New Jersey Section

NJAIChE Newsletter

NJ's oldest section – over 50 years of service

Volume 16 Issue 2 September 2009

Welcome Back

The fall has come around again. It is a pleasure to be back with you again. In the next few months we will have our annual college bowl pitting the best of local colleges against one another as well as a fine talk on chemical engineering in China to begin in September.

Our annual Holiday Party is scheduled for December at a date to be determined. Please come and enjoy!

Election time has come around again. Anyone who wishes to run who is a member of the section may do so. It is a fun thing to do and will help develop you as an individual as well as providing a useful service to your fellow chemical engineer.

The executive committee meets at Paisanos at Watching Square Mall usually on the first Tuesday of the month (In September we will meet on September 14) at 6:30 PM. Just show up!

Jobs

The section is setting up a list of potential job openings on our web site. Anyone wishing to post should contact any officer or send to Jobs@njaiche.org.

2009 Section Officers

Chairperson:
Geoffrey D'Netto

Chair-Elect:
David Greene

Treasurer:
Patricia Forgang

Secretary:
Andrew Soos

Past Chair:
Yasha Zelmanovich

Directors:
Chandra Nair
Phil Messina
Todd Salamone
Ken Carlson
Eric Gulliver
Yong Zheng

Director Emeritus:
Frank Dittman

Call for 2010 Elections!

Do you want to serve? Contact any officer for information.

Emerging Leaders Alliance

Our own Laura Turci has been awarded by National by being selected to attend the Emerging Leaders Alliance meeting in Virginia in October. This group is intended to provide an interdisciplinary global community of learning and leadership. This will help promote the next group of emerging leaders in the 21st century.

Congratulation Laura from all of us!

Leadership Development Conference 2009

Around 70 chemical engineers got together in Augusta, GA to discuss and brainstorm about the future of the American Institute of Chemical Engineers. Having just turned 100 years old, the Institute is getting ideas about how to better serve its members and how keep up to date in this fast paced century.

We discussed how relevant our Chemical Engineering degree is in current society; how we can impact the challenges presented, regarding energy generation, waste treatment, controlling contamination etc. We as Chemical Engineers are very well grounded to provide expertise and guidance, problem solving skills to the future, considering the broadness of scope we can have in our disciplines. We also discussed about what are the things Colleges will need to teach to form the Chemical Engineers of the future.

We talked about what are the things the institute is doing and will continue to do, to keep providing to its member with the tools we need to further our career development. Besides the annual meetings, the spring meeting, the institute is also providing engineering On Demand. As the importance of the website grows, more tolls are added, like the webinars that are offered, the library, and the possibilities to advertise our monthly meetings via Facebook, how our networking is not only cards and phone calls, but is also LinkedIn. Some of these things are essential to keep young professionals involved in our meetings…

And of course, we talked about what it means to be part of the AIChE. How we are redefining the institute, how we are providing leaders with the sensitivity to the minorities, to the wide cultural diversity of the young engineers in Between all the things shared, we shared the joy of getting together as colleagues, shaking hands, talking in our meals, discussing coffee preferences sometimes, talking about favorite dishes or the hospitality of Augusta …

At the end, we concluded that to be American, to be part of the Institute, to be a Chemical Engineer, you need to be a human been and share, face to face, a friendly hello.
We need a lot of input, we need everybody's voice in this fast paced career, and we are working to provide our members with the elements needed for the challenges.

We have to try to be that place where everybody knows your name….

- The LDC was hosted by the Central Savannah River Local Section.
- There was a competition about the design of local section web sites and our section was one of the 7 candidates. The winner was South Texas.
- Scott Fogler presented the second edition of his book, Strategies for Creative Problem Solving. The book was based on research founded by the National Science Foundation, presents problem solving framework integrating proven strategies from effective technical organizations.
- The AIChE wants to work with the National Science Foundation to foster and encourage interest in science in children (K-12). For example, connect the growing interest in planet-friendly and green technologies with the Engineering profession.

Keynote address:

Ralph Kempski, a retired bishop from the Evangelical Lutheran Church talked to us about leading a volunteer organization.

