



AIChE Sustainable Engineering Forum Newsletter

Vol. 2 No. 3

September 2008

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MESSAGE FROM CHAIR

The Sustainable Engineering Forum has made great strides over the course of the last three months since our last publication. Our entire leadership team has continued their hard work in initiating new programs and improving upon existing initiatives.

I would like to first thank our Awards Committee Chair, Thomas Marrero and all the committee members for their work and dedication to selecting the inaugural awardees of our Research Excellence and Best Student Paper Awards. Dr. Subhas Sikdar was selected as the recipient of The Research Excellence in Sustainable Engineering Award for his scholarship and leadership among the sustainability community. Ms. Cristina Piluso, a Ph.D. student at Wayne State University, and Ms. Ana Carvalho, a Ph.D. student at the Technical University of Denmark and the Instituto Superior Técnico-Portugal, were selected as the winners of the Student Paper Awards. Congratulations to all three on their selection as recipients of these prestigious awards. As discussed later in the newsletter, the awards will be presented during the AIChE Annual Meeting in Philadelphia in November.

Furthermore, regarding the upcoming annual meeting in Philadelphia, we have four distinguished speakers lined up for the plenary session of the Topical Conference on Sustainability on November 18th. The SEF is sponsoring/co-sponsoring a total of over 30 sessions, in three Topicals, containing numerous leading edge sustainability related oral and poster presentations.

Additionally, the SEF is looking to initiate an industrial award program, to be awarded during the AIChE Spring 2009 Meeting, and is working on the development of sustainability related educational modules for use in undergraduate and graduate courses, an effort led by Dr. Robert Hesketh. In addition, the SEF will be co-sponsoring the First International Congress on Sustainability Science and Engineering along with the EPA, NIST, and NSF. The Congress will be held August 9 – 13, 2009 in Cincinnati, OH. As a benefit to our SEF membership, the SEF will support members for presenting a paper during the Congress by way of covering partially registration fee. Each of these activities is discussed in further detail later in the newsletter. Furthermore, as always, the SEF co-sponsors a series of virtual meetings, which cover a broad spectrum of sustainability topics. Please check the newsletter for a complete list of upcoming virtual meetings, we hope you find the topics interesting and that you participate in them.

I hope the information supplied in this newsletter is of interest to you. The entire SEF leadership committee thanks the membership for your support, as you are key in the success of the Forum.

Yinlun Huang
Chair, Sustainable Engineering Forum

ANNOUNCEMENTS

AIChE 2008 Annual Meeting – SEF Programming

The AIChE 2008 Annual Meeting is quickly approaching, to be held November 16-21, 2008 in Philadelphia, PA. The SEF will sponsor three topical sessions, a Sustainability Topical (Topical E), which contains 9 oral and 1 poster session, a Sustainable Biorefineries Topical (Topical 4), which includes 13 oral and 1 poster session, and a Green Engineering and Sustainability in the Pharmaceutical Industry Topical (Topical 5). The SEF will sponsor this Topical in conjunction with the Pharmaceutical Division, which will include 6 oral sessions, a poster session, and a speaker luncheon. The full listing of SEF programming is provided in the tables below:

For more detailed information regarding all programming at the Annual meeting, please visit: <http://aiche.confex.com/aiche/2008/preliminaryprogram/index.html>

Topical E: Sustainability

Tuesday, November 18, 2008

3:15 PM-5:45 PM

#380 – Sustainability Plenary (TE003)

Wednesday, November 19, 2008

8:30 AM-11:00 AM

#449 – Sustainability Education (TE007)

12:30 PM-3:00 PM

#512 – Sustainable Energy (TE006)

3:15 PM-5:45 PM

#563 – Sustainable Fuels (TE004)

6:00 PM-8:30 PM

#573 – Poster Session: Sustainability & Sustainable Biorefineries (T4011)

Thursday, November 20, 2008

8:30 AM-11:00 AM

#586 – Design for Sustainability (TE001)

12:30 PM-3:00 PM

#663 – Practical Approaches to Sustainability & Business Success (TE002)

3:15 PM-5:45 PM

#713 – Prediction of Sustainability Performance by Computation (TE008)

Topical E: Sustainability (cont'd)

Friday, November 21, 2008

8:00 AM-10:30 AM

#747 – Towards Sustainable Processes (TE009)

10:30 AM-1:00 PM

#750 – Systems Analysis of Sustainability (TE005)

