

การสัมมนาวิชาการและนวัตกรรมวิจัยก้าวอย่างสู่ทศวรรษใหม่ 2553

คณะวิทยาศาสตร์ประยุกต์

มหาวิทยาลัยเทคโนโลยีพระจอมเกล้าพระนครเหนือ

12 – 13 ตุลาคม 2553



**Research and Innovation Conference  
a Step for the Next Decade  
Faculty of Applied Science  
King Mongkut's University of Technology North Bangkok  
12-13 October 2010**

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## Letter from Associate Dean of Research and International Relations



Dear colleagues,

On behalf of the Organizing Committee, I would like to thank you for taking part in the “Research and Innovation Conference a Step for the Next Decade” that is being organized by the Faculty of Applied Science, King Mongkut’s University of Technology North Bangkok on 12-13 October 2010. It is aimed to be a start in emphasizing to the faculty members the importance of research if the university is to succeed in its mission of becoming recognized as a research university. Special talks from representatives of each department will give us a focus on the research achievements of each department. These research days will be a venue for exchanging ideas, for developing collaborative research and for increasing public awareness of current issues in the fields of Science and Technology. As one of the administrators with responsibility for research support within the Faculty, I would like to raise the awareness of our Faculty members and staff to the importance of “Research Contribution”. The meaning of this phrase is that members are encouraged to apply for grants to do their research, to present their work at national and international conferences, to publish their results in quality journals and last, but not least, to make a contribution within the university and Faculty by sharing their knowledge and ideas with their university and Faculty colleagues and students. I strongly encourage you, and especially the young researchers, to be successful and active contributors to the advancement of science and technology. Finally, I would like to express our gratitude to our special guests and presenters for their commitment to sharing their research expertise with us in this conference.

Sincerely,

A handwritten signature in black ink, appearing to read 'Sasithorn Kongruang'. The signature is fluid and cursive.

(Assistant Professor Dr. Sasithorn Kongruang)  
Associate Dean for Research and International Relations  
Faculty of Applied Science  
King Mongkut’s University of Technology North Bangkok  
Research Committee of Applied Science

## Research Committee of Applied Science



Assoc.Prof. Dr. Kitti Bodhipadma  
Department of Agro-Industrial Technology



Asst.Prof.Dr. Saowanit Sukparungsee  
Department of Applied Statistics



Dr.Mahosut Punpocha  
Department of Mathematics



Dr.Sirisart Ouajai  
Department of Industrial Chemistry



Asst.Prof. Withaya Hlekklai  
Department of Biotechnology



Mrs.Pakawan Seesouy  
Academic Staff  
Research and Quality Assurance



Asst.Prof.Wiboon Leenhapatanalert  
Department of Industrial Physics  
and Medical Instrumentation



Asst.Prof. Suchada Ratanakongnate  
Department of Computer and  
Information Science



Miss.Wansiri Mitoi  
Academic Staff  
International Relations

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**Special Guests**



**Professor Dr. Yoon Yong Soo**  
**Department Chair of Chemical Engineering**  
**Director, Institute of Advances in Science and**  
**Technology, Dankook University, KOREA**

“Research topics of our lab. include wastewater treatment, for recovering of resources and energy from organic wastes. We have studied advanced treatment of sewage using MBR and RHMBR(Rotating Hanging Media Bio-Reactor), electrochemical treatemnt process for T-P removal in municipal wastewater, and ultrasonic treatemnt of wasted sludge from municipal wastewater treatment plant for bio-gas recovery and reduced sludge production.

