

Final Announcement & Call for Abstracts
Deadline for Abstract Submission: 31 January 2009
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ICMAT 2009
International Conference on Materials
for Advanced Technologies

&



IUMRS - ICA 2009
Int'l Union of Materials Research Societies-
International Conference in Asia 2009



28 June - 3 July 2009, Singapore
Suntec Singapore International Convention & Exhibition Centre

Organised by



In association with



HIGHLIGHTS OF PREVIOUS ICMAT

Year 2001

- 1-6 July 2001
- 16 Symposia
- 10 Plenary Lectures
- 4 Public Lectures by Nobel Laureates
- 1,400 Delegates

Year 2003

- 7-12 December 2003
- 16 Symposia
- 9 Plenary Lectures
- 2 Public Lectures by Nobel Laureates
- 1,500 Delegates

Year 2005

- 3-8 July 2005
- 25 Symposia
- 9 Plenary Lectures
- 2 Theme Lectures
- 3 Public Lectures by Nobel Laureates
- 2,200 Delegates

Year 2007

- 1-6 July 2007
- 24 Symposia
- 9 Plenary Lectures
- 2 Theme Lectures
- 2 Public Lectures by Nobel Laureates
- 2,300 Delegates

CONTACT DETAILS

ICMAT 2009 Secretariat

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ABOUT THE CONFERENCE

Encouraged by the overwhelming success of the first 4 ICMAT conferences, the Materials Research Society of Singapore will host the 5th ICMAT and IUMRS - ICA 2009 from 28 June to 3 July 2009 at the Suntec Singapore International Convention and Exhibition Centre (SICEC). Some of the ICMAT conferences were attended by more than 2,000 members of the international scientific and materials research community representing over 40 countries.

There will be 23 Symposia covering contemporary topics of importance for the science, engineering and technology of materials. The technical program includes Plenary, Keynote, Invited, Oral and Poster presentations. About 50 international exhibitors from all sectors of materials science and engineering communities will also be showcasing their products and equipment during the conference.

In line with the previous ICMAT conferences, a few Nobel Laureates will speak at the conference. They will also be giving public lectures at the University Cultural Centre of the National University of Singapore. These lectures will be opened to conference participants and to the general public including students from local Junior Colleges, Polytechnics and Universities.

Thus, ICMAT 2009 and IUMRS - ICA 2009 will be a multidisciplinary forum providing over 2,000 research scientists and engineers a first-hand learning platform, as well as the opportunity to share and exchange ideas with some of the best minds in the field.

CONFERENCE PUBLICATION

Each symposium is likely to publish its own proceedings volume as full-length manuscripts, either as a special issue of a journal or standalone monograph. Whichever format is used, all papers will be peer-reviewed. Details will be available on the conference website.

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LIST OF SYMPOSIA

- A Advanced Biomaterials and Regenerative Medicine
- B Nanomaterials for Bioimaging and Biosensing
- C Advanced Delivery of Therapeutics: New Challenges for Materials
- D Functional Ceramic Materials, Oxide Thin Films and Heterostructures
- E Nanostructured Magnetic Materials and Their Applications
- F Nanostructured Materials for Electrochemical Energy Systems: Lithium Batteries, Supercapacitors and Fuel Cells
- G Plasmonics and Applications
- H Carbon Nanotubes: Synthesis, Characterisation and Applications
- I Carbon Rich Materials (CRMs) and Applications
- J Nanodevices and Nanofabrication
- K Nano Patterning & Surface Characterization
- L NEMS/MEMS Technology and Devices
- M DNA Nanoscience and Physics
- N Plastic Electronics
- O Compound Semiconductor Photonics: Materials, Devices and Integration
- P Optical Fiber Devices and Applications
- Q Computational Materials Design at All Scales: From Theory to Application
- R Single Crystals; Growth and Applications for Research and Industry
- S Novel Routes of Solution Processing
- T Advanced Component Manufacture from Light Materials
- U Mechanical Behavior of Micro- and Nano-Scale Systems
- V Materials Education: New Tools and Resources
- W GEM⁴/SMART symposium on Infectious Diseases



PLENARY LECTURES

- Peter C. DOHERTY**, *Nobel Laureate in Physiology or Medicine, St Jude Children's Research Hospital, Memphis, USA*
Title: *Virus killers and killer T cells*
- Albert FERT**, *Nobel Laureate in Physics, Universite Paris-Sud, France*
Title: *Spintronics: fundamentals, emerging directions and impact on ITC*
- A. INOUE**, *President, Tohoku University, Japan*
Title: *Development and applications of Bulky Glassy Alloys*
- Frederick F. LANGE**, *University of California, Santa Barbara, USA*
Title: *A Materials World: Revolutions in Society*
- Hartmut MICHEL**, *Nobel Laureate in Chemistry*
Max Planck Institute of Biophysics
Frankfurt am Main, Germany
Title: *Membrane proteins - importance, functions, mechanism.*
- Chad MIRKIN**, *Northwestern University, USA*
Title: *Nanostructures in Biodiagnostics and Therapeutics*
- Sir J.B. PENDRY**, *F.R.S., Imperial College, UK*
Title: *Metamaterials and non-linear Plasmonic Phenomena*
- Andrew T. S. WEE**, *NUS, Singapore*
Title: *Epitaxial Graphene: Growth and Molecular Interactions.*

PUBLIC LECTURES

- Peter C. DOHERTY**, *Nobel Laureate in Physiology or Medicine, St Jude Children's Research Hospital, Memphis, USA*
Title: *Living in an evidence-based world*
- Albert FERT**, *Nobel Laureate in Physics, Universite Paris-Sud, France*
Title: *Spintronics, the electron injects its spin into the computer and telephone technologies*
- Hartmut MICHEL**, *Nobel Laureate in Chemistry, Max Planck Institute of Biophysics, Frankfurt am Main, Germany*
Title: *Biofuels - can they help to reduce global warming or to solve the energy crisis?*

THEME LECTURES

- James L. HEDRICK**, *IBM Research, San Jose, CA, USA*
Title: *Hierarchical Supermolecular Structures for Delivery of Therapeutics*
- Karl Ulrich KAINER**, *Magnesium Innovation Centre, GKSS Research Centre Geesthacht, Germany*
Title: *Magnesium Alloys and their Processing for Use in Structural and Medical Applications*
- Martyn POLIAKOFF**, *F.R.S., University of Nottingham, UK*
Title: *Supercritical Fluids: Clean solvents for Cleaner Materials*

PROGRAM STRUCTURE

	28 Jun 2009	29 Jun 2009	30 Jun 2009	1 Jul 2009	2 Jul 2009	3 Jul 2009
Early AM		Opening & Plenary	Plenary Lectures			
Late AM		Oral Presentations				
Noon		Theme Lectures				
Early PM		Oral Presentations				
Late PM	Pre-conference Registration	Poster Sessions			Oral Presentations	End of conference
Evening		Public Lectures			Banquet	

SYMPOSIA DETAILS

SYMPOSIUM A **ADVANCED BIOMATERIALS AND REGENERATIVE MEDICINE**

Chair **Swee-Hin TEOH**, *National University of Singapore, Singapore*

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Tony MIKOS, *Rice University, Texas, USA*
Yasuhiko TABATA, *Kyoto University, Japan*
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JW DAI *Inst Genetics & Dev Biology, China Academy of Sci, China*

In Conjunction with 2nd Asian Biomaterials Congress

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Scope

Biomaterials have made important contributions to health care, medical device breakthroughs and new methods of drug delivery for cancer treatment and the new tissue engineering fields. It is believed that the next break through in science is working at the interface of one or more discipline. Advanced Biomaterials and Regenerative Medicine are considered key disciplines to drive this breakthrough. Biomaterials cover wide interdisciplinary topics which include biological, metallic, polymeric, ceramic, composite, hybrid implant materials and intelligent materials. Of importance is the study of cell-biomaterial interactions and surface modification to enhance biocompatibility. The scope of the present symposium will cover macro to nano scale biomaterials engineering, including integration of medical imaging, optical microscopy and computational materials modelling techniques to evaluate the performance of biomaterials and tissue engineered organs. While emphasis is placed on basic research findings, the manufacturing and the failure analysis aspects will also be addressed. The restoring of tissues with minimal host rejection through advances in tissue engineering will also be a key focus. The present conference brings the latest trends in advanced biomaterials and regenerative medicine.

Second Asian BioMaterials Congress (2nd ABMC)

The 1st ABMC was held successfully in Tsukuba, Japan, 6-8, Dec 2007 with more

than 500 participants from major Asian countries such as Japan, Korea, China and Singapore (including Australia). Singapore was chosen for the 2nd ABMC. The 2nd ABMC will be held 2 days earlier (27 to 28 June 2009) than the official date for ICMAT2009. It will be held at the Clinical Research Centre, National University of Singapore. The venue was chosen so as to maximise interactions between researchers, provide more opportunities for oral presentations and reduce cost. This will be a unique time and biomaterials scientists will have a chance to hear some of the breakthroughs that is happening in Asia. Special registration and University accommodation has been arranged to make this event a resounding success.

