2013 APCBEES MACAU CONFERENCES SCHEDULE

Macau

SOFITEL LUXURY HOTELS

March 17-18, 2013

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March 17, 2013 (Sunday)

Sofitel Luxury Hotels

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

Note:(1) You can also register at any time during the conference.
(2) The organizer doesn't provide accommodation, and we suggest you make an early reservation.
(3) One Excellent Paper will be selected from each oral session. The Certificate for Excellent Papers and will be awarded in the Closing Ceremony on March 18, 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 3 Minutes of Q&A

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

Conference website and Secretariat Contact:

ICPIE 2013: www.icpie.org icpie@cbees.org

ICEST 2013: www.icest.org icest@cbees.org

ICBBT 2013: www.icbbt.org icbbt@cbees.org

JCCEA 2013 1st: http://www.ijcea.org/jccea/1st/index.htm jccea01@stpress.net

Morning, March 18, 2013 (Monday)

Venue: Promenade 1

08:40-08:50	Opening Remarks Bogdan Zygmunt Gdansk University of Technology, Poland
08:50-09:30	Keynote Speaker I Takashi Watanabe Tohoku University, Japan "Measurement and Control of Lower Limb Movements for Gait Rehabilitation of Hemiplegic Subjects"
09:30 – 10:10	Keynote Speaker II Bogdan Zygmunt Gdansk University of Technology, Poland “Solid Phase Microextraction, a Versatile and Handy Tool in Environmental Trace Organic Analysis, Gets a New Class of Coatings, Polymeric Ionic Liquids”
10:10-10:30	Taking Photo and Coffee Break

Morning, March 18, 2013 (Monday)

SESSION – 1 (ICPIE & IJCEA)
Venue: Promenade 1
Session Chair: Jizhong Zhu
Time: 10:30 – 12:00

CA024	Kinetics of a Three-step Isomerization of Glucose to Fructose Using Immobilized Enzyme **M. H. Gaily**, A. K. Sulieman, and A. E. Abasaeed *Abstract*—A three-step complex formation of fructose by glucose isomerization was suggested to describe the isomerization kinetics. The model was characterized by the formation of a fructose complex. Experimental data obtained from the isomerization process using immobilized Sweetzyme enzyme, IT® were used in this study. Experiments were conducted at different reaction temperatures in the range of 50-70 ℃ and glucose initial concentrations of 10, 15 and 20% and enzyme loading of 1g. Glucose concentrations dropped with time until equilibrium was reached. A first order kinetics for the steps was employed and Runge Kutta 4th order algorithm combined with a least square method were used to estimate the pre-experimental factor and activation energy for determination of the corresponding rate constants by solving the initial value problem of the suggested model using EZ-Solve software. Very good fits between experimental data and model prediction was obtained.
P010	Characterization of Completion Operational Safety for Deepwater Wells **Wu Shengnan**, Fan Jianchun and Zhang Laibin *Abstract*—As the exploration and development of offshore energy resources moves into deeper waters, deepwater completion operations is facing much more challenging conditions than onshore and shallow water completion operations. Safety is one of the most important factors to be considered. In this paper, an integrated risk analysis model on basis of preliminary hazard analysis and Swiss cheese model is proposed to specifically evaluate both the static and dynamic risks involved during the deepwater completion phases. Uncertainties and potential hazards in deepwater completion operations and the corresponding consequences are identified by the proposed method. The safety degree of individual hazards is evaluated

	and effective measures are adopted to prevent, mitigate and control the deepwater completion accidents. Based on the above analysis, risk control model and six safety barriers including well structure barriers, correct operation barriers and well control barriers etc. will be established to mitigate and control incidents and major accidents caused by unintentional fluid leaking from the formation to surface. The greatest privilege of this method is that it can be applied during the completion design and operation stages, where the effects of hazards in the process are unknown. Finally, a case study is presented to show how this method can be applied to the field operations.
P022	Development and Application of Wind Energy in China **Jizhong Zhu**, Xiaofu Xiong and Kwok Cheung *Abstract*—The development of wind energy is one of the most potential among various renewable energy resources. Due to maturing technology, wind energy has become the most promising renewable energy which can be developed and utilized for large scale. China is located in the eastern Eurasian continent and the brink of the world's largest ocean - the Pacific Ocean. It has more than 20,000 kilometers border, 18,000 kilometers coastline and 5,000 offshore islands. The strong climatic differences between land and sea, as well as vast land area and the complex terrain form abundant wind energy resources in China. This paper reports the development and application of wind energy in China. It also analyzes the existing issue on wind energy application in power systems as well as the latest research in this area
P20001	Prediction of Reservoir Performance Applying Decline Curve Analysis **Khulud .M. Rahuma**, H. Al hendi, N. Shuwshin and S. Edayekh *Abstract*— Decline curve analysis is a technique can be applied to a single well, and total reservoir. Decline analysis routinely used by engineers to estimate initial hydrocarbon in place, hydrocarbon reserves at some abandonment conditions, and forecasting future production rate. The remaining reserve depends on the production points that selected to represent the real well behavior, the way of dealing with the production data, and the human errors that might happen during the life of the field. In this study the actual oil rate technique is applied under decline curve analysis (D.C.A) program, and screening data points to calculate remaining and recoverable reserves.
P20002	Relationship between Wave Velocities and Geo-Pressures in Shallow Libyan Carbonate Reservoir *Tarek S. Duzan* *Abstract*—Geo-pressures (Pore, Fracture & Over-burden) is vital for any subsurface oil operations. In this paper, we focused on the relationships between geo-pressures and wave velocities in shallow Libyan Carbonate reservoir. The data was collected recently drilled from four new wells scattered through-out the interested reservoir. The data used are bulk density, formation multi-tester (FMT) results and acoustic wave velocities. Furthermore, most commonly used Eaton method has been used to calculate Fracture pressure for wells using dynamic poison ratio calculated by using acoustic wave velocities, FMT results for pore pressure, and overburden pressure estimated by using bulk density. Upon data analysis, a linear relationship between geo-pressures and wave velocities ratio (Vp/Vs)has been found. However, the relationship was not clear in the high pressure area. Therefore, it is recommended to use the output relationship to predict the geo-pressures for any future oil operations in low pressure carbonate reservoir.
P30002	Natural Gas Business and Market in India **Dr. Subrat Sahu** and Mr. Varun Singh *Abstract*— Due to recent change in policy and establishment of regulatory board along with advancement in technology and emergence of innovative practice has paved the way for standardization in Natural Gas business. The potential has been recognized by many companies for developing their business and market particularly in India. Attempts have been made to discuss the business and market implications of technology, innovative practices and development which result in outcome of shaping of natural gas

	business in India.

12:00 – 13:30	**Lunch**

Afternoon, March 18, 2013 (Monday)

SESSION – 2 (ICEST)
Venue: Promenade 1
Session Chair: Bogdan Zygmunt
Time: 13:30 – 15:00

M00009	Combined Biological and Advanced Oxidation Treatment Processes for COD and Color Removal of Sewage Water **Ch. Tahir Mehmood**, Aniqa Batool and Ishtiaq A. Qazi *Abstract*—Wastewater (WW) generation is inevitable in rapidly growing and urbanizing societies resulting in significant damage to the quality and quantity of fresh water resources. The study was intended to harness the reuse potential of sewage WW using integrated wastewater treatment process. Composite sample of sewage WW was collected from inlet of sewage wastewater treatment plant. The WW sample was batch wise subjected to activated sludge process (ASP), ozonation, UV irradiation, H_2O_2 oxidation and sand filtration separately for different time intervals (i.e. 0 to 60 min) and concentrations of H_2O_2 (0.1 to 1.0 mlL^{-1}), followed by the integration of all the processes at their optimum conditions. Batch experiments were performed in pyrex containers using 1.5L sample except for ASP that is 20L. Efficiencies were measured in terms of COD, color and TSS removal along with changes in pH and temperature. Biological diversity of WW was also determined using cultural techniques followed by biochemical tests. Color reduction was much higher and faster than COD in all the tested treatment processes. Ozonation was the fastest process to remove 78% color in 30 minutes however, ASP was more economical for the same efficiency but requires high hydraulic retention time (HRT). Increase in UV irradiation time reduced COD and color by 54 and 69% after 60min respectively. Sand filter efficiently removed 97% TSS with marginal reduction in COD. Integration of 4 hr ASP, 24 min ozonation and 10 min UV exposure with 1 ml L^{-1} H_2O_2 dose yielded 98 and 100% COD and Color reduction respectively.
M00010	Optical Spectra of Phytoplankton Cultures for Remote Sensing Applications: Focus on Harmful Algal Blooms Robert Warner and **Chunlei Fan** *Abstract*—Hyperspectral remote sensing reflectance was measured for a series of phytoplankton cultures as the first step in determining major taxon in an algal bloom by remote sensing. Two common bloom-forming species: Dinophyta, the dinoflagellate *Prorocentrum minimum*, and Cyanophyta, the cyanobacteria *Synechococcus sp*. were grown as mono cell cultures. Optical spectral measurements were taken from the cultures during logarithmic growth phases with progressive dilutions and culture mixtures. The primary objective of this study was to obtain base line reflectance spectra which can be used as references for remote sensing of algal blooms. Furthermore, the derivative analysis was applied to the reflectance spectra to explore the spectral features that can be used to identify phytoplankton taxon. Results showed that spectral reflectance correlated with phytoplankton biomass. Applying mathematical operators to the spectra of mono cell cultures corresponded to observed spectra of culture mixtures. Our results further corroborate previous findings that for some cases, remote sensing reflectance (Rrs) can be

