

# 2017 HKCBEEES PRAGUE CONFERENCE ABSTRACT

March 13-15, 2017

J. Heyrovský Institute of Physical Chemistry of the CAS

Czech Republic



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# 2017 HKCBEEES Prague Conference

## Introductions

Welcome to CBEEES 2017 conference in Prague, Czech Republic. The objective of the Prague 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 Food Security and Nutrition, Civil and Urban Engineering, Chemical and Biological Sciences.

### 2017 4th International Conference on Civil and Urban Engineering (ICCUE 2017)

Papers will be published in one of the following journals:



**International Journal of Engineering and Technology (IJET, ISSN: 1793-8236)**, and will be included in Chemical Abstracts Services (CAS), DOAJ, Engineering & Technology Digital Library, Google Scholar, Ulrich Periodicals Directory, Crossref, ProQuest, Electronic Journals Library, Index Copernicus, EI (INSPEC, IET).



**International Journal of Structural and Civil Engineering Research (IJSCER, ISSN: 2319-6009)**, Included in New Jour (Electronic Journals & Newsletters), OpenJ-Gate, Index Copernicus International, Indian Science, Research BIB Japan.

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

### 2017 4th International Conference on Chemical and Biological Sciences (ICCBS 2017)

Papers will be published in one of the following journals:



**International Journal of Pharmacy and Pharmaceutical Sciences (IJPPS, ISSN 0975 - 1491)**, and be indexed by Google Scholar, Scopus, Elsevier, EBSCO, EMBASE, SCI mago (SJR), CAS, CASSI (American Chemical Society), Directory of Open Access Journal (DOAJ), Index Copernicus, ICAAP, Scientific commons, PSOAR, Open-J-Gate, Indian Citation Index (ICI), Index Medicus for WHO South-East Asia (IMSEAR), OAI, LOCKKS.



**International Journal of Chemical Engineering and Applications (IJCEA, ISSN:2010-0221)** which will be included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, Cross ref, ProQuest.

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

### 2017 4th International Conference on Food Security and Nutrition (ICFSN 2017)

Papers will be published in one of the following journals:



**International Journal of Food Engineering (IJFE, ISSN: 2301-3664)**. Included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, Cross ref, ProQuest, CABI and sent to be reviewed by EI Compendex and ISI Proceedings;

Conference website and email: <http://www.icfsn.org/>; [icfsn@cbees.net](mailto:icfsn@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 **40** 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 Oral Presentation will be selected from each presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on March 13 & March 14, 2017.

## Dress code

Please wear formal clothes or national representative of clothing.

# Keynote Speaker Introductions

## Keynote Speaker I



Prof. Ignacio Javier Acosta García

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

Research field: daylighting in architecture, energy efficiency in buildings, thermal comfort and electric lighting control.

Education:

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. Awards: Extraordinary Ph.D. Award from the University of Seville.

Research Experience:

Acosta, J. Navarro, J. J. Sendra, (2011) Towards an Analysis of Daylighting Simulation Software, *Energies* 4, 1010-1024.

I. Acosta, J. Navarro, J. J. Sendra, P. Esquivias, (2012) Daylighting design with lightscoop skylights: Towards an optimization of proportion and spacing under overcast sky conditions, *Energy and Buildings* 49, 394-401.

I. Acosta, J. Navarro, J. J. Sendra, (2013) Predictive method of the sky component in a courtyard under overcast sky conditions, *Solar Energy* 89, 89-99.

I. Acosta, J. Navarro, J. J. Sendra, (2013) Daylighting design with lightscoop skylights: Towards an optimization of shape under overcast sky conditions, *Energy and Buildings* 60, 232-238.

I. Acosta, J. Navarro, J. J. Sendra, (2013) Towards an analysis of the performance of lightwell skylights under overcast sky conditions, *Energy and Buildings*. 64, 10-16.

Project: TECNOCAI-ACCIONA: Efficient and intelligent technologies designed to health and comfort indoors.

Project: CELL. Energy and environmental rehabilitation of social housing in Andalusia: evaluation test cells.

Topic: “Analysis of the accuracy of lighting simulation programs according to real measurements”

Prof. Ignacio Javier Acosta García

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

**Abstract**—Lighting simulation programs are useful tools to determine the daylight distribution in the inner architecture, concluding the optimal design of windows and skylights as well as the energy saving in electric lighting. However, the accuracy of these programs is difficult to achieve, due to the endless process of light reflection, necessary for calculating the Internally Reflected Component. Considering this context, several methods for determining the accuracy of lighting programs appeared, such as the CIE test cases, developed by the Commission Internationale de l’Éclairage in 2006. Nevertheless, most of the methods proposed were based on the calculation of the Sky Component, which is easily defined according to the geometrical analysis of the sky dome light distribution, obviating the light reflection, so the accuracy of the lighting programs is not fully demonstrated. Therefore, a full analysis of the accuracy of lighting simulation programs is proposed, according to the CIE test cases and real measurements under overcast sky. The results obtained conclude that the lighting programs have a long way to improve and the real measurements are still useful to determine the daylight distribution.

## Keynote Speaker II



Assoc. Prof. Tomáš Navrátil

J. Heyrovský Institute of Physical Chemistry of the CAS, Czech Republic

**Assoc. Prof. Dr. Tomáš Navrátil** (1967) is the deputy head of the Department of Biomimetic Electrochemistry. He earned his PhD (1996) in analytical chemistry at the Faculty of Science, Charles University in Prague; he habilitated at the First Faculty of Medicine of the same university (Biochemistry, 2012).

He deals with investigation of transporting processes across biological membranes, with development of analytical methods and with biostatistics. Moreover, with polarographic/voltammetric techniques (voltammetry), their combination with mathematical and statistical methods (elimination voltammetry, chemometry, biometry); development and testing of new electrochemical sensors and procedures.

He is author of more than 165 full-length papers in peer-reviewed journals (133 in impacted journals incl. accepted) (since 1996); 8 book chapters, 8 chapters in textbooks, of four special medicinal databases, and www-pages with presentations (lectures) for students of biochemistry: (about 43 000 accesses (since 2004)).

About 2331 citations (autocit. incl.), about 1270 citations (autocit. excl.) according to WOS + more than 130 (according to Scopus) (autocit. excl.).

H-index = 31 (Researcher ID “F-4000-2012“)

He has been principal investigator or co-investigator of 4 grant projects of the Grant Agency of the Czech Science Foundation and of 1 of grant project of the Grant Agency of the Academy of Sciences of the Czech Republic, co-investigator of the project of the Ministry of Industry and Trade and participant of about 14 national or international grant projects.

Topic: “New Approaches for Monitoring of Transport of Selected Biologically Important across Biomimetic Membranes”

Assoc. Prof. Tomáš Navrátil

J. Heyrovsk ý Institute of Physical Chemistry of the CAS, Czech Republic

**Abstract**—The contribution deals with development and application of new approaches for monitoring and explanation of transport of selected xenobiotics and other biologically important compounds (e.g., hazardous elements, low molecular weight organic acids) across biomimetic membranes. The main attention has been devoted to the development of methods for identification of transporting ways across which these substances are transported. For these purposes, not only electrochemical techniques (voltammetry, electrochemical impedance spectroscopy, ion selective electrodes, etc.), but some other techniques (e.g., mass spectrometric, immunochemical, and microscopic methods) have been applied.

## Keynote Speaker III



Prof. Ioana Demetrescu

University Politehnica Bucharest, Romania

**Prof. Dr. Ioana Demetrescu** obtained her Bachelors degree and Ph.D. from University of Bucharest in Physical Chemistry field. She spent more than 40 years in teaching and research activities in this domain. Her teaching activities are focussed in the field of General Chemistry, and Physical Chemistry of Materials. Since 2005, Prof. Demetrescu is also associated with the Masters program in the Department of Biotechnology and Bioengineering. The research program focuses, apart from other issues, on the tissue engineering, scaffolds characterization, new implants for medical applications.

Her professional and scientific activity comprises: handbooks/textbooks (15); papers published (165); 92 of them in ISI journals :inventions (4); participating in different international or national research projects (111) ; awards at international halls for inventions (1 ) Chair pairson, member of the scientific committee and invited speaker at different meetings universities and ( USA, Mexic, Poland Greece, France, Tunis, Brazil etc; member of the International Editorial Board journal of Nanobiomedicine (Japan ); reviewer for different journals (Materials Chemistry and Physics, J. of Biomedical Materials Research, Surface and Interface Analysis, Journal of Non-Crystalline Solids, Electrochimica Acta, etc).



Topic: “Electrochemical and biological aspects in stents improvement”

Prof. Ioana Demetrescu

University Politehnica Bucharest, Romania

*Abstract*—The lecture represents the present trends and future perspectives in stents investigations. In this idea after a short status of the art in the field, including materials and surface modifications, new research regarding the human albumin effect on corrosion and biological behavior of a CoCr Mo alloy is presented. The electrochemical behavior of alloy was tested in simulated body fluid with and without human albumin at 37°C. The used electrochemical methods have been open circuit potential measurement, potentiodynamic polarization and electrochemical impedance spectroscopy. Albumin adsorption has been evaluated spectrophotometrically using both FT-IR and UV-VIS investigation methods. Biological tests as hemocompatibility of CoCrMo alloy has confirmed by hemolysis test. No blood cell shape modification was observed. As perspectives the use of drugs with their merits and demerits are discussed.

## Keynote Speaker IV



Prof. Ing. Zbyšek Pavlák

Faculty of Civil Engineering, Czech Technical University in Prague, Czech Republic

Education, pedagogical and scientific degrees:

1994-2000 Faculty of Civil Engineering, Czech Technical University in Prague, Dipl.-Ing. in Civil Engineering

2000-2003 Department of Structural Mechanics, Faculty of Civil Engineering, Ph.D. in Physical and Materials Engineering, thesis: Development of a Semi-Scale Technique for the Assessment of Hygro-Thermal Performance of Multi-Layered Systems of Building Materials

2010 – Habilitation in Theory of Building Structures and Materials, thesis: Identification of Parameters Describing the Coupled Moisture and Salt Transport in Porous Building Materials

2014 – Professor in Theory of Building Structures and Materials, Lecture theme: Theme: Application of semi-scale experiments for determination of hygrothermal function of building materials and structures

Employment:

2003- 2006 Assistant Professor at Department of Structural Mechanics, Faculty of Civil Engineering, Czech Technical University in Prague

2007 – 2010 Assistant Professor at Department of Materials Engineering and Chemistry, Faculty of Civil Engineering, Czech Technical University in Prague

2010 – Associate Professor at Department of Materials Engineering and Chemistry, Faculty of Civil Engineering, Czech Technical University in Prague

2014 – Professor at Department of Materials Engineering and Chemistry, Faculty of Civil Engineering, Czech Technical University in Prague

Topic: “HPC with hybrid reinforcement at high temperatures – analysis of material performance and residual properties”

Prof. Ing. Zbyšek Pavlík

Faculty of Civil Engineering, Czech Technical University in Prague, Czech Republic

**Abstract**—A design of modern building materials faces the tremendous challenges connected with various functional demands. Advanced building materials needed for high-rise buildings or durable underground constructions must provide sufficient mechanical parameters, resistance to aggressive environment and fire resistance. Exposure of High Performance Concrete (HPC) to high temperatures possesses a risk related to the serious damaging of its micro and meso structure, and therefore mechanical decay. This phenomenon is extensively studied especially in relation with the high-rise buildings and nuclear power plants, where high performance or even ultra-high performance concrete is used. Unfortunately, HPC as well as UHPC exhibit relatively poor performance when exposed to fire or high temperatures because of changes on the microstructural level. Firstly, evaporation of free water occurs until complete loss of physically absorbed water during heating of concrete. Afterwards, chemically bonded water is released at temperature about 105 °C. This behaviour represents crucial problem during fire exposure due to the limited escape ways for excessive water vapour. According to the various studies, a very low permeability of UHPC is main factor responsible for the formation of cracks and later spalling or even explosive spalling. A temperature increase above 300 °C further damages concrete structure by the formations of cracks. Decomposition of calcium hydroxide as one of the most important compound in cement paste into CaO and CO<sub>2</sub> causes shrinkage of concrete at temperature around 500 °C. Since the low permeable structure of HPC does not allow escaping moisture from the heated structure of concrete, pore pressures arise. Attainment of 800 °C is accompanied with disintegration of concrete due to decomposition of CaCO<sub>3</sub>.

Spalling represents potential serious risk for constructions built from HPC or UHPC when they are exposed to the elevated temperatures. The explanation of the spalling development lays particularly in two aspects: moisture content in the pores and thermal stress inducing increase of the vapour pore pressure. During the fire, water in pores is vaporized and moved out from the material. Therefore, concrete structures are often reinforced by the various types of fibres in order to decrease crack formation and improve its mechanical properties. Notwithstanding, spalling can be distinguished also in fibre reinforced concrete. From this point of view is possible to find correlation between durability of concrete materials exposed to the high temperatures and their water transport properties as permeability, diffusivity and capillary absorption. Since the effect of spalling and its importance for concrete durability were revealed, UHPC mixtures were modified by various type of fibres with different melting temperatures for creation of the escape channels which are able to reduce spalling. Polypropylene (PP) or polyvinyl-alcohol (PVA) fibres with relatively low melting temperature has no significant influence on compressive strength of concrete, nevertheless beside their positive effect on flexural and tensile strength, a thermal decomposition at 150 °C (PP) and 200-250 °C (PVA) allows creation of escaping channels for excessive moisture. Consequently, it was found that application of PP fibres in UHPFRC mixtures represents an effective method for improvement of thermal resistance and prevention of spalling.

## Brief Schedule for Conference

<b>Day 1</b>	<b>March 13, 2017 (Monday)</b>		
	<b>Venue: Outside of Brdicka Lecture Hall</b>		
	Arrival Registration	9:00~18:20	
	<b>Venue: Brdicka Lecture Hall</b>		
	<b>Opening Remarks</b>	12:55~13:00	
	<b>Keynote Speech I</b>	13:00~13:45	
Topic: “Analysis of the accuracy of lighting simulation programs according to real measurements” (Prof. Ignacio Javier Acosta García, Department of Building Construction, School of Architecture, University of Seville, Spain)			
<b>Keynote Speech II</b>	13:45~14:30		
Topic: “New Approaches for Monitoring of Transport of Selected Biologically Important across Biomimetic Membranes” (Assoc. Prof. Tomáš Navrátil, J. Heyrovský Institute of Physical Chemistry of the CAS, Czech Republic)			
<b>Coffee Break &amp; Group Photo Taking</b>		14:30~14:50	
<b>Session 1: 14:50~18:20</b>			
<b>Venue: Brdicka Lecture Hall</b>			
14 presentations-Topic: “Food Chemistry and Nutrition”			
<b>Day 2</b>	<b>March 14, 2017 (Tuesday)</b>		
	<b>Venue: Outside of Brdicka Lecture Hall</b>		
	Arrival Registration, Plenary Speech, and Conference Presentation		
	<b>Morning Conference</b>		
	<b>Keynote Speech III</b>	8:30~9:15	
	Topic: “Electrochemical and biological aspects in stents improvement” (Prof. Ioana Demetrescu, University Politehnica Bucharest, Romania)		
	<b>Keynote Speech IV</b>	9:15~10:00	
	Topic: “HPC with hybrid reinforcement at high temperatures – analysis of material performance and residual properties” (Prof. Ing. Zbyšek Pavlík, Faculty of Civil Engineering, Czech Technical University in Prague, Czech Republic)		
	<b>Coffee Break &amp; Group Photo Taking</b>		10:00~10:20
	<b>Session 2: 10:20~11:50</b>		
	<b>Venue: Brdicka Lecture Hall</b>		
	6 presentations-Topic: “Urban Engineering”		
Lunch 11:50~13:00		Foyer of the Brdicka Lecture Hall	
<b>Afternoon Conference</b>			
<b>Session 3: 13:00~15:15</b>	<b>Session 4: 13:00~15:00</b>	<b>Session 5: 13:00~15:00</b>	
<b>Venue: Room no. 108</b>	<b>Venue: Room no. 11</b>	<b>Venue: Brdicka Lecture Hall</b>	
9 presentations-Topic: “Architectural Design and Management”	8 presentations-Topic: “Environmental and Chemical Engineering”	8 presentations-Topic: “Building Materials and Performance”	

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<b>Day 3</b>	Coffee Break 15:00~15:30	
	<b>Session 6:</b> 15:30~17:45 <b>Venue: Room no. 108</b> 9 presentations-Topic: “Civil Engineering and Management”	<b>Session 7:</b> 15:30~18:00 <b>Venue: Room no. 11</b> 10 presentations-Topic: “Pharmaceutical Medicine and Biotechnology”
	<b>Session 8:</b> 15:15~18:00 <b>Venue: Brdicka Lecture Hall</b> 11 presentations-Topic: “Food Processing and Biotechnology”	
	Poster session 8:30~18:00	<b>Venue: Brdicka Lecture Hall</b>
	Dinner 18:30	Foyer of the Brdicka Lecture Hall
	<b>March 15, 2017 (Wednesday) 9:00~17:00</b> One Day Visit	

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

# Detailed Schedule for Conference

**March 13, 2017 (Monday)**

**Venue: Brdicka Lecture Hall**

<b>9:00~18:20</b>	<b>Arrival and Registration</b>
<b>12:55~13:00</b>	<b>Opening Remarks</b> Assoc. Prof. Tomáš Navrátil J. Heyrovský Institute of Physical Chemistry of the CAS, Czech Republic
<b>13:00~13:45</b>	<b>Keynote Speech I</b> Prof. Ignacio Javier Acosta García Department of Building Construction, School of Architecture, University of Seville, Spain
<b>13:45~14:30</b>	<b>Keynote Speech II</b> Assoc. Prof. Tomáš Navrátil J. Heyrovský Institute of Physical Chemistry of the CAS, Czech Republic
<b>14:30~14:50</b>	<b>Coffee Break &amp; Group Photo Taking</b>
<b>14:50~18:20</b>	<b>Session 1</b> 14 presentations-Topic: "Food Chemistry and Nutrition"

**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 March 13, 2017.**

# 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, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S0009 Presentation 1 (14:50~15:05)

Analysis of the Concentration and Formation Behavior of Naturally Occurring Formaldehyde Content in Food

**Farrhin Nowshad**, Md Islam and Mohidus Khan

Bangladesh University of Engineering and Technology, Bangladesh

*Abstract*—In recent years, in spite of being legally prohibited, formaldehyde is reported to be widely used as a food preservative to increase the shelf life of fruits and fishes in tropical countries. The hot and humid weather of the tropical countries tends to quickly deteriorate fruits, vegetables, fishes, meat and other food items. Formaldehyde is detrimental to human health and reported as a human carcinogenic. To prohibit formaldehyde application in foods, the regulatory bodies often conduct on the spot analytical tests to detect artificially added formaldehyde in food items. However, formaldehyde is ubiquitous in the environment and is present in many animal and plant species as a product of their normal metabolism. Formaldehyde can be found naturally in food items including fruits, vegetables, meats, marine fishes and crustaceans. The formation and concentration of natural occurring formaldehyde may vary according to food types and conditions. The naturally occurring formaldehyde may interfere in the detection of artificially added formaldehyde in foods. It is therefore important to study the concentration and formation mechanism of naturally occurring formaldehyde in food items. The objective of this study is to determine naturally occurring formaldehyde levels in different fruits, vegetables and (cow) milk samples. In addition, time dynamic behavior of the formation of endogenous formaldehyde content in food sample (banana sample; AAB genome of Musa Spp.) was studied in this study.

