AIChE
SUSTAINABLE ENGINEERING FORUM NEWSLETTER

January 2013
Volume 7, Issue 1

Message from the Chair

To begin, I would like to wish everyone a Happy New Year and continued success in the coming year. Having survived December 21, 2012 and the Federal fiscal cliff (for now), I trust that we are all beginning 2013 with renewed vigor.

I also want to thank all who participated in programming activities for the 2012 Annual Meeting in Pittsburgh last November; your efforts and sacrifices are greatly appreciated. Attendance data indicate that the SEF-sponsored and co-sponsored sessions at the meeting were strong draws and that sustainability continues to be an increasingly important topic in AIChE and a growing focus within our profession.

As we begin the new year, there are several new initiatives taken up by the SEF Leadership Team to better guide our Forum as we move forward. In particular, several new subcommittees have been organized among the leadership team to improve and/or clarify SEF materials that are on our website, as well as processes and direction of the Forum. These include: (1) A subcommittee on updating the website to current information as well as proposing new content (Chair: Jeff Seay); (2) A Sustainable Engineering for Chemical Engineers Committee tasked with promoting sustainable education by integrating the lessons into core ChE curricula (Chair: Yinlun Huang); (3) A subcommittee tasked with developing guidelines for minimum core information requested in support of sponsorship requests (Chair: David Thompson); and (4) A committee tasked with identifying a Long Term Plan for the SEF to guide the Forum for the next 3-5 years (Chair: Peter Knox). It is expected that these efforts will provide better guidance for the SEF Leadership Team, ensure that we continue to provide useful information and support of sustainability in Chemical Engineering, and that we support the most impactful events.

As always, we are interested in membership input to help guide us toward solutions that best benefit the members' needs. Please feel free to pass along any suggestions to the committee chairs.

David N. Thompson
Chair, Sustainable Engineering Forum

Inside This Issue:

Message from the Chair	1
Announcements	2
SEF Awards	3
Technical Areas Update	6
Programming Activities	6
Education Column	12
Member Communications	13
Industrial Liaison Column	13
IfS Updates	14
Members' Column	15
SEF Leadership	16

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SEF Website:
http://www.aiche.org/sef

Announcements

By Jeff Seay

SEF Awards Announcement

The SEF is pleased to announce the following award competitions for 2013. Applications must be received by April 29, 2013. For more information, contact the SEF Awards Committee Chair, Dr. Helen Lou at helen.lou@lamar.edu.

- Research Excellence in Sustainable Engineering Award
- Industrial Practice in Sustainable Engineering Award
- Sustainability Education Award
- Student Paper Awards

Detailed information is provided in the SEF Awards Section.

Sustainability Focused International Conferences in 2013

Industrial sustainability is one of the major challenging problems that the societies are facing worldwide. To improve communications and promote experience sharing, networking, and collaboration among industries, academia, and governments, two industrial sustainability-focused international conferences are to occur this year that the AIChE Sustainable Engineering Forum is actively involved in.

The 3rd International Conference on Sustainable Chemical Product and Process Engineering (SCPPE'13), Dalian, China, May 27-30, 2013

This conference is co-sponsored by the U.S. NSF, China NSF, as well as industries and universities. The theme of the conference is Sustainable Chemical Manufacturing and Energy Supply. The key topical areas of the conference include: (1) green chemistry and engineering in product design, (2) fine chemical innovation and manufacturing sustainability, (3) innovation in process design for sustainability, (4) environmental health and safety of nanotechnology, (5) alternative and renewable energy system and supply chain, (6) energy and sustainability in production, (7) green reaction engineering and separation, (8) biological conversion and process sustainability, (9) water management and reuse, and (10) LCA, sustainability assessment, and tools. More information can be found from the conference website: http://isscme.dlut.edu.cn/top/home.php.

The 3rd International Congress on Sustainability Science and Engineering (ICOSSE'13), Cincinnati, OH, August 11-15, 2013

This conference is co-sponsored by U.S. EPA, U.S. NSF, AIChE and other professional societies, industries, and universities. The conference has three themes: Sustainable Manufacturing, Sustainable Energy, and Water Sustainability. The conference covers broad topics, such as (1) sustainable materials, products and process design, (2) sustainable manufacturing and supply chain strategy, (3) sustainable nano-manufacturing, (4) sustainability assessment, LCA, and decision making tools, (5) sustainable built environments, (6) infrastructure for energy and resource utilization efficiency, (7) technology for water sustainability and management, (8) sustainable energy, (9) integrated sustainability: engineering, social and behavioral sciences, and economics, (10) design for sustainability, (11) standards, regulations, and protocols for sustainability applications,(12) opportunities for education and training and internal collaboration, and (13) sustainability practice in industry. The website of the conference, http://icosse.org/, provides more detailed information.

