CONFERENCE PROCEEDINGS

Scientific and Technical Research Association


15-16 June 2018

Conference Venue

Nanyang Technological University, Nanyang Executive Centre, Singapore
Keynote Speaker

Dr. Deepak L. Waikar
Managing Partner, EduEnergy Consultants, Singapore and Senior Consultants Tacstra Solutions Pte Ltd, Singapore

Dr. Deepak L. Waikar is Managing Partner, EduEnergy Consultants, Singapore and Senior Consultants Tacstra Solutions Pte Ltd, Singapore. He has been involved in education, training, research & management fields for almost three decades. He has been Associate/Adjunct faculty member for the premier institutions & academies in India, Singapore, Australia and UK. He has authored/co-authored book chapters, research articles and policy papers on power, energy, management & education related topics. He has served on various committees in professional bodies such as Chairman of IEEE, Power Engineering Chapter, Singapore. He is a recipient of IEEE-PES Outstanding Power Engineers' Award 2003 and SP Green Buddy Award 2004. Dr. Waikar has been a member of Board of Examiners of Singapore Certified Energy Manager's programme. He has delivered invited presentations on power, energy, education, management & leadership related topics at the international conferences, seminars and forums in North America, Australia-New Zealand, Europe & Asia. He is a Fellow of the International Energy Foundation, Senior Member of IEEE USA and a Life Member of the Institution of Engineers, India with Ph.D. from National University of Singapore & M.S. from University of Saskatchewan, Canada. He obtained PG-DBM, M.Tech. & B.E. from Nagpur University, Banaras Hindu University and Marathwada University in India, respectively. His interests include Sustainable Energy Leadership, Rethinking Teaching, Learning & Academic Leadership, Re-inventing & Transforming Higher Education, SMART Model for Talent & Leadership Development, Innovative Project Design & Management, cricket & chess.
Keynote Speaker

El kebir abdelkader
Lecturer at Mustapha Stamboli University, Département of Electrical Engineering, Faculty of Technology, Mascara Alegria

Abdelkader El kebir was born in Sidi-Belabbes (Algeria) in 1964. He obtained a diploma of engineer in Electrotechnic in 1991 from the University of ENSET Oran (Algeria). He received his master at University of ENSET Oran (Algeria) from 2006 at 2008. He is now Lecturer at University of Mascara. His main research interests are in the field of the analysis and intelligent control of electrical machines, multimachines multiconverters systems, modelling and simulation of Fuzzy controllers Neural Networks Genetic Algorithm

Session Chair

Venkatagiri Krishnamoorthy Bupesh Raja
Department of Automobile Engineering, Sathyabama Institute of Science and Technology, Chennai, Tamil Nadu, India
Yuri Partol  
GICICRST1804051  
Estimating The Value Of On-Street Parking In Davao City

Yuri Partol  
School Of Applied Economics, University Of Southeastern Philippines, Philippines

Abstract

Contingent Valuation Method was used to measure the parker’s willingness to pay (WTP) for on-street parking in Davao City. A probit regression analysis using Stata/SE 13.0 was done to analyze the results. The study results indicated that mean willingness to pay is Php 14.71 and on-street parking in Davao City is valued at Php 2,687,794.41 annually assuming full occupancy at the City Hall Drive area. The cost the Davao City government incurs equals the opportunity cost for non-collection of parking fees. The bid price was found to be statistically significant and is positively correlated with the parkers’ WTP while the substitute source of parking, the employment (employed in the area or otherwise) and the constant term is negatively correlated albeit statistically insignificant.

Keywords: Willingness to Pay, On-street Parking, Contingent Valuation

S. Geetha  
GICICRST1804052  
Service Life Prediction For Concrete Composite With Carbon Fibres For Marine Environment

Dr. S. Geetha  
Professor, Civil Engineering Department, Rajalakshmi Engineering College, Thandalam, Chennai, India

Dr. M. Selvakumar  
Professor, Civil Engineering Department, Rajalakshmi Engineering College, Thandalam, Chennai, India

Abstract

As construction technologies are improved and as we go for advanced technologies in construction of infrastructure facilities the importance of concrete technology is also more demanding. The field of concrete technology has many new admixtures which improves the properties of concrete. Durability and performance of structures are the main focus now. In view of this, apart from just proportioning a concrete mix researchers are now interested in testing the performance of the material in varied environmental conditions. Service life prediction is the evaluation of the performance of the structure over a period of time. The prediction involves knowledge of materials science, laboratory testing and data from structures that are in service. It is a complex area where interpretation of correct data has been used and it involves systematic approaches. Researchers have used numerous methodologies and mathematical formulae that are used for the service life prediction. Accelerated laboratory tests forms the basis for these kinds of predictions. This paper deals with proportioning of concrete composite that can be used in aggressive marine environment, subject to severe exposure and the service life prediction of the material in such environment. Admixtures play a major role in making concrete durable. This composite has been customized with silica fume, fly ash and gypsum for improving the strength of concrete. Carbon fibres have been added to resist the impact of sea waves and also to improve the flexural toughness of concrete. As there are various factors that have been considered in proportioning this particular concrete mix, experimental trials have been designed with reference to central composite design of Response Surface methodology using Design Expert software. The trials were cast using these design mixes and tests were conducted for strength properties and durability parameters. The
experimental results have been analyzed for ANOVA to test the accuracy of results. Multiple optimizations have been done to get the best mix with maximum strength and minimum durability issues. Micro structural investigations were also done to support the experimental findings.

**Keywords:** strength, durability, composite, tests, fibres

**Afroz Ahmad Shah**  
GICICRST1804053  
Earthquake education through documentary movies

**Shah A. A.**  
Assistant Professor of Structural Geology, Universiti Brunei Darussalam, Brunei

**Nava**  
Graduate Students with Curtin Sarawak, Malaysia

**Eric**  
Graduate Students with Curtin Sarawak, Malaysia

**Stephan**  
Graduate Students with Curtin Sarawak, Malaysia

**Abstract**

Earthquake Science education through traditional route has not progressed much, thus there is a need to revamp this and introduce a new and exciting opportunity to engage students and public to earthquake sciences. Here we show our initial work on earthquake education in Malaysia and Brunei of SE Asian regions where such information is totally missing. We recorded real stories from people in these countries, which were affected by June 2015 Sabah earthquake. We blended these stories with the scientific information about the earthquake that was obtained from real scientists who are currently working in the region. The outcome is a documentary movie that shows the whole story about the earthquake hazards in SE Asia, and it mainly focuses on the science of earthquake that struck Sabah, Malaysia in 2015. It highlights the extraordinary impact of making documentary movies on earthquake sciences, and how it helps in dissemination of real information to public, students, and other stakeholders. The ten minutes long movie shows how to translate a geologically difficult and complicated region into a simple and meaningful movie that can be understood by ordinary people.

