

*Program*

# Application of Intelligent Particles and Sensors in Environmental and Process Engineering

August 24-28, 2008

Rasa Sayang Shangri-La Resort  
Penang, Malaysia

## Chair

Professor Richard A. Williams  
University of Leeds, UK

## Co-Chairs

Professor Mohammad Zaid Abdullah  
Universiti Sains Malaysia, Penang, Malaysia.

Professor Yasushige Mori  
Doshisha University, Kyotanabe, Kyoto, Japan.

Professor Prabir Dutta  
The Ohio State University, USA



**Engineering Conference International**  
32 Broadway, Suite 314, New York, NY, USA  
Phone: 1-212-514-6760, Fax: 1-212-514-6030  
[www.engconfintl.org](http://www.engconfintl.org) – [info@eci.poly.edu](mailto:info@eci.poly.edu)

Engineering Conferences International (ECI) is a not-for-profit global engineering conferences program, originally established in 1962, that provides opportunities for the exploration of problems and issues of concern to engineers and scientists from many disciplines.

#### ECI BOARD MEMBERS

Barry C. Buckland, President

Allen I. Laskin

Raymond McCabe

David Robinson

P. Somasundaran

Chair of ECI Conferences Committee: Jules Routbort

ECI Technical Liaison for this conference: Herman Bieber

ECI Director: Barbara K. Hickernell

ECI Associate Director: Kevin Korpics

©Engineering Conferences International

## **Sunday, August 24, 2008**

5:00 pm – 6:30 pm	Registration
6:30 pm – 7:30 pm	Welcome Reception
7:30 pm – 9:00 pm	Dinner

## **OVERALL STRUCTURE OF MEETING**

Theme A: Enabling Technologies – review lectures (Session 1-3)

Theme B: Applications in Environmental Monitoring and Engineering (Sessions 4-8)

Theme C: Applications in Process and Product Engineering (Session 10-12)

Workshops: Technical Barriers (Session 3)

Roadmap Design (Session 9)

Roadmap to Future/Research Priorities (Session 13)

*A poster session will run during the breaks on Tuesday and Wednesday for displaying research on related themes*

## **IMPORTANT ANNOUNCEMENTS**

- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Be sure to make any corrections to your name/contact information on the Master Participant List or confirm that the listing is correct. A corrected copy will be sent to all participants after the conference.

**Monday, August 25, 2008**

7:30 am – 8:15 am	Breakfast Buffet
8:30 am	Opening Remarks by Richard A. Williams (Chair) and Herman Bieber (ECI Technical Liaison)
8:45 am – 10:00 am	<b><u>Session 1: Enabling Technologies ( )</u></b> Session Chair: R.A. Williams
8:40 am – 9:20 am	<i>“Wireless Sensor networks for industrial processes,”</i> <b>Trevor York</b> (Keynote Lecture)
9:20 am – 10:00 am	<i>“Development and application of gas sensing technologies for combustion processes,”</i> <b>Prabir K. Dutta</b> (Keynote Lecture)
10:00 am - 10:30 am	Coffee Break
10:30 am – 1:00 pm	<b><u>Session 2: Enabling Technologies ( )</u></b> Session Chair: R.A Williams
10:30 am – 11:10 am	<i>“Nano &amp; Micro-particle Biosensors: Applications in Genetics, Epigenetics, Proteomics, Disease Diagnostics &amp; Personalised Medicine,”</i> <b>Matt Trau</b> (Keynote Lecture)
11:10 am – 12:00 pm	<i>“Polymer particles on air-water interface towards material chemistry”</i> <b>Syuji Fujii</b> (Keynote Lecture)
12:00 pm – 12:40 pm	<i>“Wireless Sensor Networks: From theory to application,”</i> <b>Dharma. P Agrawal</b> (Keynote Lecture)
12:40 pm – 1:00 pm	Discussion
1:00 pm – 2:00 pm	Lunch
2:00 pm – 4:00 pm	<i>ad hoc</i> sessions/free time
4:00 pm – 4:30 pm	Coffee Break
4:30 pm – 7:00 pm	<b><u>Session 3: Enabling Technologies ( )</u></b> Session Chair: R.A Williams
4:30 pm – 5:10 pm	<i>“Development of Claytronics System,”</i> <b>Seth Copen Goldstein</b> (Keynote Lecture)
5:10 pm – 6:15 pm	Discussion of technological barriers to wireless sensor development (All)
7:00 pm – 7:30 pm	Social period
7:30 pm	Dinner

