

# 2016 APCBEES DUBAI CONFERENCE ABSTRACT

December 3-5, 2016

Dubai, UAE

Flora Grand Hotel



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# 2016 APCBEES Dubai Conference Introductions

Welcome to CBEES 2016 conferences in Dubai. The objective of the Dubai 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 Architecture, Materials and Construction, Environmental Systems Research and Sustainable Agriculture Technologies.

## 2016 2nd International Conference on Architecture, Materials and Construction (ICAMC 2016)



❄ **Paper publishing and index:** **ICAMC 2016** papers will be published in **International Journal of Structural and Civil Engineering Research (IJSCER, ISSN: 2319-6009)**, which will be included in New Jour (Electronic Journals & Newsletters), Open J-Gate, Index Copernicus International, Indian Science, Research BIB Japan.

❄ **Conference website and email:** <http://www.icamc.org/>; [icamc@cbees.net](mailto:icamc@cbees.net).

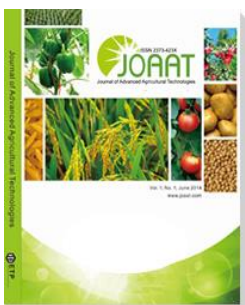
## 2016 3rd International Conference on Environmental Systems Research (ICESR 2016)



❄ **Paper publishing and index:** **ICESR 2016** papers will be published in **International Proceedings of Chemical, Biological and Environmental Engineering (IPCBE)** and all the papers published in IPCBE will be indexed by EBSCO, Chemical Abstracts Services (CAS), CABI, CNKI, WorldCat, Google Scholar, Ulrich's Periodicals Directory, Crossref, and Engineering & Technology Digital Library.

❄ **Conference website and email:** <http://www.icesr.org/>; [icesr@cbees.net](mailto:icesr@cbees.net)

## 2016 2nd International Conference on Sustainable Agriculture Technologies (ICSAT 2016)



❄ **Paper publishing and index:** **ICSAT 2016** papers will be published in **Journal of Advanced Agricultural Technologies (JOAAT, ISSN: 2301-3737)**, and all papers will be included in the Ulrich's Periodicals Directory, Google Scholar, Engineering & Technology Digital Library, Crossref.

❄ **Conference website and email:** <http://www.icsat.org/>; [icsat@cbees.net](mailto:icsat@cbees.net)

# 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 **35** Minutes of Presentation and **10** 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 Oral Presentation will be selected from presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on December 4, 2016.

## Dress code

Please wear formal clothes or national representative of clothing.

# Keynote Speaker Introductions

## Keynote Speaker I



**Prof. Khaled M. Bali**

University of California, San Diego, USA

Prof. K. M. Bali is an Irrigation/Water Management Advisor and County Director at the University of California Desert Research and Extension Center in Holtville, California. He holds a Ph.D. Degree (1992) in Soil Science (soil physics) and MS Degree (1987) in Water Science (Irrigation and Drainage) from the University of California at Davis. He holds a Bachelor of Science Degree (1984) in soils and irrigation from the University of Jordan, Amman.

His main fields of scientific interest include water resources and management, water quality, irrigation systems, automation of surface irrigation, evapotranspiration, salinity, water quality, and reuse of wastewater for irrigation.

Dr. Bali a member of many professional societies as American Geophysical Union and United States Committee on Irrigation and Drainage. He is a U.S. Fulbright Scholar and served on a number of National and International Scientific Committees.

Topic: “Tools for Improved Management of Surface Irrigation”

**Khaled M. Bali**

Abstract: Surface or flood irrigation systems such as furrow, basin, or border irrigation are the primary methods of irrigation for alfalfa and field crops in California. Surface irrigation uses the soil surface to flow water from the upper end of the field to the lower end. The majority of water losses through these systems are either by surface runoff or deep percolation or a combination of both. Improvements in surface irrigation efficiency can be achieved by minimizing water losses associated with surface irrigation systems. We discuss here some of the efficiency measures that are commonly used to evaluate surface irrigation systems and traditional and new methods for improving irrigation efficiency.



## Keynote Speaker II



**Assoc. Prof. Munjed Maraqa**

UAE University, United Arab Emirates

Munjed Maraqa is an associate professor at the UAE University. He holds B.Sc. and M.Sc. degrees in Civil Engineering from the University of Jordan, and a Ph.D. in Environmental Engineering from Michigan State University. His research covers a broad range of issues related to modeling environmental systems, water quality, waste management, traffic safety, and enhancement of engineering education. He worked on more than 30 funded research projects. His scholarly work combines both basic and applied research. His applied research was mainly directed towards addressing issues related to the UAE. The outcome of his research projects are more than 70 publications, some of them appear in journals such as Contaminant Hydrology, Environmental Earth Sciences, Coastal Research, Environmental Health Research, Transportation Research, Accident Analysis and Prevention, Environmental Engineering-ASCE, and Transport in Porous Media. Maraqa has been involved in addressing several environmental issues related to the UAE through several consultancy projects carried out to local government organizations. From 2008 to 2012, he acted as an advisor to Al Ain Municipality on the development of an EHS management system for the Building and Construction Sector in Abu Dhabi Emirate. In 2009, he received an award in recognition of promoting and supporting research activities within the UAE University and the country. Maraqa is a co-author of the book “Man and the Environment” in Arabic. In 2015, he received the College of Engineering Award for Excellence in Teaching and the prestigious Khalifa Award for Education. He is a member of several scientific and professional organizations.

Topic: “Limitations of Single-Rate Mass Transfer Approaches in Modeling Contaminant Mobility in Porous Media”

**Munjed A. Maraqa**

Abstract: The speech will focus on the limitations of using single rate mass transfer approaches in modeling transport of contaminants in porous media. The speech will also highlight research opportunities related to this area.

