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# **Innovation & Sustainability of Structures**

**Proceedings of the International Symposium  
on Innovation & Sustainability of Structures  
in Civil Engineering**

**Volume 1**

Edited by

Jie Li  
Bo Wu  
Zhishen Wu  
Zhan Wang  
Jing Ji

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## Innovation & Sustainability of Structures

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# **PREFACE**

In today's world, innovation and sustainability of structures in civil engineering have become an increasingly important issue due to safety, economic and environmental incentives. To provide an international forum for researchers, specialists, professionals and public administrators and for all concerned with the promotion and exchange of information on innovation and sustainability of structures in civil engineering, the first two International Symposiums on Innovation & Sustainability of Structures in Civil Engineering were held in Nanjing in 2005 (ISISS'2005) and in Shanghai in 2007 (ISISS'2007), respectively.

As an on-going series, the objective of the third symposium (ISISS'2009), organized by South China University of Technology and State Key Laboratory of Subtropical Building Science, China, supported by many related international and national organizations, and being held in Guangzhou on November 28-30, 2009, is aimed at presenting and publishing the most recent researches and developments on innovative materials, methodologies, technologies, structures and systems for high performance, sustainable capacity and disaster prevention and mitigation.

350 papers had been submitted to the this symposium, and 290 full papers from 8 countries (i.e., Australia, Bangladesh, China, India, Japan, Korea, Poland, and the United Kingdom ) were accepted for publication in the proceedings of ISISS'2009. The contributions of all the authors to this proceedings are really appreciated.

We would like to express our sincere thanks to all the members of the International Advisory Committee, the International Scientific Committee as well as the Organizing Committee, whose dedication is considered to be the key for the success of this symposium. Moreover, the supports from all the organizations listed in the proceedings and the special contributions from all the

keynote and invited speakers are also gratefully appreciated. We really hope that all participants will have a good time and enjoy their stay in Guangzhou.

Jie Li, Bo Wu, and Zhishen Wu

October 31, 2009



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### **Organized by**

South China University of Technology (SCUT)  
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### **Supported By**

**ACI**, American Concrete Institute  
**ASC**, Architectural Society of China  
**ASCE**, American Society of Civil Engineers  
**CAE**, Chinese Academy of Engineering  
**CCES**, China Civil Engineering Society  
**CTBUH**, Council on Tall Buildings and Urban Habitat (USA)  
**ICE**, Institution of Civil Engineers (UK)  
**IFHS**, International Federation for High-rise Structures (India)  
**IIFC**, International Institute for FRP in Construction (Hongkong, China)  
**ISHMII**, International Society for Structural Health Monitoring of Intelligent Infrastructure (Canada)  
**JCI**, Japan Concrete Institute  
**JSCE**, Japanese Society of Civil engineers  
**NSFC**, National Natural Science Foundation of China

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