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CONFERENCE ABSTRACTS

**2017 The 4th International Conference on Mechatronics and
Mechanical Engineering (ICMME 2017)**

**2017 The 2nd International Conference on Functional Materials
and Metallurgy (ICFMM 2017)**

University of Malaya, Kuala Lumpur, Malaysia

November 28-30, 2017



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Proceedings services for science



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WELCOME

Dear professors and distinguished delegates,

Welcome to the 4th International Conference on Mechatronics and Mechanical Engineering (ICMME 2017) and the 2nd International Conference on Functional Materials and Metallurgy (ICFMM 2017) in Malaysia!

We wish to express our sincere appreciation to all the Conference Chairs, Local Chairs, Technical Program Committee Chair Members, Publicity Chair and Technical Committees. Their high competence and professional advice enable us to prepare the high-quality program. Special thanks to the invited speakers as well as all the authors for contributing your latest research to the conference. We hope all of you have a wonderful time at the conference and also in Malaysia.

The conference is featured with keynote speeches, peer-reviewed paper presentation and social program. One best presentation will be selected from each parallel session, evaluated from: Originality, Applicability, Technical Merit, Visual Aids, and English Delivery. Wishing you all the very best of luck with your presentations!

We believe that by this excellent conference, you can get more opportunity for further communication with researchers and practitioners with the common interest in mechatronics and mechanical engineering as well as functional materials and metallurgy.

Your suggestions are warmly welcomed for the further development of the conferences in the future. Wish you have a fruitful and memorable experience in University of Malaya. We look forward to meeting you again next time.

Best Regards!
Yours sincerely,

ICMME & ICFMM 2017 Organizing Committee
Kuala Lumpur, Malaysia

VENUE

Institute of Research Management and Monitoring (IPPP),
 Research Management & Innovation Complex,
 University of Malaya, 50603,
 Kuala Lumpur, MALAYSIA



↑ The conference venue is where the arrow points.

Train + Taxi

1. a). **KLIA Express** starts from KLIA2, stops at KLIA1 and then runs without stopping to KL Sentral.

b). **KLIA Transit** starts from KLIA2, stops at KLIA1 and three other stops (Salak Tinggi, Putrajaya, Bandar Tasik Selatan), then on to and terminates at KL Sentral.

Here is the link for the Train

service: <https://www.kliaekspres.com/plan-buy/our-services/>

2. From KL Sentral --Conference venue (Taxi or Uber) 4 / 14

Public Transportation

Skybus + Taxi

1. KLIA2 / LCCT---KL Sentral (Skybus)
2. KL Sentral---Conference Venue (Taxi or Uber)

Here is the link for

Skybus: <https://www.skybus.com.my/>

NOTES&TIPS

Notes:

- ✧ Your punctual arrival and active involvement in each session will be highly appreciated.
- ✧ You are welcome to register at any working time during the conference.
- ✧ Certificate of Presentation will be awarded after your presentation by the session chair.
- ✧ One *Best Presentation* will be selected from each parallel session and the author of best presentation will be announced and awarded when the session is over.
- ✧ Please kindly keep your Paper ID in mind so that the staff can quickly locate your registration information onsite.
- ✧ Please kindly make your own arrangements for accommodations.
- ✧ Please keep all your belongings (laptop and camera etc.) with you in the public places, buses, metro.

Warm Tips for Oral Presentation:

- ✧ Get your presentation PPT or PDF files prepared.
- ✧ Regular oral presentation: 15 minutes (including Q&A).
- ✧ Laptop (with MS-Office & Adobe Reader), projector & screen, laser sticks will be provided by the conference organiz

KEYNOTE

Prof. Lu Li

National University of Singapore, Singapore



Lu Li received his B.Eng and M. Eng from Tsinghua University, China, and his Ph.D from the Katholiek Universiteit Leuven, Belgium. After four years of doctoral study and two years of post-doctoral work at the Department of Metallurgy and Materials Engineering, Catholic University of Leuven, Belgium. He joined the Department of Mechanical Engineering, National University of Singapore in 1991 and is a Full Professor. Dr. Lu is involved in the research of functional materials, mainly in two directions: i) materials for Li-ion rechargeable batteries which include traditional bulk batteries and all-solid-state batteries, and for supercapacitors, and ii) piezoelectric and ferroelectric materials. More recent years Dr. Lu has been heavily involved in development of thin film batteries, and Li-ion conductors for air-batteries.

Dr. Lu is the Editor-in-Chief of Functional Materials Letters, and Associate Editor of Materials Technology particularly in charge of functional materials. He is also Chairman of Functional Materials Society.