Single-rate transport models are commonly used for interpreting sorption mass transfer in porous media, often with the intention of approximating the mass transfer process. Among the most commonly used single-rate models are the first-order and the radial diffusion models. However, there is enough evidence nowadays to suggest that natural soils are heterogeneous and that the sorption mass transfer process is influenced by multiple mass transfer rates. Consequently, the use of single rate models to describe multirate behavior has resulted in several shortcomings. First, single-rate models could not adequately describe the extensive, low-concentration elution tailing that is generally observed in long-term leaching experiments. Second, the sorption rate coefficient in single rate models has been found to depend on the employed experimental conditions. Third, the sorption equilibrium parameter has been found to be under-estimated when it is determined by a curve fitting procedure using a single-rate approach. In conclusion, one has to be cautious in using single-rate models to describe sorption nonequilibrium behavior during contaminant mobility in porous media. Future research in this area should focus on addressing the following questions: Will single rate models suffer similar shortcomings when applied to systems with physical nonequilibrium? What is the effect of using single rate models on the predicted decay parameters? Will the same conclusions be reached regardless of the type of the multirate model used? Which multirate model best describes the mass transfer process?

### Keynote Speaker III



**Prof. Nuno Dinis Cortiços**  
Universidade de Lisboa, Portugal

Nuno Dinis Cortiços, was born in Lisbon, Portugal, on the 9th of January of 1974. He graduated as an architect in Faculdade de Arquitectura, from the Universidade Técnica de Lisboa, in 1999, with 16 grade points (0-20 points). He was invited to exhibit last academics work in the Ordem dos Arquitectos Portugueses (Portuguese Architects Council). He accomplished a PhD in construction technologies with 16 grade points (0-20 points), entitled Survey on construction performance of Universities built in the 80's and 90's - Identification and Standardization of Construction Defects. As a professional he worked at Alberto Souza Oliveira, Lda, Júlio Saint-Maurice, Lda (as an architect, in both architecture studios) and at PC Stevens Consulting, Ltd (as a technical consultant, in fiscalization in the construction site). Was, also, the founder of the Atelier das Picoas, Lda (an architecture atelier), in 2006, and Reformact, Lda (a construction company specialized in remodeling), in the 2012. He was visiting professor at Faculdade de Arquitectura, from the Universidade Técnica de Lisboa, from 2007 to 2013. In 2013 he began his academic career as an assistant professor, in this same University, where he remains to this day, lecturing subjects as diverse as materials, constructions technologies, constructions defects, constructions performance, rehabilitation and environmental comfort, by way of example. Since February 23, accumulates the teaching duties with the vice-presidency, being responsible for the financial area. He is considered an expert on constructions management issues as, processes development and functionality in portuguese school buildings. In this condition he was, several times, consulted by the media, such as: daily newspaper "Diário de Notícias" (Portugal), national television station "TV2" (Portugal), national public radio station "RDP 1 – Rádio Difusão Portuguesa" and others. He, recently, published an article titled "Construction's patterns with impact on the final result - 4 buildings of higher education in Lisbon built in the 1980s and 1990s" (Istambul, Turkey: CONSTENG '15 / II. Civil and Construction Engineering and Technologies Conference organized by DAKAM, Eastern Mediterranean Academic Research Center, 2015, ISBN: 978-605-9207-18-8). Prof. Cortiços is an active researcher in Centro de Investigação em Arquitetura, Urbanismo e Design at the Faculdade de Arquitetura, from the Universidade de Lisboa, which was founded in 2006 and awarded the "A" by the Fundação para a Ciência e Tecnologia, in 2007.

Topic: “One building, two maintenance approaches: Palácio Nereu Ramos (Congresso Nacional), Brasília”

**Nuno Dinis Cortiços**

Abstract: Palácio Nereu Ramos (Congresso Nacional), Brasília, inaugurated in 1960, was designed by Oscar Niemeyer to accommodate the two chambers of Brazil's Government: Senado Federal (upper house) and Câmara dos Deputados (lower house), Executive and Legislative Powers, respectively. Before, each one had its own headquarter, in Rio de Janeiro, two separated buildings with independent support entities. The importance of the research relies on reconnaissance of this modern architectural legacy: in 1987, was declared as World Heritage Site by Unesco World United Nations Educational, Scientific and Cultural Organization (UNESCO). The aggregation idea was symbolic, but was expected to result in the support bodies fusion, in special, the ones responsible for the maintenance and preservation, today known as: Secretaria de Infraestrutura do Senado Federal (SISF) and Departamento de Material e Patrimônio (DEMAP) da Câmara dos Deputados. But didn't occurred, then, and still does not. In statu quo ante: one building with two different bodies, to achieve equal goals: the ideal architectural condition, in its class. The mentioned entities are overseen by Instituto do Patrimônio Histórico e Artístico Nacional, Distrito Federal (IPHAN, DF), which is under National IPHAN. Above those, Ministério da Cultura do Brasil (Brazil's Culture Cabinet). IPHAN, DF, promotes conservation and preservation guidelines, monitors the building condition and oversees the construction interventions, during worksite development. Accordingly with the policies defined by Brazil's Government taking into account the UNESCO directives (in Brasília there are 112.25 km<sup>2</sup> of classified area, including Planalto, and alongside, constructed composition ensemble-mostly State buildings). The bodies for maintenance and preservation have similar tasks for different parts and they assume diverse technical positions to accomplish their objectives. Although with similar management frame, financial resources, organizational and coordination structures, when necessities are understood, in common and shared areas, divergent paths are taken. As, e. g.: in particular, evaluation and methodology, when establishing priorities; in general, tasks and works preparation, insuring the correct technical supervision, to achieve the proper rehabilitation/retrofit in construction condition and building modernization. Nowadays, the three entities (SISF, DEMAP and IPHAN, DF), directly related with the building, maintenance and preservation, and able to dictate the desirable technical condition: failed. The Institutions diverge on strategy, coordination policies and work definition. Specially, in common areas (external and internal - shared). Actions assumed to fulfill the contemporaneity requirements, by Brazil's Government Representatives, through each procedures manuals, produced separately, by Departamento and Secretaria, have a direct impact on architecture. Indoors spaces, given to each House, have a distinct treatment, when it comes to achieve established goals: approaches that corrupt the original floor plan. In the exterior, same interventions have been done, that lightly changed the original composition perception.

