

# Preface

Mechatronics is the synergistic combination of precision mechanical engineering, electronic control and systems thinking in the design of products and manufacturing processes. It relates to the design of systems, devices and products aimed at achieving an optimal balance between basic mechanical structure and its overall control.

This book comprises carefully selected contributions to the 2012 International Conference on Mechatronics and Control Engineering (ICMCE 2012), organized by Queensland University of Technology, Korea Maritime University, and Inha University, on November 29-30, in Guangzhou, China

The selection of papers for inclusion in this book was based on the recommendations from the preliminary review of abstract and from the final review of full length papers, with both reviews concentrating on originality and quality. It is hoped that the volume can serve the world community as the definitive reference source.

I would like to thank to authors for their contributions. Special thanks belong to all organization staff and reviewers.

***The editors***

The 2012 International Conference on  
Mechatronics and Control Engineering  
(ICMCE 2012)

**Organized by:**

Queensland University of Technology, Australia

Korea Maritime University, Korea

Inha University, Korea

**Conference Organization**

**Co-Chairmen**

Prof. Prasad Yarlagadda, Queensland University of Technology

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

Prof. Seung-Bok Choi, Inha University, Korea

**Technical and Organizing Committee**

Prof. Nabil Gindy, University of Nottingham, UK

Prof. Toshio Haga, Osaka Institute of Technology, Japan

Prof. Jong Kook Lee, Chosun University, Korea

Prof. Yong-Lin Kuo, National Taiwan Univ. of Sci. and Tech., Taiwan

Prof. Mao-Hsiung Chiang, National Taiwan University, Taiwan

Prof. Yi-Sheng Huang, National Ilan University, Taiwan

Prof. Chen-Chien Hsu, National Taiwan Normal University, Taiwan

Prof. Chengqi Zhang, University of Technology, Australia

Prof. Jianer Chen, Texas A&M University, USA

Prof. Zhong Wende, Nanyang Technological University, Singapore

Prof. Jiankun Hu, University of South Wales, Australia

Prof. Yong Guan, Iowa State University, USA

Prof. Yao-Wen Chang, National Taiwan University, Taiwan

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

Prof. Jianzhong Zhou, Jiangsu University, China

Prof. Xiaoqin Zhou, Jilin University, China

Prof. Wenjun Meng, Taiyuan University of Sci. and Tech., China

Prof. Haoran Geng, University of Jinan, China

Prof. Jun Wang, Northeastern University, China

Prof. Qiang Wang, Jinan University, China

Prof. Sihai Jiao, Research Institute, Baosteel, China

Prof. Xiaoping Zhou, Hubei University Of Technology, China

Prof. Jian Gao, Guangdong University of Technology, China

Prof. Jun Xiao, Wuhan University of Technology, China

Prof. Ligang Yao, Fuzhou University, China

Prof. Zhaohui Zhang, Beijing Jiaotong University, China

Prof. Xiaobo Zhou, University of Colorado at Colorado Springs, USA

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

Prof. Carlos Caceres, The University of Queensland, Australia

Prof. Shahrum Abdullah, University Kebangsaan Malaysia

Dr. Xiangping Bu, Wayne State University, USA

Prof. Sagar Kamarthi, Northeastern University, USA

Prof. Heinz-Gunter, Brokmeier, Technische Universitat Clausthal

Prof. Zhengyi Jiang, University of Wollongong, AU

Prof. Niels Bay, University of Denmark, Denmark

Prof. Viktor P. Astakhov, General Motor Business Unit of PSMi

Prof. Cesar de Sa, Jose, University of Porto, Portugal

Prof. Cheng Kai, Brunel University, UK

Prof. Yusuf Altintas, University of British Columbia, Canada

Prof. Phil Koshy, McMaster University, Hamilton, Ontario, Canada

Prof. Kambakar P Rajurka University of Nebraska-Lincoln, USA

Prof. Nabil Gindy, University of Nottingham, UK

Prof. V.K. Jain, Indian Institute of Technology, Kanpur, UP, India

Prof. Walid Mahmoud Shewakh, Beni Suef university, Egypt