Topical 4: Sustainable Biorefineries

Wednesday, November 19, 2008

8:30 AM-11:00 AM

#450 – Sustainable Biorefineries Plenary (T4001)

12:30 PM-3:00 PM

#460 – Biological Conversions & Processes for Renewable Feedstocks (T4006)

#511 – Sustainable Biomass Feedstock Production & Supply for the Emerging Biorefinery Industry (T4002)

3:15 PM-5:45 PM

#542 – Life Cycle Analysis of Renewable Feedstock – Based Processes & Products (T4010)

6:00 PM-8:30 PM

#573 – Poster Session: Sustainability & Sustainable Biorefineries (T4011)

Thursday, November 20, 2008

8:30 AM-11:00 AM

#584 – Chemical & Catalytic Conversions & Processes for Renewable Feedstocks I (T4007)

#617 – Pretreatment of Lignocellulosic Biomass & Interactions with Other Processing Steps I (T4004)

12:30 PM-3:00 PM

#636 – Chemical & Catalytic Conversions & Processes for Renewable Feedstocks II (T4012)

#639 – Developments in Biobased Alternative Fuels I (T4009)

#664 – Pretreatment of Lignocellulosic Biomass & Interactions with Other Processing Steps II (T4013)

Topical 4: Sustainable Biorefineries (cont'd)

Thursday, November 20, 2008

3:15 PM-5:45 PM

#689 – Developments in Biobased Alternative Fuels II (T4000)

#696 – Integrated Processes for Biochemical Conversion of Renewable Feedstocks to Fuels & Chemicals (T4008)

Friday, November 21, 2008

8:00 AM-10:30 AM

#743 – Reactor Engineering for Biomass Feedstocks (T4005)

10:45 AM-1:15 PM

#757 – Catalytic Conversion of Renewable Resources to Synthesis Gases & Pyrolysis Oils (T4003)

#636 – Chemical & Catalytic Conversions & Processes for Renewable Feedstocks II (T4012)

#639 – Developments in Biobased Alternative Fuels I (T4009)

#664 – Pretreatment of Lignocellulosic Biomass & Interactions with Other Processing Steps II (T4013)

Topical 5: Green Engineering & Sustainability in the Pharmaceutical Industry

Monday, November 17, 2008

8:30 AM-11:00 AM

#13 – Benign / Safer Solvents in Pharmaceutical Processing (T5002)

12:30 PM-3:00 PM

#107 – Pharmaceutical Environmental Metrics – LCA (T5003)

3:15 PM-5:45 PM

#134 – Batch to Continuous Pharmaceutical Processing Challenges (T5007)

Tuesday, November 18, 2008

8:30 AM-11:00 AM

#223 – Green Reactions in the Pharmaceutical Industry (T5004)

12:30 PM-3:00 PM

#290 – Green Separations in the Pharmaceutical Industry (T5008)

3:15 PM-5:45 PM

#351 – Government Programs & Partnerships (T5006)

Topical 5: Green Engineering & Sustainability in the Pharmaceutical Industry (cont'd)

Wednesday, November 19, 2008

3:00 PM-5:30 PM

#517 – Poster Session: Green Engineering & Sustainability in the Pharmaceutical Industry (T5001)

AIChE 2008 Annual Meeting – Sustainable Engineering Forum and Green Engineering in the Pharmaceutical Industry Luncheon

The SEF will co-sponsor a luncheon, together with the ACS GCI Pharmaceutical Roundtable, during the AIChE Annual Meeting in Philadelphia. The event is organized and arranged as part of the SEF Topical 5: Green Engineering and Sustainability in the Pharmaceutical Industry.

The luncheon speaker will be Dr. Karen Klimas, Vice-President of Global Safety and the Environment with Merck & Co., Inc. Her talk will discuss “The Road to a Sustainable Future for the Pharmaceutical Industry.” Advanced registration is required.

Date: Wednesday, November 19th, 2008

Time: 11:15 a.m. - 12:15 p.m.

Location: Philadelphia Marriott/Pennsylvania Convention Center, Room: TBD

Cost: \$15/person

Additional Sustainability Events in Philadelphia

In addition to the excellent sustainability technical programming at the Annual Meeting in Philadelphia, there are a number of associated events that members of the SEF should consider attending.

Monday, November 17: 12:30 pm - 3 pm. Student Poster Session: Excellence in Addressing Societal Issues with Engineering Expertise

The poster session is sponsored by the Youth Council on Sustainable Science and Engineering, the Sustainable Engineering Forum, the Government Relations Committee, and the AIChE Energy Initiative.

