ANVESHANA'S INTERNATIONAL JOURNAL RESEARCH IN ENGINEERING AND APPLIED SCIENCES.

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NATIONAL LEVEL CONFERENCE ON EMERGING TRENDS IN SCIENCE AND TECHNOLOGY NCETST-2018
22nd NOV 2018

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Message

On behalf of the conference, it is my pleasure to invite all of the great scientists, academicians, young researchers, Business delegates and students from all over the world to attend the International Conference on Science and Technology on 22nd June 2018.

Science and technology conference shares an insight into the recent research and cutting edge technologies, which gains immense interest with the colossal and exuberant presence of adepts, young and brilliant researchers, business delegates and talented student communities.

Conference meeting's goal is to bring together, a multi-disciplinary group of scientists and engineers from all over the world to present and exchange break-through ideas relating to the physics. It promotes top level research and to globalize the quality research in general, thus making discussions, presentations more internationally competitive and focusing attention on the recent outstanding achievements in the field of science, and future trends and needs.

Since this conference covers very global aspects on physics from very fundamental issue to practical application of the principle of physics, anyone interested in future progress of physics should not miss.

Dr. S. Chakradhar Goud
Principal
SRI SARADA INSTITUTE OF SCIENCE & TECHNOLOGY

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Message

Allow me to warmly thank the organizers of this important Conference forgiving me the privilege of welcoming and addressing you all. For me it is an honor and a pleasure.

These days will be dedicated to cover a wide spectrum of themes related to "Science and Technology" in this field. The Conference, composed of 13 tracks divided in 92 sessions, tackles important topics on agriculture and allied fields.I am sure that each one of you will identify subjects of his/her interest and will benefit from many fruitful and enriching discussions.

As a professor of chief co-ordinator of the conference I am very much concerned about the connection between the tertiary agricultural education and the needs of the industry.

I am particularly happy to be present in this unique event today and to exchange views and share experiences with otherhigh level professors, colleagues and friends, representing many well-known Universities and Research Institutes together with members of relevantinternational organizations.

I congratulate you for your commitment and active participation and wish you all the success.

Thank you for your attention.

Dr. B. Pavan Kumar Goud
Director-AERF

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Message

It is my great pleasure to welcome you on behalf of the Conference on Science and Technology, and to invite you to attend the International Conference on Clinical Trials to be hosted Conference.

This conference goes to the heart of all matters relating to technology trials, and it brings together the best scientists from around the world allowing you to hear and meet those at the forefront of our practice, and is being held in a fun location.

It will feature highly respected internationally renowned speakers who will share, discuss, debate, and dissect significant new developments and scientific advancements that will impact the future of clinical trials, and related fields.

The Trials 2018 should end with some strong take-home messages. To reach that goal we need multiple sources of evidence and dierent clinical experiences. We need your work to be shared. Conference is a unique and unmissable opportunity to meet face to face with colleagues from different parts of the world. It is a major contribution for the development and consilience of knowledge.

Dr.G.SUNITA SUNDARI
HOD and Professor Department of Physics
KLEF Vaddeswaram

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RISK ASSESSMENT AROUND RAYALASEEMA THERMAL POWER PLANT

Paper ID – NCETST2001

A Paper Presented by - Cherukumalli Purna Koteswara Rao[a] and Tadiboina Bhaskara Rao[a]*
[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*
Email - tbhaskararao@gmail.com [a]*

ABSTRACT

Energy is essential for economic and social development of a nation/region. The accelerating demand of energy in world nowadays has resulted in increasing numbers of construction of coal-based power plants throughout the world. The coal based thermal power plants is cited to be one of the major source to affect the environment in terms of land use, health hazards and air, soil and water. Fly ash, the main residue from the combustion of pulverized bituminous or sub-bituminous coal (lignite), is directly disposed of in large ponds in the nearby areas of Thermal Power Plants. Monitoring and assessment of the origin, chemistry, and risks of toxic heavy metals in contaminated water and soil, is necessary for the selection of appropriate remedial options.

A case study is taken up risk assessment on soil and groundwater pollution around Rayalaseema Thermal Power Plant, Kadapa district of Andhra Pradesh. The area under study bounded between 14°35' to 14°45' North and 78°15' to 78°35' East it encompasses an area of 242.26 sq Km. The physical, major ion chemistry of groundwater around the RTPP area was evaluated and analysis show an insignificant disparity of chemical composition in concentration. The respective ionic compositions with their ranges are pH (5.76–8.01); Electrical Conductivity (380–7660 µS/cm); TDS (190–8830); Total Hardness (395-3900 mg/l); Na+ (27.47–1285.73 mg/l); K+ (0.73– 491.21 mg/l); Ca2+ (7.30–167.57 mg/l); Mg2+ (2.14–144.41 mg/l); HCO3-(30.5 –719.8 mg/l); F- (0.199–1.45 mg/l); Cl- (8.76–834.75 mg/l); NO3- (0.276–434.72 mg/l); SO42- (0.29–32.237 mg/l) and SiO2 (17.90–84.42mg/l). The piper diagrams are a graphical trilinear representation of the hydro-geochemical facies and classification of the water samples. These plots include two triangles, one for plotting cations and other for anions. The plotted classification of water shown in the diagrams presents five main hydrochemical facies such as CaHCO3 (9.48%), NaCl (25%), Mixed Ca-Na-HCO3 (31.25%), CaCl2 (9.38%) and NaHCO3 (21.88%).

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THERAPEUTIC USES OF OCIMUM SANCTUM LINN (TULSI) WITH A NOTE ON EUGENOL AND ITS PHARMACOLOGICAL ACTIONS

Paper ID – NCETST2002

A Paper Presented by - SARITHA B[a] and Dr. K.DEEPTHI[a]*

[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*

*Corresponding author. E-mail thanmai.kancha@gmail.com

ABSTRACT

The medicinal plants are widely used by the traditional medical practitioners for curing various diseases in their day to day practice. In traditional systems of medicine, different parts (leaves, stem, flower, root, seeds and even whole plant) of Ocimum sanctum Linn (known as Tulsi in Hindi), a small herb seen throughout India belonging to the family Lamiaceae, have been recommended for the treatment of bronchitis, bronchial asthma, malaria, diarrhea, dysentery, skin diseases, arthritis, painful eye diseases, chronic fever, insect bite etc. The Ocimum sanctum L. has also been suggested to possess antifertility, anticancer, antidiabetic, antifungal, antimicrobial, hepatoprotective, cardioprotective, antiemetic, antispasmodic, analgesic, adaptogenic and diaphoretic actions. Eugenol (l-hydroxy-2-methoxy-4-allylbenzene), the active constituent present in Ocimum sanctum L., has been found to be largely responsible for the therapeutic potentials of Tulsi. Although because of its great therapeutic potentials and wide occurrence in India the practitioners of traditional systems of medicine have been using Ocimum sanctum L. for curing various ailments, a rational approach to this traditional medical practice with modern system of medicine is, however, not much available. Eugenol is a member of the phenylpropanoids class of chemical compounds. It is a colorless to pale yellow, aromatic oil.In order to establish the therapeutic uses of Ocimum sanctum L. in modern medicine, in last few decades several Indian scientists and researchers have studied the pharmacological effects of steam distilled, petroleum ether & benzene extracts of various parts of Tulsi plant and eugenol on immune system, reproductive system, central nervous system, cardiovascular system, gastric system, urinary system and blood biochemistry and have described the therapeutic significance of Tulsi in management of various ailments. These pharmacological studies have established a scientific basis for therapeutic uses of this plant.

Key words: Tulsi, medicinal plant, Ocimum sanctum, Linn, eugenol.

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UNPLANNED INDUSTRIALIZATION AT THE COST OF ENVIRONMENT DEGRADATION, CONTROL, TREATMENT AND ITS' IMPACTS ON PUBLIC HEALTH

Paper ID – NCETST2003

A Paper Presented by -MADUGULA EMMANUEL[a] and Dr.E. Hari Krishna[a]*

[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*

*Corresponding author. E-mail emmehplc@gmail.com

ABSTRACT

Pollution has become the enemy of the mankind. Industrial revolution of 19th century led to environmental disaster. The whole world is now more afraid of pollution rather than nuclear blast. The present environment condition of Bangladesh is not at all in equilibrium. Severe air, water, soil and noise pollution are threatening human health, ecosystem and economic growth of Bangladesh. The underground water of Bangladesh has been polluted due to Arsenic, Lead, Mercury etc. The problems are undoubtedly in the developing world, where traditional sources of pollution such as industrial emissions, poor sanitation, inadequate waste management, contaminated water supplies etc are in severe situation. The emphasis of this research work is to analyze different parameters like DO, COD, BOD, TDS, TSS, pH, EC and heavy metals of waste water of different industries before and after treatment, to determine the air pollutants which are responsible for air pollution from different industrial areas, to compare the different ETP plants in terms of efficiency and ultimately to evaluate the present scenario of environment pollution. Five industries in Chittagong have been selected to collect the waste water samples for laboratory analysis. Water samples were analyzed for Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD), Dissolved Oxygen (DO), pH, Turbidity, Total Dissolved Solid (TDS), Total Suspended Solid (TSS), Total Solids (TS), Arsenic, Lead, Chromium, Electrical Conductivity (EC) etc. From the results of this research it is observed that pH, TSS, SS and the selected metal constituents of all Individual ETP treated water are not within the limits of Industrial Effluent Quality Standards of Bangladesh. However BOD5, COD and DO values of some industries are not within the allowable limit. BOD5, COD were found higher and DO was found lower than the standard concentration set by Department of Environment (DoE). So, the effluent should be treated prior to discharge into the environment. Most of the experimental industries used almost analogous types of Effluent Treatment Plant (ETP) and their effluent treatment ways were capable to decrease their different parameters but not effective to maintain the standard discharge limit prescribed by the DoE. Installation of effective ETP is mandatory in the industries. Since industries are mainly clustered in Bangladesh, so setting up of Central ETP (CETP) by the government is really significant and appreciable.

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STUDY AND PHYSICICHEMICAL EVALUTION OF FOSINOPRIL AND BETA CYCLODEXTRINE AS MATRIX TABLET

Paper ID – NCETST2004

A Paper Presented by -PATAN RASVAN KHAN[a] and Dr. P. HARI CHARAN[a]*

[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*

*Corresponding author. E-mail rashvank@gmail.com

ABSTRACT

Fosinopril is an angiotensin-converting enzyme (ACE) inhibitor used for the treatment of hypertension and some types of chronic heart failure. It may be used alone or in combination with thiazide diuretics. It is also indicated in the management of heart failure. Fosinopril is one of the most hydrophobic substances among the angiotensin-converting enzyme inhibitors, exhibiting low water solubility and poor bioavailability following oral administration. Inclusion complexes between the drug substance and cyclodextrins (CDs) were obtained in order to improve its solubility. Fosinopril sodium, chemically named sodium (2S,4S)-4-cyclohexyl-1-(2-{[2-methyl-1-(propanoyloxy)propoxy](4-phenylbutyl)phosphoryl}acetyl)pyrrolidine-2-carboxylate.

Biocompatibility is an essential condition for any drug excipient, and the toxicological studies indicate that cyclodextrin's biocompatibility depends on the route of administration as well as on the particular chemical structure; β-CD is well tolerated in humans after oral administration. It is known that the solubility in water and the bioavailability of drug is increased when it is incorporated in cyclodextrins (CD). This research investigates the interaction between fosinopril sodium (FOS) and beta-cyclodextrin (β-CD) in aqueous solution and in solid state, in order to prove the formation of an inclusion complex between the two components. The binary system ACE inhibitor- hydroxypropyl-β-cyclodextrin was prepared using the kneading method, in 1:1 molar ratio.

Keywords: ACE Inhibitors, Fosinopril, and β-cyclodextrin

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A NEW ANTIFUNGAL SECO DITERPENOID FROM EXCOECARIA AGALLOCHA

Paper ID – NCETST2005

A Paper Presented by -EEDARA SUBBARAOa and DR. PRADEEP KUMAR BRAHMANa*
[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*
*Corresponding author. E-mail : seedara81@gmail.com

ABSTRACT

A new diterpenoid (Compound-**1**) with antifungal activity was isolated with known compounds (**2-4**) from the stem of *Excoecaria agallocha*. On the basis of spectroscopic data (IR, ^{1}H, ^{13}C, DEPT and MS), the structure of the compound **1** was established as *ent*-(8R, 13R) -8, 13 -dihydroxy-3, 4-seco-labd - 4(19), 14-dien-3-oic acid. Compound **1** exhibited significant activity against fungi (*Aspergillus niger* (AN); *Aspergillus.Wenti* (AW); *Pencillium notatum* (PN); *Pencillium.chryogenum* (PC) along with the other compounds (**2-4**).
Keywords*: Excoecaria agallocha;* antifungal activity; new diterpenoid.

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IODINE MEDIATED SIMPLE STRATEGY FOR THE SYNTHESIS OF B,Γ-UNSATURATED-A-KETO ESTERS AND THEIR APPLICATION FOR THE PREPARATION OF KNOVENAGEL CONDENSED PRODUCTS

Paper ID – NCETST2006

A Paper Presented by-Sivasubramanyam Relangi[a] **and** Dr.A.VENKATESWARA RAO[a]*
[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*
*Corresponding author. E-mail : shruthi16391@yahoo.in

ABSTRACT

For the synthesis of chiral Michael adducts synthesis of β,γ-unsaturated-α-ketoesters is one of the prerequisite intermediate. β,γ-unsaturated-α-ketoesters are highly reactive Michael acceptors and one of the important synthons for the stetter reactions,[1-4] which offers an extremely effective way to synthesize a variety of useful chiral functionalized Organic molecules,[5] that may have biological and pharmaceutical activities. Keep in view of the versatile uses of Iodine in various chemical transformations, and importance of β,γ-unsaturated-α-ketoesters prompted us to develop a simple protocol to access β,γ-unsaturated- α-ketoesters in high yields. Here a new method for the preparation of β,γ-unsaturated-α-ketoester derivatives is introduced. An expeditious synthesis of (E)-ethyl2-oxo-4-phenylbut-3-enoates and (E)-methyl4-(4-methoxyphenyl)-2-oxobut-3-enoate by one step molecular Iodine catalyzed direct coupling of electron rich aldehyde with Ethyl and Methyl pyruvates results in moderate to good yields. The reaction tolerated a range of functional groups on the aromatic ring. In order to demonstrate the synthetic utility of these β,γ-unsaturated-α-ketoesters **(3a-u)** Knovenagel Condensation with 5 different Active methylene groups was planned, the resulting Knovenagel Condensation products were formed in good yields.

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BIMETALLIC PD-AU/TIO2 NANOPARTICLES: AN EFFICIENT AND GREEN TRANSFORMATION OF NITROARENES

Paper ID – NCETST2007

A Paper Presented by - Perni Susan Rao[a] **and** Dr.G.V.KRISHNA MOHAN[a]*
[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*
*Corresponding author. E-mail : susansrinivas@gmail.com

ABSTRACT

A heterogeneous catalysis is an essential tool for green chemistry, as it empowers the development of less contaminating chemical processes and opens up synthetic pathways to desired products using sustainable resources. Herein, we describe the preparation of Pd-Au/TiO_2 nano-catalyst and its catalytic efficacy has been established by a green and rapid hydrogenation of nitroarenes with low catalytic amount (0.1 mol%). Significantly, the reaction was successful under solvent as well as ligand free conditions, at room temperature and atmospheric pressure (open vessel). Therefore, the above reaction condition seems to be a green conversion.

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DESIGN, SYNTHESIS AND ANTICANCER EVALUATION OF 2-(4-(5-(5-SUBSTITUTED ARYLPYRIMIDIN-2-YL)-1H-PYRAZOL-3-YL)PHENYL)THIAZOL[4,5-B]PYRIDINE DERIVATIVES AS ANTICANCER AGENTS

Paper ID – NCETST2008

A Paper Presented by - Cherukumalli Purna Koteswara Rao[a] and Tadiboina BhaskaraRao[a]*

[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*

*Corresponding author. Mobile: (+91) 9848736612

*Corresponding author. E-mail: eshwar2100@gmail.com

ABSTRACT

In the present study a new series of 2-(4-(5-(5-substituted arylpyrimidin-2-yl)-1H-pyrazol-3-yl)phenyl)thiazolo[4,5-b]pyridine derivatives (five) have been synthesized and tested for their anticancer activity against four human cancer cell lines including MCF-7 (breast), A549 (lung), Colo-205 (colon) and A2780 (ovarian) by the MTT assay. Among synthesized compounds, five compounds have been exhibited more potent activity than standard drug against all cell lines

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[BMIM]OH MEDIATED NEW SYNTHESIS 3-(1H-INDOL-3-YL)ACRYLONITRILE DERIVATIES

Paper ID – NCETST2009

A Paper Presented by -N. SAMBASIVA RAO[a] and Dr.M Sujatha[a]*
[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*
*Corresponding author. E-mail: siva.narras@gmail.com

ABSTRACT

[Bmim]OH mediated new synthesis of 3-(1H-indol-3-yl)acrylonitrile derivatives 6 have been developed by the reaction of diethylphthalate (1) with ethyl cyanoacetic acid hydrazide (2) to form 3-(1,4-dioxo-3,4-dihydrophthalazin-(1H)-yl)-3-oxopropanenitrile (3). Then compound 3 reacted with indole-3-aldehyde 4 by Knoevenagel condensation to form compound 2-(1,4-dioxo-1,2,3,4-tetrahydrophthalazine-2-carbonyl)-3-(1H-indol-3-yl)acrylonitriles (5). Compounds5 undergo alkylation with alkylating agents to form 6 with good yields. Compounds6 could also be synthesized by alkylation of 4 followed by condensation with 3.

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PRODUCTION AND COMPARATIVE STUDY OF EXTRACTED NATURAL BIO-EMULSIFIER UTILIZING WASTE LUBRICATING OIL WITH THAT OF COMMERSIAL EMULSIFIERS

Paper ID – NCETST20010

A Paper Presented by -M.Nagendra Kumar[a] **and** Dr.J.V.SHANMUKHA KUMAR[a]*

[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*

*Corresponding author. E-mail: nagendra_2004_kumar@yahoo.com

ABSTRACT

Emulsion is an integral part of a two phase system of matter called colloids. Two liquids can form several types of emulsions. Emulsions find their applicability in various chemical, petroleum, food and pharmaceutical industries (*). For instance the usages of emulsion coating in paints or emulsions in confectionaries are quite popular. In order to form stable emulsions, several synthetic emulsifiers are commonly used. The efficiency of an emulsifiers depends on several factors. Structurally an emulsifier consist of two components- a water-loving hydrophilic head and an oil-loving lipophilic tail. The hydrophilic head is directed to the aqueous phase and the lipophilic tail to the oil phase. The key factor determining efficiency of an emulsifier is HLB (hydrophilic lipophilic balance) value. In the present study we have extracted a bio-emulsifier from a bacterial source by utilizing waste lubricating oil as a potential substrate. We have optimized several parameters for maximizing the yield in bio-emulsifier. Subsequently, we compared the extracted bacterial emulsifier with several commercially available emulsifiers both on the basis of chemical structure as well as physical properties by specific techniques. Furthermore the emulsifying property of the bacterial bioemulsifier formed appreciable stable emulsion with respect to several fuels like crude oil, diesel, petrol, kerosene, engine oil. This indicates the bio-emulsifier can be used as a tool in degradation of petroleum hydrocarbon contaminants. Furthermore the use of bio-emulsifiers from a natural source in comparison to synthetic emulsifiers is always appreciable in any field of industry.

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ANALYSIS OF CONTRASTING SURFACE-ACTIVITIES OF BACTERIAL EXPOLYSACCHARIDES PRODUCED BY UTILIZATION OF DIFFERENT CHEAP SUBSTRATES AND THEIR POTENCY IN ECO-FRIENDLY APPLICATIONS

Paper ID – NCETST2011

A Paper Presented by- Y.Prabhakar[a] **and** Dr.K.R.S.Prasad[a]*

[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*

*Corresponding author. E-mail: prabhakar_msc2003@rediffmail.com

ABSTRACT

The potential of metabolites produced by microbial consortia are gaining concern due to several practical bio-applications[1]. One such potent metabolite synthesized by bacteria generally at late exponential phase or during stationary phase is Exopolysaccharide (EPS) – an important class of biopolymers secreted in the extracellular medium. Apart from intrinsic genetic factors of the producer microorganism, selective variation of bacterial media often determines structural moiety, characteristic properties as well as potential applicability of the EPS[2]. Initially, we considered a series of bacterial strains and depending on the maximum yield in EPS we shortlisted an oil-utilizing Gram negative bacterium of family *Brucellaceae* – *Ochrobactrum pseudintermedium.* Although this bacterium is not much familiar, some light has already been thrown on its potency in biodegradation[3] and utilization of waste lubricants using its metabolite. Here we carry forward the study by selecting some cheap substrates based solely on their carbon sources e.g. sugar and oil based substrates and found that there is a contrasting structural variation in the EPSs produced from a single bacterial strain of *Ochrobactrum* sp. which interestingly led to variation in their characteristic property. The substrate-specific EPS have been compared with other standard commercially useful EPS based on UV-Vis spectrophotometry, FT-IR spectroscopy, ^{1}H NMR spectroscopy, GC-MS, TGA and SEM studies. We named the extracted EPS individually and found their potentiality especially in environmental facets like surface-active efficacy, solubility, thermo-stability, biosorption of potentially hazardous heavy metals and emulsification potentiality. Such potent surface active bacterial EPSs, produced by a single bacterial strain by utilizing different waste substrates, might be an important alternative to several synthetic surface-active compounds if applied judiciously.

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ASTUDY OF INFLUENCE OF ETHYLENICALLY UNSATURATED DIACRYLIC MONOMERS ON COLOR MIGRATION & BLEEDING PROPERTIES OF FLUORESCENT PIGMENTS FOR PLASTIC APPLICATIONS

Paper ID – NCETST2012

A Paper Presented by-D.Srinivasulu[a] **and** Dr.S.NARESH VARMA[a]*
[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*
*Corresponding author. E-mail: zaq_mju@yahoo.co.in

ABSTRACT

Formaldehyde free non migration and non bleeding fluorescent thermoset pigments have been taken a great attention in terms of green environmental concern and find many and wide range coloring applications covering from textile to plastic, where bleeding and migration of color are very important crucial properties for plastic applications, especially in food packing and cosmetic industries.Although several methods in dispersion polymerization of ethylenically unsaturated monomers containing various types of fluorescent dyes (basic, solvent, disperse, etc.,) reported recently producing dyed thermoset polymeric colorants have limitations especially use of large quantity organic solvents, Ethanol, Methanol, Isopropyl alcohol, Tetrahydrofuran etc as reaction media. In the current invention, microemulsion free radical polymerization was used to produce the fluorescent thermoset pigments in aqueous phase and showed comparatively similar properties of those produced in the solvent media by using disperse polymerization. As compared to dispersion polymerization, the yield of conversion was increased from 1% to ~ 5% by using micro emulsion polymerization, where the coloring materials were dissolved in ethylenically unsaturated monomers added slowly over a period of 72 hours and along with slow addition of initiator aqueous system. A variety of ethylenically unsaturated monomers, allylmethacrylate, ethyleneglycoldimethacrylate (EGDMA), hexaethylenediacrylate, etc., were functionally evaluated to obtain fluorescent thermoset pigments, out of which **EGDMA** based pigments showed better control of color migration and bleeding.

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UTILIZATION OF THREE LOW COST BIO ADSORBENTS IN THEIR NATIVE AS WELL AS CARBONIZED FORMS FOR REMOVAL OF COBALT (II) FROM AQUEOUS SOLUTIONS

Paper ID – NCETST2013

A Paper Presented by-Sujitha Ravulapalli[a] and PROF.K.RAVINDRANATH[a]*

[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*

*Corresponding author. E-mail: sujitharavulapalli1988@gmail.com

ABSTRACT

Groundnut seed cake powder (GNSCP), sesame seed cake powder (SSCP) and coconut cake powders (CCP) were used in the bio-sorption of cobalt(II) from aqueous solutions. These powders in their native as well as carbonized forms were used for the removal of cobalt(II). Effect of pH, contact time adsorbent dosage, temperature and initial metal concentration on the uptake of the metal ions were investigated. Kinetic studies for the bio-sorption of cobalt(II) showed that the process followed a pseudo second order kinetics for both the forms of the adsorbents. Isothermal studies indicated that Langmuir isotherm fits for the adsorptive removal of cobalt(II). With a maximum adsorption capacity of 15.9 mg/g using both the forms of the adsorbents showed an effective and efficient removal 99.8% of cobalt(II) from aqueous solutions. The three adsorbents chosen for the present study, have not been used so far in the removal of cobalt(II).

KEYWORDS: bio-sorption, cobalt (II), pseudo second order kinetics, Langmuir isotherms, Temkin isotherm, Freundlich isotherm.

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FT-IR UV-VISIBLE FLUORSCENCE SPACTRA ANALYSIS AND QUANTUM CHEMICHAL STUDIES ON TRYPTAMINE

Paper ID – NCETST2014

A Paper Presented by-MADAN KUMAR G[a] **and** Dr. K Naga Mahesh[a]*

[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*

*Corresponding author. E-mail: sujitharavulapalli1988@gmail.com

ABSTRACT

In this study, Tryptamine has been characterized by FT-IR, UV–Vis and Fluorescence spectrum. The optimized structural geometrical parameters, Potential energy surface (PES) scan, vibrational, absorption, Frontier orbitals (HOMO-LUMO), reactive descriptors and the thermodynamic properties of the molecule were performed on the basis of DFT calculations at B3LYP/6-311++G** method using Gaussian 09 program package. The HOMO-LUMO analysis was used to find out the band gap of compound which has been extended to calculate ionization potential (I.P), electron affinity (E.A), global hardness(η), chemical potential (μ) and global electrophilicity index (ω), global softness (σ), total energy change(ΔET) in electron volts to study the chemical behavior of compound. A very good coincidence between observed and calculated wavenumbers has been achieved. The NLO property was calculated in terms of first hyperpolarizability (β0), the first hyperpolarizability of Tryptamine was four times greater than standard molecule (urea). In addition to that the intra-molecular charge transfers between the natural bonding orbitals (NBO) were determined using NBO analysis. To calculate the excited states of the Tryptamine time-dependent density functional theory (TD-DFT) was used. Molecular electrostatic potential (MEP) analysis for investigated compound was also predicted to check their electrophilic or nucleophilic reactivity.

Keywords: Tryptamine, FT-IR

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SYNTHESIS, CHARACTERIZATION, MAGNETIC AND DIELECTRIC STUDY OF DOPED NANOFERRITES

Paper ID – NCETST2015

A Paper Presented by-Lalitha Ammadu Kolahalam[1], I.V. Kasi Viswanath[1*], Bhagavatula S Diwakar[2]

[1,1*] *Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

[2] *Department of Engineering Chemistry, SRKR Engineering College, China Amiram-534204, Andhra Pradesh, India.*

*Corresponding author. E-mail: viswanath.ivk@gmail.com

ABSTRACT

Research and development of nanotechnology depends on the progress of theoretical and experimental studies in various disciplines and which in turn, provide new opportunities in different areas like surface area effects, magnetic effects, quantum effects, being to dominate the properties of matter as size is reduced to the nano scale. Some oxides such as magnetite in the body suggests that it is biocompatible, which implies synthetic iron oxide based materials are useful for biomedical applications. Ferrite powders used for microwave crisping applications, such as manganese zinc ferrite; are quite expensive. These ferrite powders use a high percentage of costly raw materials such as manganese and zinc oxide. Here report the synthesis of Metal nano ferrites (MFe_2O_4) using citrate precursor method. The obtained nano particles were purified, dried, grinded and they were characterized by X-ray diffraction patterns and scanning electron micrographs. The size of ferrite particles are calculated using Scherrer formula at different annealed temperatures, found to be ranged 20 nm to 60 nm. The SEM diagrams of the annealed nano ferrites obtained by two systems are presented. It is cleared that from these SEM images, the surface morphology is quite different with annealing temperatures. Through these micrographs, we can observe the formation of soft agglomerates with irregular morphology constituted with the quite fine particles and these particles mostly behave as magnetic nature. The results are presented.

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SYNTHESIS OF NOVEL 1–(5–(BENZYLSULFINYL)–3–METHYL–1,3,4–THIADIAZOL–2(3H)–YLIDENE)–THIOUREA/UREA DERIVATIVES AND EVALUATION OF THEIR ANTI–MICROBIAL ACTIVITIES

Paper ID – NCETST2016

A Paper Presented by-Madhav Rao Mannam,[a, b] Prasad K. R. S [*a] Srimurugan, S., B Pramod Kumar[b]

[a]*Department of Chemistry, K L University, Vaddeswaram, Guntur–522 502, Andhra Pradesh, India*

[b]*Chemical Research Division, API R&D Centre, Micro Labs Ltd., Bangalore–560 105, Karnataka, India*

*Corresponding author. E-mail: krsprasad_fed@kluniversity.in

ABSTRACT

The feast of infectious diseases is one of the major trouble some situations in the world because of increasing number of multi–drug resistant pathogens. There is a great demand for the development of new anti–microbial drugs and drug candidates [10]. Hence, we have designed and synthesized a new series of 1–(5–(benzyl sulfinyl)–3–methyl–1,3,4–thiadiazol–2(3H)–ylidene)–thiourea/urea derivatives (1a–j) from substrates (2 and 8a–j) as depicted in scheme 1. For the first time, i) a new process was developed for N–methylation of 1,3,4–thiadiazol moiety using dimethyl carbonate (DMC) in presence of TMEDA and ii) the sulphide was selectively oxidized to sulfoxide in higher yield by using chlorine (g) in aqueous acetic acid media under mild reaction condition.

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EXPERIMENTAL STUDIES ON DIFFERENT TYPES OF SURFACTANT REMOVAL FOR PREPARING ORDERED MESOPOROUS SILICA MATERIALS AT ROOM TEMPERATURE

Paper ID – NCETST2017

A Paper Presented by-MATTA MANIKANTTHA
[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*
*Corresponding author. E-mail: mani.chinnu88@gmail.com

ABSTRACT

Micelle-templated mesoporous silica materials are rapidly becoming important in many fields of chemistry with their versatile application in catalysis, separation, nano-composites, environment & biomedical research. A wide range of uniform pore size and the high density of silanol groups in mesoporous silica materials make them attractive for the introduction of functional groups with high coverage. Several synthesis strategies are available to prepare ordered mesoporous silica materials [1-4]. In this study, ordered mesoporous silica are prepared at room temperature by using TEOS and CTAB as the source of silica and the structure directing agent, respectively. The experiment is carried out in presence of an alkaline medium. The surfactants of the as-synthesized materials are removed by using HCl/ETOH solvent mixture as well as by using the calcination process. The comparative studies are followed for both the processes. The morphology and textural characteristics of the synthesized mesoporous silica in the experiment are investigated by SEM, nitrogen adsorption-desorption isotherm (BET) and Fourier transform infrared spectroscopy (FTIR) measurements. It is found that the morphology of mesostructured silica materials are mainly affected by the rate difference between condensation and mesostructure formation. The comparison results between calcination and solvent extraction for the surfactant removal, reveal that though the calcination is better choice but we can't neglect the efficiency of the later one (which is around 96%). Silica network formed for solvent extraction method shows more regularity.

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CADMIUM ELECTRODEPOSITION FROM DEEP EUTECTIC BASED IONIC LIQUID

Paper ID – NCETST2018

A Paper Presented by-B JAGADEESWARA REDDY[a], Dr.E. Hari Krishna[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. E-mail: jaganmsc4u@gmail.com

ABSTRACT

The electrodeposition of cadmium from a solution containing cadmium chloride (CdCl2·H2O) in choline chloride(ChCl) -ethylene glycol (EG) based ionic liquid has been carried out onto a copper cathode by constant current and constant potential methods at room temperature. The electrodeposition of cadmium from an ChCl:EG:CdCl2·H2O (1:2:0.1 mole ratio) ionic liquid occurs via an instantaneous nucleation mechanism in the very initial stage of the crystal growth. The influences of various experimental conditions on electrodeposition and the morphology of the deposited layers have been investigated by scanning electron microscope (SEM) and X-ray diffraction (XRD). Smooth and good adhering bright metallic coloured cadmium has been electrodeposited onto copper cathode from ethylene glycol (EG) based ionic liquid (ethaline) containing CdCl2·H2O at room temperature in presence of of 0.10 g dm-3 polyethylene glycol and 40 mL dm-3 formic acid mixture as surfactant and 0.05 mol dm-3 P2O5 as additive. The cadmium electrodeposit obtained at the applied deposition potentials up to -0.95 V and current densities up to -20.0 A m-2 are very smooth, good adhering and of uniform size. Cadmium electrodeposits cannot be obtained from urea/glycerol based ionic liquid (reline/glyceline) at any temperature and even on the addition of surfactant.

Key words: Cyclic voltammetry; Electrodeposition; Nucleation; Ethaline; Cadmium.

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DESIGN, SYNTHESIS, MOLECULAR DOCKING STUDIES OF QUINAZOLIN-4-ONES LINKED TO 1,2,3-TRIAZOL HYBRIDS AS MYCOBACTERIUM TUBERCULOSIS H37RV INHIBITORS BESIDES ANTI-MICROBIAL ACTIVITY†

Paper ID – NCETST2019

A Paper Presented by-Narendra Kumar Maddali[1]*, Kasi Viswanath I V[1], MurthyY L N[2]

[12]Department of Chemistry, Koneru Lakshmaiah Education Foundation, Guntur, Andhra Pradesh-522502, India

[2]Department of Organic Chemistry, Andhra University, Visakhapatnam, Andhra Pradesh-530003, India

*Corresponding author's mobile number: (+91) 9703823344 / 9177778711

*Corresponding author. Email: viswanath.ivk@gmail.com/maddalikumar@gmail.com

ABSTRACT

Triazoles and quinazolinones have gained much attention during the last decade among the research community due to its potential biological importance. However, 1,2,3-triazoles and 4-quinazolinones are widely studied due to theiranti-tubercularactivity. Hitherto several methodologies have been reported for the synthesis their derivatives individually.

Herein we present the synthesis of a series of novel 1,4-disubstituted triazoles fused quinazolinonesvia clean and convenient click chemistry approach to get structurally diverse compounds. The synthesized compounds were evaluated for the biological activity and found to have significant activity towards panel of anti-bacterial and anti-tubercular as well. These observations were further supported from the molecular docking studies by the strong interaction energies with the target enzyme (pantothenate synthetase).

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SYNTHESIS OF DIASTEREOSELECTIVE NOVEL CHROMENE DERIVATIVES BY MEANS OF KNOEVENGEL CONDENSATION

Paper ID – NCETST2020

A Paper Presented by-D. Navaneetha[1] and Harikrishna Erothu1[1,2*]

[1]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur-522502, Andhra Pradesh, India.*

[2]*Centre for Advanced Energy Studies (CAES), Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur-522502, Andhra Pradesh, India.*

*Corresponding author. E-mail: *harikrishnaiitm@gmail.com*

ABSTRACT

The synthesis of various thiazolidinone derivatives through knoevenagel condensation is considered as one of the most important process in synthetic organic chemistry and medicinal chemistry. Compounds containing azolidinine heterocyclic have a wide range of pharmacological activities such as antitubercular[1], anticancer[2], antidiabetic[3], antimicrobial[4], antifungal[5], antiviral, antibacterial, anti-inflammatory etc.

An efficient protocol for the synthesis of (Z) - 5-((2,4- diphenyl (2H- chromen - 3-yl nethylene) -2-thionothiazolidin - 4- ones and (Z)-5-((2-methyl-2-(4-methylpent-3-en-1-yl)-2H-chromen-3-yl) methylene)-2 thioxothiazolidin-4-one derivatives from chrome-3 carbaldehyde with rhodanine has been developed which proceeds through knoevenagel condensation. This method afforded the products with good yields in presence catalyst.

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DESIGN, SYNTHESIS, MOLECULAR, QSAR STUDIES AND ANTI-HISTAMINE ACTIVITY OF NOVEL TETRAHYDROCARBAZOLE DERIVATIVES

Paper ID – NCETST2021

A Paper Presented by-R V SATYADHAR REDDI[a], Dr. P. HARI CHARAN[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 9247825357
*Corresponding author. E-mail: satya_pushpa4u@yahoo.co.in

ABSTRACT

Tetrahydrocarbazoles are known to have very important biological activities such as Analgesic, Anti-inflammatory, Antihyperlipeademic, Anticancer. The New substituted tetrahydrocarbazole derivatives were prepared from substituted phenylhydrazine and cyclohexanone in glacial acetic acid under reflux (Fisher Indole Synthesis). These intermediates on reaction with substituted aromatic acid chlorides in alkaline media were converted to N-Substituted tetrahydrocarbazoles. The synthesized compounds were characterized by their M.P, TLC, IR, NMR, Mass spectroscopic and elemental analysis. In the first step 6-substituted tetrahydrocarbazoles were showed characterstic IR peaks 3440-3450cm^{-1}(N-H Stretching),other peaks 750cm^{-}1(C-Cl stretching), 1150 cm^{-1}(C-F stretching), 1130 cm^{-1}(C-CH_3strectching), NMR peaks at 6.50-6.57(4 aromatic protons), 1.5-3.5 (aliphatic hydrogens), 4.3(N-H Proton)and molecular ion peaks at corresponding regions. In the second step IR peaks were 1650 cm^{-}1(C=0 stretching), remaining peaks at their corresponding regions, NMR 7.20-7.57 (9 aromatic protons), 1.7-3.0 (aliphatic hydrogens), absence of N-H peak, characteristic molecular ion peaks correspondingly. All the compounds were subjected to molecular docking studies for G-protein coupled receptor H_1 (PDB Code: 3RZE). The *in silico* molecular docking study results showed that, all the synthesized compounds have good binding energy and have affinity towards the active pocket, thus, they may be considered as good inhibitor of H_1 receptor. The ligands TH4, TH6, TH8 were showed good negative dock scores and also good interactions with amino acids ala638, val796, ser238. These compounds were screened for their antihistaminic activity (guinea pig ileum). The recorded percent of inhibitions were significant when compared with standard antihistaminic drug Chlorpheniramine. The animal activity data was subjected to 3D QSAR studies and results are best suited for the model PLSR (Partial least square method). Among all the compounds TH8 was showed good animal activity because of $–CH_3$ (electron donating group) due to positive inductive effect. It can be a lead compound for further investigation.

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HYDROGEN PRODUCTION BY ELECTROCHEMICAL METHANOL REFORMING TECHNOLOGY

Paper ID – NCETST2022

A Paper Presented by-Pennada Naga Lakshmi, K. Naga Mahesh*, Anjaneyulu Yerramilli
Centre for Advanced Energy Studies (CAES), Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur (Dt), Andhra Pradesh, India-522 502
*Corresponding author. Mobile: (+91) *9500030553*
*Corresponding author. E-mail: *nagamaheshk@kluniversity*

ABSTRACT

The production of hydrogen by methanol–water solution electrolysis was investigated[1]. Graphene oxide (GO) was synthesized by modified Hummer's method[2]. The synthesized GOwas used as support for Pd catalyst. The Pd/G electrocatalyst was prepared by using chemical reduction method and characterized using SEM and XRD. Pd/G were used as a cathode and RuO_2 as anode catalysts in PEM methanol electrolyser.The catalyst inks for anode and cathode were prepared by mixing the catalyst powders inNafion solution and isopropyl alcohol.The catalyst ink was coated on carbon cloth using a fine brush and dried to form gas diffusion electrode (GDE) and hotpressed with Nafion membrane to form as MEA[3]. The MEA was tested in a PEM single cell methanol electrolyser[5].

Anode : $CH_3OH+H2O \rightarrow 6H^+ + 6e^- + CO_2$ $E^0 = 0.02V$ (vs SHE)[4] (1)

Cathode : $6H^+ + 6e^- \rightarrow 3H2$ $E^0 = 0.00V$ (vs SHE) (2)

Overall reaction: $CH_3OH + H2O \rightarrow 3H_2 + CO_2$ $E^0 = 0.02V$ (3)

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DESIGN, SYNTHESIS AND EVALUTION OF ANTI-TUBURCULAR ACTIVITY OF NOVEL TRIAZOLE DERIVATIVES

Paper ID – NCETST2023

A Paper Presented by-R V SATYADHAR REDDI[a], Dr. P. HARI CHARAN[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 9247825357
*Corresponding author. E-mail: satya_pushpa4u@yahoo.co.in

ABSTRACT

Tuberculosis is a chronic granulomatous disease and a major health problem in developing countries. Tuberculosis (TB) is an infection caused by the bacterium *Mycobacterium tuberculosis.* Emergence of 'multi-drug resistant' (MDR) TB of which over 0.4 million cases are occurring globally every year, is threatening the whole future of current anti-tubercular chemotherapy. Substituted triazoles have received considerable attention during last two decades as they are endowed with variety of biological activities and have wide range of therapeutic properties. A literature survey indicates that triazole derivatives possess different pharmacological and biological activities, of which the most potent is anti-microbial, analgesic, anti-inflammatory and anti-tubercular activities. On the basis of the above mentioned reports the present work is concerned with the synthesis of fused 1, 2, 4-triazole derivatives with the objective of discovering novel and potent anti-tubercular agents that might be devoid of harmful side effects. The synthesised compounds were characterised by their physical and spectral data. The anti Mycobacterial activity of compounds were assessed against *M.tuberculosis* using microplate alamar blue assay (MABA). The resulted 7 compounds (**IVa-IVg**) were screened for antitubercular activity studies at a concentration of 0.2 µg/ml to 100 µg/ml. However the data of the anti tubercular activity screening revealed that the compounds **IVa, IVe** and **IVg** exhibited activity against *Mycobacterium tuberculosis* strain to the level of 25 µg/ml.

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ONE POT,FOUR-COMPONENT SYNTHESIS DIHYDROPHTHALAZIN-4-HETEROYL-4H PYRAN

Paper ID – NCETST2024

A Paper Presented by-KALLI SAI BHAVANI[a], Syed Waheeduddin[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India. Andhra Pradesh, India.*
*Corresponding author. E-mail: saibhavani.06k@gmail.com

ABSTRACT

Onepot,four-componentenvironmentallysynthesisof2-amino-6-(1,4-dioxo-3,4-dihydrophthalazin 2(1H)-yl-4-heteroyl-4H-pyran-3,5-dicarbonitriles5a-5f have been synthesized by condensing diethyl phthalate 1, ethyl cyanohydrazide2, hetero aromatic aldehydes3a-3f and activemethylene Compounds 4 in [DBU][OAc] medium1, 8-diazabicyclo[5.4.0]-undec-7-en-8-iumacetate, at 60-65oC for 2h. Particularly valuable feature soft his method includes high yield, broad substrate scope, shorter reaction times and straight forward procedure.

Keywords: Diethyl phthalate, heteroaromatic aldehydes, ethyl cyanohydrazid

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SPONTANEOUS DIELECTRIC EMISSION ENHANCEMENT BY STIMULATED PLASMONIC ANTENNA OPTICAL ABSORPTION

Paper ID – NCETST2025

A Paper Presented by- KALLI SAI BHAVANI[a], Dr.A.VENKATESWARA RAO[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India. Andhra Pradesh, India.*
*Corresponding author. E-mail: saibhavani.06k@gmail.com

ABSTRACT

Metal nanoparticles exhibit localized surface plasmon resonance (LSPR) and large resonant scattering cross sections offer the potential to scatter light strongly. LSPs can guide and confine light flux in nanoscale dimensions. Such dynamic nanostructures can act as an optical antennas in dielectric cavities and modify the effective excitation and collection. These properties of metal nanoparticles are tunable and can be used in a variety of applications from non-linear optics and photovoltaics to sensing. We demonstrate the outcome of localized surface plasmon of gold nanoparticles on SiNWs/TiO2 radial nano heterojunctions. These hybrids show improved optical absorption, and emission on plasmonic sensitization which enhances self-trapped exciton emission and oxygen vacancy radiative recombination emission of TiO2. Also, LSPRs on gold can be stimulated by the defect emission energy transfer. The excited SPRs are responsible for the electron tunneling from gold to the TiO2 conduction band. As a result, electron density increases in the conduction band of TiO2, leading to a higher recombination rate of electron–hole pairs, which enhances the PL properties of TiO2.

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FACILE PROCESS FOR PREPARATION OF 2-PYRIDINESULFONYL FLUORIDE

Paper ID – NCETST2026

A Paper Presented by- KALLI SAI BHAVANI[a], DR. PRADEEP KUMAR BRAHMAN[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India. Andhra Pradesh, India.*
*Corresponding author. Mobile: (+91) 9030134647
*Corresponding author. E-mail saibhavani.06k@gmail.com

ABSTRACT

Organofluorine compounds have found enormous applications in medicinal chemistry, chemical biology, drug discovery and chemical industry. In the context of drug design, the alkyl fluorides constitute a valuable class of Organofluorine compounds for pKa modulation, lipophilicity tuning and selective blocking of oxidative metabolism. A number of methods have been developed for the synthesis of alkyl fluorides and among them; the deoxyfluorination of alcohols via in situ activation is a leading approach due to the abundance and accessibility of alcohol-containing precursors. For one step deoxyfluorination, proceeding under milder conditions, several deoxyfluorinating reagents including diethylaminosulfur trifluoride (DAST), Deoxo-Fluor, XtalFluor, Fluolead, etc have been developed. As these reagents are mostly very expensive, thermally unstable and non selective, a newer deoxyfluorinating reagent, viz., 2-pyridinesulfonyl fluoride have also been developed. Though, this reagent has been reported as an inexpensive, chemoselective and thermally stable deoxyfluorinating reagent its reported synthesis required multiple steps, hazardous & corrosive reagents and gave poor yields. We, herein, report a facile process for efficient and one step preparation of 2-pyridinesulfonyl fluoride which required lesser time and gave higher yields in comparison to the reported proceed.

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ISOTHERMAL, KINETIC STUDIES OF REMOVAL OF METHYLENE BLUE FROM AQUEOUS SOLUTION USING THREE LOW COST ADSORBENTS

Paper ID – NCETST2027

A Paper Presented by-Kosuri Eswara Raju[a], Dr.A.VENKATESWARA RAO[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India. Andhra Pradesh, India.*
*Corresponding author. E-mail : eswarrajukosuri@gmail.com

ABSTRACT

Three low cost adsorbents like groundnut seed cake powder, sesame seed cake powder, coconut cake powder were chosen and used in their carbonized form. Such materials showed excellent adsorptive properties in the removal of methylene blue from aqueous solutions. The optimum conditions for the effective removal of the dye were found to be pH of 7, temperature of 35^{o}C, adsorbent dosage 0.5g for each for sesame seed cake powder and coconut cake powder, whereas, the adsorbent dosage for groundnut seed cake powder was 0.25g and initial metal concentration as 10 mg L^{-1}. Under these conditions, using all the three adsorbents, it was found that 99.4% of the dye has been removed from aqueous solution. Maximum adsorption capacity was found to be 5.0 mg g^{-1}. Langmuir adsorption isotherm was found apt for the adsorptive removal of the dye with a high positive correlation coefficient value. Pseudo second order kinetics fits the best for the adsorption of the dye. Characterization of the adsorbent was carried out by using FTIR and XRD methods. The applicability of the adsorbent was verified with synthetic industrial effluent.

Keywords: groundnut seed cake powder, sesame seed cake powder, coconut cake powder, XRD, FTIR, bio adsorption, methylene blue, Langmuir, Fruendlich adsorption isotherms

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A STUDY OF CORRELATION OF TEXTILE PERFORMANCE PROPERTIES TO PREDICTED THEORETICAL PROPERTIES FOR DAYLIGHT FLUORESCENT NANODISPERSIONS

Paper ID – NCETST2028

A Paper Presented by-Nageswara Rao Dorepalli[a], Dr.G.V.KRISHNA MOHAN [a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India. Andhra Pradesh, India.*
*Corresponding author. E-mail : jnagchems@gmail.com;

ABSTRACT

As compared to conventional fluorescent pigments or using dye materials directly, polymeric fluorescent dispersions synthesized through micro emulsion free radical polymerization have significance credentials concerning green technologies and environmental sustainability. However, in textile and garment industries, the challenging issues facing till to date are fastness properties, especially light fastness and wash fastness of textile fabrics printed with these polymeric fluorescent dispersions. A correlation in between theoretically predicted property, dipole moment through Density Functional Theory calculations and application performance properties, wash fastness and light fastness, was studied and presented here. Various moles proportion of ethylenically unsaturated monomers of hydroxypropyl methacrylate (HPMA), methyl methacrylate (MMA), and Benzyl methacrylate (BZMA) were used in the micro emulsion polymerization, carried out in presence of Basic Red 1:1 and Basic Violet 11:1 rhodamine dyes to produce fluorescent dispersions containing submicron size particles. The possible theoretical structures of BZMA, MMA and HPMA with various moles proportions were geometrically optimized by B3LYP method and 6-31G basis set to predict dipole moments. Fluorescent dispersions with corresponding moles proportions were synthesized by using micro emulsion free radical polymerization and the resultant dispersions were used to take prints over cotton fabrics and evaluated for light fastness and wash fastness properties. The washing and light fastness values were measured by using Color Scan Spectrophotometer and plotted against to the moles proportion of BZMA, MMA and HPMA. The results show that light fastness and wash fastness increases with increasing moles proportion of dipole moment.

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INVESTIGATION ON FTIR AND ELECTRICAL PROPERTIES OF A NOVEL PVDF:NA3C6H7O7 POLYMER ELECTROLYTE

Paper ID – NCETST2029

A Paper Presented by-Challamalla Nageswara Rao[a], Dr.M Sujatha [a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 9742876503
Corresponding author. E-mail : naghimalaya@gmail.com;

ABSTRACT

The polymer electrolyte preparation and characterization have gained momentum in the recent years because of their prospective applications in batteries, fuel cells, sensors etc. due to many advantages like simple operations, electrochemical stability, non-leakage, solvent free make the solid polymer electrolytes (SPE) more viable than liquid electrolytes. In this connection, the Polyvinylidene fluoride (PVDF) having strong electro-withdrawing functional groups (-C-F) with dielectric constant value of 8.4 is very much favourable for steady maintenance of high charge carriers. The Polyvinylidene fluoride with Sodium Citrate PVDF: $Na_3C_6H_5O_7$ polymer electrolyte membranes for different concentrations have been prepared by solution casting technique. The prepared samples of different proportions were investigated with FTIR and impedance analyser. The transmission spectrum obtained from FTIR analysis confirmed the complex formation between polymer PVDF and ionic salt $Na_3C_6H_5O_7$. The dielectric parameters such as dielectric constant, dielectric loss and tangent loss of the obtained films of various weight ratios were measured in the range of frequency 42 Hz to 1 MHz and in the temperature range of 303–373 K. The Arrhenius behaviour of the prepared polymer electrolyte membranes with increasing salt concentration was confirmed. The decrease in the activation energy with increasing salt concentration was observed from the conductivity temperature relation. There was an improvement in the magnitude of the conductivity for PVDF: $Na_3C_6H_5O_7$ polymer electrolyte with increasing salt ratio and temperature. From the obtained data of AC impedance measurements, the high conductivity 1.9 x 10^{-3} S cm^{-1} was achieved for the 80PVDF:20$Na_3C_6H_5O_7$ film at room temperature. The transference numbers were calculated by using DC polarization technique.

Keywords: Solid polymer electrolyte, PVDF, FTIR, Arrhenius mechanism, Transport number.

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RECENT ADVANCES AND EMERGING APPLICATIONS OF LEVAN-A WONDER BIPOLYMER

Paper ID – NCETST2030

A Paper Presented by-

CH.H.N.PRASADA REDDY[a], Dr.J.V.SHANMUKHA KUMAR [a*],

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

*Corresponding author. Mobile: (+91) 7093836597

Corresponding author. E-mail : prasad_reddys@yahoo.co.in;

ABSTRACT

Microbial ExoPolySaccharides (EPSs) are believed to be natural biopolymers showing wide industrial applicability, due to repeated units of sugar moieties. The main bacterial EPSs include Xanthan, Dextran, Reuteran, Kefiran, Gellan, Hyaluronan, Curdlan, Welan, Diutan, Marinactan, Succinoglycan, FucoPol, GalactoPol, Levan, etc. As these EPSs vary in their chemical nature and function, they have represented diverse spectrum of practical applications for human usages that conferred them with Generally Regarded As Safe (GRAS) status.Levan, a fascinating homopolyfructose-branched EPS, β-(2→6)-linked fructose polymer synthesized from sucrose by wide range of bacteria. Bacterial levans with high molecular weights are usually branched, and form compact nanomaterials offer a broad spectrum of applications. The diversity of current and potential applications of levan ranges from as prebiotics, diet, property improvementin food industry; as moisturizerin cosmetics industry; as tolerance, soil improvement, enforcement in agriculture; as immunomodulator, anti-diarrheic, blood plasma volume expander, hypocholesterolemic agent, anti-tumor agent, hydrogel, capsule filler in medical and pharmaceutical industry; prophylactic agent in aquaculture; as edible agent in diary, confectionery and post-harvest industries to environmental application for neutralizing toxic constituents. Further, levan has become a promising nanometric carriers (in the form of nanoparticles, nanocomposites, nanofilms, etc.) which received more potential attention in delivery of peptides and protein drugs. In this study, the emerging applications of levan as a valuable and versatile future biopolymerwith excellent polymeric medicinal properties, will be elucidated.

Keywords: Levan, biopolymer, advances, applications, food, medicine.

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NOVEL AND AN EFFICIENT SYNTHESIS OF DEUTERIUM-LABELED OLOPATADINE-D6

Paper ID – NCETST2031

A Paper Presented by- BASI REDDY SIVA REDDY[a], Dr.K.R.S.Prasad [a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 9885802322
Corresponding author. E-mail : shivareddy.bassi@gmail.com

ABSTRACT

In this present communication a novel and highly efficient synthetic approach for the synthesis of deuterium labeled olopatadine-d6 has been developed by using a notably inexpensive and commercially available di-methylsulfate-d6 which played a vital role in the preparation of a target molecule association with primary amine intermediate 12. The adopted mechanistic path has successfully able to avoid expensive labeled chemical entity i.e. dimethyl amine-d6 which can be used as labeled precursor in traditional synthetic route. The main endeavor of this article such as the preparation of labeled olapatadine-d6 moiety has been achieved and its structure has also been confirmed by 1H-NMR and mass spectral data.

