

# Preface

ICME 2013 is the 4<sup>th</sup> International Conference on Mechanical and Manufacturing Engineering organized by Faculty of Mechanical and Manufacturing Engineering, Universiti Tun Hussein Onn Malaysia (UTHM). The first, second and third ICME were successfully held in Johor Bharu, Kuala Lumpur and UTHM respectively and had attracted prestigious researchers all over the world. This conference would be the main platform for researchers, academicians, technologist, policy makers, industrialists and students to share, discuss and highlight their research findings particularly works that related to research and technological developments and knowledge transfers despite of sustaining green technologies. The conference scientific committee received more than 260 papers from 16 countries all over the world. All papers were peer-reviewed in a double-blind process and most of the papers were accepted for presentations in 12 different selected areas and published in SCOPUS indexed journal. We wish to thank all authors who contributed their papers to the conference and all reviewers for their efforts to review the papers as well as the sponsors. We would also like to thank the members of the ICME2013, Organizing Committee and the International Advisory Committee for their efforts in making the conference a success. Thank you very much indeed.

## **FOREWORD FROM VICE CHANCELLOR UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

Salam 1Malaysia and sincere greetings to all.

First and foremost, I would like to congratulate the Faculty of Mechanical and Manufacturing Engineering, Universiti Tun Hussein Onn Malaysia (UTHM) for successfully organizing this 4<sup>th</sup> International Conference on Mechanical and Manufacturing Engineering (ICME 2013). It is my great pleasure to welcome all distinguished guests, invited speakers and participants to the ICME 2013. The theme for ICME 2013 is Innovative Solution for Sustainable Engineering. It is an important and interesting theme and UTHM has a forefront role in discussing the latest outcomes in the related area. Surely in this era, the innovative and sustainable based technology has attracted much concern globally and it has a very huge potential for further exploration. I believe you will benefit in many ways in this conference either as speakers or as participants. I also hope this conference is a good venue to build research network in many fields and open for great opportunity to cooperate in the future. Finally, I wish all of you good luck and all the best at this conference. Thank you.

*“WITH WISDOM WE EXPLORE”*

**Prof. Dato’ Dr. Mohd Noh bin Dalimin**

Vice Chancellor UTHM

## **FOREWORD FROM DEAN OF FACULTY OF MECHANICAL & MANUFACTURING ENGINEERING**

I would like to extend a warm welcome to all delegates attending the 4<sup>th</sup> International Conference on Mechanical and Manufacturing Engineering 2013 (ICME2013) organized by Faculty of Mechanical and Manufacturing Engineering (FKMP), Universiti Tun Hussein Onn Malaysia (UTHM). ICME was first held in 2008 and it is ideal platform for all academicians, researchers and postgraduates students to share current ideas and findings in this conference. Universiti Tun Hussein Onn Malaysia aspires to be a global university and we have done much effort towards achieving this ambition including this conference. The theme of this conference is Sustainable Engineering towards Green Technology is interesting and timely. I would like to encourage young researchers to actively take part in discussions of their research interest and consults relevant experts and professors in the conference. The process of learning is always challenging and fascinating and conferences always gather experts and also promote networking as well as to expose new findings and ideas. It should be shared and reviewed with rigor to ensure full benefits are acquired. Innovation and sustainable technology has always been the forefront of research in the current era. Finally, I would like to express my deep gratitude and thanks to all members of the organizing committee, keynote speakers, paper presenters, contributors and other involved in making this conference a success. My appreciation and thanks also to the support of the University especially the Dato' Vice Chancellor. I wish you all the best and have an enjoyable and fruitful conference.

