2014 APCBEES SINGAPORE CONFERENCES SCHEDULE

2014 4th International Conference on Chemistry and Chemical Process (ICCCP 2014)
2014 5th International Conference on Environmental Science and Development (ICESD 2014)
2014 3rd International Conference on Clean and Green Energy (ICCGE 2014)
2014 1st Journal Conference on Chemical Engineering and Applications (JCCEA 2014 1st)

SINGAPORE

Hotel Royal

February 19-21, 2014

Sponsored and Published by

2014 APCBEES SINGAPORE Conferences Introduction

Welcome to CBEES 2014 conferences in SINGAPORE. The objective of the SINGAPORE conferences are to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in Chemistry and Chemical Process, Environmental Science and Development, Clean and Green Energy.

2014 4th International Conference on Chemistry and Chemical Process (ICCCP 2014)

- **The Publication and Index Information:** All papers of **ICCCP 2014** will be published in **International Journal of Chemical Engineering and Applications (IJCEA, ISSN:2010-0221)**, and all papers will be included in the Engineering & Technology Digital Library, and indexed by EBSCO, WorldCat, Google Scholar, Cross ref, ProQuest and sent to be reviewed by Ei Compendex and ISI Proceedings.
- **The Conference Committee:** The Conference Committee (Including Conference Chair, Technical Program Chair and Technical Committee) of ICCCP 2014 can be checked on the website: **http://www.icccp.org/com.html**
- **Conference Website and Email:** **http://www.icccp.org/; icccp@cbees.org**

2014 5th International Conference on Environmental Science and Development (ICESD 2014)

- **The Publication and Index Information:** All papers of **ICESD 2014** will be published in the **APCBEE Procedia (Journal under Elsevier, ISSN: 2212-6708)**, and will be included in ScienceDirect and sent to be reviewed by Scopus, Ei Compendex and ISI Proceedings.
- **The Conference Committee:** The Conference Committee (Including Conference Chair, Technical Program Chair and Technical Committee) of ICESD 2014 can be checked on the website: **http://www.icesd.org/com.htm**
- **Conference Website and Email:** **http://www.icesd.org/; icesd@cbees.org**

2014 3rd International Conference on Clean and Green Energy (ICCGE 2014)

- **The Publication and Index Information:** All papers for the **ICCGE 2014** will be published in **JOCET (ISSN: 1793-821X)** as one volume, and will be included in Engineering & Technology Library, EBSCO, Ulrich's Periodicals Directory, BE Data and Google Scholar, ProQuest, Cross ref and sent to be reviewed by Ei Compendex and ISI Proceedings.
- **The Conference Committee:** The Conference Committee (Including Conference Chair, Technical Program Chair and Technical Committee) of ICCGE 2014 can be checked on the website: **http://www.iccge.org/com.htm**
- **Conference Website and Email:** **http://www.iccge.org/; iccge@cbees.org**

2014 1st Journal Conference on Chemical Engineering and Applications (JCCEA 2014 1st)

- **The Publication and Index Information:** All the registered papers will be published into **International Journal of Chemical Engineering and Applications (IJCEA ISSN: 2010-0221 available at:http://www.ijcea.org/list-6-1.html)** by IACSIT Press, and distributed at the conference. The journal will be indexed by Chemical Abstracts Services (CAS), CABI, DOAJ, Engineering & Technology Digital Library, Google Scholar, Crossref, and Ulrich's Periodicals Directory.
- **The Conference Committee:** The Conference Committee (Including Conference Chair, Technical Program Chair and Technical Committee) of IJCEA 2014 can be checked on the website: **http://www.ijcea.org/jccea/1st/com.htm**
- **Conference Website and Email: http://www.ijcea.org/jccea/1st/index.htm; jccea01@stpress.net**

Excellent Paper Award

- One paper will be selected from each oral presentation session, and the presenter of this paper will obtain the Excellent Paper Certificate.
- The final result and certificates will be issued at the end of each session on 20 February, 2014.

Instructions for Oral Presentations

◆Devices Provided by the Conference Organizer:

Laptops (with MS-Office & Adobe Reader)
Projectors & Screen
Laser Sticks

◆Materials Provided by the Presenters:

PowerPoint or PDF files (Files shall be copied to the Conference Computer at the beginning of each Session)

Duration of each Presentation (Tentatively):

Regular Oral Session: about 7 Minutes of Presentation 3 Minutes of Q&A

Keynote Speech: 20 Minutes of Presentation 5 Minutes of Q&A

Conference website and Secretariat Contact

ICCCP 2014: http://www.icccp.org/; icccp@cbees.org
ICESD 2014: http://www.icesd.org/; icesd@cbees.org
ICCGE 2014: http://www.iccge.org/; iccge@cbees.org
JCCEA 2014 1st: http://www.ijcea.org/jccea/1st/index.htm; jccea01@stpress.net

Schedule for February 19, 2014

February 19, 2014 (Wednesday)

Hotel Royal

10: 00 – 12: 30 13: 30 – 17: 00	Arrival and Registration

Note: (1) You can also register at any time during the conference.

(2) The organizer doesn't provide accommodation, and we suggest you make an early reservation.

(3) One Excellent Paper will be selected from each oral session. The Certificate and the gift for Excellent Papers will be awarded at the end of each session on February 20, 2014.

Schedule for February 20, 2014

February 20, 2014 (Thursday)

The General Time of Each Presenter on February 20

Conference Name	Session Number and Time	Session Venue
ICCCP 2014&JCCEA 2014 1st	Session 1 (10:20am– 12:00am)	Royal Room 1
ICCCP 2014	Session 2 (10:20am– 12:00am)	Royal Room 2
ICESD 2014	Session 3 (13:30pm– 15:30pm)	Royal Room 1
ICESD 2014	Session 4 (13:30pm– 15:30pm)	Royal Room 2
ICESD 2014	Session 5 (13:30pm– 15:30pm)	Royal Room 3
ICESD 2014	Session 6 (15:50pm– 18:30pm)	Royal Room 1
ICESD 2014	Session 7 (15:50pm– 18:30pm)	Royal Room 2
ICCGE 2014	Session 8 (15:50pm– 18:30pm)	Royal Room 3

The Certificate and the gift for Excellent Papers will be awarded at the end of each session.

The General Process on February 20 for Reference

08:50-10:00 Opening Remarks and Keynote Speeches)

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10:00-10:20 Taking Photo and Coffee Break

↓

10:20-12:00 Session 1(ICCCP 2014&JCCEA 2014 1st)

10:20-12:00 Session 2(ICCCP 2014)

↓

12:00-13:30 Lunch(Please bring the lunch coupon to the restaurant and enjoy the lunch)

(Please arrive on time at conference Room by 13:30. If your presentation is in Session 3, 4, 5, please kindly arrive at the "conference" Room before 13:20 to copy your PPT and prepare your presentation. Thank you for your cooperation!)

↓

13:30-15:30 Session 3(ICESD 2014)

13:30-15:30	Session 4(ICESD 2014)
13:30-15:30	Session 5(ICESD 2014)

↓

15:30-15:50	Coffee Break

(Coffee Break leisure offer you a great time to communicate with other experts about your study field or research results)

↓

15:50-18:30	Session 6(ICESD 2014)
15:50-18:30	Session 7(ICESD 2014)
15:50-18:30	Session 8(ICCGE 2014)

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19:00	Dinner(Please bring the dinner coupon to the restaurant and enjoy the dinner)

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The End of the Conference

The Detail Schedule for February 20

Morning, February 20, 2014

Venue: Royal Room 1

08:50-09:00	Opening Remarks Saji Baby  Environmental Manager (Research and Consultation) & Principal Scientist, GEO Environmental Consultation, Kuwait
09:00-09:30	Keynote Speaker I Dr. Eldin W. C. Lim  Dept. of Chemical and Biomolecular Engineering, National University of Singapore, Singapore Topic: “ ”

09:30 – 10:00	Keynote Speaker II Saji Baby  Environmental Manager (Research and Consultation) & Principal Scientist, GEO Environmental Consultation, Kuwait Topic: "Pollutants in Ambient Air of Kuwait, Sources and Dispersion"
10:00-10:20	Taking Photo and Coffee Break

Morning, February 20, 2014

SESSION – 1 (ICCCP 2014&JCCEA 2014 1st)
Venue: Royal Room 1
Session Chair: DaeWoo IHM
Time: 10:20 – 12:00

F0004	Influence of Varying Thermodynamic Magnitudes on the Acoustic Levitation of Particles in a Single Axis Ultrasonic Levitator **Sebastian Baer**, Cemal Esen, Andreas Ostendorf Applied Laser Technology of the Ruhr Universität Bochum, Universitätsstr. Bochum, Germany *Abstract*—This work describes the development and analysis of a single-axis acoustic levitator, which consists of a 38,5 kHz Langevin-type piezoelectric transducer with a concave radiating surface and a concave reflector under increased temperatures and pressures. The levitator design is implemented in a Single-Droplet Optical Cell for levitation processes under varying atmospheres. The advantages of acoustic levitation of small droplets under increased temperatures and pressure combined with spectroscopic applications enable novel experiments possibly relevant to the fields of chemical engineering, planetary science, metrology and combustion chemistry. In this investigation the optimal transducer-reflector distances of a single axis ultrasonic levitator for various temperatures and pressures of different gases are simulated with a FEM-method using a modified Gorkov equitation and experimentally verified.
F0009	Modeling Analysis of Corrosion Behavior of Carbon Steel in CO_2 loaded Amine Solutions **Abdelbaki Benamor** and Mohammed Jaber Al-Marri Gas processing Center, Faculty of Engineering, Qatar University, Doha, Qatar

	Abstract—A mathematical model simulating the corrosion behavior of carbon steel in aqueous amine-CO_2 environment was developed and used to analyze the corrosion phenomena in CO_2 loaded amine solutions. A mechanistic corrosion model is applied to identify the most important agents responsible for the corrosion behavior of carbon steel. The model incorporates an equilibrium model based on an activity coefficient approach according to Debye-Huckel theory and mixed potential theory to simulate the concentration of chemical species and polarization behavior taking place at a metal-solution interface in a DEA-CO_2-H_2O system. Simulated anodic and cathodic polarization curves were established on the basis of the calculated species concentration to represent the hypothetical oxidation and reduction behavior which were compared to the experimental curves to come out with the best fit revealing the most important corroding agents.
F0011	Reactive Absorption of CO_2 into Aqueous Mixtures of Methyldiethanolamine and Diethanolamine **Abdelbaki Benamor** and Mohammed Jaber Al-Marri Gas Processing Center, Faculty of Engineering, Qatar University, Doha, Qatar *Abstract*—The effect of mixing a tertiary amine, N,N-Methyldiethanolamine (MDEA), with a secondary amine, diethanolamine (DEA), on the kinetics of the reaction with carbon dioxide in aqueous media has been studied in a stirred cell reactor with a plane, horizontal gas-liquid interface. Temperature was varied from 293 to 313K over a range of blend composition and total mixture concentration ranging from one to two molars. The proposed model representing the reaction of CO_2 with the blends studied is found to be satisfactory in determining the kinetics of the involved reactions. This model is based on the zwitterion mechanism for the DEA and water hydration catalysis for MDEA. Blending MDEA with DEA results in observed pseudo-first-order reaction rate constant values (k_o) that are greater than the sum of the k_o values of the respective single amines. This is due to the role played by MDEA in the deprotonation of the zwitterion of the other amine (DEA). Species concentration profile needed to fit the experimental data to the model to extract the kinetic parameters associated with the reactions was calculated using the modified Deshmukh-Mather model.
F0012	Well-arranged Porous Co_3O_4 Microsheets and Its Electroanalysis toward Pb(II) **Zhong-Gang Liu**, Xing-Jiu Huang University of Science and Technology of China, Department of Chemistry, Hefei, PR China *Abstract*—Well-arranged porous Co_3O_4 microsheets has been successfully synthesized *via* a hydrothermal process and subsequent thermal decomposition. The characterization of the as-prepared product is identified with scanning electron microscopy (SEM), high-resolution transmission electron microscopy (HRTEM) and X-ray diffraction (XRD). The results show that the as-prepared porous Co_3O_4 possesses the face-centered cubic phase structure and well single-crystallized phase. Its electrochemical performance was characterized with square wave anodic stripping voltammetry (SWASV) for the detection of Pb(II) at the porous Co_3O_4/nafion modified electrode with the good sensitivity of 48.5 $\mu A \cdot \mu M^{-1}$ and detection limited of 30 nM (3σ method). In addition, the stability measurement is investigated under the optimized conditions.
F0013	Study on the Preparation of Nanosized Titanium Dioxide with Tubular Structure by Hydrothermal Method and Their Photocatalytic Activity **Yu-Zhen Zeng**, Yu-Chang Liu, Yun-Fang Lu, and Jen-Chieh Chung Chemical Engineering Division, Institute of Nuclear Energy Research, Taoyuan County, Taiwan (R.O.C.)

