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KEYNOTE SPEAKER



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Supercritical Water Gasification of Digested Biomass in Anaerobic Digestion

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Abstract

Anaerobic digestion (AD) is a process for utilization of biomass to produce biogas (60–70% methane) and a nitrogen rich organic residue (digestate) that was usually used as fertilizer or composting material. Evaluation of digestate as fertilizer is not suitable because of low capacity for application in agriculture, different pollutions like heavy metals and organic compounds, danger of infection, legal problems and transportation distances. In addition, composting process produces mostly carbon dioxide which is not valuable for energy production. Additionally, the amount of digestate left are usually around 50% of the fed material and conversion of the volatile organic matter are between 40–60% in AD systems. Digestate with high organic content can be converted to hydrogen and methane rich gas by supercritical water gasification (SCWG). The most important advantages of SCWG are gasification of biomass without drying, high reaction rates, formation of less coke and less carbon monoxide.

In this study, anaerobic digestion of cauliflower residue (80 g/L) with sheep manure (40 g/L) was performed at different temperatures (35 and 45°C). SCWG of digestates from anaerobic digestion was investigated at different temperature (500–600 °C) with a reaction time of 1 hour in the absence and presence of catalysts (KOH, NaOH and K₂CO₃) in 0.1 L volume of batch reactor. Gaseous, liquid products and solid residue were obtained after gasification. Gaseous products were analysed by GC, while liquid products were analysed by TOC and GC-MS; and solid residues were analysed by TOC-SSM. Carbon gasification efficiency was obtained in the range of 58.2–86.4% at selected operating conditions. Gaseous products were composed of hydrogen, carbon dioxide and methane as major components and carbon monoxide, ethane, ethene and propane were as minors. Hydrogen concentration was in the range of 28–40% vol. while methane was 19–28% vol. Total organic carbon content of liquid product concentration changes between 141–1333 ppm. Organic fraction of liquid products was mainly composed of phenol, substituted phenols, N-heterocyclic (pyridine, quinoline, indole etc.), substituted N-heterocyclics, benzene and substituted benzenes that can be used as platform chemicals for pharmacy, dye industry, pesticide and polymer processes.

Keywords: Anaerobic digestion, Hydrogen, Methane, Supercritical water gasification.

Anaerobic Fermentation of Water Hyacinth for Biogas Production: Effects of Substrate Concentration and Fermentation Temperature

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Abstract

Water hyacinth (*Eichhornia crassipes*) is a free floating aquatic weed that spreads very fast and causes serious environmental problems in irrigation, navigation, aquatic life and crops. The conversion of water hyacinth to fuels has received significant interest in the last few decades as being a potential source of sugars to convert biogas. Anaerobic digestion (AD) is an advantageous method in treatment of waste instead of composting since biogas with a high percentage of methane is produced in digestion whereas composting produces mostly carbon dioxide. In this study, anaerobic fermentation of water hyacinth with activated sludge was performed to investigate the effects of substrate concentration (40, 50 and 60 g/L) and temperature (35, 45 and 55°C) on biogas production performance. Methane yield (MY) and production rate (MPR) were identified at different substrate concentrations and fermentation temperatures in laboratory-scale batch system. The highest values of maximum MY (26.6 mL CH₄/g substrate) and MPR (1.87 mmol CH₄/L/d) were reached at substrate concentration of 60 g/L at 35°C. Monod, modified Andrew, Moser, and Tessier models are used to evaluate the effect of substrate concentration on biogas production rate. The highest correlation coefficient (R²) of 0.853 was obtained with Moser model. Maximum MY (86.9 mL CH₄/g substrate) and MPR (8.93 mmol CH₄/L/d) were reached at 55°C. Effect of fermentation temperature on methane production potential was well described by Ratkowsky model with R² of 0.999. The optimum fermentation temperature was found as 56.8°C for maximum methane production according to Ratkowsky model. (This study was supported by Ministry of Science, Industry and Technology of Turkish Republic.) (Project No.STZ.0330.2013-2)

Keywords: Anaerobic fermentation, Kinetic model, Methane, Water hyacinth



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Enhancement of Chitinase in *Beauveria bassiana* using a green route


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	<p>Department of Chemical Engineering, Heritage Institute of Technology, Kolkata-700107, India</p> <p>ABSTRACT</p> <p>Beauveria bassiana, one of the identified sources of biopesticide has been isolated from soil of tea cultivation area. Chemotaxonomy of the isolated strain has been established through standard microbiological, biochemical and gene sequencing techniques. The identified spore culture has been registered in National Centre for Biotechnological information and listed as <i>Beauveria bassiana</i> JUCHE22. The biopesticide activity of <i>Beauveria bassiana</i> is due to the presence of chitinase, an extracellular product which hydrolyses chitin present as the cuticle of pests resulting in the degradation and subsequent death of the pests.</p> <p>The primary focus of the present investigation is to enhance extracellular production of Chitinase (one of the biomolecule responsible for its biopesticide activity) by external addition of an amino acid precursor (serine). Experimental results show the spore culture modified with the precursor produces Chitinase in an appreciable quantity compared with the performance of the native isolated spores. Experiments have been designed under simulated condition using chitin as the substrate which is hydrolysed by Chitinase produced by the isolated strain.</p> <p>An extensive investigation has been carried out and is being carried out to study the effects of various operating parameters viz., concentration of chitin, incubation of time and concentration of serine on the productivity of extracellular Chitinase. The promising results obtained from these programmed experiments clearly indicate new green route of producing eco-friendly biopesticide.</p> <p>Keywords: <i>Beauveria bassiana</i>, biopesticide, Chitinase, serine.</p>
 <p>Navid Zandi-Atashbar GICECG1702059</p>	<p>Nano-CeO₂/SiO₂ as an Efficient Catalytic Conversion of Waste Engine Oil into Diesel Fuel, Using Experimental Design</p> <p>Navid Zandi-Atashbar Department of Chemistry, Isfahan University of Technology, Isfahan 84156-83111, Iran</p> <p>Amir Hooshmand Ahoor Faculty of Sciences, Ferdowsi University of Mashhad, Mashhad, Iran</p> <p>Ali A. Ensafi Department of Chemistry, Isfahan University of Technology, Isfahan 84156-83111, Iran</p> <p>Abstract</p> <p>Nowadays, discard of 24 million tons used diesel engine oil per year is a significant challenge for human health and environment. Thus, waste conversion into more valuable products like fuel can be the best solution. This work covered catalytic converting the waste motor oil into fuel, gas, and char products of pyrolysis, based on multivariate experimental design. Hence, nano-CeO₂/SiO₂, as a catalyst, was synthesized and characterized by different analytical methods. As the main aim of this work, this efficient catalyst is used to achieve low-level sulfur fuel from inexpensive, not eco-friendly and available discarded engine oil. Thus, the ability of liquid product as a successfully applicable substitute for diesel fuel was also assessed. Furthermore, the modeling and optimization of pyrolytic fuel production based on the process factors, including operating temperature, flow rate of argon, catalyst</p>

