

2018 8th International Conference on Environment Science and Engineering (ICESE 2018)

Barcelona, Spain

March 11-13, 2018



Published by

IOP Conference Series
Proceedings services for science

indexed by



www.cbees.org

Table of Contents

2018 HKCBEEES Barcelona Conference Introductions	8
Presentation Instructions	9
Keynote Speaker Introductions	10
Brief Schedule for Conference	18
Detailed Schedule for Conference	20
Session 1	
A0011: Quantitative analysis the role of reactive oxygen species (ROS) in a Fe/Cu/O ₃ process for p-nitrophenol treatment <i>Z K Xiong, B Lai, P Yang</i>	22
A0013: Chlorine dioxide catalytic oxidation by zero valent iron for the degradation of PNP in aqueous solution <i>Jun Li, Bo Lai</i>	23
A0014: Evaluation of different structures of moving bed biofilm reactors (MBBR) for synthetic wastewater treatment <i>L Yang and P Yang</i>	24
A0079: Application of removal of dye in waste water by photocatalytic oxidation using modified TiO ₂ / PBS biocomposite film <i>T Kreetachat and K Suwannahong</i>	25
A0053-A: Optimization of coagulant dose for treatment of antimony-containing wastewater and the effects of sludge recycle. <i>Du Ri Park, Soo Kyo Shin, Muhammad Ali Inam, Kang Hoon Lee, Ick Tae Yeom</i>	26
A0072: Color removal by ozonation process in biological wastewater treatment from the breweries <i>S Sripiboon and K Suwannahong</i>	27
A0081: Removal of methyl violet dye via adsorption using activated carbon prepared from Randu sawdust (Ceiba pentandra) <i>Achmad Chafidz, Widi Astuti, Venitalitya Augustia, Dinda Tri Novira, Nur Rofiah</i>	28
A0049: Trends in Agro-Meteorological Parameters as Groundwater Exploitation Indicators <i>Abhishek A. Pathak, Sinan Nizar and B M Dodamani</i>	29
A2001: Mechanisms of Rapid Flow caused by Tidal–Fluvial Flow Interaction in Inland Waterways of the Mekong Delta <i>H Takagi, N D Thao, T T Anh, L T Anh, T Takabatake and R Nakamura</i>	30
Session 2	
E0005 A: Study on the mechanical behavior of precast concrete cavity shear wall <i>Gang Xu</i>	31

E0019: Dynamic Analysis of Innovative Hybrid Wind Mill Tower Considering Soil Structure Interaction	32
<i>Hemal J Shah and Atul K Desai</i>	
E0030: Investigations of Structural Behavior According to Frame Shape Variation of Electric Transmission Tower	33
<i>Woo Bum, Kim</i>	
E0013 A: Formwork pressure of recycled aggregate self-consolidating concrete	34
<i>Pierre Matar and Joseph Assaad</i>	
E0017: A Survey on Seismic Reinforcement Systems of Adobe Buildings in Iran	36
<i>S. Farahbakhsh and D. Heydari Beni</i>	
E0027: Optimum Design of Reinforced Concrete Multi-Story Multi-Span Frame Structures under Static Loads	37
<i>Serdar Ulusoy, Aylin Ece Kayabekir, Gebrail Bekdas and Sinan Melih Nigdeli</i>	
E0035: Response Sensitivity of Low-Rise Buildings to Coefficients of Variations of Random Semi-Active Isolation System Parameters under Near-Fault Earthquakes	38
<i>Seda Öncü-Davas, Cenk Alhan</i>	
E2001: Evaluation of Foundation on Soil with Cavities: A Case Study from the UAE	39
<i>Reem Sabouni</i>	
E0015: Aligning Tender Cost Estimation Practices in Iran with BIM	40
<i>M. Ashtab, M. R. Farzad</i>	
A0084: A Methodology for Designing an Information System for Road Infrastructure Monitoring and Traffic Management in Disasters	41
<i>D Dimitrov, P Zlateva and D Velez</i>	
E0040 A: The Ingenious Use of Natural Resources without the Consumption of Additional Power (Case study: Iranian Vernacular Cisterns)	42
<i>Aryan. Amirkhani, Fatemeh. Tehrani</i>	
Session 3	
A0021: Towards Smart Cities Development: A Study of Public Transport System and Traffic-related Air Pollutants in Malaysia	43
<i>S N Brohi, T R Pillai, D Asirvatham, D Ludlow, J Bushell</i>	
A0038: Modelling of indoor air pollutants dispersion: new tools	44
<i>V Busini, S Favrin, G Nano, M Derudi</i>	
A0048-A: Removal characteristics of NO _x by additives in an electron beam process	45
<i>Youn-Suk Son</i>	
A0044-A: Effect of Cu/Al ratio on the hydrothermal stability of CuSSZ-13 catalysts for NH ₃ -SCR	46
<i>Shuai Han, Jin Cheng, Qing Ye, Shuiyuan Cheng, Tianfang Kang</i>	
A0045-A: The Influence of Si/Al Ratio on Catalytic Performance of Hydrothermally Aged Cu-SSZ-13 for no Reduction by NH ₃ -SCR	47
<i>Jin Cheng</i>	

A0091: Application of copper-zinc metal as a catalytic converter in the motorcycle muffler to reduce the exhaust emissions	48
<i>Achmad Chafidz, Megawati, Catur Rini Widyastuti, Venitalitya Augustia, Khairatun Nisa, Ratnaningrum</i>	
A0074: Factors affecting greenhouse microclimate and its regulating techniques: A review	49
<i>G Li, L Tang, X Zhang, J Dong, M Xiao</i>	
A0085: Institutional barriers for the implementation of climate change adaptation actions in the Mexican	50
<i>Norma Patricia Muñoz-Sevilla, Isaac Azuz-Adeath and Maxime Le Bail</i>	
A2002: Taking into account climate change adaptation in urban area through the use of the CFD FLUENT simulation model example: an urban sector of the ORAN agglomeration	51
<i>Hayat BELHORMA, Mustapha CHACHOUA and Khaled MAHDI</i>	
Session 4	
A0001: Fabrication of superhydrophobic hollow fiber membrane contactor for biogas purification by pressurized water	52
<i>Yifu Li, Li'ao Wang and Chao Qin</i>	
A0026: Preparation and characterization of chromium-copper supported biogenic catalyst from rice husk	53
<i>A Sahoo, G V V Gowthami and S S Mohapatra</i>	
A0035-A: Influence of active mitigation barriers on dense gas dispersion	54
<i>V Busini, R Rota</i>	
A2003: Carbon Dioxide Minimum Miscibility Pressure with Nanopore Confinement in Tight Oil Reservoirs	55
<i>R. S. Mohammad, S. Zhang, E. Haq, X. Zhao, and S. Lu</i>	
A0028-A: Plant species Identified in Natural Oil Seep Soils with Chronic Hydrocarbon Contamination	56
<i>Maria Francesca Scannone, Martina Bochicchio</i>	
A0034-A: Development of phytoremediation coupled with agro-production (PCA) technology using hyper-accumulator <i>Sedum alfredii</i> and low-accumulator field	57
<i>Lin Tang, Weijun Luo, Zhenli He, Hanumanth Kumar Gurajala, Yasir Hamid, Xiaoe Yang</i>	
A0036-A: Cadmium immobilization in soil amended with organic, inorganic and mineral amendments and its phytoavailability to wheat crop	58
<i>Yasir Hamid, Lin Tang, Min Lu, Muhammad Zahir Aziz, Bilal Hussain, Muhammad Yaseen, Xiaoe Yang</i>	
A0029-A: Neutron activation analysis of soil and terrestrial isopods as potential bioindicators of anthropogenic pollution	59
<i>Lenka Gajdosikova, Borivoj Sarapatka, Ivan Hadrian Tuf and Marina Vladimirovna Frontasyeva</i>	
A0092: A Review of the Effectiveness Study of Botanical Components That Improves Air Filtration	60

Chang Choo Khean, Tan Yong Yih

- A3002-A: Enhancement of Anammox Biomass Activity using a Novel Electro–Bioreactor Packed with Al–Fe electrodes 61
Abdelmajeed, Adam & Maria, Elektorowicz

Session 5

- E0043 A: Evaluation of the Effectiveness of Graphene Oxide in Improving the Mechanical Properties of OPC Cement 62

Amer Al-Arbeed

- E0025: Binder Contribution to Cracking of a Lightly Trafficked Asphalt Pavement Made With Clear Binder 63

Khalid. Al-Shamsi, Hossam F. Hassan

- E0028: Suitability of Metakaolin in Concrete 64

Satish Desai and Sonal Shah Tripathy

- E0018: Volumetric Optimization and Moisture Sensitivity Analysis of Crumb Modified Stone Mastic Asphalt 65

Hasnain Gardezi, Arshad Hussain

- E0022 A: Landscape Experience and Format Succession in the Cultural and Creative Park Genre Renewal of Industrial Heritage– Based on Chinese cases 66

Huimin Ren and Xinyu Luo

- E0042: A Study of Tree Pattern and Tree species of Colonial Grid Pattern City in tropical Zone Considering Urban Morphology Using Statistical Analysis 67

Khaing Myint Mo, Mishima Nobuo

- E0045: Morphological research on Compact University Campus: Taking the case of Dushu Lake Higher Education Town 68

Yezi Dai

- E0047: An analysis on illumination distribution and residents' perception in a traditional town for streetlight planning 69

Raheon Min, Nobuo Mishima, and Takayuki Fuchikami

- E0049: A study on improvement of views across the sea from a modern remain of fortress in a National Park 70

Takatoshi Yasuda, Nobuo Mishima, Takayuki Fuchikami

- E0051: Comparing building exteriors design perception regarding the integration in an urban preservation area 71

Derbel M. Rami, and Prof. Mishima Nobuo

- E0055 A: Basic Study for Multifamily Housing Construction Impact on Urban Sprawl Reduction 72

Ivan Rwampungu

- E3003: Energy forecasting based on ANN machine learning for domestic properties in dry hot arid regions: A case study in Baghdad 74

Marwah M Mohsin, Thomas Beach, and Alan Kwan

Session 6

A0098-A: Chemical and Structural Analysis of Sand and their Application for Environmental Remedy	75
<i>Yehya A. El-Sayed, Dana M. Abouelnasr and Taraneh Taghaddosi</i>	
A0086: Increasing hybrid pv/wind/diesel generator power output with increased pv module efficiency.	76
<i>L O Idoko, O Anaya-Lara and A Attya</i>	
A0088: Risk Assessment of Bulgarian Electricity Network under Natural Disasters	77
<i>P Zlateva, and D Velev</i>	
A0093: Voltage control ancillary services for low voltage distributed generation	78
<i>Linus Idoko, Olimpo Anaya-Lara, David Campos-Gaona</i>	
A0099-A: Gaseous yields production from CO ₂ gasification of the Miscanthus giganteus biomass over Ni/Al ₂ O ₃ -SiO ₂ and Ni/Al ₂ O ₃ -SiO ₂ with K ₂ O promoter catalysts	79
<i>O Tursunov</i>	
A0075: A soft application for surface solar radiation estimation in Algeria	80
<i>Rahli Hamida Samiha and Benharrats Farah</i>	
A0024: Engine Performance and Emission study of Waste cooking oil and Sewage sludge derived Biodiesel blend	81
<i>D Priyadarshi and K K Paul</i>	
A0027: Utilization of kitchen food waste for biodiesel production	82
<i>S Barik, K K Paul and D Priyadarshi</i>	
A0060: A comparison of the energy consumption for CO ₂ compression process alternatives	83
<i>Steven Jackson and Eivind Brodal</i>	
A0064: Production of value-added chemicals form wheat straw lignin by bio-refinery process	84
<i>Nasim Ramezani, Robert Jeng, Mohini Sain</i>	
Session 7	
A0059: Evaluation of water quality in mangrove ecosystem for the Beilun Gulf and Zhenzhu Bay: A Complex Approach	85
<i>Minghui Ou, Shan Liang, Qingyu Xiong and Ru Zhang</i>	
A0076: Assessment of total mercury content in water of the Balkyldak Lake-reservoir, Pavlodar, Kazakhstan	86
<i>A V Korobeinyk, V R Yapyiev, S Azat and V J Inglezakis</i>	
A0025: Characterization of coke oven wastewater	87
<i>L Mishra, K K Paul and S Jena</i>	
A1002: Monitoring Lead in Soil Water System Using Complex Permittivity	88
<i>S Al Martini and J Q Shang</i>	
A0095-A: Identification of Carbon and Nitrogen Hot Spots in Fourleague Bay Along a Salinity and Sediment Gradient	89
<i>Madeline LeBlanc, Alexandra Christensen, Giancarlo Restreppo, Robert R. Twilley</i>	

A0009: Investigating the effects of sea-level rise on morphodynamics in the western Giens tombolo, France <i>Minh Tuan Vu and Yves Lacroix</i>	90
A0054: Implication to Environmental Education of Indigenous Knowledge and the Ecosystem of Upland Farmers in Aklan, Philippines <i>E Arangote</i>	91
A0094: Integrating the concept of ecosystem services and values in Land use planning <i>Mohammad Hossein Mohammadi Ashnani, Afshin Danehkar, Majid Makhdoum, Vahid Majed</i>	92
A0047: Heavy Metal Contamination Assessment in Near Surface Soils: A Case Study from Subarctic Region of Russia <i>A Masih and A P Sergeev</i>	93
Posters	
A0056: Modular Eco -Percolation Tank R & D and Engineering Application <i>Xiaotong Cui, Zhiqiang Liu, Qiuxiang Huang and Qun Miao</i>	94
A0080: An Analysis of the Carbon Fixation Change according to the Greenbelt Deregulation Using InVEST Model –In Case of Anyang and Gwacheon City- <i>Ji Young Choi and Sang Don Lee</i>	95
A0090-A: Assessment of biological effects on dissolved inorganic carbon in seawater <i>Jung-suk Lee, Byeong-Mo Gim, Nam-Hyun Kim, Eun-Mi Kwon, Joon-Woo Gil</i>	96
E0021-A: Generation of Random Shear Wave Velocity Profiles using Harmonic Wavelet Transform for Stochastic Seismic Site Response Analysis <i>Hyung Choon Park</i>	97
One Day Tour	98
Conference Venue	99
Note	100
Feedback Information	103

2018 HKCBEEES Barcelona Conference

Introductions

Welcome to 2018 HKCBEEES Barcelona conference. This conference is organized by HKCBEEES. The objective of the Barcelona conference is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in Environment Science and Engineering.

2018 8th International Conference on Environment Science and Engineering (ICESE 2018)



Accepted papers will be published into **IOP Conference Series: Earth and Environmental Science (EES) (ISSN: 1755-1315)**, which is indexed by EI Compendex, Scopus, Thomson Reuters (WoS), Inspec, et al.

Conference website and email: <http://www.icese.org/>; icese@cbees.org

Presentation Instructions

Instructions for Oral Presentations

Devices Provided by the Conference Organizer:

Laptop Computer (MS Windows Operating System with MS PowerPoint and Adobe Acrobat Reader)

Digital Projectors and Screen

Laser Sticks

Materials Provided by the Presenters:

PowerPoint or PDF Files (Files should be copied to the Conference laptop at the beginning of each Session.)

Duration of each Presentation (Tentatively):

Regular Oral Presentation: about **12** Minutes of Presentation and **3** Minutes of Question and Answer

Keynote Speech: about **30** Minutes of Presentation and **5** Minutes of Question and Answer

Instructions for Poster Presentation

Materials Provided by the Conference Organizer:

The place to put poster

Materials Provided by the Presenters:

Home-made Posters

Maximum poster size is A1

Load Capacity: Holds up to 0.5 kg

Best Presentation Award

One Best Presentation will be selected from each presentation session, and the Certificate for Best Presentation will be awarded at the end of each session on March 11-12, 2018.

Dress code

Please wear formal clothes or national representative of clothing.

Keynote Speaker Introductions

Keynote Speaker I



Prof. Ignacio Javier Acosta Garc ía

Department of Building Construction, School of Architecture, University of Seville, Spain

Prof. Ignacio Javier Acosta Garc ía is Member of TEP-130 research group, specialized in design, development and integration of installations and building systems, both basic and advanced, as well as in environmental conditioning in thermal, acoustic and lighting comfort. Simultaneously ranks as one of the national reference groups in the field of analysis of energy efficiency and environmental sustainability of the buildings, including the use of renewable energy.

06.2004: BS Architect Degree in Architecture

06.2007: MS Master Degree in Master in City and Sustainable Architecture

06.2012: PhD from the University of Seville.

Research experience:

15 indexed articles in JCR related with daylighting in architecture, energy efficiency in buildings and smart controls for electric lighting. H-index: 7. Accumulated impact factor JCR: 47.983

2 research stays at the Lighting Research Center of New York.

5 research projects or contracts related with energy efficiency. Main researcher of DYNALIGHT project: Efficient design for biodynamic lighting to promote the circadian rhythm in shift work centers.

Relevant awards:

Extraordinary doctorate award from the University of Seville, 2012.

University of Seville Award for research work of special relevance in the area of Engineering and Architecture, 2016.

Topic: “Introduction to Dynalight project: efficient design for biodynamic lighting to promote the circadian rhythm”

Abstract—In the last five years, several studies have demonstrated the relevance of the circadian rhythms and its impact in the human health. Current publications of the Lighting Research Center (LRC) of New York and the Department of Chronobiology of the Harvard University have quantified the harmful effects produced by the circadian alteration: sleep disruption, increased risk of coronary heart diseases, cancer, obesity or depression.

The synchronization of the circadian rhythm with the light-dark cycle is carry out by the melatonin, hormone secreted by the pineal gland during the night. The night exposition to a short wavelength light with high illuminance promotes the inhibition of melatonin production which leads to a situation of physiological chrono-disruption.