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3-[(3-(TRIMETHOXYSILYL)PROPYL)THIO]PROPANE-1-OXY-SULFONIC ACID: AN EFFICIENT RECYCLABLE HETEROGENEOUS CATALYST FOR THE SYNTHESIS OF 3,4-DIHYDROPROMIDIN-2(1H)-ONES/THIONES

Paper ID – NCETST2032

A Paper Presented by- Srinivas Endoori[a], Dr.S.NARESH VARMA [a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 8978565074
Corresponding author. E-mail : srinivas.endoori@gmail.com;

ABSTRACT

An efficient method for the synthesis of 3,4-dihydropyrimidin-2(1*H*)-ones and thiones through one-pot three-component reaction of ethyl acetoacetate, aryl aldehyde and urea or thiourea in ethanol using 3-[(3-(trimethoxysilyl)propyl)thio]propane-1-oxy-sulfonic acid as catalyst is described. The use of 3-[(3-(trimethoxysilyl)propyl)thio]propane-1-oxy-sulfonic acid as catalyst offers several advantages such as high yields, short reaction times, mild reaction condition and a recyclable catalyst with a very easy work up.

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AN EFFICIENT OF D3-LACOSAMIDE AND D6-LACOSAMIDE

Paper ID – NCETST2033

A Paper Presented by-Srinu Bodige[a] and Naresh varma Seelam[a]*

[a]*Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., 522502, India.*

*Corresponding author. E-mail: srinuss.chem@gmail.com

ABSTRACT

An efficient protocol for the synthesis of D_3-Lacosamide and D_6-Lacosamide from the unprotected amino acid derivatives in acceptable yields and excellent chemical purities with deuterium methyl iodide (CD_3I) and acetyl chloride (CD_3COCl) as labelled precursor. Their structures and purity confirmed by ^1H NMR and MS analysis.

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EFFICIENT TREATMENT OF CONTAMINATED WATER USING NOVEL HOLLOW FIBERS FABRICATED FROM POLYMER NANOCOMPOSITES

Paper ID – NCETST2034

A Paper Presented by- Subhakaran Singh Rajaputra, Anjaneyulu Yerramilli and Harikrishna Erothu*

Centre for Advance Energy Studies (CAES),
Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram,
Guntur Dist., Andhra Pradesh, India – 522 502.

*Corresponding author. Mobile: (+91) 7995621995

*Corresponding author. E-mail: harikrishnaiitm@gmail.com

ABSTRACT

Rapid industrialization and discharge of industrial waste water into the environment leads to contamination of ground water.[1] In the 21st century, water scarcity is a major concern which can be resolved by utilizing unconventional water resource like contaminated water by membrane filtration process like Nanofiltration.[2,3] Contaminants like As, Pb, Cd, Zn, Ni, Cu and Cr, are toxic heavy metals (HMs) which accumulate in living organisms causing serious health issues.[1] Treatment of contaminated water through Nano-Filtration (NF) using polymeric hollow nano-fibers (HNFs) which are very efficient in contaminant adsorption because of their high surface to volume ratios is an unexploited area of research.[2] Incorporation of nano metal oxides (NMOs) into polymeric hollow fibers facilitate deep removal of HMs due to the high interfacial reactivity of NMOs with large specific surface area to volume ratio, and affinity towards HMs.[4,5] Magnetic NMOs are very economical and recyclable adsorbents for removal of HMs with minor secondary contamination and can be separated easily under magnetic gradient followed by easy regeneration.[5,6] The high surface energy of NMOs leads to agglomeration, in turn decrease the efficiency.[5] This can be resolved by impregnation of NMOs into polymer forming polymer nano-composites (PNCs), which enhances the stability, processability, physicochemical and mechanical properties and also retaining high interfacial reactivity of the NMOs.[4,5] Our objective is to design and develop multifunctional HNFs by Co-axial electro-spinning technique from PNCs containing magnetic NMOs. The developed novel multifunctional HNFs can be fabricated into capillary membrane modules and tested in lab scale NF setup for removal of toxic HMs like As, Cr, Zn, Cu, Ni, Cd, Pb and fluorides from contaminated water.[3,7]

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COLLECTION,ISOLATION AND PURIFICATION OF NATURAL GUM FROM MORINGA OLEIFERA AND ITS STUDY AS PHARMACEUTICAL EXCIPIENTS IN THE FORMULATION OF METOPROLOL SUCCINATE ORODISPERSIBLE TABLETS

Paper ID – NCETST2035

A Paper Presented by-Ch. Surya Kumari [a], Subhranshu Panda [b*], Siva Prasad Panda [c], G.Sireesha [d].

[a] *Research Scholar, Pharmaceutics Research Division, KL College of Pharmacy, Koneru Lakshmaiah Education Foundation, Guntur (DT.), Andhra Pradesh, India.*

[b*] *Pharmaceutics Research Division, KL College of Pharmacy, Koneru Lakshmaiah Education Foundation, Guntur (DT.), Andhra Pradesh, India.*

[c] *Pharmacology Research Division, KL College of Pharmacy, Koneru Lakshmaiah Education Foundation, Guntur (DT.), Andhra Pradesh, India.*

[d] *Department of Pharmaceutics,Vikas college of Pharmacy,Krishn (DT.),India.*

*Corresponding author. E-mail: drsubhran@gmail.com

ABSTRACT

Our research is based on the collection, isolation and purification of natural gum from *Moringa oleifera* (Syn *Moringa pterygosperma Gaertn*), which is a small genus of quick growing tree distributed through out in India belonging to family *Moringaceae*. It is one of the richest plant sources of all the Vitamins. The vital minerals present in Moringa include Calcium, Copper, Iron, Potassium, Magnesium, Manganese and Zinc. It has more than 40 natural anti-oxidants and has been used since 150BC by ancient kings and queens in their diet for mental alertness and healthy skin. The leaves, pods, seeds, gums, bark and flowers of Moringa are used in more than 80 countries to relieve mineral and vitamin deficiencies, support a healthy cardiovascular system, promote normal blood-glucose levels, neutralize free radicals to provide excellent support of the body's anit-flammatory mechanisms, enrich anemic blood and support immune system. It also improves eyesight, mental alertness and bone strength. It has potential benefit in malnutrition, general weakness, lactating mothers, menopause, depression and osteoporosis. Apart from this it is also used to make an efficient fuel, fertilizer and livestock feed. Moringa is an edible extremely safe plant. Its tree could easily and cheaply be cultivated and grown in and around India. We need to explore more benefits of this gift of nature which is reported to be one of the world's most useful trees.The stem of the tree exudes a gum which is initially white in colour but changes to reddish brown or brownish black on exposure to sunlight. It is sparingly soluble in water but swells in contact with water giving a highly viscous solution. It is a polyuronide consisting of arabinose, galactose and glucoronic acid in the proportion of 10:7:2. The gum has also got a high lethal dose (LD_{50}) in mice indicating it is safety to use. Considering these utilities this research work carried out for the application of *M. oleifera* gum as natural excipient for preparation of orodispersible metoprolol succinate tablets.This study elucidates the physical and pharmacological properties of Moringa oleifera gum in order to establish it as a pharmaceutical excipient. The parameters applied for the present study include solubility, total ash and acid insoluble ash value, moisture content, pH value, angle of repose, swelling index, bulk and tap densities, Hausner's ratio, Compressibility index, Fourier Transform Infra red (FT-IR), viscosity, acute and sub–acute toxicity studies. The studied parameters indicate that this gum could be used as cost effective natural pharmaceutical excipient for novel drug delivery system.

Keywords: *Moringa oleifera*; Natural Gum; Pharmaceutical Excipient; Physiochemical; Toxicity.

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COMPARATIVE STUDY OF THEORETICAL ULTRASONIC VELOCITIES OF BINARY LIQUID MIXTURE CONATAINING DIMETHYL ACETAMIDE (DMAC) AND CHLOROFORM (CF) AT DIFFERENT TEMPEARATURES T = (300,303) K

Paper ID – NCETST2036

A Paper Presented by-S.S.Rama Krishna [a], PROF.K.RAVINDRANATH[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
Corresponding author. E-mail : rama2903@gmail.com;

ABSTRACT

Ultrasonic velocities , densities and viscosities of binary liquid mixture containing Dimethyl Acetamide (DMAc) and Chloroform(CF) have been measured at temperatures T = (300,303) K over the entire mole fraction range of Chloroform(CF) under frequency of 2 MHz. Theoretical velocities have been evaluated by using several empirical models of liquid mixtures viz.Nomoto's relation(U_{NOM}) , Impedance dependence relation (U_{IDR}), Schaaff's collision factor theory (U_{CFT}),Jacobson's free length theory (U_{FLT}),Van-Dael and Vangeel(U_{VD}),Zhang-Junjie relation(U_{JR}), Danusso model(U_{DM}) and Rao's specific velocity (U_{RAO}) models. Chi –square tests for the goodness of the fit and average percentage errors (APE) are applied to investigate the relative applicability of these theories to the present binary mixture. A good agreement has been found between experimental and theoretical values. U^2_{EXP}/U^2_{IMX} has also been evaluated for non-ideality in the liquid mixture. The results are discussed in terms of intermolecular interactions between the component molecules of the binary liquid mixture.

Keywords: Binary mixture,Ultrasonic velocity,Dimethyl Acetamide (DMAc),Chloroform(CF), Chi –square test, average percentage error(APE),Molecular interactios.

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SYNTHESIS AND IN VITRO ANTICANCER ACTIVITY OF (1-ARYL-1H-1,2,3-TRIAZOL-4-YL) METHYL 6-FLUORO-4-OXO-4H-CHROMENE-2-CARBOXYLATE DERIVATIVES

Paper ID – NCETST2037

A Paper Presented by-NAGALAKSHMI PENNADA[a], Dr. K Naga Mahesh[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 9000045685
Corresponding author. E-mail : pennadanagalakshmi@gmail.com;

ABSTRACT

A novel series of **(**1-aryl-1H-1,2,3-triazol-4-yl)methyl 6-fluoro-4- oxo-4H-chromene-2-carboxylate derivatives (**5a-l**) were synthesized using Cu (I)-catalyzed cycloaddition reaction and evaluated their anticancer activity against human cancer cell lines MCF-7 and HeLa. Compound **5e** has exhibited excellent activity against both cancer cell lines MCF-7 and HeLa (IC_{50} 11.77 ± 1.27 & 9.92 ± 1.75 □M) in comparison with the standard drug Cisplatin. Compound **5g** against MCF-7 (IC_{50} 16.24 ± 1.42 □M) and **5a** against HeLa (IC_{50} 13.22± 1.34 □M) have shown good activity.

Keywords: 1,2,3-triazoles; chromene-2-carboxylic acid; anticancer activity.

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CHEMICAL, OPTICAL AND VIBRATIONAL SPECTROSCOPIC STUDIES ON 2 NAPATHYL ACRYLATE BY USING EXPERIMENTAL AND QUANTUM CHEMICAL SIMULATIONS

Paper ID – NCETST2038

A Paper Presented by-SAILAJA GARREPALLI[a], Dr. K Naga Mahesh[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 9000536376
Corresponding author. E-mail : sailajagp@gmail.com;

ABSTRACT

In this article presents chemical band structure, optical properties, structural geometry and vibrational spectroscopic information about 2-Naphthyl Acrylate (2-NA) organic chemical compound. The titled compound is optimized by using Gaussian 09 at higher order density functional basis set B3LYP/6-311++G(d,p). We collect complete vibrational spectroscopic data for Infrared (IR), Uv-Vis and Raman by using both experiential and quantum chemical simulation techniques. Non-linear optical properties of investigated compound is studied with the help of exchange and correlation functions and reported in detailed. We found electronic dipole moment is 1.42 Debye and potential energy surface stable energy were observed at -652.0222 hartrees. HOMO-LUMO and natural bond orbital (NBO) were obtained from optimized structure with the help of NBO 6.0 and simulated theoretical results along with experimental data. Ionization and chemical potentials are calculated by using FMO data. TD-DFT calculations were performed at higher basis set. We report major contributions and oscillation strength in detailed along with wavenumber and energy. Mulliken atomic charges and electrostatic potential charges were studied for to know the electron stability, electrophilic and nucleophilic attacks. Here, with the whole data supports the titled compound is efficient to use as optical material. Moreover it is use as fluorescent monomer.

Keywords: 2-NA, DFT, NLO, NBO, HOMO-LUMO, PES.

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THERMO-ELECTRIC AND ION EXCHANGE POTENTIAL OF BOT: TERPOLYMER

Paper ID – NCETST2039

A Paper Presented by-N V DURGA PRASAD KETHA[a], Dr. K.DEEPTHI[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 9908508552
Corresponding author. E-mail : nvdprasadketha@gmail.com

ABSTRACT

Semiconducting terpolymers are versatile in their electronic properties having adaptable flexibility is of a great importance in flexible solar cells, electronics, organic field effect transistors and chemo-biosensors etc. Electrical conductivity within the applied temperature range maintaining the molecular stability is another important factor for the real applications which has been studied extensively for the terpolymers [1-3]. Nanomaterials (such as CNT, graphene, metal NPs etc.) and organic molecules interlinked with terpolymers display improvedelectrical properties in OFET due to the fine tuning of the HOMO-LUMO level interactions.Infact, semiconducting (n-type or p-type) nature can be introduced by the effective conjugationcoupling in the terpolymer molecular chain [4-6].In effect of the above mentioned criteria, we have synthesized a series of high molecular weightBOT: Terpolymers by thecondensation of salicylaldehyde (B), oxamide (O) and trioxane (T)reactive monomers in the presence of an acid catalyst.BOT-Terpolymers were characterized by spectral and physico-chemical techniques. Further, thethermoelectrical and ion exchange performance of BOT: Terpolymer were investigated.Enhanced thermoelectrical conductivity and stabilityof BOT: Terpolymers is observed in relationto temperature variation. We made an attempt to examine the applicability of BOT: Terpolymeras a potential adsorbent to remove the toxic metal ions from contaminated water. The increasedadsorption of Cd(II) ions signify the importance of the BOT: Terpolymers as an ion exchanger.

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SYNTHESIS,BIOLOGICAL EVALUTION,AND MOLECULAR DOCKING STUDIES OF ISOXAZOLE SYNCHRONIZED QUINAZOLINONE DERIVATIVES

Paper ID – NCETST2040

A Paper Presented by-SRILATHA ANANTHA[a], Dr.E. Hari Krishna[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
Corresponding author. E-mail : ananthasrilatha11@gmail.com

ABSTRACT

Quinazolinones and Isoxazoles derivatives acts as potent VEGFR-2 inhibitors hence, in the present study isoxazole heterocycle is conjugated with Quinazolinone scaffold in order to obtain new hybrid molecules with potent VEGFR-2 inhibitor activity. Twelve Novel isoxazole synchronized quinazolinone derivatives were designed and synthesized by the condensation of different 3-aryl-5-methylisoxazole-4-carbohydrazides **(5a-h)** with 2-phenyl/2-methyl-(4H)-3, 1-benzoxazine-4-ones to give the target compounds that act as anti-inflammatory agents and anticancer agents. The synthesized compounds were characterized on the basis of spectral and elemental analysis data. Anti inflammatory activity results showed that compounds **6b, 6f and 6i** exhibited significant protection against at the concentration of 20 mg/ kg. . In anti proliferative assay **MCF-7** Breast cancer cell line, compounds and **6i and 6j** exhibited potent activity with IC_{50} values in nanomolar concentrations as well as in silico docking studies also reveal that compounds **6d, 6f, 6g, 6h** and **6j** have good dock score, binding affinity and binding energies towards epidermal growth factor receptor tyrosine kinase.

Key words: Quinazolinone, Isoxazole hydrazides, Molecular Docking, anti-inflammatory activity, invitro antiproliferative assay.

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ADVANCES IN THE SYNTHESIS AND BIOLOGICAL SCREENING OF SOME NOVEL DERIVATIVES OF FIVE-AND SIX-MEMBERED RINGS WITH TWO OR MORE HETEROATOMS

Paper ID – NCETST2041

A Paper Presented by-KISHORE BABU CHITTELA[a], Dr. P. HARI CHARAN[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Corresponding author. E-mail : kishorechem@gmail.com

ABSTRACT

The chemistry of heterocyclic compounds has been an interesting field of study for a long time. Various heterocyclic compounds along their derivatives were evaluated for their biological activities. The widespread use of 1,3, 4 –oxadiazole as a scaffold in medicinal chemistry establishes this moiety as an important bioactive class of heterocyclic compounds**.** These compounds have biological properties like antipyretic, antimitotic, antitubercular, antimicrobial, antiviral, antitumor, anticonvulsant, antibacterial, antifungal, antituberculosis, analgesic, anti-inflammatory, antidiabetic, antihistamine and other biological activities. The parent tetrahydro-1,4-oxazine, commonly called morpholine, is produced on a large scale for use as a solvent, corrosion inhibitor, and fungicide. The morpholine ring is also present in the sedative-hypnotic drug trimetozine and in some fungicides such as tridemorph and fenpropimorph. The novel derivatives of 1-{5-[4-(morpholin-4-yl) phenyl]-1,3,4-oxadiazol-3(2H)-yl} ethanone has been biologically screened for in-vivo and in-vitro anticonvulsant activity and reported. This research work can be helpful to develop various more new compounds possessing 1,3,4-oxadiazoles and Morpholine moiety that could be better in terms of efficacy and lesser toxicity.

Keywords: 1,3,4-Oxadiazole, Morpholine and Anticonvulsant

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DESIGN, SYNTHESIS AND DOCKING STUDIES OF NOVEL INDAZOLE DERIVATIVES AS POTENT CYTOTOXIC-ANTIBACTERIALS

Paper ID – NCETST2042

A Paper Presented by-Ganji Sreekanth Reddy[1,2], I V Kasi Viswanath[1]*,

[1]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Greenfields, Vaddeswaram, Guntur-522502, Andhra Pradesh, India*

[2]*Department of Science and Humanities, Sreenidhi Institute of Science and Technology, Ghatkesar, Hyderabad, Telangana, India.*

*Corresponding author. E-mail: viswanath.ivk@gmail.com

ABSTRACT

The novel series of indazole analogues 3a-j and 5a-j based aryl boranes were synthesized and evaluated their anticancer activity against HT-29, MDA-MB-231 cancer cell lines and development of a potent antibacterial activity against Gram-positive and Gram-negative organisms. All compounds were fully characterized by 1H NMR, 13C NMR, FTIR and Mass spectral analysis. From the molecular docking studies, the compounds 3j, 3c showed highest binding energies -7.45, -6.80 kcal/mol with Tyr248, Lys273, Val268 and Arg171 amino acids (PDB ID: 2ZCS). Thus, the synthesized compounds from the present series can serve as an important gateway for the design and development of new anticancer, antibacterial agents, and they valid lead compounds for further optimization.

Keywords: Indazole, antibacterial activity, anticancer

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SYNTHESIS AND CHARACTERIZATION OF COPPER OXIDE NANOPARTICLES SYNTHESIZED VIA CHEMICAL PRECIPITATION METHOD

Paper ID – NCETST2043

A Paper Presented by-CHAITHANYA BOGA[a], DR. PRADEEP KUMAR BRAHMAN (INT)[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 9550874221
Corresponding author. E-mail : vamshi22g@gmail.com

ABSTRACT

The copper oxide Nanoparticles were synthesized from Copper Nitrate Trihydrate aqueous solution under the chemical method at 90°C. The average crystallite size was calculated from De-Bye Scherrer's equation. FESEM, EDX, XRD were used to characterize the structural features of the product. FTIR spectra confirmed the adsorption of the copper oxide nanoparticles. In addition, UV-visible absorption spectra were employed to estimate the band gap energy of the copper oxide nanoparticles. This method may be suitable for large scale production of copper oxide nanoparticles for practical applications. The effect of copper oxide nanoparticles is screened in vitro for antimicrobial activity by Disc diffusion method. The bacterial organisms used in this study are E.coli, Bascillus Subtilis. The observed inhibition zones for these nanoparticles are in the range of 10-15mm for E.coli and 10-17mm for Bascillus Subtilis. The cytotoxicity activities of copper oxide nanoparticles screened by MTT-assay. We have screened for one type of cancer cell-line i.e MCF-7(Breast Cancer), copper oxide nanoparticles obtained IC_{50} values in the range of 40-50ug/ml for MCF-7 cell line.

Keywords: Copper Oxide Nanoparticles, SEM, EDX, XRD, FTIR, UV-Vis, Disc diffusion method, Cytotoxicity.

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GREEN CHEMICAL SYNTHESIS OF A-HYDROXYPHOSPHONATES

Paper ID – NCETST2044

A Paper Presented by-CHAITHANYA BOGA[a], DR. PRADEEP KUMAR BRAHMAN (INT)[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
Corresponding author. E-mail : vamshi22g@gmail.com

ABSTRACT

A new green and efficient method has been accomplished for the synthesis of α-hydroxy phosphonates through Pudovik reaction. It involves the reaction of different substituted aromatic aldehydes and dimethyl phosphite in the presence of Triethyl amine (Et_3N) and Copper oxide (CuO) catalyst under solvent free conditions at room temperature. Triethyl amine (Et_3N) and Copper oxide (CuO) catalyst was found to have many advantages like higher catalytic activity even at room temperature. The products obtained were good to very high yields. The products were characterized by IR, 1H, 13C, and 31P NMR spectra and elemental analysis.

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SYNTHESIS OF GEL POLYMER ELECTROLYTE WITH PEO/RBI/I2 FOR DSSC APPLICATIONS

Paper ID – NCETST2045

A Paper Presented by- Kasimala Bikshal Babu[a], Dr.A.VENKATESWARA RAO[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 9533163683
Corresponding author. E-mail : bikshalbabu@gmail.com

ABSTRACT

Gel polymer electrolytes are synthesized by PEO blended with rubidium iodide (RbI)/I2 for DSSC applications. Gel polymer electrolytes are optimized by addition of acetamide at various weight % (0%,5%,10%,20%) in poly (ethylene oxide) (PEO) and poly (ethylene glycol) dimethyl ether (PEGDME). The photocurrent conversion efficiency of Cell-B (PEO/PEGDME/0-weight% acetamide) exhibits best performance with η = 5.03 %, Voc = 0.79 V, Jsc = 11.35 mA/cm2 and FF = 0.55, which shows that the GPE with PEO/PEGDME/0% acetamide is containing better potentiality than the other electrolytes and is reflected in the improved dye sensitized solar cell performance. The Voc increases from 0.79 V to 0.84 V because of the reduction of the charge recombination process on the TiO2/dye/electrolyte interface. The lowest photocurrent conversion efficiency of 3.44% is attributed for PEO/PEGDME/20 weight % acetamide. This is due to the poor soluble of RbI in the polymer matrix and the unfavorable interaction between RbI and acetamide. So that the influence of acetamide on the gel polymer electrolyte very less, which reflect on the photovoltaic efficiency of DSSCs.

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PHYTOCHEMICAL INVESTIGATION AND ORGAN TOXICITY STUDY OF DATURA ALBA (DATURA)

Paper ID – NCETST2046

A Paper Presented by-Appala Raju Majji[a], Dr.ANINDITA CHATTERJEE [a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
Corresponding author. E-mail : maraju.chem07@gmail.com;

ABSTRACT

Now days along with the popularity of Ayurvedic medicines the toxicity produced by them is also heard frequently. The present study has been undertaken to see the toxicity if any produced by *Dattura Alba* Nees on various organs of albino rats, before and after purification. The dried seeds of *Datura Alba* were extracted with ethanol (90%). Extracts of *Datura Alba* Linn. (Solanaceae) were screened for Phytochemical analysis before and after the purification. The chronic toxicity studies were carried out at high, moderate, and low dose levels of both purified dhattura extact which was given to GroupI and Non-purifiied extract which was given to GroupII and GroupIII was administered with vehicle distilled water. After completion of study haematological, Biochemical, and Histopathological studies were done. By seeing all the results it can be concluded that toxicity of Dhattura seeds has reduced after purification by gomutra.

Keywords: *Dattura Alba* Nees, Purification of Datura seeds, Chronic toxicity study, Gomutra

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SYNTHESIS, MOLECULAR-DOCKING AND BIOLOGICAL ACTIVITY EVALUATION OF SOME NEW PHOSPHOAMIDATE DERIVATIVES

Paper ID – NCETST2047

A Paper Presented by-VENKATESH KONAKALLA[a], Dr.G.V.KRISHNA MOHAN[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
Corresponding author. E-mail : konakalla.venkatesh@gmail.com;

ABSTRACT

Phosphoramidates have attracted considerable interest as they have versatile applications in medicine, agriculture and industry. These derivatives are often used as pro-drug moieties to get better restorative potential of the parent drug. They are using in medicine due to their potential applications as anticancer, anti-HIV, inhibitors of hepatitis C virus and ant malarial agents. Within agriculture they are reported as urease inhibitors, herbicides and insecticides. In industry they find application both as antifire and antirust additives in lubricating oils. In the present work, a series of new phosphoramidate derivatives were conveniently synthesized by using 4-chlorobenzene sulfonyl chloride as starting material *via* substituted sulfonamides as intermediates with high yields in short period of time using conventional and microwave irradiation techniques. All the synthesized compound were characterized by spectral and elemental analysis. An in silico molecular docking studies were carried out in order to find some more potent anti-diabetic and antibacterial drugs. Some of the tested compounds proved to possess good to excellent activities with good docking score when compared with reference drugs.

Key words: Phosphoramidates, 4-chlorobenzene sulfonyl chloride, molecular docking studies

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MESOPOROUS MIXED METAL OXIDE NANOCRYSTAL:REUSABLE CATALYST FOR THE TROUBLE FREE SYNTHESIS OF NAPTHOXAZINONES DERIVATIVES

Paper ID – NCETST2048

A Paper Presented by-VENKATESH KONAKALLA[a], Dr.G.V.KRISHNA MOHAN[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 9553537378
Corresponding author. E-mail : konakalla.venkatesh@gmail.com;

ABSTRACT

This paper outline the synthesis of one-pot three component synthesis of 2-naphthol condensed medicinally significant napthoxazinones derivatives using efficient and effective mesoporous mixed metal oxide nanocrystals of Al_2O_3-V_2O_5 as heterogeneous catalysts under solvent free conditions. This procedure includes some important aspects like the easy work-up, no need of column chromatography, simple and readily available precursors, higher yields and reusability of catalyst. The structures of products were confirmed by spectral analysis FT-IR and NMR (^1H & ^{13}C).

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DEVELOPMENT AND VARIATION OF STABILITY INDICATING RP-HPLC METHOD FOR SIMULTANEOUS ESTIMATION OF ESCITALOPRAM AND L-METHYLFOLATE IN BULK AND TABLET DOSAGE FORM

Paper ID – NCETST2049

A Paper Presented by- P. Geetha Swarupa*, Dr.K.R.S.Prasad

[1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

*Corresponding author. E-mail: babuiict@gmail.com

ABSTRACT

The purpose of the investigation was to develop a new RP-HPLC method for simultaneous estimation of Escitalopram and L-methylfolate in pharmaceutical dosage forms. Chromatography was carried out on an ODS C-18 column (4.6 x 250mm, 5µ particle size) with a isocratic mobile phase composed of ortho phosphoric acid buffer, Acetonitrile, (45:55v/v) at a flow rate of 1 mL/min. The column temperature was maintained at 30°C and the detection was carried out using a PDA detector at 215nm. Validation parameters such as system suitability, linearity, precision, accuracy, specificity, limit of detection (LOD), limit of quantification (LOQ), Stability of sample and standard stock solutions and robustness were studied as reported in the International Conference on Harmonization guidelines. The retention times for Escitalopram and L-methylfolate and were 2.158 min and 3.899 min respectively. The percentage recoveries of Escitalopram and L-methylfolate were 100.42 % and 100.14% respectively. The relative standard deviation for assay of tablets was found to be less than 2%. The method was fast, accurate, precise and sensitive hence it can be employed for routine quality control of tablets containing both drugs in quality control laboratories and pharmaceutical industries.

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EFFECT OF NATURAL FERMENTATION ON CHARECTERSTICS OF CHICHPEA FLOUR

Paper ID – NCETST2050

A Paper Presented by-I. VANI[a], Dr.K.R.S.Prasad[a*],
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
Corresponding author. E-mail : vaniinavolu@gmail.com;

ABSTRACT

Chickpea is the most important crop in the world because of their nutritional quality. The objective of the study was to study the effect of natural fermentation on characteristics of chickpea flour. Characteristics of raw chickpea flour and fermented chickpea flour were analyzed by standard procedures. Fermented chickpea flour contained higher moisture (10.44±0.64%), protein (23.25±0.59%), ash content (3.8±0.2%) and amylose content (23.23±1.77%) than raw chickpea flour. Fermented chickpea flour had lower dry matter (89.54±0.64%), fat content (4.22±0.33%) and pH (5.88±0.20) than raw chickpea flour. Fermented chickpea flour exhibited higher water binding capacity (204±3.03%) and oil absorption capacity (0.84±0.02g.g-1) than chickpea flour. Fermented chickpea flour had lower bulk density (0.74±0.02g.ml-1) when compared to raw chickpea flour. Fermented chickpea flour had lower peak, trough, breakdown, final and setback viscosities than chickpea flour. Although the crystal type of raw chickpea flour and fermented chickpea flour was a characteristic C-type, relative crystallinity was higher for fermented chickpea flour (28.95%) than raw chickpea flour (26.52%). In conclusion fermented chickpea flour is suitable for food used in several dishes and as a supplement in weaning food mixes, bakery products.

Key words: Fermentation, Chickpea flour, Chemical properties, Functional properties

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DYE ADSORPTION STUDIES USING ALUMINUM BASED METAL ORGANIC FRAMEWORK

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A Paper Presented by- SRIRAM VALAVALA[a], Dr.S.NARESH VARMA[a]*

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

*Corresponding author. Mobile: (+91) 9538994664

Corresponding author. E-mail : valavalasriram@gmail.com;

ABSTRACT

Metal Organic Frameworks (MOFs) are the new class of highly porous crystalline materials. These materials possess distinct properties such as high surface area, tunable pore size, multifunctionalorganic linkages, high thermal and mechanical strength which makes them suitable for different applications. MOFs containing trivalent metal cations have shown enhanced adsorption capacity than the conventional adsorbents because of its high surface area and appropriate pore size. The present work reports wet chemical synthesis of an Aluminium based MOF, MIL-68(Al). The synthesized material was characterized using standard analytical techniques and used for dye adsorption application. The parameters influencing the adsorption capacity viz. initial dye concentration and MOF load were studied using batch adsorption experiments. The experimental data was fitted with various adsorption isotherm models. The kinetics of adsorption was also studied using pseudo first and pseudo second order models.

Keywords: Metal organic frameworks, Dye adsorption, Kinetics, Isotherm.

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COMPARATIVE STUDY ON EFFECT OF CR SUBSTITUTION ON STRUCTURAL PROPERTIES OF CR-ZN AND CR-CO NANO FERRITES SYNTHESIZED BY SOL-GEL METHOD

Paper ID – NCETST2051

A Paper Presented by-Sumanth Mullangi[a], PROF.K.RAVINDRANATH[a]*

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

Corresponding author. E-mail : mullangisumanth@gmail.com;

ABSTRACT

Cr x Zn Fe2−x O4 and Cr x Co Fe2−x O4 (with x = 0.0, 0.1, 0.2, 0.3, 0.4, and 0.5) spinel ferrite nanoparticles have been synthesized by sol–gel method. The samples were annealed at a temperature of 900 °C for 3 hours. The aim of this comparative study was to investigate the effect of Cr3+ ion substitution on the structural properties of Cr–Zn and Cr-Co ferrite systems. Various characterization techniques such as X-ray diffraction (XRD), Fourier Transform Infrared spectroscopy (FTIR), Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM) with elemental analysis (Energy Dispersive X-ray Analysis - EDAX), etc. were used to investigate the structural properties of both ferrite samples. The X-ray diffraction patterns of the both ferrite samples provide information about the existence of single-phase spinel structure. The average crystallite size was found to be ranging from 24–34 nm and 56-75nm in case of Cr-Zn and Cr-Co ferrite systems respectively. The analysis revealed that the average crystallite size exhibit gradual decrease with the increasing in Cr3+ content (x) in case of Cr-Zn ferrite system but in case of Cr-Co ferrite system, crystallite size decreased non-linearly with increasing Cr content. FTIR spectra shows that the bands υ1 and υ2 are found to shift towards the higher frequency side with substitution of Cr3+ ions. SEM and TEM micrographs demonstrated that nanoparticles with narrow size distribution were obtained. The result indicated that the amount of Cr contents significantly influenced the crystal morphology and structural properties of both Cr-Zn and Cr-Co ferrite nanoparticles.

Keywords: Cr-Co ferrites, Cr-Zn ferrites, nanoparticles, structural properties, sol-gel method.

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SENSITIZATION OF YB3+ BY ND3+ EMISSION IN ALKALINE-EARTH CHLORO BORATE GLASSES FOR LASER AND FIBER AMPLIFIER APPLICATIONS

Paper ID – NCETST2052

A Paper Presented by- upesh A Talewar[1], Sk. Mahamuda[1*], K. Swapna[1] and A. S. Rao[2] *

[1]*Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur (Dt)-522 502, A.P, India*

[2]*Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi-110 042, India*

*Corresponding author. E-mail: mahmudass@kluniversity.in

ABSTRACT

Intense near-infrared emitting alkaline-earth chloro borate (AECB) glasses doped with Lanthanide (Ln) ions (Ln = Nd and Yb) were synthesized by conventional melt quenching technique and characterized with absorption, photoluminescence excitation (PLE), photoluminescence (PL) and PL decay spectral measurements. For Nd^{3+} ion, intense NIR emission in the range 850-1450 nm was observed under 824 nm excitation. Intense and characteristic emission bands of Nd^{3+} (at 883, 1067 and 1340 nm) and Yb^{3+} (at 980 nm) were observed with 585 nm excitation. Yb^{3+} emission at 980 nm is ascribed to $^2F_{5/2} \rightarrow {}^2F_{7/2}$ transition. The dependence of NIR emission, lifetime and the energy transfer efficiency (η_{ETE}) with the concentration of Yb^{3+} was investigated in detail. The PLE and PL spectra along with donor decay curves have been used to establish the energy transfer mechanism between Nd^{3+}-Yb^{3+} ions. The results indicate that the sensitization of Yb^{3+} is possible via 4f-4f transition of Nd^{3+} ions in AECB glasses. The luminescence properties of the Nd^{3+} singly doped and Nd^{3+}-Yb^{3+} co-doped AECB glasses indicate their suitability as multiple pump channel sources for Yb^{3+} fiber laser systems.

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EFFECT OF GELATION TIME OF CHITOSAN HYDROGELS BY USING GLUTARALDEHYDE AND SODIUM TRI POLY PHOSPHATE AS CROSSLINKERS

Paper ID – NCETST2053

A Paper Presented by- N V DURGA PRASAD KETHA[a], Dr. K.DEEPTHI[a]*

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

Corresponding author. E-mail : nvdprasadketha@gmail.com;

ABSTRACT

Chitosan is a organic polymer with extended biocompatibility and biodegradability. Chitosan is used to prepare the physical and chemical hydrogels. Physical chitosan hydrogel is formed by using STPP as cross linker and chemical chitosan hydrogel is formed by using glutaraldehyde as crosslinker.The present study determines the gelation of chitosan with glutaraldehyde and sodium tri poly phosphate (STPP), by varying the temperatures from 20ºC to 50ºC.By varying the temperatures the gelation of chitosan time increases first and suddenly decreases with increasing the temperatures (20ºC to 50ºC) by using glutaraldehyde as cross linker and the gelation time of chitosan decreases with increasing the temperature (20ºC to 50ºC) and forms injectable hydrogel by using STPP as cross linker.

Keywords: Hydrogel, Chitosan, Glutaraldehyde, STPP.

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ANTI CYTOTOXIC AND MICROBIAL STUDIES OF IRON SCHIFF BASE COMPLEX WITH AZIDE

Paper ID – NCETST2054

A Paper Presented by-SRILATHA ANANTHA[a], Dr.E. Hari Krishna[a]*

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

Corresponding author. E-mail : ananthasrilatha11@gmail.com;

ABSTRACT

The aim of this research is to study the role of Iron and the recognition of its complexes as important bioactive compounds in vitro and in vivo arouse an ever-increasing interest in these agents as potential drugs for therapeutic intervention in various diseases. Schiff bases are a critical class of compounds in medical chemistry that have verified significant chemotherapeutic and antibacterial application. Schiff base copper complexes revealed great potential for anti proliferative, anti bacterial, and gastro protective activity. Ortho phenylene diamine is a wide class of synthetic compound that showed diverse pharmacological activities including anticancer activity. In particular, their antibacterial, antifungal and anticancer activities make the compounds attractive for further derivatization and screening as novel therapeutic agents. Taking these compounds as iron, we have designed and synthesized a new iron complexe with ortho phenyline diamine, salicylaldehyde and Acetyl acetone Schiff base ligand.

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ISOLATION, PURIFICATION AND EVALUATION OF TAMARINDUS GUM AS RELEASE RETARDANT IN FORMULATION AND EVALUATION OF MODIFIED ORAL CHRONOTROPIC DRUG DELIVERY SYSTEMS OF TRAMADOL HYDROCHLORIDE FOR RHEUMATOID ARTHRITIC PAIN

Paper ID – NCETST2055

A Paper Presented by-KISHORE BABU CHITTELA[a], Dr. P. HARI CHARAN[a]*
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India. Andhra Pradesh, India.*
Corresponding author. E-mail : kishorechem@gmail.com;

ABSTRACT

The main aim of study is to develop modified oral chronotropic system for timed release of tramadol hcl. All functions in man are highly organized in time as biological rhythms of diverse periods, both in health and in disease. This represents a challenge for those involved in the development of drug-delivery systems to make possible the treatment of illness according to these physiological biological rhythms as a means of improving therapeutic outcomes. These systems consists of immediate release core tablet of Tramadol hcl using different materials such as SSG, Crosspovidone, pregelatinised starch and then coated with tamarindus gum, HPMC and their combination. The release retardant behavior of tamarindus gum was evaluated in compressed coated formulations. This coated tablet is enteric coated with Eudragit L 100, Eudragit S100 to produce suitable lag time. Immediate release systems are optimized with formulation F6 containing pre gelatinized starch as immediate release agent. Among the compressed coated tablets CF3 shows better results followed by entetic coating with Esc coat fulfilled my objective of work.

Keywords: Tamarindus gum, Biological rhytms, Tramadol hcl, Rheumatoid arthritis.

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FORMULATION AND EVALUATION OF SUSTAIN RELEASE MUCOADHESIVE MICROSPHERES OF CEFODOXIME PROXITEL

Paper ID – NCETST2056

A Paper Presented by-Regalla Venkatareddy[a], Dr.ANINDITA CHATTERJEE [a]*

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt 522502, Andhra Pradesh, India.*

Corresponding author. E-mail : venki113@gmail.com;

ABSTRACT

The current aim of this work was to prepare and evaluate the gastroretentive mucoadhesive microspheres of Cefpodoxime proxetil. The microspheres were prepared by solvent evaporation method using polymers such as EudragitRS100 & PMMA. The prepared microspheres were characterized for surface morphology, particle size analysis, DSC, FTIR swelling index, Drug Entrapment efficiency, and in-vitro drug release study. The prepared microspheres are smooth in surface & spherical in shape. The average particle size was in the range of 120-210 µm. The particle size and shape found to be dependent on the concentration of polymers. Drug entrapment efficiency of Cefpodoxime proxetil loaded microspheres found in the range of 76.13% to 84.62%. The drug release study was done in simulated gastrointestinal fluids (SGF) for 12 hour and shown maximum amount of drug release in the controlled and sustained manner to extended periods of time. The DSC analysis and X-ray diffraction study indicated that the drug uniformly dispersed in amorphous state in molecular level. The drug release kinetic followed non-Fickain transport.

Keywords: - Gastroretentive microspheres, Cefpodoxime proxetil, solvent evaporation.

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SYNTHESIS OF SILVER NANOPARTICLES FROM PLUMBAGO INDIAN PLANT AND ITS ANTIBACTERIAL ACTIVITY

Paper ID – NCETST2057

A Paper Presented by-G Dhananjaya[a], Dr.A.VENKATESWARA RAO [a]*
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Corresponding author. E-mail : dhananjayag@drreddys.com;

ABSTRACT

The present work is synthesis of silver nanoparcticles has been done using a particular variety of medicinal plant extract. The green synthesis of silver nanopracticles was done by the bioreduction of silver nitrate using different concentration of plant extract taken from *Plambago Indica*. UV-visible studies were conducted to confirm the formation of silver nanoparticles. The peak showing the standard surface Plasmon resonance wavelength in UV-visible studies confirm the formation of silver nanoparticles. Later the antimicrobial activity of the synthesized silver nanoparticles was tested against bacteria i.e. *B.megaterium* and *S.aureus*. The zone of inhibition increased with the increase in the concentration of silver nanoparticles. These studies are quite useful as it shows the utility of green nanotechnology for the synthesis of silver nanoparticles without any toxic residuals and byproducts. Further efficient antimicrobial activity of the synthesized silver nanoparticles proves the application potential of green synthesis in the area of nano-medicine.

Key words: Silver nanoparticles, *Plambago Indica*, antimicrobial activity, *B.megaterium*

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MOLECULAR INTERACTIONS IN BINARY MIXTURES CONTAINING HALO SUBSTITUTED CARBONYL COMPOUND+ ALKOXY ALKANOLSAT VARIOUS TEMPERATURES

Paper ID – NCETST2058

A Paper Presented by- ROHINIKUMARI[a], Dr.A.VENKATESWARA RAO [a]*

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Corresponding author. E-mail : rohini12june@gmail.com;

ABSTRACT

Thermo-physical, and excess parameters has a great impact to know the behaviour and type of molecular interactions exist between the components of binary liquid mixtures at different mole fractions and temperatures.Densities, viscosities and ultrasonic velocities of binary liquid mixtures of halo-substituted carbonyl compounds with Alkoxy alkanols have been measured over the entire composition range and at temperatures 303.15K, 308.15K, 313.15K and 318.15K. From experimental data, Excessparameters were calculated. The obtained values were fitted to the Redlich-Kister polynomial equation. The parameters of excess functions are found sensitivefor the intermolecular interactions between the binary mixtures. Theoretical values of viscosity of the binary mixtures were calculated using empirical relations and theoretical equations.The relative merits of these relations and theories were discussed.

Keywords: Ultrasonic velocity, viscosity, Redlich-Kisterequation, carbonyl compounds

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CHEMICAL STABILIZATION OF COBALT NANOFLUIDS IN GLYCEROL WATER BASE FLUID MIXTURE AND THEIR THERMOPHYSICAL PROPERTIES

Paper ID – NCETST2059

A Paper Presented by-T. MOHAN KUMARI[a], Dr.T.BHASKARA RAO [a]*

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Corresponding author. E-mail : mohantumuluri@gmail.com;

ABSTRACT

The prime limitation of the fluids used for thermal energy transfer is their low thermal conductivities resulting in moderate heat transfer rates. A Nano-technological modification of the thermal fluid by dispersing solid nanoparticles in it can improve the thermal conductivity. The hassle in practical application of the Nano fluidsis their inferior dispersion stabilities. To improve the stability of Nano fluidsdiverse chemical and physical techniques are available. In the present work we report an experimental assessment of optimum Glycerol-Water (GW) mixture ratio as base fluid. Cobalt Nano fluids were prepared at different concentrations of the nanoparticles without using surfactant. A chemical means of stabilizing the Cobalt Nano fluids was selected and Zeta potential was measured to ensure the stability of prepared Nano fluids. Thethermal conductivity and viscosity of stabilized Nano fluidsare experimentally found and the effect of temperature on these properties is investigated.

Keywords: Nano fluid, Glycerol-Water mixture, stability, Zeta potential, Thermal conductivity, Viscosity

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DETERMINATION OF ENANTIOMERS OF BETAXOLOL AND THEIR SEPARATION BY RP-HPLC USING CHIRAL DERIVATIZING REAGENT BASED ON 1,5-DIFLUORO-2,4-DINITROBENZENE

Paper ID – NCETST2060

A Paper Presented by-Katta Nagapurnima[a], Dr.G.V.KRISHNA MOHAN[a]*

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Corresponding author. E-mail : omkarvanukuri@yahoo.com;

ABSTRACT

Betaxolol (Bel) is a β_1 receptor blocker used in the treatment of hypertension and glaucoma. Due to different activities of its enantiomers (R/S) in human body. Enantiomers of betaxolol have been detected in drugs composition and these have been separated from racemic mixture. For separation racemic mixture has been derivatized with CDRs based on 1,5-difluoro-2,4-dinitrobenzene to form their daistereomers. The CDRs were characterized using UV, IR, CHN, and ^{1}H NMR. Diastereomers were synthesized under MWI 50 s at 80% (of 850W) and also by stirring for 55 min at 40 °C. The conditions of derivatization were optimized to achieve better yield. The diastereomers were separated by RP-HPLC on a C_{18} column with detection at 340 nm using acetonitrile and aqueous trifluoroacetic acid (TFA) as the mobile phase components. Optimization of chromatographic conditions has been carried out by applying the different mobile phase components. The method validation was done in terms of accuracy, precision, limit of detection and limit of quantification.

Keywords: β-blocker, Amino acids, 1,5-Difluoro-2,4-dinitrobenzene, enantiomeric purity, RP-HPLC

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SYNTHESIS AND ANTIMICROBIAL ACTIVITY OF NOVEL QUINAZOLINE DERIVATIVES

Paper ID – NCETST2061

A Paper Presented by-Srinivasa Rao Dasari,[a,b] Naresh Varma Seelam*[a] , Subbaiah Tondepu[c] and Lakshmana Rao Vadali,[b]

[a]*Koneru Lakshmaiah Education Foundation,Vaddeswaram, Guntur, Andhar Pradesh, India-522502*

[b]*Mylan Laboratories Limited, Bollaram, Medak, Hyderabad, Telangana, India.*

[c]*Department of Chemical Engineering,Vignan's Foundation for Science,Technology & Research, Vadlamudi,Guntur, Andhra Pradesh, India-522213.*

*Corresponding Author. Mobile: (+91) 9849289716

*Corresponding Author. E-mail: srinivas43.dasari@gmail.com

ABSTRACT

Hetero cyclic chemistry is a very important branch of organic chemistry accounting for nearly two thirds of organic compounds. Heterocyclic chemistry is the largest classical division of medicinal chemistry and display a broad range of industrial and pharmaceutical applications. Quinazoline (Fig. 1) is a compound made up of two fused six member simple aromatic rings-benzene and pyrimidine. It is a yellow coloured compound, found usually in crystalline form. Medicinally, it is used as antimalarial agent. It was first prepared by Gabriel in 1903 and first isolated from the Chinese plant Aseru. The development of research on biological activity of Quinazoline compounds started, when the compound 2-methyl-1,3-aryl-4-quinazoline derivative was synthesized. This compound has soporific and sedative action. In 1968, only two derivatives were used, soporific and anticonvulsant-methaqualone and diuretic quinathazone. By 1980, about 50 kinds of derivatives of this class includes medicines with different biological actions like soporific, sedative, tranquilizing, analgesic, anticonvulsant, antitussive, myorelexant, antirheumatic, hypotensive, anti-allergic, bronchodilating, antidiabetic, cholagogue, diuretic, cystatic, antimalarial, spermicidal, etc. The search for substances of cardiovascular agents begun in quinazoline derivatives after pharmacological screening of hypotensive activity of quinazoline that have a glycine amide or β-alanine amide residue in 3rd position. But unfortunately due to volume and density of general material on quinazoline derivatives, more specific problem of investigation of cardiovascular agents not has been successfully reflected in some reviews. Quinazoline derivatives, which belong to the nitrogen-containing heterocyclic compounds, have caused universal concerns due to their widely and distinct biopharmaceutical activities. Researchers have already determined many therapeutic activities of quinazoline derivatives, including anticancer[1-4],antiinflammation[5], antibacterial, antivirus, anti cytotoxin, antispasm, antituberculosis, anti oxidation, anti-malarial, anti-hypertension, anti-obesity, antipsychotic, anti diabetes, etc. Encouraged by the diverse biological activities of quinazoline heterocyclic compounds, it was decided to prepare a new series of quinazoline derivatives by adopting Scheme-1

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SYNTHESIS, SPECTRAL CHARACTERIZATION AND MOLECULAR DOCKING STUDIES OF PHOSPHONATES CONTAINING THIAZOLIDINEDIONE MOIETY

Paper ID – NCETST2062

A Paper Presented by-K. VENUGOPAL[a], Dr.M Sujatha[a*]

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

Corresponding author. E-mail : venukamani@gmail.com;

ABSTRACT

Phosphonates are now widely used as herbicides, stimulants for the latex production of Hevea brasiliensis, pesticides, detergents, reagents for Wittig-Horner reactions, antibacterial, antiviral, and antitumor agents. Phosphonate motif is present in biomolecules which can act as inhibitors of certain biosynthetic pathways and can be degraded only by some prokaryotic microorganisms. The high chemical stability of phosphonates, together with their resistance to biodegradation, makes this class of compounds of particular interest for the drug design. On the other hand, Thiazolidinedione along with their derivatives draw attention as they have diverse biological as well as clinical use. Thiazolidinedione nucleus is present in numerous biological compounds, e.g., anti-malarial, antimicrobial, anti-mycobacterium, anticonvulsant, antiviral, anticancer, anti-inflammatory, antioxidant, anti-HIV (human immunodeficiency virus) and antitubercular agent. Keeping in mind the above points and as part of our research in the development of new methodologies for the synthesis of bioactive phosphonates, we synthesized a series of substituted phosphonates containing thiazolidinedione moiety. All the synthesized compounds were characterized by various spectrophotometric methods. Molecular docking study was also carried out to assess their interaction and binding modes with target receptor.

Key words: Phosphonates, Thiazolidinedione, Molecular docking

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SYNTHESIS, CHARACTERIZATION AND ANTIMICROBIAL EVALUATION OF NOVEL COMPUNDS OF 3-((BENZO[D]THIAZOL-2-YLMETHYL)AMINO)-1-(2,5,-DIFLUOROBENZOYL)-4-(2-(4-(SUBSTITUTED)PHENYL)HYDRAZONO)-1H-PYRAZOL-5(4H)-ONE

Paper ID – NCETST2063

A Paper Presented by-Vijayabhaskar Reddy Emani[a], Dr.J.V.SHANMUKHA KUMAR[a*]
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
Corresponding author. E-mail : vijaybhaskarreddyemani@yahoo.com;

ABSTRACT

Abstract: New novel derivatives of 3-((benzo[d]thiazol-2-ylmethyl)amino)-1-(2,5-difluorobenzoyl)-4-(2-(4-(substituted)phenyl)hydrazono)-1H-pyrazol-5(4H)-one (2a-g) were prepared by refluxing a mixture of ethyl 2-(4-(2-(4-subtituted methyl)phenyl)hydrazono)-1-(2,5-difluoro benzoyl)-4,5-dihydro-5-oxo-1H-pyrazol-3-yl)amino Carboxylic acid. (1a-g) and 2-amino thio phenol. **Methods**: The newly synthesized compounds were characterized by IR, ^{1}H-NMR, ^{13}C-NMR, mass spectra & Elemental analysis. The newly synthesized compounds were screened for their Biological activity**.**

Key words: Benzthozole, 2-amino thio phenol, Antibacterial and Antifungal activity,spectral data.

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A PARALLEL STUDY OF FREEZE CONCENTRATION AND VACUUM EVAPORATING CONCENTRATION OF APPLE JUICE

Paper ID – NCETST2064

A Paper Presented by-Lalitha Ammadu Kolahalam[a], Dr.K.R.S.Prasad[a*]

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

Corresponding author. E-mail : lalitha.peesapati87@gmail.com;

ABSTRACT

Apple juice is one of the most common fruit juices, and its concentrate is an important product in traded market. Some representative technical indexes of apple juice (AJ), such as VC, aromatic substance, and colour value are compared in the processes of freeze concentration (FC) and evaporating concentration (EC). A 2.5-liter lab scale freeze concentrator with instrumentation standard and a vacuum evaporating concentrator were utilized in this research. The FC working procedure was cooling, freezing/making suspension ice from solution, ice crystallization/re-crystallization, compressing ice to form porous packed ice bed, washing-separating ice from the mother-liquid, discharging the concentrate. The concentration ratio in single trial is about 1.8 for (e.g. from 10% to 18%); 4 times of trial obtains highest achievable concentration of about 50 Brix; in which the VC retention rate is 93%; aromatic substance retention rate is 90.5%; and the colour value, which is represented with the absorbance at 420 nm increases about 2.1%. A parallel study of vacuum evaporating concentration of AJ shows that the VC retention rate was about 52%, aromatic substance retention rate was 26% and absorbance increases 32% in this study. The total solute content in separated ice was found ~100 ppm, so the solute loss in ice was 0.01% correspondingly. The freezing point depression curves/data of commonly consumed liquid foods, such as skim milk, orange juice, wine, beer, egg whey etc., are integrated into the program of the PLC controller, so that the instrument detects the solution concentration according to its freezing point (temperature) and control the FC process to make it work as an intelligent instrument for the purpose of lab research and development.