**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S0012 Presentation 2 (15:05~15:20)

Time and Temperature Effect on the Residual Concentration of Formaldehyde in Formalin Treated Samples *Labeo rohita*

Mohidus Samad Khan, Sadat Kamal Amit, Md. Mezbah Uddin, Shawly Samira, **Mursalin Rahman**, Suman Nandy and Rizwanur Rahman

Bangladesh University of Engineering and Technology (BUET), Bangladesh

*Abstract*—Indiscriminate and unrestrained use of chemical preservatives is posing a potential threat to food safety and security all over the world. It is reported that formalin, a 37 to 40 percent solution of formaldehyde (HCHO), is widely used as a food preservative to increase the shelf-life of fishes. Direct consumption of formalin is harmful for human health. However, limited scientific information is available about the diffusivity of formaldehyde in fish flesh, the effect of consuming formalin dosed fish, and the amount of residual formalin in fish flesh after cooking. Besides, detecting formalin or formaldehyde in fishes and other food items is quite challenging since formaldehyde in food items can be interfered by the presence of other aldehyde, ketone or alcohol groups in foods. Formaldehyde can also be naturally produced in fish and other food items through ageing and deterioration. This experimental research aims to study the effect of formalin on key nutritional parameters: protein and lipid of fish sample (*Rohu* fish; *Labeo rohita*), and to analyze the time and temperature effect on the residual HCHO concentration in fresh and formalin treated fish samples. In addition, the behavior of naturally occurring formaldehyde concentration in fish was studied at different temperatures: 4 °C, 8 °C and 12 °C, for up to 54 hours. This systematic approach and methodology can also be applied to analyze other chemically preserved food items and corresponding health hazards.



**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S0015 Presentation 3 (15:20~15:35)

Influence of Adulteration Agents on Physicochemical and Spectral Profile of Different Honey Types

**Mircea Oroian**, Vlad Olariu and Sorina Ropciuc

Faculty of Food Engineering, Stefan cel Mare University, 13th University Street, 720229, Suceava, Romania

*Abstract*—The aim of this study is to evaluate the influence of some adulteration agents (fructose and hydrolysed inulin syrup) on physico-chemical parameters (pH, electrical conductivity, water activity and CIEL\*a\*b\* parameters) and Raman spectra of some honey types (acacia, tilia and polyfloral) from the North East part of Romania. The physico-chemical parameters (pH, water activity, electrical conductivity and color) of the honey adulterated varied depending on the degree of substitution of honey by adulteration agent. Unlike physico-chemical analyses and color analysis, which determine only the degree of falsification of honey, Raman analysis enables identification of falsification agent based on specific vibrational bands recorded.

**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S1002 Presentation 4 (15:35~15:50)

Film forming Characteristics and Coating Effect on Walnut Lipid Peroxidation of Whey Protein and Xylose Maillard Reaction Products

Xi Zhang, Zi Yin, Qi Li, **Hao Jing**

China Agricultural University, China

*Abstract*—**BACKGROUND:** Whey protein isolate (WPI) film is good barrier to oxygen but poor barrier to water vapor. Maillard Reaction (MR) between protein and sugar could modify protein structure. Our study used xylose (Xyl) to modify WPI through MR, and prepared WPI-Xyl MR product (MRPs) film. Its mechanical property, water vapor permeability, especially coating effect on lipid peroxidation of walnut coated were assessed. **RESULTS:** Mechanical properties of WPI-Xyl MRPs film have been improved, with the penetration and tensile strengths of 1.7 times and 2.4 times that of WPI film, respectively; while water vapor permeability was 24% lower for WPI-Xyl MRPs film than WPI film. The acid value and TBARS value were lower, 21% and 16%, respectively, for the walnuts coated with WPI-Xyl MRPs film than un-coated. While the walnut coated with WPI film had no effect on lipid peroxidation development. **CONCLUSION:** WPI-Xyl MRPs film has good mechanical property and low water vapor permeability. The coating with WPI-Xyl MRPs film, but not WPI film, could effectively delay lipid peroxidation of walnut. MR could be used as an effective method to improve film property and coating effect of WPI.

**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S0017 Presentation 5 (15:50~16:05)

Paper Diagnostics to Detect Formalin in Food

**Md Islam**, Mehnaz Mursalat, Muzahidul Anik, Md Ferdous and Mohidus Khan  
Bangladesh University of Engineering and Technology, Bangladesh

*Abstract*—Formalin, a solution of formaldehyde (40% by volume, 37% by mass), is commonly used for the preservation of biodegradable substances. However, in recent years, the rampant use of formalin to prolong the shelf life of fish and fruits and make them look fresh is widely reported. Constant exposure to formalin can lead to respiratory problems and possibly to cancer. For the qualitative and quantitative detection of formalin traces, outsourcing of food sample to an analytical laboratory is a standard practice. Reliable instantaneous detection of formalin without requiring sophisticated laboratory and analytical instrumentation such as chromatographic and spectroscopic methods would be invaluable for consumers, legislative forces, and other stakeholders. Paper based Point of Care (POC) formaldehyde detection device can offer attractive options for on-spot formalin detection. Formalin can be detected from colour based chemical reaction. Paper diagnostics treated with chemical reagents can detect primary aldehyde in liquid solution. However, false positive results could be the major challenge of using cellulosic paper devices. The major objective of this study was to prepare a reliable and low cost POC device to detect formaldehyde, without using sophisticated optical or chemical analytical instruments. Whatman 1 filter paper was used for the experiments. A paper treatment technique was developed to mitigate the effect of cellulose on aldehyde detection agents, and to eliminate false positive. The treated paper detected formaldehyde concentrations as low as 10 ppm. The paper based technique is faster and economical compared to traditional detection techniques. Therefore, with proper calibration, the paper based technique can be compatible and economical to the sophisticated detection techniques applied to detect formaldehyde.

**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S0004 Presentation 6 (16:05~16:20)

A New Analytical Approach to Detecting non-volatile Molecular Isomers in Food: Combining Lasers and Mass Spectrometry for Identifying Fruit Phytoalexins

**Naruo Yoshikawa** and Caroline Dessent

University of Southampton, UK

*Abstract*—Resveratrol and piceatannol are phytoalexins, a natural compound found in many plants and foods including red grapes, and peanuts. These stilbene compounds are attracting increasing attention as food constituents and supplements due to their unique properties against diseases, including heart disease and some cancers. Recent investigation further revealed that cis-stilbenes were more potent cytotoxic agents in tumour cells than trans-stilbenes. Therefore, there is increasing interest in developing quantitative analytical methods based on mass spectrometry to determine the structural isomers of stilbenes. This is of critical importance in determining the relative population of one naturally occurring active structural isomer over the other when comparing the presence of these chemicals in food and plant material.

In this proof-of-concept investigation, we have attempted to spectroscopically identify the isomers of stilbenes by using our new and unique laser mass spectroscopy technique. We obtained action spectra and photo dissociated fragment ion mass spectra between the trans- and cis-isomers (dimethyl trans-stilbene-4,4'-dicarboxylate and Dimethyl cis-stilbene-4,4'-dicarboxylate) and observed significant spectra differences in between these isomers. We also obtained information on the UV photochemical degradation of these molecules. Results of this study demonstrated the utility of our new instrument in performing rapid mass and UV spectroscopic identification of small molecule isomers through spectral differentiation of structurally close isomers. More broadly, we demonstrated the utility of our new instrument in the field of food science and food adulteration.

**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S1010 Presentation 7 (16:20~16:35)

Identification of Major Metabolites of Phoxim in *Carassius Auratus Gibebio* in Vivo by High-performance Liquid Chromatography Combined with Hybrid Ion Trap/Time-of-Flight Mass Spectrometry

Yutian Zhu, **Xiaoyu Liu**, Wenting Fan, Sher Ali Khan, Hong Li  
Huazhong Agricultural University, China

*Abstract*—The present study was focused on the major metabolites of phoxim in *Carassius Auratus Gibebio*, and speculated possible metabolic pathways. Phoxim was administered to *Carassius Auratus Gibebio* through intraperitoneal injection with a single dosage of 10 mg/kg for once, and water, liver, blood and muscle were collected for metabolites analysis. High-performance liquid chromatography combined with IT/TOF mass spectrometry (LC/MS-ITTOF) was used for structural investigation and identification of metabolites. The structures of metabolites were explained on the basis of the accurate MS<sup>2</sup> spectra and comparison of their changes in accurate molecular masses and fragment ions with those of parent drug or metabolite. According to the results four metabolites along with phoxim were detected in water after phoxim administration; however, no metabolite was detected in the blood except phoxim; the liver contained two metabolites of phoxim at 12 h after phoxim administered, but no metabolite was detected at 24 h; while in muscle tissue no metabolites were detected after 12 h and 24 h phoxim administration. The proposed metabolic pathways of phoxim would offer help to expound the metabolism of phoxim in fish, and provide a theoretical base for food safety evaluation and scientific explanation of phoxim toxicities in fish.

**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S2012 Presentation 8 (16:35~16:50)

Synergetic Effects of Ultrasound and Mild Heat against *Staphylococcus aureus* Determined by Flow Cytometry and Microscopies

**Jiao Li**, Yuanjie Suo, Xinyu Liao, Donghong Liu, Shiguo Chen, Xingqian Ye, Tian Ding  
Zhejiang University, China

*Abstract*—In this study, the effects of ultrasound and/or mild heat on *S. aureus* cell membrane integrity and intracellular enzyme activity were investigated by flow cytometric analysis following single staining with carboxyfluorescein diacetate or propidium iodide. And dynamic changes of *S. aureus* cell viability, sublethal injury and death after different treatments were revealed by multiparametric analysis. Microscopies were applied to identify changes of morphological appearance and ultrastructure of *S. aureus*, what’s more, visualize the bactericidal effect. The results showed the membrane damage and esterase inhibition were almost synchronized upon exposure to sonication, resulting in the immediate death of *S. aureus*. On the other hand, bacteria exposed to mild heat of 55 °C died gradually via a sublethal injury. Therefore, the lethal modes of sonication and mild were different, but those two sterilization techniques were synergistic in bacteria inactivation. The antibacterial value of thermo-sonication was greater than the sum of the individual treatments, and it synergistically reduced the occurrence of sublethally injured cells during the whole process. Microscopy analysis revealed that greater damage and better bactericidal effect of *S. aureus* were achieved after synergistic combination of ultrasound and mild heat.

**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S3004 Presentation 9 (16:50~17:05)

Rapid and Non-Destructive Prediction of pH in Cooked Pork Sausages Using Hyperspectral Imaging

**Chao-Hui Feng**, Yoshio Makino, Mohammed Kamruzzaman, Seiichi Oshita  
University of Tokyo, Japan

*Abstract*—The potential of visible near-infrared hyperspectral imaging with wavelength of 400-1000 nm was used to determine the pH of cooked sausages (91 samples) during long term storage (up to 27 days) (8 oC, RH: 45%). The mean spectra of the sausages were extracted from the hyperspectral images and partial least squares regression (PLSR) model was developed to relate the spectral profiles with the pH of the cooked sausages. The model performed well with the coefficient of determination ( $R^2$ ) of 0.87 and the root mean square error estimated by cross-validation (RMSECV) of 0.045. Important wavelengths were also selected based on the regression coefficients value, to improve the accuracy of the prediction and simplify complex data analysis and computation. These results suggested that hyperspectral imaging, as a promising tool in developing rapid and non-invasive pH measurement, is capable to quantify and visualise the sausage pH evaluation during long term storage.

**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S0016 Presentation 10 (17:05~17:20)

A Brief Nutritional Intervention to Improve Dietary Knowledge and Behaviors in Emergency Food Assistance Recipients

**Joan Temmerman Md Mph**

United States Department of Defense, Rock Island Arsenal Health Clinic, USA

*Abstract*—The purpose of this study was to evaluate whether a brief nutritional intervention providing easy, fast, nutritious plant-based recipes, tastings and education would improve nutritional knowledge and encourage preparation of more meatless meals in 100 mobile food pantry clients in America. A controlled pilot study was used to assess changes in nutritional knowledge (healthfulness of plant-based meals) and behaviors (preparing more plant-based meals at home) after a brief educational intervention. Significant differences in knowledge and behavior were seen within the treatment group and between the control and treatment groups over time. A targeted, brief educational intervention using quick, easy meatless recipes and food pantry ingredients to promote more plant-based meals cooked at home can positively affect dietary knowledge and behaviors in mobile food pantry clients.



**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S0025 Presentation 11 (17:20~17:35)

The Differences in Perception of Nutrition Claims, Food Behaviors, and Body Images between Health and Non-Health Science Students

**Ahmad Fahmy Arif Tsani**, Ananda Eka Astirani, Restu Amalia, Okky Lupitasari and Cita Ery Ayuningtyas

Universitas Gadjah Mada, Indonesia

**Abstract—Background:** Food Marketing Institute survey results showed that 57% of consumers choose products with whole grain claims, 54% high fiber and 53% low fat. In Indonesia, there is increasing public demand for products of low fat and high fiber. A person with a high level of knowledge, especially in those who have knowledge of health science, should have a better understanding. However, it becomes difficult in transition adolescence to early adulthood period. Concern about body image to be the reason which more students choose foods that are believed to maintain the appearance remains interesting, such as on products with nutrition claims.

**Objective:** To determine differences in perception of nutrition claims, food behaviors, and body images on health and non-health science students, and determine the relationship between the perception of nutrition claims with food behaviors and body images.

**Method:** This type of research is an observational study with cross-sectional design with two groups. The study was conducted in Yogyakarta during April to June 2014. The respondents were Universitas Gadjah Mada students aged 19-24 years. Subject selection is based on consecutive sampling technique.

**Result:** Perceptions of nutrition claims between health and non-health science students differ significantly ( $p = 0.000$ ). In both groups, the food behavior which includes the consumption of fat ( $p = 0.0803$ ) and fiber ( $p = 0.926$ ) did not differ, whether from food or natural products. There is no significantly difference in body image between the two groups ( $p = 0.463$ ).

**Conclusion:** Between health and non-health science students have different perceptions of nutrition claims, but there is no difference in fat and fiber intake, nutritional status, and body image between the two groups. There was no relationship between perceptions of nutrition claims with body image and consumption of fat and fiber.

**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S3005 Presentation 12 (17:35~17:50)

Socioeconomic and Environmental Determinants of Child Nutritional Status in Ethiopia: Empirical Evidences from Nonno District

**Messay Mulugeta**

College of Development Studies, Addis Ababa University, Ethiopia

*Abstract*—The objective of this study was to assess the socioeconomic and environmental determinants of child malnutrition in Nonno Resettlement Site. Cross-sectional survey design was employed to carry out the research. Simple random sampling procedure was employed to select the required households from the three kebeles. The same sampling technique was used to select only one child from one sample household in case of the availability of more than one child for anthropometric measurements. In the event household that does not have under-five child/ren the next neighboring household was considered. Structured questionnaire was used to collect household socioeconomic and environmental data. Anthropometric measurements of the selected under-five children were also collected using standard weighing scale and height measuring board. The results show that the overall prevalence of malnutrition in the community was high with 46.3% of the children stunted, 41.9% underweight, and 11.5% wasted. Parental education, wealth status of household, family size, number of under-five children in the household, age of a child, antenatal care attendance, source of water, availability of latrine and sign of disease in the past two weeks before the survey were found to be the major determinants of malnutrition among under-five children in the study area. Therefore, it requires careful attention and systematic actions in the areas of food security, child and maternal healthcare, education and hygienic problems to reduce the existing malnutrition prevalence in the area.

**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S2009 Presentation 13 (17:50~18:05)

Kiwifruit Alleviates Learning and Memory Deficits Induced by Pb through Anti-oxidation and Inhibition of Microglia Activation *in vitro* and *in vivo*

**Hui-Li Wang**, Wei-Zhen Xue, Qian-Qian Yang

Hefei University of Technology, China

*Abstract*—Human health is threatened by environmental toxins. Lead (Pb) is a well-known environmental poison which causes cognitive deficits. This study aims to investigate the effects and mechanism of kiwifruit to improve learning and memory deficit induced by Pb exposure. Five kinds of kiwifruits were recruited in this study and the amount of vitamin C and polyphenols in kiwifruits were determined. Among them, Qinmei kiwifruit (Qm) showed the strongest anti-oxidation effects *in vitro*. *In vivo*, Qm significantly improved Pb-induced learning and memory deficits and dendritic spine loss. In addition, Pb compromised the enzymatic activity and transcriptional levels of SOD and GSH-Px, decreased the microglial activation, all of which were, to some extent, reversed by Qm kiwifruit administration. The results suggest that kiwifruit can alleviate Pb-induced cognitive deficits, which is possibly through anti-oxidative stress and microglia inactivation. Kiwifruit can be a potential functional food in the prevention and treatment of Pb intoxication.

**Afternoon, March 13, 2017 (Monday)**

**Time: 14:50~18:20**

**Venue: Brdicka Lecture Hall**

**Session 1: 14 presentations- Topic: “Food Chemistry and Nutrition”**

**Session Chair: Assoc. Prof. Tomáš Navrátil**

S0008 Presentation 14 (18:05~18:20)

Closing the Chasm between Vegans and non-vegans in Australia.

**Julie Cartlidge and Ellen Scott**

University of South Australia, Australia

*Abstract*—Food is socially and culturally significant. According to Fischler (1988 p3) and Brady and Ventresca (2014 p303) social relationships and identities are expressed through food and the performance of eating. Australia’s media portrays its food culture as centralised on meat, in some cases promoting discourses tying meat to national identity. The success of such discourses is clearly evident in the data presented by McCarthy (2015) which finds Australia the biggest consumer of meat in the Western world. There is, however, an opposing food identity which is gaining momentum in Australia, veganism; demonstrated by Nicholson’s (2016) data showing Australian’s googled the term vegan more than any other nationality. Saunders (2014, p 3) argues that while only approximately 1.3% of the population declare as vegan, it is a way of life which is becoming more mainstream in Australian society. This presentation will discuss how Australian’s who identify as vegan, vegetarian or even those who prefer to have a plant centred diet express their social connections in a society centred on meat. As two self-defining vegans we are completing PhD’s focused on how food is central to maintaining vegan wellbeing through social media, vegan café’s and festivals. Using mixed ethnographic methods to complete this research process, we aim to improve the social connectedness between vegans to create improved vegan wellbeing within a society which centres its national food identity on meat.

**Afternoon, March 14, 2017 (Tuesday)**

**Venue: Brdicka Lecture Hall & Room no. 11 & Room no. 108**

<b>Venue: Brdicka Lecture Hall</b>			
<b>8:30~9:15</b>	<b>Keynote Speech III</b> Prof. Ioana Demetrescu University Politehnica Bucharest, Romania		
<b>9:15~10:00</b>	<b>Keynote Speech IV</b> Prof. Ing. Zbyšek Pavlík Faculty of Civil Engineering, Czech Technical University in Prague, Czech Republic		
<b>10:00~10:20</b>	<b>Coffee Break &amp; Group Photo Taking</b>		
<b>10:20~11:50</b>	<b>Session 2</b> 6 presentations-Topic: "Urban Engineering"		
<b>11:50~13:00</b>	<b>Lunch-----Foyer of the Brdicka Lecture Hall</b>		
<b>13:00~15:15</b>	<b>Room no. 108</b>	<b>Room no. 11</b>	<b>Brdicka Lecture Hall</b>
	<b>Session 3</b> 9 presentations-Topic: "Architectural Design and Management"	<b>Session 4</b> 8 presentations-Topic: "Environmental and Chemical Engineering"	<b>Session 5</b> 8 presentations-Topic: "Building Materials and Performance"
<b>15:00~15:30</b>	<b>Coffee Break &amp; Group Photo Taking</b>		
<b>15:15~18:00</b>	<b>Session 6</b> 10 presentations-Topic: "Civil Engineering and Management"	<b>Session 7</b> 10 presentations-Topic: "Pharmaceutical Medicine and Biotechnology"	<b>Session 8</b> 11 presentations-Topic: "Food Processing and Biotechnology"
<b>18:30</b>	<b>Dinner-----Foyer of the Brdicka Lecture Hall</b>		

**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 March 14, 2017.**

# 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.

**Morning, March 14, 2017 (Tuesday)**

**Time: 10:20~11:50**

**Venue: Brdicka Lecture Hall**

**Session 2: 6 presentations- Topic: “Urban Engineering”**

**Session Chair: Prof. Ignacio Javier Acosta Garc ía**

U0022 Presentation 1 (10:20~10:35)

Travel Demand Forecasting on Bicycle Route under Expressway in Thailand

**Bhawat Chaichannawatik**, Tassana Boonyoo, Sun Punurai, Pornnarong Leuanpech, and Ekarin Lueangvilai

Kasem Bundit University, Thailand

*Abstract*—This article intends to present bicycling demand on the pilot area under the Chalong Rat expressway (Ramintra rd. to Rama 9 rd. to Ratchadapisek rd.) according to a master plan of the bicycle network development under the right of way of Expressway Authority of Thailand (EXAT). The study began with a literature review on the current statistical usage of bike travel in Thailand, factors related to the use of bicycles, as well as the bicycle travel demand forecasting methodologies. After that the travel information of people living in a 0.8-kilometer buffer zone along the pilot route has been explored. 528 households were randomly interviewed by a questionnaire from 12 May to 12 June 2014, and then compared the number of bicycle travel demand on the route between with and without project in the year 2016, which is expected to be the first year of operation and the future year of 2017, 2022, 2027, 2032, and 2037. The study results found that travel demand on pilot route will be significantly increased when compared between the two conditions. As well, the difference value of the total cycling will be 19.18, 19.59, 21.78, 24.21, 26.91, and 29.92 thousand vehicle-km/day, in the year of 2016, 2017, 2022, 2027, 2032, and 2037, respectively.

