

AIChE SUSTAINABLE ENGINEERING FORUM NEWSLETTER

February 2012
Volume 6, Issue 1



Message from the Chair

I want to welcome everyone to the New Year and to the first 2012 issue of the SEF Newsletter! I want to thank Professor Helen Lou, the outgoing Chair, for her exemplary leadership over the past two years. It is my pleasure to serve as the Chair of the Forum for the next two years, and I hope to meet the high bar that has been set by Helen and the past Chairs of the Forum. Finally, please welcome the new SEF Officers, who are contributing to the newsletter for the first time in their new capacities.

“Meeting the needs of the present without compromising the ability of future generations to meet their own needs.” This is the definition given to sustainability in 1987 in the World Commission on Environment and Development Report, and remains one of the clearest definitions. The Sustainable Engineering Forum (SEF) seeks to disseminate information regarding advancements in sustainable engineering science, technology and practice.

The SEF continues to be a leader in the development of sustainable engineering programming, sustainability-related course materials and webinars for the AIChE community. As in the past, the SEF continues to reach out to its membership and the community by cosponsoring sustainability programming both within and outside AIChE. This year, the SEF will be cosponsoring the inaugural conference on Sustainability in (Bio)Pharma on November 11-14, 2012, in Puerto Rico, and the 2nd Sustainable Packaging Symposium in conjunction with the AIChE Spring Meeting in Houston on April 3-5, 2012.

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SEF Website:

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

The SEF will also be continuing its three award programs that recognize up and coming young professionals in sustainability, and pioneers in the application of sustainability principles to Chemical Engineering. These include the Student Paper Awards, the Industrial Practice in Sustainable Engineering Award, and the Research Excellence in Sustainable Engineering Award. The application deadline is April 29, 2012, and decisions are scheduled for June 9, 2012.

I look forward to another great year for the Forum, and welcome your comments and suggestions.

David N. Thompson
Chair, Sustainable
Engineering Forum



Announcements

By Jeff Seay

SEF Awards Announcement

The SEF is pleased to announce the following award competitions for 2012. Applications must be received by April 29, 2012. For more information, contact the SEF Awards Committee Chair, Dr. Helen Lou at helen.lou@lamar.edu.

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

Sustainability in (Bio)Pharma Conference Announcement

The Society for Biological Engineering and the Institute for Sustainability will hold the inaugural conference on Sustainability in (Bio)Pharma on November 11 -14, 2012 in Puerto Rico. Scientists and engineers representing industry, academia and government will gather to discuss innovative strategies for developing sustainable processes and practices in the pharmaceutical and biopharmaceutical industry. The goal of the meeting is to bring together thought leaders from both industries along with sustainability experts to assess engineering processes aimed at improving sustainability to justify their return on investment (ROI) and ultimately identify improvement to optimize performance. In addition, with the recognition that the community of researchers integrating sustainability assessment and metrics for specific (Bio)Pharma applications is still growing, special emphasis will be placed on engaging young researchers and students (graduate and undergraduate) to develop their interest and skills in apply decision support tools such as LCA and eco-assessments application to the biopharma industries.

All SEF members interested in application of sustainability metrics and decision support tools to the biopharma industries are encouraged to engage. Travel grants for young faculty and students are anticipated, but not yet confirmed. Ideas and concepts to be explored for engaging younger researchers are being sought and a teleconference will be held on Monday, March 15, 2012 from 11 am to 12 noon ET to discuss. Those with ideas for developing this community of researchers can register for the telcon by emailing sustainability@aiche.org with SIBP telcon in the subject line. Also, if interested in a possible travel grant for students, please send your name and areas of interest to sustainability@aiche.org with Grant Inquiry for SIBP in the subject line.

Sessions to be explored at conference and additional information is found at <http://sustainabilityinbiopharma.com/>.

Sustainable Packaging Symposium Announcement

The IfS and Greener Package are holding the 2nd Sustainable Packaging Symposium in conjunction with the AICHE Spring meeting in Houston on April 3-5, 2012. The theme of the conference is Advancing Sustainable Supply Chains with Optimized Packaging; Dr. Bill Flanagan, Ecoassessment Leader at General Electric's Global Research Ecoassessment Center of Excellence, and Michael Hewett, Director of Environmental and Sustainability Programs at Publix Super Markets, Inc., will be presenting the keynote sessions for this year's event. Dr. Flanagan will take the stage on day one of the conference, April 4. The group Dr. Flanagan represents, GE Global Research, is the technology development arm for the General Electric Company. The Eco-assessment Center was established to discover new frontiers in assessing and managing a product's environmental footprint throughout the entire life cycle of the product.