	used to identify the primary taxon in algal blooms.
M00011	Design of Eco Bags on the Basis of LOHAS and Consumption Behavior **Qing Li** *Abstract*—Nowadays, an increasing number of people is aware of the detrimental results of environment pollution in global scale. Some of the population has changed their lifestyles and has switched to eco bags to tone down the impact on human inhabitation on earth. Eco bags, which are renewable, are good for environment because they are both recyclable and degradable. The purpose of this paper is for businesses or government agencies to better locate and understand a particular market segment and potential demands of environment-friendly bags. By this research, the author hopes to not only increase businesses' sales but also meet demands of consumers living in Lifestyles of Health and Sustainability. (LOHAS). By quantitative research, this study analyzes relationships between demands of eco bags with various sizes, designs, shapes as well as applications, and purchasers of different education background, career, and age. Furthermore, it also examines the difference between LOHAS purchasers' behavior and visual sensation, style, size, and shape. Last but not the least, this paper establishes a model of the influence of LOHAS' concept and way of living on eco bags consumption by official data of Macao population. Since LOHAS' advocators react differently to visual effect, style, size and graphic design of eco bags, bags manufacturers should take these dissimilar requests into consideration when they fashion their products. In this way, it is more likely for manufacturers to penetrate into the market segment and access to more potential LOHAS consumers by producing desired items. Meanwhile, organizations or government agencies with interest in this particular market segment can be well informed for policies making or related administrative purposes based on the models presented in this paper.
M00019	Determining Minimum Distance Anaerobic Organic Digestion Processing Municipal Wastewater Through Pipes before Draining to the Wastewater Treatment Ponds under H.M. the King's Initiative Nature-by-Nature Long-Term Project **Satreethai Poommai**, Kasem Chunkao, Narauchid Dumpin, Saowalak Boonmang and Chatri Nimpee *Abstract*—H. M. The King's initiative Laem Phak Bia environmental research and development (LERD) project has been selected Laem Phak Bia sub-district, Ban Laem district, Petchaburi province which is about 18.5 km away from points sources at Petchaburi municipal. Transferring community wastewater was really needed to take HPDE pipe because of high pressure requirement for 50-cm head between Klongyang pumping station to the project site and also unpleasant smell in case of using open channel sewer system. The original point sources are far away about 5 km to 8 km to in-town collection pond which is localized at fresh-food markets, households, shopping center, dessert factories, Thai rice noodle factories, and government offices in which they produce wastewater approximately 7,000 m3/d. The pumping capacity was estimated 3,000 to 3,600 m3/d through 18.5-km HPDE pipe to the LERD's project site without any interruption. The research results found that the Royal LERD wastewater treatment system to decrease the high content of BOD down to under standard value after overflowing weir crest of the last pond (pond5). In addition, the anaerobic organic digestion processing distance was determined by graphical method with free hand curving that pointing out on 2,000 meters that moving from the start-up point at Klongyang collection pond through the 18.5- km HPDE pipe tail. Only the values of BOD and anaerobes had evidently shown in variable patterns, but the others found more or less changeable patterns, i.e. COD, NH4, NO2, alkalinity, hardness, SS. TDS, EC, orthophosphate, total phosphate, temperature, aerobes, facultative bacteria, total coliform, fecal bacteria, and DO (0.000 to 0.003 mg/L).
M00020	Sea Salt Aerosols : Shortwave Radiative Forcing Winai Meesang, **Surat Bualert**, Pantipa Wonglakorn *Abstract*—Effect of sea salt aerosol on short wave spectrum energy is the study of solar reduction and the

	reduction percentage due to sea salt aerosol. The research measured short wave radiation from the sun by using spectroradiometer, model MS700. The spectroraiometers were installed at two levels: the first level was set at 10 meters height from ground that called "control unit" representing the rays of the sun directly (direct Incoming) and the second level was set at one meter height that called "blank unit" measuring radiation from the sun passed through the blank chamber (Representing a decrease in solar radiation on Chamber / blank) and "laboratory unit" was a chamber with dry sea salt aerosol (Representing a decrease of the radiation from the sun and dried sea salt), then the study would find the percent reduction of solar radiation. The results show that the concentration of sea salt aerosol from 0.48, 0.85, 1.22, 1.59, 1.96 g/m^3. Aerosol particles caused the solar radiation reducing rate higher than sea salt aerosol at wavelength 306-330 nm due to high energy (short wavelength). In addition.wave-length 380-390 nm increase solar radiation f due to the properties of sea salt crystals 570-590 nm and 710-750 nm showed rapidly reduce energy.
M00025	Variation of Net Radiation and Solar Spectrum in Thailand **Pannop Limhoon**, Surat Bualert *Abstract*—Variation of Net radiation and Solar spectrum in Thailand determine the Net radiation and Solar spectrum to compare the environment. The preparation databases amount of solar radiation to be aware change types quantity proportion and distribution of the ratio change each area can influence change the net radiation and spectrum of solar radiation that is received. Measuring and monitoring solar radiation at the wave length 350-1050 nm since November 2010 – February 2011 and March 2011 – March 2012 by instrument netradiometer, CNR4 and Spectroradiometer (EKO, MS-700). The results showed that net radiation was lowest in rainy season. In rainy season was highest decreasing percentage compared to summer. Seasonal variation of the averaged radiation at the wavelength range 351-1050nm showed a good agreement to net radiation, highest in summer rain and winter respectively. In the rainy season, massive cloud, and humidity in the air could absorb net radiation causes the net radiation decreasing at the wavelength range 700-1050 nm of the rainy season, more than other seasons. At the wavelength range 351-700nm, the net radiation decreasing in the winter caused by the station's location and wind direction which brought particles from the sea. Especially on sea salt affected the net radiation at the wave length range 351-700 nm. It showed a good agreement to [7] [10] which reported that in winter, % decrease was greater than any other seasons.
M00031	Solar Spectrum Forcing Due to Soil Particle Concentration **Pantipa Wonglakorn**, and Surat Bualert *Abstract*—The Solar spectrum forcing Due to Soil Particle Concentration to study about difference solar energy 3 unit on September 2012 at Petchburi province, Thailand. MS-**700**, Spectroradiometer was used to determined energy at the wave length 300-1050 nm and short-wave solar radiation. The soil particle was used in the experiment. The result showed that the particulate matter was decrease the shortwave radiation energy. The highest decreasing rate was near infrared range (-0.97%), it showed slightly effect on ultraviolet range (0.11%) and visible light rangeand (0.87%). The soil particle showed significantly effect on the proportion of short wave radiation energy. At the visible light showed percentage is the highest in 450-490 nm (16.0%) the lowest in 380-450 nm (11.0%).
M00022	Bacterial-Type Contamination of Thachin River Water from Recharging Floodwater of Extreme 2011-Bangkok Flooding Disasters through the three-Draining Canals Due to Unnatural Phenomena of Five-Consecutive Typhoons in Thailand **Sathapat Saneha** *Abstract*—Unnatural phenomena of five-consecutive typhoons in July through September 2011 caused the falling of heavy and long duration rain. The total rainfall turning to be streamflowed and reaching to

	around Bangkok about 150,000 MCM. Due to draining out of this amount of floodwater only Chao Phraya river took very long period of time, the government made the decision to take Mahasawad, Phasicharoen, and Mahachai canals to transfer them to Thachin river without any treatment before reaching to the stream water. In order to have warning sign from floodwater quality from unnatural typhoons in Thailand, the Royal LERD project had been collected floodwater sample to detect physical, chemical, and biological water quality at the areas around northern part of Bangkok, Chao Phraya river, three-canal watercourses (Mahasawad, Phasicharoen, Mahachai) and Thachin river. An analyzed value of physical and chemical quality was unpleasant because of high concentration above the surface water quality. As well as the biological water quality, especially microorganisms and water-born diseases was found much more than standard values [1]. It was no doubt that water of Thachin river had to be contaminated all the said water quality indicators which were rather lower quality than before and after transferring floodwater from upper north of Bangkok and Chao Phraya river through Mahasawad, Phasicharoen, and Mahachai canals to mix with Thachin river water. The above statement should be a lesson to learn of flood fighters not taking any action in the future because it would be like getting rid of bad thing from one place to the others on which it has been identified as plenty of natural resources likewise Thachin riverine systems [2].
M00027	Biofilm Growth Characteristics at Different Diesel Leakage Concentration **Fang Liu**, Wei Yang, HuiYun Zhong, JinJin Lu, Chaocheng Zhao *Abstract*—Petroleum products leakages result in important effects on the normal operation of circulating cooling water system. However, relatively little research has been done to explore effects of petroleum products leakages on biofilm growth characteristics. In this study, diesel as the experimental subject representing petroleum products, effects of diesel addition on biofilm growth characteristics were investigated. Increase of diesel addition led to biofilm EPS increase with diesel concentration less than 200 mg/L, then EPS content were kept relatively stable with diesel concentration more than 200 mg/L. Protein contents were found at relatively higher levels than polysaccharides in the biofilm with diesel concentration more than 200 mg/L. Expect for 100 mg/L diesel, increasing diesel concentration enhanced biofilm detachment ratio with respect to the control test. Although biofilm wet weight tended to increase with diesel concentration rising from 0 to 1500 mg/L, there was a marked reduction in lipid phosphorus content with increase of diesel concentration from 200 to 1500 mg/L. The reduction indicated that diesel was toxic to microbial population in biofilm.
M00030	A Forecasting System of Carbon Price in the Carbon Trading Markets Using Artificial Neural Network **Ming-Tang Tsai** and Yu-Teing Kuo *Abstract*—In this paper, a carbon price forecasting system is proposed to quickly and accurately predict the carbon price for participants. The data including the carbon trading price, oil price, coal price and gas price are first calculated and the data clusters are embedded in the Excel Database. Based on the Radial Basis Function Network (RBFN) and Ant Colony Optimization (ACO), an Ant-Based Radial Basis Function Network (ARBFN) is constructed in the searching process. The optimal parameters obtained from the ACO enable the learning rate parameters to regulate and improve the predicting errors during the training process. By linking the ARBFN and Excel database, the training stages of the ARBFN retrieve the input data from the Excel Database so that the efficiency and accuracy of the predicting system can be analyzed. A comparison of the Back-propagation Neural Network (BPN), Radial Basis function (RBFN), Probability Neural Network (PNN) and the ARBFN show that the converging solution is obtained by the prediction process. Simulation results will provide an accurate and real-time method for participants to forecast carbon price and raise the market competition in a carbon trading market.
M00032	Reconciling Indoor Air Quality and Energy Efficiency in Air-conditioned Classrooms: Case Studies for Portugal and Macao

