

# AIChE SUSTAINABLE ENGINEERING FORUM NEWSLETTER

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## Message from the Chair

It is turning out to be a good summer for the Forum. Many SEF leaders attended the 2nd International Symposium on Sustainable Chemical Product and Process Engineering held in Hangzhou, China from May 9-12, where student activities in the field of sustainable product and process engineering were in the spotlight. The symposium attracted over 300 attendees from 16 countries. The SEF was one of the co-sponsors of this event. More details about this conference can be found in "Announcements" and "Education Column".

The 2010 AIChE Annual meeting will be held in Salt Lake City, Utah, in November. As you might know, the SEF is sponsoring/co-sponsoring a record number of sessions this year. We also have a number of special SEF events planned for the meeting that we are sure you would like to attend. Details of these events can be found in the Announcements section. The winners of the SEF awards will be announced at the SEF luncheon on November 10th.

The Forum has organized a seven-session topical for the 2011 AIChE Annual Spring Meeting. The call for papers ends on October 22, so do send in your entries before then. You will notice that we have a new column in this newsletter exclusively for Sustainable Biorefineries (23B), which is one of our fast-growing technical areas.

The Second International Congress on Sustainability Science and Engineering

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<http://www.aiche.org/sef>

is scheduled for January 9-13, 2011 in Tucson, Arizona. The Congress aims to provide a venue for practitioners from various fields to exchange ideas. The focus of this Congress is on managing natural resources sustainability from a systems perspective using scientific and engineering innovations.

Members are the strength of any organization. We look forward to your comments and suggestions regarding the Forum. Your continued support and participation is greatly appreciated, and we hope to see even greater participation in future.

Helen Lou  
Chair, Sustainable  
Engineering Forum



## Announcements

By David N. Thompson

### **Symposium on Sustainable Chemical Product and Process Engineering**

By David N. Thompson and Yinlun Huang

IfS and the SEF co-sponsored the Second International Symposium on Sustainable Chemical Product and Process Engineering, which was held in Hangzhou, China, from May 9-12, 2010. The Symposium was sponsored by the National Science Foundation (NSF) and the National Natural Science Foundation (China). Dow Chemical, P&G, and Chinese American Chemical Society were also co-sponsors. The symposium was co-chaired by Prof. Chun'an Ma of Zhejiang University of Technology, China, and Prof. Yinlun Huang of Wayne State University (The SEF Chair during 2008-09).

The symposium attracted over 300 attendees from 16 countries, including more than 30 U.S. participants. The



symposium provided a unique forum for researchers, scientists and practitioners to assess and critique the current status and future directions of research and development in integrating sustainability into chemical product and process systems engineering.

Topics covered at the symposium included green chemistry and engineering in product design, emerging technologies (nanotech, biotech, and IT) in product design, multiscale systems science and engineering in sustainability, integrated material, product and process design, alternative and renewable energy and systems, LCA and systems analysis and decision making for sustainability, sustainable chemical processing, green reaction engineering & separation, and value/supply chain and large scale system sustainability.

During the symposium, a Student Poster Paper Competition was held. Six students from the U.S., China, Denmark, Korea, and Thailand were selected by the judges for the Student Best Poster Award (see the list of awardees in the education section of the newsletter). For more information point your browser to <http://www.gct.zjut.edu.cn/>.

### **SEF Events planned for AIChE Annual Meeting in Salt Lake City**

Have you ever wanted to become more involved in the SEF? The following special events have been scheduled for the upcoming Annual Meeting in Salt Lake City. If you are interested in participating, please plan to attend.

1. Green Engineering Education Workshop: "Incorporating Green Engineering and Sustainability into Engineering Curricula", Sunday November 7, 8:00am to 12 noon, \$15
2. "Cellulosic Biomass Commercialization: Overcoming Obstacles in the Supply Chain for Fuels and Chemicals" – James Hettenhaus, James D. McMillan and Richard L. Bain, Sunday November 7, 8:30am - 5:00pm, \$499
3. SEF Leadership Meeting: Monday, November 8th, 5:00 - 6:30 pm
4. SEF Programming Meetings for the 2011 Annual Meeting
  - a. Area 23a - General and Area 23c - Sustainable Energy: Tuesday, November 9th, 4:00 - 5:00 pm
  - b. Area 23b - Sustainable Biorefineries: Tuesday, November 9th, 5:00 - 6:00 pm
5. SEF Luncheon: Wednesday, November 10th, 11am - 12:30. The cost will be \$30/person. The winners of the SEF awards will be announced during the luncheon.