The last findings in biomedicine and LED lighting have encouraged the development of new research projects which promote a healthy lighting design. At the same time, the cutting edge technologies in efficient lighting, as well as the lighting smart controls, have achieved a noticeably reduction of the energy consumption in buildings, taking advantage of daylight by mean of remote or coupled lux-meters, allowing the dimming of the luminous flux according to the external conditions.

The main aim of DYNALIGHT project is to optimize the design and configuration of the biodynamic lighting systems to promote a suitable circadian rhythm in work centers with rotating schedules, assessing at the same time the lighting smart controls for the use of daylighting. The biodynamic lighting uses lighting emitting diodes RGB, controlled by a DALI system which allow to vary both the luminous flux and the wavelength of the emitted light.

In order to achieve this aim, a multidisciplinary research team is created, made up of architects expert in lighting design, researchers expert in the study of melatonin and its biological effects and medical experts in biochemistry and occupational risk prevention.

The work center will be the new laboratory of Clinic Biochemistry of the University Hospital Virgen del Rocío in Seville whose work is expected to end in April 2018. The study sample accessible to the research is the 40 workers in the 24 h area. The work center will have a lighting system with smart control that combines natural and electric light in all the floor, so that 500 lx are obtained in the working plane, while a biodynamic lighting system is added in the 24 h area. The overhead of this lighting design, proposed with the specific purpose of this research project, has been assumed by the company SIMON, sponsor entity of this project, with the approval of all the intervening agents.

Keynote Speaker II



Prof. Zhijun Peng

University of Bedfordshire, UK

Professor Peng started his professorship in the University of Bedfordshire, UK in June 2017. Prior to his new role, he has been a Reader in Sustainable Energy Technology in the School of Engineering and Technology, University of Hertfordshire since 2013. As the leader of the Sustainable Energy Technology Research Group in University of Hertfordshire, his is responsible for research activities on sustainable energy technology development and application vehicle powertrains and vehicle energy efficiency technology with an emphasis on experimental investigation, though he also conducts some numerical simulations including CFD modelling. Prof Peng was a lecturer since 2004 and then as a senior lecturer since 2007 in the School of Engineering and Design, University of Sussex. He acquired his industry experience as a senior powertrain development engineer at the Dunton Technical Centre of Ford Motor Company between May 2003 and September 2004.

Topic: “Environmental and Energetic Impacts of Ground Vehicle Electrification”

Abstract—When road vehicle powertrain is make a revolutionary transformation from combustion engines powered by fossil fuel to electric machines powered by electricity, life cycle analysis of energy efficiency and CO₂ emissions have become important topics for helping electric vehicle developers and relevant policy creators to identify environmental and energetic impacts of ground vehicle electrification. Based on necessary theoretical analysis with a recently developed analytic model of all life cycle CO₂ emissions and all life efficiency of various vehicle powertrain systems including Pure Combustion Fuel Vehicles (PCFV), Hybrid Electric Vehicle (HEV), Plug-in HEV (PHEV), Pure Battery Electric Vehicle (PBEV), this study examines typical CO₂ emissions level from electricity production in some typical countries, then compares those countries’ potentials for reductions of carbon emissions and other harmful emissions. Results demonstrate a threshold of CO₂ emissions per kWh electricity production which is critical for achieving better all life CO₂ emissions for pure battery EV than pure fossil fuel combustion engine vehicles.

Keynote Speaker III



Prof. Raf Dewil

Head Cluster Sustainable Chemical Process Technology, KU Leuven - Department of Chemical Engineering, Belgium

Prof. Raf Dewil holds a Master of Science in Chemical Engineering (KU Leuven, 2003) and a PhD in Bioscience Engineering (University of Antwerp, 2006). Currently, he is a professor with the Chemical Engineering Department of the KU Leuven, where he heads the Laboratory for Process and Environmental Technology. Within the Faculty of Engineering Technology of the same university, he chairs the Sustainable Chemical Process Technology Cluster. His main research domains include (i) (bio)chemical conversion methods for the valorization of biomass and organic wastes (currently main focus on anaerobic digestion), and (ii) the integration of physicochemical treatment methods in wastewater treatment (e.g., advanced oxidation processes, ultrasound, microwave). He has (co-)authored over 80 publications in peer-reviewed international journals and about 90 presentations at international conferences. His papers received over 2800 citations and his h-index is 23. He is Editor-in-Chief of the Journal of Environmental Management (Elsevier, IF 4.01) and in the editorial board of several renowned journals such as Chemical Engineering Journal and Renewable Energy.

Topic: “Current trends in advanced oxidation processes (AOP) for the degradation of pharmaceutical micro-pollutants in wastewater”

Abstract—There is a growing concern on the ecological impact of different classes of recalcitrant organic pollutants in natural waters. These are called emerging pollutants and include polycyclic aromatic substances, pesticides, pharmaceuticals and their metabolites, endocrine disruptors, disinfection by-products, personal care products and illicit drugs. Many recalcitrant organics are toxic and bio-refractory. Globally, about 4000 active pharmaceutical ingredients are being distributed in prescription medicines, over-the-counter therapeutic drugs, and veterinary drugs. For the production of the active ingredients of these pharmaceuticals, various synthetic chemical compounds are produced at a rate of 100000 tons per year. Pharmaceutical micro-pollutants are regarded as a special threat to the ecosystem due to their specific biological effect and the potential of inducing drug-resistant bacteria. Drug residues are only partially removed in a classical wastewater treatment plant and traces are still detected in effluents, surface waters and ground waters. Although present in small concentrations, (metabolites of) pharmaceutical residues were shown to have an adverse effect on fish populations and other aquatic organisms.

A class of treatment technologies that are overall termed Advanced Oxidation Processes (AOP) are receiving high attention for the degradation of these hazardous pollutants from different types of wastewater. AOPs all involve the use of highly reactive radicals (typically OH* radicals) for the oxidation of organics in water. Because an oxidation of the main pollutant does not always result in a full mineralization, a main challenge lies not only in the identification of the most suited AOP technique for the degradation of priority pollutants, but also in an accurate assessment of the safety and toxicity of the formed degradation products before discharge in the environment. To this end, a full evaluation of the formed degradation products is required, hence necessitating the development of novel, state of the art analytical techniques. This presentation will provide an overview of the current trends in AOP degradation of pharmaceutical components. Attention will be given to the most innovative methods, in which the use of alternative radicals will be explored.

Keynote Speaker IV



Prof. Miguel Ángel Campano Laborda

Department of Building Construction I, Universidad de Sevilla

Prof. Miguel Ángel Campano Laborda' research field is Thermal comfort and HVAC systems in buildings, energy efficiency, daylighting in architecture.

Education:

- 09.2015: PhD in Architecture from the University of Seville.
- 05.2012: MS Master Degree in Master in Architecture Facilities Project: Design, Calculation and Energy Efficiency.
- 01.2011: MS Master Degree in Master in City and Sustainable Architecture
- 03.2009: MS Master Degree in Architecture
- 03.2009: BS Architect Degree in Architecture

Research Experience

- Santamaría, J.; Girón, S.; Campano, M. A. (2016). Economic assessments of passive thermal rehabilitations of dwellings in Mediterranean climate. *Energy and Buildings* 128, 772-784.
- Acosta, I.; Campano, M. A.; Molina, J. F. (2016). Windows design in architecture: analysis of energy savings for lighting and visual comfort in residential spaces. *Applied Energy* 168, 793-506.
- Acosta, I.; Muñoz, C.; Campano, M.A.; Navarro, J. (2015). Analysis of daylight factors and energy saving allowed by windows under overcast sky conditions. *Renewable Energy* 77, 194-207.
- Campano, M.A.; Acosta, I.; Fernández-Aguera, J.; Sendra, J. J. (2014). Towards finding the optimal location of a ventilation inlet in a roof monitor skylight, using visual and thermal performance criteria, for dwellings in a Mediterranean climate. *Journal of Building Performance Simulation* 8 (4), 226-238.
- León, A. L.; Domínguez, S.; Campano, M. A.; Ramírez-Balas, C. (2012). Reducing the Energy Demand of Multi-Dwelling Units in a Mediterranean Climate Using Solar Protection Elements. *Energies* 5 (9), 3398-3424.
- Project Sub-Umbra: Tertiary use buildings energy rehabilitation in Mediterranean climate through the solar protection devices optimization.
- Solar Decathlon LAC2015: Institutional research project.
- Project CELL: Energy and environmental rehabilitation of social housing in Andalusia: evaluation test cells.
- Project Efficacia: Energy consumption and environmental impact reduction in the Official housing construction in Andalusia.

Topic: “Introduction to Celda & MEDOS R+D+i projects: Energy and environmental refurbishment of social housing in Andalusia by using test cells”

Abstract—Nowadays, the current European energy policies emphasize the need to rehabilitate the housing stock in order to meet the objectives of the European Union. In southern Spain, the housing stock was built in a context of limited technical and economic means and without any type of energy regulation, with a view to providing universal access to housing for the working class, and presents deficient energy conditions requiring high energy consumption in order to maintain suitable comfort conditions.

However, before any rehabilitation process can be carried out on the housing stock, extensive knowledge of a building’s energy performance in its current condition and the appropriate prediction of the energy behaviour of the retrofitted proposals are required.

In contrast to just monitoring representative dwellings, which are conditioned by user real patterns, or the laboratory test studies, which reproduce a steady-state regimen, the use of test cells allows results with real outdoor conditions to be obtained in a controlled indoor environment with high instrumentation levels and data storage. These test cells cannot be seen in any case as an end in themselves but rather as the first step of the analysis, which is to be complemented with the validation stage and the later use of energy simulation programs, analysing previous test cell results.

In this way, the main aim of both Celda and MEDOS R+D+I projects is to optimice constructive solutions of vertical building envelopes (including windows) for the retrofit of residential buildings in a Mediterranean area. In the case of Celda R+D+i Project (2015), the main solution under analysis was the External Thermal Insulation Composite System (*ETICS*), while MEDOS I+D+i project (2018-2021) will be focused on the use of ventilated façade.

In order to achieve this aim, Celda project included, as one of their pillars, the design and performance of one-pair test cells in Seville. In this way, the environmental conditions in a cell with an existing envelope and another retrofitted one, both with the same orientation, can be simultaneously evaluated. Moreover, the suitability of the retrofitted solution is assessed from a global and simultaneous vision of energy aspects, thermal and lighting comfort, and air quality through the later development of simulation models. The use of this equipment provided a precise and real knowledge of the envelope solutions of buildings, ignoring the influence of the user but considering a fully controlled environment that can be manipulated.

Brief Schedule for Conference






Day 1	March 11, 2018 (Sunday) 09:30~17:25 Venue: Lobby of the Hotel Arrival Registration, Keynote Speeches and Conference Presentations	
	March 11, 2018 (Sunday) 13:00~14:15 Venue: Marina meeting room Opening Remark 13:00~13:05 Prof. Ignacio Javier Acosta Garc ía Department of Building Construction, School of Architecture, University of Seville, Spain	
	Keynote Speech I 13:05~13:40 Prof. Zhijun Peng University of Bedfordshire, UK Topic: “Environmental and Energetic Impacts of Ground Vehicle Electrification”	
	Keynote Speech II 13:40~14:15 Prof. Ignacio Javier Acosta Garc ía Department of Building Construction, School of Architecture, University of Seville, Spain Topic: “Introduction to Dynalight project: efficient design for biodynamic lighting to promote the circadian rhythm”	
	Coffee Break & Group Photo Taking 14:15~14:40	
	Afternoon Conference Venue: Marina meeting room & Mir ó meeting room	
	Session 1: 14:40~16:55 Venue: Marina meeting room Session Chair: Prof. Hiroshi Takagi 9 presentations-Topic: “Wastewater Treatment and Water Resources Management”	Session 2: 14:40~17:25 Venue: Mir ó meeting room Session Chair: Prof. Ignacio Javier Acosta Garc ía 11 presentations-Topic: “Civil and Constructional Engineering”
Day 2	March 12, 2018 (Monday) 08:40~19:00 Venue: Marina meeting room & Mir ó meeting room Arrival Registration, Keynote Speeches and Conference Presentations	
	Morning Conference Venue: Marina meeting room	
	Opening Remarks 08:40~08:45 Prof. Ignacio Javier Acosta Garc ía Department of Building Construction, School of Architecture, University of Seville, Spain	

2018 HKCBEES BARCELONA CONFERENCE


	<p align="center">Keynote Speech III 08:45~09:20 Prof. Raf Dewil Head Cluster Sustainable Chemical Process Technology, KU Leuven - Department of Chemical Engineering, Belgium Topic: “Current trends in advanced oxidation processes (AOP) for the degradation of pharmaceutical micro-pollutants in wastewater”</p>	
	<p align="center">Keynote Speech IV 09:20~09:55 Prof. Miguel Ángel Campano Laborda Department of Building Construction I, Universidad de Sevilla Topic: “Introduction to Celda & MEDOS R+D+i projects: Energy and environmental refurbishment of social housing in Andalusia by using test cells”</p>	
	<p align="center">Coffee Break & Group Photo Taking 09:55~10:15</p>	
	<p align="center">Session 3: 10:15~12:30 Venue: Marina meeting room Session Chair: Prof. Zhijun Peng 9 presentations-Topic: “Air Pollution and Climate Change Management”</p>	
	<p align="center">Lunch 12:30~13:30 Venue: Hotel Restaurant</p>	
	<p align="center">Afternoon Conference Venue: Marina meeting room & Mir ó meeting room</p>	
	<p align="center">Session 4: 13:30~16:00 Venue: Marina meeting room Session Chair: Prof. Raf Dewil 10 presentations-Topic: “Chemical Engineering and Biotechnology”</p>	<p align="center">Session 5: 13:30~16:30 Venue: Mir ó meeting room Session Chair: Prof. Miguel Ángel Campano Laborda 12 presentations-Topic: “Building Materials and Urban Engineering”</p>
	<p align="center">Coffee Break 16:00~16:45</p>	
	<p align="center">Session 6: 16:15~18:45 Venue: Marina meeting room Session Chair: Prof. Dimiter Velez 10 presentations-Topic: “Energy and Power Engineering”</p>	<p align="center">Session 7: 16:45~19:00 Venue: Mir ó meeting room Session Chair: Prof. Norma Patricia Muñoz Sevilla 9 presentations-Topic: “Environmental Monitoring and Management”</p>
	<p align="center">Dinner 19:00 Venue: Hotel Restaurant</p>	
	<p align="center">Day 3</p>	<p>One Day Tour</p>

Tips: Please arrive at the conference to upload or copy PPT into the laptop room 10 minutes before the session begins.

Detailed Schedule for Conference

March 11, 2018 (Sunday)			
Venue: Marina meeting room			
13:00~13:05	 <p>Opening Remarks Prof. Ignacio Javier Acosta García Department of Building Construction, School of Architecture, University of Seville, Spain</p>		
13:05~13:40	 <p>Keynote Speech I Prof. Zhijun Peng University of Bedfordshire, UK Topic: “Environmental and Energetic Impacts of Ground Vehicle Electrification”</p>		
13:40~14:15	 <p>Keynote Speech II Prof. Ignacio Javier Acosta García Department of Building Construction, School of Architecture, University of Seville, Spain Topic: “Introduction to Dynalight project: efficient design for biodynamic lighting to promote the circadian rhythm”</p>		
14:15~14:40	Coffee Break & Group Photo Taking		
14:40-17:25	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Session 1-9 presentations-Topic: “Wastewater Treatment and Water Resources Management” Venue: Marina meeting room Session Chair: Prof. Hiroshi Takagi</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Session 2-11 presentations-Topic: “Civil and Constructional Engineering” Venue: Mir ó meeting room Session Chair: Prof. Ignacio Javier Acosta García</p> </td> </tr> </table>	<p>Session 1-9 presentations-Topic: “Wastewater Treatment and Water Resources Management” Venue: Marina meeting room Session Chair: Prof. Hiroshi Takagi</p>	<p>Session 2-11 presentations-Topic: “Civil and Constructional Engineering” Venue: Mir ó meeting room Session Chair: Prof. Ignacio Javier Acosta García</p>
<p>Session 1-9 presentations-Topic: “Wastewater Treatment and Water Resources Management” Venue: Marina meeting room Session Chair: Prof. Hiroshi Takagi</p>	<p>Session 2-11 presentations-Topic: “Civil and Constructional Engineering” Venue: Mir ó meeting room Session Chair: Prof. Ignacio Javier Acosta García</p>		
March 12, 2018 (Monday)			
Venue: Marina meeting room			
8:40-8:45	 <p>Opening Remarks Prof. Ignacio Javier Acosta García Department of Building Construction, School of Architecture, University of Seville, Spain</p>		
8:45-9:20	 <p>Keynote Speech III Prof. Raf Dewil Head Cluster Sustainable Chemical Process Technology, KU Leuven - Department of Chemical Engineering, Belgium Topic: Current trends in advanced oxidation processes (AOP) for the degradation of pharmaceutical micro-pollutants in wastewater</p>		

2018 HKCBEEES BARCELONA CONFERENCE

<p>9:20-9:55</p>		<p>Keynote Speech IV Prof. Miguel Ángel Campano Laborda Department of Building Construction I, Universidad de Sevilla Topic: “Introduction to Celda & MEDOS R+D+i projects: Energy and environmental refurbishment of social housing in Andalusia by using test cells”</p>	
<p>9:55-10:15</p>	<p>Coffee Break & Group Photo Taking</p>		
<p>10:15-12:30</p>	<p>Session 3-9 presentations-Topic: “Air Pollution and Climate Change Management” Venue: Marina meeting room Session Chair: Prof. Zhijun Peng</p>		
<p>12:30-13:30</p>	<p>Lunch Venue: Hotel Restaurant</p>		
<p>13:30-16:30</p>	<p>Session 4-10 presentations-Topic: “Chemical Engineering and Biotechnology” Venue: Marina meeting room Session Chair: Prof. Raf Dewil</p>	<p>Session 5-12 presentations-Topic: “Building Materials and Urban Engineering” Venue: Mir ó meeting room Session Chair: Prof. Miguel Ángel Campano Laborda</p>	
<p>16:00-16:45</p>	<p>Coffee Break</p>		
<p>16:15-19:00</p>	<p>Session 6-10 presentations-Topic: “Energy and Power Engineering” Venue: Marina meeting room Session Chair: Prof. Dimiter Velezv</p>	<p>Session 7-9 presentations-Topic: “Environmental Monitoring and Management” Venue: Mir ó meeting room Session Chair: Prof. Norma Patricia Muñoz Sevilla</p>	
<p>19:00</p>	<p>Dinner Venue: Hotel Restaurant</p>		
<p>March 13</p>	<p>One day Tour</p>		

Note: (1) The registration can also be done at any time during the conference.