	ROGERIO DUARTE; **INGRIDE BELTRAO-COELHO** *Abstract*—Growing awareness on the subject of classroom's indoor air quality and concerns regarding the probable link between indoor air quality, student's attendance and academic performance, support recent legislation limiting classroom's indoor pollutant concentrations. A consequence of this legislation is the generalized shift towards air-conditioned classrooms and increased budgets for schools energy running costs. According to the scientific literature, demand control ventilation systems are suited for classrooms, ensuring indoor air quality and thermal comfort with significant energy savings. Based on detailed building energy simulation this paper compares a demand control ventilation system and a (traditional) constant air volume system considering a typical classroom located in two distinct climatic regions: Portugal and Macao. Based on hourly results of classroom's indoor CO_2 concentrations and indoor air temperatures, and on annual air-conditioning energy consumptions, advantages of the demand control ventilation system are discussed.
M00033	Effectiveness of Grid Orthogonality on Body Fitted Curvilinear Coordinate System in CFD **Ichiro Nakane** Abstract—Body fitted curvilinear coordinate systems (usually abbreviated to "BFC") are widely used for calculating the flow around arbitrary complex bodies, but generally they are not orthogonal. The accuracy deteriorates if the departure from orthogonality is too large, and non-orthogonal coordinate systems make the application of boundary conditions more complex. In this study, the method for generating the orthogonal BFC based on the non-orthogonal BFC is suggested, and five kinds of calculation grids (one non-orthogonal and four orthogonal grids) are generated. The two-dimensional calculations were performed for the flow around a circular cylinder with these orthogonal and non-orthogonal grids. The calculated results were compared with the measurements and the analytic prediction. The validity of grid orthogonality and the method for generating the orthogonal BFC are confirmed.

Afternoon, March 18, 2013 (Monday)

SESSION – 3 (ICBBT)
Venue: Baccara 2
Session Chair: Takashi Watanabe
Time: 13:30 – 15:00

S001	Exoskeleton to rehabilitate paralyzed arm based on patient healthy arm guidance Jiajia Hu, Xinmin Xu, and **Weidong Liu** *Abstract*—In this paper we discuss the stroke rehabilitation by robotic device and a novel exoskeleton, which is based on the patient's self-guided control will be presented. It is realized by moving the patient's own healthy arm in order to provide the movement trajectories for the exoskeleton. The main advantage of the exoskeleton is its flexibility and adaptivity for individual patient's rehabilitation training. A new model predictive control (MPC) algorithm for handling coupling and nonlinearity is also proposed and a microprocessor-based drive system for the exoskeleton will be adopted. In addition, to measure the angular positions corresponding to the joint angles of arm high resolution potentiometers are used.
S002	A Structural Equation Modeling Approach for the Estimation of Genetic and Environmental Effects from Twin fMRI Data **Yu Yong Choi**, Jong-In Song, Jang Soo Chun, Kun Ho Lee, and Woo Keun Song *Abstract*—Structural equation modeling (SEM) is a statistical technique widely used in quantitative

	genetics to measure genetic and environmental variances of human traits. Using SEM, the proportions of genetic and environmental influences can be separated from the phenotypic variance. However, the SEM softwares like Mx or LISREL were not designed for a big data analysis. They can hardly be applied for brain images that comprise hundreds of thousands of voxels. Here, to introduce SEM in the field of neuroimaging, we developed a simple code in MATLAB for multiple computations of Mx. Our method could estimate genetic and environmental variances of neural activations at 153,594 voxels of the whole brain, to be converted to brain images.
S003	Treadmill Exercise Facilitates Functional Recovery and Neuroprotection in Subacute Stroke Rat **J. Sun**, K. Y. Tong, Z. Ke, S. J. Zhang, X. L. Hu, X. X. Zheng *Abstract*—Treadmill exercise has been a controversial method to help stroke rat with functional recovery and neuroprotection. In this study, we investigated the effect of treadmill exercise on focal brain ischemia stroke rat in subacute phase. Twelve rats were induced focal ischemic stroke by a 60 min middle cerebral artery occlusion/reperfusion surgery and then randomly divided into two group, control group (CG, n=6) and treadmill group (TG, n=6). TC rats received daily treadmill exercise training during the seven-day experimental period while CG rats did not receive any intervention. Daily functional test results were recorded and all rats were sacrificed for TTC staining on the 7^{th} day. The increase rate of behaviour score in TG is significantly higher than that in CG ($P<0.05$) and the infarct volume in TG is significantly smaller than that in CG ($P<0.05$). Results illustrated that post-stroke treadmill exercise can facilitate the functional recovery and provide neuroprotection in focal ischemic stroke rat in the subacute phase.
S005	Detection of Deoxyribonucleic Acids on A Membrane Strip **Jui-Chuang Wu**, Yai-Hsin Hsu, Dan-Ping Cheng, and Ya-Yuen Cheng *Abstract*—A lateral-flow membrane strip was developed to detect the signal of deoxyribonucleic acids. The signal amplification was demonstrated by the detection of the model sample, biotinlyated Avian-Influenza (AI) genetic sequence, with a sandwich configuration of the target-RCA template complex captured between a RCA (Rolling Circle Amplification) template and streptavidin protein immobilized on a nitrocellulose membrane strip.
S008	Hemodynamics in Multiple Intracranial Aneurysms: The Role of Shear Related to Rupture **P. Berg**, G. Janiga, O. Beuing, M. Neugebauer and D. Thévenin *Abstract*—Wall shear stress is the most prominent hemodynamic parameter associated with intracranial aneurysm rupture. Since low as well as high shear theories still coexist, the aim of this study was to investigate several shear related variables on datasets with multiple intracranial aneurysms. Therefore, two patient-specific anterior circulations of the human cerebral vascular system were reconstructed, containing two and three intracranial aneurysms, respectively. The hemodynamic simulations are based on flow rates measured by means of 7-Tesla PC-MRI. Since a rupture occurred in both cases and the affected aneurysms could be identified, the evaluation of time-averaged wall shear stresses, their gradients as well as the oscillatory shear indices mainly focuses on a comparison between ruptured and unruptured aneurysms. Areas of low and elevated shear were found in all cases and no correlation with rupture was identified. However, the ruptured aneurysms feature significantly higher directional changes of the shear vector associated to a stronger flow oscillation. This observation suggests that a combination of low average shear stresses wit increased oscillations is present in ruptured aneurysms. In that case, wall shear stress cannot be used exclusively in order to predict the rupture probability and the oscillatory shear index should be taken into account, probably as one of several additional indicators.
S010	Method of Retrieving Articles on Protein Structure Analysis from User Intention **T. Aso** and T. Ohkawa

