AIChE
Sustainable Engineering Forum Newsletter

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Message from the Chair

Welcome to the Fall 2015 issue of the SEF Newsletter. That means it's time to get ready for the AIChE Annual Meeting in Salt Lake City, UT. In this issue, you will find the detailed plan for all the outstanding SEF sponsored and co-sponsored sessions at the Annual Meeting.

As we near the Annual Meeting, we are also approaching the end my two-year term as SEF Chair. That means it's time once again for officer elections! We have an outstanding slate of candidates this year, as you will see outlined in the newsletter. Be on the lookout shortly for an e-mail inviting you to vote for our next leadership team.

As my term comes to an end, I am pleased to introduce our incoming Chair, Dr. Ray Smith. Ray has been an active member of SEF for many years, and has served as Vice-Chair for the last 2 years. I am looking forward to working with Ray and the rest of our new leadership team over the next 2 years. I have certainly enjoyed my term as Chair and plan to stay actively involved with the SEF moving forward. The SEF is an outstanding organization with an important mission of promoting sustainability research and education within the AIChE and beyond.

Of course, in a volunteer based organization like SEF, our volunteers provide all the energy for continued momentum. If you are interested in getting involved and working with our new leadership team, 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

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SEF Elections

By Jeffrey Seay

Candidate Statements from the nominees for SEF Vice Chair:

Nate Mosier

Nathan S. Mosier is a Professor of Agricultural and Biological Engineering at Purdue University. Dr. Mosier's research addresses fundamental topics in bioprocessing with current projects in biological and chemical catalysts for transforming renewable agricultural and forestry products to fuels and chemicals, cellulose pretreatment for biofuel and biochemical production, and bioprocess simulation. He is the author or co-author of more than 50 journal publications, 9 book chapters, co-author of a textbook, "Modern Biotechnology: Connecting Innovations in Microbiology and Biochemistry to Engineering Fundamentals", and inventor on 4 awarded US and international patents. He has been a member of the SEF and AIChE for 15 years and has previously served as the SEF programming coordinator.

Ignasi Palou-Rivera

Ignasi Palou-Rivera works as a Senior Process Engineer for LanzaTech in Skokie IL in the development, commercialization, and analysis of processes for the manufacturing of low carbon fuels and chemicals via gas fermentation. Dr. Palou-Rivera received a Ph.D. in Chemical Engineering from the University of Wisconsin-Madison in 1998, and has held several professional positions in the areas of process modeling and optimization, and life-cycle and sustainability analysis. He is a Senior Member of the AIChE, and has been heavily involved within CAST Division (Programming Chair for Systems and Process Operations, Area 10c in 2012) as well as the SEF as current Secretary and past Programming Chair for Sustainable Energy, Area 23c (2012-2013).

The nominee for treasurer is Cristina Piluso and the nominee for secretary is Fengqi You. Both are unopposed.

Announcements

By Raymond Smith

SEF Luncheon at Salt Lake City AIChE Annual Meeting, Wednesday, November 11th, 2015

Come join us for a tremendous lunch at the Annual Meeting. We have arranged a buffet lunch at Bambara, recently named Salt Lake City's Best Restaurant! The lunch, called the Executive Buffet, will include tea or coffee, salad, soup, quinoa with roasted vegetables and feta, gnocchi with seasoned vegetables, tenderloin, pepper-crusted salmon, cheeses, rolls, kettle chips, flourless chocolate cake, and seasonal berries with whipped cream! Bambara is also conveniently located to the conference, just a block away. Come to relax and network with fellow SEF members, or just to get relief from the continuous meeting. During the lunch SEF awards will be presented. SEF is subsidizing this event, so the total cost including tax and tip is $30. Please sign up in advance, for instance, when you register for the meeting

Programming Activities

By Sipho Ndlela

The Sustainable Engineering Forum is holding an excellent program at the 2015 AIChE Annual Meeting in Salt Lake City, Nov 8-13th under three main categories: General (23A) with 10 sessions, Sustainable Biorefineries (23B) with 33 sessions, Sustainable Energy (23C) with 11 sessions and 11 co-sponsored sessions. I would like to extend a big thank you to all involved in making this happen again. For more information about the 2015 SEF program, please visit: https://aiche.confex.com/aiche/2015/webprogram/ataglance.html

Please note that session 23A05 "Industrial Sustainable Synergies, Roundtable Discussion" is hosting experts from industry to highlight and debate sustainability issues impacting various sectors. Details about the session including speaker bios and topics are covered below:

Session 23A05, "Insights into Corporate Sustainability: Successes, Challenges and Opportunities" Salt Palace CC, 258
Monday, November 9, 2015: 8:30 AM-11:00 AM

Sustainability and the drive towards product transparency has garnered appeal in the last few years. Industry manufacturers and product suppliers now face increased scrutiny towards their processes, sourcing, and product delivery. Innovation is needed now more than ever. Companies need new technologies and strategic design to help them meet the stringent standards now required in the marketplace. This workshop serves as a bridge between industry and academia to encourage collaboration and conversation around industry needs and how academia can help with critical innovation. Sustainability leaders from a variety of chemical and chemical-related companies will speak about advancements their respective organizations have made in recent years. The session will culminate in a panel discussion open to audience questions.

Session 23A05, Panel Speaker Bios:

Dr. Rich Helling, DOW:
Panelist Topic: Going from Here towards There: Dow's 2025 Sustainability Goals

Dr. Rich Helling is Director of Sustainable Chemistry for The Dow Chemical Company, located in Midland, Michigan. Rich leads the Sustainable Chemistry expert community at Dow, which supports Dow businesses on the use of Life Cycle Assessment (LCA), the Sustainable Chemistry Index (SCI) and related tools to identify opportunities for innovation, differentiating products in the marketplace, and creating sustainable value for Dow. He is a member of the State of Michigan's Green Chemistry Roundtable, and active in working groups of the Sustainability Consortium.

