2016 International Conference on Architectural Engineering and Civil Engineering [AECE2016]

2016 年建筑与土木工程国际会议

December 9-11, 2016

Shanghai, China

AECE2016
Program Book

Organizer:

Publisher:

SCHEDULE OF THE CONFERENCE

Friday, December 9, 2016

10:00—16:30

Conference Registration, Merry Hotel, Shanghai, China

Saturday, December 10, 2016

8:00-8:10

Open Ceremony, Perth Hall, 5F, Merry Hotel (5F 伯斯厅)

8:10-8:40

Keynote Speech by Prof. Peng-Sheng Wei

8:40-9:10

Keynote Speech by Prof. K.M. Liew

9:10-9:40

Keynote Speech by Prof. Lu-Wen Zhang

9:40-9:50

Tea Break

9:50-10:20

Keynote Speech by Assoc. Prof. Jason Xu

10:20-10:50

Keynote Speech by Assoc. Prof. Togay Ozbakkaloglu

10:50-11:20

Keynote Speech by Assoc. Prof. Chee-Ming Chan

11:20-12:00

Oral Presentation

12:00-14:00

Lunch, Expo Hall, 5F, (5F 世博厅)

14:00-17:00

Oral Presentation

KEYNOTE SPEAKERS

Prof. Dr. Peng-Sheng Wei

Biography

Dr. Peng-Sheng Wei received Ph.D. in Mechanical Engineering Department at University of California, Davis, in 1984. He has been a professor in the Department of Mechanical and Electro-Mechanical Engineering of National Sun Yat-Sen University, Kaohsiung, Taiwan, since 1989. Dr. Wei has contributed to application of heat transfer in manufacturing and materials processing, and atmospheric phenomena. Dr. Wei has published more than 80 journal papers, given keynote or invited speeches in international conferences more than 50 times.

Title: Factors Affecting Temperature and Heat Transfer near the Ground

Abstract

The effects of radiative properties of emission gases of water vapor and carbon dioxide on temperature and heat transfer in the troposphere layer, which is less than the altitude of 10 km in the atmosphere, are presented in this work. Accounting for wavelength, temperature and concentration- dependent radiative properties, this work systematically evaluates heat transfer encountered in the atmosphere near the earth surface. Even though global warming strongly affects the life of the human being, the cause of global warming is still controversial. This work thus establishes a fundamental, systematical and quantitative analysis of heat transfer in the troposphere layer. For the sake of simplicity, the heat transfer is assumed to be one-dimensional conduction and radiation modes. The solar irradiation penetrates through the atmosphere within its short wavelength range near the visible range, and absorbed and reflected by the earth ground. The ground emits radiation in the ranges of long wavelengths. Water vapor is transparent to long wavelength range 8-12 micrometers, whereas carbon dioxide is absorbed in three long wavelength bands centered at 15, 10.4 and 9.4 micrometers, respectively. The computed results show that the difference in temperatures predicted by using constant and realistic radiative properties of water vapor and carbon dioxide can be as high as several Celsius degrees.

Prof. Dr. K.M. Liew

Biography

Professor Liew is the Head of Department of Architecture and Civil Engineering and Chair Professor of Civil Engineering, City University of Hong Kong. Prior to this, Professor Liew was appointed Chair Professor of Building and Construction, City University of Hong Kong, a tenured Professor at Nanyang Technological University (Singapore) and the Founding Director of Nanyang Center for Supercomputing and Visualization. He was visiting professors of MIT, University of Southern California, Texas A&M University, University of Toronto and Tsinghua University. His research interests encompass computational mechanics, materials modeling, nanotechnology, plates and shells, engineering optimization and fire simulation. Over his academic career, he has published over 700 SCI journal articles. Professor Liew is listed by the Institute for Scientific Information (ISI) as a Highly Cited Researcher in engineering.