## Brief Schedule for Conferences

<b>Day 1</b>	<p><b>December 3, 2016 (Saturday) Venue: Al Umra Hall</b>          Arrival Registration (10:30~17:00)          (Committee Meeting 14:00~16:00)</p>
<b>Day 2</b>	<p><b>December 4, 2016 (Sunday) 9:00~18:40</b>  <b>Venue: Flora Grand Hall</b>          Arrival Registration, Keynote Speech, and Conference Presentation</p>
	<p><b>Morning Conferences</b></p>
	<p><b>Venue: Flora Grand Hall</b>          Opening Remarks 9:00~9:10          (Assoc. Prof. Munjed Maraqa, UAE University, United Arab Emirates)          Keynote Speech I 9:10~9:55          Topic: “Tools for Improved Management of Surface Irrigation”          (Prof. Khaled M. Bali, University of California, San Diego, USA)          Coffee Break &amp; Photo Taking 9:55~10:20          Keynote Speech II 10:20~11:05          Topic: “Limitations of Single-Rate Mass Transfer Approaches in Modeling          Contaminant Mobility in Porous Media”          (Assoc. Prof. Munjed Maraqa, UAE University, United Arab Emirates)          Keynote Speech III 11:05~11:50          Topic: “One Building, Two Maintenance Approaches: Palácio Nereu Ramos          (Congresso Nacional), Brasília”          (Prof. Nuno Dinis Cortiços, Universidade de Lisboa, Portugal)</p>
	<p><b>Lunch: 12:00~13:00</b>  <b>Venue: Hotel Restaurant</b></p>
	<p><b>Afternoon Conferences</b></p>
	<p><b>Session-1: 13:00~14:45</b>  <b>Venue: Flora Grand Hall</b>          7 presentations-Topic: Construction and Material engineering</p>
	<p><b>Session-2: 14:45~16:30</b>  <b>Venue: Flora Grand Hall</b>          7 presentations-Topic: Construction and Material engineering</p>
	<p>Coffee Break 16:30~16:55</p>
	<p><b>Session-3: 16:55~18:40</b>  <b>Venue: Flora Grand Hall</b>          7 presentations-Topic: Food, Biological and Environmental Sciences</p>
	<p><b>Dinner: 18:50</b>  <b>Venue: Hotel Restaurant</b></p>

**Tips:** Please arrive at conference room 10 minutes before the session beginning to upload PPT into the conference laptop.

# Detailed Schedule for Conferences

**December 3, 2016 (Saturday)**

**Venue: Al Umra Hall**

<b>10:30~17:00</b>	<b>Arrival and Registration</b> <b>(Committee Meeting: 14:00~16:00)</b>
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- 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 Oral Presentation will be selected from each oral presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on Dec. 4, 2016.

**December 4, 2016 (Sunday)**

**Venue: Flora Grand Hall**

<b>9:00~9:10</b>		<b>Opening Remarks</b> Assoc. Prof. Munjed Maraqa UAE University, United Arab Emirates
<b>9:10~9:55</b>		<b>Keynote Speech I</b> Prof. Khaled M. Bali University of California, San Diego, USA Topic: "Tools for Improved Management of Surface Irrigation"
<b>9:55~10:20</b>	<b>Coffee Break &amp; Photo Taking</b>	
<b>10:20~11:05</b>		<b>Keynote Speech II</b> Assoc. Prof. Munjed Maraqa UAE University, United Arab Emirates Topic: "Limitations of Single-Rate Mass Transfer Approaches in Modeling Contaminant Mobility in Porous Media"
<b>11:05~11:50</b>		<b>Keynote Speech III</b> Prof. Nuno Dinis Corti ços Universidade de Lisben, Portugal Topic: "One building, two maintenance approaches: Pal ácio Nereu Ramos (Congresso Nacional), Bras ília"
<b>12:00~13:00</b>	<b>Lunch</b> Venue: Hotel Restaurant	

## Let's move to the Sessions!

# Session 1

**Tips:** The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 13:00~14:45**

**Venue: Flora Grand Hall**

**Session 1: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Assoc. Prof. Munjed Maraqa**

L0008 Presentation 1 (13:00~13:15)

Detailed Examination of Myslinka Stone Railway Bridge

**Sarka Nenadalova, Tomas Bittner, Milan Rydval and Milan Hrabanek**

Klokner Institute CTU, Czech Republic

*Abstract*—A detailed examination of the stone railway bridge Myslinka, built approximately in 1878, was performed. The Bridge is on the railway line Plzeň – Tachov, the Czech Republic. The bridge is created by two parallel vaulted tubes made from sandstone where a frequented road goes through under one of them and Myslinsky brook flows under the second one. In 2006 a reinforced concrete frame structure was inbuilt to the bridge portal. Lengths of the both tubes are about 45.5 m, widths are about 5.7 m, height of the tube above the road is about 6.0 m and the one above the brook is 7.8 m. The arch is made as an annular vault. On the basis of the diagnostic works the structure is evaluated from the point of view of moisture, amount of water soluble salts, strengths of sandstone. There is also a visual observation of a condition of the structure itself performed. There are also recommendations for a consequent procedure in case of a revitalization stated in the end of the paper.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 13:00~14:45**

**Venue: Flora Grand Hall**

**Session 1: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Assoc. Prof. Munjed Maraqa**

L0014 Presentation 2 (13:15~13:30)

A Research of Key Indicators of Highway Construction for Public Supervision based on Cloud Model

**Wei Sun**, Wei Xiong, Xiangyang Xie, Chao Li, Tian Xie and Wei Lu

Hefei University of Technology, China

*Abstract*—In order to solve the problem that the number of detecting indicators of constructing highway is too great, and key indicators are not clear, questionnaire survey is used to obtain the raw data of the quantitative evaluation of detection indicators by expert. After analyzing the reliability credibility of questionnaire survey result, an indicator feature cloud model that used to characterize the quantitative evaluation with feature of randomness, fuzziness and subjectivity, and a standard qualitative evaluation cloud model that used to qualitatively characterize an indicator is critical or not are presented. By comparing the approximation of indicator feature cloud model and standard qualitative evaluation cloud model, the conversion model between raw data and qualitative result is deduced to extract the key indicators that can reflect the safety, durability and reliability of highway project. The research is also helpful for reduce the anthropogenic factors, such as randomness, fuzziness and subjectivity in evaluation.