SEF 2013 Awards

By Helen Lou

(1) 2013 Research Excellence in Sustainable Engineering Award:

Winner: One person per year
Sponsor(s): Sustainable Engineering Forum
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, 2013

Nominations should be submitted to:

SEF Awards Committee Chair
Helen H. Lou, Ph.D., P.E.
Professor
Dan F. Smith Department of Chemical Engineering
Lamar University, Beaumont, TX 77710-0053
Phone: 409-880-8207
Email: helen.lou@ lamar.edu

Awards: The Awardee will receive $1,000 and a plaque. Decisions are scheduled for June 9, 2013.

(2) 2013 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, patens, 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, 2013

Application/Nomination documents should be submitted to:

SEF Awards Committee Chair
Helen H. Lou, Ph.D., P.E.
Professor
Dan F. Smith Department of Chemical Engineering
Lamar University, Beaumont, TX 77710-0053
Phone: 409-880-8207
Email: helen.lou@ lamar.edu

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 9, 2013.
Presentation: The Award will be presented at the Sustainable Engineering Forum luncheon during the AIChE Annual Meeting.

(3) 2013 Sustainability Education Award:

Winner: One person per year
Sponsor(s): Sustainable Engineering Forum
Description: The Sustainability Education award will recognize and honor one educator who has successfully incorporated sustainability in their classroom curriculum or has developed teaching modules that have widespread application. The emphasis is on active leadership and scholarly endeavor leading to the advancement of sustainability education in the engineering field. The award will be presented annually for outstanding achievement as an educator in the area of sustainability of products, processes, or the environment. 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.

Application/ Nomination Deadline: April 29, 2013

Application/Nomination documents should be submitted to:

SEF Awards Committee Chair
Helen H. Lou, Ph.D., P.E.
Professor
Dan F. Smith Department of Chemical Engineering
Lamar University, Beaumont, TX 77710-0053
Phone: 409-880-8207
Email: helen.lou@ lamar.edu

Awards: The awardee will receive $1,000 and a plaque. Decisions are scheduled for June 9, 2013.
Presentation: The Award will be presented at the Sustainable Engineering Forum luncheon during the AIChE Annual Meeting.

(4) 2013 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, 2012. 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
Helen H. Lou, Ph.D., P.E.
Professor
Dan F. Smith Department of Chemical Engineering
Lamar University, Beaumont, TX 77710-0053

Phone: 409-880-8207
Email: helen.lou@ lamar.edu

Awards:

1. Up to three papers (One winner and two honorable mentions) will be selected each year; decisions are scheduled for June 9, 2012.
2. Student Award recipient will receive a cash award of $500 plus a certificate of recognition.
3. Presentation: The awards are presented at the SEF luncheon during the AIChE Annual National Meeting.

SEF 2012 Award Winners:

2012 Research Excellence in Sustainable Engineering Award:

Bhavik Bakshi, Professor of Chemical and Biomolecular Engineering and Research Director of the Center for Resilience at The Ohio State University, Columbus, USA.

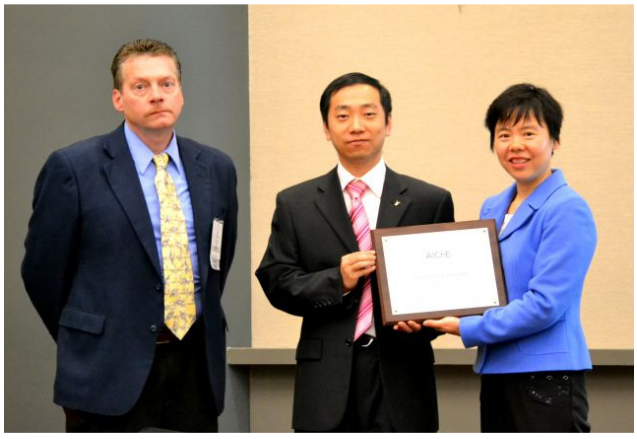
Dr. Bhavik Bakshi receiving his award from Dr. David Thompson, SEF Chair (right), and Dr. Helen Lou, Awards Committee Chair

Student Paper Awards:

Preeti Gangadharan, Department of Chemical Engineering, Lamar University,
"Sustainability assessment of polygeneration processes based on syngas derived from coal and natural gas," published in Computers and Chemical Engineering (2012), 39, 105-117 (co-authors: Anand Zanwar, Kailiang Zheng, John Gossage, Helen H. Lou; advisor: Professor Helen H. Lou)

Student Paper Award recipient, Preeti Gangadharan, with Dr. David Thompson and Dr. Helen Lou

Zheng Liu, Department of Chemical Engineering and Materials Science, Wayne State University, "Technology Evaluation and Decision Making for Sustainability Enhancement of Industrial Systems under Uncertainty," published in AIChE Journal (2012), 58(6), 1841-1852 (co-author: Dr. Yinlun Huang; advisor: Professor Yinlun Huang)



Student Paper Award recipient, Zheng Liu, with Dr. David Thompson and Dr. Helen Lou

Honorable Mention:
Geoffrey Grubb, Department of Chemical Engineering, Ohio State University, "Appreciating the Role of Thermodynamics in LCA Improvement Analysis via an Application to Titanium Dioxide Nanoparticles", published in Environmental Science and Technology (2011), 45(7), 3054–3061 (co-author: Dr. Bhavik R. Bakshi; advisor: Professor Bhavik Bakshi)

Technical Areas Update

By Sipho Ndlela and Susan Williams

Sustainable Biorefineries 23B14 Poster Session Award Recipients, AIChE 2012 annual conference

The AIChE 2012 conference in Pittsburg, PA attracted numerous scholars and research and industry experts to showcase their expertise and research findings though oral and poster presentations. The Sustainable Biorefineries 23B14 Poster Session was no exception, initially with 65 registered to attend. Unfortunately partly due to bad weather, 27 individuals missed the session and only 38 highly energetic participants ended up sharing their excellent work. Eight judges volunteered their time to select the three best posters. The top three winners were as follows. In first place was Ravi Challa, a second year PhD student of Dr. Kent Rausch from the Agricultural and Biological Engineering Department at the University of Illinois at Urbana Champaign. The title of his presentation was "Fouling Rates of Synthetic Thin Stillage". Ravi Challa received his bachelor's degree in chemical engineering from India and master's degree from Mississippi State University. His current project on thin stillage fouling is to determine the effects of soluble and insoluble solids on rates of evaporator fouling in corn processing. The second place was a tie between Griffin W. Roberts and Aaron W. Palumbo. Griffin Roberts is a fifth year PhD candidate at the University of Kansas in the Department of Chemical and Petroleum Engineering. His poster was entitled "Comparison of Biocrude from Micro- and Macroalgae". He is a student co-advised by Dr. Susan M. Stagg-Williams and Dr. Belinda S. M. Sturm. Griffin Roberts received bachelor's degrees in Chemistry and Chemical Engineering from the University of Illinois Urbana-Champaign. His research involves the production of biocrude from wastewater-fed algae through hydrothermal liquefaction. Aaron W. Palumbo is a fourth year PhD candidate under Dr. Alan Weimer in the Department of Chemical & Biological Engineering at the University of Colorado at Boulder. His poster title was "Added Methane in High Temperature Steam-Biomass Gasification Using Concentrated Solar Power". Aaron Palumbo works on exploring avenues of biodiesel production, microalgae growth, lipid extraction, and thermochemical processing with emphasis on gasification. His current project involves high temperature gasification of biomass with added methane using concentrated solar energy for liquid fuel synthesis.

Programming Activities

By Nathan Mosier

To begin, I'd like to thank our area chairs, Hebab Quazi, David Shonnard, and Ignasi Palou-Rivera, for putting together a great slate of sessions for the 2013 annual meeting.

SEF has proposed an impressive 43 sessions and co-sponsoring many more at the 2013 annual meeting. Thanks to all who chair or co-chair these sessions. I encourage everyone to begin thinking about papers for submission after the call for abstracts is given.