**Morning, March 14, 2017 (Tuesday)**

**Time: 10:20~11:50**

**Venue: Brdicka Lecture Hall**

**Session 2: 6 presentations- Topic: “Urban Engineering”**

**Session Chair: Prof. Ignacio Javier Acosta Garc ía**

U0035 Presentation 2 (10:35~10:50)

Development of LED Illumination Work at a Town Center in Collaboration of Students from Different Fields

**Haruka Masumori**, Nobuo Mishima, and Tomoyuki Koga  
Saga University, Japan

*Abstract*—Most of town management or community building like machidukuri in Japan are carried out not only by a specialist but by many stakeholders of the various fields. There are recently also events such as lights illuminations in town centers as a part of community building everywhere in Japan. These events have various meanings. They can bring tourists from out of the area, then activate the area. The relations between the area to the town center should be made strong. Therefore, town managements need collaborations not only from architecture or city planning but also from various fields. This paper aims to report one of our trials related to development of a LED illumination work at town center in students' collaboration from deferent fields.

**Morning, March 14, 2017 (Tuesday)**

**Time: 10:20~11:50**

**Venue: Brdicka Lecture Hall**

**Session 2: 6 presentations- Topic: “Urban Engineering”**

**Session Chair: Prof. Ignacio Javier Acosta Garc ía**

U0040 Presentation 3 (10:50~11:05)

Distribution of American Houses around the USA air Force Soon after the Second World War in Fukuoka, Japan

**Makoto Taniguchi**, Nobuo Mishima, and Takayuki Fuchikami  
Saga University, Japan

*Abstract*—This paper aims to clarify a case of distribution of American houses in the term of occupation by US forces after the second world war, especially focusing on the surrounding area of the US force base in Fukuoka, Japan. In several countries as well as in Japan, there still remain many traces of the second world war even though some of them are invisible and unrecognizable. The traces have possibility to be used and to be succeeded in one’s memory also for planning or designing architecture and urban spaces. The target area of this study is Kasugabaru area of Fukuoka city where a railway company developed for sports facilities area before the war and US forces stationed at the airport Japanese force made as the front line against the Allied Powers in the period of the war. After the war, the American soldiers lived mainly in the airport, but some of them lived in the city area until the area was returned to Japan. We used old housing maps and cadaster (land registration book) to make a distribution map of foreigner’s house and to analyze the characteristics. We could clarify the possibility that the distribution was related to the demand of the foreigners and the provision of land by land owners.



**Morning, March 14, 2017 (Tuesday)**

**Time: 10:20~11:50**

**Venue: Brdicka Lecture Hall**

**Session 2: 6 presentations- Topic: “Urban Engineering”**

**Session Chair: Prof. Ignacio Javier Acosta Garc ía**

U0026 Presentation 4 (11:05~11:20)

Study on Revision of Pedestrian Road Design Guideline in Korea

**Woo Hoon Jeon** and Inchul Yang

Korea Institute of Civil Engineering and Building Technology, South Korea

*Abstract*—Despite of many efforts, there is still insufficient infrastructure for pedestrians. Pedestrian traffic accidents are 4.1 per 100,000 population, which is three times higher than the OECD average of 1.4 in Korea. In particular, the entrance to a village on a national highway or the vicinity of a school is an area where a conflict between a car driving at high speed and a pedestrian continuously occurs. In a region where the pedestrian road is insufficient, the right of way and accessibility of the pedestrian are limited. In order to secure the safety of pedestrians, the Ministry of Land, Transport and Infrastructure (MOLIT) drew up ‘Pedestrian Road Installation and Management Guideline (PRIM Guideline),’ which has used as a design basis for the installation of the pedestrian roads in areas such as dense villages in rural areas, connection areas between cities and towns, and outskirts of cities. The current guideline is, however, based on the traffic situations at the time of enactment in 2004, and there are a number of items that do not meet the relevant laws and regulations now and/or are subject to revision in many areas, such as terminology and installation standards. Therefore, in this study, the main revision contents of PRIM guideline, the direction of revision, and the contents of new enforcement were examined and proposed.

**Morning, March 14, 2017 (Tuesday)**

**Time: 10:20~11:50**

**Venue: Brdicka Lecture Hall**

**Session 2: 6 presentations- Topic: “Urban Engineering”**

**Session Chair: Prof. Ignacio Javier Acosta Garc ía**

U0032 Presentation 5 (11:20~11:35)

A Study on System for Reuse of Vacant Houses of a Historic Town by an Intermediate Organization viewing from Habitants’ Perception

**Yumi Sumida** and Nobuo Mishima

Saga University, Japan

*Abstract*—This study focuses on vacant houses which become a social problem recently especially in local cities. The study area is a historic area in Japan called Hizen Hamashuku in which traditional townscape left and the house owners can receive subsidy from government to repair and renovate their buildings. Yet, vacant houses were increasing by low birthrate and aging. Thus, local habitants’ recognition on reuse of vacant houses in the area was analyzed, and its problem was discussed to build a system of better use and management of the vacant houses. As a methodology, a questionnaire survey was conducted to clarify the idea of the owner of the vacant houses in the area. Then, basic situations of the vacant houses and wishes of the owners could be confirmed, and valuable data for utilization of the vacant houses for future of the area could be obtained. In addition, a questionnaire survey was conducted to NPO of the study area and persons who had moved to live into the area from the outside. Thus, we could discuss a system for reuse of the vacant houses from each viewpoint.

**Morning, March 14, 2017 (Tuesday)**

**Time: 10:20~11:50**

**Venue: Brdicka Lecture Hall**

**Session 2: 6 presentations- Topic: “Urban Engineering”**

**Session Chair: Prof. Ignacio Javier Acosta Garc ía**

U1005 Presentation 6 (11:35~11:50)

Effect of the Shadings Pattern and Greenery Strategies on the Outdoor Thermal Comfort

**Suaad RIDHA**, Stéphane GINESTET, and Sylvie LORENTE

University of Toulouse/INSA, France

*Abstract*—The outdoor thermal comfort is influenced by the perception and satisfaction of the pedestrians, especially in hot and arid climates. Accordingly, the researchers look for the appropriate methods to reduce the Urban Heat Island and thus to enhance the outdoor thermal comfort level of pedestrians. However, there is limited research conducted on the outdoor thermal comfort in hot and arid climate. This work is an investigation study conducted in an urban area (Haifa Street) in Baghdad city, characterized by an arid climate with very high temperatures in summer season reaching 50°C. This study focuses on investigating possible mitigation strategies to ensure how we could improve the thermal comfort at pedestrian level for an urban area with intricate Western design (high-rise buildings, a large spacing between the buildings, asymmetrical canyon geometry, and lack of vegetation). We created four different scenarios to assess the role of vegetation elements such as trees, grass, and different shading patterns. The evaluation was performed in the hottest day in summer. For each scenario, the mean radiant temperature, specific humidity, air temperature, and wind speed distributions have been analyzed using ENVI-met software. Thermal comfort is assessed using the PET thermal index (Physiological Equivalent Temperature) and Predicted Mean Vote (PMV). The results reveal that the PET index can be reduced to 10.4 °C, the temperature can be decreased of about 2.4°C and PMV to 3. The study shows how the urban factors such as the aspect ratio, vegetation cover, shadings, and geometry of the canyon are crucial elements that urban planners and municipalities have to take into account, especially for new urban developments.



<b>Lunch</b>	
<b>11:50 --- 13:00</b>	<b>Foyer of the Brdicka Lecture Hall</b>

# Session 3

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:15**

**Venue: Room no. 108**

**Session 3: 9 presentations-Topic: “Architectural Design and Management”**

**Session Chair: Prof. Ing. Zbyšek Pavlík**

U0001 Presentation 1 (13:00~13:15)

The Impact of Green Buildings on Energy Consumption in Some Middle East Countries (Arabic Union)

**Mahmod Tayb M. Yahya**

Sabratha University, Sabratha, Libya

*Abstract*—Green buildings will have a significant impact in helping the Middle East countries of the suffering incurred in resolving the power outage problems as a result of increasing growing energy demand. Green buildings could help the inability of some of Arabic countries to provide increased volume on demand, especially in the summer time, which cost their budget huge expenses.

On the other hand, a significant pollution to the environment due to the large reliance on environmentally harmful conventional stations to provide the bulk of the electricity; however keeps the deficit remains which led to several initiatives, including the emergence of a new project, which is a electrical connection between these countries to resolve this crisis, one of the costly projects. This paper has put up a practical solution which renovate government and commercial buildings into green buildings to save energy consumption. Government and commercial buildings consume about 16% to 50% of the total electricity consumed in the Arabic countries according to the Arab Union for Electricity ; in other words, this paper has examined the impact of green buildings save energy consumed in the Arabic region, and it has been showed that the amount of electrical power could be saved by using green buildings in each country. Using green buildings technique in the government and commercial buildings leads to release the stresses on the budget of these countries by saving the used money to produce that amount of electricity for these buildings, also this saving has been taking in the consecration in this paper; as well as It was studied the impact of these buildings to reduce environmentally harmful emissions from power plants by reducing the productivity power of these planets. Reducing the productivity power in Arabic countries means reducing greenhouse gas emissions. Implementing the idea of green buildings result the reduction the stress on the budget by reducing the drain the energy sector, solving outage power problems, and reducing environmental pollution.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:15**

**Venue: Room no. 108**

**Session 3: 9 presentations-Topic: “Architectural Design and Management”**

**Session Chair: Prof. Ing. Zbyšek Pavlík**

U0020 Presentation 2 (13:15~13:30)

Characteristics and Values as a Source of the “UMANOSUKE FUNAKI ARCHIVES”

**Kaori Inomata**, Takayuki Fuchikami, and Nobuo Mishima

Saga University, Japan

*Abstract*—Umanosuke Funaki (hereafter, Funaki) is a Japanese architectural engineer who worked in Saga, from the late Meiji era to the beginning of the Showa era. He learned architecture at a local technical high school and designed many buildings in Saga after his independence. His representative works are Saga Public Hall, Takatori' s home, Funaki' s own house, etc., but it is particularly well known that he was a designer of the enlargement of the old Koga Bank Head Office (hereafter, K Bank). The documents regarding Funaki' s professional activities are in present archived at Saga University. The contents are widely including design drawings, design documents, photographs, diaries etc. Although the K Bank among these documents and the report was reported by Kyushu Institute of Design in 2002, the other documents remained unfiled without studying. We named the documents "UMANOSUKE FUNAKI ARCHIVES (hereafter, the UF Archives)," and tried to show its characteristics and values as a research source in this paper. It is so rare that quantities of documents on local engineers are kept in archives like this. Moreover, the architectural engineers who worked especially in Saga in this period have neither been surveyed nor been reported yet, although many researchers have researched also on local architectural engineers of all over Japan and their documents have been archived. The UF archives is very valuable not only to clarify the career of Funaki, but also to know the development of the architecture in Saga at that time.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:15**

**Venue: Room no. 108**

**Session 3: 9 presentations-Topic: “Architectural Design and Management”**

**Session Chair: Prof. Ing. Zbyšek Pavlík**

U0024 Presentation 3 (13:30~13:45)

Institutionalization Perception Differentiation in Construction Family-owned Businesses

**Tugce Ercan**

Yildiz Technical University, Turkey

*Abstract*—Family-owned business is the oldest and most common model of economic organizations. It is known that the number of them is increasing and in current economic conditions family-owned companies still play a critical role, especially in the construction sector. Construction sector is one of the most common market where family-owned business model organizations are so widespread. Construction family-owned businesses are characterized by less formal mode of operating, the possession of less formal policies, rules and codes, the presence of implicit assumption of moral and ethical behavior among employees and by the existence of informal decision making (Belak, 2012). Most of the family-owned businesses have a short lifetime and bankrupt in its first generation. The researches show that the survivability of the family-owned enterprises to the third generation is below 10 %. In order for family businesses to adapt changing world and to transfer themselves to the future generations, institutionalization recommended as a way to overcome the barriers so that it could be possible to survive longer. One of the main obstacles in the institutionalization process of the construction companies is the perception differentiations of organization members on the “institutionalization” concept. The perception differentiation cause in most cases ultimate disputes in organizational structure. In this context, the main objective of this study is to find out the institutionalization perception differentiation between the family member and non-family member organizational actors. In this study the concept of institutionalization has been undertaken by its three dimensions: objectivity/fairness, transparency and formalization/professionalism. It was conducted a questionnaire survey among this three dimensions to collect data from family-owned construction companies and it was asked the importance level of predicted institutionalization factors.

Independent sample t-test was employed to see the main institutionalization perception differentiation areas between the two groups of organization members (family and non-family). The results indicate that for the objectivity/fairness dimension the institutionalization parameter “OF2-Objective criteria are used in personnel selection” and for the transparency dimension the institutionalization parameter “T5- “When we make our plans,

we always consider the long term as well” are the parameters by which the family and non-family organization members have a great perception differentiations which should be well managed for the success of the construction companies. Finally the analysis results indicate that for the formalization/professionalism dimension at any parameter there is no significant perception differentiation among the the family and non-family organization members, which means consensus of opinion exists.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:15**

**Venue: Room no. 108**

**Session 3: 9 presentations-Topic: “Architectural Design and Management”**

**Session Chair: Prof. Ing. Zbyšek Pavlík**

U0033 Presentation 4 (13:45~14:00)

Characteristics of the Two-storied Japanese-style Wooden Gate designed by Architect Kingo Tatsuno in Takeo Onsen

**Shintaro Iwao**, Nobuo Mishima, and Hideo Tomita  
Saga University, Japan

*Abstract*—Architect Kingo Tatsuno is a modern architect who led the world of Japanese architects in modern age and designed many modern architecture from Tokyo station. His Tatsuno and Kasai Architects Office designed the new building called the Shinkan and the two-storied gate called the Romon of the Takeo Onsen in Takeo, Saga, Japan. Although the two-storied gate was originally planned as three gates, only one gate was realized, so we can call it uncompleted gate. In this paper, focusing on the uncompleted gate we aim to clarify the characteristics of expression of Japanese wooden modern architecture designed by architect Kingo Tatsuno.



**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:15**

**Venue: Room no. 108**

**Session 3: 9 presentations-Topic: “Architectural Design and Management”**

**Session Chair: Prof. Ing. Zbyšek Pavlík**

U1007 Presentation 5 (14:00~14:15)

Daylight Spectrum Index: Development of a New Metric to Determine the Color Rendering of Light Sources

**Ignacio J. Acosta García**

Universidad de Sevilla, Spain

*Abstract*—Nowadays, there are many metrics to determine the color rendering provided by a light source. The Color Rendering Index is the most widely metric used to determine the accuracy of a light source, according to eight color samples. However, this metric does not allow a proper measurement for LED lamps. Recently, the Color Quality Scale was defined, extending the color samples selected by previous metrics in order to improve the analysis of LED lamps. However, the results of both metrics for a low correlated color temperature use as reference the Standard Illuminant A, that is to say, the color rendering of an incandescent lamp, which does not represent the real conditions of the natural color rendering. Currently, new metrics appears, such as the TM-30-15, based on 99 color samples and a complex calculation. According to this context, a new metric is proposed, based in the Spectral Power Distribution of daylighting. The daylight spectrum is corrected by the photopic luminosity function, as well as the spectrum of the light source sample. Both corrected spectrums are compared in order to determine the Daylight Spectrum Index. This new metric represents a better definition of the LED lamps for a high correlated color temperature, as can be deduced from the analyzed surveys.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:15**

**Venue: Room no. 108**

**Session 3: 9 presentations-Topic: “Architectural Design and Management”**

**Session Chair: Prof. Ing. Zbyšek Pavlík**

U1001 Presentation 6 (14:15~14:30)

Analysis of the Perceived Thermal Comfort in a Portuguese Secondary School: Methodology and Results

**Miguel Ángel Campano Laborda**, A. Pinto, I. Acosta and C. Muñoz-González  
Universidad de Sevilla, Spain

*Abstract*—This paper presents a methodology to assess the thermal environment in non-university classrooms, using the example of the results obtained from a multipurpose classroom of a Portuguese secondary school during a week of November. According to the defined protocol, both hygrothermal parameter values and thermal assessments were obtained and used for the calculation of both static and adaptive thermal comfort indicators, including Matias’ Portuguese adaptive comfort indicator. Occupants perceived a neutral thermal environment (Thermal Sensation Vote, TSV, of -0.03), while their thermal preference was a warmer environment (Thermal Preference Vote, TPV, of +0.64). Female occupants tended to demand a warmer environment during this study, despite their thermal perception was similar to male occupants. Predicted Mean Vote (PMV) was lower than TSV in 0.35 points, so it underestimates occupants’ real thermal perception. When occupants’ acceptance vote are compared with Adaptive indicators, Matias’ obtains similar acceptance values (80 %) than the occupants’ assessments (85 %), while ASHRAE indicator shows lower values (27 %). In conclusion, the exposed methodology allows to characterise the thermal comfort level of Iberian non-university classrooms, so further investigation is required.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:15**

**Venue: Room no. 108**

**Session 3: 9 presentations-Topic: “Architectural Design and Management”**

**Session Chair: Prof. Ing. Zbyšek Pavlík**

U1010 Presentation 7 (14:30~14:45)

How Physical and Psychological Aspects of a Sustainable Building Design Affect its Occupants` Environmental Health

**Aryan. Amirkhani and Fatemeh. Tehrani**

Tarbiat Modares University, Iran / Islamic Azad University, Iran

*Abstract*—Evidence indicates that various building aspects influence the health and the comfort of occupants. Lack of safe drinking water, inadequate heating or cooling, waste disposal, and ventilation systems result in adverse health effects, including respiratory illness, asthma, infectious disease, injuries, and mental health disorders. These conditions, which are characteristic of substandard housing, predominantly affect vulnerable populations specifically people of radical minorities. [Krieger, Higgins, 2002] Moreover, susceptibility of poor and minority populations to hazard may be increased due to underlying health conditions, [Frumkin, 2002] The well-being, health, and safety of a building occupants and all those potentially affected by a building is a primary goal of a sustainable architecture. Health goals, on the other hand, relate to all issues dealing with the long term health of the occupants and passers-by. As the environmental impact of buildings becomes more apparent, a growing field called sustainable design is leading the way to reduce that impact at the source. Sustainable building is in fact creating environmentally sensitive, energy conscious and healthier developments. Generally one of the important points of green buildings is called "Quality of life", that means improving our living space through reduced indoor air pollution, smarter designs and improving environmental conditions for future generations. Since quality of life is essential part of green buildings, it is important to understand the relationship between technological sustainable development in different buildings and the impacts on the occupants and buildings owners.. In this paper social and psychological issues in green buildings are investigated in addition to applied behavior of occupants in these structures. This paper also investigates how indoor environment greatly affects the occupant's well being. The solutions to sustainable indoor environment are reviewed afterward. The results show that behavioural aspects of sustainability and how people interact with these structures can be important in sustainable design. The results also show that maintaining the conditions of a building improves the health of its occupants.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:15**