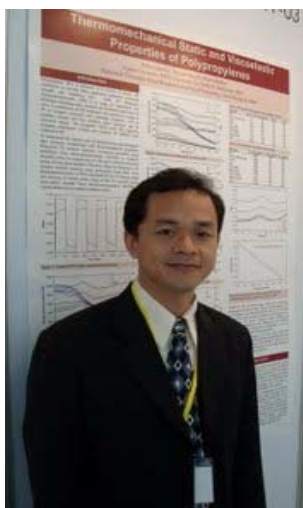


**Associate Professor Dr. Michael H. Penner**  
**Department of Food Science and Technology**  
**Oregon State University, USA**  
**Email: [mike.penner@oregonstate.edu](mailto:mike.penner@oregonstate.edu)**  
**Research Interest**

My laboratory is interested in the general area of enzyme technology, with particular emphasis on projects related to the enzymatic processing of polysaccharides. We typically focus on glycan hydrolases. Our studies aim to advance the current knowledge of how these enzymes function, to determine novel methods by which their specificity may be regulated, and to find applications for the production of value added products. Current projects relate to the enzymatic saccharification of cellulose, the conversion of biomass polysaccharides to ethanol, and the application of polysaccharide debranching enzymes in the food industry.

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**Special Guests**



**Dr. Sirisart Quajai** is currently working as a senior lecturer and a deputy head department of Industrial Chemistry (Research and Quality assurance). He is recognized as an excellent young researcher who received many awards: the postgraduate student making the most outstanding contributed to the field of FT-IR spectroscopy in 2003 from Perkin-Elmer prize; RMIT University, Australia, the best Presentation Awards, Session 14<sup>th</sup> in 3rd TISD International conference, Thailand in 2010. He also received the best Paper Awards; on the topic Chemical Engineering "Composition and structure of modified ball-milled rice husk for a novel cellulose film regeneration". His research interests are cellulose modification and regeneration, biopolymer composite and blends, extrusion melt spinning and film casting.



**Dr. Sarinya Shawaphun** was born in Samutprakarn, Thailand in 1973. She received her B.Sc. in Chemistry from Mahidol University, Bangkok Thailand in 1994. She has then worked with Prof. Steven L. Regan from 1997-2002 at Lehigh University, Bethlehem, Pennsylvania, USA where she received her M.S. and PhD in Polymer Science and Engineering. She is currently working at the Department of Industrial Chemistry, KMUTNB. She is one of the key members of Research Center of Nano Industries and Bio-plastics. Her recent research focuses mainly on biodegradable polymer, biopolymer, biocomposite, plastics degradation and also biodegradable packaging.



**Dr. Sumet Umchid** was born in Bangkok, Thailand in 1978. He received the B.S. degree in Electrical Engineering from Mahidol University, Bangkok, Thailand in 1999, and M.S. and Ph.D. degrees in Biomedical Engineering from Drexel University, Philadelphia, PA, in 2003 and 2007, respectively. Currently, he is working in the Department of Industrial Physics and Medical Instrumentation, King Mongkut's University of Technology North Bangkok, Thailand as a lecturer. His main research interests include Biomedical Ultrasound, Ultrasound Metrology and Biomedical Instrumentation.

**Research and Innovation Conference a Step for the Next Decade**  
**Faculty of Applied Science**  
**Tuesday 12 October 2010, Room 223**

Time	Special Lecture Room (2 <sup>nd</sup> Floor, R 223)
8.30-8.45	Registration
8.45-9.00	Opening Ceremony Welcome message from Dean of Applied Science Assoc. Prof. Wichai Suracherdkiati
9.00-10.00	University Research Policy and Strategy Assoc. Prof. Chalie Tragangoon, Director of Science and Technology Research Institute
10.00-10.45	Research Grant and Publication Ms. Jittima Juntavech, Academic Officer, Division of Research Promotion and Evaluation
10.45-11.00	Coffee Break
11.00-12.00	Research and Publication Searching Ms. Chaniga Chuensangjun, Research Officer, Division of Research Promotion and Evaluation
12.00-13.00	Lunch Room 216
13.00-13.30	Applications of Ultrasound in Science and Engineering Professor Yoon Yong Soo, Department of Chemical Engineering, Dankook University, Korea
13.30-14.00	The Conversion of Lignocellulosic Biomass to Value Added Products Associate Professor Dr. Michael H. Penner, Department of Food Science and Technology, Oregon State University, USA
14.00-14.15	Coffee Break
14.15-14.45	Composition and Structure of Modified Ball-milled Rice Husk Cellulose for a Novel Cellulose Film Regeneration Dr. Sarisart Ouajai, Department of Industrial Chemistry, Faculty of Applied Science, KMUTNB
14.45-15.15	PHB and PLA Coating on Paper for Food Packaging Dr. Sarinya Shawaphun, Department of Industrial Chemistry, Faculty of Applied Science, KMUTNB
15.15-16.00	Development of a Primary Level Ultrasonic Power Measurement System at NIMT Dr. Sumet Umchid, Department of Industrial Physics and Medical Instrumentation, Faculty of Applied Science, KMUTNB