	Abstract—In this study, we attempt to synthesize nanosized titanium dioxide with tubular structure for the photocatalytic applications, and self-prepared anatase TiO_2 powder is the precursor. We demonstrated that nanosized TiO_2 with tubular structure could be synthesized with a NaOH hydrothermal treatment on TiO_2 powder and then with a subsequent acid washing. Furthermore different formation mechanism of nanotubes could be got by controlling the pH value of acid washing step. In this research, we investigate the influence of different pH values of acid washing on the crystalline-structure, optical absorption range, porosity, specific surface area, and photo-catalytic activity of nanotubes. The influence of the preparation methods on crystalline-structure of photocatalysts and activities of photocatalytic reaction are obvious. The experimental results show that anatase TiO_2 nanotubes are produced as the pH value of acid washing is decreased to 1.3. Under this condition, the outer diameter and length of the nanotube is about 10 nm and 1μm respectively, its group is like petals. And it possesses the largest surface area of 381.2 m^2/g, band gap of 3.12eV and the best photocatalytic activity.
F0014	State of the Art Hollow Fiber Supported Liquid Membrane on Pd (II) Separation from Wastewater Using Alamine 336 **Kraiwith Wongkaew**, Natchanun Leepipatpiboon and Ura Pancharoen Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University, Pathumwan Bangkok, Thailand *Abstract*—A hollow fiber supported liquid membrane (HFSLM), having unique characteristics in the separation and stripping of trace species from dilute aqueous solutions, was applied to separate trace Pd(II) of approximately 1 ppm from wastewater. Optimum values of the parameters influencing the extraction and stripping of Pd(II) were investigated i.e. types of extractants (Alamine 336 and Aliquat 336), types of stripping agents (H_2SO_4, HCl, NH_2CSNH_2, NH_4Cl and a mixture of NH_2CSNH_2 and HCl), as well as types of diluents. The experimental results indicated that Alamine 336 and a mixture of NH_2CSNH_2 and HCl were the extractant and stripping solution, respectively. Under the most favorable operating conditions, Pd(II) was successfully separated from Pt(IV), Au(III), Cu(II) and Zn(II). Percentages of Pd(II) extraction and stripping were achieved reaching 95% and 88% respectively. Reproducibility of the HFSLM system was found to be ±2%.
CA026	Synthesis of Anion-exchange Materials from Concrete Sludge and Evaluation of Their Ability to Remove Harmful Anions (Borate, Fluoride, and Chromate) **Teruhisa Hongo**, Y. Tsunashima, A. Iizuka, and A. Yamasaki Waseda University, Japan *Abstract*—Concrete sludge is an industrial waste slurry containing hydrated cement, aggregates, and water. In the current study, anion-exchange materials: ettringite, metaettringite, and Ca-Al layered double hydroxide were synthesized from concrete sludge, and tested to see if they could remove harmful anions (borate, fluoride, and chromate) from solutions. Metaettringite showed high borate and fluoride removal ability, reducing initial concentrations of 100 mg B/L and 300 mg F/L to 6.3 mg B/L and 14.5 mg F/L. The Ca-Al layered double hydroxide showed high fluoride and chromate removal ability, reducing initial concentrations of 300 mg F/L and 180 mg Cr/L to 14.5 mg F/L and 0.4 mg Cr/L.
CA027	Robust Model Predictive Control of Linear Time-Varying Systems with Bounded Disturbances **Pornchai Bumroongsri** and Siwaporn Duangsri Department of Chemical Engineering, Faculty of Engineering, Mahidol University, Thailand

	Abstract—In this article, a synthesis approach for robust model predictive control using linear matrix inequalities is presented. Uncertain time-varying parameters and bounded additive disturbances are explicitly taken into account in the controller design. Robust stability and constraint satisfaction are guaranteed by computing a positively invariant set containing the measured state at each sampling instant. The effectiveness of the proposed algorithm is illustrated by a simulation example.
CA028	Application of Mechanical Vapor Recompression to Acetone – Methanol Separation **Le Cao Nhien**, Gyeongmin Kim, Riezqa Andika, Yuli Amalia Husnil and Moonyong Lee School of Chemical Engineering, Yeungnam University, South Korea *Abstract*—This paper proposed a novel integrated design of azeotropic mixtures distillation process based on mechanical vapor recompression (MVR). The extractive distillation of acetone – methanol binary system that forms a homogeneous minimum – boiling azeotrope was studied. Based on the simulation result, the total energy consumption of the proposed sequence is 62% less than the existing extractive distillation configuration.
F0003 SC 2	Plasma-assisted Titanium Dioxide Wrinkle Resistant Treatment of Cotton Fabric **Chi-wai KAN** Institute of Textiles and Clothing, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong *Abstract*—Titanium dioxide (TiO_2) has been found feasible for improving the wrinkle resistant of cotton fabric. In this paper, plasma treatment was used as a pretreatment process to enhance the application of TiO_2 in wrinkle resistant treatment of cotton fabric. The relationship between plasma pretreatment process parameters including (i) treatment speed, (ii) oxygen flow rate; and (iii) jet distance were studied through orthogonal array testing strategy (OATS). Based on the OATS, the optimum condition for plasma pretreatment of cotton fabric before 0.2% TiO_2 treatment could be obtained and also their relative importance can be found. The optimum condition was: (i) treatment speed = 15 mm/s; (ii) oxygen flow rate = 0.3 L/min. and (iii) jet distance = 5 mm and the order of importance was oxygen flow rate followed by jet distance and treatment speed.

SESSION – 2 (ICCCP 2014)
Venue: Royal Room 2
Session Chair: Chi-wai KAN
Time: 10:20 – 12:00

F0015	Effect of Membrane Materials on Transport Kinetics of Cu(II) through Bulk Liquid Membrane **Siu Hua Chang**, Ayub Md. Som and Jagannathan Krishnan Faculty of Chemical Engineering, Universiti Teknologi MARA (UiTM) Malaysia, 13500 Permatang Pauh, Penang, Malaysia *Abstract*—The kinetics of Cu(II) transport through a bulk liquid membrane was investigated with different membrane materials. Three types of membrane materials were used: fresh cooking oil, waste cooking oil

	and kerosene, each of which was mixed with di-2-ethylhexylphosphoric acid (carrier) and tributylphosphate (modifier). Kinetic models derived from the kinetic laws of two consecutive irreversible first-order reactions were used to study the facilitated transport of Cu(II) across the source, membrane and receiving phases of bulk liquid membrane. It was found that the transport kinetics of Cu(II) across the source phase was not affected by different types of membrane materials but those across both the membrane and receiving phases decreased considerably when the membrane materials changed from kerosene, waste cooking oil to fresh cooking oil. The rate constants of Cu(II) removal and recovery processes in bulk liquid membrane using different membrane materials were also determined and compared.
F1003	Polyindole Based Nickel - Zinc Oxide Nanocomposite – Characterization and Antifungal Studies **Dedhila Devadathan**, R. Raveendran Nanoscience Research Laboratory, Department of Physics, Sree Narayana College, Kollam, Kerala, India *Abstract*—In the present work polyindole based nickel - zinc oxide nanocomposite was prepared. Here nickel - zinc oxide was prepared separately in presence of capping agent using well known co-precipitation method. Polyindole based nickel - zinc oxide nanocomposite was prepared using chemical oxidation method. Polyindole and nickel - zinc oxide was also prepared separately to compare their properties with their counterparts. The samples have been analysed using SEM, FTIR, XRD techniques. Polyindole showed a cauliflower like pattern in SEM picture and the surface morphology was changed entirely in the case of nanocomposite. FTIR showed the vibration bands of both polyindole and nickel-zinc oxide in the nanocomposite. From the XRD spectrum the particle size was calculated using Scherrer's equation. The dielectric properties of these materials were studied and the dependence of dielectric constant and a.c conductivity with frequency of these samples were analysed. Antifungal activity of the nanocomposite and their counterparts were studied separately on the fungi Penicillium Chrysogenum. The nanocomposite showed activity of 1 cm, nickel – zinc oxide showed 0.7 cm activity, whereas polyindole, nickel oxide and zinc oxide showed no activity.
F1004	Adsorption of Pb (II) on Nano Sized SnO_2 Derived from Sol-Gel Method P. Rejani, Asha Radhakrishnan and **B. Beena** Nano Science Research Lab, Department of Chemistry, D. B. College, Sasthamcotta, Kollam, Kerala, India *Abstract*—This study investigates the applicability of SnO_2 nanoparticles for the removal of Pb(II) from waste water . SnO_2nano particles of 15 nm size were synthesized using a sol-gel method and characterized by X-ray diffraction (XRD), FTIR, SEM and transmission electron microscope (TEM).Batch experiments were carried out to study the adsorption kinetics of Pb (II) on SnO_2.The effect of varying parameters such as contact time and P^H on the adsorption process were examined. The adsorption process was found to be highly P^Hdependent. Experimental kinetic data were tested with pseudo-first –order and pseudo-second-order kinetic equations. The equilibrium data were modeled using general isotherm models. The experimental data agreed well with Langmuir isotherm model.
F2001	The Role of Creb In Adipogenesis Through Mammalian Target of Rapamycin of Complex 1 (mTORC1) Pathyway **Triawanti**, M. Rasjad Indra, Askandar Tjokroprawiro, Hidayat Sujuti, and Eko Suhartono Medical Chemistry/ Biochemistry Department Faculty of Medicine Lambung Mangkurat

	University, Banjarmasin, Indonesia *Abstract*—One of the tissues taking the biggest part in the pathogenesis of obesity is adipose tissue mainly formed by white fat cells. Recently, the processes adipogenesis become a treatment target for obesity. One of the pathway that allegedly participated in the process of adipogenesis is activated via CREB. The upstream pathway is by means of protein of mammalian targets of rapamycin (mTOR). This study was aimed to determine the role of CREB in adipogenesis through the activation of p70S6K1 by mTORC1. This was an experimental study. Subjects were primary cultured preadipocytes taken from visceral fat of white rats (Rattus norvegicus). Cell cultures were classified into 4 groups: (K) Control of adipogenesis: without rapamycin and RNAi CREB, (A): was given rapamycin 10 nM, (B): was given RNAi CREB 100 nM, (C): was given rapamycin 10 nM and RNAi CREB 100 nM. p70S6K1, CREB activation, and expression of C/EBPδ measured on day 2, 4, and 6, and the morphology of adipocytes on day 6. Data were analyzed with Anova test, LSD test, and Pearson correlation test with 95% confidence level. The data showed that rapamycin activated p70S6K1 and caused lower CREB compared with control group during adipogenesis. These results indicated that adipogenesis was blocked, which resulted from the inhibition of p70S6K1 and CREB activation by rapamycin and RNAi CREB. The inhibition was stronger in rapamycin + RNAi CREB group. Statistically, there was significant correlation between p70S6K1 and CREB; and between CREB and C/EBPδ. It was concluded that the role of CREB in adipogenesis was mediated by the activation of p706K1 by mTORC1.
F2002	Oxidative Stress of Cadmium-Induced Ovarian Rat Toxicity J. A Tribowo, **M. H. Arizal**, M. Nashrullah, A. R Aditama, D. G. Utama, H. M. Bakhriansyah, Adjar W, E. Suhartono Faculty of Medicine Lambung Mangkurat University South Kalimantan, Indonesia *Abstract*—Cadmium (Cd), a common toxic heavy metal, is widely distributed in the environment due to its use in industry. In the industry, Cd is hazardous both by inhalation and ingestion and can cause acute and chronic toxicity. Exposure to Cd had been known to cause damage to organs such as kidney, liver and testis. In this present study Cd was proposed caused an oxidative stress in ovarian rat *(Rattus novergicus)* cells. Female *Rattus novergicus* was divided in two groups, one control groups and one case group were exposed by Cd. Furthermore we set Superoxidismutase (SOD), Peroxidase (POX) and catalase (CAT) activity with Hydrogen peroxide (H_2O_2) and Malondyaldehide (MDA) as a biomarker of oxidative stress. For analyzing of the data, SPSS software version 17 was used and was examined by Mean-Whitney test. For all outcomes, a nominal p-value of $p < 0,05$ was considered significant. The resulted showed that there are a significance differences SOD, GPx and catalase activity between case and control group. The resulted also showed a significance differences H_2O_2 and MDA levels between case and control group. The result suggest that Cd induced oxidative stress in ovarian cells.
F2003	The Role Formation of Methylglyoxal, Carbonyl Compound, Hydrogen Peroxide and Advanced Oxidation Protein Product Induced Cadmium in Ovarian Rat **A. H. Husna**, E. A. Ramadhani, Eva D. T, A. F. Yulita, Meitria S, E. Suhartono Faculty of Medicine Lambung Mangkurat University South Kalimantan, Indonesia *Abstract*—Cadmium (Cd) is a heavy metal that be a source of concern for industrial workers and it was proposed in the formation of advance glycation end products (AGEs) such as methylglyoxal (MG). In the

	other hand the exposure of Cd also induced the formation of Hydrogen Peroxide (H_2O_2), Carbonyl Compound (CC) and Advance Oxidation Protein Products (AOPP). The role of Cd in the formation of MG, H_2O_2, CC and AOPP in ovarian has not been much studied. Thus, our study aims to measure the formation rate of MG, H_2O_2, CC and AOPP in ovarian rat. Female *Rattus novergicus* was divided in two groups, one control groups and one case group. Furthermore we set MG, CC, H_2O_2 and AOPP as a biomarker of ovarian cell damage. For analyzing of the data, SPSS software version 17 was used and was examined by Mean-Whitney test. For all outcomes, a nominal p-value of $p < 0,05$ was considered significant. The resulted showed that there are a significance differences of MG, CC, H_2O_2 and AOPP between case and control group.
F2004	Body Composition Analysis of Staff members of College Using Bioelectrical Impedance Analysis method **Swaroopa Rani N.Gupta** Department of Chemistry, Brijlal Biyani Science College Amravati, Maharashtra, India *Abstract*—Aims: In this analysis of body composition such as Body Weight, BMI, Body Fat Percentage, Segmental Subcutaneous Fat & Skeletal Muscle Percentage (Whole Body, Trunk, Legs and Arms), Resting Metabolism, Visceral Fat Level and Body Age is done by Bioelectrical impedance technique and results are interpreted and corresponding instructions for better health improvement is given. Methods: Body Composition Analysis of Teaching and Non Teaching Staff members of Brijlal Biyani Science College Amravati Maharashtra India Using Bioelectrical Impedance Analysis method is done. For ideal weight management and for a more accurate and precise body composition analysis full Body Sensing Technology Karada Scan Body Composition Monitor – HBF-375 is used. The general principle behind bioelectrical impedance analysis is that two or more conductors are attached to a person's body and a small electric current is sent through the body. The resistance between the conductors provides a measure of body fat between a pair of electrodes, since the resistance to electricity varies between adipose, muscular and skeletal tissue. Result: Interpretation of body composition analysis report of Teaching Staff members (Senior College) shows that overweight person is 70.6 %; that of Junior College is 73.3 %; that of Non Teaching Staff members (Laboratory) is 52.4 % while; that of Office is 76.9 %; and that of Library is 100 %.
F3007	Influence of the Natural Medium on the Hydrocarbons and Fatty Acids Producing from the Microalgae *Batryococcus Brauni* **Gaukhar K. Bishimbayeva**, Adilzhan K. Adamgaliyev, Sandugash K. Kazybekova D. V. Sokolsky Institute of organic catalysis and electrochemistry and Kazakh - British Technical University, Almaty, Kazakhstan *Abstract*—Algologically pure culture of microalgae Botryococcus braunii was obtained from Alakol Bay of Balkhash Lake. The ability of the selected cultures to synthesize liquid hydrocarbons and fatty acids was revealed. The composition of the lipid compound of investigated microalgae depending on the composition of natural medium was established. Hydrocarbon composition of obtained biomasswas identified, presented mainly by n- alkanes C21 - C38, which constitute 41-62 % of their total number. Fatty acid composition of intracellular and extracellular lipids is represented by saturated, monounsaturated and diene fatty acids of the C12 - C24 composition in the ratio of 32:18:38, respectively, indicating the potential for using of this microalgae as raw material forbiodiesel.
F3005	Synthesis of Functionalized Oxaphosphaphenanthrenes and Chromenes via Multicomponent

	Reactions of Trivalent Phosphorus Nucleophiles Zinatossadat Hossaini, **Faramarz Rostami-Charati** Department of Chemistry, Qaemshahr Branch, Islamic Azad University, Qaemshahr, Iran *Abstract*—Stable derivatives of oxaphosphaphenanthrenes were prepared using multicomponent reactions of dialkyl acetylenedicarboxylate with 3-bromo-2-naphthol in the presence of trimethyl or triphenyl phosphite in good yields. Chromene derivatives were produced by using triethyl phosphite and dialkyl acetylenedicarboxylate in the presence of OH-acids in excellent yields.