- Forcing each one of us to think what role we play to increase participation. How do we assimilate new people into the organization so that they continue active participation?
- The leadership needs to be perceptive about the needs of new people and try to connect them to existing members with common interests.
- The organization need to have a strong, clear and passionate sense of identity. We have to define who we are and our values. We have to have a clear vision of where are we headed.
- Our vision and relationships have to be like the steering of a car to guide us.
- The engine of the car is the program to keep it moving.
- The management team should listen, empower and communicate
- Each member should personally invite another to participate in programs.
- The atmosphere should be akin to "Cheers" where everybody knows your name …

PROGRAMING: FUEL FOR GROWTH

Presented by Todd Williams, Director of Development at Epcon International, Chair of the South Texas Section

- He shared with us the impact of sponsors on monthly meeting attendance. He contacted the key employers of chemical engineers in the area, he emphasized the benefits of reaching out, provided year long recognition in their website. The sponsor gets to talk about his company, he chooses the topic, he is allowed promotes his company.
- The engineers that work in that company will definitely come to a meeting where their colleague is going to talk.
- Other people who wish to make connections or to work for the sponsor companies will also try to attend the meeting.
- The idea is to serve the chemical engineers and the companies they work for.
- The Programming of our session has to be the Fuel for Growth.
- We need to have a mission, vision and a clear knowledge of what we are as an organization and what we are able to provide to the people coming to our meetings
- Avoid doing "the same old" thing or you are going to get "the same old" results.
- Improve your product first, and then market it.
- Ask active member what they like and how to improve even further.
- Professional development grows during the college years, stays flat for the next ten years, because people are getting into the work force, because they are forming families, because they are having kids. There may be need for a family friendly (annual picnic or sports event etc) for networking.

- Evaluate how your programming competes with other activities…
- Interview and poll those who don't attend to understand why they are not involved. We have to know our constituency and understand what they need in terms of talk or professional development.
- Identify what will take to get inactive members excited about being active local section members.

MENTORING

George Wicks of Savannah, GA spoke about the importance of mentoring. He is a member of the Mentoring Committee which also includes Don Orth and Todd Crawford.

- Professionals with many years of experience are rarely recognized for their contributions in mentoring.
- Read books, 2 o r 3 each, 20 total and then share. On their website they have some of these (need website or references)
- Recruitment and Retention: mentor the next generation of leaders in the organization. Help them to establish professional and peer relationship, so that they can hit the ground running.
- Establish a Formal mentoring program.
    - Initial phase is to get to know the person and their needs and whether or not the mentor has the right interests, chemistry and connections for the person
    - In the cultivation phase the relationship, growth and learning takes place
    - The Separation phase occurs when the person is on the right track and no further value can be imparted and the mentor can move on to another person.
    - The Redefinition. Phase is the continuation of the relationship after the active mentoring is over by keeping in touch on a long tem basis.
- Encourage people to pursue their dreams and facilitate their highest aspirations.
- The local section could mentor college students: advice for job search, mock interviews with feedback, provide real world advice, show how to communicate at work with people who are not their professors or parents.

See web information at:
http://www.aiche.org/uploadedFiles/LocalSections/DepartmentUpload/PDF/VolunteerismCEOC.pdf

http://www.aiche.org/uploadedFiles/LocalSections/Resources/How%20To%20Start%20a%20YP%20Group%20Final.doc

Keep them coming

A session on how to connect with the next generation of members.

- Visit colleges often and invite them to events
- Promote website, The mission is to create an information hub,
- Promote local section activities
- Post members accomplishments in the websites. Put bios on their website. Create a Linked in profile for yourself…. Keep updating your profile
- Ensure website updates
- Link website from college website

- List services provided
- Plan specific events students would like to attend
- Stay in touch with active people
- Offer talents you have to develop in the young professionals Speaking, Industry, and organization public relation writing. Public relations: How to deal with adults that are not your teachers
- Define roles and responsibilities as you go…it takes time.
- Create and Fill roles for all
- Gather everybody's information, interests…try to accommodate as many as possible.
- Be enthusiastic; be open to new ideas …
- Organize information for each college or university in the local area with key faculty and student contacts and update as these change often.
- Promote free meals to students etc, and Giveaways: make goody bags- items from 99 cent store
- Create a young professionals group in Facebook or Linked-in
- Keep in touch with valuable contacts even if you like where you are.

http://www.drpetecomedy.com/

http://www.wrek.org/blackbox

Princeton Plasma Tour (June 2009)

The NJAIChE visited the Princeton Plasma Physics Laboratory on one sunny June Afternoon. A group of about 25 toured the facility and visited the subterranean chambers and saw the various reactors (See attached news briefs from PPPL). The attached photos also show some of the tour members admiring the lab exhibits.