Proposed SEF Sessions for the 2013 AIChE Annual Meeting:

23000 Division Plenary: Sustainability Plenary	
Chair	David N. Thompson, Idaho National Laboratory
Co-Chair	Jeffrey R. Seay, Department of Chemical and Materials Engineering, University of Kentucky
23A00 Division Plenary: Plenary For Sustainability	
Chair	David N. Thompson, Idaho National Laboratory
Co-Chair	Jeffrey R. Seay, Department of Chemical and Materials Engineering, University of Kentucky
23A01 Area Plenary: Industrial Sustainability	
Chair	Dr. Helen Lou, Chemical Engineering, Lamar University
Co-Chair	Yinlun Huang, Dept. of Chemical Engineering & Material Science, Wayne State University
23A02 Process Design: Innovation for Sustainability	
Chair	Aydin K Sunol, Chemical & Biomedical Engineering, University of South Florida
Co-Chair	Cristina Piluso, BASF Corporation
23A03 Process Design: Indicators for Sustainability	
Chair	Raymond L. Smith, U.S. Environmental Protection Agency, National Risk Management Research Laboratory, 26 W. Martin Luther King Dr., Cincinnati, OH 45268
Co-Chair	Gerardo J. Ruiz-Mercado, U.S. Environmental Protection Agency, National Risk Management Research Lab, 26 W. Martin Luther King Dr., Cincinnati, OH 45268
23A04 Manufacturing Sustainability	
Chair	Yinlun Huang, Dept. of Chemical Engineering & Material Science, Wayne State University
Co-Chair	Robert Holler, Wayne State University
23A05 Environmental Health & Safety and Sustainability	
Chair	William M. Barrett, US Environmental Protection Agency
Co-Chair	Cory D. Jensen, Chemical & Biological Engineering, Colorado State University

23A06 Nanomaterials and Nanotechnology Sustainability	
Chair	Barbara Karn, Engineering-CBET, NSF
Co-Chair	Yinlun Huang, Dept. of Chemical Engineering & Material Science, Wayne State University
23B00 Demonstration Scale Biorefining-Scale Up Challenges	
Chair	Nitin H. Kolhapure, DuPont Engineering Research and Technology
Co-Chair	Deisy Corredor, BP Biofuels
23B01 Integrated Thermo-Chemical and Biochemical Processing for Renewable Fuels and Chemicals	
Chair	Tracy J. Benson, Dan F. Smith Department of Chemical Engineering, Lamar University
Co-Chair	Christopher M. Saffron, Biosystems & Agricultural Engineering, Department of Forestry, Michigan State University
23B02 Integrating Industrial Waste into Biorefineries	
Chair	Rafael Hernandez, Dave C. Swalm School of Chemical Engineering, Mississippi State University
Co-Chair	L. Antonio Estevez, Department of Chemical Engineering, University of Puerto Rico
23B03 Developments in Biobased Alternative Fuels I	
Chair	Brian Duff, Office of the Biomass Program, U.S. Department of Energy
Co-Chair	Marcus Rajchel, Clarke-Rajchel Engineering
23B04 Integrated Processes for Biochemical Conversion of Renewable Feedstocks to Fuels and Chemicals I	
Chair	Alexandre Chapeaux, National Bioenergy Center, National Renewable Energy Laboratory, 1617 Cole Blvd, Golden, CO 80401
23B05 Life Cycle Analysis of Bio-Based Fuels, Energy, and Chemicals	
Chair	Ignasi Palou-Rivera, Lanzatech
Co-Chair	Paul Blowers, Chemical and Environmental Engineering, The University of Arizona
23B06 Advances in Biofuels: DOE Bioenergy Research Centers I	
Chair	Venkatesh Balan, Chemical Engineering and Material Science, Michigan State University,
Co-Chair	Seema Singh, Lawrence Berkeley Laboratory

23B07 Plenary Session: Sustainable Biorefineries (Invited Talks)	
Chair	David R. Shonnard, Chemical Engineering, Michigan Technological University & Sustainable Futures Institute
Co-Chair	Jane C. Fisher, National Bioenergy Center, National Renewable Energy Laboratory
23B08 Microbial Engineering for the Synthesis of Bulk and High-Value Products	
Chair	Rakesh Bajpai, Chemical Engineering, University of Louisiana at Lafayette
23B09 Advances In Algal Biorefineries I	
Chair	Belinda S.M. Sturm, Civil, Environmental & Architectural Engineering, University of Kansas,
Co-Chair	Stephen Dufreche, Chemical Engineering, University of Louisiana at Lafayette
23B10 Conversion of Renewable Resources to Synthesis Gases and Pyrolysis Oils	
Chair	Fernando Resende, School of Environmental and Forest Sciences, University of Washington
Co-Chair	Ezra Bar Ziv, Mechanical Engineering-Engineering Mechanics, Michigan Technological University
23B11 Biological Conversions and Processes for Renewable Feedstocks	
Chair	Shishir Chundawat, Chemical Engineering and Material Science, Great Lakes Bioenergy Center, Michigan State University
Co-Chair	Hasan K. Atiyeh, Biosystems and Agricultural Engineering, Oklahoma State University
23B12 Reaction Kinetics and Transport Fundamentals for Biomass Conversion	
Chair	Todd A. Lloyd, Mascoma Corporation
Co-Chair	Jonathan J. Stickel, National Bioenergy Center, National Renewable Energy Laboratory
23B13 Sustainable Biomass Feedstock Production and Supply for the Emerging Biorefinery Industry	
Chair	Steven E. Taylor, Biosystems Engineering, Auburn University
Co-Chair	Robert Handler, Sustainable Futures Institute, Michigan Technological University
23B14 Poster Session: Sustainability and Sustainable Biorefineries	
Chair	Susan M. Stagg-Williams, Chemical and Petroleum Engineering, University of Kansas
Co-Chair	Mark Mba Wright, Iowa State University