Posters will include:

- The award winning effort from Rowan University Chemical Engineers on Green Engineering Research
- Lafayette College's project on biofuels and the CSTP Sustainability Roadmap

- EPA P3 winners from MIT on Energy sustainability
- University of Idaho YCOSST EPA P3 Winners on sustainable design
- The 2008 Sustainable Engineering Forum's Outstanding Student Paper
- The three 2008 Washington Interns for Students of Engineering projects (two are energy policy, one on bio research policy)
- Perspectives of Barclay Satterfield, recent Chemical Engineering Ph.D. working as a fellow with the US Congress in 2008

Tuesday, November 18: 2 pm. Robert Sylvester of DuPont will present the Sustainability 101: "Sustainability Actions an Individual Can Take." Contact ifs@aiche.org for registration information. This short course is offered free of charge; register when you sign up for the conference. In addition, even if you can't attend the Philadelphia meeting, the course will also be available via live webcast from Philadelphia as an SEF virtual meeting.

Wednesday, November 19: 12:00 pm. Pharmaceutical Topical and SEF Luncheon

Wednesday, November 19: 4:30 pm - 7:30 pm. Center for Sustainable Technology Practices Annual Meeting

CSTP will meet on Wednesday November 19 from 4:30 to 7:30 pm to discuss project plans for 2008. They will also be issuing the CSTP Sustainability Guide at the meeting.

Friday, November 21: 8 am – 5 pm. IfS Total Cost Assessment Users Meeting and Workshop

In this workshop, which consists of the one day Short Course, followed by a web meeting, we will conduct a total cost assessment using the expertise of the assembled group. In addition to preparatory exercises, the group will have the opportunity to participate in the TCA with an experienced facilitator. We will explore what works well and what are stumbling blocks to success.

The Total Cost Assessment (TCA) methodology relies on interdisciplinary expertise combined with advanced computing power to determine the risks associated with a decision. This financial analysis goes beyond traditional cost accounting to show the various possible futures: worst case, blue sky, and most probable results. The Total Cost Assessment process produces valuable insight into a decision, such as areas where risks can and should be

minimized, and where costs associated with intangibles: morale, community relations, and/or brand value; are significant enough to counterbalance traditional financial analysis. Businesses have used TCA to analyze environmental and health management systems, investment in new technologies, and mergers and acquisitions among others.

After class, the instructor will use a TCA tool to crunch the scenarios defined during the workshop. The participants will get an e-mailed copy of the model in about two weeks. Participants will then have the opportunity to assemble the final report using the results obtained from the tool. We will conclude with a presentation of the results during a web conference (scheduled to include as many participants as possible) including a discussion of sensitivity analysis, results achieved, and how to present the results to others.

You should attend if you are: looking to connect the triple bottom line to your company's profitability, facing a decision with considerable risk but an apparently high payback from a conventional accounting approach, interested in converting environmental and social impacts or the results of your risk analysis into monetary value.

To register or for additional information, contact ifs@aiche.org. There is a fee for this workshop.

SEF Announces Award Program Winners

This past summer, the AIChE Sustainable Engineering Forum initiated two new award programs – a Research Excellence Award and a Student Paper Award.

The **Research Excellence Award** is designed to recognize one who has made significant technical contributions to the advancement of sustainable engineering in research, teaching, and development activities.

Dr. Subhas K. Sikdar was selected as the first winner of The Research Excellence in Sustainable Engineering Award, 2008. Dr. Sikdar has had a long and productive career



with the Environmental Protection Agency in directing programs in Sustainable Technology and

related research. Currently, Dr. Sikdar is Associate Director for Science at the National Risk Management Research Laboratory, Office of Research and Development (ORD), U.S. EPA, in Cincinnati.

Prior to joining the EPA, Dr. Sikdar was a Section chief with NIST, Boulder, CO for technology development of various transport processes and a manager of process technology for Corporate R&D, General Electric in plastics and silicone businesses. He also helped engineer new manufacturing processes for the Occidental Research Corporation. Dr. Sikdar's career in industry and government started in 1975 after earning his doctorate from the University of Arizona, Tucson.

Dr. Sikdar has received many significant Honors and Awards during his exemplary career.

The **Student Paper Award** is presented to full-time undergraduate or graduate students who prepare the best technical papers that describe results related to engineering and sustainability. The SEF Awards Committee has selected two graduate students as the inaugural 2008 Sustainable Engineering Forum Student Paper Award winners, Ms. Ana Carvalho and Ms. Cristina Piluso.