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

(3) One Best Presentation will be selected from each presentation session, and the Certificate for Best Presentation will be awarded at the end of each session on March 11-12, 2018

Session 1

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~16:55

Venue: Marina meeting room

Session 1: 9 presentations- Topic: “Wastewater Treatment and Water Resources Management”

Session Chair: Prof. Hiroshi Takagi

A0011 Presentation 1 (14:40~14:55)

Quantitative analysis the role of reactive oxygen species (ROS) in a Fe/Cu/O₃ process for *p*-nitrophenol treatment

Z K Xiong, B Lai, P Yang

Department of Environmental Science and Engineering, Sichuan University, China

Abstract—In this study, a highly efficient catalytic ozonation with Fe/Cu bimetallic catalyst was developed for *p*-nitrophenol (PNP) aqueous solution treatment. The result shows that the high COD removal (94.1%) was obtained by the Fe/Cu/O₃ process, owing to the strong synergetic effect between Fe/Cu and ozone. In addition, the COD removal (94.1%) obtained by the Fe/Cu/O₃ process after 30 min treatment is twice more than the sum (45.2%) of COD removal efficiencies obtained by sole ozone and sole Fe/Cu. These results confirm that the synergetic effect between Fe/Cu and ozone played a vital role in the degradation of PNP in aqueous solution. Additionally, the formed corrosion products in exhibited high catalytic ability for ozone decomposition, which could generate more •OH to degrade PNP in aqueous solution. Finally, the role of various reactive oxygen species (ROS) was quantitative analyzed by a series of trapping experiments

Afternoon March 11, 2018 (Sunday)

Time: 14:40~16:55

Venue: Marina meeting room

Session 1: 9 presentations- Topic: “Wastewater Treatment and Water Resources Management”

Session Chair: Prof. Hiroshi Takagi

A0013 Presentation 2 (14:55~15:10)

Chlorine dioxide catalytic oxidation by zero valent iron for the degradation of PNP in aqueous solution

Jun Li, Bo Lai

Sichuan University, China

Abstract— In order to evaluate the degradation of *p*-nitrophenol (PNP) in aqueous solution by chlorine dioxide oxidation process catalyzed by Fe⁰ micro-particles, the effects of Fe⁰ dosage (0-5.0 g/L), ClO₂ dosage (0-2.0 g/L), initial pH (3.0-13.0) and air flow rate (0-5.0 mL/min) on chemical oxygen demand (COD) removal of PNP in aqueous solution were investigated comprehensively. In particular, the maximum COD removal was obtained under the optimal conditions (i.e., Fe⁰ dosage of 4.0 g/L, ClO₂ dosage of 1.2 g/L, initial pH of 5.0, stirring speed of 300 rpm and reaction time of 30 min). Meanwhile, the two control experiments (i.e., Fe⁰ alone and ClO₂ alone systems) were carried out to confirm the performance of chlorine dioxide oxidation process catalyzed by Fe⁰ micro-particles. In a word, the study provided an effective and promising catalytic oxidation technology for toxic and refractory pollutants.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~16:55

Venue: Marina meeting room

Session 1: 9 presentations- Topic: “Wastewater Treatment and Water Resources Management”

Session Chair: Prof. Hiroshi Takagi

A0014 Presentation 3 (15:10~15:25)

Evaluation of different structures of moving bed biofilm reactors (MBBR) for synthetic wastewater treatment

L Yang and P Yang

Sichuan University, China

Abstract— Performance of three different structures of moving bed biofilm reactors (MBBR) treating synthetic wastewater was evaluated. The three systems were operated under the same conditions of dissolved oxygen (DO) 3 mg/L at 26°C. The effluent of chemical oxygen demand (COD) decreased from 111.6 mg/L in reactor 1 (R1), 128.8 mg/L in reactor 2 (R2), and 154.5 mg/L in reactor 3 (R3), to less than 100 mg/L, respectively, with concentration of influent $\text{NH}_4^+\text{-N}$ rising from 30 mg/L to 50 mg/L. The concentration of effluent $\text{NH}_4^+\text{-N}$ for R1, R2 and R3 were close to 2 mg/L, 4 mg/L and 5 mg/L, respectively. The highest TN removal rate in R1 achieved average 84.4 %, which was 6.0 % and 9.7 % higher than those of R2 and R3, respectively. R1 with two baffles in it exhibited well fluidization and abundant microbes growing on carrier.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~16:55

Venue: Marina meeting room

Session 1: 9 presentations- Topic: “Wastewater Treatment and Water Resources Management”

Session Chair: Prof. Hiroshi Takagi

A0079 Presentation 4 (15:25~15:40)

Application of removal of dye in waste water by photocatalytic oxidation using modified TiO₂/ PBS biocomposite film

T Kreetachat and **K Suwannahong**

Western University, Thailand

Abstract—Polybutylene succinate (PBS) has been applying as one of the most recognizable biopolymers for fabricated as a biocomposite film for photocatalyst in photocatalytic oxidation process. In this research, the biocomposite film, which was composed of PBS and TiO₂ particles, was used as the substrate as a Ethyl triethoxysilane(ETES) to modify the photo-catalytic degradation efficiency of the TiO₂ embedding throughout the PBS matrix. The photo-catalytic activity efficiency of the TiO₂ in the degradation of black dye in wastewater from the textile industry in photoreactors has occurred on the TiO₂/ PBS biocomposite film. Since the amount of the nano-TiO₂ was affected by the efficiency of the photocatalytic activity, this work has been mainly concentrating on the effort to embed a high amount of TiO₂ in the PBS matrix. The developed photocatalyst biocomposite films are characterized by their physical properties from XRD, UV-VIS near-IR spectrophotometer and SEM instruments. The SEM images have revealed the presence of high homogeneity of the deposition of TiO₂ on the PBS matrix. The XRD patterns were interpreted so that the nano-TiO₂ embedded in the PBS matrix exhibited mainly in anatase form. In addition, the photocatalytic results shown that the black dye removal capabilities were 40%, 32% and 18% when using the initial black dye concentration of, 100 ADMI, 300 ADMI and 500 ADMI ,respectively.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~16:55

Venue: Marina meeting room

Session 1: 9 presentations- Topic: “Wastewater Treatment and Water Resources Management”

Session Chair: Prof. Hiroshi Takagi

A0053-A Presentation 5 (15:40~15:55)

Optimization of coagulant dose for treatment of antimony-containing wastewater and the effects of sludge recycle.

Du Ri Park, Soo Kyo Shin, Muhammad Ali Inam, Kang Hoon Lee, Ick Tae Yeom
Sungkyunkwan University, Korea

Abstract—Antimony is a regulated pollutant in most countries due to its significant impacts on human health and the environment. Coagulation and precipitation appears to be the most efficient and economical treatment method for industrial wastewater containing relatively high concentration of antimony. The primary aim of this study is to optimize the ferric chloride dose for treating antimony-rich wastewater. Experiments were conducted with both synthetic wastewater and the complex wastewater from a copper smelting plant. For the same dose of the coagulant a two-stage coagulation process showed much better antimony removal efficiency compared with a single-stage process. In addition, recycling of the precipitated sludge from the second stage coagulation into the first stage proved to be very effective in reducing the overall amount of coagulant and sludge production. The removal of dissolved antimony species by ferric chloride may be described as an adsorption of antimony on the precipitate of ferric chloride. The behavior of antimony in the two stage process with sludge recycling could be quantitatively analyzed through separate isotherm studies. On the other hand, antimony removal from the real industrial wastewater was significantly inhibited, probably due to the presence of competing ions such as arsenic species. Single stage coagulation process could not satisfy the regulatory discharge limit of 0.2mg/L set for antimony, even with very high coagulant dose. Two stage processes with recycling of precipitated sludge significantly improved antimony removal not only in meeting the regulatory limit but also in reducing the overall dose of coagulants. Further discussions were given for other factors influencing the optimum coagulant dose such as pH and the speciation of antimony in the wastewater.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~16:55

Venue: Marina meeting room

Session 1: 9 presentations- Topic: “Wastewater Treatment and Water Resources Management”

Session Chair: Prof. Hiroshi Takagi

A0072 Presentation 6 (15:55~16:10)

Color removal by ozonation process in biological wastewater treatment from the breweries

S Sripiboon and K Suwannahong

Department of Environmental Engineering, Faculty of Engineering, Rangsit University, Thailand

Abstract—Colors from the final stage of processing of brewery biological wastewater treatment by Upflow Anaerobic Sludge Blanket (UASB) reactors have caused extremity problems. The aim of this research was to investigate the ozone dosage required to remove the color from brewery industrial wastewater effluent. The dosage of ozone is varied between 50 to 300 mg/L. for 18 minutes, flow rate 45 L/hr., pH 8.4. As the result, the increasing depolarization efficiency is obtained with the increase in an ozone dose. Maximum depolarization of 90% is achieved at an ozone measurement of 300 mg/L. Moreover, the kinetic of depolarization is fitted by the first order equation. The constant of the reaction (k) was 0.120 1/minute. Electrical energy required to move color was 6 kW-h/m³.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~16:55

Venue: Marina meeting room

Session 1: 9 presentations- Topic: “Wastewater Treatment and Water Resources Management”

Session Chair: Prof. Hiroshi Takagi

A0081 Presentation 7 (16:10~16:25)

Removal of methyl violet dye via adsorption using activated carbon prepared from *Randu* sawdust (*Ceiba pentandra*)

Achmad Chafidz, Widi Astuti, Venitalitya Augustia, Dinda Tri Novira, Nur Rofiah
Universitas Islam Indonesia, Indonesia

Abstract—In this study, randu sawdust carbon used as precursor for synthesis of activated carbon via KOH chemical activation assisted to adsorb methyl violet dye in the water. Activation by microwave radiation to accelerate of activation time. Randu sawdust carbon and randu sawdust activated carbon were characterized by FTIR, SEM, and BET. This research also studied equilibrium were analyzed by Langmuir and Freundlich isotherm and kinetics models. The results showed that the randu sawdust carbon and randu sawdust activated carbon has an fungsional group which can adsorb methyl violet. Randu sawdust activated carbon has a larger pore and surface area than randu sawdust carbon. The optimum adsorption occurs at pH 9 and 90 minute contact time. The adsorption capacity of methyl violet dye by randu sawdust activated carbon was 531.16 mg g⁻¹. The isotherm model applied is Freundlich and kinetic studies showed that surface reaction model pseudo-second-order best described the adsorption process.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~16:55

Venue: Marina meeting room

Session 1: 9 presentations- Topic: “Wastewater Treatment and Water Resources Management”

Session Chair: Prof. Hiroshi Takagi

A0049 Presentation 8 (16:25~16:40)

Trends in Agro-Meteorological Parameters as Groundwater Exploitation Indicators

Abhishek A. Pathak, Sinan Nizar and **B M Dodamani**

National Institute of Technology Karnataka, India

Abstract—Rainfall being a major component of the hydrologic cycle, influences the agricultural practices in an area. Thus, trends in rainfall as well as rainy days are of major concern to farmers. Present study focusses on understanding the rainfall trends and its spatial distribution along with the trends in vegetation. An approach where Normalized Difference Vegetation Index (NDVI) procured from MODIS NDVI as an indicator for vegetation was used in this study. Mann Kendall trend test was performed on a 0.25-degree gridded data and the trends were then compared with the distribution of groundwater stress map of the study area. The study tries to examine the coupled use of NDVI and rainfall trends to decrypt the groundwater exploitation in the region. Further Ghataprabha river basin being susceptible to drought by hosting most of the significantly decreasing trend was investigated further. The propagation of severe drought return periods within the basin resembles the agro-meteorological trends. Even within the limitations of the present study, the methodology with further modifications promises to portray strong indication of groundwater exploitation.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~16:55

Venue: Marina meeting room

Session 1: 9 presentations- Topic: “Wastewater Treatment and Water Resources Management”

Session Chair: Prof. Hiroshi Takagi

A2001 Presentation 9 (16:40~16:55)

Mechanisms of Rapid Flow caused by Tidal–Fluvial Flow Interaction in Inland Waterways of the Mekong Delta

H Takagi, N D Thao, T T Anh, L T Anh, T Takabatake and R Nakamura
Tokyo Institute of Technology, Tokyo, Japan

Abstract—The present study investigates the river flow intensifications in the urban areas of the Mekong Delta, which are characterized by tributaries, channels, and low-lying lands in addition to the main stream of the Mekong Delta system. A hydraulic model is used to simulate velocities under the influence of both ocean tide and river discharge. A series of numerical simulations estimate that a rapid flow occurs along the tributary in flood season, reaching up to 1.8 m/s during the 2013 historical flood, which can be reproduced by assigning the net downstream river discharge of 9200 m³/s as well as tidal current. A unique mechanism of flow intensification caused by “tidal blockage”, which occurs in the flood tide phase during the flood season, is also identified. Such locally intensified flows could be further strengthened particularly during abnormal high water events such as storm surges and tsunamis, resulting in ship handling difficulties or a risk of overturning small ships.

Session 2

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~17:25

Venue: Mir ó meeting room

Session 2: 11 presentations- Topic: “Civil and Constructional Engineering”

Session Chair: Prof. Ignacio Javier Acosta Garc ía

E0005 A Presentation 1 (14:40~14:55)

Study on the mechanical behavior of precast concrete cavity shear wall

Gang Xu

Southeast University, China

Abstract—Low shear-span ratio shear wall are mainly dominated by shear under earthquakes, and the seismic action is larger than that of middle shear-span ratio shear wall because of the greater stiffness and strength, so the main damage is shear failure. The ductility of low shear-span ratio shear wall is poor, which is not conducive to aseismic. The seismic performance can be improved by the cavity in low shear-span ratio shear wall for precast construction, which has better ductility, reduced stiffness and reduced capacity than common shear wall. Firstly, the difference of mechanical characteristics is analyzed under lateral loads between the common shear wall, the shear wall with concealed vertical joint and the cavity shear wall. The results show that the stiffness and capacity of cavity shear wall is reduced and the ductility is improved. Meanwhile, reasonable match can be achieved between the stiffness, capacity and ductility by changing the parameters of cavity. Secondly, a theoretical calculation model of cavity shear wall is proposed; the calculating formula of the lateral displacement curve, the equivalent lateral stiffness and internal force of cavity shear wall are deduced under lateral loads. The verification results of FEA models with different parameters are in good agreement with that of the theoretical calculation formula, which can meet the needs of engineering estimation. Finally, the influence of cavity parameters on the stiffness of cavity shear wall is studied and discussed, which can provide significant recommendation for the design of cavity shear wall..

Afternoon March 11, 2018 (Sunday)

Time: 14:40~17:25

Venue: Mir ó meeting room

Session 2: 11 presentations- Topic: “Civil and Constructional Engineering”

Session Chair: Prof. Ignacio Javier Acosta Garc ía

E0019 Presentation 2 (14:55~15:10)

Dynamic Analysis of Innovative Hybrid Wind Mill Tower With Soil Structure Interaction

Hemal J Shah and Dr. Atul K Desai

Government Engineering college, Bharuch, India

Abstract—The wind mill towers are constructed using monopoles or lattice type tower. As the height of tower increases it gives more power but it becomes uneconomical, So in this research work innovative hybrid wind mill tower such as combination of monopole and lattice tower is analyzed using FEM software. When the tall structures are constructed on soft soil it becomes dynamically sensitive so three types of soil such as hard, medium and soft are also considered and the frequencies of innovative hybrid tower are studied for different types of soil. From study it is revealed that the innovative hybrid tower will reduce resonance condition considering soil structure interaction

Afternoon March 11, 2018 (Sunday)

Time: 14:40~17:25

Venue: Mir ó meeting room

Session 2: 11 presentations- Topic: “Civil and Constructional Engineering”

Session Chair: Prof. Ignacio Javier Acosta Garc ía

E0030 Presentation 3 (15:10~15:25)

Investigations of Structural Behavior According to Frame Shape Variation of Electric Transmission Tower

Woo Bum, Kim

Kongju National University, Korea

Abstract—The purpose of this study is to analyze the ultimate strength and behavior of triangular frame and rectangular frame in elastic transmission tower. Investigation of collapse mechanism including local and global failure of partial frame was carried out through nonlinear finite element analysis . Ultimate strength and deformation was investigated in the case of shape variation by changing the inner and outer frame. The necessity of rectangular frame reducing sub-brace member was suggested through comparing the various combination of frame shape.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~17:25

Venue: Mir ó meeting room

Session 2: 11 presentations- Topic: “Civil and Constructional Engineering”

Session Chair: Prof. Ignacio Javier Acosta Garc ía

E0013 A Presentation 4 (15:25~15:40)

Formwork pressure of recycled aggregate self-consolidating concrete

Pierre Matar and Joseph Assaad

Lebanese University, Lebanon

Abstract—The self-consolidating concrete (SCC) manufactured with recycled concrete aggregates (RCA) can be used for casting members with high steel reinforcement rates [1,2]. However, the pressure developed by the SCC on the formwork should be investigated. The main objective of this research is to evaluate the effect of RCA and vertical reinforcing steel bars on SCC pressure exerted on formwork. Mixtures with different RCA contents were cast in 1.6-m high formwork containing vertical steel reinforcement of different percentages.