Registration to SPS 2012 is available at www.sustainablepackagingsymposium.com. An "early-bird" registration fee is available until March 5. Contact darls@aiche.org for additional information or if you have any questions on registrations.

AICHe 2012 Spring Meeting: April 1 – 5, Houston, TX

General meeting information is available from: www.aiche.org/spring

Highlights of the meeting will include:

- Keynote address (Monday, April 2) by Michael J. Dolan, Senior Vice President, Exxon Mobil Corporation;
- The 8th Global Congress on Process Safety featuring the 27th CCPS International Conference, the 46th Loss Prevention Symposium and the 14th Process Plant Safety Symposium
- 24th Ethylene Producers' Conference
- 12th Gas Utilization Topical Conference
- 15th Topical Conference on Refinery Processing

Topical conferences on Advanced Fossil Energy Utilization, Sustainability, Distillation, and more. Contact Joe.Powell@Shell.com for more details.

New Student Competition Announcement

Rocky Mountain is sponsoring the pilot of a student competition (\$400-winner and \$200-honorable



mention) and is looking for feedback from those interested in extending traditional chemical engineering design approaches. Information on the competition can be found:

<http://rockymtn.aiche.org/sites/rockymtn.aiche.org/files/webfm/files/Annoucements/2012%20Comp%20State.pdf>

SEF 2012 Awards

By Helen Lou

(1) 2012 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, 2012.

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, 2012.

(2) 2012 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, 2012

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, 2011.

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

(3) 2012 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 \$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 Nathan Mosier

To begin, I'd like to thank Dave Thompson for inviting me to serve the SEF in this capacity. I'd also like to thank Christina Piluso for leaving me with such a well organized program. My goal is to continue the tradition of strong programming for the SEF. None is this is possible without the hard work and dedication of our area chairs Hebab Quazi, David Shonnard, and Ignasi Palou-Rivera.

The Annual Meeting looks to have a strong program again. SEF is sponsoring an impressive 40 sessions and co-sponsoring many more at the meeting in Pittsburgh. The program is open for submission of abstracts. I hope that all of you will submit at least one and will encourage your colleagues to do the same.

SEF Sessions at the 2012 AICHe Annual Meeting

Session	Chair	Co-Chair
23000 Sustainability Plenary	David N. Thompson	Jeffrey R. Seay
Sustainable Engineering Forum 23001 Innovation in Process Design for Sustainability		Hebab A. Quazi
Sustainable Engineering Forum 23002 Advances in Basic R&D for Sustainability		Hebab A. Quazi
Sustainable Engineering Forum 23003 Smart Utilization of Water & Energy for Sustainability in Pulp & Paper Industries.		D.B. Bhattacharyya
Sustainable Engineering Forum 23004 Meeting Sustainability Challenges in Designing & Operating Petrochemical Plants		Cristina Piluso

Session	Chair	Co-Chair
Sustainable Engineering Forum 23005 Assigning Sustainability for Process Plants for Developing Economies	Hebab A. Quazi	
23A00 Sustainability Plenary - General Issues	Helen Lou	
23A01 Nanomaterials Based Composite Catalysts for Reducing Carbon-Foot-Print of Conventional Fuels	Hebab A. Quazi	
23A02 Environmental Health & Safety and Sustainability		Jeffrey Seay
23A03 Challenges in Incorporating Sustainability in Interdisciplinary Programs	Jeffrey R. Seay	
23A04 Integrated & Sustainable Renewable-Energy for Industrial Processes	Hebab A. Quazi	
23A05 Sustainable Manufacturing: Fundamentals and Applications	Yinlun Huang	Mahmoud El-Halwagi
23A06 Complexities, Dynamics, and Standardization for Sustainable Engineering	Heriberto Cabezas	Bhavik R. Bakshi
Sustainable Biorefineries 23B00 Demonstration Scale Biorefining-Scale up Challenges	Nitin H. Kolhapure	Deisy Corredor
Sustainable Biorefineries 23B01 Integrated Thermo-Chemical and Biochemical Processing for Renewable Fuels and Chemicals	Akwasi A. Boateng	Tracy Benson
Sustainable Biorefineries 23B02 Integrating Industrial Waste Into Biorefineries	Rafael Hernandez	L. Antonio Estevez
Sustainable Biorefineries 23B03 Developments In Biobased Alternative Fuels I	Brian Duff	Marcus Rajchel