Ms. Ana Carvalho is a graduate student at the Technical University of Denmark and the Instituto Superior Técnico-Portugal. The basis for Ana's selection by the Awards Committee was her published paper entitled, "Design of Sustainable Chemical Processes: Systematic Retrofit Analysis Generation and Evaluation of Alternatives." This paper was co-authored by R. Gani and H. Matos, and published in *Process Safety and Environment Protection* 86 (2008) 328-346. Ms. Carvalho's, *et al.*, paper determines a set of mass and energy indicators from steady-state process data that are used to identify design alternatives. The indicators are also able to set safety indicators, in certain cases. The methodology can be used to define design targets and to generate sustainable process alternatives. This new methodology was illustrated by evaluation of vinyl chloride monomer, production.

Ms. Cristina Piluso is a graduate student at Wayne State University, Detroit, MI. The Awards Committee selected Ms. Piluso on the basis of her



publication, "Ecological Input-Output Analysis-Based Sustainability Analysis of Industrial Systems," which was published in *Industrial and Engineering Chemistry Research* 47 (2008) 1955-1966. This paper was co-authored by Y. L. Huang and H. H. Lou. Ms. Piluso's, *et al.*, creates a systematic analysis methodology capable of evaluating various decisions related to improving sustainable industrial development at a plant, industry, and region. The systematic analysis utilizes an extended Ecological Input-Output Analysis (EIOA) method. Ms. Piluso's systematic methodology allows industrial entities to understand their current status of sustainable development and to evaluate various potential future production schedules that provide a best route toward improved industrial sustainable development.

The awards will be presented during the SEF and Green Engineering in the Pharmaceutical Industry Luncheon during the AIChE Annual Meeting in Philadelphia on Wednesday, November 19, 2008.

Upcoming SEF Virtual Meetings

The AIChE Institute for Sustainability (IFS) and Sustainable Engineering Forum (SEF) invite participation in their upcoming webcasts on sustainability.



The standing call in number for all meetings is (303) 928-2693, meeting number 3329706.

- Tuesday October 21st, 2008, 2 pm ET: "Sustainability and the Olympics"
- Tuesday November 18th, 2008, 2 pm ET: "Sustainability Actions an Individual Can Take." Hosted by Robert Sylvester of DuPont during the AIChE Annual Meeting in Philadelphia.
- Tuesday December 16th, 2008, 2 pm ET: Sustainability and the Packaging Industry

For the most up-to-date and current listing of upcoming SEF Virtual Meetings, please visit: <http://www.aiche.org/IFS/Products/Virtual.aspx>.

For more information regarding each virtual meeting or to register, contact ifs@aiche.org.

Past SEF Virtual Meetings

For additional information regarding past and upcoming virtual meetings, please visit the “Events” → “Virtual Meetings” section of the SEF website (<http://www.aiche.org/sef>).

Please contact Earl Beaver if you are interested in a detailed summary of the main discussion points from these previous virtual meetings or for suggestions for future virtual meeting topics.

SEF ACTIVITIES

1st International Congress on Sustainability Science and Engineering: Where Science and Engineered Technologies Meet the Needs of Society

Mark your calendars for the 1st International Congress on Sustainability Science and Engineering (ICOSSE Aug 09). The EPA and the Institute for Sustainability announce the First International Congress on Sustainability Science and Engineering (ICOSSE Aug 09). The Congress will be held in Cincinnati Ohio, August 9 – 13, 2009 and will address the multidisciplinary nature of industrial sustainability along the supply chain.

The focus of the symposium is to provide a common platform to practitioners of various physical and ecological sciences, engineering fields, economics, and social sciences for exchanging emerging ideas about ways and means of protecting the environment and its resource depletion so that humans can achieve sustained economic growth and societal benefits through generations. Products, processes and systems for sustainability are among the major focus of this conference.