The materials used in SCC manufacturing include:

- Ternary binder composed of 70% Portland cement, 25% blast furnace slag, and 5% silica.
- Natural fine aggregates consisted of well-graded siliceous sand.
- Natural coarse aggregates consisted of crushed limestone rocks.
- RCA obtained by crushing returned concrete from ready-mix concrete batching plant.
- Naphthalene-based high-range water reducer (HRWR).
- Liquid hydroxyethyl cellulose ether viscosity-modifying admixture (VMA).

The mixtures were prepared with water-to-binder ratio (w/b) varying from 0.5 to 0.44 and 0.38, while HRWR adjusted to achieve slump flow of 700 ± 25 mm. The natural coarse aggregates were replaced by 50% and 100% RCA. The properties of SCC determined include the slump flow, passing ability, segregation resistance, bleeding, static yield stress, plastic viscosity, and structuration rate.

The SCC lateral pressure was determined using a plexiglass acrylic formwork of L x w x H = 400 x 200 x 1600 mm; the strains were measured using linear variable differential transformers (LVDTs) and high-precision digital micrometre strain gages [2,3]. The vertical reinforcing steel consisted of Ø20 deformed bars arranged symmetrically along the two opposite 400-mm sides of the formwork with constant concrete cover of 25 mm; the resulting percentage of vertical steel was 1.57%, 2.36%, 3.14%, 3.93%, and 4.71%.

Test results are obtained for the maximum initial pressure and rate of pressure drop over time. Test results have shown that RCA additions reduced the initial maximum pressure as well as accelerated the rate of pressure drop over time. This was related to RCA intrinsic properties including higher surface roughness that increases internal friction and plastic viscosity as well

as higher percentage of fine particles and higher water absorption that improve build-up of SCC skeleton at rest [2-5]. From the other hand, regardless of RCA additions, the increase in vertical steel density (i.e., reducing S_v) led to reduced initial maximum pressure, which practically shows that steel reinforcement in field works can contribute in reducing the formwork pressure. This can be explained by the fact that the reinforcement cage confines the inner concrete volume and carries part of its load. The rates of pressure drop over time were not altered due to increased vertical steel density, implying that pressure decay is governed by the concrete intrinsic properties such as SCC thixotropy, RCA friction, and cement hydration.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~17:25

Venue: Mir ó meeting room

Session 2: 11 presentations- Topic: “Civil and Constructional Engineering”

Session Chair: Prof. Ignacio Javier Acosta Garc ía

E0017 Presentation 5 (15:40~15:55)

A Survey on Seismic Reinforcement Systems of Adobe Buildings in Iran

S. Farahbakhsh and D. Heydari Beni

Art University of Isfahan, Iran

Abstract—Regarding the fact that a vast part of Iran plateau is covered with desert lands, adobe has been used as the main building material, especially in historic buildings. Although the large number of earthquakes happen in Iran, adobe structures have no resistance to dynamic actions such as earthquakes. Today, various seismic reinforcement systems have been employed in such buildings. This research indicates that each technique has different results in implementation and functional scopes. Considering the lack of practical analysis of these techniques in previous researches, the present paper tries to find out the positive and negative points of each technique as the research strategy in a descriptive-analytic-comparative way. The result declares that these prevalent reinforcement systems are in accordance with brick buildings’ regulations, and it is necessary to provide seismic reinforcement systems in accordance with adobe buildings’ seismic behavior and adobe material traits.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~17:25

Venue: Mir ó meeting room

Session 2: 11 presentations- Topic: “Civil and Constructional Engineering”

Session Chair: Prof. Ignacio Javier Acosta Garc ía

E0027 Presentation 6 (15:55~16:10)

Optimum Design of Reinforced Concrete Multi-Story Multi-Span Frame Structures under Static Loads

Serdar Ulusoy, Aylin Ece Kayabekir, Gebrail Bekdaş and Sinan Melih Nigdeli
İstanbul University, Turkey

Abstract—The construction economy is one of the major goals of engineers and only an experienced engineer can make an economical design after several trial efforts. Whereas, the optimum design of structures can be found by using metaheuristic methods. Especially, the optimum design of reinforced concrete (RC) structures is challenging since two materials with different price and behavior are used. In that case, the optimization problem is highly non-linear and the developed methods employing harmony search (HS) algorithm is effective to solve the problem in several random stages. As the numerical example, the method was tested for two-story two-span RC frames. The results show that the metaheuristic based methodology is feasible.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~17:25

Venue: Mir ó meeting room

Session 2: 11 presentations- Topic: “Civil and Constructional Engineering”

Session Chair: Prof. Ignacio Javier Acosta Garc ía

E0035 Presentation 7 (16:10~16:25)

Response Sensitivity of Low-Rise Buildings to Coefficients of Variations of Random Semi-Active Isolation System Parameters under Near-Fault Earthquakes

Seda Öncü-Davas, Cenk Alhan

Istanbul University, Turkey

Abstract—Actual values of the mechanical parameters of isolation system elements of semi-active isolated buildings may deviate from their design values. Therefore, it is more realistic to evaluate their seismic performance via use of probabilistic analyses methods. While the mean values of random variables are used as nominal design values in a probabilistic model, their coefficients of variation (c.o.v.) represent the level of uncertainty. In the absence of adequate statistical observation for determining suitable c.o.v values of random semi-active isolation system parameters, it is worth evaluating the sensitivity of the seismic response to the aforementioned c.o.v values. Here, this issue is examined in the context of a low-rise benchmark semi-active isolated building under historical near-fault earthquakes. Cumulative distribution plots of peak base displacements and top floor accelerations are presented for different c.o.v values which shows that as the covariance values increase, the range of results expand depending on the earthquake data.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~17:25

Venue: Mir ó meeting room

Session 2: 11 presentations- Topic: “Civil and Constructional Engineering”

Session Chair: Prof. Ignacio Javier Acosta Garc ía

E2001 A Presentation 8 (16:25~16:00)

Evaluation of Foundation on Soil with Cavities: A Case Study from the UAE

Dr. Reem Sabouni

Abu Dhabi University/ Civil Engineering Department, Abu Dhabi, United Arab Emirates

Abstract—Abu Dhabi, the capital of United Arab Emirates (UAE), is one of the most rapidly developing cities during the last two decades. One of the major problems facing this rapid development is the presence of sub surface cavities and sinkholes in different areas of Abu Dhabi, which causes many engineering and geotechnical problems.

The main objective of this research is to evaluate different foundation options for a case study from the UAE with foundation on soil with cavities. The evaluation will be carried out through a finite element numerical investigation using Plaxis 3D to model the four proposed foundation options for the selected case study. The foundation options evaluated are the raft foundation and the pile foundation first with no cavity treatment and then with cavity treatment. Based on the numerical investigation results, the pile foundation with grouted cavities option is recommended to be used as the foundation of the studied structure.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~17:25

Venue: Mir ó meeting room

Session 2: 11 presentations- Topic: “Civil and Constructional Engineering”

Session Chair: Prof. Ignacio Javier Acosta Garc ía

E0015 Presentation 9 (16:40~16:55)

Aligning Tender Cost Estimation Practices in Iran with BIM

M. Ashtab, **M. R. Farzad**

Texas A&M University, USA

Abstract—The emersion of computer applications in construction such as Building Information Modeling (BIM) has evolved the estimating process. Many studies have evaluated the benefits of using BIM in preconstruction phase, however, no researches have been conducted for Iranian construction industry where companies are obligated to follow the National Bill of Quantity (NBQ) book as the standard classification in the bid process and estimating for government projects. Current BIM tools are adaptive with major construction classifications such as Unifomat. This paper evaluated the possibility of aligning current BIM tools with the Iranian NBQ using a case study. A 3D model was created considering the items defined in NBQ. The quantities were extracted from the model and a cost analysis was performed to determine the resources required for this project. The result of this study shows that it is practical to incorporate NBQ classification in current BIM tools in the estimation process.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~17:25

Venue: Mir ó meeting room

Session 2: 11 presentations- Topic: “Civil and Constructional Engineering”

Session Chair: Prof. Ignacio Javier Acosta Garc ía

A0084 Presentation 10 (16:55~17:10)

A Methodology for Designing an Information System for Road Infrastructure Monitoring and Traffic Management in Disasters

D Dimitrov, P Zlateva and **D Velev**

University of National and World Economy, Bulgaria

Abstract—The impact of natural disasters and other adverse events on road infrastructure leads to a partial reduction or complete renunciation of its working capacity. Currently, there is no online-based information system to disclose and manage traffic in the event of a problem or disruption of a transport segment from the road infrastructure. The main purpose of the paper is to present a common methodology for designing a cloud-based online information system for road infrastructure monitoring and traffic management in disasters. The methodology of the information system is based on traditional geographic information system (GIS) solutions, Web-based technologies and GPS navigation systems.

Afternoon March 11, 2018 (Sunday)

Time: 14:40~17:25

Venue: Mir ó meeting room

Session 2: 11 presentations- Topic: “Civil and Constructional Engineering”

Session Chair: Prof. Ignacio Javier Acosta Garc ía

E0040 A Presentation 11 (17:10~17:25)

The Ingenious Use of Natural Resources without the Consumption of Additional Power (Case study: Iranian Vernacular Cisterns)

Dr. Aryan. Amirkhani, Dr. Fatemeh. Tehrani

Tarbiat Modares University, Iran/ Islamic Azad University, Iran

Abstract—As in other parts of the world, with the advent of modern materials such as cement, indigenous construction and conservation practices carried out by craftsmen are rendered intellectually invisible by a process similar to the drawing of a veil. The elimination of these practices equals the erosion of centuries of building and conservation culture. Expanding the existing knowledge of earthen heritage properties, examining their behavior in the local climate and explaining their current condition in order to express the need for the preservation of traditional craftsmanship as part of a sustainable conservation future are of the prominent concerns of this work. This article focuses on Cisterns as an example of Ingenious Use of Natural Resources without the Consumption of Additional Power in Iranian plateau.

Session 3

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Morning March 12, 2018 (Monday)

Time: 10:15~12:30

Venue: Marina meeting room

Session 3: 9 presentations- Topic: “Air Pollution and Climate Change Management”

Session Chair: Prof. Zhijun Peng

A0021 Presentation 1 (10:15~10:30)

Towards Smart Cities Development: A Study of Public Transport System and Traffic-related Air Pollutants in Malaysia

S N Brohi, T R Pillai, D Asirvatham, D Ludlow, J Bushell
Taylor’s University, Malaysia

Abstract— Increasing number of privately owned vehicles are depicting Malaysians preferred mode of mobility and lack of interest in the public transport system. In most developing countries such as Malaysia, motorized vehicles are the major contributors to air pollution in urban zones. Air pollution is a silent killer as it infiltrates the vital organs, leading to serious diseases and death. This research critically analyses the emissions of air pollutants such as CO, NO₂, SO₂, hydrocarbon, and PM from various sources in Malaysia with emphasis mainly on the emission of pollutants from motor vehicles. This research also discusses the public transport initiatives undertaken by the government of Malaysia such as enhancing the bus and rail system, transforming Malaysia’s taxi system, managing travel demand and enhancing the integration of urban public transport system. Furthermore, considering the smart cities initiatives, this research identified that weather, safety, security and inappropriate infrastructure are major barriers in Malaysia’s move towards the implementation of smart and eco-friendly mobility practices such as cycling, carpooling and car sharing.

Morning March 12, 2018 (Monday)

Time: 10:15~12:30

Venue: Marina meeting room

**Session 3: 9 presentations- Topic: “Air Pollution and Climate Change
Management”**

Session Chair: Prof. Zhijun Peng

A0038 Presentation 2 (10:30~10:45)

Modelling of indoor air pollutants dispersion: new tools

V Busini, S Favrin, G Nano, M Derudi

Politecnico di Milano, Italy

Abstract—Ventilation systems are used for create a thermally comfortable environment and good indoor air quality. It is therefore essential to have adequate tools for predicting the performance of these systems. Among the various approaches, the computational fluid dynamics could be a useful tool for the design of the ventilation system. When dealing with pollutants dispersion problems, a steady state averaged simulation can be misleading because it is not able to properly predict and model peak concentrations, which can be relevant even if temporary. An interesting approach is the use of LES (Large Eddy Simulations) simulations to obtain a better description of concentrations oscillations. In this framework, the aim of this work is the validation of simulation carried out using the FDS (Fire Dynamic Simulator) software with an actual case study, already studied with a mock-up. Secondly, two new configurations of the ventilation system are proposed, in order to stress the capacity of the software to describe complex and different features, classical of HVAC (Heating, Ventilation and Air Conditioning) systems. Interesting conclusions about efficiency are drawn from the comparison, highlighting the potentiality of the software.

Morning March 12, 2018 (Monday)

Time: 10:15~12:30

Venue: Marina meeting room

**Session 3: 9 presentations- Topic: “Air Pollution and Climate Change
Management”**

Session Chair: Prof. Zhijun Peng

A0048-A Presentation 3 (10:45~11:00)

Removal characteristics of NO_x by additives in an electron beam process

Youn-Suk Son

Pukyong National University, Republic of Korea

Abstract—Although, many technologies (e.g., adsorption and selective catalytic reduction) have been researched to reduce NO_x, their techniques still have some problems such as low removal efficiency and reduction of catalyst efficiency. To solve these problems, new technologies (electron beam, plasma, etc.) have been developed by various researches. In this study, we carried out to reduce NO_x emitted from various industrial processes and power plants. To improve removal efficiency of NO_x using an electron beam, diverse factors influencing such as absorbed dose, initial concentration, and additives were investigated. As a result, removal efficiency of NO_x increased as initial concentration of NO_x decreased and absorbed dose increased. Additionally, removal efficiency NO and NO₂ by NaOH was highest among various additives.

Morning March 12, 2018 (Monday)

Time: 10:15~12:30

Venue: Marina meeting room

**Session 3: 9 presentations- Topic: “Air Pollution and Climate Change
Management”**

Session Chair: Prof. Zhijun Peng

A0044-A Presentation 4 (11:00~11:15)

Effect of Cu/Al ratio on the hydrothermal stability of CuSSZ-13 catalysts for NH₃-SCR

Shuai Han, Jin Cheng, Qing Ye, Shuiyuan Cheng, Tianfang Kang

Beijing University of Technology, China

Abstract—The aim of the present work is to investigate the effects of Cu/Al ratio on the hydrothermal aging stability of the CuSSZ-13 catalyst. The collapse of the zeolitic crystal structure became more significant with the increase in the Cu/Al ratio after hydrothermal aging treatment. The amount of the isolated Cu²⁺ species in the catalyst after hydrothermal aging treatment significantly decreased, and the amount of the Cu⁺ and CuO species obviously increased with the rise in the Cu/Al ratio. The quantity of both the Lewis and Brønsted acid sites decreased during the hydrothermal aging treatment with the rise in the Cu/Al ratio. Lower Cu/Al catalyst display better activity for selective reduction of NO with NH₃ than that of higher Cu/Al after hydrothermal aging treatment. The lower Cu/Al of CuSSZ-13 catalyst exhibits better hydrothermal aging stable as compared to the higher Cu/Al catalyst.

Morning March 12, 2018 (Monday)

Time: 10:15~12:30

Venue: Marina meeting room

Session 3: 9 presentations- Topic: “Air Pollution and Climate Change Management”

Session Chair: Prof. Zhijun Peng

A0045-A Presentation 5 (11:15~11:30)

The Influence of Si/Al Ratio on Catalytic Performance of Hydrothermally Aged Cu-SSZ-13 For No Reduction by NH₃-SCR

Jin Cheng

Beijing University of Technology, China

Abstract—The SSZ-13 samples with various Si/Al ratios was carried out by hydrothermal synthesis. The CuSSZ-13 samples were held at a corresponding final temperature for 12 h in a 10% H₂O-containing air flow (300 mL/min). It is show that the surface area and NO conversion of the CuSSZ-13 samples drastically dropped upon hydrothermal aging treatment. A more amount of the active Cu²⁺ sites on the CuSSZ-13 sample with a higher Si/Al ratio was pulled out of the SSZ-13 framework during the hydrothermal aging process and aggregated into CuO. The NO conversion over the CuSSZ-13 sample with a higher Si/Al ratio was heavily influenced by the decreased amount of Cu²⁺, leading to the significant decrease in NO conversion. Simultaneously, over the CuSSZ-13 sample with a higher Si/Al ratio, NH₃ conversion and NO_x concentration increased in the oxidation of NH₃, providing sufficient evidence for the decrease in amount of the active Cu²⁺ sites and for the increase in amount of the aggregated CuO.