Topics

- Stem cells-biomaterials interactions
- Scaffolds technology in tissue engineering
- Cell-biomaterial interactions
- Drug and gene delivery polymers and hydrogels
- Durability and corrosion issues in metallic implants
- Surface modification of implants and advanced characterisation
- Fatigue, impact failure of biomaterials
- Wear issues
- Bioceramics
- Dental biomaterials
- Intelligent biomaterials
- Self-assembling biomaterials
- Hybrid biomaterials
- Metallic biomaterials
- Advanced manufacturing processes in biomaterials
- Noninvasive evaluation, optical imaging technology
- Bio-nanotechnology
- Bioreactors technology
- BioMems and Biosensors technology
- Artificial organs, Bone, Liver, Cardiovascular tissue engineering
- Clinical case histories related to biomaterial performance
- Computer simulations of biomaterial behaviour
- Bioresorbables biomaterials (including resorbable polymers and metals such as Mg)

Invited Speakers

Luigi AMBROSIO, *University of Naples "Federico II", Italy*
Jianwu DAI, *China Academy of Science, China*
Lucy DI SILVIO, *King's College London, UK*
Steve FEINBERG, *University of Michigan, USA*
Hans GRIESSER, *University of South Australia, Australia*
Harmut F HILDEBRAND, *INSERM, France*
Ging-Ho HSIUE, *National Tsing Hua University, Taiwan*
Ali KHADEMHOSEINI, *Harvard Medical School Brigham & Women's Hospital, USA*
Yong Ha KIM, *Gwangju Institute of Science and Technology, Korea*
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George SANDOR, *University of Toronto, Canada*
Yasuhiko TABATA, *Kyoto University, Japan*
Tetsuya TATEISHI, *National Institute for Materials Science, Japan*
Min WANG, *Hong Kong University of Science & Technology, Hong Kong*
Xingdong ZHANG, *Sichuan University, China*

Program Structure for 2nd ABMC

	26-6-2009	27-6-2009	28-6-2009	29-6-2009	30-6-2009	1-7-2009	2-7-2009	3-7-2009
Early AM	2 nd Asian Biomaterials Congress (ABMC), CRC, NUS		ICMAT 2009 - Symposia, Suntec City, Singapore					
	Registration / Open & Keynote	Keynote	ABMC Council Meeting	Opening & Plenary	Plenary Lectures			
Late AM	Oral Presentations		Oral Presentations					
Noon	Lunch / Posters		Theme Lectures					
Early PM	Keynote		Oral Presentations					
Late PM	Oral Presentations		Pre-ICMAT Conference Registration	Posters Sessions			Oral	End
Evening	Welcome Reception	Banquet		Public Lectures			Banquet	

SYMPOSIUM B**NANOMATERIALS FOR BIOIMAGING AND BIOSENSING****Chairs**

S. Tamil SELVAN, *Institute of Materials Research and Engineering (IMRE), Singapore*
Hsiao-hua YU, *RIKEN, Japan*

Co-Chairs

Paul MULVANEY, *University of Melbourne, Australia*
Hsian-Rong TSENG, *UCLA, USA*
Luis M. LIZ-MARZAN, *University of Vigo, Spain*

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Scope

Advanced nanomaterials display unique robustness, physical and chemical properties. They offer a myriad of opportunities to couple analyte-receptor interactions into observable and transduced signals. They also provide unique opportunities for bioimaging applications. In this symposium, different aspects and types of nanomaterials for bioimaging and biosensing will be covered. The objective is to draw a diverse group of researchers including chemists, material scientists, physicists, engineers, medical doctors, and biochemists to discuss new ideas, experimental findings, prototypes, and challenges ranging from synthesis, and characterization to the application of nanomaterials for bioimaging and biosensing.

Topics**Nanomaterials for Bioimaging**

- Quantum Dots – Synthesis, Properties, and Surface Functionalization
- Metallic and Magnetic Nanoparticles-Synthesis, Properties, and Surface Functionalization
- Synthesis, Shape Control and Assembly of Nanorods, Nanotubes, and Nanowires
- Composites of Heterogeneous Nanostructures
- Nanomaterials for Targeting and Labeling
- Magnetic Nanoparticles for Bioimaging, Bioseparation and Drug Targeting
- Multifunctional Nanoparticles for Biolabeling, Bioseparation and Bioimaging

Molecular Design and Synthesis of Nanomaterials for Sensing

- Bioconjugate Chemistry to Link Nanomaterials with Biomolecules
- Signal Transducing Mechanisms between Analyte/Receptor and Nanomaterials
- Nanoparticles, Nanorods, and Nanowires for Molecular and Biological sensing
- Nanostuctured Polymers and Polymer Thin Films for Biosensing
- Nanomaterials-Based Electronic Devices for Molecular and Biological Sensing
- Integration of Nanomaterials to Diagnostic and Bioinformatic systems

Keynote Speakers

Joachim SPATZ, *Max-Planck-Institute for Metal Research, Stuttgart, Germany*
Horst WELLER, *University of Hamburg, Germany*
Jackie Y. YING, *Institute of Bioengineering and Nanotechnology, Singapore*

Invited Speakers

Ramón ÁLVAREZ-PUEBLA, *Universidade de Vigo, Spain*
Pi-Tai CHOU, *National Taiwan University, Taiwan*
Shigenori FUJIKAWA, *RIKEN, Japan*
Anthony GUISEPPI-ELIE, *Clemson University, U.S.A.*
Ming-Yong HAN, *Institute of Materials Research and Engineering, Singapore*
Nicholas A. KOTOV, *University of Michigan, U.S.A.*
Dan LUO, *Cornell University, USA*
Liberato MANNA, *National Nanotechnology Laboratory, Italy*
Chung-Yuan MOU, *National Taiwan University, Taiwan*
Norio MURASE, *National Institute of Advanced Industrial Science & Technology (AIST), Japan*



Wolfgang J. PARAK, *Philipps Universitaet, Marburg, Germany*
Joon Won PARK, *POSTECH, Korea*
K.L.N. PHANI, *Central Electrochemical Research Institute, Karaikudi, India*
Timothy TAN, *Nanyang Technological University, Singapore*
John D. TOVAR, *John Hopkins University, USA*
Jadranka TRAVA-SEJDIC, *University of Auckland, New Zealand*
Shu WANG, *Institute of Chemistry, Chinese Academy of Sciences, China*
Bengang XING, *Nanyang Technological University, Singapore*
Yong ZHANG, *National University of Singapore, Singapore*

SYMPOSIUM C**ADVANCED DELIVERY OF THERAPEUTICS: NEW CHALLENGES FOR MATERIALS**

Chair Yi-Yan YANG, *Institute of Bioengineering and Nanotechnology, Singapore*

Co-Chairs Shu WANG, *National University of Singapore, Singapore*
Andrew GEORGE, *Imperial College London, UK*
Dan LUO, *Cornell University, USA*
Kazunori KATAOKA, *University of Tokyo, Japan*

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Scope This symposium will highlight current challenges and new concepts in the delivery of therapeutics including small molecular drugs, peptides, proteins, nucleic acids and cells, and mainly focus on cancer therapy. Topics will address biological barriers for delivery of therapeutics, and novel materials that are designed and developed to overcome these barriers. In addition, strategies for combinatorial drug delivery will be discussed to combat multidrug-resistant problems.

Topics

- Nano-structured materials including polymers and organic/inorganic hybrids
- Novel materials based on synthetic peptides, nucleic acids and polymer constructions
- Novel delivery approaches for therapeutic drugs, peptides, proteins and genes
- Delivery of cell-based therapies and immunotherapy
- Nanotoxicology

Keynote Speakers Andrew GEORGE, *Imperial College London, UK*
James L. HEDRICK, *IBM Research, USA*
Kazunori KATAOKA, *The University of Tokyo, Japan*
Kam W. LEONG, *Biomedical Engineering, Duke University, USA*
Dan LUO, *Cornell University, USA*
Jackie YING, *Institute of Bioengineering and Nanotechnology, Singapore*

Invited Speakers Sangyong JON, *Gwangju Institute of Science and Technology (GIST), Korea*
Terry D. TETLEY, *Imperial College London, UK*
Yen Wah TONG, *National University of Singapore, Singapore*
Kathryn UHRICH, *Rutgers University and The State University of New Jersey, USA*
Chi-Hwa WANG, *National University of Singapore, Singapore*
Jun WANG, *University of Science and Technology of China, China*
Shu WANG, *National University of Singapore*
Ho Sup YOON, *Nanyang Technological University, Singapore*
Larry YUNG, *National University of Singapore, Singapore*

SYMPOSIUM D**FUNCTIONAL CERAMIC MATERIALS, OXIDE THIN FILMS AND HETEROSTRUCTURES****Chairs**

Hans HILGENKAMP, *University of Twente, The Netherlands*
Jun Min XUE, *National University of Singapore, Singapore*

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Venky VENKATESAN, *National University of Singapore, Singapore*
John WANG, *National University of Singapore, Singapore*

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Scope

This symposium is aimed at providing a forum for participants from academic, research and development, and industrial communities worldwide to exchange latest information and progress on functional ceramic materials, oxide thin films and heterostructures. It also addresses the future development of functional ceramic materials and oxide thin films for electrical, electronic, magnetic, optical, optoelectric and functional applications. Topical areas will cover all the new and rapidly developing areas of functional ceramic materials, oxide thin films and heterostructures, fabrication, physical and functional properties as well as their applications.