INFORMATION BULLETIN

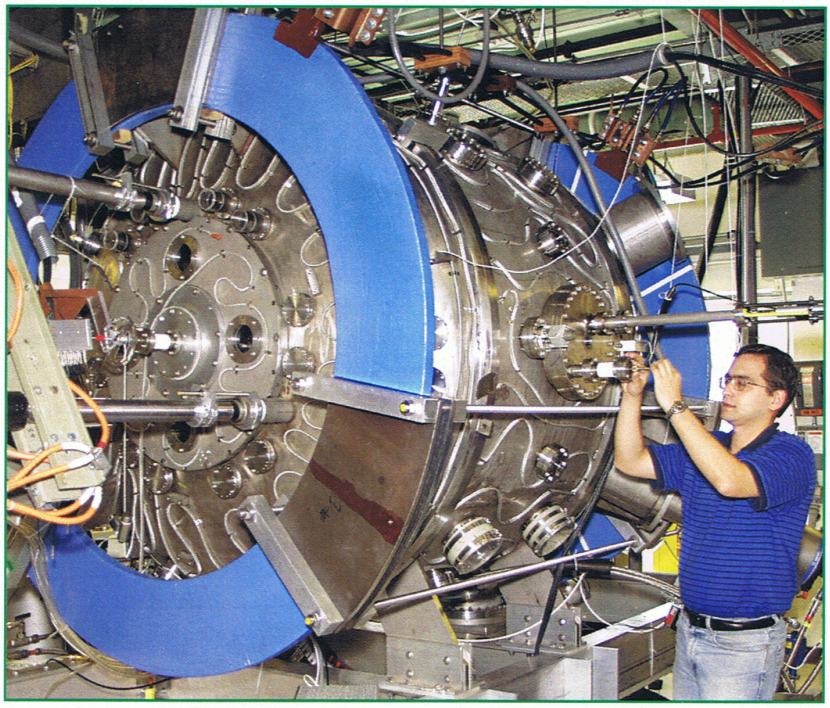
Office of Science
U.S. DEPARTMENT OF ENERGY

U.S. DEPARTMENT OF ENERGY'S
PRINCETON PLASMA PHYSICS LABORATORY
JAMES FORRESTAL CAMPUS, P.O. BOX 451
PRINCETON, NEW JERSEY 08543

MRX

The Magnetic Reconnection Experiment

The Princeton Plasma Physics Laboratory (PPPL) Magnetic Reconnection Experiment (MRX) was built to study a fundamental plasma process in a controlled laboratory environment. A plasma is a hot, ionized gas that can be confined using a magnetic field. Plasmas are often considered to be the fourth state of matter after solids, liquids, and gases, and account for more than 99 percent of the visible universe.



The Magnetic Reconnection Experiment.

Magnetic reconnection is the topological change of a magnetic configuration through the breaking and rejoining of magnetic field lines. During reconnection, magnetic energy is rapidly converted to kinetic and thermal energy, often significantly increasing the plasma temperature, or accelerating plasma particles. PPPL scientists hope to discern the governing principles of this important plasma physics process and gain a basic understanding of how it affects plasma characteristics.

Reconnection occurs in virtually all magnetized plasmas, both in nature and in the laboratory. It was first suggested more than 50 years ago to explain activities associated with observed solar flares. Long and quiet periods (days to months) exist before a sudden explosion of a solar flare, which lasts minutes or hours. In recent years, the solar satellite TRACE has provided the best evidence that reconnection is involved in rapid solar flare energy release. However, the rate of energy release is not well resolved by the present understanding of reconnection physics. The observed "fast reconnection" has made magnetic reconnection a very active area of research.

Magnetic reconnection also plays an important role in the formation of stars, in the heating of the Sun's corona, and in the dynamics of the Earth's space environment, or magnetosphere. The Sun's super heated corona is the source of the solar wind. Fluctuating magnetic fields carried by the solar wind reach the Earth and interact with the magnetosphere. Reconnection induced at the dayside magnetopause (see page 2) is thought to be a trigger of such events as auroral substorms and geomagnetic storms. High-energy particles created during magnetic reconnection ionize upper atmosphere gases producing the aurora borealis, or "northern lights," observed on Earth. The ionized gases release X-rays that are swept into the ionosphere and can damage satellites and disrupt communications and navigation systems. A better understanding of magnetic reconnection would help predict solar eruptions and the stormy behavior of the magnetosphere.

