

Output ที่ได้จากโครงการ

1. ผลงานวิจัยที่ตีพิมพ์ในวารสารวิชาการระดับนานาชาติ

Orathai Pornsunthorntawe, Panya Wongpanit, Sumaeth Chavadej, Masahiko Abe, and Ratana Rujiravanit (2008) “Structural and physicochemical characterization of crude biosurfactant produced by *Pseudomonas aeruginosa* SP4 isolated from petroleum-contaminated soil”, *Bioresource Technology*, 99, 1589-1595. **Impact factor 4.453**

Orathai Pornsunthorntawe, Nampon Arttaweeporn, Sarawut Paisanjit, Pastra Somboonthanate, Masahiko Abe, Ratana Rujiravanit, and Sumaeth Chavadej (2008) “Isolation and comparison of biosurfactants produced by *Bacillus subtilis* PT2 and *Pseudomonas aeruginosa* SP4 for microbial surfactant-enhanced oil recovery”, *Biochemical Engineering Journal*, 42(2), p. 172-179. **Impact factor 1.872**

Orathai Pornsunthorntawe, Sasiwan Maksung, Onsiri Huayyai, Ratana Rujiravanit, and Sumaeth Chavadej (2009) “Biosurfactant production by *Pseudomonas aeruginosa* SP4 using sequencing batch reactors: Effects of oil loading rate and cycle time”, *Bioresource Technology*, 100(2), p. 812-818. **Impact factor 4.453**

Orathai Pornsunthorntawe, Sumaeth Chavadej, and Ratana Rujiravanit (2009) “Solution properties and vesicle formation of rhamnolipid biosurfactants produced by *Pseudomonas aeruginosa* SP4”, *Colloids and Surfaces B: Biointerfaces*, 72(1), 6-15. **Impact factor 2.593**

Thitima Sarachat, Orathai Pornsunthorntawe, Sumaeth Chavadej, and Ratana Rujiravanit (2010) “Purification and concentration of a rhamnolipid biosurfactant produced by *Pseudomonas aeruginosa* SP4 using foam fractionation”, *Bioresource Technology*, 101(1), 324-330. **Impact factor 4.453**

Orathai Pornsunthorntawe, Panya Wongpanit, Sumaeth Chavadej, Kenichi Sakai, Hideki Sakai, Masahiko Abe, Ratana Rujiravanit, “Surface-modified polymeric films by rhamnolipid biosurfactant

from *Pseudomonas aeruginosa* SP4 for biomedical applications”, Journal of Biotechnology, in preparation.

2. ผลงานวิจัยอื่นๆ

Book chapters:

Orathai Pornsunthorntawe, Panya Wongpanit, and Ratana Rujiravanit (2010) “Rhamnolipid Biosurfactants: Production and their Potential in Environmental Biotechnology”, in Biosurfactants, Springer-Verlag Berlin, **Book Series:** Advances in Experimental Medicine and Biology, 672, 211-221.

การเสนอผลงานในการประชุมวิชาการระดับนานาชาติ

Orathai Pornsunthorntawe, Panya Wongpanit, Sumaeth Chavadej, Kennichi Sakai, Hideki Sakai, Masahiko Abe, Ratana Rujiravanit (2010) “Adsorption behavior of glycolipid biosurfactant onto chitosan film and its effects on human dermal fibroblasts and keratinocytes”, the 25th International Carbohydrate Symposium, Tokyo, Japan, 1-6 August 2010.

Orathai Pornsunthorntawe, Panya Wongpanit, Sumaeth Chavadej, and Ratana Rujiravanit (2009) “Surface modification of biopolymeric films via adsorption of rhamnolipid biosurfactant produced by *Pseudomonas Aeruginosa* SP4”, World Forum on Advanced Materials (POLYCAHR17), Rouen, France, 20-24 April 2009.

Orathai Pornsunthorntawe, Sumaeth Chavadej, Masahiko Abe, and Ratana Rujiravanit (2008) “Aggregation behaviors and microstructures of rhamnolipid biosurfactants produced by *Pseudomonas aeruginosa* SP4 in aqueous media”, 17th International Symposium on Surfactants in Solution, Berlin, Germany, 18th-22th August 2008.

Orathai Pornsunthorntawe, Panya Wongpanit, Sumaeth Chavadej, Masahiko Abe, and Ratana Rujiravanit (2007) “Structural and physicochemical characterization of crude biosurfactant produced by *Pseudomonas aeruginosa* SP4 isolated from petroleum-contaminated soil”, the 2nd Asian Conference of Colloid and Interface Science, Shandong University, Jinan, China, 28th – 31st October 2007.