Topics

- Ferroelectric and piezoelectric ceramic materials
- Electronic properties of complex oxide thin films and heterostructures
- Multiferroics
- High-K and low-K materials
- Transparent conducting oxides
- High-Tc superconductors
- Magnetic materials and applications
- Mesoporous materials, nanohybrids and thin films
- Materials for photovoltaics and sustainable energy
- Complex oxide thin film growth techniques with atomic control
- Mott metal-insulator transition
- Interface electronic effects
- Defects and dopants
- In situ diagnostics (e.g. RHEED at high oxygen pressures)
- New characterization techniques

Keynote Speakers

Haydn H.D. CHEN, *Tunghai University, Taiwan*
Masahiro YOSHIMURA, *Tokyo Institute of Technology, Japan*

Invited Speakers

Helen L.W. CHAN, *Hongkong Polytechnic University, Hong Kong*
Xiang Ming CHEN, *Zhejiang University, China*
Ram Naresh Pras CHOUDHARY, *IIT-Kharagpur, India*
Robert FREER, *University of Manchester, United Kingdom*
Philippe GHOSEZ, *Institut de Physique Université de Liege, Belgium*
Hyun M. JANG, *POSTECH, South Korea*
Stanislav KAMBA, *Academy of Sciences of the Czech Republic, Czech Republic*
Ram S. KATIYAR, *University of Puerto Rico, USA*



Ernst Z. KURMAEV, *Urals Academy of Sciences (Ektarinburg), Russia*
Fred.F. LANGE, *University of California Santa Barbara, USA*
Junming LIU, *Nanjing University, China*
Cewen NAN, *Tsing Hua University, China*
Tae W. NOH, *Seoul National University, South Korea*
Kiyoshi OKADA, *Tokyo Institute of Technology, Japan*
Xiaoqing PAN, *University of Michigan, USA*
Tsugio SATO, *Tohoku University, Japan*
Tseung Yuen TSENG, *National Taipei University of Technology, Taiwan*
Wei Hsing TUAN, *National Taiwan University, Taiwan*
Nagarajan VALANOOR, *University of New South Wales, Australia*
Hong WANG, *Xian Jiaotong University, China*
Xiaoling WANG, *University of Wollongong, New Zealand*
Yuanzheng YUE, *Aalborg University, Denmark*
Jiwei ZHAI, *Tong Ji University, China*

SYMPOSIUM E **NANOSTRUCTURED MAGNETIC MATERIALS AND THEIR APPLICATIONS**

Chairs **Jun DING**, *National University of Singapore, Singapore*
S. N. PIRAMANAYAGAM, *Data Storage Institute, Singapore*

Co-Chairs **Gan Moog CHOW**, *National University of Singapore, Singapore*
Jingsheng CHEN, *National University of Singapore, Singapore*
Ganping JU, *Seagate Research (Pittsburgh), USA*

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Scope This symposium focuses on nanostructured magnetic materials with the emphasis on various applications, such as data storage, electronics and biomagnetics. The topics of the symposium include magnetic recording, spintronics, magneto-optics, magneto-mechanics, hard & soft magnets and modelling/simulation. Selected papers will be published in *Journal of Nanoscience and Nanotechnology*.

Topics

- Magnetic thin films and nanostructures in magnetic recording (recording media and read/write devices)
- Magneto-electronic, magneto-optic and magneto-mechanical properties of nanostructured magnetic materials
- Nanomagnets with high energy products
- Nanomagnets in soft-magnetic and microwave applications
- Nanostructured Magnetic materials for bio-medical applications
- Domain structure and magnetization reversal mechanisms of magnetic nanostructures
- Modeling/simulation of magnetic nanostructures

Keynote Speakers **J.N. CHAPMAN**, *University of Glasgow, UK*
C.L. CHIEN, *John Hopkins Univesity, USA*
T.C. CHONG, *Data Storage Institute, Singapore*
J.M.D. COEY, *Trinity College, Dublin, Ireland*
Sadamichi MAEKAWA, *Tohoku University, Japan*
Stuart S.P. PARKIN, *IBM Fellow Director, IBM Almaden Research Center*

Invited Speakers

Gerardo BERTERO, *Western Digital, USA*
Hiroyuki HIEDA, *Toshiba Corp., Japan*
Qingyuan JIN, *Fudan University, China*
Chihhuang LAI, *National Tsing Hua University, Taiwan*
Sean LI, *The University of New South Wales, Australia*
Nguyen Xuan PHUC, *VAST, Vietnam*
Robert STAMPS, *University of Western Australia, Australia*
A. SUNDARESAN, *Jawaharlal Nehru Centre for Advanced Scientific Research, India*
Takao SUZUKI, *Toyota Technological Institute, Japan*
Bruce TERRIS, *Hitachi Global Storage Technologies, USA*
Jianping WANG, *University of Minnesota, Minneapolis, USA*
John Q. XIAO, *University of Delaware, USA*
De-sheng XUE, *Lanzhou University, China*
J. V. YAKMI, *BARC, India*
Hao ZENG, *SUNY Buffalo, USA*
Xixiang ZHANG, *University of Science & Technology, Hong Kong*
Xiaozhong ZHANG, *Tsinghua University, China*

SYMPOSIUM F**NANOSTRUCTURED MATERIALS FOR
ELECTROCHEMICAL ENERGY SYSTEMS: LITHIUM
BATTERIES, SUPERCAPACITORS AND FUEL CELLS****Chair**

Balaya PALANI, *National University of Singapore, Singapore*

Co-Chairs

San Ping JIANG, *Nanyang Technological University, Singapore*
B.V.R. CHOWDARI, *National University of Singapore, Singapore*
Atsuo YAMADA, *Tokyo Institute of Technology, Japan*

Correspondence

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Scope

This symposium will provide an excellent opportunity to bring together experts in the area of energy conversion and storage. Nanomaterials have shown unusual and exciting performances in the area of electrochemical energy systems due to enhanced surface to volume ratio and reduced transport length for the charge carriers, ions and electrons. Number of novel mechanisms has been introduced recently for the energy conversion and storage due to nanocrystallinity. Members belonging to materials community will be highly benefited as this symposium is expected to provide an excellent exposure for them to exploit the usage of nanostructured materials in various electrochemical systems such as fuel cells, lithium batteries and supercapacitors.

Topics

- Fundamentals, theory and modeling of energy conversion and storage
- Lithium batteries: cathode materials - insertion reaction
- Lithium batteries: Anode Materials - insertion, alloy and conversion reactions
- Fuel cells: low temperature fuel cells
- Fuel cells: high temperature fuel cells
- Supercapacitors

Invited Speakers

Takeshi ABE, *Kyoto University, Japan*
Daniel ABRAHAM, *ANL, USA*
Doron AURBACH, *Bar Ilan University, Israel*
Samar BASU, *IIT Kanpur, India*



Gerbrand CEDER, *MIT, USA*
Siew Hwa CHAN, *Nanyang Technological University, Singapore*
ChunHua CHEN, *University of Science and Technology of China, China*
Yet-Ming CHIANG, *MIT, USA*
Deryn CHU, *Army Research Laboratory, USA*
Claude DELMAS, *ICMBC-CNRS, France*
Marc DOEFF, *Lawrence Berkeley National Laboratory, USA*
Takayuki DOI, *Kyushu University, Japan*
Dave GHOSH, *Institute for Fuel Cell Innovation, NRC, Canada*
Akitoshi HAYASHI, *Osaka Prefecture University, Japan*
I-Ming HSING, *Hong Kong University of Science and Technology, Hong Kong*
Tatsumi ISHIHARA, *Kyushu University, Japan*
Janez JAMNIK, *National Institute of Chemistry, Slovenia*
Kiyoshi KANAMURA, *Tokyo Metropolitan University, Japan*
Ryoji KANNO, *Tokyo Institute of Technology, Japan*
Jun-ichi KAWAMURA, *Tohoku University, Japan*
Naooki KUMAGAI, *Iwate University, Japan*
Erik KELDER, *The Delft University of Technology, The Netherlands*
Pawel KULESZA, *University of Warsaw, Poland*
Ajit KULKARNI, *IIT Mumbai, India*
Changming LI, *Nanyang Technological University, Singapore*
Hong LI, *Chinese Academy of Sciences, China*
Jian LI, *Huazhong University of Science and Technology, China*
Meilin LIU, *Georgia Institute of Technology, USA*
Arumugam MANTHIRAM, *University of Texas, USA*
Christian MASQUELIER, *University Picardie, France*
Michel MÉNÉTRIER, *ICMBC-CNRS, France*
Katsuhiko NAOI, *Tokyo University of Agriculture and Technology, Japan*
Gholam- Abbas NAZRI, *GIM, USA*
Peter NOTTEN, *Philips Research, The Netherlands*
Mu PAN, *Wuhan University of Technology, China*
Nigel SAMMES, *Colorado School of Mines, USA*
Soshi SHIRAISHI, *Gunma University, Japan*
A.K. SHUKLA, *IISc/CECRI, India*
Yasuo TAKEDA, *Mie University, Japan*
Jose L. TIRADO, *Universidad de Cordoba, Spain*
Avesh Kumar TYAGI, *BARC, India*
Guoxiu WANG, *University of Wollongong, Australia*
Zhaoyin WEN, *Shanghai Institute of Ceramics, China*
Yuping WU, *Fudan University, China*
Yong-yao XIA, *Fudan University, China*

SYMPOSIUM G

PLASMONICS AND APPLICATIONS

Chairs

Boris LUK'YANCHUK, *Data Storage Institute, A*STAR, Singapore*
Daniel S. PICKARD, *National University of Singapore, Singapore*

Co-Chairs

Mark BRONGERSMA, *Stanford University, USA*
Girsh BLUMBERG, *Bell Laboratories, Murray Hill, USA*
Erping LI, *Institute for High Performance Computing, Singapore*

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Scope

There is a growing interest in the sub-wavelength control and manipulation of electromagnetic energy at optical frequencies (nano-photonics). A rapidly expanding branch of this field, plasmonics, aims at harnessing the unique properties of surface plasmon polaritons (SPPs) to miniaturize optical components to the nanoscopic dimensions of their electronic counterparts. Metallic nanostructures can also be fabricated to concentrate and locally enhance the electromagnetic fields by orders of magnitude. This effect is achieved by either engineering the metallic nanostructures to function as optical antennas or by controlling the illumination conditions to launch SPPs at a metal-vacuum or metal-dielectric interface. The potential applications of these phenomena span many disciplines and include high speed nano-scale interconnects, meta-materials, chemical and biological sensing, sub-wavelength optics and waveguides, near-field optical trapping, high-density data storage, and the enhancement of non-linear effects.