**Afternoon, December 4, 2016 (Sunday)**

**Time: 13:00~14:45**

**Venue: Flora Grand Hall**

**Session 1: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Assoc. Prof. Munjed Maraqa**

L0021 Presentation 3 (13:30~13:45)

Heavy Equipment Demand Prediction with Support Vector Machine Regression Towards a Strategic Equipment Management

**Amadeusz Kargul**, Amelia Glaese and Willibald A. Günthner

Technical University Munich, Institute for Materials Handling, Material Flow, Logistics, Germany

*Abstract*—Equipment owner have realized that professionalized equipment management offers cost advantages. The procurement strategy as one of the most important tasks for equipment managers changed from simply buying heavy equipment to make use of different options regarding leases and sales. Nevertheless, a strategic and cost efficient heavy equipment procurement is only one import step towards a strategic equipment management. As a next step there is need to improve the utilization of heavy equipment regarding equipment logistics, maintenance and repair to increase return on investment over the equipment’s lifecycle. Therefore, the paper presents an approach to predict a reliable heavy equipment demand by computing the monthly utilization rate with support vector machines regression. In total, sample data of over 111 construction projects between 2013 and 2015 is computed. A better knowledge of the upcoming equipment demand for future projects allows to progress from an ad-hoc equipment management to a data-driven strategic equipment management. Benefits of the presented approach are discussed in order to increase return of investment by renting out unused equipment or in order to balance out the heavy equipment fleet by reducing respectively buying new equipment. In this research paper we describe the process of designing the pulse detecting systems and selecting the suitable sensor for the system design.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 13:00~14:45**

**Venue: Flora Grand Hall**

**Session 1: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Assoc. Prof. Munjed Maraqa**

L0026 Presentation 4 (13:45~14:00)

Electrical Current Flow and Cement Hydration: Implications on Cement-Based Microstructure

**Agus Susanto**, Gao Peng, Dessi Koleva and Klaas van Breugel

Faculty of Civil Engineering and Geosciences, Delft University of Technology, Section of Materials and Environment, Stevinweg 1, 2628 CN Delft, Netherlands

*Abstract*—Stray current is an electrical current “leakage” from metal conductors and electrical installations. When it flows through cement-based materials, electrical energy is converted to thermal energy that causes increasing temperature due to Joule heating phenomena. The aim of this paper is to shed light on the influence of electrical current flow on cement hydration, thermal properties and pore structure changes of cement-based materials. Calorimetry tests show that degree of cement hydration increases as a results of temperature increase due to electrical current flow through cement-based materials. To evaluate the influence of electrical current on the thermal properties of cement paste, the specific heat of cement paste was calculated based on the degree of cement hydration and temperature development during the hydration process. MIP tests were carried out to quantify changes in the pore structure due to electrical current flow. The results show that if no other factors are present, leaching is avoided and for relatively early cement hydration age, the electrical current flow accelerates cement hydration, leading to an initial decrease in porosity of the cement paste.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 13:00~14:45**

**Venue: Flora Grand Hall**

**Session 1: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Assoc. Prof. Munjed Maraqa**

L0027 Presentation 5 (14:00~14:15)

Effect of Stray Current on Corrosion Behavior of Reinforcing Steel: Importance of Cell Geometry and Orientation With Respect To the Electrical Field

**Zhipei Chen** and Dessi Koleva

Faculty of Civil Engineering and Geoscience, Delft University of Technology, Material and Environment Section, Stevinweg 1, 2628 CN Delft, The Netherlands

*Abstract*—Stray current circulating in reinforced concrete structures may initiate corrosion or accelerate existing corrosion processes on embedded reinforcement. In some cases, the range of dangerous or unwanted interactions of stray currents under favorable conditions (environment), is much broader than is generally recognized. All these show that investigation of the effects of stray current on the corrosion behavior of steel is necessary and significant. In this work, the tested level of stray current was 3 mA/cm<sup>2</sup>, and the type of samples were reinforced mortar cubes (40 mm×40 mm×40 mm). To investigate the corrosion behavior of embedded steel undergoing stray current, the evaluation indicators adopted were OCP (Open Circuit Potential), Polarization resistance ( $R_p$ ) derived through LPR (Linear Polarisation Resistance), and electrochemical parameters recorded through EIS (Electrochemical Impedance Spectroscopy) and PDP (Potentio-Dynamic Polarization). The recorded electrochemical response aimed to elucidate the importance of cell geometry i.e. the effect of steel orientation with respect to the electrical field (placed parallel or orthogonal to the current direction). It was found that the geometrical position of the steel bar is of significant importance and determines the level of stray current-induced degradation.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 13:00~14:45**

**Venue: Flora Grand Hall**

**Session 1: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Assoc. Prof. Munjed Maraqa**

L0011 Presentation 6 (14:15~14:30)

Influence of Texture Depth and Layer Thickness of Crater-like Textured ZnO on the Efficiency of Thin Film Solar Cell