**Venue: Room no. 108**

**Session 3: 9 presentations-Topic: “Architectural Design and Management”**

**Session Chair: Prof. Ing. Zbyšek Pavlík**

U2001 Presentation 8 (14:45~15:00)

Multi-Agent Simulation-based Collaborative Inventory Management to Architecture Prefabricated Components

**Du Juan**, Gao Bonan, and Yuan Fan

Shanghai University, China

*Abstract*—With the increasingly developing construction industrialization in China, the management issue of architecture prefabricated components supply chain has been concerned. Because of the particularity of prefabricated architecture, it claims a tight connection among plan design, components production, logistics, site construction, and maintenance. The coordination problems among the supply chain will increase costs of the upstream and downstream enterprises. Based on the collaborative supply logistics theory, multi-Agent modeling, simulation technology, this paper uses multi-Agent platform to simulate interactive among component factories, assembly center and assemblers and seek for the optimal strategy. Firstly, the basic definition of collaborative supply logistics theory will be introduced, then a prefabricated construction supply chain stimulation model will be established. Finally, in the case study, the simulation model will be applied to a real tunnel construction case and provide the basis for decision making management.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:15**

**Venue: Room no. 108**

**Session 3: 9 presentations-Topic: “Architectural Design and Management”**

**Session Chair: Prof. Ing. Zbyšek Pavlík**

U2003 Presentation 9 (15:00~15:15)

Exploration of Sustainable Landscape in Iran: From Persian Garden to Modern Park

**Honey Fadaie** and Vahid Parhoodeh

Islamic Azad University, Iran

*Abstract*—This paper concentrates on the result of research based on studies on parameters of sustainability in Persian Garden design as a traditional Iranian landscape and in a contemporary park, Jamshidieh in Iran as a new experience of re-creation of Persian Gardens’ sustainable design. Since, sustainable development has three parts: social, economic and environmental. The complexities of each part are too great to discuss in a paper of this length, thus the authors decided to analyze the design of Persian garden by considering their environmental sustainability. The method of this research is descriptive-analytic based on documental resources and field studies. By the analysis of sustainable features and characteristics of traditional gardens, and exploration of parameters of sustainability in Iranian modern landscape, Such as Jamshideh Park, the main objective of this research is to identify the strategies for sustainable landscaping and parameters of creating sustainable green spaces for contemporary cities. The results demonstrate that in Persian Gardens, sustainable parameters such as productive networks and local renewable materials have been used to achieve sustainable development. At the conclusion, guidelines and recommendations for sustainable landscaping are presented.

# Session 4

**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, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Room no. 11**

**Session 4: 8 presentations-Topic: “Environmental and Chemical Engineering”**

**Session Chair: Prof. Nora Kovács**

D0011 Presentation 1 (13:00~13:15)

Effect of Mixing Individual Isolates for Bioreduction of Metals in Contaminated Soil

**Emenike C. U, Izyani A. K, Fauziah S. H**

University of Malaya, Kuala Lumpur, Malaysia

*Abstract*—Bioremediation of metal contaminated soil involves complex processes, and the non-degradable nature of metals makes it more difficult. The known sources of metal pollution are many and adopting a specific remediation procedure for it is often impossible. Microbes found at polluted sites tend to serve as good remediation agents due to perceived environmental potential. Therefore, it is imperative to select bioremediation by enhancing microbes potential as a way of restoring metal polluted site to original or undisturbed state. Hence, this study tried to evaluate the individual effect of bacterial isolates on the remediation of metal polluted soil from landfill, against combined impact of microbes blended together. Soil samples that characterized of Cd<sup>2+</sup>, Cr<sup>2+</sup>, Pb<sup>2+</sup> and Zn<sup>2+</sup> were subjected to bioremediation. Results revealed no more than 50% reduction across the treatments amended with individual isolates. Rather higher metal remediation was observed when individual isolates were mixed prior to application. Therefore, the study suggests that individual isolates from contaminated sites can selectively metabolize to bioreduce metal concentrations. However, a mix of such isolates with manipulation in the concentration level can enhance metal reduction efficiency (>50%).

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Room no. 11**

**Session 4: 8 presentations-Topic: “Environmental and Chemical  
Engineering”**

**Session Chair: Prof. Nora Kovács**

D0017 Presentation2 (13:15~13:30)

Potential of Cordyline sp Plant for Remediation of Metal-leachate Contaminated Soil

**Jayanthi B**, Emenike C.U, Agamuthu P and Fauziah S.H

UNIVERSITY OF MALAYA, MALAYA

*Abstract*—Heavy metals are extremely persistent in the environment and cannot degrade through chemical process, hence the long term accumulation cause induce to the environment. Soil is one of the major sink to heavy metal contamination due human activities associated to the development of global economies. Metals from waste stream, especially landfill leachate impact the soil and there is need to develop remedial option for the environmental safety of soil core. Various plants have been used to remedy polluted soil, yet metal interaction with plant differ with respect to medium or source of metal pollution. Phytoremediation technology is an alternative and cheaper approach for remediation of metal contaminated soil. Plant-based remediation is one of the most significant sustainable techniques to cope with overwhelming consequences of pollutants. Therefore this study aimed to study the potential of Cordyline sp plant and Durianta variegated for the phytoremediation of heavy metals (Pb, As, Mn, Ni, and Cr) from the leachate contaminated soil. The results showed that Cordyline sp plants tends to accumulate high amounts of this metals compared to Durianta variegated and control. Cordyline sp was able to remove 63 % of Pb, 90 % of As, 78.8 % of Mn, 88.9 % of Ni and 75 % of Cr from the metal polluted soil. The removal of heavy metal from the contaminated soil was significantly higher compared to control at  $P > 0.05$ . The highest heavy metal removal rate constant was obtained for As and Ni at same rate of 0.018 mg/kg day<sup>-1</sup> when Cordyline sp plants were used. Therefore we can conclude that, Cordyline sp have a potential to remediate heavy metal contaminated soil at a significant level.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Room no. 11**

**Session 4: 8 presentations-Topic: “Environmental and Chemical  
Engineering”**

**Session Chair: Prof. Nora Kovács**

D0020 Presentation 3 (13:30~13:45)

Development of Ce/  $\text{La}_{0.25}\text{Sr}_{0.75}\text{Cr}_{0.5}\text{Mn}_{0.5}\text{O}_3$  Anode Catalyst for Further Application in Solid Oxide Fuel Cell Typed Reactor

**W. Appamana**, S. Assabumrungrat and W. Wiyaratn

Faculty of Engineering, Rajamangala University of Technology Thanyaburi, Thailand

*Abstract*— $\text{La}_{0.25}\text{Sr}_{0.75}\text{Cr}_{0.5}\text{Mn}_{0.5}\text{O}_3$  (LSCM) and Ce/LSCM were synthesized and investigated for their potential use in an oxidative coupling of methane (OCM) reaction. The catalysts was characterized using XRD, SEM and Impedance. The catalytic activity of catalysts for OCM reaction was both studied in fixed bed and SOFC reactor. A YSZ was used as a solid electrolyte and  $\text{La}_{0.8}\text{Sr}_{0.2}\text{FeO}_3$  (LSF) was used as a cathode material. The cell obtained a maximum power density of 221 mW cm<sup>-2</sup> in humidified methane. The cell was put under a bias voltage of 0.3 V, which C<sub>2</sub> hydrocarbon was generated from the cell. At the highest methane conversion rate, the cell achieved a good C<sub>2</sub> hydrocarbon selectivity of 78.4% and a C<sub>2</sub> yield of 3.4% at 850 oC.



**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Room no. 11**

**Session 4: 8 presentations-Topic: “Environmental and Chemical  
Engineering”**

**Session Chair: Prof. Nora Kováts**

D0021 Presentation 4 (13:45~14:00)

The Influence of Propan-1-ol on Performance of Alumina-silica Catalyst over Ethanol Dehydration

**Sasiradee Jantasee**, Prajak Kanya, Wasuwat Ngoksilapa, and Bunjerd Jongsomjit  
Rajamangala University of Technology Thanyaburi, Thailand

*Abstract*—This research investigated the effect of propan-1-ol on a performance of ethanol dehydration by using an alumina-silica composite ( $\text{Al}_2\text{O}_3\text{-SiO}_2$ ) catalyst. It was compared the results to a H-Beta zeolite catalyst. Alumina-silica composite catalyst was prepared in the ratio of 60:40 by precipitation method. The catalysts were characterized using various techniques. The catalysts were tested catalytic activity over the dehydration of ethanol mixed with propan-1-ol at 1 atm of total pressure and the temperature range between 200 to 400 °C. The results show that propan-1-ol decreased ethanol conversion and ethylene yield of the  $\text{Al}_2\text{O}_3\text{-SiO}_2$  catalyst about 50% compared to the dehydration of pure ethanol over the same catalyst. Nevertheless, propan-1-ol did not significantly affect the ethylene selectivity of this catalyst. Ethanol to ethylene preferable occurred at high temperature but propan-1-ol to propylene preferable occurred at low temperature.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Room no. 11**

**Session 4: 8 presentations-Topic: “Environmental and Chemical  
Engineering”**

**Session Chair: Prof. Nora Kovács**

D0024 Presentation 5 (14:00~14:15)

Fabrication of Magnetic Alginate-Based Microspheres for Immobilized Cell Separation

**TING GAO, WEI-MING XUE**

Northwest University, China

*Abstract*—Objective: To develop a facile preparation of magnetic microspheres (MSs) for immobilized cell separation using the high-voltage electrostatic droplet technology.

Methods: Magnetic Fe<sub>3</sub>O<sub>4</sub> particles introduced into magnetic microspheres enable the target separation of immobilized cells in-situ from fermentation liquor under external field. Single factor experiment has been devised to optimize the preparation conditions of MSs.

Results: The technique allows us to industrially produce uniform MSs, where their size and magnetic adherent speed can be easily controlled by varying the operating voltage, nozzle diameter and pulse frequency. The MSs loaded Fe<sub>3</sub>O<sub>4</sub> particles and *Bacillus licheniformis* can maintain good sphericity without any breakage after a long incubation up to 66 h, which not only provides the opportunities to reuse the immobilized cells to a secondary fermentation, but also facilitate the gathering of the fermentation liquor without immobilized cells and significantly reduce the industrial separation cost.

Conclusion: This technique provides a potential way to immobilization and target isolation bioactivities substrates, such as living cell, protein, biomacromolecules and enzyme.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Room no. 11**

**Session 4: 8 presentations-Topic: “Environmental and Chemical  
Engineering”**

**Session Chair: Prof. Nora Kováts**

D1005 Presentation 6 (14:15~14:30)

Remediation of Heavy Metal Contaminated Soil Using Potential Microbes Isolated from a Closed Disposal Site

**Fauziah SH**, Jayanthi B, Emenike C.U, Agamuthu P  
UNIVERSITY OF MALAYA, MALAYA

*Abstract*—Soil environment is a major sink for a multitude of chemicals and heavy metals, which inevitably leads to environmental contamination problems. Various human activities including agricultural, urban or industrial, or landfilling are major contributors to heavy metal contamination in the environment. Since landfilling is one of the ultimate waste disposal methods, the generation of leachate is inevitable. Leachate from landfill is highly heterogeneous and consist high amount of heavy metal. Subsequent movement of the leachate into the surrounding soil, ground water or surface water could lead to severe pollution problems to and cause toxicity to human and other living organisms. Microorganisms has the ability to solubilize the metals (or increase their bioavailability) via the production of siderophores and adsorb the metals in their biomass on metal-induced outer membrane proteins and by bio precipitation. Therefore this study aimed to remediate heavy metal in leachate contaminated soil from a closed non-sanitary landfill in Kuala Lumpur. Preliminary soil and leachate characterization revealed high amount of metal contaminants as compared to the prescribed limit by local and international standard. Total of eighteen microbes were isolated from the contaminated site and were grouped into two treatments, proteobacteria and non-proteo bacteria. Comparison between the treatments revealed that proteobacteria (Treatment A) were performing higher metal removal activity compared to non- proteobacteria (Treatment B) and control (Treatment C). Out of four metals tested in this study, three of the metals (As (71.86%), Ni (50.8%), Al (87.15%)) were removed significantly by the addition of Treatment A. Highest metal removal rate constant was obtained for Al at 0.02 day<sup>-1</sup>. Therefore, it can be concluded that the addition of microbes, namely proteobacteria to leachate contaminated soil can remove the heavy metal content at a significant rate.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Room no. 11**

**Session 4: 8 presentations-Topic: “Environmental and Chemical  
Engineering”**

**Session Chair: Prof. Nora Kovács**

D2003 Presentation 7 (14:30~14:45)

Novel PAM Complex as Rheology Modifier and Fluid Loss Controller for Montmorillonite Fluid

**Rakshith R Shettigar**, Nirendra M Misra, and Khushbu Patel  
PANDIT DEENDAYAL PETROLEUM UNIVERSITY, INDIA

*Abstract*—Fluid loss controller improves the fluid retention capacity of drilling fluid during the oil and gas drilling process. Cetyltrimethylammoniumbromide modified polyacrylamide acts as a rheology modifier and fluid loss controller at very low concentration of 0.2 % (w/v) in water-based mud. The performance of polyacrylamide complex in the Na-montmorillonite fluid was analysed by using it in powder and gel form. The dispersed drilling fluid was formulated using pre-hydrated montmorillonite chrome free lignosulphonate and Na<sub>2</sub>SO<sub>3</sub>. Experimental results show that polyacrylamide complex provides Enhanced fluid loss control and excellent shear thinning rheology property to the fluid. Performance efficiency of polyacrylamide complex is studied in non-weighted and weighted fluid system. The bridging efficiency of polyacrylamide complex in the fluid was confirmed by analysing fluid cake in scanning electron microscope and energy dispersive X-ray spectroscopy.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Room no. 11**

**Session 4: 8 presentations-Topic: “Environmental and Chemical  
Engineering”**

**Session Chair: Prof. Nora Kovács**

U0029 Presentation 8 (14:45~15:00)

A Study on the Phosphorus Removal Using HFO Coated Media from Wastewater Treatment Plant Effluent

Eun-young Jo, Younghee Kim, and **Chan-gyu Park**

Korea Testing Laboratory, Korea

*Abstract*—The removal of phosphorus by adsorption is investigated in this study. Adsorption is one of efficient method to remove phosphorus in wastewater. Media such as zeolite, activated carbon, and quartz sand was coated with hydrated ferric oxide, and the adsorption efficiency of phosphorus is increased. In this study, three kinds of media (zeolite, activated carbon, and quartz sands) is coated with hydrated ferric oxides(HFO) and the removal efficiency of phosphorus was investigated.

# Session 5

**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, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Brdicka Lecture Hall**

**Session 5: 8 presentations-Topic: “Building Materials and Performance”**

**Session Chair: Prof. Alireza Mojtahedi**

U0010 Presentation 1 (13:00~13:15)

A Study Bakelite Plastics Waste from Industrial Process in Concrete Products as Aggregate

**Seree Tuprakay**, Nopagon Usahanunth and Sirawan Ruangchuay Tuprakay

Ramkhamhang University, Thailand

**Abstract**—Bakelite is prohibited to dispose for direct land filling and open burning because of the unsafe disposal and emission reasons. The purposes of this research are characterization of BPW and using BPW as aggregates in concrete products. The physical characteristics of BPW, the bulk specific gravity was 1.30-1.40 g/cm<sup>3</sup>. Chemical composition of BPW, total carbon, hydrogen, oxygen and sulfur was 53.4, 4.0, 11.6 and 0.017%, respectively. Composition of ash of Bakelite, CaO, SiO<sub>2</sub> and SO<sub>3</sub> was 94.53, 5.14 and 0.33%, respectively. pH value of BPW and fine Bakelite plastics waste (FBPW) was 8.10 and 12.00, respectively. Water absorption capacity of BPW and FBPW was 0% and 25%, respectively.

After grinding, BPW become FBPW. The water absorption of FBPW was 25%. Using BPW as aggregates in concrete products by preparing and testing mortar samples with 0%, 20%, 40%, 80% and 100% replacement percentage at each curing age 7, 14 and 28 days. Based on a testing standard of American Society for Testing Material (ASTM). The specimen test results showed that the compressive strength and density of Bakelite plastics waste Mortar (BPWM) was lower than Conventional Mortar (CM). The compressive strength decreased with increasing of replacement percentage and it increased with curing time.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Brdicka Lecture Hall**

**Session 5: 8 presentations-Topic: “Building Materials and Performance”**

**Session Chair: Prof. Alireza Mojtahedi**

U0011 Presentation 2 (13:15~13:30)

Experimental Responses of Jacketed RC Beams

**Panuwat Joyklad and Suniti Suparp**

Srinakarinwirot University, Thailand / Kasem Bundit University, Thailand

*Abstract*—Repair and strengthening of reinforced concrete (RC) beams is commonly carried out by “jacketing”. Jacketing is the addition of concrete or cement mortar and steel reinforcement to an existing beam. This paper describes an experimental investigation into the behavior of reinforced concrete beams strengthened by jacketing. Static load tests to failure were carried out on five reinforced concrete shallow beams. The mortar used in the jacket was non-shrink cement grout. The steel bars were fixed to the beams by using two inexpensive and simple anchorage systems i.e., epoxy anchorage system and mechanical expansion anchors with steel plate anchorage system. Based on experimental results, it was noted that jacketing using mortar and steel bars is very effective method to enhance ultimate load carrying capacity of RC beams compared with control beams. Proposed anchorage systems were proved effective to securely attach the steel bars to the beam. The anchorage system with mechanical anchors is resulted into higher load carrying capacity of RC beams compared with epoxy anchorage system. The control beam failed at the peak ultimate load of 23.70 kN. The RC beams jacketed using epoxy anchorage were failed at 13% to 27% higher peak load compared with control beam, whereas RC beams jacketed using mechanical anchors were failed at 84% to 105% increased load compared with control beam.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Brdicka Lecture Hall**

**Session 5: 8 presentations-Topic: “Building Materials and Performance”**

**Session Chair: Prof. Alireza Mojtahedi**

U0012 Presentation 3 (13:30~13:45)

Influence of Calcium Nitrite Based Accelerator, Steam Temperature and Pre-curing time on the Compressive Strength of Mortar/Concrete

**Abdul Ahmad Malikyar**, Yuhji Sudoh, Nozomi Nakajima, and Shigeyuki Date  
Tokai University, Japan

*Abstract*—The purpose of this study is to investigate the effect of Calcium Nitrite based accelerators concentrated 45% weight, pre-curing time and steam curing temperature on the strength gain of mortar, in the early and later age. Hence an experimental investigation was conducted to determine the optimum dosage of mentioned accelerators, and proper pre-curing time. Tests were performed on the specimens from various mixes considering to the W/C ratio 30% and 40%. Accelerator admixture was added in four series (0, 0.5, 2 and 4) %, steam curing temperature was 65C °, and the pre-curing times were two patterns (pattern1 = 0.5 (hr) and the pattern2= 2.5(hr). Curing time was equal to both patterns that's 5 (hr). The compressive strength test has been performed on the early age (8, hr), and later age (7 and 28) days, the obtained result compared with the strength of control specimens. To make the better fluidity, water reducing admixture was added by 0.5% weight of cement. From the result of the experiment, it has been observed that high strength for early and later ages obtained for the specimens that made with 4% accelerator admixture and exposed to the longer pre-curing cycle.



