



POLYMER TECHNOLOGY CENTER

Fall 2004 Edition



MARK YOUR CALENDAR FOR NEXT YEAR'S CONFERENCES!

April 2005

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April 21 - SCRATCH

Spring Conference

April 22 - PTIC

Spring Conference

@ Texas A & M University

PTC FALL CONFERENCE WRAPUP

The Scratch and PTIC Fall Conferences held on September 30th and October 1st were a great success! There were new PTC faculty presenters with exciting research updates, as well as a record number of polymer-related companies in attendance. The research presentations can be viewed by PTC members on our website, and a list of companies in attendance is below.

Many terrific ideas were discussed for further research opportunities, workshop formats, and student poster presentations. We'd like to thank our PTC members and faculty for their participation. We look forward to seeing you again in the Spring!



Advanced Composites ▪ *BP Global Polymers* ▪ *Cadillac Products* ▪ *Dow Chemical* ▪ *Engelhard* ▪ *ExxonMobil* ▪ *KRATON* ▪ *Lord* ▪ *Luzenac America* ▪ *Nissan* ▪ *NITE* ▪ *Shell* ▪ *Solvay* ▪ *SPE* ▪ *Specialty Minerals* ▪ *Sunoco* ▪ *Toyota* ▪ *Viscotek* ▪ *Visteon* ▪ *Yamagata University*

ADVERTISE IN THE PTC NEWSLETTER!

If you are interested in placing an ad in the PTC quarterly newsletter, please contact Kelly Strickland. Revenue will be used for PTC Student activities.

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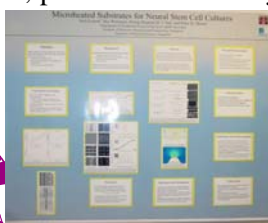
WANTED:

**PTIC STUDENT
POSTER SESSION
SPONSOR**



Save These Poster Students!

A goal of the PTC is the support and enrichment of the education received by Texas A&M polymer students. The Student Poster Session provides an opportunity for student-industry member interaction. This event encourages the exchange of findings and ideas, and also provides an opportunity for recruiting. In the past, the poster session has been held during the lunch break of the PTIC Conference. It was suggested that we change this to a social off-site event the night prior to the conference so students have a more focused audience, and more space to optimize their presentations. If you are interested in sponsoring this important event for our Spring Conference, please contact Kelly Strickland. We can develop the event to fit your ideas and budget.



Pictures from the FALL PTC Conferences



NEWS FROM SPE - STUDENT CHAPTER

From Andrea Phelps, President

Website: <http://stuact.tamu.edu/stuorgs/spe/>

Email: aphelps@mail.chem.tamu.edu

ANTEC 2005

SPE student members are preparing for the The Annual Technical Conference (ANTEC) in Boston May 1-5. ANTEC, of the Society of Plastics Engineers (SPE), is the largest international gathering of individuals who represent industry, government and academia in the field of plastics and synthetic polymers. Engineers, scientists and business professionals attend to share ideas, learn about the latest advances in technology and network with peers. This year's theme is "A Revolution in Plastics."

For more information, go to: <http://www.4spe.org/conf/antec/submissions.php>

ANTEC 2005 Deadlines:	October 15, 2004	Abstract Submission Deadline
	December 3, 2004	Technical Paper Submission Deadline
	January 12, 2005	Final Paper Revision Deadline

International Polyolefins Conference 2005

The Challenges of Globalization

February 27 - March 2, 2005

Wyndham Greenspoint Hotel

Houston, Texas

<http://www.spe-stx.org/polyolefinsconference.htm>

**Need ushers and poster presenters
-- - cash prizes!**

Thank you to the following speakers for taking the time to make presentations for SPE:

Dr. Zonghai "Harry" Xie & Dr. David R. Battiste from Bruker, Inc..

Applications of Time Domain Nuclear Magnetic Resonance Spectrometry & Raman Spectrometry for Process Analysis in Polymers

Greg Olson & Larry Goodenow from Southwest Drives & Systems and SPM Instruments.

Condition Monitoring Solutions for the Chemical Industry

The SPE is organizing a visit to Blackwell Plastics in Houston. Date to be announced.

Watch the TAMU SPE website for upcoming announcements on field trips and speakers!

SCHOLARSHIPS FOR POLYMER STUDENTS

The Society of Plastic Engineers (SPE) South Texas Section will be awarding scholarships at the Polyolefin 2005 Conference in Houston. Awards will be made to undergraduate and graduate polymer students. Requirements of the scholarships are:

- ♦ Current Graduate or Undergraduate Student at Texas A&M University engaged in polymeric material studies
- ♦ Must be able to attend SPE International Polyolefins Conference in Houston to accept award. Specific date and time to be announced. Conference dates are: Feb. 27 – March 2, 2005
- ♦ Provide a short biographical sketch (i.e. a few paragraphs)
- ♦ Submit two letters of recommendation to support your application

Deadline for Application: November 30, 2004

Recipient Announcement: December 15, 2005

The application can be found at: http://ptc.tamu.edu/educ_scholarships.htm

Thank you SPE!