3. จำนวนและรายละเอียดการได้รับเชิญไปเป็นวิทยากร

เป็นวิทยากรรับเชิญในการประชุมวิชาการประจำปี 2009 ของ Japan Research Institute of Material Technology ประเทศญี่ปุ่น โดยบรรยายในวันที่ 4 ธันวาคม 2552 ในหัวข้อเรื่อง Isolation and Characterization of Rhamnolipid Biosurfactants produced by *Pseudomonas aeruginosa* SP4

4. การเชื่อมโยงทางวิชาการกับนักวิชาการอื่นๆ ทั้งในและต่างประเทศ

มีความร่วมมือในงานวิจัยด้านสารลดแรงตึงผิวชีวภาพ (Biosurfactant) กับ Prof. Masahiko Abe, Tokyo University of Science, Chiba, Japan และ Dr. Dai Kitamoto, AIST, Japan โดยมีผลงานวิจัยร่วมกันดังนี้

Wannasiri Worakitkanchanakul, Tomohiro Imura, Tokuma Fukuoka, Tomotake Morita, Hideki Sakai, Masahiko Abe, Ratana Rujiravanit, Sumaeth Chavadej, Hiroyuki Minamikawa, and Dai Kitamoto (2009) "Phase behavior of ternary mannosylerythritol lipid/water/oil Systems", Colloids and Surfaces B: Biointerfaces, **68(2)**, 207-212. **Impact factor 2.593**

Wannasiri Worakitkanchanakul, Tomohiro Imura, Tokuma Fukuoka, Tomotake Morita, Hideki Sakai, Masahiko Abe, Ratana Rujiravanit, Sumaeth Chavadej, Hiroyuki Minamikawa, and Dai Kitamoto (2008) "Aqueous-phase behavior and vesicle formation of natural glycolipid biosurfactant, mannosylerythritol lipid-B", Colloids and Surfaces B: Biointerfaces, **65(1)**, p. 106-112. **Impact factor 2.109**

Wannasiri Worakitkanchanakul, Tomohiro Imura, Tomotake Morita, Tokuma Fukuoka, Hideki Sakai, Masahiko Abe, Ratana Rujiravanit, Sumaeth Chavadej, and Dai Kitamoto (2008) "Formation of W/O microemulsion based on natural glycolipid biosurfactant, mannosylerythritol lipid-A", Journal of Oleo Science, **57(1)**, 55-59.

5. การเชื่อมโยงทางวิชาการกับนักวิชาการภายในสถาบันเดียวกัน

มีความร่วมมือในงานวิจัยด้านสารลดแรงตึงผิวชีวภาพ (Biosurfactant) กับ ศาสตราจารย์ ดร. สุเมธ ชวเดช โดยมีผลงานวิจัยร่วมกันดังนี้

Sira Pansiripat, Orathai Pornsunthorntawe, Ratana Rujiravanit, Boonyarach Kitiyanan, Pastra Somboonthanate, and Sumaeth Chavadej (2010) "Biosurfactant production by *Pseudomonas aeruginosa*

SP4 using sequencing batch reactors: Effect of oil-to-glucose ratio”, *Biochemical Engineering Journal*, 49(2), 185-191. **Impact factor 1.889**

6. รางวัล

นางสาวอรทัย พรสุนทรทวี ซึ่งเป็นสมาชิกในคณะผู้วิจัยได้ไปเสนอผลงานวิจัยแบบโปสเตอร์ในหัวข้อเรื่อง “Surface modification of biopolymeric films via adsorption of a biosurfactant” ในการประชุมวิชาการนานาชาติ The 17th POLYCAR Conference – Annual World Forum on Advanced Materials ซึ่งจัดในระหว่างวันที่ 21 -24 เมษายน 2552 เมือง Rouen ประเทศฝรั่งเศส โดยได้รับรางวัล IUPAC Diplomas สำหรับการเสนอผลงานวิจัยแบบโปสเตอร์ประเภทนักศึกษา

Conference Call

Advanced Materials

by Michael Hess

The 17th POLYCHAR Conference—Annual World Forum on Advanced Materials, held 21–24 April 2009, was organized by Jean-Marc Saiter and his team at the Institute of Materials Research of the University of Rouen, Technopole du Madrillet, Saint Etienne du Rouvray in Haute Normandie, France. A Short Course on Polymer Characterization was held on 20 April.

The conference, and the many fruitful discussions during breaks and excursions, brought together theorists; researchers involved in modelling, synthetic chemistry, and processing; students; distinguished scientists; and newcomers to materials science and engineering.

The forum focused on the following areas:

- Nanomaterials and Smart Materials
- Electrical and Dielectric Properties
- Surfaces and Interfaces
- Structure-Properties Relationships
- Materials Synthesis
- Biomaterials, Green Polymers, Biodegradable Polymers, Recycling
- Mechanical Properties and Performance
- Rheology and Processing

There were 164 participants from 40 countries and 4 continents, presenting some 250 contributions. Many students attended the presentations and 60 presented their own results. It is not at all the intention of

POLYCHAR to have a high number of participants and parallel sessions but rather to attract young scientists and advanced and graduate students to give them the opportunity to meet with colleagues and well-known scientists to exchange experiences, make contacts, and present their results to the scientific community. There were 30 invited and special lectures together with 116 regular oral contributions.