## **Programming Activities**

By Christina Piluso

### **AIChE 2011 Spring Meeting- SEF Programming**

For the 2011 Spring Meeting, The SEF has organized a 6 session topical- Topical 3. The call for papers is open until Friday, October 22.

#### **Topical 3: Advances in Sustainability**

<b>Title</b>	<b>Session Chair</b>	<b>Session Co-Chair</b>
<u>Energy Efficiency, Challenges and Solutions</u>	Martin Abraham	
<u>Establishing and Ensuring Sustainable Biofuels Development: A Department of Energy/Industry Perspective</u>	Alison Goss Eng	David Thompson
<u>Federal Role in Renewable Liquid Fuels: Strategy and Perspective</u>	Leslie Pezzullo	David Thompson
<u>Product Life Cycle Carbon Management</u>	Todd Martin	
<u>Sustainable Energy and Oil Refining</u>	Ignasi Palou-Rivera	
<u>Sustainable Energy in Practice</u>	William Barrett	
<u>Technology Innovation on Oil Spill Clean Up and the Restoration of Ecosystem's Sustainability</u>	William Barrett	Helen Lou

### **AIChE 2010 Annual Meeting**

The updated list of sessions sponsored/ co-sponsored by the SEF for the AIChE 2010 Annual meeting in Salt Lake City, Utah, in November, is given below. As of now, there are a total of 82 sessions planned.

#### **Sustainable Engineering Forum**

<b>Title</b>	<b>Sponsor</b>	<b>Co-Sponsor</b>
<u>02D14 Session in Honor of Professor Anthony Fane: Membrane Separations I</u>	Membrane-Based Separations (02D)	SEF (23)
<u>02E02 Adsorption Applications for Sustainable Future</u>	Adsorption & Ion Exchange (02E)	SEF (23)

Title	Sponsor	Co-Sponsor
<u>04006 Incorporating Green Engineering and Sustainability Into the Curriculum</u>	Education (04)	Sustainability (09G), SEF (23)
<u>09000 Efficient Transformational Technologies – Factor 10 Engineering (10XE)</u>	Environmental Division (09)	SEF (23)
<u>09001 Environmental Implications of Nanomaterials I</u>	Environmental Division (09)	SEF (23)
<u>09004 Environmental Applications of Nanotechnology II</u>	Environmental Division (09)	Nanoscale Science & Engineering (22), SEF (23)
<u>09B01 Environmental Applications of Nanotechnology and Nanomaterials</u>	Water (09B)	SEF (23), Nanoscale Science & Engineering Forum (22)
<u>09F01 Fundamentals of Environmental Sustainability</u>	Fundamentals (09F)	SEF (23)
<u>09G01 Sustainable Building Design</u>	Sustainability (09G)	SEF (23)
<u>09H02 Climate Change Legislation and Regulation</u>	Climate Change (09H)	Separations (02), SEF (23)
<u>12B04 Pilot Plants for Green &amp; Sustainable Processes II</u>	Pilot Plants (12B)	SEF (23)
<u>14000 Ned Division Student Award Competition</u>	Nuclear Engineering (14)	Environmental (09), SEF (23)
<u>17001 Biobased Materials II</u>	Forest & Plant Bioproducts (17)	Poylmers (08A), SEF (23)
<u>17002 Biobased Materials III</u>	Forest & Plant Bioproducts (17)	Poylmers (08A), SEF (23)
<u>17003 Biobased Materials IV</u>	Forest & Plant Bioproducts (17)	Poylmers (08A), SEF (23)
<u>17004 Forest Products Biorefinery Feedstock and Logistics</u>	Forest & Plant Bioproducts (17)	Sustainability (09G), SEF (23), Sustainable Biorefineries (23B)
<u>17005 Biorefinery: Separation &amp; Transport in Lignocellulosic Conversion Processes</u>	Forest & Plant Bioproducts (17)	Transport Processes (01D), Separations (02), Membrane-Based Separations (02D), Bio Separations (02G), SEF (23), Sustainable Biorefineries (23B)
<u>17006 Biorefinery - Biochemical Conversion and Biomass Recalcitrance</u>	Forest & Plant Bioproducts (17)	Sustainability (09G), SEF (23), Sustainable Biorefineries (23B), Sustainable Energy (23C)