Morning March 12, 2018 (Monday)

Time: 10:15~12:30

Venue: Marina meeting room

Session 3: 9 presentations- Topic: “Air Pollution and Climate Change Management”

Session Chair: Prof. Zhijun Peng

A0091 Presentation 6 (11:30~11:45)

Application of copper-zinc metal as a catalytic converter in the motorcycle muffler to reduce the exhaust emissions

Achmad Chafidz, Megawati, Catur Rini Widyastuti, Venitalitya Augustia, Khairatun Nisa, Ratnaningrum

Universitas Islam Indonesia, Indonesia

Abstract—One of the main sources of air pollution is exhaust emission from vehicles. In the developing countries such as Indonesia, the most highest number of vehicles is motorcycle. Some of gas components from the exhaust emission that are commonly measured are carbon monoxide (CO) and hydrocarbon (HC). One of technology that can reduce the emission of CO and HC is the use of catalytic converter in the motorcycle’s exhaust system/muffler to assist the oxidation of carbon monoxide (CO) and hydrocarbon (HC). In the present study, Copper-Zinc (Cu-Zn) metal was selected as the catalyst. The selection of this combination of non-noble metals is due to their low cost materials, abundant materials, low cost production, and low-temperature oxidation). The objective of this study are to prepare the catalytic converter based on non-noble metal (i.e. Cu-Zn) and to study the performance of the catalytic converter installed in the muffler in converting exhaust gases of CO and HC into less harmful gases. The effect of two different motor engine rotation speeds (i.e. 2000 and 2500) on the conversion of CO and HC was also studied. The analysis of the emission from the muffler was carried out using gas analyzer. Additionally, the kinetic of oxidation reaction of CO and HC was also studied using pseudo homogeneous approach. The emission analysis results show that the use of Cu-Zn catalyst was effective to decrease the emission level of CO and HC. The CO and HC concentration level decreased up to 47.71 % at 2000 rpm and 55.34 % at 2500 rpm, respectively.

Morning March 12, 2018 (Monday)

Time: 10:15~12:30

Venue: Marina meeting room

**Session 3: 9 presentations- Topic: “Air Pollution and Climate Change
Management”**

Session Chair: Prof. Zhijun Peng

A0074 Presentation 7 (11:45~12:00)

Factors affecting greenhouse microclimate and its regulating techniques: A review

G Li, L Tang, X Zhang, J Dong, M Xiao

University of Nottingham Ningbo China, China

Abstract—This paper reviews factors affecting greenhouse microclimate and its regulating techniques towards upgrading the greenhouse applications in southeast China’s Ningbo area which have little or very basic technology integration. The microclimate of greenhouse is apparently influenced by the shape and its orientation, the wind direction, the property of covering material, and the use of insect-proof screen as they eventually affect the total solar radiation, the thermal characterises, and the flow pattern inside etc. The natural ventilation and sun block are the most common method to cool the greenhouse, but more efficient evaporative cooling such as pad-fan system, misting/fogging system and roof sprinkler are required with extreme temperatures. The earth to air heat exchanger and the heat storage using phase change material may be used for heating or cooling throughout the year which are more economic and energy-saving than other traditional thermal technologies. The reviewed knowledge provides insights into upgrading greenhouse applications in southeast China’s Ningbo area towards more sustainable and efficient greenhouse farming.

Morning March 12, 2018 (Monday)

Time: 10:15~12:30

Venue: Marina meeting room

**Session 3: 9 presentations- Topic: “Air Pollution and Climate Change
Management”**

Session Chair: Prof. Zhijun Peng

A0085 Presentation 8 (12:00~12:15)

Institutional barriers for the implementation of climate change adaptation actions in the Mexican coastal zones

Norma Patricia Muñoz-Sevilla, Isaac Azuz-Adeath and Maxime Le Bail
Instituto Politécnico Nacional, Mexico

Abstract—This paper has as its object of study the coastal and marine areas of Mexico; specifically, it focuses on the analysis of existing barriers for the implementation of actions tending to the adaptation to climate change of these fragile and dynamic regions of the national territory. The study makes a general review of the main meetings, agreements and international entities related to the global climate that have served as the basis for the XXI Conference of the Parties, from which emanated the "Paris Agreement". After analyzing some implications of the aforementioned agreement and presenting evidence of the current situation, the main legal and normative instruments of the national marine and coastal areas are reviewed; the main risks in these areas of the national territory associated with climate change are evaluated; the main existing adaptation measures are analyzed; and, the most important socioeconomic and political barriers that exist for their correct implementation are established. Finally, some lines of action are proposed to improve the current situation of vulnerability of the coastal areas and increase their resilience.

Morning March 12, 2018 (Monday)

Time: 10:15~12:30

Venue: Marina meeting room

Session 3: 9 presentations- Topic: “Air Pollution and Climate Change Management”

Session Chair: Prof. Zhijun Peng

A2002 Presentation 9 (12:15~12:30)

Taking into account climate change adaptation in urban area through the use of the CFD FLUENT simulation model example: an urban sector of the ORAN agglomeration

Hayat BELHORMA, Mustapha CHACHOUA and Khaled MAHDI
University of ORAN

Abstract—Large cities cause microclimatic changes, the largest of which is known as the urban Heat Island Effect .The acceleration of urban development has caused variations in microclimatic conditions. Urban geometry and human activities in the urban environment interact with microclimatic parameters (wind speed and direction, air and surface temperature, solar radiation), also transforming the climate of our cities. It is for us to study the impact of climate change on urban environments and to understand the consequences of geometric and morphological factors on microclimatic conditions at the city scale, using tools called Computational Fluid Dynamics (CFD) models, we will try to show how urban geometry, in all its states interacts with microclimatic parameters (solar radiation, wind flows, air temperature and surface). Applied to the agglomeration of ORAN / ALGERIA on an existing urban sector (district HLM),we will try to show the strong correlation between failures and errors of urban design and the increase and generalization of Heat Island Effect in urban area.



Lunch	12:30-13:30
--------------	--------------------

Session 4

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:00

Venue: Marina meeting room

**Session 4: 10 presentations- Topic: “Chemical Engineering and
Biotechnology”**

Session Chair: Prof. Raf Dewil

A0001 Presentation 1 (13:30~13:45)

Fabrication of superhydrophobic hollow fiber membrane contactor for biogas purification by pressurized water

Yifu Li, Li’ao Wang and Chao Qin

College of Resource and Environmental Science, Chongqing University, PR China

Abstract—Hollow fiber membrane contactor (HFMC) is a novel gas-liquid contacting equipment used for gas mixture separation by liquid absorption. However, the main challenge for applying HFMC is the sharp deterioration of absorption performance when membrane fibers are wetted by liquid absorbents. This article investigates CO₂ removal from biogas (containing 40% CO₂ and 60% CH₄) using a hollow fiber membrane contactor (HFMC) with water as absorbent at elevated pressures up to 10 bar. In order to prevent membrane wetting, superhydrophobic PTFE membrane fibers (with a water contact angle of 158.4 ° and sliding angle of 1.3 °) were fabricated by spraying silica nanoparticles on membrane surface and then used in membrane module for absorption experiments. Due to the relatively poor hydrophobicity of original membrane, it has tendency of membrane wetting especially when operating at high pressures, which lead to a significant performance deterioration. However, the modified membrane outperformed the original membrane under pressurized conditions, and the highest CO₂ absorption flux reached $7.4 \times 10^{-4} \text{ mol m}^{-2} \text{ s}^{-1}$. The results showed that the superhydrophobic membranes modified by spray-deposition technique have great potential for application in HFMC to prevent membrane wetting for biogas purification under pressurized conditions.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:00

Venue: Marina meeting room

**Session 4: 10 presentations- Topic: “Chemical Engineering and
Biotechnology”**

Session Chair: Prof. Raf Dewil

A0026 Presentation 2 (13:45~14:00)

Preparation and characterization of chromium-copper supported biogenic catalyst from rice husk

A Sahoo, G V V Gowthami and S S Mohapatra
National Institute of Technology, Rourkela, India

Abstract—Attempt was made to prepare the biogenic catalyst from waste biomass with the support of chromium and copper metals. Metal modified silica catalysts were prepared by incorporating the metals like chromium and copper into silica matrix. In the present work the rice husk samples were pre-treated with different acids and then the samples were subjected to pyrolysis under controlled burning conditions. Pyrolysis operation was carried out at different temperatures in a furnace to get maximum rice husk ash. Ash thus produced was then leached by alkalis. Alkali-leached solution was then titrated with HCl. The silica catalysts thus prepared were characterized by different characterization techniques i.e. BET, SEM, EDX and XRD analysis by which amorphous nature of silica was confirmed. The average surface area and total pore volume were obtained by using N₂ adsorption-desorption calculations by BET analysis. Oxidation of styrene was carried out for the prepared metal modified catalyst at different pH levels. The products formed were analysed by GC-MS. A better conversation was found at lower pH. Obtained high surface areas further confirmed the amorphous nature of the prepared sample. Studies on the characteristics-properties of the prepared samples confirmed the catalytic nature implying the development of good biogenic catalyst.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:00

Venue: Marina meeting room

**Session 4: 10 presentations- Topic: “Chemical Engineering and
Biotechnology”**

Session Chair: Prof. Raf Dewil

A0035-A Presentation 3 (14:00~14:15)

Influence of active mitigation barriers on dense gas dispersion

V Busini, R Rota

Politecnico di Milano, Italy

Abstract—Many industrial accidents involve the release of toxic or flammable vapors; when denser than air, they fall towards the ground and are therefore much more dangerous because they are at human height and also interact with the ground, groundwater or watercourses.

In previous works, the mitigation through passive barriers has been studied [1-3], as well as the use of active barriers with curtains of water vapor/air [4]. The objective of this study is to provide a criterion for designing an active barrier (i.e., a barrier releasing air flow rate, generated by fans embedded in the mitigation barriers) that can dilute the cloud below the hazard limit inside the barrier. Among the various dense gas, in this work, Liquefied Natural Gas was chosen, thus the presented methodology was applied to the LFL (Lower Flammability Limit) as threshold for flammable vapor dispersion distances, but the same methodology can be applied to the toxicity limit of toxic vapors. A catastrophic release due to full-bore rupture of 1 m diameter pipe connected to a tank was investigated through a computational fluid dynamics (CFD) code. Several scenarios will be showed and the effectiveness of the active barriers will be assessed.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:00

Venue: Marina meeting room

**Session 4: 10 presentations- Topic: “Chemical Engineering and
Biotechnology”**

Session Chair: Prof. Raf Dewil

A2003 Presentation 4 (14:15~14:30)

Carbon Dioxide Minimum Miscibility Pressure with Nanopore Confinement in Tight Oil Reservoirs

R. S. Mohammad, S. Zhang, E. Haq, X. Zhao, and S. Lu
China University of Petroleum-Beijing, China

Abstract— CO₂-injection is one of the capable processes in EOR from low-permeable reservoirs and MMP determination is a key factor in estimating the displacement efficiency of the CO₂ in the EOR processes. The laboratory procedures for MMP determination recognized in the oil industry are slim-tube, rising-bubble, or vanishing interfacial tension (VIT). However, the presence of nanopores in tight formations influences phase equilibrium, causing reduction in MMP. Instead, the existing MMP correlations need to be modified for tight reservoirs that might result in reliable MMP. Therefore, MMP measurement is performed using WinProp to validate correlations for tight oil samples. This study presents MMP determination experimentally using VIT for tight oil samples in both recombined-oil and dead-oil conditions. Subsequently, results obtained from VIT are compared with slim-tube results and the relative error was found 4.86% for recombined-oil and 23.36% for dead-oil. A huge deviation between VIT and slim-tube is noted while measuring MMP for dead-oil, due to deficiency of multiple contacts miscibility and stabilization of heavier fractions. subsequently, an already incorporated correlation for MMP is utilized, considering the effect of nanopore confinement. This study provides an appropriate technique for predicting MMP considering the capillary pressure and solubility on well performance of tight reservoirs.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:00

Venue: Marina meeting room

**Session 4: 10 presentations- Topic: “Chemical Engineering and
Biotechnology”**

Session Chair: Prof. Raf Dewil

A0028-A Presentation 5 (14:30~14:45)

Plant species Identified in Natural Oil Seep Soils with Chronic Hydrocarbon Contamination

Maria Francesca Scannone, Martina Bochicchio

Eni Enrico Mattei Foundation, Italy

Abstract— One of the major environmental problems today is hydrocarbon contamination. The promising sustainable technologies for the treatment of these contaminated sites involves the use of biological organisms. In Agri Valley (Basilicata Region) there is a living laboratory (natural oil seeps) where the selective pressure has enriched the environmental matrices with microorganisms, fungi and plant species able to use the hydrocarbons as a source of metabolic energy, to degrade or tolerate hydrocarbons. Observers visiting this area are fascinated by its unspoiled nature, and the condition of the ecosystem does not appear to has been damaged. The amazing resiliency observed in Tramutola site is of key importance to try to bring green remediation technologies, but no research has been done to identify high-performing native species. The aim of this research was to study how natural processes affect the fate of released oil or how individual species or communities of plants and animals are capable of dealing with the burden of otherwise toxic chemicals. The survey of vegetation was carried out, more than 60 species have been identified and divided into tree, shrub and herb layer. Plant data sheets have been completed only for the species that showed the most appropriate properties for phytoremediation. In general, members of the Salicales, Cyperales, Poales ,Fagales, Cornales, Equisetales orders were the most commonly identified orders. They are pioneer plants with high adaptive capacity and vegetative propagation. The literature review has highlighted the existence of rhizosphere effect and a green liver model on selected plants. The study provide significant information on the environmental stress adaptation processes of many indigenous plants that are living and growing on a natural leak of crude oil and gas that migrates up through subsurface.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:00

Venue: Marina meeting room

**Session 4: 10 presentations- Topic: “Chemical Engineering and
Biotechnology”**

Session Chair: Prof. Raf Dewil

A0034-A Presentation 6 (14:45~15:00)

Development of phytoremediation coupled with agro-production (PCA) technology using hyper-accumulator *Sedum alfredii* and low-accumulator field crops (*Ipomoea aquatic* and *Brassica chinensis*)

Lin Tang, Weijun Luo, Zhenli He, Hanumanth Kumar Gurajala, Yasir Hamid, Xiaoe Yang
Zhejiang University, People’s Republic of China

Abstract—Consumption of vegetables with accumulated heavy metal Cd and nitrate causes damage to different body organs leading to unwanted side effects. In our study, four *Ipomoea aquatica* genotypes and seven *Brassica chinensis* genotypes were identified as low co-accumulators for both Cd ($<0.05 \text{ mg kg}^{-1} \text{ FW}$) and nitrate ($<3100 \text{ mg kg}^{-1} \text{ FW}$) in the edible parts from a pool of 39 *I. aquatica* and 62 *B. chinensis* genotypes, even when grown in co-contaminated soils. From these findings we developed a PCA technology system for greenhouse fields co-contaminated with Cd and nitrate using hyperaccumulator *S. alfredii*. In this system, endophytic bacterium M002 inoculation, CO₂ fertilization, and fermentation residue were continuously applied to improve the growth and Cd uptake of *S. alfredii*, and low-accumulator *I. aquatic* and *B. chinensis* which were rotated under reasonable water management. This comprehensive management practice showed to enhance biomass and Cd uptake in *S. alfredii* and reduce Cd and nitrate concentration in both vegetable species. This crop rotating system could remove 56.5% total Cd, 62.3% available Cd, and 65.4% nitrate, respectively, from the co-contaminated soil in two years of phytoremediation, and is an effective way of remediating moderately co-contaminated soils by Cd and nitrate.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:00

Venue: Marina meeting room

**Session 4: 10 presentations- Topic: “Chemical Engineering and
Biotechnology”**

Session Chair: Prof. Raf Dewil

A0036-A Presentation 7 (15:00~15:15)

Cadmium immobilization in soil amended with organic, inorganic and mineral amendments and its phytoavailability to wheat crop

Yasir Hamid, Lin Tang, Min Lu, Muhammad Zahir Aziz, Bilal Hussain, Muhammad Yaseen, Xiaoe Yang

Zhejiang University, People’s Republic of China

Abstract—Human activities have led to an increase in cadmium pollution around the globe. Different organic, inorganic and mineral amendments and their mixtures were evaluated for Cd immobilization in clay purple soil in incubation to field experiments. Twelve treatments with seven concentration levels (0.25, 0.5, 1, 1.5, 2, 2.5 and 3%) were applied and soil was incubated for 7, 30, 60, 90, 120 and 150 days. pH was maximum in GSA-4 (3%) where different organic, inorganic and mineral amendments in combination were applied, followed by GSA-3 and Lime. Available cadmium was decreased in lime (0.0041 mg/kg) followed by GSA-3 (0.0042 mg kg⁻¹) and GSA-4 (0.0043 mg kg⁻¹) with 3% concentration level. 1 % of each amendment was selected for field experiment. Wheat was harvested at maturity and data regarding growth parameters was recorded. GSA-4, GSA-2 and lime increased pH (1-5 month) of soil to 6.50, 6.50, and 6.47 respectively as compared to control. Cd bioavailability to wheat was decreased as GSA-2 > GSA-4 > GSA-3 > lime. Mixture of amendments decreased cadmium concentration in roots, straw and grains of wheat as compared to other amendments. These results can be a good tool to decide heavy metal immobilizer in clay purple soil.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:00

Venue: Marina meeting room

**Session 4: 10 presentations- Topic: “Chemical Engineering and
Biotechnology”**

Session Chair: Prof. Raf Dewil

A0029-A Presentation 8 (15:15~15:30)

Neutron activation analysis of soil and terrestrial isopods as potential bioindicators of anthropogenic pollution

Lenka Gajdosikova, Borivoj Sarapatka, Ivan Hadrian Tuf and Marina Vladimirovna Frontasyeva

