Mark Your Calendars!

**Scratch Behavior of Polymers Consortium-SCRATCH**

- October 5th—Troy, Michigan
- From noon-4:30
- after the TPO Conference

**Polymer Technology Industrial Consortium-PTIC**

- October 13th — 14th
- College Station, TX
- Texas A&M University

Please welcome the newest members to the APPEAL Materials Producers Group (APPEAL MPG).

Please welcome our newest member to the Polymer Technology Industrial Consortium (PTIC).

Please welcome our newest member to the SCRATCH Behavior of Polymers Consortium (SCRATCH).
In the latest project, sandwich panels containing ‘hourglass’ channels filled with a shear-thickening fluid showed adaptive damping in the 0.1 to 10 Hz frequency range, which is important in reducing driver fatigue and nausea in road vehicles. “The panel exhibited high damping at every test frequency because the fluid viscosity adjusted to match the driving frequency,” Dr. Creasy explained. Previously, these cellular composites were used in an active structure that mimicked the nastic motion available in plants such as the mimosa and the venus flytrap. In that project, Bell Helicopter applied the material to a tilt rotor propeller design that could change the blade twist to optimize vertical take off/landing, horizontal cruise, and all flight points in between.

Presently, Dr. Creasy’s students Ms. Ruaa Al-Mezrakchi and Mr. Scott Attaway are investigating the processing effects of temperature profile control while solidifying thick wall thermoplastic components for the APPEAL consortium with Ms. Al-Mezrakchi performing the processing studies and Mr. Attaway investigating the resulting mechanical properties at 400ºF.

Other projects have Mr. Dewashish Shah working on composite flywheel fabrication and Mr. Yuwei Zhang working on active materials for architecture that self regulates the building environment for occupant comfort and energy efficiency. Mr. Shah will use the carbon nanofiber produced by Dr. Mohammad Naraghi’s group in Aerospace Engineering.

Piezoelectric polymers have been widely used as energy harvesters for electronic devices such as MEMS. Increasing their performance efficiency has been of great interest to many. Finding an alternative approach for cost-effective fabrication is key for further development. To obtain optimum energy conversion, we developed a hybrid material, multiphase magnetocaloric- Poly (Vinylidene Difluoride) piezoelectric composite. The magnetocaloric material is an alloy that possesses an adiabatic effect that undergoes phase transformation with significant volume change. Such change, as we believed, would be beneficial to further enhance energy conversion from mechanical to electrical in a piezoelectric polymer. With this design in mind, we developed a synthetic process to make the hybrid. There are two ways to make this material to generate electricity, using either an external magnetic field, or a thermal cycle. Under an external magnetic field, the material exhibited a power density of 14.3 mW/cm².Oe when the concentration of the magnetocaloric phase (Gd5Si2Ge2) was at 4 %wt. This was due to the magnet-induced strain in GdS5Si2Ge2 leading to the voltage generation in the piezoelectric polymer. The power density of the hybrid system has been proven to be significantly higher than each single phase alone. Furthermore, the temperature-driven electrical power generation was found to be more than 10,000 times higher than the polymer alone. The coupling of magnetic and piezoelectric effects enables multi-energy conversion that is unique for device design and clean energy harvesting.

Texas A&M University Cited As One Of Nation’s Top Colleges For Women

Texas A&M University, known for decades as an all-male college, is one of 50 U.S. institutions featured in a new “Best Colleges and Universities for Women” article — and the only public university in Texas so cited.

Women now account for almost half of the 60,000+ students at Texas A&M, which ranks among the top five universities in the nation in student body size. Last fall, women totaled 30,677 in the university’s overall enrollment, with men totaling 33,699.

Full story: https://goo.gl/info/zEpP2z

Females Sweep Top Student Leadership Posts at Texas A&M University

Aggies are celebrating a major milestone this school year: Women command all the top student leadership spots, pushing back against Texas A&M University’s long-held image as a predominantly male institution.

The top Aggie women are Student Body President Hannah Wimberly, Senior Class President Claire Wimberly and Texas A&M Corps of Cadets Commander Cecille Sorio. Hannah and Claire are twin sisters.

"It’s extremely significant that we have this, and it really shows the beauty of Texas A&M University because I guess people wouldn’t think that with it starting as an all-male military land grant school, but the truth is I find a strong presence of women,” said Chief Marketing and Communications Officer Amy Smith.