Title: Nanocomposites for Engineering Applications

Abstract

Nanocomposites are advanced materials possessing high strength and stiffness as well as high aspect ratio and low density. In recent years, many researches have been focused on carbon nanotube (CNT) reinforced composites. Research findings have reported the remarkable physical and mechanical properties of CNTs, making them a strong candidate for the reinforcements in polymer composites. The axial Young's modulus of single-walled carbon nanotube arrays with diameters ranging from nanometer to meter scales. The mechanical properties of CNTs are superior to those of carbon fibers. In recent studies, CNTs have been designed to be uniaxially aligned in an axial direction following the functionally graded pattern, leading to a new class of composite material – that is, the CNT-reinforced functionally graded composite material. This CNT-reinforced composite can be used in the form of beam, plate or shell structural components. Because of their usage in a variety of structures, studies of their mechanical behavior, in terms of bending, buckling, vibration, large deformation, postbuckling and large amplitude vibration have received considerable attention. In this talk, the effects of various geometric and material parameters on the mechanical behavior of CNT-reinforced composite structures will be presented.

Prof. Dr. Lu-Wen Zhang

Biography

Dr. Lu-Wen Zhang is currently a distinguished research professor in school of naval architecture, ocean and civil engineering, Shanghai Jiao Tong University. Her research areas are on the theoretical development and application of numerical algorithms and computational methods for problems in computational mechanics, nanomaterials, engineering structures and structure optimization. She has published over 60 SCI journal articles and her publications have been cited over 1,000 times (Google Scholar). Her current H-index is 17 (Google Scholar). Professor Zhang was awarded the 2014 China Hundred Most Influential International Scientific Publication by the Institute of Scientific and Technical Information of China. To date, she has 14 publications being listed as ESI Highly Cited Papers and 1 publication being listed as ESI hot paper.

Title: Mechanical Behaviors of Nanocomposite Structures

Abstract

The rapid advancements in the civil, aerospace, defense, marine and automotive industries have demanded the use of more advanced materials to bear the greater mechanical loads created by external loads. Nanocomposites have been selected for many applications within these industries. The recent discovery of the remarkable physical and mechanical properties of carbon nanotube (CNT) reinforced composites have generated tremendous research interest, within the context of allowing them to be readily usable in these applications. Previous research has revealed that CNTs possess high strength and high stiffness, but low density. They can be integrated into advanced composites and thus are a firm candidate for reinforcement in polymer composites. The presenter's work is useful to understand the constitutive and material properties of CNT-reinforced composites, and other advanced nanocomposites.

Assoc. Prof. Dr. Jason Xu

Biography

Assoc. Prof. Jason Xu is the chief engineer of test center of civil engineering in Tianjin University. He received Ph.D. of Structural Engineering in Politecnico di Torino, Italy. His research areas are on structural health monitoring; random fatigue analysis; behaviors of novel structures, such as CFRP in beam string structure and new materials in civil engineering, such as crumb rubber concrete, recycled concrete. He received First Prize for China Highway Society Science and Technology Awards, “Research on key technology for development and application of green crumb rubber concrete in roadway and bridge”, in 2015.

Title: Research on Anchorage Behaviors of Transverse Enhanced CFRP Tendons in Beam String Structure