Title	Sponsor	Co-Sponsor
<u>17008 Biorefinery - Improved Utilization of Co-Products From Biorefinery</u>	Forest & Plant Bioproducts (17)	SEF (23)
<u>17009 Biorefinery - Sustainability, Energy and Environmental Issues</u>	Forest & Plant Bioproducts (17)	Environmental Division (09), SEF (23)
<u>17010 Biorefinery - Deployment and Industry Infrastructure</u>	Forest & Plant Bioproducts (17)	SEF (23)
<u>20030 Catalytic Processing of Fossil and Biorenewable Feedstocks: Chemicals</u>	Catalysis & Reaction Engineering (20)	Forest & Plant Bioproducts (17), SEF (23)
<u>23000 Sustainability Plenary</u>	SEF (23)	SEF – General (23A), Sustainable Energy (23C)
<u>T1002 Separations for Renewable and Sustainable Energy Development</u>	Topical 1	Membrane-Based Separations (02D), SEF (23)

#### General

Title	Sponsor	Co-Sponsor
<u>23A02 Case Studies in Sustainability Science and Engineering</u>	SEF – General (23A)	SEF (23), Sustainable Biorefineries (23B), Sustainable Energy (23C)
<u>23A04 Design for Sustainability</u>	SEF – General (23A)	Systems & Process Design (10A)
<u>23A05 Complexity, Networks, Dynamics, and Sustainability</u>	SEF – General (23A)	Systems & Process Control (10B), Applied Mathematics & Numerical Analysis (10D)
<u>23A06 Life Cycle Assessment and the Water-Energy-Materials Nexus</u>	SEF – General (23A)	Sustainable Energy (23C)

#### Sustainable Biorefineries

Title	Sponsor	Co-Sponsor
<u>01F07 Biomass and Biorenewables Processing Under Pressure</u>	High Pressure (01F)	Sustainable Biorefineries (23B)
<u>15C01 Biobased Fuels and Chemicals II</u>	Bioengineering (15C)	Sustainable Biorefineries (23B)
<u>15C04 Advances in Fermentation and Biological Conversion</u>	Bioengineering (15C)	Sustainable Biorefineries (23B)

Title	Sponsor	Co-Sponsor
<u>15C07 Environmental Biotechnology: Green Bioprocessing</u>	Bioengineering (15C)	Sustainability (09G), Sustainable Biorefineries (23B), Topical G
<u>17004 Forest Products Biorefinery Feedstock and Logistics</u>	Forest and Plant Bioproducts (17)	Sustainability (09g), SEF (23), Sustainable Biorefineries (23B)
<u>15C24 Biobased Fuels and Chemicals I</u>	Bioengineering (15C)	Sustainable Biorefineries (23B)
<u>16004 Biomass Pyrolysis</u>	Fuels & Petrochemicals (16)	Catalysis & Reaction Engineering (20), Alternative Energy & Fuel Cells (07F), Sustainability (09g), Alternate Fuels & New Technology (16D), Sustainable Biorefineries (23B), Sustainable Energy (23C)
<u>17005 Biorefinery: Separation &amp; Transport in Lignocellulosic Conversion Processes</u>	Forest and Plant Bioproducts (17)	Transport Processes (01D), Separations (02), Membrane-Based Separations (02D), Bio Separations (02G), SEF (23), Sustainable Biorefineries (23B)
<u>17006 Biorefinery - Biochemical Conversion and Biomass Recalcitrance</u>	Forest and Plant Bioproducts (17)	Sustainability (09G), SEF (23), Sustainable Biorefineries (23B), Sustainable Energy (23C)
<u>17007 Biorefinery - Thermochemical Conversion of Biomass I</u>	Forest and Plant Bioproducts (17)	Transport & Energy Processes (07), Emerging Energy Processes (07C), New Challenges in Enhanced Heat Transfer (07H), Alternate Fuels & New Technology (16D), Sustainable Biorefineries (23B)
<u>23B01 Reactor Engineering for Biomass Feedstocks</u>	Sustainable Biorefineries (23B)	Catalysis & Reaction Engineering (20), Forest & Plant Bioproducts (17), SEF (23)
<u>23B02 Poster Session: Sustainability and Sustainable Biorefineries</u>	Sustainable Biorefineries (23B)	SEF (23), General (23A), Sustainable Energy (23C)
<u>23B03 Developments in Biobased Alternative Fuels I</u>	Sustainable Biorefineries (23B)	Catalysis & Reaction Engineering (20), Bioengineering (15C), Forest & Plant Bioproducts (17), SEF – General (23A)
<u>23B03 Developments in Biobased Alternative Fuels I</u>	Sustainable Biorefineries (23B)	Catalysis & Reaction Engineering (20), Bioengineering (15C), Forest & Plant Bioproducts (17), SEF – General (23A)

