

AICHE

SUSTAINABLE ENGINEERING FORUM NEWSLETTER

April 2011
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Message from the Chair

It is mid-spring now, and preparations are well under way for the 2011 AIChE Annual Meeting. There are a number of events being held that will be of interest to you, including the ICE-2011 which aims to bring industry, university and government leaders together to address the challenge of sustaining the energy supply. Another effort is the 1st Annual World Congress on Sustainable Engineering (WCSE), which is an umbrella topical themed toward sustainability, and will be divided into technical grids aligned with various sustainability topics.

For those of you who missed our last issue, the full list of programming activities planned for the AIChE Annual Meeting is given in the Programming Activities column. The sessions are listed under the names of their respective technical areas. Also, please check out the SEF special events planned for the meeting and do try to attend.

To encourage students to take up sustainability-related research, two actions will be taken at this year's Annual Meeting in Minneapolis. A sustainability category will be included as part of the National Student Poster Competition (for undergraduate students) for the second time. The SEF will also sponsor a special Sustainable Biorefinery and Sustainability poster session. Three cash awards of \$200 will be provided to the best student posters. We hope to make this a permanent fixture in future.

The call for nominations for the 2011 SEF awards is still open. Detailed information is given in the SEF Awards column. The application/ nomination deadline is April 29.

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It has been a pleasure to serve as the Chair of the SEF. The Forum continues to grow from strength to strength and it is your participation and support that drives us forward.

I hope you will continue to send us your valuable comments and suggestions regarding the forum and this newsletter. We would like to hear from you about your ideas to streamline the content further with a view to serving members better.

Helen Lou
Chair, Sustainable
Engineering Forum



Announcements

By David N. Thompson

Reminder: Call for Nominations for the Sustainable Engineering Forum Awards

- (1) Research Excellence Award annually presented for basic or applied research results relative to the sustainability of products, processes, or the environment. The award is to recognize the one who has made significant technical contributions to the advancement of sustainable engineering in research, teaching, and development activities.
- (2) Industry Practice Award recognizes individuals or teams who have made outstanding contributions over a long-term basis pertinent to sustainable engineering development in the practice of chemical process/product design or manufacturing. This award focuses on applicants from small, medium, or large companies.
- (3) Student Paper Award is presented to full-time undergraduate or graduate students who prepare the best technical papers that describe results related to engineering and sustainability. Please see the column "SEF Awards" for Details.

Green Engineering Workshop Proposed

David Shonnard and David Allen are proposing a 3-hr workshop "Green Engineering and Sustainability in the Chemical Engineering Curriculum" for the 2012 ASEE Summer School for the Chemical Engineering Division of ASEE. The Summer School will be held July 21-28, 2012 at the University of Maine. For more information, contact Professor Shonnard at drshonna@mtu.edu.

ICE 2011 – Second International Congress on Energy: Sustaining Supplies

This targeted conference, organized by the AIChE Center for Energy Initiatives, is created by grouping the high quality energy-related sessions submitted to the Annual Meeting under one umbrella. This year's conference brings industry, university and government leaders together to address the challenge of sustaining the energy supply. For more information, go to <http://energycongress.org/>.

1st Annual World Congress on Sustainable Engineering

A similar effort to the International Congress on Energy is in preparation for the 2011 Annual Meeting in the area of sustainability. The 1st Annual World Congress on Sustainable Engineering (WCSE) will draw existing division, forum, and topical programming sessions under an umbrella topical themed toward sustainability, and will be divided into technical grids aligned with various sustainability topics. The WCSE will have one allocated session, an invited plenary session that presents visionary talks invited by each of its participating co-chairs (one chair each from the SEF, Environmental Division, and the Forest Bioproducts Division).

SEF Events planned for AIChE Annual Meeting in Minneapolis

The following special events are being planned for the upcoming Annual Meeting in Minneapolis. Rooms and times have not yet been scheduled. If you are interested in participating, please watch for updates and plan to attend.

1. SEF Leadership Meeting
2. SEF Programming Meetings for the 2011 Annual Meeting
 - a. Area 23a - General and Area 23c - Sustainable Energy
 - b. Area 23b - Sustainable Biorefineries
3. SEF Luncheon: The winners of the SEF awards will be announced during the luncheon.