	<p>amount and time, were conducted. The properties of pyrolytic fuel produced in the optimizing conditions (554 °C, 128 mLmin⁻¹ Ar, 8.8 wt% nano-CeO₂/SiO₂, and 95.0 min) were compared with commercial diesel fuels as represented flash point of 49.0±2.9 °C, the cetane number of 42.0±1.8, and gross calorific value of 44.9±3.2 MJ kg⁻¹. Moreover, application of nano-CeO₂/SiO₂ as the catalyst caused the reduction of sulfur level contained in pyrolytic fuel from 0.9 to 0.02 wt%. As the result of this research, catalytic pyrolysis of waste oil by nano-CeO₂/SiO₂ concluded rich liquid fuel product (60.7 wt%) with low sulfur (0.02 wt%) and inorganic pollutants (0.01 wt%) as diesel fuel.</p> <p>Keywords: Waste engine oil; Diesel fuel; Experimental design; CeO₂/SiO₂ catalyst; Modeling.</p>
 <p>V. Karthick GICECG1702061</p>	<p>Quercetin loaded PLGA microspheres as anticancer agent using breast cancer cell lines</p> <p>V. Karthick Centre for Ocean Research, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai 600119, India</p> <p>Sucheta Panda Centre for Ocean Research, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai 600119, India</p> <p>V. Ganesh Kumar Centre for Ocean Research, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai 600119, India</p> <p>T. Stalin Dhas Centre for Ocean Research, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai 600119, India</p> <p>Dinesh Kumar Centre of Biomedical Research (CBMR), Sanjay Gandhi Post-Graduate Institute of Medical Sciences Campus, Raibareli Road, Lucknow 226014, India</p> <p>K. Vasanth Interdisciplinary School of Indian System of Medicine, SRM University, Kattankulathur 603203, India</p> <p>K. S. Uma Suganya Centre for Ocean Research, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai 600119, India</p> <p>K. Govindaraju Centre for Ocean Research, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai 600119, India</p> <p>Abstract Quercetin is natural polyphenolic compound isolated from widely available and consumed plant <i>Allium cepa</i> L. which has shown promising chemopreventive and chemotherapeutic activities. In this study, quercetin was encapsulated onto Poly</p>

	<p>lactic glycolic acid (PLGA) microspheres using double emulsification technique for improving its efficiency in cancer therapy. Quercetin was isolated, purified and characterized using nuclear magnetic resonance (NMR) and fourier transform infrared (FT-IR) spectroscopy. PLGA+Quercetin (PLGAq) were characterized using fourier transform infrared spectroscopy (FTIR) and scanning electron microscopy (FESEM) for surface morphology analysis. The bare and drug loaded microspheres were tested for its cytotoxicity on human monocytic cell line (THP-1). PLGAq showed excellent anti-cancer activities tested against MCF-7 cell line studied using Annexin-V/ propidium iodide (PI) staining method. Keywords: apoptosis; annexin-v, electron microscopy; nuclear magnetic resonance; cancer.</p>
 <p>Christof Lanzerstorfer GICECG1702053</p>	<p>Off-gas desulfurization with sodium bicarbonate for iron ore sinter plants: investigation of the influence of the off-gas temperature</p> <p>Christof Lanzerstorfer Process Engineering and Production, University Applied Sciences Upper Austria, Wels, Austria</p> <p>Abstract</p> <p>For dry off-gas desulfurization by chemisorption in iron ore sinter plants hydrated lime is usually used as reactant. In some other off-gas cleaning applications with a gas temperature above 140°C sodium bicarbonate is used instead of hydrated lime. An advantage of sodium bicarbonate is the higher desulfurization efficiency. Additionally, cooling of the off-gas to a temperature below 100°C to achieve satisfactory desulfurization is not required. In sinter plants the off-gas temperature is often below 140°C. Thus, the thermal decomposition of sodium bicarbonate to sodium carbonate, which increases the specific surface area of the reactant, might be too slow. The aim of this study was to investigate the desulfurization gas with sodium bicarbonate in the typical temperature range of sinter plant off-gas of 110-160°C. The experiments were performed in a small pilot system consisting of an entrained flow reactor and a fabric filter. For the experiments a mixture of sulfur dioxide in air was used. The results showed that the efficiency of the desulfurization was only slightly reduced at the lower temperature of 110°C. However, at lower temperatures it takes longer after star-up of the system to reach stable conditions. At first, the efficiency is lower, but it seems that this is nearly compensated for by reaction in the filter cak, which builds up at the filter. Therefore, sodium bicarbonate is a feasible reactant for the desulfurization of sinter plant off-gas. Keywords: Dry desulfurization, sinter plant, sodium bicarbonate.</p> <hr/> <p>Flowability of dusts from dry off-gas cleaning: the influence of particle size and the spread of the particle size distribution</p> <p>Christof Lanzerstorfer Process Engineering and Production, University Applied Sciences Upper Austria,</p>

	<p style="text-align: center;">Wels, Austria</p> <p style="text-align: center;">Abstract</p> <p>Considerable amounts of fine granular dusts result from dry off-gas cleaning systems. The flow ability of these dusts is an important characteristic for the design of dust-conveying and storage equipment. In this study the relation between the flow-relevant properties unconfined yield strength and flow ability and important properties of the dust (Sauter mean diameter, spread of the particle size distribution) were investigated based on the data of seventy dusts from dry off-gas cleaning systems. The results showed that the Sauter mean diameter of a dust from dry off-gas cleaning can be used as the basis for a rough estimate of the unconfined yield strength and the flow ability. As is well-known, for coarser dust the unconfined yield strength is typically lower and the flow ability is higher. The influence of the spread of the particle size distribution is comparatively low. However, to obtain reliable flow ability data shear tests are obligatory.</p> <p>Keywords: Dry off-gas cleaning, dust, flowability, particle size</p>
 <p>Tathagat Waghmare GICECG1702057</p>	<p>A novel microbial strains for producing 1,3-propanediol (Bioplastic) from biodiesel derived glycerol as a sole carbon source</p> <p style="text-align: center;">Tathagat Waghmare Dept of Microbiology and Biotechnology, Faculty of Food Science, Szent Istvan University, Budapest, Hungary Csilla Mohacsi-Farkas 4Dept of Microbiology and Biotechnology, Faculty of Food Science, Szent Istvan University, Budapest, Hungary Nguyen Duc Quang Dept of Brewing and Distilling, Faculty of Food Science, Szent Istvan University, Budapest, Hungary Agnes Belak Dept of Microbiology and Biotechnology, Faculty of Food Science, Szent Istvan University, Budapest, Hungary Prithviraj Bhandare Department of Biotechnology, Gulbarga University, Kalaburagi, Karnataka, India-585106 G. R. Naik</p> <p style="text-align: center;">Abstract</p> <p>Rapidly Expanding market for biodiesel has increased the supply and eventually decreased the cost of crude glycerol, which makes an attractive sustainable feed stock for the fuel and chemical Industry. The conversion of glycerol may be carried out by both chemical as well as biological means. Many microorganisms are known to convert glycerol to value added industrially important products. The present study involved the isolation of potent bacterial strains from soil sample obtained from soil sample. The isolated strain was Enterobacter cloacae. As the Enterobacter cloacae strain is the known producer of 1,3-PDO (Bioplastic), is an important component of fuel and polyesters (used widely in the petroleum industry) using biodiesel derived crude glycerol for producing 1,3- Propanediol, which is a substituent in various industrial sectors as good and remarkable solution from an commercial as well as ecological point of view.</p> <p>The crude glycerol has been converted to 1, 3-propanediol which is not only a useful</p>