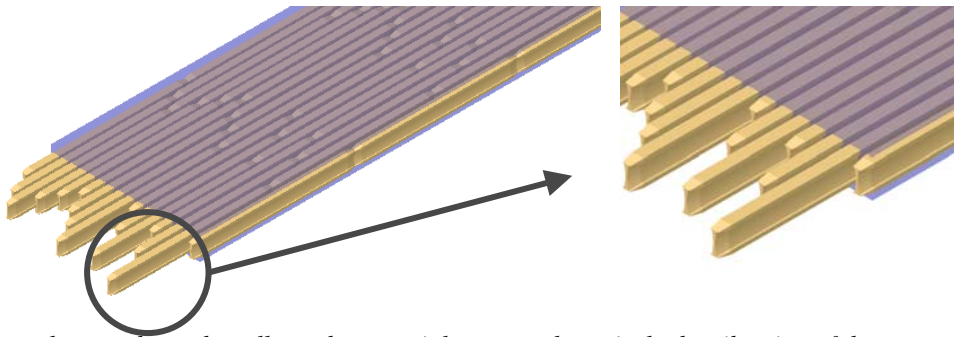


PTC HOSTS a DARPA PROJECT in NASTIC POLYMER MATERIALS

The Defense Advanced Projects Administration (DARPA) and the U.S. Army have awarded a \$1.3M research project to a Texas A&M/Aerospace Corporation/Naval Research Laboratory team. Dr. Terry S. Creasy is the TAMU principal investigator for this 18 month, Phase 1 project in active materials for advanced structures with nastic ability. Primary personnel include Dr. Gary F. Hawkins of the Aerospace Corporation, who invented the machine-augmented-composites concept and who will lead the design/analysis task, and Dr. James Thomas of the Naval Research Laboratory, who will study systems integration issues. At Texas A&M, undergraduate and graduate students will fabricate and test the nastic materials while providing the basic research necessary to deploy nastic materials in structures. Nationally, four teams were awarded contracts. The other teams are MIT, Virginia Tech, and Rockwell Sciences.

Nastic motions are those that allow plants--such as the Venus flytrap--to move and to react to a stimulus or to reach out and grasp a support as they grow. By creating polymer matrix composites that mimic the structure of plants, the team will demonstrate the technology needed to make a new generation of shape changing materials that bring actuation and control into the structure through a distributed network of cellular structures.

"The Phase 1 objective is to demonstrate that the basic science and technology base is in place to provide a pathway to application of the technology during long term, Phase 2 project," said Dr. Creasy. Dr. Gary Hawkins of the Aerospace Corporation added that "this project will advance the methods developed in an earlier, passive response project into novel, active materials. We can improve the performance of materials by adding simple machines that either passively or actively add functions throughout the material."



These machine elements have a shape that allows the material to control passively the vibration of the structure. By making these elements into pressurized systems, a new generation of shape changing structural materials may be possible. The cellular structure provides parallel and serial redundancy.

NEW EQUIPMENT FOR PTC

The PerkinElmer new Thermomechanical Analyzer (TMA) determines dimensional changes in materials as a function of temperature or time. It is used in research and QC to measure changes in length, width, thickness and linear expansion of materials.

A full complement of TMA sampling accessories facilitate various measurements, including expansion coefficient, glass transition, softening, swelling, gel time, creep, stress-strain, stress-relaxation, and Young's modulus measurements.

Key capabilities ·

- Wide temperature range (-150 to 1500°C) ·
- Completely automated furnace movement, instrument calibration, probe positioning and zero sample length measurement ·
- Sample lengths are automatically measured in the sample cylinder, completely eliminating troublesome micro- meter readings ·
- A wide variety of accessory probes facilitate many testing modes, such as compression, expansion, penetration and tension
- Additional options enable analysis of bending and volume expansion as well as gel time and temperature ·
- Upper limit load values can be set prior to experiments, allowing you to correct for bending.



Pyris Diamond TMA



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From the chill of Alaska to the heat of Texas... THE PTC FACULTY WELCOMES HONG "Helen" LIANG

Dr. Hong (Helen) Liang joined the TAMU in September, 2004. She has extensive experience in industry, government laboratories, and academic. After getting her Ph.D. in 1992 from the Stevens Institute of Technology, she did postdoc research at the National Institute of Standards and Technology (NIST) for two years. Her primary activities were in the machining of ceramics. Following that, she joined a leading manufacturer to develop technologies making integrated circuits for computer chips. The excitement of fast development and driven for understanding the technology lead her returning to the University of Alaska, where she taught courses and conducted research in microelectronics.



Dr. Liang's long-term interests are in surface science and tribological properties of advanced materials. In her lab., there are always some undergraduate students participating research. Her understanding of materials have developed from macroscale behavior to the most fundamental, i.e., electron and atom level. In recent years, she has expanded her areas from synthetic microelectronics to bio and nanomaterials. Her current funded research is in nanomaterials and nanofabrication. Her work has been recognized by many. The award she obtained includes the American Society of Materials (ASM) International Lectureship award and NSF's CAREER award. In last few months, she has facilitated her laboratories with state-of-art tribology testers and an atomic force microscope. Her group investigates the tribological, chemical, physical, and mechanical behavior of advanced materials surfaces. Her research has wide applications in many areas, such as automobile, aerospace, chemical, and petroleum industries.

"The excitement keeps growing", Dr. Liang said. "TAMU provides great opportunities to explore and to collaborate. My students and I are going to accomplish a lot here."

NEW CHEMICAL ENGINEERING BUILDING



The Jack E. Brown Chemical Engineering Building

Have you spotted the beautiful new CHEN facility?! The 205,000 foot² building is prominently located at the corner of University Drive and Spence Street. The building's first floor houses 6 classrooms, computer laboratories, and a 600 foot² computer cluster room. Staff and faculty offices are located on the 2nd floor, along with offices for the Mary Kay O'Connor Process Safety Center. Graduate student offices and research labs are located on floors 3 - 7.

PTC Faculty Members will have access to the Nano-Materials Characterization Lab on the 3rd floor, managed by Dr. Bill Lackowski.