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COMPUTATION OF EFFECTIVE DEBYE TEMPERATURE FOR ORGANIC LIQUID MIXTURES – THERMAL ENERGY VARIATIONS

Paper ID – NCETST2065

A Paper Presented by-Dasari Sivasubrahmanyam[a], Dr.S.NARESH VARMA[a*]
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Corresponding author. E-mail : siva_org@yahoo.com;

ABSTRACT

In an analytical way effective Debye temperature computations of functional materials are extended to organic liquid mixtures using ultrasonic velocity and density measurements. Thermal properties of organic liquid mixture containing Aniline + Toluene, Aniline + o-Xylene and Aniline + Mesitylene over different mole fractions have been explained using Debye temperature variations and they are scrutinized to bring out the molecular association due to thermal energy changes of binary liquid mixtures. The results including computation of Debye temperatures using standard formula, ideal mixture relation and modified Lorentz-Bertholet combination mixing rule and their deviations are used to explain thermal energy changes of component molecules in liquid mixtures and their association.

Key words: Debye temperature; Thermal behavior; ideal mixture relation; deviation; Mesitylene.

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PREPARATION AND ELECTRICAL CHARACTERIZATION OF TAMARIND SEED POLYSACCHARIDE(TSP) BIOPOLYMER ELECTROLYTE

Paper ID – NCETST2066

A Paper Presented by- M. Usha Rani and N. Krishna Jyothi*

Dept. of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, A.P., India

*Corresponding author. Mobile: (+91) 9491544730

*Corresponding author: E.mail: jyothinadella@kluniversity.in

ABSTRACT

The natural abundantly available non-toxic, bio-compatible and bio-degradable biopolymers and polysaccharides had become more viable in the synthesis of polymer electrolytes. They became a prime interest in the development of energy storage devices like batteries, fuel cells, sensors and super capacitors due to their eco-friendliness and cost effectiveness over the other synthetic available solid polymer electrolytes. Tamarind seed polysaccharide a biopolymer extracted from tamarind seed has applications in food industry, cosmetics, pharmaceutical industry and dyeing industries due to its stabilising, thickening and gelling nature and is also an emulsifying agent. The biopolymer electrolytes were prepared by tamarind seed polysaccharide (TSP) as a host polymer with various weight proportions of Sodium Citrate ($Na_3C_6H_5O_7$). Solvent casting technique was used to prepare the biopolymer membranes with distilled water as solvent. The obtained biopolymer electrolytes were investigated with FTIR, AC impedance spectroscopy and transference number measurements (TNM). The complex formation between host polymer TSP and ionic salt $Na_3C_6H_5O_7$ is confirmed by FTIR spectrum. The magnitude of ionic conductivity is found to be increased with increase in salt ratio and temperature. The dielectric parameters like dielectric constant, dielectric loss and tangent loss were studied from AC impedance spectroscopy in the frequency range of 42 Hz to 1MHz. The AC impedance data analysis revealed that the biopolymer membrane of 1g TSP: 0.3g $Na_3C_6H_5O_7$ has the maximum ionic conductivity of $2.1x10^{-4}$ Scm^{-1} at room temperature. The decrease in activation energy E_a with the increase in salt ratio confirmed the Arrhenius relation of the polymer membranes. From the transport number calculations, the transference number close to unity revealed that the conductivity is due to the ions as the predominant charge carriers.

Keywords: Biopolymer, solution casting technique, FTIR, ionic conductivity, dielectric constant.

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ONE-POT SYNTHESIS OF YLIDE FACILITATED SPIRO-CYCLOPROPANE DERIVATIVES AND THEIR BIOLOGICAL EVALUTION

Paper ID – NCETST2067

A Paper Presented by-Dasari Sivasubrahmanyam[a], Dr.S.NARESH VARMA[a*]

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

*Corresponding author. Mobile: (+91) 9550191933

Corresponding author. E-mail : siva_org@yahoo.com;

ABSTRACT

A series of novel, ylide facilitated spiro-cylopropane derivatives have been synthesized in a one-pot sequential domino cyclopropanation reaction model, by using 5-Phenyl-1,3-cyclohexane-dione, 4-chloro-phenacylbromide, different substituted aromatic aldehydes and pyridine in acetonitrile with triethylamine serving as a catalyst. Structure conformation of synthesized compounds was done with IR, ^{1}H & ^{13}C NMR and MS spectral data. Further, the synthesized compounds were subjected to biological evaluation for anti-oxidant and cytotoxicity assay. The anti-oxidant activity is carried out by using DPPH model and cytotoxicity study is carried out on HTC-116 human colon carcinoma cells by using SRB assay. Eleven compounds out of sixteen have shown a much more potent antioxidant activity compared to the standard ascorbic acid. The IC50 values of synthesized compounds were ranging from -0.55 to 6.15 whereas the ascorbic acid value was found to be 19.23. The compounds with a code MR-1, MR-5, MR-8, MR-11, MR-13, and MR-15 have shown the IC50 values below 500µM and shows good anticancer activity. Remaining compounds have shown IC50 values more than 500 µM whereas the IC50 value of 5-fluorouracil (5-FU) is five µM. It shows that these compounds do not have any potent activity compare to reference compound.

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DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF NOVEL AZEPINO DIINDOLONE DERIVATIVES AS POTENTIAL DNA-INTERCALATING ANTITUMOUR AGENTS

Paper ID – NCETST2068

A Paper Presented by-NALLAMMOTHU VANAJA RANI[a], PROF.K.RAVINDRANATH[a*]

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

Corresponding author. E-mail : nvanajarani@gmail.com;

ABSTRACT

DNA intercalation is a process in which the intercalating molecule containing planar aromatic or heteroaromatic ring systems is transferred to the hydrophobic space between two adjacent DNA base pairs and bind *via* non-covalent stacking interactions. Herein, we report the molecular design and chemical synthesis of a novel series of azepino diindolone derivatives as DNA-intercalating antitumor agents. The cytotoxic activity of the synthesized compounds was evaluated against four human cancer cell lines including DU143, HEPG2, RKO and A549. Compound **7b** showed significant cytotoxicity against all the four human cancer cell lines with IC_{50} values ranging from 4.56 to 6.59 μM, encouraging us to further examine its cytotoxicity against HT-29, MDA-MB-231 and MG-63. To our surprise, it showed remarkable activity with IC_{50} values of 3.54, 3.60 and **1.23** μM, respectively. Docking studies were performed in order to investigate the DNA interaction properties of the synthesized compounds. According to the computational data, these compounds showed promising interactions with the DNA thus supporting its potential DNA-intercalating property.

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SYNTHESIS,BIOLOGICAL EVALUTION,, AND MOLECULAR DOCKING STUDIES OF NOVEL 1,2,3-TRIAZOLE TAGGED 5-[(1H-INDOL-3-YL)METHYLENE]PYRIMIDINE – 2,4,6(1H,3H,5H)TRIONE DERIVATIVES

Paper ID – NCETST2069

A Paper Presented by-NALLAMMOTHU VANAJA RANI[a], PROF.K.RAVINDRANATH[a*]

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

Corresponding author. E-mail : nvanajarani@gmail.com;

ABSTRACT

Novel 5 -{(1-[(1-phenyl-1H-1,2,3-triazol-4-yl)methyl]-1H-indol-3-yl)methylene}pyrimidine 2,4,6(1H,3H,5H) trione derivatives (5a–5k) were synthesized by the click reaction. All compounds 5a–5k were characterized by 1H and 13C NMR, IR and Mass spectra and evaluated for their in vitro anticancer activity against cervical cancer cell lines. Among all, compound 5e (IC50 = 6.76 μM), shown high inhibitory activity. Docking analysis of all the compounds with the Lipid kinase PI3K-α revealed that the compound 5e fitted well in the active site pocket, showing the best docking score (LibDock) of 123.274.

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A NOVEL AND EFFICIENT SYNTHESIS OF METOPROLOL AND METOPROLOL-D6

Paper ID – NCETST2070

A Paper Presented by-MADAN KUMAR G[a], Dr. K Naga Mahesh[a*]

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

Corresponding author. E-mail : madankumar.gundala@gmail.com;

ABSTRACT

A novel and highly efficient synthetic approach for the synthesis of Metoprolol and Metoprolol containing six deuterium atoms in the isopropyl methyl groups (Metoprolol-D_6) has been developed from inexpensive and commercially available starting materials. Synthesis involved opening of epoxide with methonolic ammonia to form secondary amino alcohol followed by the reductive amination with acetone for Metoprolol and acetone-D_6 for Metoprolol-D_6. Structures and purity of synthesized Metoprolol and Metoprolol-D_6 was confirmed by ^1H NMR and MS analysis.

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REMOVAL OF LEAD AND ZINC USING AGRICULTURAL WASTE AS A BIOSORBENT

Paper ID – NCETST2071

A Paper Presented by-MATTA MANIKANTTHA[a], Dr. K.DEEPTHI[a*]

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

*Corresponding author. Mobile: (+91) 9642184218

Corresponding author. E-mail : mani.chinnu88@gmail.com;

ABSTRACT

Presence of heavy metals in wastewater is the biggest environmental problem nowadays. Removal of such metal ions is a great challenge. Many alternative methods are available for the removal of heavy metals; among these Biosorption is one of the best methods. Biosorption of lead and zinc were investigated in this study using nonliving biomass of Tamarind fruit shell and also Response surface methodology was tested to get optimum conditions. The applicability of the Langmuir and Freundlich models for the biosorbent was tested. The coefficient of determination (R^2) of both models were mostly greater than 0.9. The maximum percentage removal of lead is 83.6% and zinc is 78.9%.

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SURFACTANT ASSISTED SYNTHESISED COPPER (II) OXIDE FOR THE ADSORPTION OF CATIONIC DYES(RHODA MINE B AND METHYLENE BLUE)

Paper ID – NCETST2072

A Paper Presented by-MATTA MANIKANTTHA[a], Dr. K.DEEPTHI[a*]

[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*

Andhra Pradesh, India.

Corresponding author. E-mail : mani.chinnu88@gmail.com;

ABSTRACT

SDS assisted synthesized Copper (II) oxide nano particles are utilized as adsorbents for the removal of cationic dyes (Rhoda mine B and methylene blue). Batch adsorption studies were conducted using spectrophotometer at the maximum wave length of the dyes. Langmuir adsorption isotherms are calculated. Results confirm the pseudo second order kinetics, Thermodynamic parameters reveal the spontaneity and exothermic reaction.

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GC-MS ANALYSIS AND PHARMACOLOGICAL INVESTIGATION OF SOME CHROMATOGRAPHICALLY SEPARATED PURE FRACTIONS OF SYZGIUM CUMINI BARK

Paper ID – NCETST2073

A Paper Presented by-LENKALAPALLI NAVEENKUMAR[a], Dr.E. Hari Krishnal[a*]
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Andhra Pradesh, India.
*Corresponding author. Mobile: (+91) 9885665592
Corresponding author. E-mail : naveenlenkala@gmail.com;

ABSTRACT

The objective of this study was to investigate the antibacterial activity of some of the chromatographically separated sub fractions of microwave assisted ethanolic extract of *Syzygium cumini* bark and to screen the phytochemical compounds by GC-MS technique. For the same Hexane, benzene, chloroform, ethyl acetate, acetone, ethanol, and methanol fractions of the ethanol extract were screened for their antibacterial and antifungal activity out of which DCM, ester, ethanol, and methanol fractions showed noticeable activity against gram positive and gram negative bacterial and fungal strains which are responsible for various infections. Meantime 23 bioactive phytochemical compounds were identified by gas chromatography - Mass Spectrometry analysis of dichloromethane fraction of n-hexane extract coded as SSC-01 from *S. cumini* bark.

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SILICA CATALYSED A GREEN,AND HIGHLY EFFICIENT FOR THE SYNTHESIS OF THIOETHERS FROM CARBOXYLATES AND THIOL

Paper ID – NCETST2074

A Paper Presented by-SRINIVAS PERABOINA[a], Dr. P. HARI CHARAN[a*]
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Corresponding author. E-mail : srinivas.peraboina@gmail.com;

ABSTRACT

Highly efficient and new procedure is described for the synthesis of thioethers from carboxylates and thiols using silica gel as solid support. The reaction proceeds displacement of carboxylates from benzylic or allylic esters by heterocyclic thiols and aromatic thiols. This protocol is good to excellent yields of products and short reaction times.

Keywords: Silicagel; carboxylates ; C–S coupling; diaryl sulfide

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COMPUTER AIDED DRUG DESIGN USING GLIDE SOFTWARE BY PERORMING DOCKING STUDY

Paper ID – NCETST2075

A Paper Presented by-Narasimhamurthy Gandikota[a], Dr.I.V.Kasi Viswanath [a*]
[1,1*]*Department of Chemistry, Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, Guntur Dt-522502, Andhra Pradesh, India.*
Corresponding author. E-mail : murthy.gandikota@gmail.com;

ABSTRACT

The increase in application of diverse computerized methods in drug discovery has enabled a better handling of data associated with a large number of compounds screened against the target molecules or proteins for leads. Computational tools help to define and elaborate the strength of interaction between ligands and targets and is used in the identification of lead molecules from databases In this study we performed docking with Amaranthus spinosus with three targets i.e 5-hydroxy tryptamine[5-HT],Norepinephrine[NE], Dopamine against anti depressant activity of the bio active compounds of amaranthus spinosus using glide software Schrondinger 2018.The steps are ligand preparation, protein preparation and ligand docking. Docking was performed using ligand docking. The validation was performed for the three proteins

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A FACILE SYNTHESIS OF 2,8-DICHLOROQUINONES IN THE PHARMACEUTICAL INDUSTRY

Paper ID – NCETST2076

A Paper Presented by-Ch. Kishore Babu* and K. R. S. Prasad

Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh, India – 522502

*Corresponding author. E-mail: kishorechem@gmail.com

ABSTRACT

The 2,8-dichloroquinolines were prepared with production friendly process by Amidation of 2-chloro aniline with Cinnamoyl chloride in the presence of inorganic base and a ketone solvent and then followed by cyclization in the presence of Aluminium chloride in the presence of chlorobenzene as solvent medium to form 2-oxo quinoline derivative, and this derivative was further converted to 2-chloro quinolines by using phosphorous oxy chloride as chlorinating agent.

Keywords: Chloroquinolines; 2,8-dichloroquinolines, Amidation, cyclization chlorinating agent.

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PHOTOLUMINESCENCE OF DYSPROSIUM DOPED ANTIMONY-MAGNESIUM-STRONTIUM-OXYFLUOROBORATE GLASSES FOR W-LED APPLICATION

Paper ID – NCETST2077

A Paper Presented by-S. Farooq[1], Mahamuda[2]

[1] Department of Physics, JNT University, Anantapuramu 515002, India

[2] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

Dysprosium (Dy^{3+}) doped antimony magnesium strontium oxyfluoroborate (B_2O_3-MgF_2-SrO-Sb_2O_3-Dy_2O_3, BMFSrSbD), glasses were synthesized by traditional melt-quenching method. The synthesized samples have been analyzed by X-ray diffraction, optical absorption and fluorescence techniques for deriving various characteristic properties. Emission spectra of Dy^{3+}: samples were exhibit three well resolved emission bands at around 482, 575 and 666 nm which originated from the $^4F_{9/2}\rightarrow{}^6H_{15/2,}$ $^4F_{9/2}\rightarrow{}^6H_{13/2}$ and $^4F_{9/2}\rightarrow{}^6H_{11/2}$ transitions upon excitation of wavelength at 452 nm. Decay curves of the $^4F_{9/2}$ level of Dy^{3+} ion were display mono-exponential at low Dy^{3+} concentration (0.1 mol%) and deviated to non-exponential behavior at high concentration of Dy^{3+} ions ($\geq$ 0.5 mol%). Lifetime of the $^4F_{9/2}$ level was decreased with increase of Dy^{3+} ions concentration. Chromaticity coordinates (x,y) of Dy^{3+}:BMFSrSbD samples were evaluated and represented in CIE 1931 chromaticity diagram, appear in the whitish-yellow region. The results suggest that these glasses could be utilized as a potential candidate for the development of display devices and lasers at a wavelength of 575 nm.

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STRUCTURAL, ABSORPTION AND PHOTOLUMINESCENCE STUDIES OF SM^{3+}IONS DOPED BARIUM LEAD ALUMINO FLUORO BORATE GLASSES FOR PHOTONIC DEVICE APPLICATIONS

Paper ID – NCETST2078

A Paper Presented by-P. Rekha Rani[1], Sk. Mahamuda[1]

[1] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

Samarium ions doped barium lead alumino fluoro borate glasses were prepared by conventional melt quenching technique and characterized by using various spectroscopic techniques. The amorphous nature and functional groups present host glass were confirmed by XRD and FT-IR spectra respectively. From the measured oscillator strengths the Judd-Ofelt (J–O) parameters were evaluated and subsequently used to estimate various radiative properties for the prominent fluorescent levels. The PL spectra show three transitions $^4G_{5/2}\rightarrow{}^6H_{5/2}$, $^6H_{7/2}$, and $^6H_{9/2}$ at 565 nm, 602 nm and 650 nm in greenish yellow, reddish orange and red regions respectively. The experimental lifetimes correlated with radiative lifetimes to calculate quantum efficiency of the as prepared glasses. The CIE chromaticity coordinates measured establishes reddish orange emission from the as prepared glasses. Based on the emission cross-sections, branching ratios, quantum efficiency and CIE coordinates, it is concluded that the Sm^{3+} ions doped as prepared glasses are aptly suitable for reddish orange optoelectronics device applications.

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SPECTROSCOPIC STUDIES AND LASING POTENTIALITIES OF SM^{3+} IONS DOPED SINGLE ALKALI AND MIXED ALKALI FLUORO TUNGSTENTELLURITE GLASSES

Paper ID – NCETST2079

A Paper Presented by-Ch.B. Annapurna Devi[1], Sk. Mahamuda[1]
[1] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

Samarium ions doped single alkali and mixed alkali fluoro tungsten tellurite glasses prepared by employing melt quenching technique were characterized by using various spectroscopic techniques such as optical absorption, excitation, emission and decay spectral studies. From the absorption spectral features, the optical band gap energies have been evaluated. By applying the Judd-Ofelt (J-O) theory to the measured oscillator strengths (f_{exp}), the best fit J-O parameters are evaluated and used further in evaluating the radiative properties for the prominent fluorescent levels of Sm^{3+} ions in the as prepared glasses. A strong luminescence in the reddish-orange spectral region has been observed for all the Sm^{3+} ions doped as prepared glasses. The emission spectra show four emission transitions resulting from the $^4G_{5/2}$ meta-stable state to the lower lying $^6H_{5/2}$, $^6H_{7/2}$, $^6H_{9/2}$ and $^6H_{11/2}$ states upon exciting with a 478 nm line of an argon ion laser. CIE chromaticity co-ordinates evaluated from the emission spectral features and found to be falling in reddish-orange region of the visible spectrum. The decay spectral profiles recorded for single alkali fluoro tungsten tellurite glasses were used to estimate the experimental lifetimes and correlated further with radiative lifetimes to estimate quantum efficiency. The stimulated emission cross-sections (σ_{se}) and branching ratios (β_R) were estimated from the emission spectra for all the emission transitions. The aforementioned spectral studies carried out on Sm^{3+} ions doped as prepared glasses allowed us to conclude that, these glasses are best suited for visible reddish-orange lasers.

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ENHANCEMENT OF 1.54 MM EMISSION IN CE^{3+}-ER^{3+} CODOPED $CA_4SI_2O_7F_2$ PHOSPHOR FOR GE-BASED SOLAR CELLS

PAPER ID – NCETST2080

A Paper Presented by-Rupesh A. Talewar[1*], Sk. Mahamuda[1]

[1] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

A novel near-infrared (NIR) emitting phosphor, $Ca_4Si_2O_7F_2$:Ce^{3+},Er^{3+} was synthesized by conventional solid state reaction method and characterized with X-ray diffraction, photoluminescence emission, photoluminescence excitation spectra and fluorescence decay measurements. In $Ca_4Si_2O_7F_2$:Ce^{3+},Er^{3+} phosphors, intense NIR emission at 1540 nm which is assigned to the characteristic $^4I_{13/2} \rightarrow {}^4I_{15/2}$ transition of Er^{3+} along with the broadband emission of Ce^{3+} at 490 nm was observed under 380 nm excitation. The luminescence spectra, both in visible (VIS) and NIR regions, and lifetime curves of Ce^{3+} have been measured to prove energy transfer (ET) from Ce^{3+} to Er^{3+}. Efficient energy transfer from Ce^{3+} to Er^{3+} in $Ca_4Si_2O_7F_2$ is observed and leads to about 10 times enhancement of the Er^{3+}-1540 nm emission when excited at 380 nm. The critical distance between Ce^{3+} and Er^{3+} ET in $Ca_4Si_2O_7F_2$ host was calculated, as 14.81 Å. The Inokuti-Hirayama (I-H) model is applied in the analysis of the non-exponential fluorescence decay curves. From I-H curve fitting, it is inferred that the electric dipole-dipole interaction is the main process responsible for the energy transfer as well as for the large enhancement of 1540 nm emission. The results indicate that sensitization of Er^{3+} is possible via 4f-5d transition of Ce^{3+} in the $Ca_4Si_2O_7F_2$ host.

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NEAR SENSITIZATION OF YB^{3+} BY ND^{3+} EMISSION IN ALKALINE-EARTH CHLORO BORATE GLASSES FOR LASER AND FIBER AMPLIFIER APPLICATIONS

Paper ID – NCETST2081

A Paper Presented by-Rupesh A. Talewar[1*], Sk. Mahamuda[1]

[1] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

Intense near-infrared emitting alkaline-earth chloro borate (AECB) glasses doped with Lanthanide (Ln) ions (Ln = Nd and Yb) were synthesized by conventional melt quenching technique and characterized with absorption, photoluminescence excitation (PLE), photoluminescence (PL) and PL decay spectral measurements. For Nd^{3+} ion, intense NIR emission in the range 850–1450 nm was observed under 824 nm excitation. Intense and characteristic emission bands of Nd^{3+} (at 883, 1067 and 1340 nm) and Yb^{3+} (at 980 nm) were observed with 585 nm excitation. Yb^{3+} emission at 980 nm is ascribed to $^2F_{5/2} \rightarrow {}^2F_{7/2}$ transition. The dependence of NIR emission, lifetime and the energy transfer efficiency (η_{ETE}) with the concentration of Yb^{3+} was investigated in detail. The PLE and PL spectra along with donor decay curves have been used to establish the energy transfer mechanism between Nd^{3+}-Yb^{3+} ions. The results indicate that the sensitization of Yb^{3+} is possible via 4f-4f transition of Nd^{3+} ions in AECB glasses. The luminescence properties of the Nd^{3+} singly doped and Nd^{3+}-Yb^{3+} co-doped AECB glasses indicate their suitability as multiple pump channel sources for Yb^{3+} fiber laser systems.

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SPECTROSCOPIC STUDIES OF DY^{3+} IONS DOPED BARIUM LEAD ALUMINO FLUORO BORATE GLASSES FOR W-LED APPLICATIONS

Paper ID – NCETST2082

A Paper Presented by-P. Rekha Rani[1], Sk. Mahamuda[1]

[1] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

Barium lead alumino fluoro borate (BaPbAlFB) glasses doped with Dy^{3+} ions were prepared by using melt quenching technique and characterized using various spectroscopic techniques to understand their usage in photonic devices. The SEM and EDX spectral studies were performed on the as prepared glasses to understand the glassy nature and elemental analysis respectively. The weight loss in the BaPbAlFB glass has been studied by the TGA. Judd-Ofelt (J-O) theory has been applied to the measured oscillator strengths of the absorption spectral features to evaluate radiative parameters for the prominent emission transitions of Dy^{3+} ions in BaPbAlFB glasses. The photoluminescence (PL) spectral measurements show concentration quenching beyond 1.0 mol% of Dy^{3+} ions in the as prepared glasses. The decay profiles observed for higher concentration of Dy^{3+} ions in these glasses are well fitted to Inokuti-Hirayama (I-H) model to understand the energy transfer mechanism involved in the as prepared glasses. The experimental lifetimes (τ_{exp}) measured from the decay spectral features are correlated with radiative lifetime (τ_R) values to understand the quantum efficiency (η) of the as prepared glasses. From the PL spectra, colorimetric parameters such as CIE coordinates, correlated color temperature (CCT) and yellow-to-blue (Y/B) intensity ratios have been estimated to understand the usage of these glasses in photonic devices such as white LEDs and lasers.

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STRUCTURAL, OPTICAL AND NIR STUDIES OF ER^{3+} IONS DOPED BISMUTH BORO TELLURITE GLASSES FOR LASER APPLICATIONS

Paper ID – NCETST2083

A Paper Presented by-Y.ANANTHA LAKSHMI[1], SK. MAHAMUDA[1]
[1] DEPARTMENT OF PHYSICS, KONERU LAKSHMAIAH EDUCATION FOUNDATION, VADDESWARAM, GUNTUR-522502, AP, INDIA

ABSTRACT

Bismuth Boro Tellurite (BiBT) glasses doped with Er3+ ions (i.e., Er3+ = 0.1, 0.5, 1.0, 1.5, 2.0, 2.5 mol %) were prepared by using melt quenching technique and their structural, optical absorption, emission and up-conversion properties were investigated using XRD, Raman, absorption, emission and decay spectral studies. The oscillator strengths measured from the absorption spectral features were subjected to Judd-Ofelt theory to understand the radiative properties possessed by the as prepared glasses. The titled glasses excited under 379 nm exhibited green luminescence at 547 nm (4S3/2 → 4I15/2). Upon pumping with a laser diode of 980 nm (NIR), a broad NIR emission at around 1572 nm (4I13/2 → 4I15/2) was observed for which stimulated emission cross-section (σse), effective band width (Δλp), gain band width (σse × Δλp) and optical gain (σse × τR) parameters were evaluated. The up-conversion luminescence shown by these glasses has been analysed to understand the utility of these glasses as up-conversion lasers. Among all the as prepared glasses, 1 mol% of Er3+ ions doped BiBT glass exhibits better radiative properties compared to other glasses. The gain cross-section of the 1 mol% of Er^{3+} ions doped BiBT glass was derived using absorption cross-section (σ_a) and emission cross-section (σ_e) for different values of population inversion (γ). The Decay spectral features recorded under 980 nm excitation were used to measure the experimental lifetimes (τ_{exp}) and quantum efficiencies. All the aforementioned studies revealed that the Er^{3+} ions doped BiBT glasses are quite suitable to fabricate optoelectronic devices in visible green and NIR regions.

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SPECTROSCOPIC INVESTIGATIONS OF DYSPROSIUM IONS DOPED OXY CHLORO BORO TELLURITE GLASSES FOR WHITE LIGHT EMITTING DIODE APPLICATIONS

Paper ID – NCETST2084

A Paper Presented by-P. Sailaja[1], Sk. Mahamuda [1*]

[1] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

Spectroscopic properties of oxy chloro boro tellurite glasses (OCBT) doped with varying concentration of dysprosium ions were studied using X-ray Diffraction (XRD), Fourier transform infrared (FT-IR), Raman, absorption, excitation and photoluminescence (PL) spectral studies. Judd-Ofelt (J-O) theory has been applied to the recorded absorption spectral features to evaluate various radiative parameters for the prominent fluorescent levels of Dy^{3+} ions doped OCBT glasses. Under 350 nm excitation, intense blue and yellow emissions at 483 nm ($^4F_{9/2} \rightarrow {}^6H_{15/2}$) and 575 nm ($^4F_{9/2} \rightarrow {}^6H_{13/2}$) were observed respectively and show concentration quenching at 1 mol% of Dy^{3+} ions in OCBT glasses. Dexter theory applied to the PL spectra reveals dipole-dipole interaction responsible for energy transfer between the doped Dy^{3+} ions to show concentration quenching in the prepared glasses. The yellow to blue (Y/B) intensity ratio, CIE chromaticity coordinates and color correlated temperatures (CCT) have been evaluated from the PL spectra for all the prepared glasses. The emission cross-sections, branching ratios and quantum efficiency evaluated for the OCBT glasses confirm the suitability of Dy^{3+} doped OCBT glasses for visible photonic device applications.

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NEAR UV BASED DY^{3+} IONS DOPED ALKALINE-EARTH CHLORO BORATE GLASSES FOR WHITE LED'S APPLICATIONS

Paper ID – NCETST2085

A Paper Presented by-Rupesh A. Talewar[1*], Sk. Mahamuda[1]

[1] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

A new series of Dy^{3+} ions doped alkaline-earth chloro borate (AECB) glasses were prepared by conventional melt quenching technique and characterized with XRD, absorption, excitation, photoluminescence (PL), fluorescence decay spectral measurements and CIE coordinates. From the absorption spectra, Judd-Ofelt (J-O) intensity parameters (Ω_2, Ω_4, Ω_6) have been measured using the least square fit method. Under 385 nm excitation, intense blue, yellow emissions at 483 and 576 nm and weak red emission at 665 nm were observed, which are assigned to the $^4F_{9/2} \rightarrow {}^6H_{15/2}$, $^4F_{9/2} \rightarrow {}^6H_{13/2}$ and $^4F_{9/2} \rightarrow {}^6H_{11/2}$ transitions of Dy^{3+} respectively. The yellow-to-blue emission intensity ratios and CIE chromaticity coordinates have been determined from emission spectra to evaluate the emitted light as a function of Dy^{3+} concentration. The CIE chromaticity coordinates of Dy^{3+} (1 mol%) doped AECB glasses are located in the white light region. The optimum doping concentration of Dy^{3+} ions is around 1 mol%, beyond which concentration quenching is observed. The decay spectral profiles of $^4F_{9/2} \rightarrow {}^6H_{13/2}$ (577 nm) luminescence transition were used to measure experimental lifetimes (τ_R). The results indicate that Dy^{3+} doped AECB glasses may have great potential as a single-component white-light-emitting glass for UV-light-emitting diodes and for other visible photonic applications.

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UP-CONVERSION AND NIR LUMINESCENCE STUDIES OF ERBIUM IONS DOPED ALKALINE-EARTH BORO TELLURITE GLASSES

Paper ID – NCETST2086

A Paper Presented by-K. Siva Rama Krishna Reddy[1*], Sk. Mahamuda[1]

[1] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

The Alkaline-Earth Boro Tellurite (AEBT) glasses doped with different concentrations of Erbium (Er^{3+}) ions were prepared by sudden melt quenching technique. The prepared samples were characterized by optical absorption, visible, Up-Conversion (UC), near-infrared (NIR) luminescence and luminescence decay to understand their luminescence properties. The Judd-Ofelt (J-O) intensity parameters (Ω_λ, $\lambda = 2, 4, 6$) were calculated from the absorption spectra. Different radiative properties such as total radiative transition probability (A_T), radiative lifetime (τ_R), radiative branching ratios (β_R), stimulated emission cross-section (σ_{se}), effective bandwidth ($\Delta\lambda_p$), gain bandwidth (σ_{se} x $\Delta\lambda_p$) and optical gain (σ_{se} x τ_R) for Er^{3+} ions in the titled glasses were estimated. The Decay spectral curves for the $^4I_{13/2}$ level of Er^{3+} ions in AEBT glasses were recorded under 980 nm excitation for 1574 nm emission. The obtained results reveal that the titled glasses are suitable for the optical devices like solid state lasers and fiber amplifiers.

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INVESTIGATION ON STRUCTURAL AND LUMINESCENCE FEATURES OF DY^{3+}IONS DOPED ALKALINE-EARTH BORO TELLURITE GLASSES FOR W-LED APPLICATIONS

Paper ID – NCETST2087

A Paper Presented by-K. Siva Rama Krishna Reddy[1], Sk. Mahamuda[1]
[1] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

A Series of Alkaline-Earth Boro Tellurite (AEBT) glasses doped with different concentrations of Dy^{3+} ions have been prepared by using melt quenching technique and characterized using spectroscopic techniques such as XRD, Raman, optical absorption, excitation, photoluminescence (PL) and PL decay to understand their utility in optoelectronic devices such as lasers and white light emitting diodes (wLEDs). The XRD spectrum revealed non-crystalline nature whereas the Raman spectrum revealed the phonon energy and various functional groups present in the undoped host glass. The intensities of the electronic transitions and the ligand field environment around the Dy^{3+} ions were studied by applying Judd-Ofelt (J-O) theory to the recorded absorption spectra of the AEBTDy glasses. The J-O parameters were used to measure various radiative parameters for the prominent fluorescent levels of Dy^{3+} ions in the asprepared glasses. The emission spectra of Dy^{3+} ions doped AEBT glasses under 387 nm excitation show three emission transitions $^4F_{9/2} \rightarrow {}^6H_{15/2}$ (blue), $^4F_{9/2} \rightarrow {}^6H_{13/2}$ (yellow), and $^4F_{9/2} \rightarrow {}^6H_{11/2}$ (red) of which the yellow transition observed at 575 nm is highly intense. The fluorescence decay curves for the as prepared glasses have been recorded for 757 nm transition under 387 nm excitation wavelength. The experimental lifetimes (τ_{exp}) measured from the decay spectral profiles are combined with radiative lifetimes (τ_R) to measure quantum efficiencies of the asprepared glasses. The yellow to blue intensity ratios and chromaticity color co-ordinates are found to vary with Dy^{3+} ion concentrations. All the aforementioned results finally revealed that the AEBT glasses doped with Dy^{3+} ions are aptly suitable for the design and development of optoelectronic devices such as wLEDs and lasers.

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ELECTROCHEMICAL STUDIES OF MESOPOROUS AND COPPER-MODIFIED MESOPOROUS TIO2-ANODE MATERIAL

Paper ID – NCETST2088

A Paper Presented by-R. Ajay Kumar, A. Venkateswara Rao*, and Ch. Rajesha
Advanced Functional Materials Research Centre, Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh, 522502, India
Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in

ABSTRACT

Herein, we developed a method to synthesize highly ordered mesoporous TiO_2 (MT) and coppermodified M-TiO_2 (CMT) with a high surface area by the hydrothermal method using Pluronic P-123 as a surfactant at 150 ◦C. CMT with different copper concentrations (0.1, 0.2 and 0.3%) was synthesized. The structural characterization studies revealed that MT and CMT particles are in anatase phase. The average particle size was found to be 24 ± 0.8 nm for MT and that of CMT was 25 ± 0.6, 27 ± 0.4 and 28 ± 0.3 nm, respectively. The presence of ordered spherical MT and CMT particles with uniform size distribution was confirmed by performing morphological studies using FE-SEM. Optical absorption studies indicate the presence of copper because of the red shift in the band gap and also a broad peak around 800 nm when compared with MT. EIS studies point out an increase in conductivity from MT through 0.3% CMT by a decrease in the charge transfer resistance. Further, charge-discharge studies were carried on this material at room temperature for lithium-ion battery applications. CMT with 0.3% copper showed high initial discharge capacity and better cyclability. The results indicate that this material can act as a promising. negative electrode.

Keywords: FE-SEM, anatase phase, copper modified M-TiO_2

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STRUCTURAL, ELECTRICAL AND ELECTROCHEMICAL STUDIES ON DOUBLY DOPED $LIMN_{2-X}(GDNI)_XO_4$ CATHODE MATERIALS FOR LI-ION BATTERIES

Paper ID – NCETST2089

A Paper Presented by-A. Venkateswara Rao*, B. Ranjith Kumar
Advanced Functional Materials Research Centre, Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India
Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in

ABSTRACT

Doubly doped $LiMn_{2-x}(GdNi)_xO_4$ (x = 0, 0.01, 0.02, 0.03, 0.04 and 0.05) materials with spinel structure have been synthesized by sol-gel method. Powder X-ray diffraction results have confirmed the formation of cubic spinel structure. FE-SEM studies showed that cubic spinel structure remained unchanged with notably modified particle size in the range of 200–400 nm. Cyclic Voltammetry results showed enhancement in Li^+ intercalation and de-intercalation through decrease in redox potentials as a function of doping. Electrochemical Impedance Spectroscopy (EIS) results show decreased charge transfer resistance with addition of Gd and Ni. Charge-discharge studies for $LiMn_{1.98}(GdNi)_{0.01}O_4$ show 67.1 mAh/g discharge capacity over other doped derivatives and pristine $LiMn_2O_4$ (60.6 mAh/g) in aqueous Li_2SO_4 electrolyte.

Keywords: Gd and Ni co-doped $LiMn_2O_4$ Li-ion battery, Improved discharge capacity, Li intercalation and de-intercalation, Cubic spinel structure

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STRUCTURAL, MICROSTRUCTURAL AND ELECTROCHEMICAL STUDIES ON $LIMN_{2-x}(GDAL)_xO_4$ WITH SPINEL STRUCTURE AS CATHODE MATERIAL FOR LI-ION BATTERIES

Paper ID – NCETST2090

A Paper Presented by-A. Venkateswara Rao[a*], B. Ranjith Kumar[a], S.D. Ramarao[a,b]

[a] Advanced Functional Materials Research Centre, Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

[b] Solid state and Inorganic Chemistry Lab, New Chemistry Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore 560064, India

Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in

ABSTRACT

Gd and Al co-doped $LiMn_{2-x}(GdAl)_xO_4$ (x = 0, 0.01, 0.02, 0.03, 0.04 and 0.05) materials with spinel structure were synthesized by sol–gel method. Powder X-ray diffraction results confirm the formation of cubic spinel structure and average particle sizes are found to be between 80 and 110 nm from FE-SEM and TEM analysis. Decrease in peak potential difference as a function of doping in Cyclic Voltammetry results establishes enhancement in Li+ intercalation and de-intercalation. Electrochemical Impedance Spectroscopy (EIS) results showed that accumulation of charges on electrode has improved with doping over pristine samples. At a doping of x = 0.02 charge transfer resistance values were found to be least. First cycle charge–discharge profiles for $LiMn_{1.96}(GdAl)_{0.02}O_4$ shows 139.2 mAh/g discharge capacity over other doped derivatives and pure $LiMn_2O_4$ (119.6 mAh/g) in aqueous Li_2SO_4 electrolyte. Doping of x = 0.02 exhibit good cycling performance with only a total 4% capacity loss after 30 cycles.

Key words: Gd and Al co-doped $LiMn_2O_4$, Li-ion battery, Improved discharge capacity, Li^+ intercalation and de-intercalation, Cubic spinel structure

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SYNTHESIS OF 1-((5-OXO-4,5-DIHYDRO-1,3,4-OXADIAZOL-2-YL)METHYL)- 1H-1,2,4-TRIAZOLE-3-CARBOXYLIC ACID-APPLICATION OF ANTIBACTERIAL ACTIVITY

Paper ID – NCETST2091

A Paper Presented by-Manuri Brahmayya[1,2,3] • Dasi Samsonu[4] • Alaparthi Venkateswara Rao*[5] • Nelli Srinivasa Rao[6] • Battula Venkateswara Rao[1] • Huan-Jung Fan[3]

[1]Department of Engineering Chemistry, Andhra University, Visakhapatnam, Andhra Pradesh, India

[2]Department of Chemical Engineering, National Chung Hsing, University, Taichung, Taiwan

[3]Department of Environmental Engineering Safety and Health, HungKuang University, Shalu District, Taichung, Taiwan, ROC

[4]Department of Organic Chemistry and FDW, Andhra University, Visakhapatnam, India

[5]Department of Physics, Advanced Functional Materials, Research Centre, K L University, Guntur, Andhra Pradesh, India

[6]Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu 300, Taiwan, ROC

**Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in*

ABSTRACT

Synthesis of 1-((5-oxo-4,5-dihydro-1,3,4-oxadiazol-2-yl) methyl)-1H-1,2,4-triazole-3-carboxylic acid was accomplished starting with the commercially available 1,2,4-triazole-3-carboxylic acid. The conversion of hydrazide and carbon dioxide to 1,3,4-oxadiazole has been explained. Antibacterial activity also studied for some synthesized compounds.

Keywords: 1,2,4-Triazole Sodium methoxide, Hydrazine monohydrate, Hydrazide, Carbon dioxide, 1,3,4-Oxadiazole.

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STRUCTURAL AND ELECTROCHEMICAL PROPERTIES OF LI(LAAL)$_X$MN$_{2-X}$O$_4$ BASED COMPOSITE CATHODES

Paper ID – NCETST2092

A Paper Presented by-A. VENKATESWARA RAO* and B. RANJITH KUMAR
Advanced Functional Materials Research Centre, Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India.
**Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in*

ABSTRACT

Spinel oxides lanthanum (La) and aluminium (Al) doped Li(LaAl)$_x$Mn$_{2-x}$O$_4$ (x = 0, 0.01, 0.02, 0.03, 0.04 and 0.05) compounds were prepared by a sol–gel method. Lanthanum and aluminium showed an influence on the structural, morphological and electrochemical properties. An x-ray diffraction study revealed that all the samples are in the cubic spinel phase. The grain size from the Debye–Scherrer and Williamson–Hall methods is comparable at lower doping concentration. Field emission scanning electron microscopy shows that the particle size of the samples increased with increasing dopant concentration, and the particle sizes were found to be between 50 nm and 200 nm. Cyclic voltammetry studies show two sets of well separated redox peaks due to the formation of Li+ extraction/insertion into the spinel framework at a scan rate of 0.5 mV/s in the potential range of 0.2–1.2 V. Electrochemical impedance spectroscopy studies show that (LaAl) 0.01 doping improved charge transfer resistance. Li(LaAl)$_{0.01}$Mn$_{1.98}$O$_4$ showed better discharge capacity (68.2 mAh/g) over other doped derivatives and pristine LiMn$_2$O$_4$ in saturated Li$_2$SO$_4$ aqueous electrolyte.

Key words: Sol–gel method, x-ray diffraction, FE-SEM, cyclic voltammetry, charge–discharge characteristics

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PARTICLE SIZE EFFECT ON THE DIELECTRIC PROPERTIES OF ZNO NANOPARTICLES

Paper ID – NCETST2093

A Paper Presented by-MD. Parvez Ahmad[a,b], A. Venkateswara Rao[a*], K. Suresh Babu[b], G. Narsinga Rao[b]

[a]Advanced Functional Materials Research Centre, Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh, 522502, India

[b]Department of Humanities & Sciences, Marri Laxman Reddy Institute of Technology and Management, Hyderabad, Telangana, 500 043, India

**Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in*

ABSTRACT

Zinc oxide (ZnO) nanoparticles with different particle sizes were synthesized by thermal annealing TA of zinc hydroxide at various temperatures. X-ray diffraction measurements show that all nanoparticles possess a typical wurtzite structure and no other impurity phases are observed. The average particle size (d) increases from 22 to 98 nm as TA increases from 100 to 850 °C. The dielectric properties of nanocrystalline ZnO with various particle sizes were studied in the frequency range of 20 Hz to 1 MHz between 80 K and 320 K. Dielectric measurement indicates that the particle size of samples has great influence on the dielectric behavior of ZnO nanoparticles. The Mu curves show strong grain peaks in all ZnO nanoparticles, whereas only 22 nm and 98 nm particles show weak grain boundary peaks. In addition, the ac conductivity (σac) follows Jonscher's power law for all ZnO nanoparticles, but two types of conduction mechanisms were observed. It is concluded that the σac behavior of 22 nm particles is well accounted by the correlated-barrier-hopping model (CBH), whereas the d > 22 nm particles behavior is probably due to Quantum Tunneling Mechanism (QMT). The different σac behavior can be attributed to the various defects in grain boundary and formation of inhomogeneous dielectric structures.

Keywords: Oxide materials, Semiconductors, Precipitation, Dielectric response, Grain boundaries, X-ray diffraction

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SOLVOTHERMAL SYNTHESIS OF $BIVO_4/WO_3$ HETEROSTRUCTURES AND THEIR APPLICABILITY TOWARDS ELECTROCHEMICAL WATER OXIDATION REACTIONS

Paper ID – NCETST2094

A Paper Presented by-P. Saraswathi[1], S.D. Ramarao[1],a, R.A. Kumar[1], Ch. Rajesh[2], and A.Venkateswara Rao[1]

[1]Advanced Functional Materials Research Centre, Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

[2]Department of Physics, GVP College of Engineering (A), Madhurawada, Visakhapatnam 530048, Andhra Pradesh, India

**Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in*

ABSTRACT

Bismuth vanadate ($BiVO_4$) and its heterostructures with tungstate (WO_3) were prepared by solvothermal technique. Phase purity of these compounds was analysed by collecting powder. X-ray diffraction data revealed the co-existence of both $BiVO_4$ and WO_3 phases. Transmission electron microscopic measurements on these samples revealed that the average particles sizes of these heterostructures are in the submicron range. Optical band gap is found in the range of 2.30 to 2.45 eV by using UV-visible spectrometer. Optical spectra reveal two distinct absorption edges corresponding to both existing phases. Electrochemical activity of $BiVO_4$ and $BiVO_4/WO_3$ heterostructures was studied using electrochemical workstation for applicability of oxygen evolution reaction (OER). These results indicate that the electrochemical activity was improved by forming heterostructures as compared with pristine compounds. From the Tafel slope analysis, it was found that the second electron transfer step is the rate determining step in OER mechanism in $BiVO_4/WO_3$ heterostructures.

Key words: $BiVO_4/WO_3$ heterostructures, OER mechanism, solvothermal technique

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EFFECT OF HEAT TREATMENT TIME ON PERFORMANCE OF $LIMN_2O_4$ NAN PARTICLES PRODUCED BY SOL-GEL METHOD

Paper ID – NCETST2095

A Paper Presented by-A. Venkateswara Rao[1*], Rupesh Kumar Sah[2], Jayakumar Singh Bondil[2]

[1]Advanced Functional Materials Research Centre, Department of Physics; Koneru Lakshmaiah Education Foundation, Greenfields, Vaddeswaram, A. P. India

[2]Department of Biotechnology, Koneru Lakshmaiah Education Foundation, Green fields, Vaddeswaram, A. P. India

**Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in*

ABSTRACT

$LiMn_2O_4$ nanomaterials was synthesized by sol gel technique and calcined at 8000C temperature for different heat treatment time. The crystal structure and phase identification was done by X-Ray diffraction study; XRD revealed that the crystallite size decreased with increasing annealing time. Morphological, elemental analyses were carried out by FE-SEM and EDS showed the grain size in the range of 100-130 nm. XPS spectra confirmed Mn valency in +4 and +3 states. Dielectric study exhibited available free charge carriers at low frequencies within the material. Cyclic Voltammetry results showed that the sample annealed at 10h has improvement in Li^+ intercalation and de-intercalation.

Keywords: $LiMn_2O_4$, FE-SEM, Cyclic Voltammetry, XPS

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EFFECT OF HYDROGEN ANNEALING ON STRUCTURE AND DIELECTRIC PROPERTIES OF ZINC OXIDE NANOPARTICLES

Paper ID – NCETST2096

A Paper Presented by-MD. Parvez Ahmad[a,b], A. Venkateswara Rao[a]*, K. Suresh Babu[b], G. Narsinga Rao[b]

[a]Advanced Functional Materials Research Centre, Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh, 522502, India

[b]Department of Humanities & Sciences, Marri Laxman Reddy Institute of Technology and Management, Hyderabad, Telangana, 500 043, India

**Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in*

ABSTRACT

In this article, Zinc Oxide (ZnO) samples were synthesized by Co-precipitation method. The influence of hydrogen annealing on the structure and dielectric behavior of zinc oxide nanoparticles was investigated. X-ray diffraction measurements indicate that all the particles possess a typical wurtzite structure without any other impurity phases. The structure and size of these nanoparticles are not influenced by hydrogen annealing but a small change in the peak position and intensity was observed. The low-temperature dielectric study of the samples was studied in the frequency range 20Hz to 1MHz between 80K and 300K and these measurements show that the ZnO nanoparticles further annealed at hydrogen atmosphere exhibit a high dielectric permittivity and a large increase in ac conductivity compared to that of the corresponding ZnO nanoparticle annealed in air.The hydrogen occupancy of oxygen atoms to play an important role in enhancing dielectric permittivity and conductivity in ZnO nanoparticles.

Key words: ZnO nanoparticles, Hydrogen annealing, Dielectric properties, High dielectric permittivity, AC conductivity

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EFFECT OF FE^{3+} DOPING ON THE STRUCTURE AND CONDUCTIVITY OF $LITI_2(PO_4)_3$

Paper ID – NCETST2097

A Paper Presented by-A. Venkateswara Rao[1*], B. Ranjith Kumar[1], B. Kishore Babu[2]
[1]Advanced Functional Materials Research Centre, Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India.
[2]Department of Engineering Chemistry, Andhra University, Visakhapatnam, India, A.P, India
**Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in*

ABSTRACT

Fe^{3+} substituted $LiTi_2(PO_4)_3$ samples of composition $Li_{1-x}Ti_{2-x}Fe_x(PO_4)_3$ (x = 0.0, 0.05, 0.1, and 0.15) have been prepared by solid-state reaction. XRD studies indicated formation of phase-pure materials of rhombohedral structure. Microstructural studies by scanning electron microscopy revealed particle size was in the micron range. Conductivity data at 533 and 573 K revealed increasing ionic conductivity with increasing dopant concentration. Electronic conductivity results correlated well with ionic conductivity. Cyclic voltammetry studies were indicative of electrochemical stability in the voltage range 0.5 to 3.5 V.

Keywords: Lithium titanium phosphate, Nasicon material, Fe-doped $LiTi_2(PO_4)_3$ Ionic conductivity Electronic conductivity, Cyclic voltammetry

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STRUCTURAL, SPECTROSCOPIC AND ELECTROCHEMICAL STUDY OF V^{5+} SUBSTITUTED $LITI_2(PO_4)_3$ SOLID ELECTROLYTE FOR LITHIUM-ION BATTERIES

Paper ID – NCETST2098

A Paper Presented by-A Venkateswara Rao[1]*, B Kishore Babu[2], B Swarna Latha[2]

[1]Advanced Functional Materials Research Centre, Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India.

[2]Department of Engineering Chemistry; Andhra University, Visakhapatnam 530 003, India

**Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in*

ABSTRACT:

Vanadium substituted $LiTi_2(PO_4)_3$ (LTP) samples of composition of $Li_{1-x}[Ti_{2-x}V_x](PO_4)_3$ (x = 0·0, 0·05, 0·10 and 0·15) have been prepared by solid-state reaction method. XRD data for these compositions indicated the formation of phase pure materials of rhombohedral structure with space group R3c (167). Microstructural studies by scanning electron microscope indicated particle size in the range of 0·5–1 μm. Electrochemical impedance studies showed that ionic conductivity is high for x = 0·10 composition. a.c. and d.c. conductivity results up to 573 K are in accordance with the Jonscher's power law. Cyclic Voltammetry study showed its electrochemical stability in the voltage range from 0·5 to 3·5 V.

Keywords: Nasicon materials; X-ray diffraction; lithium titanium phosphate; vanadium doped $LiTi_2(PO_4)_3$.

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COMPARATIVE STUDIES OF TEC OBTAINED FROM FORMOSAT-3/COSMIC RO MEASUREMENTS WITH GROUND BASED GPS TEC AND IRI-2012 MODEL PREDICTIONS OVER INDIAN LOW LATITUDE REGION

Paper ID – NCETST2099

A Paper Presented by-N.S.M.P.Latha Devi
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

ABSTRACT

Space weather alerts are utmost importance to users of high frequency (HF) radio communications and Global Positioning System (GPS) applications especially ionospheric time delay information over a particular region of interest. In the present study data from GPS station located at K L University (16.44° N, 80.62° E) for high solar activity year 2013 is considered for the analysis. Electron density profiles obtained from FORMOSAT-3/COSMIC (Constellation Observing System for Meteorology, Ionosphere and Climate) RO (Radio Occultation) measurements were compared with Ground based GPS TEC and IRI-2012 model data. The results revealed that, the bottom parts of the electron density profiles of the COSMIC measurements and GPS TEC data are in good agreement, while topside TEC shows considerable difference at all the time. Over all GPSTEC shows overestimation of electron concentration than measurements obtained from COSMIC measurements. Also, the results show that IRI-2012 model TEC overestimates the GPS TEC measurements. Present studies are important to validate the reliability of COSMIC ionosphere probing using RO technique.

Key words: COSMIC, GPS, IRI-2012 model, TEC

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RETRIEVAL OF AEROSOL OPTICAL DEPTH USING MODIS AND MISR SATELLITE DATASETS OVER EASTERN CHINA

Paper ID – NCETST2100

A Paper Presented by-N.S.M.P. LATHA DEVI, K.RAGHAVENDRA KUMAR
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

ABSTRACT

Aerosols in East Asia, in particular over China have significant direct and indirect effects on the Earth's climate variation. Aerosol Optical Depth (AOD) has become more and more significant in our atmospheric research, and many scientists have done lots of studies on it in different regions of China. In this paper, we have selected Hangzhou, Jinan, Linan, Nanjing, Shanghai, and Shouxian to make our study on AOD using Moderate resolution imaging spectroradiometer (MODIS) and Multi-angle Imaging SpectroRadiometer (MISR) satellites. Besides AOD, we also made to study Angstrom exponent (AE) and studied the impact of these properties on climate change. All the properties were cosidered for the time bound period from March 2005 to February in the Chinese Yangtze River Delta (YRD) region. We also observed source and movements of air masses that bring aerosol particles and may be considered as the natural cause of aerosol particles in the region. For this purpose, the Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) model was used to make paths of these air masses for their sources.

Keywords : Aerosol optical depth; MODIS; MISR; Angstrom exponent; HYSPLIT model.

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A COMPARATIVE STUDY ON H'F MEASURED WITH IONOSONDE AND PREDICTED USING IRI – 2007 MODEL AT JAPANESE LONGITUDES DURING LOW SOLAR ACTIVITY YEARS

Paper ID – NCETST2101

A Paper Presented by-N. S. M. P. Latha Devi, P. S. Brahmanandam, K. S. Ramesh, and G. Uma

Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

ABSTRACT

This paper presents a comparative study on the important parameter of the ionosphere i. e. , the virtual height of the F layer (h'F) retrieved using ground based ionosonde radars and predicted by International Reference Ionosphere model (IRI-2007) at four different locations including Okinawa (Geographic Lat. 26. 40 N, Geographic long. 128. 10E), Yamagawa (Geographic Lat. 31. 20 N, Geographic long. 130. 370 E), Kokubunji (Geographic Lat. 35. 40 N, Geographic long. 139. 290 E), and Wakkanai (Geographic Lat. 45. 20 N, Geographic long. 141. 10 E) in Japanese longitudes during low sunspot activity years 2007 and 2008. The h'F starts increases from 0600 LT and reaches a maximum peak around 1200 LT. This increase in h'F altitudes is because of the solar production that occurs at higher altitudes during the sunrise period. The duration of observation of h'F is more during summer months while it is observed for shorter durations during winter months. The day-to-day variation in the F-layer height is very large during summer months while during winter it is quite negligible. It is revealed that the highest values of h'F are observed during summer and lowest values are observed during winter season in all four stations. From a comparative study between ionosonde retrieved and IRI-2007 model derived h'F values, it is observed that during low sun-spot activity years the IRI-2007 model underestimates the experimental values during all four seasons. The observed results of this research are discussed in light of available literature.