Prof. Dr. Mohd Hamdi Abdul Shukor

University of Malaya, Malaysia



M. Hamdi is a senior professor in the Department of Mechanical Engineering, University of Malaya. He received his B.Eng. (Mechanical), from Imperial College, London and his M.Sc. In Advanced Manufacturing Technology & System Management from University of Manchester Institute of Science & Technology (UMIST). His Doctoral study was in the field of thin film coating for biomedical applications for which he was conferred Dr. Eng by Kyoto University. He is a Fellow of the Institution of Mechanical Engineering, UK and a Chartered Engineer (C.Eng) with the UK Engineering Council. Professor Dr M. Hamdi has devoted his career in nurturing research and innovation and has mentored over 125 postgraduate students, particularly in the field of advanced machining, materials processing and surface engineering. He has authored more than 145 ISI journals and having a h-index of 20. He is also a director and founder of the Centre of Advanced Manufacturing & Materials Processing (AMMP Centre), in which has grown from modest-size team of researchers and engineers to an interdisciplinary research hub. Professor Dr M. Hamdi has obtained recognition from various international and local organizations.

KEYNOTE

**Prof. Ir. Dr. Mohd Zulkifly bin Abdullah,
Universiti Sains Malaysia, Malaysia**



Ir. Dr. Mohd Zulkifly bin Abdullah received the B.Eng. degree in Mechanical Engineering from the University of Wales, Swansea, United Kingdom in 1990, M.Sc degree in Thermodynamics and Fluid Mechanics from the University of Strathclyde, Galsgow, United Kingdom, and the Ph.D degree in fluid dynamics also from the University of Strathclyde. He studied Ph.D under project title, "Experimental investigation and computer simulation of an improved cyclone dust separator". He was a production superintendent with the Malaysian Sheet Glass Berhad, from 1990-1992 before he further postgraduate study in United Kingdom. He joined the School of Mechanical Engineering, Universiti Sains Malaysia after completed his Ph.D degree in 1997. He taught a number core mechanical engineering courses such as fluid mechanics, thermodynamics, Computational Fluid Dynamics (CFD), design project and numerical methods. He was appointed as an Associate Professor in 2003 and appointed as a full Professor of Mechanical Engineering in 2010. Currently, he is a principal investigator with the advanced packaging and surface mount technology research. He has authored or co-author more than 150 technical papers in refereed journals and conference proceedings. His current research interests include CFD, heat transfer, electronic packaging, surface mount technology, electronic cooling and combustion. He has successfully established collaboration works with Intel Technology (M) Sdn. Bhd., Celestica (M) Sdn. Bhd. and Jabil Circuits (M) Sdn. Bhd. in the areas of electronic packaging and surface mount technology. Because of his well known in the field, he has been invited to give keynote/invited lectures at University of Manipal, India, National Institute of Technology, Calicut India, University of Tarumanangara, Jakarta Indonesia, University of Kuala Lumpur (MSI), Kedah Malaysia and Intel Technology (M) Sdn. Bhd., Penang Malaysia. He also involved the consultancy works with 5 companies in Malaysia related to his expertise fields. Ir. Dr. Abdullah has supervised 15 Ph.D and more than 30 M.Sc students. Currently, he is supervising 8 Ph.D students in his research laboratory. He also the recipient of Outstanding Paper Award 2013 conferred by the Emerald Group Publishing Limited in the journal of Soldering and Surface Mount Technology.

KEYNOTE

Prof. Wirachman Wisnoe

Faculty of Mechanical Engineering, Universiti Teknologi MARA, Malaysia



Prof. Wirachman Wisnoe was born in Bandung, Indonesia in 1962. He is currently working as professor at the Faculty of Mechanical Engineering, Universiti Teknologi MARA (UiTM) Shah Alam, Malaysia. He obtained his degree from University Paul Sabatier, Toulouse, France. He then took his further studies in Aeronautical Engineering at ENSICA, Toulouse, France. Prof. Wirachman Wisnoe received his Doctor of Philosophy in Fluid Mechanics from ENSAE/Sup'Aero, Toulouse, France in 1993. After graduated, he worked at the Indonesian Aerospace Industry (PT. IPTN) as Head of Mission Systems Department. In the year 2005, he joined UiTM. His research is focused on the aerodynamics of Blended-Wing-Body UAV and also in the area of thermofluids.