SEF to Sponsor Student Poster Awards at 2011 Annual Meeting

The SEF will sponsor a special Sustainable Biorefinery and Sustainability student poster session at the AIChE Annual Meeting in Minneapolis, MN. Three cash awards of \$200 will be provided to the best student posters. The SEF is currently looking for volunteers who plan to attend the Annual Meeting to serve as judges for the poster session. As a special thanks, judges will be given a free ticket to the SEF Luncheon for their service. If interested, please send your name and contact information to SEF Education Committee Chair, Jeff Seay at jseay@engr.uky.edu.



Message from the Chairs of Area 23b

Bruce Dien and David Shonnard wish to announce that the Sustainable Biorefineries programming area will be sponsoring 24 sessions at the 2011 AIChE Annual Meeting in Minneapolis, and welcome all to submit presentations. The sessions are listed below as organized by subject matter:

Feedstock, Pretreatment, Lifecycle, and Poster Session

- Sustainable Biomass Feedstock Production and Supply for the Emerging Biorefinery Industry
- Developments in the Pretreatment of Lignocellulosics for Bioconversion
- Life Cycle Analysis of Renewable Feedstock-Based Processes and Products
- Poster Session: Sustainability and Sustainable Biorefineries
- Industrial ecology enabled by biorefineries
- Biochemical Conversions
- Advances in Algal Biorefineries
- Biological Conversions and Processes for Renewable Feedstocks Integrated Processes for Biochemical Conversion of Renewable Feedstocks to Fuels and Chemicals
- Microbial Engineering for bulk value-added products developments in Biobased Alternative Fuels

Thermochemical

- Catalytic Conversion of Renewable Resources to Synthesis Gases and Pyrolysis Oils
- Chemical and Catalytic Conversions and Processes for Renewable Feedstocks
- Integrated thermo-chemical and biochemical processing for renewable fuels

Fundamentals

- Reactor Engineering for Biomass Feedstocks
- Reaction Kinetics and Transport Fundamentals for Biomass Conversion
- Advances in Biofuels: DOE Bioenergy Research Centers (invited)

Please see Area 23b Sustainable Biorefineries in the Preliminary Program for session links. Finally they want to acknowledge in-kind support from the Society of Industrial

Microbiology and remind everyone of the excellent upcoming meeting of the [33rd Symposium on Biotechnology for Fuels and Chemicals](#) will be held in Seattle, WA on May 2-5, 2011 (see www.simhq.org for details).

SEF 2011 Awards

By Thomas Marrero

(1) 2011 Research Excellence in Sustainable Engineering Award:

Winner: One person per year

Sponsor(s): Industry

Description: Award is annually presented for basic or applied research results relative to the sustainability of products, processes, or the environment. The award is to recognize the one who has made significant technical contributions to the advancement of sustainable engineering in research, teaching, and development activities. Emphasis should be placed on accomplishments and advances made within the last five years, although the award can also be made to someone who has had an outstanding career.

Deadline: April 29, 2011.

Nominations should be submitted to:
SEF Awards Committee Chair
T.R. (Tom) Marrero, Professor
Department of Chemical Engineering
W2030 Lafferre Hall
Columbia MO 65211
E-mail: MarreroT@missouri.edu
Phone: 573-882-3802

Awards: The Awardee will receive \$1,000 and a plaque. Decisions are scheduled for June 3, 2011.

(2) 2011 Industrial Practice in Sustainable Engineering Award:

Winner: One person or team per year

Sponsor(s): Albemarle Corporation

Description: This award recognized individuals or teams who have made outstanding contributions over a long-term basis pertinent to sustainable engineering development in the practice of chemical process/product design or manufacturing. This award focuses on applicants from small, medium, or large companies. The applicants' achievements will be based on both publications (articles, patents, and internal reports) and reputation substantiated by at least three (3) written recommendations. The selection of the Awardee for a given year will be based on their continued contributions to the development, implementation and dissemination of sustainable engineering practice in the chemical process industry and related fields. Contributions may include paradigms for sustainable development and/or general application of new practices. The Awardee need not necessarily be a chemical engineer. The applicant or at least one member of the team must be a member of AIChE Sustainable Engineering Forum at the time of application.

Application/ Nomination Deadline:
April 29, 2011

Application/nomination documents should be submitted to:
SEF Awards Committee Chair
T.R. (Tom) Marrero, Professor
Department of Chemical Engineering
W2030 Lafferre Hall
Columbia MO 65211
E-mail: MarreroT@missouri.edu
Phone: 573-882-3802

Note: The AIChE Award Nomination Form can be downloaded from the AIChE Website: <http://www.aiche.org/About/Awards/Division.aspx>.