Joint Institute for Nuclear Research, Czech Republic

Abstract—Terrestrial isopods (woodlice and pill bugs) have been proved to be reliable as indicators of pollution of environment. They are widespread throughout Europe, relatively large, conspicuous and they have short life-cycle. Mainly, they can cumulate heavy metals into their bodies. This research is focused on heavy and toxic metals which are noxious for the environment. The purpose of this project is to find out heavy metals in soils using terrestrial isopods as potential bioindicators of anthropogenic pollution in Czech Republic. Multi-elemental instrumental epithermal neutron activation analysis at the reactor IBR-2 in FLNP, JINR was used for assessment of heavy metal contamination which belongs between acute environmental problems in Czech Republic. Additionally, atomic absorption spectrometry will be used for comparison of results and for detection of elements which cannot be obtained by NAA. Concentrations of iron, nickel, zinc, chromium, cadmium, lead and copper will be determined in isopods and soils collected in Moravian-Silesian region in Czech Republic. The study is on-going, processing of data is in progress and preliminary results will be presented.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:00

Venue: Marina meeting room

**Session 4: 10 presentations- Topic: “Chemical Engineering and
Biotechnology”**

Session Chair: Prof. Raf Dewil

A0092 Presentation 9 (15:30~15:45)

A Review of the Effectiveness Study of Botanical Components That Improves Air Filtration

Chang Choo Khean, Tan Yong Yih

Universiti Kuala Lumpur Malaysia France Institute (UniKL MFI), Malaysia

Abstract—This paper focus on the review of green filtration system that incorporated with evaporative cooling that used to enhance indoor air quality. This system was invented in attempt to thrive a clean environment that becomes a solution for certain places. Indoor air quality (IAQ) and public health risk connected to each other, it is due to the percentage of city population that stays indoors rather than go for outdoors. Indoor air contamination are originated from mixed origin such as volatile organic compounds (VOCs) and indoor airborne particulate matter (PM). There are two (2) methods will be discussed in this review paper. First is the modular green wall and VOCs removal. All trial PM factions are effectively reduced by all plant species in method one (1) which helps in improving indoor air quality (IAQ). The same goes for VOCs removal in method two (2). Our centre of attention is assessing the present condition of study and the prospective research needs.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:00

Venue: Marina meeting room

**Session 4: 10 presentations- Topic: “Chemical Engineering and
Biotechnology”**

Session Chair: Prof. Raf Dewil

A3002-A Presentation 10 (15:45~16:00)

Enhancement of Anammox Biomass Activity using a Novel Electro–Bioreactor Packed with Al–Fe electrodes

Abdelmajeed, Adam & Maria, Elektorowicz
Concordia University, Canada

Abstract—The anammox–based process is one of the emergent nitrogen removal techniques offering substantial cost–savings. Yet, long start–up period of such techniques as a result of low growth rate and activity of anaerobic ammonia oxidation (anammox) bacteria restricts the widespread application of these processes. In this work, we investigated start–up and activity of anammox bioprocess in one–stage electrically enhanced bioreactor towards complete autotrophic nitrogen removal. Continuous flow electro–bioreactor was fed with synthetic wastewater consisting mainly of nitrite and ammonium at a molar ratio of 1:1. When the DC electric field was intermittently applied for 5-min ON/25-min OFF, the TN removal dramatically reached up to 89% after 100 d of operation. Anammox activity was witnessed after 47 d of operation (almost 50 % shortening the start–up period of anammox process comparing to the control reactor). Based on these observations, membrane electro–bioreactor (SMEBR) is able to rapidly accelerate anammox reaction with a minimum cost and space requirement.

Session 5

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

Session 5: 12 presentations- Topic: “Building Materials and Urban Engineering”

Session Chair: Prof. Miguel Ángel Campano Laborda

E0043 A Presentation 1 (13:30~13:45)

Evaluation of the Effectiveness of Graphene Oxide in Improving the Mechanical Properties of OPC Cement

Amer Al-Arbeed

Kuwait Institute for Scientific Research, Kuwait

Abstract—Variety of Nano composite materials for the improvement of Portland cement properties took over in many research studies. Graphene oxide (GO) is a single layer of carbon atom prove new properties at a nanoscale in different applications. The recent work on GO prove that, new properties in cement mortar mixture enhance its microstructure and its physical and mechanical properties.

Plain mortar mixture of OPC has been compared with GO mortar mixture for the investigation of the new properties. The addition of GO has been evaluated for its physical and mechanical properties.

Tensile strength and flexural strength of OPC mortar has improved after the addition of GO liquid in cement mixture at different age.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

Session 5: 12 presentations- Topic: “Building Materials and Urban Engineering”

Session Chair: Prof. Miguel Ángel Campano Laborda

E0025 Presentation 2 (13:45~14:00)

Binder Contribution to Cracking of a Lightly Trafficked Asphalt Pavement Made With Clear Binder

Khalid. Al-Shamsi, Hossam F. Hassan
Sultan Qaboos University, Oman

Abstract—This paper reports the findings of a technical investigation on the role of clear asphalt binder in the development of extensive block cracking in a lightly trafficked colored pavement. Visual inspection of the pavement surface was carried out together with detailed laboratory investigation on the rheological characteristics of the binder. The results showed that the tested clear binder is extremely viscous and harder than any bitumen grade specified by ASTM standards. Furthermore, the clear binder has much lower ductility compared to the conventional asphalt bitumen. The clear binder is almost 11 times more viscous than the conventional bitumen at the tested temperatures.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

Session 5: 12 presentations- Topic: “Building Materials and Urban Engineering”

Session Chair: Prof. Miguel Ángel Campano Laborda

E0028 Presentation 3 (14:00~14:15)

Suitability of Metakaolin in Concrete

Satish Desai and Sonal Shah Tripathy

SV National Institute of Technology, Surat, Gujarat., India

Abstract—Profound research work on the use of different types of clays in mortar and in concrete is done by researchers. There is a general and unanimous conclusion among the researchers that of all the clay available on earth’s crust, Metakaolin (produced from kaolin clay) is a material with maximum pozzolanic reactivity. This pozzolanic reactivity of Metakaolin, depends on its physical characteristics like specific surface area, its amorphousness, the particle size distribution; and these physical attributes in turn depend upon process of dehydroxylation i. e. the degree at which the clay is dehydroxylated and the residence time. The usage of metakaolin in concrete and cement industry requires a good understanding of how these factors affect the strength and durability of concrete when added to it. This paper explains the working of Metakaolin, its hydration mechanism with cement and how it alters the microstructure and enhances the durability and mechanical strength of the concrete when added in concrete which is pivotal to utilize the potential of metakaolin for the research work in this industry.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

Session 5: 12 presentations- Topic: “Building Materials and Urban Engineering”

Session Chair: Prof. Miguel Ángel Campano Laborda

E0018 Presentation 4 (14:15~14:30)

Volumetric Optimization and Moisture Sensitivity Analysis of Crumb Modified Stone Mastic Asphalt

Hasnain Gardezi, Arshad Hussain

National University of Science and Technology/ University of Wah, Pakistan

Abstract—Pre-mature failure of hot mix asphalt pavements in Pakistan is generally due to intense loadings owing to which frequent maintenance is required. To prevent pre-mature failure and make pavements economically efficient and effective, several alternatives should be designed. In this study, pavement made of Stone Matrix Asphalt (SMA-25) is proposed as an alternative to increase the service life and minimize the damages in terms moisture sensitivity. The study includes the use of Crumb rubber and Munjin fiber as main additives in Bitumen. Study is composed of two parts in first part change in behavior/properties of bitumen was studied by addition of crumb rubber @ 2%, 4%, 6%, 8%, 10% and 12%. In second part, volumetric properties and performance behavior of SMA-25 were studied. It was found that mix showed good behavior at 5.8% bitumen content and 4.8% rubber content. It was observed that volumetric behavior of Crumb modified SMA was totally reversed to that of Conventional SMA. Crumb modified SMA also showed good behavior against moisture sensitivity at optimum rubber content.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

Session 5: 12 presentations- Topic: “Building Materials and Urban Engineering”

Session Chair: Prof. Miguel Ángel Campano Laborda

E0022 A Presentation 5 (14:30~14:45)

Landscape Experience and Format Succession in the Cultural and Creative Park Genre
Renewal of Industrial Heritage– Based on Chinese cases

Huimin Ren and Xinyu Luo

Nanjing University, China

Abstract—Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. A large number of industrial land, which does not assume the goods production function, need to be transformed during the transition period of industrialisation toward post-industrialisation. Cultural and creative park genre industrial heritage renewal is a common pattern in both eastern and western. The landscape experience is composed of the imagination, experience, emotion and consciousness of the viewer. The format provides places and events on the basis of the material space and then creates the symbol and picture. The industrial heritage is created, shared, inherited and constructed by modern people. In such a dynamic renewal process, the landscape experience–format is one of the most important dynamic relationships. This paper chooses the Beijing 798 Art Park, Nanjing Chenguang 1865 Cultural and Creative Park and Taipei Huashan 1914 Cultural and Creative Park as examples to study their history of landscape experience and format succession through empirical study and comparative study. Based on the above analysis, the author argues that the landscape experience and the format succession cannot achieve a stable balance in a dynamic process – that is, there is a certain tension in this relationship. However, this tension can also help to promote the quality of the industrial heritage renewal and create more refined urban space.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

Session 5: 12 presentations- Topic: “Building Materials and Urban Engineering”

Session Chair: Prof. Miguel Ángel Campano Laborda

E0042 Presentation 6 (14:45~15:00)

A Study of Tree Pattern and Tree species of Colonial Grid Pattern City in Tropical Zone Considering Urban Morphology Using Statistical Analysis

Khaing Myint Mo, Mishima Nobuo

Saga University, Japan

Abstract—Since the tropical zone is hotter and humid weather, maintaining the green area and microclimate strategies of surrounding urban areas can improve not only outdoor thermal comfort but also indoor as well. This paper discusses about the tree pattern and tree species of colonial grid pattern city in tropical zone which is aging, but still use as central business district, considering urban morphology with respect to shading since the shading has supreme influence on thermal comfort. The purpose of this research is to investigate the shading condition of existing city pattern. The investigation was carried out using Geographic information system(GIS), 3D modelling program, and statistical analysis. The result of this study will propose tree planning system of old Grid Pattern city to maintain old urban city not to vanish the historical facts and original image and to contribute it to other similar area.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

**Session 5: 12 presentations- Topic: “Building Materials and Urban
Engineering”**

Session Chair: Prof. Miguel Ángel Campano Laborda

E0045 Presentation 7 (15:00~15:15)

Morphological research on Compact University Campus: Taking the case of Dushu Lake
Higher Education Town

Yezi Dai

Soochow University, China

Abstract—As China's future higher education will go towards the direction of industrialization, diversification and openness, and correspondingly, the objectives of university campus space will inevitably point at compactness, intensification and humanity. Taking Suzhou Dushu Lake Higher Education Town for example, the essay explored a morphological pattern of compact university campus which is suitable for the future development of university by analyzing the characteristics of its teaching model, functional features, transportation form and boundary space.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

Session 5: 12 presentations- Topic: “Building Materials and Urban Engineering”

Session Chair: Prof. Miguel Ángel Campano Laborda

E0047 Presentation 8 (15:15~15:30)

An analysis on illumination distribution and residents’ perception in a traditional town for streetlight planning

Raheon Min, Nobuo Mishima, and Takayuki Fuchikami
Saga University, Japan

Abstract—Streetlights are very necessary for security of residents at night and for night townscape also in traditional towns, although they were originally unequipped when the towns were built especially before the middle of the 19th century. and their installations have been not well-considered for traditional values of the towns in Japan. To plan streetlights in a traditional town, fundamental issues and procedures including residents’ perception should be clarified. This research attempts to reveal problems on a traditional area as a fundamental study for installation of streetlights in traditional towns.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

Session 5: 12 presentations- Topic: “Building Materials and Urban Engineering”

Session Chair: Prof. Miguel Ángel Campano Laborda

E0049 Presentation 9 (15:30~15:45)

A study on improvement of views across the sea from a modern remain of fortress in a National Park

Takatoshi Yasuda, Nobuo Mishima, Takayuki Fuchikami
Saga University, Japan

Abstract—In the Meiji era, a fortress for defense against the external threats was built in various parts of Japan. Currently, the fortress is located in a national park, in a place with a good viewing landscape to prevent enemy invading from the sea. However, the national park law is applied to that place, regulation is restrictive and strict concerning the extraction and logging of trees among others. There is, therefore, a place where a good viewing landscape across the sea is not guaranteed. In this research, the purpose is to clarify the viewpoint of modeling landscape, and to understand how to improve the view with minimal environmental impact.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

Session 5: 12 presentations- Topic: “Building Materials and Urban Engineering”

Session Chair: Prof. Miguel Ángel Campano Laborda

E0051 Presentation 10 (15:45~16:00)

Comparing building exteriors design perception regarding the integration in an urban preservation area

Derbel M. Rami, and Prof. Mishima Nobuo
Saga University, Japan

Abstract—The purpose of this paper is to deepen understanding of the variables working in the perception process of a newly integrated building in an urban heritage area. The paper examines user’s perceptions of the newly designed building façades from the angle of insertion in its environment. We tried to understand how physical features impact on perception of building insertion quality.

On that purpose, we conducted a survey on architecture students familiar with the site. The analyses of the research-helped de highlight relevant variable when designing a new building in an urban heritage area.

This article reviews formal and symbolic variables in order to find out the correlation with the evaluative Reponses. We scope our research regarding the insertion of a building in an urban heritage area and we focus in especially with the building exteriors in the mean of producing design recommendation based on aesthetic variables.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

Session 5: 12 presentations- Topic: “Building Materials and Urban Engineering”

Session Chair: Prof. Miguel Ángel Campano Laborda

E0055 A Presentation 11 (16:00~16:15)

Basic Study for Multifamily Housing Development Impact on Urban Sprawl Reduction. Case Study Kigali, Rwanda

Ivan Rwampungu

Saga University, Japan

Abstract—Urban Sprawl is a concept with miscellaneous parts including spreading outward of a city and its suburbs to its peripheries with scattered development of various types of land use resulting in an unpleasant environment on the urban fringe while affecting both the inner city as well as the rural areas. Urban sprawl is becoming an increasingly important problem in many cities especially in developing countries. Researches also proved the sprawl itself is inevitable but also many methods, which may be applied to each city depending mostly on the main causes, have been studied through those researches to mitigate the sprawling. Causes are numerous including rapid urban population growth, lack of urban planning and/or its follow-up, consumer preferences, etc... (Bhatta, B., 2010). Many solutions referring to the causes have been suggested by researchers. This study will provide the overview impact of multi-family housing development on the reduction of urban sprawl in Kigali, Rwanda. It will also generate constraints that should be taken into account for future deep analysis that the author is anxious and concerned to pursue. The City population is increasing day by day and more residential housing units are needed. It is in this regard that the City Council has recently started on thinking solutions to the above-mentioned issue. One of the solutions is the adoption of Multi-family housing development. Within the city, this type of housing is apparently not existing for the moment. This study will use a scorecard derived from “Smart Growth scorecards” to analyze the impact of multifamily-family housing development on each cause of Urban Sprawl in Kigali city. Smart Growth scorecards are basic assessment tools, that have been used in many cities mainly in USA, helping researchers and communities to achieve many things. One of them is to determine whether a development project meets a community’s smart growth criteria for features such as compactness, walkability, and bikeability. Multi-family housing developments can reflect the compactness of an area. The used scorecard was adapted firstly by determining the main causes and consequences of the sprawl. Next was to find what kind of advantages provided by Multi-family housing development to face each and every cause.

Finally, a score relating the level of impact was given to each provided advantage of Multi-family housing. Constraints to the proposed solutions were put in evidence for future and deep analysis.

Afternoon March 12, 2018 (Monday)

Time: 13:30~16:30

Venue: Mir ó meeting room

Session 5: 12 presentations- Topic: “Building Materials and Urban Engineering”

Session Chair: Prof. Miguel Ángel Campano Laborda

E3003 Presentation 12 (16:15~16:30)

Energy forecasting, based on ANN machine learning, for domestic properties in dry hot arid regions: A case study in Baghdad

Marwah M Mohsin, Thomas Beach, and Prof. Alan Kwan
Cardiff University, UK

Abstract—This paper uses MATLAB-Artificial Neural Networks (ANNs) to predict the current and future energy consumption of new-builds in the domestic sector. This research simulates a prototype neighbourhood block, using multiple prototype domestic sectors across Baghdad, to predict the future energy use of urban projects and assess the potential use of renewable sources. This will identify how sustainable solutions, such as solar energy, may impact on urban development compared to the conventional methods currently used. To construct the ANNs, data from one prototype block from six which were assessed was used. Variables that directly or indirectly impact on energy consumption were used. The trained ANN revealed that the use of sustainable solutions, such as PV systems, can save energy in that there was a 33% reduction in energy consumption when comparing conventional and sustainable energy scenarios



Coffee Break

16:00-16:45

Session 6

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon March 12, 2018 (Monday)

Time: 16:15~18:45

Venue: Marina meeting room

Session 6: 10 presentations- Topic: “Energy and Power Engineering”

Session Chair:

A0098-A Presentation 1 (16:15~16:30)

Chemical and Structural Analysis of Sand and their Application for Environmental Remedy
Yehya A. El-Sayed, Dana M. Abouelnasr and Taraneh Taghaddosi
American University of Sharjah, UAE

Abstract—United Arab of Emirates (UAE) is dominated by about 80% of desert covered with sand. This abundance makes sand a potential resource. However, pollutants are present in the atmosphere are expected to be adsorbed on sand particles. Exposure of human and animals to sand may cause adverse health effects. In this work, sand particles will be evaluated for their impact on environment in addition to their application as adsorbents after acid treatment. Structural and chemical analyses were performed on the treated and untreated sand and the results were correlated to the variations in particle size.

