PREFACE

This volume contains some selected papers from the 2014 International Conference on Advanced Materials Engineering and Technology (ICAMET 2014) which is to be held in Ho Chi Minh City, Vietnam during December 4-5, 2014, and is organized by Centre of Excellence Geopolymer & Green Technology (CEGeoGTech), School of Materials Engineering, Universiti Malaysia Perlis. ICAMET 2014 co-organized by Faculty of Materials Technology, Ho Chi Minh City University of Technology, Vietnam, National Key Laboratory of Polymer and Composite Material, Vietnam and also Faculty of Materials Science and Engineering, Gheorge Asachi Technical University of lasi, Romania. The conference aims to provide a high level international forum for researchers, engineers and scientists to present their new advances and research results in the field of advanced materials engineering and technology.

This volume covered all the aspects of advanced materials engineering and technology, particularly of advanced characterization, biomaterials, biotechnology, building materials, coating and surface engineering, composite and polymer materials, optical and photonic materials, nanoengineering and any other related topics. All of the papers have been reviewed by more than two expert referees in their relevant topic disciplines. The paper selected for this volume depended on their quality and relevancy to the conference.

The editors hope that this volume will provide the reader a broad overview of the latest advances in the field of advanced materials engineering and technology, and that will be as valuable reference source for further research.

The editors would like to express their sincere appreciations and thanks to all the committee members of the ICAMET 2014 for their tremendous efforts. Without their dedication, it was impossible to have a successful ICAMET 2014 and a high quality volume of the conference proceedings. Thanks also to Trans Tech Publications for producing this volume. Finally, the editors would like to thank all the authors for their contribution to this valuable volume.

Mohd Mustafa Al Bakri Abdullah Zarina Yahya Liyana Jamaludin Alida Abdullah Rafiza Abdul Razak

Universiti Malaysia Perlis, MALAYSIA

December, 2014

Co-organized by

Faculty of Materials Technology, Ho Chi Minh City University of Technology, Vietnam
National Key Laboratory of Polymer and Composite Material, Vietnam
Faculty of Materials Science and Engineering, Gheorge Asachi Technical University of Iasi,
Romania

International Advisory Board

Prof. Dr. Petrica Vizureanu, Gheorghe Asachi Technical University of Iasi, Romania

Prof. Dr. Mohammed Binhussain, King Abdul Aziz City Science & Technology (KACST), Kingdom Saudi Arabia

Prof. Dr. Azmi Rahmat, Universiti Malaysia Perlis (UniMAP), Malaysia

Prof. Dr. Ion Sandu, Alexandru Ioan, Cuza University of Iasi, Romania

Assoc. Prof. Dr. Dai Phu Huynh, Ho Chi Minh City University of Technology, Vietnam

Assoc. Prof. Dr. Nguyen Van Chanh, Ho Chi Minh City University of Technology, Vietnam

Assoc. Prof. Dr. Andrei Victor Sandu, Gheorghe Asachi Technical University of Iasi, Romania

Associate Professor Dr. Kazuhiro Nogita, The University of Queensland, Australia

Prof. Dr. Ir. Djwantoro Hardjito, Petra Christian University, Indonesia

Conference Organization

Honorary - Chair

Prof. Dr. Kamarudin Hussin, Universiti Malaysia Perlis (UniMAP), Malaysia

Conference Chairman

Dr. Mohd Mustafa Al Bakri Abdullah, Universiti Malaysia Perlis (UniMAP), Malaysia

Conference Co-Chairman

Alida Abdullah, Universiti Malaysia Perlis (UniMAP), Malaysia

Technical and Organizing Committee

Assoc. Prof Dr. Che Mohd Ruzaidi Ghazali, University Malaysia Perlis (UniMAP), Malaysia

Assoc. Prof. Dr. Khairul Nizar Ismail, Universiti Malaysia Perlis (UniMAP), Malaysia

Assoc. Prof. Dr. Aeslina Abdul Kadir, Universiti Tun Hussein Onn Malaysia (UTHM), Malaysia

Assoc. Prof. Dr. Supri A Ghani, Universiti Malaysia Perlis (UniMAP), Malaysia

Dr. Hamzah Fansuri, Institut Teknologi Sepuluh Nopember (ITS), Indonesia

Dr. Ir. Januarti Jaya Ekaputri, Institut Teknologi Sepuluh Nopember (ITS), Indonesia