23B15 Reactor Engineering for Biomass Feedstocks	
Chair	Michael J. Antal, Hawaii Natural Energy Institute, University of Hawaii
Co-Chair	Yukihiko Matsumura, Hiroshima University
23B16 Developments in the Pretreatment of Lignocellulosics for Bioconversion I	
Chair	Submanian Ramakrishnan, Chemical & Biomedical Engineering, Florida State University
Co-Chair	Tae Hyun Kim, Department of Agricultural and Biosystems Engineering, Iowa State University
23B17 Chemical and Catalytic Conversions and Processes for Renewable Feedstocks	
Chair	Hongfei Lin, Chemical and Materials Engineering, University of Nevada
Co-Chair	Michael Mullins, Department of Chemical Engineering, Michigan Technological University
23B18 Electrofuels Science and Engineering	
Chair	Brian Duff, Office of the Biomass Program, U.S. Department of Energy
Co-Chair	Rafael Hernandez, Dave C. Swalm School of Chemical Engineering, Mississippi State University
23B19 Life Cycle Assessment of Biofuels: Standardization and Harmonization	
Chair	David R. Shonnard, Chemical Engineering, Michigan Technological University
23B20 Biofuels Production: Design, Simulation, and Economic Analysis	
Chair	Ramalingam Subramaniam, Chemical Engineering, University of Louisiana at Lafayette
Co-Chair	Mark Mba Wright, Iowa State University
23B21 Nutrients Management in Biochemical and Thermochemical Biorefineries	
Chair	William Todd French, Chemical Engineering, Mississippi State University
Co-Chair	Rafael Hernandez, Dave C. Swalm School of Chemical Engineering, Mississippi State University
23B22 Advances in Biofuels: DOE Bioenergy Research Centers II	
Chair	Seema Singh, Lawrence Berkeley Laboratory
Co-Chair	Venkatesh Balan, Chemical Engineering and Material Science, Great Lakes Bioenergy Center, Michigan State University

23B23 Advances in Algal Biorefineries II	
Chair	Belinda S.M. Sturm, Civil, Environmental & Architectural Engineering, University of Kansas
Co-Chair	Stephen Dufreche, Chemical Engineering, University of Louisiana at Lafayette
23B24 Recovery of Value-Added Co-Products from Biorefinery Residuals and Effluents	
Chair	Andro Mondala, Dave C. Swalm School of Chemical Engineering, Mississippi State University
Co-Chair	Tracy J. Benson, Dan F. Smith Department of Chemical Engineering, Lamar University
23B25 Biological Conversions and Processes for Renewable Feedstocks II	
Chair	Hasan K. Atiyeh, Biosystems and Agricultural Engineering, Oklahoma State University
Co-Chair	Shishir Chundawat, Chemical Engineering and Material Science, Great Lakes Bioenergy Center, Michigan State University
23B26 Reaction Kinetics and Transport Fundamentals for Biomass Conversion II	
Chair	Todd A. Lloyd, Mascoma Corporation
Co-Chair	Jonathan J. Stickel, National Bioenergy Center, National Renewable Energy Laboratory
23B27 Developments in the Pretreatment of Lignocellulosics for Bioconversion II	
Chair	Tae Hyun Kim, Ag. and Biosystems Engineering, Iowa State University
Co-Chair	Subramanian Ramakrishnan, Department of Chemical and Biomedical Engineering, Florida A&M University - Florida State University
23C00 Energy Sustainability, Challenges and Solutions	
Chair	Dr Matthew Realff, School of Chemical and Biomolecular Engineering, Georgia Institute of Technology
Co-Chair	William M. Barrett, US Environmental Protection Agency
23C01 Sustainable Electricity: Generation and Storage	
Chair	Da Deng, Chemical Engineering and Materials Science, Wayne State University
Co-Chair	Geoffrey A. Prentice, Division of Chemical, Bioengineering, Environmental & Transport Systems, National Science Foundation