The results obtained from SEM imaging and BET surface area analysis showed slight increase in surface area after acid treatment. TGA analysis showed the presence of carbonates on the untreated sand samples which were removed upon acid treatment. EDS analysis confirmed the loss of carbonates in treated sand. ICP analysis, the results showed the presence of heavy metals. For example, lead was present in untreated sand, but was significantly reduced after treatment with acid. The application of acid treated sand for environmental remedy was studied. Adsorption studies were performed on the three particle size fractions. Sand showed the potential for removing toxic metals.

Afternoon March 12, 2018 (Monday)

Time: 16:15~18:45

Venue: Marina meeting room

Session 6: 10 presentations- Topic: “Energy and Power Engineering”

Session Chair:

A0086 Presentation 2 (16:30~16:45)

Increasing hybrid pv/wind/diesel generator power output with increased pv module efficiency.

L O Idoko, O Anaya-Lara and A Attya

University of Strathclyde, UK.

Abstract—This research work focuses on increasing the power output of a hybrid energy system by giving a boost to the energy supplied from the PV module. It embraces the cooling of the PV module using a multi-concept cooling technique. An experiment was set up to reduce the surface temperature of the PV module to 20 °C in order to increase its efficiency and hence power output. The experiment was performed using two 250 watts PV modules, water spraying was carried out on one of the modules which, was also attached with an Aluminium heat sink at the rear, while the other module was mounted without any form of cooling. The modelling of the hybrid energy system was done using MATLAB Simulink. An equation for PV module power output was used with a derating factor of 95% and the result of the experiment shows that power output of 262.4 watts is achievable, and the simulation result shows an increase in the power contributed by the module.

Afternoon March 12, 2018 (Monday)

Time: 16:15~18:45

Venue: Marina meeting room

Session 6: 10 presentations- Topic: “Energy and Power Engineering”

Session Chair:

A0088 Presentation 3 (16:45~17:00)

Risk Assessment of Bulgarian Electricity Network under Natural Disasters

P Zlateva, and **D Velev**

University of National and World Economy, Bulgaria

Abstract—The electricity transmission and distribution networks are heavily affected from natural disasters. Electricity networks can also incur multiple or multi-risks, including their conjoint and cascading effects, or systemic risks. The aim this paper is to propose an approach for risk assessment of Bulgarian electricity transmission and distribution network under natural disasters. The proposed approach for risk assessment is based on guidelines and techniques of risk management standards ISO 31000:2009 and EN 31010:2010. Here, the risk assessment is the overall process of risk identification, risk analysis and risk evaluation. The risk assessment results can support the all key stakeholders to take more informed decision about effective protection of the electricity networks from natural disasters.

Afternoon March 12, 2018 (Monday)

Time: 16:15~18:45

Venue: Marina meeting room

Session 6: 10 presentations- Topic: “Energy and Power Engineering”

Session Chair:

A0093 Presentation 4 (17:00~17:15)

Voltage control ancillary services for low voltage distributed generation

Linus Idoko, Olimpo Anaya-Lara, David Campos-Gaona

Department of Electronic & Electrical Engineering, University of Strathclyde, Glasgow, UK

Abstract—This paper sheds light on the provision of voltage control ancillary services for low voltage distributed generation, DG, the need for the creation of the microgrid ancillary services market, since the ancillary service network operation does not include small size energy generation. The limitations facing the participation of DG in the provision of ancillary services, the basis for the creation of a microgrid ancillary service market, the gap between the large power plants and smaller sources, as well as useful recommendations to help proffer solution to the problem were considered. This work also embraces the types of ancillary services, microgrid, distributed generations, voltage control ancillary services, the various types of voltage control service and their usefulness to power system network. The various techniques for voltage control and the relationship between reactive power and voltage control, power factor and power factor corrections and its useful to power system was also illustrated.

Afternoon March 12, 2018 (Monday)

Time: 16:15~18:45

Venue: Marina meeting room

Session 6: 10 presentations- Topic: “Energy and Power Engineering”

Session Chair:

A0099-A Presentation 5 (17:15~17:30)

Gaseous yields production from CO₂ gasification of the *Miscanthus giganteus* biomass over Ni/Al₂O₃-SiO₂ and Ni/Al₂O₃-SiO₂ with K₂O promoter catalysts

O Tursunov

National University of Science and Technology (MISiS), Russia

Abstract—The kinetics of the *Miscanthus giganteus* biomass by thermogravimetric testes was carried out at the heating rate of 3 K/min⁻¹ from ambient temperature to 950 °C. The tests were performed in high purity CO₂ (99.99%) with a flow rate 200 ml/min and 100 mg of the biomass sample, milled and sieved into particle size below 250 μm. Yields of gasification products such as hydrogen (H₂), carbon monoxide (CO) and methane (CH₄) were calculated based on the kinetic curves formation reactions of these products during catalytic (Ni/Al₂O₃-SiO₂ and Ni/Al₂O₃-SiO₂ with K₂O promoter catalysts) and non-catalytic gasification of the *Miscanthus giganteus* biomass. In addition, carbon conversion degrees are presented. Calculations were made of the kinetic parameters of carbon monoxide and hydrogen formation reaction in the catalytic and non-catalytic CO₂ gasification process. The Ni/Al₂O₃-SiO₂ catalyst along with a high temperature of 950 °C resulted in a higher conversion of *Miscanthus giganteus* biomass into gaseous yield with a greatly increasing of H₂ and CO contents. Moreover, H₂ and CO are the key factors to produce renewable energy and biogases (synthesis gas). The parameters obtained during the experimental examinations enable a tentative assessment of plant biomasses for the process of large-scale gasification in industrial sectors.

Afternoon March 12, 2018 (Monday)

Time: 16:15~18:45

Venue: Marina meeting room

Session 6: 10 presentations- Topic: “Energy and Power Engineering”

Session Chair:

A0075 Presentation 6 (17:30~17:45)

A soft application for surface solar radiation estimation in Algeria

Rahli Hamida Samiha and Benharrats Farah

Center of Space Technology Algeria, Algeria

Abstract—In this article, we have developed an application of four theoretical models that allows to estimate the solar radiation received on the ground for any wilaya of the Algerian territory. The first model makes it possible to estimate the global solar radiation received on the ground. This model is a spectral model for the determination of direct and diffuse irradiance on a horizontal and sloping surface and for a clear sky. The second model is a Bird & Hulstrom time model that estimates solar radiation at ground level for a certain period (Hours, days, months, ... etc.). The third model is the Davies & Hay model, which makes it possible to trace the rates of absorption and diffusion of solar radiation by the various atmospheric constituents as a function of time and make comparisons. The last model is Lacis & Hansen which allows to trace the global radiation for a certain period. These models are based on the determination of the transmission coefficients of the various atmospheric constituents. These coefficients require the availability of current meteorological parameters (relative humidity, ambient temperature, atmospheric pressure, etc.) and geographical parameters of the site (latitude, longitude and altitude). The application developed made it possible to study several models for estimating global solar radiation at a few Algerian sites and to draw a conclusion on the most appropriate models of estimations.

Afternoon March 12, 2018 (Monday)

Time: 16:15~18:45

Venue: Marina meeting room

Session 6: 10 presentations- Topic: “Energy and Power Engineering”

Session Chair:

A0024 Presentation 7 (17:45~18:00)

Engine Performance and Emission study of Waste cooking oil and Sewage sludge derived Biodiesel blend

D Priyadarshi and K K Paul

National Institute of Technology, Rourkela, India

Abstract—Sewage sludge and waste cooking oil based biodiesel (WCOB) recently gaining popularity for a fair amount of lipid content for biodiesel production. In this study, for the first time sewage sludge biodiesel (SSB) based blend was subjected to engine performance analysis. SSB has relatively higher saturated fatty acid content and reduced polyunsaturated fatty acid content. While WCOB has low saturated methyl esters and very high unsaturated methyl ester concentration. Hence, effect of fatty acid structure on performance and emission were also monitored. On the basis of performance WCO30 (30 % v/v WCOB and 70 % v/v diesel blend) found better alternative with low break specific fuel consumption and lesser exhaust gas emission compared to SSB30. However, decent performance was also witnessed for SSB30. It was observed that fatty acid profile has negligible effects on the performance parameters. Whereas, significant variation in NO_x, CO and HC emission were noted with change in individual fatty acid methyl ester contents. Utilising SSB30 and WCO30 reduced the CO emission by 12.82% and 10.39% respectively. Saturated fatty acid methyl ester rich SSB30 resulted 9.09% higher NO_x emission than petroleum diesel. Hydrocarbon emission were increased by the presence of unsaturated fatty acid methyl esters.

Afternoon March 12, 2018 (Monday)

Time: 16:15~18:45

Venue: Marina meeting room

Session 6: 10 presentations- Topic: “Energy and Power Engineering”

Session Chair:

A0027 Presentation 8 (18:00~18:15)

Utilization of kitchen food waste for biodiesel production

S Barik, **K K Paul** and D Priyadarshi

National Institute of Technology, Rourkela, India

Abstract—Food waste has led to handling and disposal problems affecting human health and polluting environment. Land disposal is one of the ways of disposing food waste but it produces harmful leachate when rain water falls on it. Reuse of food waste for biodiesel production is one of the key steps to reduce food waste problem and also meet the energy demand. Food waste in the present study was collected from the kitchen of a hostel of an educational institute located in India. This waste was dried by various drying methods to dewater. Lesser is the moisture content, more will be the lipid extraction and hence increased biodiesel production. Lipids were extracted and fatty acids (caproic acid (6:1), lauric acid (12:0), myristic acid (14:0), palmitic acid (16:0), stearic acid (17:0) and oleic acid (18:0) were identified in gas chromatography-mass spectrometry (GC-MS). These fatty acids identified in lipid indicate the potential of food waste for biodiesel production. Transesterification of lipid was performed to produce biodiesel and concentration of fatty acid methyl ester was determined using gas chromatograph flame ionisation detector (GC-FID). Further, biodiesel properties were compared with various standards.

Afternoon March 12, 2018 (Monday)

Time: 16:15~18:45

Venue: Marina meeting room

Session 6: 10 presentations- Topic: “Energy and Power Engineering”

Session Chair:

A0060 Presentation 9 (18:15~18:30)

A comparison of the energy consumption for CO₂ compression process alternatives

Steven Jackson and Eivind Brodal

UiT Norges arktiske universitet, Norway

Abstract—The efficient transportation of large volumes of CO₂ generally requires pipelines that will operate above the critical pressure of CO₂. Since most capture processes release CO₂ at low pressure, compression of CO₂ from the point of capture to pipeline will generally be required. The compression duty can be achieved using *conventional* multi-stage compressors or using newer shockwave type compressors. Pumping could also be used if CO₂ is condensed below its critical point. This paper presents a comparison the energy consumption associated with these compression process alternatives. The focus of the review is on the clarity of the comparison and the careful optimisation of each of the scheme considered. The main finding is that the performance advantages claimed for improved CO₂ compression process schemes are often optimistic because the based-line scheme compared against is not well optimized.

Afternoon March 12, 2018 (Monday)

Time: 16:15~18:45

Venue: Marina meeting room

Session 6: 10 presentations- Topic: “Energy and Power Engineering”

Session Chair:

A0064 Presentation 10 (18:30~18:45)

Production of value-added chemicals from wheat straw lignin by bio-refinery process

Nasim Ramezani, Robert Jeng, Mohini Sain

University of Toronto, Canada

Abstract—Lignocellulosic-based bio-refineries are essential for a secure energy in future. Lignin degradation is required for carbon recycling and production of renewable chemicals. Lignin due to the high level of color and low biodegradability, is categorized as a serious pollutant particularly in the aquatic ecosystem. In this study, biodegradation of organosolv lignin by a white rot fungi, *Bjerkandera adusta*, was verified. The FTIR spectra of lignin, before and after treatment with fungi displayed modification by changing in the structure of lignin. Some of the functional groups have disappeared and some new bands appeared in the spectra. The SDS-PAGE chromatographs also showed that the fungi protein has a molecular weight of 44 kDa. This molecular weight increased to 46 kDa after the treatment of lignin by fungi. The heavier molecular weight occurred due to the bonding of fungi protein with lignin. The results from surface morphology also showed the attachments of lignin molecules to fungi mycelia. As a result, the extracted lignin after treatment with *B. adusta* showed significant changes in its physical and chemical structure which makes it a noble candidate for carrying out value added products and refinery of lignin waste in pulp and paper industries.

Session 7

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon March 12, 2018 (Monday)

Time: 16:45~19:00

Venue: Mir ó meeting room

Session 7: 9 presentations- Topic: “Environmental Monitoring and Management”

Session Chair: Prof. Norma Patricia Muñoz Sevilla

A0059 Presentation 1 (16:45~17:00)

Evaluation of water quality in mangrove ecosystem for the Beilun Gulf and Zhenzhu Bay: A Complex Approach

Minghui Ou, **Shan Liang**, Qingyu Xiong and Ru Zhang
Chongqing University, Chongqing China

Abstract—Water quality evaluation is vital for water monitoring and management in mangrove ecosystem of Beilun gulf and Zhenzhu bay in Guangxi of china. Over the past few years, with the expansion of urbanization and economic development, the coastal water quality in mangrove ecosystem is becoming worse. This literature applied the Fuzzy C-Means (FCM) and principal component analysis (PCA) techniques to evaluate the water quality in the study area and to evaluate the overall rating of stations with respect to the 14 water quality parameters. The PCA analysis is based on the precise clustering of FCM analysis. More reasonable evaluation of water quality by PCA was obtained. Our numerical analysis has verified the result of the current paper is correct. In addition, those results can provide some selectable methods to improve station number for interrelated management department with the limit funds and resources.

Afternoon March 12, 2018 (Monday)

Time: 16:45~19:00

Venue: Mir ó meeting room

Session 7: 9 presentations- Topic: “Environmental Monitoring and Management”

Session Chair: Prof. Norma Patricia Muñoz Sevilla

A0076 Presentation 2 (17:00~17:15)

Assessment of total mercury content in water of the Balkyldak Lake-reservoir, Pavlodar, Kazakhstan

A V Korobeinyk, V R Yapyiev, S Azat and V J Inglezakis
Nazarbayev University, Astana, Kazakhstan

Abstract—This study aimed at determining the levels of total mercury in water samples collected in the vicinity of the Lake-reservoir Balkyldak in Pavlodar, Kazakhstan. Legacy of the chloralkali process in Pavlodar which involved the mercury cell method while producing a chlorine-free sodium hydroxide leads to serious environmental problems. At the time of the unit continuous operation in between 1971-1993 approximately 1000 metric tons of metallic mercury has been released into the wastewater holding pond at the chemical plant. For many years, mercury collected in the wastewater pond was a subject of the Kazakhstan sharply continental climate fluctuation and overflow to the Balkyldak Lake-reservoir, creating a significant mercury contamination issue for the whole region. Mercury emitted from industrial eluents in environment carries predominantly anthropogenic pollutants. Due to its natural cycle through atmosphere, water and soil in different forms prompts the widespread global mercury pollution. In present investigation, samples collected in a close proximity of the Balkyldak Lake were analyzed in respect to the geological location of collection.

Afternoon March 12, 2018 (Monday)

Time: 16:45~19:00

Venue: Mir ó meeting room

Session 7: 9 presentations- Topic: “Environmental Monitoring and Management”

Session Chair: Prof. Norma Patricia Muñoz Sevilla

A0025 Presentation 3 (17:15~17:30)

Characterization of coke oven wastewater

L Mishra, K K Paul and S Jena

NIT Rourkela, India

Abstract—During manufacture and processing of iron in iron and steel industry various wastewaters are generated, out of which the coke oven wastewater is contemplated to be the most toxic byproduct. Untreated discharge of coke oven wastewater to environment will increase the contamination and may threaten the flora and fauna. Physico-chemical characterization is required to assess the pollution level and to identify the treatment method. In the present research work, coke oven wastewater was collected from iron and steel plant and various physico-chemical characteristics were studied. The study found that concentrations of BOD₅ (73.13 mg/l), COD (540.25 mg/l) and cyanide (27.9 mg/l) exceeded the tolerance limit as per IS: 2490 effluent water standard (inland surface water). Biological treatment may supersede the conventional technologies for safe disposal to inland surface water.

Afternoon March 12, 2018 (Monday)

Time: 16:45~19:00

Venue: Mir ó meeting room

Session 7: 9 presentations- Topic: “Environmental Monitoring and Management”

Session Chair: Prof. Norma Patricia Muñoz Sevilla

A1002 Presentation 4 (17:30~17:45)

Monitoring Lead in Soil Water System Using Complex Permittivity

S Al Martini and J Q Shang

Abu Dhabi University (ADU), UAE

Abstract—The complex permittivity was investigated to detect lead contamination in soil. The system used consists of an Automatic Network Analyzer (ANA), a sample holder, coaxial cables and a personal computer for data processing. Five samples of Halton Till soil were prepared and mixed with five different concentrations of hybrid blends of lead salts (PbSO_4 , PbCl_2 and $\text{Pb}(\text{NO}_3)_2$). The objective was to investigate the capability of complex permittivity to detect lead, when introduced to the soil in hybrid blend salts. Chemical analysis was conducted on the pore water of the six soil samples to investigate lead transport and the potential risk of lead in groundwater sources. The results show that the complex permittivity is sensitive to the change in lead concentration in soil as the real part decreases and the imaginary part increases with the increase of lead concentration. The real part decreased from 23 to 17 when the concentration of the lead increased from 0 to 1800 ppm. The imaginary part increased from 16 to 24 as the lead concentration in soil increased from 0 to 1800 ppm. The chemical analysis of the pore water showed that the electrolytes increased as lead concentrations increased in soil. The results displayed that the complex permittivity could be used as a non-destructive tool to monitor lead contamination in soil.