Title	Sponsor	Co-Sponsor
<u>23B04 Integrated Processes for Biochemical Conversion of Renewable Feedstocks to Fuels and Chemicals I</u>	Sustainable Biorefineries (23B)	Transport Processes (01D), Bioengineering (15C), Forest & Plant Bioproducts (17), SEF (23)
<u>23B05 Life Cycle Analysis of Renewable Feedstock-Based Processes and Products</u>	Sustainable Biorefineries (23B)	Bioengineering (15C), SEF (23)
<u>23B07 Sustainable Biorefineries Plenary Session (Invited Papers)</u>	Sustainable Biorefineries (23B)	Bioengineering (15C), Forest & Plant Bioproducts (17), SEF – General (23A)
<u>23B08 Reaction Kinetics and Transport Fundamentals for Biomass Conversion I</u>	Sustainable Biorefineries (23B)	Catalysis & Reaction Engineering (20), Transport & Energy Processes (07)
<u>23B09 Microbial Engineering of Microorganisms for Biofuels and Chemicals I</u>	Sustainable Biorefineries (23B)	Bioengineering (15c)
<u>23B10 Advances in Biofuels: DOE Bioenergy Research Centers I</u>	Sustainable Biorefineries (23B)	Forest & Plant Bioproducts Division (17)
<u>23B11 Sustainable Biomass Feedstock Production and Supply for the Emerging Biorefinery Industry</u>	Sustainable Biorefineries (23B)	Forest & Plant Bioproducts (17), SEF (23)
<u>23B12 Advances in Algal Biorefineries I</u>	Sustainable Biorefineries (23B)	Catalysis & Reaction Engineering (20), Bioengineering (15C), Forest & Plant Bioproducts (17), Alternate Fuels & New Technology (16D), SEF (23)
<u>23B13 Catalytic Conversion of Renewable Resources to Synthesis Gases and Pyrolysis Oils</u>	Sustainable Biorefineries (23B)	Catalysis & Reaction Engineering (20), Transport & Energy Processes (07), Forest & Plant Bioproducts (17), Alternate Fuels & New Technology (16D), SEF (23)
<u>23B14 Biological Conversions and Processes for Renewable Feedstocks</u>	Sustainable Biorefineries (23B)	Bioengineering (15C), SEF (23)
<u>23B15 Developments in the Pretreatment of Lignocellulosics for Bioconversion</u>	Sustainable Biorefineries (23B)	Forest & Plant Bioproducts Division (17), SEF (23)
<u>23B16 Chemical and Catalytic Conversions and Processes for Renewable Feedstocks</u>	Sustainable Biorefineries (23B)	Catalysis & Reaction Engineering (20), SEF (23), Research & New Technology Committee (18j)
<u>23B17 Advances in Biofuels: DOE Bioenergy Research Centers II</u>	Sustainable Biorefineries (23B)	Research & New Technology Committee (18j)