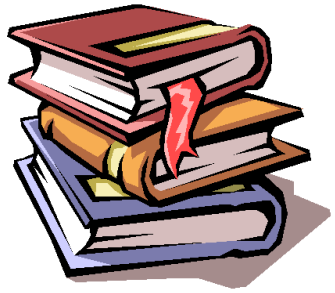
23C02 Sustainable Fuels from Renewable Resources I	
Chair	Mariano Savelski, Chemical Engineering, Rowan University
Co-Chair	Belinda S.M. Sturm, Civil, Environmental & Architectural Engineering, University of Kansas
23C03 Sustainable Fuels from Renewable Resources II	
Chair	Belinda S.M. Sturm, Civil, Environmental & Architectural Engineering, University of Kansas
Co-Chair	Mariano Savelski, Chemical Engineering, Rowan University
23C04 CO_2 Capture, Control and Sequestration I	
Chair	Paul F. Harten, Sustainable Technology Division, U.S. Environmental Protection Agency
Co-Chair	Urmila Diwekar, Vishwamitra Research Institute
23C05 CO_2 Capture, Control and Sequestration II	
Chair	Fengqi You, Department of Chemical and Biological Engineering, Northwestern University
Co-Chair	Ignasi Palou-Rivera, Lanzatech, Inc.
23C06 Carbon Efficient Chemical-Engineering Systems	
Chair	Shaibal Roy, Du Pont Engineering Research & Technology
Co-Chair	Ignasi Palou-Rivera, Lanzatech, Inc.

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 raw materials to materials useful to human activity (e.g., environmental water to potable water, wastewater to "water that can be safely discharged into the environment", petroleum to petrochemicals, ABS resin into LEGO bricks, etc.) and therefore we are responsible for ensuring that we (that's the collective "we" as in all of humanity) have and will continue to have water, energy, materials, and finished products.



If we define "sustainability" as the conceptual field focused on creating and maintaining the conditions under which humans can continue to exist at adequate levels of well being to an indefinite future, and Engineering as a general field focused on the creative application of scientific principles to design or develop apparatus, structures, machines, or manufacturing processes with the goal of improving the human condition (yes, that was a modified ABET statement) then Sustainable Engineering must somehow be a field that includes application of principles of Sustainability Science to develop said systems.

Science itself is founded on the experimental testing of explanations and predictions of the observable universe and therefore requires metrics; the metrics used in sustainability science include concepts such as life cycle assessment, energy (or even better, exergy) efficiency or E-factor/atom economy. Within the context of the activities of members of the institute then, sustainability efforts probably center on developing said manufacturing processes and apparatus that optimizes the appropriate metrics. In some cases the sustainability benefits of the technological improvements you work on are quantified/ quantifiable, in some cases the benefits are immediately obvious but unquantified and sometimes the benefits are not immediately evident.

Since the call for papers for the AIChE annual meeting is probably forthcoming, and the spring meeting is just around the corner, I would like to challenge you to include in your contributions brief but clear statements on the manner in which your work helps achieve the sustainability concept described above.

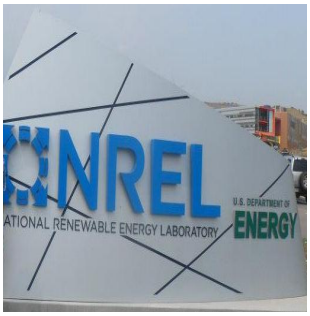
For any comments or with ideas on what I can address in upcoming Education Columns, please contact me at alex.yokochi@orst.edu.