**Keywords:** Education, Earthquake, Hazards, Documentary, Movie

**Abubakar Siddiq Mohameed**  
GICICRST1806054  
Impact of Indigenous Language in Teaching and Learning of Mathematics in Junior Secondary Schools in Nigeria

**Abubakar Siddiq Mohameed**  
College of Pure and Applied Sciences, Statistical and mathematical sciences department, Kwara state university, Malete, Ilorin- Kwara Nigeria

**Abstract**

The indigenous language refers to the child’s mother tongue, which is a very crucial language in the child’s developmental stage of skill and language acquisitions. Mathematics is one of the basic and compulsory subject taught in primary and post primary schools in Nigeria. The purpose of this research is to determine the effect of indigenous language on junior secondary school student’s academic performance in mathematics. To archive this, a Demonstrative Teaching Techniques (DTT) and Mathematics Test of Assimilation (MTA) are used for the study mainly to assess the effect of treatment on the two groups (Control and Experimental groups). This study used Quasi-Experimental research design and the sample consist of 120 students randomly selected from three schools in each of the six Geo-political zones in Nigeria, leaving the total population sample to 2160 students. Three (3) research questions and three (3) null hypotheses guided the study. The
 statistical analysis, using z-test showed that there was a significant difference before and after the teaching using indigenous language on students’ performance in mathematics (p≤0.05). Based on the findings, it is recommended among other things that indigenous language (mother tongue) should be encouraged in our school system, particularly at junior secondary school level in Nigeria. This will in turn improve the student academic performance in mathematics.

Keywords: Indigenous Language, Mathematics, and Performance.

Teo Ming Ting  
GICICRST1806055

Recovery of light rare earth elements using chelating ligands grafted onto surfaces of polymeric adsorbent

Teo Ming Ting  
Radiation Technology Division, Malaysian Nuclear Agency, 43000, Kajang, Selangor, Malaysia

Nor Hasimah Mohamed  
Radiation Technology Division, Malaysian Nuclear Agency, 43000, Kajang, Selangor, Malaysia

Sarala Selambakkannu  
Radiation Technology Division, Malaysian Nuclear Agency, 43000, Kajang, Selangor, Malaysia

Nor Azillah Fatimah Othman  
Radiation Technology Division, Malaysian Nuclear Agency, 43000, Kajang, Selangor, Malaysia

Abstract

Rare earth elements (REEs) are critical and important to support the increasing demand from advanced technology and clean energy sectors. The separation and purification of these elements remain challenging. Various extracting agents have been explored for separation of REE. Polymeric grafting modified fibers is an efficient material for recovery and subsequent separation of REE because of its high surface, tunable functional groups, thermal and mechanically stable substrate. In this study, a new diglycolamide based polymeric adsorbents were synthesized through immobilization of diglycolamide ligand onto aminated epoxy group. The prepared of the polymeric adsorbent was tested for the separation of rare earth elements from solution. The sorption behavior of lanthanum (La) and neodymium (Nd) in acidic medium and alkaline medium was tested in batch mode experiments.

The diglycolamide based adsorbent was found to have high adsorption of La and Nd in pH 2-3. The substrate of the polymeric materials and ligand were found to be stable under acidic conditions with the ligand remaining intact after 24 h of contact with 1 M HNO3. The result also shows that adsorption behaviors of diglycolamide can be tuned and selectivity of the rare earth elements from solution can be improved.

Keywords: lanthanum, neodymium, polymeric adsorbent and rare earth elements

Manish Singh Sengar  
Removal Of Some PAHs Via. Bio-Nanoparticles

Manish S. Sengar  
Dayalbagh Educational Institute Dayalbagh Agra, India

Soami P. Satsangee  
Dayalbagh Educational Institute Dayalbagh Agra, India

Abstract

This study offers a simple and convenient method of synthesis of silver nanoparticles. Use of green method to prepare AgNPs is the step towards the
green chemistry which is eco-friendly and safe for the environment. PAHs which are carcinogenic and mutagenic were removed successfully with optimal efficiency of more than 80% following the order of Phenanthrene > Pyrene > Anthracene. The adsorption of PAHs on silver nanoparticles is attributed to hydrophobic interactions. The natural and green source provides an adsorbent that has comparable efficiency to chemically synthesized expensive adsorbent under ambient conditions. Ag(P) is relatively a better adsorbent than Ag(W) in removing PAHs. It may be attributed to more functional groups in the plant extract participating in binding of PAH to the surface. Ag(P) can be applied over a wide range of temperature, due to stability of compounds present in Allium sativum at high temperatures. The study recommends the use of alternate economical and green natural adsorbents for control of poly aromatic hydrocarbons (PAHs).

Emergence Of Handoff In Global System Mobile (GSM) In Nigeria

Babayo Aliyu Shanga
Department Of Electrical/Electronic Technology, School Of Technical Education, Federal College Of Education (Technical), Potiskum, Yobe State, Nigeria

Abstract
The development of technology has brought about new inventions of making things easier for the teeming populace of our country Nigeria. One of such development is the introduction of a Mobile Phone which cannot be over emphasized in our day to day use of Mobile phone, we moved out of range of one base station into the range of another base station without interruption when sharing the same boundary which is called handoff. This paper examined the application of handoff to the Global system mobile (GSM). Its importance, classification, possible problems associated with it and possible remedy were analyzed and discussed.

KeyNote: Handoff, Global System Mobile

A simple power electronic interface based on DSP controller for control of DC motor fed from solar photovoltaic cells

T Shanthi
Assistant Professor, Electrical and Electronics Engineering Department, Kumaraguru College of Technology, Coimbatore - 641 049, Tamil Nadu, India

S U Prabha
Professor and Head, Electrical and Electronics Engineering Department, Sri Ramakrishna Engineering College, Coimbatore – 641 022, Tamil Nadu, India

S. Mageshwari
Assistant Professor, Electrical and Electronics Engineering Department, National Institute of Technology, Tiruchirapalli- 620 015, Tamil Nadu, India

Abstract
A DSP controller based speed control of separately excited DC motor fed from photovoltaic (PV) array with closed loop controller has been developed. A Single Ended Primary Inductor Converter (SEPIC) is used as an interface between PV array and the DC motor. Duty cycle of the SEPIC converter is automatically varied depending on the required motor speed. This is programmed in the DSP controller. The model of DC motor was constructed and the entire simulation of the closed loop system was carried out on a MATLAB / Power System block set. Simulation and experiments were conducted on a DC motor supplied from a PV array and furnished the results. Comparative analysis is made between the hardware and software simulation results which find very close harmony between them which
 validates the proposed system.

Keywords: DSP Controller, SEPIC converter, photovoltaic, DC motor.