	Abstract—In recent years, the number of articles that describe protein structure and function is increasing. Since the articles are written using polysemic and complex terminologies, however, such naive retrieval methods as full text search often fail to find appropriate articles. We propose a new method in which the structural and functional concepts of proteins are considered using Gene Ontology (GO) and other databases. In our proposed method, articles of interest are submitted as queries to solve the problem caused by the ambiguity of the terminologies, and then articles similar to the query article are retrieved. In addition, giving another article as an additional query article clarifies the user intention and improves retrieval accuracy. The effectiveness of our proposed method was confirmed by evaluating its accuracy through retrieval experiments, especially for retrieving new articles.
S011	Needle insertion forces studies for optimal surgical modeling Ka Wei Ng, **Jin Quan Goh**, Soo Leong Foo, Poh Hua Ting and Teck Kheng Lee *Abstract*— Needle insertion for minimally invasive surgery is a technique explored and studied in order to adhere to the strict regulatory requirement for medical device development. While the instruments and techniques determine the success of every surgical procedure, minimal attention was given to the medium, the interaction force for testing, the development tools and surgical techniques. In this paper, we present the interaction forces involve during the needle insertion into porcine back tissue and simulated flesh-like tissue, independently measured by a testing setup developed for this purpose. The experimental setup and test procedure provides an understanding on the mechanics of needle insertion, potentially aid the design improvement on surgical instrument. Investigation on the composition of the force components helps to define the bio-mechanical properties of back abdomen tissue upon insertion. These forces comprises of stiffness, friction and cutting force. These results estimate the true insertion depth of the needle in the tissue. Needle insertion forces 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 force feedback controlled surgical instrument for needle insertion which will be used in kidney surgical operation.
S014	Comparison of Lead Absorption Ability of Bougainvillea (*Bougainvillea spectabilis L.*) Leaves in Two Cities in Metro Manila, Philippines **Dela Cruz, K.A.M.**, Burgos, S.D., Gloria, M.A., Ventura, K. *Abstract*—Heavy metals, such as lead, have caused deleterious effect not only to the environment, but also to the public's health. In the Philippines, the ornamental plant Bougainvillea has been planted on the main roads of cities due to its capacity to thrive in heavily polluted areas. Studies show that Bougainvillea may be utilized to reduce heavy metal pollution through absorption and adsorption in soil and air, respectively. In this study, the plant's leaves were used to measure the lead accumulated, adsorbed and absorbed from two cities in Metro Manila, specifically Las Piñas and Manila. The lead concentration of the plant and its soil was measured through Flameless Atomic Absorption Spectrophotometer (AA-6300, Shimadzu, France), and the duration of measurement lasted for nine months with four time periods (0, 3, 6 and 9^{th} month-interval). Two-way t-test and ANOVA were used to analyze the data gathered. It was found that there is no sufficient evidence to conclude that lead content of the plants in Manila differs significantly from that of Las Piñas. Moreover, results show that Bougainvillea lead uptake may vary depending on various environmental factors, such as concentration of lead in soil, climatic condition, degree of heavy metal pollution and complexes of lead form in other soil components.
S016	Assessment of water quality using multivariate statistical methods: A case study of an urban landscape water, Beijing **Qu Jiang-qi**, Zhang Qing-jing, Liu Pan, Jia Cheng-xia, Yang Mu *Abstract*—Multivariate statistical methods, such as cluster analysis (CA), discriminant analysis (DA), and factor analysis (FA) were applied to the data on water quality of Lake Taoranting (Beijing), generated

	during two years (2011-2012), with monitoring at five different sites. The CA grouped the eight months (March to November) into three periods，and classified five sites into two clusters based on water quality characteristics. The DA showed the best results for data reduction and temporal analysis. It calculated six parameters (TEMP，pH，SD，COD_{Mn}，TSS and Chl-a) were the major sources of temporal variations in water quality. The FA applied to datasets of two special clusters of the lake calculated three factors for each region, capturing 72.89% and 78.88% of the total variance, respectively. Factors obtained from FA indicate that some parameters such as Chl-a, TSS, TP and NH_4^+-N are mainly key factors responsible for water quality. Thus, this study results suggested that multivariate statistical methods is a effective tool for analysis of urban landscape water quality.

15:00 - 15:20	**Coffee Break**

Afternoon, March 18, 2013 (Monday)

SESSION – 4 (ICEST)
Venue: Promenade 1
Session Chair: Ichiro Nakane
Time: 15:20 – 18:00

M00034	Characterization of Fuel Briquette Made from Sewage Sludge Mixed with Water Hyacinth and Sewage Sludge Mixed with Sedge **Nuta Supakata** *Abstract*—This research aimed to study the quality of the fuel briquettes made from sewage sludge mixed with water hyacinth and sewage sludge mixed with sedge. Sewage sludge were mixed with water hyacinth and sedge at the ratios of 1:1, 1:2, 1:3, 2:1 and 3:1 then compressed these mixtures with hydraulic pressure to obtain fuel briquettes and finalized them by analyzing fuel briquettes properties including moisture content, calorific value and compressive strength, then comparing them to the properties of the wood charcoal standard. The result showed that the ratio of wastewater sludge and sedge at 1:3 provided the highest calorific value (3,362.9 cal/g) but still lower than the standard (5,000 cal/g) and the ratio of wastewater sludge and water hyacinth at 1:3 gave the highest compressive strength value (4,545 N). And the moisture content of them was between 4.78% and 7.86%.
M00039	Loss of Agricultural Land: A Case Study of Tha Chin River Basin, Influenced by Water Diversion to the West **Panarat Chengcharoen**, Pricha Dhanmanonda and Kasem Chunkao *Abstract*—Tha Chin River is a major river in the central plateau from the past to the present. Tha Chin river, separated from the river to Chainat. And runs almost parallel to the river in the province through the stuff into the Gulf of Thailand, Nakhon Pathom, Samut Sakhon province by the year 2011 through the Tha Chin River Basin area of the West Bank has experienced major flooding over the years. The areas near the Chao Phraya River and the Gulf of Thailand to flood conditions on the sea level rise driven by The man tried exploitation of land resources as much as possible in a variety of formats. The agricultural land use, etc., fishing industry in Thailand. Has changed over time, from past to present.Of the problems mentioned above. Researchers are interested in studying the impact of the loss of agricultural land flooding the Tha Chin River Basin influenced by the west side of the drainage. Affecting land use change in the Tha Chin River Basin. The results of this study may be used as supporting data and the schedule of the planned

	flood protection planning. To avoid the loss of important agricultural area and economic and social.
M00040	Alternative Rice Straw Management Practices to Reduce Field Open Burning in Thailand **Kanittha Kanokkanjana** and Savitri Garivait *Abstract*—Open burning of rice straw causes release of air pollutants, which contributes to enhance climate change related issues. Moreover, the burning practice was a reason of losing carbon content from crop land to the atmosphere. This study focuses on estimation of carbon content loss to the atmosphere through open burning of rice straw and suggests alternative rice straw management practices to reduce field open burning in Thailand. Field experiments were conducted to collect samples of rice straw to quantify residue to product ratio (RPR) and analyze their carbon content by elemental analysis. Ash samples were also collected to analyze their carbon content. Carbon losses to the atmosphere through field burning were then estimated. To better understand traditional practices of open burning in Thailand, statistics related to seasonal rice production/harvesting were also investigated. Finally, economic and environmental benefits associated to alternative rice straw management options were considered and discussed against traditional open burning practices.
M00041	Energy and Greenhouse Gas Emissions Reduction Potential of Sugarcane Field Residues for Power Generation in Thailand **Salakjai Jenjariyakosoln**, Boonrod Sajjakulnukit, and Savitri Garivait *Abstract*—This paper presents an approach to evaluate the net energy potential of sugarcane field residues in Thailand. It was estimated that around 13,595 ktons of sugarcane field residues was burned in the field annually in the country. Assuming 100% collection efficiency, this amount could be converted to 210.46 PJ through power generation. The quantity of greenhouse gases (GHGs) including CO_2, CH_4, and N_2O emitted from open burning of sugarcane residues was compared to that released from power production using life cycle analysis methodology for the estimation. It was found that the avoided GHG emissions obtained for power generation represent 11,836 ktons CO_2equivalent, based on the country specific emission factor of electricity production using coal as fuel of 1.09 kg CO_2/kWh. Although this enormous potential for energy production in Thailand, sugarcane field residues availability is subject to seasonal variability, which limits its capacity to serve as fuel for power generation. The total avoided GHG emissions were therefore 11,836 ktons CO_2eq and 8,285 ktons CO_2eq annually for collection efficiency of 100% and 70%, respectively. Comparatively to the national CO_2 emissions from coal power generation of 34,532 ktons CO_2eq in 2011, the avoided GHG emissions would be about 34% and 24% for collection efficiency of 100% and 70%, respectively.
M10001	Adsorption of Pb(II) and Cu(II) from Aqueous Solution onto Activated Carbon Prepared from Dates Stones **Mohamed O. Sulyman**, Khalad Y. Elazaby, Jamal A. Abudaia, Salah M. Ben-Ali *Abstract*—Potentially toxic trace elements such as Lead Pb(II) and Copper Cu (II), with high levels in water are very serious problem in many places around the world, sometimes in relation to natural sources and in other cases to anthropogenic ones. Adsorption process is among the most effective techniques for removing of many heavy metal (HM) ions from different types of water. In this study, an attempt has been made to investigate the efficiency of granular activated carbon (GAC) and powder activated carbon (PAC) obtained from easy available agricultural by-products dates stones (DS) in removing of Pb (II), Cu (II) from their aqueous solutions using batch mode technique. During the removal process, the effects of solution pH, HM concentrations and contact time, and adsorbent concentration, on adsorption efficiency by both GAC & PAC were studied. Under the experimental conditions, the removal efficiency of such metals by PAC was 83%, 91% showing preference over GAC which had a removal efficiency of 76%, 82% respectively.