Member Communications

By Anthony Halog

Dr. Anthony Halog Received USDA Grant and Participated in DOE NREL's Visiting Faculty Program

Together with other research partners, Dr. Anthony Halog, a main proponent of life cycle sustainability analysis, has been awarded $6.8 million USDA collaborative project "*Securing the Future of Natural Rubber – an American Tire and Bioenergy Platform from Guayule*". This project involves Dr. Colvin (Cooper Tire), Dr. Manahan (USDA), Mr. Christofffersen (Yulex), and other research collaborators. With relevance to industrial ecology (IE), this project aims "to develop system-level, integrated impact analysis to direct future development of guayule as a domestic industrial crop in ways that ensure environmental, societal and economic sustainability. The expected IE output is "Development of a Tool for Sustainability Impact Assessment (ToSIA) to determine the sustainability implications and economic scalability of large scale guayule production with biofuels as co-product." Further details of this grant are available at: http://cris.nifa.usda.gov/cgi-bin/starfinder/0?path=fastlink1.txt&id=anon&pass=&search=R=52720&format=WEBLINK



Moreover, Dr. Halog had been selected by the US Department of Energy to participate in the *Visiting Faculty Program* at the National Renewable Energy Laboratory, Golden, Colorado. His hosts are Dr. Yimin Zhang and Dr. Garvin Heath, both NREL researchers with interest in technology and life cycle analysis.

Dr. Halog with Dr. Zhang and Dr. Heath at NREL

His NREL appointment was focused on collaborative research and teaching activities on

computational and analytical capabilities in energy analysis and system modeling, and application to evaluating emerging biochemical & thermochemical technologies for wood-derived biofuels production. He made a presentation on the "*Crucial Role of Ecosystem Goods and Services to Sustainability of Renewable Fuel Production (Case of Wood Derived Ethanol*" on August 15, 2012, Golden, Colorado.

Industrial Liaison Column

By Peter Knox

As we enter the new year of 2013, the SEF industrial liaison function has two priorities:
1. Obtain feedback from industrial sector members on information needs and challenges for the 18 months ahead;
2. Develop a three year plan to increase relevance, collaboration and participation of industrial sector members.

An electronic survey is being sent out to SEF industrial members during the month of January. Please complete this important survey which will influence future content of SEF webinars, industrial programming, and collaboration opportunities with the AIChE Center for Sustainable Technology Practices (CSTP).

If you are active in the industrial sector and would like to be part of an industrial sector working group to help evolve the 3-Year Plan (2014-2016), please send an e-mail to Peter.Knox@EcoChemStrategies.com or contact by phone at (626) 255-6462.

IfS Updates

By Darlene Schuster

Credentials for Sustainability Professionals

The Institute for Sustainability is launching a program that offers engineers and other qualified professionals a specialized credential in sustainability. The body of knowledge is at the heart of this new sustainability credential, which is based on seven key areas in the AIChE's Sustainability Index: strategic commitment, innovation, environmental performance, safety performance, product stewardship, social responsibility, and value chain management.

The program requires 2 master-level courses (from an endorsed list of classes at various universities or online) and a capstone case study course focused on a real world problem. This program will be supportive to engineers who aspire to the Professional Engineering License and will be planned as a way to help companies control training costs by pooling expertise and having resources pre-screened for quality and readily available.

For more information please visit: http://www.aiche.org/ifs/sustainability-credentials

International Certificate on Sustainable Standards for Engineering (ICOSSE)

The ICOSSE certificate is a joint initiative of AIChE and DECHEMA (Society for Chemical Engineers and Biotechnology), two international societies whose authority is recognized by scientists and policy makers alike.

The ICOSSE application consists of a detailed questionnaire covering environmental performance, safety, product stewardship, life cycle consideration, value chain, innovations and corporate sustainability goals and policies for products, processes, or services one wishes to have certified. Submissions are evaluated by an advisory board. If the evaluation is positive,

the applicant will receive a certificate and the right to use the ICOSSE logo for marketing purposes of the evaluated products, process, or service to give them a competitive edge in the market.

Companies who want to consider the overall impact sustainability of a product or process it makes or uses can apply for the certificate.

To obtain the certificate, please visit our website at: www.aiche.org/ifs/conferences/international-congress-sustainability-science-engineering-icosse/2012/international.

The Center for Sustainable Technology Practices (CSTP) has recently launched a series of mini-webcasts related to projects and activities AIChE has underway related to sustainability; including efforts on carbon management, industrial water efforts, and energy. These webinars can be viewed on the CSTP page at www.aiche.org/ifs/resources/center-sustainable-technology-practices. If you would like more information on how to participate in the webinars, please contact Erin Chan at erinc@aiche.org.

Members' Column

By Cory Jensen

Dear Membership,
Welcome to the New Year! The efforts and outcomes of your membership make the SEF what it is today and will aid in how the SEF changes in the future. So let us continue to promote a dynamic that makes sustainable engineering a means to start new conversations and create new endeavors!

