

2013 APCBEES SINGAPORE CONFERENCES SCHEDULE

2013 4th International Conference on Environmental Engineering and Applications (ICEEA 2013)
2013 3rd International Conference on Environmental, Biomedical and Biotechnology (ICEBB 2013)
2013 2nd International Conference on Biotechnology and Food Engineering (ICBFE 2013)
2013 3rd Journal Conference on Environmental Science and Development (JCESD 2013 3rd)

Singapore

Hotel Royal

August 24-25, 2013

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August 24, 2013 (Saturday)

Hotel Royal, Singapore

10: 00 – 12: 30 13: 30 – 17: 00	Arrival and Registration
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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 for Excellent Papers and will be awarded in the Closing Ceremony on August 25, 2013.

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 and 3 Minutes of Q&A

Keynote Speech: 30 Minutes of Presentation and 5 Minutes of Q&A

Conference website and Secretariat Contact:

ICEEA 2013: www.iceea.org iceea@cbees.org

ICEBB 2013: www.icebb.org icebb@cbees.org

ICBFE 2013: www.icbfe.org icbfe@cbees.org

JCESD 2013 3rd: <http://www.ijesd.org/jcesd/3rd/index.htm> jcesd03@stpress.net

Morning, August 25, 2013 (Sunday)

Venue: Royal Room 1

08:30 - 08:40	Opening Remarks Sezai Ercisli Atatürk University, Faculty of Agriculture, Department of Horticulture, Erzurum-TURKEY
08:40 - 09:10	Keynote Speaker I Chan Jin Park Dept. of Environmental Engineering, College of Urban Science, University of Incheon “The Characteristics of Odor Pollution & Effective Control Technology”
09:10 - 09:40	Keynote Speaker II Kokyo Oh Center for Environmental Science in Saitama, Japan “Study on Application of Phytoremediation Technology in Management and Remediation of Contaminated Soils”
09:40 - 10:10	Taking Photo and Coffee Break
10:10 - 10:40	Keynote Speaker III Sezai Ercisli Atatürk University, Faculty of Agriculture, Department of Horticulture, Erzurum-TURKEY “Rose Hip: Utilization and Interactions between Galling Insects and Plant Total Phenolic Contents”

Morning, August 25, 2013 (Sunday)

SESSION – 1 (JCESD & ICEBB)

Venue: Royal Room 1

Session Chair:

Time: 10:40 – 12:30

CD0126	Systematic Innovation Based Design of Energy Efficient House Cooling System Song-Kyoo Kim <i>Abstract</i> —Energy conservation for buildings is a serious issue for any government and an efficient cooling system of a building in summer is one of major topics for conserving energy. In addition, the resources are very limited in developing countries of tropical regions. The paper deals with the practical approach of enhancing the cooling temperature in the house by the unique problem solving method which is an innovative structured process and sets of practical tools that can be used for the value creation.
CD0129	Study of Heavily Adhesive Cs in Soil Environment Kiminori Sato , K. Numata, and N. Inamura <i>Abstract</i> —Two years having passed since the nuclear crisis at Fukushima, radioactive ¹³⁷ Cs with the half-life of ~ 30 years has come to the forefront of our largest concern. To gain an insight into current unsuccessful ¹³⁷ Cs decontamination from soil, heavily adhesive Cs adsorption, referred as specific Cs adsorption here, is highlighted for the layered clay minerals. Beside the interlayer Cs ⁺ cations, a population

	<p>of Cs is able to adsorb on the surfaces of open nanospaces with their sizes of ~ 0.3 nm and ~ 0.9 nm, which are formed by one- and two-clay nanosheet insertion into interlayer spaces. They are adsorbed on the surfaces of both the open nanospaces so strongly that cannot be removed even by the hydrochloric acid solution of pH 1.0, these open nanospaces thus acting as the specific Cs adsorption site. The characteristic local molecular structures as a clay-nanosheet edge and a wedge-shaped frayed part available in the open nanospaces are responsible for the specific Cs adsorption. Radioactive ^{137}Cs that is not cleaned up after the decontamination work would originate from the specific Cs adsorption clarified here. The present findings unambiguously provide the molecular evidence of specific Cs adsorption and are thus of importance for further sophisticated decontamination of the radioactive Cs from the soil environment.</p>
CD0130	<p>Self- Assembly of Saponite Nanoparticles Influenced by Interlayer H_2O Molecules Kazuomi Numata and K. Sato <i>Abstract</i>—The rheological mechanism of long-term self-assembly caused by H_2O molecules is highlighted for layered saponite nanoparticles based on the results of positronium (Ps) annihilation spectroscopy and thermogravimetry and differential thermal analysis (TG-DTA). A-type zeolite powder of typical cage material is also investigated to compare with the layered material. Prior to self-assembly, saponite nanoparticles exhibit two kinds of local molecular structures, where one and two nanosheets are inserted into interlayer spaces forming open spaces with their sizes of ~ 3 Å and ~ 9 Å, respectively. The angstrom-scale open spaces for the saponite vary in the time scale of ~ 100 h much longer than that of TG-DTA of ~ 8 h. The long-term molecular dynamics probed by Ps annihilation spectroscopy originates from the self-assembly of saponite nanoparticles. It is found that the self-assembly of layered saponite nanoparticles is accelerated with increasing the humidity from 35 % to 70 % owing to the formation of two-layer hydration. The present results demonstrate that the long-term self assembly originates from the layered structures together with H_2O molecules on the layer surfaces.</p>
CD0132	<p>Energy-Saving Effect of a Hybrid Air-Conditioning System Using Natural Ventilation in an Office Building Tomoya Sakamoto and Yasuyuki Shiraishi <i>Abstract</i>—The energy-saving effect of a hybrid A/C system during operation phase in springtime was shown quantitatively based on field measurements and numerical simulations. A numerical model of the natural ventilation rate for a building with flow control inlets and outlets was proposed in this study by means of a thermal and air flow network analysis. The prediction accuracy of this model was also verified by performing a comparison with field measurements of a hybrid A/C system in an existing office building. Power consumption for A/C was reduced by about 20% on each floor by introducing natural ventilation, and predicted energy savings for the system was about 22.3% on average.</p>
CD0133	<p>Characteristics of Indoor Lighting Environment Using Daylight with a light Shelf Hideaki Kido and Yasuyuki Shiraishi <i>Abstract</i>—We carried out measurements and lighting simulations of an existing office building in order to clarify the characteristics of indoor lighting environments using daylight with a light shelf. Paired comparison measurements were performed to elucidate the difference between using only a light shelf and using a light shelf with a blind in terms of horizontal illuminance and window luminance. Next, the effect of the light shelf's presence or absence on indoor lighting environments was verified through lighting simulations. Measurements and simulations revealed that when a light shelf was available, the luminance of the upper part of the window was higher than that of the lower part, suggesting that glare does not result from the lower part of the window. We also found that using a light shelf increased horizontal illuminance by about 10% over the case of no light shelf. The illuminance distribution of the ceiling indicated that illuminance</p>

	was high at the window and that reflected diffuse light reached the back of the room, so that it was obvious effect on the horizontal illuminance distribution.
CD0135	<p>Interrelationship between Indian Ocean Dipole (IOD) and Australian Tropical Cyclones Kamal Kumar Saha and Saleh A Wasimi</p> <p><i>Abstract</i>—Indian Ocean Dipole (IOD) index plays an important role in shaping the weather conditions in the Indian Ocean and surrounding areas. It has a strong correlation with Darwin pressure. This paper attempts to unfold its relationship with the occurrence of Tropical Cyclones (TCs) in the Australian basin. An analysis of 30 years' data (1976-2006) reveals that individual IOD pole (Western or Eastern) has peak negative correlation (-.5 and -.4, respectively) with the seasonal occurrences of TCs in Australia. Mainly the TC occurrences in Western and Eastern sub-regions are correlated with IOD index of both the poles. Northern sub-region is more or less free from the influence of IOD index. These findings provide further insight in understanding the genesis of tropical cyclones in the Australian region.</p>
CD0136	<p>Propagation of Probabilistic and Possibilistic Uncertainty in Life Cycle Assessment: A Case Study of a Naphtha Cracking Plant in Taiwan Kevin Fong-Rey Liu, Si-Yu Chiu, Ming-Jui Hung, and Jong-Yih Kuo</p> <p><i>Abstract</i>—The use of a life cycle assessments (LCA) is dramatically increasing, partially due to the ease of use of the commercial software. However, there is a critical doubt about the credibility of the assessment results, particularly in endpoint assessments. Each phase of a LCA involves some simplifications, assumptions and choices. More research is required to improve the credibility of assessments, such as studies of time and space effects and studies of dose-response effects. Another method of improving the credibility of assessments is to characterize, propagate and analyze uncertainty in a LCA. In this study, a probabilistic method (Monte Carlo simulation) and a possibilistic method (fuzzy set theory) are used to model uncertainty in the inventory (input data) of a naphtha cracking plant in Taiwan. The results of the probabilistic and possibilistic approaches are compared and discussed. The results show that although probability and possibility distributions have approximately the same bottom width, their highest peaks have almost the same value. The primary difference between probabilistic and possibilistic methods is in the number of calculations. In this study, at least 10,000-time simulations are used for a Monte Carlo simulation, in order to obtain a smoother curve and the vertex method for the possibilistic approach only uses 11 α-cuts (intervals), to produce a smooth triangle.</p>
A03	<p>Detecting congestive heart rate variability failure using pointcar étrend analysis plot Hoang Chuduc, Hung PhamManh, Thuan NguyenDuc, Dung NguyenViet</p> <p><i>Abstract</i>—The function of heart rate variability (HRV) has been studied over the years, but less is known about the factors predicting recovery from work stress during sleep. The availability to register reliable data for short-time HRV has raised the interest to find the congestive HRV signal. The objective of this study was to identify individual-level factors related to work and leisure-time predicting the recovery of autonomic nervous system (ANS) during congestion measured by 24-h HRV. 15 subjects (11 men, aged 22 to 71, and 4 women, aged 54 to 63) with severe congestive heart failure (NYHA class 3-4). This group of subjects was part of a larger study group receiving conventional medical therapy prior to receiving the oral inotropic agent, milrinone. Questionnaire data was gathered with a self-administered questionnaire of individual characteristics, perceived work ability, stress and psychological resources. The individual recordings are each about 20 hours in duration, and contain two ECG signals each sampled at 250 samples per second with 12-bit resolution over a range of ± 10 millivolts. In this study, we only calculate first 15 minus of each subject.</p>
A05	<p>Needle deflection studies for optimal insertion modeling Ka Wei Ng, Jin QuanGoh, Soo Leong Foo, PohHua Ting, TeckKheng Lee, Edmund Chiong, Qing Hui Wu</p>

	<p>and Kesavan Esuvaranathan</p> <p><i>Abstract</i>—Needle insertion for minimally invasive surgery is a technique explored and studied for percutaneous procedure, diagnosis, localized therapeutic drug delivery, and Biopsy. While the instruments and techniques determine the success of every surgical procedure, minimal attention was given to the medium, the interaction between the tissue and the needle, the development tools and surgical techniques. This paper addresses the interaction by studying the needle deflection during the insertion into porcine back tissue and simulated flesh-like tissue. A customized testing setup is developed to measure and quantify these interactions. The needle deflection magnitude and its insertion characteristics were measured and correlated to define the bio-mechanical properties of back abdomen tissue upon insertion. Needle deflections were measured for gelatine analogues developed to model the consistency of the tissues in the lumbar region of the back. This study was the first step in developing a deflection feedback controlled surgical instrument which enable the needle to reach its intended target in the percutaneous operation. The experimental setup and test procedure provides an understanding on the mechanics of needle insertion, potentially aid the design improvement on surgical instrument.</p>
A01 POSTER	<p>Safety assessments of chalcone derivatives in a zebrafish model</p> <p>Ya-Ting Lee and Yau-Hung Chen</p> <p><i>Abstract</i>—It was reported that chalcone and its derivatives possess various biological activities, including anti-inflammatory, anti-cancer and anti-oxidant properties. Aim of this study was to investigate the toxic effects of hydroxychalcones during zebrafish embryogenesis. After hydroxychalcones treatment [especially 3'-hydroxychalcone (3'-HC)], zebrafish embryos displayed deformed somite phenotypes, such as curved body and muscle fiber mis-alignment. Interestingly, those malformed phenotypes can be rescued by adding caffeine, but can be enhanced by adding amlodipine. To further investigate the cause of 3'-HC-induced deformed somite phenotypes, we carried out histochemistry and electron microscopy experiments. Results demonstrate that 3'-HC was able to induce muscle atrophy, mitochondrial autophagy and increased reactive oxygen species (ROS) levels. Furthermore, the increase in TUNEL-positive cells was only observed in those which were exposed 3'-HC. Finally, the reverse transcription-PCR analysis showed that caffeine can inhibit the up regulation of expression of Fbxo32 by 3'-HC. In conclusion, we suggested that 3'-HC induces apoptosis in muscle by alteration of mitochondrial calcium signaling and generation of ROS.</p>
A02 POSTER	<p>Prevention of Contrast Medium Induced Nephropathy by Liposome Encapsulation</p> <p>Gi-Da Lee, Jyn-Wen Chai, Li-Che Hu, Huei-Ling Huang, Pei-Hsuan Lu and Kuo-Chih Liao</p> <p><i>Abstract</i>—The study is investigating prospectively the potentials of applying liposome as computed tomography (CT) contrast agent delivery vesicle for prevention of contrast medium induced nephropathy (CIN) incidence both in vitro and in vivo. From dynamic CT of nude mice, we found that partial encapsulation of CM in liposome increased the indication of biliary excretion up to 12 folds post CM administration, and reduced the concentration and duration of CM accumulation in kidney. From Madin-Darby canine kidney epithelial cell line (MDCK) viability studies, it showed that fully encapsulation of CM in liposome significantly improved the cell viability when exposed to clinical concentration of CM for 24 hours.</p>
A08 POSTER	<p>A Whitening Filtering Approach for the Detection of Abnormal Intra-QRS Potentials in Signal-Averaged Electrocardiograms</p> <p>Chun-Cheng Lin</p> <p><i>Abstract</i>—The detection of extremely low-amplitude and high-frequency abnormal intra-QRS potentials (AIQP) in signal-averaged electrocardiograms is a potential technique to improve the diagnostic performance of the risk of ventricular arrhythmias. Instead of using the modeling residuals of the previous studies, this study develops a whitening filtering approach to whiten the input QRS wave and use the</p>