M10002	Innovation Strategy of Low Carbon Technology in China: Technology for Market **Xiangsheng Dou**, Meijuan Liu, and Hongfei Wang *Abstract*—The basis and key of low carbon economy development is low carbon technological innovation. At this stage, China must fully implement the technological innovation strategy of technology-for-market. Only to fully grasp the core or key low carbon technologies and have fully the strong self-innovation capabilities of low carbon technologies, can China take the initiative in the game of global low carbon economy and is not dominated by other countries. The key to the implementation of technology-for-market strategy is to achieve the independent technological innovation and the accumulation of technological capabilities. This requires to protect the intellectual property rights.
M10010	Substitution Approach in Carbon Dioxide Emission Reduction Evaluation: Case Study on Geothermal Power Station Project plAn – Ďurkov (Košice Basin, Slovakia) **Branislav Fričovský**, **Stanislav Jacko Jr.**, Miroslava Popovičová, Ladislav Tometz *Abstract*—Application of substitution approach (fossil fuels heat and power production duty essential in high CO_2 emissions is replaced by low-emissions based geothermal source in the same process at the same intensity) in CO_2 emission reduction potential analysis for proposed cogeneration Ďurkov power station project is presented in the paper. Project can contribute with yearly 49 891 tCO_2 of gross (a sum of 26 811 tCO_2 from a heat and 23 080 tCO_2 from a power production) or 49 587 tCO_2 of real carbon dioxide savings. According to 40-years projected lifespan, achievable cumulative gross savings can reach 1,995 $MtCO_2$ or 1,99 $MtCO_2$ of real carbon dioxide bulk mitigated.
M10013	Adsorption characteristics of Copper(II) onto Ferrocene Modified Resin **Qian Wang**, Senlin Tian, Zongliang He, Jiaqi Li, Ping Ning *Abstract*—Ferrocene (Fc) modified cation exchange resin (FMCER) was synthesized for copper adsorption process and characterized by XRF and BET analysis. Fc has been successfully impregnated into resin, and Fc loaded on resin was about 0.1792% (w/w). Both surface area and pore width of resin was enlarged. Results from batch experiments indicated that the adsorption kinetics of Cu^{2+} obeyed pseudo-second-order kinetic model and the adsorption rate constant was 0.0011 g/mg/min. Langmuir adsorption isotherm model fitted the adsorption of Cu^{2+} well. The adsorption process of Cu^{2+} was exothermic reaction. The adsorption process was pH dependent and the optimal pH was found to be 4-5, and maximum removal efficiency was 38.59% at pH 4.
M10021	Quantitative Analysis of Lead, Cadmium and Chromium Found in Selected Fish Marketed in Metro Manila, Philippines Judilyn N. Solidum, **Maylea Joelle D. De Vera**, Ar-Raquib D.C. Abdulla, Jennielyn H. Evangelista, Mary Joy Ann V. Nerosa and Jemimah B. Macarubbo *Abstract*—Heavy metals are considered as a major pollutant causing environmental cytotoxic, mutagenic and carcinogenic effects in animals and aquatic organisms. Pollution caused by these substances can arise from many sources and the major problem associated with its persistence is its potential for bioaccumulation. Heavy metals such as lead (Pb), cadmium (Cd) and chromium (Cr) are the most common toxicant that can be found in the marine environment including fish. Fish is a common table food consumed by humans for protein nourishment and its use to study heavy metal contamination would benefit majority of individuals living in a country surrounded by bodies of water, such as the Philippines. The study aims to analyze the presence of lead, cadmium and chromium using qualitative and quantitative tests in the head, meat and internals of selected fish samples sold in wet markets located at Metro Manila, Philippines. Quantitative analysis confirmed the presence of lead, cadmium and chromium in all fish samples. Results were reinforced by the Flame Atomic Absorbance Spectroscopy, wherein most of the fish samples exceeded the standard limits set by US-EPA and FDA for lead, cadmium and chromium i.e. 0.5,

	0.05 and 0.1 ppm respectively. Single factor ANOVA have shown that there is no significance among the levels of lead, cadmium and chromium with p values of 0.3679, 0.8858 and 0.9593 respectively in the head, meat and internal organs of the fish samples. Therefore, a person will acquire the same amount and effect of the heavy metals regardless of the part of the fish to be consumed. This study would be useful for the creation of guidelines to protect the public from the harmful effects of the toxicants present in fish that is consumed by the public.
M10024	Forecasting Damage Length of Maritime Structures Caused by Typhoons Based on Improved EWE Method **Ryusuke Hashimura** *Abstract*—The aim is to forecast the damage length of damaged maritime structures at each coast for each pass of a typhoon of the equivalent wave energy of a typhoon at a latitude of 30˚N using the so-called equivalent wave energy (EWE) method, which has been improved. EWE of typhoons is defined based on the maximum wind speed and the duration of wind blowing of the typhoon. Using the data on the damage length of maritime structures by typhoons and the path and the equivalent wave energy of typhoons, the vulnerability of coastal regions along the coastline of Japan for 13 groups of typhoon with different paths is estimated. The improved EWE method has been upgraded in comparison with EWE method and it will be used to estimate the damage length of damaged maritime structures that will occur along the coast at a latitude of 30˚ N before a typhoon strikes. The forecasting method reported here will be used for the purpose of coastal zone management in disaster prevention works. Further, it provides useful for information of storm warning and evacuation of residents along coastlines.
M20001	Risk assessment of Poly Cyclic Aromatic Hydrocarbons in the Holy City of Makkah, Saudi Arabia **Turki M. Habeebullah** *Abstract*—There is a lack of information on polycyclic aromatic hydrocarbons (PAHs) as environmental pollutants in Saudi Arabia. The current study focuses on the risk assessment of polycyclic aromatic hydrocarbons (PAHs),in the Holy city of Makkah, Saudi Arabia, during Hajj season 1431H. Atmospheric particulate matter was collected using High Volume samplers. Samples of 24h were collected at three sampling sites, Al-Shebakah, Al-Aziziah and Mina. PAH compounds were quantified by using GC. The total PAH concentrations (ng/m^3) ranged from 103.5 - 195.2 with mean values of 164.67, 137.81 and 132.40 for TSP, PM_{10}, $PM_{2.5}$, respectively. The higher percentages of the total carcinogenic compounds were recorded at Al-Shebakah, with a maximum value of 63.5 % in PM_{10}. The carcinogenic PAHs, dibenzo[a]pyrene was found at low concentrations.
M20002	Bio- Ethanol Production from Banana, Plantain and Pineapple Peels by Simultaneous Saccharification and fermentation Process **JANET ITELIMA**, FESTUS ONWULIRI, EDITH ONWULIRI, ISAAC ONYIMBA AND STEPHEN OFORJI *Abstract*—Most nations, whether economically advanced or at different stages of development are faced with the problem of disposal and treatment of wastes. Wastes could be treated in several ways (e.g. by reducing its bulk or by recovering and reprocessing it into useful substance) to meet sanitary standards. Ethanol fermented from renewable sources for fuel or fuel additives are known as bio-ethanol. In Nigeria, many food crops have been specifically grown for the production of bio-ethanol. However, bio-ethanol production from waste materials removed from fruits is very rare. In the present study, wastes from fruits such as banana, plantain and pineapple peels which are in abundance and do not interfere with food security were subjected to simultaneous saccharification and fermentation for 7days by co–culture of *Aspergillus niger* and *Saccharomyces cerevisiae*. Biomass yield, cell dry weight, reducing sugar concentration and the ethanol yield were determined at 24 hours interval. The results of the study showed

	that after 7 days of fermentation, pineapple peels had the highest biomass yield of 1.89 (OD), followed by banana peels 1.60 (OD), while plantain peels had the least 0.98 (OD). The reducing sugar concentrations ranged between 0.27 – 0.94 mg/cm^3 for pineapple, 0.20 – 0.82 mg/cm^3 for banana and 0.16 – 0.45 mg/cm^3 The optimal ethanol yields were 8.34% v/v, 7.45 % v/v and 3.98 % v/v for pineapple, banana and plantain peels respectively. These indicate that pineapple and banana peels ethanol yields were significantly higher ($P<0.05$) than plantain peel ethanol yield. The findings of this study suggest that wastes from fruits that contain fermentable sugars can no longer be discarded into our environment, but should be converted to useful products like bio-ethanol that can serve as alternative energy source.
M20003	Simultaneous Saccharification and Fermentation of Corn Cobs to Bio-Ethanol by Co-Culture of *Aspergillus Niger* and *Sacharomyces Cerevisiae* JANET ITELIMA, **ABIGAIL OGBONNA**, JOHN EGBERE, SUNDAY PANDUKUR AND ADAMS SALAMI *Abstract*—The production of bio-ethanol from corn is a mature technology that is not likely to see significant reduction in the production costs. Substantial cost reductions may be possible if cellulose based agricultural wastes such as corn cobs are used instead of corn. In this study, corn cobs which are in abundance and do not interfere with food security was subjected to simultaneous saccharification and fermentation process by co-culture of *Aspergillus niger* and *Saccharomyces cerevisiae* for 7 days. The corn cobs were sundried, milled into powder using hammer milling and stored at room temperature (25^{O}C) before use. The growth media used for culturing *Aspergilus niger* and *Saccharomyces cerevisiae* inocula were prepared respectively. Parameters such as biomass yield, cell dry weight, reducing sugar concentration, pH of the fermentation medium and the ethanol yield were determined at 24 hours intervals. The results of the study revealed that the yeast and mould biomass yield obtained from the corn cobs on the 7th day was 0.59 (OD), while the microbial cell dry weight obtained on the same day was 0.88mg/cm^3. The substrate was hydrolyzed to produce 0.63mg/cm^3 reducing sugar concentrations. The pH values of the fermentation medium varied between 3.05 and 7.58. Optimal ethanol yield of 10.08v/v was obtained after 7 days of fermentation. The results of this study suggest that agricultural wastes that contain fermentable sugars can no longer be discarded into our environment, but should be converted to useful products like bio-ethanol.
M20004	Solid Phase Micro-Extraction, a Versatile and Handy Tool in Environmental Trace Organic Analysis, Gets a New Class of Coatings, Polymeric Ionic Liquids Marta Wasielewska, Anna Banel, **Bogdan Zygmunt** *Abstract*—Solid phase microextraction (SPME) fundamentals, characteristics and application are described. The special stress is put on characteristics of sorbents used as SPME fiber coatings. Description of commercially available fibers and the present-day trends in development of new sorbents for SPME are given. Discussion is focused on possibility of application of ionic liquids (IL) and polymeric ionic liquids (PIL) as SPME fiber coatings. An example of application of PIL coating to determine volatile fatty acids in water is given.
M30005 Poster	Comparison of Surface Runoff Quality between Dry and Wet Period and Characteristics of Pollutant Runoff in a Lake Watershed **JAE HEON CHO** *Abstract*—Numerous golf courses are being constructed in Korea lately. Along with the construction, many civil complaints are filed against destruction of environment and use of pesticides and fertilizers that are known to significantly affect the water quality of surface water near golf courses. This study analyzes the result of storm water runoff of eutrophic lake watershed in which diffuse pollution sources such as

