

# ***Program***

## **Separations Technology VIII: Sustainable Separation Technology for Energy and Environmental Challenges**

**December 5 – 9, 2010**

### **Sheraton Keauhou Bay Hotel**

78-128 Ehukai Street  
Kailua-Kona, Hawaii, 96740  
1-808-930-4900

### **Chair**

**Michael F. Doherty**

University of California, Santa Barbara, USA



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## **Sunday, December 5, 2010**

16:00 – 18:00	Registration
18:00 – 19:00	Welcome Reception
19:00 – 20:30	Dinner

## **NOTES**

- *Meal Locations:*
  - *Breakfast – Kai Restaurant. Vouchers will be given to you during conference check-in. Restaurant hours for breakfast: 06:30 – 10:30*
  - *Lunch – Keauhou Convention Center Foyer*
  - *Dinner – Sunday - Crystal Blue Terrace  
Monday – Bayview Lawn  
Tuesday – Crystal Blue Terrace  
Wednesday – Hawaii Lawn*
- *Social hours will be during the posters sessions.*
- *Audiotaping, videotaping and photography of presentations are prohibited.*
- *Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).*
- *Speakers – Please leave at least 5 minutes for questions and discussion.*
- *Poster Presenters – Please hang your poster prior to the first poster session. All posters need to be removed by 10:00 am on Wednesday morning.*
- *Please do not smoke at any conference functions.*
- *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 (by your initials) that the listing is correct. A corrected copy will be sent to all participants after the conference.*

**Monday, December 6, 2010**

- 06:30 – 08:00 Breakfast
- 08:15 – 08:30 Welcome  
Michael Doherty, Conference Chair  
Herman Bieber, ECI Technical Liaison
- 08:30 – 10:30 **Session 1: Separation Challenges in Unconventional Energy Production**
- 08:30 – 09:30 **Keynote Lecture: Water and Carbon Footprint Challenges of Fossil Energy – The Next 10 Years**  
Philippe A. Tanguy, TOTAL, SA, France
- 09:30 – 10:00 **Separation Challenges for a New Bromine-Based GTL Technology**  
Sagar Gadewar, GRT Inc., USA
- 10:00 – 10:30 **Separation Solutions for the Energy Challenge**  
Jose Bravo, Shell, USA
- 10:30 – 11:00 Break
- 11:00 – 12:30 **Session 2: New Approaches to CO<sub>2</sub> Capture**
- 11:00 – 11:30 **Carbon Dioxide Mineralization with Silicates and Fly Ash**  
Hans Geerlings, TU Delft, The Netherlands
- 11:30 – 12:00 **Carbon Dioxide Mineralization with Beneficial Use**  
Michael Weiss, Calera Corp, USA
- 12:00 – 12:30 **Direct CO<sub>2</sub> Capture From Air Using Moisture Swing Absorption**  
Klaus Lackner, Columbia University, USA
- 12:30 – 13:30 Lunch
- 13:30 – 18:00 Free time and *ad hoc* discussions
- 18:00 – 19:00 **Session 3: Membrane Separations**
- 18:00 – 18:30 **Separations using Room Temperature Ionic Liquids and Membranes**  
Richard Noble, University of Colorado, USA
- 18:30 – 19:00 **Metal-Organic Frameworks as Molecular Sieve Membranes**  
Juergen Caro, Leibniz University, Germany
- 19:00 – 19:30 **Possibilities for Separation of Natural Gas from Carbon Dioxide at the Wellsite for Efficient Carbon Sequestration**  
T. S. Ramakrishnan, Schlumberger, USA
- 19:45 – 21:00 Dinner

**Monday, December 6, 2010** (continued)

21:00 – 22:30

**Poster Session 1 and Social Hour**

**Tuesday, December 7, 2010**

- 06:30 – 09:00 Breakfast
- 09:00 – 10:30 **Session 4: New Concepts/Fundamentals**
- 09:00 – 09:30 **Electrochemically-Mediated Separation Processes**  
Alan Hatton, Massachusetts Institute of Technology, USA
- 09:30 – 10:00 **Energy Efficient Hydrotropic Extraction of Natural Materials**  
Vilas G. Gaikar, ICT Mumbai, India
- 10:00 – 10:30 **Separations for High Performance Materials: Integrated Sustainability**  
Ruth Sands, DuPont, USA
- 10:30 – 11:00 Break
- 11:00 – 12:30 **Session 5: New Concepts and Applications**
- 11:00 – 11:30 **Gas Liquid Microdispersion Process for CO<sub>2</sub> Capture**  
Guangsheng Luo, Tsinghua University, China
- 11:30 – 12:00 **A Dow Perspective on Alternate Feedstocks and Separations Needs for the Chemical Industry**  
John G. Pendergast, Dow Chemical Company, USA
- 12:00 – 12:30 **Particulate-Flue Gas in-situ Separation in Smokeless Cooking Stoves for the Developing World: Modelling and Experimental Validation**  
A. B. Pandit, ICT Mumbai, India
- 12:30 – 13:30 Lunch
- 13:30 – 18:00 Free time and *ad hoc* discussions
- 18:00 – 19:30 **Session 6: Water Purification and Reuse**
- 18:00 – 18:30 **Sustainable Engineered Processes to Mitigate the Global Arsenic Crisis in Drinking Water: Challenges and Progress**  
Arup K. Sengupta, Lehigh University, USA
- 18:30 – 19:00 **Nanoscale Magnetic Materials Used in Water Treatment**  
Vicki Colvin, Rice University, USA
- 19:00 – 19:30 **New Membrane and Nono-Materials in Efficient Water Treatment for Ecological Risk Abatement and Pollution Control**  
L. Liu, Dalian University of Technology, China