Smart Freeaway Microalgae Photobioreactor Helped by Solar Energy as Eco-Green Technology to Reduce CO2 Emissions Trigger Global Warming for Sustainable Environmental Development in DKI Jakarta, Indonesia

Agustiani Putri
State University of Jakarta, Jakarta, Indonesia

Husni Falah
State University of Jakarta, Jakarta, Indonesia

Haryanto Adi Nugroho
State University of Jakarta, Jakarta, Indonesia

Abstract
Global warming that cause climate change effects has become the center of attention around the world to find a solution in order to reduce or minimize its impact. Formerly, Indonesia was an agricultural country. But now, Indonesia has started to become a state-based industries, especially in DKI Jakarta. The impact was increasing CO2 emissions in atmosphere from industrial and combustion of motor vehicles. In addition, Indonesia has one of the marine resource can be used to absorb CO2 is faster than land plants that is Nannochloropsis sp microalgae. Therefore, microalgae photobioreactor was created to find out how much CO2 absorbed and O2 produced. This research was conducted among 4 months in State University of Jakarta. The steps were study literature, supply tools and materials, photobioreactor manufacture, due diligence, Nannochloropsis sp cultivation, and CO2 absorption and O2 production test. The data obtained between CO2 absorption and O2 productivity is directly proportional. In the first, second and third repetitions CO2 absorption and O2 production were found at 40%, 68% and 83%. So, microalgae photobioreactor can be one solution to reduce CO2 emissions, especially city-based industries in Indonesia. For long scale, microalgae photobioreactor can be placed on the rooftop of each high building.

Keywords: Climate change, CO2 emissions, global warming, photobioreactor

Global Peace And Security: A Case For Facility Management In Law Enforcement Agencies In Enugu, Nigeria

Ezema, Cajethan Chidi
Department of Estate Management, Institute of Management And Technology, (IMT) Enugu

Abstract
Given the novel challenges faced by law enforcement agencies in achieving sustainable peace globally and locally, the study fills the gap in extant literature by determining the role of Facility Management (FM) in overcoming the challenges. It is significant to law enforcement agencies, Estate Surveyors and Valuers (ESVs), the public and scholars. Related literature on FM and service delivery proxies of law enforcement agencies are reviewed conceptually and empirically. The population of the study comprises all 6 security agencies and 45 ESVs in Enugu. The focus group is limited to a sample of 138 officers, determined with Freund and Williams formula for infinite population due to the reluctance of the agencies to release their official population figures. The expert survey covers all 45 ESVs using a Likert scale structured questionnaire. Hypotheses were tested with One-sample Kolmogorov Smirnov Test and Correlation Coefficient. The study found that prospects of FM in law enforcement agencies are advancing the strategic utilization of the workplace, sustainable inventory management, and

Nanyang Technological University, Nanyang Executive Centre, Singapore

8
establishment of effective communication systems. It concludes that FM will play a significant positive role of engendering global peace through improved service delivery of law enforcement agencies. The study recommends that government appoint ESVs with respect to cohesive facility management functions in the agencies.

Keywords: Law Enforcement Agencies, sustainable inventory management and effective communication systems

Relativity of Carbonaceous Meteorites and Comet Dust for Processing Biological Composition (Micro Fossils): A Review on Metamorphic and Sedimentary Petrology of Polonnaruwa (Sri Lanka) Meteorite Stone

Aravinda Ravibhanu Sumanarathna
School of Earth & Atmospheric Sciences, University of Madras, Navalar Nagar, Chepauk, Triplicane, Chennai, 600005, India

Jinadasa Katupotha
Department of Geography, University of Jayawardenepura, Nugegoda 10250, Sri Lanka

Buddika Madurapperuma
Department of Forestry and Wildland Resources, Humboldt State University, Arcata, CA, USA

Janaka Kuruppuarchchi
Department of Botany, The Open University of Sri Lanka, PO Box 21,

Abstract

The study chronicles a series of landmark events of Polonnaruwa Arnaganwila, dry zone of Sri Lanka carbonaceous meteorites that impacted on 29th December 2012. The main objective of this study was to compile the cited articles for creating a plausible corresponding model to possess the sedimentation of Micro Fossils (Fossil diatoms) found in carbonaceous meteorites. As such, the sampling data of Polonnaruwa stones were investigated using diverse tools and methods, i.e., ICP-OES, GC-MS, SEM, EDAX, CHN, FTIR, Raman Spectroscopy, XRD. The Optical Spectroscopy was adapted as a second major objective to interpret the physical, chemical, mineral properties of stone including oxygen isotope, crystalline and biological composition. Geologic age of the stones was determined by N/C atomic ratio depletion (N/C ARD) technique. Results showed that the Polonnaruwa stone comprised of high porous minerals including Si-K-rich, Al-depleted, amorphous melt enclosing trace (commonly <1μm) anorthoclase, albite, anorthite and quartz. Additionally, it was recognized that bound H2O < 0.03wt% originated from hypervelocity impact. SEM analysis revealed that several fossil microorganisms similar to acritarchs, hystricho spheres and diatoms were represented. Geologic age of the stones was recognized as at least ~300 Ma by N/CARD. Triple oxygen isotope analysis provided the values of Δ17O = -0.335 with δ17O = 8.978 ± 0.050 and δ18O = 17.816 ± 0.100 which indicated constituents of non-terrestrial sources. To conclude, our model was significantly supportive for providing a gradual series of meta-metamorphic to sedimentation that has processed the numerous of condition for stability of microfossil in carbonaceous meteorites.

Keywords: Meteorites, Micro fossils (diatoms), Sedimentation Petrology, Sri Lanka

Dr Anil Shantappa
GICICRST1804064

Study of Effective atomic numbers of Bioactive Glasses for Photon Interaction

Anil Shantappa
Department of Physics, Guru Nanak Dev Engineering College, Bidar, Karnataka, India

Nanyang Technological University, Nanyang Executive Centre, Singapore
S. M. Hanagodimath  
Department of Physics, Gulbarga University, Gulbarga, Karnataka, India

Abstract
Bioactive glasses are a group of synthetic silica-based bioactive materials with unique bone bonding properties. Bioactive glasses are widely used in joint replacements, bone plates, etc. As a consequence, various human organs and bioactive material are exposed to X-rays and gamma rays. Once some parts of the human body is replaced by bioactive material, it is very important to know that how these material can be affected by exposing with X-or gamma radiation. This work was carried out to study the nature of mass attenuation and effective atomic numbers of bioactive glasses for gamma or X-rays. In the present study, we have calculated the effective atomic number, electron density for photon interaction in the energy range 1 keV to 100 MeV of selected of bioactive glasses SiO2-Na2O-CaO-P2O5, SiO2-CaO-P2O5 and SiO2-CaO. We have also computed the single valued effective atomic number by using XMuDat programme. It is observed that variation in effective atomic number (ZPI, eff) depends also upon the weight fractions of selected bioactive glasses and range of atomic numbers of the elements. The XMuDat calculates Zeff, XMuDat (Effective atomic number) by assuming photoelectric absorption as the main interaction process where as Nel, XMuDat (Electron density) assuming Compton scattering as the main interaction process.

