



PTC

POLYMER TECHNOLOGY CENTER

TEXAS A&M ENGINEERING EXPERIMENT STATION

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Third Quarter 2015
NEWSLETTER



Dwight Look College of

ENGINEERING

TEXAS A&M UNIVERSITY

Mark Your Calendars for PTC'S upcoming events:

- * APPEAL Consortium = TBA at Texas A&M University, College Station, TX
- * SCRATCH Consortium = October 7th at Troy, MI
- * PTIC Consortium = October 22nd-23rd at Texas A&M University, College Station

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Advancing Performance Polymers for Energy Applications - Materials Providers Group (APPEAL-MPG)

On April 8th, 2015, the APPEAL-MPG group met, with the following companies in attendance: Arkema, Baker Hughes, Greene Tweed, Hoerbiger, Kaneka, PBI Performance Products, Polymics, SABIC, Solvay, Saint-Gobain, Texas A&M University and Victrex. This meeting was led by Dr. Tim Bremner and included presentations from Dr. Michael Mullins related to an I/UCRC grant proposal. Dr. Bremner presented on research done by TAMU graduate student's Kevin Laux on friction and wear with PEEK and Peng Liu on PBI/PEEK blend stability tests. Jason Ren, Baker Hughes, presented on materials, and Tyne Dutzer, Solvay, presented on high pressure/high temperature testing. Industrial partners gave feedback on the presentations.



Advancing Performance Polymers for Energy Applications (APPEAL)

On April 9th, 2015 the 'Core' APPEAL Consortium met, in attendance were the following companies: Baker Hughes, Ensinger, Hoerbiger, Kaneka, RTP Company, SBM Offshore, Solvay, Saint-Gobain, and Texas A&M University. Presentations were led by Dr. Tim Bremner on MPG organization and other topics.



Polymer Technology Industrial Consortium (PTIC)

On April 10th, the PTIC Consortium met, with PTC faculty members from Aerospace Engineering, Chemical Engineering, Chemistry, and Materials Science & Engineering presenting their recent cutting-edge research findings. In attendance were representatives from the following companies: Agilent, Asahi Kasei, Baker Hughes, Dow Chemical, ExxonMobil, Heritage Bag Company, Huntsman, Kaneka, SABIC, Solvay, Southwest Petroleum University-Chengdu, China, TA Instruments, TSC Manufacturing and Supply, LLC, Schlumberger, and Texas A&M University. The student chapter of SPE (Society of Plastic Engineers) also gave an update on their activities. After the full PTIC meeting, a steering team consisting of key PTIC industrial members was convened with the goal of gathering input for the future direction of the PTIC and TAMU.





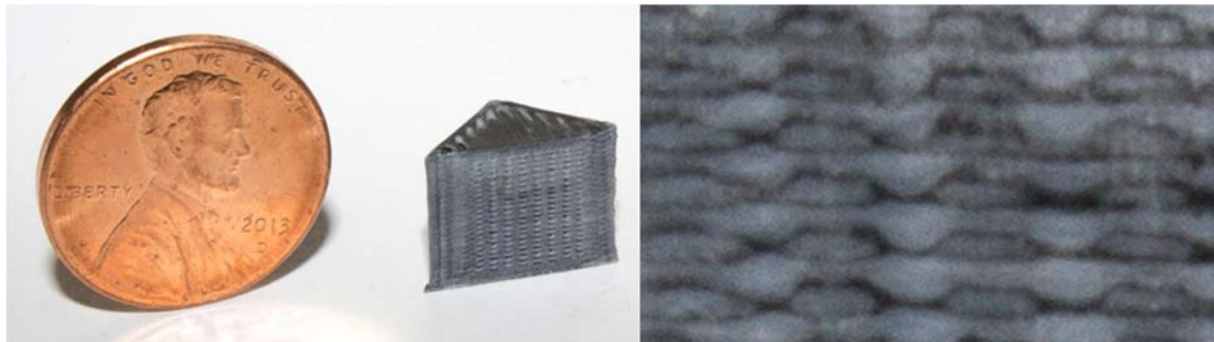
Dr. Micah Green, Chemical Engineering "Nanomaterial Fillers for Advanced Manufacturing"

Dr. Micah J. Green, associate professor in the Artie McFerrin Dept. of Chemical Engineering at Texas A&M University, uses chemical engineering concepts to address pressing production and processing needs facing the nanomaterials community. One interesting new advance from his research group is a technique where microwave irradiation is used to trigger localized heating in polymeric matrices.