	golf resort drainage and agricultural drainage are significant pollution sources. 10 storm water runoff surveys were carried out at Jangcheon Stream and a storm sewer from 2004 to 2007 and water quality was also surveyed weekly from June 2005 to August 2007 in dry seasons as well. Water quality of Flow, TP (Total phosphorus), PO_4-P, TN(Total nitrogen), NO_3-N, SS, BOD, COD were surveyed. EMCs (Event mean concentrations) of storm water runoff were higher than the mean concentration surveyed for 27 months during dry seasons in both sites. Difference between EMC and the mean concentration during dry seasons was especially large in JM (main stream of the Jangcheon) site which is directly under the influence of Golf resort. Mass-volume curve and evaluation of the first flush effect was completed by utilizing storm runoff surveys.
M30008	Effect of Ultraviolet Light on Efficiency of Nano Photo-Catalyst (UV/CNTs/TiO_2) Composite in Removing MTBE from Contaminated Water **B. Tawabini**, M. Atieh and M. Mohyeddin *Abstract*—In this study, the removal efficiency of methyl tertiary butyl ether (MTBE) by: (1) UV-Titanium dioxide (UV/TiO_2), (2) UV-Carbon Nanotubes (UV/CNT) and (3) 5% TiO_2 impregnated on CNTs surface (UV/CNTs/5%TiO_2) was investigated. Two types of UV irradiation were utilized in this study namely: UVA irradiating at wavelength of 365nm and UVC irradiating at a wavelength of 254 nm. Dosage of 20 mg of nano materials was used in these experiments. The fate of MTBE's main degradation by-products were also investigated in this study. Results of the study showed that MTBE removal in the dark was very low for the three types of nano materials under the study conditions used. However, appreciable removal of MTBE was observed when using UV/TiO_2 for both types of UV lights, with UVC showing slightly better than UVA. On the other hand, the removal of MTBE by UV/CNTs and UV/CNTs/TiO_2 were much lower than that of UV/TiO_2.
M30009	Assessment of Environmental Impact for Tannery Industries in Bangladesh Abul Hasnat, Istiakur Rahman, and **Mosabbir Pasha** *Abstract*—Leather industry is a prominent industrial sector in Bangladesh which has a massive influence on our economy. The industry has become an area of export thrust with footwear having been identified as an area of extreme focus. Though having massive potential, this overgrowing sector has received much criticism on environmental as well as health issue. Basically the process of tanning is to retain the skin's natural properties, to stabilize its structure and at the same time to chemically process it so it will no longer be subject to putrefaction. It is one of the most energy intensive industries in Bangladesh which creates eco toxicity like water pollution, solid waste generations. In Bangladesh eco toxicity evaluation of any aquatic environment has not been conducted in large scale so far. Tannery discharge wastes to the marshy land like rivers and canals which carry toxic chemical like H_2S (water), NH_3 (ammonia), poisonous chlorine and nitrogen based gases. According to a report by SOCIETY FOR ENVIRONMENT AND HUMAN DEVELOPMENT (SEHD), millions of people suffer from gastrointestinal, dermatological and other diseases and 90% of them die before the age of 50. This project has been done to focus on the evaluation of pollution on the relative areas and also aimed at optimum utilization of for this Environmental Impact Assessment (EIA) has been done in those particular areas. It shows highly negative impact on ecological environment but shows more positive impact on human interest.
M30010	Study on Air Quality Characteristics of Subway Stations Using Sensor Module **Choon-Keun Bong** *Abstract*—This study developed an environment monitoring system in order to construct a data base for understanding the actual conditions and improving problems about the air quality of subway stations, and used this device to understand the air quality of the station and analyzed the changes according to the number of passengers to execute a preliminary review related to their interrelationship. As a result of

	measuring the air quality of the ticket barrier and the platform of the subway station as well as outside of the station using the monitoring system, the ticket barrier and platform showed an outcome difference of similar patterns while the range of fluctuation for the platform was larger than the ticket barrier. During rush hours, the effect, according to entering passenger cars, showed to be insignificant and some sections were measured to have exceeded the indoor environment standard. This signifies that maintaining air quality during rush hours is especially crucial. In addition, during lunch hours when the number of passengers is relatively small and fixed, it overall showed to maintain a simple concentration below the indoor environment standard. Accordingly, in these times, lowering the rate of operation of conditioning equipment to minimize power and reduce the use of unnecessary energy is found to be needed.
M30012	Study on Tolerance and Accumulation Potential of Biofuel Crops for Phytoremediation of Heavy Metals **Kokyo Oh**, Tao Li, Hongyan Cheng, Xieying He, Shinichi Yonemochi *Abstract*—Phytoremediation is a cost-effective and environment-friendly technology that uses plants for environmental remediation. In order to promote practical application of phytoremediation, an income generation phytoremediation strategy was suggested using biofuel crops for utilization and phytoremediation of contaminated soils. In this study, the tolerance and accumulation potential to heavy metals of two biofuel plants and two accumulator plants were investigated in order to evaluate their suitability for phytoremediation. Two biofuel crops, maize (*Zea mays* L.) and sunflower (*Helianthus annuus* L.), and two accumulator plants, *Elsholtzia splendens* (ES) and *Kummerowia striata* (KS) were exposed to the hydroponic mixtures of Pb, Cu and Cd. Results showed that, at the 0.01 mol/L application level of Pb, Cu and Cd, sunflower had the highest accumulation ability for Pb, Cu and Cd in the shoot part compared to other three plants, and maize had a similar accumulation level to ES and KS. Sunflower also had much higher shoot/root ratios of accumulation for Cu and Cd than maize. However, sunflower showed lower tolerance to Pb, Cu and Cd contamination than maize, ES and KS. This study provided useful data supporting the use of biofuel plants in phytoremediation.

Afternoon, March 18, 2013 (Monday)

SESSION – 5 (ICBBT)
Venue: Baccara 2
Session Chair: Yu Yong Choi
Time: 15:20 – 17:00

S018	A Multi-Objective Spatial Optimization Method for Land Use Allocation in High Flood Risk Areas **Tsun-Wei Huang**, Hsing-Fu Kuo, and Ko-Wan Tsou *Abstract*—As the result of the rapid development, mountain areas have suffered from the unbalanced development and land use planning. Recently, under the global climate change, the stability of mountain land is more difficult to control. Therefore, it is an important issue to find the most suitable land use pattern for mountains in order to respond to the impact of global climate change. This paper applies multi-objective programming model for the evaluation of sustainable management strategies of optimal land development in mountains. The environmental goals focus on the water quality, the economic goals focus on the total output value, and the disaster goals focus on soil erosion. A case study of the planning for land use programs in the Tai Po Township in Taiwan was demonstrated.
S021	The Analysis of Measurements and Influence Factors of Mixed Land Use Shu-Wei Huang, **Wan-Jung Tsai** *Abstract*—Mixed land use is a performance of land-use development that can increase the strength of