Keywords—Bioactive glasses, Electron density, Effective atomic number, Gamma rays, Photon interaction

Environmental Restoration: Clay as Environmental Restoration Materials in the Built Environment

Muntari Mudi Yar’adua  
Hassan Usman Katsina Polytechnic, College of Environmental Studies, Department of Building

Abstract
Building materials is an important aspect within the design and building construction process, having a great influence on the restoration and quality for the built environment. The objective of this paper is to identify the social, economic, environmental and restoration aspects of clay for the built environment. Environmental degradation in developing countries leads to incorporating clay building products: bricks, roofing slates, toilet and floor tiles clay pipes and sanitary appliances in most present projects in the built environments. This research was carried out in suitable civil and building construction companies in Katsina, Kano and Kaduna states in northern Nigeria. The research findings identified that economic aspects has the highest potentials for restoration degraded built environment.

Green Engineering Application in Pharmaceutical Industries for the E factor reduction

S. Sruthy  
Research Scholar, Environmental and Water Resources Engineering, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai – 600036, India

Dr. S. Mohan, Ph.D.  
Professor, Environmental and Water Resources Engineering, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai – 600036, India

Abstract
Different processes are involved in a Pharmaceutical industry to manufacture a drug such as manufacturing, extraction, processing, purification, and packaging of chemical and biological materials into solids and liquids which are then used for medication. These industries mainly employ sequential batch operations which involves almost 4 to 5 different stages to produce an Active Pharmaceutical Ingredient (API). At each stage of its production they use different chemicals/reactants/solvents/water etc. As a result the wastewater generated at each stage varies not only in composition but also in quality and quantity. At the treatment plant the wastewater will be a cocktail of around 20-30 chemicals which will decrease the efficiency of biological treatment. Also the chances of metabolite formation or the transformation of the parent compound during treatment or by some other natural means is not well understood. The E factor (kg of waste produced per kg of product produced) for pharmaceutical industry is 25-100 which means for 1 kg of product produced around 25 kg of waste is been produced. This has motivated to adopt the Green Engineering Principles in the Pharmaceutical industry in the production stage. So rather than treating the wastewater generated from each process together at a common effluent treatment plant, system needs to be modified in a way such that mother liquor generated at each process could be segregated at the source itself and wherever possible reuse and recycle should be done.

The research work mainly focuses on making the effluent more environmental friendly by adopting reuse and recycles options during an API production and analyzing the reduction in associated E factor. Adopting these in practice is challenging as these process modifications has to get concerned regulatory approval. Though the challenges are high, but when considered from ecological point of view it is high time that the 3R principles to be incorporated in the industries. A closed loop system of treatment needs to be promoted for the sustainable operations of the Pharmaceutical industry.

Keywords: Pharmaceuticals, Active Pharmaceutical Ingredient, E factor, Green Engineering Principles

---

**Prathibha Ekanthaiah**  
GICICRST1804069

---

**Analysis Of Power Quality Events Using Wavelets**

Prathibha,E  
Sri Krishna Institute of Technology, Bangalore, Karnataka, India

A.Manjunatha  
Sri Krishna Institute of Technology, Bangalore, Karnataka, India

Cyril Prasanna Raj  
MS Engg College, Bangalore, Karnataka, India

**Abstract**

Wavelets are prominently used for PQ signal analysis; the features that are computed from wavelet sub bands are informative for detection and classification. Energy levels of non-stationary events that occur in PQ signal computed considering wavelet sub bands suffer from shift variant property and hence use of dual tree complex wavelets that supports shift invariance property is used for PQ event analysis. In this paper, PQ event algorithm is developed considering dual tree wavelets and the results are compared with wavelets. Various PQ signals with non-stationary events are analyzed and the shift invariant property of dual tree wavelets is demonstrated to be advantageous in terms of event classification. DTCWT energy levels are capable of differentiating between multiple events as well as different types of sags, swells, harmonics, interrupts and flicker. The classification accuracy using DTCWT energy bands is improved by more than 90%. DTCWT filters selected in this paper are suitable for PQ event detection as well as classification.

**Index Terms:** Pq Event, Dwt, Dtcwt, Wavelets, Decomposition, Shift
Kailas S. Patil
Research Scholar, E&CE Department, PDACE, Kalaburagi, Karnataka – India

Abstract

Keywords: Underwater Wireless Sensor Networks, Routing, Multilayer, Network Lifetime, Delivery Ratio, Residual Energy.

Isah Usman Balan
Department of Science Laboratory Technology, School of Technology, Kano State Polytechnic

Abstract
Blood samples collected from pregnant women attending anti-natal care services in Sir Sunusi General Hospital were analyzed for serum electrolytes levels (Na, K and Cl). The level of sodium in the blood samples ranged from 122mmol/L to 151mmol/L The amount of potassium ranged from 2.4mmol/L to 5.2mmol/L while that of chloride ranged between 76mmol/L to 116mmol/L. The results showed electrolytes disturbance in some of the pregnant women as the concentration level was not within the range; the normal range for sodium is 135-145 mmol/L, that of potassium; is 3.5-5.0mmol/L while chloride has the normal range between 98mmol/L and 106mmo/L. The disturbance may be due to some certain reasons such as vomiting, low fluid intake, drugs and malnutrition.

Keywords: Serum, Electrolytes, Pregnant woman, Blood, Kano State

Abdulwadud Abdulkarim Yusuf
Chemical Engineering Programme, Abubakar Tafawa Balewa university, Bauchi

Abstract
Blood samples collected from pregnant women attending anti-natal care services in Sir Sunusi General Hospital were analyzed for serum electrolytes levels (Na, K and Cl). The level of sodium in the blood samples ranged from 122mmol/L to 151mmol/L The amount of potassium ranged from 2.4mmol/L to 5.2mmol/L while that of chloride ranged between 76mmol/L to 116mmol/L. The results showed electrolytes disturbance in some of the pregnant women as the concentration level was not within the range; the normal range for sodium is 135-145 mmol/L, that of potassium; is 3.5-5.0mmol/L while chloride has the normal range between 98mmol/L and 106mmo/L. The disturbance may be due to some certain reasons such as vomiting, low fluid intake, drugs and malnutrition.

Keywords: Serum, Electrolytes, Pregnant woman, Blood, Kano State
Idris Muhammad Misau
Chemical Engineering Programme, Abubakar Tafawa Balewa university, Bauchi

Mohammed Tijani Isa
Department of Chemical Engineering, Ahmadu Bello University, Zaria

Bello Aminu Alhaji
Chemical Engineering Programme, Abubakar Tafawa Balewa university, Bauchi

Sagir Adamu
King Fahad University of Petroleum, Saudi Arabia

Abstract
A study was carried out to investigate the adsorption of lead (II) ion on the blend of activated carbon and Chitosan from Mussel shell from lead water solution using the batch adsorption study. The optimum dosage of the chitosan/activated carbon blend was 5g (2.5g activated carbon and 2.5 g chitosan). At optimum dosage, the percentage uptake is 83.75% and 0.134 mg/l of Pb2+ was removed while at equilibrium contact time of 120 minutes, the percentage uptake was 98.75%. The data generated where used for isotherm studies and kinetic modelling. The Langmuir isotherm fits best with an R2 value of 0.9776 and the adsorption was found to be favourable 0.0842 kJ/mol. Also, the adsorption process follows the Pseudo second order kinetic model with an R2 value of 0.9981

Keywords: Isotherm, Kinetics, Activated-carbon, Chitosan, Mussel, Lead, Adsorption.

