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AIChE Sustainable Engineering Forum Newsletter

Message from the Chair

Welcome to the Spring 2015 issue of the SEF Newsletter. As we look forward to summer, it's already time to begin planning for the AIChE Annual Meeting. The SEF has been hard at work planning our slate of programming. I think you will once again find a host of interesting topics as well as high quality plenary sessions. This issue contains the detailed program plan for SEF sponsored and co-sponsored sessions at the 2015 Annual Meeting.

Our web page now has a permanent web master – Cory Jensen. If there is content you'd like to see on our site, please feel free to contact us. The web page belongs to the members, so be sure to let me know how we can serve you better. The SEF has a large number of student members, so we are especially interested in hearing from them as to how SEF can provide value as they continue their education at the undergraduate or graduate level.

As always, in a volunteer based organization like SEF, volunteers provide all the energy for continued momentum for the forum. If you are interested in getting involved, please e-mail me or any of the other members of the leadership committee, as listed in the newsletter. On behalf of the leadership committee, we look forward to welcoming many new volunteers to our organization.

Finally, your comments and suggestions on how we can improve the SEF or serve our members better are always welcome. Feel free to contact me at Jeffrey.seay@uky.edu.

Jeffrey R. Seay
Chair, Sustainable Engineering Forum

Inside This Issue:

Message from the Chair	1
SEF Awards	1
Programming Activities	2
Education Column	4
IfS Updates	4
Members' Column	5
SEF Leadership	6

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SEF 2015 Awards

By Tom Marrero

The following SEF awards are presented annually, at the SEF luncheon held during the AIChE Annual Meeting:

1. Sustainable Engineering Forum Student Paper Awards
2. Sustainability Education Award
3. Research Excellence in Sustainable Engineering Award
4. Industrial Practice in Sustainable Engineering Award

For more information on the awards, please visit the Sustainable Engineering Forum website. This year's decisions are scheduled for June 5, 2015.

Programming Activities

By Sipho Ndlela

My sincere gratitude to the Chairs and Co-Chairs for SEF Area sessions (23, 23 A, 23 B, 23 C) who did a great job in assembling excellent sessions at the Annual Conference in Atlanta in 2014. Let us continue this strong collaborative spirit as we embark on preparations for the 2015 annual conference in Salt Lake City, UT. As you can see in Tables 1-4, we have an excellent lineup of primary sessions. Please spread the word and invite excellent speakers to submit their abstract before the closing date. I am also encouraged by the level of co-sponsorship; this is a great indication that other programs see value in what we share as the SEF group. Finally, I want to encourage all session Chairs and Co-Chairs to ensure they meet the six speaker quota. For sessions with high quality papers exceeding six, let us utilize our co-sponsorships to move things around. In case transferring papers to another co-sponsored area is not possible, we can always arrange splitting sessions.

SEF Sessions for the 2015 AIChE Annual Meeting in Salt Lake City, UT:

Table 1. Area 23 (1 Primary Plenary Division and 11 Co-Sponsors)

Title	Type of Sponsorship
23000 Division Plenary: Sustainability Plenary	Primary
09G03 Sustainability Metrics at the Process and Product Level	Co-Sponsored
18C00 Undergraduate Research Forum I: Energy and Environment	Co-Sponsored
09D02 Advances in Life Cycle Optimization for Process Development	Co-Sponsored
09D00 Sustainable Chemicals: Advances in Innovative Processes	Co-Sponsored
09D01 Sustainable Fuels: Advances in Innovative Processes	Co-Sponsored
09G02 Going to a Decision Point in Sustainability Analysis	Co-Sponsored
09G00 Sustainable Fuel from Renewable Resources	Co-Sponsored
TD000 Emerging Technologies for Sustainable Food Production	Co-Sponsored
TD002 Panel: Engineering Challenges Facing Sustainable Food and Beverage Processing: A Dialogue with Industry and Academia	Co-Sponsored
TD003 Poster Session: Sustainable Food Production Posters	Co-Sponsored
TD001 Process Development Innovations for Sustainable Food Production	Co-Sponsored

