Collaborative Graduate Program with Chulalongkorn University, Bangkok, Thailand

Dave Sabatini
University of Oklahoma

S. Khaodhia, M. Rachakornkij and C. Tongcumpou - Chulalongkorn University
Outline

- Chulalongkorn University – Bangkok, Thailand
- Collaborative Graduate Program
  - Teaching
  - Research
- Collaborative Research Areas
- Observations
Chulalongkorn University

* Founded in 1913, oldest / one of most prestigious universities in Thailand, located in Bangkok

* Engineering: #1 in Thailand; #86 in world (Times Higher Education Supplement, 2008)

* 300 faculty members; 1,000 new undergraduate students a year; 4,000 graduate students enrolled
Environmental Engineering - Chula

- Founded in 1952 as “Sanitary Engineering Program”
- 19 faculty members; 120 undergraduate students; 200 graduate students
- B. Eng
- M. Eng, M.S. Envir. Mgmt & Env. Sci.
- Ph.D. in Eng., Env. Mgmt. and Env. Sci.
National Center of Excellence: Environmental and Hazardous Waste Management International Program

- Center established in 1999; international graduate program started in 2000; my first trip in 2001
- First five years co-funded by Asian Development Bank and Thai government; since 2005 Thai funding only
- Initially seven centers funded throughout Thailand / currently twelve centers
- Collaboration is both in teaching / research
  - Classes taught at Chulalongkorn in English
  - Research both at Chulalongkorn and at US university
EHWM Center Executives

Asst. Prof. Dr. Manaskorn Rachakornkij
Programs Director

Asst. Prof. Dr. Chantra Tongcumpou
Programs Deputy Director

Asst. Prof. Dr. Ekawan Luepromchai
Programs Deputy Director

Dr. Tawan Limpiyakorn
Programs Secretary
US Collaborating Universities

THE UNIVERSITY OF OKLAHOMA (OU)

NEW JERSEY'S SCIENCES & TECHNOLOGY UNIVERSITY (NJIT)

NORTH DAKOTA STATE UNIVERSITY (NDSU)
### Teaching / Courses

**腩 Classes: take one at a time for four weeks**

- Initially two US faculty, two weeks each; now one US and one Thai faculty in four weeks

- OU – six faculty have taught in three courses (plus other universities)

<table>
<thead>
<tr>
<th>Date</th>
<th>Course Name</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>APR 20-30, 2009</td>
<td>Intensive English</td>
<td>Ms. Uyeda</td>
</tr>
<tr>
<td>MAY 4-15, 2009</td>
<td>Environmental Management</td>
<td>Dr. Suchana</td>
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<tr>
<td>MAY 18-29, 2009</td>
<td></td>
<td>Dr. Khan</td>
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<td>JUN 8-19, 2009</td>
<td>Groundwater Quality Management</td>
<td>Dr. Khan</td>
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<td>JUN 22-JUL 3, 2009</td>
<td></td>
<td><strong>Dr. Sabatini</strong></td>
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<tr>
<td>JUL 6-17, 2009</td>
<td>Site Remediation</td>
<td>Dr. Ong &amp; Dr. Tawan</td>
</tr>
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<td>JUL 20-31, 2009</td>
<td></td>
<td>Dr. Ong &amp; Dr. Tawan</td>
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<tr>
<td>AUG 3-14, 2009</td>
<td>Environmental Chemistry</td>
<td>Dr. Chantra &amp; Dr. Nyein Nyein</td>
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<td>AUG 17-28, 2009</td>
<td></td>
<td><strong>Dr. Nanny</strong></td>
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<td>AUG 31-SEP 4, 2009</td>
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<td>Dr. Muller</td>
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<tr>
<td>SEP 7-18, 2009</td>
<td>Environmental Biology</td>
<td>Dr. Ekawan &amp; Dr. Onruthai</td>
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<td>SEP 21-25, 2009</td>
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<tr>
<td>JUN-OCT, 2009</td>
<td>Doctoral Dissertation Seminar</td>
<td>Dr. Nyein Nyein &amp; Dr. Pichet</td>
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<td>JUN-OCT, 2009</td>
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<td>Instructor(s)</td>
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<tr>
<td>OCT 5 - 16, 2009</td>
<td>Solid and Hazardous Waste Management</td>
<td>Drs. Tawan, Nyein &amp; Pichet</td>
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<td>OCT 19 - 30, 2009</td>
<td></td>
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<tr>
<td>NOV 2 - 7, 2009</td>
<td>Environmental Law, Policy &amp; Economics</td>
<td>Dr. Kanongnij</td>
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<td>NOV 9 - 20, 2009</td>
<td></td>
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<tr>
<td>NOV 23 - 27, 2009</td>
<td></td>
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<tr>
<td>NOV 30 - DEC 11, 2009</td>
<td>Environmental Quality Modeling</td>
<td>Dr. Pichet</td>
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<td>DEC 14 - 22, 2009</td>
<td></td>
<td>Mr. Borgstorm</td>
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<td>JAN 2 - 16, 2010</td>
<td>Environmental Risk Assessment</td>
<td>Dr. Robson</td>
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<td>JAN 21 - 31, 2010</td>
<td></td>
<td>Dr. Watasist</td>
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<td>FEB, 2010</td>
<td>Watershed and Soil Management</td>
<td>Dr. Padmanabhan</td>
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<td>FEB, 2010</td>
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<td>Dr. DeSutter</td>
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<td>FEB 2-13, 2010</td>
<td>Research Methodology</td>
<td>Dr. Nyein Nyein and Dr. Pichet</td>
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<tr>
<td>NOV’09 - MAR’10</td>
<td>Doctoral Dissertation Seminar</td>
<td>Dr. Nyein Nyein and Dr. Pichet</td>
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<tr>
<td>NOV’09 - MAR’10</td>
<td>Seminar II</td>
<td>Dr. Pichet</td>
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Research