Laila Sadallah
GICICRST1804073

Synthesis and functionalization of calcium phosphate nanoparticles for optical applications

Laila Sadallah
Team Thermo-structural Materials, Polymers and radiochemistry, Laboratory of Engineering and Materials (LIMAT) -FSBM, UH2C. BP. 7955 Casablanca, Morocco

Hassan Hannache
Team Thermo-structural Materials, Polymers and radiochemistry, Laboratory of Engineering and Materials (LIMAT) -FSBM, UH2C. BP. 7955 Casablanca, Morocco

Materials Science and Nanoeengineering Department, Mohamed VI Polytechnic University, Lot 660 – Hay Moulay Rachid, 43150 Benguerir, Morocco

Said GMOUH
Team Thermo-structural Materials, Polymers and radiochemistry, Laboratory of Engineering and Materials (LIMAT) -FSBM, UH2C. BP. 7955 Casablanca, Morocco

Abstract
Organic fluorophores have characteristics that limit their effectiveness for their applications, including poor photostability, low luminosity, and limited capacity for multiplexed analysis. To overcome these limitations, the fluorophores were encapsulated by calcium phosphate nanoparticles. Due to their excellent biocompatibility, biodegradability and bioactivity, calcium phosphate nanoparticles are of interest for many biomedical applications. Functionalization of nanoparticles with multi-photon fluorophores is of great interest, mainly for imaging or photodynamic therapy. The aim of our work is to synthesize fluorescent calcium phosphate nanoparticles functionalized with organic fluorophores.
nanoparticles via the encapsulation of mono and multiphoton organic fluorophores. Thus to follow the release of these fluorophores using spectroscopic methods. The results obtained allowed us to measure the impact of crystallization on fluorescence yields. Similarly, the study carried out on the release of fluorophores has demonstrated that calcium phosphate nanoparticles have a very important potential for applications in imaging and medical therapy. Keywords: Calcium phosphate, Encapsulation, Fluorophores, Functionalization, Nanoparticles.

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GICICRST1804074</td>
<td>S. Aruna Deepthi Research Scholar, Professor, JNTUA, Anantapuramu, India</td>
</tr>
<tr>
<td></td>
<td>E. Sreenivasa Rao Professor, Vasavi College of Engineering, Hyderabad, India</td>
</tr>
<tr>
<td></td>
<td>M.N. Giri Prasad Professor, JNTUA, Anantapuramu, India</td>
</tr>
<tr>
<td></td>
<td>Abstract Wireless Sensor Networks are used in various day-to-day applications. With advanced technology Wireless sensor networks (WSNs) play a crucial role in networking technologies since it can be expanded without communication infrastructures. Most image compression algorithms in WSN are subject to low image quality after the images are decoded or have random image content changes. As the image contains a massive amount of redundancies resulting from the high correlation between pixels, image compression methods are proposed. In this paper Multilayer Restricted Boltzmann Machine (RBM) network and Variational Auto Encoder (VAE) are designed and tested for both Gray (2D) and Colour (3D) images. The proposed variational auto encoder image compression method is compared with multilayer RBM when the layers are 2, 4 and 8 and the peak signal-to-noise ratio (PSNR), Signal to Noise Ratio (SNR), Mean square error are compared.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Said Akbar Khan</th>
<th>Determination Of Selected Heavy Metals In Canal Water And Its Effects On Agricultural Soil And Wheat Crop</th>
</tr>
</thead>
<tbody>
<tr>
<td>GICICRST1804077</td>
<td>Said Akbar Khan Earth and Environmental Sciences Department, Bahria University Islamabad</td>
</tr>
<tr>
<td></td>
<td>Ammad Zaheer Earth and Environmental Sciences Department, Bahria University Islamabad</td>
</tr>
<tr>
<td></td>
<td>Salim khan Niazi Earth and Environmental Sciences Department, Bahria University Islamabad</td>
</tr>
<tr>
<td></td>
<td>Abstract This study was conducted to determine the heavy metals concentrations in canal water (Gogera Branch Canal) and their effect on agricultural soils and wheat crop at the area of Chak-65 GB in Punjab, Pakistan. The samples of water, soil, plant and grain were collected from the study area and digest according to standard processes and analyzed by using atomic absorption spectroscopy. All samples were analyzed for the subjected heavy metals and their concentration are noted and they were as follow; The Cadmium is ranged from 0.01 to 1.9 mg/L in water samples, 0.08 to 3.08 mg/Kg in soil samples, 0.16 to 0.21 mg/Kg in plant samples and 0.57 to 0.87 mg/Kg in grain samples. The concentration of Chromium is ranged from 0.03 to 1.9 mg/L in water, 55.7 to 68.3 mg/Kg in soil, 0.9 to 1.3 mg/Kg in plant and 1.06 to 3.01</td>
</tr>
</tbody>
</table>
mg/Kg in grain samples. These values were compared with the NEQSs levels of WHO ad FAO for irrigation water, soil, plant and grains. These results show that heavy metals are accumulated in soil and then up take by the wheat plant. These heavy metals are accumulating in the wheat grains, wheat is most consumed crop in Pakistan. These concentrations of heavy metals in wheat grains when consumed give rise to many health risks to human health. Industrial effluents should be treated before dumping into the canal water and concern department should take serious action against them.

Thandar Nwe  
GICICRST1804079

Analysis Of Power Output And Flow Characteristic Of A Small-Scaled Straight Blade Vertical Axis Wind Turbine

Thandar New  
Department of Mechanical Engineering, Mandalay Technological University  
Patheingyi, Mandalay Region, Myanmar

Myat Myat Soe  
Department of Mechanical Engineering, Mandalay Technological University  
Patheingyi, Mandalay Region, Myanmar

War War Min Swe  
Department of Mechanical Engineering, Mandalay Technological University  
Patheingyi, Mandalay Region, Myanmar

Abstract

Vertical axis wind turbines (VAWT) can offer many advantages for small-scale wind power electrification. For efficient utilization of the available wind energy, it is imperative to study the behaviour and performance of the wind turbines subjected to aerodynamic and ambient conditions. Due to limitations on experimentation, the computational fluid approach has been used to quantify the wind loads on the blades. This work studies on a small straight bladed or H-rotor type vertical axis wind turbine especially focuses on the flow around and power output of the turbine at various wind speeds with the aim to work in low wind speed region. The power output and flow analysis of the turbine was done in the range of cut-in and rated velocities of 2.6-7.5 m/s in 3D CFD simulation by using commercial software ANSYS 17.0, and compared the results with the theoretical outputs. The results from both analytical and numerical values are in good agreement. In the simulation result, the electrical power output at rated wind velocity was 63W while the targeted theoretical value was 50W. The flow around the turbine was also investigated and it was found that the flow nature of velocity and pressure distribution around the turbine was captured correctly. The highest pressure difference was attained at blade 2 and blade 3 while blade 1 had the lowest pressure difference in all flow velocity conditions.