Rich joined Dow in 1987 and has held a variety of roles in process research, development and manufacturing. He developed and improved technologies at Dow's Pittsburg, California, manufacturing site for waste reduction, reaction selectivity and purification of chlorinated pyridines that are used in a broad range of Dow AgroSciences products, becoming the leader for Process & Environmental Technology in Pittsburg. He led the process development for SiLK™ dielectric materials in Midland, Michigan, and was the Dow AgroSciences European contract synthesis leader and fungicides technology leader when based in Drusenheim, France. Rich returned to Midland in 2003, when he began his use of LCA to complement economic evaluations of new technologies, especially the use of renewable feedstocks for chemical production, becoming an Associate R&D Director.

Rich holds a bachelors' degree from Harvey Mudd College with majors in Engineering and History, a masters' degree in Chemical Engineering Practice from MIT, and a doctorate in Chemical Engineering, also from MIT. He was an Assistant Professor with the MIT Chemical Engineering Practice School prior to joining Dow. He is an author of 23 papers, holds 2 patents, is a registered Professional Engineer in Michigan, and is a LCA Certified Professional.

Dhruv Raina, Owens Corning
Panelist Topic: From Footprints to Handprints: Owens Corning's Journey

Dhruv is a Sustainability Leader with Owens Corning and leads the product & supply chain sustainability initiatives, most importantly in life cycle assessment (LCA) and thinking as well as

how products deliver sustainable attributes in the marketplace. He joined Owens Corning in April 2014 after 10 years at WSP (a leading global environmental and sustainability consultancy.) At WSP, he was a Principal, working with clients such as ALCOA Building & Construction Systems, Bayer Material Science LLC, SAP Labs, Nike and JPMorgan Chase & Company working at the intersection of technology and innovation, creating value for clients and delivering on sustainable business models.

Dhruv has a Bachelor of Civil Engineering from University of Mumbai, a Masters in Environmental Engineering from University of Texas at El Paso, and a MBA in Corporate Strategy & Innovation from the University of Pittsburgh.

Tony Saracino, BASF
Panelist Topic: Sustainable Solutions Steering at BASF: A Methodology for Product Portfolio Analysis

Tony joined BASF in 2013 as Commercial Key Account Manager for the Center for Building Excellence. The Center for Building Excellence serves as a conduit to the breadth and depth of BASF's innovative technologies and provides tailored solutions for design and construction challenges. An architectural engineer, Tony focuses on sustainable high-performance solutions to challenges within the built environment. Working to identify innovative solutions to current and future construction challenges Tony engages stakeholders throughout the construction value chain. Prior to joining BASF, Tony was a member of the High Performance Solutions Team at Syska Hennessy Group. With a background in building envelopes, MEP systems, and their integration within energy efficient designs, he provides an analysis driven building science focused approach to the team. Tony currently serves on the USGBC Materials and Resources Technical Advisory Group (MR TAG) and has served as an educator on topics ranging from the New York State Energy Code to successful design strategies for Net Zero Buildings.

Connie D. Hensler, Interface, Inc. Director of Corporate Life Cycle Assessment Programs, Interface, Inc.
Panelist Topic: Biomimicry in Sustainable Product Development

Interface is the world leader in modular carpet and is recognized as a leader in the movement of the industrial community toward environmental sustainability. As Director of Corporate Life Cycle Assessment Programs, Ms. Hensler manages the use of LCA at Interface towards the company's ultimate goal of sustainability. The LCA work includes evaluation of raw material and process impacts for product development, determination of the product carbon footprint for the Cool Carpet program, creation of Environmental Product Declarations (EPDs), and consulting on environmental impact and chemistry issues for the company.

Ms. Hensler is a Life Cycle Assessment Certified Professional (LCACP) and has published research in the Journal of Industrial Ecology and the International Journal of Life Cycle Assessment. She is a member of the board of directors of the American Center for Life Cycle Assessment. Prior to her current position, she worked for over 20 years in research and development and holds multiple patents for her work in polymer formulation. Ms. Hensler has a Master of Science degree in Applied and Environmental Microbiology from Georgia State University.

Michael Deane, Turner Construction Company
Panelist Topic: The Need for Materials Transparency in the Marketplace

Michael Deane is Vice President and Chief Sustainability Officer at Turner Construction

Company and a LEED Fellow, the most prestigious designation of LEED Professionals. Michael has an MS in Historic Preservation from Columbia University and 25 years of construction management experience. He is a founding board member and past chair of the USGBC New York Chapter and served on the USGBC National Board of Directors from 2005 through 2008. He is a member of the Federal GSA Green Building Advisory Committee. He is presently on the Board of Governors of the Design Futures Council, the Board of Directors of the Recycling Certification Institute and the Board of the Urban Green Council. Michael writes and speaks frequently about sustainability and in particular the builder's role in delivering green buildings.

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

SEF Awards 2015

By Tom Marrero

SEF Research Award 2015
Recipient: Dr. Alan W. Weimer, University of Colorado, Boulder

Dr. Alan Weimer is a Professor at the Department of Chemical and Biological Engineering, University of Colorado Boulder, a position he has held since 2006. Prior to this, he worked for the Dow Chemical Company in Midland, MI. Dr. Weimer's main research interests are Particle ALD/MLD Surface Modification and Solarthermal Processing.
The award will be presented at the SEF Luncheon on November 11, 2015.

Members' Column

By Cory Jensen

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

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

SEF Leadership 2014-2015

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