Title	Sponsor	Co-Sponsor
<u>23B18 Developments in the Pretreatment of Lignocellulosics for Bioconversion II</u>	Sustainable Biorefineries (23B)	SEF (23), Research & New Technology Committee (18j)
<u>23B19 Developments in the Pretreatment of Lignocellulosics for Bioconversion III</u>	Sustainable Biorefineries (23B)	SEF (23), Research & New Technology Committee (18j)
<u>23B20 Biological Conversions and Processes for Renewable Feedstocks II</u>	Sustainable Biorefineries (23B)	Bioengineering (15c), SEF (23), Research & New Technology Committee (18j)
<u>23B21 Reaction Kinetics and Transport Fundamentals for Biomass Conversion II</u>	Sustainable Biorefineries (23B)	Catalysis & Reaction Engineering (20), Transport & Energy Processes (07), Research & New Technology Committee (18j)
<u>23B22 Integrated Processes for Biochemical Conversion of Renewable Feedstocks to Fuels and Chemicals II</u>	Sustainable Biorefineries (23B)	Transport Processes (01d), Bioengineering (15c), Research & New Technology Committee (18j), SEF (23)
<u>23B23 Developments in Biobased Alternative Fuels II</u>	Sustainable Biorefineries (23B)	Catalysis & Reaction Engineering (20), Bioengineering (15c), Research & New Technology Committee (18j), SEF - General (23A)
<u>23B24 Advances in Algal Biorefineries II</u>	Sustainable Biorefineries (23B)	Catalysis & Reaction Engineering (20), Bioengineering (15c), Alternate Fuels & New Technology (16D), Research & New Technology Committee (18j), SEF (23)
<u>23B25 Microbial Engineering of Microorganisms for Biofuels and Chemicals II</u>	Sustainable Biorefineries (23B)	Bioengineering (15c), Research & New Technology Committee (18j)

### Sustainable Energy

Title	Sponsor	Co-Sponsor
<u>15C15 Advances in Metabolic Engineering and Bioinformatics I - Biofuels</u>	Bioengineering (15C)	Sustainable Energy (23C), Topical G
<u>16004 Biomass Pyrolysis</u>	Fuels & Petrochemicals (16)	Catalysis & Reaction Engineering (20), Alternative Energy & Fuel Cells (07F), Sustainability (09g), Alternate Fuels & New Technology (16D), Sustainable Biorefineries (23B), Sustainable Energy (23C)



Title	Sponsor	Co-Sponsor
<u>17006 Biorefinery - Biochemical Conversion and Biomass Recalcitrance</u>	Forest and Plant Bioproducts (17)	Sustainability (09g), SEF (23), Sustainable Biorefineries (23B), Sustainable Energy (23C)
<u>23C00 Sorptive Processes for Use in Carbon Dioxide Capture</u>	Sustainable Energy (23C)	Research & New Technology Committee (18j)
<u>23C01 Sustainable Energy Plenary</u>	Sustainable Energy (23C)	SEF (23)
<u>23C02 Materials for Alternative Energy: Solar Cells</u>	Sustainable Energy (23C)	Electronics & Photonics (08E), Nanoscale Science & Engineering Forum (22)
<u>23C04 CO<sub>2</sub> Capture, Control and Sequestration</u>	Sustainable Energy (23C)	Materials Processing (07S), Environmental (09), Separations (02)
<u>23C05 Energy Efficiency, Challenges and Solutions</u>	Sustainable Energy (23C)	New Challenges in Enhanced Heat Transfer (07H), Environmental Division (09)
<u>23C06 Sustainable Fuel From Renewable Resources</u>	Sustainable Energy (23C)	Sustainability (09G), Alternate Fuels & New Technology (16D)
<u>23C07 Novel Processes for Carbon Capture</u>	Sustainable Energy (23C)	Sustainability (09g), Alternate Fuels & New Technology (16D), Research & New Technology Committee (18j)
<u>23C08 Sustainable Electricity: Generation and Storage</u>	Sustainable Energy (23C)	Emerging Energy Processes (07C), Sustainability (09G)
<u>23C09 Sustainable Diesel Fuel From Renewable Resources</u>	Sustainable Energy (23C)	Alternate Fuels & New Technology (16D), Research & New Technology Committee (18j)
<u>23C10 Innovative Carbon Capture and Storage Processes</u>	Sustainable Energy (23C)	Emerging Energy Processes (07C), Research & New Technology Committee (18j)
<u>23C11 Solvent and Membrane Processes for Carbon Capture</u>	Sustainable Energy (23C)	Membrane-Based Separations (02D), Research & New Technology Committee (18j)
<u>TE000 Chemical Looping Processes</u>	Topical E	Environmental Division (09), Sustainable Energy (23C)
<u>TE001 Oxycombustion of Coal - Need, Opportunities, and Challenges I</u>	Topical E	Environmental Division (09), Sustainable Energy (23C)