Keywords - Power output, Small-scale, Straight blade, VAWT, Wind.

Venkatagiri Krishnamoorthy Bupesh Raja  
GICICRST1804080

Effect Of Using Az31b Trimmings As Filler Rod In Gas Tungsten Arc Welding Of Az31b Alloy

V.K.Bupesh Raja  
Department of Automobile Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Manchukonda Tarun  
UG Student, Department of Mechanical Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Perumalla Krishna Varun  
UG Student, Department of Mechanical Engineering, Sathyabama Institute of Science and Technology, Chennai, India
Manoj Gupta  
Department of Mechanical Engineering, National University of Singapore, Singapore

Abstract  
AZ31B is one of the most widely used magnesium alloy in engineering applications. Gas Tungsten Arc Welding (GTAW) is one of the most economical method for joining AZ31B alloy. In this experimental study, 4 mm thick AZ31B alloy plates were square butt-welded using GTAW. The prime objective of this study was to study the effect of AZ31B trimmings as filler rod on the microstructure and properties of the GTAW welded AZ31B plates. The trimmings for the filler rod were prepared from the 4 mm thick AZ31b plates through electric discharge machine. The effects of the GTAW process on the weld bead, macrostructure, microstructure, micro hardness and tensile strength were investigated. The GTAW yielded good quality welded joint showing a broad Heat Affected Zone having a uniform distribution of inter-metallics caused by the heat input during welding. The results showed that increasing welding current led to deterioration of the surface appearance of the weld. When the AZ31B plate was welded with GTAW at a weld current of 86 amp (ac) a fine weld was obtained with good tensile strength. The results obtained shows the feasibility of successfully using AZ31B trimmings as filler rod in the event of the non-availability of any commercial filler rod.  
Keywords: AZ31B, Magnesium, macrostructure, microstructure, tensile strength, filler rod.

Thandar New  
GICICRST1804081

Analysis Of Power Output And Flow Characteristic Of A Small-Scaled Straight Blade Vertical Axis Wind Turbine

Thandar Nwe  
Department of Mechanical Engineering, Mandalay Technological University Patheingyi, Mandalay Region, Myanmar

Myat Myat Soe  
Department of Mechanical Engineering, Mandalay Technological University Patheingyi, Mandalay Region, Myanmar

War War Min Swe  
Department of Mechanical Engineering, Mandalay Technological University Patheingyi, Mandalay Region, Myanmar

Abstract  
Vertical axis wind turbines (VAWT) can offer many advantages for small-scale wind power electrification. For efficient utilization of the available wind energy, it is imperative to study the behaviour and performance of the wind turbines subjected to aerodynamic and ambient conditions. Due to limitations on experimentation, the computational fluid approach has been used to quantify the wind loads on the blades. This work studies on a small straight bladed or H-rotor type vertical axis wind turbine especially focuses on the flow around and power output of the turbine at various wind speeds with the aim to work in low wind speed region. The power output and flow analysis of the turbine was done in the range of cut-in and rated velocities of 2.6-7.5 m/s in 3D CFD simulation by using commercial software ANSYS 17.0, and compared the results with the theoretical outputs. The results from both analytical and numerical values are in good agreement. In the simulation result, the electrical power output at rated wind velocity was 63W while the targeted theoretical value was 50W. The flow around the turbine was also investigated and it was found that the flow nature of velocity and pressure distribution around the turbine was captured correctly. The highest pressure difference was attained at blade 2 and blade 3 while blade 1 had the lowest pressure difference in all flow velocity conditions.
Molecular engineering of carbazole-based conjugated molecules as potential hole-transporting materials for perovskite solar cells

Kavya S. Keremane
Department of chemistry, NITK Surathkal, Mangalore, India

Mahdieh Shojaei baghini
Department of ECE, NITK Surathkal, Mangalore, India

Ranjana Shourini
Department of Physics, Indian Institute of Technology (IIT) Bombay, India

Rathnamala Rao
Department of ECE, NITK Surathkal, Mangalore, India

Dinesh Kabra
Department of Physics, Indian Institute of Technology (IIT) Bombay, Mumbai, India

Airody Vasudeva Adhikari
Department of chemistry, NITK Surathkal, Mangalore, India

Abstract

Over the past two decades, the ever increasing energy demand and continuous depletion of non-renewable resources has forced us to look for a renewable, safe, infinite, low-cost and omnipresent energy sources. In this regard, harvesting of photons from sun to produce electricity has found to be promising way to solve the world energy crisis. As a promising way to convert sunlight into electricity, organometal halide perovskite solar cells (PSCs) attracted worldwide attention due to its predominant merits especially in the aspect of remarkable photovoltaic performance and much potentially low production cost. Further, in order to enhance the performance, several organic molecules have been utilized as a hole transporting materials (HTMs). Among them, the carbazole based heterocyclic conjugated molecules have attracted many researchers due to their design functionality, hole transporting ability and excellent optoelectronic properties. Against this background, herein, we report the design, synthesis and photovoltaic performance studies of a new carbazole-based HTMs carrying 9-(2-ethylhexyl)-9H-carbazole-3,6-dicarbaldehyde scaffold. The newly synthesized molecules CT-1 and CT-2 have been well characterized by various spectral techniques such as FTIR, 1H NMR and mass spectral including elemental analysis. Further, it's optical and electrochemical properties has been investigated using UV-visible, fluorescence spectroscopy and cyclic voltammetry, respectively. Finally, it has been subjected to DFT calculations in order to obtain its electronic configuration in FMO using Turbo-mole V 7.2 software. The results revealed that, carbazole-based conjugated molecules are a promising class of potential hole-transporting materials for perovskite solar cells.

Key words: Perovskite solar cells, Organic HTMs, Carbazole chromophores, DFT
Suresh Kumar Govindarajan  
Department of Ocean Engineering, Indian Institute of Technology Madras, Chennai 600036, India

Indumathi M Nambi  
EWRE Division, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai 600036, India

Abstract  
Groundwater has become a critical resource worldwide with the unsustainable levels of exploitation and pollution. These issues demand immediate action plans and implementations. Therefore, groundwater management strives for both the mitigation of the existing and prevention of the looming groundwater crises. Water wells are means to access the groundwater in the aquifers. And, the contributing aquifer regions that drain water to an extraction well upon pumping constitutes its capture zone. Hence, the study of well capture zones renders an idea of the area that can be influenced by groundwater pumping, and very important. Capture zone delineation has also been the inevitable, outset for the planning of groundwater remediation programmes. Consequently, the study of coupled fluid flow and contaminant transport within the capture zones and their influence on each other will help enlighten the understanding and perception.  
This study utilizes the MODALL model based capture fraction method for determining the capture zones of a hypothetical confined aquifer. Capture fraction gives the certainty or the strength of flow from each cell to the sink cell, with the extraction well. And subsequently investigating the plume contour profiles for different sources of pollution for meaningful insights underlying the processes.  
Keywords: Contributing aquifer regions; capture zone delineation; groundwater remediation programmes