**Tuesday, December 7, 2010** (continued)

19:45 – 21:00

Dinner

21:00 – 22:30

**Poster Session 2 and Social Hour**



**Wednesday, December 8, 2010**

06:30 – 09:00	Breakfast
09:00 – 10:30	<b><u>Session 7: Absorption/Adsorption/Membrane Separations</u></b>
09:00 – 09:30	<b>Zeolite Membranes for CO<sub>2</sub> Removal from Natural Gas</b> John Falconer, University of Colorado, USA
09:30 – 10:00	<b>Effect of Framework Flexibility on Adsorptive Separations Using Metal Organic Frameworks</b> Gino Baron, Vrije Universiteit Brussel, Belgium
10:00 – 10:30	<b>An Update on Carbon Capture Using Chilled Ammonia</b> Ulrich Koss, Alstom Power Systems, Switzerland
10:30 – 11:00	Break
11:00 – 18:00	Optional Conference Trip
18:30 -	Group Luau Dinner

**Thursday, December 9, 2010**

06:30 – 09:00	Breakfast
09:00 – 10:30	<b><u>Session 8: Modeling and Simulation</u></b>
09:00 – 09:30	<b>Waves, Shocks and Delta-Shocks in Adsorption Processes</b> Marco Mazzotti, ETH, Switzerland
09:30 – 10:00	<b>Molecular Simulation of Crystal Nucleation for Separations and Energy Materials</b> Baron Peters, University of California, Santa Barbara, USA
10:00 – 10:30	<b>Molecular Simulation for Carbon Capture</b> Berend Smit, University of California, Berkeley, USA
10:30 – 11:00	Break
11:00 – 12:30	<b><u>Session 9: New Concepts and Applications</u></b>
11:00 – 11:30	<b>A New, Novel Method for Algae Oil Extraction</b> Frank Seibert, University of Texas-Austin, USA
11:30 – 12:00	Best Poster
12:00 – 12:30	<b>Development of Sustainable Separation Processes Within the Life Sciences Industry</b> E. van de Sandt, DSM, The Netherlands
12:30 – 13:30	Lunch and departure

## ***Poster List***

- 1. ADSORPTION OF PHENOL FROM INDUSTRIAL WASTE WATER USING OLIVE MILL WASTE**  
Maha Abdelkreem. HTI, Egypt
- 2. HEAT INTEGRATED DISTILLATION COLUMN**  
Mohamed Abdelghani, SABIC, Saudi Arabia
- 3. ADVANCED CARBON ADSORBENTS FOR CO<sub>2</sub> CAPTURE AND OTHER ENERGY AND ENVIRONMENTAL APPLICATIONS**  
Josh Sweeney (presented by) James Carruthers, ATMI, USA
- 4. SEPARATION OF AMMONIUM AND PHOSPHATE IONS FROM LIVESTOCK WASTEWATER BY IONIZING RADIATION AND STRUVITE CRYSTALLIZATION**  
Tak Hyun Kim, Korea Atomic Energy Research Institute, Korea
- 5. ACHIEVING HIGH PURITY HYDROGEN PRODUCTION AND PURIFICATION IN A NON-PERMSELECTIVE CATALYTIC MEMBRANE: ONE DIMENSIONAL MAXWELL-STEFAN REACTION DIFFUSION MODEL**  
Bhanu Vardhan Reddy Kuncharam, Texas A&M University, USA
- 6. MAGNETIC HYBRID ADSORBENT FOR REMOVING HEAVY METAL IONS FROM AQUAEIOUS PHASE**  
Lifen Liu, Dalian University of Technology, China
- 7. CARBON SEQUESTRATION BY CARBONATE MINERALIZATION**  
Anjana Meel, University of California Santa Barbara, USA
- 8. USE OF MAGNETIC NANOPARTICLES IN ENVIRONMENTAL REMEDIATION**  
Asha Parekh, Massachusetts Institute of Technology, USA
- 9. NOVEL SEPARATION NANOTECHNOLOGY: CONJUGATES OF MAGNETIC NANOPARTICLE-CHELATOR FOR NUCLEAR FUEL RECYCLING AND ENVIRONMENTAL REMEDIATION**  
You Qiang, University of Idaho, USA
- 10. REDUCTION OF MEMBRANE FOULING IN SUBMERGED MICROFILTRATION MEMBRANE WITH IONIZED AIR**  
Marco Rupprich, MCI-University of Applied Sciences, Austria
- 11. CHEMISTRY OF REDOX-RESPONSIVE SORBENTS FOR CO<sub>2</sub> SEPARATION**  
Fritz Simeon, Massachusetts Institute of Technology, USA

## ***Poster List (continued)***

**12. ANALYSIS OF REDOX-RESPONSIVE MOLECULES FOR CO<sub>2</sub> SEPARATION USING A GENERAL THERMODYNAMIC MODEL OF ELECTROCHEMICALLY MODULATED COMPLEXATION SEPARATIONS**

Michael Stern, Massachusetts Institute of Technology, USA

**13. CO<sub>2</sub> ADSORPTION ON AMINE MODIFIED MESOCELLULAR SILICEOUS FOAM (MCF): DRY VS HUMID CONDITION**

Dirgarini Subagyono, Monash University, Australia

**14. PREPARATION OF X ZEOLITE COATED HONEYCOMB ADSORBENTS AND ITS CARBON DIOXIDE ADSORPTION CHARACTERISTICS**

YoonJong Yoo, Korea Institute of Energy Research, Korea

**15. SYNTHESIS AND CHARACTERIZATION OF SULFONATED POLY(ARYLENE ETHER SULFONE) COPOLYMERS BEARING PENDANT AMINO GROUPS FOR RO MEMBRANES**

Sang Gon Kim, Korea University, Korea