	<p>optimized filter coefficients to detect the presence of AIQP due to the high-frequency characteristics of AIQP that may increase the higher order coefficients. To demonstrate the performance of the proposed method for detecting the AIQP, a color noise with a frequency band ranged from 40 Hz to 250 Hz is embedded into the normal QRS wave to simulate AIQP, and the detection performance of AIQP is tested under four signal-to-noise ratios (SNRs) (AIQP vs. QRS) including -50 dB, -46 dB, -40 dB, and -34 dB. The study results demonstrate that the presence of AIQP can increase the amplitude of the higher order coefficients of the whitening filter. The accuracy of AIQP detection can at least reach 75%, 83%, 92%, and 96% under SNRs of -50 dB, -46 dB, -40 dB, and -34 dB, respectively, in the X, Y and Z leads.</p>
A2003 POSTER	<p>Growth of Chrysanthemum Explants on MS Medium Sterilized by Disinfectants and Essential Oils Wittaya Deein, Chockpisit Thepsithar, Aree Thongpukdee, and Suppaya Tippornwong</p> <p><i>Abstract</i>—A sterile condition of culture medium is one of the main aspects for micropropagation. The alternative technique for medium sterilization to replace autoclaving was carried out. For sterilization of Murashige and Skoog (MS) medium, commercial essential oils, disinfectants or in combinations were tested. Each essential oil or disinfectant or combination was added to a 20-mL medium in a 120-mL container, kept for 2 weeks before evaluating sterile conditions. Treated media were compared to control medium, autoclaved at 121 degree Celsius for 15 min. Sterile conditions of MS medium were found 100% from 10% povidone-iodine (108 µL), 6% sodium hypochlorite (36 µL), 2% iodine + 2.4% potassium iodide (36 µL), while 95% sterile conditions were obtained from 2% iodine + 2.4% potassium iodide in combination with 10% povidone-iodine (ratio 1 : 1 at 36 µL and ratio 1 : 3 at 72 µL), 10% povidone-iodine in combination with lemon oil (ratio 3 : 1, 108 µL) compared to 100% sterile conditions from autoclaved medium. Effects of these treated media on growth of chrysanthemum shoot and node explants were investigated. It was found that growth of explants on medium treated with 10% povidone-iodine or 2% iodine + 2.4% potassium iodide alone or in combination with 10% povidone-iodine (ratio 1 : 1) or 6% sodium hypochlorite was comparable to those on autoclaved medium.</p>
A30012 POSTER	<p>Dimorphic Goat Amelogenin Alleles on Sex Chromosomes for Gender Determination of Preimplantation Embryos Hsiao-Ling Chen, Tung-Chou Tsai, Jan-Chi Huang, De-Chi Wang, and Chuan-Mu Chen</p> <p><i>Abstract</i>—Amelogenin (AMEL) is a conserved gene located on the sex chromosomes of mammals. It is involved in the formation of enamel, which is the hard, white material that forms the protective outer layer of each tooth. In this study, we first cloned the coding sequences of the goat AMELX and AMELY transcripts from female and male lamb enamel tissues during tooth development. All 207 amino acids of the putative AMEL proteins from the cDNA coding regions of both sex chromosomes were the same, but the AMEL sequences of the 3'-untranslated regions (UTR) were different. The results showed that the nucleotide sequences of intron 5 of the goat AMELX and AMELY genes contained multiple deletions/insertions and had only 48.5% identity. Based on the dimorphic AMEL intron sequences, a set of sex-specific primers was successfully applied to goat gender determination. A high sensitivity for sex determination was reached with a minimal amount of template, such as a trace amount of genomic DNA from a single blastomere isolated from embryos at the blastula stage among different strains of goats.</p>
A30013 POSTER	<p>Cloning and Expression of the Human Extracellular Superoxide Dismutase (EC-SOD) Gene in Probiotic Lactobacillus casei Chuan-Mu Chen, Zi-Lun Lai, Chih-Ching Yen, Miao-Ling Wang, and Hsiao-Ling Chen</p> <p><i>Abstract</i>—Reactive oxygen species (ROS) have been implicated in a number of disease processes. Oxidative stress is inhibited by enzymatic defense mechanisms, such as superoxide dismutase, catalase, and glutathione peroxidase. Extracellular superoxide dismutase (EC-SOD or SOD3) is an antioxidant enzyme secreted by cells to prevent overproduction of reactive oxygen species. It could potentially be used to prevent and cure cardiovascular disease, neurological disorders, and inflammation resulting from</p>

	<p>the accumulation of superoxide anions. In this study, we expressed the EC-SOD gene isolated from a human aortic smooth muscle cDNA library in food-grade <i>Lactobacillus casei</i> CCRC10679. We used an 18-aa signal peptide from human SOD3 (hSOD3) to mediate extracellular secretion. After electroporation and 20 rounds of erythromycin antibiotic selections, two clones were isolated that expressed high levels of recombinant EC-SOD. The recombinant protein was purified from <i>L. casei</i> /hSOD3 using fast protein liquid chromatography (FPLC) with a heparin affinity column. The purified enzyme showed two bands at 38-kDa (monomer) and 76-kDa (dimer) by SDS-PAGE and western blotting. The 76-kDa band was also detected by a nitroblue tetrazolium assay. Antioxidant activity of the purified EC-SOD was determined using a water-soluble tetrazolium (WST-1) assay to demonstrate that production of recombinant EC-SOD in the food-grade <i>L. casei</i> actually possessed enzymatic activity.</p>

Morning, August 25, 2013 (Sunday)

SESSION – 2 (ICEEA)

Venue: Royal Room 2

Session Chair: U. Beker

Time: 10:40 – 12:30

E013	<p>Alkaline pretreatment of waste activated sludge in anaerobic digestion Watcharapol Wonglertarak and Boonchai Wichitsathian <i>Abstract</i>—Slow degradation of waste activated sludge (WAS) is a disadvantage of anaerobic digestion leading to high sludge retention time in conventional digesters. So, this study was proposed to increase biodegradability of WAS by alkaline pretreatment, and effect of pretreatment on the performance of anaerobic digestion and treatment efficiency was evaluated under both ambient and thermophilic condition. The soluble chemical oxygen demand (SCOD) and biochemical oxygen demand (BOD) fractions increased when pH values were increased. The solubilization had the highest increase in the pH range of 11 to 12 and gradually increased in the pH range of 8-11. However, the BOD₂₀/COD ratios decreased for adjusted pH 10 and pH 11, and biodegradation was limited at pH 12. And pH 8 was the optimal value this alkaline pretreatment on anaerobic digestion. In alkaline pretreatment thermophilic anaerobic condition (PTAN), the result remove were 42.16%, 43.15% and 50.64% for TS, VS and COD removal, respectively, which are higher efficiency and gas production when compared to other conditions.</p>
E014	<p>Effect of activated carbon addition with enhance performance on a membrane bioreactor (MBR) Wimonmas Boonyungyuen and Boonchai Wichitsathian <i>Abstract</i>—The paper aims at studying the effect of activated carbon (AC) on pollutant removal and filtration performance of Hybrid Membrane Bioreactor (HMBR) were operated at hydraulic retention time of 24 h. under the textile wastewater treated by anaerobic digestion. AC addition led to TMP decrease for the rate of HMBR system to about twice the rate of the MBR system. The irreversible fouling of HMBR was 2 times lower than MBR system, where the decrease was mainly caused by the cake resistance reduction. In addition, foulant found in HMBR system was 9.12% lower than MBR system because AC can absorb foulant. The removal efficiencies of HMBR were higher than MBR system. The TKN removal of HMBR system is higher than MBR at 14.2%. This is due to the biofilm on AC surface which allows anoxic condition inside porous biofilm and enhances nitrite/nitrate removal efficiency.</p>
E015	<p>A Comparison of the Mussel <i>Anodonta woodiana</i>'s Acute Physiological Responses to Different Algae</p>

	<p>Diets</p> <p>Yuxian Liu, Aimin Hao, Yasushi Iseri, Takahiro Kuba, and Zhenjia Zhang</p> <p><i>Abstract</i>—The bivalve <i>Anodonta woodiana</i> is widely distributed throughout Chinese freshwaters and is an important economic pearl mollusk. Recently, <i>A. woodiana</i> as a biomanipulation tool in Chinese lakes due to its strong suppression of phytoplankton, has been attracted increasingly more attention. In order to examine whether <i>A. woodiana</i> can exert grazing pressure on <i>Microcystis</i> and to evaluate the different effects of each algae diet on mussels' potential growth, a comparative study was carried out on the acute physiological responses to variable microalgae diets including toxic microcystin-producing cyanobacteria <i>Microcystis aeruginosa</i> and non-toxic green algae <i>Scenedesmus obliquus</i>. The values of filtration rate, absorption efficiency, oxygen consumption rate and ammonia excretion rate of <i>A. woodiana</i> were measured and finally the scope for growth (SFG) value as a measure of metabolic energy balance for <i>A. woodiana</i> was calculated and compared. The results showed that the mussel <i>A. woodiana</i> has a higher grazing ability on the toxic <i>M. aeruginosa</i> compared with the green algae <i>S. obliquus</i>; furthermore, the effects of different algae diets on SFG of <i>A. woodiana</i> demonstrated that the toxic <i>M. aeruginosa</i> may supply more energy for <i>A. woodiana</i>'s potential growth. These results indicated that <i>A. woodiana</i> has strong adaptation ability when they were exposed to toxic <i>Microcystis</i> solution in this study, which implied that there is high application feasibility of <i>A. woodiana</i> as a toxic <i>Microcystis</i>-blooming controller in practice.</p>
E016	<p>Remote Monitoring Device Design of Water Quality Information for Rivers and Lakes Based on ARM Techniques</p> <p>Jiping Xu, Lingbin Wang, Jiabin Yu, Xiaoyi Wang, Junyang Yao</p> <p><i>Abstract</i>—In the context of rivers and lakes' environmental deterioration as well as the water bloom's explosion, an informative remote monitoring device of water quality is exploited for rivers and lakes. Based on the ARM Technique, serial communications technology, GPS global positioning technology, and GPRS/3G remote data communication technology are adopted to exploit a main controller of water quality monitoring which is made of input and output interfaces, analog parameter input interfaces, standard interface and Network Interface. The idea of modularization is used in constructing the software system combined with the YSI data acquisition system, security monitoring system, pumping water system, global positioning system(GPS). The practical running indicates that on the basis of collecting and transmitting the water quality information, the instrument can well meet the control requirements.</p>
E017	<p>Electrode material of ceria-substition LSCCM for symmetric solid oxide fuel cells exposed to H₂ fuel containing H₂S</p> <p>Yang Song, Wenyi Tan, and Qin Zhong</p> <p><i>Abstract</i>—10 at.% ceria-substition on A-site for La_{0.75}Sr_{0.15}Ce_{0.1}Cr_{0.5}Mn_{0.5} (noted as LSCCM) was synthesized by the sol-gel process. The characterizations were done by XRD and SEM. The structures, before and after exposure to 5% H₂S-5% wet H₂ at 900 °C, were demonstrated using X-ray diffraction (XRD). And best sulfur tolerance of LSCCM was studied. It also demonstrated that LSCCM had good structural compatibility with electrolyte YSZ. SEM test exhibits a homogeneous distribution of pores. The results of electric performance test prove that the maximal power density was 16.03 mW cm⁻² in 5% H₂S-5% wet H₂ at 900 °C.</p>
E034	<p>Modeling Impreciseness of Trophic State Levels for Eutrophication Assessment</p> <p>Tejaswini Dayanand Nalamutt, Subhankar Karmakar</p> <p><i>Abstract</i>—Tremendous efforts have been made to propose numerous indices for quantifying states of eutrophication in lentic water bodies over the last decades. Most of the indices are developed or modified considering conventional trophic state indices [e.g., Carlson trophic state index (TSI)] or pre-specified</p>