**Tuesday, August 26, 2008**

7:00 am – 8:30 am	Breakfast Buffet
	<i>Poster session will run during the day</i>
8:30 am – 10:00 am	<b><u>Session 4: Environmental Monitoring/Engineering: Case Studies ( )</u></b> Session Chair: P. Dutta
8:30 am – 9:10 am	<i>“Wireless sensor network applications and needs in Mining and Minerals Industry,”</i> <b>Richard. A. Williams</b> (Keynote Lecture)
9:10 am – 9:35 am	<i>“Titania smart nano-structures in biosensing applications,”</i> <b>Alex Simonian</b>
9:35 am – 10:00 am	<i>“Application of Biosensors in Environmental Monitoring,”</i> <b>M. S. Thakur</b>
10:00 am – 10:30 am	Coffee Break
10:30 am – 11:45 am	<b><u>Session 5: Environmental Monitoring/Engineering: Case Studies ( )</u></b> Session Chair: P. Dutta
10:30 am – 10:55 am	<i>“Magnetically permeable particles embedded in elastomer matrix for intelligent sensing and actuation,”</i> <b>Anna Boczkowska</b>
10:55 am – 11:45 am	Discussions
11:45 am – 1:00 pm	<b><u>Session 6: Environmental Monitoring/Engineering: Sensor and Systems Development ( )</u></b> Session Chair: P. Dutta
11:45 am – 12:25 pm	<i>“Exhaled Breath Analysis: The New Frontier in Medical Testing,”</i> <b>Raed. A. Dweik</b> (Keynote Lecture)
12:25 pm – 12:50 pm	<i>“Development of immunobiosensor using quantum dots for the detection of pesticides,”</i> <b>M. S. Thakur</b>
12:50 pm – 1:00 pm	Discussions
1:00 pm – 2:00 pm	Lunch
2:00 pm – 7:00 pm	<i>Optional tours</i>
7:00 pm – 7:30 pm	Social period
7:30 pm	Dinner

**Wednesday, August 27, 2008**

- 7:00 am – 8:30 am Breakfast Buffet
- Poster session will run during the day*
- 8:30 am – 10:10 am **Session 7: Environmental Monitoring/Engineering: Sensor and Systems Development ( )**  
Session Chair: T.A York
- 8:30 am – 8:55 am *“Synthesis of magnetic nano-particles for biological sensor applications,”*  
**Marcin Leonowicz**
- 8:55 am – 9:20 am *“Microstructure, Composition and Application of Oxides in Mixed Potential Gas Sensors”*  
**Girish Kale**
- 9:20 am – 9:45 am *“Performance of titania based thick film catalytic pellet for detection of gaseous organics under UV light,”*  
**M. Z. Abu Bakar**
- 9:45 am – 10:10 am *“Silver ion doped nickel molybdate – Nickel oxide composites as sensor materials for ammonia,”*  
**Boniface Jeyaraj**
- 10:10 am – 11:00 am Coffee Break
- 11:00 am – 11:50 am **Session 8: Environmental Monitoring/Engineering: Sensor and Systems Development ( )**  
Session Chair: T.A York
- 11:00 am – 11:25 am *“Synthesis of metal (Au, Pt, Pd) – doped iron oxide nanoparticles for gas sensing application,”*  
**Xuchuan Jiang**
- 11:25 am – 11:50 am *“Systems engineering and information processing in wireless sensor networks,”*  
**Xue Wang**
- 11:50 am – 12:50 am **Session 9: Workshop on use of Roadmaps to assist in predicting future of Intelligent Sensor Applications**  
Led by: Professor B.S Hoyle and M Manga
- All delegates participate
- 12:50 pm – 1:50pm Lunch
- 1:50 pm - 2:30 pm Break