Title	Sponsor	Co-Sponsor
<u>TE002 Advances in Gasification Research I</u>	Topical E	Environmental Division (09), Sustainable Energy (23C)
<u>TE003 Advances in Gasification Research II</u>	Topical E	Environmental Division (09), Sustainable Energy (23C)
<u>TE004 Chemical Looping Processes II</u>	Topical E	Environmental Division (09), Sustainable Energy (23C)
<u>TE005 Oxycombustion of Coal – Need, Opportunities, and Challenges II</u>	Topical E	Environmental Division (09), Sustainable Energy (23C)
<u>TE006 Oxycombustion of Coal – Need, Opportunities, and Challenges III</u>	Topical E	Environmental Division (09), Sustainable Energy (23C)

## **Sustainable Biorefineries** **Column**

By Bruce Dien and David Shonnard



At this year's annual meeting, the Sustainable Biorefineries (23B) will have a record 24 sessions, which represents, including posters, 203 technical papers. As evident from the titles and abstracts, we think this year's sessions should be interesting and highly worthwhile for the attendees. I want to especially note our new programming, which includes: technical updates from the DOE bioenergy centers, a session specifically devoted to microbial engineering strategies related to biofuels and chemicals, and one addressing fundamentals in reaction kinetics and transport phenomena for biomass conversion.

Thank you to all of our enthusiastic chairs and co-chairs who worked so hard recruiting papers, requesting overflow sessions as needed, and organizing their sessions in a timely manner!

We have also formalized a joint advertisement campaign with the Society of Industrial

Microbiology, sponsor of the annual Symposium on Biotechnology for Fuels and Chemicals Sustainable Biorefineries. For those not familiar with this Symposium, it is in its 33<sup>rd</sup> year and is the most popular specialized meeting for biochemical conversion of biomass. As a result, we have a half page advertisement in the meeting proceedings, the AIChE annual and related specialty meetings are listed on the SIM calendar, and they announced our meeting at the ending banquet. On our side, AIChE will likewise advertise their meeting in our proceedings, in our newsletter, and announce the Symposium meeting at our plenary. Thank you to Dave Thompson, who conceived and pursued this agreement. Thank you, as well, to all the professional staff people at both SIM and AIChE that help make this so convenient for us to implement.

Finally, our programming meeting will be held on Tuesday, November 9, 2010, 5:00-6:00 pm; location is still to be determined. Please plan on attending the programming meeting if you are able to, for a discussion of next year's programming, including new session ideas. This year, Sustainable Biorefineries will have its own meeting time to ensure greater efficiency.



## Education Column

By Jeffrey Seay

The Sustainability Engineering Forum recently co-sponsored the 2<sup>nd</sup> International Symposium on Sustainable Chemical Product and Process Engineering in Hangzhou, China. Student activities were again in the spotlight. To promote the activities of young researchers in the field of sustainable product and process engineering, awards were given out to Outstanding Student Researchers in graduate and undergraduate categories. The awardees were as follows:

### **Undergraduate Category Awardees**

Andrea Ramsey (University of Kentucky, **USA**), Jeffrey Seay, Sumesh Sukumara, "Development of Multidisciplinary Region Specific Economic Models for Co-Fired Biorefining Using Process Simulation"

Doyle P. Bean (Lamar University, **USA**), Helen H. Lou, Kailiang Zheng, Thomas C. Ho and Yinlun Huang, "Education Modules: Integrating Sustainability Concepts in a Mass and Energy Balance Course"

### **Graduate Category Awardees**

Iyara Nuchanat (Chulalongkorn University, **Thailand**), Seimanond Kitipat, Rafiqul Gani, "Sustainable Design for an Olefins Process"

Wenjun Fu (Technical University of Denmark, **Denmark**), Jacob Skibsted Jensen, Astrid Boisen, Sven Pedersen, Aders Riisager, Rafiqul Gani, and John Woodley, "Process Design for Chemo-enzymatic Synthesis of 2,5-Furandicarboxylic Acid"