The problem of welding at polymer interfaces is quite common and affects a wide range of industrial sectors, including defense, aerospace, automotive, and petrochemical. This difficulty is particularly striking in additive manufacturing (popularly known as 3D printing), where each successive deposited thermoplastic layer forms an imperfect weld with the structure below. This lack of weld strength severely limits practical application possibilities.

Charles Brandon Sweeney, a doctoral student in Dr. Green's research group, applied a unique property of carbon nanotubes to address this issue. Nanotubes evolve enormous heat in response to microwave irradiation. By adding a coating of nanotubes to plastic parts, microwaves can induce localized heating at the interfaces and rapidly weld polymer parts together without heating or warping the overall structure. Dr. Green's group is now in the process of demonstrating how this concept can result in increased weld strength in 3D-printed plastic parts. This may allow 3D printing to transition from a mere prototyping technology to a widespread manufacturing technology.

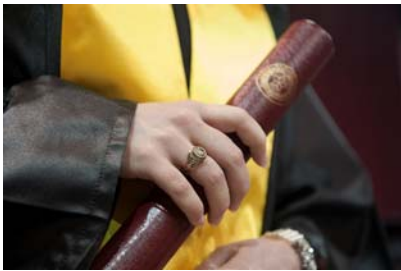
This research area was developed in collaboration with Texas Tech Professor Mohammad Saed, an expert in microwave fields and waveguide design. Sweeney had the opportunity to give a widely-viewed TEDx talk on this area in 2014. A provisional patent and PCT has been filed.



Structure of 3D-printed polymer filament coated with nanotubes



3D-printed structures without and with carbon nanotubes present



Aggies Prominent Among Fortune 100 CEOs

Two major national publications, *U.S. News & World Report* and *Newsweek*, are out with new reports showing Texas A&M University graduates faring quite well in the marketplace, with the *U.S. News* story indicating no university in the country has more current Fortune 100 CEOs than Texas A&M.

Full story: <http://goo.gl/0khpah>

Formation of Texas A&M-Chevron Engineering Academies Announced



Texas A&M University has announced the formation of the Texas A&M-Chevron Engineering Academies at four two-year colleges across the state of Texas. This innovative co-enrollment partnership was developed to address the state's growing need for engineers. Houston Community College in Houston; Texas Southmost College in Brownsville; Alamo Colleges in San Antonio; and El Centro College in Dallas are the first partners in the program, which is supported by a \$5 million gift from Chevron.

Full story: <http://goo.gl/oF3FM4>

Fast Facts: West Nile Virus 101

The influx of rain this season has caused severe flooding across the Southeast, particularly in Texas and Oklahoma. Rushing water is dangerous, but when water stops moving, it creates the perfect breeding ground for something just as threatening: West Nile virus (WNV) bearing mosquitoes. To reduce the number of mosquitoes in your neighborhood, remove any standing water in your yard.



Full Story: <http://goo.gl/T42e2L>



Dr. Carmen Gomes, colleague receive NSF grant



Dr. Carmen Gomes, assistant professor in the Department of Biological and Agricultural Engineering at Texas A&M University, is part of a team that has been awarded a three-year grant from the National Science Foundation.

Gomes and her Co-PI, Dr. Eric McLamore from the University of Florida, will receive \$340,000 for their research project "Nanoengineering biomimetic nanobrushes for pathogen sensing."

Full story: <http://goo.gl/QyNhgW>

Dr. Jodie Lutkenhaus invited participant at NAE symposium in Germany



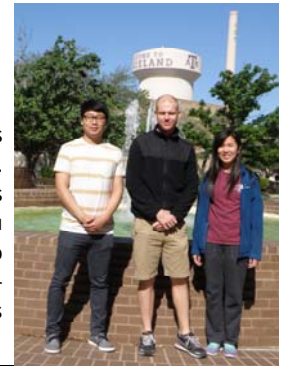
Dr. Jodie Lutkenhaus, the William & Ruth Neely Faculty Fellow and assistant professor in the Artie McFerrin Department of Chemical Engineering at Texas A&M University, was an invited participant at the 2015 German-American Frontiers of Engineering Symposium, organized by the National Academy of Engineering (NAE) and the Alexander von Humboldt Foundation.