	<p>ranges of cause and response variables [e.g., index proposed by Organization of Economic and Cooperation and Development (OECD)], where a strong correlation structure must exist among cause and response variables. Here an attempt is made to model impreciseness or subjectivity of trophic state levels, especially for weakly correlated variables. A generalized framework using fuzzy synthetic evaluation (FSE), analytic hierarchy process (AHP) and the concept of statistical entropy is proposed to assess the trophic state of lentic water bodies. The proposed methodology has been tested with the case study of Jordan lake data set collected from the United States of Geological Survey (USGS) data base. The result shows that, the eutrophication problem is critical mostly during the months of August to October, and the method can efficiently capture the rapid changes in trophic states. The sensitivity of the model has been tested with different weight structures for cause and response variables considered during model development, and the robustness of the model has also been tested with different weighting techniques.</p>
E037	<p>Short Term Trend of Vegetation Removal Estimation by Aerial Photograph Analysis and Flood Flow Simulation Deen Islam, Yuji Toda and Tetsuro Tsujimoto <i>Abstract</i>—This study purposes to estimate the spatial distribution of vegetation removal on a gravel bed and braided river, called the Tenryu in Central Japan. Aerial photograph and flood flow simulation are used to observe the vegetation change. High annual flood flow promotes vegetation removal and low flood flow in the preceding year accelerates vegetation invasion. Numerical simulation of flood flow can estimate the spatial conditions of vegetation wash out or vegetation remaining with minor misjudgment. Inclusion of sediment transport equation in the simulation may reduce the misjudgment during computation.</p>
E038	<p>Phenolic Based Pharmaceutical Contaminated Wastewater Treatment Kinetics by Activated Sludge Process Sumana Siripattanakul-Ratpukdi <i>Abstract</i>—This study was to investigate phenolic based pharmaceutical-contaminated wastewater treatment using activated sludge. Activated sludge was grown and acclimated using commercial medium with Chemical Oxygen Demand (COD) of 300 mg/L. Phenol was used as a representative of phenolic based pharmaceuticals. Duplicate batch experiment was operated in horizontal shaker at 150 rpm for 8 hr. The experiment divided into 2 parts: 1) determination of phenol degradation potential by activated sludge at the concentrations of 0-100 mg/L and 2) investigation of phenol-contaminated wastewater treatment efficiency at the phenol concentrations and COD of 0-100 and 200-5,000 mg/L, respectively. COD, phenol and mixed liquored suspended solids (MLSS) were measured hourly. Based on the result from the first part, it was found that the activated sludge could treat phenol at the initial phenol concentrations of 10-100 mg/L for 7% to 100%. Higher phenol concentrations resulted in lower phenol removal efficiencies. From the second part, the activated sludge could treat COD of 23-94% and phenol of 0-98%. The result indicated that both initial phenol concentrations and COD affected wastewater treatment and phenol removal efficiencies. Treatment of wastewater contaminating phenol by the activated sludge followed competitive inhibition kinetic model with V_{max} and KI of 220 mg/L/hr and 200 mg/L, respectively. Based on MLSS monitoring, activated sludge well grew during the tests.</p>
E043	<p>Adsorption of Copper Using Pomelo Peel and Depectinated Pomelo Peel Penpun Tasaso <i>Abstract</i>—The removal of Copper (Cu^{2+}) from aqueous solution by adsorption on pomelo peel (PP) and depectinated pomelo peel (DPP) were studied. Factors affected to adsorption; initial pH, initial concentration, contact time and temperature were investigated. It was found that the highest Cu^{2+} adsorption capacity for PP and DPP were 19.7 mg/g and 21.1 mg/g at the following conditions; pH =</p>

	<p>4, 125 mg/l of initial concentration, temperature of 25 °C and equilibrium time about 60 min. Adsorption isotherm of both PP and DPP were well described by the Langmuir model. The kinetic studies showed that a pseudo-second-order rate model was adopted to describe the Cu²⁺ adsorption. The thermodynamic parameters of the Cu²⁺ adsorption were evaluated at temperatures of 25, 35 and 45 °C. The negative of standard free energy change and enthalpy change revealed that the adsorption process is spontaneous and exothermic.</p>
E044	<p>Chromium and Iron Removal for Hard Chrome Bath Recycling using Eggshell Sorbent Theeraporn Rubcumintara <i>Abstract</i>—This research is to study the removal of chromium and iron from spent hard chrome plating solutions using eggshell as selected bio-waste sorbent. It was found from the batch experiments that the chemically modified eggshell with hydrochloric acid resulted in better performance in comparison with the unmodified eggshell. The removal efficiency as well as adsorption capacity for Fe(II), Cr(III), and Cr(VI) were 95%, 100%, 13% and 94.5 mg/g, 18.8 mg/g, 173.4 mg/g, respectively in 48 h. The kinetics of chromium and iron sorption were described by pseudo first order and pseudo second order kinetic models. The experimental kinetic data fitted well with the pseudo second order kinetic model for both chromium and iron. The adsorption isotherms using Langmuir and Freundlich models were also evaluated by linearized forms. The best-fitted model to the experimental equilibrium data for eggshell sorbent was found to be the Freundlich model. From this investigation, the purification and recovery of hard chrome bath from spent plating solutions can be achieved using eggshell adsorption.</p>
E045	<p>Sustainable Design in Event Design: Opportunities and Limitations S'harin Binti Mokhtar, Yi-Shin Deng <i>Abstract</i>—Events offer valuable economic, social, cultural and educational benefits, and potential growth in tourism for many international destinations. As society gains a greater understanding about these impacts, events are being challenged to become more accountable for their managerial decisions and to produce outcomes which are more sustainable on multiple criteria and have positive environmental impacts. The purpose of this study was to discuss sustainable design in event design. Literature review will be conducted in this study as the research methodology. The aims of this study are (1) to discuss the opportunities of sustainable design in event design; (2) to discuss the limitations of sustainable design in event design. Lastly, findings from this study will provide insights on the opportunities of sustainable design in event design to develop better sustainable events in the future and limitations that have to overcome before a sustainable event can be organized.</p>
E047	<p>Degradation of Paracetamol and Norfloxacin in Aqueous Solution Using Vacuum Ultraviolet (VUV) Process Thunyalux Ratpukdi <i>Abstract</i>—The removal of pharmaceutical and personal care products (paracetamol and norfloxacin) in water by vacuum ultraviolet (VUV) process was studied. The effects of initial pharmaceutical concentrations (1, 5 and 10 mg/L), initial pHs (5, 7 and 9), VUV powers (30, 60 and 120 W) and bicarbonate concentrations (100 and 200 mg/L as CaCO₃) were investigated. The experiments under ultraviolet (UV) condition were performed for comparative purpose. The results showed that the VUV process exhibited superior degradation performance than that by the UV process. The rates of both paracetamol and norfloxacin removals were second order reaction. Higher concentrations resulted in the decrease of pharmaceutical degradation rate. The initial pH had slight impact on pharmaceutical removal efficiency and the neutral pH showed the highest degradation efficiency. Bicarbonate obviously decreased the pharmaceutical removal. This is due to OH• scavenging and the VUV light absorption of the bicarbonate. For the effect of VUV powers, removal efficiencies increased as the increase of VUV</p>

	powers.

12:30 – 13:30	Lunch
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Afternoon, August 25, 2013 (Sunday)

SESSION – 3 (ICEBB)

Venue: Royal Room 1

Session Chair: Kokyo Oh

Time: 13:30 – 15:30

A011	<p>Hardware Simulator for Seizure, Preseizure and Normal Mode Signal Generation in Labview Environment for Research</p> <p>UvaisQidwai, Mohamed Shakir, AamirSaeed Malik and NidalKamel</p> <p><i>Abstract</i>—Currently numerous theories and model have been developed to associate various findings or in relating EEG patterns to develop a software simulator. Here we develop a hardware simulator of the EEG model or to simulator any EEG data set in either .edf or .tdms ot .txt format from any patient or database depository. The proposed hardware simulator will enhance researchers and hardware validators to simulate, validate and test their detection algorithms forehand, before actual testing the algorithm in the actual standalone hardware. This system make use of signal generator block and then pass this data to the external hardware data acquisition system like the NI-DAQ [1] with an external option to transfer the data wirelessly(Bluetooth, Zigbee, Wi-Fi) or wired (analog port, serial bus etc). this simulator can simulate or generate seizure, pre-seizure and normal EEG waveform. The paired cost effective Arduino microcontroller (in case of wireless system) will be having the algorithm in built in order to classify the type of signal received. This can help in developing wearable EEG Seizure monitoring system (WBAN-HL7). This paper will enhance the purpose of developing a system which can alert locally in a form of wearable gadget, whenever a pre-seizure occurs. This can help the epileptic patient or the user to take precautionary action to save themselves from accidents or injury, just before the occurrence of the seizure. Useable of this embedded wearable version can ensure a better everyday activities and the psychological stress can be reduces to leverage the social interaction.</p>
A014	<p>Water Quality Assessment Based on Fuzzy Entropy And Similarity Measures For Tai Lake</p> <p>Wang Xiaojing and ZouZhihong</p> <p><i>Abstract</i>—Similarity measures were used to assess the water quality of 7 sites of Tai Lake in 2011. The data were collected once a week and there were 364 samples totally. In each samples, the concentrations of three indicators were collected: DO, COD, NH3-N. For the water quality data was a fuzzy set, semi-normal distribution membership functions were used to obtain the pollution condition of a given sample. The calculation results of fuzzy entropies were used to determine the weights of the indicators. The weight of DO was higher than the other two indicators. This also explained the affection of DO on other indicators. The similarity degree of the results of three similarity measures was 76.10%. This illustrated that they were suitable to determine the water quality ranks. Hamming similarity measures and Euclid similarity measures gave 94.51% of the samples the same water quality ranks. The sample site Jishuigang, Shanghai City was taken to illustrate.</p>
A015	<p>Role of Biosurfactant Produced By Fusarium sp. BS-8 in Enhanced Oil Recovery (EOR) Through Sand</p>

	<p>Pack Column</p> <p>MuneerQazi, MishalSubhan, Nighat Fatima, Muhammad Ali, Abdul Hameed and Safia Ahmed</p> <p><i>Abstract</i>—Microbial enhanced oil recovery (MEOR) represents the use of microorganisms to extract the remaining oil trapped up in reservoirs. Recently, the biosurfactant application in MEOR has been preferably encouraged over microorganisms due to their potential role in oil mobility and miscibility. The present study was conducted to develop practical microbial solutions and approaches for improving oil production. A newly isolated fungal strain <i>Fusarium</i> sp. BS-8 (JQ860113) produced an effective biosurfactant. The crude biosurfactant was able to reduce the surface tension of water from 72 mN m⁻¹ to 32 mN m⁻¹, with 71% hydrocarbon emulsifying index and an oil displacement activity (ODA) in the range of 7-13 cm. Under optimized conditions, up to 5.25 g L⁻¹ crude biosurfactant was recovered from fermentation broth with ethyl acetate/methanol (5:1) with an ODA of 13 cm. A sand pack column was constructed to simulate an oil reservoir. The use of crude biosurfactant resulted in the additional oil recovery of 46% over untreated column. The biosurfactant was found to be stable at wide range of temperature (0-90 °C), pH (5-9) and salt concentration (1-15%), suggesting it to be suitable candidate for biosurfactant mediated enhanced oil recovery.</p>
A016	<p>Extended spectrum beta-lactamase producing bacteria in waste water Alexandria, Egypt</p> <p>Amira Amine</p> <p><i>Abstract</i>—Waste water is a reservoir of resistant bacteria and an excellent location to describe the pattern of fecal carriage of extended-spectrum β lactamases (ESBLs) producing bacteria in the community. In this study, the aim was to determine the proportion of ESBL producing Gram-negative bacteria in waste water. Also to describe the antimicrobial susceptibility and types of beta-lactamases (TEM, SHV and CTX-M) among <i>E. coli</i> and <i>K. pneumoniae</i> isolates from waste water in the city of Alexandria, Egypt. The ESBLs compromised 69.8% in influent sewage and 57.7% in effluent sewage of the total Gram negative bacteria. The most frequently detected gene among <i>E. coli</i> isolates while blaTEM, while the most common among <i>K. pneumoniae</i> isolates was blaSHV.</p>
A2004	<p>Effect of Ethyl methane sulphonate and dimethyl sulphate on some growth characters of <i>Senna occidentalis</i></p> <p>Azza A. Tawfik; Gehan, G. Mostafa and Mohamed S. Gad</p> <p><i>Abstract</i>—<i>Cassia occidentalis</i> is widely consumed by animals and humans. It is used in several traditional medicines to cure many diseases. A wide range of chemical compounds have been isolated from all parts of the plant. This research has been conducted to study the effect of ethyl methane sulphonate (EMS) and dimethyl sulphate (DMS) on alkaloids and saponins in different parts of <i>Cassia</i>. To achieve this aim, seeds were soaked in EMS at 0, 1000, 2000, 3000, 4000, and 5000 ppm and DMS at 200, 400, 800, 1600 and 3200 ppm for 6 h where the control seeds were remained in the water for the same period of soaking. Seed were sown in 25cm plastic pots containing a soil mixture of clay and sand (1: 1 v/v). At the end of each regeneration alkaloids and saponins were determined in leaves, stems and roots. The effect of EMS and DMS concentrations were fluctuated in both generations.</p>
A020	<p>New photocatalyst LiNbO₃ for corrosion reducing and environment friendly sustainable concrete construction</p> <p>Ranjit Kumar Nath, M. F. M. Zain and Abdul Amir H. Kadhum</p> <p><i>Abstract</i>—By the carbonation process concrete construction absorbs carbon dioxide from surrounding environment. This absorbed carbon dioxide reacts with the calcium oxide, which is already present in Reinforced concrete (RC) and form calcium carbonate an acidic compound that enhances corrosion on the surface of the reinforcement. Addition of photo catalytic materials to the RC structure during its construction phase could reduce the corrosion problem of RC materials. This material hinders calcium</p>