	<p>final product but also a valuable starting compound for producing polymers, A newly isolated <i>Enterobacter cloacae</i>-S2-5, <i>Enterobacter cloacae</i> GNTEW13-1 and <i>Enterobacter cloacae</i> GNTEW13-V has shown a high producibility of 1, 3-propanediol by using biofuel derived crude glycerol as a sole carbon and energy source. In the preliminary stage Isolation, Identification and Characterization of potent 1,3-Propanediol producing microbial strain the <i>Enterobacter cloacae</i>-S2-5, <i>Enterobacter cloacae</i> GNTEW13-1 and GNTEW13-V has been carried out and checked their ability utilizing crude glycerol as a sole carbon source and produce industrially important chemical constituent such as 1,3-Propanediol at laboratory scale. And further the strain <i>Enterobacter cloacae</i>-S2-5, <i>Enterobacter cloacae</i> GNTEW13-1 and GNTEW13-V have been optimized for the enhancement of highest 1,3-Propanediol production rate.</p>
 <p>Shuaibu Hassan Usman GICICRST1702055</p>	<p>An Exploration of the Determinants of Web Enabled Knowledge Sharing Practices among Students</p> <p>Shuaibu Hassan Usman Department of Management and Information technology, Faculty of Management Technology, Abubaka Tafawa Balewa University, Bauchi, Nigeria hasusman@gmail.com</p> <p>Abstract</p> <p>The study explores the latent factors on the web enabled knowledge sharing practices. There Seven (7) factors identified through a factor analysis and interpreted based on item loadings, and analytical statistics. The Kaiser Normalization criteria and Scree plot are used in determining the number of factors retained. The reliability tests of the seven factors of the web enabled knowledge sharing practices revealed a satisfactory reliability scores.</p> <p>Keywords— Factor Analysis, latent factors, knowledge sharing practices, Students, Web 2.0 enabled.</p>
 <p>Norhayati Zakuan GICICRST1702057</p>	<p>The Impact of Integrated Management System on Organizational Performance in Malaysia Manufacturing Industry: A Literature Review</p> <p>Pragash Sopromanen Faculty of Management, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor</p> <p>Norhayati Zakuan Faculty of Management, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor</p> <p>Mohd Shoki Md Ariff Faculty of Management, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor</p> <p>Thoo Ai Chin Faculty of Management, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor</p> <p>Zuraidah Sulaiman Faculty of Management, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor</p> <p>Siti Zaleha Omain Faculty of Management, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor</p>

	<p style="text-align: center;">Muhamad Zameri Mat Saman Faculty of Mechanical Engineering, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor</p> <p style="text-align: center;">Abstract</p> <p>Manufacturing Industry sector is one of the important sectors in Malaysian Economy in which contributed towards Gross Domestic Product (GDP), external Trade and job creation. Meanwhile, adopting Integrated Management System in Manufacturing Industry shall help the organization grow and compete with others. The importance of IMS practices in the achievement of organizational performance has been highlighted in numerous studies. The purpose of this paper is to examine the relationship of IMS practices and organizational performance in the Malaysian Manufacturing industry. The outcome of this writing would be developing of research model. This model will be used to study the relationship between IMS practices and organizational performance in manufacturing industry.</p> <p>Keywords- Integrated Management System (IMS), manufacturing industry in Malaysia, Organizational Performance, Research framework</p>
 <p>M.A Fakunle GICICRST1702058</p>	<p style="text-align: center;">Determination of Maximum Horizontal Distance (XMHD) Travelled by Landfill Leachate from Lapite Dumpsite in Ibadan, South – West Nigeria O.I. Popoola Physics Department, University of Ibadan</p> <p style="text-align: center;">M.A Fakunle Mathematical and Physical Sciences Department, Osun State University, Osogbo.</p> <p style="text-align: center;">ABSTRACT</p> <p>Residential buildings are usually located in the vicinity of dumpsites in Nigerian cities. Residents of such buildings often depend on groundwater for their domestic use. Leachate Migration (LM) from dumpsites could lead to contamination of groundwater in the vicinity. An important parameter for assessing LM is Maximum Horizontal Distance (XMHD) travelled by leachate. Information on this important parameter in the vicinity of dumpsites in Ibadan is limited. This study was designed to determine XMHD. Lapite a government designated dumpsite was selected for this study. Twenty - nine Schlumberger Vertical Electrical Soundings (VES) with maximum current electrode spacing of 130.0 m were conducted at 10.0 m intervals away from the four sides of this dumpsite. One VES point conducted outside the vicinity of the dumpsite served as a control. The VES data were processed by conventional curve matching and computer iteration methods. Lowest resistivity values (Y) of VES points in the vicinity of dumpsite and those of the control points (Yc) were extracted. The Y were plotted against the corresponding horizontal distances (X) of the VES points to yield a mathematical model for LM. The model is used to determine XMHD when $Y=Y_c$. Curves of Y against X fitted best to (correlation coefficients ranged from 0.825 to 0.995), M and N are constants that ranged from 15.523 to 38.699 Wm and 0.0062 to 0.0236 m⁻¹ respectively. The Maximum horizontal distance (XMHD) travelled by the landfill leachate on side A, B, C, and D ranged from 78.95 m to 179.86 m. For a well to be dug in the vicinity of the dumpsite, a distance of 190.0 m is therefore recommended</p> <p>Keywords: Leachate migration, Vertical electrical sounding, Horizontal distance travelled by leachate.</p>