Table 2. Area 23 A (7 Primary Sessions and 1 Co-Sponsor)

Title	Type of Sponsorship
09G03 Sustainability Metrics at the Process and Product Level	Co-Sponsored
23A05 Panel Discussion: Industrial Sustainable Synergies	Primary
23A06 Process and Product Design: Innovation for Sustainability (2)	Primary
23A01 Area Plenary: Optimizing Health, Safety & Environmental (HSE) Sustainably	Primary
23A04 Environmental Health & Safety and Sustainability	Primary
23A00 Nanomaterials and Nanotechnology Sustainability	Primary
23A02 Process and Product Design: Innovation for Sustainability (1)	Primary
23A03 Sustainability in Facility Siting	Primary

Table 3. Area 23B (20 Primary Sessions and 11 Co-Sponsors)

Title	Type of Sponsorship
T4A04 USA-China Progress in Biomass Conversion Technologies I	Co-Sponsored
T4A02 Separation Processes in Biorefineries	Co-Sponsored
T4A07 Biomass Conversion: Processing of Solids	Co-Sponsored
T4A03 Chemical Conversion Processes in Forest/Plant Biorefineries	Co-Sponsored
T4A06 Recalcitrance of Woody Biomass	Co-Sponsored
T4A01 Biomass Characterization, Pretreatment and Fractionation I	Co-Sponsored
T4A05 Biochemical Conversion Processes in Forest/Plant Biomass Biorefineries I	Co-Sponsored
T4A08 Thermochemical Conversion of Biomass I	Co-Sponsored
09D00 Sustainable Chemicals: Advances in Innovative Processes	Co-Sponsored
02F02 Filtration: Theories and Practice	Co-Sponsored
03C05 Biomass Processing and Handling - A New Frontier	Co-Sponsored
23B04 Recovery of Value-Added Co-Products from Biorefinery Residuals, Effluents, and Emissions	Primary
23B18 Distributed Bioprocessing for Integrated Biorefineries	Primary
23B06 Sustainable Biorefineries for Municipal Solid Waste Conversion to Renewable Fuels and Chemicals	Primary
23B19 Advances in Anaerobic Digestion for Bioenergy	Primary
23B00 Electrofuels	Primary
23B09 Advances in Algal Biorefineries I	Primary
23B08 Biofuels Production: Design, Simulation, and Economic Analysis I	Primary
23B11 Biological Conversions and Processes for Renewable Feedstocks I	Primary
23B17 Chemical and Catalytic Conversions and Processes for Renewable Feedstocks	Primary
23B10 Conversion of Biomass Based Renewable Resources to Synthesis Gases and Pyrolysis Oils	Primary
23B03 Developments in Biobased Alternative Fuels I	Primary
23B16 Developments in the Pretreatment of Lignocellulosics for Bioconversion	Primary
23B01 Integrated Thermochemical and Biochemical Processing for Renewable Fuels and Chemicals	Primary
23B02 Integrating Industrial Waste into Biorefineries	Primary
23B05 Life Cycle Analysis of Bio-Based Fuels, Energy, and Chemicals	Primary
23B13 Life Cycle Assessment of Advanced Biofuels	Primary
23B07 Plenary Session: Sustainable Biorefineries (Invited Talks)	Primary
23B14 Poster Session: Sustainability and Sustainable Biorefineries	Primary
23B12 Reaction Kinetics and Transport Fundamentals for Biomass Conversion	Primary
23B15 Reactor Engineering for Biomass Feedstocks	Primary

Table 4. Area 23 C (7 Primary Sessions and 4 Co-Sponsors)