INFORMATION BULLETIN

PPPL PRINCETON PLASMA PHYSICS LABORATORY

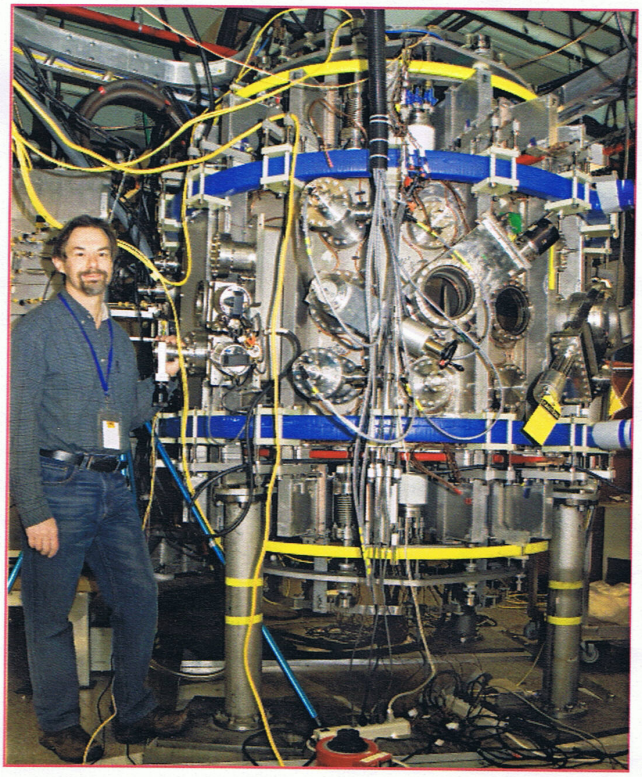
U.S. DEPARTMENT OF ENERGY'S
PRINCETON PLASMA PHYSICS LABORATORY
JAMES FORRESTAL CAMPUS, P.O. BOX 451
PRINCETON, NEW JERSEY 08543

LTX

LTX Experiment Achieves First Plasma

The Lithium Tokamak Experiment (LTX) produced its first plasma in September, 2008. The new device will continue the promising, innovative work started on CDX-U in 2000, involving the use of pure lithium metal on surfaces facing or contacting the plasma. PPPL researchers believe that LTX may herald a new regime of plasma performance with improved stability, lower impurity levels, better particle and temperature control, and more efficient operation. "Even in a small machine like LTX, we expect a dramatic change in plasma parameters, and that's what we're quite excited about," said Bob Kaita, one of LTX's co-investigators. This improved performance may be possible because the LTX plasma is enclosed in a heated, conductive shell coated with molten lithium on the inside, and shaped to conform to the boundary of the plasma.

In CDX-U, there was a circular, lithium-filled tray on the bottom of the vacuum vessel. This enabled tokamak plasmas, for the first time, to be operated in the presence of a large-area liquid-lithium plasma-facing component (PFC), and a substantial improvement in the energy confinement was observed. The CDX-U experiments were concluded in 2005, and the construction of LTX began.



Dick Majeski at the Lithium Tokamak Experiment.

Engineering Challenges Met

In LTX, the evaporation of a thin layer of lithium on the inner shell surface creates a "wall" of lithium, which will be kept liquid by heaters in the shell. Significant technical problems had to be solved to squeeze the four heated shell sections, two new internal magnetic field coils, and about 120 magnetic sensors, together with their mounts and cables, into the old CDX-U vacuum vessel. Leonid Zakharov, another of LTX's co-investigators, specified the requirements for the internal magnetic field coils and the magnetic sensors. They are needed to control the plasma position and determine its "equilibrium" configuration. Zakharov was also instrumental in developing the theory that predicts the advantages of lithium walls. "Drawing on the experience and exceptional skills of the LTX team and PPPL shop staff, we were able to surmount many challenges by using creative synergy at a cost significantly below the approved budget," noted Tom Kozub, who led the engineering effort.

The fabrication of the shell segments and their mounting hardware, the vacuum vessel modifications, and the manufacture of new magnetic field coils took more than two years. An external vendor supplied only two pairs of new magnetic field coils.

Understanding Engineers

The graduate with a science degree says: Why does it work.
The graduate with an engineering degree says: How does it work?
The graduate with an accounting degree says: How much does it cost?
The graduate with an arts degree says: "Do you want fries with that burger?

The Frog and the Engineer

An engineer was crossing the road one day (to get to the other side naturally) and noticed a talking frog who said: "Kiss me and I will turn into a beautiful princess!"

The engineer picked up the frog and put it into his pocket.

The frog, more frantic, spoke again: "If you kiss me not only will I be beautiful but I will stay with you for a week!" The smiled and patted the pocket and proceeded on his way. "I will do anything you want!" she squealed now.

Again a nonchalant pat on the bulging pocket protector.

"What is the matter with you? Why won't you kiss me?"

The engineer replied: "I am too busy for a girlfriend but a talking frog is really cool to have." Having reached the other side of the road, the engineer proceeded to his office for a busy day.