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GICICRST1702061

Space observations of solar irradiance on FY-3 satellites, from solar instruments onboard Earth observation spacecraft

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Abstract

Accurate long-time data series of solar irradiance are fundamental to understand natural solar forcing of climate change, including Total Solar Irradiance (TSI) and Solar Spectral Irradiance (SSI). Long term TSI and SSI observations are essential to separate solar forcing from human-induced factors. TSI has been monitored by several instruments on the Chinese FY-3 satellites. Solar irradiance has been measured in FY-3 missions. Since solar instruments on FY-3A and FY-3B satellites operated in the scanning mode and they had no pointing system, the sun was only measured when the sun swept through field-of-view of the instruments. TSI data quality is further improved in FY-3C missions by using a pointing system for solar tracking. A slowly increasing TSI trend of the solar cycle 24 in the past 4 years has been detected in FY-3C mission, with nearly the same short time variations compared with the ongoing missions VIRGO/SOHO and TIM/SORCE. A decreasing trend of solar spectral irradiance has been detected at 331.375 nm channel in the FY-3B mission from 2011 to 2015, and this trend is validated by the observations from SORCE mission.

Keywords - solar radiometry, solar irradiance, total solar irradiance, solar spectral irradiance



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Optimization of process parameters for probioticated wine

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Abstract


Wine has been an age old alcoholic beverage consumed by humans for nutritional benefits. Apart from grapes many other fruits like apples, berries, amla etc can also be used for its preparation. To further enhance the nutritional properties of the wine 'probiotic organism' can be used. In the present study 2 combinations of wine were prepared. *Hylocereus undatus* (dragon fruit), *Phoenix dactylifera* (dates), honey and *Phyllanthus emblica* (amla) were used as the first combination whereas, *Vitis vinifera* (Grapes), *Phyllanthus emblica* (amla), Honey and Green tea as the second

	<p>combination. These combinations were fermented using <i>Saccharomyces cerevisiae</i> and kept in incubation for 5 days in aerobic conditions and for 15 days in anaerobic conditions. The wine was filtered, pasteurized and kept for ageing. Presence of alcohol in the wine was detected using Gas Chromatography and a peak at wave number 3290.56 revealed the presence of OH groupin FTIR for both the combinations. Further probiotic organisms were inoculated into the wine and were screened for presence of toxic compounds using GCMS. HPLC was performed for the detection of alcohol in the wine.</p> <p>Keywords: Wine, Probiotic organism, Alcohol content</p>
 <p>Keka Talukdar GICICRST1702063</p>	<p>Chirality dependent interaction of Graphene with amino acid: A molecular dynamics approach</p> <p>Keka Talukdar Department of Physics, Nadiha High School, Durgapur-713218, West Bengal, India</p> <p>Abstract</p> <p>A molecular dynamics simulation is performed to investigate the effect of chirality on the binding of amino acid molecules with graphene. Single layer, double layer and three layered graphene is modeled with alanine molecules bound with their structures and then the structures are subjected to molecular dynamics simulation. The alanine bound zigzag graphene structure always shows higher potential energy compared to the armchair structure. Moreover, the zigzag symmetry shows less stability when bound with alanine molecule. In this study the structures are energy minimized first and then molecular dynamics simulation with total time 40000 fs and time step 1.00 fs are carried out in each case to obtain their energies and the model of the final structure. The potential energies of the three layered graphene bound with two alanine molecules are 6191. 83 kcal/mol and 3116.09 kcal/mol respectively for the zigzag and armchair symmetry of graphene. Simulation points towards the fact that without alanine molecules these energies are lesser. However, it is observed that alanines molecules bind well with armchair graphene more easily. Binding energies of these molecules are also found. In our simulation we used Berendsen thermostat and velocity verlet algorithm is adopted to update coordinate and velocity. Two, five and seven alanine molecules are bound with graphene structure and for them simulation is run separately. As the energetics of graphene binding with amino acids is required to find the possibility of using them as biosensor, hence the current study will definitely add some value to the future biosensing applications of graphene.</p> <p>Keywords: Graphene, chirality, atomistic simulation, potential energy, alanine</p>
 <p>Salih Ceylan GICICRST1702064</p>	<p>An Architectural Interpretation On Space Colonization Based On Contemporary Science-Fiction Movies</p> <p>Salih Ceylan, Ph.D. Bahçeşehir University, Istanbul, Turkey</p> <p>ABSTRACT</p> <p>Expanding its living zone and territories has been a source of motivation for the mankind since the beginning of its existence. Most of the scientific work held throughout history has the purpose to learn new things and reveal the unknown for human beings. A prominent phenomena, the idea of living in outer space, has been an inspiration not only for a number of science fiction works but also for scientific efforts to design space colonies which have been an emerging trend in the last few</p>


	<p>decades. These ideas, firstly having occurred as fantasies unrelated with reality, turned to be more realistic through time with the aid of the improvements in science and technology. And nowadays there are theoretical models generating possibilities to build an actual station for a colony in space. No matter if in the far or remote future, space colonization appears to be an inevitable step in the evolution of mankind. In the scope of this paper, the questions to be considered about building space colonies are interpreted based on scientific work and contemporary science fiction products with an architectural point of view.</p> <p>When a space colony is considered in terms of shape, there occurs the necessity to compose an axial formation spinning around a central axis. And the most appropriate versions of this formation are sphere, cylinder and torus. Realistic and scientific space colony designs executed in the last years are all based on these shapes. But living in outer space contains a number of different issues and questions besides shape. Some of these important questions are; gravity, atmosphere, cosmic radiation, energy, sustainability and positioning. There are also some humanistic issues such as psychological and social needs of colonists. In addition, with an architectural perspective space colonization must be interpreted in different categories such as regional planning, transportation, infrastructure, civil architecture and individualization.</p> <p>Space colonization offers an important alternative of living habitat for humanity. However, the amount of studies in this subject has to increase with contributions from different disciplines which provide alternative perspectives and approaches. In this regard, it is important to compose an architectural interpretation of space colonization as it provides a possibility to intercept a new way of thinking about this important subject.</p>
 <p>Gbadebo I. Olatona GICICRST1702065</p>	<p style="text-align: center;">Comparative Analysis of Models for Estimating Global Solar Radiation from Routine Meteorological Parameters over a Tropical City</p> <p style="text-align: center;">Gbadebo I. Olatona (Ph. D) Department of Mathematical and Physical Sciences, Osun State University, P.M.B. 4494, Osogbo, Nigeria</p> <p style="text-align: center;">Abstract</p> <p>The need for adequate solar radiation is ever increasing for various applications such as renewable power supply, meteorology and agriculture. However there is an inadequate data of solar radiation in many developing countries due to the cost of setting up instrument for its measurement. Hence this study investigates a comparative analysis of estimating solar radiation from routinely measured meteorological parameters. The data for the study were obtained from the International Institute of Tropical Agriculture, Ibadan. The regression coefficients of the quadratic models, from the modified Angstrom-Prescott model, were determined and used to estimate the global solar radiation. The estimated and the measured values were then compared using standard statistical error indicators. The result showed that the root mean square errors for the temperature based model are 1.50, 1.10, 0.75 and 1.54 respectively for 2002, 2003, 2009 and 2012 while that of the sunshine based model are respectively 1.22, 1.24, 1.13 and 0.96 The mean bias errors for the temperature based model are respectively: -0.31, 0.12, 0.22 and -0.45 while that of the sunshine based model are 0.28; -0.16, 0.38, and -0.08; The mean percentage errors for the temperature based model are respectively 0.48, -1.28, -2.08 and 1.80 while that of the sunshine hours are -1.05, -4.76, -4.18 and -2.64. The</p>