12:00 – 13:30	**Lunch**

Afternoon, February 20, 2014

SESSION – 3 (ICESD 2014)
Venue: Royal Room 1
Session Chair: Saji Baby
Time: 13:30 – 15:30

L007	Determination of Hypochlorous Acid in Tap Water Using Highly Fluorescent Graphene Oxide **Houjuan Zhu** and Suhua Wang Department of Chemistry, University of Science & Technology of China, Hefei, Anhui, 230026, China. *Abstract*—We report on the effect of hypochlorous acid (HClO) in the fluorescence emission of a fluorescent graphene oxide modified by hexylenediamine (GO-C6NH2). The synthesis process and the optical property of GO-C6NH2 were also introduced in detail. We found a strong quenching effect by HClO on the fluorescence emission of the fluorescent graphene oxide. The fluorescent quenching efficiency of GO-C6NH2 establish as a function of the amount of HClO, which the fluorescence intensity ratio is proportional to the different concentrations of HClO employed for the measurement. The results show that this fluorescent naomaterials are a promising tool for sensing trace HClO in tap water.
L008	A Novel Fluorescent Sensor for the Sensitive Detection of Mercury **Fang Ma**, Mingtai Sun, Chao Yuan, Jianlei Yao and Suhua Wang Department of Chemistry, University of Science & Technology of China, Hefei 230026, P. R. China *Abstract*—Mercury pollution is a widespread danger to human health and environment. To developed a effective method for mercury detecting is in high demand. This work demonstrated a novel bright fluorescent molecule DPDTC for the sensing of mercury. The approach was mainly based on the mercury-induced fluorescence turn-off of DPDTC. The probe was prepared by a simple method and exhibited high fluorescence. The fluorescence of DPDTC was very stable and immue to photobleaching. Results showed that DPDTC was a promising tool for mercury detection. Moreover, DPDTC could be immoblized on a paper to prepare an simple and portable sensor which expanded its real application.
L010	Reduction of Hexavalent Chromium Present in Wastewater by Steel Wool in a Continuous

	Flow System **Sampa Chakrabarti**, Pallavi Mitra, Prantik Banerjee and Debasish Sarkar Department of Chemical Engineering, University of Calcutta, 92, Acharya P. C. Roads, Kolkata 700 009, India *Abstract*—Continuous reduction of hexavalent chromium Cr(VI) in aqueous solution by commercial steel wool was investigated using glass column over the pH range of 3–7. Nearly 100% reduction took place within the first 10 minutes. The maximum reduction was obtained at pH 3, and the rate decreased with increasing initial pH of Cr(VI) solution. The initial substrate concentration was varied as 50 mg/L, 80 mg/L and 100 mg/L respectively. There was a gradual decrease in the extent of reduction as the initial substrate concentration increased. The breakthrough of the column was observed generally at 10 minutes whereas the complete exhaustion took 120 minutes. Results of this experiment may be utilized for modelling, simulation and scale-up in future.
L011	Redevelopment of Old Sludge Reservoirs **Kristof Verreydt**, Dionys Van Gemert, Jules Houtmeyers and Johan Van Waelderen Triconsult n.v., Lindekensveld 5 b3.2, 3560 Lummen, Belgium *Abstract*—Because of environmental and societal constraints Tessenderlo Chemie at Ham is reorganizing its sludge deposit sites, covering more than 200 ha in the area. Due to changing production and organization, some of the deposits are being closed and the sites redeveloped, whereas other deposits are reorganized. This paper deals with the problems, occurring at the treatment and reuse of the specific industrial sludge as a construction material for dikes. The geotechnical characteristics of the sludge were investigated, and a test dike with a height of 18 m above original ground level was constructed. The applicability of naturally dried sludge, of sludge with forced natural drying, and of sludge dried by filter pressing was tested. The appropriate construction pace and maximum elevation were determined, based on hydrostatic settlement measurements, oedometer tests, vane and direct shear tests as well as borehole shear tests. Computer simulations were calibrated with the field measurements, and used to evaluate the stability and safety of newly constructed sludge embankments.
L012	The Dynamic of Spatial Extent of Land Use in the Fringe of Jakarta Metropolitan: A Semivariogram Analysis **Rahma Fitriani** and Eni Sumarminingsih Department of Mathematics, University of Brawijaya,Jl. MT Haryono 169 Malang, Indonesia *Abstract*—Spatial interaction of land use is one factor which drives land use change. A recent study indicates that in the fringe of Jakarta Metropolitan, the significance of land use externalities creates sprawl. This inefficient development activity leads to premature conversion of some environmentally sensitive sites in the southern fringe. A proper land use policy to protect those sites should be formulated based on precise information about the extent of land use externalities. The development of semivariogram analysis enables the formulation of this distance, which is the aim of this study. Applying the analysis for two years data, this study indicates that, in this area the furthest distance for interaction between developments is between 21-29 km, while the interaction between agricultural uses are still in effect between 29-30 km. Those results will be useful to predict the future land use change in the area.
L016	Using Choice Modelling to Reveal Household Demand for Wastewater Treatment in Malaysia **Chandramalar Munusami**, Jamal Othman and Shaharuddin Mohamad Ismail Institute for Environment and Development, National University of Malaysia, 43600 UKM,

	Bangi, Selangor, Malaysia *Abstract*—In Malaysia, an efficient sewerage system is vital to ensure that wastewater is treated adequately before being discharged into the river system. Wastewater from household may contain harmful dissolved or suspended matter and unregulated discharge of wastewater that undermines biological diversity, natural resilience and the capacity of the ecology to provide fundamental ecosystem services. This study is undertaken to assist the relevant governmental bodies and service providers to identify an improved wastewater management strategy from the consumer perspectives. The study applies the choice modelling technique and based on focus group discussions, attributes such as river water quality (effluent), environmental improvement (sludge), standard time for repair (response time), odour impact (distance) and a monetary attribute (additional payment) were identified.
L017	Economic Impact of Climate Change on Agriculture Sector of Coastal Odisha **Diptimayee Mishra**, and Naresh Chandra Sahu School of Humanities, Social Sciences & Management (HSSM), IIT Bhubaneswar Abstract—The present study tries to explore the economic impact of climate change on agriculture of the coastal zone of Odisha using Ricardian approach. The climate response function of the farm level net revenue has been estimated through pooled cross-section and time series regression analysis. The results reveal that most of the climate variables and control variables have significant influence on the net revenue per hectare of the region. Using the estimated trends of the various seasons over 30 years, it is found that the rising temperature might adversely affect the coastal zone's agriculture of Odisha.
L018	A Bayesian Model to Study Spatio-Temporal Variability of Latent Heat Flux and Its Trend Manoj Kumar Singh and **Parvatham Venkatachalam** IIT Bombay *Abstract*—This paper talks about two models. First model is presented to study space-time variability of latent heat flux, where latent heat flux has been decomposed into three periodic terms, spatio-temporal process term, long term trend and a term due to covariates. And the second model is presented to characterize the long term trend and its possible causes. For both the models Bayesian approach was adopted. The method presented is particularly useful for characterizing environmental spatio- temporal processes variability. The model parameters were sampled using a Markov chain Monte Carlo simulation technique. The models were used for studying latent heat flux components in the Indian Ocean for the period of January 1985 to April 2010. The results showed that in LHF variability, dominant factors were annual variability, spatio-temporal variability and variability due to covariates. Further it has been found that the long term positive trend of LHF is dominated by the increase in wind speed. In some regions of Indian Ocean, increase in sea surface temperature has also been the cause for increase in LHF.
L021	Investigation of More Environmental Friendly Materials for Passive Cooling Application Based on Geopolymer Zeynab Emdadi, **Nilofar Asim** , M. A. Yarmo and Roslinda Shamsudin Solar Energy Research Institute, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia *Abstract*—Evaporative passive cooling systems are considered as interesting technique to address the environmental and energy crises. Within this context, the development of new porous materials has attracted a lot of attention recently. The utilization of industrial and agricultural waste byproduct will also

	make this technology more environmentally friendly. This article reviews the application of byproduct, industrial wastes materials, and other agricultural residuals as raw materials for the preparation of geopolymers. It must also be taken into due consideration that many potential waste and residuals have not been extensively studied, and requires extensive investigations.
L024	Study of the Effects of Acidic Ions on Cloud Droplet Formation Using Laboratory Experiments **Sh. Moradia**, A. A. Bidokhtia, , M. Gharayloua, Sh. Jalaieb and M. H. Shoushtaria Institute of Geophysics,University of Tehran *Abstract*—Atmospheric aerosols affect climate of the Earth, scatter sunlight and serve as cloud condensation nuclei (CCN). Yet the reason for many observed events of new aerosol formation is not understood. One of the ideas put forward to explain these events is that the presence of SO42- can enhance the formation of aerosols. These sulphate aerosols form partly during the oxidation of the oceanic emission Dimethyl sulfide (DMS) into the atmosphere and partly from volcanoes, plants and soils, fossil fuel combustion, and biomass burning. In this paper, laboratory experiments on warm cloud formation with different acid ion density are presented. The results show that the lifetime of cloud is reduced by increasing density of SO42-, but this changes is not significant (significance level, P=0.578), while the cloud concentration is significantly changed with the decreasing of density of SO42- (P=0.001). There is also a good significant correlation between cloud concentration with the maximum temperature change, with correlation coefficient, r=0.646 (p=0.004).
L025	Understanding Hydrodynamic Flow Characteristics in a Model Mangrove Ecosystem in Singapore **Alamsyah Kurniawan** , G. M. Jahid Hasan, Seng Keat Ooi, Lee Wei Kit, Lay Leng Loh and St ́phane Bayen Sustainable Development & Water Alliance, National University of Singapore *Abstract*—Recent importance has been placed on the ecological and socio-economic aspects of mangroves for adjacent coastal populations, in terms of flood defense, food resources, employment and generation of income. Anthropogenic stressors, such as direct clearance, hydrological alterations, climatic change effects or chemical pollution contribute to mangrove ecosystems degradation. While the relative impact is not well understood, the hydrodynamics specific to mangroves (intertidal, land-marine interface) are undoubtedly influencing those effects. In the present study, a computer-based model was built to understand the hydrodynamic flow characteristic in a mangrove ecosystem, the Sungei Buloh Wetland Reserve in Singapore, with the wider intent to better understand the transport of chemical substances in mangroves. Field surveys in the mangrove and the preliminary development of a two-dimensional hydrodynamic (2DH) model have been carried out. Higher bottom roughness was considered in the vegetated part of the model domain to account for the effect of mangrove roots. Spatial and temporal distributions, as well as minor mean differences between simulated and observed results, suggest that the developed model capture satisfactorily the tidal dynamics within the river, the wetland area covered with mangroves and in the strait. These results indicate that the hydrodynamics are properly understood within the Sungei Buloh mangrove ecosystem and can be used for modeling the fate of chemicals.

Afternoon, February 20, 2014

SESSION – 4 (ICESD 2014)
Venue: Royal Room 2
Session Chair:
Time: 13:30 – 15:30

L026	Release and Transport of Toxic, Mobile Organic Compounds (Formaldehyde and Phenols) on an Arctic Glacier **Krystyna Kozioł**, Marek Ruman, Katarzyna Kozak and Żaneta Polkowska University of Sheffield & The University Centre in Svalbard (UNIS) *Abstract*—As a result of current deglaciation, the chemical cycles of many compounds, including toxic formaldehyde and phenols, are changing. However, the processes by which these chemicals are released have yet to be studied in situ. Here, we quantify fluxes of HCHO and phenols in a glacial catchment within one summer season, obtaining a net release from the glacier of 0.106 · 106 g formaldehyde and 0.255 · 106 g phenols, which can be interpreted as a combined result of summer deposition and glacier ice melt. Formaldehyde flux was shown to increase by 164% on a 250 m stretch of the stream flowing through an icing (an exposed former glacier bed area), whilst phenols have shown a smaller increase of 48%. Hence, the importance of glacial forefields in chemical cycle of toxic compounds is pronounced and requires further attention.
L027	Integrated Management of Wastewater through Sewage Fed Aquaculture for Resource Recovery and Reuse of Treated Effluent: A Case Study **Dinesh Kumar**, Anand M. Hiremath and Shyam R. Asolekar Indian Institute of Technology Bombay, Mumbai, INDIA *Abstract*—India has 18% of the world's population, 1.15 billion people, but access to only 4% of world's fresh water resources. In the recent past, the dependency of Indian agriculture on ground water resources has increased upto an enormous extent due to several factors including increased demand of food, erratic behavior of monsoon, developmental pressure of various allied sectors etc. Currently, the available 70% of water resources in India being used to fulfill the water demand for agriculture and the 80% of domestic water supplies come from groundwater which led to rapidly declining groundwater tables in most of the states in India and has found no longer sustainable. Present study has primarily highlights the need of the Indian conditions for treatment and reuse of wastewater which happens to be the main cause for pollution of water resources in India. In this study efforts were made for assessment the potential of model sewage fed aquaculture system of capacity 8 MLD in Karnal, India for wastewater treatment, reuse and resource recovery during the treatment process. The in-depth evaluation study were conducted for integrated assessment of STP in association with health, environment, society, and institutions aspects as well as quality of treated effluent subjected for reuse in irrigation. The Economic analysis of the model sewage-fed aquaculture system shows that there was an annual profit of INR 8-10 lakhs through selling of fish in local market as well as ample amount of revenue generated through selling of treated effluent to the farmers. Also, the irrigation with treated wastewater able to save the fertilizer upto 50kg of Urea and 50kg of diammonium phosphate during cultivation of one acre of crop annually. The system was found good for removal of physic-chemical pollutants and also found very effective in removal of bacteriological pollutants. The reported removals for total coliform, fecal coliform and fecal streptococci were found 99.988, 99.965 and 99.9567, respectively.

