

2016

Institute for Sustainability

November 13-18, 2016

Hilton San Francisco Union Square, San Francisco, CA





Letter from the Chair

Sustainability Professionals:

Welcome to the 2016 AIChE Annual Meeting at the Hilton San Francisco in San Francisco, CA. The program contains extensive content related to sustainability efforts, challenges, and opportunities. The program includes sessions sponsored by the Sustainable Engineering Forum and the Environmental Division. Featured events include:

- Management & Environmental Divisions / Chemical Engineering & The Law Group Dinner
- Sustainable Engineering Forum (SEF) Awards Luncheon

Details of these events are provided in the conference program.

We thank the speakers, chairs, and other volunteers who have worked hard to put together a wonderful program. There will be many opportunities for networking, exchange of ideas and hearing about the latest in information and innovations. We look forward to seeing you in San Francisco for an enjoyable and productive conference.

A handwritten signature in black ink that reads "David Allen".

David T. Allen

Chair, Institute for Sustainability
An AIChE Technological Community
Gertz Regents Professor of Chemical Engineering
Director of the Center for Energy and Environmental Resources
University of Texas at Austin

Program

Sustainable Engineering Forum					
Day	Time	Session #	Session Title	Property	Room
Sunday	1:00 PM	17	Poster Session: Meet the Faculty Candidate - Sustainable Engineering*	Hilton San Francisco Union Square	Continental 4 & 5
Sunday	3:30 PM	27	Design of CO ₂ Capture and Utilization Systems*	Hotel Nikko San Francisco	Carmel I
Monday	12:30 PM	150	Fundamentals of Food, Energy, and Water Systems*	Hilton San Francisco Union Square	Union Square 14
Monday	3:15 PM	239	Sustainable and Green Product Design *	Hilton San Francisco Union Square	Union Square 3 & 4
Tuesday	8:30 AM	315	Sustainable Chemicals: Advances in Innovative Processes*	Hilton San Francisco Union Square	Union Square 13
Tuesday	8:30 AM	319	The Food-Energy-Water Nexus*	Hilton San Francisco Union Square	Union Square 15 & 16
Tuesday	8:30 AM	319	The Food-Energy-Water Nexus*	Hilton San Francisco Union Square	Union Square 15 & 16
Tuesday	12:30 PM	350	Energy Sustainability: Challenges and Solutions*	Hilton San Francisco Union Square	Union Square 17 & 18
Tuesday	12:30 PM	353	Fuels from Sun I: Nanomaterials for Water Splitting, Artificial Photosynthesis, and Other Photocatalytic and Photoelectrochemical Reactions*	Hilton San Francisco Union Square	Golden Gate 8
Tuesday	12:30 PM	355	Fundamentals of Sustainability Science and Engineering*	Hilton San Francisco Union Square	Union Square 14
Tuesday	12:30 PM	379	Sustainable Fuel from Renewable Resources*	Hilton San Francisco Union Square	Union Square 13
Tuesday	3:15 PM	410	Fuels from Sun II: Nanomaterials for Water Splitting, Artificial Photosynthesis, and Other Photocatalytic and Photoelectrochemical Reactions*	Hilton San Francisco Union Square	Golden Gate 8
Tuesday	3:15 PM	439	Sustainability in the Analysis, Synthesis, and Design of Chemical Engineering Processes	Hilton San Francisco Union Square	Union Square 17 & 18
Wednesday	8:30 AM	454	Advanced Treatment for Water Reuse and Recycling I*	Hilton San Francisco Union Square	Union Square 14