**Rummana Rahman**, Tamanna Motahar and Tahsin Rahman

North South University, Bangladesh

*Abstract*—The application of zinc oxide (ZnO) thin film as transparent conductive oxide (TCO) layer in thin film solar cells (TFSC) has high potential because of the various advantages of ZnO over other TCO materials. In this paper, the influence of the crater-like texture of ZnO layer on the optical properties and performance of the solar cell is investigated. Using the commercial simulation software RSoft Fullwave and RSoft Solar Cell Utility, we designed solar cells with crater-like textured ZnO layers as TCO and varied the crater depth along with overall ZnO thickness. It was found that, the crater-like textured ZnO layer provides better light trapping with increased crater depth as well as higher conversion efficiency near the IR region in the solar spectrum.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 13:00~14:45**

**Venue: Flora Grand Hall**

**Session 1: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Assoc. Prof. Munjed Maraqa**

L0028 Presentation 7 (14:30~14:45)

Corrosion Behavior of Low-Carbon Steel in Model Solutions, Containing Empty Pbd-Peo Vesicles

**Hitham Mahmoud Amin Hassan** and Dessi Koleva

TU Delft, Netherlands

*Abstract*—The present work reports the corrosion resistance of low-carbon steel in alkaline model solutions (saturated  $\text{Ca}(\text{OH})_2$ ) in the presence of empty vesicles of poly (butadiene-b-ethylene oxide) (PBd-PEO). The main objective was to define the electrochemical response of the steel electrodes in chloride free and chloride containing solutions. Electrochemical Impedance Spectroscopy (EIS), Linear Polarization Resistance (LPR) and Cyclic voltammetry (CV) were performed at certain time intervals, whereas open circuit potential (OCP) was monitored continuously throughout the test. The motivation of this research was to evaluate the effect of PBd-PEO vesicles on the electrochemical response of steel in model solutions, prior to “loading” them with active substance and employing them as an additive to reinforced concrete. In other words, “empty” vesicles were subject to investigation in this work, where the obtained results serve as a control case for on-going work on self-healing in reinforced cement-based materials.

The study reveals that, the addition of 0.025 wt.% empty PBd-PEO vesicles has a positive effect on the protective properties of the passive film, formed on the treated steel surface in solutions with and without chloride. This enhancement in the surface film properties was assigned to the variation in the chemical composition and altered redox processes on the steel surface when PBd-PEO vesicles were present.

# Session 2

**Tips:** The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 14:45~16:30**

**Venue: Flora Grand Hall**

**Session 2: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Prof. Nuno Dinis Corti ços**

L0009 Presentation 1 (14:45~15:00)

High-Performance Textile Concrete Structural Element Loaded By Bending Moment

**Tomas Bittner**, Petr Bouska, Sarka Nenadalova and Milan Rydval

Klokner Institute CTU, Czech Republic

*Abstract*—Experiments of thin elements made from ultra-high performance concrete reinforced by a textile glass mat were carried out under laboratory conditions. The concrete had a fine-grained matrix according to a recipe. The recipe has been designed at the Klokner Institute. Thin-walled test specimens were subjected to a short-term load as well as to a long-term load. The short-term loading was performed in the testing machine and the long-term one under permanent load. The 2D glass textile reinforcement was protected by an alkali-resistant treatment and was loaded in four-point bending test. Many accompanying tests determined the material properties of the matrix and of the glass reinforcements. A comparison was made between the results of the experimental investigation and the results of numerical analysis.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 14:45~16:30**

**Venue: Flora Grand Hall**

**Session 2: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Prof. Nuno Dinis Corti ços**

L0010 Presentation 2 (15:00~15:15)

Heat Loss Reduction Analysis of 2-Layer ETFE Foil by Dymola Simulation

**Mohd Azfar Nazim**, Sharmin Abdullah and Mirza Mohammad Maqbule Elahi

North South University (NSU), Bangladesh

*Abstract*—ETFE (Ethylene Tetra Fluoro Ethylene) is a light weight foil with architectural beauty which is commonly used as building material. However to improve the poor heat insulation, deposition of multiple layers of low-emissive coating is necessary. During winter large amount of heat can be trapped since the property of low-e coating includes reduction of radiative part of heat loss with the increase in infrared reflection and decrease in infrared emission. Thus the reflective property stops emission of radiant heat outside, keeping the produced radiant heat inside. The simulation of 2 layer ETFE pillows is performed using Dymola Simulation software with and without low-e coating. The simulation showed a significant reduction in U value from 2.6 to 1.7.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 14:45~16:30**

**Venue: Flora Grand Hall**

**Session 2: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Prof. Nuno Dinis Corti ços**

L0020 Presentation 3 (15:15~15: 30)

Mechanical Properties of Functionally Doble Layered Thin Slabs

**Milan Rydval**, David Citek, Tomas Bittner, Sarka Nenadalova and Jiří Kolísko

Klokner Institute CTU, Czech Republic

*Abstract*—The contribution deals with mechanical properties of functionally double layered thin slabs (totally thickness 25 mm) made from two cement-based composite materials with different properties and rupture behavior. The load bearing part of the slab was done from Ultra-High Performance Steel Fibere Reinforcement Concrete (here and after noted as UHPSFRC) with short brass coated steel fibres BASF MASTERFIBER® 482 0.2/13. The second layer of fine-grained Engineered cementitious composite (here and after noted as ECC) material with thickness about 10 mm reinforced by short PVA fibres Kuraray REC15/8 was spread on so prepared samples after 15 minutes. Total thickness of slabs was 25 mm. The performed functionally layered thin slabs were tested in a four-point bending test. The layered samples take advantage of the potential of the hi-tech UHPSFRC material and properties of the ECC matrix that thanks to the reinforcement by PVA fibres prevents a developing and spreading of micro-cracks and a getting out of steel fibres on to the surface of a structure.



