Volume 23, Issue 2

August 2008

AIChE-Pittsburgh
The Catalyst

iN THISS ISSUE

- The first AIChE national meeting was held in December 1908—100 years ago!!—at Carnegie Tech!

September Meeting Announcement

Nanotechnology & the Chemical Engineer

Petersen Institute of NanoScience and Engineering

Tour of NanoScale Fabrication and Characterization Facility (NFCF)

Where: University of Pittsburgh
Benedum Hall of Engineering, Room 360
3700 O'Hara Street
Pittsburgh, PA 15261

When: Wednesday, September 17, 2008

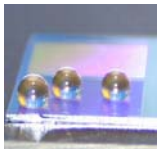
Time: 6:00 PM Registration

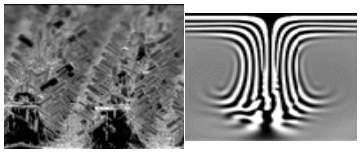
6:30 – 8:30 Presentation and NFCF Tour

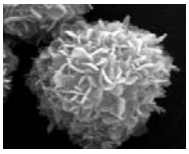
Menu: Catered buffet and soft drinks will be served in the Conference Room during registration

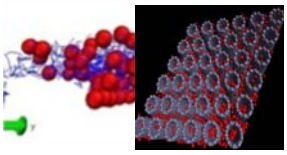
Cost: Students: $20, Members: $25

Parking-wise, Soldiers & Sailors Garage (two blocks away on Bigelow Blvd between O'Hara and Fifth) is available.









RSVP No Later Than Monday, September 15, 2008

To: Paul Brezovec, Vice-Chair
Phone: 814-269-2844
E-mail: brezovec@ctc.com

Your RSVP must include: **Name, Affiliation, E-mail Address, and Phone Number.**

Please Pay at Door.

CANCELLATIONS: If you must cancel your meeting reservation, please do so no later than 48 hours prior to the meeting. Otherwise, you will be invoiced for the cost of your meal.

Nanostructures serve as the base for many applications, including environmental protection, fast computing, new synthetic materials, energy storage, and conversion and biomedical applications from tissue engineering to disease detection. University of Pittsburgh Chemical Engineers conduct research at the Petersen Institute of NanoScience and Engineering, which include:

- Synthesize, assemble, and characterize nanostructure for biomedical and environmental applications
- Develop biomimetic materials for green construction, dry adhesives, energy harvesting systems, and biochemical and environmental sensors

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Letter from the Chair

By Chris Steffy

Dear Colleague,

Welcome to a great new year with AIChE Pittsburgh Section. This year we celebrate our centennial. For 100 years, AIChE has been advancing the theory and practice of chemical engineering for the betterment of society.

As Chair of the Pittsburgh Section, I am proud to follow in our long tradition of leadership, and I am dedicated to supporting the professional and personal growth of our members. With the time and dedication of the officers and other volunteers, we have a great schedule of events planned.

As a theme for the year, I will discuss in this column and at meetings the role of the Chemical Engineer as Leader. Our society is on the verge of making some significant changes in the fields of Energy, Medicine and Food. To participate in making correct decisions in these areas, individuals in society require a high level of technical understanding. I believe that a Chemical Engineer has the perfect training to grasp the most important issues of our time. Our politicians do not.

I see some painful and expensive pitfalls on the horizon. For example, in the field of Energy, we have spent significant taxpayer dollars for ethanol plants. With more leadership by Chemical Engineers, would we have gone down this path in the same way? There are other similar issues in the pipeline. How will we as Chemical Engineers react and lead?

(Continued on page 4)

Please sign me up for the Pittsburgh Section of AIChE

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

Business Phone _____

Residence Phone _____

Email _____

Local Section dues are $20/year. Contact Gary Hall at gary.hall@sauereisen.com

National Chemistry Week-2008

We are looking for volunteers for the AIChE booth at the National Chemistry Week celebration at Carnegie Science Center. The event will be held on Saturday, October 25 from 10am to 5pm. Volunteers are needed for the following shifts: 9:30-1:30, 1:00-5:00, or 9:30-500. Volunteers will receive free lunch and parking.

To volunteer or for more information, please contact Julia Johnson at 724-258-2776 or Julia.A.Johnson@flexsus.com

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS
PITTSBURGH SECTION

INAUGURAL

GOLF OUTING

October 10, 2008

Pittsburgh North Golf Course, Gibsonia PA

724-443-3800

- 10:30am Registration, 12 noon Tee off
- $80/golfer - $280/foursome
- Price includes
  - 18 holes, shared cart,
  - Hot dog at the turn,
  - "Beer cart"
  - Dinner,
  - Prize holes,
- Low-Gross and Low-Net (Calloway) for Total
- Cash bar
- Dinner only -- $25; Golf only -- $65

QUESTIONS? Gary R. Hall
Gary.Hall@Sauereisen.com
412-963-0303, ext. 236
Sauereisen Inc
160 Gamma Drive
Pittsburgh PA 15238

Sign Up Today!