	land-use and arise the vitality of city in the past researches, especially in Asian city. In Taiwan, mixed land-use is a universal city phenomenon. Mixed land-use could be a study case because this kind of land use pattern had long-term development from Taiwans' historical habits. The policy of mixed land-use could be carried out more efficient. For this reason, this paper considered the concept of landscape ecology and used GIS technique to analyze the influence factors of mixed land use. We measure the degree of mixed land use by calculate diversity indices, and draw on Geographically Weighted Regression to discuss the spatial distribution characteristics of mixed land use. We hope this procedure and results could adjust factors of planning for future urban planners who can control the mixed land-use for the good of the state.
S023	A Validation Test of Measurement Method of Lower Limb Angles based on Kalman Filter on Different Type of Inertial Sensors **Yuta Teruyama**, Takashi Watanabe *Abstract*—Lower limb joint angle measurement method based on Kalman filter was tested using commercially available inertial sensors in our previous study for a rehabilitation use. Although the angle measurement method was effective, measurement with the wireless sensors were affected by wireless communication environment. Wired and wireless inertial sensor systems were developed in our laboratory for solving the wireless communication problem. This paper aimed to examine the 2 developed sensors, since those were different from the previously used sensors in data communication system or resolution in measurement. The 2 developed sensors and 2 commercially available sensors were evaluated in measurements of inclination and joint angles of a rigid body model comparing to the results of an optical motion measurement system. The angles were measured by correcting the angles calculated from outputs of gyroscopes based on a Kalman filter using outputs of accelerometers. All of the sensors showed small RMS errors under the static and dynamic conditions. The results suggested that various inertial sensors could measure inclination and joint angles stably if angles are calculated by using the Kalman filtering based method. It would be possible to replace sensors with inexpensive or latest commercially available sensors.
S024	A Measurement of Lower Limb Angles using Wireless Inertial Sensors during FES Assisted Foot Drop Correction with and without Voluntary Effort **Takashi Watanabe**, Shun Endo, Katsunori Murakami, Yoshimi Kumagai, and Naomi Kuge *Abstract*—An integrated wireless system of lower limb angle measurement and Functional Electrical Stimulation (FES) control was developed in our previous study for application to motor rehabilitation. In the motor rehabilitation, it is also considered that voluntary effort to move their limbs is effective. In this paper, gait movements of a hemiplegic subject were measured with and without voluntary effort of ankle dorsiflexion during FES assisted foot drop correction as a preliminary test for gait rehabilitation with FES. Some characteristics of hemiplegic gait and differences in joint angles between the paralyzed and the non-paralyzed sides were found in the measurement. The foot and the shank inclination angles at the toe off timing showed small change with the voluntary effort of dorsiflexion during FES control. In addition, variations of the inclination angles of some segments of the paralyzed side were larger than those with only FES at the toe off timing, maximum angle point and the foot contact timing in the case of the voluntary effort. These results suggested that voluntary effort could change movement in FES control. However, these changes with voluntary effort were not seen with larger stimulation intensity. Therefore, it was considered that the movement changes with voluntary effort were small because the subject could not produce further voluntary muscle force in excess of the muscle force production by FES. It would be necessary to determine appropriate intensity of electrical stimulation for rehabilitation use.
S025	Identification of Shifting Regulatory Modules in Time Series Gene Expression Data Using a Linear Time

	Biclustering Algorithm **Tustanah Phukhachee** and Songrit Maneewongvatana *Abstract*— Since standard biclustering problem was defined, the problem is known to be NP-hard. However in analyzing time series expression data, we can restrict the problem with the trait of data that represented the contiguous columns, which corresponded to coherent expression patterns. With this restriction included, the problem considered to be tractable problem. We propose an algorithm to find and report all maximal contiguous column coherent biclusters with the shifting input included in time linear within the size of expression matrix multiplied by the size of the shifting window.
S033	Nimustine induces DNA breaks and crosslinks in NIH/3T3 cells **Lin-na Zhao**, Xue-chai Chen, Yan-yan Zhong, Qin-xia Hou, Ru-gang Zhong *Abstract*—The relationship between carcinogenicity and DNA interstrand cross-links of nitrosoureas is poorly defined. 1-(4-amino-2-methyl-5-pyrimidinyl)methyl-3- (2-chloroethyl)- 3- nitrosourea (ACNU, nimustine) is one of nitrosoureas used in the treatment of high-grade gliomas. It has the capability of causing DNA interstrand cross-links (ICLs) to kill cancer cells. But it can also cause the generation of secondary tumors with carcinogenic side effects. In present study, we investigated DNA interstrand cross-links, DNA double-strand breaks and cell cycle phase in NIH/3T3 cells from the primary mouse embryonic fibroblast cells induced by ACNU. This result indicated that the concentration of 60 and 75μg/ml of ACNU could be detected significantly ICLs, and the γ-H2AX has the ability to be a biomarker for DNA damage associated with ICLs induced by ACNU.
S035	The Performance Evaluation of A Novel Methodology of Fixational Eye Movements Detection **Jiamao Li** and Xiaolin Zhang *Abstract*—The vision system plays a very important role for people. Eye movements are an important part of human`s vision system. Fixational eye movements have been studied for many years, butfixational eye movements have not been explained clearly because of the technical problems. To measure these eye movements, we developed a new eye movement measurement device that offers sufficient accuracy. The device can detect rotation of eye movements in three degrees of freedom and is also less-invasive.We conducted some performance evalution experiments in order to validate the feasibility and effectiveness of the system.
S036	Identifying driver genes of breast cancer by integrated analysis of methylation and expression data in paired disease-normal samples of patients **Xiaopei Shen**, Shan Li, and Zheng Guo *Abstract*—Among the thousands of gene promoters hyper- or hypomethylated in cancer genomes, only a small portion of them play “driver” roles in tumorigenesis, whereas the others are only “passengers”. Here, we develop an approach to identify driver methylation genes of cancer with integrated promoter methylation and gene expression data generated from paired cancer and normal samples for each of a cohort of breast cancer patients, taking the advantage that data of paired samples could provide the relative gene methylation change information from normal to tumor for each individual patient. We applied this approach to analyze a dataset of breast cancer and discovered some novel cancer driver genes. The identified driver genes with methylation alteration may help us to reveal new molecular targets for potential epigenetic therapy.
S038	A Novel Algorithm for DNA Multiple Sequence Alignment Based on the Sliding window and the Keyword Tree Yong Sun, Zili Zhang, and **Jun Wang** *Abstract*—Multiple sequence alignment (MSA) is a difficult yet important problem for bioinformatics research. In most cases, large-scale biological sequence data with high similarity have to be analyzed.

	Center star method is always used to deal with lots of long sequences. However, square time complexity is a bottleneck for large data. In this paper, a novel method for the MSA problem is proposed, which employs the keyword tree and the sliding window to match a set of substrings and the rest regions are aligned by dynamic programming. The method provides the dynamic adaptive mechanism for the sliding window size and step length. The self-adaptive parameters play a extremely important part for improving the performance of the method. Experimental results show that the proposed method is computational efficient and can obtain good performance.
S039	A Robust Predictor of Response to Preoperative Chemotherapy for Breast Cancer **Lin Zhang**, Chunxiang Hao and Zheng Guo *Abstract*—Breast cancer patients with pathological complete response (pCR) to taxane and anthracycline containing preoperative chemotherapy tend to have excellent distant-free and overall survival. However, most of current pCR predictors for guiding chemotherapy tend to perform poor in inter-laboratory validation, most likely due to microarray experimental batch effects and insufficient training samples for feature selection. To tackle this difficulty, by merging three separate datasets of patients treated with paclitaxel, fluorouracil, doxorubicin, and cyclophosphamide, we extracted gene pairs with consistent relative expression ordering in patients not achieving pCR and with relative expression reversal in patients achieving pCR. Then, based on combination of these pairs, a pCR predictor was built. The performance of this predictor achieved a sensitivity of 93% and specificity of 62% in an independent dataset, much better than the performances of three previously proposed predictors. In conclusion, the rank-based pCR predictor derived from a large cohort of samples can accurately and robustly predict patients with high probability of achieving pCR after chemotherapy.
S10002	Rheological Behavior Analysis of Liver Fibrosis in Rats **Ying Zhu**, Yuanyuan Shen, Xin Chen, Haoming Lin, and Siping Chen *Abstract*—The process of liver fibrosis changes rheological properties of tissue. This study characterizes and compares two stages of liver fibrosis in rats. Two rheological models—Voigt model and Zener model are applied to the measured data. The experimental results demonstrate that Zener model is preferred to Voigt model for describing rheological properties of liver fibrosis stages F0 and F2 in rats.

March 18, 2013 19:00	**Dinner and Closing Ceremony**

Conference Venue

SOFITEL LUXURY HOTELS

SOFITEL MACAU AT PONTE 16

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Like a modern Portuguese palace, Sofitel Macau at Ponte 16 rises to a height of 18 floors. Swirling curves of the cobbled forecourt and driveway lead to the lobby with its shimmering crystal ceiling, mosaic floor and massive hand-painted mural. Amidst all this glamour and space Sofitel Ambassadors greet arrivals with a smiling "Bonjour or Bonsoir!" straight from the heart. French sophistication and Sofitel's impeccably polished art of living complement Macau's long tradition of welcoming discerning international visitors.

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Address: SOFITEL MACAU AT PONTE 16 – RUA DO VISCONDE PACO DE ARCOS – MACAU SAR
TEL + (853) 8861 0016
FAX +(853) 8861 0018
Sales Executive: Billy HUANG
E-MAIL: h6480-sl2@sofitel.com

PS: Please mention the conference name when you reserve the hotel room.

APCBEES FORCOMING CONFERENCES

Call for Papers

The 2013 4th International Conference on Chemistry and Chemical Engineering (ICCCE 2013) is the premier forum for the presentation of technological advances and research results in the fields of Chemistry and Chemical Engineering.

All papers of ICCCE 2013 will be published in the IJCEA (ISSN: 2010-0221) as one volume, and will be included in Engineering & Technology Library, EBSCO, Ulrich's Periodicals Directory, BE Data, Google Scholar, Cross ref, ProQuest and sent to be reviewed by Ei Compendex and ISI Proceedings

Important Date

Paper Submission (Full Paper)	Before May 1, 2013
Notification of Acceptance	On May 20, 2013
Authors' Registration	Before June 5, 2013
Final Paper Submission	Before June 5, 2013
ICCCE 2013 Conference Dates	July 6-7, 2013

SUBMISSION METHODS:

Conference Template (DOC)

Conference Website: www.iccce.org

1. **Electronic Submission System**; (.pdf)

If you can't login the submission system, please try to submit through method 2.