Key words: Ionosphere, IRI-2007 model, Ionosonde radar, E x B drifts, and dynamical and electro-dynamical processes.

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A COMPARATIVE STUDY ON IONOSPHERIC PARA-METER MEASURED WITH IONOSONDE AND PRE-DICTED USING IRI – 2007 MODEL AT JAPANESE LONGITUDES DURING LOW SOLAR ACTIVITY YEARS

Paper ID – NCETST2102

A Paper Presented by-N. S. M. P. Latha Devi
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

ABSTRACT

This paper presents a comparative study on the important pa-rameter of the ionosphere critical frequency of F2 layer (foF2) retrieved using ground based ionosonde radars and predicted by International Reference Ionosphere (IRI-2007) model at three different locations including Okinawa (Geographic Lat. 26.40 N, Geographic Long. 128.10E), Yamagawa (Geographic Lat. 31.20 N, Geographic Long. 130.370 E), and Kokubunji (Geographic Lat. 35.40 N, Geographic Long. 139.290 E), in the Japanese lon-gitudes during low sun spot activity years 2007 and 2008. From the present study it is revealed that the highest values of foF2 are observed during equinox and lowest values are observed during summer and winter seasons over Okinawa and Yamaga-wa, but at Kokubunji highest values of foF2 are observed during summer and lowest values are observed during winter. A com-parative study between ionosonde retrieved and IRI-2007 model derived foF2 values reveals that the IRI predicted values exhibit better agreement during all four seasons.

Key words: Ionosphere, IRI-2007 model, Ionosonde, ExB drifts, dynamical, electro dynamical processes.

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IONOSPHERIC RESPONSES TO GEOMAGNETIC STORMS OVER JAPANESE AND INDIAN LONGITUDE SECTORS

Paper ID – NCETST2103

A Paper Presented by-N.S.M.P. Latha Devi, G.Uma, P.S.Brahmanandam
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

ABSTRACT

The physical phenomena including the prompt penetration electric field, disturbance dynamo obtained from electric field, disturbed thermospheric winds and composition changes can play a significant role in restructuring the equatorial, low, mid and high-latitude ionosphere during storm-time. In this present research, the electric field(indirectly) and thermospheric wind (retrieved from an empirical disturbance wind model) components are effectively utilized as alternate database to ascertain the individual role of physical processes by studying the ionospheric response over Japanese and Indian longitude sectors during two geomagnetic storms occurring on 31 March, 2001 and 20 November, 2003 using ground (ionospheric parameters scaled from ionosondes and global ionospheric maps of total electron content measured by the ground-based GPS receivers) and satellite-borne (in-situ electron density data measured by the Planar Longmuir Probe onboard CHAMP satellite) measurements. It has been found that the equatorial ionization anomaly is expanded and intensified during the main phase of these two storms. In addition, the storm associated thermospheric wind is propagating equatorward during the recovery phase of these two storms that is responsible for a height rise in the virtual height of the F-layer (h'F) starting from mid to low and equatorial latitudes with a consistent time delay. An important reflection is that the ionospheric irregularities are found in the electron densities in the form of depletions nearly at anomaly crest region (_231N) as measured by the CHAMP satellite over the Japanese longitude sector during the main phase of the 20 November, 2003 storm during the pre mid night period that correspond to the time of rapid decrease (__30–35 nT/h) in Sym-H index due to prompt penetration of eastward electric fields into the low latitudes.

Keywords: Total electron content prompt penetration electric field CHAMP satellite and disturbance wind model.

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IONOSPHERE VARIABILITY OVER LOW-LATITUDE GNSS STATIONS DURING 24TH SOLAR MAXIMUM PERIOD

Paper ID – NCETST2104

A Paper Presented by-D. Venkata Ratnam G. Sivavaraprasad , N.S.M.P. Latha Devi
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

ABSTRACT

Global Positioning System (GPS) is a remote sensing tool of space weather and ionospheric variations. The dynamic variability of the low-latitude ionosphere is an imperative threat to the satellite-based radio communication and navigation ranging systems. The study of temporal and spatial variations in the ionosphere has triggered new investigations in modelling and forecasting the ionospheric variations. Hence, in this paper, the dynamism in the day-to-day, month-to-month and seasonal variability of the ionospheric Total Electron Content (TEC) has been explored during the solar maximum period, January-December 2013, of the 24th solar cycle. The spatial and temporal variations of the ionosphere are analysed using the TEC values derived from three Indian low-latitude GPS stations, namely, Bengaluru, Guntur and Hyderabad. The observed regional GPS-TEC variations are compared with the predicted TEC values of the International Reference Ionosphere (IRI-2012 and IRI-2007) models.. The maximum ionospheric TEC variability is found during March and September equinoxes, followed by December solstice while the minimum variability is observed during June solstice. IRI models are in reasonable agreement with GPS TEC but are overestimating during dawn hours (01:00–06:00 LT) as compared to the dusk hours. Higher percentage deviations are observed during equinoctial months than summer over EIA stations, Guntur and Hyderabad. GPS TEC variations are overestimated during dawn hours for all the seasons over Bengaluru. It has also been observed that positive storm effect (enhancement of TEC) is observed during the main phase of the March storm, 2013 (March 16–18, 2013) while both positive and negative storm effects (depletion of TEC) are registered during the main phase of the June storm, 2013 (June 28–30, 2013) at Bengaluru and Guntur, respectively. This analysis highlights the importance of upgrading the IRI models due to their discrepancies during quiet and disturbed states of the ionosphere and developing an early warning forecast system to alert about ionosphere variability.

Keywords: GNSS; GPS; Ionosphere; TEC; Ionosphere variability; IRI model

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A STUDY OF DESIGN AND FABRICATION OF HYBRID SYSTEM

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A Paper Presented by-Himabindu. B, Latha Devi N.S.M.P., Rajini Kanth. B, Pradyumn. N, Vinay Reddy. S, Kranthi Kiran. R

Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

ABSTRACT

An innovative idea of hybrid system which contains a solar tree with vertical axis wind turbine is proposed in this paper. Solar tree where hoist acts as a vertical support, and the photo voltaic cells are placed in such a manner they appear as leaves of a tree. They are turned towards south east, south and south west directions this makes the solar panel to be oriented towards the sun to capture maximum sun light. Secondly, a vertical axis wind turbine has been embedded on the top of solar tree to also capture the energy from the flowing wind.

The hybrid system is generally less noisy and takes full advantage of the wind's spiralling effect upon hitting an object in its path. The two sources for generating electricity are contained in the same structure, and operate simultaneously yet independently of one another from renewable energy sources such as the wind and the sun. Thus, fusion of smartly designed hybrid system helps us meet the growing power demand of our growing cites and also can increase efficiency of the renewable system by 50.8%.

Keywords: Solar PV tree, Wind turbine, Lenz2 VAWT, Solar irradiation and Orientation

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TEC RESPONSE DUE TO GEOMAGNETIC STORM AT LOW LATITUDE STATION

Paper ID – NCETST2106

A Paper Presented by-N.S.M.P.Latha Devi, D.Venkata Ratnam, S.Venkatesh
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

ABSTRACT

The responses of the ionosphere TEC due to the Geomagnetic storm have been investigated by using the Global Positioning System (GPS) data during 29 June, 2013 at low latitude station, K L University, Vaddeswaram,(Geographic latitude 16.44^0N, Geographic longitude 80.62^0E),India. The variations of VTEC during this storm are analyzed, significant deviations in VTEC during the main phase of the storms are observed. During June storm,TEC depeltions are observed. The depletion in VTEC is due to the thermospheric composition changes; however disturbance dynamo electric field also plays an important role. The GPS VTEC values compared with VTEC derived from IRI-2007 & IRI – 2012 models. It is observed that IRI models could not predict these variations during storm days. It has been found that the development of more accurate TEC models would be needed. So, it is necessary to modify the IRI models to get better accuracy.

Key words: GPS TEC, IRI TEC, low-latitude Indian station, geomagnetic storm.

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A COMPARATIVE STUDY ON IONOSPHERIC PARAMETERS MEASURED WITH IONOSONDE AND PREDICTED USING IRI MODEL AT JAPANESE LONGITUDES DURING AN EXTREMELY LOW SUN SPOT ACTIVITY YEAR

Paper ID – NCETST2107

A Paper Presented by-N.S.M.P.Latha Devi, P.S.Brahmanandam, G.Uma, D.Venkataratnam, K.S.Ramesh
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

ABSTRACT

We present a comparative study on one of the important parameters of ionosphere i.e., the height of the F2 layer (hmF2) retrieved using a ground based ionosonde radar predicted by IRI model (IRI-2007) at Japanese longitudes for different seasons in an extremely low sunspot activity year 2008. The present study used four different places including Okinawa, Yamagawa, Kokubunji and Wakkanai in Japanese longitudes sector in a view to assess the accuracy of IRI at entirely different longitudes which are associated with different dynamicaland electrodynamical processes. It is observed that during low sunspot activity year the IRI model overestimates the value of hmF2 at Japanese sector in two equinox seasons(vernal and autumn) and in in winter season from Pre-noon to evening hours. On contrary to above, the IRI model underestimates the hmF2 value at Japanese longitudes in summer season from pre-noon to evening hours.

Key words: Extreme low sunspot activity year, IRI and dynamical and electro dynamical processes.

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LOCAL TIME DEPENDENCE OF THE ONSET OF SCINTILLATIONS

Paper ID – NCETST2108

A Paper Presented by-N.S.M.P.latha Devi
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

The distribution of scintillation events observed as a function of time of onset over Waltair for every 15 minutes between 1800–0600 hrs IST (Indian standard time) during half a solar cycle (1997–2002) presented as a function of local time. A total of 1346 events has been identified during the above period of observation (1997-2002). It is observed that the onset of scintillations is more probable during pre-midnight hours and less during post-midnight hours. Scintillation patches start appearing as early as 1800 hrs IST (during 1997 and 1999) and reaches a peak value by about 2000 hrs IST scintillations start decaying gradually around 0500 hrs IST.

Keywords: scintillations, solar cycle

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DISCUSSION OF POSSIBLE LINK BETWEEN PLASMA BUBBLES AND BLOBS

Paper ID – NCETST2109

A Paper Presented by-N.S.M.P.Latha Devi
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, AP, India

ABSTRACT

In order to ascertain whether plasma bubbles and blobs belong to the same category or not, we have calculated power spectra of them by using a fast-Fourier transform (FFT). It is noticed that the power spectra of bubbles and blobs is showing nearly equal trends during 14-16 October 2001 and the first minima of spectra of bubbles and blobs are located at ~1 Hz which are equal to ~1.8-2.0 km wavelength. Since the power spectra of bubbles and blobs are similar in a spatial range of ~ 1.5 to 2.0 km, it is likely that blobs are generated when zonal electric fields inside bubbles move them all the way to topside ionosphere In addition, it has also been witnessed from our observational results that the presence of plasma blobs can be seen during the times of a downward reversal of ambient drift, which strongly indicates the effect of upward drifts inside plasma bubbles in the similar lines with the earlier hypothesis.

Keywords: Plasma bubbles, blobs, power spectra.

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ORANGE AND REDDISH-ORANGE LIGHT EMITTING SM^{3+} IONS DOPED ZINC LEAD TUNGSTEN TELLURITE GLASSES

Paper ID – NCETST2110

A Paper Presented by-*Ritu Sharma[1], M. Venkateswarlu[1*], Sk. Mahamuda[1], K. Swapna[1], , Srinivasa Rao[1,2 *] and G. Vijaya Prakash[3]*

[1]Department of Physics, K.L.University, Vaddeswaram, Guntur (Dt), A.P.

[2]Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi-110 042

[3]Department of Physics, Indian Institute of Technology, Haus Khaz, New Delhi- 110 042

ABSTRACT

Zinc Lead Tungsten Tellurite glasses (ZnPbWTe) doped with different concentrations of Sm^{3+} ions (0.1, 0.5, 1.0, 1.5, 2.0 and 2.5 mol%) have been fabricated by using melt quenching technique. Structural and compositional analysis has been carried out for the prepared glasses from XRD and FTIR spectral profile. Optical absorption and photoluminescence spectra have been recorded for titled glasses at room temperature. From the absorption, nature of the metal - ligand bond in the titled glasses has been examined. The spectral intensities of Sm^{3+} transition observed in absorption spectra have been calculated by using Judd - Ofelt theory. The Judd–Ofelt intensity parameters (Ω_λ , λ=2, 4, and 6) and transition probability (A) have been evaluated. The predicted radiative lifetime (τ_{rad}) and branching ratio (β_R) values of the $^4G_{5/2}$ excited level of the Sm^{3+} ions to the lower energy levels were determined and compared with the experimentally measured values. The photoluminescence spectra of these glasses consists of four peaks 565, 602, 648 and 709 nm corresponding to the transitions $^4G_{5/2} \rightarrow {}^6H_{5/2}$, $^4G_{5/2} \rightarrow {}^6H_{7/2}$, $^4G_{5/2} \rightarrow {}^6H_{9/2}$ and $^4G_{5/2} \rightarrow {}^6H_{11/2}$ respectively. The lifetime spectra corresponding to the $^4G_{5/2}$ level of the Sm^{3+} ion is found to be single exponential at lower concentration whereas it becomes non-exponential at higher concentration which is due to the energy transfer taking place among the neighbouring Sm^{3+} ions. Among the prepared glasses, ZnPbWTeSm01 glass exhibit higher values of emission characteristic parameters and quantum efficiency for the $^4G_{5/2}$ level suggesting that ZnPbWTeSm01glass could be potentially applicable for orange and reddish-orange laser applications.

Keywords: *Samarium, glass, JO Parameters, radiative properties*

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ELECTRON PARAMAGNETIC RESONANCE AND OPTICAL ABSORPTION STUDIES OF CHROMIUM IONS DOPED BOROPHOSPHATE GLASSES

Paper ID – NCETST2111

A Paper Presented by-V. Aruna[1], M.Venkateswarlu[2*],A. Ramesh Babu[1], MVVKsrinivas Prasad[2],KLSV Prasad[3], , S. H. Nandyala4

[1] Department of Physics, Bapatla Engineering College, Bapatla-522102, AP, India

[2] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram-522502, AP, India

[3]Department of Nanotechnology, Acharya Nagarjuna University, Nagarjunanagar-522510, Guntur, India

[4]School of Metallurgy and Materials, University of Birmingham, Edgbaston, Birmingham B15 2TT, United Kingdom

[*]Corresponding author E-mail: mvrmphil@kluniversity.in

ABSTRACT

Chromium (Cr^{3+}) ions doped borophosphate glasses was prepared by well known melt quenching technique and their Electron paramagnetic resonance (EPR), Optical absorption and FTIR spectra were investigated for application to various optical applications. The EPR spectra of the doped glasses exhibit two resonance signals at g=4.23 and g=1.96. The optical absorption spectrum shows bands corresponding to the presence of Cr^{3+} ions in octahedral symmetry. The crystal field parameters Dq, Racha parameter B and optical parameters like optical band gap, Urbach energy have been evaluated from the optical absorption spectra. The consequences supports the strong distorted Cr^{3+} ions in the present host environment with the craving of g values on crystal field parameters.

Keywords: borophosphate glass, Chromium ions, EPR studies, optical absorption.

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SPECTROSCOPIC PROPERTIES OF VANADIUM IONS DOPED LI_2O-ZNO-B_2O_3-P_2O_5 GLASSES

Paper ID – NCETST2112

A Paper Presented by- V. Aruna[1],M.Venkateswarlu[2], Dr. A. Ramesh[1]

[1]Department of Physics, Bapatla Engineering College, Bapatla – 522101

[2] Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram-522502, AP, India

ABSTRACT

The present Glass matics of composition 5 Li_2O-5ZnO - (60) B_2O_3- (30-x) P_2O_5- x V_2O_5 (where x=0.5, 1, 1.5, 2, 2.5 wt%) were prepared by normal melt quenching technique and the amorphous nature of the glass samples were confirmed by XRD studies. The physical properties of the glasses were calculated based on the composition. Optical and structural properties were studied for the prepared samples. Optical band gap and Urbach energies were evaluated from absorption spectra, FTIR spectra of the prepared glasses were recorded in the wave number range 400-1600 cm^{-1} in order to know the various structural units present in the glass network. From the ESR spectra, the spin Hamiltonian parameters were evaluated.

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EPR AND OPTICAL SPECTROSCOPY OF IRON DOPED MIXED ALKALI CADMIUM PHOSPHATE GLASSES

Paper ID – NCETST2113

A Paper Presented by-M. Venkateswarlu[c] G. Giridhar[a], D. Punyaseshudu[b] and M.V.V.K. Srinivas Prasad[c]

[a]Department of Nanotechnology, Acharya Nagarjuna University, Nagarjunanagar - 522510, Guntur, India

[b]Department of Physics, Rayalaseema University, Kurnool, India

[c]Department of Physics, KL University, Vijayawada,

ABSTRACT

Iron doped mixed alkali cadmium phosphate (LiNaCdP) glasses of the following chemical composition xLi_2O + $(20-x)Na_2O$ + 20CdO + $59.5P_2O_5$ + $0.5Fe_2O_3$ ($5 < x < 15$) were prepared by melt quenching technique to study the mixed alkali effect. To manifest the mixed alkali eect, electron paramagnetic resonance and optical absorption studies were carried out at room temperature for these phosphate glasses. The physical and optical properties of these glasses have been evaluated. The results accomplished for the present glass system point out the presence of mixed alkali effect for x = 10

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SPECTROSCOPIC INVESTIGATIONS ON PR3+ DOPED ALKALI FLUORO BOROPHOSPHATE GLASSES

Paper ID – NCETST2114

A Paper Presented by-B. Rupa Venkateswara Rao[1]., M. Venkateswarlu[2 *],M.V.V.K. Srinivas Prasad2, L. Tanuj Kumar[3],

1Department of Physics, V.R. Siddhartha Engineering College, Vijayawada – 520 007, AP, India.
2Department of Physics, K L University, Green Fields, Vaddeswaram – 522 502, AP, India.
3Department of Physics, Ramachandra College of Engineering, Eluru – 534 007, AP, India.

ABSTRACT

Alkali fluoroborophosphate glasses doped with praseodymium fluoride has been prepared and characterized by X-Ray diffraction, UV–Visible spectroscopy, differential scanning calorimetry, excited and emission spectra analysis. Judd-Ofelt theory has been applied to evaluate the optical parameters such as radiative transition probabilities, radiative lifetime, branching ratios etc. of praseodymium, Pr^{3+} ions. The trend found in the JO intensity parameter is $\Omega_6 > \Omega_4 > \Omega_2$, it indicates the glass system is favorable for the lasing emission $^1D_2 \rightarrow {}^3H_4$ in IR wavelength. Among the studied glasses, the glass with 20 mole% of NaF appears to be an ideal material for carrying out further investigations on samples of appropriate size to examine laser action to use them in glass laser technology and optical communications.

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OPTICAL AND SPECTROSCOPIC PROPERTIES OF DEEP GREEN EMITTING HO^{3+} DOPED ZNPBWTE GLASSES FOR OPTOELECTRONIC AND LASER APPLICATIONS

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A Paper Presented by-Ritu Sharma[a], M. Venkateswarlu[c],Aman Prasad[a], Sumandeep Kaur[a], Nisha Deopa[b], Rekha Rani[c], A.S. Rao[a],

a Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi 110 042, India
b Department of Physics, Chaudhary Ranbir Singh University, Rohtak bypass Road, Jind, Haryana 26102, India
c Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram-Guntur, AP, India

ABSTRACT

Thulium (Ho^{3+}) doped Zinc Lead Tungsten Tellurite (ZnPbWTe) glasses having the composition 5ZnO-15PbO-20WO_3-(60-x)TeO_2-xHo_2O_3 were prepared by using melt quenching technique and analysed with optical absorption, photoluminescence (PL) and PL decay spectral measurements. The absorption data was used to calculate oscillator strengths and the Judd-Ofelt (J-O) parameters. The emission spectra were recorded under 654 nm excitation exhibit intense fluorescent peaks 650 nm and 806 nm. The emission spectral data correlated with J-O theory was used to determine radiative parameters like radiative transition probability (AR), total radiative transition probability (A_T), branching ratio (β_R) and radiative lifetimes (τ_R) for the fluorescent levels of Tm3+ ions in ZnPbWTe glasses. The decay curves for the $^1G_4 \rightarrow {}^3F_4$ transition under 472 nm excitation were investigated to calculate experimental lifetimes (τexp) and quantum efficiency (η). The σse and η reveals that ZnPbWTe glasses doped with 1 mol% of Tm^{3+} ions are most suitable for fabricating deep red emitting optoelectronic devices and lasers.

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RESONANT ENERGY TRANSFER AND CROSS RELAXATION MECHANISM STUDIES OF A ALKALINE EARTH LEAD FLUORO ALUMINO BORATE GLASSES FOR W-LED APPLICATIONS

Paper ID – NCETST2116

A Paper Presented by-*P. Rekha Rani*[1], *M. Venkateswarlu*[1*], *K. Swapna*[1], *Sk. Mahamuda*[1], *M.V.V.K.S.Prasad*[1], *A. Srinivasa Rao*[2] *and* *G. Vijaya Prakash*[3]

[1]*Department of Physics, K.L.University, Vaddeswaram, Guntur (Dt), A.P.*

[2]*Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi-110 042*

[3]*Department of Physics, Indian Institute of Technology-Delhi, Haus Khaz, New Delhi- 110 016.*

Corresponding author: e-mail: mvrmphil@kluniversity.in

ABSTRACT

Rare earth ions doped glasses have concern among the researchers for their usage in several optoelectronic devices. Particularly Dy^{3+} doped glasses have significant role in the fields ofespecially in white light emitting diodes (w-LEDs). Optically transparent Dy^{3+} doped Alkaline earth lead fluoro alumino borate (BaPbFAlB) glasses have been synthesized by melt quenching technique. The amorphous nature of the un-doped glass has been confirmed through XRD and SEM measurements. The FT-IR spectral data recorded for an un-doped glass gives the information pertaining to various functional groups . The weight loss in the as-prepared un-doped glass has been studied by TGA studies. TFurther, the radiative parameters such as radiative transition probabilities (A_R), branching ratios (β_R), and the radiative lifetimes (τ_R) the prominent $^4F_{9/2}\rightarrow{}^6H_{15/2}$ and $^4F_{9/2}\rightarrow{}^6H_{13/2}$ emission transitions were calculated by using J-O parameters. Luminescence spectra measured for different concentrations of Dy^{3+}-doped glasses show concentration quenching beyond 1mol% and the luminescence quenching has been explained by using cross-relaxation (CR) channels and resonant energy transfer (RET). To obtain the lasing capabilities of these glasses, the quantum efficiency (η) are measured by recording the decay curves for the obtained emission levels $^4F_{9/2}\rightarrow{}^6H_{15/2}$ and $^4F_{9/2}$-$^6H_{13/2}$. The obtained results indicate that the optimized prepared Dy^{3+}-doped glass may be useful for the warm white light emitting applications as well as for luminescent display devices.

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OPTICAL AND SPECTROSCOPIC STUDIES ON SM^{3+} DOPED ALKALI FLUORO BOROPHOSPHATE GLASSES

Paper ID – NCETST2117

A Paper Presented by-B. Rupa Venkateswara Rao[1]., M. Venkateswarlu[2 *],M.V.V.K. Srinivas Prasad2, L. Tanuj Kumar[3],

1Department of Physics, V.R. Siddhartha Engineering College, Vijayawada – 520 007, AP, India.
2Department of Physics, K L University, Green Fields, Vaddeswaram – 522 502, AP, India.
3Department of Physics, Ramachandra College of Engineering, Eluru – 534 007, AP, India.

ABSTRACT

Alkali fluoroborophosphate glasses doped with Sm^{3+} ions fluoride has been prepared and characterized by X-Ray diffraction, UV–Visible spectroscopy, differential scanning calorimetry, excited and emission spectra analysis. Judd-Ofelt theory has been applied to evaluate the optical parameters such as radiative transition probabilities, radiative lifetime, branching ratios etc. of praseodymium, Sm^{3+} ions. The trend found in the J-O intensity parameter is $\Omega_4 > \Omega_2 > \Omega_6$, The luminescence spectra exhibit three emission bands 565nm, 602nm and 650nm in the visible region due to the $^4G_{5/2} \rightarrow {}^6H_{5/2}$, $^6H_{7/2}$, and $^6H_{9/2}$ transitions which gives greenish yellow, reddish orange and red, which will be useful in storage devices, display appliances and in medical diagnosis. Among the studied glasses, the glass with 1.0 mole% of NaF appears to be an ideal material for carrying out further investigations on samples of appropriate size to examine laser action to use them in glass laser technology and optical communications.

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LUMINESCENCE AND SPECTROSCOPIC STUDIES ON DY^{3+} DOPED MIXED ALKALI FLUORO BOROPHOSPHATE GLASSES

Paper ID – NCETST2118

A Paper Presented by-B. Rupa Venkateswara Rao[1]., M. Venkateswarlu[2 *],M.V.V.K. Srinivas Prasad2, L. Tanuj Kumar[3],

1Department of Physics, V.R. Siddhartha Engineering College, Vijayawada – 520 007, AP, India.
2Department of Physics, K L University, Green Fields, Vaddeswaram – 522 502, AP, India.
3Department of Physics, Ramachandra College of Engineering, Eluru – 534 007, AP, India.

ABSTRACT

Mixed Alkali fluoroborophosphate glasses doped with Dy^{3+} ions fluoride has been prepared by melt quenching technique and characterized by X-Ray diffraction, UV–Visible spectroscopy, differential scanning calorimetry, excited and emission spectra analysis. Judd-Ofelt theory has been applied to evaluate the optical parameters such as radiative transition probabilities, radiative lifetime, branching ratios etc. of praseodymium, Dy^{3+} ions. The trend found in the J-O intensity parameter is $\Omega_4 > \Omega_2 > \Omega_6$, To obtain the lasing capabilities of these glasses, the quantum efficiency (η) are measured by recording the decay curves for the obtained emission levels $^4F_{9/2} \rightarrow {}^6H_{15/2}$ and $^4F_{9/2}$-$^6H_{13/2}$. Inokuti-Hirayama model applied to the decay spectral profiles confirm dipole-dipole interaction responsible for their conversion from exponential to non-exponential. From the luminescence spectra, the yellow-to-blue(Y/B) luminescence intensity ratios, color chromaticity coordinates(x,y) and correlated color temperatures (CCT) of the glasses have also been estimated to evaluate the white light generation with respect to Dy^{3+} ion concentration. The obtained results indicate that the optimized prepared Dy^{3+}-doped glass may be useful for the warm white light emitting applications as well as for luminescent display devices.

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PR^{3+} IONS DOPED SINGLE ALKALI AND MIXED ALKALI FLUORO TUNGSTEN TELLURITE GLASSES FOR VISIBLE RED LUMINESCENT DEVICES

Paper ID – NCETST2119

A Paper Presented by-Ch.B Annapurna Devi[a], Sk. Mahamuda[a], K. Swapna[a], M. Venkateswarlu[a*], A. Srinivasa Raoa,[b],, G. Vijaya Prakash[c]

[a] Department of Physics, Koneru Lakshmaiah Education Foundation, Green Fields, Vaddeswaram, 522 502 Guntur (Dt), Andhra Pradesh, India

[b] Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi 110 042, India

c Department of Physics, Indian Institute of Technology-Delhi, Hauz Khas, New Delhi 110 016, India

ABSTRACT

The present work illustrates the optical absorption and fluorescence properties of Pr^{3+} ions doped single alkali and mixed alkali fluoro tungsten tellurite glasses prepared by using melt quenching technique. The prepared glasses were characterized by using absorption, excitation and photoluminescence (PL) spectral measurements. The energies of the absorption spectral features called oscillator strengths were calculated using area method and in turn used to evaluate the Judd-Ofelt (J-O) intensity parameters (Ω_2, Ω_4, Ω_6). Such J-O parameters are used to estimate various radiative parameters such as radiative transition probabilities (AR), branching ratios (β_R), and radiative lifetimes (τ_R) for the prominent fluorescent levels of Ho^{3+} ions in these glasses. Spectroscopic investigations are performed through Optical absorption, excitation, emission and emission decay measurements to understand visible luminescence and lasing potentialities of the prepared glasses. The bonding parameters (δ) have been estimated from the absorption spectra to know about the bonding nature between Ho^{3+} ions and nearby ligands. The Urbach energy are estimated from the absorption spectral data and verified the amorphous nature of the present glass system from the obtained values. The experimental lifetimes (τ_{exp}) are found to be decreasing with increasing Ho^{3+} ion concentration owing to energy transfer. The quantum efficiency (η) of BaPbAlFBHo glasses have been measured by coupling the experimental lifetime (τ_{exp}), measured from the decay profiles with radiative lifetimes (τ_R), obtained from J-O theory. The strong visible emission, large stimulated emission cross-section (σ_{se}), high branching ratios (β_R) and good quantum efficiency (η) were observed for the most intense transition $^5S_2 \rightarrow {}^5I_8$ (green) in BaPbAlFBHo1.0 glass, indicating the suitability of this glass for the development of laser devices operating in visible region.

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PHOTOLUMINESCENCE PROPERTIES OF DY^{3+} IONS DOPED TUNGSTEN TELLURITE GLASSES FOR W-LED APPLICATIONS

Paper ID – NCETST2120

A Paper Presented by-M. Venkateswarlu[1*], Ritu Sharma[1], Sk. Mahamuda[1], K. Swapna[1], Srinivasa Rao[2], and G. Vijaya Prakash[3]

[1]Department of Physics, K L University, Vaddeswaram, Guntur (Dt), A.P.

[2]Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi-110 042

[3]Department of Physics, Indian Institute of Technology, Haus Khaz, New Delhi- 110 042

ABSTRACT

An innovative series of Dy^{3+} ions doped Tungsten Tellurite glasses (ZnPbWTe) was synthesized by melt quenching technique and optical spectrum such as IR transmission and absorption in UV-vis-NIR regions was measured. The fluorescence spectra and lifetimes of $^4F_{9/2}$ level of Dy^{3+} ions of the present series of glasses have been measured using the 410 nm laser as an excitation source. The fluorescence spectra consists of two fluorescent peaks in two regions blue and yellow related to the transitions $^4F_{9/2}\rightarrow{}^6H_{15/2}$ and $^4F_{9/2}\rightarrow{}^6H_{13/2}$ respectively. The fluorescence decay from $^4F_{9/2}$ level has been measured by monitoring the intense $^4F_{9/2}\rightarrow{}^6H_{13/2}$ transition. The CIE colour chromaticity coordinates (x, y) and Y/B ratio were also evaluated from the fluorescence spectra for all the glasses. The colour coordinates evaluated for these glasses fall within the white light region, hence the present series of glasses are aptly suitable for lasing and white-LED applications.

Keywords: Dysprosium, Tellurite glasses, fluorescence and CIE co-ordinates

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STUDY ON LIQUID MIXTURES OF N-METHYLANILINE AND N,N-DIMETHYLFORMAMIDE WITH TEMPERATURE VARIATION

Paper ID – NCETST2121

A Paper Presented by-A.Nagarjuna, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

The comparative study of the molecular interaction in the binary mixtures of N-methylaniline and N,N-dimethylformamide using experimental data of viscosity (η), ultrasonic velocity (U) and density (ρ) was carried out at 303.15 K, 308.15K and 313.15K. The parameters molar volume (V), acoustical impedance (Z), free length (L_f), enthalpy (H), internal pressure (π_i), and excess values of some parameter's such as excess isentropic compressibility (K_s^E), excess Enthalpy (H^E), excess molar volume (V_m^E), excess Gibb's free energy (ΔG^{*E}) and excess free length (L_f^E) explained on the basis of the intermolecular interactions present in these liquid mixtures. The excess functions have been fitted to the Redlich-Kister type polynomial equation.

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A STUDY ON INTERPRETATION OF INTERMOLECULAR INTERACTIONS IN SOME LIQUID MIXTURES

Paper ID – NCETST2122

A Paper Presented by-T.kalimulla, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

The viscosity (η), ultrasonic velocity (U) and density (ρ) have been measured for the binary liquid mixtures containing N-methylaniline and 2-methylcyclohexanone at 303.15 K, 308.15K and 313.15K.. The experimental data have been used for a comparative study of the molecular interaction in the binary mixture using the parameters molar volume (V), acoustical impedance (Z), free length (L_f), enthalpy (H), internal pressure (π_i), and excess values of some parameter's such as excess isentropic compressibility (K_s^E), excess Enthalpy (H^E), excess molar volume (V_m^E), excess Gibb's free energy (ΔG^{*E}) and excess free length (L_f^E) explained on the basis of the intermolecular interactions present in these liquid mixtures. The excess functions have been fitted to the Redlich-Kister type polynomial equation.

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ESTIMATION OF INTERMOLECULAR INTERACTIONS IN CERTAIN LIQUID MIXTURES WITH VARYING TEMPERATURE

Paper ID – NCETST2123

A Paper Presented by-K.Govindarao, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

The viscosity (η), ultrasonic velocity (U) and density (ρ) have been measured for the binary liquid mixtures containing formamide and O-toluidine at 303.15 K, 308.15K and 313.15K.. The experimental data have been used for a comparative study of the molecular interaction in the binary mixture using the parameters molar volume (V), acoustical impedance (Z), free length (L_f), enthalpy (H), internal pressure (π_i), and excess values of some parameter's such as excess isentropic compressibility (K_s^E), excess Enthalpy (H^E), excess molar volume (V_m^E), excess Gibb's free energy (ΔG^{*E}) and excess free length (L_f^E) explained on the basis of the intermolecular interactions present in these liquid mixtures. The excess functions have been fitted to the Redlich-Kister type polynomial equation.

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EFFECT OF TEMPERATURE ON SOME BINARY LIQUID MIXTURES

Paper ID – NCETST2124

A Paper Presented by-G.V.Gangadhar rao, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

The viscosity (η), ultrasonic velocity (U) and density (ρ) have been measured for the binary liquid mixtures containing 2-methylcyclohexanone and N-mtehylformamide at 303.15 K, 308.15K and 313.15K.. The experimental data have been used for a comparative study of the molecular interaction in the binary mixture using the parameters molar volume (V), acoustical impedance (Z), free length (L_f), enthalpy (H), internal pressure (π_i), and excess values of some parameter's such as excess isentropic compressibility (K_s^E), excess Enthalpy (H^E), excess molar volume (V_m^E), excess Gibb's free energy (ΔG^{*E}) and excess free length (L_f^E) explained on the basis of the intermolecular interactions present in these liquid mixtures. The excess functions have been fitted to the Redlich-Kister type polynomial equation.

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COMPARATIVE STUDY OF BINARY LIQUID MIXTURES CONTAINING ANILINE AND O-CHLOROANILINE AT DIFFERENT TEMPERATURES

Paper ID – NCETST2125

A Paper Presented by-T.kalimulla, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

The viscosity (η), ultrasonic velocity (U) and density (ρ) have been measured for the binary liquid mixtures containing aniline and O-chloroaniline at 303.15 K, 308.15K and 313.15K.. The experimental data have been used for a comparative study of the molecular interaction in the binary mixture using the parameters molar volume (V), acoustical impedance (Z), free length (L_f), enthalpy (H), internal pressure (π_i), and excess values of some parameter's such as excess isentropic compressibility (K_s^E), excess Enthalpy (H^E), excess molar volume (V_m^E), excess Gibb's free energy (ΔG^{*E}) and excess free length (L_f^E) explained on the basis of the intermolecular interactions present in these liquid mixtures. The excess functions have been fitted to the Redlich-Kister type polynomial equation.

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INTERPRETATION OF INTERACTIONS IN LIQUID MIXTURES CONTAINING N-METHYL ANILINE AND N-METHYLFORMAMIDE AT VARIOUS TEMPERATURES

Paper ID – NCETST2126

A Paper Presented by-A.Nagarjuna, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

The experimental data of viscosity (η), ultrasonic velocity (U) and density (ρ) have been measured for the binary liquid mixtures containing N-methylaniline and N-methylformamide at 303.15 K, 308.15K and 313.15K.. This is used for a comparative study of the molecular interaction in the binary mixture using the parameters molar volume (V), acoustical impedance (Z), free length (L_f), enthalpy (H), internal pressure (π_i), and excess values of some parameter's such as excess isentropic compressibility (K_s^E), excess Enthalpy (H^E), excess molar volume (V_m^E), excess Gibb's free energy (ΔG^{*E}) and excess free length (L_f^E) explained on the basis of the intermolecular interactions present in these liquid mixtures. The excess functions have been fitted to the Redlich-Kister type polynomial equation.

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STUDY ON LIQUID MIXTURES OF N,N-DIMETHYLANILINE AND N,N-DIMETHYLFORMAMIDE WITH TEMPERATURE VARIATION

Paper ID – NCETST2127

A Paper Presented by-K.Govinda Rao, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

The comparative study of the molecular interaction in the binary mixtures of N,N-dimethylaniline and N,N-dimethylformamide using experimental data of viscosity (η), ultrasonic velocity (U) and density (ρ) was carried out at 303.15 K, 308.15K and 313.15K. The parameters molar volume (V), acoustical impedance (Z), free length (L_f), enthalpy (H), internal pressure (π_i), and excess values of some parameter's such as excess isentropic compressibility (K_s^E), excess Enthalpy (H^E), excess molar volume (V_m^E), excess Gibb's free energy (ΔG^{*E}) and excess free length (L_f^E) explained on the basis of the intermolecular interactions present in these liquid mixtures. The excess functions have been fitted to the Redlich-Kister type polynomial equation.

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INTERPRETATION OF INTERACTIONS IN LIQUID MIXTURES CONTAINING N,N-DIMETHYLANILINE AND N-METHYLFORMAMIDE AT VARIOUS TEMPERATURES

Paper ID – NCETST2128

A Paper Presented by-G.V.Gangadhar rao, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

The experimental data of viscosity (η), ultrasonic velocity (U) and density (ρ) have been measured for the binary liquid mixtures containing N,N-dimethylaniline and N,N-dimethylformamide at 303.15 K, 308.15K and 313.15K.. This is used for a comparative study of the molecular interaction in the binary mixture using the parameters molar volume (V), acoustical impedance (Z), free length (L_f), enthalpy (H), internal pressure (π_i), and excess values of some parameter's such as excess isentropic compressibility (K_s^E), excess Enthalpy (H^E), excess molar volume (V_m^E), excess Gibb's free energy (ΔG^{*E}) and excess free length (L_f^E) explained on the basis of the intermolecular interactions present in these liquid mixtures. The excess functions have been fitted to the Redlich-Kister type polynomial equation.

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THERMODYNAMIC AND VOLUMETRIC PROPERTIES IN MIXTURES: A STUDY

Paper ID – NCETST2129

A Paper Presented by-K.Govinda Rao, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

Densities and Speed of sound for the binary liquid mixtures of cyclohexanone with mole fractions of benzoates – Ethyl-4-hydroxy benzoate and p-Methoxy benzoic acid have been estimated with the standard technique at 303.15, 308.15 and 313.15K. From these experimental results, different thermo-dynamic parameters such as enthalpy (H), adiabatic compressibility (β_s), free length (L_f) ,molar volume (V_m) and their excess properties were determined. These excess parameters have been fitted to the Redlich–Kister type polynomial equation using the least square method. Further estimate the partial molar volumes ($\bar{V}_{m,1}$,$\bar{V}_{m,2}$) from the results of V_m^E .The intra/inter molecular interactions presence in the liquid mixtures was perceived by studying the deviations obtained in the excess properties.

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VOLUMETRIC AND THERMO-ACOUSTIC PROPERTIES IN SOME BINARY MIXTURES

Paper ID – NCETST2130

A Paper Presented by-T.Kalimulla, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

Densities, viscosity and Speed of sound for the binary liquid mixtures of 2-methylcyclohexanone with O-toluidine have been estimated with the standard technique at 303.15, 308.15 and 313.15K. From these experimental results, different thermo-dynamic parameters such as enthalpy (H), adiabatic compressibility (β_s), free length (L_f) ,molar volume (V_m) and their excess properties were determined. These excess parameters have been fitted to the Redlich–Kister type polynomial equation using the least square method. Further estimate the partial molar volumes ($V_{m,1}$,$V_{m,2}$) from the results of V_m^E .The intra/inter molecular interactions presence in the liquid mixtures was perceived by studying the deviations obtained in the excess properties.

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INSIGHTS INTO INTERMOLECULAR INTERACTIONS IN CERTAIN LIQUID MIXTURES

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A Paper Presented by-G.V.Gangadhara rao, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

The experimental data of viscosity (η), ultrasonic velocity (U) and density (ρ) have been measured for the binary liquid mixtures containing 2-methylcyclohexanone and N,N-dimethylaniline at 303.15 K, 308.15K and 313.15K. This is used for a comparative study of the molecular interaction in the binary mixture using the parameters molar volume (V), acoustical impedance (Z), free length (L_f), enthalpy (H), internal pressure (π_i), and excess values of some parameter's such as excess isentropic compressibility (K_s^E), excess Enthalpy (H^E), excess molar volume (V_m^E), excess Gibb's free energy (ΔG^{*E}) and excess free length (L_f^E) explained on the basis of the intermolecular interactions present in these liquid mixtures. The excess functions have been fitted to the Redlich-Kister type polynomial equation. Further estimate the partial molar volumes ($\bar{V}_{m,1}$,$\bar{V}_{m,2}$) from the results of V_m^E .The intra/inter molecular interactions presence in the liquid mixtures was perceived by studying the deviations obtained in the excess properties.

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A THERMODYNAMIC APPROACH TO INTERMOLECULAR INTERACTIONS IN LIQUIDS

Paper ID – NCETST2132

A Paper Presented by-A.Nagarjuna, Shaik Babu

Department of Physics, Koneru Lakshmaiah Educational Foundation, Vaddeswaram, Guntur - 522 510, India

ABSTRACT

The experimental data of viscosity (η), ultrasonic velocity (U) and density (ρ) have been measured for the binary liquid mixtures containing 2-methylcyclohexanone and N,N-dimethylformamide at 303.15 K, 308.15K and 313.15K.. This is used for a comparative study of the molecular interaction in the binary mixture using the parameters molar volume (V), acoustical impedance (Z), free length (L_f), enthalpy (H), internal pressure (π_i), and excess values of some parameter's such as excess isentropic compressibility (K_s^E), excess Enthalpy (H^E), excess molar volume (V_m^E), excess Gibb's free energy (ΔG^{*E}) and excess free length (L_f^E) explained on the basis of the intermolecular interactions present in these liquid mixtures. The excess functions have been fitted to the Redlich-Kister type polynomial equation. Further estimate the partial molar volumes ($\bar{V}_{m,1}$,$\bar{V}_{m,2}$) from the results of V_m^E .The intra/inter molecular interactions presence in the liquid mixtures was perceived by studying the deviations obtained in the excess properties.

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EFFECT OF ZRO_2 NANO FILLERS ON PAN-BASED GEL POLYMER ELECTROLYTES AND THEIR PERFORMANCE IN PROTON BATTERIES

Paper ID – NCETST2134

A Paper Presented by-N. Krishna Jyothi[1], M.Gnana Kiran[1] and K Vijaya Kumar[2]
[1]Department of Physics, K L University, Vaddeswaram, Guntur, India 522502
[2]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

Nanocomposite polymer electrolyte materials are very attractive for components of batteries and opto-electronic devices. PAN-NH_4I polymer electrolytes and their nanocomposites were prepared by using addition of different wt % of ZrO_2 nano fillers. The nanocomposite polymer electrolytes were systematically characterized by X-ray diffraction (XRD) and ac-impedance spectroscopy. The X-ray diffraction pattern indicated the amorphous nature of the polymer electrolytes. The magnitude of conductivity increased with increase in the concentration of the ZrO_2 nano filler and temperature. The highest ionic conductivity achieved was 1.2 x 10^{-6} S/cm for the sample prepared with 15 wt % of ZrO_2 at room temperature. The charge transport in the present nanocomposite polymer electrolyte was obtained using Wagner's polarization technique, which demonstrated the charge transport to be mainly due to ions. Using these (PAN- NH_4I) polymer electrolyte and (PAN- NH_4I -ZrO_2) nanocomposite polymer electrolyte, solid-state electrochemical cells were fabricated and their discharge profiles were studied under a constant load of 100 kΩ.

Key words: solution casting technique; Solid polymer electrolyte; XRD; Dielectric properties.

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IMPEDANCE STUDIES OF POLY (VINYLIDENE FLUORIDE) BASED NABF$_4$DOPED SOLID POLYMER ELECTROLYTES

Paper ID – NCETST2135

A Paper Presented by-N. Krishna Jyothi[1], M. Narasimha Rao[2], K. Vijaya Kumar[3]

[1]Dept. of Physics, K L University, Vaddeswaram, Guntur-522502-INDIA

[2]Dept. of Physics, Priyadarshini Institute of Science and Technology for Women, Khammam, Telangana, India-507001.

[3]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

An investigation is carried out on a new gel polymer electrolyte systems consisting of poly (vinylidene fluoride) (PVdF) as a host polymer, Sodium tetrafloroborate ($NaBF_4$), as salt. Polymer thin films were prepared by solution casting technique and the obtained films were subjected to different characterizations to confirm their structure, complexation and thermal changes. IR studies revealed that the complexation of the polymer PVdF with salt $NaBF_4$. DSC studies showed the thermal stability of the polymer electrolytes. In DSC Plot of PVdF + $NaBF_4$ (70:30) wt% composite, there is a Corresponding steep dip at lower temperature at -40^oC which may be the glass transition temperature for PVdF + $NaBF_4$ (70:30). The role of interaction between polymer hosts and salts on conductivity is discussed using the results of A.C. impedance studies. Room temperature (30°C) A.C. Conductivity of $6.54x10^{-4}$ Scm^{-1} was observed in PVDF+ $NaBF_4$ polymer electrolyte systems.

Key words: AC conductivity; Solid polymer electrolyte; Impedance spectroscopy; Dielectric properties.

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SYNTHESIS, STRUCTURAL & DIELECTRICAL PROPERTIES OF SODIUM BICARBONATE ($NAHCO_3$) DOPED PAN BASED COMPOSITE POLYMER ELECTROLYTE

Paper ID – NCETST2136

A Paper Presented by-N. Krishna Jyothi[1], K. Vijaya Kumar[2]

[1]Dept. of Physics, K L University, Vaddeswaram, Guntur-522502-INDIA

[2]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

Solid polymer electrolytes based on poly acylonitrile (PAN) doped with $NaHCO_3$ have been prepared by using solution-casting method. The electrical studies of all the prepared polymer electrolyte samples of PAN:$NaHCO_3$ (90:10; 80:20; 70:30 and 60:40) have been performed using AC impedance spectroscopy technique from 50 Hz -1MHz. The variation of the conductivity with salt concentration ranging from 10 to 40 wt% is studied. From the complex impedance plot, the maximum ionic conductivity has been found to be 2.52 x 10^{-6} S/cm in 70PAN:30$NaHCO_3$ polymer electrolyte system at 303K. The ionic conductivity of the polymer electrolyte increases with the increase of temperature. Dielectric and modulus analysis have been studied at different temperatures.

Key words: Ionic conductivity; Solid polymer electrolyte; Impedance spectroscopy; Dielectric properties.

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DEVELOPMENT AND CONDUCTIVITY STUDIES OF POTASSIUM ION CONDUCTING PAN BASED POLYMER ELECTROLYTE

Paper ID – NCETST2137

A Paper Presented by-*N. Krishna Jyothi*[1], *Satya Krishna Nippani*[2], *Kambila Vijay kumar*[3],
[1]Dept. of Physics, K L University, Vaddeswaram, Guntur-522502-INDIA
[2]*Dept of Physics, UPES, Dehradun, India*
[3]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

Solid Polymer Electrolytes (SPE) were synthesized using Polyacrylonitrile (PAN) and potassium bycarbonate ($KHCO_3$) by using the solution casting Technique. Different films were prepared with increasing salt concentrations, by taking the polymer- plasticizer ratio to be constant. All these films were characterized by different experimental techniques such as X-Ray Diffraction (XRD) for structural studies, Thermal properties were studied by using Thermo Gravimetric Analyser(TGA). The complexation of salt-in-polymer is studied by FTIR. The composition dependence conductivity studies were performed at room temperature with frequency variation from 10 to 10^6 Hz. The conductivity of the polymer electrolytes increased by 100-1000 times with increase in frequency. At a particular frequency, the conductivity increased by 10 times with increase in salt concentration.

Keywords: *solid Polymer Electrolyte (SPE), A. C. conductivity, FTIR, TGA.*

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EFFECT OF SIO_2 NANO FILLERS ON PAN-BASED GEL POLYMER ELECTROLYTES AND THEIR PERFORMANCE IN PROTON BATTERIES

Paper ID – NCETST2138

A Paper Presented by-N. Krishna Jyothi[1], M.Gnana Kiran[1] and K Vijaya Kumar[2]
[1]Department of Physics, K L University, Vaddeswaram, Guntur, India 522502
[2]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

Nanocomposite polymer electrolyte materials are very attractive for components of batteries and opto-electronic devices. PAN-NH_4I polymer electrolytes and their nanocomposites were prepared by using addition of different wt % of SiO_2 nano fillers. The nanocomposite polymer electrolytes were systematically characterized by X-ray diffraction (XRD) and ac-impedance spectroscopy. The X-ray diffraction pattern indicated the amorphous nature of the polymer electrolytes. The magnitude of conductivity increased with increase in the concentration of the SiO_2 nano filler and temperature. The highest ionic conductivity achieved was 5.1×10^{-4} S/cm for the sample prepared with 10 wt % of SiO_2 at room temperature. The charge transport in the present nanocomposite polymer electrolyte was obtained using Wagner's polarization technique, which demonstrated the charge transport to be mainly due to ions. Using these (PAN-NH_4I) polymer electrolyte and (PAN-NH_4I- SiO_2) nanocomposite polymer electrolyte, solid-state electrochemical cells were fabricated and their discharge profiles were studied under a constant load of 100 kΩ.

Key words: solution casting technique; Solid polymer electrolyte; XRD; Dielectric properties.

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IMPEDANCE STUDIES OF POLY (VINYLIDENE FLUORIDE) BASED NH_4BF_4 DOPED SOLID POLYMER ELECTROLYTES

Paper ID – NCETST2139

A Paper Presented by-N. **Krishna Jyothi[1], M. Narasimha Rao[2], K. Vijaya Kumar[3]**

[1]Dept. of Physics, K L University, Vaddeswaram, Guntur-522502-INDIA

[2]Dept. of Physics, Priyadarshini Institute of Science and Technology for Women, Khammam, Telangana, India-507001.

[3]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

An investigation is carried out on a new gel polymer electrolyte systems consisting of poly (vinylidene fluoride) (PVdF) as a host polymer, ammonium tetrafluoroborate (NH_4BF_4), as salt. Polymer thin films were prepared by solution casting technique and the obtained films were subjected to different characterizations to confirm their structure, complexation and thermal changes. IR studies revealed that the complexation of the polymer PVdF with salt NH_4BF_4. DSC studies showed the thermal stability of the polymer electrolytes. In DSC Plot of PVdF + NH_4BF_4 (70:30) wt% composite, there is a Corresponding steep dip at lower temperature at -40^oC which may be the glass transition temperature for PVdF + NH_4BF_4 (70:30). The role of interaction between polymer hosts and salts on conductivity is discussed using the results of A.C. impedance studies. Room temperature (30°C) A.C. Conductivity of $6.34x10^{-4}$ Scm^{-1} was observed in PVDF+ NH_4BF_4 polymer electrolyte systems.

Key words: AC conductivity; Solid polymer electrolyte; Impedance spectroscopy; Dielectric properties.

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SYNTHESIS, STRUCTURAL & DIELECTRICAL PROPERTIES OF SODIUM TETRAFLUOROBORATE DOPED PAN BASED COMPOSITE POLYMER ELECTROLYTE

Paper ID – NCETST2140

A Paper Presented by-N. Krishna Jyothi[1], K. Vijaya Kumar[2]

[1]Dept. of Physics, K L University, Vaddeswaram, Guntur-522502-INDIA

[2]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

Solid polymer electrolytes based on poly acylonitrile (PAN) doped with $NaBF_4$ have been prepared by using solution-casting method. The electrical studies of all the prepared polymer electrolyte samples of PAN: $NaBF_4$ (90:10; 80:20; 70:30 and 60:40) have been performed using AC impedance spectroscopy technique from 50 Hz -1MHz. The variation of the conductivity with salt concentration ranging from 10 to 40 wt% is studied. From the complex impedance plot, the maximum ionic conductivity has been found to be 7.46 x 10^{-4} S/cm in 70PAN:30 $NaBF_4$ polymer electrolyte system at 303K. The ionic conductivity of the polymer electrolyte increases with the increase of temperature. Dielectric and modulus analysis have been studied at different temperatures.

Key words: Ionic conductivity; Solid polymer electrolyte; Impedance spectroscopy; Dielectric properties.