The Congress is organized by AIChE’s Institute for Sustainability, cosponsored by EPA, NSF, and NIST, and supported by ASME. The congress is chaired by Subhas Sikdar of the EPA and steering committee members include Bruce Hamilton, NSF, Herb Cabezas, EPA, Lyn Beary, NIST, Eric Amis, NIST, Darlene Schuster, AIChE IfS, and Yinlun Huang, Chair Sustainable Engineering Forum. For additional information regarding the Congress and for the call for papers, please visit:

<http://www.aiche.org/IFS/Conferences/index.aspx>

AIChE’s SEF and Energy Initiative Announce Undergraduate Competition

The AIChE’s Sustainable Engineering Forum and Energy Initiative announce a competition to promote

energy education in K-12 schools. The program will pair teams of AIChE student chapters and an area K-12 school to work together to develop a hands-on learning activity that addresses curricular needs using energy concepts. Each student group will develop a hands-on demonstration or experiment that illustrates an important concept in alternative energy, while also contributing to the K-12 curriculum learning objectives. The program will offer awards of \$2,500 to each of four student chapters.



The groups will develop their concept prior to November 1, 2008 and submit a proposal that describes the specific activity in enough detail so that it can be judged for effectiveness by a group of chemical engineering educators. An assessment component is a required element of the project. Awards of \$2,500 will be provided no later than November 15, 2008 for those projects selected as most likely to succeed to allow the group to purchase materials needed for the demonstration.

The project shall be completed in the school no later than May 1, 2009. The student group shall make a report of the project, including instructions on how to construct the demonstration/experiment, the curricular goals and outcomes, and a report of the success of the first implementation of the project. The report will be included on a web page for public access and dissemination to a broader audience. An oral presentation of the outcomes of each project may be requested as a part of the 2009 AIChE Annual Meeting.

Program details and guidelines are available at: www.aiche.org/energy/getinvolved/volunteer.aspx

EDUCATION COLUMN

Course Specific Modules for Sustainability

Hesketh, Robert P.
Department of Chemical Engineering, Rowan University, Glassboro, NJ, USA

An essential step for preparing undergraduate students to consider aspects of sustainable development throughout their courses is to encourage professors to incorporate sustainability in the curriculum. The SEF is starting an initiative to do this by providing faculty materials for integration of this subject into chemical engineering courses as

well as providing information giving the motivation for using sustainability principles.

The motivation for using this material will be presented using the overall mantra of sustainable development and



green engineering. In addition we will prepare examples of industrial use of sustainable engineering concepts and based on the driving factors in ABET accreditation:

ABET Engineering Program Outcomes Criteria (Accreditation Board for Engineering & Technology) 2007-2008 Accreditation Cycle

Criterion 3. Program Outcomes and Assessment:

- (c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and **sustainability**
- (f) An understanding of professional and ethical responsibility
- (h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (j) A knowledge of contemporary issues

We now have an excellent textbook in green engineering and a series of MS PowerPoint modules. This material can be easily adopted for a stand-alone course in Green Engineering, but we are missing many elements of a course in sustainability as well as an integration of these ideas throughout chemical engineering. However, more work is required to prepare materials for professors teaching traditional chemical engineering courses. The Sustainable Engineering Forum will give support for the production and publication of in-class modules that can be used by professors in each of their engineering classes. These modules would consist of the following:

1. Professor's guide to incorporating sustainable engineering into their course
2. In-class presentation package (lecture notes and handouts)
3. Example Problems
4. Homework problems and solutions (10-20 depending on complexity)
5. Sample Exam problems (2-3)

SEF will be targeting a number of chemical engineering textbooks in key chemical engineering courses.

Through these course modules linked to key textbooks this program will:

- Enable students to learn sustainable engineering over a 4 year period.
- Provide a source of sustainable engineering material for faculty in chemical engineering
- Develop a core of faculty that have experience using this new material in their courses

We are looking for both industrial and academic contributions to this effort. If you are interested in participating in this project please contact Robert Hesketh at Rowan University at Hesketh@rowan.edu or (856) 256-5313.

A presentation of these proposed modules will be made at the 2008 AIChE Annual meeting on Wednesday, November 19th 2008 from 8:30 AM-11:00 AM in the Sustainability Education session (449) in the Lescaze Room (Loews Philadelphia Hotel).

MEMBER COMMUNICATIONS

Lemelson-MIT Award for Sustainability – Call for Nominations

The Lemelson-MIT Program recognizes outstanding inventors, encourages sustainable new solutions to real-world problems, and enables and inspires young people to pursue creative lives and careers through invention.

The \$100,000 Lemelson-MIT Award for Sustainability celebrates individuals whose inventions and innovations enhance economic opportunity and community well-being in developing and/or developed countries, while protecting and restoring the natural environment. The award seeks to further foster inventive work focused on sustainable challenges, and promotes inventive role models who can inspire young people to pursue creative lives and careers through invention.