Topics

- Surface Plasmon Polaritons
- Imaging techniques of surface plasmon-polaritons
- 2D optics on metallic films
- Non-linear interactions in metals
- Stimulated light or electron emission by surface plasmons
- Computational electromagnetics for plasmonics
- Surface plasmon polariton band-gap structures
- Surface plasmon wave guide structures
- Resonant optical structures: both optical antennas and enhanced transmission apertures
- Applications of surface plasmons in IC interconnects, high density data storage and sensing applications

Keynote Speakers

Harry ATWATER, *California Institute of Technology, USA*
Naomi HALAS, *Rice University, USA*

Invited Speakers

Vladimir M. AGRANOVICH, *Institute of Spectroscopy, Russian Academy of Sciences, Troizk, Russia*
Tahsin AKALIN, *IEMN-CNRS, Lille University, France*
Alexandra BOLTASSEVA, *Technical University of Denmark, Lyngby, Denmark*
Boris CHICHKOV, *Laser Zentrum Hannover e.V., Germany*
Towchong CHONG, *Data Storage Institute, A*STAR, Singapore*
Alain DEREUX, *l'Université de Bourgogne, France*
Ildar GABITOV, *University of Arizona, Tucson USA*
Seng-Tiong HO, *Northwestern University, Evanston, Illinois, USA*
Minghui HONG, *Data Storage Institute, A*STAR, Singapore*
Maria KAFESAKI, *Institute of Electronic Structure and Laser (IESL), Heraklion, Crete, Greece*
Efim I. KATS, *Institut Laue-Langevin, Grenoble, France*
Elena KHROMCHENKO, *Technical University of Denmark, Denmark*
Yung-Chiang LAN, *National Cheng Kung University, Taiwan*
Le-Wei LI, *National University of Singapore*
Zhaowei LIU, *University of California, San Diego, CA, USA*
Oliver J. F. MARTIN, *EPFL, Lausanne, Switzerland*
Luis MARTIN-MORENO, *University of Zaragoza, Spain*
Peter NORDLANDER, *Rice University, USA*
EkmeI OZBAY, *Nanotechnology Research Center, Bilkent University, Ankara, Turkey*
John B. PENDRY, *Imperial College London, UK*
Andrei V. RODE, *Australian National University, Canberra, Australia*
Andrey SARYCHEV, *Ethertronics Inc. San Diego California, USA*
Vladimir SHALAEV, *Purdue University, USA*
Ekaterina SHAMONINA, *University of Erlangen-Nuremberg, Germany*
Mark I. STOCKMAN, *Georgia State University, Atlanta, Georgia, USA*
Michael STUKE, *Max-Planck-Inst. für biophysikalische Chemie, Göttingen, Germany*



Raj THAMPURAN, *Institute of High Performance Computing, A*STAR, Singapore*
Din Ping TSAI, *National Taiwan University, Taipei, Taiwan*
Viktor G. VESELAGO, *General Physics Institute, Russian Academy of Sciences, Moscow, Russia*
Hong Xing XU, *Institute of Physics, Chinese Academy of Sciences, Beijing, China*
Eli YABLONOVITCH, *University of California, Berkeley, USA*
Anvar ZAKHIDOV, *UTD NanoTech Institute, Richardson, USA*
Anatoly ZAYATS, *Queen's University of Belfast, UK*
Nikolay I. ZHELUEV, *University of Southampton, UK*
Rashid ZIA, *Brown University, USA*

SYMPOSIUM H

CARBON NANOTUBES: SYNTHESIS, CHARACTERISATION AND APPLICATIONS

Chairs

Yuan CHEN, *Nanyang Technological University, Singapore*
Lain-Jong LI, *Nanyang Technological University, Singapore*
Mary B. CHAN-PARK, *Nanyang Technological University, Singapore*

Co-Chairs

Ravi SILVA, *University of Surrey, U.K.*
John ROGERS, *UIUC, U.S.A.*

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Scope

Carbon nanotubes are one of the most important building blocks and materials in nanotechnology. Their unique combination of nano-sized diameter with macroscopic length scale has lead to many new phenomena and properties. Progress in large-scale synthesis, control of their structural properties, thin film transparent electrodes and nanocomposites continues to widen their application in many new technologies. Carbon nanotube research has over a short period time generated sufficient critical mass to be known as emerging technology on its own. This material is of high importance to the materials research community as it covers a broad range of fundamental understanding in nano-science as well as applications.

Topics

- Synthesis of carbon nanotubes
- Optical Spectroscopy
- Theory and Characterization of Nanotubes
- NEMS and Related Properties
- Electronics and Related Properties
- Physical Properties and Devices
- Biological and Chemical Properties and Devices
- Device Integration

Invited Speakers

Gehan AMARATUNGA, *University of Cambridge, United Kingdom*
Li-Chyong CHEN, *National Taiwan University, Taiwan*
Manish CHHOWALLA, *The State University of New Jersey, USA*
George GRUNER, *University of California Los Angeles, USA*
Dirk M. GULDl, *Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*
Rikizo HATAKEYAMA, *Tohoku University, Japan*
Hiroimichi KATAURA, *National Institute of Advanced Industrial Science and Technology, Japan*
Andrei N. KHLBYSTOV, *University of Nottingham, United Kingdom*
Jong Min KIM, *Samsung Advanced Inst. of Tech., Republic of Korea*
Young Hee LEE, *Sungkyunkwan University, Republic of Korea*

Jie LIU, *Duke University, United Kingdom*
Robin J. NICHOLAS, *University of Oxford, United Kingdom*
Taishi TAKENOBU, *Tohoku University, Japan*
Kirk J. ZIEGLER, *University of Florida, USA*

SYMPOSIUM I CARBON RICH MATERIALS (CRMs) AND APPLICATIONS

Chair Valiyaveetil SURESH, *National University of Singapore, Singapore*

Co-Chairs Kian Ping LOH, *National University of Singapore, Singapore*
Furong ZHU, *IMRE, Singapore*
Klaus MUELLEN, *Max-Planck Institute for Polymer Research, Germany*
Barbaros OEZYILMAZ, *Physics (NUSNNI), NUS, Singapore*

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Scope Research and development of carbon rich materials (CRMs) hold a key to new generation of technologies and industries. Even though many carbon rich materials (e.g. diamond, graphite, fullerene, carbon nanotubes, carbon fibers)¹ are known and used by the industry, there are plenty of room to discover new compounds from carbon. Such optimism stems from the fact that elemental carbon has the unique feature of high stability and optimum reactivity. In addition, many industries use carbon for various applications, which range from adsorbents for pollutants to electronic industries. The symposium will review the state-of-the-art development in this emerging area.

Topics

- Graphenes
- Carbon rich oligomers and polymers
- Amorphous and crystalline carbon forms
- Nanostructured carbon
- New sources for carbon
- Devices and applications

Invited Speakers P. AJAYAN, *Rice University, USA*
K. ARIGA, *NIMS, Japan*
Phillip BERGONZO, *CEA, France*
T. ENOKI, *Tokyo Institute of Technology, Japan*
Dean HO, *Northwestern University*
Kian Ping LOH, *National University of Singapore, Singapore*
Antonietti MARKUS, *MPI for Colloids and Interfaces, Germany*
K. MUELLEN, *MPIP Mianz, Germany*
Rod RUOFF, *University of Texas at Austin, USA*
Chorng Haur SOW, *National University of Singapore, Singapore*
Haibin SU, *Nanyang Technological University, Singapore*
Rik R. TYKWINSKI, *University of Alberta, Canada*

SYMPOSIUM J NANODEVICES AND NANOFABRICATION

Chair Qing ZHANG, *Nanyang Technological University, Singapore*

Co-Chairs Carl V. THOMPSON, *Massachusetts Institute of Technology, USA*
Bill MILNE, *University of Cambridge, UK*
Wei ZHOU, *Nanyang Technological University, Singapore*

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Scope

A variety of devices at nanometer scale / molecular scale for electronic, photonics, optoelectronics, biological and mechanical applications have been created through a rapid development of materials and fabrication technology. Further development of such devices strongly depends on the state-of-the-art knowledge of science and technology at the sub-100nm length scale. The objective of this symposium is to present up-to-date and highlights some of the key advances in the following topics.

Topics

- Electronic and optoelectronic devices of nanometer scale / molecular scale
- Nanomechanics and NEMS
- Electromechanical coupled devices
- Manipulation and aligning processes at nanometer scale / molecular scale
- Quantum phenomena
- Modeling of nanodevices and nanostructures
- Fabrication and property characterization of nanodevices
- Nanofabrication with focused beam technology, e.g., focused ion beam, laser and proton beam.

Invited Speakers

Ying CHEN, *University of Tokyo, Japan*
Wee Kiong CHOI, *National University of Singapore*
Qingwen LI, *Chinese Academy of Sciences, China*
Bill MILNE, *University of Cambridge, UK*
Endo MORINOBU, *Shinshu University, Japan*
Lianmao PENG, *Beijing University, China*
Michael STRANO, *MIT, USA*
Carl V. THOMPSON, *MIT, USA*
Shuyan XU, *National Institute of Education, Singapore*
Soon Fatt YOON, *Nanyang Technological University, Singapore*

SYMPOSIUM K**NANO PATTERNING & SURFACE CHARACTERIZATION****Chairs**

Isabel RODRIGUEZ, *Institute of Materials Research and Engineering, Singapore*
Hua ZHANG, *Nanyang Technological University, Singapore*

Co-Chairs

Andrew T.S. WEE, *National University of Singapore*
Lars MONTELIUS, *Lund University, Sweden*
Li-Jun WAN, *Chinese Academy of Sciences, China*

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Scope

New functional nanostructured surfaces have emerged with applications that go beyond information and data storage to optics and biomedicine. In particular, nanofabrication technologies applied to polymers have enabled the development of new products such as organic electronic displays, sensors, flexible solar cells and biofluidic devices. SPM technologies are invaluable research tools for patterning and characterization of surface morphologies, surface properties and interactions of materials at the nanometer scale. The symposium is intended to be a forum devoted to advances in nanopatterning and surface characterization technologies that enable the successful development and expansion of materials science into new fields of application.