Session	Chair	Co-Chair
Sustainable Biorefineries 23B04 Integrated Processes for Biochemical Conversion of Renewable Feedstocks to Fuels and Chemicals I	Junyong Zhu	Alexandre Chapeaux
Sustainable Biorefineries 23B05 Life Cycle Analysis of Bio-Based Fuels and Energy Products	Ignasi Palou-Rivera	Paul Blowers
Sustainable Biorefineries 23B06 Advances In Biofuels: DOE Bioenergy Research Centers I	Seema Singh	Venkatesh Balan
Sustainable Biorefineries 23B07 Sustainable Biorefineries Plenary Session (Invited Papers)	David R. Shonnard	Jane C. Fisher
Sustainable Biorefineries 23B08 Microbial Engineering for the Synthesis of Bulk and High-Value Products	Rakesh Bajpai	Curt R. Fischer
Sustainable Biorefineries 23B09 Advances In Algal Biorefineries I	Stephen Dufreche	Belinda S.M. Sturm
Sustainable Biorefineries 23B10 Catalytic Conversion of Renewable Resources to Synthesis Gases and Pyrolysis Oils	Rick Knight	Fernando Resende
Sustainable Biorefineries 23B11 Biological Conversions and Processes for Renewable Feedstocks I	Shishir Chundawat	Hasan K. Atiyeh
Sustainable Biorefineries 23B12 Reaction Kinetics and Transport Fundamentals for Biomass Conversion	Todd A. Lloyd	Jonathan J. Stickel
Sustainable Biorefineries 23B13 Sustainable Biomass Feedstock Production and Supply for the Emerging Biorefinery Industry	Steven E. Taylor	Yogendra Shastri
Sustainable Biorefineries 23B14 Poster Session: Sustainability and Sustainable Biorefineries	Sipho C. Ndlela	Susan M. Staggs-Williams

Session	Chair	Co-Chair
Sustainable Biorefineries 23B15 Reactor Engineering for Biomass	Yukihiko Matsumura	Kazuhiro Mochidzuki
Sustainable Biorefineries 23B16 Developments In the Pretreatment of Lignocellulosics for Bioconversion I	Tae Hyun Kim	R. Eric Berson
Sustainable Biorefineries 23B17 Chemical and Catalytic Conversions and Processes for Renewable Feedstocks	Debangsu Bhattacharyya	Hongfei Lin
Sustainable Biorefineries 23B18 Electrofuels Science and Engineering	Brian Duff	Rafael Hernandez
Sustainable Biorefineries 23B19 Life Cycle Analysis of Bio-Based Chemical Products	Mariano Savelski	
Sustainable Energy 23C00 Sustainable Energy Plenary (Invited papers) ¹	Ignasi Palou-Rivera	William M. Barrett
Sustainable Energy 23C01 Energy Sustainability, Challenges and Solutions	Martin A. Abraham	Matthew Realff
Sustainable Energy 23C02 CO ₂ Capture, Control and Sequestration ²	Urmila D. Diwekar	Paul F. Harten
Sustainable Energy 23C03 Carbon Efficient Chemical Engineering Systems	Shaibal Roy	Mariano J. Savelski
Sustainable Energy 23C04 Sustainability of Fossil Energy	Ignasi Palou-Rivera	Ramkumar Karupiah
Sustainable Energy 23C05 Sustainable Fuels From Renewable Resources	Belinda S.M. Sturm	Arun V. Giridhar
Sustainable Energy 23C06 Sustainable Electricity: Generation, Transmission, and Storage	Geoffrey A. Prentice	Da Deng

¹ Forward suggestions for invited talks to Ignasi Palou-Rivera (<mailto:palourivera@anl.gov>)

² Expected to be split into several sessions

Area: 23A-General Programs**2012 AIChE Annual Meeting, Pittsburgh, PA.**

By Hebab Quazi

Session 23001: Innovation in Process Design for Sustainability**Chair:**

Aydin K. Sunol
Chemical & Biomedical Engineering
University of South Florida
4202 East Fowlers Avenue
Tampa, FL 33620

Co-Chair (from Topical G)

Invited Co-sponsorship from Topical G: Innovation of Green Process Engineering for Sustainable Energy and Environment.