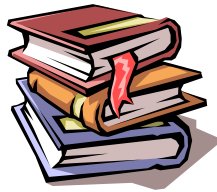


The deadline to nominate a candidate for this award is Friday, October 3, 2008. If you have any questions regarding the nomination process, please e-mail the Lemelson-MIT Program Officer (lemelson_awards@mit.edu).

For more information about the Lemelson-MIT Program or this award, please visit their website at: <http://mit.edu/invent/a-award.html>

Sustainability Readings

Lists of valuable sustainability related reading materials, as assembled by Earl Beaver, are available on the SEF website. Anyone interested in learning more regarding the areas of sustainability, global climate change, and how sustainable companies make decisions, please visit the "Readings" section of the SEF website (<http://www.aiche.org/sef>).



IFS UPDATES

Sustainability Index Roundtable Meets November 19

The AIChE Sustainability Index Roundtable will meet during the upcoming AIChE Annual Meeting in Philadelphia on Wednesday November 19, 2008 from 2 to 4 pm. The Roundtable consists of companies using the AIChE Sustainability Index (sm) to benchmark their sustainability performance. The roundtable provides the opportunity for companies to improve their understanding of sustainability measures and to help the index evolve in order to best meet company needs.

The AIChE Sustainability Index (<http://www.aiche.org/ifs/sustainability/about.aspx>) was developed by engineers and scientists for both engineering and scientific experts and enterprise managers. Unlike other indices, the AIChE Sustainability Index benchmarks well-defined performance metrics and indicators, including SH&E performance, innovation, and societal measures. The metrics are based on over 30 sources of public data and allow companies to measure their efforts at the company and sector level. Companies interested in attending the Roundtable discussion should contact D. Schuster at darls@aiche.org for additional information.

CSTP Projects 2008

Some of the projects undertaken by CSTP throughout 2008 included:

Sustainability Guide - Provides over 150 key sustainability considerations to be integrated across your business' value chain and throughout your company's organizational structure.

- Goal: Complete and publish Guide Version 1 in 2008.

Tools - A list of 'tools' used to enhance sustainable practices of interest to industry.

- Goals: Update list of existing tools, identify gaps, and recommend simplified tools to be developed under CSTP sponsorship.

3rd Party Guidelines - Provide the guidelines (certification) for practices and products of suppliers and other key stakeholders with respect to sustainability.

- Goal: Complete a feasibility study to understand the opportunity to be more proactive with our suppliers and stakeholders.

Raising Awareness - Raise the collective awareness and buy-in of stakeholders regarding sustainable practices.

- Goals: Create and publish the CSTP Steward, a quarterly newsletter of interest to industrial practitioners of sustainability and provide monthly educational CSTP Exchanges on sustainability topics of interest to members.

Best Practices - Techniques or methodologies that, through experience and research, have proven to reliably lead to a desired result.

- Goal: Identify/develop 10 best practices to drive sustainability and track usage by partner companies by year end.

Engineers Forum on Sustainability 2008 Update

The Engineers Forum on Sustainability, chaired by the ASCE and co-chaired by the AIChE Institute for Sustainability (IFS), is a collaborative effort of ASCE, AIChE, ASEE, ASME, IEEE-USA, and AAAS. Their May 9 2008 meeting at the National Academies included the following presentations:

- Founders Society Project on Technologies for Carbon Management - By Dale Keairns, AIChE President
- Sustainability in Post-Katrina New Orleans: Opportunities, Issues and Challenges
- The Global Flow of Metals and Minerals
- The AAAS Center for Science, Innovation and Sustainability

The next Forum meeting is scheduled for Friday, September 26, 2008 at the Academy. The agenda includes:

- Progress Report on the National Academies' Study "America's Energy Future: Technology Opportunities, Risks and Tradeoffs"
- The LEED EB Experience at the National Geographic Society
- Report on the U.N. Commission on Sustainable Development
- Report on the ASME Water Management Technology Vision & Roadmap Workshop

- Engineering for Sustainable Solutions: Materials and Resources - An International Workshop (AIME)

All interested SEF members are invited to attend. For a copy of the August 2008 Newsletter, which



includes summaries of the May 9 Forum presentations, articles on the Higher Education Climate Commitment, the EPA P3 Award Winners, the IEEE

Video Series on Sustainability, and the ASCE Sustainability Website, please visit:

<http://www.aiche.org/IFS/Press/Newsletter.aspx>.

For any additional information, contact ifs@aiiche.org.

SEF LEADERSHIP (2008-2009)

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