Topics

- Nanoimprint lithography
- Micro- and nano-contact printing
- Edge & nanosphere lithography
- 2-Photon lithography
- Scanning beam lithographic techniques
- Bottom-up nanofabrication: self-assembly and templated growth
- Atom and molecular manipulation
- Scanning probe lithography
- Surface structure characterization at nanoscale
- Tip preparation and functionalization
- Theory of probe-matter interactions

Keynote Speakers

Hideki MASUDA, *Tokyo Metropolitan University, Japan*
Li-Jun WAN, *Chinese Academy of Sciences, China*

Invited Speakers

Katsuhiko ARIGA, *National Institute for Materials Science, Japan*
Juergen BRUGGER, *EPFL, Switzerland*
Wei CHEN, *National University of Singapore, Singapore*
Yong CHEN, *Ecole Normale Supérieure, Paris, France*
Jason J DAVIS, *University of Oxford, UK*
Steven DE FEYTER, *Katholieke Univ Leuven, The Netherlands*
James DE YOREO, *Lawrence Livermore National Laboratory, USA*
Emmanuel DELAMARCHE, *IBM Zurich Research Laboratory, Switzerland*
David S. GINGER, *University of Washington, USA*
Thomas GREBER, *University of Zurich, Switzerland*
Jay T. GROVES, *University of California at Berkeley, USA*
Harry HEINZELMANN, *Centre Suisse d'Electronique et de Microtechnique SA, Switzerland*
Yoshihiko HIRAI, *Osaka Prefecture University, Japan*
Seunghun HONG, *Seoul National University, Korea*
Ling HUANG, *Corning Incorporated, USA*
Albena IVANISEVIC, *Purdue University, USA*
Norbert KOCH, *Humboldt-Universität zu Berlin, Germany*
Yan LI, *Peking University, China*
Chang LIU, *Northwestern University, USA*
Ryutaro MAEDA, *National Institute of Advanced Industrial Science & Technology Japan*
Jwa-Min NAM, *Seoul National University, South Korea*
Kornelius NIELSCH, *University of Hamburg, Germany*
Francesco STELLACCI, *Massachusetts Institute of Technology (MIT), USA*
Yu-Huang WANG, *University of Maryland, USA*
Kai WU, *Peking University, China*
Xianng XIE, *National University of Singapore, Singapore*

SYMPOSIUM L
NEMS/MEMS TECHNOLOGY AND DEVICES
Chairs

Ai-Qun LIU, *Nanyang Technological University, Singapore*
Tarik BOUROUINA, *ESIEE, France*

Co-Chairs

Vincent Chengkuo LEE, *National University of Singapore, Singapore*
Hua LI, *Nanyang Technological University, Singapore*
Gwo-Bin LEE, *National Cheng Kung University, Taiwan*
Franck CHOLLET, *Université de Franche Comté*

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Scope The emphasis of this symposium is on Nanoelectromechanical Systems (NEMS) / Microelectromechanical Systems (MEMS) technology and devices. Particularly applications that involve MEMS design, modeling, fabrication processes (e.g. semiconductors, polymers, etc.) lab-on-a-chip, and biophotonic medical devices (e.g. DNA, protein and cell sorting, etc.) are preferred. This symposium will explore new devices and processes innovation and engineering applications, especially related to NEMS/MEMS technology and devices.

Topics

- Theory, Design, Analysis of MEMS and NEMS
- Materials and Device Characterization
- Fabrication Technologies
- Packaging and Assembly Technology
- Mechanical and Physical Sensors
- Chemical Sensors and Microsystems
- BioMEMS and Fluidic Systems
- Actuators and micro-structure modeling
- Optical MEMS and nanophotonic (PBG, QD and plasmonics)
- RF MEMS devices and switching circuits
- Sensing System, Algorithm and Sensor Networks
- Nanotechnology and NEMS Devices
- Lab-on-a-chip and uTAS devices
- Plasmonic MEMS and devices

Invited Speakers

Davide IANNUZZI, *Astronomy Vrije Universities, The Netherlands*
Tae Song KIM, *KIST, Korea*
Satoshi KONISHI, *Ritsumeikan University, Japan*
Kazuo SATO, *Nagoya University, Japan*
Lu Ping SHI, *Data Storage Institute, Singapore*
Changhuei YANG, *California Institute of Technology, USA*
Levent YOBAS, *Institute of Microelectronics, Singapore*

SYMPOSIUM M DNA NANOSCIENCE AND PHYSICS

Chairs **Johan R.C. VAN DER MAAREL**, *National University of Singapore, Singapore*
Jie YAN, *National University of Singapore, Singapore*

Co-Chair **Daniel LUBRICH**, *National University of Singapore, Singapore*

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Scope This symposium provides a platform to discuss and present the latest developments in the exciting area of DNA nanoscience and physics. Specifically, the symposium shall focus on biophysical methods to understand the structure, dynamics and functional mechanisms of DNA from the level of the single molecule to the assembling in dense phases such as in viruses and chromatin. Another aspect of the symposium is the application of this knowledge to the design of nano-devices of technological importance based on the unique self-assembling properties of nucleic acids.

Topics

- Nanomechanics and nanostructures
- Molecular motors

- Nanofluidics and single molecule manipulation techniques
- Theoretical aspects and computer modeling
- DNA packaging

Keynote Speakers

Lars NORDENSKIOLD, *Nanyang Technological University, Singapore*
Rob PHILLIPS, *California Institute of Technology, USA*
Rudi PODGORNİK, *Institut Jozef Stefan, Slovenia*
Friedrich SIMMEL, *Technical University, Munich, Germany*
Alexander VOLOGODSKII, *New York University, USA*
Kenichi YOSHIKAWA, *Kyoto University, Japan*

SYMPOSIUM N

PLASTIC ELECTRONICS

Chairs

Peter HO, *National University of Singapore, Singapore*
Hardy CHAN, *National University of Singapore, Singapore*
Richard FRIEND, *National University of Singapore and University of Cambridge*

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Scope

This symposium covers recent advances in the physics, chemistry and engineering aspects of solution-processed organic semiconductors for plastic electronics applications, including organic light-emitting diodes (OLEDs), thin-film transistors (OTFTs), photovoltaics (OPVs) and memory devices. We would like to emphasise advances in materials and device physics and chemistry, in device architecture, and in patterning and fabrication of devices and circuits. Materials classes covered include solution-processed pi-conjugated polymers and oligomers, graphenes, small molecules, self-assembled monolayers, dielectric materials, and conductor materials.

Topics

- Materials and device physics and chemistry
- Device architectures (OLEDs, OTFTs, OPVs, memories, and others)
- Novel solution-processing methods (inkjet and other forms of printing)
- Organic thin-film and interface morphology and structure-property correlations

Invited Speakers

Guillermo BAZAN, *University of California at Santa Barbara, U.S.A.*
Christoph BRABEC, *Konarka Technologies, U.S.A.*
Paul BURN, *University of Queensland, Australia*
Jeremy BURROUGHES, *Cambridge Display Technology, U.K.*
Franco CACIALLI, *University College London, U.K.*
Yong CAO, *South China University of Technology, China*
Chin-Ti CHEN, *Academia Sinica, Taiwan*
Zhi-Kuan CHEN, *Institute of Materials Research and Engineering, Singapore*
David GINGER, *University of Washington, U.S.A.*
Andrew GRIMSDALE, *Nanyang Technological University, Singapore*
Marc HILLMYER, *University of Minnesota, U.S.A.*
Andrew HOLMES, *University of Melbourne, Australia*
Antoine KAHN, *Princeton University, U.S.A.*
Howard KATZ, *Johns Hopkins University, U.S.A.*
Karl LEO, *Technische Universitaet Dresden, Germany*
George MALLIARAS, *Cornell University, U.S.A.*
Kazuhiro MURATA, *Advanced Industrial Science and Technology, Japan*
Thuc-Quyen NGUYEN, *University of California at Santa Barbara, U.S.A.*
Henry SNAITH, *University of Oxford, U.K.*
Takao SOMEYA, *University of Tokyo, Japan*



Nir **TESSLER**, *Technion, Israel*
Ji-Shan **WU**, *National University of Singapore, Singapore*

SYMPOSIUM O

COMPOUND SEMICONDUCTOR PHOTONICS: MATERIALS, DEVICES AND INTEGRATION

Chair **Soo-Jin CHUA**, *National University of Singapore/
Institute of Materials Research and Engineering, Singapore*

Co-Chairs **Jung HAN**, *Yale University, USA*
Hiromasa ITO, *Tohoku University, Japan*
JingHua TENG, *Institute of Materials Research and Engineering, Singapore*
Aaron DANNER, *National University of Singapore, Singapore*

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Scope Photonics is a cross discipline between materials, devices, semiconductor processing and physical optics and has vast industry relevance. Semiconductors are the dominant materials used in photonics. In recent years continued progress in the research and development of new materials and devices has led to a better understanding of fundamental knowledge in electronic structures, carrier dynamics and electron-photon-phonon interactions. These have generated widespread applications in solid state lighting, imaging, displays, signal processing, chemical and biological sensing, surveillance, solar cells and wide band-width communications.