Dr. Khairel Rafezi Ahmad, Universiti Malaysia Perlis (UniMAP), Malaysia

Dr. Luqman Musa, Universiti Malaysia Perlis (UniMAP), Malaysia

Dr. Zarina Zakaria, Universiti Malaysia Perlis (UniMAP), Malaysia

Dr. Azwan Iskandar Azmi, Universiti Malaysia Perlis (UniMAP), Malaysia

Dr. Abdul Hafiizh Ismail, Universiti Malaysia Perlis (UniMAP), Malaysia

Dr. Mukhzeer Mohamad Shahimin, Universiti Malaysia Perlis (UniMAP), Malaysia

Dr. Norazian Mohamed Noor, Universiti Malaysia Perlis (UniMAP), Malaysia

Dr. Tran Van Mien, Ho Chi Minh City University of Technology, Vietnam

Dr. Xuan Viet Cao, Ho Chi Minh City University of Technology, Vietnam

Dr. Du Ngoc Uy Lan, Universiti Malaysia Perlis (UniMAP), Malaysia

Engr. Shayfull Zamree Abd Rahim, Universiti Malaysia Perlis (UniMAP), Malaysia

Engr. Mazlan Mohamad, Universiti Malaysia Kelantan (UMK), Malaysia

Engr. Mohd Arif Anuar Mohd Salleh, Universiti Malaysia Perlis (UniMAP), Malaysia

Engr. Liyana Jamaludin, Universiti Malaysia Perlis (UniMAP), Malaysia

Engr. Zarina Yahya, Universiti Malaysia Perlis (UniMAP), Malaysia

Engr. Rafiza Abdul Razak, Universiti Malaysia Perlis (UniMAP), Malaysia

Engr. Alida Abdullah, Universiti Malaysia Perlis (UniMAP), Malaysia

Engr. Muhammad Faheem Mohd Tahir, Universiti Malaysia Perlis (UniMAP), Malaysia

Engr. Meor Ahmad Faris, Universiti Malaysia Perlis (UniMAP), Malaysia

Engr. Muhammad Qauyum Zawawi Ahamad Suffin, Universiti Malaysia Perlis (UniMAP), Malaysia

Reviewer List

Assoc Prof Dr Ir Salmah Husseinsyah, Universiti Malaysia Perlis (UniMAP)

Assoc. Prof. Dr. Andrei Victor Sandu, Gheorghe Asachi Technical University of Iasi, Romania

Assoc. Prof Dr. Supri Abd Ghani, Universiti Malaysia Perlis (UniMAP)

Dr. Heah Cheng Yong, Universiti Malaysia Perlis (UniMAP)

Dr. Liew Yun Ming, Universiti Malaysia Perlis (UniMAP)

Dr. Irwana Nainggolan, Universiti Malaysia Perlis (UniMAP)

Dr. Mohamad Firdaus Omar, Universiti Malaysia Perlis (UniMAP)

Dr. Norsuria Mahmed, Universiti Malaysia Perlis (UniMAP)

Dr. Ir. Januarti Jaya Ekaputri, Institut Teknologi Sepuluh Nopember (ITS), Indonesia

- Dr. Mohd Mustafa Al Bakri Abdullah, Universiti Malaysia Perlis (UniMAP)
- Dr. Azremi bin Abdullah Al Hadi, Universiti Malaysia Perlis (UniMAP)
- Dr. Phak Len Al Eh Kan, Universiti Malaysia Perlis (UniMAP)
- Dr. Dina Maizana Maiz Ahmad, Universiti Malaysia Perlis (UniMAP)
- Dr. Mukhzeer Mohamad Shahimin, Universiti Malaysia Perlis (UniMAP)
- Dr. Rizalafandi Che Ismail, Universiti Malaysia Perlis (UniMAP)
- Dr Zarina Zakaria, Universiti Malaysia Perlis (UniMAP)
- Dr. Azlin Fazlina Osman, Universiti Malaysia Perlis (UniMAP)
- Dr Muhamad Saifuldin Abd Rahman, Universiti Malaysia Perlis, (UniMAP)
- Dr Wan Khairunizam Wan Ahmad, Universiti Malaysia Perlis (UniMAP)
- Dr Noorhafiza Muhammad, Universiti Malaysia Perlis (UniMAP)
- Dr Sam Sung Ting, Universiti Malaysia Perlis (UniMAP)
- Dr. Mohamad Khairuddin Md Arshad, Universiti Malaysia Perlis (UniMAP)
- Dr. Firuz Zainuddin, Universiti Malaysia Perlis (UniMAP)
- Dr, Du Ngoc Uy Lan, Universiti Malaysia Perlis (UniMAP)
- Engr. Faizul Che Pa, Universiti Malaysia Perlis (UniMAP)
- Engr. Mohd Arif Anuar Mohd Salleh, Universiti Malaysia Perlis (UniMAP)
- Engr. Liyana Jamaludin, Universiti Malaysia Perlis (UniMAP)
- Engr. Rafiza Abdul Razak, Universiti Malaysia Perlis (UniMAP)
- Engr. Zarina Yahya, Universiti Malaysia Perlis (UniMAP)
- Engr. Alida Abdullah, Universiti Malaysia Perlis (UniMAP)
- Engr. Shayfull Zamree Abd Rahim, Universiti Malaysia Perlis (UniMAP)