- All of my PhD / some of my MS students have conducted research at OU - four to six months a year
- Refereed publications / US conference presentations for all my PhD students (and many MS students)

Four of my PhD students now on faculty

Center funding included new equipment for research
EHWM Center Research Equipment

- ESEM + EDS + Phase/particle analysis
- Fourier Transform IR
- X-ray Fluorescence Spectroscope
- WET, TCLP, and TCLP-ZHE
- Gas Chromatograph-Mass Spec.
- High Performance Liquid Chromatographs
- Microwave digesters
- Atomic Absorption Spectrophotometer
- Ion Chromatographs
- Inductively Coupled Plasma Spectrometer
- Laser Particle Size Analyzer
- Thermo Gravimetric Analyzer
- 1700°C Muffle furnace
- And more…
Surfactant Aqueous-Based for Palm Kernel Oil Extraction using Microemulsion System

Objective
To develop surfactant-based aqueous microemulsions for extracting vegetable from seeds

Dr. Chantra Tongcumpou
Admicellar Formation and Adsolubilization with Novel Surfactant Systems for Environmental Applications

Objective:
To develop and evaluate surfactant–modified adsorbents for removing organic contaminants

Assoc. Prof Sutha Khoadhiar
Environmental Engineering, Chulalongkorn University
Collaboration / Students Graduated

26 Journal articles published / 3 in review (2002-2013)

Collaboration

- OU
- Faculty of Engineering, Chulalongkorn University
- NCE-EHWM, Chulalongkorn University
- Prof. John O’ Haver, University of Mississippi, USA
- Dr. Kazuyuki Tsubone and Dr. Abe Mazahiko, Tokyo University of Science, Tokyo

Graduate Thesis Students Co-Supervised (2002 - 2013)

<table>
<thead>
<tr>
<th>8 Ph.D. students</th>
<th>Fuangswasdi A.; Lorphensri O.; Charoensaeng A.; Asanachinda E.; Damrongsiri S.; Mathurasu L.; Panswad D.</th>
</tr>
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<tbody>
<tr>
<td>&gt; 15 MS. students</td>
<td>e.g. Intravijit J.; Krajangpan S.; Attaphong C.; Arpornpong N.; Wanitkornkul A.; Suntisukaseam U.; Lewlomphaissan J.</td>
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Program Highlights

- Average of 24 MS and 14 PhD students per year
- Attracting high quality students
- International Conferences Coorganized in Bangkok - January 2006 and May 2013
Closing Thoughts

- Combined teaching and research focus is very valuable
- Co-advising research & students doing research at OU is very valuable
- Allows me to extend ongoing work / collect preliminary data for new work
- High quality and motivated students; recruit top students to OU for PhD
- Helping train future environmental professors / leaders for Thailand
Questions?