	<p>positive errors show over estimation while the negative ones show under estimation. The models are versatile for estimating global solar radiation at the horizontal surface for Ibadan (7.23oN, 3.52oE) and locations with similar climatic conditions, when direct measured values cannot be obtained. The model can also be used for fixing missing global solar radiation data and correcting outliers. Keywords: Solar-radiation; Sunshine-hour; Minimum and maximum temperature; Observed, Measured</p>
 <p>Younes El Khchine GICICRST1702066</p>	<p>Maximization power coefficient of horizontal axis wind turbine blades (HAWT) using blade element momentum theory BEM</p> <p>Younes El khchine Engineering Sciences Laboratory, Polydisciplinary Faculty of Taza, Sidi Mohamed, Ben Abdellah University</p> <p>Mohammed Sriti Engineering Sciences Laboratory, Polydisciplinary Faculty of Taza, Sidi Mohamed, Ben Abdellah University</p> <p>Abstract</p> <p>The horizontal axis wind turbine (HAWT) blade geometry with the diameter of 10.054 m using the S809 airfoil profile have been investigated numerically. The optimum blade shape, obtained using improved blade element momentum (BEM) theory. The main objectives are to predict the aerodynamic performances such as forces and torque imposed on the rotor blades, which are essential to its structure or design. This approach requires much less computing time and memory than three-dimensional simulation flow around the wind turbine rotor with simple CFD method. The flow is assumed unsteady, incompressible and fully turbulent. Keywords: BEM method; CFD; aerodynamic performances; horizontal axis wind turbine</p>
 <p>Soumia Edalle GICICRST1702067</p>	<p>Maximum power tracking for the photovoltaic system by modified reference</p> <p>Soumia Edalle Engineering Sciences Laboratory, Polydisciplinary Faculty of Taza, Sidi Mohamed Ben Abdellah University</p> <p>Majid Ben Yakhlef Engineering Sciences Laboratory, Polydisciplinary Faculty of Taza, Sidi Mohamed Ben Abdellah University</p> <p>Abstract</p> <p>In this paper, the studying of the controller for the Maximum Power Point Tracking (MPPT) of a photovoltaic system under variable temperature and irradiation is presented. The reference signal for the PV system is variable and unknown. The aim of this article is to propose a controller based on the MG after having made a modification on the reference signal of an unknown and variable signal to the zero signal. A DC/DC boost converter is utilized as a control actuator for the MPP tracking using PWM control on the switches. To validate the proposed approach, it is compared with that based on the P & O with the variable reference signal. The results of the simulation show the P & O approach it has limits such as: presence of oscillations around MPP, which leads to energy losses and diverges in the case of</p>

	<p>sudden changes in climate and with the sliding mode we note the absence of the oscillations but the time of convergence increases. Keywords: MPPT, Sliding Mode Control (SMC), P&O.</p>
 <p>Amara Rafik GICICRST1702069</p>	<p>Online GIS for the representation of air traffic based on radar data</p> <p>R. AMARA Ecole Normale Supérieure de Kouba (ENS Kouba), Algiers Image processing and radiation laboratory (LTIR, FEI – USTHB), Algiers</p> <p>M. BELHADJ AISSA Ecole Normale Supérieure de Kouba (ENS Kouba), Algiers Image processing and radiation laboratory (LTIR, FEI – USTHB), Algiers</p> <p>N. Belalia Ecole Normale Supérieure de Kouba (ENS Kouba), Algiers Image processing and radiation laboratory (LTIR, FEI – USTHB), Algiers</p> <p>F. Berrached Ecole Normale Supérieure de Kouba (ENS Kouba), Algiers Image processing and radiation laboratory (LTIR, FEI – USTHB), Algiers</p> <p>Abstract The management of air traffic has always been a major concern of the Air Navigation organisms. To do this, various data sources are used, among them, geographic data (FIR and control areas boundaries, airways...) and also navigation data like radar data. Furthermore, the simulation of air traffic is expected to involve potential conflicts that may arise between aircraft separation during breaks and from there provide alternatives. This is especially useful when it comes to introducing a new air route in a sector or radio navigation equipment. In the following, we offer an online representation of air traffic in which we mainly use the radar data to ASTERIX format for traffic information. The online environment is based on Map server. We conclude with a review and prospects to improve the solution.</p>
<p>BESKRI Youcef GICICRST1702070</p>	<p>New tool for automated drainage network extraction in ENVI+IDL</p> <p>BESKRI Youcef Higher Normal School of Kouba (ENS Kouba), Higher Normal School of Kouba (ENS Kouba), Kouba, Algiers</p> <p>Abstract Our work is a tool that we have developed and which enables the automatic extraction of the drainage and sub-basins network using a digital terrain model (DTM). The tool also makes it possible to automatically create the vector layer (evf), as well as the extraction of some spatial and geomorphological properties of each entity (stream or sub-basins). The tool is developed under the ENVI + IDL environment.</p>