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DEVELOPMENT AND CONDUCTIVITY STUDIES OF POTASSIUM ION CONDUCTING PAN BASED POLYMER ELECTROLYTE

Paper ID – NCETST2141

A Paper Presented by-*N. Krishna Jyothi*[1], *Satya Krishna Nippani*[2], *Kambila Vijay kumar*[3],
[1]Dept. of Physics, K L University, Vaddeswaram, Guntur-522502-INDIA
[2]*Dept of Physics, UPES, Dehradun, India*
[3]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

Solid Polymer Electrolytes (SPE) were synthesized using Polyacrylonitrile (PAN) and potassium tetrafloroborate (KBF_4) by using the solution casting Technique. Different films were prepared with increasing salt concentrations, by taking the polymer- plasticizer ratio to be constant. All these films were characterized by different experimental techniques such as X-Ray Diffraction (XRD) for structural studies, Thermal properties were studied by using Thermo Gravimetric Analyser (TGA). The complexation of salt-in-polymer is studied by FTIR. The composition dependence conductivity studies were performed at room temperature with frequency variation from 10 to 10^6 Hz. The conductivity of the polymer electrolytes increased by 100-1000 times with increase in frequency. At a particular frequency, the conductivity increased by 10 times with increase in salt concentration.

Keywords: solid Polymer Electrolyte (SPE), A. C. conductivity, FTIR, TGA.

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EFFECT OF SIO_2 NANO FILLERS ON PAN-BASED GEL POLYMER ELECTROLYTES AND THEIR PERFORMANCE IN SODIUM BATTERIES

Paper ID – NCETST2142

A Paper Presented by-N. Krishna Jyothi[1], M.Gnana Kiran[1] and K Vijaya Kumar[2]
[1]Department of Physics, K L University, Vaddeswaram, Guntur, India 522502
[2]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

Nanocomposite polymer electrolyte materials are very attractive for components of batteries and opto-electronic devices. PAN-NaI polymer electrolytes and their nanocomposites were prepared by using addition of different wt % of SiO_2 nano fillers. The nanocomposite polymer electrolytes were systematically characterized by X-ray diffraction (XRD) and ac-impedance spectroscopy. The X-ray diffraction pattern indicated the amorphous nature of the polymer electrolytes. The magnitude of conductivity increased with increase in the concentration of the SiO_2 nano filler and temperature. The highest ionic conductivity achieved was 1.2×10^{-6} S/cm for the sample prepared with 15 wt % of SiO_2 at room temperature. The charge transport in the present nanocomposite polymer electrolyte was obtained using Wagner's polarization technique, which demonstrated the charge transport to be mainly due to ions. Using these (PAN- NaI) polymer electrolyte and (PAN- NaI - SiO_2) nanocomposite polymer electrolyte, solid-state electrochemical cells were fabricated and their discharge profiles were studied under a constant load of 100 kΩ.

Key words: solution casting technique; Solid polymer electrolyte; XRD; Dielectric properties.

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IMPEDANCE STUDIES OF POLY (VINYLIDENE FLUORIDE) BASED KBF_4 DOPED SOLID POLYMER ELECTROLYTES

Paper ID – NCETST2143

A Paper Presented by-N. Krishna Jyothi[1], M. Narasimha Rao[2], K. Vijaya Kumar[3]

[1]Dept. of Physics, K L University, Vaddeswaram, Guntur-522502-INDIA

[2]Dept. of Physics, Priyadarshini Institute of Science and Technology for Women, Khammam, Telangana, India-507001.

[3]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

An investigation is carried out on a new gel polymer electrolyte systems consisting of poly (vinylidene fluoride) (PVdF) as a host polymer, potassium tetrafloro borate (KBF_4), as salt. Polymer thin films were prepared by solution casting technique and the obtained films were subjected to different characterizations to confirm their structure, complexation and thermal changes. IR studies revealed that the complexation of the polymer PVdF with salt KBF_4. DSC studies showed the thermal stability of the polymer electrolytes. In DSC Plot of PVdF + KBF_4 (70:30) wt% composite, there is a Corresponding steep dip at lower temperature at -40^oC which may be the glass transition temperature for PVdF + KBF_4 (70:30). The role of interaction between polymer hosts and salts on conductivity is discussed using the results of A.C. impedance studies. Room temperature (30°C) A.C. Conductivity of $6.54x10^{-4}$ Scm^{-1} was observed in PVDF+ KBF_4 polymer electrolyte systems.

Key words: AC conductivity; Solid polymer electrolyte; Impedance spectroscopy; Dielectric properties.

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SYNTHESIS, STRUCTURAL & DIELECTRICAL PROPERTIES OF SODIUM TETRAFLORO BORATE ($NABF_4$) DOPED PVA BASED COMPOSITE POLYMER ELECTROLYTE

Paper ID – NCETST2144

A Paper Presented by-N. Krishna Jyothi[1], K. Vijaya Kumar[2]

[1]Dept. of Physics, K L University, Vaddeswaram, Guntur-522502-INDIA

[2]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

Solid polymer electrolytes based on poly vinyl alcohol (PVA) doped with $NaBF_4$ have been prepared by using solution-casting method. The electrical studies of all the prepared polymer electrolyte samples of PVA: $NaBF_4$ (90:10; 80:20; 70:30 and 60:40) have been performed using AC impedance spectroscopy technique from 50 Hz -1MHz. The variation of the conductivity with salt concentration ranging from 10 to 40 wt% is studied. From the complex impedance plot, the maximum ionic conductivity has been found to be 2.52×10^{-5} S/cm in $70PAN:30NaBF_4$ polymer electrolyte system at 303K. The ionic conductivity of the polymer electrolyte increases with the increase of temperature. Dielectric and modulus analysis have been studied at different temperatures.

Key words: Ionic conductivity; Solid polymer electrolyte; Impedance spectroscopy; Dielectric properties.

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DEVELOPMENT AND CONDUCTIVITY STUDIES OF POTASSIUM ION CONDUCTING PVA BASED POLYMER ELECTROLYTE

Paper ID – NCETST2145

A Paper Presented by-*N. Krishna Jyothi*[1], *Satya Krishna Nippani*[2], *Kambila Vijay kumar*[3],
[1]Dept. of Physics, K L University, Vaddeswaram, Guntur-522502-INDIA
[2]*Dept of Physics, UPES, Dehradun, India*
[3]Dept. of Physics, Dayananda Sagar University, Bengaluru-560068, Karnataka, India.

ABSTRACT

Solid Polymer Electrolytes (SPE) were synthesized using Polvinyl alcohol (PVA) and potassium tetrafloroborate (KBF_4) by using the solution casting Technique. Different films were prepared with increasing salt concentrations, by taking the polymer- plasticizer ratio to be constant. All these films were characterized by different experimental techniques such as X-Ray Diffraction (XRD) for structural studies, Thermal properties were studied by using Thermo Gravimetric Analyser (TGA). The complexation of salt-in-polymer is studied by FTIR. The composition dependence conductivity studies were performed at room temperature with frequency variation from 10 to 10^6 Hz. The conductivity of the polymer electrolytes increased by 100-1000 times with increase in frequency. At a particular frequency, the conductivity increased by 10 times with increase in salt concentration.

Keywords: solid Polymer Electrolyte (SPE), A. C. conductivity, FTIR, TGA.

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LUMINESCENCE PROPERTIES OF ER^{3+} IONS DOPED ALKALINE-EARTH BORO TELLURITE GLASSES

Paper ID – NCETST2146

A Paper Presented by-K. Siva Rama Krishna[1],K. Swapna[1]*, Sk. Mahamuda[1], A. Srinivasa Rao[2]

[1]Department of Physics, Koneru Lakshmaiah Education foundation (Deemed to be University), Green Fields, Vaddeswaram, 522502 Guntur, Andhra Pradesh, India

[2]Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi, 110042, India

E-mail: kswapna80@gmail.com

Abstract

The Alkaline-Earth Boro Tellurite (AEBT) glasses doped with different concentrations of Er^{3+} ions were fabricated by conventional melt quenching technique. The optical absorption, visible luminescence, Near-Infra Red (NIR) luminescence, Up-Conversion (UC) luminescence and luminescence decay spectra were recorded to analyze the spectroscopic properties of the titled glasses. The titled glasses excited under 379 nm exhibited green luminescence at 547 nm ($^4S_{3/2} \rightarrow {}^4I_{15/2}$), Upon pumping with a laser diode λ_{exe} = 980nm (NIR), a broad emission spectra at around 1572 nm ($^4I_{13/2} \rightarrow {}^4I_{15/2}$) has been observed for which stimulated emission cross-section (σ_{se}), effective band width ($\Delta\lambda_p$), gain band width (σ_{se} x $\Delta\lambda_p$) and optical gain (σ_{se} x τ_R) parameters were evaluated. The gain cross-section of the sample AEBTEr1.0 was derived using absorption cross-section (σ_a) and emission cross-section (σ_e) for different values of population inversion (γ). The Decay spectral curves for the $^4I_{13/2}$ level of Er ions in AEBT glasses were recorded under 980 nm excitation, to measure the experimental lifetimes (τ_{exp}) and quantum efficiencies. From the obtained results, it is conspicuous that the prepared glasses are quite suitable to fabricate optoelectronic devices in visible green and NIR region.

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NEAR-INFRARED LUMINESCENCE STUDIES OF ERBIUM IONS DOPED LEAD PHOSPHATE GLASSES

Paper ID – NCETST2147

A Paper Presented by-K. Siva Rama Krishna Reddy[1], K. Swapna[1,*], M. Venkateswarlu[1], Sk. Mahamuda[1], A. S. Rao[2]

[1]Department of Physics, Koneru Lakshmaiah Education foundation, Green Fields, Vaddeswaram, Guntur, Andhra Pradesh 522502, India.

[2]Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi-110042, India.

**Corresponding author : swapnakon@kluniversity.in, kswapna80@gmail.com*

ABSTRACT

The Lead Phosphate glasses doped with different concentrations of Erbium (Er^{3+}) ions were prepared by sudden melt quenching technique. The prepared samples have been characterized through optical absorption, visible & near-infrared (NIR) luminescence and luminescence decay to understand their luminescence properties. The Judd-Ofelt (J-O) intensity parameters (Ω_λ, λ = 2, 4, 6) were evaluated from the absorption spectra. The radiative properties such as total radiative transition probability (A_T), radiative lifetime (τ_R), radiative branching ratios (β_R), Stimulated emission cross-section (σ_{se}), effective bandwidth ($\Delta\lambda_p$), gain bandwidth (σ_{se} x $\Delta\lambda_p$) and optical gain (σ_{se} x τ_R) for Er^{3+} ions in the Lead Phosphate glasses were estimated. The Decay spectral curves for the $^4I_{13/2}$ level of Er^{3+} ions in Lead Phosphate glasses were recorded under 980 nm excitation for 1574 nm emission. The obtained results reveal that the Lead Phosphate glasses are suitable for the optical devices like solid state lasers and fiber amplifiers.

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WHITE LIGHT EMISSION STUDIES OF DY^{3+} IONS DOPED ZINC TELLURITE GLASSES FOR OPTOELECTRONIC DEVICE APPLICATIONS

Paper ID – NCETST2148

A Paper Presented by-K. Siva Rama Krishna Reddy[1], K. Swapna[1]*, Sk. Mahamuda[1], M. Venkateswarulu[1], A. S. Rao[2], G. Vijaya Prakash[3]

[1] Department of Physics, K L E F (Deemed to be University), Green Fields, Vaddeswaram, 522502 Guntur, Andhra Pradesh, India

[2] Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi 110042, India

[3]Nanophotonics Laboratory, Department of Physics, Indian Institute of Technology-Delhi, Hauz Khas, New Delhi 110016, India.

**Corresponding author : swapnakon@kluniversity.in, kswapna80@gmail.com*

ABSTRACT

A Series of Zinc Tellurite glasses doped with Dy^{3+} ions were prepared by sudden melt quenching technique and studied through XRD, Raman, optical absorption, excitation, photoluminescence (PL) and PL decay to predict their applications in various fields such as lasers and white light emitting diodes (w-LEDs). The XRD spectrum disclosed amorphous nature and Raman spectrum uncovered the phonon energy and various functional groups of the base glass. The intensities of the electronic transitions and the ligand field environment around the Dy^{3+} ions were studied by Judd-Ofelt (J-O) theory. The J-O parameters were used to measure various radiative parameters for the prominent fluorescent levels of Dy^{3+} ions in the Zinc Tellurite glasses. The emission spectra of Dy^{3+} ions doped Zinc Tellurite glasses under 387nm excitation show three emission transitions $^4F_{9/2} \rightarrow {}^6H_{15/2}$ (blue), $^4F_{9/2} \rightarrow {}^6H_{13/2}$ (yellow), and $^4F_{9/2} \rightarrow {}^6H_{11/2}$ (red) of which the yellow transition observed at 575 nm is intense. The decay curves for the Zinc Tellurite glasses were recorded for 757 nm transition under 387 nm excitation wavelength. All the results finally showed that the Zinc Tellurite glasses doped with Dy^{3+} ions are aptly suitable for the design and development of optoelectronic devices such as w-LEDs and lasers.

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ORANGE RED LUMINESCENCE STUDIES OF SM^{3+} IONS DOPED PHOSPHATE BORO TELLURITE GLASSES

Paper ID – NCETST2149

A Paper Presented by-K. Siva Rama Krishna Reddy[1], K. Swapna[1,*], Sk. Mahamuda[1], M. Venkateswarlu[1], M.V.V.K. Srinivas Prasad[1], A. S. Rao[2], G. Vijaya Prakash[3]

[1]Department of Physics, Koneru Lakshmaiah Education foundation, Green Fields, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

[2]Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi 110042, India

[3]Nanophotonics Laboratory, Department of Physics, Indian Institute of Technology-Delhi, Hauz Khas, New Delhi 110016, India

**Corresponding author : swapnakon@kluniversity.in, kswapna80@gmail.com*

ABSTRACT

Phosphate Boro Tellurite glasses doped with different concentrations of Sm^{3+} ions have been prepared by conventional melt quenching technique and characterized by the spectroscopic techniques like FT-IR, optical absorption, Photoluminescence and Fluorescence decay spectral measurements. Using absorption spectra, the bonding parameters, nephelauxetic ratios were determined for understanding the nature of bonding between Sm^{3+} ions and ligands. The measured oscillator strengths and the Judd-Ofelt (J-O) intensity parameters were evaluated from the absorption spectral data and they are used to estimate the radiative parameters for the fluorescent levels of Sm^{3+} ions in Phosphate Boro Tellurite glasses. The PL spectra of Sm^{3+} ions exhibit three emission bands corresponding to the transitions $^4G_{5/2} \rightarrow {}^6H_{5/2}$, $^6H_{7/2}$ and $^6H_{9/2}$ in the visible region for which the emission cross-sections and branching ratios were evaluated. The decay spectral profiles measured for $^4G_{5/2} \rightarrow {}^6H_{7/2}$ transition showed single exponential for lower concentration and non-exponential for higher concentration of doped rare earth ion in the as prepared glasses. From the evaluated radiative parameters, emission cross-sections and quantum efficiencies, it was observed that Phosphate Boro Tellurite glass with 1 mol % of Sm^{3+} ions is more suitable for designing optoelectronic devices.

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LUMINESCENCE STUDIES OF ND^{3+} IONS IN FLUORO BORO TELLURITE GLASSES

Paper ID – NCETST2150

A Paper Presented by-K. Swapna*[1], Sk. Mahamuda[1], K. Siva Rama Krishna Reddy[1], A. Srinivasa Rao[2]

[1]Department of Physics, K L University, Vaddeswaram - 522 502, A P, India

[2]Department of Applied Physics, Delhi Technological University, New Delhi - 110 042, India

Corresponding author : swapnakon@kluniversity.in, kswapna80@gmail.com

ABSTRACT

Nd^{3+} ions doped Fluoro Boro Tellurite glasses were prepared using melt quenching technique and examined by optical absorption, emission and decay spectral measurements to understand the lasing potentialities of the glasses. Optical absorption spectra were analyzed using Judd-Ofelt (J-O) theory to derive oscillator strengths and J-O parameters. The oscillator strengths of Fluoro Boro Tellurite glasses were parameterized in terms of Judd-Ofelt intensity parameters Ω_λ (λ=2, 4 and 6) to explain the glassy matrix around Nd^{3+} ion and to evaluate the radiative properties of $^4F_{3/2}$ metastable state like the transition probability (A_R), radiative lifetime (τ_R), branching ratios (β_R) and emission cross-section (σ_{se}) of the fluorescent levels of Nd^{3+} in Fluoro Boro Tellurite glasses. The emission spectra of Fluoro Boro Tellurite glasses have two peaks at 1086 and 1327 nm corresponding to $^4F_{3/2}$ to $^4I_{11/2}$ and $^4I_{13/2}$ transitions. The emission intensity of the $^4F_{3/2}$ to $^4I_{11/2}$ transition increases with increase of Nd^{3+} concentration up to 1 mol% and then concentration quenching is observed for 1.5 mol% of Nd^{3+} concentration. The lifetimes for the $^4F_{3/2}$ level are found to decrease with increase in Nd_2O_3 concentration due to the concentration quenching. The decay curves glasses reveal single exponential behavior. The results obtained are compared with other reported glasses and the results indicate that the present Fluoro Boro Tellurite glasses could be useful for 1.08 µm laser applications.

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LUMINESCENCE STUDIES OF SM^{3+} IONS IN BISMUTH FLUORO PHOSPHATE GLASSES FOR VISIBLE LUMINESCENT APPLICATIONS

Paper ID – NCETST2151

A Paper Presented by-Y. Lakshmi[1], K. Swapna*[1], Sk. Mahamuda[1], K. Siva Rama Krishna Reddy[1], A. Srinivasa Rao[2]

[1]Department of Physics, K L University, Vaddeswaram - 522 502, A P, India

[2]Department of Applied Physics, Delhi Technological University, New Delhi - 110 042, India

Corresponding author : swapnakon@kluniversity.in, kswapna80@gmail.com

ABSTRACT

Bismuth Fluoro Phosphate glasses doped with different concentrations of Sm^{3+} ions have been manufactured using a conventional melt quenching technique. The Bismuth Fluoro Phosphate glasses were characterized through different spectroscopic techniques such as XPS, SEM, EDX, optical absorption, photoluminescence and decay spectral measurements. Optical absorption spectra were used to derive the bonding parameters, nephelauxetic ratios to understand the nature of bonding between Sm^{3+} ions and ligands. The experimental oscillator strengths were determined from the absorption spectra and were used to calculate J-O intensity parameters Ω_λ (λ=2,4 and 6). With help of J-O intensity parameters, emission and lifetimes measurements various radiative parameters such as branching ratios (β_R), transition probabilities(A_R), radiative lifetimes (τ_R), effective band width ($\Delta\lambda_p$) and stimulated emission cross section ($\sigma\lambda_p$) have been calculated for the excited level $^4G_{5/2}$. The PL spectra recorded for the prepared glasses under 402 nm excitation shows four emission bands. Among the four emission bands the emission band $^4G_{5/2} \rightarrow {}^6H_{7/2}$ having highest intensity at a wavelength of 601 nm. Based on the results the effectiveness of Sm^{3+} ions doped Bismuth Fluoro Phosphate glasses are aptly suitable for a laser active substance in the visible reddish orange region.

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LUMINESCENCE PROPERTIES OF ND^{3+} IN ZINC SULPHATE BORO TELLURITE GLASSES FOR ELECTRONIC DEVICE APPLICATIONS

Paper ID – NCETST2152

A Paper Presented by-K. Swapna*[1], Sk. Mahamuda[1], K. Siva Rama Krishna Reddy[1], A. Srinivasa Rao[2]

[1]Department of Physics, K L University, Vaddeswaram - 522 502, A P, India

[2]Department of Applied Physics, Delhi Technological University, New Delhi - 110 042, India

**Corresponding author : swapnakon@kluniversity.in, kswapna80@gmail.com*

ABSTRACT

Different concentrations of Nd^{3+} ions doped Zinc Sulphate Boro Tellurite glasses have been prepared using melt quenching technique and characterized through various spectroscopic techniques. The spectroscopic properties of Zinc Sulphate Boro Tellurite glasses were analyzed using J-O theory. UV-Vis-NIR absorption spectra of glass samples obtained nine absorption peaks. The J-O parameter Ω_2 value disclosed the covalent nature and asymmetry between Nd^{3+} and the ligand ions. Under the excitation of 808 nm laser diode, three near-infrared emission bands at around 888, 1064, 1335 nm from $^4F_{3/2} \rightarrow {}^4I_{9/2}$, $^4I_{11/2}$, and $^4I_{13/2}$ radiative transitions respectively. The emission band at 1064 nm has highest intensity. The lifetimes of $^4F_{3/2}$ transition has been experimentally determined through decay profile studies at 808 nm excitation wavelength. The Zinc Sulphate Boro Tellurite glass with 1.0 mol% of Nd^{3+} ions possesses high fluorescence quantum efficiency (η = 89%). The results indicate the prepared Zinc Sulphate Boro Tellurite glass system could be a suitable candidate for using it as laser gain media around 1.064 μm.

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INVESTIGATION OF SM^{3+} IONS DOPED ALKALI ZINC TELLURITE GLASSES FOR LUMINESCENT DEVICE APPLICATIONS

Paper ID – NCETST2153

A Paper Presented by-K. Swapna*[1], Sk. Mahamuda[1], K. Siva Rama Krishna Reddy[1], A. Srinivasa Rao[2]

[1]Department of Physics, K L University, Vaddeswaram - 522 502, A P, India

[2]Department of Applied Physics, Delhi Technological University, New Delhi - 110 042, India

**Corresponding author : swapnakon@kluniversity.in, kswapna80@gmail.com*

ABSTRACT

Alkali Zinc Tellurite glasses doped with various concentrations of Sm^{3+} ions were prepared using conventional melt quenching technique and characterized through different spectroscopic techniques such as optical absorption, emission and decay spectral measurements in order to understand their utility in optoelectronic devices. The absorption spectra were used to derive the bonding parameters, nephelauxetic ratios for understanding the nature of bonding between Sm^{3+} ions and ligands. The measured oscillator strengths were used in evaluating the Judd-Ofelt (J-O) intensity parameters and are in turn used to estimate the various radiative parameters for the fluorescent levels of Sm^{3+} ions in Alkali Zinc Tellurite glasses. The PL spectra of Sm^{3+} ions show three emission bands corresponding to the transitions $^4G_{5/2} \rightarrow {}^6H_{5/2}$, $^6H_{7/2}$ and $^6H_{9/2}$ in the visible region for which the emission cross-sections and branching ratios were evaluated. The decay spectral profiles measured for $^4G_{5/2} \rightarrow {}^6H_{7/2}$ transition showed single exponential for lower concentration and non-exponential for higher concentration of doped rare earth ion in the as prepared glasses. CIE Chromaticity coordinates were calculated using emission spectra. From the evaluated radiative parameters, emission cross-sections and quantum efficiencies, it was observed that Alkali Zinc Tellurite glass with 1 mol% of Sm^{3+} ions is more suitable for designing optoelectronic devices.

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INVESTIGATIONS OF DY^{3+} IONS IN ALKALINE CHLORO FLUORO BORO PHOSPHATE GLASSES FOR OPTOELECTRONIC DEVICE APPLICATIONS

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A Paper Presented by-K. Siva Rama Krishna Reddy[1], Dr. K. Swapna[1]*, Dr. Sk. Mahamuda[1], Dr. M. Venkateswarulu[1], M.V.V.K.S. Prasad[1], Dr. A. Srinivasa Rao[2]

[1] Department of Physics, Koneru Lakshmaiah Education foundation (Deemed to be University), Green Fields, Vaddeswaram, 522502 Guntur, Andhra Pradesh, India

[2] Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi 110042, India

**Corresponding author. Tel : +91 9652163632 E-mail: kswapna80@gmail.com , swapnakon@kluniversity.in*

ABSTRACT

Alkaline Chloro Fluoro Boro Phosphate glasses doped with different concentrations of Dy^{3+} ions were prepared by melt quenching technique and characterized through different spectroscopic techniques such as XRD, Raman, optical absorption, excitation, photoluminescence (PL) and PL decay to understand their utility in optoelectronic devices such as lasers and white light emitting diodes (w-LEDs). The XRD spectrum revealed amorphous nature and the Raman spectrum exposed the phonon energy and various functional groups present in the undoped base glass. The intensities of the electronic transitions and the ligand field environment in the vicinity of the Dy^{3+} ions were studied using Judd-Ofelt (J-O) theory and the absorption spectra of the Alkaline Chloro Fluoro Boro Phosphate glasses. The estimated J-O parameters were then used to measure various radiative parameters for the prominent fluorescent levels of Dy^{3+} ions in the as-prepared glasses. The luminescence spectra recorded at 387nm excitation show three emission transitions ($^4F_{9/2} \rightarrow {}^6H_{15/2}$ (blue), $^4F_{9/2} \rightarrow {}^6H_{13/2}$ (yellow), and $^4F_{9/2} \rightarrow {}^6H_{11/2}$ (red)) of which the yellow transition observed at 575nm is highly intense. The experimental branching ratio (β_{exp}) and stimulated emission cross-section (σ_{se}) were measured from luminescence spectra. The fluorescence decay curves for the as prepared glasses have been recorded for 575nm transition under 387nm excitation wavelength. The experimental lifetimes (τ_{exp}) measured from the decay spectral profiles are combined with radiative lifetimes (τ_R) to measure quantum efficiencies of the Alkaline Chloro Fluoro Boro Phosphate glasses. The yellow to blue intensity ratios and chromaticity color co-ordinates are found to vary with Dy^{3+} ion concentrations. All the results reveal that Alkaline Chloro Fluoro Boro Phosphate glasses doped with Dy^{3+} ions are aptly suitable for the design and development of optoelectronic devices such as w-LEDs and lasers.

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DYSPROSIUM IONS IN GADOLINIUM BORO TELLURITE GLASSES FOR LUMINESCENT APPLICATIONS

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A Paper Presented by-K. Siva Rama Krishna Reddy[1], Dr. K. Swapna[1]*, Dr. Sk. Mahamuda[1], Dr. M. Venkateswarulu[1], M.V.V.K.S. Prasad[1], Dr. A. Srinivasa Rao[2]

[1] Department of Physics, Koneru Lakshmaiah Education foundation (Deemed to be University), Green Fields, Vaddeswaram, 522502 Guntur, Andhra Pradesh, India

[2] Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi 110042, India

[3]Nanophotonics Laboratory, Department of Physics, Indian Institute of Technology-Delhi, Hauz Khas, New Delhi 110016, India

*Corresponding author. Tel : +91 9652163632 E-mail: kswapna80@gmail.com , swapnakon@kluniversity.in

ABSTRACT

Gadolinium Boro Tellurite glasses doped with different concentrations of Dy^{3+} ions were prepared by melt quenching technique and characterized through spectroscopic techniques such as XRD, Raman, optical absorption, excitation, photoluminescence (PL) and PL decay to understand their utility in optoelectronic devices such as lasers and white light emitting diodes (w-LEDs). The XRD spectrum and the Raman spectrum revealed non-crystalline nature and the phonon energy & various functional groups present in the host glass respectively. The intensities of the electronic transitions of the absorption spectra and the ligand field environment around the Dy^{3+} ions were studied by applying Judd-Ofelt (J-O) theory to the recorded absorption spectra of the Gadolinium Boro Tellurite glasses. The luminescence spectra recorded at 387 nm excitation illustrate three emission transitions ($^4F_{9/2} \rightarrow {}^6H_{15/2}$, $^4F_{9/2} \rightarrow {}^6H_{13/2}$, and $^4F_{9/2} \rightarrow {}^6H_{11/2}$ of which the transition observed at 575 nm is highly intense. The experimental branching ratio (β_{exp}) and stimulated emission cross-section (σ_{se}) were measured from luminescence spectra. The fluorescence decay curves for the as prepared glasses have been recorded for 575 nm transition under 387 nm excitation wavelength. The experimental lifetimes (τ_{exp}) measured from the decay spectral profiles are combined with radiative lifetimes (τ_R) to measure quantum efficiencies of the Gadolinium Boro Tellurite glasses. The yellow to blue intensity ratios and chromaticity color co-ordinates are found to vary with Dy^{3+} ion concentrations. All the results reveal that Gadolinium Boro Tellurite glasses doped with Dy^{3+} ions are aptly suitable for the design and development of optoelectronic devices such as w-LEDs and lasers.

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LUMINESCENCE STUDIES OF ER^{3+} IONS IN BISMUTH TITANIUM TELLURITE GLASSES

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A Paper Presented by-K. Siva Rama Krishna[1],K. Swapna[1]*, Sk. Mahamuda[1], A. Srinivasa Rao[2]

[1]Department of Physics, Koneru Lakshmaiah Education foundation (Deemed to be University), Green Fields, Vaddeswaram, 522502 Guntur, Andhra Pradesh, India

[2]Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi, 110042, India,Email: kswapna80@gmail.com

ABSTRACT

Different concentrations of Er^{3+} ions doped Bismuth Titanium Tellurite glasses were manufactured by conventional melt quenching technique. The optical absorption, visible luminescence, Near-Infra Red (NIR) luminescence, Up-Conversion (UC) luminescence and luminescence decay spectra were recorded to analyze the spectroscopic properties of the Bismuth Titanium Tellurite glasses. The Bismuth Titanium Tellurite glasses excited under 379 nm exhibited green luminescence at 548 nm ($^4S_{3/2} \rightarrow {}^4I_{15/2}$), upon pumping with a laser diode λ_{exe} = 980nm (NIR), a broad emission spectra at around 1574 nm ($^4I_{13/2} \rightarrow {}^4I_{15/2}$) has been observed for which stimulated emission cross-section (σ_{se}), effective band width ($\Delta\lambda_p$), gain band width (σ_{se} x $\Delta\lambda_p$) and optical gain (σ_{se} x τ_R) parameters were evaluated. The gain cross-section of the Bismuth Titanium Tellurite glass sample with 1 mol% of Er^{3+} ions was derived using absorption cross-section (σ_a) and emission cross-section (σ_e) for different values of population inversion (γ). The Decay spectral curves for the $^4I_{13/2}$ level of Er^{3+} ions in Bismuth Titanium Tellurite glasses were recorded under 980 nm excitation, to measure the experimental lifetimes (τ_{exp}) and quantum efficiencies. From the obtained results, it is conspicuous that the prepared glasses are quite suitable to fabricate optoelectronic devices in visible green and NIR region.

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SPECTROSCOPIC AND OPTICAL PROPERTIES OF ND^{3+} DOPED FLUORINE CONTAINING ALKALI AND ALKALINE EARTH ZINC-ALUMINOPHOSPHATE OPTICAL GLASSES

Paper ID – NCETST2157

A Paper Presented by-A. Srinivasa Rao[a,*], B. Rupa Venkateswara Rao [a], M.V.V.K.S. Prasad [a], J.V. Shanmukha Kumar [a], M. Jayasimhadri [b], J.L. Rao [c], R.P.S. Chakradhar [d]

[a]Department of Physics, K.L. University, Green Fields, Vaddeswaram, 522 502 Guntur (Dt.), A.P., India

[b]Department of Physics, Changwon National University, # 9 Sarimdong, Changwon, Kyongnam 641 773, South Korea

[c]Department of Physics, Sri Venkateswara University, Tirupati 517 502, A.P., India

[d]Glass Technology Laboratory, Central Glass and Ceramic Research Institute (CSIR), Kolkata 700 032, India

ABSTRACT

Nd^{3+} doped fluorine containing zinc-aluminophosphate glasses have been prepared with alkali and alkaline earth content to understand the effect of network modifiers on radiative process. The physical and optical properties of these glasses have been evaluated. The Judd–Ofelt model for the intensity analysis of induced electric dipole transitions has been applied to the measured oscillator strengths of the absorption bands to determine the three phenomenological intensity parameters Ω_2, Ω_4 and Ω_6 for each glass. Using these parameters, transition probability (A), total transition probability (A_T), branching ratios (β_R) radiative life times (τ_R) and integrated cross-section (σa) for the stimulated emission have been theoretically calculated for certain excited Nd^{3+} fluorescent levels. From the obtained results the conclusion is made about the possibility of using these glasses as laser material.

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EFFECT OF ALKALI MODIfiER ION ON SPECTROSCOPIC PROPERTIES OF CU^{2+}-DOPED LEAD ZINC PHOSPHATE GLASS SYSTEM

Paper ID – NCETST2158

A Paper Presented by-S Sreehari Sastry[1*], M V V K S Prasad[1,2], B R Venkateswara Rao[3] and J Sivaramakrishna1[1]

[1]Department of Physics, Acharya Nagarjuna University, Nagarjunanagar 522510, India

[2]Department of Physics, K L University, Green Fields, Vaddeswaram 522502, India

[3]Department of Physics, V R Siddhartha Engineering College, Vijayawada 520007, India

ABSTRACT

A blue colored Cu^{2+}-doped lead zinc phosphate glass in the system $10Pb_3O_4$ – 30ZnO – 59.9 P_2O_5 – 0.1 CuO was prepared by quenching of the melt and spectral properties of these glasses were studied. Optical absorption and electron paramagnetic resonance spectra of Cu^{2+} ion in these glasses were measured. Polarization produced by uneven distribution of d-electron density on the inner core of s-electron was studied. The estimated results showed that the g |||[g\ because Cu^{2+} ions had tetragonally elongated distortion. Optical absorption studies also supported the same property. The variation in crystal field caused the change in bonding nature. The Fourier transform infrared spectra had elucidated the bonding system of the constituent atoms and groups that shed light on the expected structure. Raman spectra were used to get information about the depolymerization of phosphate chains in the glasses with successive replacement of alkali content.

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SPECTROSCOPIC AND BONDING PROPERTIES AS A PROBE IN THE SYMMETRY OF PBO-P_2O_5-ZNO-V_2O_5 GLASS SYSTEM WITH ALKALI OXIDES

Paper ID – NCETST2159

A Paper Presented by-S. Sreehari Sastry[1,*], M.V.V. K. Srinivas Prasad[2], B. Rupa Venkateswara Rao[3]
[1]Department of Physics, Acharya Nagarjuna University, Nagarjunanagar 522510, India
[2]Department of Physics, K L University, Green Fields, Vaddeswaram 522502, India
[3]Department of Physics, V R Siddhartha Engineering College, Vijayawada 520007, India

ABSTRACT

PbO-P2O5-ZnO-V2O5 glasses composed of different alkali oxides are prepared. The glasses are characterized by XRD, FTIR, EPR and UV-Visible spectral analysis. The functions of structural features and amorphous nature due to compositional changes are examined using XRD. FTIR spectroscopy is used to identify the presence of bond assignments and vibrational modes of phosphate in the system. Depolymerization of the phosphate network by the replacement of alkali oxide content in the glasses which are consisting mainly more of (PO_4^{3-}) and (PO_3^{2-}) units, is detected by the FTIR spectra. The spectral studies have exhibited an intense and broadband in the visible region which is related to VO^{2+} ions in a ligand field of C4v symmetry. The importance of bridging oxygen in improving the optical properties is studied.

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SPECTROSCOPIC AND PHYSICAL PROPERTIES OF MN^{2+} SPIN PROBE IN ROP_2O_5-ZNO-PB_3O_4 (R=LI, NA AND K) GLASSES

Paper ID – NCETST2160

A Paper Presented by- K. Swapna*[1], -N. Krishna Jyothi[2], G. Vijaya Prakash[3]

[1]Department of Physics, Acharya Nagarjuna University, Nagarjunanagar 522510, India

[2]Department of Physics, K L University, Green Fields, Vaddeswaram 522502, India

[3]Department of Physics, V R Siddhartha Engineering College, Vijayawada 520007, India

ABSTRACT

RO-P_2O_5-ZnO-Pb_3O_4 (R=Li, Na and K) glasses containing 0.1concentrations of MnO have been prepared. The structural, optical and physical properties of prepared glasses are studied by XRD, UV-Visible, EPR and FTIR techniques. The nature of local symmetry and structural information of the neighboring atoms of dopant ions (Mn^{2+}) in the host matrix have been understood by evaluating the crystal field strength (D_q) and Racah (B & C) parameters. The combined analysis of optical absorption and EPR spectroscopy has indicated that the manganese ions exist in Mn^{2+} (in octahedral) local coordination sites. FTIR results showed that PO4 are the main structural unit of the glass system and the manganese ions are located in the glass matrix network.

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STRUCTURAL INVESTIGATIONS OF CR^{3+} IONS DOPED ALKALI LEAD ZINC PHOSPHATE GLASSES

Paper ID – NCETST2161

A Paper Presented by- Cherukumalli Purna Koteswara Rao[a] and Tadiboina Bhaskara Rao[a]*
[1]Department of Physics, Acharya Nagarjuna University, Nagarjunanagar 522510, India
[2]Department of Physics, K L University, Green Fields, Vaddeswaram 522502, India
[3]Department of Physics, V R Siddhartha Engineering College, Vijayawada 520007, India

ABSTRACT

Lead zinc phosphate glasses containing 0.1% transition metal ion Cr^{3+} were prepared by melt quenching technique and their amorphous nature confirmed by X-Ray diffraction. The covalent bond nature of Cr^{3+} ions with octahedral symmetry in glass network was established through Electron Paramagnetic Resonance and optical absorption spectroscopic studies. Endothermic dip for glass transition temperature (Tg) at about 410^0C and an exothermic peak subsisted from thermal studies were obtained. De-polymerization of host glass network due to addition of alkali content to the glass matrix, has turned as a strong candidate for nonlinear optical laser applications.

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EPR and Optical Spectroscopy of Iron Doped Mixed Alkali Cadmium Phosphate Glasses

Paper ID – NCETST2162

A Paper Presented by-G. Giridhar[a,*], D. Punyaseshudu[b], M.V.V.K. Srinivas Prasad[c], M. Venkateswarlu[c] and G. Srinivasc,[d]

[a]Department of Nanotechnology, Acharya Nagarjuna University, Nagarjunanagar, 522510, Guntur, India
[b]Department of Physics, Rayalaseema University, Kurnool, India
[c]Department of Physics, KL University, Vijayawada, India
[d]Department of Physics, NRI Institute of Technology, Agiripalli, Krishna(Dt.), India

ABSTRACT

Iron doped mixed alkali cadmium phosphate (LiNaCdP) glasses of the following chemical composition xLi_2O + (20-x) Na_2O + 20CdO + $59.5P_2O_5$ + $0.5Fe_2O_3$ ($5 < x < 15$) were prepared by melt quenching technique to study the mixed alkali eect. To manifest the mixed alkali effect, electron paramagnetic resonance and optical absorption studies were carried out at room temperature for these phosphate glasses. The physical and optical properties of these glasses have been evaluated. The results accomplished for the present glass system point out the presence of mixed alkali effect for x = 10.

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SPECTROSCOPIC INVESTIGATIONS ON PR^{3+} DOPED ALKALI FLUOROBOROPHOSPHATE GLASSES

Paper ID – NCETST2163

A Paper Presented by-B. Rupa Venkateswara Rao[1,*], M.V.V.K. Srinivas Prasad[2], L. Tanuj Kumar[3], M. Venkateswarlu[2]

[1]Department of Physics, V.R. Siddhartha Engineering College, Vijayawada – 520 007, AP, India.
[2]Department of Physics, K L University, Green Fields, Vaddeswaram – 522 502, AP, India.
[3]Department of Physics, Ramachandra College of Engineering, Eluru – 534 007, AP, India.

ABSTRACT

Alkali fluoroborophosphate glasses doped with praseodymium fluoride has been prepared and characterized by X-Ray diffraction, UV–Visible spectroscopy, differential scanning calorimetry, excited and emission spectra analysis. Judd-Ofelt theory has been applied to evaluate the optical parameters such as radiative transition probabilities, radiative lifetime, branching ratios etc. of praseodymium, Pr^{3+}, ions. The trend found in the JO intensity parameter is $\Omega_6 > \Omega_4 > \Omega_2$, it indicates the glass system is favorable for the lasing emission $^1D_2 \rightarrow {}^3H_4$ in IR wavelength. Among the studied glasses, the glass with 20 mole% of NaF appears to be an ideal material for carrying out further investigations on samples of appropriate size to examine laser action to use them in glass laser technology and optical communications.

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EPR AND OPTICAL ABSORPTION STUDIES OF CU^{2+} IONS DOPED ZNALBIB GLASSES

Paper ID – NCETST2164

A Paper Presented by-Gunjan Mahajan[1], K. Seshu Latha[1], M.V.V.K. Srinivas Prasad[2], M.Venkateswarlu[2], A.S.Rao[3]

[1]Department of Physics, Andhra Loyola College, Vijayawada – 520 008, AP, INDIA

[2]Department of Physics, Koneru Lakshmaiah Educational Foundation, Green Fields, Vaddeswaram – 522 502, Guntur (Dt), AP, INDIA

[3]Department of Applied Physics, Delhi Technological University, Bawana Road, New Delhi – 110 042, INDIA

ABSTRACT

Copper ions doped Zinc Alumino Bismuth Borate (ZnAlBiB) glasses with different concentrations of copper ions were characterised by using FT-IR, electron paramagnetic resonance (EPR) and optical absorption studies. The FT-IR spectra show various stretching and bending vibrations of ZnAlBiB glasses. The EPR spectra of all these glasses reveal a resonance signal, characteristic of Cu^{2+} ions in axially elongated octahedral sites. The values of the spin-Hamiltonian parameters indicate that the Cu^{2+} ions in these glasses are present in octahedral coordination with tetragonal distortion. With the increase of the copper ion it is found that the $g_{\perp}$ component increases. The optical absorption of all the glasses shows a single broad band. By correlating EPR and optical absorption data, the molecular orbital coefficients have been evaluated. The optical band gap energy (E_{opt}) and Urbach energy (ΔE) are calculated at ultraviolet edges. It is found that as the copper ion concentration increases the optical band gap decreases and the Urbach energy increases.

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STUDY OF VO2+ AS PROBE IN THE LEADPHOSPHATE GLASSES SYSTEM DOPED WITH ALKALI OXIDES

Paper ID – NCETST2165

A Paper Presented by-M.V.V.K. Srinivas Prasad[1,2], B. Rupa Venkateswara Rao[3] and S. Sreehari Sastry[2*]
Department of Physics, K.L. University, Vaddeswaram-522 502, AP[1]
Department of Physics, Acharya Nagarjuna University, Nagarjunanagar-522 510 AP[2]
Department of Physics, V.R. Siddhartha Engineering College, Vijayawada-520 007, AP[3]

ABSTRACT

$PbO-P_2O_5-ZnO-V_2O_5$ glasses containing different alkali oxides have been prepared. The glasses are characterized by XRD, EPR, UV-Visible and differential thermal analysis. The spectral studies exhibit an intense and broadband in the visible region and are related to VO^{2+} ions in a ligand field of C_{4v} symmetry. The importances of bridging oxygen's in improving the optical properties were studied. Depolymerization of the phosphate network by the replacement of alkali oxide content in the glasses which are consisting of mainly more (PO_4^{3-}) and (PO_3^{2-}) units.

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PECTROSCOPIC PROPERTIES OF VANADIUM IONS DOPED LITHIUM BOROPHOSPHATE GLASSES

Paper ID – NCETST2166

A Paper Presented by-V. Aruna[1]*, M.Venkateswarlu[2], MVVK Srinivas Prasad[2], G.Giridhar[3], B R V Rao[4], A. Ramesh[1]

[1]Department of Physics, Bapatla Engineering College, Bapatla , AP, INDIA– 522101

[2] Department of Physics, K L E F, Green Fileds, Vaddeswaram, INDIA-522502

[3] Department of Nanotechnology, Acharya Nagarjuna University, Nagarjunanagar, Guntur, AP. INDIA- 522510

-[4] Department of Physics, V R Siddardha Engg. Collge, Vijayawada, INDIA-520007

ABSTRACT

Glass samples of composition 10 Li_2O - 60 B_2O_3- (30-x) P_2O_5- x V_2O_5 (where x=0.5, 1, 1.5, 2, 2.5 wt %) were prepared by conventional melt quenching technique and the amorphous nature of the glass samples was confirmed by XRD studies. The physical properties of the glasses were also evaluated with respect to the composition. Characterization of these glasses was carried out by Optical absorption, Electron Spin Resonance and Fourier Transform Infrared spectra. UV–VIS optical absorption spectra of the glass samples presented two characteristics bands at 910nm and 585nm related to $^2B_2 \rightarrow {}^2E$ and $^2B_2 \rightarrow {}^2B_1$ transitions of VO^{2+}. The optical band gap and Urbach energies were evaluated from absorption spectra. The FTIR studies indicate that inclusion of VO^{2+} ions produces BO_3 and BO_4 basic structural units by breaking the boroxol (B_3O_6) ring. From the ESR spectra of these glass samples are of isolated V^{4+} ions in a ligand field of C_{4v} symmetry that are present as VO^{2+} species.

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EFFECT OF ALKALI OXIDE ON OPTICAL AND STRUCTURAL STUDIES OF PB_3O_4 – ZNO – P_2O_5 GLASSES

Paper ID – NCETST2167

A Paper Presented by-V. M.Venkateswarlu[1], MVVK Srinivas Prasad[1], G.Giridhar[2], B R V Rao[3], A. Ramesh[2]
[1]Department of Physics, K.L. University, Vaddeswaram-522 502, AP
[2]Department of Physics, Acharya Nagarjuna University, Nagarjunanagar-522 510 AP
[3]Department of Physics, V.R. Siddhartha Engineering College, Vijayawada-520 007, AP

ABSTRACT

Lead zinc phosphate glasses (Pb_3O_4 – MO_2 – ZnO – P_2O_5; M = Li, Na and K) with 0.1 mol % of MnO have been prepared by conventional melt quenching technique. The functions of compositional changes on their structural features were examined using X-ray Diffraction (XRD) to detect the amorphousity phase present. The EPR spectra of all the glasses exhibited the presence of Mn^{2+} by exhibiting sextet hyperfine structure centred at g = 2.005. The optical absorption spectra of Mn^{2+} ions doped glasses reveal a broad absorption band which is a characteristic of Mn^{2+} ions in octahedral symmetry. While Fourier Transform Infrared (FTIR) Spectroscopy were used to identify the presences of vibrational modes and band assignments of phosphate, and transition metal ion in the system. The modification of lead zinc phosphate glasses with alkali oxide was studied and showed present of alkali oxide in the glass system change the structural features.
Keywords: Glass; X-ray Diffraction; Fourier Transform Infrared spectroscopy

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OPTICAL AND DIELECTRIC PROPERTIES OF PVP BASED COMPOSITE POLYMER ELECTROLYTE FILMS

Paper ID – NCETST2168

A Paper Presented by-*G. Sunita Sundari
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, AP, India.
*Corresponding author: gunturisunita@kluniversity.in

ABSTRACT

Solid polymer electrolyte films were prepared by adding Al_2O_3 particles to poly (vinylpyrrolidone)-$MgCl_2{\cdot}6H_2O$ salt using solution cast technique. Various analytical techniques have been applied to characterize the prepared polymer films such as XRD, SEM, UV–Vis spectroscopy and AC conductivity. The structural analysis of pure poly (vinylpyrrolidone) complexed with $MgCl_2{\cdot}6H_2O$ salt showed orthorhombic lattice structure indicating its semi-crystalline nature. SEM analysis reveals the heterogeneous phase of nanocomposite polymer electrolyte systems. The conductivity of Al_2O_3 doped poly (vinylpyrrolidone) based solid polymer electrolyte was found to be 1.22×10^{-6} S/cm at room temperature for 85:15 weight composition. Electrochemical cell has been fabricated with the configuration Mg^{+}/(PVP+$MgCl_2{\cdot}6H_2O$+Al_2O_3)/(I_2+C+electrolyte) and its discharge characteristics were studied for a constant load of 100 kΩ. Various cell parameters such as open-circuit voltage, short circuit current, energy density and power density were calculated for the prepared samples.

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STRUCTURAL AND DIELECTRIC PROPERTIES OF PVP BASED COMPOSITE POLYMER ELECTROLYTE THIN FILMS

Paper ID – NCETST2169

A Paper Presented by-*G. Sunita Sundari
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, AP, India.
*Corresponding author: gunturisunita@kluniversity.in

ABSTRACT

Study and application of thin film technology is entirely entered in to almost all the branches of science and technology. Transparent conducting oxide films have been widely used in the fields of flat panel displays, solar cells, touch panels and other optoelectronic devices owing to their high electrical conductivity and optical transmittance in visible region. In the present study, Solid state ion conducting polymer electrolyte films were prepared by doping nano-sized TiO_2 particles on PVP (poly vinyl pyrrolidone) complexed with $MgSO_4 \cdot 7H_2O$ salt by solution casting technique and characterized by powder XRD, DSC, SEM, optical and dielectric studies. The XRD pattern of the prepared sample shows the semi-crystalline nature. SEM and EDS confirms the presence of compounds inside the material. Optical absorption studies are used to measure the bandgap of the prepared sample. Dielectric studies are performed to observe the conductivity of the sample.
Keywords XRD · DSC · SEM · Optical spectroscopy, Dielectric properties · Transport number and discharge

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FABRICATION AND ELECTRICAL CHARACTERIZATION OF PEM FUEL CELL BASED ON (PEO+$KHCO_3$) POLYMER ELECTROLYTE MEMBRANE

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A Paper Presented by-*G. Sunita Sundari
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, AP, India.
*Corresponding author: gunturisunita@kluniversity.in

ABSTRACT

An attempt has been made in the present work to develop a new Polyethylene oxide (PEO) based Solid polymer electrolyte membrane, (PEO+$KHCO_3$) by Isothermal immersion- technique. Several experimental techniques such as IR, composition dependence conductivity, temperature dependence conductivity in the temperature range of 308-368 K and transport number measurements were employed to characterize this polymer electrolyte membrane system. The IR studies confirm the salvation of K^+ ion with PEO. The conductivity of the (PEO+$KHCO_3$) electrolyte was found to be about 3 times larger than that of pure PEO at room temperature. The transference data indicated that the charge transport in these polymer electrolyte systems is predominantly due to ions. Using this conducting polymer electrolyte membrane, a polymer electrolyte membrane (PEM) Fuel cell stack was fabricated with the configuration anode/polymer electrolyte/cathode and studied its I-V Characteristics. The results of these investigations are reported in this present paper.

Keywords: Isothermal immersion**,** polymer electrolyte, ionic conductivity, transport number, Polymer Electrolyte Membrane (PEM) fuel cell, current (I)- voltage (V) Characteristics.

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INFLUENCE OF PLASTICIZER ON A PEO BASED K^+ ION CONDUCTING POLYMER ELECTROLYTE SYSTEM FOR BATTERY APPLICATIONS

Paper ID – NCETST2171

A Paper Presented by-*G. Sunita Sundari
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, AP, India.
*Corresponding author: gunturisunita@kluniversity.in

ABSTRACT

Polyethylene Oxide (PEO) based Solid polymer electrolyte films with $KHCO_3$ and $KHCO_3$+plasticizer (Dimethyl formamide) have been prepared using a solution casting technique. The complexation of the Polymer PEO with $KHCO_3$ and $KHCO_3$+DMF (Dimethyl formamide) was confirmed by IR and XRD studies. The conductivity-temperature plots showed an increase in conductivity with increasing temperature. The increase in conductivity is about ten times larger in the plasticized (PEO + $KHCO_3$) polymer electrolyte systems compared with pure (PEO + $KHCO_3$) polymer electrolyte system. The transference data indicated that the charge transport in these polymer electrolyte systems is predominantly due to ions. Using this polymer electrolyte system, a polymer battery or an electrochemical cell with configuration K^+/(PEO+$KHCO_3$+plasticizer)/(I_2+C+Electrolyte) was fabricated and its discharge characteristics were studied for a constant load of 100 KΩ. The Open circuit voltage (OCV), Short circuit current (SCC), Discharge time, Current density and Power density were evaluated. A number of other battery parameters associated with the battery were evaluated and compared with the data from earlier reported in this paper.

Keywords : Solid polymer electrolyte, Solution casting technique, Transport number, Discharge characteristics.

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ELECTRICAL CONDUCTIVITY, TRANSPORT AND DISCHARGE CHARACTERISTICS OF A SODIUM ACETATE TRIHYDRATE COMPLEXED WITH POLYVINYL ALCOHOL FOR ELECTROCHEMICAL CELL

Paper ID – NCETST2172

A Paper Presented by-*G. Sunita Sundari
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, AP, India.
*Corresponding author: gunturisunita@kluniversity.in

ABSTRACT

In this present work Poly vinyl alcohol (PVA) based solid polymer electrolyte systems (PVA+ $CH_3COONa_3H_2O$) was prepared by solution-cast technique. The crystalline structure and its characteristics were studied by using X-ray diffraction and the complexation between (PVA+ $CH_3COONa_3H_2O$) has been observed from FTIR data. The bulk resistance of polymer electrolyte was calculated by using impedance analysis the ionic conductivity of the polymer electrolyte can be calculated by using AC conductivity at 303 K room temperature the composition dependence of A.C Conductivity in the temperature range 303 K was carried out. And it reveals the conduction mechanism to be the Arrhenius-type thermally activated process. The ionic conductivity of PVA Polymer electrolyte is about $9.73x10^{-9}$ S/cm at Room temperature. The highest conductivity is found to be $1.07x10^{-6}$ S/cm at 303 K, for sample 70:30 of sodium acetate in PVA. The charge transport in the polymer electrolytes was calculated by Wagner's polarization technique. The total ionic transference number was found to be 0.98 in this polymer electrolyte system, which suggest that the charge carriers in these polymer electrolytes are mainly due to ions, By using the solid polymer electrolyte films an electrochemical cell has been fabricated with the parameters of Na/(PVA+$CH_3COONa_3H_2O$)/(I+C+electrolyte). And its discharge characteristics were studied, such as open circuit voltage (OCV), short circuit current (SCC) has been calculated.

Keywords: Solid Polymer electrolyte, Solution Casting technique, XRD, FTIR, AC conductivity, transport properties, discharge characteristics, cell parameters.