**Afternoon, December 4, 2016 (Sunday)**

**Time: 14:45~16:30**

**Venue: Flora Grand Hall**

**Session 2: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Prof. Nuno Dinis Corti ços**

L0022 Presentation 4 (15:30~15:45)

Produce Foam Glass Crystalline Insulating Material Based on Anthropogenic Raw Materials in Kazakhstan According China’S Experience

**Yuliya Kim**, Zhmagul Nuguzhinov and Cheng Sun

Harbin Institute of Technology, China

*Abstract*—In cold regions of Kazakhstan and China, the use of thermal insulation materials in the designing of buildings is one of the most important issues. In China is a quality use of environmentally friendly materials. China has experience of using green materials are in the processing of secondary materials blast furnace slag, gypsum, slag, ash and the steel slag, ash and other low environmental load. To improve the properties of chemical building materials used to optimize production, the introduction of new technologies. The total CO2 emissions could reduce by 30% to 40%. This study proposes a method for improving the thermal insulation foam glass-material and provides a method a considerable reduction of energy consumption and hence the cost can be achieved using a two-stage low-temperature glass synthesis technology and process waste granulates using as a main component. The case study shows, the resulting foam glass crystalline insulating material is environmentally friendly because it complements the original components are non-toxic and non-corrosive substances; the resulting material has a high chemical stability and biological refractory. The proposed method, by the core process of architectural design, uses an approach focused on efficiency, to find solutions that meet the requirements. The use of foamed glass solves practical optimization problems in the construction.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 14:45~16:30**

**Venue: Flora Grand Hall**

**Session 2: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Prof. Nuno Dinis Corti ços**

L0029 Presentation 5(15:45~16:00)

Polarization Behaviour of Silver in Model Solutions

**Farhad Pargar** and Dessi Koleva

Delft University of Technology, Netherlands

*Abstract*—When studying chloride-induced corrosion in reinforced concrete structures, essential information of interest is the concentration of chloride ions in the system. The absence of a reliable method for monitoring the free chloride ions justifies the attempts towards establishing a feasible practice in the application of the already known Ag/AgCl electrode, as a chloride sensor.

To identify the governing mechanism and cognition of causes for instability of the chloride sensors in highly alkaline medium (as concrete), it is necessary to study the polarization behaviour of silver in different aqueous solutions resembling the concrete environment.

Following expectations and well-known fundamental background, the results from this work confirm that in the presence of chloride ions, silver chloride is the predominant reaction product, forming on the silver surface. Whereas, in the absence of chloride ions and/or presence of interfering ions, such as hydroxide ions, the oxidation process of AgCl formation is significantly dependent on the chloride concentration in the medium.

Therefore, the formation of a stable AgCl layer on a Ag substrate (as would be required for sensors application for example) is a function of the presence and amount of interfering ions, together with the chloride concentration in the medium.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 14:45~16:30**

**Venue: Flora Grand Hall**

**Session 2: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Prof. Nuno Dinis Corti ços**

R2003 Presentation 6 (16:00~16:15)

Changes of Groundwater Level and Water Budget after Damming at Large Barrage

**Gyoo-Bum Kim**

Daejeon University, South Korea

*Abstract*—The Four Major Rivers Restoration Project (4MRRP) was launched by the South Korean Government in 2008 with a vision of “Reviving the Rivers of a New Korea”. The main element of this project was a barrage construction. 16 large barrages were planned and constructed in order to store water and control flooding along the four main rivers, the Han, Nakdong, Geum, and Yeongsan rivers. A barrage construction with a damming can change the interaction process between groundwater and river. This change brings a change of groundwater recharge rate in the riverside plain and water budget, including a baseflow. The height of the Gangjeong-Koryeong Barrage is approximately 11.5 m, the length of the barrage crest is about 935.5 m, and the total capacity of the surface water in the barrage reservoir is about 92.3 million m<sup>3</sup>. The average river water level before barrage construction was approximately 15.8 a.m.s.l., but the water level is now controlled at 19.2 a.m.s.l. by the water gate of the barrage. Groundwater levels are measured at two wells, GJM-13 and GJM-14, for two periods of pre- and post-damming in the riverside. The average water level at GJM-13 before a barrage construction is about 16.2 a.m.s.l., while it becomes 18.9 a.m.s.l. after that. On the other hand, GJM-14 has 16.9 a.m.s.l. and 18.0 a.m.s.l., respectively. The rising heights are 2.7 m for GJM-13 and 1.1 m for GJM-14. The pattern of groundwater level time series is changed from peak type, sensitive to rainfall, to flat type, non-sensitive to rainfall, due to the effect of river water level management by a water gate of the barrage. This produces a change of groundwater recharge rate in the riverside from 11.0% for pre-damming to 4.3% of rainfall for post-damming, which is estimated by using a method of h-WTF. Recharge rate reduction produces an increase of direct surface flow into the river during rainfall because the rising groundwater level can make the upper sediment have high moisture content. The interaction between riverside aquifer and river was active due to water level fluctuation before a barrage construction, but now it becomes not active and the baseflow is also reduced.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 14:45~16:30**

**Venue: Flora Grand Hall**

**Session 2: 7 presentations-Topic: “Construction and Material engineering”**

**Session Chair: Prof. Nuno Dinis Corti ços**

L3001 Presentation 7(16:15~16:30)

The Solid-Phase Method Synthetics and Study the Thermoelectric Properties Analyze of  $\text{Ca}_3\text{CO}_2\text{O}_6$

**Jiaolian Luo**, Weifu Cen, Daji Tao

Guizhou Minzu University. China

*Abstract*—Used  $\text{CaCO}_3$  and  $\text{CO}_2\text{O}_3$  as raw materials of the Experiment, which successfully synthesized  $\text{Ca}_3\text{CO}_2\text{O}_6$  thermoelectric material by solid-phase method. Study the morphology and microstructure by X-ray diffraction pattern (XRD) and scanning electron microscopy (SEM), the results show that the forming temperature of  $\text{Ca}_3\text{CO}_2\text{O}_6$  is  $900^\circ\text{C}$ , and not form other impurities at  $900^\circ\text{C}$ , when the temperature rise to  $1000^\circ\text{C}$ , the  $\text{Ca}_3\text{CO}_2\text{O}_6$  decomposed into CaO. The SEM analysis results shows that the morphology of  $\text{Ca}_3\text{CO}_2\text{O}_6$  is a worm-like curled up, formed at  $900^\circ\text{C}$ .