Emeritus Prof. Druce Dunne, University of Wollongong, Australia



Druce Dunne retired from the University of Wollongong in New South Wales, Australia in 2003, after an academic career spanning more than 30 years. He was the Professor and Head of the Department of Metallurgy for 10 years, as well as the initiator and leader of major research centres based on advanced materials and welding and joining. In 2004 he was made an Emeritus Professor of the University and was awarded a DSc degree based on his outstanding research contributions on martensitic transformations and shape memory alloys, as well as welding and thermomechanical processing of steels. Although part of his research has been concentrated on fundamental aspects of physical metallurgy, he has also worked in close collaboration with the local steel industry on applied research projects. He has maintained a strong interest in martensitic transformations in steels and non-ferrous alloys since he completed his PhD project on the crystallography of martensitic transformation in steels in 1968. Subsequent research work as a Post-Doctoral Fellow at the University of Illinois led to the discovery of thermoelastically reversible martensitic transformation in an Fe-Pt alloy and the first recorded case of a shape memory steel. Visiting Professorial positions at the University of Cambridge, the Catholic University in Leuven (Belgium), Tsukuba University in Japan and INSA de Lyon in France have stimulated his extensive research output on fundamental and practical aspects of shape memory alloys.

KEYNOTE

**Assoc. Prof. Huijun Li,
University of Wollongong, Australia**



Prof Huijun Li obtained a PhD degree in 1996 from the University of Wollongong; He has 20 years research experience in materials science and engineering.

He has published 4 book chapters and more than 300 papers over his career in the field of welding metallurgy, new alloy development, surface engineering, nuclear materials and microstructure characterization.

In 1995, he joined CRC Materials Welding and Joining as a postdoctoral research fellow at University of Wollongong. In 2000, he took a research scientist position at Materials Division, ANSTO (Australian Nuclear Science and Technology Organisation), he worked on a wide range of research projects in conjunction with the CRC Welded Structures, CRC CAST3, CRC Rail, British nuclear research organisations and American national laboratories. During this period, Prof Li pioneered research on 9-12% Cr creep resistant steel s in Australia. Prof Li started working at University of Wollongong from July 2008; he is heavily involved in research work with Defence Materials Technology Centre (DMTC), Energy Pipeline CRC (EPCRC), Baosteel Australia Joint Centre (BAJC), and Australian Rail Industry.

Prof Li has been supervising (or co-supervising) 28 PhD students and 10 postdoctoral fellows; he is the chief investigator of 26 research projects supported by DMTC, EPCRC, BAJC, Australian Research Council (ARC) and other industry sectors. He was involved in the preliminary work on the production of engineering components of Titanium alloys using one such method of additive manufacture, namely gas tungsten arc (GTA) welding with mechanised wire addition. He then proposed to produce intermetallics with twin wire system, combining the concept of additive manufacturing and in-situ alloying with GTA process. Gamma TiAl has been successfully produced with this method.

Prof Li was awarded Australian Museum Eureka Prize for Outstanding Science in Safeguarding Australia, 2013, Australia Endeavour Fellowship 2014, and Defence Materials Technology Centre-Capability Improvement Award in 2014 and 2016.

KEYNOTE

**Prof. Dongyun WAN,
Shanghai University, China**



Dr. Dongyun WAN is a Professor of School of Materials Science and Engineering of Shanghai University, China. She obtained her Ph.D. degree at Institute of High Energy Physics, Chinese Academy of Sciences (CAS) in 2004, and became a full professor in Shanghai University in 2014. She worked as a postdoctoral fellow at French National Center for Scientific Research (CNRS) from 2004 to 2006, and was an associate professor (2007-2012) and professor (2012-2014) in Shanghai Institute of Ceramics, CAS. Her research field is functional thin solid films (Graphene and VO₂, et al.) and their energy-conversion and energy-saving applications. She has published more than 60 papers in the national and international journals (Times Cited by Science Citation Index: 1788, H-index: 24, up to the end of 2016) and got more than 20 national patents (12 of which have been authorized).

**Dr. Xiaowei Guo
University of Electronic Science and Technology of China, China**



Xiaowei Guo received his M.S. and Ph. D. degree from Sichuan University, China, in 2004 and 2007, respectively. Then he joined University of Electronic Science and Technology of China (UESTC). In 2009, he became an associate Professor. In 2010, he was a visiting professor at MIT, USA. In 2011 he worked as a BK researcher at Seoul National University for two years. In 2013, he came back to UESTC. Now he is an investigator in the Center of Optoelectronic technology and engineering at UESTC.