**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Brdicka Lecture Hall**

**Session 5: 8 presentations-Topic: “Building Materials and Performance”**

**Session Chair: Prof. Alireza Mojtahedi**

U0003 Presentation 4 (13:45~14:00)

Porosity and water absorption of Aerated Concrete with varying Aluminium powder content  
**Rana Shabbar**, Paul Nedwell, and Zhangjian Wu  
University of Manchester, UK

*Abstract*—Pore space, which occupies 60 – 90% of the volume in aerated concrete, is important when considering performance. In this paper the properties of density, porosity, capillary suction and water absorption are investigated for aerated concrete produced. Aluminium powder was used with the percentage ranging between 0.25 and 1% by cement weight in order to produce the aerated concrete. Density, porosity and capillary suction tests were carried out after immersion in water for 28 days. The results show that the highest density of aerated concrete was with 0.25% aluminium powder. The porosity values obtained by vacuum saturation were consistently found to be higher than those obtained by soaking which suggests that the soaking method does not access all the pore space. Also, the capillary suction of aerated concrete as assessed by sorptivity was significantly higher than that measured by coefficient of water absorption method. However, both methods show the water absorption of aerated concrete increases with increasing aluminium content.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Brdicka Lecture Hall**

**Session 5: 8 presentations-Topic: “Building Materials and Performance”**

**Session Chair: Prof. Alireza Mojtahedi**

U0004 Presentation 5 (14:00~14:15)

The Behavior of Circular Profile Columns Reinforced with CFRP Plates under Combined Gravity and Lateral Loads

**Armin Badakhshan and Farhad Ahadi Koloo**

Shahrood University of Technology, Iran / University of Tehran, Iran

*Abstract*—Today, carbon polymer fibers wrapping are widely used in retrofitting weak and damaged members such as bridge piers and columns of buildings. Columns reinforced with this method enjoy more ductility and energy absorption than other methods, especially the steel shells. The wrapping plays a role in lateral confinement of concrete that can increase the axial compressive strength of the concrete and prevent early failure of columns. This paper performed cyclic loading analysis of thin circular columns with three full wrapping arrangement, middle area arrangement and initial and final arrangements. Results showed that a sample with full wrapping has higher and more regular cycles and greater area under the curve than the other two samples (longer pushover curve); however, the optimal retrofit is using the middle wrapping.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Brdicka Lecture Hall**

**Session 5: 8 presentations-Topic: “Building Materials and Performance”**

**Session Chair: Prof. Alireza Mojtahedi**

U0031 Presentation 6 (14:15~14:30)

Effect of Steam Curing on Initial Strength Development of Mortar

**Nozomi Nakajima**, Takayoshi Maruyama, Hiromitsu Koyama and Shigeyuki Date  
Tokai University, Japan

*Abstract*—The steam curing process is being applied to produce precast concrete to accelerate production cycle. A prediction of initial strength is required to determine optimized production cycle and provide economical mix proportions. As for this, the strength estimate by the Maturity method is being used widely so far. However, this method is pointed that the accuracy of the estimated strength of the concrete which has been steam cured is low. This is one of the problems on the precast concrete production. In this study, the relationship between initial strength at early age and effective material age calculated by Maturity method and Arrhenius’s law was evaluated. As a result, it showed a higher estimation accuracy of the Arrhenius’s law than the Maturity method. However, the accuracy of the prediction was different in each condition such as cement type, water-cement ratio, and steam curing temperature and material age.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Brdicka Lecture Hall**

**Session 5: 8 presentations-Topic: “Building Materials and Performance”**

**Session Chair: Prof. Alireza Mojtahedi**

U1008 Presentation 7 (14:30~14:45)

Flexural Strengthening of Rolled Steel Beams using Pultruded CFRP Composite Sheets

**Kumaraguru Selvakumarasami** and Alagusundaramoorthy Paramasivan

Indian Institute of Technology Madras, India

*Abstract*—The experimental study on the flexural strengthening of rolled steel beams using intermediate modulus pultruded Carbon Fibre Reinforced Polymer (CFRP) composite sheets is presented in this paper. De-bonding is the commonly observed failure mode in external strengthening of steel structural elements using CFRP composite sheets. The load/deflection behaviour of rolled steel beams with different strengthening schemes such as external bonding, external bonding with different configurations of mechanical fasteners and intermittent U-wraps was studied. Two control and six strengthened steel beams were tested. The load carrying capacity, deflection ductility, toughness, mode of failure and stiffness were arrived from the test results. The test results show that steel beams with external bonding along with intermittent U-wraps has better performance in terms of load carrying capacity, toughness and ductility. The increase in load carrying capacity was up to 19 % and the maximum strain in CFRP sheet reached up to 63 % of its rupture strain.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 13:00~15:00**

**Venue: Brdicka Lecture Hall**

**Session 5: 8 presentations-Topic: “Building Materials and Performance”**

**Session Chair: Prof. Alireza Mojtahedi**

U2002 Presentation 8 (14:45~15:00)

Reducing High Temperature Effect on Concrete by Changing Concrete Mixture

**Erhan Burak Pancar**

Ondokuz Mayıs University, Turkey

*Abstract*—Mechanical properties of concrete decrease when subjected to high temperatures. It is desired to reduce concrete surface temperature when it is subjected to high temperature. In this study, different proportions of glass beads (10%, 20%, 30%) and blast furnace slag (+10%, +20%, -10%, -20%) were added into C30/37 strength class concrete samples to reduce the concrete surface temperature when it is subjected to 3000 °C flame for a short time. Mechanical properties of concrete samples were also measured. It was determined that lower surface temperatures can be obtained by regulating concrete mixture with optimum proportions of glass beads and blast furnace slag when the concrete is subjected to high temperature. In this study, the easy, cheap and time consuming test is also presented to find the better concrete mixture when subjected to high temperature.



**15:00-15:30**

**Coffee Break & Group Photo Taking**

# Session 6

**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, March 14, 2017 (Tuesday)**

**Time: 15:30~17:45**

**Venue: Room no. 108**

**Session 6: 9 presentations-Topic: “Civil Engineering and Management”**

**Session Chair: Prof. Humayun R. H. Kabir**

U0005 Presentation 1 (15:30~15:45)

Preparation of Papers for International Journal of Engineering and Technology

**Alireza Mojtahedi** and Aida Bagheri Basmenji

University of Tabrizu, Iran

*Abstract*—River training refers to the operations which are optimally used in length or width of the river, and provides significant objectives. Achachi Village is one of the most important rural areas of the Mianeh City in Iran, and Ghezel- Ozan River runs adjacent to it and makes its lands more fertile. On the other hand, the arterial borders of the river cause a lot of damages in the area. Therefore, an embankment dike and a couple of fully-stone groynes were constructed to protect the agricultural lands; however, some parts of those structures were destroyed because of flood, and they gradually lost their efficiency. The second phase of Ghezel-Ozan River training studies is done by Water Research Institute belonging ministry of energy. Moreover, the area is modeled by HEC-RAS. The properties, such as average velocity and water depth in the river, can be evaluated by one-dimensional models. However, using two-dimensional models is vital for the modeling the vortex formation between the groynes, determination of optimum distance between them, and the application of the structures. In this study, numerical modeling of the hydraulic phenomena is computed by MIKE21-FM which is one of the most powerful software in the world. Consequently, the groynes impact on Achachi River is investigated in various cross sections, and also vortex formation and stream velocity around them are analyzed.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~17:45**

**Venue: Room no. 108**

**Session 6: 9 presentations-Topic: “Civil Engineering and Management”**

**Session Chair: Prof. Humayun R. H. Kabir**

U0042 Presentation 2 (15:45~16:00)

On Assessment of Seismic Hazard Analysis in Kuwait City-A Case Study

**Humayun R. H. Kabir** and Mariam Badwai

Kuwait University, Kuwait

*Abstract*—This paper presents the results of a seismic hazard assessment undertaken for Kuwait City. The area where Kuwait is located is proposed to a number of major regional tectonic features including the Zagros and Makran regions, hence one of the possible sources of seismic hazard. Some earthquakes in Kuwait were also caused by oil field activities as rapid and regional depletion of pore pressure can induce shear stress sufficient to cause massive subsurface rock failure. The recent seismicity of Kuwait studied through collected historical data which were incorporated through ASCE 10[1] guidelines were studied and applied through two different approaches, Deterministic Seismic Hazard Analysis Approach (DSHA) and Probabilistic Seismic Hazard Approach (PSHA). A comparison between the DSHA results and PSHA results will be presented to establish the most suitable approach for Kuwait region.

The main objective of the presented project is to find out the proper assessment of earthquake hazard for Kuwait city and oil fields by following ASCE-10 guidelines of the Deterministic Approach (DSHA) and the Probabilistic Approach (PSHA).

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~17:45**

**Venue: Room no. 108**

**Session 6: 9 presentations-Topic: “Civil Engineering and Management”**

**Session Chair: Prof. Humayun R. H. Kabir**

U0044 Presentation 3 (16:00~16:15)

The Modeling of Human-structure Interaction

**Huixuan Han** and Ding Zhou

Nanjing Tech University, China

*Abstract*—The coupled model of human and structure system has been developed by considering the standing human body as an elastic non-uniform column with the distributed mass, damping and stiffness. The governing differential equations of the human-beam system and the human-plate system are, respectively, derived by using the Lagrange equation. A two-section elastic column is used to simulate the vibration of the human body. The dynamic characteristics of the human-structure interaction are analyzed by the use of the complex mode theory. The influence of the human standing on the beams or the plates on vibration characteristics of the coupled systems is investigated in detail. The numerical results are compared with the experimental ones existed in the literature, good agreement has been achieved. Therefore, the reasonability and correctness of the present model have been demonstrated.



**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~17:45**

**Venue: Room no. 108**

**Session 6: 9 presentations-Topic: “Civil Engineering and Management”**

**Session Chair: Prof. Humayun R. H. Kabir**

U0045 Presentation 4 (16:15~16:30)

Natural Frequency of Bridge Pier Considering Soil Shear Effect in Layer Foundation

**Ying Sun** and Ding Zhou

Nanjing Tech University, China

*Abstract*—To improve Winkler foundation model that ignores the shear effect of the layered soil, the second soil elastic parameter is introduced to take into account the shear deformation of soil. An initial parameter method is developed to solve the dynamic differential equation of lateral vibration for a pile which is embedded in a layered Pasternak foundation. By means of the transfer matrix method, the relationship of the lateral displacement, rotation angle, bending moment and shear force between the pile head and pile tip is investigated. Based on the boundary conditions as well as the continuity conditions, the accuracy of the theoretical derivation and the calculation program of the natural frequency has been verified through an engineering example. The method in this paper gives much better results in contrast to the energy method and equivalent depth method. The analysis also demonstrates that the role of soil shear makes the dynamic stiffness of a pile increase when compared with one in the Winkler foundation model.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~17:45**

**Venue: Room no. 108**

**Session 6: 9 presentations-Topic: “Civil Engineering and Management”**

**Session Chair: Prof. Humayun R. H. Kabir**

U0048 Presentation 5 (16:30~16:45)

Investigation the Effect of Infill Walls on the Seismic Performance of an Old Building

**Ugur Albayrak**, Esref Unluoglu and Mizam Dogan

Eskisehir Osmangazi University, Turkey

*Abstract*—Turkish Seismic Code requires that all new buildings must be able to survive after a major earthquake. The building can crack, tilt and even be declared unfit for future use but it must not totally collapse. The effect of the existence of infill walls on the earthquake performance of the structure had been investigated. This study present a recommended alternative approach to the entrenched procedures for seismic design of buildings contained in standards such as Turkish Seismic Code. In this manner, an existing 55 years old industrial R.C. building in Eskisehir, Turkey was modelled and performance-based seismic design deal with the verification of seismic performance uttered in terms of limit states defined in Turkish Seismic Code. Three dimensional finite elements modelling of the building was created based on the measurements and observations on site. SAP2000 was utilized to make earthquake analysis of the 3-D numerical model of the building. According to the results from the performance evaluation of entire building; 71.4% of the columns are in Marked Damage Region for X direction and 39.0% for Y direction while 3.6% of the columns are in Collapsing Region for X direction and 0% for Y direction. On the other hand, the same model without any infill wall (Brick, white stone or concrete) was analyzed, all of the columns would have been in Advanced Damage Region or Collapsing Region for both X and Y directions. These results from performance based design procedure indicate that infill walls in this building are the main reason why this insufficient building in terms of earthquake resistance has been survived since 55 years.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~17:45**

**Venue: Room no. 108**

**Session 6: 9 presentations-Topic: “Civil Engineering and Management”**

**Session Chair: Prof. Humayun R. H. Kabir**

U2004 Presentation 6 (16:45~17:00)

Behavior Analysis of Circular Steel Tube under Fire

**Jihye Seo, Deokhee Won, and Woo-Sun Park**

KIOST (Korea Institute of Ocean Science and Technology), Korea

*Abstract*—Recently, a tremendous loss of lives open occurred by collapse of structures under fire. Steel members were applied main member as column and beam in building for good performance and construction efficiency. Fire resistance performance of steel structure was very important because it rapidly changed according to high temperature. Buckling behavior of steel structure under fire was imperative because it can local buckling failure by reduction of structural material properties by temperature. In this paper, Elastic buckling behavior of circular steel tube under fire was investigated through finite element analysis. Parameters for this analysis were selected diameter-thickness ratio, fire exposure area, and fire scenarios. Elastic buckling strength of circular steel tube was rapidly reduced subjected to the fire curve. Local buckling was occurred that this can be lead global failure. When fire resistance design of circular steel tube was performed, buckling behavior must be considered.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~17:45**

**Venue: Room no. 108**

**Session 6: 9 presentations-Topic: “Civil Engineering and Management”**

**Session Chair: Prof. Humayun R. H. Kabir**

U3004 Presentation 7 (17:00~17:15)

General Perception of Quality Management: An Application in Industrial Sector

**Ayşenur Erdil** and Hikmet Erbiyık

Yalova University, Turkey

*Abstract*—Global business world, quality customer’s products are really significant dimensions within the Variety and functional production scope. These goods created are requirements of households. They are household devices, electronic means, home textile products and other products of industrial sectors. All products have quality warranties. These generally have a useful and functional lifecycle time more than three years.

This study presents the quality and it involves background basic concepts of quality methodology. The aim of this research is to investigate and analysis some developments which the delivery time of manufactured products by using Pareto Chart. The other purpose of this study is to present the control system of Warehouse Management System in X Company for an industrial sector.

This study provides a general review of the quality improvement of stages of production process for VoC (Voice of Customer) by applied methodology, Pareto Analysis.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~17:45**

**Venue: Room no. 108**

**Session 6: 9 presentations-Topic: “Civil Engineering and Management”**

**Session Chair: Prof. Humayun R. H. Kabir**

U0049 Presentation 8 (17:15~17:30)

Cost Optimization of Plane Truss using Non-Linear Programming

**Gulcag Albayrak** and Ugur Albayrak

Eskisehir Osmangazi University, Turkey

*Abstract*—Nowadays, research on cost optimization on structural engineering is a developing area. Some convenient optimization methods can be effective for engineers to find the most cost-effective solutions for sizing of structural members. Furthermore, designing and producing of truss systems which are increasingly popular are quite appropriate with optimization. This paper discusses using non-linear programming to optimize cost of plane truss. The aim of the study is to obtain the minimum cost based on the optimal configurations which determined by mathematical modelling. The decision variables of the mathematical model are considered cross-sections of the truss system elements which are constrained in regard to structural and design issues. Also, the cost expression as an objective function is defined using cost data. For this purpose, firstly, the proposed method is introduced in details. Then a numerical example is developed and analysed according to problem data and the frame of the non-linear programming principles. The results are evaluated and the effectiveness of the proposed optimization method is mentioned.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~17:45**

**Venue: Room no. 108**

**Session 6: 9 presentations-Topic: “Civil Engineering and Management”**

**Session Chair: Prof. Humayun R. H. Kabir**

U1006 Presentation 9 (17:30~17:45)

Development of Work Breakdown Structure at Underground Tunnel Construction of Jakarta Mass Rapid Transit Project for Budgeting Control

**Haureta Nova Aisyah**

Universitas Indonesia, Indonesia

*Abstract*—Infrastructure development in urban area are restricted by limited land and its negative impact of traffic congestion. Tunnel construction is the alternative to minimize the impact of the infrastructure on the environment by shifted in the cities underground. Tunnel project in Indonesia is a new comer and this method construction adopted in the construction of Jakarta’s MRT Project, which is expected to be an alternative solution for the city public transportation. Tunnel construction is the critical scope in this project due to its impact for total project cost and duration. Therefore detail description and definition of project scope is highly required in the form of Work Breakdown Structure (WBS) that shall be implemented at project planning stage. This is proven that WBS is one of the important component that affect the successful of project execution. There are few published studies about the methodologies to develop WBS for tunnel construction. This study emphasizes the development of systematic and comprehensive methods of WBS that can be customized to complex tunnel projects. To address this issue, a WBS development will be employed top down method. This method will define a structured and logical WBS by decomposition of tunneling construction process to the smallest work package. The developed WBS will be a main input of integrated budgeting control aspect. Consequently this WBS development can significantly improve the key project task and decreasing risk of project cost overrun.

# Session 7

**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, March 14, 2017 (Tuesday)**

**Time: 15:30~18:00**

**Venue: Room no. 11**

**Session 7: 10 presentations- Topic: “Pharmaceutical Medicine and Biotechnology”**

**Session Chair: Prof. Ioana Demetrescu**

D0006 Presentation 1 (15:30~15:45)

Anthraquinone Derivatives Ameliorate the Evolution of Inflammatory Periodontal Bone Loss by Inhibiting Rankl-Induced Osteoclastogenesis

**Ren-Yeong Huang**, Jen-Kun Chen, Wen-Chin Yang, Wan-Chien Cheng and Tian-Syuan Lin, National Defense Medical Center, Taipei, Taiwan

**Abstract—Purpose.** Periodontal diseases are characterized by destruction of the tooth-supporting structure, and may be a hazard to general health. Anthraquinone derivatives were found originally in plants with anti-inflammatory and analgesic activities, and were also known as “disease-modifying osteoarthritis drugs (DMOAD)” or “chondro protective agents”. Both *in vitro* and *in vivo* experiments have also revealed that anthraquinone derivatives possesses anti-inflammatory properties. Therefore, in the present study, we investigated the therapeutic effects of anthraquinone derivatives in experimental periodontitis in rats.

**Materials and Methods.** Rat model of periodontal disease was induced by ligature placed around the maxillary second molars of each animal. Male SD rats were divided into three groups: 1) animals without ligature placement receiving administration of empty vehicle (control); 2) animals with ligature receiving administration of empty vehicle; 3) animals with ligature receiving administration with oral anthraquinone derivatives (10 mg/kg/day). The animals were sacrificed after 3, 7, 10 or 14 days after induction of periodontal disease, and the maxillae and gingival tissues were removed for further analysis. *An in vitro* assay was also employed to test the inhibitory effects of anthraquinone derivatives on osteoclastogenesis.

**Results.** Histomorphological analyses of periodontal tissue demonstrated that anthraquinone derivatives-treated animals presented ameliorated alveolar bone destruction, compared to those animals with ligature, but treated with empty vehicle. Corresponding to such results obtained from in

vivo experiments, anthraquinone derivatives also suppressed in vitro osteoclast differentiation in the presence of RANKL in osteoclast precursor cells, along with the down-regulation of the expression of RANKL-induced TRAP mRNA.