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STRUCTURAL AND A.C. CONDUCTIVITY STUDIES OF (PVDF+NACLO4) SOLID POLYMER ELECTROLYTE SYSTEM FOR AN ELECTROCHEMICAL CELL APPLICATIONS

Paper ID – NCETST2173

A Paper Presented by-*G. Sunita Sundari
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, AP, India.
*Corresponding author: gunturisunita@kluniversity.in

ABSTRACT

An investigation is carried out on a new solid polymer electrolyte system consisting of poly (vinylidene fluoride) (PVdF) as a host polymer, sodium perchlorate, as salt. Solid polymer electrolyte films were prepared by solution-casting technique and characterized by using IR, DSC, composition-dependence conductivity and transference number studies. IR studies revealed that the complexation of the polymer poly (vinylidene fluoride) with $NaClO_4$. Differential scanning calorimetry was used to determine the melting temperatures of the pure and complexed films. The maximum ionic conductivity for 60 PVdF+40$NaClO_4$ polymer electrolyte system was found to be 1.78×10^{-5} S/cm at room temperature. Transference number data suggests that the charge transport in this polymer electrolyte system is mainly due to ions. Electrochemical cells were fabricated with the configuration of Na^{+}/(PVdF+$NaClO_4$)/(I_2+C+electrolyte) and discharge characteristics were studied under a constant load of 100 KW. Various cell parameters, such as open circuit voltage, short circuit current, power density and energy density were determined.

Key Words: Polymer electrolyte, Ionic conductivity, IR, Transference number, Electrochemical cell.

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PREPARATION AND CHARACTERIZATION OF RUTHENIUM BASED ORGANIC COMPOSITES FOR OPTOELECTRONIC DEVICE APPLICATION

Paper ID – NCETST2174

A Paper Presented by-*G. Sunita Sundari
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, AP, India.
*Corresponding author: gunturisunita@kluniversity.in

ABSTRACT

Ruthenium based solid state organic LED was fabricated by the dispersion of aluminum oxide nanocomposite using solution cast technique. Different analytical techniques such as XRD, FTIR, DSC, SEM, Photoluminescence, Electroluminescence and I–V characteristics were carried out on the prepared samples. XRD showed polycrystalline nature of the prepared films. DSC revealed that the microporous organic membrane was thermally stable up to 363 ^{0}C. SEM showed the degree of roughness of OLED. Photoluminescence studies werecarried out on the prepared samples in the wavelength ranging from 300 to 900 nm. It is evident from the results that the intensity of the peak was increased with the dispersion of Al_2O_3 nano particles in the Ru complex. The I–V characteristics of Al_2O_3 doped OLED of $(bpy)_2Ru[bpy(Al)_2O_3](BF_4)_2$ have showed higher efficiency which is suitable for display device application. Thus it was found out that the ruthenium based composites could be promising candidates for organic light emitting device applications.

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STRUCTURAL AND ELECTRICAL PROPERTIES OF GRAPHENE OXIDE-DOPED PVA/PVP BLEND NANOCOMPOSITE POLYMER FILMS

Paper ID – NCETST2175

A Paper Presented by-*G. Sunita Sundari
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, AP, India.
*Corresponding author: gunturisunita@kluniversity.in

ABSTRACT

Graphene oxide (GO) nanoparticles were incorporated in PVA/PVP blend polymers for the preparation of nanocomposite polymer 7lms by the solution cast technique. XRD, FTIR, DSC, SEM, and UV-visible studies were performed on the prepared nanocomposite polymer films. XRD revealed the amorphous nature of the prepared films. Thermal analysis of the nanocomposite polymer films was analyzed by DSC. SEM revealed the morphological features and the degree of roughness of the samples. DC conductivity studies were undertaken on the samples, and the conductivity was found to be 6.13×10^{-4} $S \cdot cm^{-1}$ for the polymer film prepared at room temperature. A solid-state battery has been fabricated with the chemical composition of Mg+/(PVA/PVP:GO)/(I_2+C+electrolyte), and its cell parameters like power density and current density were calculated.

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EFFECT OF NICKEL DOPANT ON STRUCTURAL, MORPHOLOGICAL AND OPTICAL CHARACTERISTICS OF Fe_3O_4 NANOPARTICLES

Paper ID – NCETST2176

A Paper Presented by-*G. Sunita Sundari
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, AP, India.
*Corresponding author: gunturisunita@kluniversity.in

ABSTRACT

In this current work, the effect of different concentrations of nickel (Ni) dopant on the structural, morphological and optical properties of undoped Fe_3O_4 nanoparticles (NPs) are analyzed. Nickel doped Fe_3O_4 ($NiFe_3O_4$) NPs of five concentrations can be represented as 0.5% as NF1, 1.0 % as NF2, 1.5 % as NF3, 2 % as NF4 and 2.5 % as NF5. Undoped Fe_3O_4 and $NiFe_3O_4$ NPs are prepared by Chemical co-precipitation method from a mixture of $FeCl_2 \cdot 4H_2O$ and $FeCl_3 \cdot 6H_2O$ salts. Structural, morphological and optical properties of the synthesized undoped Fe_3O_4 and $NiFe_3O_4$ NPs were deliberated by a choice of characterization techniques such as XRD, FTIR, FE-SEM and UVVIS. XRD established the characteristic structure, phase and purity of the synthesized undoped Fe3O4 and $NiFe_3O_4$ NPs; Average crystallite size is found to decrease with increasing Ni concentration. Surface morphology of undoped Fe_3O_4 and $NiFe_3O_4$ NPs was studied by scanning electron microscopy (SEM). The existence of FTIR peaks at 563.2 cm^{-1} and 433.5 cm^{-1} confirmed the formation of Fe_3O_4 NPs. It is due to the stretching vibrations of the Fe-O bond. The optical absorption of the synthesized nanomaterials was studied by DR UV-Vis spectrometer. Band gap measurements revealed that the indirect band gap values for synthesized Ni-doped nanomaterials (1.25 eV) are higher than the determinant value for the undoped Fe_3O_4 NPs (0.75 eV) due to a decrease in lattice constant. The results indicated that the Ni-doped Fe_3O_4 NPs strongly influences the microstructure, crystal structure and energy band gap.

Keywords: Nickel doped Fe3O4 nanomaterials, FTIR, FE-SEM, DR-UV-Visible, XRD analysis.

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SYNTHESIS AND CHARACTERIZATION OF GRAPHENE BASED IRON OXIDE (Fe_3O_4) NANOCOMPOSITES

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A Paper Presented by-*G. Sunita Sundari
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, AP, India.
*Corresponding author: gunturisunita@kluniversity.in

ABSTRACT

This work reports the synthesis of iron oxide (Fe_3O_4) nanocomposites (NCs) such as Fe_3O_4/GO, Fe_3O_4/rGO using Co-precipitation method. The synthesized NCs were characterized by X-ray diffraction (XRD), Field emission scanning electron microscopy (FE-SEM), Fourier transforms infrared spectroscopy (FTIR), and Diffuse reflectance ultraviolet-visible spectrophotometry (DRS). The XRD analysis showed the formation of Fe_3O_4/rGO nanocomposite. FE-SEM images revealed that Fe_3O_4 spherical nanoparticles are uniformly deposited on the reduced graphene oxide (rGO) sheets. FTIR confirms the formation of inverse ferrite spinel structure and DRS studies showed the strong absorption in the visible region and both types (direct and indirect) of energy bands were calculated for iron oxide (Fe_3O_4) NCs.

Keywords: Co-precipitation method, Fe_3O_4 nanoparticles, Iron oxide nanocomposites, Structural properties, Optical properties.

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TRANSPORT PROPERTIES OF PVA BASED ION CONDUCTING POLYMER ELECTROLYTE COMPLEXED WITH SODIUM ACETATETRIHYDRATE

Paper ID – NCETST2178

A Paper Presented by-G. Sunita Sundari
Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, AP, India.
*Corresponding author: gunturisunita@kluniversity.in

ABSTRACT

In the present work, an attempt has been made to prepare solid polymer electrolyte systems (Poly Vinyl Alcohol and sodium acetatetrihydrate) by solution-cast technique. The optical spectrum revealed that the absorption peaks in ultraviolet region (360-375nm) and is attributed to polymer chain complexed with salt. Moreover, the D.C. Conductivity as well as transport properties (temperature range 303 K to 373 K) were carried out. The conductivity results reveal conduction mechanism is of Arrhenius-type thermally activated process. The highest conductivity is found to be $5.57x10^{-6}$ S/cm at 373 K, for sample 60:40 of sodium acetatetrihydrate in PVA. Whereas in transport properties, the transport number of the mobile species in the polymer electrolytes was calculated by Hebb Wagner's polarization technique. The total charge transport of ionic was found at 0.98 in this polymer electrolyte system. These results indicate that the charge transport in the polymer electrolytes is mainly due to Na^+ ions.

KEYWORDS: Solid Polymer Electrolyte, Ionic Conductivity, Solution Casting Technique, Transport Properties, UV- Absorption Peak

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EXCESS THERMODYNAMIC AND ACOUSTIC ROPERTIES FOR EQUIMOLAR MIXTURE OF METHYL BENZOATE AND ALKANOLS WITH BENZENE AT 303.15 K

Paper ID – NCETST2179

A Paper Presented by-Sk. Suriya Shihab[1], K. Govinda Rao[2], M. Gnana Kiran[2], Shaik. Babu[2,*] and S. Sreehari Sastry[1]

[1]Department of Physics, Acharya Nagarjuna University, Nagarjunanagar -522510, India.
[2]Department of Physics, K L University, Guntur- 522 502, Andhra Pradesh, India.
*E-mail: babu.computers@gmail.com

ABSTRACT

The values of speed of sound (U), density (ρ) and viscosity (η) of pure liquids and the mixture of methyl benzoate +1-propanol/1-butanol/1-pentanol with benzene were measured over the entire mole fraction range at T=303.15 K.From these values, various thermo-acoustic parameters such as excess molar volume (VE), excess isentropic compressibility (Ks E), and excess free length (Lf E), excess Gibbs free energy (ΔG^*E) and excess enthalpy (HE) are calculated. The reason for deviations in these excess parameters is explained based on the intermolecular interactions present in these liquids.

Keywords: methyl benzoate, density, 1-alkanols, acoustic properties, the speed of sound.

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AC CONDUCTIVITY AND DIELECTRIC STUDIES OF PVA BASED SOLID POLYMER ELECTROLYTE

Paper ID – NCETST2180

A Paper Presented by-M. Gnana Kiran[a,b], N. Krishna Jyothi[a*], M. Narasimha Rao[c] and K. Vijaya Kumar[d]

[a]Department of Physics, K. L. E. F., Vaddeswaram, Guntur Dt.-522 502, Andhra Pradesh, India

E-mail: jyothinadella@kluniversity.in

[b]Department of Physics, Andhra University, Visakhapatnam-530 003, Andhra Pradesh, India

[c]Department of Physics, SBIT, Khammam-507 002, Telangana, India

[d]Department of Physics, Dayananda Sagar Academy of Tech. and Management, Bangalore-560 082, India

ABSTRACT

The solid polymer electrolyte films composed of polyvinyl alcohol (PVA) with various concentrations of sodium nitrate ($NaNO_3$) salt have been prepared by solution casting technique. The bond structure and amorphous nature has been confirmed by Fourier transform infrared spectroscopy (FTIR) and X-ray diffraction (XRD) analysis respectively. The AC conductivity values have been measured in the frequency range 42 Hz–100 KHz for the films (PVA:$NaNO_3$ = 90:10; 80:20; 70:30; 60:40). The polymer electrolyte with composition 30 wt% of NaNO3 shows the highest conductivity of 2.33×10^{-6} S/cm. Activation energy is found to be 0.19 eV.

Keywords: PVA, NaNO3, XRD, FTIR, conductivity.

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AC CONDUCTIVITY AND DIELECTRIC STUDIES OF TSP BASED SOLID POLYMER ELECTROLYTE

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A Paper Presented by-M. Gnana Kiran[a,b], N. Krishna Jyothi[a*], M. Narasimha Rao[c] and K. Vijaya Kumar[d]

[a]Department of Physics, K. L. E. F., Vaddeswaram, Guntur Dt.-522 502, Andhra Pradesh, India

E-mail: jyothinadella@kluniversity.in

[b]Department of Physics, Andhra University, Visakhapatnam-530 003, Andhra Pradesh, India

[c]Department of Physics, SBIT, Khammam-507 002, Telangana, India

[d]Department of Physics, Dayananda Sagar Academy of Tech. and Management, Bangalore-560 082, India

ABSTRACT

The solid polymer electrolyte films composed of Tamarind seed polysaccharides (TSP) with various concentrations of sodium nitrate (NaNO3) salt have been formulated by solution casting technique. The structure and amorphous nature have been verified by Fourier transform infrared spectroscopy (FTIR) and X-ray diffraction (XRD) analysis separately. The AC conductivity values have been calculated in the frequency range 42 Hz–100 KHz for the films (TSP: NaNO3 = 90:10; 80:20; 70:30; 60:40). The polymer electrolyte with composition 30 wt% of NaNO3 shows the highest conductivity of 2.33×10–4 S/cm. Activation energy is found to be 0.29 eV.

Keywords: TSP, NaNO3, XRD, FTIR, conductivity.

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CONDUCTIVITY AND DIELECTRIC STUDIES OF TSP BASED SOLID POLYMER ELECTROLYTE

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A Paper Presented by-N. Krishna Jyothi[a*], M. Gnana Kiran[a,b], M. Narasimha Rao[c] and K. Vijaya Kumar[d]

[a]Department of Physics, K. L. E. F., Vaddeswaram, Guntur Dt.-522 502, Andhra Pradesh, India
E-mail: jyothinadella@kluniversity.in
[b]Department of Physics, Andhra University, Visakhapatnam-530 003, Andhra Pradesh, India
[c]Department of Physics, SBIT, Khammam-507 002, Telangana, India
[d]Department of Physics, Dayananda Sagar Academy of Tech. and Management, Bangalore-560 082, India

ABSTRACT

The solid polymer electrolyte films composed of Tamarind seed polysaccharides (TSP) with various concentrations of sodium Carbonate (NaCO3) salt have been made by solution casting technique. The amorphous nature and bond structure have been confirmed by Fourier transform infrared spectroscopy (FTIR) and X-ray diffraction (XRD) analysis respectively. The AC conductivity values have been calculated in the frequency range 42 Hz–100 KHz for the films (PVA: NaCO3 = 90:10; 80:20; 70:30; 60:40). The
polymer electrolyte with composition 20 wt% of NaCO3 shows the highest conductivity of 2.33×10–6 S/cm. Activation energy is found to be 0.39 eV.

Keywords: TSP, FTIR, conductivity, NaCO3, XRD.

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CONDUCTIVITY AND DIELECTRIC STUDIES OF PVA BASED SOLID POLYMER ELECTROLYTE

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A Paper Presented by-N. Krishna Jyothi[a*], M. Gnana Kiran[a,b], M. Narasimha Rao[c] and K. Vijaya Kumar[d]

[a]Department of Physics, K. L. E. F., Vaddeswaram, Guntur Dt.-522 502, Andhra Pradesh, India
E-mail: jyothinadella@kluniversity.in
[b]Department of Physics, Andhra University, Visakhapatnam-530 003, Andhra Pradesh, India
[c]Department of Physics, SBIT, Khammam-507 002, Telangana, India
[d]Department of Physics, Dayananda Sagar Academy of Tech. and Management, Bangalore-560 082, India

ABSTRACT

The solid polymer electrolyte films composed of polyvinyl alcohol (PVA) with various concentrations of sodium Carbonate ($NaCO_3$) salt have been made by solution casting technique. The amorphous nature and bond structure has been confirmed by Fourier transform infrared spectroscopy (FTIR) and X-ray diffraction (XRD) analysis respectively. The AC conductivity values have been calculated in the frequency range 42 Hz–100 KHz for the films (PVA:$NaCO_3$ = 90:10; 80:20; 70:30; 60:40). The polymer electrolyte with composition 20 wt% of $NaCO_3$ shows the highest conductivity of 2.33×10^{-6} S/cm. Activation energy is found to be 0.29 eV.

Keywords: PVA, FTIR, conductivity, $NaCO_3$, XRD.

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STRUCTRURAL AND DIELECTRIC STUDIES OF PVA BASED SOLID POLYMER ELECTROLYTE

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A Paper Presented by-M. Narasimha Rao[c], N. Krishna Jyothi[a*], M. Gnana Kiran[a,b] and K. Vijaya Kumar[d]

[a]Department of Physics, K. L. E. F., Vaddeswaram, Guntur Dt.-522 502, Andhra Pradesh, India
E-mail: jyothinadella@kluniversity.in
[b]Department of Physics, Andhra University, Visakhapatnam-530 003, Andhra Pradesh, India
[c]Department of Physics, SBIT, Khammam-507 002, Telangana, India
[d]Department of Physics, Dayananda Sagar Academy of Tech. and Management, Bangalore-560 082, India

ABSTRACT

The polymer electrolyte films composed of polyvinyl alcohol (PVA) with various intensities of sodium Carbonate ($NaCO_3$)salt have been made by solution casting procedure. The amorphous nature and bond structure have been verified by Fourier transform infrared spectroscopy (FTIR) and X-ray diffraction (XRD) analysis respectively. The AC conductivity values have been computed in the frequency range 40 Hz–120 KHz for the films (PVA: NaCO3 = 90:10; 80:20; 70:30; 60:40). The polymer electrolyte with composition 20 wt% of $NaCO_3$ shows the maximum conductivity of 2.33×10–6 S/cm. Activation energy is observed to be 0.29 eV.

Keywords: PVA, XRD, FTIR, conductivity, NaCO3.

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STRUCTURAL AND DIELECTRIC STUDIES OF TSP BASED SOLID POLYMER ELECTROLYTE

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A Paper Presented by-M. Narasimha Rao*c*, N. Krishna Jyothi*a, M. Gnana Kiran*a,b* and K. Vijaya Kumar*d***

[a]Department of Physics, K. L. E. F., Vaddeswaram, Guntur Dt.-522 502, Andhra Pradesh, India
E-mail: jyothinadella@kluniversity.in
[b]Department of Physics, Andhra University, Visakhapatnam-530 003, Andhra Pradesh, India
[c]Department of Physics, SBIT, Khammam-507 002, Telangana, India
[d]Department of Physics, Dayananda Sagar Academy of Tech. and Management, Bangalore-560 082, India

ABSTRACT

The polymer electrolyte films composed of Tamarind seed polysaccharides (TSP) with various intensities of sodium Carbonate (NaCO3) salt have been made by solution casting procedure. The AC conductivity values have been computed in the frequency range 42 Hz–100 KHz for the films (PVA: NaCO3 = 90:10; 80:20; 70:30; 60:40). The amorphous nature and bond structure have been verified by Fourier transform infrared spectroscopy (FTIR) and X-ray diffraction (XRD) analysis respectively. The polymer electrolyte with composition 20 wt% of NaCO3 shows the maximum conductivity of 2.33×10–6 S/cm. Activation energy is observed to be 0.29 eV.

Keywords: TSP, XRD, FTIR, conductivity, NaCO3

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EFFECT OF CHROMIUM SUBSTITUTION ON THE STRUCTURAL AND MAGNETIC PROPERTIES OF COBALT FERRITE

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A Paper Presented by-G. Raju [a], N. Murali [b,] M.S.N.A. Prasad [a], B. Suresh [a], D. Apparao Babu [a], M. Gnana Kiran [c], A. Ramakrishna [d], M. Tulu Wegayehu [d], B. Kishore Babu [a]

[a] Department of Engineering Chemistry, AUCE(A), Andhra University, India

[b] Advanced Analytical Laboratory, DST-PURSE Programme, Andhra University, India

[c] Department of Physics, KLEF, Guntur, Andhra Pradesh, India

[d] Department of Physics, Andhra University, Visakhapatnam, India

ABSTRACT

Spinel structured ferrite materials have been explored more than the other types as bearing simplified structural analysis and their synthesis methods. In this present report Cr2+ doped spinel structured cobalt ferrite nano powder materials have been synthesized and characterized. For investigation of structural, morphological, and magnetic properties, analytic techniques such as powder X-ray diffraction, FTIR, FESEM, and VSM have been employed. The phase analysis from XRD data showed the spinel structure with the lattice parameters with the range of 8.328–8.412 Å. The FESEM images show non uniform size and shape distribution of these different composition powder samples. The VSM measurement shows a decreasing saturation magnetization as the Cr2+ content increases. Whereas, the coercive force and remnant magnetization at first increase and then decrease with Cr2+ content.

Keywords: Cobalt ferrite, Inverse spinel structure, XRD, Raman spectra, VSM

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STRUCTURAL AND VIBRATIONAL PROPERTIES OF COBALT FERRITE

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A Paper Presented by-M. Gnana Kiran [c], G. Raju [a], N. Murali [b], M.S.N.A. Prasad [a], B. Suresh [a], D. Apparao Babu [a], M. Gnana Kiran [c], A. Ramakrishna [d], M. Tulu Wegayehu [d], B. Kishore Babu [a]

[a] Department of Engineering Chemistry, AUCE(A), Andhra University, India
[b] Advanced Analytical Laboratory, DST-PURSE Programme, Andhra University, India
[c] Department of Physics, KLEF, Guntur, Andhra Pradesh, India
[d] Department of Physics, Andhra University, Visakhapatnam, India

ABSTRACT

Spinel structured ferrite materials have been studied more than the other types as bearing simplified structural assessment and their synthesis methods. In this present report Cr2+ doped spinel structured cobalt ferrite nano powder substances have been synthesized and characterized. For analysis of structural, morphological, and magnetic properties, analytic methods such as powder X-ray diffraction, FTIR, FESEM, and VSM have been used. The phase analysis from XRD data indicated the spinel structure with the lattice parameters with the range of 8.428–8.612 Å. The FESEM images show non uniform size and shape distribution of these different composition powder samples. The VSM measurement proves a decreasing saturation magnetization as the Cr2+ content rises. Whereas, the coercive force and remnant magnetization at first increase and then decrease with Cr2+ content.

Keywords: Cobalt ferrite, XRD, Inverse spinel structure, Raman spectra, VSM.

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VIBRATIONAL AND MAGNETIC PROPERTIES OF COBALT FERRITE MATERIAL SAMPLES

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A Paper Presented by-N. Murali [b], M. Gnana Kiran [c], G. Raju [a], M.S.N.A. Prasad [a], B. Suresh [a], D. Apparao Babu [a], M. Gnana Kiran [c], A. Ramakrishna [d], M. Tulu Wegayehu [d], B. Kishore Babu [a]

[a] Department of Engineering Chemistry, AUCE(A), Andhra University, India
[b] Advanced Analytical Laboratory, DST-PURSE Programme, Andhra University, India
[c] Department of Physics, KLEF, Guntur, Andhra Pradesh, India
[d] Department of Physics, Andhra University, Visakhapatnam, India

ABSTRACT

Spinel structured ferrite materials have been experimented more than the other types as bearing simplified structural estimation and their synthesis methods. The phase analysis from XRD data indicated the spinel structure with the lattice parameters with the range of 8.428–8.612 Å. For analysis of structural, morphological, and magnetic properties, analytic methods such as powder X-ray diffraction, FTIR, FESEM, and VSM have been used. The FESEM images show non uniform size and shape distribution of these different composition powder samples. The VSM measurement proves a decreasing saturation magnetization as the Cr2+ content rises. Whereas, the coercive force and remnant magnetization at first increase and then decrease with Cr2+ content.

In this present report Cr2+ doped spinel structured cobalt ferrite nano powder substances have been synthesized and characterized.

Keywords: Cobalt ferrite, XRD, Inverse spinel structure, Raman spectra, VSM.

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PERFORMANCE OF THREE DIFFERENT RADIATORS OF 8 X 8 ACOUSTIC ARRAY ANTENNA FOR DOPPLER SODAR

Paper ID – NCETST2189

A Paper Presented by-KT Rao[1], V Naveen Kumar[2],Ganna Kiran[3], S Sreedevi[4], MP Rao[5]

[1, 4, 5] Department of Systems Design, Andhra University, Visakhapatnam, Andhra Pradesh, India

[2] Gudlavalleru Engineering College, BSH Department, Gudlavalleru, Andhra Pradesh, India

[3] KL University, Vaddaswaram, Vijayawada, Andhra Pradesh, India

ABSTRACT

The need for quality measurements of the wind profilers in the first 200m of the atmosphere for wind energy and other emerging areas applications demands new antenna for enhanced echo-signal intensity. This forces antenna designers to look for transducer systems with better conversion efficiencies and to seek for more versatile configurations. In the present experiment, an array antenna of size 8 x 8 with three different transducers is designed and fabricated for an operation frequency of 2 kHz. Basically, two types of transducers made with piezoelectric and neodymium materials are used. The models of Philips 1X9101 and Ahuja APT-165 belong to piezoelectric category and MA Audio MA588 to neodymium. The spacing between any two successive elements 0.5λ. The six elements at each corner of the planar array are removed as part of the optimization of the side lobe levels and the beam width of the main lobe. The antenna was systematically characterized, in an acoustic anechoic chamber, with respect to its axial and also studies transmit, receive conversion efficiencies and directional response. These measurements should be performed in free field conditions. The anechoic chamber at Naval Science and Technological Laboratories (DRDO), Visakhpatnam was used to conduct the measurements. A maximum intensity of 113 dB, 86.4 dB and 92.5 dB is observed at zenith angle at 2 kHz with a beam width of 160, 180 and 150 for Philips, Ahuja and M.A audio array antenna respectively. Among three antenna the MA588 antenna is suitable for profilers up to 500 meters of the boundary layer and capable of high power handling. Before installing the elements in the array, each element was individually characterized for its forward and reverse conversion efficiencies.

Keywords: radiators, acoustic array antenna, Doppler Sodar

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MEASUREMENT OF WIND ENERGY 8 X 8 ACOUSTIC ARRAY ANTENNA PERFORMANCE FOR DOPPLER SODAR

Paper ID – NCETST2190

A Paper Presented by-Ganna Kiran[3], KT Rao[1], V Naveen Kumar2, S Sreedevi[4] , MP Rao[5]

[1, 4, 5] Department of Systems Design, Andhra University, Visakhapatnam, Andhra Pradesh, India

[2] Gudlavalleru Engineering College, BSH Department, Gudlavalleru, Andhra Pradesh, India

[3] KL University, Vaddaswaram, Vijayawada, Andhra Pradesh, India

ABSTRACT

The requirement for quality measurements of the wind profilers in the first 200m of the atmosphere for wind energy and other emerging areas applications demands new antenna for enhanced echo-signal intensity. In the present experiment, an array antenna of size 8 x 8 with three separate transducers is designed and manufactured for an operation frequency of 2 kHz. Basically, two types of transducers made with piezoelectric and neodymium materials are utilized. The models of Philips 1X9101 and Ahuja APT-165 belong to piezoelectric category and MA Audio MA588 to neodymium. The antenna was systematically characterized, in an acoustic anechoic chamber, with respect to its axial and also studies transmit, receive conversion efficiencies and directional response. These measurements should be performed in free field conditions. The anechoic chamber at Naval Science and Technological Laboratories (DRDO), Visakhpatnam was used to conduct the measurements. A maximum intensity of 113 dB, 86.4 dB and 92.5 dB is observed at zenith angle at 2 kHz with a beam width of 160, 180 and 150 for Philips, Ahuja and M.A audio array antenna respectively. Among three antenna the MA588 antenna is suitable for profilers up to 500 meters of the boundary layer and capable of high power handling.

Keywords: radiators, Wind energy, acoustic array antenna, Doppler Sodar.

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A NEW RETRIEVAL METHOD FOR THE ICE WATER CONTENT OF CIRRUS USING DATA FROM THE CLOUDSAT AND CALIPSO

Paper ID – NCETST2191

A Paper Presented by-Honglin Pan[a], K. Raghavendra Kumar[b], M. Gnana Kiran[b]

[a]*Institute of Desert Meteorology, China Meteorological Administration,Urumqi 30002,China*

Department of Physics, Koneru Lakshmaiah Education Foundation, K.L.University, Vaddeswaram 522502, Guntur, India

ABSTRACT

The CloudSat and CALIPSO (Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations) are the members of satellite observation system of A-train to achieve the quasi-synchronization observation on the same orbit. With the help of active (CALIOP and CPR) and passive payloads from these two satellites, respectively, unprecedented detailed information of microphysical properties of ice cloud can be retrieved. In retrieval of cirrus IWC, empirical formulas of the exponential type were used for both thinner cirrus (detected by Lidar-only), thicker cirrus (detected by radar-only), and the part of cirrus detected by both. In the present study, the comparison of various methods verified that our proposed new joint method is more comprehensive, rational and reliable. This can be interpreted from the different hypothesis of microphysical characteristics and parameters used in the retrieval method. In addition, our joint method only uses the extinction coefficient and the radar reflectivity factor to calculate the IWC, which is simpler and reduces to some extent the accumulative error. In future studies, we will not only compare the value of IWC but also explore the detailed macrophysical and microphysical characteristics of cirrus.

Keywords: Cirrus; CloudSat; CALIPSO; Retrieval methods; Ice Water Content.

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STRUCTURAL, ELECTROCHEMICAL STUDIES ON DOUBLY DOPED $L_{2-X}(GDNI)_XO_4$ CATHODE MATERIALS FOR LI-ION BATTERIES

Paper ID – NCETST2192

A Paper Presented by-A. Venkateswara Rao*, B. Ranjith Kumar
Advanced Functional Materials Research Centre, Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India
Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in

ABSTRACT

Doubly doped $L_{2-x}(GdNi)_xO_4$ (x = 0, 0.01, 0.02, 0.03, 0.04 and 0.05) materials with spinel structure have been synthesized by sol-gel method. Powder X-ray diffraction results have confirmed the formation of cubic spinel structure. Cyclic Voltammetry results showed enhancement in Li^+ intercalation and de-intercalation through decrease in redox potentials as a function of doping. Electrochemical Impedance Spectroscopy (EIS) results show decreased charge transfer resistance with addition of Gd and Ni. Charge-discharge studies for $L_{1.98}(GdNi)_{0.01}O_4$ show 67.1 mAh/g discharge capacity over other doped derivatives and pristine $LiMn_2O_4$ (60.6 mAh/g) in aqueous Li_2SO_4 electrolyte.

Keywords: Gd and Ni co-doped $LiMn_2O_4$ Li-ion battery, Improved discharge capacity, Li intercalation and de-intercalation, Cubic spinel structure

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STRUCTURAL, MICROSTRUCTURAL AND ELECTROCHEMICAL STUDIES ON $MN_{2-X}(GDAL)_XO_4$ WITH SPINEL STRUCTURE AS CATHODE MATERIAL FOR LI-ION BATTERIES

Paper ID – NCETST2193

A Paper Presented by-A. Venkateswara Rao[a*], B. Ranjith Kumar[a], S.D. Ramarao[a,b]

[a] Advanced Functional Materials Research Centre, Department of Physics, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh 522502, India

[b] Solid state and Inorganic Chemistry Lab, New Chemistry Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore 560064, India

Corresponding author: avrtoavr@gmail.com, avrphysics@kluniversity.in

ABSTRACT

Gd and Al co-doped $Mn_{2-x}(GdAl)_xO_4$ (x = 0, 0.01, 0.02, 0.03, 0.04 and 0.05) materials with spinel structure were synthesized by sol–gel method. Powder X-ray diffraction results confirm the formation of cubic spinel structure and average particle sizes are found to be between 80 and 110 nm from FE-SEM and TEM analysisAt a doping of x = 0.02 charge transfer resistance values were found to be least. First cycle charge–discharge profiles for $Mn_{1.96}(GdAl)_{0.02}O_4$ shows 139.2 mAh/g discharge capacity over other doped derivatives and pureMn_2O_4 (119.6 mAh/g) .

Key words: Gd and Al co-doped Mn_2O_4, Li-ion battery, Improved discharge capacity, Cubic spinel structure

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SEISMIC ANALYSIS OF INDUSTRIAL STRUCTURE USING BRACINGS AND DAMPERS

Paper ID – NCETST2194

A Paper Presented by-B. Ravali[1]and P. Poluraju[2]

[1,2] PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Resistance of structures against earthquake plays an extensive role in construction industry. A structure should consist of strength, stability and ductility to accommodate both horizontal and vertical loadings. Horizontal loading leads to the production of sway and further results in vibration and storey drift. Strength and stiffness are two major keys for any structure to resist gravity and lateral loads. Provision of bracings or dampers to any structure contributes to lateral stability. After assigning dampers or bracings, the general system changes to lateral load resisting system (LLRS). However, this involves high economy; it is only suitable for high rise, important buildings which are suspected to be affected by lateral load and structures damaged by lateral load. The present work involves in proposing the suitability of type of damper or bracing for controlling the seismic activity on industrial structures in respective seismic zones III and V of India. Industrial structures also associate high dead load as it provides residence to heavy sized members. Therefore, this is necessary to investigate seismic response of buildings with various bracings and dampers to control vibration, lateral displacement and storey drift. Natural time period, frequency, roof displacements are the major parameters considered for observing response of structures. Response spectrum analysis of 3D industrial structure with distinct concentric bracings and dampers using SAP 2000 and ETABS is carryout in this research under respective base shear.

Index Terms: bracings, dampers, horizontal load, lateral displacement, response spectrum analysis, storey drift.

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EXPERIMENTAL INVESTIGATION ON FLEXURAL BEHAVIOUR OF SANDWICH SLABS WITH AND WITHOUT CONCEALED BEAMS

Paper ID – NCETST2195

A Paper Presented by-M. Sai Manideep[1], Abhay Kumar Chaubey[2], M. L. Sai Ranga Rao[2]
1,2PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

A sandwich panel is a lightweight structure, economical and having low thermal conductivity. It is made up of three layers in which the middle layer is low-density core bounded with a thin concrete layer at top and bottom. The main objective of this study is to find out the flexural behaviour of Sandwich slabs with concealed beams arranged in two different ways. The experimental investigation consists of four different slabs one in conventional reinforced cement concrete slab and the second model is sandwich slab and the third model is the sandwich slab with a concealed beam provided in one direction. The fourth model is a concealed beam provided in both perpendicular directions. To examine the flexural behaviour of sandwich panels, a loading frame of capacity 200 tons have been used. The Load versus deflection and crack pattern were observed and recorded by linear variable differentiable transducers (LVDT). The results are obtained by varying parameters like direction and number of a concealed beam. There is a significant change in flexural behaviour of the sandwich slab with a concealed beam in both perpendicular directions compared to other specimens.

Index Terms: sandwich slab, concealed beams, flexural behaviour

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INVESTIGATION ON STEEL FIBER COMPOSITE BEAM USING FRACTURE MECHANICS APPROACH

Paper ID – NCETST2196

A Paper Presented by-Sk. Amreen[1] and P. Poluraju[2]

1,2 PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Fracture mechanics is the field of mechanics based on energy principles. The crack propagates in a material when energy dissipation is more. The existence of pores and cracks which are stable are not considered while designing a structure under ultimate load in stress-strain criteria, but their presence is included in energy-based principles i.e., fracture mechanics. The fracture mechanics study determines the ductile behaviour of a structure under loading conditions using following parameters such as fracture energy, stress intensity factor, fracture process zone etc., The ductile and toughness nature of a concrete elements will be increased by incorporation of steel fiber in a normal concrete defined as steel fiber reinforced concrete (SFRC). In this present study, the experimental work has been carried out on steel fiber reinforced concrete notched beams by varying notch to depth ratio as recommended by RILEM (fracture test) tested under three point bending test (TPBT). The behavior of notched beams has been assessed through load-deflection curve, crack pattern resulted from three point bending test which are required to find the fracture parameters such as fracture energy and stress intensity factor. It is been observed from the experimental study, the energy dissipation produced by the crack was shortened by the usage of steel fiber.

Index Terms: Fracture Energy, Notch to Depth ratio, Stress Intensity Factor, Steel Fiber Reinforced Concrete.

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BEHAVIOR OF COMPOSITE CELLULAR BEAM UNDER FLEXURE

Paper ID – NCETST2197

A Paper Presented by-Nanduri Sai Tejaswi[1] and P. Poluraju [2]

[1,2] PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Construction technology is looking forward to recycling the material for ensuring the safe environment by applying new technologies like cellular beams. The cellular beam comprises of web openings. These types of beams are currently in use. These are flexible and elegant in nature. When a beam consists of I-section girder which is encased with concrete is known as encased beam. The composite cellular beam consists of I-section cellular girder which is wrapped with concrete. These composite cellular beams are free from corrosion and are fire resistant. These beams are more economical and ensure more structural integrity when compared with encased beams. This research mainly concentrates on flexural behavior of composite cellular beams. The experimental work is carried out by testing the specimens under three point bending test by varying various parameters such as circular web openings and spacing. Experimental data is characterized by Load *vs.* Deflection cure. It is been observed that composite cellular beam acquires more flexural strength and they are light in weight when compared to encased beam.

Index Terms: cellular beam, circular web openings, encased beam, three point bending test.

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NUMERICAL ANALYSIS OF COLD FORMED STEEL COMPRESSION MEMBERS BASED ON BUCKLING PROFILE UNDER ECCENTRIC LOADING

Paper ID – NCETST2198

A Paper Presented by-Sk.Fayaz[1],I. Siva Kishore [2], K.J. Brahma Chari[2]

[1,2] PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

This paper notably investigated the strength (ultimate load) of the member by taking the buckling profile that commemorates the application of the load. This study mainly contravenes with the previous studies that are majorly dependent on the empirical formulas that fails to provide similar results that outrage in experimental results. Potential studies were carried out by considering the pinned ends that compensate a perfect parabolic curve, which helps in assessing the load details. The principle which envisages the investigation is that load acting on the pre-stressing can be decided based on the profile of the tendon. The numerical study further proceeded by the simulation technique and determined the distortional buckling characteristics of the compression member. The use of harmonic sine(or)cosine waves make significant escalated factor for the application of mathematical model in engineering sciences but the results are dejected when compared to parametric analysis.

Index Terms: Distortional buckling, Harmonic wave, parabolic profile, Pinned ends, Ultimate load.

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EXPERIMENTAL INVESTIGATION OF GGBS BASED GEOPOLYMER CONCRETE WITH STEEL FIBERS

Paper ID – NCETST2199

A Paper Presented by-G. Srinivasa Rao [1]and B. Sarath Chandra Kumar [2]

1,2 PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Concrete is the most popular material used in the construction works in which cement is the main composite. The manufacturing of cement involves the emission of greenhouse gases into the atmosphere which are responsible for global warming. Hence the researches are currently focused on various materials to replace and reducing the usage of cement. In this study Geopolymer concrete is prepared with Ground Granulated Blast Furnace Slag (GGBS) with the addition of steel fibers. GGBS is the by-product produced from steel industry. Steel fibers are added to increase the tensile strength of concrete. In this experimental investigation geopolymer concrete containing GGBS and steel fibre (0.5%) with 8 Molar and 10 Molar alkaline activators are used. The ratio of these alkali activators is 1:2.5. The results showed that fiber can significantly enhance the Mechanical properties. The enhancement also increases with the increasing fiber volume fraction.

Index Terms: Alkaline Activator Solution, Geopolymer, Ground Granulated Blast Furnace Slag, Molarity, Steel Fibers.

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NUMERICAL STUDY OF BUBBLE DECK SLAB USING ANSYS

Paper ID – NCETST2200

A Paper Presented by-B. Gopi Raju [1] and P. Poluraju [2]

[1,2] PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Construction of slab element is one of the important structural members consumes higher concrete. It is necessary to optimize the use of concrete in slabs. Bubble deck slab is an innovative technique made up of high-density polyethylene hollow spherical balls. It eliminates the inactive concrete which is present below the neutral axis by replacing hollow spherical balls. The parameters like strength, stiffness, durability and structural integrity remain unchanged when compared with the conventional slab. It has advantages in terms of economy, reducing co_2 emission, earthquake damages and structural dead weight etc. Bubble deck slab diminish the load coming on the columns, walls, and foundations. In this research work, simulation work has been carried out on bubble deck slab by varying the parameters such as void ratio and thickness of bubble deck slab at different support conditions under uniformly distributed load by using ANSYS. From this simulation work, the total deformation, directional deformation, and Von-mises stresses were assessed. It is been concluded that when the void ratio percentage was varied from 30- 50% for achieving high strength.

Index Terms: void ratio, size of the slab, the compressive strength of concrete, type of load.

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STUDY ON STRUCTURALBEHAVIOUR OF RC SANDWICH DEEP BEAM

Paper ID – NCETST2201

A Paper Presented by-G. Kranthi Kumar [1]and B. Sarath Chandra Kumar [2]

1,2 PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation,Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Reinforced concrete deep beams are different compared to normal beam because of compression bottle shape is happen after the diagonal crack has occurred. An experimental program consists of three groups of twelve specimens are carried out to investigate the shear strength behaviour of reinforced concrete sandwich deep beam concealed with the variation of insulation pad depth (200 mm, 300 mm and 400 mm) and vertical and horizontal reinforcement varies 0.15%, 0.25%, and 0.35%. Constantly maintained effective length, depth, the width of the specimens, width of bearing plates and longitudinal reinforcement as 1%. The study also aims at examining the influence of longitudinal shear reinforcement along with vertical and horizontal shear reinforcement on the shear strength, shear ductility of RC sandwich deep beams of insulation pads placed at different depths and compare the ACI code, Mau and Hau, and Zsutty shear strength models for prediction of sandwich deep beam. The main outcome of this study is to compare load vs. deflection and stress vs. strain.

Index Terms: Deep beam, shear reinforcement, insulation pad, crack pattern, diagonal crack.

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EXPERIMENTAL INVESTIGATION ON CONCRETE WITH PARTIAL REPLACEMENT OF FINE AGGREGATE BY MARBLE DUST POWDER

Paper ID – NCETST2202

A Paper Presented by-T. Naga Sai Sree Saran [1] and T. Venkat Das [2]

[1,2] PG Student, Assistant Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Construction officials in coastal areas have facing the challenge of building and maintaining durable concrete structures in a salt water Environment. Gradual penetration of sea salts and the subsequent formation of expansive and Leachable compounds lead to disintegration of structural concrete.The average NACL Concentration of sea water is about 3.5% although it varies from sea to sea depending upon the geological location. In this study, Marble Dust powder has been chemically and physically characterized and partially replaced in the ratio of 10%, 20%, 30%, 40% and 50%by weight of fine Aggregate in concrete fresh concrete test like compaction factor test and slump cone test were under taken as well as hardened concrete test compressive strength as the age of 7, 28 days was obtained.

Index Terms:Compressive strength, Marble dust powder, Sodium chloride, Split tensile strength.

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INFRASTRUCTURE REQUIREMENTS FOR DEVELOPMENT OF A RURAL AREA THROUGH PUBLIC PRIVATE PARTNERSHIP: A MODEL STUDY

Paper ID – NCETST2203

A Paper Presented by-Srikanth. N [1] and Naga Chaitanya Kavuri[2]

[1,2] PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

There is a drastic change in the lifestyle scenario of the rural people due to lack of facilities and amenities (social equality). As a result, there is a lot of migration from rural areas to urban areas resulting in increase of population, socio-economic fluctuation and environmental pollution. Due to such migration, the rural areas are being deserted and the occupation is decreased resulting in low economic growth. Infrastructure development has key role to play in both economic growth and poverty reduction. The Government started many programs for boosting the rural infrastructure development but did not achieve much success in addressing the infrastructure sector. This paper proposes a public private partnership (PPP) concept to rectify address in problems infrastructure sector and improve the lifestyle of the rural people. A case study investigation Chandragudem (V), Mylavaram (M), Krishna (D), Andhra Pradesh, has been taken for the study. The existing infrastructure and proposals in village were gathered by interacting with villagers. The data was gathered to know the needs which make life comfortable and the survey was done in Chandragudem village which comprises of all categories of community people. The present paper proposes the public private partnership (PPP) opportunities for selected village that can boost the infrastructure.

Index Terms:Drastic change, Infrastructure development, Public private partnership, Socio-economic fluctuation.

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5D APPLICATIONS OF BIM IN CONSTRUCTION MANAGEMENT

Paper ID – NCETST2204

A Paper Presented by-Pathan. Md Rafi [1] and K. J. Brahma Chari [2]

[1,2] PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The innovation of roots to develop the construction projects are rapidly growing because of the availability of technologies adopted to build the construction. In the way of construction projects facing some crucial problems between owners, contractors, consultants that are more aspects from the present scenario. In BIM (building information modeling) projects to provide what is need of building a simulation from endeavor through getting better results. Moreover, in every stage of construction is communicating of good collaboration and coordination for making of a decision in a comprehensive analysis and solving. In this paper, research work was carried out on implementing the 5D applications of BIM (3D, 4D, and 5D) with basic parameters to approach the development of projects, systematic planning, scheduling, and cost estimation to overcome barriers on the project. The overall process of meeting the quality in the construction industry can be achieved. In the present study, a model has been designed for implementing the project.

Index Terms:Building information modeling, 5D applications, Revit Architecture, Primavera, Construction techniques.

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A CRITICAL STUDY ON TECHNOLOGICAL ADVANCEMENTS OF FORMWORK IN CONSTRUCTION PROJECT MANAGEMENT

Paper ID – NCETST2205

A Paper Presented by-Israth Ansari Shaik[1] and B.G. Rahul[2]

[1,2] PG Student & Assistant Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Nowadays due to the globalization has brought a lot of changes in the ways of construction across the globe because the spread of newer and innovative technologies across the communities in the world has become simple and the cross-border knowledge sharing has become faster and accurate. Formwork, which temporary structure help in mounding of concrete into desired shape Support the loads imposed on it holds as well as supports wet concrete till the time it cures, is a very important element in construction. This study aims to compare merits and demerits by using a conventional timber Formwork system, Re-Usable Plastic /PVC/Aluminum Formwork System, Table Form/Flying Form systems and Jump Form System in the construction industry in developed countries has improved the standard of the construction industry. One of the most important factors in the determining understand the recent advancements in the Formwork systems with reference to their technological advantages over the traditional Formwork systems and to compare and analyze the impacts of the advancements in the Formwork systems over the traditional Formwork systems on the construction project management. Form the above problem research has been done, are the rectified results will present in this study. The project quality of the work.

Index Terms:Aluminum Formwork, Jump Form System, Permanent Insulated Formwork, Slip Form Systems, and Table form/Flying Formwork.

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ASSESSMENT OF GROUND WATER QUALITY AND ESTIMATION OF WATER QUALITY INDEX BY USING WEIGHTED ARITHMETIC METHOD NEAR MUNICIPAL DUMP SITE AT TENALI, GUNTUR DISTRICT, ANDHRA PRADESH, INDIA

Paper ID – NCETST2206

A Paper Presented by-Sravan Kumar Chilukuri[1], D. Satish Chandra[2], S. S. Asadi[3]

[1,2,3] PG Student, Associate Professor, Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The present study discusses about the ground water pollution near the municipal dump site of Tenali town, Guntur district, Andhra Pradesh. Tenali municipality is following the open dumping process such that there will be a huge problem to environment as well as human health. Dump site in Tenali is a non-engineered, improper and low-lying area. Dump site do not have any leachate collection point. Therefore, the Leachate that is generated is percolated into landfill in the wet and rainy seasons. The study proposes the design of landfill for a municipal dump yard. Ground water samples are collected by fixing the landfill as centre and selecting the four cardinal points around the site. The samples were collected in the poly-ethylene bottles.The samples are tested for physical, chemical and biological parameters to estimate the level of pollution. The results were compared with Indian standards of drinking water (BIS-10500-1991). By using the weighted arithmetic method, the water quality index is analyzed. This study is a reference to implement the best suitable technique to suggest the land fill. The construction of landfill will help the dump site for not allowing the Leachate to percolate into the soil and preventing from damaging the aquifer. The research suggestsupgrading of municipal dump to landfill for the protection of ground water.

Index Terms:Water quality index, Pollution, Ground water, Landfills.

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STUDY OF ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN FORNH-216, IPURUPALEM- REPALLE ANDHRA PRADESH

Paper ID – NCETST2207

A Paper Presented by-Duggisetti Manoj Kumar [1] and K. Shyamchamberlin [2]

[1,2] PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Transport and highway construction play a key role in infrastructure development. As a result, there is tremendous construction activity going on in this field. Irrespective of the numerous works in road and highway works, there is a drastic change in the environmental components due to the works as there was no environmental control board in earlier days. Due to the increase in pollution of all the components of the environment, new government bodies were formed in which environmental impact assessment is one such government body which concerns the environmental effects in construction projects and. The study in this paper is about environmental impact assessment and environmental management plan for NH-216, Ipurupalem, Repalle and Andhra Pradesh. The methodology used is based on environmental impact assessment and environmental management plan by assessing the affected environmental components by collecting the baseline data, analyzing the extent of pollution, estimate the approximate future pollution and suggesting mitigation measures for the affected components. The results will be based on the environmental audit for the proposed mitigation measures and the impact of proposed mitigation measures.

Index Terms:National Highways, Environmental impact assessment, Mitigations, Environmental management Plan, Physical, Biological components.

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A STUDY ON CONSTRUCTION PROJECT MANAGEMENT BEFORE AND AFTER REAL ESTATE REGULATION ACT, (RERA) 2016

Paper ID – NCETST2208

A Paper Presented by-Rajesh Mikkili1[1], V. Sree Lakshmi[2], VenkateshKone[2]

[1,2] PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Real Estate business at present has become a havoc /nightmare for the customers who are investing in Real estate. There are numerous cases of poor quality, increased cost and delay in projects of construction with respect to client and customer which results in loss of resources. To eradicate these issues, the government has proposed to implement RERA Act in India on May 1st, 2016. The main purpose of this act is to protect home-buyers and also to help boost investments in the real estate industry, provide transparency of transactions and improve the quality of construction. But this act is not being implemented all over India due to various factors. This paper tries to study the factors affecting implementation of RERA, advantages and comparison of RERA implemented building with conventional building by taking a live construction as a case study in Andhra Pradesh. The paper highlights the use of RERA, its benefits and proposes RERA act as mandatory tool/norm for improving the quality and life of building in concern with the customer.

Index Terms:RERA, Havoc, Eradicate, Transparency, Implement, Comparison, Conventional Building.

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SUSTAINABILITY OF GOSTHANI RIVER AND DESIGN OF SEWAGE TREATMENT PLANT FOR TANUKU TOWN, WEST GODAVARI DISTRICT, ANDHRA PRADESH, INDIA

Paper ID – NCETST2209

A Paper Presented by-S. Vamsi Harischandra Prasad[1], A. Aravindan[2], Koya Naga Venkata Siva Prasad[3]

[1,3] PG Student, 2Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The present study discusses the sustainability of Gosthani River which is flowing through Tanuku town. In Tanuku, this river water is not used for drinking purpose. After crossing Tanuku town, some of the villages like Velpur, Relangi, Attili etc., are used for drinking and irrigation purpose also. The entire sewage of Tanuku is directly discharged into the Gosthani River which creates an alarming situation to the water quality of Gosthani River. So, the samples of Gosthani River are collected and then samples were tested for various physicochemical parameters. The results were compared withBureau of Indian Standards (10500-2012). It is found that the results obtained from the study area are within the limits. But in future, they may vary due to a rapid increase in population. There is no Sewage Treatment Plant in Tanuku. In this study, the design of sewage treatment plant in Tanuku is discussed. The construction of the sewage treatment plant is to prevent the direct disposal of sewage in the Gosthani River. In the present study, a comprehensive design of unit operations and unit processes are discussed. By the execution of the project, the Gosthani River gets sustained.

Index Terms: Alarming, Gosthani River, sustainability, Unit operations, Unit processes.

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EVALUATION AND DESIGN OPTIMUM PPP MODEL FOR IMPLEMENTATION OF AFFORDABLE HOUSING

Paper ID – NCETST2210

A Paper Presented by-N.S.R.K. Prasad Kethineni[1] and A. Aravindan[2]

[1,2] PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Since 2015 India's urban population is growing at an average of 2.1% every year, but housing growth has been unable to keep pace, due to the government sluggish pace its leads to 10 million housing shortage. Now to overcome this tangible challenge government of India is striving hard for investing on affordable housing constructions to Economic weaker section (EWS) and Lower income group (LIG) in order to achieve housing for all by 2022. Considering the government limitations in financing, the government of India introduced the PPP model to share risk with public authority in housing construction. This paper aims to provide optimum PPP model design for the implementation of affordable housing. This research paper is an explorative study to understand the challenges and possible models in affordable housing and comparative analysis across all Public-private partnership models. This model makes an appropriate allocation of risks, responsibilities, rewards, and penances, and create the incentives for value creation.

***Index Terms*:** Public-Private Partnership, Affordable housing, Lower Income Group (LIG), Economic Weaker Section (EWS), Challenges Facing.

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STUDY ON IMPLEMENTING SMART CONSTRUCTION WITH VARIOUS APPLICATIONS USING INTERNET OF THINGS TECHNIQUES

Paper ID – NCETST2211

A Paper Presented by-Harish Gopi Reddy[1] and Venkatesh Kone[2]

[1,2] PG Student, AssistantProfessor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

In general, the construction industry lacks the change resistance due to which, there is no improvement in innovative style of construction, control over the assets and optimization of the construction process for better energy usage, resource allocation and assets management. Digital transformation is an ongoing challenge in the construction industry. Utilization of digital technologies to improve business process i.e. digitalization has enabled companies to reach great savings and earnings during the past decades. IOT is one such robust system which helps in rectifying the above problems. The future is Internet of Things which will transform the real world object to the virtual world object. The purpose of this paper is twofold, first to identify and study the IOT applications relevant to construction industry and second investigate the factors which have hindered the implementation of IOT. The IOT sensors can use various types of connection devices such as Global Positioning System, Radio Frequency Identification, Zigbee Module, Wireless Sensor Network etc. It allows objects to be sensed and controlled remotely across existing infrastructure. The main aim is to identify different technologies in IOT to support Civil Engineering. Utilization of IOT applications to achieve smart design, Real time control, Safety working environment.

Index Terms: IOT, Smart Construction, Real Time Monitoring.