Wednesday	8:30 AM	455	Advances in Life Cycle Optimization for Process Development*	Hilton San Francisco Union Square	Union Square 13
Wednesday	8:30 AM	469	Division Plenary: Sustainability Plenary	Hilton San Francisco Union Square	Union Square 15 & 16
Wednesday	8:30 AM	498	Solar Thermochemical Energy Storage*	Hilton San Francisco Union Square	Powell
Wednesday	12:30 PM	512	Advanced Treatment for Water Reuse and Recycling II*	Hilton San Francisco Union Square	Union Square 14
Wednesday	12:30 PM	524	Distributed Chemical and Energy Processes for Sustainability*	Hilton San Francisco Union Square	Union Square 17 & 18
Wednesday	12:30 PM	557	Solar Thermal Power Generation*	Hilton San Francisco Union Square	Powell
Wednesday	3:15 PM	572	Carbon Dioxide Capture Technologies and Their Use*	Hilton San Francisco Union Square	Union Square 13
Wednesday	3:15 PM	609	Solar Thermochemical Fuels I*	Hilton San Francisco Union Square	Powell
Wednesday	3:15 PM	614	Water Sustainability and Integrated Water Resource Management*	Hilton San Francisco Union Square	Union Square 14
Wednesday	6:00 PM	619	Poster Session: Sustainability and Sustainable Biorefineries*	Hilton San Francisco Union Square	Grand Ballroom B
Thursday	8:30 AM	630	CCS: Technoeconomics and LCA	Hilton San Francisco Union Square	Union Square 15 & 16
Thursday	8:30 AM	633	Community-Based Water Treatment Innovations*	Hilton San Francisco Union Square	Union Square 1 & 2
Thursday	8:30 AM	664	Solar Thermochemical Fuels II*	Hilton San Francisco Union Square	Powell
Thursday	12:30 PM	677	CCS: Utilization of CO ₂ to Products	Hilton San Francisco Union Square	Union Square 15 & 16
Thursday	12:30 PM	690	Going to a Decision Point in Sustainability Analysis*	Hilton San Francisco Union Square	Union Square 3 & 4
Thursday	12:30 PM	712	Solar Thermochemical Processing*	Hilton San Francisco Union Square	Powell
Thursday	3:15 PM	724	CCS: Modeling and Simulation	Hilton San Francisco Union Square	Union Square 15 & 16

Thursday	3:15 PM	751	Sustainability Metrics at the Process and Product Level*	Hilton San Francisco Union Square	Union Square 3 & 4
Thursday	3:15 PM	753	Techniques in Solar Energy*	Hilton San Francisco Union Square	Powell
Friday	8:30 AM	760	Design, Analysis, and Optimization of Sustainable Energy Systems and Supply Chains I*	Hilton San Francisco Union Square	Golden Gate 6

Environmental Division					
Day	Time	Session #	Session Title	Property	Room
Sunday	1:00 PM	11	Poster Session: Meet the Faculty Candidate - Environmental Topics*	Hilton San Francisco Union Square	Continental 4 & 5
Monday	8:30 AM	110	Overview of U.S. DOE Environmental and Waste Cleanup Programs (Invited Talks)*	Hilton San Francisco Union Square	Sutter
Monday	8:30 AM	110	Overview of U.S. DOE Environmental and Waste Cleanup Programs (Invited Talks)*	Hilton San Francisco Union Square	Sutter
Monday	12:30 PM	150	Fundamentals of Food, Energy, and Water Systems*	Hilton San Francisco Union Square	Union Square 14
Monday	3:15 PM	234	Rapid Fire Session: Environmental Division	Hilton San Francisco Union Square	Union Square 13
Monday	6:00 PM	254	Poster Session: Environmental Division	Hilton San Francisco Union Square	Grand Ballroom B
Tuesday	12:30 PM	340	Composites for Environmental Applications*	Hilton San Francisco Union Square	Golden Gate 5
Tuesday	12:30 PM	355	Fundamentals of Sustainability Science and Engineering*	Hilton San Francisco Union Square	Union Square 14
Tuesday	3:15 PM	414	Environmental Division Awards and Honors (Invited Talks)	Hilton San Francisco Union Square	Union Square 13
Wednesday	8:30 AM	477	Important Issues in Professional Development Including the Management Division's Award Recipient Presentation (Invited Talks)*	Hilton San Francisco Union Square	Union Square 19 & 20
Wednesday	12:30 PM	544	Nanoparticles and Health*	Hilton San Francisco Union Square	Golden Gate 8
Wednesday	3:15 PM	584	Environmental Implications of Nanomaterials: Biological Interactions*	Hilton San Francisco Union Square	Golden Gate 8