 <p>Seyed Mohammad Hossein GICICRST1702071</p>	<p>Analysis of new functions of family in Christian society and Islamic society and effect of modern media to change functions of family</p> <p>Seyed Mohammad Hossein Women and Family, University of religions and denominations, Qom, Iran</p> <p>Abstract</p> <p>As the most important social institution, Family is increasingly important in social harms. Media as a powerful tool affects thinking and attitudes of couples and influences parent children relationship. Media can have negative influence on all members of the society, however the influence of media is greatest on institutions like family. Modern media especially visual media represent the dominant values in the society and has altered the function of family toward more individualism, and individual behavioral patterns. Under the influence of modern media, families are losing their traditional function and are experiencing new functions.</p> <p>A function geared toward more individualism and catering for the individual needs of family members, a function that challenged the traditional dominant values of the family. Among all the contributing factors, modern media in their various forms and comprehensive advertisements, have played a pivotal role in internalizing characteristics of modern world and specially individualism among family members. What can increase the positive function of modern media is thorough and scientific understanding functions and characteristics of modern family. Only then can media produce programs that are appropriate for the pre-set purposes and reduce additional side effects.</p> <p>By having direct or indirect impact in the family, media can reduce abnormalities and antisocial behavior and contribute to the welfare and wellbeing of the family. It is crystal clear that media present role models for children. Presenting role models for children is an arduous task for parents. By presenting appropriate role models, the function of modern media will not only be to strengthen authentic and worthy beliefs, but also to correct irrational behavior. All these attempts will be taken in order to lead to desirable changes and a reform in people's behavior, which is the ultimate goal of any educational system. The essay aims to investigate the new functions of family in accordance with the role played by visual media in the modern society as well as Analysis of new functions of family in Christian society and Islamic society.</p> <p>Keywords: Family, Christian, Society, Islam, Function, Media</p>
<p>Atiye Judavi GICICRST1702073</p>	<p>The Relation of Family and Society in New Models of Communication from Islamic Perspective</p> <p>Atiye Judavi Social Sciences, Shiraz, University, Mashhad, Iran</p> <p>Abstract</p> <p>Islam is an pervasive and social religion that maintains specially the importance of peoples' rights and communication and not only considers human's material and spiritual interests but also has special look at human's goal and sublimation which can be introduced as a prospective and perfectionist religion. The Relation of Family and Society in the present age is one of the important issues that could be taken from new functions and models of communication. And also media as one of the main tools of communication has a significant role to maintain unity and social order between</p>

	<p>family and society as well as the creation of beliefs, feelings and behavior shared among different classes and ranks of the community. According to the Islamic perspective, communication should be considered as the source and pattern for unity and social cohesion of family and society. The purpose of this article is to introduce some characteristics in the field of family and social communication that are extracted from reliable Islamic references such as Holy Qur'an, Nahjoalblagheh and sayings and narrations of the holy Prophet of Islam Muhammad (s), and his infallible successors.</p> <p>Key words: Islam-Family-Communication- Society- Cohesion</p>
<p>Nwobike Innocent Owakah GICICRST1702074</p>	<p>Maintaining Day To Day Employees Performance In Different Organization</p> <p>Nwobike Innocent Owakah University of Mediterranean Karpasia, Nicosia, North Cyprus</p> <p>Abstract</p> <p>Maintaining day to day performance of employees in different organization is a very huge responsibility because you are laden with the task of bringing out the best in your employees. More than ever, this endeavour requires a lot of effort in the area of encouraging employee performance improvement, in other to help the organization grow in its aim of establishment. If you're a manager and your goal is to change an employee's behavior, you might have to make some adjustments in the manner of dealing with some employees.</p> <p>For instance, when you place someone on disciplinary action, managers frequently make the mistake of concentrating only on documenting negative employee behavior rather than focusing more on guiding the employee Although documentation is important when the behavior is not amended and additional steps in the discipline process are necessary, managers should also hope that their employee can successfully improve rather than expect the worst.</p> <p>This academic piece therefore focuses on how employee performance can improve in various organizations today. This is important because poor performance of employees can easily destroy the value of business, thereby causing low production rate, which in turn creates loss of customers and degradation of brand name and these is a threat to the success of any organization today.</p> <p>Keyword: Management, Performance, Employees, Organization, Maintenance.</p>
<p>Amin H. Al Ka'bi GICICRST1702075</p>	<p>PIFA Antenna Design for 4G Wireless Communications</p> <p>Amin H. Al Ka'bi Australian College of Kuwait, Kuwait</p> <p>Abstract</p> <p>With the introduction of the fourth generation (4G) of cellular mobile communications, there has been an increase in the frequency bands that a generic mobile phone should be able to operate. This requirement poses some challenges in the design of the transceiver modules of the device as well as the RF front-end and the antenna.</p> <p>In this paper we discuss the effect of Planar Inverted F-Antenna (PIFA) dimensions on its resonance frequency, and we come up an empirical equation for this relationship.</p> <p>Keywords: PIFA, Antennas, 4G, Resonance frequency</p>

<p>Bright Matimba GICICRST1702078</p>	<p>The environmental impacts of poor waste management due to deepening economic crisis, a case of Harare, Zimbabwe</p> <p>Bright Matimba Science Research, Kumalo International College and Research Centre, Bulawayo, Zimbabwe</p> <p>Valerie Tinotenda Moyo</p> <p>Abstract Bulawayo, the second capital city of Zimbabwe is home to 3 million people with an annual population growth rate of 3 to 5% has been facing the worst economic difficulties for about 2 decades and as such has had the poorest waste management practices ever. The study focused on the environmental impacts of poor waste management due to deepening economic crisis as the City authorities continue to downsize both financial and technical resources including tools to use during waste management as well as water and solid waste treatment chemicals which are getting scarce by day. The budget for waste management continues to fall as the population grows exponentially. The City's geographical size continues to grow as the means to manage it are getting less and less. Both qualitative and quantitative methods have been used in this study. The study also included physical examination and weighing of the waste products throughout the city. Most of the effluent is being discharged raw into the city drainage systems leading to city's main reservoir that supplies water to residents. The sewage treatment plant is now so dilapidated that it has become a real environmental disaster. The city is running short of clean, fresh and healthy places as the city air is smelly. The waste management problems are due to failed policies, bad governance, corruption, inappropriate regulations, dysfunctional land markets, unresponsive financial systems and a fundamental lack of political will. These factors have led to lack of basic amenities like availability of safe drinking water, proper housing and drainage, and excreted disposal services resulting in water borne diseases.</p> <p>Key words: environment, waste management, drainage, effluent</p>
 <p>Bogdan-Alexandru Onose GICICRST1702051</p>	<p>Advanced Energy Measurement and Control System for Existing Non-Residential Buildings</p> <p>Bogdan-Alexandru ONOSE Bogdan-Alexandru Onose, Deputy Director – Energy Divison at ICPE SA, 313 Splaiul Unirii, Bucharest, Romania</p> <p>Abstract This paper presents the advanced monitoring and control system architecture developed under the Energy IN TIME (EiT) project for existing non-residential buildings. This approach was based on the necessity to implement advanced building simulation models to reduce the energy consumption and energy bill of existing buildings. The developed system methodology covers the most accurate and up to date international standards for energy efficiency. A demo pilot was chosen to implement, test and validate the project results with a focus on developing a continuous commissioning strategy to better cope with real operation of the building and improve the capabilities of the fault detection and diagnostic system, designed</p>