Topics

- Solid state lighting including GaN and ZnO based material development and LED fabrication
- Semiconductor lasers including edge emitting and VCSEL
- Solar cells
- Saturable optical amplifiers and absorbers
- Novel photonic materials and devices
- Heterogeneous material growth
- III-V compound semiconductor epitaxy
- Self-assembled and patterned nano-structured material growth or synthesis
- Semiconductor nanostructures growth including quantum dot, wire, well and other quantum confined system
- Metamaterials, including plasmonic structures
- Materials and engineered structures for light control
- Photonic crystals: modeling, fabrication, characterization and device application
- Nano-photonics including nano-patterning-fabrication-device
- Photonic devices and integration
- Microwave and Terahertz photonics
- Modeling and simulation of materials and devices

Keynote Speakers **Federico CAPASSO**, *Harvard University, USA*
Susumu NODA, *Kyoto University, Japan*
James SPECK, *UCSB, USA*
Xi Cheng ZHANG, *Rensselaer Polytechnic Institute, USA*

Invited Speakers **Toshihiko BABA**, *Yokohama National University, Japan*
Kent CHOQUETTE, *University of Illinois at Urbana-Champaign, USA*
Weng CHOW, *Sandia National Lab, USA*
Giles DAVIS, *University of Leeds, United Kingdom*

Didier DECOSTER, *IEMN, CNRS, France*
Sailing HE, *Zhejiang University, China*
Seng-Tiong HO, *Northwestern University, USA*
Chennupati JAGADISH, *Australian National University, Australia*
Fumio KOYAMA, *Tokyo Institute of Technology, Japan*
Alois KROST, *Otto-von-Guericke University Magdeburg, Germany*
Ulf LEONHARDT, *University of St Andrews, United Kingdom*
Zhi-Yuan LI, *Institute of Physics, ACS, China*
H. C. LIU, *IMS, National Research Council, Canada*
Boon Siew OOI, *Lehigh University, USA*
Xiaoqing PAN, *Michigan State University, USA*
Osamu WADA, *Kyobe University, Japan*
Shumin WANG, *Chalmers University of Technology, Sweden*

SYMPOSIUM P **OPTICAL FIBER DEVICES AND APPLICATIONS**

Chair Ping SHUM, *Nanyang Technological University, Singapore*

Co-Chairs Ian BENNION, *Aston University, United Kingdom*
Anders BJARKLEV, *Technical University of Denmark, Denmark*
John HARVEY, *University of Auckland, New Zealand*
Tanya MONRO, *University of Adelaide, Australia*
Changyuan YU, *National University of Singapore, Singapore*
Xia YU, *Singapore Institute of Manufacturing Technology, Singapore*

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Scope This symposium provides a platform for academics, scientists, technologists and industrial players to present innovations, exchange views, share results and discuss opinions and thoughts in the field of optical fiber. Specifically, the symposium shall focus on some novel optical fiber devices and applications, such as microstructured optical fiber, nano fiber and specialty fiber. Moreover, both theoretical and experimental investigations in fields like linear/nonlinear optics, amplification systems, sensing, plasmonic waveguides, high-power systems etc, will be covered.

Topics

- Microstructured optical fibers
- Nano fibers
- Gratings and grating-based devices
- Plasmonic sensors
- Acousto-optic devices
- Optical fiber amplifiers and fiber lasers
- Non-linear and polarization effects in fibers
- Fiber measurement techniques
- Splices, connectors, and fiber coupling
- Silicon photonics and polymer waveguides
- Device packaging, testing and reliability

Invited Speakers Alex ARGYROS, *University of Sydney, Australia*
Wojtek J. BOCK, *Université du Québec en Outaouais, Canada*
Gilberto BRAMBILLA, *ORC, United Kingdom*
Adrian CARTER, *Redfern Fibres Pty. Ltd, USA*
Kin S. CHIANG, *City University, Hong Kong SAR*
John DUDLEY, *l'Universite de Franche-Comte, France*
Benjamin J. EGGLETON, *University of Sydney, Australia*
Simon FLEMING, *University of Sydney, Australia*
Aaron HO, *Chinese University of HK, HK*
Morten IBSEN, *ORC, United Kingdom*
Jonathan KNIGHT, *Bath University, United Kingdom*
Gong-Ru LIN, *National Taiwan University, Taiwan*



Chao LU, *Hong Kong Polytechnic University, Hong Kong SAR*
Eric MAZUR, *Harvard University, USA*
Tanya MONRO, *University of Adelaide, Australia*
Masataka NAKAZAWA, *Tohoku University, Japan*
Chester SHU, *CUHK, Hong Kong SAR*
Misha SUMETSKY, *OFS, USA*
Roy TAYLOR, *Imperial College, United Kingdom*
Luc THEVENAZ, *EFPL, Switzerland*
Limin TONG, *Zhejiang University, China*
Shinji YAMASHITA, *University of Tokyo, Japan*
Lin ZHANG, *Aston University, United Kingdom*

SYMPOSIUM Q

COMPUTATIONAL MATERIALS DESIGN AT ALL SCALES: FROM THEORY TO APPLICATION

Chair

Khin Yong LAM, *Nanyang Technological University, Singapore*

Co-Chairs

Ping WU, *A*STAR Institute of High Performance Computing, Singapore*
Yuan Ping FENG, *National University of Singapore, Singapore*
Teng Yong NG, *Nanyang Technological University, Singapore*
J. N. REDDY, *Texas A&M University, USA*
Joan ADLER, *Technion - Israel Institute of Technology, Israel*

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Scope

The availability of advanced simulation tools which are sufficiently accurate to design and predict novel materials and processes is the key to achieve a quantum leap in the way new materials are developed. In order to fully understand the macroscopic properties of novel material systems, especially new nanomaterials, it is crucial to understand/simulate the properties and mechanisms on shorter length- and time-scales, even all the way to the most fundamental mechanisms describing the chemical bonds. Thus nanoscale modeling and simulation will become increasingly important in the design and study of new nanomaterials. This symposium will provide the ideal forum for computational materials scientists and engineers to showcase their latest endeavors in this broad and exciting field of computational materials design. The symposium will cover the design and development of all novel/refined material systems, including new nanomaterials. It will range from theory to application, for which computational tools have been deployed in the process. It will also encompass the hierarchy of simulation techniques, from first principle ab initio techniques to continuum approaches and multiscale techniques.

Topics

Design and Modeling of Novel Material Systems

- electronic materials
- magnetic materials
- photonic materials
- electrochemical materials
- catalytic materials
- ionic liquids
- biomaterials
- polymeric systems
- green materials

Design and Modeling of Novel Nanomaterials

- quantum dots, nanodots, inorganic macromolecules
- nanocrystalline, nanophase, nanostructured materials
- nanorods, nanoplatelets, nanotubes, nanofibrils, quantum wires

- nanofilms, nanoholes
- nanocomposites

Modeling Techniques and Applications

- Ab Initio
- Semi-Empirical
- Empirical Molecular Dynamics
- Continuum Modeling
- Multiscale Modeling
- Artificial Intelligence
- Digital Materials Design
- Device Level Simulation

Invited Speakers

Sundaram BALASUBRAMANIAM, *Jawaharlal Nehru Centre for Advanced Scientific Research, India*

Jisoon IHM, *Seoul National University, Korea*

Christian JOACHIM, *CEMES/CNRS, France*

Leor KRONIK, *Weizmann Institute of Science, Israel*

Sukit LIMPIJUMNONG, *Suranaree University of Technology, Thailand*

Risto M. NIEMINEN, *Helsinki University of Technology, Finland*

Vu NGOC-TUOC, *Hanoi University of Technology, Vietnam*

Duc NGUYEN-MANH, *Culham Science Centre, UKAEA, UK*

Ponniah RAVINDRAN, *University of Oslo, Norway*

David J. SINGH, *Oak Ridge National Laboratory, USA*

Shammai SPEISER, *Technion-Israel Institute of Technology, Israel*

John TSE, *University of Saskatchewan, Canada*

Enge WANG, *Chinese Academy of Sciences, China*

Su-Huai WEI, *NREL, USA*

SYMPOSIUM R

SINGLE CRYSTALS: GROWTH AND APPLICATIONS FOR RESEARCH AND INDUSTRY

Chair

Christian KLOC, *Nanyang Technological University, Singapore*

Co-Chairs

Wenping HU, *Institute of Chemistry, Chinese Academy of Science, China*

Fang-Cheng CHOU, *National Taiwan University, Taiwan*

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Scope

This symposium will cover the field of growth and application of single crystals of considerable scientific and technological interest. Availability of high quality single crystals continuously determines the pace of progress in many areas of condensed matter physics; like for example in semiconductors, ferroelectrics, magnetics, optoelectronics, organic microelectronics or superconductivity. Crystal growth from its very beginning has included experts from different disciplines carrying on interdisciplinary research focused on samples for basic research, technology or commercial interest. This symposium should encompass single crystal growers with single crystal users. Should help crystal growers to define current needs for samples leading to breakthrough enabling materials as well as allows crystal users to formulate the critical parameters achievable in crystal growth laboratories. This symposium will focus on interactions between growth, purity, quality or structure and physical properties. This symposium will provide a forum for exploring current results inspired by availability of single crystals. Abstracts are solicited on all aspects of properties and characterization of single crystals emerging from perfection of crystal growth technology.

**Topics**

- Methods and technologies of single crystal growth
- Purity, structure, defects and characterization of crystals
- Specific substances: organic and inorganic crystals
- Intrinsic properties resulted from high quality of crystals
- Crystalline samples required for basic research
- Crystals of electronic materials
- Anisotropy of physical properties
- Growth of crystals composed from biological molecules
- Selected high impact crystals, GaN, AlN, SiC, diamond,
- Classical industry crystals, Si, GaAs, quartz
- Single crystals of organic semiconductors
- New materials and methods

Invited Speakers

Gunter BEHR, *Leibniz Institute for Solid State and Materials Research, Germany*
Xianhui CHEN, *University of Science and Technology of China (Hefei), China*
Sang-Wook CHEONG, *Rutgers Center for Emergent Materials, USA*
Janusz KARPINSKI, *Laboratorium fuer Festkörperphysik, Switzerland*
Agung NUGROHO, *Universiti Indonesia, Indonesia*
Jens PFLAUM, *University of Wuerzburg, Germany*
Jun TAKEYA, *Osaka University, Japan*
Xuewu XU, *Data Storage Institute, Singapore*

SYMPOSIUM S**NOVEL ROUTES OF SOLUTION PROCESSING****Chairs**

K. BYRAPPA, *University of Mysore, India*
Gregory K. L. GOH, *IMRE, Singapore*

Co-Chairs

Richard E. RIMAN, *Rutgers University, USA*
Shouhua FENG, *Jilin University, China*
Tadafumi ADSCHIRI, *Tohoku University, Japan*

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Email: kbyrappa@gmail.com

Scope

This symposium provides a perfect platform for academics, researchers, technologists and industrial players to meet and discuss the latest developments in the area of novel routes of solution processing to fabricate advanced materials covering polyscale crystals, particles, films, composites, nanostructures, patterned materials, etc. The symposium will focus also on the in situ fabrication and intelligent engineering of functional materials, thermochemical modelling, reactions kinetics, transport kinetics and crystallization kinetics.