L028	The Specific Nature of Chemical Composition of Water from Volcanic Lakes Based on Bali Case Study **Żaneta Polkowska**, Marek Ruman, Sara Lehmann, Magdalena Matysik and Damian Absalon Gdansk University of Technology, Department of Chemistry *Abstract*—The research area was localized in the Indonesian Archipelago, at the latitude of eight and nine degrees S on the one of the Lesser Sunda group island provinces, Bali (563,3 km2). Two massive calderas (Mount Batur 1717 m above sea level.; Mount Sangiyang 2093 m above sea level) are one of the most prominent landforms in the chain of volcanic mountain ranges of the Bali Island. Lake Batur (17,18 km2) and Batur Spring (which are part of the freshwater lake system of Mt. Batur caldera) and also Danau Bratan Lake (one of the unconnected lakes next to the Mt. Sangiyang caldera), were selected for studies on the pollutants concentration levels in this volcanic area located in tropical climate. The research was aimed at determining the concentration of pollutants of natural (volcanic) and anthropogenic origin occurring in both lakes. The following parameters were determined: anions, metals, pH and conductivity. Based on the obtained dataset of initial studies it can be stated that the localization of aquatic ecosystems has the significant impact on the chemical composition of surface water.
L029	Innovative Solutions in Surface Water Quality Monitoring Damian Absalon, **Marek Ruman**, Magdalena Matysik, Krystyna Kozioł and Żaneta Polkowska Faculty of Earth Sciences, University of Silesia, Będzińska 60, 41-200 Sosnowiec, Poland *Abstract*—In 2010 a project entitled "Integrated Support System for Management and Protection of Water Dam Reservoir (ZiZOZap)" was initiated, to aid solving water management problems on a river and dam reservoir formed on it. An innovative system of continuous monitoring was created, that encompassed selected physical and chemical parameters of river and lake waters in three chosen sites. This article presents a selection of results, that were obtained thanks to the continuous monitoring. In particular, monitoring of parameters with high diurnal variability benefits from this measurement design. Sites that are essential for water management are recommended to be monitored in this way.
L030	Rainfall- Rain off Modeling Using Artificial Neural Network **Mrad Dounia**, Dairi Sabri and Djebbar Yassine University of Mohamed Chérif Messaadia. Laboratory of Research InfraRes, Souk-Ahras. Algeria *Abstract*—The objective of this work is studying the transformation of the rainfall into rain off in area scale catchment of North East of Algeria by artificial neural networks (ANNs). In this paper, we used simulation and the forecast per ANN and we adopted model conceptual GR2M to validate the results obtained per ANN. In this case, it is necessary to bring a sample of hydro meteorological data to knowing the rains, the evapotranspiration and the flows of the station to be modeled. Results obtained per ANN show superior result compared to the traditional modeling approaches (GR2M). Indeed, the coefficient of correlation is very significant (R^2 exceeds 0.95) and the very weak quadratic error.
L031	Copper, Cadmium and Ferrous Removal by Membrane Bioreactor **Rouhallah Mahmoudkhani,** Ali Torabian, Amir Hessam Hassani and Roya Mahmoudkhani Department of Health, Tehran medical Branch, Islamic Azad University, Tehran, 1468954311, Iran

	Abstract—One of the important concerns in Tehran municipal landfill is the production of leachate and its potential for water resources pollution. This paper investigates the removal of heavy metals from landfill leachate by using a membrane Bioreactor (MBR). The leachate was collected from a landfill in the vicinity of Tehran nearly 1 year old, The results of this study indicated that the system provided high removals of Fe, Cu and Cd equal to 96%, 23% and 84% respectively and heavy metal concentration in MBR effluent is a function of aeration ratio and bioaccumulation. Among the metals investigated in the present study it can be concluded that the extracellular adsorption, is the principal removal process of the metals, compared to other removal mechanisms such as bioaccumulation or intracellular accumulation.
L034	Effect of Lead and γ-Polyglutamic Acid Produced from Bacillus subtilis on Growth of Brassica chinensis L. **O. Chunhachart**, N. Kotabin, N. Yadee, Y. Taharac and K. Issakul Kasetsart University, Thailand *Abstract*—γ-Polyglutamic acid (γ-PGA) has been reported to be an effective biosorbent for metal ions. In vitro binding of lead (II) (Pb) by γ-PGA produced from Bacillus subtilis NBRC16449 was examined and the effect of Pb and γ-PGA on Brassica chinensis L. grown in the laboratory was investigated. The results revealed that the optimal pH for Pb adsorption was 5.0. γ-PGA was stable at 35-50℃ and pH 5-7. The maximum removal efficiency was 87.9%. Brassica chinensis L. seeds were germinated and grown at 28±1 C on filter paper soaked with Pb solution at 0, 50, 100 and 250 M and γ-PGA at 0, 100, 500 and 1,000 mg/L for 7 days. The results indicated that Pb markedly inhibited growth of roots by reducing root length ($P<0.05$). However; the addition of 500 mg/L γ-PGA significantly protected seedlings from the adverse effects of Pb ($P<0.05$). Thus, γ-PGA has high potential as a biopolymer to be used for alleviation of Pb toxicities in plants.
L037	Biodiversity of Adult Trichoptera and Water Quality Variables in Streams, Northern Thailand **Taeng-On Prommi**, Pongsak Laudee, Theeraphap Chareonviriyaphap Faculty of Liberal Arts and Science, Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom Province, 73140, Thailand *Abstract*—The diversity of adult Trichoptera was surveyed at Mae Tao and Mae Ku watersheds, northern Thailand during July 2011 to May 2012. The aim of the study was to determine the relationship between physicochemical parameters of water quality and adult Trichoptera for monitoring of water quality. A total of 9,475 adult Trichoptera representing 14 families and 126 species were collected. The correlation between the biodiversity of adult Trichoptera and water quality showed that the Ecnomus jojachin, Cheumatopsyche carmentis, C. chryseis, C. lucida, C. chrysothemis, C. dhanikari, Potamyia dryope, Leptocerus dirghachuka, L. trophonios, L. ganymedes, Oecetis scutulata, O. armadillo, O. raghava, O. asmada, O. tripunctata, Setodes flivialis, S. neptunus, S. endymion, S. okypete, Chimarra chiangmaiensis, Paduniella semarangensis, Lepidostoma doligung, Polyplectropus ahas, Psychomyia lak, Marilia sumatrana, Hydroptila thuna and Orthrotrichia typhoeus depended on some physicochemical factors including air temperature, pH, electrical conductivity, turbidity, sulfate, nitrate-nitrogen, orthrophosphate, ammonia-nitrogen and alkalinity in water.
L039	Effect of Anthropogenic Activities on Accumulation of Heavy Metals in Legumes Crops, Riyadh, Saudi Arabia **Mohammed Nasser Alyemeni** and Ibraheem Almohisen Department of Botany and Microbiology, King Saud University, Riyadh 11451, Saudi Arabia

	Abstract—The objective was to look at the effect of anthropogenic activities on the accumulation of heavy metals; in four legumes crop plants. Pisum sativum L., Vicia faba L., Glycine max and Vigna sinensis, during summer and winter plants exposed to five levels of ambient air pollution by quantifying heavy metals (Cu, Mn, Pb and Zn) concentrations in the leaves, pods and grains. Results indicated that air pollution significantly increased the heavy metal concentrations in the leaves, pods and grains. Toxic concentrations were found in the plants grown at L3, L4 and L5.
L040	Photocatalytic Reduction of Nitrate over Fe-Modified TiO2 **K. Kobwittaya** and S. Sirivithayapakorn Department of Environmental Engineering, Faculty of Engineering, Kasetsart University, Bangkok, 10900, Thailand. *Abstract*—This research work investigated the photocatalytic nitrate reduction under the system using Fe-TiO2 thin film catalyst with formic acid as the hole scavenger and irradiation with black-light fluorescence lamps. The Fe-TiO2 thin films with 0.1% weight by volume (w/v) of Fe as dopant were coated onto the 304 stainless steel surface by the sol-gel method. The system showed the overall nitrate removal efficiency of 70.44% with the net photocatalytic nitrate reduction efficiency of 65.97%. The stoichiometric ratio of net formate to nitrate was 2.86 to 1.0, which is close to the theoretical ratio of 2.5 to 1.0 for nitrate reduction to nitrogen gas. The presence of nitrite in the system together with the aforementioned formate to nitrate ratio indicated that the main mechanism of nitrate removal was nitrate reduction to nitrogen gas.
L042	Screening and Characterization of Bacterial Biosurfactant from Bangkok and Vicinities **Manita Siriwong Na Ayudhya**, Pornpong Sutthirak and Pumnat Chuenchomrat Department of Food Science and Technology, Faculty of Science and Technology, Thammasat University, Pathumthani 12121, Thailand *Abstract*—In this study, biosurfactant producing bacteria were screened from oil-contaminated areas in Bangkok and vicinities, Thailand. Isolated bacteria of 1,094 isolates were collected from the samples. Primary screening of biosurfactant producing bacteria was performed by oil agar plate method. From primary screening, 82 isolates showed dispersion zone surrounding colonies. Ten isolates with the highest RZC values were selected to study in the secondary screening. These isolates were separately cultured in NB. Tensiometer was used to measure surface tension of each cell free cultured broth. The decreasing of surface tension was observed in 4 isolates. BKG04-005 isolate showed the lowest surface tension value of 18.58 mN/m. According to the results, biosurfactant of BKG04-005 was growth-associated product. To obtain biosurfactant, its cell free cultured broth was acidified and extracted by acid and a mixture of chloroform:methanol, respectively. The chemical structure of crude biosurfactant was identified as lipopeptide by FTIR spectroscopy.

Afternoon, February 20, 2014

SESSION – 5 (ICESD 2014)
Venue: Royal Room 3
Session Chair:
Time: 13:30 – 15:30

L043	Generation and Composition of Municipal Solid Waste (MSW) in Muscat, Sultanate of Oman

	Thenmozhi Murugaian Palanivel and **Hameed Sulaiman** Sultan Qaboos University *Abstract*—The success of waste management requires accurate data on generation and composition of waste which is pivotal for the decisions towards the appropriate waste management system. At present there is no data available on Municipal Solid Waste (MSW) generation and composition collected systematically in Oman. Hence, this preliminary study was conducted in Al-Multaqaa landfill, the only engineered landfill functioning in Oman. The main objective of this study is to determine the generation rate and composition of municipal solid waste with the intention of providing base line data for development of municipal solid waste management system. The samples were collected from the landfill in two different seasons, in summer and winter. The collected sample was sorted out into various components. Subsequently, the weight and volume of each component were measured and recorded. The daily generation of MSW works out to be 0.97 Kg /day/person by weight, 3.113 x 10-3 m3/day/person by volume with a density of 311.73 Kg/m3. The study results reveal that the MSW stream has the largest proportion of biodegradable and recyclable waste. If waste management options such as composting, recycling and energy recovery are to be practiced in the future, there is a greater possibility of reducing substantial amount of waste stream getting disposed to the landfill.
L044	Constructed Wetland of Lepironia Articulata for Household Greywater Treatment **Anwaruddin Ahmed Wurochekke**, Nurul Azma Harun, Radin Maya Saphira Radin Mohamed and Amir Hashim Bin Mohd. Kassim Universiti Tun Hussein Onn Malaysia, Parit Rajas, Johor, 86400, Malaysia *Abstract*—The release of domestic greywater from various sources can cause contamination of water bodies. In this study, a pretreatment system and mini wetland were constructed at village dwelling for greywater treatment. The main purpose of this study was to investigate the greywater loading characteristics, provide appropriate on site mini wetland and to measure the effectiveness of the wetland treatment system. The greywater samples were collected from the effluent of single house, at influent, pre-treatment model (particle material), mini wetland model (plant tube sedge Lepironia Articulata), and control model (without plant) at two sampling period. The mini wetland model shows high removal performance of 81.42 % BOD, 84.57 % COD, 39.83 % AN, 54.70 % SS, and 45.01 % turbidity. Generally, the results show that the constructed mini wetland was effective to remove contaminants and suitable for treatment of greywater sources. In view of future application, further explorations should consider other aquatic plants and disinfection system to achieve more efficient treatment.
L047	Performance Analysis of Vertical Up-flow Constructed Wetlands for Secondary Treated Effluent **Gargi Sharma**, Priya and Urmila Brighu Dept. of Civil Engg., Malaviya National Institue of Technology, Jaipur – 302017, India *Abstract*—The use of constructed wetlands for wastewater treatment has been exercised since 1950's and still are being in use. The vertical flow constructed wetlands provide more oxygenated environment and significantly reduce the organic matter as well as microbial species from wastewater. In the present study vertical up-flow constructed wetlands were constructed and used as bio-filter to improve the water quality of secondary treated effluent. The reduction pattern is studied in this research and correlated with plant species and presence of plant. The plant species used in the constructed wetlands were canna and phragmitis. The fibrous rooting system of canna species causes the high aerobic conditions throughout the