	<p>for overall system robustness and evaluating faulty operation scenarios. The system architecture is modular and can be adapted to complex building and systems configuration, providing a wide range of measurements to implement. The control algorithms was specially developed for this particular demo building. The project goes beyond existing building BEMS systems by developing an advance monitoring and control system to meet the indoor comfort conditions and use systems behavior performance to further improve energy efficiency and equipment lifetime. This approach will bring an increase in the system efficiency and therefore will contribute significantly to improving the building energy bill. The data interpretation and validation will be done based on the online data storage platform which has more than 18 month of continuous recorded data from the demo building.</p>
 <p>Jens-Phillip Petersen GICICRST1702055</p>	<p>Procedural Challenges of Implementing Renewable Energy Policies at Community Scale: The Case of Strategic Energy Plans in Denmark</p> <p>Jens-Phillip Petersen Technical University of Denmark, Department of Civil Engineering (ICIEE), Kgs. Lyngby, Denmark</p> <p>Abstract</p> <p>The implementation of national energy efficiency targets requires policies at the local scale. It is widely acknowledged that local communities are an important scale to implement these policies: as arena where renewable energy technologies can be combined with socio-economic interests of local stakeholders. Although a vast amount of demo projects are well-documented, insufficient attention has been given to the average performing municipalities and their challenges in linking technical energy scenarios with their socio-economic realities in practice. In this paper the Strategic Energy Plans (SEP) of 19 Danish municipalities have been analysed on their development, inclusion of local communities, affected stakeholders, and on their impact on the municipalities' working procedures.</p> <p>The main behavioral, institutional, market-related and socio-economic challenges for local energy policy implementation are illustrated by means of individual SEPs. Findings indicate lacking capacity in municipalities; in both resources and technical knowledge. This explains partly the technology-focused strategies developed by private sector technocrats, leading to a negligence of socio-technical realities of the local communities, which in combination with lacking capacity makes it difficult for municipalities to implement these energy strategies. Conclusively, optimization methods for development and scope of SEPs are proposed that can help improving local anchoring of energy strategies in communities and might facilitate the strategy implementation process.</p> <p>Keywords: Renewable Energies; Renewable Energy Policy; Municipal Energy Strategies; Implementation Challenges; Community Scale.</p>
 <p>Himchan Oh</p>	<p>Rolled Thin Film Thermoelectric Materials for Efficient Electric Power Generation</p> <p>Himchan Oh Reality Device Research Division, Electronics and Telecommunications Research Institute, Daejeon 305-700, Republic of Korea</p> <p>Sooji Nam Reality Device Research Division, Electronics and Telecommunications Research Institute, Daejeon 305-700, Republic of Korea</p>

<p>GICICRST1702059</p>	<p style="text-align: center;">Ji Hun Choi Reality Device Research Division, Electronics and Telecommunications Research Institute, Daejeon 305-700, Republic of Korea</p> <p style="text-align: center;">Chi-Sun Hwang Reality Device Research Division, Electronics and Telecommunications Research Institute, Daejeon 305-700, Republic of Korea</p> <p style="text-align: center;">Myung-Lae Lee Reality Device Research Division, Electronics and Telecommunications Research Institute, Daejeon 305-700, Republic of Korea</p> <p style="text-align: center;">Abstract</p> <p>We propose a method to modularize thin film thermoelectric materials by rolling them up for efficient electric power generation. Numerous thin film materials with high thermoelectric figure of merit (ZT) have been introduced for effective conversion of heat into electricity. However, their practical use in thermoelectric generator is limited due to the thickness to build the sufficient temperature gradient for driving large electromotive force. As the 'thin' film materials have thicknesses range from few nanometers to several micrometers, the temperature of cold side quickly reaches toward hot side temperature. The problem gets even worse when the proper cooling solution is absent and the material is thinner. This makes thin film thermoelectric materials useless for power generation. To overcome this, we first formed high performance thermoelectric thin film and then delaminate it from the substrate. Finally, the detached film type materials rolled and stand up for modularization. Now the dimension of thin film materials is expandable freely to the substrate size. The thermoelectric generator fabricated by rolled-up module will be demonstrated.</p> <p>Keywords : thermoelectric, thin film, power generation, energy harvesting</p>
<p>Salih Akbudak GICICRST1702068</p>	<p style="text-align: center;">Elastic, Thermodynamic, and Phonon properties of TcNb, TcTa, and TcV: First principles study</p> <p style="text-align: center;">Salih Akbudak Department of Physics, Faculty of Arts and Science, Adiyaman University, TR-02100, Adiyaman, Turkey</p> <p style="text-align: center;">Abdullah Candan Central Research and Practice Laboratory (AHILAB), Ahi Evran University, TR-40100 Kırşehir, Turkey</p> <p style="text-align: center;">Fethi Soyalp Department of Physics, Faculty of Education, Yüzüncü Yıl University, TR-65080 Van, Turkey</p> <p style="text-align: center;">Hüseyin Ünver Department of Physics, Faculty of Science, Ankara University, TR-06100, Ankara, Turkey</p> <p style="text-align: center;">Gökay Uğur</p>

<p>Department of Physics, Faculty of Science, Gazi University, TR-06500, Ankara, Turkey</p> <p>Şule Uğur Department of Physics, Faculty of Science, Gazi University, TR-06500, Ankara, Turkey</p> <p>Abstract Elastic, thermodynamic, and phonon properties of TcNb, TcTa, and TcV compounds in the B2 phase are investigated by using first-principles density-functional theory within generalized gradient approximation (GGA). Computed structural and elastic properties of TcNb, TcTa, and TcV compounds are in close accord with available theoretical and experimental data. Elastic constants of B2 phase indicate that they are mechanically stable. The analysis of B/G ratio shows that TcNb, TcTa, and TcV compounds behave as ductile. The phonon spectra are calculated using a finite displacement method. The first-principles calculations are also used to obtain the specific heat and entropy. Keywords: B2 Phase, Phonon Spectrum, Elastic Properties, Thermodynamic Properties, Density Functional Theory (DFT).</p> <hr/> <p>Investigations of the Core-Electron Binding Energies Using First-Principles calculations: A case study of C2 and Sn2</p> <p>Salih Akbudak Department of Physics, Faculty of Arts and Science, Adiyaman University, TR-02100, Adiyaman, Turkey</p> <p>Abdullah Candan Central Research and Practice Laboratory (AHİLAB), Ahi Evran University, TR-40100 Kırşehir, Turkey</p> <p>Gökay Uğur Department of Physics, Faculty of Science, Gazi University, TR-06500, Ankara, Turkey</p> <p>Şule Uğur Department of Physics, Faculty of Science, Gazi University, TR-06500, Ankara, Turkey</p> <p>Abstract Core-electron binding energies of C2 and Sn2 have been obtained using first principles density functional theory calculations. Frozen-core Random phase approximation (RPA) method together with PBE exchange correlation functional was used. For all calculations correlation-consistent cc-pVXZ and aug-cc-pVXZ basis sets were used. Two point extrapolations to complete basis set limit were used to speed up the calculations. Calculated results showed that as the maximum angular momentum number (X) increases the contribution of core electrons to binding energy decreases. Key words: Core-Electron Binding Energy, RPA Method, Correlation-Consistent Basis Sets, Basis Set Extrapolation.</p>