Topics

- Nature inspired, Biomimetic, Bio-inspired, Geomimetic Solution Processing. Geothermal reactors.
- Solution processing - Conventional Methods and Novel Methods including CBD, Soft Solution Processing, Spray Pyrolysis, Solution Plasma Processing, High Temperature Solution, Wet Chemical Processing, Hydrothermal, Solvothermal, Supercritical Fluid Technology, Ammonothermal, Glycothermal, methods, Hydrothermal-epitaxy, Direct write technology, etc.
- Multi-Energy Solution Processing of Materials: Mechanochemical, Sonochemical, Microwave, Electrochemical, etc., in combination with conventional solution routes.
- In situ fabrication of functional products from Novel Solution Routes.
- Thermochemical modeling, Reaction Kinetics, Transport Kinetics, Crystallization Kinetics.

- Solution processing of Technological Materials and their applications including semiconductor, ceramic, optoelectronic, photonic, negative index, catalysis, treatment, sensors, biomedical and next generation display applications; Polyscale Crystals - Bulk single crystals, Fine crystals, Nanocrystals; Thin Films; Fibers; Nanomaterials - nanotubes, nanosheets, nanosphere, nanowires, nanoprobes, nanoscale films, nanocarriers, Composites – bulk to nano size, organic-inorganic composites; Patterned materials, etc. Solution routes for recycling, green chemistry.

Keynote Speakers

Anthony CHEETHAM, *Cambridge University, United Kingdom*
Gerard DEMAZEAU, *Universite BORDEAUX, France*
Gautam DESIRAJU, *University of Hyderabad, India*
Sridhar KOMARNENI, *Penn State University, USA*
Edward LESTER, *Nottingham University, UK*
Masahiro YOSHIMURA, *Tokyo Institute of Technology, Japan*

Invited Speakers

Muffit ACKINC, *Iowa State University, USA*
Dinesh AGRAWAL, *Penn State University, USA*
Qi-Sheng CHEN, *Chinese Academy of Sciences, China*
L.N. DEMIANETS, *Institute of Crystallography, Russia*
Mike DUDLEY, *Stony Brook University, USA*
Govindan DHANRAJ, *ARC Energy, USA*
Dirk EHRENTRAUT, *Tohoku University, Japan*
Karl Thomas FEHR, *Munich University, Germany*
M. GOTO, *Kumamoto University, Japan*
M. KAKIHANA, *Tohoku University, Japan*
Tanusree KER, *IACS, India*
David KISAILUS, *UC Riverside, USA*
K. KOJIYOSHI, *Kochi University, Japan*
Brian KORGEL, *Texas State University at Austin, USA*
S.B. KRUPANIDHI, *Indian Institute of Science, India*
Youn-Woo LEE, *Seoul National University, Korea*
Zhimin LIU, *Institute of Chemistry, Chinese Academy, China*
Abel MORENO, *Institute of Chemistry, Mexico*
Nitin PADTURE, *Ohio State University, USA*
C. RANGANATHAIAH, *Mysore University, India*
S. RANGANATHAN, *National Metallurgical Laboratory, India*
G. SANKAR, *University College of London, UK*
T. SATO, *Tohoku University, Japan*
Patrik SCHMUKI, *University of Erlangen-Nuremberg, Germany*
Anurag SHARMA, *Carnegie Institute, USA*
SIDDARAMAIAH, *VTU, Mysore, India*
Elliot SLAMOVICH, *Purdue University, USA*
K. SOGA, *Tokyo University of Science, Japan*
Wojciech SUCHANEK, *Sawyer Research Corp., USA*
Richard WALTON, *University of Warwick, UK*
Dan WANG, *Institute of Process Engg. Chinese Academy, China*
Jim WATKINS, *University of Massachusetts, USA*
Ian WILLIAMS, *Hong Kong Univesity, Hong Kong SAR*
K. YANAGISAWA, *Kochi University, Japan*
Shu-Hong YU, *University of Science and Technology of China, China*

SYMPOSIUM T
ADVANCED COMPONENT MANUFACTURE FROM LIGHT MATERIALS
Chair

Anders Eric Wollmar JARFORS, *Singapore Institute of Manufacturing Technology, Singapore*

**Co-Chairs**

Karl Ulrich KAINER, *GKSS Research Centre Geestacht GmbH, Germany*
John Ming Shyan YONG, *Singapore Institute of Manufacturing Technology, Singapore*
Ming Jen TAN, *Nanyang Technological University, Singapore*

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Scope

The focus will be process innovation, development and modeling with particular focus on material and part performance related to advanced manufacturing of light materials. The light materials covered are Al, Ti, Mg-alloys and Ti- or Al-based intermetallics. Advanced processing will cover processes primarily relevant to the automotive, aerospace and 3C sectors to generate both sheet metal components and structural parts made by casting, powder metallurgical means (including reactive processing) as well as assemblies by joining. Particularly important is the performance of the material at the component level and the effects of the processing route and the micro structural changes of the material.

Topics

- Superplastic Forming, Creep Age Forming and Quick Plastic Forming, Rotary forming and similar.
- PM-components, with special focus on reactive materials such as Mg and reaction processing of intermetallics.
- Advanced joining processes such as Friction Stir Welding, Electron Beam Welding, Self-Piercing Rivets and Adhesive joining.
- Machining related problems for high precision components made from light materials.
- Microstructural control in components and component performance, especially at elevated temperature or under fatigue loading and associated failure characteristics.
- Joining process and influence on the component performance under fatigue load and impact.
- Implementation of new processes and the implication on material related matters following scale up for part soundness, quality and tolerance control. and replication of lab-scale results

Keynote Speaker

Karl Ulrich KAINER, *GKSS Research Centre Geestacht GmbH, Germany*

Invited Speakers

B. S. S. DANIEL, *Indian Institute of Technology, Roorkee, India*
Manoj GUPTA, *National University of Singapore, Singapore*
Ingvar L SVENSSON, *Jönköping University, Sweden*

SYMPOSIUM U**MECHANICAL BEHAVIOR OF MICRO- AND NANO-SCALE SYSTEMS****Chair**

Kaiyang ZENG, *National University of Singapore, Singapore*

Co-Chairs

Zhong CHEN, *Nanyang Technological University, Singapore*
Ming DAO, *Massachusetts Institute of Technology, USA*
Upadrasta RAMAMURTY, *Indian Institute of Science, India*
Yongwei ZHANG, *National University of Singapore, Singapore*

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Scope

With ever-increasing miniaturization and the prominence of nano-scale materials and systems for engineering, functional and biological applications, understanding of the mechanical behavior of the nano- and micro-scale materials/systems becomes critical to the technological progress. Issues concerning mechanical response and reliability pervade wide ranging areas, from bulk materials to thin films, from crystalline materials to amorphous materials, from monophase materials to advanced composite materials, from thin films in microelectronic circuits, displays, MEMS/NEMS to coatings for wear resistance or thermal protection. The techniques that are developed for these purposes, such as the micro-mechanical testing, nanoindentation, Atomic Force Microscopy, continuum mechanics modeling and molecular level modeling also enable the study of some fundamental aspects of mechanical behavior of materials at nano to micron levels. Examples include deformation and fracture of biological materials, amorphous metals, interfaces, polymer-based composites and so on.

This symposium is a continuation of the successful symposium in ICMAT 2005, it aims to bring together active researches working on various experimental and modeling aspects of mechanical behavior of nano- and micro-systems, advanced materials, thin films, and biological materials together to discuss the current status and identify future research opportunities.

Topics

- Mechanical behavior of nanostructured materials
- Mechanical behavior of thin films and multilayer systems
- Modeling and experimental aspects of Instrumented-indentations
- Mechanical behavior of biological materials at micro- and nano-scales
- Tribology and wear mechanisms of advanced materials
- Size effect on the mechanical properties of small structures
- Modeling of mechanical behavior of the nanostructured materials
- Multi-scale simulations of mechanical behavior of nano and micro scale systems
- Application of SPM on characterizing mechanical behavior of micro- and nano-scale systems
- Mechanical behaviors of advanced materials such as amorphous materials, composites, functional materials including piezoelectric or ferroelectric materials.
- Mechanical behaviors of nanostructures, such as nanotubes, nanorods, nanoringes and nanobelts, etc

Keynote Speaker

Huajian GAO, *Brown University, USA*
Yonggang HUANG, *Northwestern University, USA*
Robert RITCHIE, *University of California, Berkeley, USA*

Invited Speakers

Hanshan DONG, *The University of Birmingham, UK*
Samir KAMAT, *Defense Metallurgical Research Lab, India*
Alexander M. KORSUNSKY, *University of Oxford, UK*
Yi LI, *National University of Singapore, Singapore*
Lei LU, *Institute of Metal Research, Chinese Academy of Sciences, China*
Johann MICHLER, *EMPA, ETH, Switzerland*
Michelle OYEN, *Cambridge University, UK*
John H. L. PANG, *Nanyang Technological University, Singapore*
Upadrasta RAMAMURTY, *Indian Institute of Science, India*
Vivek SHENOY, *Brown University, USA*
Sujeet Kumar SINHA, *National University of Singapore, Singapore*
Ai-Kah SOH, *The University of Hong Kong, Hong Kong, China*
Vincent TAN, *National University of Singapore, Singapore*
T. A. VENKATESH, *Stony Brook University, USA*
Yueguang WEI, *Institute of Mechanics, Chinese Academy of Sciences, China*

**SYMPOSIUM V****MATERIALS EDUCATION: NEW TOOLS AND RESOURCES****Chairs**

John BAGLIN, *IBM Almaden Research Center, USA*
B.V.R. CHOWDARI, *National University of Singapore, Singapore*

Co-Chairs

Laura M. BARTOLO, *Kent State University, USA*
Tim J WHITE, *Nanyang Technological University, Singapore*

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Scope

An unprecedented variety of excellent resources readily available today offers opportunities for creating, polishing, and sustaining dynamic, compelling, and state-of-the-art programs in materials education. And new curricula, new software, new web resources, new literature, new lab modules, and new facilities are actively being developed. This Symposium invites innovators in these areas to discuss their works in-progress, and invites presentations of new, successful teaching tools and strategies. It especially seeks to present summaries and reviews of available resources (such as modules online or on CD, or great reference sources) that will be useful for all those seeking to update and enrich their materials education activities at levels including K-14, undergraduate, graduate, continuing education, and community outreach.

