Preface

The International Conference on Manufacturing Science and Engineering is the premier forum for the presentation of new advances and research results in the fields of Manufacturing Science and Engineering. The conference brings together leading researchers, engineers and scientists in the domain of interest from around the world. The 1st International Conference on Manufacturing Science and Engineering was held in Zhuhai, 2009, under the organization of the University of Wollongong and Guangzhou University, and the 2nd Congress was held in Guilin, 2011, co-hosted by the Guangxi University, Guilin University of Electronic Technology, University of Wollongong, Korea Maritime University, and Baosteel Research Institute. Following the style of the previous two successful congresses, the 3rd International Conference on Manufacturing Science and Engineering was held in Xiamen, China, 27-29 March 2012, Organized by Fujian University of Technology, Xiamen University, Fuzhou University, Huagiao University, University of Wollongong, Fujian Mechanical Engineering Society, China and Hong Kong Industrial Technology Research Centre. The program was designed to advance manufacturing technologies to the next generation through discussion of the most recent advances and future perspectives, and to engage the worldwide community in a collective effort to solve problems in manufacturing. Delegates from more than 40 countries or districts attended those conferences.

The present volumes provide up-to-date, comprehensive and worldwide state-of-the art knowledge of the manufacturing science and engineering, including: advanced composite materials, advanced mechanical design, new materials and processes, advanced manufacturing technology, automation equipment and systems. All papers included in those volumes have already passed the strict peer-reviewing by 2-5 expert referees and been accepted for publication. We hope that those volumes will not only provide the readers a broad overview of the latest advances but also provide the researchers a valuable summary and reference in this field.

The organization of ICMSE2012 and the publication of those volumes were made possible thanks to the tireless dedication of many people. We would like to express our sincere thanks to the session organizers, session chairs, reviewers, presenters, exhibitors and congress attendees for their efforts and enthusiastic participation in this congress. Thanks are also given to Trans Tech Publications for producing those volumes.

The Organizing Committee of ICMSE 2012

Sponsored by

Fujian University of Technology, China

Xiamen University, China

Fuzhou University, China

Huaqiao University, China

University of Wollongong, Australia

Fujian Mechanical Engineering Society, China

Hong Kong Industrial Technology Research Centre

Conference Organization

Honorary Chair

Academician Prof. Yu Zhou, Harbin Institute of Technology, China

Chairman

Prof. Wenzhe Chen, Fujian University of Technology, China

Co-Chairmen

Prof. Zhengyi Jiang, University of Wollongong, Australia

Prof. Yun-Hae Kim, Korea Maritime University, Korea

Local Organizing Committee

Chair:

Prof. Pinqiang Dai, Fujian University of Technology

Members:

Prof. Dingning Chen, Fujian University of Technology

Prof. Lei Li, Xiamen University

Prof. Hongbing Zhan, Fuzhou University

Prof. Hui Huang, Huaqiao University

Associate Prof. Qianting Wang, Fujian University of Technology

Associate Prof. Yonglu Chen, Fujian University of Technology

Technical and Organizing Committee

Prof. Xipeng Xu, Huaqiao University, China

Prof. Xingjun Liu, Xiamen University, China

Prof. Qiang Li, Fuzhou University, China

Prof. Pinqiang Dai, Fujian University of Technology, China

Prof. Guomai Liu, Fujian University of Technology, China

Prof. Jibin Jiang, Fujian University of Technology, China

Prof. Dingning Chen, Fujian University of Technology, China

Prof. Tianlong Gu, Guilin University of Electronic Technology, China

Prof. Xianghua Liu, Northeastern University, China

Prof. Jingtao Han, University of Sci. and Tech. Beijing, China

Prof. Kaiming Wu, Wuhan University of Science and Technology

Prof. Zhengyi Jiang, University of Wollongong, AU

Prof. AKM Nurul Amin, International Islamic University, Malaysia

Prof. Carlos Caceres, The University of Queensland, Australia

Dr. Chunsheng Lu, Curtin University of Technology, Australia

Prof. Lin He, Guizhou University, China

Prof. Jun Wang, Northeastern University, China

- Prof. Qiang Wang, University of Jinan, China
- Prof. Shao Hui Yin, Hunan University, China
- Prof. Wenlei Sun, Xinjiang University, China
- Prof. Chun Liang Zhang, Guangzhou University, China
- Prof. Jinglong Bu, Hebei Polytechnic University, China
- Prof. Xiaoming Jia, Hebei Polytechnic University, China
- Prof. Jianmin Zeng, Guangxi University, China
- Prof. Daoguo Yang, Guilin University of Electronic Technology, China
- Prof. Huarui Xu, Guilin University of Electronic Technology, China
- Prof. Yuan Gao, Guilin University of Electronic Technology, China
- Prof. Yun-Hae Kim, Korea Maritime University, Korea
- Prof. Junyou Shi, Qingdao University of Science & Technology, China
- Prof. Yin Biao Guo, Xiamen University, China
- Prof. Ming Dong, Shanghai Jiao Tong University, China
- Prof. Wenbo Du, Beijing University of Technology, China
- Prof. Hongzhen Guo, Northwestern Polytechnical University, China
- Prof. Wenji Xu, Dalian University of Technology, China
- Prof. Shiming Ji, Zhejiang University of Technology, China
- Dr. Dongbin Wei, University of Wollongong, Australia
- Prof. Geun Jo Han, Dong-A University, Korea
- Prof. Shanqing Li, Research Institute, Baosteel, China
- Dr. Gui Wang, The University of Queensland, Australia
- Prof. Jong Kook Lee, Chosun University, Korea
- Prof. Ken-ichi Manabe, Tokyo Metropolitan University, Japan

- Prof. Jeng-Haur Horng, National Formosa University, Taiwan
- Prof. Jianzhong Zhou, Jiangsu University, China
- Prof. Xiaoqin Zhou, Jilin University, China
- Prof. Wenjun Meng, Taiyuan University of Science and Technology, China
- Prof. Haoran Geng, University of Jinan, China
- Prof. Shuguang Gong, Xiangtan University, China
- Prof. Yijian Huang, Huaqiao University, China
- Prof. Changhe Li, Qingdao Technological University, China
- Prof. Cheng Li, Zhengzhou University, China
- Prof. Jialu Li, Tianjin Polytechnic University, China
- Prof. Zhiyi Liu, Central South University, China
- Prof. Yongcheng Lin, Central South University, China
- Prof. Xiaoping Liao, Guangxi University, China
- Prof. Deping Liu, Zhengzhou University, China
- Prof. Jia-Horng Lin, Feng Chia University, Taiwan
- Prof. Kyung-Man Moon, Korea Maritime University, Korea
- Dr. Mark Fong, Hong Kong Industrial Technology Research Centre
- Prof. P. S. Pa, National Taipei University of Education, Taiwan
- Prof. Sagar Kamarthi, Northeastern University, USA
- Prof. Meihong Liu, Kunming University of Science and Technology, China
- Prof. Dehong Lu, Kunming University of Science and Technology, China
- Prof. Yongjin Chen, KunMing University of Science and Technology., China
- Prof. Shaojian Ma, Guangxi University, China
- Prof. Qingsen Meng, Taiyuan University of technology, China

- Prof. Furen Xiao, Yanshan University, China
- Prof. Kailin Pan, Guilin University of Electronic Technology, China
- Prof. Jingang Qi, Liaoning University Of Technology, China
- Prof. Pengcheng Wang, Inner Mongol University of Technology, China
- Prof. Shoujun Wang, Tianjin University of Technology, China
- Prof. Shahrum Abdullah, University Kebangsaan Malaysia, Malaysia
- Prof. Toshio Haga, Osaka Institute of Technology, Japan
- Prof. Walid Mahmoud Shewakh, Beni Suef university, Egypt
- Dr. Yuentong Gu, Queensland University of Technology, Australia
- Prof. Yu-Shiang Wu, China University of Sci. and Tech., Taiwan
- Prof. Jun Xiao, Wuhan University of Technology, China
- Prof. Ligang Yao, Fuzhou University, China
- Prof. Zhaohui Zhang, Beijing Jiaotong University, China
- Prof. Xiaoping Zhou, Hubei University Of Technology, China
- Prof. Jian Gao, Guangdong University of Technology, China
- Prof. Changsheng Li, Northeastern University, China
- Prof. Xiaoming Sang, Hebei Polytechnic University, China
- Prof. Ping Zou, Northeastern University, China
- Prof. Zhihai Han, Xi'an Jiao Tong University, China
- Prof. Olaf Diegel, Auckland University of Technology, NTZ