**Wednesday, August 27, 2008 (continued)**

- 2:30 pm – 5:10 pm      **Session 10: Application in Process and Product Engineering: Case Studies**  
Session Chair: M. Zaid
- 2:30 pm – 3:10 pm      *“Spatial Intelligence in environmental and process engineering sensor and actuation networks,”*  
**Brian. S. Hoyle** (Keynote Lecture)
- 3:10 pm – 3:35 pm      *“Experimental measurement of mixing rates of granular materials using a new bulk radioactive particle tracking method (BRPT),”*  
**Jamal Chaouki**
- 3:35 pm – 4:00 pm      *“Application of smart process environment sensors and actuators in the process industry,”*  
**M. Motegh**
- 4:00 pm – 4:25 pm      *“The future of intelligent technology in pharmaceutical applications,”*  
**Mohamed. S. Manga**
- 4:25 pm – 4:50 pm      *“Miniaturised electrical tomography,”*  
**Trevor York**
- 4:50 pm – 5:00 pm      Discussion
- 5:00 pm – 5:10 pm      Informal address by invited guest Professor Abdul Razak, Vice Chancellor
- 5:10 pm – 6:30 pm      Break
- 6:30 pm – 10:00 pm      Reception and Malaysian Conference Dinner

**Thursday, August 28, 2008**

7:30 am – 9:00 am	Breakfast Buffet
9:00 am – 10:30 am	<b><u>Session 11: Application in Process and Product Engineering: Engineering of Functional Particles ( )</u></b> Session Chair: Y. Mori
9:00 am – 9:40 am	<i>“The intelligent nanoparticle units with local Plasmon resonance in the near infra-red region,”</i> <b>Takao Fukuoka</b>
9:40 am – 10:05 am	<i>“Selective adsorption of lithium on 1D manganese dioxide nanorods,”</i> <b>Qin-Hui Zhang</b>
10:05 am – 10:30 am	<i>“Gold nano-particle patterning using combination of self-assembly and 2-step transfer,”</i> <b>Koji Sugano</b>
10:30 am – 11:15 am	Coffee Break
11:15 am – 12:00 pm	<b><u>Session 12: Application in Process and Product Engineering: Engineering of Functional Particles ( )</u></b> Session Chair: Y. Mori
11:15 am – 11:35 am	<i>“Applications of poly(N-isopropyl acrylamide) as a temperature responsive flocculant and dewatering aid,”</i> <b>John-Paul O’Shea</b>
11:35 am – 12:00 pm	<i>“Silver nanoplates: synthesis, structure and functionality,”</i> <b>Xuchuan Jiang</b>
12:00 pm – 1:10 pm	<b><u>Session 13: Workshop: Delivering the Roadmap: Research Priorities</u></b> Led by: Professor B.S Hoyle and M Manga  All delegates participate
1:10 pm – 1:15 pm	Closing remarks
1:15 pm	Lunch
2:00 pm	Depart

**Poster Session Contribution (Tuesday and Wednesday)**

*"Hydroxyapatite-coated biodegradable nanocomposite microspheres,"*

**Syuji Fujii**

*"Stimuli-responsive macroazoinitiator synthesized by atom transfer radical polymerization and their use as an initiator towards stimuli-responsive latex particles,"*

**Syuji Fujii**

*"Advances and Future Directions in Morphology Monitoring and Control of Organic Crystals Grown from Solution,"*

**Xue Wang**