	oxide to form acidic compound and creates a complex compound. In combination with light, this complex compound is oxidized, and residual compound will exist in or surface of RC material. In this study we find out a new photo catalytic material LiNbO_3 in concrete construction, adjustable with RC material for reducing corrosion problem and enhancing oxidization process of volatile organic compounds (VOC).
A021	<p>Transmission loss computed of Star Topology Sensor Network base on DT, RED and SFQ buffer mechanism for Overseeing High Rise Building Structural Health</p> <p>Md. Ershadul Haque and M F M Zain</p> <p><i>Abstract</i>—Wireless sensor network is the new invention applying for detects the damage of the civil infra-structural health. Recently, Wireless sensor network are widely used because it's low cost, portable, easy to run, install, reconfigured, easy maintenance. The coverage area becoming a crucial issue for multi-hop sensor network locally or remotely historical or high-rise structural health overseeing. The objective of this article is to design star topology sensor network and loss investigation of the sensor node transmit signal at the base station. The loss of the received signal are computed at base station based on DT (Drop Tail), RED (Random Early Discard), SFQ (Stochastic Fair Queuing) buffer mechanism.</p>
A022	<p>Working Range Assessment for Interventional Guidance Using Two Electromagnetic Sensors</p> <p>Chia-Hsiang Wu, Mei Yun Su, Cheng-Chien Chang and Ting-Sheng Lin</p> <p><i>Abstract</i>—Electromagnetic trackers have been used extensively in image-guided surgery and therapy. During the procedure, it is essential to evaluate the effective working range of the tracking system, because the accuracy could be influenced by the environment and manner in which the procedure is conducted. We assume that the guidance is provided by two electromagnetic sensors attached at the distal ends of two endoscopes in order to achieve end-to-end coaptation of the human inner tubular structure. During the procedure, the sensors become very close to help surgeons find the desired path inside the body; as a result, the sensors can potentially cause distortion that adversely affects the accuracy of the tracking system. Thus, it is necessary to determine the working range of the tracking system. The range was evaluated by two methods: static measurement and dynamic measurement. Static measurement determines the range by placing the sensors in several positions and collecting data when the sensors are stationary, whereas dynamic measurement allows movement of the sensors. The experimental results show that these two methods are useful in determining the effective working range.</p>
A30001	<p>A Review of the Accumulation and Distribution of Persistent Organic Pollutants in the Environment</p> <p>Jolly Jacob</p> <p><i>Abstract</i>—Persistent Organic Pollutants (POPs) have a long life in soils, sediments, air or biota. There has been a recent upsurge of interest in the development of low cost reliable measures which are required in order to detect and trace current concentration levels of POPs due to increasing levels of accumulation within the living organism. It is accompanied by transformation as well as toxicity makes it ideal to examine the impact on the environment which has been the focus of this review. There are still debates that rage around the issue including relevance of some physiopathologic effects of POPs on the human body along with epidemiological and clinical effects on the human population. Hence in this review there is examination and presenting of arguments in relation to the sources, properties and types of POPs in the atmosphere along with examining the toxicity, analytical techniques and monitoring of atmospheric and biological concentration of POPs in the human population.</p>
A30006	<p>The Potential of Rice bran and Chito-Oligosaccharide as Natural Prebiotics on Traditional Tempe in Indonesia</p> <p>Agnes Sri Harti, Anis Nurhidayati, Desy Handayani</p> <p><i>Abstract</i>—Tempe is solid soybean product fermented with <i>Rhizopus</i> sp mould which is widely consumed in Indonesia. Recently the concept of food fortification is used in characterizing health improvement food</p>

	as functional bio-supplement. Chito-oligosaccharide rice bran tempe as one form of vegetable protein based fermented food fortification made of soybean. The mixture of soybean: rice bran (2:1) and chito-oligosaccharide 2% w/w shows optimum organoleptic result in rice bran chito-oligosaccharide tempe. Research results shows rice bran and chito-oligosaccharide is potential to be natural prebiotic in soybean fermentation namely tempe therefore it can be used as functional food that provides immunostimulatory effects.
A30008	<p>A Model of Organization Knowledge Management Maturity Kittipong Tissayakorn, Fumio Akagi and Yu Song</p> <p><i>Abstract</i>—Knowledge management entails formally managing knowledge resources in order to facilitate access and reuse of knowledge, typically by using advanced information technology. In this paper analyzes the organizational knowledge management and discusses knowledge management maturity aim and process. Then organizational knowledge management maturity model is established based on the research of some typical international project management maturity models. The study is intended to guide organizations to improve and optimize their knowledge management capability.</p>
A30009	<p>Diagnosis of Heart Valve Disorders through Trapezoidal Features and Hybrid Classifier Fatemeh Safara, Shyamala Doraisamy, Azreen Azman, Azrul Jantan, Sri Ranga</p> <p><i>Abstract</i>—Numerous studies are being conducted in recent years focusing on phonocardiographic (PCG) signals due to their capability to characterize heart sounds. These characteristics can be exploited in developing computer-aided auscultation system as a complementary tool for clinicians in diagnosis of cardiovascular disorders. This study proposes a new type of features to distinguish five categories of heart sounds, including normal, mitral stenosis, mitral regurgitation, aortic stenosis, and aortic regurgitation. PCG signals were collected from online resources and training CDs. Wavelet packet transform was utilized for heart sound analysis as opposed to discrete wavelet transform that has been extensively used in the previous studies. Then, trapezoidal function was calculated for deriving feature vectors. A hybrid classifier was designed composing of three types of classifiers, multilayer perceptron (MLP) artificial neural network, k-nearest neighbor (KNN), and support vector machine (SVM), to classify feature vectors. The promising results demonstrate the effectiveness of the proposed trapezoidal features and hybrid classifier for heart sound classification.</p>

Afternoon, August 25, 2013 (Sunday)

SESSION – 4 (ICBFE)

Venue: Royal Room 2

Session Chair: Sezai Ercisli

Time: 13:30 – 15:30

K00002	<p>Microwave Sterilization of Oil Palm Fruits: Effect of Power, Temperature and D-value on Oil Quality Maya Sarah and Mohd. Rozainee Taib</p> <p><i>Abstract</i>—Microwave sterilization of oil palm fruits offer significant advantages in fast process due decimal reduction time (D-values) for this typical process was less than 17 minutes. It also required lower energy to increase temperature of the fruits during sterilization process. Instead of better operation process, palm oil quality is significant to investigate so as to evaluate relationship between process parameters (D-value, temperature and power) and oil quality. Free fatty acid (FFA) of palm oil was observed below</p>
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	<p>standard requirement for commercial palm oil. Other minor component such as vitamin E was found on significant concentration in palm oil, while carotenoids content was lower than carotenoids in commercial palm oil. Reducing D-value at elevated power and temperature has improved reduced sterilization period and protect oil quality from lipases activity. As opposite, those elevated temperature promoted degradation of carotenoids in palm oil. However it did not influence the quality of vitamin E in palm oil.</p>
K00004	<p>Effects of Humidity and Temperature on the Performance of Milk Powder Baghouses James Litchwark, James Winchester, Justin Nijdam <i>Abstract</i>—A bench scale filtration apparatus was used to investigate the influence of powder composition, and temperature and humidity of the carrier gas on the structure of the filter cake formed in milk powder baghouses. Two types of powder, a skim milk powder (SMP) and a high fat milk protein concentrate (MPC) were filtered from air using a polyester filter, at a range of temperatures and humidity levels. The filter cake mass and pressure drop were measured and used to calculate the cake permeability, and the filter cake structure was examined using a microscope. Increased stickiness of particles resulted in the appearance of dendritic structures in the filter cake and hence an increase in porosity and reduction in cake resistance. Cake resistance in SMP was lowest at the highest relative humidity tested, indicating that cohesion in SMP was primarily due to the glass transition of amorphous lactose. The cake resistance in MPC was lowest at the highest temperatures tested, but was not affected by relative humidity, indicating that cohesion in this powder was primarily due to melted fat. In general, the MPC formed a more permeable filter cake and exhibited much higher deposition onto the filter than the SMP. The deposition rate of SMP powder decreased at higher relative humidity. The cause of this effect could not be determined, however likely explanations are increased agglomeration and gravitational settling of stickier powder prior to reaching the filter, or the breakage of fragile dendritic structures formed by sticky powder. The deposition rate of MPC was not affected by either temperature or humidity.</p>
K00005	<p>Peroxidase Activity in Native and Callus Culture of <i>Moringa oleifera</i> Lam. Lalida P. Shank, Thidarat Riyathong, Vannajan S. Lee and Srisulak Dheeranupattana <i>Abstract</i>—In vitro <i>Moringa oleifera</i> Lam. seedlings were successfully produced through seed culture on Murashige & Skoog (MS) agar medium containing 3% (w/v) sucrose and 0.2% (w/v) Gelrite™ in the absence of growth regulators under 1,500 lux of light density, 16 hour photoperiod light at temperature of 25 ± 2 °C. Shoot-derived callus and root-derived callus of <i>M. oleifera</i> were established via culture of shoot and root on the MS medium supplemented with 0.5 mg/l of 2,4-dichlorophenoxy acetic acid (2,4-D) in the dark at 25 ± 2 °C. Stem, leaf and root of native <i>M. oleifera</i> and <i>M. oleifera</i> callus were assayed for peroxidase activity using guaiacol as a substrate of the enzyme. In native plant, crude extract from root provided the highest peroxidase specific activity, followed by those from stem and leaf with the specific activity of 19.73 ± 0.18, 16.56 ± 1.43 and 13.38 ± 1.04 unit/mg protein, respectively. Crude extract of root-derived callus and shoot-derived callus of <i>M. oleifera</i> possessed specific activity of 167.25 ± 16.12 and 103.99 ± 10.64 unit/mg protein. These values are significantly higher than their counter parts from native <i>M. oleifera</i> suggesting the potential use of the callus cultures as new and improved sources of peroxidase.</p>
K00006	<p>Bioconversion of Ferulic Acid into High Value Metabolites by White Rot Fungi Isolated from Fruiting-Body of the Polypore Mushroom Keerati Tanruean, Nopakarn Chandet and Nuansri Rakariyatham <i>Abstract</i>—The trend toward natural flavors has led to extensive research in this area. In the biotechnological process, ferulic acid was commonly used as a substrate and employs microorganisms as a biocatalyst. In this study, the potential of three white rot fungi- <i>Ganoderma mastoporum</i>, <i>Ganoderma australe</i> and <i>Trametes pavonia</i>- isolated from the fruiting-body of the polypore mushroom and two strains</p>

	<p>of commercial mushrooms (<i>Ganoderma lucidum</i> and <i>Schizophyllum commune</i>) were investigated for their ability to convert ferulic acid into its metabolites using GC-MS. The results showed that <i>G. lucidum</i>, <i>S. commune</i> and <i>T. pavonia</i> were able to convert ferulic acid to 4-vinyl guaiacol as a major degradation product, while the extract of <i>G. australe</i> and <i>G. mastoporum</i> grown in the same medium were found to obtain vanillin as a major component. Moreover, various degradation products, including methoxy benzoquinone, 2-methoxyhydroquinone and methyl eugenol, were also found in this experiment.</p>
K00007	<p>The Adsorption Coefficient (K) for Determination of Total Lipid and Gamma oryzanol Content in Rice Bran Varieties from the Northern of Thailand Anakhaorn Srisaipet <i>Abstract</i>—This research has studied the extraction and analyzation of gamma- oryzanol and total lipid in new rice bran glutinous varieties which were analyzed by the developed technique. The adsorption coefficient (K) of a solute between a solid phase and a solvent phase were studied in the solid-liquid extraction which is defined by the solid-liquid equilibrium condition used to determine the oil extracted in short time so the operation of extraction time been considered. The percentage of oil extracted (% dry weight) is highly increase when time of extraction at 10 minute (30°C) and then it shown slowly increasing rate. From the K values, it was estimate that about 16.52-41.98 mg/g dry basis of the lipid and 1.15-2.96 mg/g dry basis of the gamma oryzanol were extract by heaxane. Sanphatong 1 had highest total lipid and gamma oryzanol while the lowest content was found in Maejo 2.</p>
K00008	<p>Effects of Thermosonication on Escherichia Coli O157:H7 and Salmonella Enteritidis as A Function of pH and Temperature Wei-Seng Kiang <i>Abstract</i>—The effects of thermosonication and thermal treatment on Escherichia coli O157:H7 and Salmonella Enteritidis suspended in citrate-phosphate buffer of pH 3 to pH 6 were studied at 30, 40 and 50 °C. Application of ultrasound and low pH was found to enhance the inactivation of the pathogens; with the highest reduction of the pathogens was achieved by thermosonication at 50 °C in pH 3 buffer. Approximately 4 log cycle reduction of E. coli O157:H7 and 6 log cycle reduction of S. Enteritidis were obtained after being thermosonicated for 15 minutes at 50 °C.</p>
K00009	<p>Stability of PAT Protein Expression of Multiple Generations of Genetically Modified Soybean Developed in Korea Kijong Lee, Sung-Dug Oh, Si-Myung Lee, Kyung-Hwan Kim and Tae-Hun Ryu <i>Abstract</i>—Genetically modified (GM) soybeans (<i>Glycine max</i> (L.) Merrill) expressing the γ-tocopherol methyltransferase gene (γ-TMT) and the selectable marker phosphinothricin acetyltransferase (PAT) were developed by the Rural Development Administration in Korea. In this study, we used Southern blot analysis to examine the stability of inserted genes in GM soybeans, and enzyme-linked immunosorbent assay (ELISA) was conducted to analyze inherent PAT protein levels. PAT expression levels varied among different plant generations and plant organs isolated from GM soybean. PAT expression was the highest in the leaves of plants at the beginning of the pod stage (R3) (12.36 μg/g) and the lowest in pods collected from plants that were at the fully mature stage (R8) (1.43 μg/g). The PAT protein showed a decreasing pattern of expression during plant growth. As expected, the expression of PAT proteins was not detected in control soybean plants.</p>
K00010	<p>Effect of Vibration Characteristics of Skull in Mastication of Crispy Foods on Food Texture Ren Kadowaki, Norio Inou, Hitoshi Kimura <i>Abstract</i>—It is important to clarify characteristics of sounds in mastication of foods because the food texture is affected by them. This study deals with food texture of crispy foods focusing on two types of chewing sounds in eating the foods, which are air conduction sound and bone conduction sound. Five</p>