**Conclusion.** These data indicates that anthraquinone derivatives may suppress the bone resorption by inhibiting RANKL-mediated osteoclasto genesis elicited during the course of experimental periodontitis in rats. These findings suggest that anthraquinone derivatives could constitute a promising therapeutic drug to treat periodontal disease.



**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~18:00**

**Venue: Room no. 11**

**Session 7: 10 presentations- Topic: “Pharmaceutical Medicine and  
Biotechnology”**

**Session Chair: Prof. Ioana Demetrescu**

D0007 Presentation 2 (15:45~16:00)

Melatonin Ameliorates Experimental Periodontitis through Modulation of Osteoblastic Activities

**Wan-Chien Cheng**, Yi-Wen Cathy Tsai, Po-Yan Hsiao and Ren-Yeong Huang

National Defense Medical Center, Taipei, Taiwan

**Abstract—Purpose.** Periodontitis is a chronic inflammatory disease characterized by tissue inflammation and destruction of the associated alveolar bone. Melatonin (N-acetyl-5-methoxytryptamine) is a hormone and is well-known for its biological effects as well as its wide range of beneficial effects on health. However, the therapeutic potential of melatonin on periodontal destruction has not been fully investigated. The aim of this study was to evaluate the effects of melatonin on periodontitis *in vivo* and *in vitro* by examining alveolar bone destruction in rat-model of experimental periodontitis along with its influence on osteoblastic activities.

**Materials and Methods.** Sprague-Dawley rats were separated into control (C), ligature (L), and ligature-plus-melatonin (L+Mel) groups (n=5 per group). Ligature-induced experimental periodontitis in rats was established by ligature placed around the maxillary second molars. Ligature-plus-melatonin groups were subdivided into two groups treated with 10mg/kg or 100mg/kg of melatonin through oral gavage for 14 days. Afterwards, the rats were sacrificed for Micro-CT and histological analysis. To observe the effects of melatonin *in vitro*, mouse osteoblastic cell line (MC3T3-E1) cells were treated with melatonin at concentrations of 12.5-200nM, and mineralization effects were examined through alkaline phosphatase (ALP) activity and Alizarin Red Staining (ARS).

**Results.** Micro-CT, histomorphological and biochemical analyses showed systemic administration of melatonin in S-Drats induced with experimental periodontitis showed reduced alveolar bone destruction and decreased polymorphonuclear cells infiltration and MPO activity compared to rats with periodontitis not treated with melatonin. Melatonin treatment showed no toxicity to MC3T3-E1 cells for concentrations up to 500nM. In addition, melatonin increased mineralization activity of MC3T3-E1 cells after differentiation *in vitro*.

**Conclusion.** Melatonin may have potential therapeutic effects on periodontitis through modulating osteoblastic activities, and more studies should be conducted to further investigate its mechanism.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~18:00**

**Venue: Room no. 11**

**Session 7: 10 presentations- Topic: “Pharmaceutical Medicine and  
Biotechnology”**

**Session Chair: Prof. Ioana Demetrescu**

D0004 Presentation 3 (16:00~16:15)

Role of Oxidative Stress and Trace Elements in PCOS Infertility

Rzgar T. Kareem, **Uyan Yuksel**, Ayad F. Palani

Siirt University, Turkey

*Abstract*—Oxidative stress is a phenomenon of imbalance between oxidant and antioxidant in vivo. Oxidative stress is intrinsically associated with many pathologies including infertility. Trace elements play an important role in antioxidant defense system as direct antioxidant or as a co-factor for enzymatic antioxidant. In this study we try to estimate the effects of trace elements and antioxidants on female infertility. The study includes 60 infertile women who have signs of polycystic ovary syndrome [Clinical signs of hyperandrogenism & ovarian dysfunction (Oligo-anovulation)] and 30 fertile women. Sample taken from patients attended Sulaymaniyah hospital for obstetrics and gynecology in Sulaymaniyah city, Iraq. Blood samples drawn in the lab of the hospital and samples transferred to deep freeze in the university labs (-80 °C). Serum samples analysis include: (LH, FSH Testosterone, prolactin, Total antioxidant capacity, Catalase, MDA, Zn, Cu, Se, Mg). Results analysis statistically using Mini Tab software program, result considered significant at ( $p \leq 0.05$ ).

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~18:00**

**Venue: Room no. 11**

**Session 7: 10 presentations- Topic: “Pharmaceutical Medicine and  
Biotechnology”**

**Session Chair: Prof. Ioana Demetrescu**

D0016 Presentation 4 (16:15~16:30)

Comparison of Anticancer Activity of Anhydride Containing Copolymer/Hydroxyurea Conjugates

**Gulderen KARAKUS**, Hatice KAPLAN CAN, Ayse SAHIN YAGLIOGLU  
Cumhuriyet University, Faculty of Pharmacy, Turkey

*Abstract*—Polymeric drug delivery systems (DDS) have been improved to achieve the efficiency delivery of antitumor agents to tumor cells to overcome the problem of side effects by improving drug distribution in the body and prolongation of its main activity. Modification of the polymeric materials through derivatization or conjugation forms have been commonly applied as solubilizing agents for nanoparticulate formation, surface modification, macromolecular drug carriers, diagnostic imaging agents, implants, etc.[1] Water-soluble polymer conjugates have been designed as drug that can be attacked by amino (-NH<sub>2</sub>) or hydroxyl groups (-OH) of nucleophilic reagents.[2] Hydroxyurea or hydroxycarbamide (HX) is a monohydroxyl-substituted urea antimetabolite. It is an antineoplastic agent that used to reduce the rate of painful attacks in sickle-cell disease and has antiretroviral properties in diseases (HIV/AIDS). It has a limited use due to its many side effects depending on its cytotoxic effects on tissues. [3]

Purified water soluble poly (maleic anhydride-co-vinyl acetate) (MAVA) and poly(maleic anhydride-alt-acrylic acid) (MAAA) copolymers were modified by ring opening reaction with an anticancer agent HX. Conjugation reactions were carried out as follows: 50 h 70 °C (MAVA/HX) and 48 h 75 °C (MAAA/HX) in dimethylformamide (DMF) and trimethylamine (TEA) used as the catalyst. Structural characterization of conjugates was performed by Fourier Transform Infrared Spectroscopy (FTIR) and Proton Nuclear Magnetic Resonance Spectroscopy (1H-NMR). Antiproliferative activities of conjugates was performed by the BrdU cell proliferation ELISA assay, using C6 (rat brain tumor) and HeLa (human cervix carcinoma) cell lines (at 5-100 µg/mL).[4] Statistical analysis were carried out by ANOVA (p values of <0.01 were considered as significant). Conjugates characterized with successful amidation mechanism. MAAA/HX is more suitable, because of its significant antiproliferative activity against C6 and HeLa as MAAA/HX > HX > MAAA. Furthermore MAAA/HX increased antitumor activity, improved HX water solubility, and decreased toxic effects compared to crude drug (HX).

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~18:00**

**Venue: Room no. 11**

**Session 7: 10 presentations- Topic: “Pharmaceutical Medicine and  
Biotechnology”**

**Session Chair: Prof. Ioana Demetrescu**

D0013 Presentation 5 (16:30~16:45)

Bioactivity Study of Moss *Dumortiera Hirsuta* (Swaegr.) Nees Ethanolic Extract on Parasitemic Level of *Plasmodium Berghei* Vincke and Lips, 1948 in Mice (*Mus Musculus* L.)

**Imam Fathoni**, R. R. Upiek Ngesti Wibawaning Astuti, S. Herry Poerwanto  
Gadjah Mada University, Faculty of Biology, Indonesia

*Abstract*—Malaria is a major infectious disease in the world including Indonesia. The main problem in controlling malaria is its resistance by standard treatment. *Dumortiera hirsuta* has not been widely used by the public as an alternative medicine. Liverworts contain bioactive compounds such as flavonoids, terpenoids, and alkaloids one of which may reduce the level *Plasmodium* in the blood. Moss was collected from Telaga Putri waterfall, Yogyakarta. Samples were extracted by using 96% ethanol. Thin layer chromatography (TLC) was used for detecting bioactive compounds. Peter's Suppressive Test method has been used for monitoring anti-plasmodial activities of moss extract in male SWISS Strain mice. The  $10^7$  *P. berghei* in 0.2 mL of DMSO were infected intraperitoneally for the treated mice ( $H_0$ ). There were 9 groups : 3 control groups, 1 placebo, and 5 treated groups on the 1<sup>st</sup> day ( $H_1$ ) until the 4<sup>th</sup> day ( $H_4$ ) *D. Hirsuta* extract on 100; 200; 300; 400 and 500 mg / Kg BW doses were given orally. The results of TLC showed that alkaloids, flavonoids, terpenoids, and saponins were detected in the extract of *D. Hirsuta*. The most effective inhibition was showed at the dose 300 mg/Kg BW up to 96%, whether the control mice with chloroquine up to 77%. Ethanolic extract *D. Hirsuta* could be potential source of an alternative antimalarial drug.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~18:00**

**Venue: Room no. 11**

**Session 7: 10 presentations- Topic: “Pharmaceutical Medicine and  
Biotechnology”**

**Session Chair: Prof. Ioana Demetrescu**

D0009 Presentation 6 (16:45~17:00)

Assessing Ecotoxicity of Aerosol Samples Using Higher Plants as Test Organisms  
**Nora Kováts**, Eszter Horváth, Bettina Eck-Varanka, Eszter Csajbók, András Hoffer  
University of Pannonia, Institute of Environmental Sciences, Hungary

*Abstract*—Plants are widely applied in the assessment of the ecological effects of airborne contaminants, using individual level symptoms such as growth inhibition or leaf injury. The same symptoms can be used in controlled ecotoxicological tests where the dose–effect relationships can be established and a quantitative estimation can be given on the toxic effect. In our study *Cucumis sativus* L. plants were sprayed with the aqueous extract of urban aerosol samples, following the protocol as described by the No. 227 OECD GUIDELINE FOR THE TESTING OF CHEMICALS: Terrestrial Plant Test: Vegetative Vigour Test. After the termination of the test, on Day 21, fresh weight and leaf length were measured as end-points. It was found that the extract elucidated stimulatory effect on both fresh weight and leaf length. Our results are in concordance with literature data reporting on the nutrient content of atmospheric aerosol.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~18:00**

**Venue: Room no. 11**

**Session 7: 10 presentations- Topic: “Pharmaceutical Medicine and  
Biotechnology”**

**Session Chair: Prof. Ioana Demetrescu**

D0010 Presentation 7 (17:00~17:15)

Screening for Polypropylene Degradation Potential of Bacteria Isolated from Mangrove Ecosystems in Peninsular Malaysia

**Auta, Shnada Helen**, Emenike, Chijioke Uche, Fauziah, Shahul Hamid  
Federal University of Technology, Minna, Nigeria

*Abstract*—Polypropylene (PP) is a versatile polymer that is widely used globally and plays an important role in many commercial applications. Its recalcitrance to degradation by microorganisms makes it persist in the environment, causing environmental pollution. In the present studies, *Bacillus cereus* and *Sporosarcina globispora* isolated from mangrove sediments in Peninsular Malaysia were screened for ability to degrade polypropylene using mineral salt media. The bacteria isolates were able to grow on media infused with polypropylene. The extents of biodegradability of the polypropylene granules by the isolated bacterial strains were assessed in vitro in the medium containing polypropylene as sole carbon source. After 40 days of incubation, the biodegradation of polypropylene granules was measured in terms of weight loss and rate of polymer reduction. *Bacillus cereus* showed 12% and *Sporosarcina globispora* showed 11% degradation by weight loss in 40 days. The rate of reduction of the polypropylene polymer granules by the isolates was 0.003g day<sup>-1</sup> and 0.002g day<sup>-1</sup> for *B. cereus* and *S. globispora*, respectively. The designated isolates can degrade the microplastic material and indicate positive potential towards remediation of polypropylene-contaminated environment.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~18:00**

**Venue: Room no. 11**

**Session 7: 10 presentations- Topic: “Pharmaceutical Medicine and  
Biotechnology”**

**Session Chair: Prof. Ioana Demetrescu**

D0012 Presentation 8 (17:15~17:30)

Toxic Effect of Biodiesel Extract on Aquatic Organisms

**Eszter Horváth**, Bettina Eck-Varanka, Gábor Paulovits, Nora Kovács

University of Pannonia, Institute of Environmental Sciences, Veszprém, (Hungary)

*Abstract*—Biodiesel is considered as an important renewable energy source but the environmental effects and toxicity of biodiesel, especially to aquatic organisms have not been sufficiently studied. The toxicity of water soluble fractions of biodiesel was evaluated in our study in relatively low concentrations. Aqueous extract of a biodiesel containing 99.7% Fatty Acid Methyl Ester and 0.3% methanol was investigated with *Unio pictorum* micronucleus test (MN test). The results indicate that the biodiesel extract is highly toxic in low concentration: According to the MN test genotoxic effect of biodiesel extract increased the number of micronuclei (indicating serious DNA damage) in concentration as low as 3.3%. Our study suggests that for aquatic molluscs even a low concentration biodiesel spilling can be a serious hazard.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~18:00**

**Venue: Room no. 11**

**Session 7: 10 presentations- Topic: “Pharmaceutical Medicine and  
Biotechnology”**

**Session Chair: Prof. Ioana Demetrescu**

D0015 Presentation 9 (17:30~17:45)

A New Approach Based on Polymers for Developing Polymeric Vaccine against Q fever

**Mesut Karahan**

Üsküdar University, Faculty of Engineering and Natural Sciences, Department of Bioengineering, Turkey

*Abstract*—Reactions of polyelectrolytes (PE) with proteins in aqueous solutions have attracted great attention in the last decades. Polymer- biomacromolecules (protein, peptid, polysaccharide etc.) complexes (or conjugate) form as a result of the polyion chains with the oppositely charged groups of the biomacromolecules molecule during these reactions. Such complexes represent a specific class of polymer- biomacromolecules compounds that have important applications in various areas. Polyelectrolytes of synthetic origin have been found to increase immunoresponse to the immunizing antigen and to produce an adjuvant effect. The use of PE as a carrier, which is firmly linked to microbial and viral antigens to form a stable complex (or conjugate), not only increased by several orders of magnitude the immune responsiveness of the organism but also afforded effective immune protection [1-4].

*Coxiella burnetii* is etiological agent of Q fever. The bacterium causes a most frequent diseases of rickettsial origin in the world. The most common acute form of Q fever is characterized as a sudden onset of fever, chills, fatigue, headache, loss of appetite or less frequently as a granulomatous hepatitis, with a significant incidence of neurologic complications. Persistent infections in humans may lead to chronic form of Q fever, which may be associated with endocarditis. *C. burnetii*-induced endocarditis is often fatal. *C. burnetii* contains a lipopolysaccharide (LPS) which is considered to be a major factor of virulence of the bacterium. For the purpose of this study, the LPS was isolated from the *C. burnetii* strain Nine Mile I (RSA 493), serologically in virulent phase I. [5-8]. A series of experiments have been performed to develop a polymer-LPS conjugate, which should form a basis for the construction of synthetic vaccine against Q fever. Our preliminary results have shown that it is now possible to prepare an polymer-LPS conjugate as a possible vaccine prototype.



**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:30~18:00**

**Venue: Room no. 11**

**Session 7: 10 presentations- Topic: “Pharmaceutical Medicine and  
Biotechnology”**

**Session Chair: Prof. Ioana Demetrescu**

S2014 Presentation 10 (17:45~18:00)

Identification of Approved and Candidate Maiz Varieties/Lines against Stalk Rot (Fusarium Moniliforme) under Natural and Artificial Disease Conditions.

**Muhammad Asim Nazir**

DuPont Pioneer Pakistan Seed Limited

*Abstract*—The investigations reported in this manuscript were carried on screen out different approved and candidate maize varieties/lines against stalk rot (Fusarium moniliforme) under natural and artificial conditions, and its effects on morphological, disease. Yield components and grain yield (kg/ha) under natural and artificial conditions. Among the fungal disease of maize, stalk rot (Fusarium moniliforme) is a major disease. All the maize varieties of white group including EV-6098, EV-6089 and Pak-Afgoyee are moderately resistant against stalk rot (Fusarium moniliforme) due host resistant. All the maize varieties of Yellow group including Agatti-2002, Sahiwal-2002 are the susceptible against Fusarium moniliforme under natural and artificial conditions due to less host resistant against this pathogen. All plant morphological characters, plant height, cob length, cob diameter are drastically affected with the attack of stalk rot (Fusarium moniliforme), while plants morphological character was less affected in case of white group. Similarly stalk rot also effect on grain yield with decreasing in different yield components like cob length, cob diameter and grain size. White group varieties also gave maximum grain yield under artificial inoculation with F. Moniliforme and in natural condition. RCBD design was applied on following experiment.

# Session 8

**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, March 14, 2017 (Tuesday)**

**Time: 15:15~18:00**

**Venue: Brdicka Lecture Hall**

**Session 8: 11 presentations-Topic: “Food Processing and Biotechnology”**

**Session Chair: To be added**

S0019 Presentation 1 (15:15~15:30)

The Influence of Native Inulin and Oligofructosis Addition to Flour and Its Effects on the Rheological Characteristics of the Dough

Georgiana Codina, Dumitru Zaharia, Silvia Mironeasa, Adriana Dabija and **Sorina Ropciuc**  
Ștefan cel Mare University, Romania

*Abstract*—The aim of this paper was to study the effect of native inulin (IN) addition and oligofructosis (FOS) addition in wheat flour of 1250 type on gluten quality, dough rheological properties and amylase activity. The wheat flour has been enriched with IN and FOS in a proportion of 0 – 10%. The gluten quality were analyzed by it extensibility and elasticity. The dough rheological properties were analyzed with a Farinograph device the fallowing characteristic being determinate: water absorption, time of development, stability and degree of softening. The samples with a 5% content of IN and FOS were the ones which presented the lowest time values for dough formation. Furthermore, it has been noted that the time during which the dough maintains its consistency (stability) registers higher values for the flour with a 5% addition of IN and FOS. Water absorption in dough decreased direct proportional with the increase level of inulin and oligofructosis addition in wheat flour. The amylase activity of the wheat flour with inulin and oligofructose addition were analysed by using the Amilograh and Falling Number device. The amylase activity were higher with the increase level of inulin and oligofructose addition.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:15~18:00**

**Venue: Brdicka Lecture Hall**

**Session 8: 11 presentations-Topic: “Food Processing and Biotechnology”**

**Session Chair: To be added**

S0020 Presentation 2 (15:30~15:45)

Effect of Composite Flour Made from Tomato Seed and Wheat of 650 Type of a Strong Quality for Bread Making on Bread Quality and Alveograph Rheological Properties

**Silvia Mironeasa**, Georgiana Gabriela Codină and Costel Mironeasa

Faculty of Food Engineering, Stefan cel Mare University, 13th University Street, 720229, Suceava, Romania

*Abstract*—The effect of composite flour made from tomato seed and wheat flour of 650 type of a strong quality for bread making on Alveograph rheological properties and bread quality characteristics were investigated. In this study, dough and breads were prepared using five levels of replacement of wheat flour with tomato seeds flour (TSF) (0, 5, 10, 15 and 20%, on flour basis). Incorporating of TSF in dough formulations significantly ( $p < 0.05$ ) influenced dough rheological properties. Dough extensibility and deformation energy decrease with increase level of TSF addition in wheat flour. Up to 10% replacement with TSF the loaf volume, porosity and elasticity of the bread samples increases. Regarding the mechanical textural parameters, significant changes were found for the hardness parameter which presented higher values for all the bread formulations compared to the control one. The crumb cells structure the bread samples with TSF addition it seems less compact than those of the control sample. Regarding sensory properties, when TSF was used at the level of 10%, lead at either acceptable sensory characteristic than the sample without TSF addition. Addition of more than 10% TSF decreased overall acceptability of bread. The multivariate statistics technique, Principal Component Analysis was used to highlight correlations between chemical characteristics of wheat flour-tomato seed flour formulation, Alveograph rheological properties, bread physical characteristics, bread textural parameters and bread sensory characteristics of the sample formulation.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:15~18:00**