**Chairperson:** Asst. Prof. Dr. Sasithorn Kongruang

**Research and Innovation Conference a Step for the Next Decade**  
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**Wednesday 13 October 2010, Room 203**

<b>Time</b>	<b>Room (2<sup>nd</sup> Floor, R 203)</b>
9.00-10.00	Research Strategy of Industrial Chemistry Department Dr.Sabaithip Tungkamani Chairperson: Dr.Sirisart Ouajai
	Functionally Doped Polypyrrole : A Role in the Development of Novel pH Sensing Devices Dr.Walaiporn Prissanaroon Ouajai
	Rice Bran Filled with PLA Biopacking : Production and Properties Dr.Rapeephun Dangtungee
	Fabrication and Characterization of Biodegradable Electrospun Fibers by Coaxial Electrospinning Assoc.Prof.Narumol Kreuaongarjnkool
11.00-12.00	Research Strategy of Agro-Industrial Technology Department Asst.Prof. Dr.Rotsaman Chongcharoen Chairperson: Assoc.Prof. Dr. Kitti Bodhipadma
	Development of BOD Sensor for Water Quality Monitoring Asst. Prof.Dr. Nipon Pisutpaisal
	Lead Removal from Synthetic Wastewater by Using Oil Palm Shell as An Absorbent Assoc.Prof. Gannikar Disyawongs
13.00-14.00	Research Strategy of Mathematics Department Assoc.Prof.Suporn Ratanapun Chairperson: Dr.Mahosut Punpocha
	Stability of a Numerical Discrimination Scheme for the SIS Epidemic Model with a Delay Dr.Ekkachai Unnawutti-preechachan
14.00-15.00	Research Strategy of Computer and Information Science Department Assoc.Prof. Thavatchai Ngamsantivong Chairperson: Asst.Prof. Suchada Ratanakongnate
	A Researcher Expertise Search System Using Ontology- Based Data Mining Dr.Gridaphat Sriharee



**Research and Innovation Conference a Step for the Next Decade**  
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**Wednesday 13 October 2010, Room 203 (continue)**

Time	Room (2 <sup>nd</sup> Floor, R 203)
	Assessing Corrective, Enhance, and Reductive Maintenance Tasks: A Controlled Experiment Mr. Phongphan Danphitsanuphan, Instructor
	Sys-Long Database Manipulation Security Protocol Assoc.Prof. Dr.Somchai Prakanchaen
15.00-16.00	Research Strategy of Industrial Physics and Medical Instrument Department Assoc.Prof.Dr. Surapun Yimman Chairperson: Asst.Prof.Wiboon Leenhapatanaalert
	Self-consistent Simulations of <i>L</i> Mode using BALDUR Code Asst.Prof. Apichart Siriwitprecha
	Evolution of Solute Transport Involved Elastic Deformation in Saturated Porous Media Assoc.Prof.Boonyong Punantapong
	Design and Implementation of Novel Impedance Measurement using Digital Sine-wave Oscillator with Optimum Phase and Amplitude Miss Sukanya Praesomboon, Instructor
	Computer-based Digital Audiometer for Evaluating Hearing Loss Asst.Prof. Theera Leeudomwong
	Wavelet Time Entropy for Characterization of Ventricular Tachycardia Asst.Prof. Pattaraweerin Woraratsoontorn