Awards: The awardee will receive a plaque and \$2,500. Decisions are scheduled for June 3, 2011.

Presentation: The Award will be presented at the Sustainable Engineering Forum luncheon during the AIChE Annual National Meeting.

(3) 2011 Sustainable Engineering Forum Student Paper Award:

Winner: One winner and two honorable mentions per year.

Sponsor: GlaxoSmithKline

Description: Awards are presented to full-time undergraduate or graduate students who prepare the best technical papers that describe results related to engineering and sustainability.

Selection Criteria:

1. Technical merit: The student(s) needs to provide original experimental data and/or published facts.
2. Quality: The student(s) need to have the paper published (or to be published) in a refereed journal within the last year.
3. Results: The content of the paper needs to describe significant (to society) results.
4. Authorship: The student(s) needs to be the primary author(s)
5. Qualifications: The student(s) must be AIChE member(s), the SEF, and enrolled in an ABET accredited Chemical Engineering

program. The student may submit an application to join SEF, if not already a member.

Application/Nomination Deadline: April 29, 2011. Papers may be submitted directly by student(s), or nominated by local section chair, or an AIChE member. The original, signed manuscript and an e-mail copy of the paper with pertinent information are to be sent to:

SEF Awards Committee Chair
T.R. (Tom) Marrero, Professor
Department of Chemical Engineering
W2030 Lafferre Hall
Columbia MO 65211
E-mail: MarreroT@missouri.edu
Phone: 573-882-3802

Awards:

1. Up to three papers (One winner and two honorable mentions) will be selected each year; decisions are scheduled for June 3, 2011.
2. Student Award recipient will receive \$500 for travel expenses associated with attending the AIChE annual meeting, plus, a certificate of recognition.
3. Presentation: The awards are presented at the SEF luncheon during the AIChE Annual National Meeting.
4. Past Winner(s): This paper competition was initiated in 2008.

Programming Activities

By Christina Piluso

AIChE 2011 Annual Meeting

1. Sustainability Plenary

General (23A):

1. Design & Operation for Sustainability
2. Complexity, Networks, Dynamics, & Sustainability

3. Sustainability Metrics, Indicators, & Life Cycle Assessment
4. Sustainable Materials
5. Sustainable Water Use & Management
6. Sustainable Chemicals
7. Water-Energy-Climate in a Sustainable Urban Environment

Sustainable Biorefineries (23B):

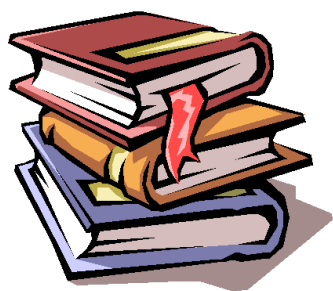
1. Sustainable Biorefineries Plenary Session (Invited Papers)
2. Microbial Engineering for the Synthesis of Bulk and High-Value Products
3. Advances In Algal Biorefineries
4. Catalytic Conversion of Renewable Resources to Synthesis Gases and Pyrolysis Oils
5. Biological Conversions and Processes for Renewable Feedstocks
6. Chemical and Catalytic Conversions and Processes for Renewable Feedstocks
7. Sustainable Biomass Feedstock Production and Supply for the Emerging Biorefinery Industry
8. Poster Session: Sustainability & Sustainable Biorefineries
9. Reactor Engineering for Biomass Feedstocks
10. Developments In the Pretreatment of

Lignocellulosics for Bioconversion**Sustainable Energy (23C):**

1. Sustainable Energy Plenary
2. Energy Efficiency, Challenges and Solutions
3. Process Design and Simulation Tools for Sustainable Energy
4. CO₂ Capture, Control and Sequestration
5. Sustainable Electricity: Generation, Transmission, and Storage
6. Carbon Efficient Chemical Engineering Systems
7. Ionic Liquids for Carbon Capture
8. Solvent-Based Carbon Capture Processes
9. Sorbent Processes for Carbon Capture
10. Materials for Solar Energy
11. Sustainable Gasoline From Renewable Resources
12. Membrane Processes for Carbon Capture
13. Sustainable Diesel Fuel From Renewable Resources

Education Column

By Jeffrey Seay



The SEF continues to make slow, but steady progress on developing a series of educational modules for incorporating sustainability into the core chemical engineering curriculum. The first set of three modules is currently under peer review and will be available soon on the SEF website. These modules included Thermodynamics, Separation Processes and Fluid Mechanics. Two additional Modules in Heat Transfer and Mass Transfer are also under development.