TAMU opened 140 years ago as a military land-grant college.

Full story: http://goo.gl/lD9mPH

Texas A&M Engineering Top in Nation for Best College Value Ranking

Texas A&M University’s College of Engineering is No.1 on Best College Values’ ranking of the 50 Best Value Bachelor’s in Engineering, ranking ahead of the University of California, Berkeley, and Georgia Institute of Technology, which ranked second and third, respectively. Texas A&M is the only university in Texas among the top five.

Full story: http://goo.gl/dpmK0f

Texas A&M Researchers Study Next Generation Implanting Materials With Titanium-Gold Compound

According to the American Academy of Orthopedic Surgeons, two of every 100 Americans have an artificial joint where the ends of bones are removed or resurfaced and replaced with plastic, ceramic or metals. Titanium and ceramics such as alumina [aluminum oxide] and zirconia [zirconium oxide] account for most artificial joints.

Dr. Hong (Helen) Liang, along with her graduate student, M. Fevzi Ozaydin, have been studying a titanium-gold compound that is four times stronger than titanium and most steel alloys.

Full story: http://goo.gl/hc9glj

Drs. Wayne Hung and Shen-Jen “Tony” Hsieh Share Manufacturing Expertise With Educators Locally, Nationwide in Summer Programs

This past summer, two professors participated in programs to help teachers and two-year college faculty learn more about general and automated manufacturing.

Drs. Wayne Hung and Tony Hsieh, professors in the Manufacturing and Mechanical Engineering Technology (MMET) program, each combined classroom and hands-on manufacturing education with educators from the area as well as across the nation.

“How do we get people interested in manufacturing? This was the crucial question that spurred the creation of this program,” said Hung.

Full story: http://goo.gl/qxfrNn

Texas A&M Ranked First In State For Women In STEM

The Aggies ranked first in Texas and 12th nationally on a list of colleges that graduate the most women in science, technology, engineering and math majors.

It may be interesting to note at Texas A&M that the deans of the colleges of science, engineering and education are all women, and the top three student leaders are all female as well.

Full story: https://goo.gl/QodSn9

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Full story: http://goo.gl/qxfrNn
Emerging Polymer Technologies
Summit 2016
September 14-16, 2016
Melbourne, Australia

Congratulations to graduate student Marouen Hamdi for being awarded first place in best oral presentation titled: “Fundamental Understanding on Scratch Behavior of Polymeric Films and Laminates” and best poster titled: “Fundamental Understanding of Scratch & Mar Behavior of Polymers.”

Society of Plastics Engineers Student Chapter at TAMU

News and Upcoming Events

Howdy! Our SPE chapter was very excited to start our new school year this September by hearing a talk from Kaneka at our first meeting on September 12. Next month (October 3) Brandon Sweeney from Essential Materials will come to give a talk in Room 2122 of the chemistry building – all are invited to attend!

So far in 2016, we have been involved in many volunteer activities including STEMfest with the Girl Scouts of America, Super Techno Science Night at Southwood Valley Elementary, and Rock Prairie Elementary Science and Technology Night. We have also participated in the SPE International Polyolefins Conference in Houston and once again received an award for one of the best student chapters at ANTEC in May 2016. We look forward to carrying out more volunteer events this fall, including Chemistry Open House in October. We as always are grateful to the SPE South Texas Chapter for its support through donations and scholarships. If you are interested in becoming involved with our chapter, please contact our social media coordinator Tim Tsao (yi-yun.timothy.tsao@email.tamu.edu) and check out our group on Facebook!

Thanks and have a great semester!
Mary Layne Harrell
SPE President for TAMU Student Chapter

Our new officer photo for 2016-2017 (pictured from left): Tim Tsao, Social Media Coordinator; Xun He, VP Engineering; Mohammed Haque, Publicity Coordinator; Mary Layne Harrell, President; Shin Hye Ahn, VP Science; Simcha Felder, Secretary; Yanyan Wang, Activities Coordinator; and Kevin Wacker, Treasurer

Polymer Specialty Certificate Updates

Students that have applied for the Polymer Specialty Certificate 56

Students that have received the Polymer Specialty Certificate 39

For more information, please visit: http://ptc.tamu.edu/certificate.html

PTC Faculty Members

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