**Venue: Brdicka Lecture Hall**

**Session 8: 11 presentations-Topic: “Food Processing and Biotechnology”**

**Session Chair: To be added**

S2001 Presentation 3 (15:45~16:00)

Effect of Roasting on Phenolics Content and Antioxidant Activity of Proso Millet

**Han Fei**, Zheng Lu, Di Wenlong and Li Aike

Academy of State Administration of Grain, Beijing, China

*Abstract*—The influence of roasting on the antioxidant activity and phenolics content of two varieties of proso millet (*Panicum miliaceum* L.) was studied. Changes of phenolic and flavonoid contents and the antioxidant properties during the roasting of soaked proso millet seeds at 180 °C were measured by the DPPH, ABTS, FRAP and ORAC assays. These contents and properties increased markedly after roasting for 10 min. The positive correlation coefficients between the total content of phenolics, total content of flavonoids and antioxidant activity were high; the highest was between total content of phenolics and FRAP ( $r$  0.995). Nine individual phenolic compounds were identified in roasted proso millet. The predominant phenolic acids were p-coumaric acid and trans-ferulic acid in the free fraction and vanilic acid, p-coumaric acid and trans-ferulic acid in the bound fraction. This study showed that roasting increased the content of phenolic compounds and the antioxidant activity of proso millet.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:15~18:00**

**Venue: Brdicka Lecture Hall**

**Session 8: 11 presentations-Topic: “Food Processing and Biotechnology”**

**Session Chair: To be added**

S2003 Presentation 4 (16:00~16:15)

Recrystallization and in Vitro Digestibility of Wrinkled Pea Starch Gel by Temperature Cycling

**Miaomiao Shi**, Qunyu Gao

Zhengzhou University of Light Industry, China

*Abstract*—The effect of storage temperature on recrystallization and in vitro digestibility of wrinkled pea starch gel was investigated by differential scanning calorimetry (DSC), the Avrami equation, and enzymatic hydrolysis to understand the relationship between them. DSC results demonstrated that compared with the native pea starch, all the recrystallized starches under different temperatures showed the decreasing temperature parameters and  $\Delta H$ , however, these values of starch samples stored at 4/30 °C were higher than that of starch samples stored at 4 and 30 °C. Avrami equation analysis showed that the recrystallization rate of crystal at 4/30 °C condition was much faster than that of isothermal condition. The starch samples after cycled storage displayed the maximum slowly digestible starch (SDS, 30.44%) under 4/30 °C for 2 days. Compared with the gelatinized pea starch, the digestibility of retrograded starches under the different temperature had a different degree of reduction, and the digestibility of the starch sample stored at 4/30 °C was the lowest. Therefore, the cycled temperature storage could promote the recrystallization and induce the digestibility of gelatinized wrinkled pea starch than the isothermal storage.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:15~18:00**

**Venue: Brdicka Lecture Hall**

**Session 8: 11 presentations-Topic: “Food Processing and Biotechnology”**

**Session Chair: To be added**

S2013 Presentation 5 (16:15~16:30)

Bread Quality and Alveograph Rheological Properties of Composite Flour Made from Flaxseed and Wheat of 650 Type of a Strong Quality for Bread Making

**Georgiana G. Codină** and Silvia Mironeasa

Stefan cel Mare University, Romania

*Abstract*—The Alveograph rheological properties and bread quality characteristics made from two flaxseed varieties (golden and brown) and 650 type wheat of strong quality for bread making were investigated. In this sense, five levels of wheat substitution (0, 5, 10, 15 and 20%) with the two varieties of flaxseed were used. It was observed that dough extensibility (range 68-23 mm) and deformation energy (range  $286-120 \times 10^{-4}$  joules) decreased significantly ( $p < 0.05$ ) with the increased level of flaxseed flour addition in wheat flour. The loaf volume, porosity and elasticity of the bread samples increased by up to 10% substitution by brown or golden flaxseed flour. From the textural point of view significant changes were observed for the hardness value which registered higher values for all the bread samples as compared to the control one. Regarding the crumb cell structure the bread with flaxseed addition seems to be less compact than that of the control sample. The bread sensory characteristics (overall acceptability, general appearance, color, flavor, texture, taste, smell) were either acceptable or better at the level of 10–15 % substitution by flaxseed flour than the sample without flaxseed addition. The Principal Component Analysis was used to show significant correlations between the chemical characteristics of wheat flour-flaxseed formulation, Alveograph rheological properties, bread physical, textural and sensory characteristics of the composite flaxseed- wheat flour. Bread overall acceptability was influenced significantly by the sensorial characteristics, general appearance and bread physical value of loaf volume. Good correlations ( $r=0.801$ ) were found between bread textural characteristic hardness value and flour chemical characteristic protein content.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:15~18:00**

**Venue: Brdicka Lecture Hall**

**Session 8: 11 presentations-Topic: “Food Processing and Biotechnology”**

**Session Chair: To be added**

S3002 Presentation 6 (16:30~16:45)

Issues of Integrating Shelters for Migrants in the EU

**Volodymyr Babyak**

Ahlia University, Bahrain

*Abstract*—Obesity has been a research area that has been of scholars’ interest since decades. Still obesity seems to be reported to be a rising global epidemic. Past research empirically assessed the role of genetic, economic and social environments interventions on obesity using research strategies like quantitative, simulation and social networks cross sectional and longitudinal analysis. This article critiques a review of current literature and describes how obesity is recently tackled from the point of view of adolescents’ social networks: specifically from journal articles’ various pronounced research gaps. Hence a model solution is proposed; viable for future empirical assessment for this study’s research in progress. Theoretical and practical implications to this model are also suggested in this paper.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:15~18:00**

**Venue: Brdicka Lecture Hall**

**Session 8: 11 presentations-Topic: “Food Processing and Biotechnology”**

**Session Chair: To be added**

S0018 Presentation 7 (16:45~17:00)

Isolation of Yeast Strain with High Odor Activity Value for Mulberry Wine Brewing

**Jinjing Wang** and Qianwen Cao

Jiangnan University, China

*Abstract*—Mulberry, the fruit of moraceae deciduous shrubs, is well known for its special flavor. Mulberry trees are usually found in warm districts of Asian, Africa and the Americas, and they are very common in southeast part of China. The fresh mulberry fruit deliver a sweet and pleasant flavor. And the fruit contains a lot bioactive substances such as carotenoids, flavonol, anthocyanins, and vitamins. As the fresh fruits of mulberry are hard to preserve, mulberry is often used as food additive or for wine production. Lacking of specific yeast strain for mulberry wine production resulted in vague characteristic of mulberry wine in Chinese market. Thus, in this study, a total of 40 strains were isolated from the naturally fermented mulberry mash. Ethanol production and SO<sub>2</sub> resistance of different strains were analyzed. The strains that could tolerant 10% ethanol and 120 mg/L SO<sub>2</sub> were selected for further study. The flavor substances from each fermentation were analyzed with GC/MS. Meanwhile, sensory evaluations of mulberry wine produced with different strains were performed by taste panelists. Odor activity value was introduced to evaluate the flavor of mulberry wine. *Saccharomyces cerevisiae* strain JNB-14 with highest odor activity value and good production performance was finally selected. The mulberry wine produced with the selected yeast strain exhibited characteristics of mulberry aroma and a pleasant flavor.



**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:15~18:00**

**Venue: Brdicka Lecture Hall**

**Session 8: 11 presentations-Topic: “Food Processing and Biotechnology”**

**Session Chair: To be added**

S0013 Presentation 8(17:00~17:15)

High Efficient Degradation of Microcystin-LR by Lactic Acid Bacteria: Screening and Mechanism Analysis

**Juan Zhang**, Qian Zhang, Guocheng Du and Jian Chen

Jiangnan University, China

*Abstract*—Microcystins are cyclic heptapeptides produced by cyanobacteria which classified as hepatotoxins and tumor promoters to seriously threaten the food security and environmental control. In this study, 33 strains of lactic acid bacteria isolated from traditional fermentation foods were identified to assess their abilities to remove microcystin-LR. Among them, the strain BBE10-212 showed an outstanding performance, and was classified phenotypically as a member of the genus *Lactobacillus casei* on the basis of 16S rDNA sequencing. Further investigation showed that, the regulation issues such as bacterial concentration and cells viability play the key roles to remove microcystin-LR. In addition, when glucose, ethanol and glycerine were added to increase the metabolic activity of cells, the toxin concentration decreased remarkably. After optimization, a maximum removal of 52% was observed for BBE10-212, which was 2.74-fold higher than before. Moreover, proteomics analysis revealed that certain glycolysisrelated proteins and chaperones play important roles in regulating the degradation of microcystin-LR. Results presented here provides a novel way to reduce microcystin-LR by a strain which is generally regarded as safe (GRAS) in food processing and further inspirits us to improve the efficiency of microcystin removal based on the mechanism of cell metabolism.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:15~18:00**

**Venue: Brdicka Lecture Hall**

**Session 8: 11 presentations-Topic: “Food Processing and Biotechnology”**

**Session Chair: To be added**

S0021 Presentation 9(17:15~17:30)

Study Concerning Milk Quality – Raw Material for Dairy Industry

**Adriana Dabija**, Silvia Mironeasa, Mircea Oroian and Iuliana Sion  
Stefan cel Mare University of Suceava, Romania

*Abstract*—This paper presents a study of some factors that could have an influence on the quality of milk used as raw material in the dairy industry. The research was conducted over a period of 10 months in three milk collection centres located in different geographic regions from north-eastern Romania. The analytical methods used were the classic ones, but also modern methods, which gave accurate results in a short time and so, could be easily interpreted. The statistical analysis has shown that other methods with rapid result response, and not standardized yet, were used successfully, because all the values of the statistic factor, relative standard deviation (RSD), are under 1%, that is the limit for a method to be efficient, accepted by the normative.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:15~18:00**

**Venue: Brdicka Lecture Hall**

**Session 8: 11 presentations-Topic: “Food Processing and Biotechnology”**

**Session Chair: To be added**

S1003 Presentation 10 (17:30~17:45)

Evaluation of Ethyl Carbamate Formation in Chinese Ppirits during Distillation and Storage Processes

**Fang Fang**, Yuying Qiu, Guocheng Du, Jian Chen  
Jiangnan University, China

*Abstract*—Ethyl carbamate (EC) is a toxic contaminant that poses considerable risk to humans due to its potential carcinogenicity. This compound has been widely detected in fermented foods and alcoholic beverages such as Chinese sprits. Clarifying the mechanism of EC formation is difficult but necessary for reducing EC levels in Chinese spirits because of their complex fermentation procedures. The formation of ethyl carbamate during distillation and base liquor aging were evaluated in this study. All grains used as materials for producing Chinese spirits contained ethyl carbamate precursors, urea, and citrulline. The highest levels of urea (93.07  $\mu\text{g}/\text{kg}$ ) and citrulline (82.49  $\mu\text{g}/\text{kg}$ ) were detected in wheat and sorghum, respectively. EC and its precursors were introduced into the base liquor of Chinese spirits during distillation. EC, which was present at 92  $\mu\text{g}/\text{l}$  concentration in base liquor, came from the distillation process. EC content in the base liquor increased to 66% during the first year of storage because of spontaneous formation of EC from its precursors in the base liquor. Urea and citrulline in Chinese spirits mainly came from grains.

**Afternoon, March 14, 2017 (Tuesday)**

**Time: 15:15~18:00**

**Venue: Brdicka Lecture Hall**

**Session 8: 11 presentations-Topic: “Food Processing and Biotechnology”**

**Session Chair: To be added**

S2011 Presentation 11 (17:45~18:00)

Pickled and Dried Mustard Extends Shelf Life of Steamed Pork Belly by Reducing Lipid and Protein Oxidation Degree

**Qing Shen**, Mengting Wang, Jianchu Chen

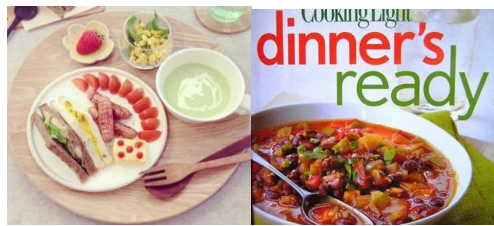
Zhejiang University, China

*Abstract*—Picked and dried mustard (PDM; also known as Meigancai in China) is a fermented vegetable product that is widely consumed in southern China. As a food ingredient with aromatic flavour, PDM is widely added to pork, chicken, fish, and cowpeas during cooking by various methods, including steaming and stir-frying. Chinese food culture is well known throughout the world, and steamed pork with PDM is a famous dish that is delicious and suitable for adults and children. This food product has great taste and flavour and provides a sense of fullness after consumption. In particular, people found that steamed pork with PDM had a much longer shelf life than that without PDM, and could be stored for more than half a year at room temperature. However, the reason why adding PDM could extend shelf life of steamed pork belly was unclear.

Here, present study examined the effects of PDM on nutritional quality and shelf life of steamed pork belly. Proximate composition (moisture, crude protein, total lipid, ash, and sodium chloride contents), lipid oxidation (TBA and POV), fatty acid profiles, protein oxidation (carbonyl and sulfhydryl contents), and induction period of steamed pork belly were determined after addition of different levels (0–100%, WPDM/Wpork belly) of PDM.

The results demonstrated that PDM played an essential role in nutritional quality and shelf life of steamed pork belly. PDM could significantly decrease the moisture and total lipid contents, but increase the crude protein, ash, and sodium chloride contents in steamed pork belly. In addition, lower TBA and POV values as well as higher UFA/SFA ratios in PDM treated samples were observed, confirming that PDM effectively reduced lipid oxidation in steamed pork belly. PDM also inhibited protein oxidation of steamed pork belly to some degree as higher carbonyl contents and lower sulfhydryl contents were determined in PDM treated samples. Therefore, the OXITEST analysis showed that steamed pork belly had a longer induction period with higher addition of PDM under the same induced temperature. Furthermore, all of the changes in chemical composition in response to addition of PDM could affect the nutritional qualities of steamed pork belly. These results provide insights into

the beneficial effects of PDM on steamed pork belly, and supplied a theoretical basis for the preservation mechanism of PDM. Additionally, the findings of this study may provide a foundation for expanding the applications of PDM for economic benefits.



<b>Dinner</b>	
<b>18:30</b>	<b>Foyer of the Brdicka Lecture Hall</b>

# Poster Session

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 14 presentations**

D1004 Poster 1

Sorption of Asymmetric Polar Compounds on Oil Shale and on Special Composites

**Miklós Molnár**, Ottó Horváth, Rita Földényi

University of Pannonia, Hungary

*Abstract*—Nowadays, frequently used organic compounds could be transformed into environmental contaminants, if these chemicals get in the soil or water. Sometimes these compounds are persistent, thus they could pollute the environment for a long time.

Sorption is one of the most appropriate method to eliminate these environmental contaminants. One of the requirements of widespread application of sorbent is the low price.

Oil shale is a unique rock, which is present in a large amount in Hungary. Oil shale originates from the biomass of algae accumulated in the volcanic craters over 4 to 5 million years. This rock is widely used as a soil-ameliorating agent because of its special microelement and organic contents and low price. Its application for elimination of chemical pollutants is a current topic [1-4]. Despite these beneficial properties of the oil shale, it is easily crumbling, thus its routine applicability is hindered.

Combination of oil shale with forming, immobilizing agents, such as alginate or agar-agar, might result in new composite forms [5-7].

Two different types of oil shale composites were synthesized: oil shale – alginate and oil shale – agar-agar composites. Sorption experiments of two different asymmetric polar organic compounds – cationic TEBA (benzyltriethylammonium chloride) and anionic Supragil WP (sodium diisopropyl naphthyl sulfonate) – were performed on these composites and oil shale powder, then the results were compared.

According to the adsorption isotherms the process is rather complicated (called “sorption”), and these oil shale composites are promising for retention of the contaminants investigated.

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

U0046 Poster 2

Study on Admissible Displacement Calculation Method of Double-Column Piers

**Kairui Wang**, Xiuli Xu, Weiguo Huang, Weiqing Liu

Nanjing Tech University, China

*Abstract*—Because of the load capacity design method cannot guarantee the structure to achieve the prospective plastic deformation or ductility requirement, so the displacement of pier should be calculated in the seismic design. This paper focuses on the ductile deformation and allowable displacement of reinforced concrete double-column piers under earthquake action. Based on the nonlinear analysis software ABAQUS, the seismic response and failure state of reinforced concrete double-column piers under transverse earthquake are studied through incremental dynamic analysis (IDA) method. According to the relationship between material constitutive and limit state, the displacements of piers are obtained in three different (the slightly damage limit state, controlled damage limit state and controlled collapse limit state). Besides the pier height and tie beam are also consider in the analysis. The relationship between the displacement angle and the strain of double-column piers under the transverse earthquake action is analyzed and a simplified formula of admissible displacement of pier is proposed. Through verification, this simplified formula is simple and accurate, and can be used in the preliminary design.

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

U0047 Poster 3

Numerical Simulation of Steel-Laminated Bearing Considering Friction Slipping

**Weiguo Huang**, Xiuli Xu, Kairui Wang, Weiqing Liu

Nanjing Tech University, China

*Abstract*—In order to obtain a more precise seismic response of steel-laminated elastomeric bearing, which is widely used in middle-span bridges, a three-dimensional finite element model of this bearing is built by ABAQUS software, incorporating material, geometric nonlinearities, and frictional contact between bearing surfaces and plates. Analytical simulation is carried out to study the behavior of steel-laminated elastomeric bearing under the compression and shear, adapting both penalty friction model and static-kinetic exponential decay friction model. The results about hysteretic curve and equivalent viscous damping ratio are compared with test one. The results show that the numerical results using static-kinetic exponential decay friction model are in good accordance with the test one, so the numerical model can simulate the behavior of experimental bearings well and is accurate enough to simulate the bearing friction slipping. Further parameter analysis on the influence of pressure and velocity of slipping is conducted, for bridge seismic design and analysis.



**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

S1005 Poster 4

Study & Application on Key Technology of Grain Security System in Southern China

**Li Wenhui**, Zhang Wensheng, Zhang Shaobo, Chen Jiadong, Zheng Miao, Liu Li, Li Huiyong, Xu Ting, Zhang Xiaosong, Xiao Zhili, Xian Qing, Tian Wei 6Lu Mubo, Zhao Na, Wan Hongyan, Liu Jianfeng

*Guangdong Institute for Cereal Science Research, Guangzhou, China*

*Abstract*—With the acceleration of economic globalization, food security is not only related to the health of consumers, but also affects the international food and agricultural trade. It has become one of significant global focus. Aiming at the safety issues of chemical contamination in food processing, storage and transportation, the rapid detection technology of food security is studied in this paper, while four kinds of haptens with four kinds of antibodies were designed and screened. The effective detection reagents including PBDEs, imidacloprid, polybrominated diphenyl ether, bifenthrin, and fenvalerate were evaluated. The results show that the lowest detection limit (IC<sub>10</sub>) for the detection of imidacloprid, polybrominated diphenyl ethers, fenvalerate and fenvalerate were 1.8ng/g, 0.1ng/g, 4.7ng/g, and 1.0ng/g. Through the correlation analysis, grain, rice and corn samples were highly correlated based on the average detection time, which was less than 10 minutes, faster than gas chromatography (GC) method.