	treatment bed which in turn facilitates higher removal in comparison to phragmitis planted wetland. Removal of nitrogenous compounds like ammonia-nitrogen, TKN and nitrate were observed better in canna planted wetlands than others.
L049	Application of an Innovative Venturi Type Aeration Array as Part of the Restoration and Upgrading of an Obsolete Wastewater Treatment Plant **Yaakov Anker**, David Mualem, Alexander Gimburg, Bezalel Koplon, Erez Gur, Adi Nocham and Yigal Rosental Samaria and the Jordan Rift Regional R&D Center *Abstract*—Wastewater treatment plants (WWTP) are usually planned for operational duration of several decades, nonetheless, at the end of that period and in many cases earlier, they need to be replaced. In the current project a typical extended aeration activated sludge facility have demonstrated high energy and labor consumption, as well as insufficient effluent quality. Since the option of replacing the WWTP was estimated in about 1.5 million USD, it was decided to try and rehabilitate it. The technical solutions applied included mainly a new aeration array with a reactive management system. Following this rehabilitation, the effluent quality became within the desired standards and with the new management system the energy consumption was reduced by about a half. Considering that the cost of implementing the new technical solutions was about tenth of the alternative, it is clear that for similar scenarios restoration of a WWTP is superior to building a replacement.
L050	Hydrodynamic Properties of Aerobic Granules Cultivated on Phenol as Carbon Source **Farrukh Basheer** and I. H. Farooqi Department of Civil Engineering, Aligarh Muslim University, Aligarh 202 002 India *Abstract*—The cultivation and hydrodynamic properties such as morphology, fractal dimension, porosity, size distribution, and settling velocity of stable aerobic granules, developed in a column type sequencing batch reactor SBR was investigated in this study. A column type SBR was operated with organic loading rate of 1.8 kg phenol/m3day with phenol as a sole carbon source. The granules were fractal and porous aggregates and had a fractal dimension and porosity of 2.47 and 0.7-0.9 respectively. The settling velocities of aerobic granules were in the range of 2.38x10-02m/s-7.1x10-02m/s. This was in good agreement with the settling velocities predicted by Stoke's law for porous but impermeable spheres. This may be due to the EPS (Extracellular Polymeric Substances) produced by bacteria form a gel matrix that clogs the pores within the granules which resulted in reduced permeation and settling velocities.
L051	Integrated Environmental Risk Assessment Using Biomarkers in Marine Plants of the Gulf of Mannar, India **N. Nagarani** and M. Ananad Department of Marine & Coastal studies, Madurai Kamaraj University *Abstract*—The purpose of this study was to explore a possible relationship between inorganic metals and oxidative stress in marine plants of south east coast of India. The investigation was carried out during the low tides in Pudumadam, Mandapam, Pamban and Keelakarai coastal areas. The distribution of elements such as phosphorus, nitrogen, lead (Pb), manganese (Mn), iron (Fe), copper (Cu), and zinc (Zn) were determined in the marine plants and its surrounding seawater. An atomic absorption spectrometer, Varian Model SPECTRAA was used to determine the level of heavy metals. The impact of metals on the metabolism of the plants was determined by the level of antioxidant response. Low levels of Mn, Cu were observed in Pudumadam species. The thiobarbutric acid reactive substances formation in the marine plants

	showed a positive correlation with the trace element selected sites, which indicates the contamination of sewage and industrial pollution in these waters.
L061	Removal of phenol from water different types of carbon – A comparative analysis **Muataz Ali Atieh** King Fahd Univervery of Petroleum & Minerals *Abstract*—Toxic organic substances are considered among the pollutants that have direct effect on humans and animals. Industrial wastewaters containing dissolved phenol can contaminate groundwater resources and thus lead to a serious groundwater pollution problem. In the present research, the adsorption technique for the efficient removal of phenol pollutants at trace level in water was employed. Four type of micro and nanocarbon materials including carbon nanotubes (CNTs) and carbon nanofibers (CNFs) as nano carbon adsorbents, activated carbon (AC) and industrial carbon fly ash (CFA) as micro carbon adsorbents were used to remove phenol from water. Characterization of these adsorbents was performed by Field Emission Scanning Electron Microscopy (FE-SEM), Transmission Electron Microscopy(TEM), Thermogravimetric Analysis (TGA), BET specific surface area while the concentration of phenol in water before and after treatment was analyzed using UV-Spectroscopy. The pH (3-9) of the solution, was varied in order to determine their effect on the removal of phenol from water and hence on the adsorption rate.
L062	Thermal Balancing of a Multi-Cylinder Diesel Engine Operating on Diesel, B5 and Palm Biodiesel Blends **M. J. Abedin**, H. H. Masjuki, M. A. Kalam, A. Sanjid and S. M. Ashrafur Rahman Centre for Energy Sciences, Faculty of Engineering, University of Malaya, 50603 Kuala Lumpur, Malaysia *Abstract*—This manuscript provides an in-depth analysis of the engine heat losses in different subsystems of the engine. Finally, thermal balancing of the engine has been done by showing all energy flows in and out of the engine. The investigation was conducted in a four cylinder diesel engine fuelled with pure diesel, B5 (5% Palm + 95% Diesel), 10% (PB10) and 20% (PB20) palm biodiesel blends at full load and in the speed range 1000 to 4000 RPM. The engine brake power, water heat loss and lubricating oil heat loss increased whereas the exhaust heat loss and unaccounted heat loss decreased with the increase of biodiesel percentage in the blends.
L063	Stabilization of Uranium(VI) at Low pH by Fungal Metabolites: Applications in Environmental Biotechnology **A. Ogar**, A. Grandin, V. Sjöberg, K. Turnau and S. Karlsson Institute of Environmental Science of the Jagiellonian University, Gronostajowa 7, 30-387 Krakow, Poland *Abstract*—Uranium contamination of soils and water is a worldwide problem due to geology or anthropogenic release such as mining, or use of inorganic fertilizers. In situ remediation of low and moderately contaminated sites is a complicated procedure due to the complex chemistry of uranium. This study demonstrates that at pH 3.5, a fungal strain isolated from unprocessed uranium bearing shale creates hydrochemical conditions that immobilize 97% of a total of 10 mg L-1 dissolved uranium in a 0.20 μm pore system. The redistribution occurred within 10 minutes and remained for five weeks and just 12% of the inventory was retrieved in the biomass. Size exclusion chromatography of the dissolved phase identified organic substances in the range of more than 60 kD down to 100 D as a response to time of incubation. Geochemical modeling indicates formation of uranium-organic complexes where ligand size, coordination

	chemistry and their tendency to agglomerate determine the redistribution.
L064	Experimental Investigation of Mustard Biodiesel Blend Properties, Performance, Exhaust Emission and Noise in an Unmodified Diesel Engine **A. Sanjid**, H. H. Masjuki, M.A. Kalam,M.J. Abedin and S. M. Ashrafur Rahman Centre for Energy Sciences, Department of Mechanical Engineering, University of Malaya. *Abstract*—Mustard biodiesel was produced from waste mustard oil and physicochemical properties were investigated. MB showed superior calorific value (40.404 MJ/kg), oxidation stability (15.92 h), cloud point (5 ℃) and pour point (-18 ℃) than any other conventional biodiesels. During engine performance test MB10 and MB20 showed 8-13% higher BSFC and 5-6% lower BTE compared to B0. By contrast, MB blends produced 7-8% less BP and 6-8% less engine torque compared to B0. Engine emission and noise test showed 9-12% higher NO, 24-42% lower HC, 19-40% lower CO and 2-7% lower noise emission for MB blends compared to B0. Besides, comparable engine performance and emission characteristics were found for MB10 and MB20 compared to PB10 and PB20 respectively.
L065	Bandung Urban Sprawl and Idle Land: Spatial Environmental Perspectives **Vevin S. Ardiwijaya**, Tresna P. Soemardi, Emirhadi Suganda and Yuswanda A. Temenggung Environment Science Study Program, University of Indonesia *Abstract*—This paper addresses the growth of the urban population resulting in sprawl urban form and its relationship to land abandonment (idle lands). Bandung Metropolitan Area (BMA) in West Java was selected as a case study. Bandung urban topography is a shaped basin, thus has restrictions in the urban's physical growth. This research uses the Geographical Information System (GIS) approach to obtain urban land use patterns and the distribution of idle lands. The land use data were used the historical data from year 1991 to 2012. This paper discusses the impacts of the idle lands due to the urban sprawl, in the term of economic, ecological, and social aspects. This research found the number of idle lands scattered in various parts of the city. Based on these findings, the policy for managing urban development and the idle lands could be potentially improved.
L067	Lead Levels in Fresh Medicinal Herbs and Commercial Tea Products from Manila, Philippines **Judilynn N. Solidum** College of Pharmacy, University of the Philippines *Abstract*—Alternative medicine utilizing the therapeutic effects of plants is commonly used in the community. Contaminants in the raw materials, like lead, may lead to adverse health effects. This study aimed to determine the presence or absence of lead and specifically aimed to obtain its levels in plants and commercial tea utilized as herbal medicine in Manila, Philippines. The blood levels of the heavy metals were mathematically projected as well. The concentrations were compared with the World Health Organization (WHO) and Center for Disease Control (CDC) allowable standards for plants and blood, respectively. Flame Atomic Absorption Spectrophotometry (FAAS) was used to analyze the heavy metals from the samples. All samples tested contained lead but conformed with the WHO limits at 10 ppm. However, only the tea preparation samples conformed with the CDC limit at 10 ug/dL but not the collected plants which went above the prescribed concentration. Herbs and its preparations must be decontaminated prior to use for better health provision to the Filipino people.

15:30 - 15:50	Coffee Break

Afternoon, February 20, 2014

SESSION – 6 (ICESD 2014)
Venue: Royal Room 1
Session Chair:
Time: 15:50 – 18:30

L069	Effect of Coagulation on Submerged Ultrafiltration Membrane **Youn-Jong Park** and Young-Che Kim SK Engineering and Construction, 192-18 Gwanhoon-dong, Jongno-gu, Seoul, Korea *Abstract*—The possibility of minimizing the coagulation dosage in ultrafiltration (UF) drinking water treatment was assessed using a pilot-scale membrane operation in relation to membrane fouling. A 1,000 m3/d submerged UF system was used with a constant low dosage of coagulant. The results of investigating the normalized fouling rate during runtime indicated that membrane fouling was fairly controlled in the presence of a low concentration of PACl, even though a slight rise in the transmembrane pressure occurred.
L070	Temporal variation of BTEX at the area of petrol station in Bangkok, Thailand **Pattamaporn Rattanajongjitrakorn** and Tassanee Prueksasit International Postgraduate Programs in Environmental Management, Graduate School, Chulalongkorn University, Bangkok 10330, Thailand *Abstract*—This work aims to find changing amount of BTEX in period of time and theirs concentration at difference positions surrounding the petrol station located at the boundary of Bangkok and Nonthaburi, Thailand. A carbon charcoal glass tube connected to a personal air pump was used to collect BTEX during 16 hrs (6 a.m. - 10 p.m.) divided into 4 periods. After sampling, BTEX was extracted from charcoal tubes and analyzed by GC/FID. The center of petrol station which is considered as the main point source has the highest BTEX average concentration: benzene 589.91±107.26 μg/m3, toluene 1,694.92±212.27 μg/m3, ethylbenzene 96.74±17.34 μg/m3, m,p-xylene 409.79±59.91 μg/m3, and o-xylene 123.96±16.01 μg/m3. Total BTEX at the center point are 12.8 and 22.9 times higher than those at roadside and the backside of petrol station, respectively. Temperature and humidity are possible meteorological variables which affect BTEX concentrations.
L072	Household Fuel Consumption Based on Multiple Fuel Use Strategies: A Case Study in Kibera Slums **Aya Yonemitsu**, Mary Njenga, Miyuki Iiyama and Shusuke Matsushita Grasuate School of Life and Environmental Sciencaes, University of Tsukuba *Abstract*—Recently, it has been argued that, contrary to earlier energy ladder thinking, households in developing countries do not switch to modern energy sources but instead tend to consume a combination of fuels. This article aimed to gather a better understanding of the relative importance of fuel substitution and fuel complementation, especially among charcoal, fuel briquettes and kerosene, and the factors associated with these choices. In this paper we present results of a household survey conducted during October 2010 in Kibera slums in Nairobi, Kenya. The results revealed that widely various household characteristics

	influence demand for charcoal and briquettes for cooking. In addition to these factors, the household income level affects the use of kerosene for cooking. At the same time, we found the fact households tend to switch to multiple fuels strategy as their increasing in income instead of completely switching from the consumption of traditional fuels to modern energy sources.
L074	Uncertainty Quantification of Hydrologic Model **P. Vallam**, X. S. Qin and J. J. Yu Nanyang Tech. Univ., 50 Nanyang Avenue, Singapore 637598 *Abstract*—Generalized Likelihood Uncertainty Estimation (GLUE), a simplified Bayesian method, was adopted to determine the parametric uncertainty in hydrological modeling. A preliminary analysis of the summer flows of the Kootenay Watershed, Canada, was modeled to portray a typical uncertainty analysis procedure. SLURP, a robust hydrologic model was chosen for this procedure. The results demonstrated the viability of applying the GLUE method in conjunction with the SLURP hydrological model, following which the posterior probability distributions of the parameters was analyzed. The performance of this technique was verified by examining the flows' prediction intervals for a period of 2 years, enabling valid future hydrological forecasting for the watershed.
L077	Development of Demand Prediction Simulator based on Multiple Water Resources **Ji Young Kim**, Jin Hong Jung, Young H. Yoon, Ju-Suk An, Weon Jae Kim and Hyun Je Oh Korea Institute of Construction Technology(KICT) *Abstract*—One-way water supply systems which do not take into consideration the required demand are becoming an issue in terms of their efficient use of water. In this study, a demand prediction simulator was developed used to present the measures for increasing the water reuse ratio and reducing energy consumption. For its development, by using a multi-layer perception (MLP), a demand prediction module was developed, and an operating simulation module for the supply facilities of multiple water resources were implemented.
L1005	Assessment of Temporal and Spatial Variation of Pan Evaporation with Related Climatological Factors in Bangladesh **Shakil Ahmed**, Md. Mafizur Rahman, Shahriar Shams and Md. Mosabbir Pasha Department of CEE, Islamic University of Technology, Gazipur-1704, Bangladesh *Abstract*—Pan evaporation is an effective way to analyze the multidimensional impact of climate change on irrigation water requirement since pan evaporation measures the integrated effect of radiation, wind, temperature and humidity on the evaporation from an open-water surface. The characteristic trends of pan evaporation and related climatological factors, as developed in this paper, indicate that most of the regions of Bangladesh have undergone a significant amount of decrease in evaporation through the years. The reduction in sunshine duration as a consequent of climate change can be attributed to be the principal reason for the decrease in evaporation. The spatial distribution of seasonal variation of pan evaporation along with solar radiation and humidity was analyzed, and solar radiation seemed to have the major influence on evaporation. The study also reveals that summer and spring are the seasons of highest evaporation in most of the regions. The characteristic trend and spatial distribution of seasonal pan evaporation correlated with related climatological factors developed in this study could aid in water resources development and planning for irrigation purposes.
L1007	Evaluating the Role of Energy Efficiency Label on Consumers' Purchasing Behaviour **Norzalina Zainudin**, Chamhuri Siwar, Er Ah Choy and Norshamliza Chamhuri

