

**5<sup>th</sup> International Workshop on  
Microelectronics: Wireless Technology and MEMS  
Kuala Lumpur (Malaysia) September 6-7, 2005**

***PARTICIPATING COUNTRIES: 15 (INLCUDING 10 MEMBER COUNTRIES and 1  
INDUSTRY NETWORK MEMBER OF THE NAM  
S&T CENTRE)***

***NUMBER OF PARTICIPANTS: 26 SCIENTISTS AND SENIOR EXPERTS FROM  
15 COUNTRIES***

Microelectronics is one of the priority areas identified by the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre). In this context the Centre has organised four international workshops in the last 4 years, on 'Developments in Microelectronics' during August 21-24, 2000 at the School of Advanced Technology, Asian Institute of Technology (AIT), Bangkok, Thailand; 'Trends in Microelectronics R&D and Industry' during November 20-23, 2001 in Da Nang, Vietnam; 'Development of Microelectronics: Role of VLSI in MEMS' during December 4-6, 2002 in New Delhi, India; and 'Microelectronics: Role of Developing Countries in VLSI and Micro-Systems Technology' during December 24-26, 2003 in Cairo, Egypt. With the approval of its Governing Council, the Centre organised the 5th International Workshop on Microelectronics on the theme 'Wireless Technology and MEMS' during Sept 6-7, 2005 in Kuala Lumpur, Malaysia jointly with the Ministry of Science, Technology and Innovation of Malaysia (MOSTI) and MIMOS Berhad. The workshop was aimed at exchanging country specific information on MEMS and wireless technologies; establishing a network for research in these areas across the NAM and other developing countries; facilitating the developing countries to establish relations for joint industrial projects in these areas; and exploring other models for microelectronics industrial development. It covered the areas of Bio-MEMS, 3G wireless technologies, RFID technology, analog mixed signal design and process, and RF technology

Mr. Wan Mohd. Salleh Wan Abu Bakar, Vice-President (Microelectronics and Semiconductors), MIMOS Berhad welcomed the delegates during the inaugural session of the workshop, which was followed by the welcome address of Prof. Arun P. Kulshreshtha, Director, NAM S&T Centre and the keynote address of Dr. Fatima Mohd Amin, Director, S&T Division of MOSTI.

26 scientists and senior experts from 15 countries, viz. Australia, Cuba, Egypt, India, Indonesia, Malaysia, Mauritius, Nigeria, Pakistan, Philippines, Sri Lanka, Tanzania, Turkey, UK and USA attended the workshop either as participants or as resource persons. There were four resource persons in the workshop, namely, Dr. Arif Anwar, Vice President, Synamatix Sdn Bhd from the UK; Prof. Chung-Chiun Liu, Wallace R. Persons Professor of Sensor Technology & Control, Professor of Chemical Engineering and Director, Center for Micro and Nano Processing at the Case Western Reserve University, Cleveland, Ohio, USA; Prof. Sudhanshu Shekhar Jamuar of India and currently with the Department of Electrical and Electronic Engineering of the Universiti Putra Malaysia (UPM), Selangor; Malaysia; and Dr. Tun

Zainal Azni Zulkifli, who respectively delivered talks on 'MEMS in Bio Medical Applications', 'Infrastructure Requirement for Bio-Sensing', 'Current Trends of Low Voltage Analog Design for Wireless Applications' and 'Recent Developments and Application of RFID'.

Scientific and country status presentations were made by Dr. Luis Miguel Ledo, Specialist, Centre of Applied Technology & Nuclear Development (CEADEN) of Cuba; Dr. Hamed Abdelghafar Hamed Elsimary, Chairman, Microelectronics Dept., Electronics Research Institute, Cairo, Egypt; Dr. Vinod Kumar Jain, Emeritus Scientist, Central Scientific Instrument Centre and Mrs. Sanikommu Nirmala, Scientist, International Advanced Research Centre For Powder Metallurgy & New Materials of India; Dr. Totok Soegandi, Director and Dr. Golb Wiranto, Senior Researcher of the Research Centre for Electronics & Telecommunications, Indonesian Institute of Sciences; Ms. Bharti Kisto, Licensing Officer of the Ministry of IT & Telecommunication in Mauritius; Dr. Ashiru Sani Daura, Director, National Information Technology Development Agency (NITDA) of Nigeria; Mr. Muhammad Malik Asif, Assistant Professor, COMSAT Institute of Information Technology, Pakistan; Dr. John Richard E. Hizon, Assistant Professor, Microelectronics and Microprocessors Laboratory, Department of Electrical and Electronics Engineering, University of the Philippines in Quezon City; Mr. Ananda Sisirakumara Pannila, Head/Technical Manager, Industrial Technology Institute, Sri Lanka; Mr. Emmanuel John Kaale, Scientific Officer (ICT) Grade I in the Tanzania Commission for Science & Technology (COSTECH); and Ms. Gul Senturk, Researcher in the National Research Institute of Electronics and Cryptology of Turkey. Dr. Ahmed Shuja, Associate Professor, COMSAT Institute of Information Technology, Pakistan and Dr. Nguyen The Truyen, Director, Centre for Industrial Electronics, Ministry of Industry of Vietnam had submitted their presentation material, but could not attend the workshop.

Panel Discussion was held in two sessions, respectively to explore joint research opportunities in Bio MEMS in the developing countries and for joint development of wireless products. Dr. Waleed Faris of IIU was the moderator of the 5-member first discussion session with Prof. Dr. Burhaniddin Yeop Majlis (UKM), Dr. Othman Sidek (USM), Dr. Arif Anwar (Synamatix) and Prof. Chung-Chiun Liu (CWRU, USA) sharing the dais. For the second discussion session Dr. Ahmed Mabrouk of MIMOS was the moderator and Dr. Tun Zainal Azni Zulkifli (USM), Prof. SS Jamuar (UPM), Dr. Abu Khari A'ain (UTM) and Dr. Sze Wei Lee (MMU) were the members.

The concluding session was devoted to the presentation of Resolution by Mr. Wan Mohd. Salleh Wan Abu Bakar, Vice-President, MIMOS Berhad, which are **appended** below, and award of certificate of participation to the participants by Prof. Arun P. Kulshreshtha, Director, NAM S&T Centre, and award of souvenirs to the speakers by Mr. Akbar Mahbat, Director (International), MOSTI.

For the interested participants a visit was organised to MIMOS on the 5th of September, and a training course by Prof. Chung-Chiun Liu (CWRU, USA) at MIMOS on the Fabrication of Biological and Chemical Sensors on the 8<sup>th</sup> of September 2005.

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**RESOLUTIONS**

A) Focus on commercializable products: R&D push and end-user/application pull must be considered.

B) Generate database of wireless and MEMS researchers and research areas among NAM members. This can help identify areas of focus/interest, and quantify human resource strength.

C) Form specific teams, which consist of government, researchers and end-users to oversee collaboration efforts in focus areas and commercializable products

D) Leverage existing facilities in NAM member countries for specific technical activities such as fabrication, characterization and packaging. Build additional facilities for specific requirements in appropriate locations/countries.