(Note: **Session 23002- "Advances in Basic R&D for Sustainability"** has been **deleted**)

Session 23003: Smart Utilization of Water & Energy for Sustainability in Pulp & Paper Industries**Chair:**

D.B. Bhattacharyya
Chemical and Materials Engineering
University of Kentucky
Lexington, KY 40506

Co-Chair (from TAPPI)

Invited Co-Sponsorship from TAPPI

Session 23004: Meeting Sustainability Challenges in Designing & Operating Petrochemical Plants**Chair:**

Cristina Piluso
BASF Corporation
1609 Biddle Avenue
Wyandotte, MI 48192

Co-Chair (from Group 16 Subgroup Petrochemicals & Derivatives)

Invited Co-Sponsorship from Group 16 Fuels & Petrochemicals Subgroup: Petrochemicals & Derivatives

Session 23005: Assigning Sustainability of Process Plants for Developing Economies**Chair:**

Hebab A. Quazi
AngelNet Energy, Water, and Environmental Systems
Box 160921
Austin, TX 78716

Co-Chair (from Topical B: 2nd Annual World Congress on Sustainable Engineering)

Invited Co-Sponsorship from Topical B: 2nd Annual World Congress on Sustainable Engineering

Session 23A00: Industrial Sustainability Plenary**Chair:**

Helen Lou
Lamar University
Chemical Engineering
Beaumont, TX 77705

Co-Chair:

Yinlun Huang
Department of Chemical Engineering & Materials Science
Wayne State University
Detroit, MI 48202

Co-Chair (one additional) (From Transport Processes or Graduate Education or Nanoparticles)

Invited Co-Sponsorship from Group 1d-Transport Processes or Group 4B-Graduate Education or Group 03D -Nanoparticles

Session 23A01: Nanomaterials Based Composite-Catalysts for Reducing Carbon-Foot-Print of Conventional Fuels**Chair:**

Aydin K. Sunol
Chemical & Biomedical Engineering
University of South Florida
4202 East Fowler Avenue
Tampa, FL 33620

Co-Chair (from Group 16)

Invited Co-Sponsorship from Group 16: Fuels & Petrochemicals

Session 23A02: Environmental Health & Safety and Sustainability**Chair:**

Jeffrey Seay
Chemical and Materials Engineering
University of Kentucky
Lexington, KY40508

Co-Chair (from Group 9g)

Invited Co-Sponsorship from Group 9
Environmental Division (Sub-Group: g – Sustainability)

Session 23A03: Challenges in Incorporating Sustainability in Interdisciplinary Programs**Chair:**

Jeffrey Seay
Chemical and Materials Engineering
University of Kentucky
Lexington, KY40508

Co-Chair

Alexander F. T. Yokochi
School of Chemical, Biological, and
Environmental Engineering
Oregon State University
Corvallis, OR 97331

Session 23A04: Integrated Sustainable Renewable-Energy for Industrial Processes**Chair:**

Hebab A. Quazi
AngelNet Energy, Water, and Environmental
Systems Inc
Box 160921
Austin, TX 78716

Co-Chair (from Group 9h)

Invited Co-Sponsorship from Group 9h – Climate Change

Session 23A05: Sustainable Manufacturing: Fundamentals and Applications

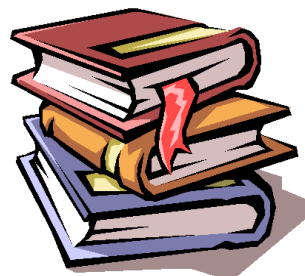
Co-Sponsored by Group 10: Computing Systems and Technology

Chair:

Yinlun Huang
Department of Chemical Engineering &
Materials Science
Wayne State University
Detroit, MI 48202

Education Column

By Alex Yokochi



As Jeff Seay mentioned in the last newsletter, I was elected to serve the SEF this past fall and this is therefore my first contribution to the newsletter. Since I am a relatively newcomer to the AICHe, I thought I would take the opportunity to introduce myself to the SEF membership at large.

Growing up, I travelled widely as an athlete and had the opportunity to observe how widely the fundamental social structures and living conditions of human populations differ, which made me keenly aware of the need for worldwide sustainable development. This has led me to focus my career as faculty in the School of Chemical, Biological and Environmental Engineering at Oregon State University on developing process chemistry enabling sustainable energy and/or materials processing and on the education of students from all majors on the concepts sustainability and sustainable development.