K. Neenu  
GICICRST1804062

Groundwater Modeling for aquifer depressurization in Mining Sites

K. Neenu  
Research Scholar, Environmental and Water Resources Engineering, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai – 600036, India

S. Mohan  
Professor, Environmental and Water Resources Engineering, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai – 600036, India

Abstract  
Mining activity serves as a major contributor to a country’s economy. But the mineral extraction process from beneath the earth surface often interferes with groundwater. Removing the overburden material to extract the mineral can cause water from confined aquifers lying below the mineral deposit to burst out and obstruct safe mining operation. The threats caused during the operation can be avoided by depressurising the confined aquifer below by pumping out groundwater and ensuring that water levels in the mining area are within the safe operating limits. This kind of information can be obtained from a simulation model which represents the actual field condition. This study aims at modeling a lignite mine with its deposit nearly 70 m below the ground level. The geological formation is multi – layered with an unconfined aquifer at the top, semi – confined aquifer in between and a confined aquifer at the bottom separated by a thin impermeable layer. The geology of the aquifer is discontinuous making the model more complex. Visual MODFLOW was used to develop the groundwater flow model and to study the impact of depressurisation activities on the existing water levels by taking...
into account the discontinuity in the formations. The interaction between the layers and the pumping impacts were studied. Various scenarios were analysed to study the impact of depressurization on existing as well as future groundwater levels. The results show that the model is successful in replicating the field conditions and therefore can be used as a predictive tool to arrive at appropriate management decisions.
Keywords: Aquifer depressurisation, Groundwater Modeling, Visual Modflow, Water Resources Management

Critical appraisal of Building Information Modeling (BIM) for Indian Architects, Engineers, Contractors (AEC) industry

Akshaya Bomanwar
X Semester B. ARCH, National Institute of Technology Raipur, Chhattisgarh, India

Abstract
The Indian Architecture, Engineering, and Construction (AEC) industry has still not been completely successful in the application of Building Information Modeling (BIM). Majorly because many of the members are still not aware that BIM can be used for improving the design, construction, and facility management of projects, moreover a higher LOD (level of detail) can be attained. Owing to this, several matters about management ascend during the design. This fact builds the need to standardize and craft guidelines for the implementation of a BIM process in the construction industry, additionally the process needs to be revised, reviewed and the functionality must be rechecked as per the Indian construction scenario. There is a need for a guidance-centered BIM implementation process in India, viewing all buildings as a product of the constantly evolving process. With the help of this research the Indian AEC industry will get ahead of its existing state of infancy in adoption of BIM.
Keywords: building information modelling, construction, simulation, efficiency, energy savings, building modelling, energy efficient architecture

Image compression in Wireless Sensor Networks using Auto Encoder and Restricted Boltzmann Method

S. Aruna Deepthi
Asst Professor, Vasavi College of Engineering, Hyderabad

E. Sreenivasa Rao
Professor, Vasavi College of Engineering, Hyderabad

M.N. Giri Prasad
Professor, JNTUA, Anantapuramu

Abstract
Wireless Sensor Networks are used in various day-to-day applications. With advanced technology Wireless sensor networks (WSNs) play a crucial role in networking technologies since it can be expanded without communication infrastructures. Most image compression algorithms in WSN are subject to low image quality after the images are decoded or have random image content changes. As the image contains a massive amount of redundancies resulting from the high correlation between pixels, image compression methods are proposed. In this paper Multilayer Restricted Boltzmann Machine (RBM) network and Variational Auto Encoder (VAE) are designed and tested for both Gray (2D) and Colour (3D) images. The proposed variational auto encoder image compression method is compared with multilayer RBM when the layers are 2,4 and 8 and the peak signal-to-noise ratio (PSNR),Signal to Noise Ratio (SNR),Mean square error are compared.
Keywords: RBM, Auto Encoder, VAE, WSN
Abstract
Infections caused by CRE (Carbapenem resistant enterobacteriaceae) are one of the most serious health threats for human and animals, worldwide. The carbapenems are often considered as antibiotics of last resort for treatment of bacterial infections. Emergence of New Delhi metallo β-lactamase (NDM) variants causes difficulty to treat infections by physicians in clinical settings. NDM-1 was first identified in Klebsiella pneumoniae isolated from a 59-years old man who returned to Sweden after hospitalization in India in January 2008. The NDM producing bacteria are resistant to almost all available antibiotics except polymyxins. In this study total 402 Carbapenem Resistant Enterobacteriaceae (CRE) member were recovered from blood and rectal swabs of 1000 infants admitted in NICU of Jawaharlal medical college hospital Aligarh Muslim University Aligarh, India, cabapenemase producers determine by Carba NP phynotype biochemical assay. Out of 402 isolates, many isolates were identified having NDM variants in different species, but 3 of the isolates were identified as E. aerogenes carrying blaNDM-4, blaNDM-5, and blaNDM-7 genes as a first report. These genes were identified by PCR and sequence analysis. The isolates were further characterized to know the plasmid type and genetic environment features, including integron and Is elements. These three E. aerogenes isolates (AK-93, AK-95 and AK-96) were resistant to all β-lactams including carbapenems. The β-lactamase genes blaOXA-1, blaOXA-9, blaSHV, blaVIM were also found to be associated with blaNDM-4 in AK-93 and blaOXA-1, blaOXA-9, blaCMY were found co-associated with blaNDM-5 in AK-95 and with blaNDM-7 in AK-97, identified by PCR analysis. Plasmid based replicon typing (PBRT) revealed plasmids of different incompatibility in Enterobacter aerogenes in each of the isolates (AK-93 AK-95 and AK-96), respectively. Genetic environment analysis revealed presence of bleomycin resistance gene (bleMBL) to downstream of blaNDM and complete ISAba125 sequence were found to upstream of blaNDM in all three variants of these isolates. This is the first time we identified blaNDM-4, blaNDM-5 and blaNDM-7 in E. aerogenes species, isolated from NICU of tertiary care hospital.

K. Neenu
Environmental and Water Resources Engineering
Department of Civil Engineering Indian Institute of Technology Madras, India

S. Mohan
Environmental and Water Resources Engineering
Department of Civil Engineering Indian Institute of Technology Madras, India

Abstract
Mining activity serves as a major contributor to a country’s economy. But the mineral extraction processes from beneath the earth surface often interfere with groundwater. Removing the overburden material to extract the mineral can cause water from confined aquifers lying below the mineral deposit to burst out and obstruct safe mining operation. The threats caused during the operation can be avoided by depressurising the confined aquifer below by...
pumping out groundwater and ensuring that water levels in the mining area are within the safe operating limits. This kind of information can be obtained from a simulation model which represents the actual field condition. This study aims at modeling a lignite mine with its deposit nearly 70 m below the ground level. The geological formation is multi-layered with an unconfined aquifer at the top, semi-confined aquifer in between and a confined aquifer at the bottom separated by a thin impermeable layer. The geology of the aquifer is discontinuous making the model more complex. Visual MODFLOW was used to develop the groundwater flow model and to study the impact of depressurization activities on the existing water levels by taking into account the discontinuity in the formations. The interaction between the layers and the pumping impacts were studied. Various scenarios were analysed to study the impact of depressurization on existing as well as future groundwater levels. The results show that the model is successful in replicating the field conditions and therefore can be used as a predictive tool to arrive at appropriate management decisions.