**Assoc. Prof. Dr. Yusri bin Hj. Yusof**

Dean of Faculty of Mechanical and Manufacturing Engineering

## **FOREWORD FROM CHAIRMAN OF ICME2013**

Firstly, on behalf of the organizing committee, I would like to convey my deepest thanks to all, the participants and sponsors of the conference. I am also would like to welcome our guest to the 4<sup>th</sup> International Conference on Mechanical and Manufacturing Engineering (ICME2013). The main goal of ICME2013 is to provide a common platform for knowledge interchange and sharing in terms of current research and development between researchers, academicians, industries and practitioners in mechanical and manufacturing engineering areas. Academic institutions need to place increased emphasis on transferring and commercializing knowledge as opposed to solely generating and disseminating knowledge within the academic community itself and ICME2013 will be of great advantage in providing an ideal platform in addressing these issues. I hope all delegates will participate actively in the conference and share their scope of interest within the mechanical and manufacturing engineering areas. It is also hope that during this conference, delegates will take the opportunity to renew old friendship and meet new acquaintances as well as explore the campus of UTHM. My gratitude and best wishes to the entire team who have made the conference a success. Thank you.

**Assoc. Prof. Dr. Md Saidin Wahab**  
Chairman of ICME2013

## **ORGANIZING COMMITTEE**

### **Chairman**

Assoc.Prof. Dr. Md Saidin Wahab

### **Secretary I**

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### **Secretary III**

Mdm. Zalina Omar

### **Seminar Paper**

AP Dr. Waluyo Adi Siswanto (H)

Dr. Abdul Latif Mohd Tobi

### **Event, Seminar & Protocol**

Dr. Nur Azam Badarulzaman (H)

Dr. Sia Chee Kiong

Mr. Mohd Azlis Sani Md Jalil

### **Publication**

Dr. Al Emran Ismail (H)

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Dr. Ibrahim Masood

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Mr. Mahyan Nasoha

Mr. Mohd Adib Ramzi

Mr. Suhaimi Hassan

Mr. Hanis Zakaria

Mr. Ashari Kasmin

### **Equipment & Facilities**

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Mr. Ghazali Kadis

Mr. Azmi Md Salleh

### **Participation & Registration**

Dr. W.N. Azrina Wan Muhammad (H)

Dr. Hasan Zuhudi Abdullah

### **Co-committees**

Advanced Manufacturing and Materials Center (AMMC)

Center for Energy and Industrial Environment Studies (CEIES)

Advanced Textile Training Center (ADTEC)

### **Vice Chairman**

Dr. Badrul Aisham Md Zain

### **Secretary II**

Dr. Norzelawati Asmuin

### **Bursary**

Dr. Saifulnizan Jamian

### **Vice Bursary**

Mdm. Halimah Jan Fakir

### **Logistic**

Dr. Rosniza Hussin @ Isa (H)

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### **Special Task & Sourvenier**

Dr. Mohd Zamani Ngali (H)

Dr. Izzuddin Zaman @ Bujang

Mr Bohari Ismanqun

### **Feast**

Mr. Mohd Nazrul Roslan (H)

Mr. Maznan Ismon

## Keynote Speakers



### **Prof. Dr. Ibrahim Jawahir**

Director of Institute for Sustainable Manufacturing  
James F. Hardyman Chair in Manufacturing Systems  
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### **Professional Preparation**

Ph.D., Manufacturing Engineering, University of New South Wales, Sydney  
M.S., Mechanical/Manufacturing Engineering, P.F. University, Moscow

### **Appointments**

July 2002 – present: James F. Hardyman Chair in Manufacturing Systems,  
Department of Mechanical Engineering, University of Kentucky, Lexington, KY  
July 1996 – present: Professor, Mechanical Engineering (Tenured), University of  
Kentucky, Lexington, KY  
July 1990 – June 1996: Associate Professor, Mechanical Engineering, University of  
Kentucky, Lexington, KY  
Sept. 1989 – June 1990: Manager, Carbide Product Design, Carboloy Inc., Warren, MI  
July 1986 – Sept. 1989: Lecturer and Senior Lecturer, Dept of Mech. Eng, Univ. of  
Wollongong, Australia