In my activities I have, for example, developed a “Sustainable Engineering” course directed at the general student population in conjunction with my friend and colleague Prof. Kenneth Williamson. This course has gone in the past eight years from a class with 12 curious engineering students to over 150 students from various disciplines this last fall (since about 1/3rd of the students in this course are not

engineering students, this is also an excellent opportunity to educate them on the topic of “what is engineering”, but that’s another topic altogether...). I have also had the opportunity to work on development of processes directed towards novel sustainability enhancing technologies such as research into novel implementations of thermochemical processes for water splitting (with the support of an NSF CAREER grant and the Oregon Nanoscience and Microproducts Institute), contributions to the development of ocean energy (with the support of the US DoE, OSU and others), or the examination of grid scale energy storage to buffer the variability of wind power (with support from the Bonneville Power Administration, Oregon Best, local utilities like Central Lincoln PUD, Pacific Power, Portland General Electric and others).

I would therefore like to express my hope that I can continue to support the forum’s ongoing efforts in the education of undergraduate and graduate students as well as academic and industrial colleagues on the issues and technological options to the challenges posed by global sustainable development. Should you have any suggestions for new activities or approaches to reenergize current ones please contact me at alex.yokochi@orst.edu.

Member Communications

By Yinlun Huang

NSF Funded a Manufacturing Sustainability Research Coordination Project, “SMART CN”, to CACHE

U.S. manufacturing, a key component of national economic development and prosperity, has been greatly challenged by competitive trends over the past decade, as global manufacturing competition has begun to shift towards fast implementation, just-in-time model-



based manufacturing, frequent product transitions, and shifting of technical personnel to meet those changing needs. Further burdens are placed on the industries owing to uncertain energy prices and possible greenhouse gas constraints. Today, revitalization of the U.S. manufacturing is of utmost importance in the nation.



To bridge the gap between the academic knowledge discovery and industrial technology innovation for sustainable manufacturing, a multidisciplinary group, led by Yinlun Huang (Wayne State U.), Thomas Edgar (U. of Texas), Mahmoud El-Halwagi (Texas A&M U.), Cliff Davidson (Syracuse U.), and Mario Eden (Auburn U.), received an award from National Science Foundation recently on the project, “*Sustainable Manufacturing Advance in Research and Technology (SMART) Coordination Network (CN)*” (\$721,800; Jan. 2012 - Dec. 2016). The steering committee of the project includes Luke Achenie (Virginia Tech.), David Allen (U. Texas), Burton English (U. Tennessee), David Fasenfest (Wayne State U.), Ignacio Grossmann (Carnegie Mellon U.), Karen High (Oklahoma State U.), Ibrahim Jawahir (U. Kentucky), Christos Maravelias (U. Wisconsin), Kim Ogden (U. Arizona), Mary Rezac (Kansas State U.), and Farhang Shadman (U. Arizona). The group will collaborate closely with 11 national organizations and university centers as well as eight foreign universities in Europe (Denmark, Germany, and Norway) and Asia (China, India, Japan, and Singapore). On October 20, 2011,

National Science Foundation made a news release on the sustainability research awards, including the SMART CN award (http://www.nsf.gov/news/news_summ.jsp?cntn_id=122028).

In this project, the SMART CN will conduct comprehensive and in-depth review of the frontier research and technological development for sustainable manufacturing, define the roadmap towards manufacturing sustainability and identify the bottlenecks in a number of focused research areas via several workshops, coordinate the research through sharing knowledge, resources, software, and results, establish partnerships with industrial groups to expedite technology introduction, and conduct education and outreach to a wide range of stakeholders. The SMART CN will support a new paradigm for manufacturing sustainability and aggregate concerted efforts from multiple research groups with complementary expertise to transform the knowledge base of manufacturing sustainability. It is anticipated that success in this endeavor will have a significant impact on the industrial efforts in developing sustainable manufacturing technologies.

IfS Updates

By Darlene Schuster

Call for Papers is Open for Sustainable Packaging Symposium 2012

AICHe Institute for Sustainability and Greener Package will present the 2012 Sustainable Packaging Symposium April 3-5, 2012 Houston Hilton and George Brown Convention Center in Houston, TX.

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

If you missed the 2011 Sustainable Packaging Symposium, the proceedings are available for purchase at:

<http://apps.aiche.org/proceedings/Group.aspx?GroupID=1626&ConfPageMessage=Y>

Members' Column

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!

SEF Leadership 2012-2013

Chair

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SEF Leadership 2012-2013

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Technical Areas:

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Chairman, MI Center for Strategic &
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E-Mail: drshonna@mtu.edu

Sustainable Energy (Area 23c)

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