The meeting included 30 U.S. engineers and 30 German engineers under the age of 45, and was held April 16-18 at the Steigenberger Hotel in Potsdam, Germany. The group was comprised of academic, national lab and industrial representatives.

Full story: <http://goo.gl/fW8IHJ>

Polymer Technology Industrial Consortium (PTIC) Student Poster Session

PTC would like to congratulate these students for being the PTIC student poster recipients. PTC would like to also thank all the students that took part in this event and encourage you to participate in the fall for another chance to showcase your research to the Polymer Industry and possibly become a recipient of this event.



Placed	Students Name	DEPT	Poster Titled
1st	Joseph Baker	CHEM	"High-Resolution NMR Analysis of Extracts after HP/HT-Treatment of PEEK Polymers with Completion Fluid"
2nd	Hyosung An	CHEN	"Flexible Hybrid Electrodes Containing Vanadium Pentoxide (V2O5) and an Electron-and Ion-Conducting Diblock Copolymer for Energy Storage"
3rd	Kellie Seetho	CHEM	"Amphiphilic Zwitterionic Polymer Systems for Nontoxic Antifouling Applications"



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Newly Elected 2015-16 SPE Student Chapter Officers



The newly elected SPE Student Chapter officers are below with contact information.

2015-2016	Name	Email
President:	Jennifer Summerhill	jennifer.summerhill@mail.chem.tamu.edu
VP of Sciences:	Shin-Hye Ahn	shin-hye.ahn@mail.chem.tamu.edu
VP of Engineering:	Jeniree Flores	jeniree@gmail.com
Treasurer:	Chih-Gang Chao	chih-gang.chao@mail.chem.tamu.edu
Secretary:	Xun He	xun.he@mail.chem.tamu.edu
Activities Coordinator:	Mary Layne Harrell	mary.harrell@chem.tamu.edu
Publicity Coordinator:	Mohammed Haque	myhaque123@tamu.edu
Webmaster:	Kevin Laux	klaux@tamu.edu

SPE SCHOLARSHIPS

Congratulations to Chih-Gang Chao, CHEM; and Shin Hye Ahn, CHEM for being the recipients of the Society of Plastics Engineers-SPE Scholarship.



Left to right: Chih-Gang Chao = CHEM; Shin Hye Ahn = CHEM; Dr. David Hansen, SPE Liaison; and Dr. Hung-Jue Sue, PTC Director

KANEKA SCHOLARSHIPS

Congratulations to Dr. Lei Fang who was awarded the Kaneka Jr. Faculty Award.



Congratulations to the following students that received Kaneka Scholarships: Yi Li, MSEN; Ying-Pin Chen, MSEN; Peng Liu, MEEN; Anna Kristen Means, MSEN; Parvin Karimineghlani, MSEN; Xiaosong Liu, MSEN; Morgan Plummer, MSEN; Yasheng Liu, MSEN; Kevin Dong, CHEM and Jose Leonardo Gomez, CHEM



Mr. Steve Skarke, Kaneka Vice President, presenting the Kaneka Jr. Faculty Award to Dr. Lei Fang, Assistant Professor for the Chemistry Dept.



Left to right: Yi Li, MSEN Visiting Scholar; Ying-Pin Chen, MSEN; Peng Liu, MEEN; Anna Kristen Means, MSEN; Parvin Karimineghlani, MSEN; Xiaosong Liu, MSEN; Mr. Steve Skarke, KANEKA Vice President; Morgan Plummer, MSEN; Yasheng Liu, MSEN; Kevin Dong, CHEM and Dr. Hung-Jue Sue, PTC Director, missing from picture was Jose Leonardo Gomez, CHEM

Polymer Specialty Certificate Updates

Students that have applied for the Polymer Specialty Certificate	38
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For more information, please visit: <http://ptc.tamu.edu/certificate.html>

TAMU/SPE Student Chapter

To find out more about the TAMU/SPE Student Chapter, please contact Jennifer Summerhill at:

jennifer.summerhill@mail.chem.tamu.edu

Visit the SPE Student Chapter website at:
<http://plastics.tamu.edu>