His research interests include optoelectronic material and devices, energy material and techniques, micro and nanofabrication techniques, and so on. He has authored and co-authored more than 60 journal papers and made in excess of 10 contributions to international conferences including 2 keynote speeches, 4 invited speeches, and 2 session chairs. He currently holds 5 patents, 6 pending patents. He was recipient of Excellence in Chinese Innovation and Entrepreneurship Competition (Zhejiang Province) in 2016 and was involved in Seal of Excellence awarded by EU commission in 2017.

AGENDA

<Nov. 28th, 2017>



Lobby/Ground Floor

10:00-14:00	Registration & Materials Collection
14:00-17:00	Lab Visit in University of Malaya

Morning<Nov 29th, 2017>



Seminar Room 1/Ground Floor

Parallel Keynote Speeches		
9:00-9:10	Opening Remarks	Prof. Dr. Mohd Hamdi Abdul Shukor University of Malaya, Malaysia
9:10-9:50	Keynote Speech I	Prof. Dr. Mohd Hamdi Abdul Shukor University of Malaya, Malaysia
		Speech Title: <i>Development of functional engineering devices: an experience sharing</i>
9:50-10:20	Coffee Break & Group Photo	
10:20-11:00	Keynote Speech II	Prof. Ir. Dr. Mohd Zulkifly bin Abdullah, Universiti Sains Malaysia, Malaysia
		Speech Title: <i>INNOVATIVE HYBRID NANOFLUIDS FOR FUTURE COOLING FLUIDS</i>
11:00-11:40	Keynote Speech III	Prof. Wirachman Wisnoe Faculty of Mechanical Engineering, Universiti Teknologi MARA, Malaysia
		Speech Title: <i>Towards Aerodynamically Efficient Unmanned Aerial Vehicles</i>



Lunch Time <12:00-13:30> Location: Dinning Hall/Ground Floor

AGENDA

Morning<Nov 29th, 2017>



Seminar Room 2/Ground Floor

Parallel Keynote Speeches		
9:10-9:50	Keynote Speech I	Prof. Lu Li National University of Singapore, Singapore Speech Title: <i>Li-ion Conductor for Future Energy Storage</i>
9:50-10:20	Coffee Break & Group Photo	
10:20-11:00	Keynote Speech II	Prof. Druce Dunne University of Wollongong, Australia Speech Title: <i>Shape Memory Steels</i>
11:00-11:40	Keynote Speech III	Assoc. Prof. Huijun Li University of Wollongong, Australia Speech Title: <i>Robotic Wire and Arc Additive Manufacturing</i>
11:40-12:20	Keynote Speech IV	Prof. Dongyun WAN, Shanghai University, China Speech Title: <i>High Performance VO2 Thin Film: Preparation, Optical and Electrical Properties, and First-Principles Study</i>



Lunch Time <12:20-13:30> Location: Dinning Hall/Ground Floor

AGENDA

Afternoon <Nov 29th, 2017>



Seminar Room 1/Ground Floor

13:30-14:00	Invited Speech	Dr. Xiaowei Guo University of Electronic Science and Technology of China, China
		Speech Title: <i>Tailoring of perovskite compounds for broadband light absorption</i>

Afternoon <Nov 29, 2017>



Parallel Sessions

14:30-16:30	Session I- Performance analysis and test of functional materials Session Chair--Dr. Xiaowei Guo University of Electronic Science and Technology of China, China	 Seminar Room 1 Ground Floor
	CME020 CME027 CME032-A FM011 FM013 FM020 FM025 FM026 FM027 CME031	
13:30-16:30	Session II- Mechanical system design and modeling Session Chair-- Dr. S. Shanmuga Priya Department of Chemical Engineering, MIT, Manipal, India	 Seminar Room 2 Ground Floor
	CME009 CME003 CME005 CME007 CME039 CME046 CME106 CME006 CME043 CME105 CME304 CME411	



Coffee Break <16:30---16:45>


AGENDA

16:45-19:00	<p>Session III- Robot design and vehicle engineering Session Chair--Prof. Mohamed Abdellatif Future University, Egypt</p>	<p> Seminar Room 1 Ground Floor</p>
	<p>CME004 CME013 CME022 CME023 CME029 CME030 CME049 FM001 CME108</p>	
16:45-19:15	<p>Session IV-Control theory and system Session Chair--Prof. Ryoshu FURUTANI Tokyo Denki University, Japan</p>	<p> Seminar Room 2 Ground Floor</p>
	<p>CME018 CME033 CME036 CME037 CME053 CME058 FM006 CME306 CME403 CME052</p>	



Dinner <19:15-20:30> Location: Dinning Hall/Ground Floor

<Nov 30th, 2017 >

	
10:00-17:00	Social Program