<b>16:30-16:55</b>	<b>Coffee Break</b>
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# Session 3

**Tips:** The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 16:55~18:40**

**Venue: Flora Grand Hall**

**Session 3: 7 presentations-Topic: “Food, Biological and Environmental Sciences”**

**Session Chair: Prof. Khaled M. Bali**

D0005 Presentation 1 (16:55~17:10)

Recent Advance in Silica Production Technologies from Agricultural Waste Stream–Review

**Khushbu Patel**, Nirendra Misra and Rakshith Shettigar

Department of Sciences, School of Technology (SOT), Pandit Deendayal Petroleum University, India.

*Abstract*—Substantial applications of silica materials in industrial products have caused development of silica extraction methodologies out of various waste products. Rice husk /straw and wheat husk/straw (agricultural waste) are one of the agricultural wastes which have a huge content of silicate materials. This review shows that silica production techniques by using thermal and chemical methods, and also provide directions to efficient, new, rapid microwave assisted method for silica extraction from agricultural waste stream.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 16:55~18:40**

**Venue: Flora Grand Hall**

**Session 3: 7 presentations-Topic: “Food, Biological and Environmental Sciences”**

**Session Chair: Prof. Khaled M. Bali**

D0004 Presentation 2 (17:10~17:25)

Risk Assessment of Food Additives in the Milk and Dairy Products: A Survey of Local and Imported Products in Algeria

**Saoussene Chernine**, Samira Djekoune Bensoltane and Mohamed Djekoun

University Badji Mokhtar, Annaba, Algeria

*Abstract*—Actually, food additives are playing an important role in the food supply and have an important place in the food processing sector. They are used to improve the organoleptic, nutritional products and extend their shelf life. However, this revolutionary change has always made follow another destructive change in human health. With the aim of assessing the risk of the use of these food additives on consumer health, we conducted a survey in the Algerian east and center. The survey was conducted from October to May 2016, and reached both local and imported products put on the Algerian market. These products belong to 3 food classes: milk and dairy products: yogurt and cheese. The results of our survey note that the inventoried food products contain many food additives in different degrees of toxicity. Excessive use of toxic food additives in Algerian products was well recorded against a risky use of dubious food additives in food imports. The results of the survey show that local milk mostly contained texture agents that are especially toxic order. Yoghurt whether local or imported mainly contained colorants and acidifying moderately toxic. Texture agents are in low or no toxic order. For cheeses, we have revealed the presence of dyes, preservatives, acidifiers and modified starches moderately toxic for all products. While, the texture agents are toxic order for local products and doubtful order for imported ones. To face this situation, it is essential we recommend to the organizations controls for import and export both state and private, more vigilance in relation to the traceability of local and imported products, compliance and manufacturing conditions, storage and transportation of food from their manufacturing sites to the consumer to avoid the spread of diseases.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 16:55~18:40**

**Venue: Flora Grand Hall**

**Session 3: 7 presentations-Topic: “Food, Biological and Environmental Sciences”**

**Session Chair: Prof. Khaled M. Bali**

D0006 Presentation 3 (17:25~17: 40)

Anti- Implantation Effect of the Fungicides Maneb and Chlorothalonil in the Female of Rabbit and Rat

**Leila Mallem**, Imene Dellal and Mohamed Salah Boulakoud

University Badji Mokhtar-Annaba Algeria

*Abstract*—The increasing use of pesticides all over the world makes it necessary to determine the toxic risk in populations of non-target organisms. The most used fungicides in the east of Algeria in plant diseases control and field crops are Maneb and Chlorothalonil. The purpose of this work is to examine the effect of the most used fungicides in agriculture on implantation. The rabbits were treated with the doses 5, 10 and 50 mg/kg/day by gavage for 10 days after fertilization in the domestic female rabbit, for the first product. The used doses of the Chlorothalomil are 60 mg/kg and 180 mg/kg for the same period in the Wistar rat. The vaginal smear and body weight of the animals were recorded daily. On 11th days of pregnancy, the animals of different groups were sacrificed. The rate of fecundity was calculated. The liver was moved and weighted.

The results indicate an increase in the body weight in the treated females as compared with the control. An increase is also observed in the weight of liver in the treated females with a darker color in the animals treated with Maneb. Both Maneb and Chlothalomil induce 50% of inhibition of implantation in the rabbits treated with the higher dose (50 mg/kg/day) of Maneb and 28 % in the rats treated also the higher dose of Chlorothalomil when compared to control. The inhibition of implantation by the used fungicides may be due to hormonal imbalance.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 16:55~18:40**

**Venue: Flora Grand Hall**

**Session 3: 7 presentations-Topic: “Food, Biological and Environmental Sciences”**

**Session Chair: Prof. Khaled M. Bali**

D0007 Presentation 4 (17:40~17:55)

Protective Effect of Wheatgrass (*Triticum Durum*) on Some Indicators Physiologic in Albino Rats Exposed to Contaminated Diet with Lead Acetate

**Ouarda Mansouri-Bentayeb**, Cherif Abdennour and Kamel Khelili

Departement of Medicine, Faculty of Medicine, University Badji Mokhtar, Annaba, Algeria

*Abstract*—This study is mainly focused on the search for an effective treatment to reduce Pb toxicity by using wheatgrass *Triticum durum*. Rats were divided into 3 groups; the control, the group exposed to a diet containing 600 mg Pb acetate/Kg diet (Pb), and the group received a combination of Pb and 9g wheatgrass /100g diet (Pb-WG) for a period of 6 weeks. At the end of the experimental period, all rats were sacrificed and pathological examinations were performed. Results showed a decrease in the concentration of serum hormone T3, TSH and bilirubin compared to the control and the Pb-WG. The supplementation of wheatgrass caused a considerable in the levels of these hormones. The level of Alanine-Aminotransferase (ALAT), Aspartate-Aminotransferase (ASAT) and alkaline phosphatase (ALP) were significantly increased in rats treated with Pb compared to the control and the Pb-WG. Control and WG supplemented rats showed normal liver and thyroid. Shrinkage was seen in the structure of follicles exposed to Pb also the liver of PbAc-intoxicated rats exhibited degenerated hepatocytes and portal inflammatory cell infiltrations. The testicles have marked a destruction or absence of germ cells and the light of some seminiferous are almost empty. Conclusion: the addition of wheatgrass in the daily food ration reduces the risk of lead poisoning.