Afternoon March 12, 2018 (Monday)

Time: 16:45~19:00

Venue: Mir ó meeting room

Session 7: 9 presentations- Topic: “Environmental Monitoring and Management”

Session Chair: Prof. Norma Patricia Muñoz Sevilla

A0095-A Presentation 5 (17:45~18:00)

Identification of Carbon and Nitrogen Hot Spots in Fourleague Bay Along a Salinity and Sediment Gradient

Madeline LeBlanc, Alexandra Christensen, Giancarlo Restreppo, Robert R. Twilley
Louisiana State University

Abstract—Fourleague Bay is a coastal estuary southeast of the Atchafalaya Delta and receives sediment from the Atchafalaya River. As part of one of the few growing deltaic sites in Louisiana, it can be used to better understand the feasibility of mitigation projects for coastal land loss and resource deprivation through analysis of sediment dynamics. Sediment cores of 50 cm were taken from five marsh sites (FLM 1-5) and five bay sites (FLB 1-5) in Fourleague Bay using push corers to minimize sediment compaction. The sites occur along the direction of river discharge, thus forming a salinity and sediment availability gradient. Identifying carbon deposits quantifies organic contribution, which is an indicator of sediment productivity in the area, thus allowing for comparison throughout sites and with other coastal ecosystems. Cores were divided into 2 cm segments and analyzed for total carbon and total nitrogen through elemental combustion, and total phosphorus through atomic absorption to identify regions of greater carbon, nitrogen, and phosphorus accumulation or hot spots. There was a significant difference in total nitrogen in the top 10 cm of sediment between the bay ($M=0.14$, $SD=0.04$) and marsh ($M=0.54$, $SD=0.16$) sites; $t(16.07)=-10.11$, $p<0.001$. A significant difference was also observed in total carbon in the top 10 cm of sediment between bay ($M=1.73$, $SD=0.43$) and marsh ($M=8.80$, $SD=2.44$) sites; $t(15.61)=-11.49$, $p<0.001$. Further analysis using stoichiometric ratios is still in progress to identify clear trends along the gradients. Using accretion rates, carbon storage will also be estimated in marsh and bay sites. Trends will then be analyzed alongside environmental data to assist in the identification of qualities that facilitate hot spots of carbon and nutrient storage in the active coastal delta. Future research will ultimately include a comparison of these variables at Terrebonne Bay, a sediment starved region in coastal Louisiana. It's important to compare these two systems as the differences between them highlight changes that can occur when sediment supply is removed from coastal marshes.

Afternoon March 12, 2018 (Monday)

Time: 16:45~19:00

Venue: Mir ó meeting room

Session 7: 9 presentations- Topic: “Environmental Monitoring and Management”

Session Chair: Prof. Norma Patricia Muñoz Sevilla

A0009 Presentation 6 (18:00~18:15)

Investigating the effects of sea-level rise on morphodynamics in the western Giens tombolo, France

Minh Tuan Vu and Yves Lacroix

University of Toulon, France

Abstract— Rising sea level along with the occurrence of greater and more frequent storms would cause not only coastal flooding, but also beach erosion and shoreline retreat problems. The Almanarre beach along the western Giens tombolo is socio-economically and heavily vulnerable to accelerated sea level rise due to its high touristic value and low-lying topography. Therefore, it is necessary to quantify the impacts of sea level rise (SLR) on the morphodynamics in this area, e.g. to evaluate the relationship between the beach erosion and SLR. Coupled hydrodynamic and sediment transport numerical models are used to investigate the changes in current, wave and sediment dynamics when sea level rises. A total of 16 scenarios with and without SLR are simulated. The effectiveness of the coupled model is assessed by comparison of simulated values with available field measurements. The results presented in this work should be useful in the investigation of other coastal regions.

Afternoon March 12, 2018 (Monday)

Time: 16:45~19:00

Venue: Mir ó meeting room

Session 7: 9 presentations- Topic: “Environmental Monitoring and Management”

Session Chair: Prof. Norma Patricia Muñoz Sevilla

A0054 Presentation 7 (18:15~18:30)

Implication to Environmental Education of Indigenous Knowledge and the Ecosystem of Upland Farmers in Aklan, Philippines

E Arangote

Aklan State University, Philippines

Abstract— This paper defined the association between the indigenous knowledge, cultural practices and the ecosystem its implication to the environmental education to the farmers. Farmers recognize the need for sustainability of the ecosystem they inhabit. The cultural practices of farmers on use of indigenous pest control, use of insect-repellant plants, soil management practices that suppress diseases and harmful pests and conserve soil moisture are deemed to be ecologically-friendly. Indigenous plant materials that were more drought- and pest-resistant were grown. Crop rotation was implemented with various crop seeds to increase their disease resistance. Multi-cropping, planting of perennial crops, categorization of soil and planting of appropriate crops, planting of appropriate and leguminous crops, allotting land as watershed, and preserving traditional palay seed varieties were found to be beneficial in preserving the environment. The study also found that indigenous knowledge about crops are still relevant and useful to the current generation. This ensured the sustainability of our environment and incumbent on policy makers and educators to support and preserve for generations yet to come.

Afternoon March 12, 2018 (Monday)

Time: 16:45~19:00

Venue: Mir ó meeting room

Session 7: 9 presentations- Topic: “Environmental Monitoring and Management”

Session Chair: Prof. Norma Patricia Muñoz Sevilla

A0094 Presentation 8 (18:30~18:45)

Integrating the concept of ecosystem services and values in Land use planning

Mohammad Hossein Mohammadi Ashnani, Afshin Danehkar, Majid Makhdoum, Vahid Majed

University of Tehran, Iran

Abstract—Many high-profile efforts conducted recently have proposed integrating ecosystem service values in the decisions made about land usage; however, there are not many evidences of using such approach in practice. The objective of the present study is to give an overview of the obstacles in the way of using ecosystem service assessment and valuation in managing the environment. In addition, a few solutions to achieve a comprehensive and practical framework are proposed. When it comes to land planning, the results should be comprehensive to facilitate comparison with other alternatives. One approach to this end is to aggregate the results to a manageable set through weighting methods. Here, the way of utilizing weighting method in making decisions about land usage is examined and potential areas of development are proposed. Moreover, the differences in the available patterns of use are examined, the cause and consequences of the differences are discussed, and necessity of the found differences is investigated.

Afternoon March 12, 2018 (Monday)

Time: 16:45~19:00

Venue: Mir ó meeting room

Session 7: 9 presentations- Topic: “Environmental Monitoring and Management”

Session Chair: Prof. Norma Patricia Muñoz Sevilla

A0047 Presentation 9 (18:45~19:00)

Heavy Metal Contamination Assessment in Near Surface Soils: A Case Study from Subarctic Region of Russia

A Masih and A P Sergeev

Ural Federal University, Ekaterinburg, Russia

Abstract—Under the initiative of a routine ecological screening taken by the Russian state territories, soil surface assessments of heavy metals such as Cr, Cu, Ni, Mn, etc. was conducted in a city called Noyabrsk located in a subarctic region of Yamalo-Nenets Autonomous Okrug (YNAO) Russia. During survey a total of 321 soil samples were collected from different parts of the region including residential (237 samples), industrial (80 samples) and from background locations (4 samples) of the city. In order to determine the general ecological conditions of the area chemical analysis was conducted. Geostatistical tools along with other statistical techniques have been adopted to explore, analyze and map the obtained concentrations of the heavy metals. Results drawn have revealed some moderate – high anomalies of As, Cr and oil concentrations in industrial as well as in residential regions that can be a threat to public health. The aim of the paper is to assess the pollution status of urban soil and discuss the soil contamination sources for the future planning and management of Noyabrsk city.

Posters

March 12, 2018 (Monday)

Time: 09:00~12:00

Venue: Marina meeting room

A0056 Presentation 1

Modular Eco -Percolation Tank R & D and Engineering Application

Xiaotong Cui, Zhiqiang Liu, Qiuxiang Huang and Qun Miao

Qing'dao University of Technology, P. R. China.

Abstract—The dispersed sewage in some areas which are far from the city's municipal pipelines does not treated properly. That the effluents are directly discharged without treatment can cause adverse effects on the surrounding environments. In order to treat the dispersed sewage, which has characteristic of high concentration of BOD₅ or NH₃-N, the designers have developed an ecological treatment technology for sewage, which is called Modular Eco-Percolation Tank Process and applied to a highway service area in Shandong Province. The statistics of treated sewage has shown that the Modular Eco-Percolation Tank Process has good applicability for the sewage treatment in the service area. The treated effluents have a stable quality which has reached the water quality standard and can be directly discharged into the environment.

March 12, 2018 (Monday)

Time: 09:00~12:00

Venue: Marina meeting room

A0080 Presentation 2

An Analysis of the Carbon Fixation Change according to the Greenbelt Deregulation Using InVEST Model –In Case of Anyang and Gwacheon City-

Ji Young Choi and Sang Don Lee

Ewha Womans University, South Korea.

Abstract. The greenbelt regions in South Korea are now under the pressure of development as the greenbelt around urban areas is deregulated. Due to the greenbelt deregulation, the environment formerly conserved in the greenbelt is being turned into bare ground, which is reserved for development, or has already been developed. Government deregulated 10% of the greenbelt in Gyeonggi Province in 2015 to solve the housing problems and secure industrial areas. In view of the environmental conservation and development policies, the impact of greenbelt deregulation was analyzed in the present study by comparing the amount of carbon fixation before and after the greenbelt deregulation by using the InVEST model. In Anyang city, the ratio of urbanization was significantly increased for ten years within the temporal scope of the present study and the carbon fixation was decreased by 48485.05 Mg of C. In Gwacheon city, the carbon fixation was decreased by 8492.17 Mg of C in the same period. The result of the present study may provide fundamental data for analyzing the economic value of the greenbelt that may be deregulated in the future and estimating the impact that land development policies may have on the environment and the society.

March 12, 2018 (Monday)

Time: 09:00~12:00

Venue: Marina meeting room

A0090-A Presentation 3

Assessment of biological effects on dissolved inorganic carbon in seawater

Jung-suk Lee, **Byeong-Mo Gim**, Nam-Hyun Kim, Eun-Mi Kwon, Joon-Woo Gil
NeoEnBiz Co., Republic of Korea

Abstract. Increased carbon dioxide (CO₂) concentration in the atmosphere will be broken the balance of the components of carbonate chemistry and acidified the pH of the marine surface water.

Ocean acidification could be induced a significant inhibitory effect on the growth of organisms which is constituted the CaCO₃ as part of their body, such as coral reefs and coccolithophorids. In addition, many studies have being shown that organisms, susceptible to environmental changes, such as sea urchins and fish larvae, might be inhibited by pH changes even though about 0.1 to 0.2. Therefore, as one of the methods for reducing atmospheric CO₂, a method of converting and concentrating CO₂ into bicarbonate ion (HCO_3^-), then discharging it to the ocean has been proposed to block the ocean acidification through the alkalinization of seawater. This study is looking forward to the effect on marine organisms exposed to both CO₂-infused seawater (acidified) and HCO_3^- -enriched seawater (alkalinized) using dissolved magnesium hydroxide. The total dissolved inorganic carbon both of CO₂-infused and HCO_3^- -enriched seawater was measured using TOC analyzer. Also, the effects on marine organisms based on the measured total dissolved inorganic carbon concentrations were investigated through a range of bioassays and literature reviews. The results of this study would be expected that the newly developed method will be an alternative to carbon dioxide underground storage, and also undertaken further studies on various marine populations and marine behavior studies. HCO_3^- .

March 12, 2018 (Monday)

Time: 09:00~12:00

Venue: Marina meeting room

E0021 A Presentation 4

Generation of Random Shear Wave Velocity Profiles using Harmonic Wavelet Transform for Stochastic Seismic Site Response Analysis

Hyung Choon Park

Chungnam National University, Korea

Abstract—Surficial ground motions caused by earthquake are profoundly influenced by a shear wave velocity (V_s) profile of a site. A soil site has always spatial variation of material properties and it is difficult to determine a representative soil profile, which reasonably considers uncertainties caused by lateral variation of soil material profile, from limited number of field tests. The problem in the seismic site response analysis caused by an uncertainty in the representative V_s profile could be overcome by a stochastic analysis. To do a stochastic seismic site response analysis, it is needed to generate the random V_s profiles which are possible in a given site. In this paper, the method based on Harmonic wavelet transform is developed to generate the random V_s profiles. The proposed method consists of three steps. The first step (Fig. 1(a)) is to describe V_s profiles in a magnitude and phase space-wave number domain by harmonic wavelet transform. In the second step (Fig. 1(b)), the standard deviations of magnitude and phase with wave number are evaluated from the space-wave number maps determined in the step 1. The standard deviations of magnitude and phase represent the uncertainty of a magnitude of V_s at a spatial location and the uncertainty of a location occupied by a certain magnitude of V_s . In the final step (Fig. 1(c)), the random V_s profiles are generated using the inverse harmonic wavelet transform and uncertainties obtained in the second step. The generated random V_s profiles are used for stochastic seismic site response analysis using SHAKE and a cumulative distribution function of peak ground acceleration (PGA) is determined (Fig. 2).



Dinner

19:00

One Day Tour in Barcelona

March 13, 2018 (Tuesday)

Barcelona as internationally renowned a tourist destination, with numerous recreational areas, one of the best beaches in the world, mild and warm climate, historical monuments, including eight UNESCO World Heritage Sites, 519 hotels as of March 2016, including 35 five star hotels, and developed tourist infrastructure. With its Rambles, Barcelona is ranked the most popular city to visit in Spain. Below are some places of interest in Barcelona:



The Basílica i Temple Expiatori de la Sagrada Família (Catalan pronunciation: [sə'ɣraðə fə'miliə]; Spanish: Templo Expiatorio de la Sagrada Familia; English: Basilica and Expiatory Church of the Holy Family) is the largest unfinished Roman Catholic church in the world located in Barcelona, designed by Catalan architect Antoni Gaudí (1852–1926). Gaudí's work on the building is part of a UNESCO World Heritage Site, and in November 2010 Pope Benedict XVI consecrated and proclaimed it a minor basilica, as distinct from a cathedral, which must be the seat of a bishop.



Casa Batlló is a renowned building located in the center of Barcelona and is one of Antoni Gaudí's masterpieces. A remodel of a previously built house, it was redesigned in 1904 by Gaudí and has been refurbished several times after that. Gaudí's assistants Domènec Sugrañes i Gras, Josep Canaleta and Joan Rubió also contributed to the renovation project. The local name for the building is Casa dels ossos (House of Bones), as it has a visceral, skeletal organic quality.



Casa Milà, popularly known as La Pedrera or "The stone quarry", a reference to its unconventional rough-hewn appearance, is a modernist building in Barcelona, Catalonia, Spain. It was the last private residence designed by architect Antoni Gaudí and was built between 1906 and 1912.



The Park Güell is a public park system composed of gardens and architectonic elements located on Carmel Hill, in Barcelona, Catalonia (Spain). Carmel Hill belongs to the mountain range of Collserola – the Parc del Carmel is located on the northern face.

The exact tour route will be adjusted according to the situation on Mar. 13, 2018

Conference Venue

HOTEL COLÓN



<http://www.colonhotelbarcelona.com/>

Address: Avenida Catedral, 7 - 08002 Barcelona

Tel: +34 93 3011404

E-mail: info@hotelcolon.es

Looking out the window and seeing the Barcelona Cathedral is a unique privilege.

There are certain pleasures that are only available to those that stay at the Hotel Colón. For example, waking up early in the morning, crossing over to the window, pulling aside the curtains, and seeing the image of the Barcelona Cathedral bathed in the sun's first rays. It's an image that will fill you with energy throughout the whole day!

The majority of the 139 rooms in the hotel offer this privilege, in addition to amenities such as air-conditioning, telephone, LCD television with international channels, high-speed Internet, safety deposit box, a well-stocked mini-bar, and the finishing touches of a 4 star hotel.

If you are traveling for leisure, after a nice shower and a full breakfast, you'll find it convenient to have the main tourist attractions within walking distance. If you are traveling for professional reasons, having two ample lounges at your disposal offers you infinite options for any event, convention, business meeting, or celebration. In both cases, it's good to know that, for lunch or dinner, you can depend on the excellent service at the Cathedral restaurant.

The organizer won't provide accomodation, we suggest you make an early reservation. Thank you!



Feedback Information

(Please fill this form and return it to conference specialist during the conference days.)

Personal Information					
Conference Name and Paper ID					
Full Name					
E-mail Address					
Area of Research					
Affiliation					
Please indicate your overall satisfaction with this conference with “√”					
	Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied
Conference Content					
Presentation and Paper Value					
Registration Process					
Venue					
Food and Beverage					
Are You A Member of HKCBEEES	Yes <input type="checkbox"/> No <input type="checkbox"/> (If “No”, you may apply membership from http://www.cbees.org/list-34-1.html)				
Do You Willing to Receive HKCBEEES Future Conferences Information Via E-mail	Yes <input type="checkbox"/> No <input type="checkbox"/>				
Where did you get the conference information?					
Would you please specify the main reason for attending this conference?					
Did the conference fulfill your reason for attending?	Yes– Absolutely <input type="checkbox"/> Yes- But not to my full extent <input type="checkbox"/> No <input type="checkbox"/> (If “No”, please tell us the main reason)				

2018 HKCBEEES BARCELONA CONFERENCE

<p>Would you please list the top 3 to 5 universities in your city?</p>	
<p>Other Field of Interest</p>	
<p>Any Other Suggestions/Comments</p>	

Thank you for taking time to participate in this conference evaluation. Your comments will enable us to execute future conferences better and tailor them to your needs! More conference information could be found in <http://www.cbees.org/list-15-1.html>