As your membership chair, I would like to promote member interests and search for ways to continue to expand this cross disciplinary aspect of AIChE. AIChE has already worked to incorporate the principals of sustainability into several of technical aspects of how chemical engineers go about their day-to-day activities (e.g. sustainable packaging). However, engineers and scientists involved in sustainable fields still have many challenges to embrace and collaborative partnerships to establish. Therefore, I am passionate about supporting a field that is fundamental to my activities as an engineer and scientist in new and creative ways (see Picture for some innovative topics that I have been exposed to recently).

Picture: Sustainable Engineering Topics; A) Green Packaging, B) Hydroponic Foods, C) Urban Water and Food Systems, D) Energy-Environment Policy & Science.

So please, keep a look out this year for SEF outreach materials-communication that is geared to support your interests and educate in fields that chemical engineers are becoming involved with. *Your participation defines the Forum and supports in what it will continue to be!*

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

Three Steps to Membership

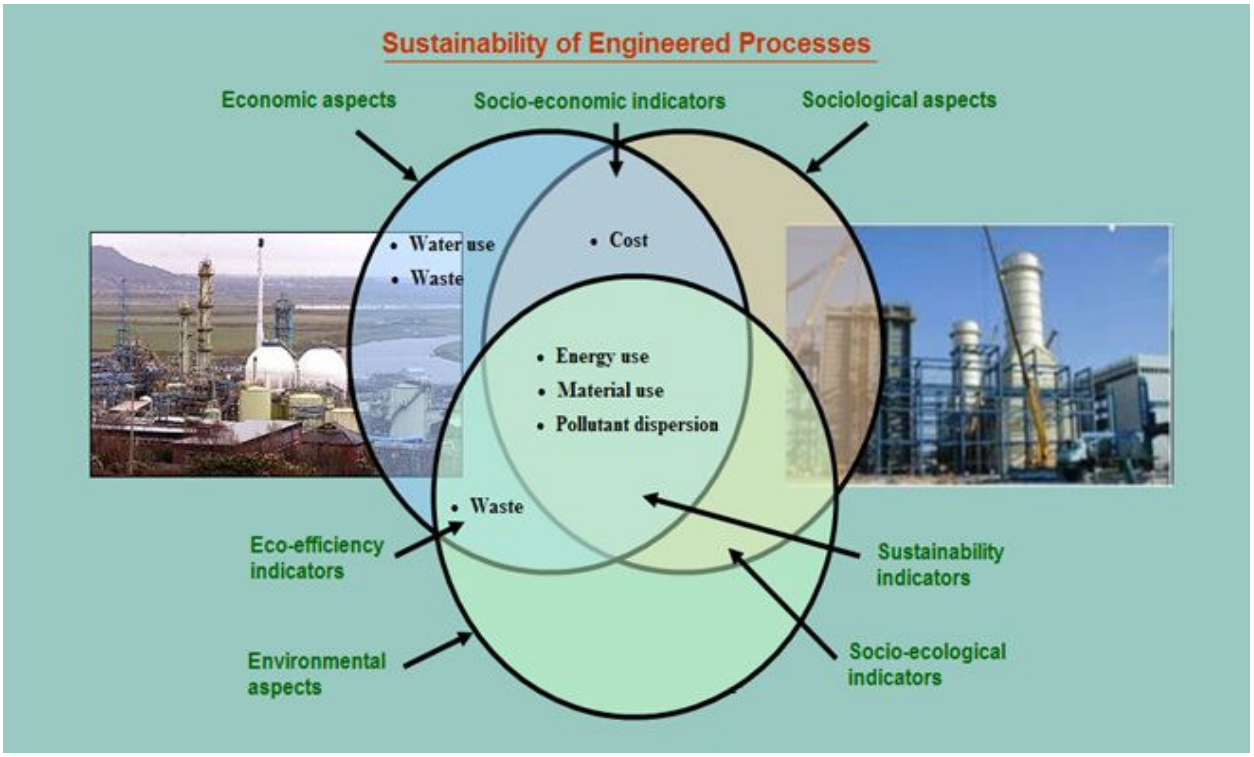
1. Applicant's Request for Membership
   Complete the SEF Application available online at:
   www.aiche.org/DivisionsForms/ViewAll/SEF.aspx
   - REGULAR membership annual fee $20
   - STUDENT membership annual fee $10

   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,
   3 Park Avenue,
   New York, NY 10016

2. Staff Review to ensure completeness of application

3. Membership - Welcome!



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