THE COUNCIL FOR CHEMICAL RESEARCH

Advancing the Chemical Enterprise through Collaboration

The Council for Chemical Research Announces

14th New Industrial Chemistry and Engineering (NIChE) Conference
On
Micro-Reactor Technologies:
A Critical Tool for Process Optimization and Intensification

Date: **September 21 – 23, 2009**

Location: **National Institute of Standards and Technology**
Gaithersburg, MD

The goal of the conference is to inform the chemical science and technology research community of the state-of-the-art of micro-reactor technology and related enabling technologies. The sessions give a rationale for the use of micro-reactors for R&D as well as production; describe technological advances and applications of micro-reactors; and feature a variety of case studies as well as other enabling technologies such as sensors, separations etc.

Micro-reactors can provide the tools for enhancing sustainability of many processes by:

- Reducing solvent use
- Increasing yield while minimizing waste
- Increasing productivity via continuous processing
- Increasing reaction rates via reduced volumes

World-leading experts will provide plenary presentations, with ample time allotted for questions and discussion. The speakers include experts from Corning, IMM-Mainz, MIT, Dow, Bayer, EPA, CPAC, Merck, and many others. The preliminary program is attached. Watch the CCR website for updates. (www.ccrhq.org).

This is a meeting on a transformational technology and promises to be of great interest to the chemical science community. We hope that this is a topic of interest for you and your organization. Registration fees are $400.00 for CCR Academic Members; $500.00 for CCR Industry and Government Members; and $750.00 for Non-members. Webcasting is also available. To register for the conference, please go to http://www.nist.gov/public_affairs/confpage/090921b.htm .

If you are interested in the webcasting or in presenting an exhibit or a poster, please contact Hratch Semerjian at CCR Headquarters (phone: 202-429-3971, e-mail: hratch@ccrhq.org).

Sponsored by: **Corning Incorporated**

CORNING

US Environmental Protection Agency

CCR's 2009 NIChE Conference on:

Micro-Reactor Technologies:
A Critical Tool for Process Optimization and Intensification

Goal of the Conference: Inform the chemical related research enterprise of the state-of-the-art of micro-reactor technology and technologies that enable their use.

Monday - September 21, 2009	
Session 1: Plenary Session - Why Micro-Reactors for Research, Development and Production?	
1:00 – 1:15 pm	**Workshop Introduction**
1:15 – 2:00 pm	**Plenary Speaker: Title to be Provided** Sergio Pissavini (Corning-France)
2:00 – 2:45 pm	**Plenary Speaker: Micro-Process Engineering for Fine Chemistry and Fuel Processing – From Lab to Pilot Production towards Sustainability -** Martin O'Connell (IMM-Mainz, Germany)
2:45 – 3:15 pm	***BREAK***
3:15 – 4:00 pm	**Plenary Speaker: Novartis Project on Continuous Manufacturing**: Klavs Jensen (MIT)
4:00 – 4:45 pm	**Plenary Speaker: Merging Green Chemistry and Process Intensification** Michael A. Gonzalez (US EPA)
4:45 – 5:30 pm	**Discussion Period**
6:00 – 7:30 pm	***RECEPTION***

Tuesday - September 22, 2009	
Session 2: Technological Advances and Applications of Micro-Reactors	
8:30 – 9:10 am	**Applications of Micro-Reactors in Scale-Up Operations**: Michelle Cohn (UOP)
9:10 – 9:45 am	**Enhanced Chemical Synthesis in Micro-Reactors**: Paul Watts (U. of Hull)
9:45 – 10:00 am	***BREAK***

Tuesday - September 22, 2009 (Cont'd)	
10:00 - 10:30 am	**Case Study**: Samrat Mukherjee (Bayer Technology Services) (tbc)
10:30 – 11:00 am	**Case Study - On-line Analysis of Flowing Streams using Micro-flow HPLC:** James Cuff (Merck)
11:00 – 11:30 am	**Case Study**: David Ager (DSM)
11:30 – 12:00 pm	**Discussion Period**
12:00 – 1:15 pm	***LUNCH***
Session 3: Making the Case for Micro-Reactors; Case Studies	
1:15 – 2:00 pm	**Utilization of Micro-Reactor Technology for Reaction Characterization** Ray Chrisman (Dow Chemical – Retired; Visiting Scholar at the Univ. Washington)
2:00 – 2:30 pm	**Case Study**: Laura Silva (Velocys)
2:30 – 3:00 pm	**FDA Project and Sampling, NeSSI Gen III, Analytical**: Brian Marquardt and Mel Koch (University of Washington-CPAC)
3:00 – 3:30 pm	***BREAK***
Session 3a: Enabling Technologies	
3:30 – 4:00 pm	**Overview of Sensors and Related Devices for Micro-Reactors**: Henry Dubina (Mettler Toledo) (tbc)
4:00 – 4:30 pm	**Overview of Sensors and Related Devices for Micro-Reactors**: Ian Lewis (Kaiser Optical Systems)
4:30 – 5:30 pm	Discussion Period
6:30 – 9:00 pm	***DINNER***

Wednesday - September 23, 2009	
Session 4: Enabling Technologies	
8:30 – 9:00 am	**Introduction to Chemical Sensing with Applications to Micro-Reactors** Joe Stetter (KWJ)
9:00 – 9:30 am	**Simulated Moving Beds for Separations** Linda Wang (Purdue U.)
9:30 – 10:00 am	**High Performance Biochemical Analysis with Simple Microfluidic Devices** David Ross (NIST)
10:00 – 10:30 am	**Summary of Conference and Issues –** Ray Chrisman (Dow Chemical – Retired; Visiting Scholar at the University of Washington)
10:30 – 12:00 pm	**Discussion and Future Directions**
12:00 pm	***Meeting Adjourns***

Council for Chemical Research

The Council for Chemical Research is a not-for-profit organization created in 1979 when Mac Pruitt, then VP for Research at The Dow Chemical Company, convened the first meeting of research executives from the nation's major chemical companies and research universities. His goal was to improve collaboration between the public and private sector research communities. Promoting collaborations – both within and across sectors and disciplines – and serving as an advocate for the United States' chemical research enterprise continue to be CCR's primary objectives.

CCR's members are companies, universities, and government laboratories that conduct research in chemistry-related science and engineering. Today the membership includes the research heads of approximately 11 leading companies, 10 government laboratories, and the chemistry and chemical engineering departments of some 130 research universities, with a combined US R&D budget of more than $7 billion. Its goals are to: advance research collaborations; advocate for research investment; enrich graduate education; and address long-range issues facing chemical and related industries.

National Institute of Standards and Technology

NOTE: Laboratory Tours on NIST's Gaithersburg Campus are available by appointment the morning of Sept 21 and the afternoon of Sept 23.

Founded in 1901, NIST is a non-regulatory federal agency within the U.S. Department of Commerce. NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life. **The NIST Laboratories** conduct research in a wide variety of physical and engineering sciences. Within its laboratory structure NIST hosts two user facilities. NIST's Center for Nanoscale Science and Technology (CNST) consists of a research program and the NanoFab, which is a shared-use facility that provides access to specialize fabrication and characterization measurement tools. The NIST Center for Neutron Research (NCNR) has activities that focus on providing neutron measurement capabilities to the U.S. research community. For more information on these programs and the NIST extra-mural programs see www.nist.gov.