Preface

ICCMME series provides a forum for accessing to the most up-to-date and authoritative knowledge from both industrial and academic worlds, sharing best practice in the field of Chemical Engineering, Chemistry, Materials and Materials Processing, Metallurgical Engineering. The meeting provides an opportunity to highlight recent developments and to identify emerging and future areas of growth in this exciting field. The 1st ICCMME 2011 was successfully taken place in Beihai, China, December 23-25. Following the success of the inaugural conference, the 2nd ICCMME 2012 was held in Kunming, China, from December 15 to December 16 and the third ICCMME 2013 was held in Zhuhai, from December 10 to 11. The 4th International Conference on Chemical, Material and Metallurgical Engineering (ICCMME 2014) taken place in Shenzhen, China from December 30 to December 31, 2014. ICCMME 2014 brought together leaders from industry and academia to exchange and share their experiences, present research results, explore collaborations and to spark new ideas, with the aim of developing new projects and exploiting new technology in this field.

We would like to express our thanks to all the authors for their time and genuine efforts and to the reviewers for their fruitful comments during the preparation of this volume. We also take this opportunity to thank the many people and organizations who have supported this conference.

The editor

Conference Organization

Co-Chairmen

- Prof. Seung-Bok Choi, Inha University, Korea
- Prof. Yun-Hae Kim, Korea Maritime University, Korea
- Prof. Prasad Yarlagadda, Queensland University of Technology

Technical and Organizing Committee

- Prof. Yanfeng Chen, Nanjing University, China
- Prof. Xun Cai, Shanghai Jiaotong University, China
- Prof. Laifei Cheng, Northwestern Polytechnical University, China
- Prof. Yuan Gao, Guilin University of Electronic Technology, China
- Prof. Hongzhen Guo, Northwestern Polytechnical University, China
- Prof. Weihao Xiong, Huazhong University of Science and Technology, China
- Prof. Yongping Lei, Beijing University of Technology, China
- Prof. Xiang Xiong, Central South University, China
- Prof. Zhanyi Cao, Jilin University, China
- Prof. Deguang Cao, Guangxi University, China
- Prof. Hongxi Zhu, Wuhan University of Science and Technology
- Prof. Zhong Cao, Changsha University of Science and Technology, China
- Prof. Xinsheng Chai, South China University of Technology, China
- Prof. Mingqing Chen, Jiangnan University, China
- Prof. Wenbo Du, Beijing University of Technology, China
- Prof. Chenji Deng, Wuhan University of Science and Technology
- Prof. Yunsheng Ding, Hefei University of Technology, China
- Prof. Kaimin Liang, Tsinghua University, China
- Prof. Hongliang Li, Qingdao University, China
- Prof. Dehong Lu, Kunming Univ. of Science of Technology, China
- Prof. Yanxuan Wen, Guangxi university, China

- Prof. Kaiming Wu, Wuhan University of Science and Technology
- Prof. Jiannan Xiang, Hunan University, China
- Prof. Huiming Xiao, University of New Brunswick, Canada
- Prof. Qianwei Xu, Tongji University, China
- Prof. Anping Xu, Hebei University of Technology, China
- Prof. Qiaoqin Yang, University of Saskatchewan, Canada
- Prof. Mingshan Yang, Beijing Institute of Petrochemical Technology
- Prof. Lin Yu, Guangdong University of Technology, China
- Prof. Zhen'ou Zeng, South China University of Technology, China
- Prof. Xuejun Zhang, Beijing University of Chemical Technology, China
- Prof. Jianwei Guo, Guangdong University of Technology, China
- Prof. Fuhou Lei, Guangxi University for Nationalities, China
- Prof. Zili Liu, Guangzhou University, China
- Prof. Lihe Qian, Yanshan University, China
- Prof. Shahrum Abdullah, University Kebangsaan Malaysia, Malaysia
- Prof. Katsuyuki Aoki, Toyohashi University of Technology, Japan
- Prof. AKM Nurul Amin, International Islamic University, Malaysia
- Dr. Geng Chen, University of Washington, Seattle, USA
- Prof. Carlos Caceres, The University of Queensland, Australia
- Dr. Mark Fong, Hong Kong Industrial Technology Research Centre
- Dr. Yuantong Gu, Queensland University of Technology, Australia
- Prof. Geun Jo Han, Dong-A Univeristy, Korea
- Prof. Yinghe He, James Cook University, Australia
- Dr. Xinjiang Hao, University of Birmingham, UK
- Prof. Toshio Haga, Osaka Institute of Technology, Japan
- Prof. Yun-Hae Kim, Korea Maritime University, Korea
- Prof. Sagar Kamarthi, Northeastern University, USA
- Prof. Jong Kook Lee, Chosun University, Korea
- Prof. Jia-Horng Lin, Feng Chia University, Taiwan
- Prof. Hongwei Liu, Queensland University of Technology, Australia
- Dr. Zhengxin Liu, National Insti. of Adv. Ind. Sci. & Tech., Japan

Dr. Chunsheng Lu, Curtin University of Technology, Australia

Prof. Ken-ichi Manabe, Tokyo Metropolitan University, Japan

Prof. Kyung-Man Moon, Korea Maritime University, Korea

Prof. Walid Mahmoud Shewakh, Beni Suef university, Egypt

Dr. Jianjian Shi, Indiana University School of Medicine, USA

Prof. Hiroyuki Takei, Toyo University, Japan

Dr. Dongbin Wei, University of Wollongong, Australia

Dr. Gui Wang, The University of Queensland, Australia

Dr. Xingzhong Yan, South Dakota State University, USA

Prof. Raj Das, University of Auckland, New Zealand

Prof. Chuanjian Zhong, State Univ. of New York at Binghamton, USA

Prof. Huaiyong Zhu, Queensland University of Technology, Australia