Xian Chen, Ying Li, Daxin Shi, Qi Zhang, Lina Fu, Jiarong Li (Beijing Institute of Technology, **China**), "ZnCl<sub>2</sub> mediated synthesis of quinazoline-2,4(1H,3H)-diones in the presence of acid"

Wonsub Lim (Yonsei University, Seoul, **Korea**), Kyungjae Tak, Il Moon, Kwangho Choi, and Sunkeun Lee, "Development of Design Technology for Liquefaction Process in LNG Plant"

The SEF wishes to congratulate these young researchers for their contribution to sustainability focused research activities.

Other undergraduate



students and their advisors involved in sustainability focused research are again reminded of an additional upcoming opportunity to showcase their research. This year, the 2010 AIChE National Student Conference in Salt Lake City will include a Sustainability Category as part of the Student Poster Competition. This new category will provide a showcase for undergraduate researchers working in the field of sustainability. On a related note, volunteers are needed to serve as judges for the student poster competition. Anyone interested should contact the Education Committee Chair at the e-mail address given at the end of this column.

Any correspondence with regard to this column should be sent by e-mail to Jeff Seay, Education Committee Chair, at the following address: "jseay@engr.uky.edu". As always, we look forward to hearing from you.

## **Conference Announcement**

By Heriberto Cabezas

### **Second International Congress on Sustainability Science and Engineering**

The Congress is scheduled for January 9<sup>th</sup> – 13<sup>th</sup>, 2011 in Tucson, Arizona, USA at the J.W. Marriott Starr Resort in the Tucson Mountains. The Congress has the purpose of providing a venue for practitioners of various physical and ecological sciences, engineering fields, economics, and social sciences to exchange emerging ideas about ways and means of protecting the environment and its resources so that humans can achieve sustained economic growth and societal benefits through generations. The focus of this Congress is managing natural resources sustainability from a systems perspective using scientific and engineering innovations.

Congress topics include:

- Plenary session on industrial sustainability pathways and programs by invited industry leaders
- Sustainability practice in industry:
- Sustainable value/supply chains
- Sustainable built environments
- Infrastructure for energy and resource utilization efficiency
- Technology for water sustainability and management
- Water sustainability and sustainable water management
- Sustainable energy
- Metrics for sustainability
- Standards and protocols
- Educational opportunities and international collaboration

The Congress web site can be found at <http://www.icosse11.org/index.php?ID=1>. The Congress is co-sponsored by the Sustainable Engineering Forum.

### **Employment Opportunities**

Please note that full-time and permanent and temporary employment opportunities are available with the U.S. Environmental Protection Agency for chemical engineers interested in sustainability in particular and environmental problems in general. Further information can be found at ([www.epa.gov/careers/](http://www.epa.gov/careers/)).



### **Sustainability Readings**

Lists of valuable sustainability related reading materials, as assembled by Earl Beaver, are available on the SEF website. Please visit the "Readings" section of the SEF website



(<http://www.aiche.org/sef>). If you have any new materials to be added in, please contact the webmaster.

## Members' Column

By Denise Quarles

Not a member of AIChE or the Sustainable Engineering Forum? In order to guarantee that you are on the current email list and will have access to all existing SEF materials, please follow the link and make sure that you join the SEF!

<https://www2.aiche.org/SolutionSite/default.aspx?tabid=168&action=MBRProductDetails&args=35&aicheskin=aiche>.

We are an active group of over 1000 members ranging from industry to academia. The diverse interests of our members have contributed to the range of activities which we offer through the forum.

### How to Join

Please use the link below to access more detailed information on membership requirements and application instructions. As a member, you will be placed on our e-mailing list and notified of upcoming meetings and events.