	<p>kinds of snack foods were used for this study. Air conduction sound was recorded from microphones and bone conduction sound around cheekbones was measured with a headphone-like instrument in which acceleration sensors were embedded. The two types of sounds were analyzed by FFT and power spectra were obtained. Finite element models were also applied for examining vibration characteristics of human skull. The computational results of modal analysis show that size of human skull affects bone conduction sound, which was identified as different power spectra from experimental data of an adult and a child. These results suggest that biomechanical factor of skull affects eating quality of foods.</p>
K00011	<p>Thermal Analysis of Lipid Crystallization and Water Ice on Coconut Milk Emulsions: Effect of NaCl Concentrations</p> <p>Gingkaew Pairoh, and Tatsawan Tipvarakarnkoon</p> <p><i>Abstract</i>—The aim of this study was to investigate the effect of NaCl concentrations at low temperature (50 to -80°C) on lipid crystallization and freezing water of coconut milk emulsions. Phase change behavior of coconut milk emulsions has been evaluated using differential scanning calorimetry at heating/cooling rate of 2°C/min. Unhomogenized coconut milks (34% fat content) showed an overlapping peak of fat crystals with an onset at 8°C and a large exothermic peak of freezing water at -20°C during cooling. Reheating sample leads to water ice melt at 0°C and subsequently a melting of coconut fat with an endset of 25°C. Commercial coconut milks (18 – 20% fat content) exhibited more than three peaks of crystallization due to a variety of oil droplet sizes in emulsions. To study the effect of salt, NaCl (0 – 4%) were then added to coconut milk (20% fat content) containing 5% w/w acacia gum. Homogenized coconut milk emulsions showed lower crystallization and melting temperatures of water ice in the presence of NaCl. However, it does not affect phase change of fat crystals. Freezing depression could be seen only on aqueous phase of its emulsion.</p>
K00014	<p>Rheological Study and Fractal Analysis of Flaxseed Gum-Whey Protein Isolate Gels</p> <p>Yong Wang, Xuqi Lin, Li-Jun Wang, Dong Li</p> <p><i>Abstract</i>—The Rheological properties and fractal dimensions of flaxseed gum-whey protein isolate (WPI) gels were analyzed in flaxseed gum concentration range of 1%-2% in this study. The Rheological properties of the mixture were significantly influenced by the flaxseed gum concentration. The gel strength increased with the increase of gum concentration. Two models were used in this study, and the calculated fractal dimension of the flaxseed gum-WPI mixture gels were 2.10-2.44 or 2.12-2.63, based on the model selected and the ionic strength applied. These results were in agreement with the fractal dimensions of other hydrocolloid gels. These results would help to understand the microstructure of the flaxseed gum-WPI gels and the influence of gum concentration on that. However, the difference in results between the two models implied that further study is needed to find suitable model for gum-protein mixtures.</p>
K00015	<p>Improved Lactose Powder Properties by In-situ Coating with Additives during Spray Drying</p> <p>Michael Brech, Payel Bagga, David Pearce, Justin Nijdam</p> <p><i>Abstract</i>—The ability of different additives to enrich on the droplet surface during spray drying of aqueous lactose solutions was investigated. The goal of this study was to find an additive coating that increases spray-dryer yield, improves powder flow and prevents caking due to lactose crystallization during storage. The additives tested were Na-caseinate (NaCas), gelatin, lecithin, anhydrous milk fat (AMF) and hydroxylpropyl methylcellulose (HPMC). The aqueous lactose solutions had 10 weight% solids content with a lactose-to-additive dry weight ratio of 9:1. All additives enrich significantly on the droplet surface at the expense of lactose during spray drying. Every additive except AMF enhances the glass transition temperature at the particulate surface and therefore reduces particle stickiness, as demonstrated by improved powder flow and/or product yield compared with the pure lactose powder. Low product yield for HPMC-containing lactose powder can be explained by its low bulk density, which reduces the separation</p>

	<p>efficiency of the cyclone. Poor powder flow for lecithin-containing lactose powder can be explained by its agglomerated nature. AMF is not suitable as an additive due to a low product yield and poor powder flow, a result of stickiness due to the low melting point of fat. None of the additives improve the wetting time of lactose powder, since lactose is already highly hydrophilic, and most of the additives tend to make the particle surface more hydrophobic. NaCas and HPMC are the most promising additives with regards to improving powder flow. NaCas results in a higher product yield than HPMC, but HPMC is the only additive that provides a protective coating for lactose capable of preventing the formation of a hard brittle cake upon lactose crystallization during storage at ambient room conditions.</p>
K00019	<p>Optimization of a Rapid DNA Extraction Protocol in Rice Focusing on Age of Plant and EDTA Concentration AzinFouladvand, Hamed Yari, Alireza Emami, Hamid Reza Mansouri Khosravi and ShadiPourmehdi <i>Abstract</i>—An increase in the world population causes the need to improve the crop and food productivity. It is generally suggested that an extensive attention should be paid to plant breeding efforts to address the issues of food security. Marker Assisted Selection (MAS) is referred to as the use of DNA markers for the selection of desirable traits in segregating/breeding populations. DNA based breeding selection is much more reliable than traditional breeding methods. Breeding populations used to select the desirable traits called segregating. Yet segregating populations need huge financial as well as leisure requirement. However DNA extraction in segregating populations has been always being a limiting factor either because of quantity or quality. The present study was conducted to improve the DNA quality and quantity of rice by investigating the effects of the age of the seedlings and EDTA buffer concentration in order to apply more reliable downstream processes and subsequently to gain better results. As a result, Four weeks old seedlings gave the best quantity of DNA (118.9ng/μl). The concentrations of EDTA in the first step buffer (2mM) and second step buffer (0.1mM) were the best for DNA extraction.</p>

Afternoon, August 25, 2013 (Sunday)

SESSION – 5 (ICEEA)

Venue: Royal Room 3

Session Chair: Chan Jin Park

Time: 13:30 – 15:30

E003	<p>Submerged Macrophyte Restoration Differentiation for a Waterfront Body Hua Wang, Fengqiang Ji, Jing Qin and Yiyi Zhou <i>Abstract</i>—The Inner Lake is a typical tide-influenced waterfront body in Eastern China. Series of environmental factors of the lake changed frequently and extensively due to its location. Regulating the water exchange for an improved living condition to restore macrophyte is very important to establish a healthy ecosystem. A differentiation function for submerged macrophyte restoration was proposed, and the numerical differentiation model was established, in which the projection pursuit theory was used to solve high-dimensional matters. The restoration areas of <i>Vallisneria gigantean</i> L. in the Inner Lake in different hydrological years were forecasted. The results showed that the restoration regions in different typical years varied to some extent. The main restoration areas in the three years were similarly concentrated in the north and south parts in the lake. It was difficult to restore the macrophytes in the mainstream of the lake for its stronger water disturbance and higher suspended sediment concentration.</p>
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E012	<p>Electrocoagulation of Landfill Leachate with Monopolar Aluminum Electrodes Tezcan Un U., Oduncu E. <i>Abstract</i>—In this paper, the removal of COD from landfill leachate using aluminum electrode by the electrocoagulation method was investigated. The studies were run with the parallel plate monopolar aluminum electrodes and the effect of pH and current density on removal efficiency of COD and energy consumption were determined. The initial COD concentration of 4100 mg/L was reduced to 1763 mg/L with the removal efficiency of 57% at the current density of 75 mA/cm² and pH 5.</p>
E018	<p>Modified Starch–enhanced Ultrafiltration for Chromium (VI) Removal Patcharin Racho and Pinitta Phalathip <i>Abstract</i>—With increasing concerns about environmental protection are being made to develop biodegradable starch-based materials using in pollutant treatment, particularly for heavy metals removal. This study was investigated on two cross-linkages of modified starch including amino and carboxyl as the sorbents to remove hexavalent chromium from aqueous solution. The overall resulted showed that only amino crosslinking starch was effective on Cr (VI) chemisorption. The carboxyl crosslinking and non-modified starch were showed too poor adsorption performances. The pH of the aqueous solutions is an important controlling parameter in the heavy metal adsorption processes. The highest efficiency was achieved in acidic condition about pH 5. However, modified starch is an organic material so it can be contaminated in the effluent. The ultrafiltration was used to separate modified starch from the effluent for sufficiently treatment. Also the operating conditions of modified starch enhanced ultrafiltration for chromium (VI) removal were evaluated in this study.</p>
E020	<p>Treatment Wetlands As Ecotechnological Tools For Regenerative Reclamation Of Wastewater: Experiences From Working With Kalyani Model Jayanta K. Biswas and Sukanta Rana <i>Abstract</i>—Presently world is facing mounting water stress, both in quantity and quality, which has prompted many municipalities for a more efficient use of the water resources, including a widespread acceptance of water reuse practices. Treatment technology encompasses a vast variety of options. As a low-cost, eco-friendly approach constructed wetlands are recently promoted for wastewater treatment and end use applications of reclaimed water. The present study was conducted to assess the performance of a series of treatment wetlands (waste stabilization ponds) in wastewater purification in Kalyani, West Bengal, India in the perspective of reclamation and bioregenerative reuse of reclaimed wastewater. The waste stabilization ponds have been proved very efficient and cost-effective nature-based system for increasing the ecological value of wastewater in culturing aqua-crops and thus converting organic wastes into fish biomass.</p>
E021	<p>A Study of the Factors influencing the Optimal Size and Site of Distributed Generations Soma Biswas, S.K. Goswami, A. Chatterjee <i>Abstract</i>—The paper solves a distributed generations placement problem considering loss and cost of DG as the main objectives while power quality issues like voltage magnitudes at different bus and harmonic distortion are maintained within some specified limits as per IEEE standards. To study the effect of several factors on DG placement the issues are considered individually first. Then the same problem is solved considering all the issues together. It has been shown that when all the issues are considered the harmonic distortion plays a vital role in deciding the DG locations and size. Again the harmonic distortions are more near to the harmonic generating loads. The shunt compensation is also included to improve the voltages to a specified limit.</p>
E023	<p>CO₂ capture on Metal-organic framework and graphene oxide composite using a high-pressure static adsorption apparatus</p>

	<p>Yunxia Zhao, Yan Cao, and Qin Zhong</p> <p>Abstract—Metal-organic frameworks (MOFs) have attracted much attention as adsorbents for the separation of CO₂ from flue gas or natural gas. A copper-based metal-organic framework and graphite oxide composite (HKUST-1/GO) was synthesized and characterized using X-ray diffraction, sorption of nitrogen and scanning electron microscopy. The composite improved the CO₂ adsorption capacity and CO₂/N₂ selectivity. The composite obtained exhibited about a 38 % increase in CO₂ storage capacity than the parent MOF HKUST-1 at 305 K and 5 atm.</p>
E026	<p>Photoelectrochemical characteristics of N- and S-doped TiO₂ with Coumarin</p> <p>Chiu-Hsuan Lee, Je-Lueng Shie, Ching-Yi Tsai, and Ching-Yuan Chang</p> <p>Abstract—This study investigated the photoelectrochemical characteristics of dye-sensitized N- and S-doped TiO₂(TiN_xO_{2-x}S_y) with coumarin using visible light emitting diode (VLED). N- and S-doped TiO₂ was prepared by titanium sulfate (Ti(SO₄)₂) and ammonia (NH₃). TiO₂ and TiN_xO_{2-x}S_y films on indium-doping tin oxide (ITO) promoted with nature organic sensitizers of coumarin (C₉H₆O₂) were prepared by precipitation method. The HRSEM, UV/Vis absorption spectra, Elemental Analyses and BET surface area of dye-sensitized N- and S-doped TiO₂ as well as I-V curve test of TiN_xO_{2-x}S_y solar cell (TNSSC) dye-sensitized with and without coumarin (CONSDSSC and CODSSC, respectively) under the irradiation of visible light lamp (VLL), blue light emitting light (BLED), white LED (WLED) and red LED (RLED) were measured. All the values of I-V curve of CONSDSSC are larger than those of CODSSC. The maximum power (P_{max}) was 4.81 μW for CONSDSSC under VLL and it was larger than that of CODSSC under VLL almost 17.8 times. This result shows that the TiN_xO_{2-x} solar cell dyed with coumarin can largely increase the photoelectrochemical characteristics and the absorption light wavelength is changed to visible light range with red shift obviously. All the results obtained from this study can apply for the design of indoor dye sensitized solar cell (DSSC) with indoor light sources.</p>
E030	<p>Monitoring of the World's Environmental Risk Based on MPCA</p> <p>Shu Pang, Yiyun Han, Xiaodong Yuan</p> <p>Abstract—MPCA (multilinear principal component analysis) and hypothesis testing are used to establish the environmental monitoring system, including both the regional and the variable factors. High-dimensional data make it advantage than the previous models in considering comprehensive high-dimensional variables. So simulation of the system measures the change and change range of the environment, providing a more precise reference about the status of the environment.</p>
E032	<p>Full factorial design of screening experiments for biosurfactant enhanced remediation of hydrophobic substances in soil</p> <p>L. Timma, K. Sams, S. Valtere, J. Vilgerts and D. Blumberga</p> <p>Abstract—This paper evaluates the cleaning efficiency of glycolipid-based anionic biosurfactant produced by a local company. Before practical application in removal of oil or other hydrophobic substances from soil, it is necessary to learn the behavior of the biosurfactant across different systems. As process variables, temperature of environment, contact time with dilution of biosurfactant, and concentration of biosurfactant in washing solution were modeled by applying full factorial design. As response variable, cleaning efficiency was obtained experimentally by a set of laboratory tests. Screening design is employed for evaluation of interactions between response variable and process variables. The cleaning efficiency showed various results depending on the initial values of variables. At the upper limit of variables (+ 35 °C temperature of environment, 15 minutes contact time with dilution of biosurfactant, and 0.3 wt% concentration of biosurfactant in washing solution) the cleaning efficiency was 99.32 %. The results showed that all variables had significant effects on the cleaning efficiency at 95 % confidence level.</p>
E008	<p>Pulmonary Function Status among Welders in Malaysian's Automotive Industries</p>