<p>Lahmeur Karim GICICRST1702082</p>	<p>Towards Arabic parser</p> <p>Mr LAHMEUR KARIM ENS Kouba Computer science department</p> <p>Abstract</p> <p>The Lexicalized Tree Adjoining Grammar (LTAG) is used in different languages such as English and French, we introduce in this work its application in Arabic. This works aims to produce an Arabic parser. We used a specific linguistic theory that helps us to produce the elementary structures of the LTAG formalism. The LTAG is based on two forms of trees, initial and auxiliaries that capture the linguistic characteristics of a language and also used the features structures of the unification grammars. We present in this work the different elementary trees and the features structures used for the different Arabic syntactic forms and the algorithm used to parse sentences.</p> <p>Keywords Natural Language Processing, LTAG, parser, Arabic language.</p>
<p>Assist. Prof. Dr. Erion LUGA GICICRST1702083</p>	<p>An Investigation On The Partial Replacement Of Portland Cement With Kosovo Fly Ash In Cement Mortars</p> <p>Erion Lugaa aPh.D. Department of Civil Engineering, Faculty of Architecture and Engineering, EPOKA University, 1039 Tirana, Albania.</p> <p>Alban Pajab bMSc. Department of Civil Engineering, Faculty of Architecture and Engineering, EPOKA University, 1039 Tirana, Albania.</p> <p>Cengiz Duran Atisc Prof.Dr. Department of Civil Engineering, Engineering Faculty, ERCİYES University, 38039 Kayseri, Turkey.</p> <p>Abstract</p> <p>The energy sector is one of the biggest polluters of environment in Kosovo. More than 40 million tons of ash and about 400 hectares of arable land are occupied from the landfill of Kosovo- A and Kosovo-B power plants. In this study the effect of the partial replacement of Portland cement with Kosovo Fly ash in cement pastes and mortars has been investigated. For that purpose six different series of (0/100, 5/95,10/90,15/85.20/80 and 25/75) fly ash to cement ratios (FA/PC) were tested. Several physical, physic-chemical and mechanical properties of the mixtures were investigated. The results were compared with those carried out with the control specimens produced with plain Portland cement and no other additive. Test results show that Kosovo fly ash has good parameters that improve the compressive strength of cement mortars and concrete by replacing the Portland cement up to 10%. On the other it might affect slightly the water absorption capacity of the mortars. Nevertheless, it can be concluded that the use of Kosovo fly ash in concrete could be a good alternative to be used as a pozzolanic material.</p> <p>Keywords Kosovo, Fly ash, Cement mortar.</p>

<p>Enea Mustafaraj GICICRST1702084</p>	<p>REVIEW OF STRENGTHENING AND MECHANICAL TESTING FOR UNREINFORCED MASONRY</p> <p>Enea Mustafaraj Department of Civil Engineering, Epoka University, Albania</p> <p>Yavuz Yardim Department of Civil Engineering, University of Nizwa, Oman</p> <p><i>Abstract</i></p> <p>Masonry has non-homogeneous nature and mechanical properties mainly depend on mortar and brick quality. Production of mortar is performed on site therefore influenced by many parameters on the other hand quality control of brick production is more accurate. These divergences lead varieties of research finding on mechanical properties and strengthening. This review has collected most significant research on mechanical properties and strengthening methods. Furthermore, these researches are categorized and critically analyzed to benefit verities of them and help further understand behavior of URM. This study provides summary and guidance for researchers who are working on strengthening, modeling and retrofitting methods.</p>
 <p>Maria Gosa GICECG1702066</p>	<p>Innovative industrial technology for the treatment of molasses effluents</p> <p>Tomasz Kapela Dergo Sp. z o.o., Lodz, Poland</p> <p>Krzysztof Makowski BioNanoPark, Lodz, Poland</p> <p>Maria Gosa Dergo Sp. z o.o., Lodz, Poland</p> <p>Molasses effluents treatment is a challenge for many industrial plants producing e.g. yeast, ethanol, biogas etc., due to the color compounds contained therein, which are difficult to remove or degrade. The purpose of the research was to develop such a technological line for the treatment of molasses effluents to get the quality level enabling their discharge to the environment. The molasses effluent coming from the industrial unit producing ethanol based on the molasses was subjected to a series of classical research methods giving the results of discoloration even up to 89%. Such a good results was achieved by aerating, coagulation and flocculation (PAX-XL19H, Siflac5080) with Perhydrol in the two different concentrations at the indicated time. Within the framework of the anaerobic treatment stage, a high rate of a 60-70% (average 63%) chemical oxygen demand (COD) reduction, was achieved. The study revealed that the only small changes are needed in classic molasses effluents treatment to maximize the degree of purification.</p> <p>Keywords: molasses effluents, wastewater treatment, innovation</p>



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The Experimental Study of Cold-Formed Steel Truss Connections Capacity: Screw and Adhesive Connection

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Abstract

A series of connection tests that were composed of Cold-Formed Steel (CFS) sections were made to investigate the capacity of connections in a roof truss frame. The connection is controlled by using the two-different type of connection i.e. screws connection and adhesive. The variation of screws is also added applying 1 screw, 2 screws, and 3 screws. On the other hand, the percentage of adhesively material is increased by the total area of screws connection which is 50%, 75%, and 100%. Behaviors illustrated by each connection are examined, and the design capacities projected from the current CFS design codes are appealed to the experimental results of the connections. This research analyses the principal factors assisting in the ductile response of the CFS truss frame connection measured to propose recommendations for connection design, and novelty so that the connection respond plastically with a significant capacity for no brittle failure. Furthermore, the comparison connection was considered for the analysis of the connection capacity, which was estimated from the specimen's maximum load capacity and the load-deformation behavior.

Keywords—Adhesive, screw, capacity, connection, cold-formed steel,

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