

Preface

The papers in this volume were selected from the 4th International Conference of Asian Society for Precision Engineering and Nanotechnology (ASPEN 2011). ASPEN 2011 was organized by the Partner State Key Laboratory of Ultra-precision Machining Technology of The Hong Kong Polytechnic University and co-organized by Chinese Mechanical Engineering Society (CMES), Japan Society for Precision Engineering (JSPE), Korean Society for Precision Engineering (KSPE) and the State Key Laboratory of Precision Measurement Technology and Instruments of Tianjin University and Tsinghua University. The Asian Society for Precision Engineering and Nanotechnology (ASPEN) is a consortium of academic societies in the Asian region to promote the collaboration among scientists and researchers in Asia.

The scope and level of the ASPEN 2011 is the first of its kinds in Hong Kong in the area of precision engineering including precision/ultra-precision machining, non-traditional machining, manufacturing systems and machine tools, nano & micro metrology and surface characterization, MEMS/NEMS, advanced moulding and forming, high precision mechatronics and other technologies associated with micro/nano manufacturing. The conference is composed of various sessions and activities including keynote presentations, invited presentations, oral and poster presentations as well as industrial sessions. This year, about 200 papers were submitted to the conference from over 50 institutes and organizations in 10 countries of different regions. We hope the present volume provides readers a broad overview of the recent advances in the field of precision engineering.

Here I would like to express my deepest appreciation to the generous contribution from all the authors as well as the kind support from the conference co-organizers, reviewers, sponsors, members of the Organizing Committee, Program Committee, and International Scientific Committee of ASEPN2011. Special thanks also go to Trans Tech Publications for producing the volume.

W.B. Lee

Conference General Chair & ASPEN President

Organization

Conference General Chair & ASPEN President

Wing Bun Lee The Hong Kong Polytechnic University, Hong Kong

Honorary Chair

Guofan Jin Tsinghua University, China

ASPEN Vice President

Kuang-Chao Fan National Taiwan University, Taiwan

ASPEN Immediate Past President

Tamio Arai University of Tokyo, Japan

Past Conference General Chair

Shen Dong Harbin Institute of Technology, China

Takuya Semba Fukuoka Institute of Technology, Japan

Dong-Yol Yang Korea Advanced Institute of Science & Technology, Korea

International Scientific Committee

Co-Chairman

Seung-Woo Kim KSPE President, Korea Advanced Institute of Science & Technology, Korea

Toshimich Moriwaki JSPE President, Kobe University, Japan

H.A.M. Spaan European Society for Precision Engineering and Nanotechnology

Member

Ekkard Brinksmeier University of Bremen, Germany

Soo-Won Chae University of Korea, Korea

Kai Cheng Brunel University, UK

Xin Chen Guangdong University of Technology, China

Chong-Nam Chu Seoul National University, Korea

T. A. Dean The University of Birmingham

Fengzhou Fang Tianjin University, China

Volker Hans University of Essen, Germany

Xiangqian Jiang University of Huddersfield, UK

Wen-Yuh Jywe Tokyo University of Agriculture and Technology, Japan

Eiji Kondo Kagoshima University, Japan

Masanori Kunieda Tokyo University of Agriculture and Technology, Japan

Yingchun Liang Harbin Institute of Technology, China

Yiuwing Mai University of Sydney, Australia

Masami Masuda Niigata University, Japan

Mamoru Mitsuishi University of Tokyo, Japan

Jun Ni University of Michigan, USA

Mustafizur Rahman National University of Singapore, Singapore

Jay Raja Univ. of North Carolina, USA

David Robertson Durham University, UK

Cheng-kuo Sung National Tsing Hua University, Taiwan

Yoshimi Takeuchi Osaka University, Japan

Toshiharu Taura Kobe University, Japan

F. W. Travis University of Strathclyde, UK

Shu Beng Tor Nanyang Technological University, Singapore

Yingxue Yao Harbin Institute of Technology, China

Seung-Han Yang Kyungpook National University, Korea

Allen Yi The Ohio University, USA

Zheng You Tsinghua University, China

Zhejun Yuan Harbin Institute of Technology, China

Guoxiong Zhang Tianjin University, China

Liangchi Zhang The University of Sydney, Australia

Jianhong Zhao Singapore Institute of Manufacturing Technology, Singapore

Libo Zhou Ibaraki University, Japan

Organizing Committee

Co-Chairman

| | |
|--------------|--|
| Sandy To | The Hong Kong Polytechnic University, Hong Kong, China |
| Xiao Tang Hu | Tianjin University, China |

Members

| | |
|----------------|--|
| Yifan Dai | National University of Defense Technology, China |
| Ruxu Du | Chinese University, Hong Kong |
| Mingwang Fu | The Hong Kong Polytechnic University, Hong Kong, China |
| Yongsheng Gao | Hong Kong University of Science and Technology, Hong Kong |
| Dongning Guo | Guangdong University of Technology, China |
| Bing Li | Harbin Institute of Technology, China |
| Yunkang Shen | Taipei Medical University, Taiwan |
| Hao Wang | The Hong Kong Polytechnic University, Hong Kong |
| Qingliang Zhao | Harbin Institute of Technology, China |
| HongYu Zheng | Singapore Institute of Manufacturing Technology, Singapore |

International Programme Committee

Co-Chairman

| | |
|------------------|--|
| Chi Fai Cheung | The Hong Kong Polytechnic University, Hong Kong |
| Shengyi Li | National University of Defense Technology, China |
| Kiyoshi Takamasu | University of Tokyo, Japan |

Members

| | |
|-----------------|--|
| Sung-Hoon Ahn | Seoul National University, Korea |
| Hisayuki Aoyama | University of Electro-Communications, Japan |
| Liam Blunt | University of Huddersfield, UK |
| James H. Burge | The University of Arizona, USA |
| Chao-Chang Chen | National Taiwan University of Science and Technology, Taiwan |
| Unchung Cho | Korea Polytechnic University, Korea |
| Jianjun Du | Harbin Institute Technology, China |
| Wei Gao | Tohoku University, Japan |
| Yongsheng Gao | Hong Kong University of Science and Technology |
| Han Huang | The University of Queensland, Australia |
| Yeau-Ren Jeng | National Chung Cheng University, Taiwan |
| Lingbao Kong | The Hong Kong Polytechnic University, Hong Kong |
| Richard Leach | National Physical Laboratory, UK |
| Sun-Kyu Lee | Gwangju Institute of Science and Technology, Korea |
| Kui Liu | Singapore Institute of Manufacturing Technology, Singapore |
| Xichun Luo | Heriot-Watt University, UK |
| Akira Okada | Okayama University, Japan |
| Oltmann Riemer | University of Bremen, Germany |
| Yoke San Wong | National University of Singapore, Singapore |
| Min Xu | Fudan University, China |
| Kazuya Yamamura | Osaka University, Japan |
| Qiusheng Yan | Guangdong University of Technology, China |
| Kaili Zhang | City University of Hong Kong, Hong Kong |
| Ming Zhou | Harbin Institute of Technology, China |

Conference Secretary

| | |
|----------------|--------------------------------------|
| Ka Chun Cheung | The Hong Kong Polytechnic University |
| May Chun | The Hong Kong Polytechnic University |
| Lesley Ho | The Hong Kong Polytechnic University |
| Grace Wang | The Hong Kong Polytechnic University |