2. Email: **iccce@cbees.org** (.pdf and .doc)

Call for Papers

The 2013 3rd International Conference on Environmental and Agriculture Engineering (ICEAE 2013) is the premier forum for the presentation of technological advances and research results in the fields of Environmental and Agriculture Engineering.

All papers of ICEAE 2013 will be published in IJESD (ISSN: 2010-0264) as one volume, and all papers will be included in the Engineering & Technology Digital Library, and indexed by Ulrich's Periodicals Directory, EBSCO, WorldCat, Google Scholar, Cross ref, ProQuest and sent to be reviewed by Compendex and ISI Proceedings.

Important Date

Paper Submission (Full Paper)	Before May 1, 2013
Notification of Acceptance	On May 20, 2013
Authors' Registration	Before June 6, 2013
Final Paper Submission	Before June 6, 2013
ICEAE 2013 Conference Dates	July 6-7, 2013

SUBMISSION METHODS:

Conference Template (DOC)

Conference Website: www.iceae.org

1. **Electronic Submission System**; (.pdf)

If you can't login the submission system, please try to submit through method 2.

2. Email: **iceae@cbees.org** (.pdf and .doc)

Call for Papers

The 2013 2nd International Conference on Geological and Environmental Sciences (ICGES 2013) is the premier forum for the presentation of technological advances and research results in the fields of Geological and Environmental Sciences.

All papers of ICGES 2013 will be published in the Volume of Journal (IPCBEE, ISSN: 2010-4618), and all papers will be included in the Engineering & Technology Digital Library, and indexed by Ei Geobase (Elsevier), Ulrich's Periodicals Directory, EBSCO, CNKI, WorldCat, Google Scholar, Cross ref and sent to be reviewed by Compendex and ISI Proceedings.

Important Date

Paper Submission (Full Paper)	Before April 30, 2013
Notification of Acceptance	On May 15, 2013
Authors' Registration	Before May 30, 2013
Final Paper Submission	Before May 30, 2013
ICGES 2013 Conference Dates	July 6-7, 2013

SUBMISSION METHODS:

Conference Template (DOC)

Conference Website: www.icges.org

1. **Electronic Submission System**; (.pdf)

If you can't login the submission system, please try to submit through method 2.

2. Email: **icges@cbees.org** (.pdf and .doc)

Call for Papers

The 2013 3rd International Conference on Asia Agriculture and Animal (ICAAA 2013) is the premier forum for the presentation of technological advances and research results in the fields of Asia Agriculture and Animal.

All papers of ICAAA 2013 will be published in the APCBEE Procedia (Journal under Elsevier, ISSN: 2212-6708), and will be included in ScienceDirect and sent to be reviewed by Scopus, Ei Compendex and ISI Proceedings.

Important Date

Paper Submission (Full Paper)	Before May 15, 2013
Notification of Acceptance	On June 5, 2013
Authors' Registration	Before June 20, 2013
Final Paper Submission	Before June 20, 2013
ICAAA 2013 Conference Dates	July 27 - 28, 2013

SUBMISSION METHODS:

Conference Template (DOC)

Conference Website: www.icaaa.org

1. **Electronic Submission System**; (.pdf)

If you can't login the submission system, please try to submit through method 2.

2. Email: **icaaa@cbees.org** (.pdf and .doc)

Call for Papers

2013 2nd International Conference on Biological and Life Sciences (ICBLS 2013) is the premier forum for the presentation of technological advances and research results in the fields of Biological and Life Sciences.

All papers of ICBLS 2013 will be published in the Journal of Life Sciences and Technologies (JOLST, ISSN: 2301-3672) as one volume, and will be included in the Engineering & Technology Digital Library, and indexed by EBSCO, CrossRef, DOAJ, MELib, Index Copernicus, JournalSeek, Google Scholar, Cross ref and sent to be reviewed by Ei Compendex and ISI Proceedings

Important Date

Paper Submission (Full Paper)	Before May 20, 2013
Notification of Acceptance	On June 10, 2013
Authors' Registration	Before June 25, 2013
Final Paper Submission	Before June 25, 2013
ICBLS 2013 Conference Dates	July 27 - 28, 2013

SUBMISSION METHODS:

Conference Template (DOC)

Conference Website: www.icbls.org

1. **Electronic Submission System**; (.pdf)

If you can't login the submission system, please try to submit through method 2.

2. Email: **icbls@cbees.org** (.pdf and .doc)

Call for Papers

2013 2nd International Conference on Nutrition and Food Sciences(ICNFS 2013) is the premier forum for the presentation of technological advances and research results in the fields of Nutrition and Food Sciences. ICNFS 2013 will bring together leading engineers and scientists in Nutrition and Food Sciences from around the world.

All papers of ICNFS 2013 will be published in the Volume of Journal (IPCBEE, ISSN: 2010-4618), and all papers will be included in the Engineering & Technology Digital Library, and indexed by Ei Geobase (Elsevier), Ulrich's Periodicals Directory, Ulrich's Periodicals Directory, EBSCO, CNKI, WorldCat, Google Scholar, Cross ref and sent to be reviewed by Compendex and ISI Proceedings.

Important Date

Paper Submission (Full Paper)	Before May 20, 2013
Notification of Acceptance	On June 10, 2013
Authors' Registration	Before June 25, 2013
Final Paper Submission	Before June 25, 2013
ICNFS 2013 Conference Dates	July 27-28, 2013

SUBMISSION METHODS:

Conference Template (DOC)

Conference Website: www.icnfs.org

1. **Electronic Submission System**; (.pdf)

If you can't login the submission system, please try to submit through method 2.

2. Email: **icnfs@cbees.org** (.pdf and .doc)

Call for Papers

2013 4th International Conference on Environmental Engineering and Applications (ICEEA 2013) is the premier forum for the presentation of new advances and research results in the fields of theoretical, experimental, and applied Environmental Engineering and Applications. The conference will bring together leading researchers, engineers and scientists in the domain of interest from around the world. Topics of interest for submission include, but are not limited to:

All papers for the ICEEA 2013 will be published in JOCET (ISSN: 1793-821X) as one volume, and will be included in Engineering & Technology Library, EBSCO, Ulrich's Periodicals Directory, BE Data and Google Scholar,Cross ref, ProQuest and sent to be reviewed by Ei Compendex and ISI Proceedings.

Important Date

Paper Submission (Full Paper)	Before April 15, 2013
Notification of Acceptance	On May 5, 2013
Final Paper Submission	Before May 25, 2013
Authors' Registration	Before May 25, 2013
ICEEA 2013 Conference Dates	August 24-25, 2013

Formatting

Each paper is limited to 5 pages normally, and additional pages will be charged. Please follow the Conference format.

- Formatting Instructions (DOC)

SUBMISSION METHODS

1. Electronic Submission System; (.pdf)

If you can't login the submission system, please try to submit through method 2.

2. Email: iceea@cbees.org (.pdf and .doc)

Call for Papers

2013 3rd International Conference on Environmental, Biomedical and Biotechnology (ICEBB 2013) is the premier forum for the presentation of new advances and research results in the fields of theoretical, experimental, and applied Environmental, Biomedical and Biotechnology. The conference will bring together leading researchers, engineers and scientists in the domain of interest from around the world. Topics of interest for submission include, but are not limited to:

All papers for the ICEBB 2013 will be published in the International Journal of Bioscience, Biochemistry and Bioinformatics (IJBBB, ISSN: 2010-3638), and all papers will be included in the Engineering & Technology Digital Library, and indexed by EBSCO, WorldCat, Google Scholar, Cross ref, ProQuest and sent to be reviewed by Ei Compendex and ISI Proceedings.

Important Date

Paper Submission (Full Paper)	Before April 10, 2013
Notification of Acceptance	On May 1, 2013
Final Paper Submission	Before May 20, 2013
Authors' Registration	Before May 20, 2013
ICEBB 2013 Conference Dates	August 24-25, 2013

Formatting

Each paper is limited to 5 pages normally, and additional pages will be charged. Please follow the Conference format.

- Formatting Instructions (DOC)

SUBMISSION METHODS

1. Electronic Submission System; (.pdf)

If you can't login the submission system, please try to submit through method 2.

2. Email: icebb@cbees.org (.pdf and .doc)

Call for Papers

2013 2nd International Conference on Biotechnology and Food Engineering (ICBFE 2013) is the premier forum for the presentation of new advances and research results in the fields of theoretical, experimental, and applied Biotechnology and Food Engineering. The conference will bring together leading researchers, engineers and scientists in the domain of interest from around the world. Topics of interest for submission include, but are not limited to:

All papers for the ICBFE 2013 will be published in the Journal of Medical and Bioengineering (JOMB, ISSN: 2301-3796), and all papers will be included in the Engineering & Technology Digital Library, and indexed by EBSCO, WorldCat, Google Scholar, Cross ref and sent to be reviewed by Ei Compendex and ISI Proceedings.

Important Date

Paper Submission (Full Paper)	Before April 5, 2013
Notification of Acceptance	On April 25, 2013
Final Paper Submission	Before May 15, 2013
Authors' Registration	Before May 15, 2013
ICBFE 2013 Conference Dates	August 24-25, 2013

Formatting

Each paper is limited to 5 pages normally, and additional pages will be charged. Please follow the Conference format.

- Formatting Instructions (DOC)

SUBMISSION METHODS

1. Electronic Submission System; (.pdf)

If you can't login the submission system, please try to submit through method 2.

2. Email: icbfe@cbees.org (.pdf and .doc)

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