[www.aiche.org/DivisionsForums/ViewAll/SEF.aspx](http://www.aiche.org/DivisionsForums/ViewAll/SEF.aspx)

### Three Steps to Membership

1. Applicant's Request for Membership
  - Complete the SEF Application available online at [www.aiche.org/DivisionsForms/ViewAll/SEF.aspx](http://www.aiche.org/DivisionsForms/ViewAll/SEF.aspx)
    - REGULAR membership annual fee \$20
    - STUDENT membership annual fee \$10

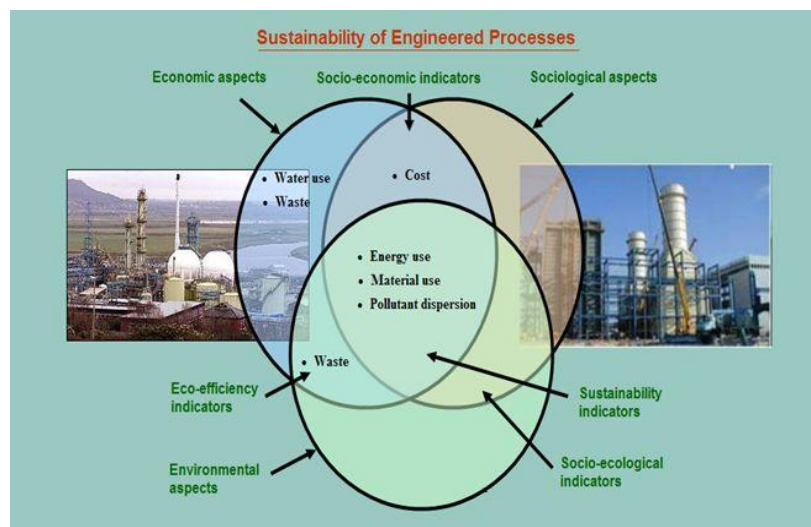
Membership fee waived for full-time undergraduate or graduate students for two years provided that student is a paid AIChE member; otherwise, a \$10 annual fee is required

Mail completed form to AIChE customer Service, 3 Park Avenue, New York, NY 10016

2. Staff Review to ensure completeness of application
3. Membership- Welcome!

### IFS Updates

Check out these Workshops and Meeting co-sponsored by the Institute for Sustainability. If you missed any of them, contact [ifs@aiche.org](mailto:ifs@aiche.org) for additional information.



**Conferences include:****Second International Congress on Sustainability Science and Engineering (ICOSSE 2011)**

Tucson, AR  
January 9-13, 2011

**Second International Symposium on Sustainable Chemical Product and Process Engineering**

**Co-sponsored by:** NSF, IfS, SEF  
HangZhou, China  
May 9-12, 2010

**NorCal AIChE's 48th Annual Symposium - The "Greening" of Chemical Engineering**

Berkeley, CA  
Tuesday, April 27, 2010

**Exhibit on the National Mall for the 40th Anniversary of Earth Day**

**Co-sponsored by:** AIChE, IfS, EPA  
National Mall, Washington DC  
April 24-25, 2010

**Think Green: Energy, Education, Environmental Initiatives**

New York Institute of Technology (NYIT) and Nanjing University of Posts and Telecommunications (NUPT)  
**Co-sponsored by:** NSF, IfS, SEF, Environmental Division  
Sofitel Galaxy, Nanjing  
April 7-9, 2010

**NOBCCHE/AIChE-IfS Global Sustainability Symposium**

**Co-sponsored by:** Institute for Sustainability (IfS)  
Atlanta, Georgia  
March 29 - April 2, 2010

**First Institute for Sustainability Conference On Sustainability For The Pacific Northwest Region**

Symposium on Sustainability and the Environment  
Seattle University Campus, Seattle, WA  
March 25-26, 2010

**Engineers Forum on Sustainability**

**Co-Sponsored by:** ASCE, IEEE, ASME, ASEE, AIChE Institute for Sustainability, AIME, IEEE-USA, AAAS Center for Science, Innovation and Technology, Renewable Natural Resources Foundation  
Washington, DC  
February 19, 2010

**Workshops include:****IPCC Expert Meetings**

February 1-2, 2010  
Palomar Hotel Washington, DC  
Washington, DC

**United Engineering Foundation Founder Society Carbon Measurement Team**

December 7-8, 2009  
Hyatt Regency Scottsdale Resort and Spa at Gainey Ranch  
Scottsdale, AZ

**Engineering Founder Societies Carbon Management Workshop - Gaps and Barriers**

October 21-22, 2009  
Baltimore, Maryland

**ICOSSE - Water Workshop**

Thursday, August 13, 2009  
Cincinnati, Ohio  
By invitation.

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