MAIL, EMAIL OR PHONE REGISTRATION INFORMATION BELOW TO GARY HALL
CHECKS MAY BE MAILED TO GARY HALL, OR PRESENTED AT THE DOOR
SORRY, NO CREDIT CARDS

Your information

Name _____

Company _____

Street _____

City _____

State _____ Zip _____

Phone _____

Email _____

Check if: ☐ Dinner only ☐ Golf only

Make checks out to:

AIChE Pittsburgh Section

Deadline to register: October 1, 2008

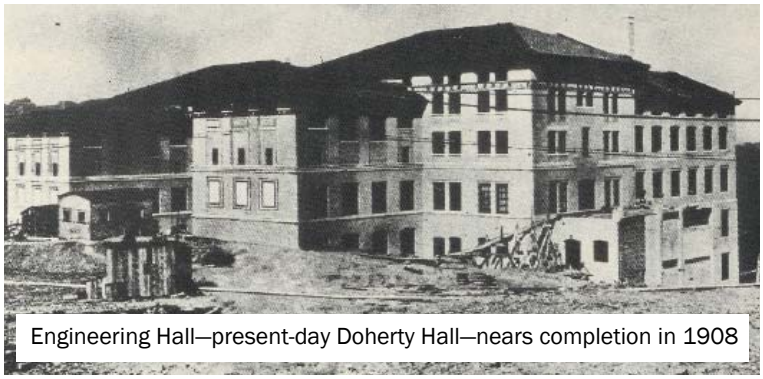
Team members:

1. _____
2. _____
3. _____
4. _____

100TH ANNIVERSARY OF THE FIRST AICHE NATIONAL MEETING

It is a little known fact that the very first national meeting of the American Institute of Chemical Engineers, held 100 years ago, was hosted by the Carnegie Technical Schools in Pittsburg (no 'h' at that time), Pennsylvania. At that time, the Carnegie Technical Schools' three-year-old course in Chemical Practice was renamed "Chemical Engineering Practice" and construction of Engineering Hall—present day Doherty Hall—was completed. During the 1908-1909 academic year, three seniors, four juniors, two sophomores, and one post-graduate student studied Chemical Engineering Practice in the day school; five students were enrolled in the night school. In addition to mathematics, physics, and chemistry, the curriculum included "Steam Engines and Boilers", "Plane Surveying" and "Shop Practice".

The summer of 1908 marked the founding of the American Institute of Chemical Engineers. The first national technical meeting of AIChE was held later that year—December 28 and 29—at the Carnegie Technical Schools. Attendees were welcomed to Pittsburgh by Carnegie Technical Schools President Arthur Anton Hammerschlag. In his opening remarks, AIChE President Samuel P. Sadtler noted that "…the Carnegie Technical Schools [is] a typical example of the kind of institutions we would like to see developed in this country for the kind of chemical engineering work which we are trying to represent."



Engineering Hall—present-day Doherty Hall—nears completion in 1908

The meeting program consisted of 11 papers, and exhibits of equipment and drawings of equipment. Paper titles included "The Chemical Aspect of Impurities, which Cause Scale and Corrosion of Steam Boilers" and "Some Experiments with the Ferric Iron Contact Method of Making Sulphuric Acid from Smelter Fumes". A link to the complete 1908 program will appear at our web-site soon.

To commemorate the 100th anniversary of that first meeting, AIChE and our department are planning a day-long celebration, tentatively scheduled for Monday, December 8, 2008. The celebration will include remarks by AIChE officials and department personnel and a display of memorabilia. Details will become available throughout the summer and fall. Updates will be posted at our web-site

References

Rothfus, R.R, "The History of Chemical Engineering at Carnegie Mellon University," Carnegie Mellon University, 1982.

"75 Years of Progress—a history of the American Institute of Chemical Engineers 1908-1983", AIChE, 1983 (available on-line at aiche.org).

UPCOMING EVENTS-MARK YOUR CALENDAR!