Once again, a sustainability category will be included as part of the Student Poster

Competition at the 2011 AIChE National Student Conference in Minneapolis. This will be the second offering of this new category which will provide a showcase for undergraduate researchers working in the field of sustainability. We are hoping to make this category a permanent fixture at the student conference, so please encourage any undergraduate students working in the field of sustainability to consider participating.

Finally, the SEF will sponsor a special Sustainable Biorefinery and Sustainability student poster session at the AIChE Annual Meeting in Minneapolis, MN. Three cash awards of \$200 will be provided to the best entries. The SEF is currently looking for volunteers who plan to attend the Annual Meeting to serve as judges for the poster session. As a special thank you, judges will be given a free ticket to the SEF Luncheon for their service. Please contact the Education Committee chair if you'd like to volunteer.

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.

Member Communications

By Heriberto Cabezas

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.

IfS Updates

By Darlene Schuster

Sustainable Packaging Symposium

Institute for Sustainability and Greener Package presented the inaugural Sustainable Packaging Symposium, which was held from March 16-18, 2011, and brought together over 200 professionals to the Hyatt Regency Chicago. Attendees gave a collective "thumbs up!" to a compelling agenda that attracted top-drawer presenters and sustainability leaders among the registrant and sponsor segments.

An exceptional lineup of sustainability experts and practitioners made presentations during the two and a half day conference, featuring keynote speakers: Andrew Speck, Packaging Buyer, Foods at Marks & Spencer, Greg Norris from The Sustainability Consortium/Harvard University, and Roger Zellner, Director for RDQ Sustainability at Kraft Foods. The conference drew participants from around the world, representing all sectors of the packaging supply chain. Many attendees and speakers also had technical backgrounds, a testament to

the conference program that was designed to bring together the scientific and packaging communities. See what Starbucks has to say about the conference at:

<http://chenected.aiche.org/sustainability/jim-hanna-of-starbucks-discusses-sustainability-and-the-anatomy-of-a-starbucks-cup/>

and stay posted at the conference website for the 2012 event at:

<http://www.sustainablepackagingsymposium.com/>

Engineers Forum on Sustainability

The Institute for Sustainability received a grant from the United Engineering Foundation to enable Professional societies and NGOs to join forces to encourage application of sustainability principles in education and the workplace. To facilitate collaboration across borders- both national and disciplinary ones- the Engineers Forum on Sustainability, has launched a new web site: <http://efs.aiche.org/>. The site uses the latest communication technologies, including social media, to improve the dissemination of information on sustainable development. Its development has been underwritten by a grant from the United Engineering Foundation.

The initial content focuses on issues such as the sustainability of water supplies and carbon management—issues that cut across engineering and scientific disciplines and which have economic, social and political dimensions, in addition to major technological challenges.

The Engineers Forum on Sustainability, a program of the American Association of Engineering Societies, has been holding meetings and publishing a newsletter since 1997. Its most recent meeting was held in January in Tucson, Arizona, in conjunction with the International Congress on Sustainability Science and Engineering (ICOSSE '11). In addition to serving practicing

engineers, the group focused on integrating sustainability concepts into engineering education programs through a variety of efforts, including undergraduate competitions.

The current chair of the group is Subhas Sikdar of the U.S. Environmental Protection Agency, who is a representative from AIChE's Institute for Sustainability. Sikdar said that the new web site "is an important tool for me and my colleagues around the world to keep up to date on the latest developments in sustainability practice". "Today's most important work is advancing technology in a way that sustains the earth's resources for future generations, and the Forum has a significant role to play in helping the process," he added.

Upcoming activities

The Institute for Sustainability is developing a project on precompetitive R&D for ensuring sustainability with energy production, addressing a broad comprehensive range of areas as oil spill prevention and clean ups, water issues with hydraulic fracking and sustainability metrics with renewable energy. If you are interested in learning more and contributing to this developing activity, contact ifs@aiche.org.

Stay tuned—The IFS Sustainability Body of Knowledge (BOK) will be released soon. Contributing to the foundation for a credential for sustainability professionals, IfS Chair Deborah Grubbe is seeking reviewers for the BOK. If interested in reviewing, please contact ifs@aiche.org.

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.

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

Three Steps to Membership

1. Applicant's Request for Membership
Complete the SEF Application available online at:

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!

SEF Leadership 2010-2011

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SEF Leadership 2010-2011

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