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

S1007 Poster 5

The Effects of Haematococcus Pluvialis Astaxanthin on Streptozotocin-induced Diabetes in Rats

Yongchao Li, **Bo Zhang**, Qinghua He, Ruixue Liu

Research Institute for Science and Technology of Functional Food, Beijing Union University, China

*Abstract*—We evaluated the effects of Haematococcus pluvialis astaxanthin on streptozotocin-induced diabetes and its mechanisms in rats. Method: Adult male SD rats were supplied. The rats were randomly divided into six groups (12/group): the control group, the model group, Metformin hydrochloride group and Haematococcus pluvialis low, medium and high dose groups. All groups rats, except control group, were modeled to diabetes by injecting Streptozotocin (STZ). Metformin hydrochloride group (metformin (0.285g/kg BW). The blood samples of rats were collected and the studying targets including anti-inflammatory and antioxidant capacity were measured. Results: compared to the model group, The body weight as well as water intake and diet intake were significantly inhibited. Activity of antioxidant enzymes, included SOD and GSH-PX were increased significantly. MDA content were decreased significantly. Blood glucose were decreased significantly. The levels of Cytokines TNF- $\alpha$ , IL-1 $\beta$  were decreased significantly. The levels of TC and TG were decreased significantly and the levels of HDL were increased significantly but the levels of LDL were decreased significantly. Conclusion: Haematococcus pluvialis astaxanthin attenuated streptozotocin-induced diabetes in rats. The possible mechanisms at least include both an anti-inflammatory effect and improvement of antioxidant capacity.

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

S1008 Poster 6

Resveratrol Ameliorates PM2.5-Induced Detrimental Effects in CHO Cell

Chen Guo, **Xiaohong Zhao**, Shijie Chen, Yanli Zhou, Shengquan Mi, Ter-Yun Lin

Research Institute for Science and Technology of Functional Food, Beijing Union University, China

*Abstract*—PM2.5 was proved to cause adverse health effects and this was related to oxidative stress and inflammatory responses. Resveratrol has many beneficial activities that may ameliorates PM2.5 caused injury. An in vitro experiment was conducted where CHO cells were exposed to PM2.5 with or without resveratrol pretreatment. Results showed PM2.5 caused a dose-dependent decrease in cell viability and cell apoptotic rate at concentrations from 25 to 800 µg/mL. Pretreatment with resveratrol reduced PM2.5-induced apoptosis in cells and the optimal effect occurred at 6.25 µmol/L. Resveratrol pretreatment also significantly shortened DNA tail lengths of comet cells with optimal dosage at 25.00 µmol/L. PM2.5 caused a significant increase in Akt activation level, resveratrol pretreatment reduced the activation rate. These results suggested that resveratrol protected CHO cells from PM2.5 induced cell injury and DNA damage. This protective effect was shown to be related.to Akt pathway

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

S1009 Poster 7

The Relationship between Glycation, Protein Structures and Gelling Strength in Egg White Protein

**Yujie Chi**, Yuan Cheng, Juntong Wang, Zhijie Bao

College of Food Science, Northeast Agricultural University, Harbin, China

*Abstract*—There is a great demand in egg white protein(EWP) of excellent gelling strength with the development of the food industry. However, gelling properties of EWP significantly reduced with prolonging storage time during shelf life. Glycation is a promising method for the improvement of gelling properties and storage stability. The gelling properties of glycation egg white protein(GEWP) were related to structure. A analysis in changes of GEWP structure was in favor of understanding the mechanism of improving gelling properties of EWP through glycation. Methods. The structure and gelling strength of GEWP were measured using texture analyzer, SDS-PAGE, fourior transform infrared spectroscopy (FTIR), circular dichroism spectra(CD), X-ray diffraction, ultraviolet absorption spectrum(UA). Results and discussion. The gelling strength greatly increased to  $1240.73 \pm 45.83 \text{g/cm}^2$  under 1% (w/w) addition ratio of polysaccharide to EWP, heat treatment at  $80^\circ\text{C}$  for 5 days. After storage of 6 months, the gelling strength of GEWP was above  $1000 \text{g/cm}^2$ , indicating GEWP had excellent storage stability. SDS-PAGE revealed that ovotransferrin and ovalbumin were glycated with polysaccharide. FTIR analysis suggested that polysaccharide was covalent attached to protein. The results of CD correspond with that of FTIR, only slightly different in data. In comparison with EWP, the content of  $\alpha$ -helical and  $\beta$ -turn of GEWP decreased, but that of  $\beta$ -sheet and random structure increased. Then the tertiary structure of EWP was also modified by glycation. The decrease of tryptophan fluorescence intensity of GEWP suggested the GEWP converted to unfold conformation. X-ray diffraction showed that GEWP contained several compounds with nature of crystal. UA showed that amino acid was changed by glycation and hydrogen bond in GEWP solution increased.

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

S2002 Poster 8

Use of High Intensity Ultrasound to Improve Functional Properties of Batter Suspensions Prepared from PSE-like Chicken Breast Meat

**Ke Li**, Ying-ying Zhao, Yai-Hong Bai, Wei Zong, Xing-Lian Xu

College of Food and Bioengineering, Zhengzhou University of Light Industry, Henan Province Collaborative, Innovation Center for Food Production and Safety, China

*Abstract*—High intensity ultrasound is a novel processing for modifying the functional properties of pale, soft, exudative (PSE)-like chicken breast with the potential to increase economical benefits for the poultry industry

- High intensity ultrasound improved the functional properties of PSE-like meat batter suspensions
- It increased the pH and reduced the particle size distribution of meat batter suspensions.
- Ultrasound modified the protein secondary structure of PSE-like meat

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

S2004 Poster 9

Effect of Dynamic High-Pressure Microfluidization Processing on the Nutritional Components and Antioxidant Activity of Chinese Jujube Juice

Shunhong Wu, Xiaoyuan Wang and **Wei Zong**

Zhengzhou University of Light Industry, School of Food and Bioengineering, Zhengzhou, China

*Abstract*—In this study, the effect of dynamic high-pressure microfluidization (DHPM) on the nutritional components and antioxidant activity of Chinese jujube juice. The effect of DHPM pressure and pass number were also assessed. Juice was passed through DHPM at 40-200 MPa for one or three passes. total phenolic, Vitamin C, soluble protein, polysaccharide, titratable acid content and antioxidant activity of the samples were evaluated through DHPM treatment. Results indicated that DHPM treatment exerted insignificant effect on all nutritional parameters of juice except for polysaccharide and titratable acid, which demonstrated adverse change. In comparison of raw and DHPM treatment, these two showed no significant difference on total phenolic content and vitamin C content overall. Regarding to soluble protein, it was increased with pressure and pass number of DHPM, and remarkable enhancement was observed in DHPM. In case of polysaccharide, results of DHPM at 40-200 MPa were noticeably lower than control, except 80 MPa for three passes. Besides, DHPM showed remarkable reduction in titratable acid as compared to control. In addition, the  $\bullet\text{OH}$  radical scavenging capacity could be maintained by DHPM, and the ABTS<sup>+</sup> assay was enhanced obviously at 40-120 MPa. While, according to the DPPH assay, the juice antioxidant capacity has not noticeably altered by DHPM processing. In conclusion, DHPM treatment was beneficial to preserve the quality of Chinese jujube juice, suggesting DHPM technology is a potential alternative to conventional for application in Chinese jujube juice.

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

S2005 Poster 10

Responses of Gut Microbiota and Lipid Metabolism in Human Flora Associated C57BL/6J Mice to Tea Polyphenols Diet

Zhenlin Liao, Benhua Zeng, Xiaojing Zhang, Zhiwei Liu, Hong Wei, **Xiang Fang**  
College of Food Science, South China Agricultural University, China

*Abstract*—Diet is one of the most important factors to determine intestinal flora diversity and its functional genomics. Dietary regulation of the intestinal microbiota to promote human health and its mechanism are becoming a hot research point. Diet polyphenols, an essential component in the dietary structure, which has a most complicated interaction with the human intestinal flora, has an important influence on the structure and function of the intestinal flora. Here we discussed the responses of colon flora diversity and lipid metabolism to the tea polyphenols by using DGGE and RT-qPCR, 454 Pyrosequencing technology, body weight, blood lipid levels and size of fat cells etc. There has a significant impact when presents a certain dose tea polyphenols in the diet. These findings, which preliminary revealed the relationship of polyphenols diet-colonic microflora-lipid metabolism, laid a foundation for further exploration of dietary regulation of intestinal flora to promote human health.

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

S2006 Poster 11

Inhibition and Eradication Effects of Chitosan on *Vibrio Parahaemolyticus* Biofilms

Ting Xie, Huan Lei, Xiang Fang, Zhenlin Liao, Li Wang, **Qingping Zhong**

College of Food Science, South China Agricultural University, China

*Abstract*—Biofilm is a community composed of microbes and the extracellular polymeric substances. This special architecture pose a significant public health risk as it increases the fitness of bacteria in harsh conditions and renders bacterial resistance to antimicrobial agents and cleaning. In this study, we investigated the inhibition and eradicating effects of chitosan on the biofilm of *Vibrio parahaemolyticus*, an important food-borne pathogen. The crystal violet staining, plate counting, XTT reduction method, phenol-sulfuric acid method, fluorescence microscope and confocal laser scanning microscope (CLSM) observation were conducted. The results indicated that the MIC of chitosan was 1.25 mg/ml. Sub-MIC of chitosan could significantly inhibit biofilm formation and reduce the metabolic activities and the secretion of extracellular polysaccharide (EPS). Moreover, chitosan at 4MIC could eradicate 85.06% mature biofilm of *V. parahaemolyticus*, and decrease 81.43% EPS in mature biofilm. These results were also confirmed by the visual images obtained from CLSM. This study elucidated that chitosan was not only effective to prevent biofilm formation, but also eradicate mature biofilms of *V. parahaemolyticus*.



**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

S2007 Poster 12

Effect of Ultra-high Pressure Technology on Isomerization and Antioxidant Activity of Lycopene

**Jing Si-qun**, Lasheng Zainixi, Wang Sai-sai, Shi Hui

College of Life Sciences and Technology, Xinjiang University, China

*Abstract*—The objective of the present study was to evaluate the influence of the ultra-high pressure processing (UHP) on the isomerization and antioxidant activity of lycopene. The optimal parameters of UHP was obtained with lycopene content as index while Ultraviolet–visible spectroscopy (UV-Vis) and High Performance Liquid Chromatography (HPLC) were used to separate and identify the components of lycopene. To study the potential effects of UHP on antioxidant activity of lycopene oleoresin, the scavenging activities against DPPH · , · OH, and Fe 2+ chelating activity were applied as antioxidant model in vitro with ascorbic acid as a positive control while the samples with and without UHP treatment. Results indicated that both the proportion of cis-lycopene and content of lycopene oleoresin were significantly higher than that of other conditions after 500 mpa, 10 min and 50 °C of ultrahigh pressure processing, and the proportion of cis-lycopene was up to 45.69% and the content was 103.24 mg/g. Full wavelength scanning figure showed that the characteristic absorption spectrum of lycopene changed and a characteristic absorption peak created at 361 nm near ultraviolet band, which was caused by Trans lycopene isomerizing into cis isomer. The results of HPLC analysis was found that five peaks (Rt=19.082,13.307,9.790,8.123,7.207 min) were produced after UHP treatment, which were further indentified by UV-Vis, and we discovered that four peaks among them showed a strong absorption peak at 361 nm in accordance with the UV - Vis spectroscopy of cis-lycopene. The total antioxidant, capability of scavenging hydroxyl radicals · OH and DPPH · radical of lycopene treated by UHP were all higher than that of ascorbic acid and lycopene without UHP treated. Therefore, UHP treatment could make trans-lycopene transfer to cis-lycopene and effectively improved the antioxidant activity of lycopene.

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

S0010 Poster 13

Environmental Temperature and Relative Humidity, two Key Factors in Maize Technology Affecting Ochratoxin a Production and Growth of Ochratoxigenic Species

Eva M. Mateo, **Jose V. Gomez**, David Romera, Andrea Tarazona, Jose V. Gimeno-Adelantado, Rufino Mateo-Castro and Misericordia Jiménez  
University of Valencia, Spain

*Abstract*—Ochratoxin a (OTA) is a secondary fungal metabolite produced naturally by filamentous fungi of the *Aspergillus* and *Penicillium* genera. The aims of this study were to identify the most relevant OTA producing species in maize in Spain by PCR and to study the effect of environmental conditions (aw, temperature) on the development of these fungi and on OTA production in maize. Eighteen and 20 corn samples harvested in 2014 and 2015, respectively, from conventional farms and 31 and 34 corn samples harvested in 2014 and 2015, respectively, from organic farms located in various Spanish areas were tested for presence of ochratoxin-producing fungi. The most important OTA-producing *Aspergillus* spp. were isolated and identified by species-specific PCR protocols. The growth rate of the main ochratoxigenic species (*A. steynii* and *A. ochraceus*) under different environmental conditions was registered and OTA level in cultures was determined by solvent extraction, immunoaffinity column clean-up and LC-fluorescence detection. The results revealed that *A. steynii* and *A. ochraceus* are good indicators of OTA risk in maize. Temperature, aw, and isolate influenced OTA production. The highest OTA levels were found in maize cultures of *A. steynii* at 0.98 aw and 30 °C.

**March 14, 2017 (Tuesday)**

**Time: 8:30~18:00**

**Venue: Brdicka Lecture Hall**

**Poster session: 13 presentations**

S0011 Poster 14

Comparative Study of Different Cereals as Substrates for T-2 and HT-2 Production by *Fusarium langsethiae*

**Eva M. Mateo**, Jose V. Gomez, David Romera, Andrea Tarazona, Jose V. Gimeno-Adelantado, Rufino Mateo-Castro and Misericordia Jiménez  
University of Valencia, Spain

*Abstract*—*Fusarium langsethiae* has been isolated from infected oats, wheat and barley, mainly, in Central and Northern Europe. This species has been implicated in the production of high levels of T-2 and HT-2 toxins in cereals, especially in oats. Cereals and their by-products are basic foods in human and animal diet. They are a primary source of components that are beneficial to human and animal health. There are limited data available regarding the host sensitivity and effect of environmental variables such as relative humidity and temperature on the biosynthesis of T-2 and HT-2 by this species. The aim of this work was to know the effect of cereal type and environmental conditions on production of T-2 and HT-2 by different isolates of *F. langsethiae* isolated from cereals in order to determine the effect of host and physical, chemical or biological variables, associated to cereal technology, in the accumulation of T-2 and HT-2 in the grain. Toxins were analyzed by an optimized HPLC method. In general, the highest T-2 and HT-2 levels were found in oat grains, followed by barley, wheat, corn, sorghum, rye and rice grains incubated at 25 °C and 0.98 aw. At 20 °C and 0.95 aw toxin levels were very low in all the assayed cereals. ANOVA showed that T-2 and HT-2 production by *F. langsethiae* were significantly affected ( $P > 0.001$ ) by temperature, aw and type of cereal.

# One Day Visit & Tour

**March 15, 2017 (Wednesday) 9:00~17:00**

*(Tip: Please arrive at the institute before 9 a.m., please wear the formal clothes; the following places are for references, and the final schedule should be adjusted to the actual notice.)*

1. (9:00) Assemble at the outside of J. Heyrovsk ý Institute of Physical Chemistry of the CAS.
2. (9:30-12:00) Visit FACULTY OF PHYSICAL EDUCATION AND SPORT, Charles University, Czech Republic

*Add: Jos é Martího 31, Prague 6, 162 52, Czech Republic.*



## **FACULTY OF PHYSICAL EDUCATION AND SPORT, Charles University, Czech Republic**

The Faculty of Physical Education and Sport, Charles University, was incorporated into Charles University as an Institute of Physical Education and Sport in 1959, and as a Faculty in 1965. Its

mission is to educate and train professionals in sport and physical education (for children, adults and seniors, with and without special needs), military physical education, civil protection education, sport management, recreation and physiotherapy. The Bachelors and Masters programmes are grounded in both theory and practice. The study programmes of Physiotherapy and Physical Education and Sport are also taught in English. The Faculty is also part of ERASMUS MUNDUS joint Masters degree programmes, offering the MA in Sports Ethics and Integrity in cooperation with 5 major European universities. At the Doctoral level, the Faculty offers programmes in Kinanthropology (human movement studies) and Biomechanics, in both Czech and English language.

The study programmes are supported by relevant research and enriched by co-operation at the local level with local authorities and various professional organizations, and at the international level with various foreign universities and international organizations. The Faculty has developed a considerable number of contacts with foreign universities that facilitate student and academic staff exchange, and that enable participation in joint research projects. The Faculty also provides opportunities for the education of the general public, offering a wide range of lifelong learning courses.

3. (12:00-13:00) Have Lunch together.
4. (13:00-15:00) Visit Faculty of Civil Engineering, Czech Technical University in Prague, Czech Republic.

Add: Thákurova 7, 166 29 Prague 6, Czech Republic



### Faculty of Civil Engineering, Czech Technical University in Prague, Czech Republic

The faculty has been awarded the CSF Centre of Excellence (Czech Science Foundation) in basic research, which is an extraordinary achievement for the whole university. The project deals with cumulative time-dependent processes

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In 2009, the first prize in the Interiors category of the Architecture Grand Prix was awarded the first prize in the Interiors category for the extensive new large teaching space designed for the purposes of the Architecture and Building Engineering study programme at our faculty. This reconstruction project was also awarded first place in the Contractworld Award 2011 at the international architecture exhibition in Hannover.

#### 5. (15:00-16:40)



### Prague Old Town Square

Old Town Square is a historic square in the Old Town quarter of Prague, the capital of the Czech Republic. It is located between Wenceslas Square and the Charles Bridge.

The square features various architectural styles including the Gothic Church of Our Lady before Týn, which has been the main church of this part of the city since the 14th century; the church's towers are 80 m high. Prague Orloj is a medieval astronomical clock located on the Old Town Hall. The clock was first installed in 1410, making it the third-oldest astronomical clock in the world and the oldest one still in operation. The Baroque St. Nicholas Church is another church located in the square, while the tower of the Old Town Hall offers a panoramic view of Old Town. An art museum of the Czech National Gallery is located in Kinský Palace.

#### 6. (16:40) Back to the outside of J. Heyrovský Institute of Physical Chemistry of the CAS.

# Conference Venue

## **J. Heyrovský Institute of Physical Chemistry of the CAS**

[www.jh-inst.cas.cz](http://www.jh-inst.cas.cz)

Add: Dolejšková 2155/3, 182 23 Prague 8, Czech Republic

Tel (secretariat): (+420) 28658 3014 or (+420) 26605 2011

Tel (reception): (+420) 26605 3286



The Institute is a centre of fundamental research in physical chemistry, electrochemistry and chemical physics. The research work is characterized by many cross-links both within the Institute and also with other institutions in Europe, the U.S.A., Japan and other parts of the world. Much of the scientific work is concerned with fundamental research, but several groups, in particular in catalysis and electrochemistry, are also making contributions in more applied aspects. Besides the research activities the Institute is strongly involved in training of both undergraduate and graduate students, supervising their diploma and Ph.D. theses, and in teaching at universities.

In the Institute work at present about 165 full-time employees and approximately 45 graduate students. Roughly 70 per cent of the personnel are engaged in research, the remaining staff provides technical and administrative services.

Members of the Institute publish each year approximately 250 research papers, for the most part in impacted international journals (in 2015: 175 articles in journals with an average impact factor of 4,68), several books or chapters in monographs, and a number of communications in proceedings of scientific meetings.













## Feedback Information

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

<b>Personal Information</b>					
Conference Name and Paper ID					
Full Name					
E-mail Address					
Area of Research					
Affiliation					
<b>Please indicate your overall satisfaction with this conference with “√”</b>					
	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 APCBEEES	Yes <input type="checkbox"/> No <input type="checkbox"/> (If “No”, you may apply membership from <a href="http://www.cbees.org/member.htm">http://www.cbees.org/member.htm</a> )				
Do You Willing to Receive APCBEEES 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)				

2017 HKCBEEES PRAGUE 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!