Title	Type of Sponsorship
TG006 Materials and Processes for Thermo-, Electro- and Photo-Chemical Energy Storage	Co-Sponsored
09D01 Sustainable Fuels: Advances in Innovative Processes	Co-Sponsored
T5000 Nanomaterials for Photovoltaics I	Co-Sponsored
02F01 Fluid Particle Separation in Energy, Water and Environmental Systems	Co-Sponsored
23C06 The Water-Energy Nexus	Primary
23C04 CO2 Capture, Utilization, and Sequestration	Primary
23C05 Concentrated Solar for Power Generation and Chemical Processing I	Primary
23C00 Energy Sustainability, Challenges and Solutions	Primary
23C03 Sustainability of Fossil Energy	Primary
23C01 Sustainable Electricity: Generation and Storage	Primary
23C02 Sustainable Energy from Renewable Resources	Primary

Education Column

By Alex Yokochi

Support the activities of the SEF!

As members of the Institute our work most likely focuses on processes related to the conversion of human activity. Therefore we are responsible for ensuring that we (that's the collective "we" as in all of humanity) have and will continue to have sufficient water, energy, materials, and finished products to support a high quality of life.

Coupling this with the concept of sustainability, essentially the idea of creating conditions that will enable us to maintain conditions under which this high quality of life can be maintained to an indefinite future, Sustainable Engineering is therefore focused on the creative application of Sustainability Science on the design and improvement of technologies that will enhance our system sustainability by decreasing impacts of present activities or mitigating impacts of past activities. Clearly, sustainability forms a part of the ethical responsibility of engineering in general, and most of our innovation activities implicitly or explicitly include some sustainability component. For the AIChE annual meeting I would like to challenge you to clearly present the manner in which your work addresses sustainability.

For any comments or with ideas on what I can address in upcoming Education Columns, please contact me at alex.yokochi@orst.edu.

IfS Updates

By Darlene Schuster and Lucy Alexander

There is still time to register for the 2015 International Congress on Sustainability Science and Technology (ICOSSE '15), held from May 26-29, 2015 in Balatonfüred, Hungary. This event is co-organized by the University of Pannonia, the American Institute of Chemical Engineers (AIChE), and the Sustainability Section of the European Federation of Chemical Engineering (EFCE). This year's excellent program presents a truly global perspective on sustainable water management, sustainable manufacturing, energy sustainability and productivity, the food-energy-water nexus, education, and societal aspects of sustainability. Learn more about ICOSSE '15 at www.icosse.org.

Members' Column

By Cory Jensen

We are in a period of transformational growth with regard to membership services and community-support-content. Our membership committee has committed to putting a long-term strategic plan into action in order to support your needs as a member. We are also seeking out additional support and, of course, your input to make the SEF a high performing member segment of AIChE. For example, we are looking for education content that supports membership interests via our educational resources. If you think you have an idea to support web content we would like to hear about it!

As I continue to support concepts and applications of sustainable engineering, I wanted to share a tid-bit of information from GreenBiz.com indicating that companies are spending money on corporate social responsibility activities. This trend suggests that employment opportunities exist that require professionals with unique soft-hard skill sets. 82% of companies polled spend money on these activities with more than 50% reporting companies spending monies equivalent to at least one full time equivalent employee making a decent living wage (>$40K/yr).

With that, I am leaving you with some sustainable transportation food for thought. Depending on the specifics of your calculation for a MPGe (miles per gallon gasoline equivalent), the Nissan Leaf and Chevy Volt have been reported to obtain MPGe in the mid-nineties. My old Jeep Cherokee would consistently get under 20 MPG (miles per gallon of gasoline). To help reduce my transportation costs, I rebuilt a two-cycle gas powered bicycle (See figure). My initial assessment of online media indicates I could expect to get 150 MPG!

Become a Member

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 500+ 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. As a member, you will be placed on our e-mailing list and notified of upcoming meetings and events.

Three Steps to Membership

Applicant's Request for Membership

1. 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 forms to:

   AIChE Customer Service,
   100 Mill Plain Rd 3rd Fl
   Danbury, CT 06811

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

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