



## Mark Your Calendars for the PTC Spring meetings!

### Scratch Behavior of Polymers Consortium-SCRATCH

SCRATCH SPRING meeting-March 23<sup>rd</sup>, 2023  
Texas A&M University-College Station, TX

### Polymer Technology Industrial Consortium-PTIC

PTIC SPRING meeting—March 23<sup>rd</sup> & 24<sup>th</sup>, 2023  
Texas A&M University-College Station, TX

# UPCOMING EVENTS



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PTC Faculty Research  
Highlights

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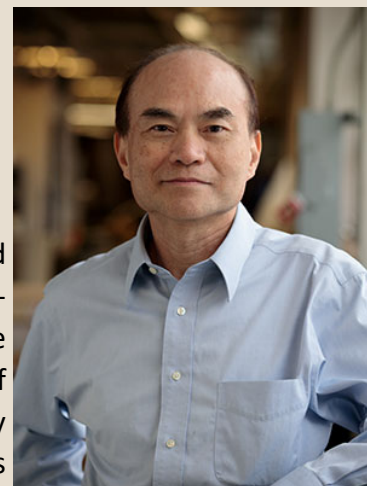
PTC News &  
SPE Student Chapter

### “Custom Test Equipment for Research”

Hung-Jue Sue

Materials Science & Engineering

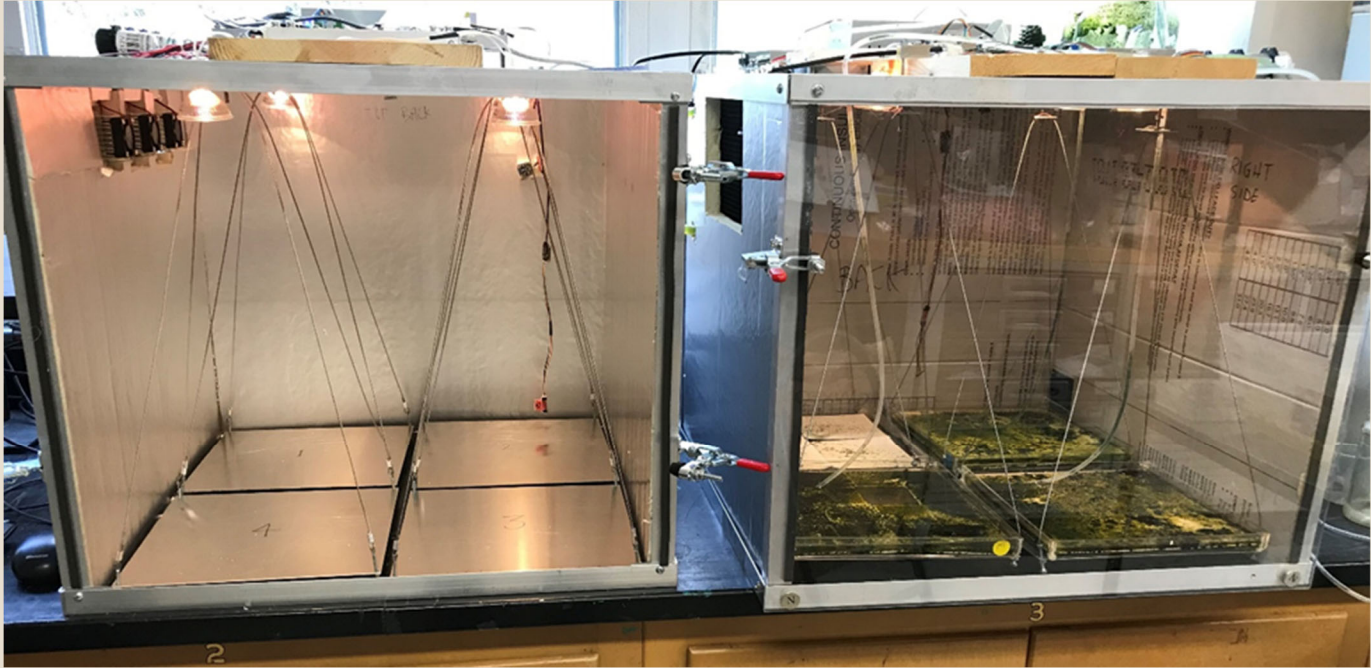
Development of new testing methods is often needed for research, and there are many examples of ‘home-built’ equipment in labs at TAMU. One example is the instrument we developed to quantify the physics of scratch damage. This instrument is now professionally manufactured, sold globally, and has become the basis for ASTM and ISO standard test methods.



GAF, a leader in the roofing industry, contracted us to develop accelerated methods for testing roof membranes. Their current method involves years of outside exposure. The long time-cycle of these tests as well as variability due to weather changes makes it difficult for them to develop improved materials. One of the factors that causes membrane degradation is the formation of algae colonies that bind to the surface and cause failure during dry/wet cycles.

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We have developed an environmental chamber that controls temperature, light, and water addition. Images are taken periodically, and data on humidity and other parameters are stored in a database. The image below shows the second generation of the chamber at right with 4 test specimens covered with algae, and a newer generation at left waiting for samples. These chambers have been used to develop test methods that can give results in months, not years. We are currently building a 4<sup>th</sup> generation of this chamber that will be shipped to GAF labs for their use.



### Researchers 3D print degradable polymers using salt

Dr. Emily Pentzer, Materials Science & Engineering

"Our goal was to create sustainable degradable polymeric structures," Pentzer said. "We did this by leveraging the microstructures afforded by chemistry in conjunction with the macrostructures afforded by 3D printing."

Most commercial synthetic polymers consist of large molecules that do not break apart under normal conditions. When left in the environment, manufactured items such as foam cups or plastic containers break down into small pieces that are unseen by the naked eye, but the long polymer molecules remain present forever.



"It's not just the plastic bottle being kicked down the road," Pentzer said. "These materials break down into microplastics that stay in the environment. We don't fully understand the impact of microplastics, but they've been shown to carry diseases, heavy metals and fecal bacteria."

Full story: <https://bit.ly/3G6SCyw>



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PTC would like to welcome our newest PTIC member to the PTIC Consortia, please welcome:

# PART Consulting

With over 60 years of combined composite formulation and resin manufacturing experience, we have worked for and learned from some of the leading companies in their field. Working with their thermoset resin systems and competitive materials has given us an extreme edge in providing design solutions tailored specifically to the needs of your business. We want you to succeed and we are ready to share with you our wealth of knowledge.

Website: <https://partconsulting.com/>

## Dr. Zewen Zhu from Jilin, China PTC Ph.D. Graduate

Zewen Zhu received his Ph.D. degree from the Department of Materials Science and Engineering at Texas A&M University in December 2022. Zewen joined Dr. Hung-Jue Sue's group since 2018. Zewen has been conducting research on Synthesis and Structure-Processing-Property Relationship of PMMA and Epoxy Nanocomposites. He also completed a Polymer Specialty Certificate offered by Texas A&M Engineering Experiment Station. Zewen will work as a Postdoctoral researcher at Oak Ridge National Laboratory in the USA.



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## Polymer Specialty Certificate Updates

Students that have applied for the Polymer Specialty Certificate	<b>87</b>
Students that have received the Polymer Specialty Certificate	<b>75</b>

For more information, please visit: <http://ptc.tamu.edu/polymer-specialty-certificate/>

## Have Questions?

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