	<p>Azian Hariri, N. Azreen P., A.M. Leman, M.Z.M. Yusof</p> <p><i>Abstract</i>—Welding process has potential physical and chemical health hazards. Welding fumes, toxic gases and metal particles are the chemical hazard that leads to long-term and chronic lung function effects. This study investigates the effects of duration of exposure and smoking status on pulmonary function status among welders of two automotive assembly plants in Malaysia (Plant 1 and Plant 2). This study assesses 61 male welders by pulmonary function test (PFT) using spirometer. These welders worked with spot, metal inert gas (MIG) and robotic welding without the benefit of fume control ventilation or respiratory protective devices. Welding workers in both plants showed significant reduction in lung function parameters relative to controls. The results of the study also showed that in Plant 1, smoking status influence significantly on pulmonary function status. However, in Plant 2, duration of work and smoking status both influence significantly on welders pulmonary function status. This study provides information to welders on chemical hazard effects among Malaysia's automotive industries.</p>
E010	<p>Studies on Zinc (II) Adsorption using <i>Alisma Plantago Aquatica</i></p> <p>E.R. Ushakumary, G. Madhu</p> <p><i>Abstract</i>—Adsorption is an effective method to remove heavy metals from wastewater. <i>Alisma Plantago Aquatica</i> was used as an adsorbent to remove Zn(II) from aqueous solution. The equilibrium adsorption were analysed using three isotherm models. The adsorption kinetics followed the pseudo-second order model. Isotherm studies have been used to determine the thermodynamic parameters of the process. Temperature change in the range 20-50oC affected the adsorption capacity. From enthalpy data revealed that the adsorption is endothermic in nature. IR spectrum analysis suggested the presence of hydroxyl, carboxyl and carbonyl groups which are participating in the adsorption of metal ions. The performance of continuous flow packed bed adsorption systems with the biomass was evaluated by plotting the breakthrough curves. It was observed that the breakthrough was strong function of the flow rates and the height of the packed bed. The zinc removal yield decreased with increasing flow rates and initial zinc concentration. Adam Bohart and Wolborska models were applied to the experimental data from dynamic studies on packed bed and were observed to fit the data well with good correlations. The model parameters including the mass transfer coefficient and kinetic parameter were estimated.</p>

15:30 - 16:00

Coffee Break

Afternoon, August 25, 2013 (Sunday)

SESSION – 6 (ICEEA)

Venue: Royal Room 1

Session Chair: Je-Lueng Shie

Time: 16:00 – 18:00

E10004	<p>The Ideal Map Projection for Sea Ports</p> <p>Dr. Akresh Mohammed Sabri and Ali Said</p> <p><i>Abstract</i>—The modern technologies and developments in computers and Global Positioning System (GPS) as well as Geographic Information System (GIS), become very important in present time in mapping and sea navigation. Traditional map projection systems are not suitable for modern technologies, because they haven't high accuracy in determining the position of features, also when calculating the</p>
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	<p>distances compared by Indirect Problems of Geodesy (I.P.G) it have bad results.</p> <p>This paper presents new method for map projection use in sea navigation specially in sea narrow paths were the risk of ship crash become very high. The map projection by harmonic equations method was used. The results show that the error in short distances was between 0.0 and 30.0 cm compared with 20.0 cm and 450.0 cm error when UTM system was used. Local system method by harmonic equations shows better results than other methods.</p>
E10005	<p>Modeling Sediment Transport and River Bed Evolution in River System Wanshun Zhang, Yanhong Xu, Yanru Wang, and Hong Peng <i>Abstract</i>—The problem of sedimentation has significant impacts on the operation lifetime of the reservoir. A two dimensional numerical model has been developed to simulate the transport of sediment and the evolution of the river bed in river system. The model consists of hydrodynamic equations, sedimentological equations and bed deformation equations. Water-sediment conditions and the abrupt change of water level and flow, which are influenced by gate dams, were emphatically considered in the simulation. The field measurements of erosion-sedimentation thickness of 2006, 2007, 2008 and 2009 in three sections are used for the model validation and the simulation results agree with the measurements well. The model is applied to simulate the process of sediment deposition at the upper reaches of Three Gorges Reservoir Region. The model results can reflect the detailed changes of sediment deposition thickness of river channel in the next 70 year.</p>
E10007	<p>Optimization of Pyrolysis conditions to synthesize adsorbent from paper mill sludge Parmila Devi and Anil K. Saroha <i>Abstract</i>—Pyrolysis temperature is the key factor influencing the biochar yield. Experiments were performed to study the effect of pyrolysis temperature and additive dose on biochar yield. It was observed that biochar yield decreased with an increase in pyrolysis temperature and maximum yield was obtained at 300 oC. Conversely, surface area of the biochar increased with an increase in temperature and maximum surface area was obtained at 700 oC. The biochar was impregnated with different dosage of CaCO₃ to analyze the effect of CaCO₃ as an additive dosage on biochar properties. Addition of CaCO₃ significantly affects the surface area and pore volume of the biochar, although it does not lead to significant change in biochar yield. Batch experiments were performed to explore the potential of raw and impregnated biochar as an adsorbent for the removal of pentachlorophenol (PCP). A removal efficiency of 86% and 97% was obtained with raw biochar and 3% CaCO₃ impregnated biochar respectively.</p>
E10010	<p>Experimental study on micro-biological degradation of 1,3,5-TMB in groundwater Dunyu Lv, Chu Yu <i>Abstract</i>—1,3,5-TMB (trimethylbenzene) has been considered as a priority pollutant by several environmental agencies due to its high toxicity, carcinogenicity and mutagenic activity. Two bacteria with ability of degrading 1,3,5-TMB were isolated from crude oil contaminated soil. The optimal pH value and temperature for the growth of these bacteria were 7.0 and 30°C. 1,3,5-TMB was used as sole carbon and energy source by both strains. Strain A was identified as Staphylococcus sciuri and strain C was Microbacterium schleiferi, both of which were facultative anaerobic bacteria. 1,3,5-TMB was degraded by strain C with efficiency of 41.2±1.8%. The bacteria offered new source for biodegradation of BTEX and bioremediation of oil-contaminated soil and groundwater.</p>
E10011	<p>Risk analysis and stability assessment on the suspended river of the lower reaches of the Yellow River Changli Liu, Xiuyan Wang, Miying Yin, Hongbing Hou, Hua Dong <i>Abstract</i>—Thanks to the increasingly-improved flood-control engineering projects in the lower reaches of the Yellow River safety has been maintained over the past 50 years. Nonetheless, the rising trend of the riverway bed of the lower reaches has not been reversed. This has been a potential hazard to the local</p>

	<p>people. Using various investigation method we basically ascertain the geological environment of the lower reaches including active faults, crust uplift, ground subsidence, seismic activities, engineering conditions of dike foundation, hydraulic conditions and fluvial geomorphology, etc. Based on the comprehensive analysis of the instability modes and corresponding influencing factors we choose fuzzy comprehensive assessing method to assess the ground stability, dike-foundation stability and riverway stability and general stability of the suspended river. The results show that the stability of the suspended river of the Yellow River could be classified into four grades, i.e. “basically stable, unstable, very unstable and extremely unstable” and 11 segments. Taking into account future tectonic faults, earthquake, difference between riverway and ground outside riverway, riverway shapes, historical breaches, ground fluidization and seepage deformation, etc. We further find out 17 the most unstable sites, among of which 7 are the most possible breaching sites, i.e. Wuzhi, Zhongmou, Kaifeng, Fengqiu, Dongming, Changyuan and Dong’e. Calculations of the possible inundation scope and area, number of affected people, economic losses and environment damage etc. Any of them, if breached, could bring about disaster results in the lower reaches of the Yellow River.</p>
E10012	<p>Life cycle assessment and environmental impact evaluation of the parabolic solar cooker SK14 in Madagascar Lala Andrianaivo and Voahanginirina J. Ramasiarinoro <i>Abstract</i>—The main cause of deforestation in Madagascar is the collection of firewood for cooking. Research cooking alternatives that would reduce firewood and charcoal use has been undertaken by NGOs. In this context, south Madagascar experiences more than 320 sunny days per year and has close to ideal conditions for the use of solar energy. Currently a variety of solar cooker models are sold at a subsidized price for the poorest household. The paper explains advantages and disadvantages of solar cooking and the challenges faced to change traditional cooking habits, in order to fight the ongoing deforestation, preserve the environment and fight poverty. To optimize the success of this project, the use of solar cooker has been compared to two alternatives - firewood and charcoal cooking and on the topics of primary energy utilization and CO₂ gas emission. The whole life cycle analysis of the alternatives and accompanying devices has been examined. As results parabolic solar cooker is less usable in cloudy or rainy weather. A reduction of about half the environmental impact has been obtained with this technology. Some backup heat source must still be available to cook meal at these times. Solar cooker, charcoal and firewood can work in a complementary fashion to meet a variety of cooking needs. The parabolic solar cooker SK14 is a very helpful instrument but less competitive compared to the traditional cooking using wood energy. It can replace firewood and charcoal cooking, reduces deforestation, improves health conditions and creates local job opportunities.</p>
E006	<p>Modeling Particulate Matter (PM10) in Makkah, Saudi Arabia – a View Point of Health Impact Turki M. Habeebullah <i>Abstract</i>—The core aim of this paper is to investigate the health impacts of PM10 in Makkah (March 2012 to February 2013). The annual average of PM10 concentration was 195 µg/m³, which is greater than both EC and PME annual standards. Daily average concentrations also exceeded PME and EC standards. Furthermore, health assessment is carried out using AirQ2.2.3 model to estimate the number of hospital admissions due to respiratory diseases. The cumulative number of average hospital admission due to respiratory illnesses during the study period was 112665, cumulative number of cases per 100,000 was 2504 and the concentration-response coefficient was 2.342 (95% CI 1.899 – 2.785) per 10 µg/m³ increase of PM10. The violation of daily and annual air quality standars and the results of AirQ2.2.3 suggest potential negative health impact for the residents, especially for more vulnerable groups, such as old aged, children and people with asthma and other respiratory diseases.</p>

E039	<p>Prediction of Biogas Generation Profiles in Wastewater Treatment Plants Using Neural Networks Peiman Kianmehr, Wathiq Mansoor, and Fadi A. Kfoury</p> <p><i>Abstract</i>—The great potential of Waste Activated Sludge (WAS) to produce methane as renewable bio-resource energy has always been of engineers' interest. The evaluation of the rate of methane generation and its ultimate value is a crucial step to predict the performance of anaerobic digesters degrading wide ranges of raw and pre-treated WAS. Biochemical methanogenic potential (BMP) test is known as the most common assay in this context. However, it is known as a time consuming, equipment-intensive and consequently expensive tool. The objectives of this research are to identify key WAS properties required to estimate biodegradability of raw and pretreated sludge and accordingly generate a proper model for predicting sludge biodegradability, utilizing Artificial Neural Networks (ANN). Earlier attempts to identify such key indicators and generating a proper model representing sludge biodegradability using typical mathematical approaches were unsuccessful. However, the results of this research proved ANN effective in modeling sludge biodegradability.</p>
E053	<p>Kinetic Performance of Aluminum and Iron Oxides in the Removal of Arsenate from Aqueous Environment E. Bilgin Simsek, U. Beker</p> <p><i>Abstract</i>—Arsenate (As(V)) adsorption from aqueous solution onto clinoptilolite incorporating iron or aluminum oxides was investigated. The modified samples were characterized by nitrogen adsorption isotherms, TEM-EDX analysis. Kinetic models were applied to describe As(V) adsorption on each modified clinoptilolite samples. The kinetic data, explained best by the pseudo-second-order model by good regression coefficients.</p>
E054	<p>Green building guidelines at South African universities M. Struwig, G. Smit and J. Van Wyk</p> <p><i>Abstract</i>—This paper presents a critical analysis of literature on green building guidelines at South African universities. The literature analysis resulted in the development of seventeen green building guidelines. The websites of all South African universities and the South African government were further content analyzed to investigate what they are doing regarding green buildings. Only three universities reported that they have a green building and only eight universities indicated a green activity on their websites. The government on the other hand had a rated green building and was extensively involved in the green economy. The four activities included in the websites were green research, green initiatives, green buildings, and future green plans. The results showed the need to develop green building guidelines for South African universities.</p>
E055	<p>Carbon Storage Through Concrete Block Carbonation Curing Hilal El-Hassan and Yixin Shao</p> <p><i>Abstract</i>—The effect of initial curing on carbonation curing of lightweight concrete masonry units (CMU) was examined. Initial curing was performed from 4 to 18 hours at a relative humidity of 50% and temperature of 25°C. Based on cement content, four-hour carbonation curing allowed concretes to uptake 22% to 24% CO₂ with initial curing and 8.5% without initial curing, while prolonged 4-day carbonation recorded an uptake of 35%. Carbonation curing can replace steam curing in CMU production to accelerate hydration and recycle cement kiln CO₂ in a beneficial manner.</p>
E061	<p>Investigation of an Evaporative Cooler for Buildings in Hot and Dry Climates R. Boukhanouf, H. G. Ibrahim, A. Alharbi and M. Kanzari</p> <p><i>Abstract</i>—The paper presents a computer model and experimental results of a sub-wet bulb temperature evaporative cooling system for space cooling in buildings in hot and dry climates. The cooler uses porous ceramic materials as the wet media for water evaporation. Under selected test conditions of airflow dry</p>

	bulb temperature of up to 45o C and relative humidity of up to 50%, it was found that the supply air could be cooled to below the wet bulb temperature with a maximum cooling capacity of 280 W/m2 of the wet ceramic surface area. It was also shown that the overall wet bulb effectiveness is greater than unity. This performance would make the system a potential alternative to conventional mechanical air conditioning systems in hot and dry regions.