Abstract

Carbon Fiber Reinforced Polymer (CFRP) has many superior material properties, such as low weight, high tensile strength, good resistance to corrosion, creep and fatigue, low linear expansion coefficient, low relaxation rate, and can be used as prestressing element for prestressing structures instead of steel cable. The problems of anchorage and connection of one type of transverse enhanced CFRP tendons for the beam string structure are discussed here. Based on the developed mechanical anchorage for CFRP tendons, one kind of anchorage applied to beam string structure was developed and tested. This new anchorage system includes four components: outer shell, two pieces of wedges, pressing plate and soft metal sleeve. The test results showed that, for a wedge with an angle of 10°, the 5-mm-diameter CFRP tendon was anchored successfully, but the early failure happened for 7-mm- and 9-mm-diameter tendons due to high pressure caused by the wedge. During the tests, the effects of wall thickness, length, cutting width and surface treatment of sleeve on the anchorage performance were analyzed. The effects of slope angle of wedge and the friction coefficient between the wedge and the outer shell on the anchorage performance were analyzed by numerical simulation. The results of simulation revealed that the sleeve should ensure adequate roughness on internal and external surfaces, enough wall thickness, cutting width, and appropriate length to avoid some failure mode caused by components themselves. Based on the failure mode analysis of laboratory tests and numerical results, some detailed suggestions were proposed to improve the new anchorage for its application to large diameter CFRP tendons. The results obtained in this research provide useful information and reference for the application of CFRP tendons in beam string structures.

Assoc. Prof. Dr. Togay Ozbakkaloglu

Biography

Dr. Togay Ozbakkaloglu is now working in the department of structural engineering at the University of Adelaide. He received his PhD from the University of Ottawa, Canada in 2005. Dr Ozbakkaloglu's research focuses on the development of new technologies to improve reliability and performance of civil infrastructure. He is particularly interested in the development and modelling of special concretes and composite fiber reinforced polymer (FRP)–concrete structural systems. Dr. Ozbakkaloglu has published over 130 peer-reviewed research articles, including 70 journal papers that have appeared in the leading journals in the field and over 60 international conferences papers. His publications have been widely cited with a consistently growing citation rate. Dr. Ozbakkaloglu is the Editor-in-Chief of the Journal of Recent Patents on Engineering and Associate Editor for the ASCE Journal of Structural Engineering and Australian Journal of Civil Engineering, and he serves on the Editorial Board of nine international journals.

Title: Toward the development of sustainable composite structural systems using waste-based concretes

Abstract

It is now widely recognized that the conventional construction practices are not capable of delivering sustainable urban development. Recent research has shown that the environmental impact and carbon footprint of structures can be significantly reduced through the use of i) more eco-efficient construction materials and ii) better designed structural systems. This talk will focus on one of the most promising of these structural systems, the so-called concrete-filled fiber reinforced polymer (FRP) tube system, where the concrete is filled into a prefabricated FRP tube to form a composite member that maximizes the advantages offered by both materials. The behaviours of these composite members under different loading conditions will be presented. The development of next-generation high-performance, low-impact structural systems with eco-efficient, waste-based concretes including recycled aggregate concrete and geopolymer concrete will also be discussed.

Assoc. Prof. Dr. Chee-Ming Chan

Biography

Chee-Ming Chan is an Associate Professor with the Civil Engineering Technology Department, Faculty of Engineering Technology, Universiti Tun Hussein Onn Malaysia. She is presently holding the office of Deputy Dean in Academic and Research at the Centre for Graduate Studies in the University. Her area of expertise includes geo-materials, engineering education and higher education improvement. More recently, Dr. Chan's current work on dredged materials from Malaysian waters has gained momentum and support from the Ministry of Science, Technology and Innovation and Department of Marine, Malaysia. The primary focus of the endeavour is to characterize the region's dredged sediments as well as to explore their reusability so as to minimize dumping and contamination/damaging risks of the marine ecosystem.

Title: Dredged Marine Soils for Sustainable Civil Engineering Reuse: From Waste to Wealth