September 17th: 6:30-8:30 PM NanoScale Fabrication and Characterization Facility (NFCF)

October 1st: Rebuilding the Troops: biomedical science by the chemical engineer

October 10th: Golf Outing 10:30 AM Registration, 12 noon Tee off at Pittsburgh North Golf Course

November 12th: Joint Energy Symposium with ACS-Pittsburgh at Duquesne University

December 8th: 100 years of AIChE national Meetings celebration, Carnegie Mellon University

January: Joint meeting with AWMA, Penn Brewery

January/February: Chemistry Week, Future Cities and Engineering Week--Outreach with Grade School and High School Students award

February 15th: Student's Night at the Pitt Student Union

February: Job Searching for Chemical Professionals/Technicians Workshop with ACS/SACP/SSP

March: TBD

April: TBD

May: McAfee Award Night

June: Student Scholarship award announcement

September meeting

(from page 1)

- Describe the equilibrium and the transport properties of fluids that are confined in nanoporous materials (e.g., Hydrogen Storage in Carbon Nanotubes)
- Develop new computer simulations for capturing the behavior of multi-component, multi-phase systems, including polymer nanocomposites (e.g., Nanotube and Nanorod Self-Assembly)
- Develop and systematically investigate metal/oxide nanocomposites as flexible and widely applicable templates for functional materials, in particular for chemical reactions and catalysis

The Petersen Institute of NanoScience and Engineering has graciously agreed to open the doors for us to their NanoScale Fabrication and Characterization Facility (NFCF) at the University of Pittsburgh. The NFCF is a user facility in 4,000 ft^2 of clean-room environment (class 100, 1,000 and 10,000 areas), located in Benedum Hall of Engineering on the Oakland campus. The NFCF is designed to support the fabrication and characterization of nanoscale materials and structures, and the integration of devices at all length scales. The facility houses advanced equipment with core nano-level (20 nanometer or below) capability for fabrication and characterization, including electron-beam lithography system, dual-beam system, and Transmission electron microscopy (TEM).

NFCF Tools

1. Electron-beam Lithography System
2. Transmission Electron Microscope
3. Dual Beam System (Focused Ion Beam/Electron beam)
4. Plasma-enhanced Chemical Vapor Deposition System
5. Reactive Ion Etching System
6. Multi-Source Electron-beam Evaporation System
7. Plasma Cleaner
8. Mask Aligner
9. Surface Profiler
10. Inspection Microscope
11. Wet Stations
12. Spin Coater
13. X-Ray Diffractometer
14. Raman Spectroscope
15. Fourier Transform Infrared (FTIR)
16. Spectroscopic Ellipsometer
17. Scanning Probe Microscope
18. Microspectrophotometer.

The Institute's collaboration goes beyond the University walls to organizations like SMC Business Councils, which is working with the Institute to bring nanotechnology to manufacturers. Researchers are working with government agencies and private companies to bring nanotechnology to drug development, pollution control, and many other industries. In the recent past, the following start-up companies (three of them local) have licensed nanotechnology from the Petersen Institute, including Zyvex Corp. (polymer coated nanotubes), GlucoseSensing (colloidal arrays), NanoMix (carbon nanotubes), and NanoLambda (plasmonics), and PPG Industries has licensed from the Petersen Institute (polymerized crystalline colloidal arrays for use in paint and coating).

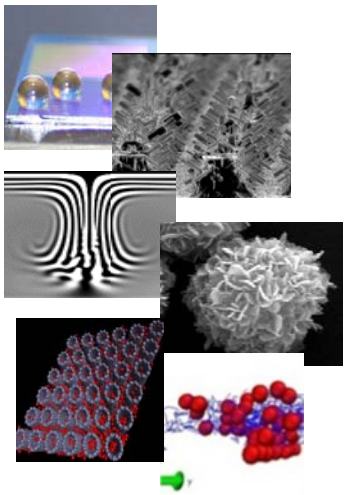
University of Pittsburgh nanoscience researchers are serving as a catalyst for many scientific and technological breakthroughs in the field. Though they come from the Schools of Engineering, Arts and Sciences, and the Health Sciences, these researchers are, increasingly, collaborators. That's because the sciences are intersecting at the nano level. Researchers in the University's Institute of NanoScience and Engineering have received many honors:

- Five have held endowed positions;
- Nine have won the Chancellor's Distinguished Research Award;
- Four have received the National Science Foundation's Career Award for researcher/educators deemed likely to become academic leaders;
- One is an elected member of the National Academy of Sciences; and
- Another is a Distinguished Professor
- Numerous patents awarded.

The NFCF facilitates the interdisciplinary interactions between university faculty members in the development of nanotechnology-based materials, devices and instrumentation technologies. The NFCF is envisioned to have the full capabilities of synthesis and characterization as well as nanofabrication.

Come join us for our visit to the Petersen Institute to be provided an overview of its developments related to chemical engineering and a tour of the NFCF

Chemical Engineers play key roles in emerging nanotechnologies!



Chair's Letter

(from page 2)

If we can take the time to broaden our own knowledge, away from the necessary details of our work life, Chemical Engineers have the technical insight to grasp the issues of the day and translate them to others in society. AIChE is one of the means by which this broadening of knowledge can occur. The first step is participation.

I look forward to seeing you at our meetings in the 2008-2009 year!

—Chris

AIChE-Pittsburgh Executive Committee 2008-2009

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