Topics

- Interdisciplinary programs, e.g., nano-bio, eco-science, energy, water resources, environment, economics, etc.
- New software modules and online resources
- Lab modules and class demonstration materials
- Useful web sites
- Distance learning
- Integration of materials topics in K-12, university, and public education
- Assessment of new programs
- Student research as a learning tool
- Shared major facilities for research/teaching
- Virtual labs and instrumentation
- Community outreach activities. Exhibits. Contests. Public Policy

Special Forum

“Materials Education Strategic Roadmap?”

Focus Topics

- Professional and Vocational Continuing Education
- Professional Certification
- Update options for Materials researchers, teachers, engineers, managers, consultants
- Accessible update resources for non-specialists

Invited and Keynote Speakers

Laura M. BARTOLO, *Kent State University, USA*
Haydn H.D. CHEN, *Tunghai University, Taiwan*
Richard CORKISH, *University of New South Wales, Australia*
Peter GOODHEW, *University of Liverpool, UK*
Sang-Wook HAN, *Chonbuk National University, Korea*
Federico ROSEI, *Université du Québec, Canada*
Noel RUTTER, *University of Cambridge, UK*
Enrico TRAVERSA, *University of Rome “Tor Vergata”, Italy*
Robert C. TUCKER, *The Tucker Group, LLC, USA*
Andrew T S WEE, *National University of Singapore, Singapore*

SYMPOSIUM W**GEM⁴ /SMART SYMPOSIUM ON INFECTIOUS DISEASES****Chairs**

Peter PREISER, *Nanyang Technological University, Singapore*
Mike KEMENY, *National University of Singapore, Singapore*

Co-Chairs

Paul MATSUDAIRA, *MIT, USA*
Vincent CHOW, *National University of Singapore, Singapore*
Laurent RENIA, *SigN, Singapore*
Thomas DICK, *Novartis Institute of Tropical Diseases, Singapore*
Chwee Teck LIM, *National University of Singapore, Singapore*
Richard SUGRUE, *Nanyang Technological University, Singapore*

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Scope

This symposium aims to provide a platform for scientists in the area of infectious diseases to come together and share recent developments. Special emphasis will be on new technologies in terms of detection, imaging, drug and vaccine delivery and structural approaches. Cross disciplinary interaction with the ICMAT meeting on materials will be emphasised. Furthermore, infectious diseases in relation to basic research as well as clinical aspects will be covered.

Topics

- Drug discovery and Delivery
- Vaccine development
- Host pathogen interaction
- Bioimaging and tools for structural biology
- Diagnostics
- Biofilms in clinical applications
- Clinical and field related challenges

Invited Speakers

Rafi AHMED, *Emory Vaccine Center, USA*
Cliff BARRY, *National Institute of Allergy and Infectious Diseases, USA*
Antonio BERTOLETTI, *Singapore Institute of Clinical Sciences, Singapore*
Bettina BOTTCHER, *University of Edinburgh, UK*
Jianzhu CHEN, *MIT, USA*
Wah CHIU, *Baylor College of Medicine, USA*
Brian COOKE, *Monash University, Australia*
Duane GUBLER, *John A. Burns School of Medicine, USA*
Darrell IRVINE, *MIT, USA*
Chris LOVE, *MIT, USA*
Robert MENARD, *Institute Pasteur, France*
Geneviève MILON, *Institute Pasteur, France*
Hidde PLOEGH, *MIT, USA*
Eric RUBIN, *Harvard School of Public Health, USA*
John SKEHEL, *National Institute for Medical Research, UK*
Subra SURESH, *MIT, USA*
Nick WHITE, *Wellcome Trust, Mahidol University, Thailand*



NANOIMPRINT LITHOGRAPHY INDUSTRIAL SYMPOSIUM 2009

The Nanoimprint (NIL) Industrial Symposium is sponsored by Exploit Technologies Pte Ltd (ETPL), the strategic marketing and commercialization arm of A*STAR, and organized by The Institute of Materials Research and Engineering (IMRE). This Symposium aims to update the recent developments, markets and technology in NIL. It also serves as a platform for industrial partners, venture capitalists, companies interested in NIL applications to acquire an understanding of the landscape and explore business opportunities/potential partnerships and expand industrial utilization of NIL technologies.

Chair

Hong Yee LOW, *Institute of Materials Research and Engineering, Singapore*

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Invited Speakers

Theodor Kamp NIELSEN, *Founder, CEO, NIL Technology*

Susumu FUJIMORI, *Senior Manager of International, NTT-Advanced Technology (NTT-AT)*

ABOUT SINGAPORE

If there is one word that best captures Singapore, it is "unique". A dynamic city rich in contrast and colour, you'll find a harmonious blend of culture, cuisine, arts and architecture here. Brimming with unbridled energy, this little dynamo in Southeast Asia embodies the finest of both East and West. English is the common language spoken by all. Signs in Singapore are also written in English.

Cuisine

Singapore is consequently a cosmopolitan place where people from all over the world sit down to enjoy each other's cooking. Each culture has brought with it unique cooking styles including Malay, Chinese, Indonesian, Peranakan, Indian, Thai, Japanese and Korean. There is a vast array of hawker stalls and restaurants.

Attractions

We have lots of attractions and things to see in Singapore. If you look at the animal kingdoms here: We have the Butterfly Park & Insect Kingdom, which has more than 3,000 species of butterfly and insect specimens, it is one of the world's largest collections. There is also the Jurong BirdPark with over 9,000-feathered friends from 600 species. This is one of Asia Pacific's most impressive bird parks. As the sun sets, a different world comes to life – the Singapore Night Safari. At the Night Safari, you can look a rhinoceros in the eye, hear the howls of a pack of striped hyenas or watch giraffes glide serenely across the plain in the still of the night. Finally, situated on Sentosa Island, there is the Underwater World. Underwater World is a dream haven, which showcases the awe-inspiring beauty of a whole different world beneath the seas.

On the more vibrant attractions, we have our famous – Sentosa Island. Sentosa offers a kaleidoscope of attractions and activities. Once you step afoot the island, be mesmerized by the breathtaking beauty of the lush greenery peppered with exciting attractions that will certainly blow you away! It's a themed attraction, tropical resort, nature-park and heritage centre all rolled into one! There is also the theme park – Downtown East. A self-contained entertainment district, Downtown East offers a comprehensive mix of over 40 food and beverage, entertainment and specialty retail outlets. For thrills and spills, they feature the highest water ride in Asia – the Flume Ride – and the heart-stopping 360-degree Cadbury Inverter! Within the theme park, there is also the Wild Wild Wet, Singapore's newest and biggest water theme park, with raft slides, an artificial wave pool, jacuzzi and Slide-up for that adrenaline rush! Wild Wild Wet is the winner of the 2004 World Water Park Association Innovation Award.

For more information on Singapore, please visit: <http://www.visitsingapore.com/mice/>

HOTEL ACCOMMODATION

Singapore offers a wide variety of accommodation types to suit all budgets and preferences. They range from backpacker, budget and youth hostels to boutique and five-star hotels.

3 Star Hotel Rates (2008 rate):	SGD 180 – 235 (nett) per room night
4 Star Hotel Rates (2008 rate):	SGD 240 – 350 (nett) per room night
5 Star Hotel Rates (2008 rate):	SGD 360 – 520 (nett) per room night

For more information on hotel and the various choices, please check website.

Most hotels come with standard facilities like International Direct Dial (IDD) phones, internet and cable, room service, mini bars, data ports for modem, no-smoking rooms or floors, and business and fitness centres furnished with the latest equipment.

There are also hostels available in Singapore. Details can be found at: <http://www.hostels.com/>
The hostel room rates ranges from SGD 40 - SGD 80 per room night.

The conference has also arranged for hostel accomodation at the Temasek Hall in the National University of Singapore. All hostel rooms are equipped with ceiling fan, built-in wardrobe and a writing desk fitted with chest of drawers. The room rate is SGD 35 per room night (including daily breakfast and transport to the conference venue)

REGISTRATION FEES*

Category	Early Bird (SGD) (on or before 1 Apr 2009)	Standard (SGD) (2 Apr - 31 May 2009)	Onsite (SGD) (from 1 June 2009)
ICMAT Delegate - Non Member	\$900.00	\$950.00	\$1,000.00
ICMAT Delegate - MRS (S) Member	\$800.00	\$850.00	\$900.00
ICMAT Student / Premier Sponsors	\$550.00	\$600.00	\$650.00
2nd ABMC Delegates (27-28 Jun 2009)	\$400.00	\$500.00	\$600.00
2nd ABMC Students (27-28 Jun 2009)	\$200.00	\$200.00	\$200.00

*Exchange rate = USD 1 is approximately SGD 1.40

*Fees listed above do NOT include a 4% online processing charge. This fee will be charged when you perform the payment online.

FINANCIAL ASSISTANCE

Considerable financial assistance is available for needy students and delegates in terms of reduced registration fee and accommodation in hostels. Please check the website for details.

CALL FOR ABSTRACTS

Authors are invited to submit their abstract(s) electronically via the conference website at: www.mrs.org.sg by **31 January 2009**.

SCHEDULE AND DEADLINES

Receipt of Abstracts	31 January 2009
Acceptance of Abstracts	15 March 2009
Receipt of Manuscripts*	01 May 2009

* The submission deadlines for manuscripts may differ for different symposia. Please refer to the website for details.

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