Keywords: Aquifer depressurisation, Groundwater Modeling, Visual MODFLOW, Water Resources Management

Tom Harry
Teaching history at UBD: my experience

Tom Harry
Ph.D. student with the Department of History
Universiti Brunei Darussalam, Brunei.

Abstract
Traditionally, history is taught with a rigid approach where students have to listen to the professor for hours and hours. This helps little to develop cognitive skills that are highly needed for English literature, and classical music. Even Geography, Geology, and Anthropology students are attracted to historical approach that can help them changing of their attitude towards the world that has crazy. This paper aims to build an entirely new theory about how to teach English literature at Universiti of Burmudi. I have examined 4000 students in the class that I teach, and I have interviewed them to understand what they think about gemology and cell biology. I have realized that they are more inclined towards historical anatomy of people. This study has clearly shown that students are mostly devoted to movies that are based on fiction, and have no relevance to any historical content of this planet that we call home.

Key words: History, education, culture, in, ruins, research, my, foot, feet

Mohammad Sahrayi
Reinforcing Integral Abutment Bridges against Earthquake using Finite Element Method

Mohammad Sahrayi
Master of Civil Engineering, Faculty of Structure, Islamic Azad University, Rooden Branch, Roodehen, Iran

Abstract
The integral abutment bridge is a kind of bridge in which the abutment and deck are integrated. This abutment system in the longitudinal direction acts like a rigid frame. The purpose of this study is to investigate the effects of different characters of abutment and bridge included height, width, length and the number of span on the general behavior of bridge under different seismic spectrum and to evaluate its period of time. Software verification is done using field model. Then bridge with different abutments and spans are modeled. Along with the numerical simulations, the strength of bridge is evaluated with survey variable parameters in seismic forces such as Tabas, Parkfield, El Centro. Investigations showed that in the integratal bridge (with two 20-meter span), the amount of base shear have 20 percent increase except for Tabas earthquake. Finally, since it is made in the range of numerical
samples that the value of the original periodic time will be shorter than the short period (0 to 20/0), the idea is will not be economically viable for earthquakes with a Fourier spectrum with a maximum relative frequency in the range of frequencies higher than 4 Hz. Also, the observations showed that changing the parameter of the length of the span changed the period of time so that with increasing the length of the span, the amount of period of time increased. However, with the change in the number of span, the amount of period of time did not change significantly, so it can be said that with the assumption of equal span, the time of the main change in traffic is not dependent on its number. With changing the height, the periodic time was rapidly increased, so that the spectral acceleration was close to the constant acceleration region, proportionally.

Keywords: seismic force, continuous bridge, finite element method, abutment, integral bridge

Groundwater Modeling For Aquifer Depressurization In Mining Sites

K. Neenu  
Environmental And Water Resources Engineering 
Department Of Civil Engineering Indian Institute Of Technology Madras, India

S. Mohan  
Environmental And Water Resources Engineering 
Department Of Civil Engineering Indian Institute Of Technology Madras, India

Abstract

Mining activity serves as a major contributor to a country’s economy. But the mineral extraction process from beneath the earth surface often interfere with groundwater. Removing the overburden material to extract the mineral can cause water from confined aquifers lying below the mineral deposit to burst out and obstruct safe mining operation. The threats caused during the operation can be avoided by depressurising the confined aquifer below by pumping out groundwater and ensuring that water levels in the mining area are within the safe operating limits. This kind of information can be obtained from a simulation model which represents the actual field condition. This study aims at modeling a lignite mine with its deposit nearly 70 m below the ground level. The geological formation is multi-layered with an unconfined aquifer at the top, semi-confined aquifer in between and a confined aquifer at the bottom separated by a thin impermeable layer. The geology of the aquifer is discontinuous making the model more complex. Visual MODFLOW was used to develop the groundwater flow model and to study the impact of depressurisation activities on the existing water levels by taking into account the discontinuity in the formations. The interaction between the layers and the pumping impacts were studied. The results show that the model is successful in replicating the field conditions and therefore can be used as a predictive tool to arrive at appropriate management decisions.

Keywords: Aquifer depressurisation, Groundwater Modeling, Visual MODFLOW, Water Resources Management

LISTENERS

Ejaz Ahmed  
Head of Physics Department, Islamabad Model College for Boys, Islamabad, Ph.D. (Scholar), Department of Physics, Pakistan, Hazara University, Mansehra KPK, Pakistan

Hayford Agyekum  
I.T, HAY IT Solutions, Kumasi Ghana
<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GICICRST1804075</td>
<td>Osarodion Ogiewmownyi</td>
<td>Technology Management and Business, University Tun Hussien Onn Malaysia (UTHM), Parit Raja, Batu Pahat, Johor Bahru, Malaysia</td>
</tr>
<tr>
<td>GICICRST1804076</td>
<td>Ernest Chigemezu Amajuoyi</td>
<td>Synergy, Black Hills Global Synergy Limited, Abuja, Nigeria</td>
</tr>
<tr>
<td>GICICRST1804077</td>
<td>Adylin Agbonoga</td>
<td>Faculty of Information and Communication Technology, Limkowing University of Creative Technology, Cyberjaya, Malaysia</td>
</tr>
<tr>
<td>GICICRST1804078</td>
<td>Imelda Nnah Inyang-udo</td>
<td>Post graduate Center, Limkowing University of Creative Technology, Cyberjaya, Malaysia</td>
</tr>
<tr>
<td>GICICRST1804079</td>
<td>Nwajiaku Jerry Chinedu</td>
<td>Industrial Trainee, MYGM Management SDN BHD, Kuala Lumpur, Malaysia</td>
</tr>
<tr>
<td>GICICRST1804080</td>
<td>Tugbiyele Oluwashola Folayemi</td>
<td>IT Officer, MYGM Management SDN BHD, Kuala Lumpur, Malaysia</td>
</tr>
<tr>
<td>GICICRST1804081</td>
<td>Chimeleze Collins Uchenna</td>
<td>Industrial Trainee, MYGM Management SDN BHD, Kuala Lumpur, Malaysia</td>
</tr>
<tr>
<td>GICICRST1804082</td>
<td>Habiboulaye Diallo</td>
<td>Pomputer Programming, Mugla Sitki Kocman University, Mugla Turquie</td>
</tr>
<tr>
<td>GICICRST1804083</td>
<td>Emmanuel Uwa Okeke</td>
<td>Database Specialist, Eagles Global Group of Companies, Pretoria, South Africa</td>
</tr>
</tbody>
</table>