Afternoon, August 25, 2013 (Sunday)

SESSION – 7 (ICBFE)

Venue: Royal Room 2

Session Chair: Norio INOU

Time: 16:00 – 18:00

K00020	<p>Inhibitory Effects of Lamiaceae Plants on the Formation of Advanced Glycation Endproducts (AGEs) in Model Proteins</p> <p>Khwanta Kaewnarin, Lalida Shank, Hataichanoke Niamsup and Nuansri Rakariyatham</p> <p><i>Abstract</i>—Protein glycation and oxidative stress caused by chronic hyperglycemia play vital role in diabetic complications. This study focused on the evaluation of the antiglycation effect of four Lamiaceae plants (<i>Ocimum sanctum</i>, <i>O. basilicum</i>, <i>O. americanum</i> and <i>Metha cordifolia opiz.</i>). Among the ethanolic extracts, <i>O. sanctum</i> extract exhibited high content of phenolic compounds and strong antioxidant activity. Chemical composition analyzed by HPLC revealing two major phenolic compounds in <i>O. sanctum</i> extracts as rosmarinic acid (4.43 mg/g) and luteolin (0.96 mg/g). In the antiglycation assays, bovine serum albumin (BSA) and histone which were used as model proteins for investigation in the presence of methylglyoxal (MGO) with or without the extracts comparing with the authentic phenolic compounds. The results showed that <i>O. sanctum</i> extract possessed a potent antiglycation activity in both BSA and histone models with 23.4% and 43.0 % inhibition at the concentration of 500 and 250µg/mL, respectively. The results indicated that <i>O. sanctum</i> which contained high phenolic compounds has potential to prevent protein glycation caused by oxidative stress.</p>
K00024	<p>Mechanical Analysis of Biocomposite Materials from Bacterial Cellulose and Hydroxyapatite</p> <p>Pei-Ying Chen</p> <p><i>Abstract</i>—Bacterial cellulose (BC), which is cultivated from <i>Gluconacetobacter xylinus</i>, is the finest natural cellulose with a diameter of 30 nm–50 nm. Because of its high levels of uniformity and purity, BC has unique physical and mechanical properties for applications in biomaterials. In this study, sample cellulose was prepared in advance from <i>Gluconacetobacter xylinus</i> under static cultivation. After the provision of hydroxyapatite was executed using dicalcium phosphate dehydrates and CaCO₃, BC was introduced in the alkaline solution at 55 °C for further reaction. Regarding mechanical strength and endotoxin evaluation, the biocomposite of BC and hydroxyapatite yielded stronger results after the addition of 5% BC. The compressive resistance of the trial product reached approximately 141.36 MPa, and the endotoxin level could be reduced to 0.3 EU/mL if the raw biocomposite was sintered using alginate as a hardener at 1200 °C for 1h. With its high level of compressive resistance and low level of endotoxins, the proposed biocomposite material has great potential for employment as a filling material.</p>
K10009	<p>Anti-inflammatory and Acetylcholinesterase Inhibition Activities of <i>Globularia Alypum</i></p> <p>Daycem KHLIFI</p>

	<p><i>Abstract</i>—The <i>Globularia alypum</i> methanolic extract (GAME) was evaluated for the anticholinesterase, anti 5-lipoxygenase, NO production inhibitory activities and the transcriptional regulation pathway. Interestingly, GAME showed an important anti-inflammatory activity in a dose dependant manner, and inhibited nitric oxide (NO) production via transcriptional regulation of iNOS gene by (66%) at 150mg/L in IFN-γ/LPS stimulated RAW 264.7 macrophages. In addition, both <i>Globularia alypum</i> showed a 5-Lipoxygenase inhibitory activity with IC50 value of 79\pm0.8mg/L. Acetyl-cholinesterase inhibition was assessed by modification of the Ellman’s method. <i>Globularia alypum</i> exhibited a strong activity against cholinesterase with IC50 value 9.33\pm0.47mg/L. The data suggest that <i>Globularia alypum</i> extract could be used as a natural inhibitor of oxidation and alzheimer disease, and since GAME induced a potent anti-inflammatory suggest its potent use for the treatment of inflammatory diseases.</p>
K20001	<p>Contribution to the Chemical and Biological Study of Eucalyptus Leaves Extracts: Effect on Frying Oil BEN HASSINE</p> <p><i>Abstract</i>—In this research, various extracts (petroleum ether, ethyl acetate, methanol and water) of <i>Eucalyptus stricklandii</i> were screened for their global chemical composition, antioxidant, antilipidic peroxidation and anti-inflammatory activities. Tannins (102.89-248.73 mg catechin equivalent/Kg dry mass), flavonoids (19.3-15.34 g quercetin equivalent/Kg dry mass), phenolics (54.18-305.24 g gallic acid equivalent/Kg dry mass) and anthocyanins (394.86-4781.02 mg cyanidin-3-glucoside equivalent/Kg dry mass) of various extracts were evaluated. Free radical scavenging capacity of all samples was carried out. In all samples, methanol extract showed the best result (IC50=4.39\pm4.75 mg/L) in DPPH assay which was compared to vitamin C (IC50=4.4\pm0.2 mg/L). In application, by frying assay, we can conclude that a protection is afforded for soya oil enriched with methanolic extract. This result enhances the antioxidant effect of extracts of our plant. Methanolic extract exhibited good anti-inflammatory activity (IC50 =9.66\pm0.57 mg/L). The aim of this study is to investigate the chemical composition and their biological activities to contribute to the amelioration of frying oil.</p>
K20002	<p>Sugar Cane Genome Numbers Assumption by Ribosomal DNA FISH techniques Sarut Thumjamras</p> <p><i>Abstract</i>—Conventional cytological method is limited for polyploidy plant genome study, especially sugar cane chromosomes that show unstable numbers of each cultivar. Molecular cytogenetic as fluorescent in situ hybridization (FISH) techniques were used in this study. A basic chromosome number of sugar cane was estimated with three information; 1) number of 18S rDNA sites, 2) number of 5S rDNA sites and 3) total number of chromosomes. 18S and 5S rDNA were located by FISH techniques, the number of hom (e) ologous sites were illustrated in range of 7 to 9 and 13 to 15 sites. 110 chromosome numbers were shown in tapetal cells of flower buds of sugar cane. The implications of these results can predict about 14 basic chromosomes numbers but 5S rDNA seem reliable indicate for basic chromosome number and 18S rDNA were discussed about nucleolar dominance phenomenon of the sugar cane “KPS 00-25” cultivar.</p>
K20003	<p>Treatment Of Palm Oil Effluent In Microbial Fuel Cell Using Polyacrylonitrile Carbon Felt as Electrode Baranitharan.E, Maksudur Rahman Khan, DMR Prasad</p> <p><i>Abstract</i>—Palm oil mill effluent (POME) is an organic waste material produced at the oil palm mills. It is highly polluting due to its high content of biological and chemical oxygen demand. In the present paper, POME was treated using double chamber microbial fuel cell with simultaneous generation of electricity. Polyacrylonitrile carbon felt (PACF) was used as electrode and anaerobic sludge was used as inoculum throughout the MFC experiments. Various dilutions of raw POME were used to analyze the MFC power generation, COD removal efficiency and coulombic efficiency. Among the raw POME and different concentrations of POME used, the PACF with raw POME showed the maximum power density and</p>

	<p>volumetric power density of about 45mW/m² and 304mW/m³ respectively but it showed low coulombic efficiency and low COD removal efficiency of about 0.8% and 45% respectively while PACF with 1:50 dilution showed higher COD removal efficiency and coulombic efficiency of about 70% and 24% but showed low power density and low volumetric power density of about 22mW/m² and 149mW/m³ respectively. The results show that MFC possesses great potential for the simultaneous treatment of POME and power generation using PACF as electrode.</p>
K20004	<p>In vitro Propagation of an Edible Bamboo Bambusa Bambos and Assessment of Clonal Fidelity through Molecular Markers Manju Anand, Jasmine Brar, Anil Sood <i>Abstract</i>—An efficient and reproducible protocol has been established through the technique of forced axillary branching for the propagation of an important edible bamboo species namely Bambusa bambos. High frequency multiple shoot induction was achieved from nodal segments collected from elite genotype on Murashige and Skoog's (MS) medium supplemented with 4.4 μM Benzylaminopurine (BAP) and 1.16 μM Kinetin (Kn). The size of explant and season greatly influenced the frequency of bud break. Rooting posed a major problem to be worked out in this particular species. Best rooting response was observed on 9.80 μM of Indole- 3 Butyric acid (IBA) with 60 ± 14.1 % rooting. In vitro raised plants were successfully acclimatized and established in the field conditions where they exhibited normal growth. In a bid to ascertain genetic fidelity, DNA was extracted by CTAB method and samples were analysed in 1.8% agarose gel electrophoresis. In the present study no variation was reported among the in vitro raised progeny and the mother plant in the banding profiles generated by the total of fifteen Random Amplified polymorphic DNA (RAPD) and Inter Simple Sequence Repeats (ISSR) markers. Hence, molecular analysis confirmed that these plants were genetically similar and can be used as elite plants.</p>
K30004	<p>Effects of Different Initial pH of Modified Zarrok Medium on Large-scale Spirulina Maxima Culture PIYANAST SORNCHAI <i>Abstract</i>—The effects of Modified Zarrouk Medium (MZM) with different pH on Spirulina maxima culture were determined using five parameters: the growth rate, lag phase duration, nutrients (protein, carbohydrate and lipid), pigments (chlorophyll-a, betacarotene and phycocyanin), and morphology of the algae. The experiment was divided into 4 treatments. All treatment contained the same MZM; however, different initial pH of 9, 9.5, 10 and 10.5 were applied to the experimental treatment I, II, III and IV, respectively. The parameters of these treatments were compared to those of the positive control (the Zarrouk medium pH 9). The results showed that the algae grown in media treatment I could reduce the duration of lag phase and gave the highest specific growth rate (4.12±0.005 g/l), while the algae grown in media treatment IV provided the lowest specific growth rate (1.09±0.006 g/l). Regarding nutrients, the algae grown in media treatment I provided highest protein content of 71.0±0.06 % and the algae grown in media treatment III provided the highest carbohydrate content of 17.07±0.02 %. It was found that algae grown in media treatment I yielded the best in pigment contents, which were the chlorophyll-a (15.2±0.16 mg/g), beta-carotene (3.16±0.32 mg/g) and phycocyanin (46.37±0.20 mg/g). The Morphological studies of algae using microscope SEM and TEM revealed that most trichome of algae grown in media treatment III and group IV were changed from helicoidal to straight.</p>
K30008	<p>Vermicompost Production by Using Tomato Residue and Yard Waste Saroj Klangkongsub <i>Abstract</i>—Tomato residue and yard waste were used as substrate for vermicompost production. These two organic wastes were suitable for feeding Eudrilus eugeniae. E. eugeniae was cultivated under four feeding conditions; control (no organic waste added), adding tomato residue, adding grass waste and adding tomato and grass. Vermicomposts from all conditions provided major nutrients (N, P, K) higher than the</p>

	<p>standard of organic fertilizer. All vermicomposts were applied to Chinese cabbage and zinnia. The results showed that all formula of vermicomposts supported crop plants as good as chemical fertilizer. Vermicomposts may benefits both economical and environmental purposes.</p>
K30009	<p>Improvement of Cocoa Beans Fermentation by LAB Starter Addition M.T.A.Penia Kresnowati, Lenny Suryani, Mirra Affifah <i>Abstract</i>—Cocoa beans fermentation is an important step in the post-harvest processing of cocoa beans. This complex mix culture fermentation produces metabolic products that serve as the precursors for the flavor development process. Modification in the dynamics of microbial population during the fermentation may alter the overall microbial activity and thus may impact the fermentation process. Addition of microbial starter was thus suggested to improve the cocoa bean fermentation process. This paper discusses the effects of Lactic Acid Bacteria (LAB) starter addition to the cocoa bean fermentation. Dynamics in microbial population, i.e. yeast, lactic acid bacteria, and acetic acid bacteria were analyzed as well as the sugar components, metabolic products, and the fermentation index during the fermentation. The addition of LAB starter was observed to accelerate the growth of both lactic acid bacteria and acetic acid bacteria, leading to the increase in the ethanol, lactic acid, and acetic acid concentration. Overall it increases the fermentation index and potentially shorter the fermentation time.</p>
K30010	<p>Importance of Vespidae (Hymenoptera) Species as Biological Control Agents in Agriculture and Their Biological Diversity in Turkey Erol YILDIRIM <i>Abstract</i>—Vespidae adults feed exclusively on carbonhydrates derived mainly from nectars of flowers and the honey-dew of aphids and some other insects. The larvae are entomophagous. In general, Vespidae prey on the larvae of Lepidoptera, principally Tortricidae, Geometridae and Noctuidae as well as on some species of the larvae of Curculionidae and Chrysomelidae. Among the prey species there are some economically important pests such as <i>Pieris brassicae</i> (L.), <i>P. rapae</i> (L.), <i>P. napi</i> (L.), <i>Helicoverpa armigera</i> Hubner, <i>Hyphantria cunea</i> (Drury), <i>Lymantria dispar</i> (L.), <i>Plutella xylostella</i> (L.), <i>Philaenus spumarius</i> (L.), <i>Chrysomela populi</i> L., <i>Hypera postica</i> (Gyllenhal), <i>Myzus persicae</i> Sulzer and, <i>Stomoxys calcitrans</i> (L.). Since, the species of Vespidae are considered to be responsible for reducing the populations of some economic pests, they have a potential as biotic agents in Integrated Pest Management (IPM). A total of 298 species and subspecies in 53 genera of the subfamilies Vespinae, Polistinae, Eumeninae, and Masarinae had recorded from Turkey. Of them, 65 species and subspecies, comprising 22% of Turkish vespids, are endemic. Furthermore three genera, 71 species and 16 subspecies of Vespidae have been described from Turkey. Turkish Vespidae fauna is very rich. The fauna of the Vespidae of Turkey contains a large number of species in comparison to others countries of the Mediterranean region, which is well known for its high biodiversity.</p>
K30011	<p>The Traditional Use of Some Wild Edible Plants for Human Nutrition in North-Eastern Anatolia Sezai Ercisli and Irfan CORUH <i>Abstract</i>—The North-East part of Turkey called as North East Anatolia has a rich plant biodiversity and most of the parts of the region are accepted as rural area. The rural peoples living in the area mostly consume wild edible plants as food traditionally for a long time and this knowledge is passing from old generation to new generation in the region. In the study we determined food values of major consumed wild edible plants such as <i>Amaranthus retroflexus</i>, <i>Heracleum platytaenium</i>, <i>Salvia</i> spp., <i>Chenopodium album</i>, <i>Cichorium intybus</i>, <i>Epilobium angustifolium</i>, <i>Malva sylvestris</i>, <i>Plantago media</i> and <i>Polygonum cognatum</i>. The plants were collected in the region and dry matter, nitrogen, phosphorus and protein contents were investigated. We found the big differences among species studied and among them stem of <i>H. platytaenium</i> had the highest dry matter content. The ethno botanical uses of the studied species were</p>