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STUDIES ON FLEXURAL BEHAVIOUR OF GEOPOLYMER CONCRETE BEAMS WITH GGBS

Paper ID – NCETST2212

A Paper Presented by-M. RatnaSrinivas[1], Y. Himath Kumar[2], B. Sarath Chandra Kumar[3]

[1,2,3] PG Student, Assistant Professor, Associate Professor, Department of Civil Engineering, KoneruLakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

As CO_2 emissions are increasing in the atmosphere and causes global warming with the production of cement, the alternative pozzolanic material is needed. The alternative pozzolanic material for cement in the production of concrete is GGBS. Geopolymer Concrete (GPC) is an alternative material for conventional concrete. Geopolymer concrete is made by mixing GGBS, fine aggregate, coarse aggregate and alkaline activator solution. GGBS is a by-product of the iron industry. This paper shows the results on experimental investigation done on reinforced geopolymer concrete beams to know the flexural behaviour. The alkaline activator solution is prepared with NaOH and Na_2SiO_3 in 1:2.5 ratio. The flexural behaviour of the beams is examined with different molars of NaOH solution. The GPC beams are compared with conventional reinforced concrete beam of M40 grade concrete. The type of curing adopted in the experimental study is ambient. The size of the beam is 1000 mm × 150 mm × 150 mm. The flexural test is done on the loading frame of capacity 200 tons. The ultimate load, cracking load and the maximum deflection and the crack pattern is determined, and the load V_s deflection graphs are plotted. This experimental study gives a clear conclusion on the flexural behaviour of conventional reinforced concrete beam and reinforced geopolymer concrete beam made with GGBS.

Index terms:Alkaline Activator Solution, Geopolymer, Ground Granulated Blast Furnace Slag, Molarity, Sodium Hydroxide, Sodium Silicate.

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VISUALIZATION OF CONSTRUCTION USING 4D GEOGRAPHICAL INFORMATION SYSTEMS (GIS) FOR RESIDENTIAL BUILDING

Paper ID – NCETST2213

A Paper Presented by-Shaik Madeena[1]and Dinesh Singh[2]

[1,2] PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Construction industries perform different set of activities requires execution as per prepare scheduling. However, scheduling software's such as PRIMAVERA, MS project etc., could not provide 3 dimensional spatial aspects of information of construction. In this regard, Geographical information system could overcome this limitation of the scheduling software's and produced 3D visualization of 3D model. This system utilizes 2D drawings from AutoCAD and schedules prepared in PRIMAVERA software in order to generate 3D visualization of the construction project. The objective of the study is to integrate 3D information and scheduling and visualization of construction projects of residential building in Vuyyuru town, Krishna district, Andhra Pradesh. Thus, created GIS based 4D (x, y, z and time) model useful for optimization, decision making and temporal monitoring of the workflow of the project at the site as well as in detecting logical errors that occur in project schedule.

Index Terms:AutoCAD, Primavera, Geographical information system (GIS), Scheduling,Visualization.

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COMPARATIVE STUDY ON BEHAVIOUR OF DEEP BEAMS

Paper ID – NCETST2214

A Paper Presented by-S. Raja Reddy[1], B. Sarath Chandra Kumar[2], A. Monica[3]

[1,2,3] PG Student, Associate Professor, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

A Deep beam is having a greater depth comparable to the span length. According to Is.456-2000 provisions deep beam is defined as span to depth ratio less than 2.0 for simply supported beam and 2.5 for continues beams. This experimental setup consists of specimens of length 1200 mm × 200 mm × 600 mm, 1100 mm × 200 mm × 600 mm and 1000 mm × 200 mm × 600 mm. The flexural, shear, crack pattern of reinforced concrete deep beams with different l/D ratios. The width of bearing plate, depth, the percentage of tension reinforcement, and the percentage of vertical and horizontal shear reinforcement are constant under three-point loading using loading frame are tested. The experimental results show the Load V_s Deflection and crack width of the beam. The experimental results are compared with code results.

Index Terms: Bearing plate, crack pattern, flexural, shear, crack width.

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EXPERIMENTAL INVESTIGATION ON FIBER REINFORCED BEAM COLUMN JOINT BY PARTIAL REPLACEMENT OF CEMENT WITH GGBS

Paper ID – NCETST2215

A Paper Presented by-S.V.D.Naveena[1]and J. D. Chaitanya Kumar[2]

1,2 PG Student &Assistant Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The beam column joint is the Critical zone in a reinforced concrete moment resisting frame. Beam column joint is the media to transfer the forces to next floor. To resist the beam column joint from the huge loads in a structure, fibre reinforced concrete is used in this present study. To make more ductile at beam-column joint, 0.5 % of electrical/ chemical resistance (ECR) glass fibres are added to the volume of concrete and also, to reduce the greenhouse gases from the cement industry replacement of cement with Ground Granulated Blast Furnace Slag (GGBS) up to 40% (0, 30, & 40) are used. To know the optimum strength of concrete, the compressive strength of cubes, split tensile strength of cylinders, modulus of rupture of prisms and flexural behaviour of the beams with size of 750 x 150 x 150 mm have tested and assessed as pilot study. Further, the concrete durability (Rapid Chloride Penetration Test (RCPT) and Sulphite attacks) studies are also carried out. All the results are compared with normal concrete grade of M30.

Index Terms: Beam Column Joint, Durability, ECR, Glass Fiber, GGBS, RCPT.

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EXPERIMENTAL INVESTIGATION AND ANALYSIS ON SHEAR WALLS

Paper ID – NCETST2216

A Paper Presented by-K. Rama Krishna[1]and Lingeshwaran. N[2]

1,2 PG Student, Assistant Professor Department of Civil Engineering, KoneruLakshmaiahEducation Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

During earthquakes large amount of buildings are getting collapsed due to the cause of lateral forces and increasing of load carrying capacity in structural element and it's caused by winds, earthquake, uneven settlement of loads. Least damage and wellbeing healthy level of a structure is the necessary requirement of tall buildings. For reducing the effect of damage on all tall structures, it may consist of base isolation techniques &shear walls etc. For enhancing the structural performance and to limit the damage of a building shear walls are used. On tall buildings to prevent earthquake loads Reinforced Concrete walls used as supporting elements. Reinforced Concrete structures are mainly implemented in engineering practices in different situations and various applications.Many researchers addressing on performance of a shear walls with boundary conditions based on different types of reinforcement alignment. This paper deals with the Load Vs deflection curve, crack pattern, mode of failure of shear wall without boundary elements and three specimens of 200mm thick are casted with different reinforcement alignment types are examined and analysis of shear walls by using Staad Pro, comparing the results of both experimental and analyze the shear walls to further crack deflections patterns.

Index Terms:Reinforced concrete walls, Boundary elements, Reinforcement types, Staad pro.

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EVALUATION OF GROUND WATER PROSPECTS AND MAPPING USING REMOTE SENSING AND GIS

Paper ID – NCETST2217

A Paper Presented by-Kesana SaiTeja[1] and Dinesh Singh[2]

1,2 PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Ground water is one of the real sources that add to the all-out yearly supply. The explosive growth and uneven appropriation of population, poor irrigation rehearses, fast industrialization, vast scale deforestation and inappropriate land use rehearses makes exhaustion of ground water. Along these lines, builds demand of water for agriculture, household and industry. The goal of this paper is to survey procedures and philosophies connected for distinguishing groundwater potential zones utilizing GIS and remote sensing. So as to assess the ground water potential zones, diverse thematic maps, for example, lineaments, slope, drainage density map, ground water profundity, Land use and Land cover and surface water bodies at a 1:50000 scale were prepared, utilizing remotely-sensed information just as topographical sheets and optional information, gathered from concern division. The readied thematic layers are additionally used for mapping and recognizable proof of groundwater potential zone and examination. This map demonstrates good, moderate and low ground potential zones. This groundwater potential data will be useful for successful distinguishing proof of Ground water condition.

Index Terms:Groundwater,Thematic Layers, GIS, RS.

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EXPERIMENTAL INVESTIGATION ON REINFORCED GEOPOLYMER CONCRETE SLABS

Paper ID – NCETST2218

A Paper Presented by-N. Sai kiran[1], Y. Himath Kumar[2], B. Sarath Chandra Kumar[3]

1,2,3 PG Student, Assistant Professor, Associate Professor Department of Civil Engineering, KoneruLakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Geopolymer is an eco-friendly binding material alternative to Ordinary Portland Cement (OPC). Concrete made with this Geopolymer has several advantages compared to Ordinary Portland Cement (OPC). Generally, geopolymer concrete is the combination of Fly ash, Ground granulated blast furnace slag (GGBS), alkaline activator solution, fine aggregate and coarse aggregate. Here in this study 100% GGBS is used. GGBS is the by-product of iron and steel manufacturing industry. Alkaline solution is made up of sodium silicate and sodium hydroxide solution (NaOH) with 2.5:1. This study describes the experimental investigation on reinforced geopolymer concrete slabs using GGBS. The aim is to compare the flexural behaviour of geopolymer concrete slab with the conventional concrete of grade M40. The slab dimension is taken as 1000 mm × 1000 mm × 60 mm. The different molarities of NaOH used in this study are 8M, 10M, 12M, 14M and 16M. The slabs are casted and cured in ambient curing. All slabs are tested on the loading frame and load V_s deflection results are noted. The results showed that Geopolymer concrete slabs have higher strength and less deflection than the conventional concrete slab.

Index Terms: Geopolymer Concrete, Ground Granulated Blast Furnace Slag, Load V_s Deflection, Molarity, Sodium Hydroxide, Sodium Silicate.

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DURABILITY OF CONCRETE WITH BINDER BY PARTIAL REPLACEMENT OF OPC WITH FLY ASH AND BENTONITE

Paper ID – NCETST2219

A Paper Presented by-P.L.K. Sowjanya[1]and V. Ranga Rao[2]

1,2 PG Student & Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Bentonite can also be used as low-cost construction material which can reduce energy consumption by blending with OPC up to certain percentage and can store natural resources and also can give solution for environmental problems which has cement production as well as which affects the durability and life cycle of the concrete structures. Fly ash contains very minute particles which can make the concrete highly dense, reduce the permeability of concrete, and alsoadds greater strength to structures and generates low heat of hydration. By partial replacement of OPC with bentonite and fly ash can reduce greenhouse effect and improves the durability of the concrete. In this paper, OPC is partial replaced with bentonite and fly ash with same proportions of 5%,10%'15%,20% and its compressive strength of concrete is studied by testing 81 cubes and the results were compared with that of controlled concrete. Durability of concrete with partial replacement of bentonite and fly ash with OPC were also studied by testing 108 specimens through RCPT equipment (rapid chloride penetration test) and the results were compared with that of OPC concrete.

Index terms:Bentonite, Fly Ash, Compression Test, Rapid Chloride Penetration Test

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PERFORMANCE OF LIMESTONE CALCINED CLAY CEMENT (LC3)

Paper ID – NCETST2220

A Paper Presented by-Apsa[1] and V.Ranga Rao[2]

1,2 PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

As world population is expected to reach 9million by 2050, infrastructural changes are done which require huge quantity of cement, as it produces 60 to 62% of CO_2 during calcination, there is a need for alternative binders. As cement demand increases, CO_2 emissions increases, this might become a threat to atmosphere. LC^3 is modern cement which is a blend of 50% clinker, 15% limestone, 30% calcined clay and 5% gypsum. Here, clinker is reduced by 50% there by CO_2 emission can be reduced by 30%. $LC^3$is a low carbon, sustainable, cost effective and double the efficiency of existing cement factory. The increase in demand of cement in coming decades might not be reached with existing alternative binders of Fly ash and GGBS, so limestone and clay are the best supplementary Cementous material that are naturally available. As LC^3 has less workability, super plasticizers need to be used. In this paper, physical properties of LC^3 were studied by varying clinker and clay content i.e. 40% clinker, 40% clay; 50% clinker, 30% clay and 60%clinker, 20%clay which were calcined at 600°c in muffle furnace by fixing the proportions of limestone 15% and gypsum 5% by adding super plasticizer (pc20) and the results were compared with that of OPC concrete. Durability was also studied by exposing LC^3 cubes to Acid attack and sulphate attack and compared with that of OPC concrete

Index Terms: LC^3, Clinker, Limestone, Calcined clay, Compressive strength, Durability

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EXPERIMENTAL RESEARCH ON COMPOSITE CEMENT WITH GLASS FIBERS

Paper ID – NCETST2221

A Paper Presented by-V. Phani Teja[1], K. J. Brahma Chari[2], V. Ranga Rao[3]

1,2,3 PG Student, Assistant Professor, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

By addition of composite cement and glass fiber to the cement matrix can impart the strength and durability to the concrete to some extent. Composite cement is intimate inter grounding mixture of Portland cement clinker (30 to 35%) by its weight, gypsum (3 to 5%), fly ash (15 to 35%) and GGBFS (20 to 50%). It produces strength to the concrete and durable. Alkali Resistant glass fibers are used due to its desired physical and mechanical properties regarding durability properties. This paper deals with experiment are carried out on compressive strength and tensile properties of concrete by incorporation of composite cement and glass fiber with certain proportions and are tested under universal testing machine. For this purpose, casting of cubes of size 150×150×150mm and cylinders of size, 150×300mm are cast and cured for normal 7, 28, 56 days. These are tested under the universal testing machine and observe the behavior of concrete, bearing capacity to with stand the load during application of load and compared to the normal conventional concrete. This research is to provide the bearing strength capacity to the concrete by the addition of the glass fiber and composite cement introducing the alternate materials without compromising on strength and durability.

Index Terms: Composite cement, Glass fiber, Compressive strength, Tensile strength.

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COMBINED STRATEGY OF BUILDING VIBRATION CONTROL BY USING TUNED MASS DAMPER AND BASE ISOLATOR

Paper ID – NCETST2222

A Paper Presented by-G. Venkata Ramana[1]and Y. Vinod[2]

1,2 PG Student, Assistant Professor Department of Civil Engineering, KoneruLakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Horizontal loading as a result of an earthquake is a dominant aspect which causes damage to the structure. The volume of damage is high in case of high-rise buildings. Many techniques are developed in recent years for resisting the structure from damage due to the earthquake. This present study deals with Base Isolation technique and Tuned Mass Damper for finding the inter-storey drift of a high-rise building. Base Isolation technique is used for partially absorbing the seismic energy. This Base Isolation technique can be used for new structures. Tuned Mass Damper is one the techniques for reducing the seismic effect on structures as it reduces the displacement causing from seismic energy. This research work deals with the performance evaluation of base-isolated structure along with Tuned Mass Damper usingSAP2000.

Index Terms: Acceleration, Base Isolators, Lateral displacement, Storey drift, Tuned Mass Damper.

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FINANCIAL AND WORK MANAGEMENT ANALYSIS FOR RESIDENTIAL CONSTRUCTION: A CASE STUDY

Paper ID – NCETST2223

A Paper Presented by-Abdul Aziz[1] and Sanjeet Kumar[2]

1,2 PG Student, AssociateProfessor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The traditional construction process has never been into the scheduling the time and cost management. As a result, there are loss of time, materials, cost and poor quality of construction. In recent years, software's play vital role in resolving such problems in construction industry, which benefit financial and work management. Primavera is one such software which helps in planning the work to its maximum extent and help in improving the quality and productivity of work. It also helps in efficiently manipulating the project cost. The present study analyses the comparison of financial and work management of a traditionally constructed building (G+4 building, Osmania University, Hyderabad) and implementing the scheduled work and financial management using primavera to the same building and compares the results. The study discusses the pros and cons of the analysis of the above results. It studies relieved that the primavera helps in optimization the construction project in scheduling and improves the productivity. The results will project the earned value graph which show the cost performance index and scheduled performance index of resources.

Index Terms: Construction, Management, Primavera, Quality.

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FACTORS AFFECTING OVERRUNS CONSTRUCTION TIME AND COST: A CASE STUDY

Paper ID – NCETST2224

A Paper Presented by-Surabattuni Murali[1] and Sanjeet Kumar[2]

1,2 PG Student, Associate Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Achievement of any construction venture depends on the timely completion of project within the specified budget. Method of execution, management of workers, equipment, scheduling and cost are some of the factors that affect the project management and these factors are the reason in for the cost and time overruns around the world. This study objective is to identify and prioritized the major causes of time and cost overrun in construction industry using a completed project. Data is collected from Shan-E-Awadh-ground anchoring project, Lucknow, the data is analysed and compared with the estimated and actual budget schedules to understand the causes of cost and time overruns. Factors are identified from the project using questionnaire with the help of people, who worked for the project through various parties like consultants, contractors, site engineers, etc. The results of the study shows that main factors of the time and cost overruns are poor material management, site conditions, unskilled labours, contractor financial difficulties, machines and equipment difficulties. By obtaining the results and analysis of factors recommendations are suggested as possible remedial solutions for the forthcoming projects. These types of study will help for the new projects which are yet to come in the same season for the proper implementation of construction project.

Index Terms:Project, Lucknow, Cost, Time, budget, Management.

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SEISMIC ANALYSIS OF RESIDENTIAL BUILDING FOR DIFFERENT ZONES USING ETABS

Paper ID – NCETST2225

A Paper Presented by-Mindala Rohini[1] and T.Venkat Das[2]

1,2 PG Student, Assistant Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

An earthquake occurs in the form of seismic waves due to sudden release of energy and results in ground shaking. During earthquake, seismic waves propagate through the soil which results in structural damage due to movements within the earth's crust. It impacts the behaviour of interaction of components like building, foundation and underlying soils and also overall system behaviour. It is important to examine soil structure interaction for heavy structures and can be neglected for light structures. In this study, the seismic response of G+15 storey building is carried out for black cotton soils and sandy soils through response spectrum method in ETABS software. The most important feature of any earthquake ground motion is its frequency content. The other parameters like base shear, storey drift and storey displacement are observed for different soil conditions. It is concluded from the results that the soil structure interaction effect results in effective reduction of base shear and enhances the values of fundamental time period, storey drift and storey displacement.

Index Terms: Base Shear, Fundamental Time Period, Soil Structure Interaction, Storey Displacement.

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SHEAR STRENGTH OF DEEP BEAMS:A STATE OF ART

Paper ID – NCETST2226

A Paper Presented by-G. Sri Harsha[1] and P. Poluraju[2]

1,2 Research Scholar, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

In this present study a comprehensive literature has been reviewed on shear strength of deep beams. The shear behavior of deep beams must be understood by varying various parameters such as web reinforcement, shear span to depth ratio, size of the beam, depth of the beam, vertical reinforcement, side face reinforcement, percentage of reinforcement, Crack width criteria, Shear span deflection. Comparison of various international codes for the design of reinforced concrete deep beam is reviewed. This study provides preliminary support for proposing a new shear strengthening technique during the design of the member.

Index Terms:a/d ratio, Deep Beam, Web Reinforcement, shear strength, Size Effect.

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OVERLAND FLOW MODELING USING ARTIFICIAL NEURAL NETWORKS (ANNS)

Paper ID – NCETST2227

A Paper Presented by-Ankit Chakravarti[1], Nitin Joshi [2], Himanshu Panjiar [3]

1 Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District. 2 Assistant Professor, Department of Civil Engineering, Indian Institute of Technology, Jimmu, J& K, India. 3Assistant Professor, Department of metallurgical & Material Science, Jimma University, Ethiopia, East Africa

ABSTRACT

Artificial neural networks (ANNs) have shown one of the most perfect tools to model complex hydrological processes like overland flow, rainfall runoff process and other hydrological events. In most of the research, ANNs have demonstrated better results as compared to other technique. ANNs are able to map underlying relationship between input and output data without prior understanding of the process under investigation. In the present investigation of the paper, firstly the laboratory experiments were conducted in sand soil having median size of 1 mm layer placed over an impermeable plane surface, with a uniform rectangular cross section of dimension 1 meter wide and 2 meter long. The laboratory tests were conducted to generate overflow data using rainfall simulator. The data was collected for catchment slope between 1% to 2 % and rainfall intensity fixed at 90 mm/hr. The overland flow model was developed using ANN approach for the validation of this collected experimental data. The comparison of observed and predicted runoff data reveals that the artificial neural network predicts the overland flow data reasonably well in observed hydrograph with Nash–Sutcliffe efficiency greater than 90% which is important for decision making in the area of water resources planning and management and flood forecasting etc.

Index Terms: Laboratory experiments, overland flow, artificial neural networks, overland flow simulator

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PERFORMANCE OF GEOPOLYMER CONCRETE UNDER AMBIENT CURING

Paper ID – NCETST2228

A Paper Presented by-B. Naga Vinay[1]and A. VenkateshwaraRao[2]

1,2PG Student, Associate Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Geopolymer concrete is an advanced material which is formed by long chains and networks of the inorganic molecule and feasible alternative to ordinary Portland cement which is useful in different forms of construction in civil infrastructure applications. Geopolymer materials are obtained from natural materials and industrial by-products. Percentage of the carbon dioxide evolved from the geopolymer material such as GGBS and class C fly ash is very low. Geopolymer concrete has the fastest setting time rapid development in strength and the carbon dioxide releasing from the source material is very low. In this paper, it describes that alkaline activators such as sodium hydroxide (NaOH) and sodium silicate in different molarities will mix with the class F fly ash and GGBS in different proportions and compressive strength, flexural strength and tensile strength are determined in order to identify the new phase that formed in Geopolymeric matrix.

Index Terms:GGBS, fly ash, Sodium hydroxide (NaOH), Sodium silicate (Na_2sio_3)

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ENHANCING THE DURABILITY AND DUCTILITY PROPERTY OF CONCRETE INCORPORATED WITH GGBS AND GLASS FIBER

Paper ID – NCETST2229

A Paper Presented by-Koka Mounika[1], Jagadish Kumar[2], B. Kameswara Rao[3]

1,2,3PG Student, Assistant Professor, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Plain concrete is widely used as a building material. But plain concrete possess low tensile strength, low ductility and durability when compared to blended concrete. The environment is rapidly effected due to energy consumption and CO_2 emission during cement production. To reduce the environment effect, Ground granulated blast furnace slag (GGBS) is used as a binding material in plain concrete which in addition improves strength, durability, workability and reduces the risk of sulphate attack and acid attack etc., simultaneously glass fibers are also added to possess high ductility in blended material (GGBS). In this paper, ductility, durability and flexural strength are the main parameters. Experimental work is conducted on M30 and M40 grade of concrete by replacing cement with GGBS by 60% and 0.4% of glass fibers are added by volume of concrete. Durability is age dependent parameter which is observed in curing with sulphate solution and acid solution for 30 days in cubes .Ductility of concrete by stress-strain behavior in cylinders. Flexural strength is assessed through load-deflection curve in beams. From the study, it is observed that use of blended concrete achieve more durability, ductility and flexural strength compared with conventional concrete.

Index Terms: Durability, Flexural strength, Glass fiber and Ground granulated blast furnace slag (GGBS).

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EXPERIMENTAL INVESTIGATION OF SHEAR BEHAVIOR IN FLEXURE MEMBERS

Paper ID – NCETST2230

A Paper Presented by-K. Deepthi[1], J. D. Chaitanya kumar[2], M. L. Sai Rangarao[2]

1,2,3 PG Student, Assistant Professor, Department of Civil Engineering, KoneruLakshmaiah Education Foundation,Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

This research provides experimental data on comparison between the inclined bars and vertical stirrups used as shear reinforcement. Different forms of shear reinforcement are induced and studied in this research. Since shear failure occurs at an angle of 45º, therefore if it can be counteracted using an inclined stirrup, then there may be a chance to reduce the crack propagation in flexure members. Inclined bars are generally provided in beams since the principle tensile force acts in an inclined direction. They are provided throughout the length of the beam. Hence different forms of stirrups such as truss model, inclined stirrups and bracing type are used. Total 8 beams are casted in which two are designed with conventional stirrups, two with truss type and two with bracing type. These forms are analyzed under different loading conditions such as three point load and four point load. From the results obtained, crack pattern, strength characteristics and strain were observed and compared with conventional stirrups induced in beams. It has showed that the beam with inclined bars has showed improvement in strength characteristics compared to the beam with conventional stirrups.

Index Terms: bracing, inclined, reinforcement, shear, and truss.

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STUDY ON EFFECT OF GEOMETRY ON RC MULTISTORY BUILDING UNDER SEISMIC LOAD

Paper ID – NCETST2231

A Paper Presented by-Om PrakashMahato[1] and M. Anil kumar[2]

1,2PG Student, Assistant Professor, Department of Civil Engineering, KoneruLakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Seismic forces are irregular in nature and unpredictable hence the static and dynamic investigation of the structures has turned into essential worry of structural Engineer. The main reason for the failure of the building is due to the plan irregularity of the RC multistory building. So, as its fundamental to detect the seismic response of the structure in high seismic zones to decrease the seismic harms in structures. The main objective of the present study is to obtain the seismic response of the structure i.e. (Displacement, overturning moment,story drift,story shear) for G+18 building and to compare these seismic response for the different geometry of the building i.e. (Box-shape, L-shape, T-shape, Tube-shape, H-shape and C-shape) by ETABS 2016 software to conclude the most stable structure among all these shape. Analysis of models were performed by Static and dynamic analysis. And further the comparison in term of displacement between Static and dynamic analysis is performed to evaluate the most economical and best method. The result shows that box shape building is more stable comparing to all other shape of the building and dynamic analysis method is economical and it predict the accurate result then Static method.

Index Terms: Response spectrum analysis, time-history analysis, story drift, overturning moment, story shear, displacement, Etabs

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URBAN FLOOD MANAGEMENT USING STORM WATER MANAGEMENT MODEL AT NEW RR PET REGION, VIJAYAWADA, INDIA

Paper ID – NCETST2232

A Paper Presented by-Shaik Mohammed Fazal Ahamed[1] and Sunny Agarwal[2]

1,2PG Student, Assistant Professor, Department of Civil Engineering, KoneruLakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Increase in the population, improper planning of urban infrastructure and paved surface are the main causes of urban floods. This paper implements Storm Water Management Model (SWMM) to explore and study the catchment area of Vijayawada, India, which is divided into 16 sub-catchments and daily rainfall data is obtained from nearby Vijayawada rain gage station. SWMM is the major tool which is used for designing and planning the drainage aspects. This case study deals with the flexible set of hydraulic modelling capabilities. It is used to assess infiltration using Green Ampt method and flow routing analysis using Dynamic wave method. The study area is represented using AutoCAD map and runoff water flow that can be routed through drainage system like pipes, channels, and outlets are identified. The aim of this study area is to check the runoff from extreme rainfall events and to evaluate the accuracy of the drainage system. The study revealed that storm networks are well planned and more sufficient to cater the simulated Rainfall event.

Index Terms: SWMM, Green Ampt, modelling, Urban flood.

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STUDY ON INFLUENCING PARAMETERS OF STRENGTH OF PERVIOUS CONCRETE

Paper ID – NCETST2233

A Paper Presented by-RadharapuChinniDivya[1], P. Poluraju[2], J. Leon Raj[3]

1,2 PG Student, Associate Professor, Department of Civil Engineering, KoneruLakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

3 Scientist CSIR-North East Institute of Science and Technology, Assam.

ABSTRACT

Pervious concrete is a special type of concrete with a mixture of cementitious material, the coarse aggregate of smaller size, admixtures, and water. Pervious concrete applications include roadpavements, rainwater harvesting -and drainage in retaining walls due to its high porosity. The void content and water-cement ratio of pervious concrete are in the range of 15-30% and 0.27-0.36, respectively. The experimental data is collected from the literature cover and graphs are drawn for water to cement ratio, cement to aggregate ratio versus compressive strength. The maximum size of aggregate used in the mixture of pervious concrete is 20mm, thus, influences the porosity range from 11%-60%. In this paper, regression equation is presented and validated for strength parameters like compressive strength, porosity, density of pervious concrete and the experimental results are obtained from the experiment done for the beams of size 500 mm × 100 mm × 100mm dimensions by using Master Glenium as the admixture in pervious concrete and the graphs are drawn for the predicted versus experimental results.

Index Terms: Master Glenium, pervious concrete, regression equation, water to cement ratio.

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SHEAR BEHAVIOR OF RETROFITTED RC BEAMS USING CFRP

Paper ID – NCETST2234

A Paper Presented by-B. Srudhira[1], M. Anil kumar[2], K. J. Brahma Chari[2]

1,2PG Student, Assistant Professor Department of Civil Engineering, KoneruLakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Carbon Fiber Reinforced Polymer (CFRP) wrapping technique is one of the best retrofitting techniques to improve the strength of the structure without destroying the whole structure. In this study, the experimentation has been carried on four Reinforced Concrete beams of different sheet widths of the CFRP fabric and tested under four-point loading using a loading frame. The U-type wrapping with different width on four Reinforced Concrete beams of size 1.5 m × 0.38 m × 0.23 m have been used in this study as parameters. The behavior of the retrofitted Reinforced Concrete beams through the load vs. deflection response and crack pattern subsequently compared the same with conventional beams. It has been concluded that the retrofitted beams have shown significant shear strength when compared to conventional beams.

Index Terms: CFRP, retrofitting, four-point loading, Shear strength

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FLEXURAL BEHAVIOR OF HIGH PERFORMANCE REINFORCED CONCRETE BEAMS

Paper ID – NCETST2235

A Paper Presented by-B. Sabharinadh[1] and V. Ranga Rao[2]

1,2PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

High performance concrete (HPC) exhibits better properties when compared to conventional concrete. Utilization of pozzolanic materials (Ground Granulated Blast Furnace Slag (GGBS), fly ash and silica fume etc.) in concrete decreases the clinker production. This paper presents the feasibility of pozzolanic materials utilization in HPC. M60 grade of concrete was prepared as per standard procedure ACI-211.4R.91. 10, 20, 30 and 40 percentage of cement was replaced with GGBS. Silica fume was added at 2, 4 and 6 percentage to cement by weight as admixture. Compressive and split tensile strengths were determined for HPC after 28 days of curing. Reinforced HPC beams were casted and tested to check failure pattern after 28 days of curing. Under point, 2-Point and Uniformly distributed loading. Flexure strength, deflection and crack pattern were measured. Better results were observed at 20% GGBS replacement and 6% silica fume addition for all specimens.

Index Terms: HPC, Flexure strength, loading, Deflection and Crack Pattern.

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NUMERICAL ANALYSIS OF 3D SANDWICH WALLS UNDER BLAST LOADING

Paper ID – NCETST2236

A Paper Presented by-S. Monika Sri[1], P. Polu Raju[2], Sanjay Deori[3]

1,2PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

3 Scientist CSIR-North East Institute of Science and Technology, Assam.

ABSTRACT

The swift in population development and urbanization have made a huge interest in the safe house and development of new materials. Masonry walls are the real segment in the housing sector and it has fragile attributes and shows poor performance against the uncertain loads. The 3D sandwich walls are such system, which is more suitable for ease and speedy wall construction. The idea of a sandwich 3D wall is to combine thin and durable facings with a light-weight core material, i.e. EPS (expanded polystyrene) which is suitable for sound and heat Insulation. Shear connectors are introduced to provide integrity and to transfer the loads. This paper reports the numerical evaluation concerning the effects such as energy absorption of core material, transfer of shock wave and the displacement of adaptable sandwich walls subjected to blast loading. The numerical model is generated using ABAQUS software to determine the dynamic response of sandwich 3D walls under the blast loading and is compared with the response of masonry wall.

Index Terms: Blast design, External explosion, Energy absorption, Masonry wall, 3D sandwich wall.

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EVALUATION OF SHEAR STRENGTH OF DEEP BEAMS USING ARTIFICIAL NEURAL NETWORKS

Paper ID – NCETST2237

A Paper Presented by-Mohammad Tasleema[1], M. Anil Kumar[2], J. Leon Raj[3]

1,2PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502, 3 Scientist CSIR- North East Institute of Science and Technology, Assam

ABSTRACT

In reinforced concrete deep beams, the customary standards of stress analysis are neither appropriate to define failure mechanism nor sufficient to forecast the shear capacity of deep beams. This paper reports the prediction of shear strength of deep beams using Artificial Neural Networks (ANNs), and the results are compared with experimentally measured shear strength as well as expressions suggested by codes of practice. Test data is collected from the past research works and the artificial neural network is trained using this test data. MATLAB is used for training and analyzing the collected experimental data. The comparison of results show that ANN has predicted the shear strength of concrete deep beams more precisely when compared with the other existing models with coefficient of variation 5 %, whereas other models COV varied in between 37 and 47 %.

Index Terms: Artificial Neural Networks (ANN), Reinforced Concrete Deep Beams, Shear strength, Shear span-to-depth ratio.

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DEVELOPMENT OF HYDRO-ENVIRONMENT MODEL FOR MAINTAINING A RESERVOIR USING ARTIFICIAL INTELLIGENCE

Paper ID – NCETST2238

A Paper Presented by-Rohit Anumarlapudi[1] and Naga Chaitanya Kavuri[2]

1,2PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Forecasting and maintenance plays an important role for optimal reservoir operations. Present study mainly refers in developing an Artificial Intelligence (AI) model which helps in maintaining reservoir and amplify the decision making scientifically. In this development process, multi-layer perceptron, a method which can give the regression and correlate the parameters that influence the inflow of reservoir is used. Parameters like rainfall (mm), temperature (°C), land-use land-cover and relative humidity (Rh %) data is gathered from Andhra Pradesh State Disaster Management Authority (APSDMA). To obtain this correlation, 8years of data is collected with reference to Prakasam barrage upstream up to pulichintala project, Krishna district, Andhra Pradesh, India. These collected data is shaped into matrix form and tested using different training algorithms like Levenberg–Marquardt, Bayesian regularization and scaled conjugate gradient algorithms. From the above mentioned models Levenberg–Marquardtand Bayesian regularization algorithms exhibits better performance and accuracy compared to scaled conjugate gradient algorithm

Index Terms: Artificial Intelligence, Hydro-Environment, Forecasting, Multi-Layer Perceptron

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FLEXURAL STRENGTH AND DURABILITY OF CONCRETE BY PARTIAL REPLACEMENT OF CEMENT WITH BIOMEDICAL WASTE ASH AND METAKAOLIN

Paper ID – NCETST2239

A Paper Presented by-B. Prasanth[1] and V. Ranga Rao[2]

1,2PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Biomedical waste is being generating from hospitals, health clinics and laboratories. Disposal of this waste ash is in environmental concern, potentially lead to spread infectious diseases. In India, presently biomedical waste is generating 550.9 tons per day, and it is annually increasing by 8%. There is a scope of utilization of biomedical waste ash in the production of concrete. In this work, compressive strength split tensile strength and durability of concrete with partial replacement of ordinary Portland cement (OPC) with biomedical waste ash with different percentages (5%, 10%, 15% and 20%) and Metakaolin (20% constant). Studied and the results were compared with that of control concrete by cast 30 concrete cubes and 25 cylinders. For durability study, concrete cubes exposed to chloride attack (NaCl) and the results were compared with that of control concrete. Flexural behavior of reinforced concrete beams were also studied by using binder material with biomedical waste ash and finally results were compared with that of ordinary Portland concrete beams.

Index Terms: Biomedical waste ash, Metakaolin, Durability, Flexural Behaviour

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MECHANICAL AND DURABILITY PROPERTIES OF LIMESTONE CALCINED CLAY CEMENT

Paper ID – NCETST2240

A Paper Presented by-J.Lavanya[1] and V.Ranga Rao[2]

1,2PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Limestone calcined clay cement (LC3) is a new type of cement blend with 15% limestone, 50% clinker, 5% gypsum and 30% clay. The production of LC3 can reduce CO_2 emissions up to 30% as compared to the OPC. The utilization of calcinedkaolinitic clay as advantageous material of bond is a choice to relieve the ecological effect. In this work, Mechanical properties of LC3 like fineness, consistency, initial and final setting time, compressive strength with different clinker proportions (40%, 50%, 60%) at different calcined kaolin clay (40%, 30%, 20%) at a temperature 450◦C were studied by casting mortar cube specimens and concrete cubes were testes and the results were compared with strength of OPC mortar and concrete cubes. For durability study of LC3 concrete, LC3 and OPC concrete cubes were exposed to chloride attack (NaCl) and sulphate attack ($MgSO_4$) and the results were compared.

Index Terms:Calcined kaolin clay, clinker, compressive strength, Gypsum, Limestone**.**

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EFFECT OF AGGREGATE INTERLOCKING AND DOWEL ACTION OF BEAMS UNDER FLEXURAL LOADING- A LITERATURE REVIEW

Paper ID – NCETST2241

A Paper Presented by-Joshi Sreenivasa Prasad[1] and P. Poluraju[2]

1,2 Research Scholar, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The aim of the present review is to study the influence of aggregate interlocking across cracked surface, reinforcement crossing the shear cracks and dowel action of longitudinal tensile reinforcing bars across the cracks. The aggregate interlocking is uncertain and depends on the shear reinforcement and action of loads under the dowel action of reinforced concrete beams under flexural loading. In reinforced concrete beams, shear resistance is provided by shear transfer in un-cracked compression concrete, supports. Similarly, dowel action is an important component for shear resistance. Due to complexity involved in shear transfer mechanism, the prediction on the effect of both aggregate interlocking and dowel action is a difficult task. Previous research had given focus on both the components separately. The present review is to study the effect of both aggregate interlocking and dowel action as common entity and understand the relationship of the same.

Index Terms: Aggregate interlocking, dowel action, flexural loading, shear resistance, shear transfer mechanism

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ELECTROLYTIC DE-FLUORIDATION TECHNIQUE IN SUSTAINABLE MANNER FOR REMOVAL OF FLUORIDE IN GROUNDWATER

Paper ID – NCETST2242

A Paper Presented by-Bade SaiTeja Reddy[1] and A. Aravindan[2]

1,2PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

This study focusses on groundwater quality of which is a high concentration of fluoride problem. Groundwater is the major source of drinking water in both urban and rural in Prakasam District. Markapuram town is located inPrakasam district suffers from fluoride problem due to lime quarries present in that location. These causes serious health problem to the people who are living in this area. The samples of ground water are collected from various locations and tests had been conducted. The water samples were analyzed for chemical parameters pH, Electrical Conductivity, Total dissolved solids, Total hardness, Fluoride, Calcium and magnesium. It is found that drinking water of the region was slightly acidic in nature. The concentration of fluoride in the water samples ranged between 4 and 6 mg/L. Water samples contains fluoride more than the permissible limit as per BIS 10500-2012. The fluoride content should be controlled by the defluoridation technique. We suggest electrolytic defluoridation technology and design details of electrolytic defluoridation plant in Markapuram, Prakasam district, A.P.

Index Terms: Defluoridation, electrolytic, fluoride, solar energy, ground water**.**

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AN INTEGRATED APPROACH FOR MUNICIPAL SOLID WASTE MANAGEMENT: A MODEL STUDY FROM VIJAYAWADA

Paper ID – NCETST2243

A Paper Presented by-Rushita Tummala[1], S. S. Asadi[2], D. Satish Chandra[3]

1,2,3PG Student,Professor, Associate professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Solid waste is produced from multiple sources such as households, hospitals, industries, offices and markets. In this current century, solid waste management is one of the major issues which effect health, climate, food and resources. Thus a place like India, need to have better solid waste management techniques. To overcome these waste management issues, Indian government initiated "SWATCHH BHARAT" program. Recently united A.P has been divided into two states Telangana and Andhra Pradesh due to bifurcation leading Amravati as new capital to A.P. Due to this, there is a drastic increase of population in Vijayawada. This current study researches on solid waste management techniques and site selection for solid waste management in Vijayawada. Waste generated from Vijayawada has been dumping in Pathapadu dump yard unscientifically where it is also insufficient due to sudden growth of population. Keeping these issues in view the disposal site selection with in 10km buffer zone is taken. By using RS and GIS, different thematic layers are prepared based on the requirement from satellite imaging of Vijayawada city. By integrating and applying Analytical hierarchy process (AHP) process to these spatial and attribute data efficient landfill site is selected scientifically along with identifying solid waste transportation path with best and affordable management strategies for proper utilization of municipal solid waste and management of natural resources for sustainable development. This type of study can be applied and implemented for any study area globally.

Index Terms: solid waste, thematic layers, spatial data, Analytical hierarchy process (AHP).

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SITE SELECTION AND PLANNING OF LOW-COST HOUSING USING RS AND GIS: A CASE STUDY ON PRAKASAM DISTRICT

Paper ID – NCETST2244

A Paper Presented by-J.Damodharreddy[1], S. S. Asadi[2],D.Satish Chandar[3]

1,2,3 PG Student, Professor, Associate professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Site selection for projects is generally done by manual surveying for analysing the data required for the project. But this takes lot of time for manual data gathering and analysing the data for finalizing the site. There is lot of wastage in resources as this trend has been running for many years. To resolve this problem, this study proposes implementation of RS and GIS during site selection procedure, locate an area using RS and GIS with desired requirements for a low cost housing project. The location used for this study is Donakonda area, Prakasam District, Andhra Pradesh (low cost housing for industrial workers). The main aim of this study is to propose a planning for low cost housing by gathering all the site selection details using RS and GIS, collect data required for low cost housing and propose a low cost housing planning. The ultimate result from this study is to show that the cost and time incurred during site selection of any project can be reduced using RS and GIS and improve the planning efficiency.

Index Terms: Geospatial Information System (GIS), low cost housing, Remote Sensing (RS*)*

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AN ANALYTICAL APPROACH FOR EVALUATION OF CONSTRUCTION PROJECT FAILURES

Paper ID – NCETST2245

A Paper Presented by-Ardhala Pavani[1], S. S. Asadi[2], D. Satish Chandra[3]

[1,2,3] PG Student, Professor, Associate professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502

ABSTRACT

Construction project plays a major role in the economic development of the nation and its failure may bring several impacts on the environment and the real properties. Generally failure occurs due to technical and non-technical issues and lack of management skills.This paper aims to find out the major factors that are leading to construction failures like financial, Geotechnical, environmental. Some of the failures observed in Kakinada, East Godavari district. Keeping these in view ShyamalaSadan complex has been selected, which was located near the seashore as a case study, this study was conducted to analyze the failure chances at that particular area by creating buffer zone up to 5km and creating thematic maps like Groundwater potential maps, Geomorphology, land cover, land use. And by integrating these thematic data and questionnaire survey reasons for failures have been identified and solutions are given to mitigate those failures. These suggestions can be applicable for all type of projects globally.

Index Terms: Remote sensing (RS) and Geographic information system (GIS)**,** thematic layers

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SEISMIC RESPONSE ANALYSIS OF RC FRAMED STRUCTURE USING DAMPERS

Paper ID – NCETST2246

A Paper Presented by-K.Sudheer kumar[1], Y.Vinod[2]

1,2PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502

ABSTRACT

Dampers are the energy dissipating devices which are used to resist lateral forces acting on the structure. Dampers are used to reduce the buckling of columns and deflection of beams and to increase the stiffness of the structure. Damper is used to reduce the vibration and deformation of RC framed structure during earthquake. This study deals with the performance evaluation of various type of passive control devices for the selected RC frame structure. Time history analysis is carried out on a G+9 story RC framed structure with and without dampers by using sap 2000. Result of the analysis revealed that maximum absolute displacement, story shear, values are more in case of RC framed structure without damper as compared to RC framed structure with dampers.

Index Terms: Friction damper, Metallic damper, Visco-elastic solid damper, viscous fluid damper.

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EXPERIMENTAL INVESTIGATION ON PROPERTIES OF CONCRETE BY PARTIAL REPLACEMENT OF CEMENT WITH GGBS AND FINE AGGREGATE WITH QUARRY DUST

Paper ID – NCETST2247

A Paper Presented by-Sk.Sirajuddin[1]and T.Venkat Das[2]

1,2PG Student, Assistant Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502

ABSTRACT

In the present study an investigation is made on properties of concrete by partial replacement of cement with Ground Granulated Blast furnace Slag (GGBS) and the fine aggregate with Quarry Dust (QD). GGBS is the by-product of iron and steel industry which is produced in large quantities as a solid waste. It is highly cementitious. Quarry Dust is a byproduct of the crushing process which is a concentrated material to use especially as fine aggregates. The replacement percentages of cement with GGBS are 20%, 40% and 60% by weight and fine aggregate with QD are 25%, 50% and 75% by weight. These combinations of materials were used to study compressive strength, spilt tensile strength and flexural strength tests and the results obtained were compared with the control concrete. It is observed that the optimum replacement percentages of GGBS and QD are 40% and 50% respectively.

Index Terms: GGBS, Quarry Dust, Compressive strength, Spilt tensile strength and Flexural strength.

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SUSTAINABLE DEVELOPMENT OF NIZAMPATNAMRURBAN - A MODEL STUDY

Paper ID – NCETST2248

A Paper Presented by-P. Sri Poojitha[1] and K. Rajasekhara Reddy[2]

1,2PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502

ABSTRACT

Urbanisation is taking place at a rapid phase in India due to employment opportunities, education, entertainment, comforts, transportation, economic activities and better amenities. Both central and state government are giving more thrust for augmenting infrastructure in urban areas and less importance is given to rural areas. Around 60% of the population in India is living in rural areas and depending on agriculture and allied activities. As agriculture has become non-remunerative people from rural areas are migrating to urban areas in search of job. Migration of rural people to urban area can be reduced only when agriculture becomes sustainable remunerative and infrastructure and amenities are developed on par with urban areas. Concept of rurban is introduced with an objective of providing amenities on par with urban in rural areas. This paper aims at study of existing infrastructure in Nizampatnam. Collecting the expectations of the stakeholders, identifying the gap between the existing infrastructure and expectations, come up with an infrastructure model for the study area. Existing infrastructure in the study area is collected, a survey is carried out among the stakeholders to understand their needs and expectations and gap in infrastructure is identified. Also identified the schemes of state and central government under rurban mission and various other schemes and evolved and the modes of finance. Appropriate infrastructure for sustainable second green revolution is identified and presented.

Index Terms: Rural infrastructure, Rurban, Schemes, sources of funds.

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IDENTIFICATION OF GROUNDWATER POTENTIAL ZONES USING GEOSPATIAL TECHNOLOGIES: A CASE STUDY

Paper ID – NCETST2249

A Paper Presented by-M. Hanisha[1], P.J. Chandrasekhara Rao[2], S.S. Asadi[3]

[1,3] PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502. 2 GIS Data Manager, APCRDA, Vijayawada.

ABSTRACT

Economic deeds ranging from agriculture to industry, Water is one of the key resources. In all climatic regions of India, ground water has become a very important source of water supplies due to its inherent qualities. To understand the occurrence, distribution and movement of ground water, mapping of geomorphologic characteristics of the study area is important. This paper deals with a range of ground water potential zones in Amravati capital city, Andhra Pradesh, India, for the estimation of ground water availability. In this work remote sensing and GIS technique like overlay analysis is used to evaluate the ground water potential zones by using Landsat-8 2018 image and Toposheets from Survey of India (SOI). By performing this analysis different phases of ground water potential zones will be identified i.e., good, moderate and poor. The results showsthat the groundwater potential zones in the capital city are found to be useful in better improvement and managing of groundwater resources.

Index Terms: Ground water, Remote sensing, GIS, Overlay analysis

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CREATION OF LAND RESOURCES INFORMATION SYSTEM USING GEOINFORMATICS: A CASE STUDY

Paper ID – NCETST2250

A Paper Presented by-R. Gayathri Devi[1], P. J. Chandrasekhara Rao[2], S. S. Asadi[3]

[1,3] PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502., 2 GIS Data Manager, APCRDA, Vijayawada.

ABSTRACT

Development is a testimony for the growth of human species, which could only be attained by pioneering the ability for the effective usage of natural resources, of once country. Among the natural resources the land, whose use changes with time and space, stakes a major share. But unfortunately, in the prodigious constraint of agriculture need for humans only a less land is available for the urbanization. For nadir usage of land, a better understanding is necessary which could only attain through scientific approach, which would be provided by the Remote sensing and Geographic Information system (GIS). The present study confines to the change detection and Land resources available at Amaravati the capital city of an Indian state i.e., Andhra Pradesh from 2014 – 2018, which is been planned to build on the southern banks of the Krishna river in Guntur district, by using of Remote Sensing and GIS mapping. To eliminate or promote a process of land management, a postulated urbanization happened in the area within the specific time is known by performing change detection analysis. The LU/LC is done by using Combined classification technique and the Change detection Analysis, is done by using "Landsat 8 Images of 20 May 2014 and 31 May 2018". And this helped to study the growth of urbanization and for preparing various thematic maps i.e., Transportation Map, Slope Map, Soil Map etc., and data from various organizations and the Survey of India (SOI) toposheets were also used. Which obliging to get a brief on Land Resources and would help the government organizations in making proper land management policies for the environmentally friendly urbanization.

Index Terms: Remote Sensing& GIS, Change Detection Analysis, Land Resources, Thematic Maps.

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AN ANALYTICAL APPROACH ON PREPARATION OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR NATIONAL HIGHWAY PROJECT (A CASE STUDY) BY USING GIS

Paper ID – NCETST2251

A Paper Presented by-Monisha Reddy Kondapalli[1], Sesha Sai Ratnamala Bommareddy[2], S. S.Asadi[3]

1,2,3 PG Student, Assistant professor, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The highway projects are a provision of any country. It is the most important part of developing countries like India. However, the activities associated have occurred with major environmental and social impact during different aspects of the project. The nature of these impacts could be either beneficial or adverse impacts depending upon the Physical, Biological and Socio-Economic environment. Environmental Impact Assessment (EIA) helps to accomplish sustainable projects and track down environmental degradation. The present paper studies about the importance of EIA in the sustainable development of National Highway (NH) NH-16 with a case study of buffer zone 2 kilometres along the road incorporating spatial data Geographic Information System (GIS). This study concentrates on the EIA of the project in the physical environment at the highway site. The parameters covered in the study are Air, Water, and Soil. Samples of water and soil were taken to analyse their present condition. Data was also collected from various Government offices. After analysing the different parameters and discussing the probable impacts suggestions are made regarding the mitigation measures that can be taken at different stages in order to reduce the environmental impacts.

Index Terms:Environmental impact assessment (EIA), Geographic Information System (GIS), National Highway (NH).

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DEVELOPMENT OF SHEAR STRENGTH EXPRESSION FOR RC CORBELS USING STRUT-AND-TIE MODEL

Paper ID – NCETST2252

A Paper Presented by-Katari Durga Bhavani[1],J. D.Chaitanaya Kumar[2] ,M. L. Sai Ranga Rao[2]

[1,2] PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Corbels are brackets that project from the faces of columns and are used extensively in precast concrete construction to support primary beams and girders. Because of the prevalence of precast concrete, the design of corbels has become increasingly important. In this paper, a simple analytical expression is proposed for predicting the shear strength of reinforced concrete corbels using "Strut-and-Tie" Model. The proposed expression is compared with some of the existing methods and ACI 318-14 code. The 178 corbels specimen's experimental data has been collected from the literature and find out the unknown parameters. The proposed model accounted for compressive strength of concrete, shear span -to-depth ratio, breadth and effective depth. The results indicate that proposed expression as one the best fitting expression to predict the shear strength of RC corbels.

Index Terms: Strut-and-Tie Model, Shear Span-to-depth ratio, Shear strength, Corbels, Size effect.

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SELF COMPACTING CONCRETE STRUCTURES WITH RESPECT TO CHLORIDE ION PENETRATION UNDER UNIFORM AXIAL COMPRESSION

Paper ID – NCETST2253

A Paper Presented by-M.Maneesha[1] and C.Rajamallu[2]

1,2 PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Every structure has a major concern regarding corrosion of reinforcement. This leads to reduction in strength and serviceability of structures. Self compacting concrete (SCC) has a high flowing ability which fills the voids in reinforced concrete without need of any vibrator and it is known as non-segregate concrete. This paper emphasis to study the mechanical properties of concrete by partial replacement of cement with GGBS and silica fume. Chloride ion penetration is also carried out in this study. 60 cubes (150 mm ×150 mm ×150mm) were casted to determine the compressive strength (24 cubes) and percentage of chloride ion penetration (36 cubes). Effects occurred with partial replacement in SCC and corrosion characteristics were assessed from this experimental work. For this research work GGBS is partially with cement in 30%, 50%, 70% and 2% silica fume by weight of GGBS, admixture of 0.5% weight of cement is added. It is observed from this experimental study, there are a huge strength and less corrosion by partial replacement of GGBS and by addition of silica fume.

Index Terms: chloride ion penetration, Ground Granulated Blast Furnace Slag (GGBS), Self Compacting Concrete (SCC), Silica fume.

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ACCELERATED METHOD OF MIX DESIGN FOR CONCRETE BY USING GGBSAND SILICA FUME

Paper ID – NCETST2254

A Paper Presented by-N.YeshaswiniSaiPriya[1] and B.Kameswara Rao[2]

1,2 PG Student, Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Accelerated method of mix design is very effective method for producing high performance characteristics in early ages of concrete. Accelerated curing of concrete hastens the process of hydration of cement and as a result the essential portion of the strength to be attained in 28 days under normal curing conditions is achieved within a short period. In 1980's there is no awareness of using Ground Granulated Blast Furnace Slag (GGBS) and Silica fume. In accelerated method of mix design, till now there is a correlation for plain concrete only. In this study, the accelerated curing method was done by using the combination of GGBS and Silica fume and by varying three different water-binder ratios such as 0.3, 0.4 and 0.5, whereas the percentages of GGBS have been varied from 90%, 80%, 70%, 60% and 50% by adding 5% of silica fume for the weight of cement. To achieve above mentioned in this present study around 108 number of standard lab size of cubes (150×150×150mm) have been tested under compression. The performance of blended concrete with accelerated curing method has been accessed through compressive strength, effect of GGBS percentage and effect of water-cement ratio. In this study, the correlations will be developed among the boiling water strength, 28 days and 90 days of GGBS and Silica fume.

Index Terms: Accelerated method, Correlation, GGBS, Silica fume, water-binder ratio.

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ACCELERATED METHOD OF CONCRETE MIX PROPORTIONING BY INCORPORATING FLY ASH AND SILICA FUME

Paper ID – NCETST2255

A Paper Presented by-P. Nikitha[1] and B. Kameswara Rao[2]

[1,2] PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The strength of concrete in construction works is calculated after 7days or 28 days of curing. If the strength is not achieved for 28 days, it is extended for 28 days more. This procedure is too long for some of the construction activities. Accelerated curing method is used to get the compressive strength values after 24 hours. By using those values, the prediction of 28 days compressive strength is possible. This paper deals with the accelerated curing of Fly ash and silica fume specimens and compared with conventional concrete. Cement is partially replaced with Fly ash and silica fume with varying percentages (70%, 60%, 50%, 40% and 30%) in water cement ratios (0.3, 0.4 and 0.5). As per IS 9013:1978, the correlation graph of compressive strength is for plain concrete. This work comprises of developing the correlation for fly ash and silica fume specimens under accelerated curing. By this research, a new equation is developed by using compressive strength values of accelerated curing to assess the compressive strength attained in 28 days.