**Afternoon, December 4, 2016 (Sunday)**

**Time: 16:55~18:40**

**Venue: Flora Grand Hall**

**Session 3: 7 presentations-Topic: “Food, Biological and Environmental Sciences”**

**Session Chair: Prof. Khaled M. Bali**

D0008 Presentation 5(17:55~18:10)

Genotoxicity Assessment of Green Frog Tadpoles by DNA Damage (Comet Essay) and Micronucleus Test, After Environmental Exposure to a Fungicide

**Bourenane Naziha** and Devaux Alain

University Badji Mokhtar, Annaba, Algeria

*Abstract*—ARTEA330EC is a fungicide used to inhibit the growth of many types of fungi of cereals and rice, it is the single largest agrochemical that is widely detected in surface waters in our area. The studies on long-term genotoxic effects of fungicides using genotoxic biomarkers on amphibian are limited. In the present study, DNA damage of propiconazole in tadpoles of *Rana saharica* using comet assays was investigated. The LC (50) - 96 h of the fungicide was estimated. On this basis of LC (50) value sub lethal and nonlethal concentrations were determined (.25, 50, 75 and 100ppm). The DNA damage was measured in erythrocytes as the percentage of DNA in comet tails of tadpoles exposed to above concentrations the fungicide. The results show a toxicity manifesting on a first plane by a growth delay that resulted in a weight and size decrease of individuals treated by a dose dependent manner and time as well as the condition index that reflects a delay in sexual maturity of individuals. On second plane, our results show non-significant effects for both of concentrations and time exposure in individuals treated by propiconazole compared to the controls. However It was found that the greatest DNA damages were observed at the highest concentration and the longest time exposure (day12). About MN frequencies, there were significant differences between the positive control (MMS) and the groups treated with ARTEA330EC concentrations whatever the time of exposure. There is a dose-effect relationship from 08 days of exposure on erythrocytes of *R. saharica*.

Our results revealed a genotoxic effects of ARTEA 330EC on *R. saharica* tadpoles only at the highest concentrations with the longest time of exposure.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 16:55~18:40**

**Venue: Flora Grand Hall**

**Session 3: 7 presentations-Topic: “Food, Biological and Environmental Sciences”**

**Session Chair: Prof. Khaled M. Bali**

D0003 Presentation 6(18:10~18:25)

Evaluation of CEREC Model for Growth Simulation of Rice (*Oryza Sativa*) under Irrigation and Nitrogen Treatments

**Bahram Mirshekari**, Mojtaba Mirakhori, Ebrahim Amiri, Farzad Paknejad and Mehrdad Yarnia

Department of Agronomy and Plant Breeding, Tabriz Branch, Islamic Azad University, Tabriz, Iran

*Abstract*—To calibrate and validate of the Ceres–Rice crop model and validate effect of nitrogen fertilizer and irrigation on the growth and yield of rice (*Oryza sativa* var. Dylam) for economize the agriculture inputs especially in sustainable agriculture strategies, this study was conducted in Rasht Rice Research Institute, Iran during 2013 and 2014. Treatments were irrigation levels (normal, 50 cm and 80 cm evaporation from pan) and the nitrogen levels (0, 90, 120 and 150 kg N ha<sup>-1</sup>). Based on the results of the evaluation, the Ceres-Rice model with regarding to RMSEn values of 8%, 6% and R<sup>2</sup> values of 0.82 and 0.95 to simulate the seed yield of rice and also with regarding to RMSEn values of 10% and 9% and R<sup>2</sup> values of 0.87 and 0.85 to simulate the biological yield the accuracy of simulations was appropriate. Also with regarding to RMSEn 24%.

**Afternoon, December 4, 2016 (Sunday)**

**Time: 16:55~18:40**

**Venue: Flora Grand Hall**

**Session 3: 7 presentations-Topic: “Food, Biological and Environmental Sciences”**

**Session Chair: Prof. Khaled M. Bali**

D0009 Presentation 7 (18:25~18:40)

Toxicological Risk of Pesticides in Lung Cancer Development among Farmers

**Samira Djekoun-Bensoltane**, Saoussene Chernine, Mohamed Djekoun and Zahra Saighi

University Badji Mokhtar, Annaba, Algeria

*Abstract*—In Algeria, it is the first cancer in men and the fourth cancer in women. Occupational factors are the second leading cause of lung cancer in humans, We investigated 150 patients through a questionnaire on occupational and environmental factors that may be related to lung cancer

The results show that the two main common types are adenocarcinomas (54%) and squamous (22%). Smoking reveals alarming percentages for its relationship with lung cancer (89.33% and 82% respectively). The environment has played an important part in our study, beginning with the nearby home of a plant or industrial area, in fact, 46% of patients live in places previously mentioned. The residence next to a busy road is seems closely with lung cancer (75.33%). People stuck in traffic present 58%.

Regarding professional activity, the results show that farmers are the most affected (17.5%), then come the taxi drivers / bus (14.17%) followed by workers in ARCELOR MITTAL (9.17%) .

Our results highlight the close relationship between work and lung cancer, the environmental impact is strongly present.

<b>Dinner</b>	
<b>18:50</b>	<b>Hotel Restaurant</b>

# Conference Venue

**Flora Grand Hotel**

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