The annual POLYCHAR Conferences, which have been IUPAC-sponsored for several years, are well known for combining materials science with polymeric materials. The name "POLYCHAR" has its origin in polymer characterization. The short course is an educational project of the IUPAC Polymer Division.

As already noted, POLYCHAR encourages student and young investigator presentations in particular. Although encouraged by the organizers to present oral contributions, many students' presentations were found in two poster sessions comprising 136 excellent contributions.

The POLYCHAR Prize Committee, chaired by Goerg Michler, Martin Luther University of Halle-Wittenberg, awarded a number of prizes. The Carl Klason Prize for the Best Student Paper was awarded to three *ex aequo* winners:

- Vivian Ikem, Imperial College London for her paper on highly porous polymer foams synthesized from templates
- Renata Pires, Federal University of Rio de Janeiro for her presentation on tailor-made copolymers for reduction of friction in aqueous solutions



Participants at the 17th POLYCHAR Conference—Annual World Forum on Advanced Materials.



Conference Call

- David Yan Dong, University of Washington, Seattle, for his presentation on patterned electrochromic polymeric windows

Diplomas of Distinction for Student Presentations were awarded as follows:

- Mohammad Ali Aravand, Torbiat Modares University, Tehran, Iran, for his presentation on phase inversion emulsification of epoxies with non-ionic block emulsifiers
- Lyubov Bardash, Institute of Macromolecular Chemistry, Kyiv, and University of Lyon, for her presentation on performance modification of poly(butylene terephthalate) by multiwall carbon nanotubes

IUPAC Diplomas of Distinction for a Student Poster Presentation were awarded as follows:

- Khadija Arabeche, Martin Luther University, Halle-Wittenberg and University of Rouen, for presentation on multilayer films in confinement geometry
- Yoo-Shung Choi, Chosun University, Gwangju, South Korea, for his presentation on flame retardant composites containing inorganic waste fillers
- Orathai Pornsunthorntawe, Chulalongkorn University, Bangkok, Thailand, for a presentation on surface modification of biopolymeric films via adsorption of a biosurfactant

The Bruce Hartmann Award for a Young Scientist went to Caroline Terrié, University of Rouen, for her presentation on biodegradable materials from agro-based byproducts. The Jürgen Springer Award for a Young Scientist was given to Haley E. Hagg Lobland, University of North Texas, Denton, for her presentation on brittleness of materials and its implications for composites and impact testing. The International Materials Science Prize, introduced in 2007, was awarded to Alexander Bismarck, Imperial College London, for his work on nanocomposite foams and emulsion templating and for his successful international cooperations.

The conference is also a platform for the esteemed Paul J. Flory Research Award. This year, it was given *ex aequo* to Elizabete F. Lucas, Federal University of Rio de Janeiro, for her pioneering work on the application of polymeric materials in many stages of petroleum extraction and processing; Masaru Matsuo,

Nara Women's University, for his pioneering work on gelation and crystallization; and to Ron Sanderson, University of Stellenbosch, for his work establishing and developing advanced polymer science in South Africa.

It is difficult to select particular contributions from the multitude of excellent oral and poster contributions from universities, research institutes, and industry without overlooking important contributions. However, the following presentations were certainly highlights of the conference:

- "Experimental Characterization and Constitutive Modelling of Polycarbonate under Changes of Temperature, Strain, and Strain Rate," M. Negahban, A. Goel, K. Strabala, J. Vogeler, R. Feng
- "Conditioning Polymers in Supercritical Fluids," Jiasong He
- "Mainchain-Type Organoboron Quinolate Polymers: Synthesis and Photoluminescence Properties; Yoshiki Chujo, Yuuya Nagata, Atsushi Nagai
- "Antireflection and Superhydrophobicity of Nanostructured Polymeric Films," Han Sup Lee, Ki Woon Choi, Yi Seul Yang, Joon Ho Lee
- "Toughnessenhancement of Multicomponent Polymers: Nanomechanical Background," Goerg H. Michler
- "Intermingled Polymer Gels and Organogels," Jean-Michel Guenet, Debarshi Dasgupta, Ayyapanpillai Ajayaghosh, Cyrille Rochas Witold Brostow, Haley E. Hagg Lobland, and R.P. Singh
- "Active Sensing and Repair in Polymer Composite Materials," Véronique Michaud, Eva Kirkby, Rui De Oliveira, and Jan-Anders Månson

The Short Course on Polymer Characterization, an integral part of the conference, is taught by well-known specialists who provide a basic overview for students and newcomers as well as an update on popular characterization techniques. A unique feature of the course is that the lecturers are available for the participants during the whole conference. Due to IUPAC sponsorship, it was possible to waive the fee for all students. There were about 50 course participants. The subjects addressed were as follows:

- "Thermophysical Methods," Michael Hess, Germany
- "Dynamic Mechanical Analysis," Kevin P. Menard, USA