### **Selected Publications**

1. Outeiro, J.C., J.C. Pina, O.W. Dillon, Jr., and I.S. Jawahir, "Size Effects and Surface Integrity in Machining and their Influence on Product Sustainability", Int. J. Sustainable Manufacturing, Vol. 2(1), 2010, pp. 112-126.
2. Badurdeen, F., T.J. Goldsby, D. Iyengar, H. Metta, S. Gupta, and I.S. Jawahir, "Extending Total Lifecycle Thinking to Sustainable Supply Chains", Int. J. Product Lifecycle Management, Vol. 4(1-3), 2009, pp. 49-67.
3. Vollertsen, F., D. Biermann, H.N. Hansen, I.S. Jawahir and K. Kuzman, "Size Effects in Manufacturing of Metallic Components", Annals of the CIRP, Vol. 58(2), 2009, pp. 566-587.
4. Umbrello, D., and I.S. Jawahir, Numerical Modeling of the Influence of Process Parameters and Workpiece Hardness on White Layer Formation in AISI 52100 Steel", Int. J. Adv. Manufacturing Tech., Vol. 44, 2009, pp. 955-968.
5. Niranjali de Silva, I.S. Jawahir, O.W. Dillon, Jr and M. Russell, "A New Comprehensive Methodology for the Evaluation of Product Sustainability at the Design and Development Stage of Consumer Electronic Products", Int. J. Sustainable Manufacturing, Vol. 1(3), 2009, pp. 251-264.



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**Qualification**

August 1997: Ph.D. Chemical and Process Engineering University of Strathclyde.

December 1992: M.Sc. Chemical Engineering, Universiti Teknologi Malaysia.

June 1989: B. Sc. Petroleum Engineering, Universiti Teknologi Malaysia.

**Professional Experience**

April 2009 – present: Dean of Research, Materials and Manufacturing Research Alliance, UTM.

8 Dec. 2009 – 11 Dec. 2009 : Visiting Professor, Nagoya Institute of Technology, Japan

8 July -18 July 2009 : Guest Professor, Meji University, Tokyo, Japan

November – December 2008 : Visiting Academic, Imperial College London

15 June – 2 July 2008 : Visiting Academic, Imperial College London

November 2006-February 2007 : Visiting Academic, Imperial College London

**Selected Publications**

1. S. M. Sanip, A. F. Ismail, M. Aziz and T.Soga, Functionalized Carbon Nanotubes For Mixed Matrix Membrane, IEICE TRANS. ELECTRON. Vol. E92-C, No. 12 Dec 2009, 1427-1431.
2. J.C. Tee, A. F. Ismail, M. Aziz and T.Soga, Influence of Catalyst Preparation on Synthesis of Multiwalled Carbon Nanotubes, IEICE TRANS. ELECTRON. Vol. E92-C, No. 12 Dec 2009, 1421-1425.
3. M.A. Aroon, A.F. Ismail, M.M. Montazer-Rahmati, T. Matsuura, A mathematical analysis of hollow fiber spinning: Bore and dope velocity profiles in the air gap, Journal of Membrane Science, Volume 348, Issues 1-2, 15 February 2010, Pages 13-20.
4. A. Mansourizadeh, A.F. Ismail, Effect of additives on the structure and performance of polysulfone hollow fiber membranes for CO<sub>2</sub> absorption, Journal of Membrane Science, Volume 348, Issues 1- 2, 15 February 2010, Pages 260-267.
5. A. Mansourizadeh, A.F. Ismail, T. Matsuura, Effect of Operating Conditions on the Physical and Chemical CO<sub>2</sub> Absorption Through the PVDF Hollow Fiber Membrane Contactor, Journal of Membrane Science, Volume 353, Issue 1-2, (1 May 2010) 192-200.



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**Professional Qualifications**

MSc, University of Strathclyde, UK, 1980.

BEng, University of Strathclyde, UK, 1976.

**Appointments**

2004 – 2006, Dean of Faculty of Mechanical and Manufacturing Engineering, Universiti Tun Hussein Onn Malaysia.

2002 – 2004, Deputy Dean of Faculty of Mechanical and Manufacturing Engineering, Universiti Tun Hussein Onn Malaysia.

2002 – 2002, Head of Programme, Centre for Graduate Studies, Universiti Tun Hussein Onn Malaysia.



## Acknowledgements



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