	Selangor International Islamic University College, Malaysia *Abstract*—This paper was designed to explore the influence of energy labelling toward the consumer purchasing behaviour. Based on information from a total of 117 samples, this paper finds mean correlations between consumers' awareness, knowledge, attitude, social norm and energy efficiency labels with purchase intention. Energy labelling shows a negative correlation with green purchasing behaviour. This finding demonstrates that energy labelling was fruitless to deliver a good message in encouraging consumer buying decision. Energy labels have to be understood, trusted and valued as a tool for consumers' decision making. It is believed that the use of energy labels alone is not considered enough to protect the environment. Thus, all the stakeholders should enhance some other factors as a complementary to the energy labelling programs.
L1008	Seasonal Weather Conditions Effect on Energy Consumption and CO2 Emission for Air Conditioning Systems Coupled with Enthalpy Energy Recovery Heat Exchanger **Mohammad Shakir Nasifa** and Rafat Al-Wakedb Department of Mechanical Engineering, Universiti Teknologi PETRONAS *Abstract*—Seasonal energy consumption and subsequent CO2 gas emission analysis of an air conditioner coupled with paper based enthalpy energy recovery ventilator has been performed. Results were then compared with a conventional air conditioning system which mixes outdoor fresh air with room return air before cooling and resupplying. Effects of the enthalpy heat exchanger and air mixing system within the air conditioning system were modeled using a modified HPRate software code. Seasonal energy analysis for different weather conditions has shown that enthalpy energy recovery system is superior in the summer season. For a 300m2 office space, a seasonal saving of up to 1.4GJ in energy consumption and 900kg annual reduction of CO2 gas emission could be achieved provided that the membrane enthalpy heat exchanger is utilized instead of a conventional air mixing and conditioning system.
L1009	Ecological Engineering, Industrial Ecology and Eco-Industrial Networking Aspects of Ship Recycling Sector in India **Anand M. Hiremath**, Sachin Kumar Pandey, Dinesh Kumar and Shyam R. Asolekar Centre for Environmental Science and Engineering, Indian Institute of Technology Bombay *Abstract*—India is the world's leading ship recycling country which works on the principle of waste to wealth. In this paper an attempt has been made to articluate the Ecological Engineering, Industrial Ecology and Eco-Industrial Networking aspects which are embedded in beaching method of ship recycling in Alang, India. There is a need to promote such activities for sustainalbe growth, but, it is equally true that, if ship recycling is conducted haphazardly with very little scientific and technical knowledge, it will expose workers to hazardous conduitions as well as would leave disproportionately large environmental footprint behind. In this context, Gujarat Maritime Board (GMB), Government of Gujarat, India has initiated many projects to defend human and environmental health. In India, already impressive positive changes can be seen as the GMB has set training and welfare institute and its efforts resulted in decrease of fatal accidents from 2.0 per 1000 workers to 0.13 per 1000 workers i.e. 93.5% decrease in the fatal accidents from the year 2003 to 2011 in the ship recycling yards. Present status of ship recycling in India is substantial. The overall trend of the industry is towards following more and more Health Safety & Environment (HSE) norms and has commitments with them. Zero accidents and near zero pollution to the surrounding environment should be the ultimate goal of beaching method of recycling in India to handle pile of end-of-life ships in environmentally sound manner - which are expected to reach ship recycling yards in near future.

L1010	Analysis of Carbon-off Setting Targets towards Sustainable Economic Development in Apparel Sector Organization in Sri-Lanka **L. F. D De Z Gunathilaka**, and K. D Gunawardana University of Sri-Jajewardenepura,Nugegoda , Sri-Lanka *Abstract*—This paper focuses on Sri Lankan apparel manufacturing industry in relation to carbon off setting targets to mitigate emissions by reviewing the industry contribution to increasing levels of atmospheric Carbon -dioxide (CO2) which is the governing factor in global warming. This paper attempts to highlight that all stakeholders of this aspect of the industry to reduce greenhouse gas emissions and the significance of neutrality which is ever so important indeed for the entire country coming from the Industry that occupies the topmost position of its economy. The ultimate objective of this study is to review the extent of fossil fuel burning the sector is responsible and the pragmatic carbon offsetting steps taken by the apparel organizations with commitment. The findings reveal a significant relation between carbon neutrality and offsetting targets towards greenhouse gas emission. It was also revealed that in order to neutralize emissions merely buying credits is inadequate compared to in-house off settings planning. Currently there are around 270 apparel factories in Sri Lanka, among the ones in operation a sample of 50 apparel companies were selected.
L2003	Recovery of Tantalum Sintered Compact from Used Tantalum Condenser Using Steam Gasification with Sodium Hydroxide **Shigeyuki Katano**, Takaaki Wajima and Hideki Nakagome Graduate School of Engineering, Chiba University, 1-33, Yayoi, Inage, Chiba, 236-8522, Japan *Abstract*—Recovery of tantalum resource from used tantalum capacitor in electric equipment is important because the production of tantalum have not been stable for the price and the quantity. However, recovery of tantalum sintered compact from tantalum capacitor is difficult since the compact strongly covered with the flame retardant resin made of halogenated compounds (mold resin). In this study, steam gasification with sodium hydroxide was applied for recovery of tantalum sintered compact by destroying mold resin and stabilization of halogenated compounds in sodium hydroxide to prevent exhausting halogenated gas. Mold resin can be decomposed by steam gasification with NaOH to recover the sintered compact of tantalum. Furthermore, most halogen gas generated from decomposition of mold resin can be trapped in sodium hydroxide not to exhaust halogen gas. These results suggested that recovery process of tantalum sintered compact from the used condenser using steam gasification with sodium hydroxide is expected as a feasible way to recycle the rare metal in electric equipment.
L2004	Society`s perceptions of African elephants and their relative influence towards the conservation of elephants **Taruvinga A**, and Mushunje A Departiment of Agricultural Economics & Extension, University of Fort Hare Bag X1314, Alice 5700, South Africa  *Abstract*—Africa`s elephant population continues to decline towards extinction in the face of globally crafted elephant conservation policies. Thus far, society questions the initial design structure, contribution of local communities and relevance of these policies. Using cross-sectional survey data from Zimbabwe the paper investigates local communities` perceptions of elephants and their relative influence towards conservation of elephants using the multinomial logistic regression model. Results indicates that, high

	human-elephant conflict and low revenue from elephant farming promote elephant decimation while, observable positive direct returns from elephants to local communities promote conservation. The paper therefore concludes that to save African elephants, it may be necessary to engage local communities as active main stakeholders in the policy formulation so as to internalise local interests - thus avoiding errors of omission and commission.

Afternoon, February 20, 2014

SESSION – 7 (ICESD 2014)
Venue: Royal Room 2
Session Chair:
Time: 15:50 – 18:30

L2005	Preparation of Adsorbent with Lead Removal Ability from Paper sludge using Sulfur-impregnation **Takaaki Wajima** Chiba University *Abstract*—During the manufacture of recycled paper, paper sludge is discharged as an industrial waste. The amount of sludge discharged from manufacturing plants increases annually. In this study, the organic constituents, such as cellulose, in the sludge were converted into carbonaceous heavy metal absorbents using sulfur treatment, and its removal ability of lead from aqueous solution was examined. The sludge was treated with 5 M HCl to remove inorganic content, and then immersed in 1 M K2S solution to prepare sulfur-immersed sludge. The immersed-sludge was heated at 100-1000 oC for 1 hour in nitrogen gas to produce the sulfur-impregnated adsorbent by pyrolysis. The product obtained at 400 oC (Product-400) has a high removal ability for lead ion, which has high specific surface areas and high sulfur content. The product-400 shows the highest adsorption of lead from aqueous solution, and high selective removal for lead ions in low pH solution.
L2006	The Influence of Reward and Penalty on Households' Recycling Intention **Farshad Amini**, Jasmine Ahmad and Abdul Rauf Ambali Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA, Selangor *Abstract*—The objective of this paper is to investigate the influences of economic instruments on households' recycling intention in order to help Malaysian government to apply a proper intervention in advancing and enforcing recycling regulations. The Reasoned Action Approach (RAA) was used in this research to investigate the effects of intervention factors on households' recycling intention. 384 participants were selected and questionnaires were utilized to collect data relating to the influences of reward and penalty on households' recycling intention in Kuala Lumpur. The results showed that both reward and penalty has significant relationship with households' recycling intention (reward $\beta = 0.355$, $p < 0.001$; penalty $\beta = 0.214$, $p<0.001$) while reward significantly influence attitude ($\beta = 0.414$, $p<0.001$) and penalty influence perceived behavioural control ($\beta = -0.340$, $p<0.001$). Moreover, the result showed perceived behavioural control as the weakest factor influencing households' recycling intention ($\beta = 0.160$, $p<0.05$). The results of this study indicate that penalty is a proper intervention to increase households' recycling intention in Kuala Lumpur.

L2009	Identification of Significant Indirect-Architectural Elements of a Classroom in the Context of Seat-selection **Mohammad Moslemi Haghighi** and Mahmud Bin Mohd Jusan Department of Architecture, Faculty of Built Environment, Universiti Teknologi Malaysia *Abstract*—Lack of suitable architectural attributes related to learner expectations may generate unpleasant phenomena within an academic environment. It is evident that architectural elements influence students in choosing preferred seats within the learning environment. Previous studies have indicated that Indirect-Architectural elements or small scale architectural attributes influence student behavior in classroom. The purpose of this research is to identify the most significant subscales of Indirect-architectural factors that influence the students' seat-selection. To reach this goal, quantitative method study was used in teacher-centered classroom arrangement. For this enquiry, 370 students from thirteen public high schools in second educational region of Shiraz-Iran were employed to obtain their opinion about Indirect-Architectural elements in the context of seat-selection. Students were selected based on cluster sampling. The five-point Likert type scale questionnaire was distributed among freshmen. The survey involved 25 indirect environmental items allocated into 10 factors. The results demonstrated that daily high school students focused more on Aural and Hygiene factors compared to other features to select a seat. Consequently, student performance may be improved by generating proper Indirect-architectural subscales such as Aural and Hygiene.
L2011	Innovative Pesticide Kit Model for Vegetable Farm Safety Surveillance Program **Lagsana Leuprasert**, Sakornrat Monmora, Maneewan Puydecha, Robert S Chapman, Wattasit Siriwong and Surasak Taneepanichskul, College of Public Health Sciences, Chulalongkorn University, Bangkok 10330, Thailand *Abstract*—To develop 4-groups innovative pesticide test kit and vegetable farm safety surveillance program, the quasai study was performed in intervention klongtabak and control ta-ngoy village groups, Nakhonratchasima province. 62 Chinese kale samples were screened for pesticide residues using innovative test kit and confirmed by GLC/HPLC. Percent acetyl cholinesterase inhibition was measured in vegetable samples, containing anti-cholinesterase pesticide residues, using spectrophotometer. Pre-intervention analysis, two detected chlorpyrifos (>MRL) in control group, two detected cypermethrin (<MRL) and one detected <MRLs methomyl, carbofuran and carbofuran-3-OH in study group. No pesticides were detected in both groups at post-intervention. Self-test was trained to agriculturists, 92% accuracy competence results was acceptable at post-laboratory kit test training. Small farm land pesticide safety manual was used to educate agriculturists and %enzyme inhibition measurement at post-intervention period, compared with pre-intervention period was decreased 51.9% at p-value <0.011, reveal that intervention program affect reduction of pesticide inhibition at 0.05% significance level.
L2012	Reduction of Bromine Compounds in the Pyrolysis Oil of Computer Casing Plastics Using Shell, $Ca(OH)_2$ and NaOH **Z. Z. Hlaing**, T. Wajima, S. Uchiyama and H. Nakagome Chiba University *Abstract*—The acrylonitrile butadiene styrene "ABS" resin is used in a variety of exterior and chassis electrical products, it have been contained brominated flame retardants to prevent fire accidients. If the resin (ABS) was thermally decomposed, the bromine compound was mixed in the pyrolysis oil. In this work, the fraction of acrylonitrile butadiene styrene "ABS" containing brominated flame retardants was pyrolyzed by