	also determined.
K30012	<p>Rose Hip: Utilization and Interactions between Galling Insects and Plant Total Phenolic Contents Sezai Ercisli and Saliha Coruh</p> <p><i>Abstract</i>—The rose hips obtained from rose plants native to Turkey’s flora are well known for their aromatic and medicinal properties. The country has a very rich rose hip germplasm including over 25 taxa. A lot of rose hip taxa has been using as remedies for treatment of different human diseases for a long time in Turkey. Their nutritional values for humans (antioxidants, protein etc.) are well documented. They are adding aroma on foods. They processed into jam, marmalade, fruit juice, syrup and tea traditionally. The main pest of this unique plant is gall induced by <i>Diplolepis</i> sp. We aimed to determine interaction between gall induced by <i>Diplolepis</i> sp and total phenolic content in <i>R. canina</i> genotypes. A total 20 <i>Rosa canina</i> genotypes with and without insect damage has been selected in different parts of Northeast Anatolia and the leaf samples collected in July 2009. The results showed that seven genotypes without insect damage had significantly greater total phenol content in its leaves compared to insect damaged <i>R. canina</i> plants. These results clearly indicate that total phenolic content in <i>R. canina</i> genotypes that had no galling insect damage may have an important part of chemical defense of <i>R. canina</i> plants against <i>Diplolepis</i> sp.</p>

Afternoon, August 25, 2013 (Sunday)

SESSION – 8 (ICEEA)

Venue: Royal Room 3

Session Chair: M. Struwig

Time: 16:00 – 18:00

E10015	<p>Assessing Water Quality of Rural Water Supply in Thailand Soticha K., Jareeya Y., Sudjit K. and Prapat P.</p> <p><i>Abstract</i>—The water quality of water supply is closely associated with human health. And providing safe water supply is one of important public health priorities. Providing water supply to small rural communities in Thailand is mainly through two types of rural water supply systems, groundwater supply system and surface water supply system. The objective of this paper is to measure the water quality to assess existing performance of rural water supply system for small rural community. Twenty five rural water supply locations in four provinces, Nakhon Ratchasima, Chaiyaphum, Buriram and Surin province of Northeastern area in Thailand were selected as sampling location. The water samples from each sampling points were measured physical, chemical and biological parameters. The sampling points were water resource, storage tank and household of each rural water supply location. The results of water quality were assessed to meet the water supply quality standard of the World Health Organization (WHO) and national surface water and groundwater quality standard. The results of water resource quality indicated that the groundwater resource quality was found to be limit exceeded more than surface water resource. It might be contaminated by human or animal. And the results of storage tank and household water qualities indicated that both rural water supply systems had problems to produce the water supply that meet the standard especially in biological standard. It indicated a failure in the disinfection process. As the results of study support that the process of rural water supply system should be improved especially the disinfection process.</p>
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E10021	<p>Adsorption of Copper by Two Different Size Gravels A. Y. Abdulfatah, I. U. Salihi and A. R. Anwar</p> <p><i>Abstract</i>—Laboratory experimental results are presented to determine the level of adsorption of copper by two different size gravels. A 6mm pea-gravel and 30-60mm gravels were used for the experiments in which the gravel samples were soaked and shaken in copper solutions prepared with varying concentrations of 10.0, 20.0 and 30.0 mg/L. Effluents samples were collected and diluted to a ratio of 1 to 10 ml. These samples were monitored by an inductively couple plasma (ICP) and the detected concentrations were multiplied by 10 to balance the dilution effect. The Henry, Langmuir and Freundlich Isotherms were considered in each case for the determination of the adsorption level. The Freundlich model gave better results for the two gravel samples with a regression coefficient, R^2 of 0.999987 for the pea-gravel and 0.5717 for 30-60mm gravels respectively. The straight line equation indicates good adsorption capacity of the Copper onto the pea-gravel more than the 30-60mm gravels in accordance with the Freundlich isotherms.</p>
E20001	<p>Non-Thermal Plasma <i>Technology</i> for the Abatement of NO_x and SO_x from the Exhaust of Marine Diesel Engine N. Manivannan, W. Balachandran, R. Belega and M. Abbod</p> <p><i>Abstract</i>—Non-thermal plasma based technology is proposed to the abatement of NO_x and SO_x of the exhaust gas from marine diesel engine. Proposed technology uses electron gun and microwave energy to generate the plasma. Fundamentals of non-thermal plasma and chemistry are presented with a set of simulation results of the reduction of NO_x and SO₂ for a typical two stoke marine diesel exhaust engine which is supported by an experimental results obtained with microwave plasma. A new scheme is also proposed in this paper to generate required plasma for the treatment of NO_x and SO_x form high exhaust flow rate.</p>
E20004	<p>On the Reduction of Heat Island Phenomena by Various Types of Rooftop Planting Park Chan Jin</p> <p><i>Abstract</i>—The temperature distributions of various rooftop region were investigated by measuring major temperature in several kinds of roof-planting locations during day time in Incheon city. From the investigations, the temperatures were very high in concrete material, but temperatures were decreased in the vegetable pots, flower beds in the same locations with the increase of planting areas. Theoretical analysis were made to explain those results.</p>
E20009	<p>Treatment of distillery spentwash by electrocoagulation V. Khandegar and Anil K. Saroha</p> <p><i>Abstract</i>—Effluent from distilleries, known as spent wash, leads to extensive soil and water pollution. Removal of pollutants and color from distillery effluent is becoming increasingly important from environmental and aesthetic point of view. Effluent from distilleries contains certain recalcitrant compounds. In the present work effort were made to reduce chemical oxygen demand (COD) from distillery effluent by electrocoagulation. The maximum COD removal efficiency of 98% was obtained at solution pH of 7.2 with a current density 17.9 mA/cm² for electrolysis duration of 3 h. Further experiments were performed using aluminum sulphate as chemical coagulant to compare the COD removal efficiencies obtained by electrocoagulation and chemical coagulation.</p>
E20010	<p>Experimental investigation of nature gas production rate's effect on the reservoirs with gas cap Liu Jia, Cheng Lin-song, Huang Shi-jun, Zhang Jian</p> <p><i>Abstract</i>—In order to study the effect of nature gas production rate on the reservoirs with gas cap, three-dimensional visualized gas-cap reservoir physical simulation device was established to simulate the processes of oil and gas development at different gas production rates. Monitoring and records of the</p>

	<p>interface migration law and well performance can be realized through visualization window. According to experimental result, it is shown that migration speed of oil-gas interface was reduced with increasing gas production rates while migration speeds of internal and external oil-gas interfaces gradually became close, which effectively slows down occurrence of gas channeling, reduces production gas oil ratio and increases the swept volume of gas drive, so as to improve its development effect. According to the optimization of collaborative development for gas-cap oil-rim reservoirs, the equivalence of accumulative production of oil and gas can reach the maximum value when the fixed period of reservoir exploitation is 50 years and the gas production rate is between 2% and 4%.</p>
E30005	<p>BOD:COD Ratio As An Indicator For Pollutants Leaching From Landfill Aik Heng Lee and Hamid Nikraz <i>Abstract</i>—The relationship of BOD to COD of leachate from a mature landfill site are investigated over a period of six years to determine the indicator to be used for prediction of leachate characteristic generating from landfill site. Results of the investigation reveal that BOD: COD ratio is a good indicator of degradation of organic matter in landfill. It can be used as an indicator for degradation of organic matter that differentiate the acetogenic phase from methanogenic phase in this landfill</p>
E30006	<p>Environmental auditing of a packaging system for redesign: a case study exploration J. Matthews, C. Parr, O. Araoye and M. McManus <i>Abstract</i>—Within the United Kingdom a significant portion of the energy consumed each year is done so through industry. It is therefore desirable to take measures that reduce this consumption. A process common to all manufacturing sectors is that of packaging, and this research focused on identifying, quantifying and reducing the environmental impact of one such system. It finally took the form of an abridged life cycle assessment focusing on the manufacturing and assembly stage of a packaging systems life. Two separate studies were conducted to evaluate the performance of specific tools for such environmental studies. Where, the total embodied energy and carbon of each sub-assembly of the systems was calculated and their contribution to the whole machine established. These were further broken down into material production and machine processes in order to establish where the major impacts were and potential areas for redesign. Both approaches were found to be resource hungry in their application, an output that may restrict their application in the type of company that operate in this domain. A surprising finding was that producing a design with lower environmental impact could be less expensive.</p>
E30007	<p>Comparative LCA of Two Thermal Energy Storage Systems for Shams1 Concentrated Solar Power Plant: Molten Salt vs. Concrete Jubilee T. Adeoye, Yamrot M. Amha, Vahan H. Poghosyan, Khachatur Torchyan, Hassan A. Arafat <i>Abstract</i>—Thermal energy storage (TES) for concentrated solar power (CSP) is gaining popularity because it has the potential to increase the hours of electricity production from the CSP technology. In this Study, we conducted a comparative life cycle assessment (LCA) of two TES technologies (concrete and molten salt) for Shams-1 CSP plant in United Arab Emirates. Eco-Indicator 99 was employed to model the environmental impact per 800MWh produced. Results obtained show that concrete TES has a greater environmental impact than molten salt TES, with fossil fuel being the largest impact contributor in both cases. A sensitivity analysis in which different scenarios were considered showed a reduction in environmental impact when waste recycling and transportation changes are incorporated. Based on the results obtained, incorporating molten salt TES in Shams 1 will have a lower environmental impact than the use of concrete TES.</p>
E30010	<p>Study on Application of Phytoremediation Technology in Management and Remediation of Contaminated Soils Kokyo Oh, Tiehua Cao, Tao Li and Hongyan Cheng</p>

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	<p><i>Abstract</i>—Phytoremediation is an emerging and eco-friendly green engineering technology that utilizes the natural properties of plants to remediate contaminated soils, water and sediments. Soil contamination by various inorganic and organic compounds has been a worldwide concern, and phytoremediation has been received increasing attention for remediation of these contaminants. However, the practical application of phytoremediation has been limited because of its low remediation efficiency. This paper addresses phytoremediation on its characteristics, research status, with emphasis on description of its practical application in management and remediation of soil contaminated sites.</p>

<p>July 7, 2013 18:30 Royal Room 1</p>	<p>Closing Ceremony</p>
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<p>July 7, 2013 19:00</p>	<p>Dinner</p>
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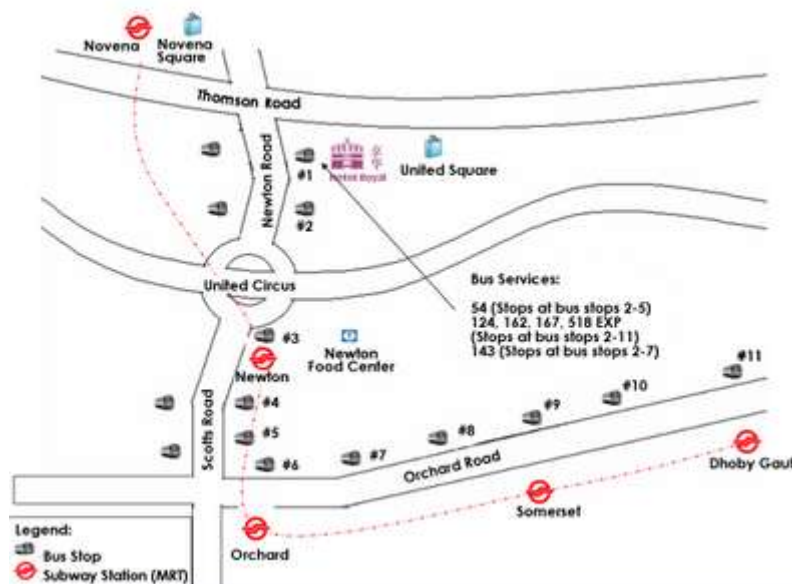
Conference Venue

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.