Abstract

Dredged marine soils are generally considered a waste material for disposal, either in designated offshore locations or inland containment facilities. The disposal measures, very much an out of sight, hence out of mind approach, invariably incur additional costs, time and labour, both for transportation as well as construction of the disposal facilities. Apart from the apparent lack of sustainable values, there is always the risk of transferring undesirable contaminants to the disposal sites as well as along the transportation routes. Considering that the material is essentially soil-based, primarily consisting sand, silt and clay with some larger marine debris, it is perhaps most apt to harness its inherent properties as a 'soil' and reuse it as a geomaterial. In civil engineering and construction terms, this would involve reusing the soils as a backfill material, for creating new land bases or restoring eroded ones in near-shore areas, for instance. This lecture puts the recycling and reuse of dredged marine soils into practical engineering context, taking into account perspectives of physical, chemical, biological and mechanical fundamentals, so as to give the exercise an all-round consideration. This encompasses definition of the dredged marine soils from all relevant aspects, the tests and measurements involved to identify the properties and behavior, the up-to-date test results and findings in making the soils reusable, the application processes as well as effective in situ implementation via a strategic technology management framework. In addition, the lecture describes the inherent physical, chemical, biological and mechanical properties of dredged marine soils. Treatment via solidification for improvement of engineering properties is also discussed for efficient reuse of the treated materials, primarily in the creation of artificial land or reclamation in near shore areas.

ORAL PRESENTATION OVERVIEW

ID	Paper ID	Title
1	AECE2516	Research on the Vehicle Loads and Their Effect on the Medium and Small Span Highway Girder Bridges
2	AECE2558	Compressive Strength Prediction of Roller-compacted Concrete Using Nondestructive Tests through Artificial Intelligence
3	AECE2603	Experimental Research on the Bearing Properties of Service Bridge Pile in Loess Soil
4	AECE2609	Cracking Down on Illegal Subdivided Units in Industrial Buildings

POSTER PRESENTATION OVERVIEW

ID	Paper ID	Title
1	AECE2512	Risk Factors of Post-earthquake Fire for Constructions Using the Analytic Hierarchy Process Approach
2	AECE2547	Community Public Facilities Planning and Study of Shenzhen Pingshan New District
3	AECE2559	Simulation of Construction Process Combining Steel Truss Integral Lifting with Concrete Pouring for SRC Conversion Layer Structure
4	AECE2575	Hysteretic Behavior of HPC Column-foundation Joint Subjected to Cyclic Horizontal Loads under Constant Axial Compression
5	AECE2580	Fundamental Properties of Infilled Concrete for Hollow PC
6	AECE2588	Tensile Capacity of Head-splice Sleeve Connection after a Repeated Axial Stress for Precast Concrete Construction
7	AECE2607	Construction Period Analysis of Composite Method Using Hollow-PC Column
8	AECE2620	Using external Prestressing to Enhance the Safety Performance of Existing Public Buildings

Saturday, December 10, 2016

Plenary Session

Perth Hall, 5F, Merry Hotel (5F 伯斯厅)

8:00-8:10 **Opening Speech**

8:10-8:40 **Keynote Speech (by Prof. Peng-Sheng Wei)**

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11:20-12:00 **Oral Presentation**

12:00-14:00 **Lunch, 5F, Expo Hall (5F 世博厅)**

14:00-17:00 **Oral Presentation**

1. **AECE2516** Research on the Vehicle Loads and Their Effect on the Medium and Small Span Highway Girder Bridges
   Yongjun NI, Jinzhu GU

2. **AECE2558** Compressive Strength Prediction of Roller-compacted Concrete Using Nondestructive Tests through Artificial Intelligence
   Mohammad Ali HADIANFARD, Ali Reza NIKMOHAMMADI

3. **AECE2603** Experimental Research on the Bearing Properties of Service Bridge Pile in Loess Soil
   Juan HU, Li SHENG, Minping HU

4. **AECE2609** Cracking Down on Illegal Subdivided Units in Industrial Buildings
   Yung YAU, Daniel Chi Wing HO

CONFERENCE MAP GUIDE

All presentations and activities will be held at the Merry Hotel
Address: 396 Yan An Road West, Jingan District, Shanghai, China
Tel for Reservation: (+86) 021-61715588-5805
Email for Reservation: sm20@rend.com.cn
本次 AECE2016 会议将于 12 月 9-11 日在上海美丽园大酒店举行。
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