	using a reflux-condenser apparatus installation at 450℃.And we used additives of sodium hydroxide "NaOH", calcium hydroxide "Ca(OH)2" and scallop shell. The total bromine compounds in product oil could be reduced from 296 mg/L to 27 mg/L by NaOH.
L3003	Isolation, Identification and Growth Optimization of Microalgae Derived from Soft Coral Dendronephthya sp. **Rory Anthony Hutagalung** , Anton Ega Sukoco, Dedi Soedharma, Lily Maria Goreti, Ivan Andrean, Bamma Elshaddai and Noryawati Mulyono Faculty of Biotechnology, Atma Jaya Catholic University *Abstract*—Despite its beauty in shape and color, soft coral Dendronephthya sp. is less interesting commercially as an ornamental coral commodity due to its low chances of survival in artificial habitats. Unlike other corals, this species is azooxhantellae, and thus, it depends on external feeding. The aim of this research is to isolate, identify, and cultivate the microalgae derived from Dendronephthya sp. The microalgae was isolated from digestive tract, followed by genomic DNA isolation and Polymerase Chain Reaction. The algae cultivation was conducted using the nitrogen sources as proven treatment. Five species of microalgae (Amphora sp., Navicula salinicola, Meyerella planktonica, Nannochloris sp., and Nitzschia inconspicua) were successfully isolated. The highest biomass of Amphora sp. was obtained when ammonium was added as nitrogen source. Meanwhile, the highest biomass of N. inconspicua was obtained through the addition of nitrate. Finally, the highest biomass of N. salinicola was acquired when a combination of ammonium and nitrate was used.
L3005	Criticality Analysis of Recharge Area and Land in The Catchment Area of Musi Hydropower Bengkulu Indonesia **Khairul Amri** , A. Halim, Ngudiantoro and M. Faiz Barchia Sriwijaya University, Palembang-30139, Indonesia *Abstract*—The aim of this study is to determine the criticality of recharge area and to assest criticality of land that occurred in the Musi hydropower catchment area. The criticality of recharge area had been analyzed by using geographic information system applications. Based on that application which covering the total catchment area of 60.369,97 ha of musi Hydropower catchment area, it has been shown that the condition of recharge area that still in good condition was 43.215,39 ha (71,58%), naturally normal condition was 6.857,31 ha (11,36), begin to critical was 2.560,28 ha (4,24%), rather critical was 5.506,40 ha (9,12%), and in critical condition was 2.230,58 ha (3, 69%). Assessment of the criticality of land was done by assessing the land cover factor, slope factor and the calculation of the erosion of Musi Hulu sub watershed land. The results of this assessment showed that the state of the land which in the state of not critical was 18.415,387 hectares (30,504%), potentially critical was 15.870,359 Ha (26,289%), rather critical was 18.073,017 hectares (29,937%), critical was 4.674,979 hectares (7,744%), and very critical was 443,170 ha (0,734%). From those analysis, it can be concluded that the recharge area and landof Musi hydropower catchment area is in the state of begin to critical.
L3010	Use of Atmospheric Epiphyte Tillandsia usneoides (Bromeliaceae) as Biomonitor Kuaanan Techato, Aesoh Salaeh and **Natthaya C. van Beem** Faculty of Environmental Management, Prince of Songkla University, Songkhla 90110, Thailand *Abstract*—The great benefit sustainability of ecotechnology requires an effective policy supported by social perception, an incorporate with the environment impact assessments, cost-benefit analysis and intellectual

	property. Ecotechnology of phytoremediation is cost effective and ecologically friendly in which plant utilizes its natural abilities to restore environment. It is the use of green plant based systems to remediate contaminated soils, sediments, water or air. Some epiphyte plants, especially those from Spanish moss, Tillandsia useneoides (Bromeliaceae), known as air plants, has been widely used in biomonitoring studies of air pollution in South America countries. The aim of this paper was to review the biological living of T. useneoides and applications for applying our current research in summer monsoon rain and rainy season in Southern Thailand.
L3016	The Importance Aspects of Landscape Design on Housing Development in Urban Areas **Fitrynadia Mohd Shahli**, Mohd Ramzi Mohd Hussain, Izawati Tukiman and Nurbazliah Zaidin Internationational Islamic University Malaysia (IIUM) *Abstract*—It has been proven that proper landscape planning and designs with the sustainability concept and approach help to create a conducive and responsive environment of housing development. This paper presents a brief of conceptual view on the important aspects of landscape design on housing development in urban areas. The review is based on the theoretical framework of the relationship between landscape design in planning and designing the housing development in urban areas as well as how it acts as an added value to the sustainable residential landscape design. A review on previous researches and journals are doing in providing a theory on the importance aspect of landscape design in housing areas. It is hoped that this paper may possibly provide significant information on landscape design towards influencing the prices and values of the house. This paper also can become an indicator towards enhancing the sustainability of living environment.
L3017	The Impact of Landscape Design on House Prices and Values in Residential Development in Urban Areas **Mohd Ramzi Mohd Hussain** , Izawati Tukiman, Ismawi Hj. Zen and Fitrynadia Mohd Shahli International Islamic University Malaysia (IIUM) *Abstract*—Focusing on a world class living environment, a good quality residential area can be highlighted as an important issue in creating a sustainable living environment. However, limited green spaces within the proximity of residential properties are not supporting the landscape space and are not conducive to living space. The aim of the paper is to investigate the impact of landscape design on house prices and values in residential development particularly in urban areas. The paper employed quantitative approaches which include i) a questionnaire survey; and ii) an observation. This empirical study is based on the findings of case studies conducted in several residential areas in Klang Valley. The findings show that the residents have very clear ideas on how much green space is really important in residential areas in order to create a sustainable residential environment. Despite the absence of public actions in terms of providing information, encouraging participations in the survey and promoting awareness of those interviewed have shown considerable interest in promoting landscape design to be applied in residential development. The perceptions of the quality and quantity of landscape designs in residential areas especially in Klang Valley can be further researched for future study.
L3018	Characterizing Intestinal Parasitism of Children in Intramuros, Manila **Gilmore G. Solidum** , Raymond Ferenandez and Joan Oyangoren Pamantasan ng Lungsod ngMaynila, Intramuros, Manila, Philippines

	Abstract—A survey on the prevalence of helminthes infestations among children aged 0-12 in Intramuros, Maynila was done as a basis for a helminthes prevention program. The aim of the present study was to determine the intestinal parasitic infestation among children in an urban area and factors that may be related to it. A cross-sectional survey was conducted for 3 months and a total of 135 stool samples were collected, processed, and microscopically examined for intestinal parasites. Odds ratio and Chi-square were used to determine the association of selected variables. The prevalence of helminthiasis among children aged 0 – 12 of Intramuros, Manila was 36% (n=49). Of this number, 92% have Ascaris lumbricoides and 8% have trichuris trichuria. Potential risk with helminthiasis was explored using a univariate analysis. Having documented the high prevalence of helminthes infestation in the subject-children in relation to the various identified risk factors, it is crucial that these factors be addressed promptly.
L3025	Radiological Monitoring of Borehole in Dei-Dei, Abuja, North Central Nigeria **O. Maxwell**, H. Wagiran, N. Ibrahim, S. K. Lee and S. Sabri Department of Physics, Faculty of Science, Universiti Teknologi Malaysia, 81310, UTM, Skudai, Johor Bahru, Johor, Malaysia *Abstract*—Inhabitants in Dei-Dei area of Abuja consume groundwater that recharges from different lithologic units of subsurface structures due to inadequate public water supply.The water is consumed untreated and during drilling, it cuts across so many rock formations, to extents constitute radioactive elements which are to be evaluated. Vertical Electric Sounding and Shuttle Radar Topography mission was used to determine the structure of electric conductivity and map lineaments.Hydrogeologically motivated borehole with geophysical log data was drilled. Activity concentrations were analysed using high resolution co-axial HPGe gamma spectrometer system. The activity concentrations ranges from 45 ± 2 to 98 ± 6 Bq kg-1 for 232Th, 18 ± 2 to 37 ± 4 Bq kg-1 for 238U and 236 ± 32 Bq kg-1 to 1195 ±151 Bq kg-1 for 40K. Structurally, fractured interconnectivity attributed to low levels in some layers. Activity levels are within the limits, requires research within groundwater activity levels and rock geochemistry.

Afternoon, February 20, 2014

SESSION – 8 (ICCGE 2014)
Venue: Royal Room 3
Session Chair: Hartmut Hinz
Time: 15:50 – 18:30

E0005	How Carbon Pricing Impacts the Selection and Optimization of a Gas Turbine Combined Heat and Power System: An Australian Perspective **Chanel A. Gibson**, Mehdi Aghaei Meybodi, and Masud Behnia The University of Sydney *Abstract*—Businesses are currently being forced to re-evaluate their energy practices with the emergence of carbon pricing in many developed nations including Australia's relatively new carbon pricing mechanism. This paper expands on a previous investigation by these authors. A gas turbine CHP system is examined to determine the financial impact Australia' s carbon price has on the installation incentive to help businesses become more energy efficient. Three economic cases were considered to ensure a comprehensive analysis was conducted. The system was unprofitable under all configurations indicating a gas turbine based system

	was not financially beneficial when applied to this case study. However, the system became slightly more economical when the carbon price was introduced indicating the installation of a CHP system may be beneficial under carbon pricing.
E0009	Analysis of a Hybrid System for Decentralized Power Generation **H. Hinz** University of Applied Sciences, Frankfurt, Germany *Abstract*—Traditionally a centralized power generation based on fossil fuels is common. To meet the greenhouse targets a transition to low carbon power generation is required. This could be achieved either by nuclear or renewable energy. Due to the concerns regarding nuclear safety and the problematic disposal of long live radioactive waste many countries move towards renewable energies. Thus a change to a decentralized power generation will occur. The objective of this paper is to describe the development of a hybrid system for a decentralized power generation. It is shown that the proposed design of a combined heat and power plant and a photovoltaic array including an electric energy storage device will establish a future oriented technology. A method is introduced which enables the study and optimization of the power management.
E0015	Charge Dynamics and Storage Behaviors of Ionic Liquids/Ionomer Electrolyte in Electroactive Devices **Jun-Hong Lin** and Ming-Tse Lee Department of Mold and Die Engineering, National Kaohsiung University of Applied Sciences *Abstract*—Developing advanced electroactive devices requires the understanding of the influence of sample geometry on the charge transport and storage. In these devices both diffusion and drift processes depend on the distances over which ions travel. In this paper the charge dynamics of Aquivion membrane with 40 wt% uptake of EMI-Tf (1-ethyl-3-methylimidazolium trifluoromethane -sulfonate) cells were investigated over a broad membrane thickness (d) range. It was found that the double layer charging time τ_{DL} is linearly proportional to the thickness (d) for all applied voltages. However, in the longer time regimes ($t>>\tau_{DL}$) under a high applied voltage (>0.5 V) where the significant charge storage occurs, it was found that the relationship between charge storage and applied voltage becomes nonlinear and also the longer time charging response of $\tau_{diff} = d^2/(4D)$, corresponding to the ion diffusion, was not observed.
E0019	Performance of a Photovoltaic or Thermal Double-Pass Solar Air Heater with Different Fin Configurations Amin Elsafi and **P. Gandhidasan** King Fahd University of Petroleum and Minerals *Abstract*—In this paper, the steady-state performance evaluation of a double-pass flat plate hybrid photovoltaic/thermal (PV/T) solar heater with attached vertical fins of different configurations at the bottom of the absorber in the lower channel has been evaluated. A simulation model for predicting the thermal and electrical photovoltaic thermal performance of the system is presented and various performance parameters are calculated for a proposed PV/T for three straight fin profiles besides the configuration with pin fins. The effect of different fin materials has also been investigated. The simulation results showed that the use of pin fins is beneficial to achieve better performance over the design with straight fins. The model could be easily extended to cover other fin types.
E0020	Residential Utility Management

	Angela CH Liu Polytechnic School *Abstract*—The price of residential electricity is soaring. We must find an effective way to cut down the energy usage. I developed an effective procedure to measure the real-time power usage pattern and the annual utility cost to charge my electronic gadgets. After understanding the electric usage pattern, I developed actionable energy-saving steps to lower my household electricity consumption and utility bills. This project was based on a real-life experiment; not on the wattage or electricity usage specifications from device manufactures' catalog. We found that most manufactory electrical usage specifications are over-optimistic and very conservative. For example, HP claimed that their LaserJet Pro 400 M401dn only use 570 watts while printing; actually it used 30% more, i.e., 750 watts. By changing our family behaviors and life style, we can reduce our electric consumption up to 40%, i.e. over $1,200, per year.
E0024	Aerodynamic and Structural Evaluation of Horizontal Archimedes Spiral Wind Turbine **Arman Safdari** and Kyung Chun Kim Pusan National University *Abstract*—Aerodynamic characteristics of small-scale of Archimedes spiral wind turbine blade are presented in this paper. Numerical simulation for aerodynamic performance of the blade was carried out for different configuration of inlet velocity. Numerical approaches on the prediction of aerodynamic characteristics of the blade were performed by using XFlow which has been written based on lattice Boltzmann method. Wall-Adapting Local Eddy-viscosity (WALE) model has been applied as is has a good properties near and far from solid body and wall for both laminar and turbulent flows. Particle Image Velocity (PIV) has been used to prove the obtained results of numerical simulation and investigate the aerodynamic physiognomies of the spiral wind turbine. In order to verify the numerical analysis velocity behavior around the blade are captured and compared with experimental results. The prediction of velocity outlines by using XFlow is in a good agreement with the trajectory and greatness of tip vortices engendered by the Archimedes spiral wind turbine blade from experimental results.
E0025	Simulation, Validation and Economic Analysis of Solar Powered Organic Rankine Cycle for Electricity Generation **Suresh Baral** and Kyung Chun Kim The school of Mechanical Engineering, Pusan National University *Abstract*—This paper presents the efficiencies such as exergy, thermal, solar power cycle efficiency, along with solar heat input and area of the solar collector for 4 selected working fluids. Thermodynamic modeling was carried out using a commercial scroll expander, two compact heat exchangers, a diaphragm pump and a solar collector. The commercial software Engineering Equation Solver (EES) was used for calculating the parameters of various working fluids. The analyzed working fluids have been recommended for solar ORC. Furthermore, the economic analysis of solar powered ORC system has been carried out with the solar collector cost and the overall ORC cost of each working fluid in the system. Finally the payback period has been calculated and was around 3.7 years.
E0028	A Contribution to the Debate on Reconciling Bioenergy for Biofuels and Food Security **Paulo C. Manduca**, Mauro D. Berni, Rubens Lamparelli, Klaus G. Dalgaard, Luis A. B. Cortez, and Juan A. Ayarza The Interdisciplinary Center for Energy Planning, State University of Campinas (UNICAMP), São Paulo, Brazil