Thursday	8:30 AM	639	Environmental Applications of Nanotechnology and Nanomaterials I*	Hilton San Francisco Union Square	Golden Gate 8
Thursday	12:30 PM	686	Environmental Applications of Nanotechnology and Nanomaterials II*	Hilton San Francisco Union Square	Golden Gate 8

* This session is co-sponsored by one or more programming groups

Special Events					
Day	Time	Session #	Session Title	Property	Room
Tuesday	7:00 PM	307	Management & Environmental Divisions / Chemical Engineering & The Law Group Dinner (ticketed event)	First Crush	Off-Site
Wednesday	11:30 AM	401	Sustainable Engineering Forum (SEF) Awards Luncheon (ticketed event)	Hotel Nikku	ANZU

AWARD WINNERS

Environmental Division Award Winners

Lawrence K. Cecil Award in Environmental Chemical Engineering

Spyros Pandis, Carnegie Mellon University

Environmental Division Graduate Student Paper Award

Ziyuan Wang, Lamar University & Kun Yu, Rutgers University

Environmental Division Early Career Award

Debalina Sengupta, Texas A&M University

SEF Award Winners

Sustainable Engineering Forum Student Paper Award

Emre Gencer, Massachusetts Institute of Technology

Sustainable Engineering Forum Research Award

Vilas Pol, Purdue University

Sustainable Engineering Forum Education Award

Yinlun Huang, Wayne State University

Institute for Sustainability: An AIChE Technological Community

AIChE, which established its first sustainability programs in the early 1990s, is a recognized leader in sustainability among scientific and engineering organizations. Its sustainability work has been supported by a number of companies in the chemical, energy and related industries, and by the U.S. Environmental Protection Agency, Department of Defense, and Department of Energy, among others. AIChE has identified sustainability as a key driver of the profession's and the Institute's future and one which is aligned with AIChE's emphasis on sound engineering and economics.

AIChE's Institute for Sustainability (IfS) is a network of scientific, engineering, and financial experts who work to develop and deploy new technologies and practices through multidisciplinary collaboration. Member companies (and their individual members) benefit from joint projects and pre-competitive research that keeps them on the cutting edge of sustainability technologies and developments. Through participation, sponsors and members shape these projects and inject scientific rigor and real-world business experience into sustainability discussions. IfS has a mission of developing and implementing cost-effective technologies, processes, and practices needed to meet global challenges. It focuses on industrial ecology, sustainable business practices and international sustainable development. Much of this work is carried out by the IfS Center for Sustainable Technology Practices, a group of companies identifying and promoting best practices and roadmaps for making technically sound sustainability decisions.

Current IfS efforts include:

- Center for Sustainable Technology Practices (CSTP)
- AIChE Sustainability Index (AIChE SI)
- AIChE Credential for Sustainability Professionals (ACSP)
- Smart Manufacturing Sustainability Metrics
- International Congress on Sustainability Science and Engineering (ICOSSE)
- Sustainable Packaging Symposium (SPS)
- Sustainable Engineering Forum (SEF)
- Youth Council on Sustainable Science and Technology (YCOSST)
- Other Conferences and Workshops

For more information, visit the Institute for Sustainability at www.aiche.org/ifs.



Institute for Sustainability Managing Board Members

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- Sally Ng, Georgia Institute of Technology
- Benson Pair, AAEEES (American Academy of Environmental Engineers and Scientists) / KBR Energy & Chemicals
- Subhas Sikdar, US EPA (retired)
- Raymond Smith, US EPA
- Diane Spencer, Lawrence Livermore National Lab
- David Thompson, Idaho National Lab
- Tracy Young, The Dow Chemical Company