Index Terms: Accelerated curing, Compressive strength, Fly ash, Silica fume.

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SIMULATION OF CONSTRUCTION SEQUENCE USING BIM 4D TECHNIQUES

Paper ID – NCETST2256

A Paper Presented by-Harsha Vardhan Tirunagari[1] and Venkatesh Kone[2]

[1,2] PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Project scheduling in construction refers to a roadmap of all activities of the project that should be done in a given order and within the time allotted to each activity. In 1910 Henry Laurence Gantt created Gantt chart to plan, coordinate and monitor construction sequence over time. It became the most used technique for scheduling, but it does not visualize the construction progress to users and also do not have the ability for clash detection. As the global construction projects are expanding day by day there is a rise in demand on resources, so there is an increasing need for a sustainable process for construction scheduling. 4D BIM (Building information modelling) is the proposed solution for the above problem. Through this technology, stakeholders and contractors can envision project success from design to construction while construction project managers can aggregate model data and quickly react to changes in real time. 4D BIM is adding the 3D model to time (schedule). It is a process that can add a lot of value to design and construction saving both time and money. The present papers studies about the importance of 4D BIM in construction scheduling and reveals the perceived value of 4D BIM in construction. This study mainly concentrates on simulation of construction sequence using 4D BIM for integrated project delivery and effective utilization of 4D application in BIM to resolve design conflicts and monitoring the project status by visualizing the time constraints.

Index Terms: 3D model, 4D BIM, Simulation, Visualization.

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ACCELERATED CURING METHOD FOR CONCRETE MIX PROPORTION BY ADDING GGBS

Paper ID – NCETST2257

A Paper Presented by-M. Sowjanya[1] and B. Kameswara Rao[2]

[1,2] PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Accelerated curing method is a steam or hot water curing which is sometimes adopted and the strength development of concrete is very rapid in this method. It fastens the process of hydration of cement and attains the strength of nearly 28 days curing within a shorter time. In this study, the method of accelerated curing was done by adding different percentages of Ground Granulated Blast Furnace Slag (GGBS) 90%, 80%, 70%, 60%, 50% have been varied for different water-binder ratios such as 0.3, 0.4 and 0.5.For this study, around 105 cubes of standard size (150mm × 150mm × 150mm) were tested under compression. In this research, the correlations among the boiling water method, 28 days and 90 days curing of GGBS will be developed. The compressive strength of GGBS 70% of w/c ratio 0.3 will give better results while compared to other percentages.

Index Terms: Accelerated method, Correlation, GGBS, water-binder ratio.

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EXPERIMENTAL INVESTIGATION ON STRENGTH AND DURABILITY OF CONCRETE INCORPORATED WITH SILICA FUME AND FLY ASH

Paper ID – NCETST2258

A Paper Presented by-V. Gopi[1] and K. Shyam Chamberlin[2]

[1,2] PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502

ABSTRACT

The prime concern of the environmental experts on the construction industry is its sustainability due to environmental impacts. The emission of CO_2 has reached to its all-time high during this decade due to the increased construction activity and production of cement. While the domain experts and researcher's exploration for an alternative to cement is continuing, they placed options for partial replacement of cement before alternatives to cement, to dig further into their studies. Some of such options are the pozzolanic materials that include fly ash and silica fume. Basically the Fly Ash and Silica Fumes are industrial by-products. In this study, the optimal percentage of these by-products for partial replacement of cement is studied in respect of their resulting concrete's strength properties. For fly-ash, 10%, 15%, 25%, and 35%, of replacement is tried and for silica fume, 0%, 4%, 6%, 8%, and 10%, of replacement is tried to arrive at their optimal replacement to get the desired strength and durability properties of the concrete. Compressive strengths were tested on cubes, split tensile strengths were tested on cylinders and flexural strengths were tested on beams. The specimen's durability properties were tested with sulphate and acid attacks. The results were amazing, the usage of these pozzolanic materials, as a partial replacement of cement, in conventional concrete is resulting to enhancement of strength and durability properties. Hence these pozzolanic materials are the promising options to reduce CO_2 emission of the construction industry.

Index Terms: Silica fume, Fly ash, Compressive strength, split tensile strength, Flexural strength, durability.

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RFORMANCE CONCRETE WITH RESPECT TO CHLORIDE ION PENETRATION BY INCORPORATED WITH GGBS

Paper ID – NCETST2259

A Paper Presented by-G. Rajesh[1] and B. Kameswara Rao[2]

[1,2] PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Service life prediction, this project can play out its primary function inside the required life expectancy while guaranteeing worthy support cost. In this paper, the service life of structures presented to aggressive conditions is estimated by the plausibility of splitting and spalling of concrete cover by conducting the investigation on 120 specimens (150 mm x 150 mm x 150 mm). And vary the water-cement ratios of 0.3, 0.4, and 0.5 with respective percentage of ground granulated blast furnace slag(GGBS) added in mix of W/C- 0.3 (90%, 80%, and 70%), W/C-0.4 (80%, 70%, and 60%) and W/C- 0.5 (70%, 60%, and 50%) each ratio contains 40 cubes (18 and 12- with material compressive strength and NaCl exposer, 4 and 6 without material compressive strength and NaCl exposer) compared with respective of their curing days 28 and 90. NaCl specimens are used to drill depth (5-10 mm, 10-15 mm and 15-20mm,20-25mm) and take the powder and predict the penetration depth of chemical through the specimen and compared with and without NaCl exposer specimens. The Penetration depth of chloride ion into specimen is restricted by w/c-0.3% of 90% GGBS is give better results than others.

Index Terms:service life prediction, plain concrete, water-cement ratio, GGBS, compressive strength, Nacl expose.

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STRENGTH AND DURABILITY STUDIES ON LIGHT WEIGHT FIBER REINFORCED CONCRETE BY INCORPORATING WITH PALM OIL SHELLS

Paper ID – NCETST2260

A Paper Presented by-Ala Muralidhar[1] and J. D. Chaitanya Kumar[2]

[1,2] PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

In this present investigation agricultural waste from the palm oil industry is used a coarse aggregate in the concrete. The palm oil shells (OPS) are the waste from the palm oil industry. For this study 30% of coarse aggregate are replaced with POS. for this study M30 grade concrete is designed by adding 0.2% electro-chemical resistances (ECR) glass fiber to the volume of the concrete and to be reduced the greenhouse gases from the cement industry replacing the cement and ground granulated blast furnace slag (GGBS) up to 30% (0,10,20,30)) are used. For this concrete strength (compressive strength, split tensile strength, modulus of rupture, flexural behavior of the beams) and durability of Sulphuric acid (H_2SO_4), Magnesium sulphate ($MGSO_4$) and sodium chloride (NACL) studies are carried out. All the results are compared with normal concrete.

Index Terms: Durability, electro-chemical resistances (ECR) glass fiber, ground granulated blast furnace slag (GGBS), palm oil shells (POS).

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LAND USE CHANGES IN GOVERNMENT LANDS AND IT'S MONITORING USING MULTI TEMPORAL SATELLITE DATA: A CASE STUDY ONAMADALAVALASA MANDAL, SRIKAKULAM DISTRICT

Paper ID – NCETST2261

A Paper Presented by-Ch. Manasa Reddy[1], T. Vani[2], S.S. Asadi[3]

1,3,2 PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.2 Land Use &Ecology Division, Andhra Pradesh Space Applications Centre (APSAC), Vijayawada, India.

ABSTRACT

Land is one of the vital natural resources and all the developmental activities are based on it. The population is increasing day by day so the land use/land cover areas also changed. In recent decades "land use" concept has evolved and it is now considered as the socioeconomic function of land. The representation of land use and land use change assessment through remote sensing still remains one of the major challenges for the remote sensing scientific community. In this study mainly we focus on land use changes in the government lands of AmadalavalasaMandal, Srikakulam district. We present a methodological approach based on multi temporal satellite data and cadastral data to assess government land use changes. IRSP6 & R2-LISS IV sensor with 5.8 meter high spatial resolution data 2012 and 2018 has been used and applied remote sensing techniques to find out the land use changes in government lands over 6 years. For this analysis software GIS (Geospatial Information System) and ERDAS (Earth Resource Data Analysis System) are used. The encroachment changes in the government land parcels are displayed by the delta cue process then the changes are visually interpreted. Therefore, the land use changes over the government land parcels of AmadalavalasaMandal, Srikakulam district was prepared.

***Index terms*:** Land use /Land cover, Remote Sensing, GIS, ERDAS.

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EXPERIMENTAL INVESTIGATION ON DUCTILITY AND DURABILITY STUDIES OF CONCRETE INCORPORATED WITH FLY ASH AND GLASS FIBRE

Paper ID – NCETST2262

A Paper Presented by-G. Anantha Rami Reddy[1] and K. Shyam Chamberlin[2]

1,2 PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Concrete industry is facing the environmental impact, by the emission of CO_2 while cement production. Cement partially replaced with pozzolanic waste material like fly ash reduces the releasing of CO_2. Fly ash is produced from thermal power plants. Due to using of glass fibers to conventional concrete has a huge compressive strength and flexural strength. This research work deals the study of different grades (M30, M40) of GFRC by partial replacement of cement with fly ash. According to mix proportions, standard sizes of specimens are casted in order to find the durability properties, ductility and flexural strength. Durability properties are achieved by testing the specimens for sulphate and also acid attacks. Whereas ductility and flexural strength is obtained from stress-strain curves. And obtained results are compared to conventional concrete. It is been observed from this research is that, ductility, durability and flexural strength is higher for GFRC than conventional concrete.

Index Terms: Glass fiber, fly ash, compressive strength, stress-strain curve, flexural strength.

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TRAFFIC CONGESTION DETECTION USING WHALE OPTIMIZATION ALGORITHM AND MULTI-SUPPORT VECTOR MACHINE

Paper ID – NCETST2263

A Paper Presented by- Bodanapu Sony[1], M. Madhusudhan Reddy[1],Ankit Chakravarti[2]

[1,2]Research Scholar, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Currently, urban traffic is an evolving issue that is closely related to economic factors and population growth. Several developing and developed countries are seeing increases in vehicle growth per each passing year. So, traffic flow congestion forecasting is one of the important aspects in intelligent transport system that aims to improve mobility, influence travel behavior, and save energy. In this research paper, an effective system; Whale Optimization Algorithm (WOA) and Multi-Support Vector Machine (MSVM) classifier was proposed in order to improve the performance of road traffic congestion detection. Here, the proposed system was experimented by using a simulated dataset, which was collected for beibei tunnel (4.2 km long road in yuwu free-way). The resulting section confirms that the proposed system enhanced the classification accuracy in road traffic congestion detection up-to 9.3% related to other existing systems.

Index Terms: Data normalization; Multi support vector machine; Traffic congestion detection; Whale optimization algorithm.

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RESPONSE SPECTRUM ANALYSIS OF G+21 BUILDING BY USING ETABS

Paper ID – NCETST2264

A Paper Presented by- B. HadassaJoice[1] and A. Aravindan [2]

[1,2] Research Scholar, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

This Research article is intended to study about Reinforced Concrete structural components partition walls and moment resisting frames building representative of structural types using response spectrum method. The design is according to Indian Standard Code IS 1893-2002 (part I). The objective of this study is to investigate the changes caused by the use of different codes in the dynamic analysis of multistoried RC building. To appraise the seismic response of the buildings. The Elastic analysis was performed by using response spectrum method in computer program ETABS V 9.7.4. It is observed from the comparative study that the base shear using IS code is higher in all the three buildings, when compared to other codes which undergo prediction of overturning moments in the building and hence heavier structural members. From this project a G+21 building was studied by using Response spectrum analysis in Zone V. The values of story drift, story shear, bending moment and Building torsion was studied.

Index Terms: Response spectrum analysis, Elastic design spectra, RC building, IS code.

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SERVICEABILITY PREDICTION OF RC STRUCTURE INCORPORATED WITH GGBS DUE TO CHLORIDE ION PENETRATION

Paper ID – NCETST2265

A Paper Presented by- G. Priyatham Reddy [1] and B. Kameswara Rao[2]

[1,2]Research Scholar, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Service-life prediction of reinforced concrete has been extensively studied in the past two decades. It is seen that RC structures have expected to have life more than 100 plus years with effortless maintenance in spite of reinforced concrete structures getting exposed to harsh environments To achieve this objective, durability of structures are required to be produced. To do this, a durable structure needs to be produced. In this work ground granulated blast furnace slag(GGBFS) is added to concrete at different levels of replacement. GGBFS is replaced in cement at the rate of 50 %, 60 % and 70 % and its strength and chloride penetration of concrete is determined. Chloride ingress is a critical attack of environment on concrete structure, which corrodes the steel reinforcement and thereby reduce the strength, serviceability and aesthetics of the structure. This is the basic reason for frequent repair and early replacement of structure. To prevent deterioration due to chorine penetration is using concrete which are resistant to chlorine attack. This is possible by understanding the ability of chlorine ion penetration in the concrete at the design, production and quality control cycle. Chloride ion penetration is a slow process and cannot be determined in specific time frame to set standards of quality before it is put to use. To predict the service life and to assess chlorine penetration, accelerated test procedure and predictive model is required to determine the value of chlorine diffusion in specified period of time.

Index Terms: Service life Prediction, GGBS, Chloride ion penetration.

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DEVELOPMENT OF AGRI INFRASTRUCTURE MODEL FOR TADIKONDA MANDAL, GUNTUR, DISTRICT, ANDHRA PRADESH

Paper ID – NCETST2266

A Paper Presented by- K. Lokesh[1] and K. Rajasekhara Reddy[2]

[1,2]PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502

ABSTRACT

In India approximately Rs.92,000 crores worth Agricultural produce is damaged. About 35% of perishable Agricultural products (fruits, vegetables, meat, milk) and non-perishable Agricultural products are damaged annually before reaching consumer due to lack of proper infrastructure facilities such as transportation, storage facility, processing, packing, etc. Hence, there is an immediate need to improve the Agricultural infrastructure to prevent loss, meeting food requirements of the country, improving the income of farmers. On an average about 12,000 farmers are committed suicide per annum since 2013 as the farming has become non- remunerative which has led to debit trap. This paper aims at understanding the infrastructure need for Agriculture and come up with an infrastructure model for Tadikonda Mandal of Guntur district, Andhra Pradesh which will help in meeting the ambitious objective of government of India in doubling the farmers income by 2022. Agricultural infrastructure involves water for irrigation, transport facility, post harvesting facilities, grading, processing, packing, marketing, etc. The existing infrastructure for Agricultural, Agricultural production in the study area is understood, questionnaire survey is carried out among the various concern stakeholders to understand their needs and expectations, identified the gap between the existing and expectations of the stakeholders. Also identified the infrastructure required for sustainable green revolution, collected the information regarding various schemes of central and state government that are suitable for the identified infrastructure and modes of finance for the identified infrastructure are evolved.

Index Terms: agricultural infrastructure, doubling farmers income, schemes, modes of finance

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COMPARATIVE STUDY OF USAGE OF OUTRIGGER AND BELT TRUSS SYSTEM FOR HIGH-RISE CONCRETE BUILDINGS

Paper ID – NCETST2267

A Paper Presented by- C. Bhargav Krishna[1] and V. RangaRao[2]

[1,2] PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The all building development has been rapidly increasing worldwide introducing new challenges that need to be met through engineering judgment. In Metro cities like Mumbai, Delhi, Chennai, Bengaluru, Kolkata, Hyderabad, Amaravati etc multi-storied buildings are common and people are willing to stay in high rise building, the analysis and design of tall building structural system. The lateral stability of tall building plays an important role in safe analysis and design. The shape of building is not regular like a rectangular (or) square, but they are of the form of Y and C Shaped buildings. The target of the present work was to contemplate the utilization of outrigger and belt bracket for RCC frame set at various area's exposed to wind. The ETABS programming program was chosen to perform the examination of (1) Lateral displacement, (2) Maximum storey drift, (3) Storey shear forces, (4) storey moments and (5) to strengthen the 85 story with story height of 3 meters of RCC building. The various parameters like (1) Lateral displacement, (2) Maximum storey drift, (3) Storey shear forces, (4) storey moments and (5) Storey overturning moments were considered for better comprehension of Tall building, when it was exposed to substantial seismic and wind .

Index Terms:Outrigger, Belt truss system, Lateral stability, Maximum storey, Lateral displacement, Storey shear, storey moments, Storey stiffness**.**

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SCHEDULING AND 3D MODEL OF RESIDENTIAL BUILDING IN GIS ENVIRONMENT

Paper ID – NCETST2268

A Paper Presented by- P. Venkatesh[1] and Dinesh Singh[2]

[1,2] PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Now a day's construction industry requires highly accurate scheduling, planning and management process for the project which can enable the overall optimization of the cost, time and resources. The construction planner uses 2D drawings and associates the components of drawings with the related activities present in the schedule. They used MS Project and Primavera for scheduling, AutoCAD drawings to visualize, plan and decision making for different construction activities. It uses multi environment and time consuming too. Thus, explaining the status of the project to the client becomes very difficult and time consuming. Therefore, the client and the store manager might not be fluent with the technical terms used in the schedules and graphical representations. Thus, the construction industry requires a tool that can manipulate the schedule and 3D components in a single environment from Multi environment. Instead of using the older, traditional methods of CAD drawings and schedule sheets, one can integrate them on a platform to create a 3D view of the project using GIS environment. The objective of study is to create scheduling and 3D model in single environment using GIS only for a G+1 residential building at Vaddeswaram. It has been found that from actual building information at site and the building simulation model, some overlapping and rework can be avoided.

Index Terms:Environmental Geographic information system, Scheduling, Auto CAD, Python, Construction management, project management

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SMART SOLID WASTE MANAGEMENT IN NEW CAPITAL CITY AMARAVATI

Paper ID – NCETST2269

A Paper Presented by- G. Kalyan Chakravarthi[1], D.Satish Chandra[2], S. S. Asadi[3]

[1,2,3] PG Student, Associate Professor, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Expanded epidemic outbreaks and spreading of infections due to inappropriate waste administration in urban areas which are having a drastic and exponential population growth. In current circumstances, the Garbage Collecting Vehicle (GCV) amasses the waste few times in a week. In this way, the issue is over streaming of wastage on the streets. Thus, to beat this restriction, in the present thesis a different scheme on smart waste management using Radio-Frequency identification devices(RFID), Machine to machine(M2M), pneumatic system, Internet of things(IOT), plasma technology are explained in detail and the best method of treating solid waste using smart solid waste management techniques is suggested basing upon the Summary of the data collected from Tullur, Rayapudi, Velagapudi, Nelapadu villages respectively, Where one of these new systems is implemented. After gathering the questionnaire, which is prepared basing upon the Quantitative survey, the results were analyzed using mathematical methods and confirm the advanced techniques in SWM Is better than traditional or conventional methods.

Index Terms:Solid Waste Management (SWM), Machine To Machine (M2M), Internet of Things (IOT), Radio Frequency Identification Techniques (RFID), Pneumatic System, Plasma Technology, Smart Solid Waste Management (SSWM).

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QUALITY ASSESSMENT OF BOREWELL AND TAP WATER IN AND AROUND HYDERABAD CITY

Paper ID – NCETST2270

A Paper Presented by- Suresh Kommu[1] and S. S. Asadi[2]

[1,2] Research Scholar, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502

ABSTRACT

To regulate the climate and shaping the land,water is the most important compound. It is one of the most important compounds that profoundly influence life. Initially, mankind used water for domestic purposes such a drinking, cooking, washing. However the present uses of water may be classified as domestic, public, commercial and industrial. Rapid industrialization and indiscriminate use of chemical fertilizers and pesticides in producing crops are causing heavy and varied pollution in aquatic environment leading to deterioration of water condition and depletion of aquatic biota. Due to use of polluted water, human suffers from water borne diseases. It is therefore necessary to check the water pollutants at regular interval of time. The water may consist of pollutants and toxic metals which are injurious to health.The following are general categories of drinking water pollutants and examples of each:Physical contaminants primarily impact the appearance or other physical properties of water. Examples of physical contaminants are sediment or organic material suspended in the water of lakes, rivers and streams from soil erosion.Chemical contaminants are elements or compounds. These contaminants may be naturally occurring or man-made. Examples of chemical contaminants include nitrogen, bleach, salts, pesticides, metals, toxins produced by bacteria, and human or animal drugs.

Index Terms: Electrical Conductivity, pH, Quality assessment, Total Dissolved Solids, Toxic metals, Water quality index.

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IMPROVING THE DUCTILITY OF THE CONCRETE INCORPORATED WITH GLASS FIBER

Paper ID – NCETST2271

A Paper Presented by- Shaik Jilani[1] and B. Kameswara Rao [2]

[1,2] Research Scholar, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Pre-stressed concrete with fiber reinforced particles exhibit brittleness which is a potential failure mode. To improve the ductility, combinations of bonded and unbounded tendons were used for pre stressing. Concrete gets fabricated in various shape and structure evolved the designers. It is ubiquitous, flexible and highly functional makes it a popular and widely used construction material in the world. Researchers have evolved various fiber reinforcement material for incorporating in concrete to enhance the performance metrics of concrete. Ductility is an essential structural parameter, allowing plastic deformation with mild decrease in strength. Compression strength content is influential is improving the ductility of the concrete. It is proposed to use 0.4 to 0.8 % of glass fiber in OPC and ductility parameters are studied and counter action would be suggested to improve the ductility of the concrete.

Index Terms: Concrete, FRP, Ductility, Glass fiber, flexibility.

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A COMPARATIVE STUDY OF WAITING LINES BETWEEN MULTIPLE SINGLE SERVER MODEL AND THE REAL-TIME OBSERVED DATA

Paper ID – NCETST2272

A Paper Presented by- K T V K Reddy[1], Dinesh Singh[2], Uma Bhawsar[3]

[1,2] Research Scholar, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

3 Professor, Holy Mary Institute of Science and Technology, India

ABSTRACT

Inefficiency and Non-frequency of conventional transit systems at Peri-urban areas result in delay in the travel time and cause inconvenience, dissatisfaction for the commuters. In order to evaluate the efficiency of the existing transit systems, Multiple single server model is established for twoservers. Both Mathematical calculation and Real-time observation are carried out in the research. The model has been checked with the actual data surveyed. This paper presents a comparative study between the results from Multiple single server model and the data collected from real-time observation of 24 hours for seven days. A case study is provided to show up to what extent the model can be applied to a simple point-to-point system.

Index Terms: Arrival, Delay, Departure, Queue, Queue length.

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ENVIRONMENT IMPACT ASSESSMENT FOR MUNICIPAL SOLID WASTE IN VADDESWARAM VILLAGE, GUNTUR DISTRICT

Paper ID – NCETST2273

A Paper Presented by- D. Surajkumar[1], D. Sonu Singh[1], D. Satish Chandra[2]

1,2 UG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502

ABSTRACT

The study focuses on the impacts and the mitigation measures of the municipal solid waste (MSW) in Vaddeswaram village, Guntur district, through the Environmental impact assessment (EIA) process. It aims to look at the effect of improper management of solid waste. The study analyses the factors contributing to the effect of improper municipal solid waste management in the Village and also suggested measures that can possibly help to mitigate the problems. A landfill is designed to minimise the impacts from the MSW. Geological study is considered to locate the appropriate site for the installation of landfill, as the population of the village is going to increase rapidly the design of land fill is considered for the next 20 years. It discusses the effects of biological, physical and chemical parameters in environment.

Index Terms: Municipal Solid Waste (MSW), Environmental Impact Assessment(EIA), Landfill.

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VARIABILITY AND TIME SERIES TREND ANALYSIS OF RAINFALL OVER KRISHNA DISTRICT OF ANDHRA PRADESH: A CASE STUDY

Paper ID – NCETST2274

A Paper Presented by- M. Rushi Kumar[1], M. Naveen[1], M. Sai Pravallika[1], Sanjeet Kumar[2]

[1,2] UG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502

ABSTRACT

Spatial-temporal variability of meteorological variables in the framework of changing climate is predominant. At the same time, if agriculture in those areas is depending on rainfall, then variables especially rainfall plays a vital role to assess climate-induced changes. Such types of studies will suggest feasible adaptation strategies of those particular areas. Spatial-temporal variability in rainfall has been focus of research over the past decade around the world due rainfed agriculture in developing country. Present study focus on rainfall variability and time series analysis of historical meteorological data of Krishna district, Andhra Pradesh, India using non-parametric mann-kendall technique. Krishna district have important in agriculture and it is upcoming urban area in Andhra Pradesh in terms of industry and population growth. In the present study, the temporal variability is done for the annual time series of grid data over the period of 1977-2007 is performed using Mann-Kendall technique. At the same time wet and dry day analysis wasalso performed, which shows increased in dry days and decreased in wet day over the area. With the results of this study, we can suggest some adaptation measure to increase the water availability of the region for the agriculture and population growth for the sustainable development of the region in the future in changing climate

Index Terms:**Krishna, Variability, Rainfall, Parametric, Climate**

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A Critical Evaluation on Geotechnical Characterization of Medical and Health Infrastructure Building Site at Mangalagiri, Guntur District, Andhra Pradesh, India.

Paper ID – NCETST2275

A Paper Presented by- M. MadhuSudhan Reddy[1] and K. Rajasekhara Reddy[2]

[1,2] Research Scholar, Associate Professor, Department of Civil Engineering, KoneruLakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The unique soil identification and evaluation is often regarded as one of the most important information for proper design of any civil engineering structures. Selection of Geotechnical investigation methods is depending upon site conditions and characteristics of soil vary site to site. Present study focused on physical characteristics of soils for a proposed medical and health infrastructure building site at Mangalagiri, Guntur district, Andhra Pradesh state, India. The investigation involves Dynamic Cone Penetration Test (DCPT) and Standard Penetration Test (SPT) followed by excavation with trial pits and trenches. Both disturbed and undisturbed soil samples were collected from twelve different locations of the study area at various depths from all the bore holes for studying physical properties of soils. Using the samples thus collected from boreholes, grain size distribution (GSD) charts were drawn to classify the soils and 2-D bore logs have been developed to understand the soil heterogeneity. The investigations reveled that the sub soil is comprising occurrence of predominantly red coloured medium dense sand with traces of laterite gravel up to a depth of 5 meters and dense sand and laterite gravel mixture beyond 5.0 m to explored depth throughout the study area.

Index Terms: Standard Penetration Test (SPT), Dynamic Cone Penetration Test (DCPT), soil samples, 2-D Bore logs, Mangalagiri.

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EXPERIMENTAL STUDY ON BLACK COTTON SOIL TO BE USED AS FILLING MATERIAL BY STRENGHTNING WITH BAGGASSE ASH AND BRICK DUST

Paper ID – NCETST2276

A Paper Presented by- Tulasi Sai Krishna[1], NoorbashaSanil Basha[1], K. Shyam Chamberlin[2]

1,2 UG Student, Associate Professor, Department of Civil Engineering, KoneruLakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Our newly proposed APCRDA area most of the surface is occupied by black cotton soil. On the black cotton soil various civil engineering applications will appear for example pavement designs, structural buildings likewise. Black Cotton soil is an expansive soil. That is the reason it can absorb water and change the volume. Not only changing volume, it can also show swelling and shrinking. This is the reason structures will fail. The damage due to settlement of soil, if soil settles foundation support will be sinking, then structure will be fail. Many problems are recorded with the Black Cotton soil, to overcome the problem civil engineers and geotechnical engineers ate found many techniques. The present experimentation is with Bagasse Ash (BA) and Brick Dust (BD). The experimentation focused on physical properties of soil, compressive test, Shear Strength tests, and Swell Pressure test. Do the experimentation with and without adding additives, compare with those two randomly adding percentages 15%, 20%, 25%, 30%, 35% Brick Dust. Bagasse Ash is contently 10%. This experimentation shows clearly difference of the strength of soil. Experimentation can conclude Bagasse Ash and Brick Dust is good stabilization materials for black cotton soil.

Index Terms: Black cotton soil, Bagasse Ash, Brick Dust, physical properties, Shear Strength tests, Swell Pressure test, compressive test.

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STRENGTHENING OF COHESIONLESS SOILS BY USING MOSQUITO NET AND ALERT NET AS A GEO-SYNTHETIC MATERIAL

Paper ID – NCETST2277

A Paper Presented by- N. Badrinath[1], L. Rachana[1], N. Sandeep Kumar[2]

1,2 UG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The objective of this investigation is to study the properties of cohesion less soils and the ways to stabilize it. Foundations are usually subjected to dynamic loads caused by the earthquakes, bomb blasts and machines etc. The behavior of reinforced foundation bed under the dynamic loads needs to be stabilized. To reduce the slope failure and the soil embankment failure we need to stabilize the soil. There are numerous techniques to stabilize the soils. One of the best methods to stabilize the soil is by using geo-synthetics. Alert net and mosquito net are used in the present study. It is well known that the bearing resistance against a alert net and mosquito net transverse rib is transferred through their junction when these geo-synthetics are placed in cohesion less soils and subjected to the tensile loading. The increased stability is through the frictional interaction between the soil and the reinforcement. Direct shear test is performed by using Alert net and mosquito net by placing in different positions and comparing the shear strength parameters. This paper examines the use of Alert net and mosquito net in cohesion less soils

Index Terms: Alert net,mosquito net,Direct shear, stabilization, Shear strength , Non cohesive soil .

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PEDESTRIAN DELAY MODELLING USING VISSIM

Paper ID – NCETST2278

A Paper Presented by- J. Sri Ram[1], V. Ashok Yadav[1], K. Hemantha Raja[2]

1,2,3 UG Student, UG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The goal of signal timing at an intersection should be to separate conflicting movements in time, maximizing safety and efficiency for all users. In many jurisdictions, however, signal timing objectives have traditionally focused on allowing vehicle progression and reducing vehicular delay and stops. While these are important considerations in many contexts, other users deserve similar focus and control strategies. Recent updates to the Highway Capacity Manual (HCM 2010) have included specific multimodal delay modelling techniques offering a bit more accommodation to pedestrians, but still remain heavily vehicle-centric. While strategies such as an exclusive pedestrian phase and leading pedestrian intervals can help improve the safety of pedestrian operations, legacy service of pedestrians requires that they still must wait for 'their turn 'which at times means they experience delays much in excess of those that would be deemed acceptable for a motor vehicle at the same location. Excessive delay can lead to pedestrian frustration, non-compliance and ultimately decreased safety. In the North American context, implementation of these strategies varies greatly across jurisdictions, and there has been limited research on incorporating these alternative pedestrian treatments at signalized intersections. The performance level of the proposed models is showing more precise and reliable solutions. The first pedestrian delay model is developed on the basis of compliance behavior, has two components, such as waiting time delay and crossing time delay. This model can be used sto evaluate pedestrian Level of Service (LOS) and signal timing optimization. The second developed pedestrian delay model is based on noncompliance behavior, has three components, such as waiting time delay, crossing time delay, and pedestrian–vehicular interaction delay. This model can also be used to evaluate the quality of pedestrian flow, estimating accurate pedestrian delay and LOS for local conditions, which is representative of the prevailing pedestrian condition.

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EXPERIMENTAL STUDY ON PERFORMANCE OF CONCRETE BY USING COMBINATION OF FLYASH AND GGBS AS BLENDED MATERIAL

Paper ID – NCETST2279

A Paper Presented by- M.G. Kamaldeep[1] and K. Shyam Chamberlin[2]

1,2 PG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Cement is the most important material of the construction industry, but its manufacturing inflicts bad to the environment by emitting carbon dioxide into the atmosphere. Reduction of these emissions, while meeting the ever-increasing demand for the infrastructure across the globe is a challenge for the sustainability of the industry that attracted the focus of academicians, domain experts and researchers to objectivise their work to explore the alternatives to the cement. Many alternatives have come into discussions, as result of such work by the researchers, to examine further to substantiate their use in the industry. Some of such alternatives for the partial replacement of cement are Fly-ash, GGBS, Rice Husk, Silica Fumes, Meta Kaolin etc., and many ofthem are industrial by-products. This project deals with replacement of cement content in concrete withthe combination of fly-ash and GGBS as blending material with the limiting percentages individually. As recommended by the respective IS standards, 25-55% of Fly ash is replaced with cement. The optimum value is noted and considered as constant throughout.In this paper, Fly ash (obtained) content is kept constant and different percentages (up to a maximum of 60%)of GGBS content is tried to conclude and report the findings on variations of concrete properties like flexural strength, compressive strength, Load vs. Displacement for different combination of varied GGBS content for a constant Fly ash content. The load carrying capacity is noted comparatively for Conventional and Composite concrete.

Index Terms:Fly ash, GGBS, Flexural Strength, Load carrying capacity.

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STRENGTH EVALUATION OF CONCRETE WITH VARIOUS SUPPLEMENTARY CEMENTITIOUS MATERIALS AND GLASS FIBER

Paper ID – NCETST2280

A Paper Presented by- K. J. Brahma Chari[1], V. Ranga Rao[2]

1,2 Research Scholar, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Industrial development leads to the generation of industrial waste. Currently, large amounts of fly ash, blast furnace slag are produced in thermal industries and iron-steel industries with a significant vital effect on the environment and humans. In recent years, many researchers have established that the utilization of supplementary cementitious materials (SCMs) like Fly Ash (FA), Ground-granulated blast-furnace slag (GGBS), Metakaoline (MK), Silica Fume (SF), Rice Husk Ash (RHA), Quarry Dust (QD), Molasses (ML), Cotton Waste (CW), M-Sand (MS) and Any Other by-products can't only improve the various properties of concrete - both in its fresh and hardened states. This research work was carried out by partial replacement of FA and GGBS to cement with the addition of glass fibers. By introducing the supplementary materials FA and GGBS in concrete designs reduce the cost of construction without effecting the various parameters of concrete. The compressive and tensile strength properties of concrete were evaluated with different mix proportions compared to conventional concrete.

Index Terms: Glass fiber, Compressive strength, Tensile strength, Fly ash, GGBS.

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ESTIMATION OF WATER EXCELLENCE OF HIMAYATSAGAR AND OSMANSAGAR LAKES IN HYDERABAD – A MODEL STUDY

Paper ID – NCETST2281

A Paper Presented by- Akhil Gurijala[1] and S. S.Asadi[2]

1,2 Research Scholar, Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh

ABSTRACT

Water is one of the major elements accountable intended for living on top of the globe. India's plane water flows during 14 main stream basins beyond incalculable average/slight basins. The weather modify is affecting the precipitation and eventually affect the amount of freshwater obtainable, while, plane water as well as ground water resources. The surface water excellence is a very essential with receptive problem is a large environmental concern worldwide. Plane water contamination through physical, chemical, with biological pollutants can be considered as an epidemic all over the world. The Study area of research job is Himayatsagar and Osmansagar lakes in Hyderabad, Distic of Rangareddy Telangana State. India. In this present study is analysis of water quality index of two water bodies under Musi River. Water samples collected from different check points during the month of December 2018.

Index Terms:Surface Water, Himayatsagar, Osmansagar, physical, chemical characteristics

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NUMERICAL ANALYSIS ON STRUCTURAL BEHAVIOR OF VOIDED BEAMS USING ANSYS

Paper ID – NCETST2282

A Paper Presented by- L. Lakshmi Kanth[1] and P. Polu Raju[2]

[1,2] Research Scholar, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Cement, as per the sources the Indian concrete industry used around 270 million metric tons of cement in the financial year 2017. Which is the most common binding material around the globe and making India as the second largest cement producer after china on the other side of the coin which is responsible for same impact of global warming. With the advance in the present-day research and development the production of cement could reduce by using the practice of eliminating the unwanted concrete by providing voids with HDPE(High Density PolyEthylene) spheres in the structural elements like slabs and beams. Beams which are visually small but occupies more or less equal volume of concrete as slabs. In this research work it is observed that the structural behavior of voided rectangular beams for different void ratio, percentage of steel, shape of the voids and different support conditions by simulating in ANSYS software tool.

Index Terms:Voided beams, HDPE Spheres, Bending Strength, Shear Strength, Punching Shear.

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EFFECT OF BENTONITE ON BEHAVIOR OF R.C. COLUMNS UNDER UNIAXIAL COMPRESSION: A NUMERICAL APPROACH

Paper ID – NCETST2283

A Paper Presented by-M. Achyutha Kumar Reddy[1] and V. Ranga Rao[2]

1,2 Research Scholar,Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Vaddeswaram, India – 522502.

ABSTRACT

This paper aims at the behavior of R.C column with binder by partial replacement of OPC with Bentonite under uniaxial compression through numerical analysis. The variables in this analysis were % of reinforcement, eccentricity (0,0.1,0.3 &0.7) of loading & percentage of bentonite substitution (0,5,10 &15) with M20 grade of concrete, Fe500 grade steel. The analysis of the column with 1.2 m length and 0.10x0.15m cross section at mid-span, hinged at both ends was carried out through Etabs v-17 software. The ultimate load, deflection, strain, and crack patterns were evaluated for each variable. Increase in ductility was observed by partial replacement of OPC with bentonite and also better performance was shown by the columns at 5 % of bentonite substitution.

Index Terms: Bentonite, uniaxial compression, strain &numerical approach.

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SPATIAL DISTRIBUTION ANALYSIS ON GROUNDWATER QUALITY OF SARADA RIVER BASIN, VISAKHAPATNAM, A. P. INDIA

Paper ID – NCETST2284

A Paper Presented by-M.Sujatha[1], T.Satyanarayana[2], S. S.Asadi[3]

1 Associate Professor, Environmental Sciences, Department of Chemistry, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh. 2 Professor, Department of Civil Engineering, S.R.K. Institute of Technology, Enikepadu, Vijayawada. A.P. India. 3 Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh

ABSTRACT

An attempt has been made to study the spatial distribution of pH, E.C, Chlorides and TDS of groundwater in the different sub-basins of Sarada River Basin, Visakhapatnam, A.P. The pH value of groundwater varies from 6.4 to 8.8 with an average of 7.6. The pH range is not within the limits prescribed by WHO or ISI either in the highest desirable level or maximum permissible level E.C values ranges from 210 to 8000 micromhos/cm with an average of 4105 micromhos/cm. The chloride values of the study area ranges from 14 to 2486mg/l with an average of 1250mg/l. The TDS values of the study area ranges from 136 to 5200 mg/l with an average of 2668mg/l, exceeds the maximum permissible limit of ISI and ICMR .A small portion of the upper Sarada River and some southern part of lower Sarada River Basin which is close to the sea, characterized with sudden change in the values of pH, Electrical Conductivity, Chlorides and TDS which indicate some sort of pollution. The agricultural and industrial townships in the study area show the minimum pH, high chloride and E.C. values. The study area also reveals that the pollution of groundwater is due to saline water intrusion and over use of fertilizers and pesticides in lower Sarada River Basin.

Index Terms: pH, E.C, chlorides, TDS and groundwater pollution.

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DEVELOPMENT OF SHEAR STRENGTH EXPRESSION FOR RC DEEP BEAMS USING STRUT-AND-TIE MODEL

Paper ID – NCETST2285

P. Praneet Sai Kumar [1],G. Sri Harsha [2], P. Poluraju[3]

[1,2,3] PG Student, Assistant Professor, Associate Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

This paper reports, a new analytical expression is proposed for predicting the shear strength of RC deep beams using Strut-and-Tie model (STM). The proposed expression is compared with some of the existing expression and ACI 318-14 code expression. The 111 deep beams specimen's experimental data have been collected from the literature survey to find out the unknown parameters. The proposed expression encloses, concrete compressive strength, amount and arrangement of longitudinal and web reinforcement, shear span-to-depth ratio and effective depth. The results indicate that the proposed expression is one of the best fitting expression to predict the shear strength of variety of RC deep beams.

Index Terms: Deep beams, Strut-and-tie Model, Shear Strength, Shear span-to-depth ratio.

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RESOURCES OPTIMIZATION IN CONSTRUCTION OFA RESIDENTIAL APARTMENT BY USING PRIMAVERA: A CASE STUDY

Paper ID – NCETST2286

A Paper Presented by-Kottamasu L. N. Panakala Rao[1]and K. Shyam Chamberlin[2]

[1,2] PG Student, Associate Professor Department of Civil Engineering, KoneruLakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Resource management is the main factor of project management in today's construction industries. Budget and scheduling factors purely based on the resources are effectively used in the construction. Project manager faces the problems such as resource planning and resource allocation in construction projects due to major projects. Thus, previous method of resource management system cannot handle present large projects. To conquer by the problems the software was introduced like primavera p6 can supervise the construction projects in appropriate way. This software will help in resource management and planning process of the construction project and avoids budget and scheduling over run. In the present study SREE LALITHA PRIDE at the location of Mangalagiri.

Index Terms: Large scale projects, Project Management, Resource planning.

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COMPARATIVE STUDY OF QUALITY OF WATER OVER STRENGTH OF CONCRETE STRUCTURE –AN ANALYTICAL APPROACH

Paper ID – NCETST2287

A Paper Presented by-Velisala supriya[1], D. Satish Chandra[2], S. S. Asadi[3]

[1,2,3] PG Student, Associate Professor, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The construction of structures in the world is increasing rapidly. Due to this the demand for the water in construction also increased, with this the ground water levels are decreasing day by day. As we know on the earth surface there is 97.5 % of saltwater and 2.5% of fresh water. So it is advisable to conserve the water for future generations. It can be achieved by utilizing the saltwater for construction purposes. This project outlines the comparative study of quality of water over strength of concrete structure by using fresh and saltwater (Nacl dissolved). As 90% seas and oceans contains salinity of 3.5% (35 ppt). The cubes are to be casted with fresh and 3.5 % of saline water prepared by mixing Nacl and the compressive strength results for 3, 7 and 28 days and tested compressive testing machine and the results are compared. As sodium chloride mixed water is used in concrete batching, there is either increase or decrease in strength of concrete. To know this strength variation this project also aims at the strength comparison for 3.+995, 5, 10, 15, and 20% of Nacl mixed water as constituent of concrete.

Index Terms: concrete, initial setting time, final setting time, sodium chloride (Nacl), compressive strength

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FLEXURAL BEHAVIOURON SCC STRUCTURES WITH RESPECT TO CHLORIDE ION PENETRATION

Paper ID – NCETST2288

A Paper Presented by-Syed Sajidh[1] and C.Rajamallu[2]

1,2PG Student, Assistant Professor Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502

ABSTRACT

Self-compacting concrete (SCC) is a high performance concrete which is having good segregation resistance, and also possess high strength. It is a special kind of concrete, which is having easy flow-able property, so that it can reach every corner of the mould easily when compared with conventional concrete. This concrete does not require any vibration or compaction while placing. The present investigation deals with the usage of both ground granulated blast furnace slag (GGBS) as a partial replacement material to cement with varying percentages such as (0%, 30%, 50%, and 70%) and Silica Fume. Silica Fume is taken 2% by weight of GGBS and replaced partially to it. Auromix 300 plus is used as admixture with a dosage of 0.6% by weight of cement. It gives good workability and also acts as viscosity modifying agent. Usage of these materials resulted in high strength, durability and corrosion resistant. In this research, totally 16 beams (150mm × 150mm × 1000 mm) were casted. Flexural strength was determined for 4 beams at an age of 28days, under four point beam bending test and remaining 12 beams were allowed for chloride penetration test as well as with four point beam bending test. It is been observed from the research, blended self-compacted concrete has high strength and also corrosion resistant.

Index Terms: Chloride penetration, Corrosion resistance Flexural strength, Self-compacting concrete**.**

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ADVERSE EFFECT ON YIELD DUE TO WATER LOGGING IN GODAVARI BASIN-INDIA

Paper ID – NCETST2289

A Paper Presented by-Dhavaleswar Rao Bhandaru [1], RVRK Chalam[2], Reshma Tabassum [3]

1 Professor, Department of Civil Engineering, Vagdevi College Of Engineering, Warangal 2 Professor in Water & Environmental Engineering, K. L. Deemed to be University. 3 Deputy Executive-Engineer (Irrigation) Government of Telangana

ABSTRACT

The analysis of the data of Sri Rama Sagar Project in Godavari Basin reveals that there were many adverse impacts of mismanagement of surface irrigation such as water logging, soil salinity and alkalinity,. The increased water logging area of fertile land was rendered un-fit and unproductive in almost all the water logged areas of the project. The personal studies were made by visits to the sites of the Six villages under this project. The data for the total production loss from the two major crops Rice, Ground Nut during the period of 5 years in both Kharif and Rabi for the affected areas of water logging, salinity/alkalinity is worked out. Many of the common field crops are affected when the Ecvalue is in the range of 4-8mm hos/cm, crops with high salt tolerance can grow satisfactorily, when the Ecvalues are between 8 and 16 mm hos/cm.Soil pH is one of the most important parameters which influence plant growth. However, there is a decreasing trend in crop yields per hectare due to water logging salinity/alkalinity. Hence, in brief, the total production loss from the two major crops in the study area during the period of 5years in both Kharif and Rabi due to mismanagement, and consequent problems of water logging, salinity/alkalinity is worked out to the order of millions of rupees. Hence, drainage is made a pre-requisite, even at the stage of planning canal irrigation projects in order to avoid huge social costs due to water logging and salinity.

Index Terms: Soil Salinity/Alkalinity, Water Logging, Reclamation. Leaching, Drainage

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STUDY ON STRENGTH OF SELF HEALING CONCRETE

Paper ID – NCETST2290

A Paper Presented by-P. Bala Gopi Krishna[1], Nayeem Mujeeb[1], K. Naga Chaitanya[2]

1,2 UG Student, Associate Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Concrete is fundamental material in construction and cracking is a common phenomenon developed due to its relatively low tensile strength. The repairing of the concrete is immediately required to attain its serviceability and also to avoid corrosion of reinforcement so that the cracks don't further expand. For repairing of cracks there will be higher cost expenditure which is uneconomical in many cases and is disadvantageous as there can be unexpected thermal expansions and other health hazards due to chemicals used in the repairing purpose. So in-order to avoid these health hazards and the high cost expenditure an environmental-friendly repair technique is developed using bacteria in this paper.

Index Terms: Bacteria, Concrete, Cracking, Environmental friendly, Low tensile strength, Low cost, Repairing, Repairing techniques.

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EXPERIMENTAL INVESTIGATION ON REINFORCED MASONRY WALLS UNDER AXIAL LOAD

Paper ID – NCETST2291

A Paper Presented by-V.V.L. Dinesh Sai [1], N.Lingeswaran[2]

1,2 PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

India is one of the most prominent country for earthquakes and masonry walls are considered as Non-Structural elements of structure. In order to resist the structures from earthquakes different techniques been used such as base isolation, shear wall, Reinforced masonry. Reinforced masonry walls are used to increase lateral resistance in both In-Plane and Out-Of-Plane of the structure. Reinforcement in masonry walls can be provided in both bed-joint and perpend joint. This paper deals with the Bed-joint reinforcement of masonry wall and the kind of reinforcement used is truss and ladder type bed joint reinforcement. This reinforcement been placed in alternative course of masonry walls and the type of masonry used is burnt clay bricks of Class-B with the kind of bond used is English. The mortar been used in between coarse is MM 7.5 confirmed according to IS:2250. The observation of this experiment stats that the inclusion of reinforcement in wall increases the Displacement capacity and the crack pattern of the wall can be observed.

Index Terms:Reinforced Masonry, In-Plane, Out-of-Plane, Bed-Joint Reinforcement, Perpend Joint.

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EXPERIMENTAL INVESTIGATION ON SAFETY AND SERVICEABILITY CONDITIONS OF REINFORCED CONCRETE DEEP BEAMS

Paper ID – NCETST2292

A Paper Presented by-L. Manjusha [1] and G. Sri Harsha [2]

1,2 PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

A Deep beam is a structural member having aspect ratio (L/D) less than 2.0 for simply supported beam, less than 5.0 for continuous beam and dominated by shear deformation. In the experimental investigation six deep beams are casted, out of which two are conventional beams, two are chlorinated and remaining two are added by bolts and nuts. The main objective of this paper is to investigate the behavior of RC deep beams under different exposure conditions. Parameters under consideration are shear behavior of RC deep beams, modes of failure, factors affecting strength, crack pattern and stress-strain response. Emphasis is also given to study the behavior of deep beams in resisting deflection and cracking along with serviceability conditions like fatigue, vibration and durability. As the serviceability performance checks are mandatory for structural members exposed to environmental conditions which ultimately effects strength, performance of RC deep beams are quantified and tested to check the width of diagonal spacing cracks that form under the application of service loads.

Index Terms: Deep beam, Serviceability, Crack pattern, Stress-Strain response, Durability.

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ASSESSMENT OF GROUND WATER QUALITY NEAR MUNICIPAL WASTE DUMP YARD IN KANURU, VIJAYAWADA ANDHRA PRADESH, INDIA

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A Paper Presented by-Y.R.V Sabith Venkata Chandra[1] and A. Aravindan[2]

1,2 PG Student, Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

The municipal solid waste is defined as the waste that is generated from the residential, commercial as well as industries. The waste may be in the form of organic or inorganic wastage. In the present study is given on determining the ground water quality as well as the level of toxicity. By using the statistical and phenomenological relationships; we can easily monitor the sustainable municipal landfill with results samples of groundwater, leachate, solid waste were analyzed to determine the impact of leachate on groundwater. Results show that high traces of chlorides and COD in all the above samples. The study suggests serving as reference for implementation of suitable technique for reducing leachate pollution. The landfill site of Vijayawada Kanuru is non-engineered and open dumping practices are followed here. The landfill is aged more than 70 years. As the age of landfill has a significant effect on leachate composition. Improper dumping should be immediately stopped or good sustainable measures were adopted to prevent the condition. By following the certain process to reduce the solid waste we can obtain a result of decreases in air pollution and ground pollution this may leads to reduce in global warming.

Index Terms: Solid waste, Landfills, Pollution, Ground water quality.

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AN EXPERIMENTAL STUDY ON BEHAVIOUR OF RCC COLUMNS RETROFITTED USING CFRP

Paper ID – NCETST2294

A Paper Presented by-P. Murali krishna[1] and M. Anil kumar[2]

1,2 PG Student, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

Existing reinforced concrete (RC) columns may be structurally deficient due to various factors such as improper design of transverse reinforcement, flaws in structural design, Insufficient load carrying capacity, etc., carbon fiber reinforced polymer(CFRP) confinement can be effectively used for strengthening the deficient RC columns. In this study the behavior of CFRP Wrapped small scale structurally damaged square RC columns having cross-sectional area 150mm x 150mm and length of 1500mm with a nominal cover of 25mm have been tested under axial compression under loading frame. These damaged columns are retrofitted with CFRP by varying the corner radii of 5mm, 10 mm, are wrapped with CFRP. These retrofitted specimens are tested under Uni-axial compression on loading frame. The results showed that smoothening of the edges of square cross-section of RC columns played a significant role in delaying the rupture of the CFRP composite at the edges.

Index Terms:RCC column, CFRP, Corner radii, wrapped.

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EFFECT OF ACCELERATED CURING ON COMPRESSIVE STRENGTH OF HIGH STRENGTH CONCRETE WITH FLY ASH

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A Paper Presented by-Rakkisa Naga Jyothi[1]and B. Kameswara Rao[2]

[1,2] PG Student & Professor Department of Civil Engineering, KoneruLakshmaiahEducation Foundation, Green Fields, Guntur District, Vaddeswaram, Andhra Pradesh 522502.

ABSTRACT

As per Indian standard codes the concrete should be accepted or rejected on the basis of 28 days normal cured strength. Normal curing of concrete for 28 days is quite complicated, time consuming for results. There are no adequate results to quantity durability. So, to avoid this time consumptions and delay of results, the accelerated curing strength can be extremely helpful. As per IS -9013 there were only prediction for 28 days strength of normal concrete from accelerated curing strength. This paper deals with some of the attempts made of fly ash concrete to get the strength from the accelerated curing test. Now a day's fly ash concrete is frequently used in the construction and there is no principle for the evaluation of fly ash concrete from accelerated concrete tests. Fly ash is a waste or by product generated from the electrical thermal plants. In this experimental work the fly ash concrete mix proportions are replaced by 70%, 60%, 50%, 40% and 30%. This paper deals with the correlation strength between 28 days normal concrete curing strength and accelerated curing tests of fly ash concrete.

Index Terms: Accelerated curing tank, compression test, fly ash.

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A STUDY ON SECUTIRY AND SHARED DATA FOR MOBILE CLOUD APPLICATION

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Kaja Masthan [1] , Dr. K. Venkatesh Sharma [2] , Dr. Prasadu Peddi [3]
[1] Research Scholar, Shri Jagdishprasad Jhabarmal Tibrewala University, Jhunjhunu, Rajasthan. [2] Professor, Dept of CSE, C.V.R. College of Engineering, Hyderabad, Telangana. [3] Associate Professor in Dept of CSE, Shri Jagdishprasad Jhabarmal Tibrewala University, Jhunjhunu, Rajasthan.

Abstract:
Now a days the Mobile cloud allows sharing the data between the organizations and suppliers and customers is very easily. According to a survey by InformationWeek, nearly all organizations shared their data somehow with 74 % sharing their data with customers and 64 % sharing with suppliers. But the data sharing at cloud having many security and privacy issues, according to survey the 45% mobile cloud users facing the security is top challenging issue, such as direct access of stored data and steal the data to sell to third parties in order to gain profit. In today's world, there is a strong need to share information to groups of people around the world. Since the Cloud is riddled with so many privacy issues, many users are still apprehensive about sharing their most critical data with other users, for example sharing the patient details to remotely located doctors. This paper describes the types of security and privacy issues in the cloud and explains the one method or framework to achieving security and privacy for data sharing through the cloud and handling the group and group members for sharing the data.

Keywords: Mobile cloud computing, encryption, decryption, hashing, OTP etc