	Abstract—Over the last few years, bioenergy production has undergone a process of rapid development, causing significant impacts on the global food system. Among other things, the resulting increase in demand for agricultural products has had important implications for food security. The alleged causal link between bioenergy production and food security has been the subject of increasing debate. Given the complex nature of bioenergy, debates on the matter often lack a solid scientific basis. The endurance of such debates raises the need for more informed and systematic attention to this issue. The present paper identifies some of the main players in this debate and their arguments in favor or against the expansion of biofuel industries. A case study of the Brazilian experience with biofuels will clarify the validity of arguments on both sides of the debate and the potential applicability of the Brazilian biofuel model worldwide.
E1007	Effect of Vapour Absorption Enhancement in Solar-Heat Driven Air-Conditioning System **Papia Sultana**, N. E. Wijeysundera, J. C. Ho, C. Yap, and T. K. Chang Republic Polytechnic *Abstract*—The solar-heat driven air-conditioning system has strong potential for significant primary energy savings. For most applications, the system involves Li-Br-water absorption chillers, which are suitable for large building applications. For absorption chillers to be used in small residential buildings, the reduction of the chiller system footprint is critical. In the present study focus has been given to design a vapour-absorption cooling system with improved transport phenomena using film-inversion techniques. The film-inverting absorber has resulted in the enhancement of vapour absorption rate by 83-95 percent more than a conventional falling film-tubular absorber based on numerical simulation data. The proposed design has the potential to increase Coefficient of Performance (COP) of a single-effect vapour absorption system 160% higher than that of a conventional vapour-absorption system. It could also reduce the foot-print of the entire vapour absorption system especially for low-grade-heat driven applications. At least 10℃ temperature reduction has been achieved in maintaining the same condensing pressure. Moreover, a smaller area is needed to harvest hot water for a solar-heat driven air-conditioning system. Also there has been at least 65% reduction of the collector area needed per kW cooling energy.
E1008	Power Flow Control of Renewable Energy Based Distributed Generators Using Advanced Power Converter Technologies **Chao-Tsung Ma** and Tzung-Han Shr National United University *Abstract*—This paper describes a design concept in which a digital controlled power interface embedded with a battery energy storage system (BESS) named battery interfaced static synchronous generator (BISSG) is constructed to improve the power quality of micro-grid (MG) systems. Some distributed generation (DG) systems, e.g., the wind turbine generator (WTG) and the Photovoltaic (PV) systems conventionally generate real power based on natural conditions thus their output power are fluctuating from time to time. To eliminate this shortcoming, the proposed BISSG attempts to smooth the output power of DG with fast charging and discharging its BESS. To achieve a cost-effective design, the proposed BISSG is designed to maximize its control capability in terms of bilateral real power regulation and reactive power compensation for MG voltage support or power factor correction. It is important to note that the proposed BISSG is able to fulfill various real power dispatching functionalities required by the system operator. In this paper, the mathematical model of BISSG and its related controllers are firstly addressed. Then, simulation studies and hardware tests on a simplified MG network are carried out. Typical results are presented with brief discussions to demonstrate the feasibility and effectiveness of the proposed control

	scheme.
E2003	Renewable Energy Resources in Nigeria: Sources, Problems and Prospects **C. N. Ezugwu** Department of Civil Engineering, Anambra State University, Uli, Nigeria *Abstract*—As a result of the danger posed to the environment by fossil fuels, the world is shifting towards low carbon energy to be powered by new energy sources. Nigeria is endowed with abundance of renewable energy (RE) resources. Being rich in energy resource, it is regrettable that Nigeria is yet to exploit these huge available energy potentials with less environmental and climatic impacts. There is need to conserve the nation's trees and other forestry resources so as to make the government's reforestation, soil erosion and desertification control programmes successful. This paper discusses the renewable energy resources in Nigeria, its sources, characteristics, problems and prospects. Moreover, there is need to integrate this energy resource into the Nigeria energy system in view of its numerous gains.
E2006	Assessment of Solar PV Power Generation Potential in Pakistan **Khanji Harijan**, Mohammad A. Uqaili, and Umar K. Mirza Mehran University of Engineering and Technology *Abstract*—Pakistan is an energy starved country. About 38% of the country's population still does not have grid access. About 65% of the total conventional electricity is produced from the gas and oil. The country is facing severe blackout problems due to shortage of about 5-8 GW electricity supply. Fortunately, the country lies in an excellent solar belt range. The vast solar energy resource of the country can be harnessed for the production of electricity through solar photovoltaic (PV) systems. This paper presents an assessment of the PV electricity generation potential in Pakistan. Considering social and technical constraints, the technical potential of PV electricity generation has been estimated. The study concludes that 3.525×10^6 and 455.3 GWh of electricity can be generated annually in Pakistan from grid-connected and off-grid PV systems respectively. The estimated results clearly demonstrate that the solar PV electricity generation systems have the potential to meet country's present as well as future electricity needs.
E3010	Real time Simulation of Distribution System with Distributed Energy Resources **Tran Thai Trung**, Seon-Ju Ahn, and Joon-Ho Choi CHONNAM NATIONAL UNIVERSITY *Abstract*—This paper presents a real – time simulation of distribution system with distributed generation – DGs, Step voltage regulation (SVR) and battery energy storage systems (BESSs) using Real Time Digital Simulation (RTDS). The simulation models of a DG and a Nickel – Metal Hydride battery are developed as RSCAD user defined model. The control schemes of DGs and BESSs to show the impacts of DGs to local voltages and BESS to accommodate the variation of DG power output are proposed and implemented as a function block in the RSCAD platform. Difficulties of the system implementation in RTDS are also discussed and solutions are provided. Finally, the simulation results are given out to verify the correctness of the control schemes.
E3012	Enhancement of Hidrogen Physisorption Energy by Lithium- doped Carbon Nanotube: A First Principle Study Nasruddin, Engkos Achmad Kosasih, Supriyadi, and **Ihsan Ahmad Zulkarnain** University of Indonesia *Abstract*—Hydrogen fuel-cell is potential future energy carrier to be implemented on vehicle. However, one

	of the main problems of its implementation is about how to store Hydrogen in high density at ambient temperature and acceptable pressure. One of the promising storage methods is adsorption on Carbon nanostructured material, one of them is Carbon Nanotube (CNT). However, CNT is still too weak to adsorb Hydrogen gas in ambient temperature. Therefore, many researches have been conducted to find ways to improve Hydrogen physisorption energy on CNT. One of the ways is by doping Lithium cation into CNT. Lithium-cation is expected able to effect electrochemical properties of CNT so that Hydrogen physisorption energy is enhanced. In this study, we performed ab-initio calculations to investigate effect of Lithium-doping on CNT to its Hydrogen physisorption energy. Our research result shows that Lithium-doped CNT have stronger physisorption energy, up to -4.2 kcal/mol, compared to undoped CNT, only -1.2 kcal/mol.

February 20, 2014 19:00	**Dinner**

Schedule for February 21, 2014

February 21, 2014 (Friday)

Academic Official Visit

Notice! The Academic Official Visit will last about 3 hours, and after that we will send you back to the hotel. Since this activity is free of charge, we do not provide lunch or dinner on that day (21 February). Thank you for your understanding!

Singapore Polytechnic is a pioneer. Not only is it a forerunner in polytechnic education, it has also established its reputation in producing graduates who are making their mark in their further studies, in industry and in the corporate world.

Their staffs are dynamic, caring and innovative. As a result of their passion for learning and experimentation, they have helped students to develop and market products such as chocolates, drinks, noodles and even perfume.

Agenda for the Visit

2:00 – 3:15pm : Presentation of CLS, DACP, DPCS and DACM

3:15 – 3:30pm : Q & A

3:30 – 3:45pm : Tea break

3:45 – 5:00pm : Lab tour to Chemistry, Perfumery and Materials facilities and laboratories

Attention: Only the authors who mark "Yes" for the visit in the registration form can attend

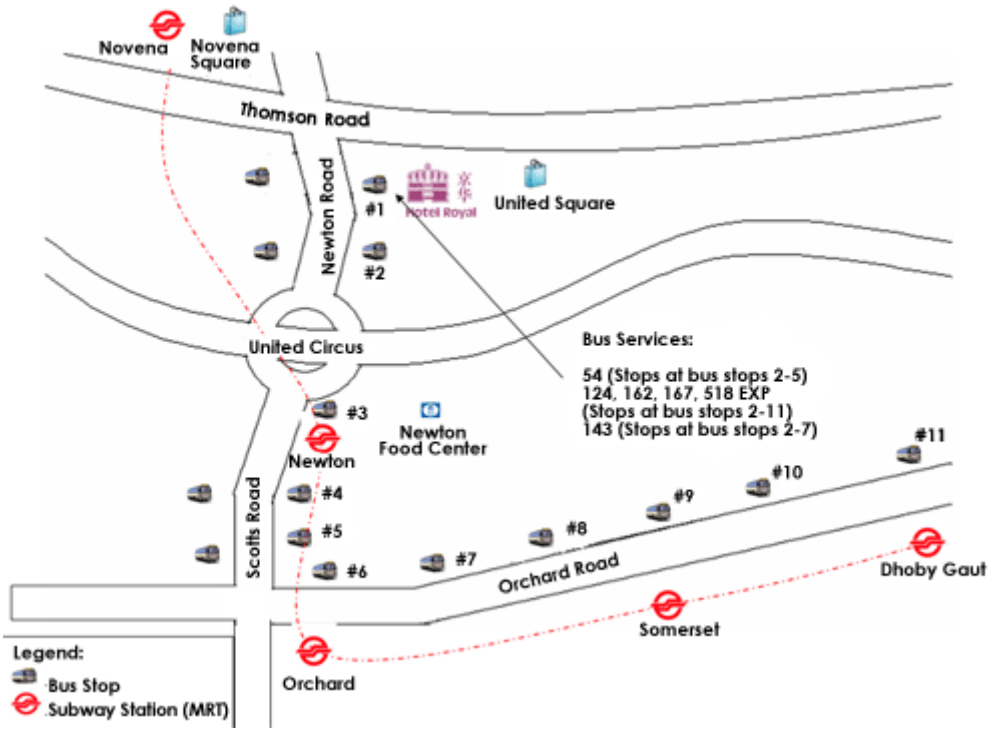
Conference venue

Hotel Royal

(http://www.hotelroyal.com.sg/about.html)

Contact Method: Please download the Reservation Form and send the filled form to Benjamin@hotelroyal.com.sg to order a room.

Location Map:



5 minute drive to Orchard Road, shopping and entertainment paradise of Singapore. Within walking distance to 2 MRT stations (subway/underground, especially Novena MRT). Stone's throw from Newton Food Centre, where you can get excellent local food at very reasonable prices. Easy access to the National University of Singapore, Nanyang Technological University and Singapore Management University. Minutes away from Little India in Serangoon Road.

APCBEES FORTHCOMING CONFERENCES

http://www.cbees.org/events/

May 2014, Sydney, Australia

Date	Conference	Location	Important Dates
May. 27-28, 14	2014 International Conference on Environmental Engineering and Development (ICEED 2014)	Sydney, Australia	http://www.iceed.net/date.htm

May. 27-28, 14	2014 International Conference on Biomedical and Pharmaceutical Engineering (ICBPE 2014)	Sydney, Australia	http://www.icbpe.org/date.htm

May. 27-28, 14	2014 International Conference on Advances in Bioscience and Bioengineering (ICABB 2014)	Sydney, Australia	http://www.icabb.org/date.htm

June 2014, Bangkok, Thailand

Date	Conference	Location	Important Dates
Jun. 09-11, 14	2014 3rd International Conference on Environment, Energy and Biotechnology (ICEEB 2014)	Bangkok, Thailand	http://www.iceeb.org/date.html

Jun. 09-11, 14	2014 4th International Conference on Asia Agriculture and Animal (ICAAA 2014)	Bangkok, Thailand	http://www.icaaa.org/date.html

Jun. 09-11, 14	2014 3rd International Conference on Chemical and Process Engineering (ICCPE 2014)	Bangkok, Thailand	http://www.iccpe.org/date.html

June 2014, Copenhagen, Demark

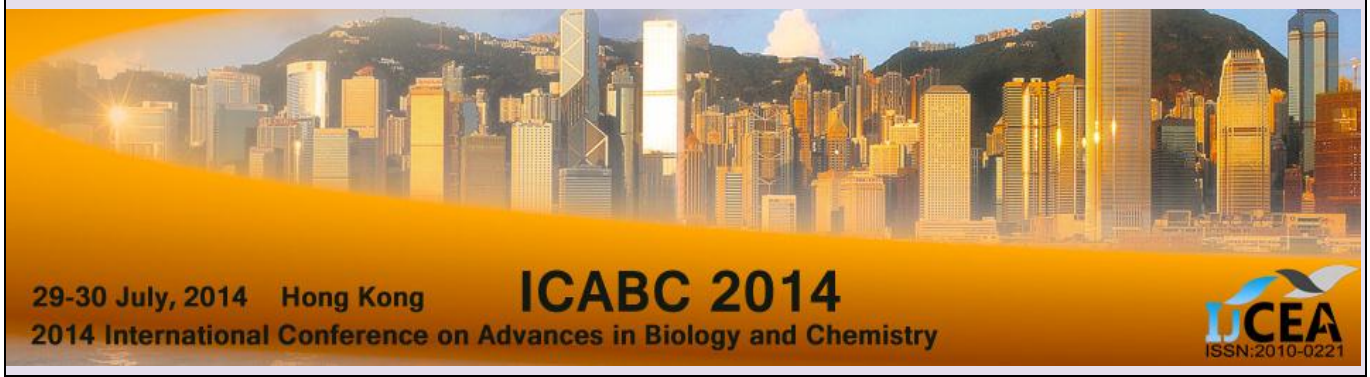
Date	Conference	Location	Important Dates
Jun. 18-20, 14	2014 3rd International Conference on Nutrition and Food Sciences(ICNFS 2014)	Copenhagen, Demark	http://www.icnfs.org/date.html

Jun. 18-20, 14	2014 3rd International Conference on Bioinformatics and Biomedical Science (ICBBS 2014)	Copenhagen, Demark	http://www.icbbs.org/date.html

Jun. 18-20, 14	2014 International Conference on Environmental and Engineering Geoscience (ICEEG 2014)	Copenhagen, Demark	http://www.iceeg.org/date.html

July 2014, Hong Kong			
Date	**Conference**	**Location**	**Important Dates**
Jul. 29-30, 14	2014 International Conference on Food and Nutrition Technology (ICFNT 2014)	Hong Kong	http://www.icfnt.org/date.htm

Jul. 29-30, 14	2014 International Conference on Advances in Biology and Chemistry (ICABC 2014)	Hong Kong	http://www.icabc.org/date.htm



Jul. 29-30, 14	2014 International Conference on Environment and Natural Resources (ICENR 2014)	Hong Kong	http://www.icenr.net/date.htm

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More information about our conference can be found at: http://www.cbees.org/events/

Note

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