



CHALLENGE ACCEPTED.

New Yearly Competition Awaits Mississippi's Polymer Science Students

By Nathan King

The 2024 Polymer Science competition, a Technology Student Association (TSA)-sponsored event, was hosted by the School of Polymer Science and Engineering at the University of Southern Mississippi (USM) in January.

It was planned and organized by James Rawlins, USM professor of polymer science and engineering; Donna Roberts, USM administrative assistant, former high school polymer science teacher; Thames Rawlins Research Group and Wiggins Research

Group; and Mississippi's Career and Technical Education (CTE) High School Polymer Science teachers.

In addition to this event, the high school teachers meet bi-annually with USM faculty and staff to plan upcoming competitions and to discuss the latest Polymer Science and Engineering industry developments. Their high school students were given the opportunity to tour the campus as they competed at multiple USM campus locations, including Scianna Hall, the Shelby F. Thames Polymer Science Research Center, the USM Innovation

and Commercialization Park and the Accelerator building.

USM President Joseph S. Paul spoke to the students, giving them a warm welcome to the Hattiesburg campus. Paul commended the students for their participation, encouraged them to have fun and challenged them to continue to strive for excellence.

The first day featured a chemistry of polymers exam, a laboratory practicum, a tour of the research facility and a demonstration of luminescent paint. During the practicum, students wore laboratory personal

protective equipment (PPE). Their experiments were observed by a team of judges comprised of USM researchers and professors.

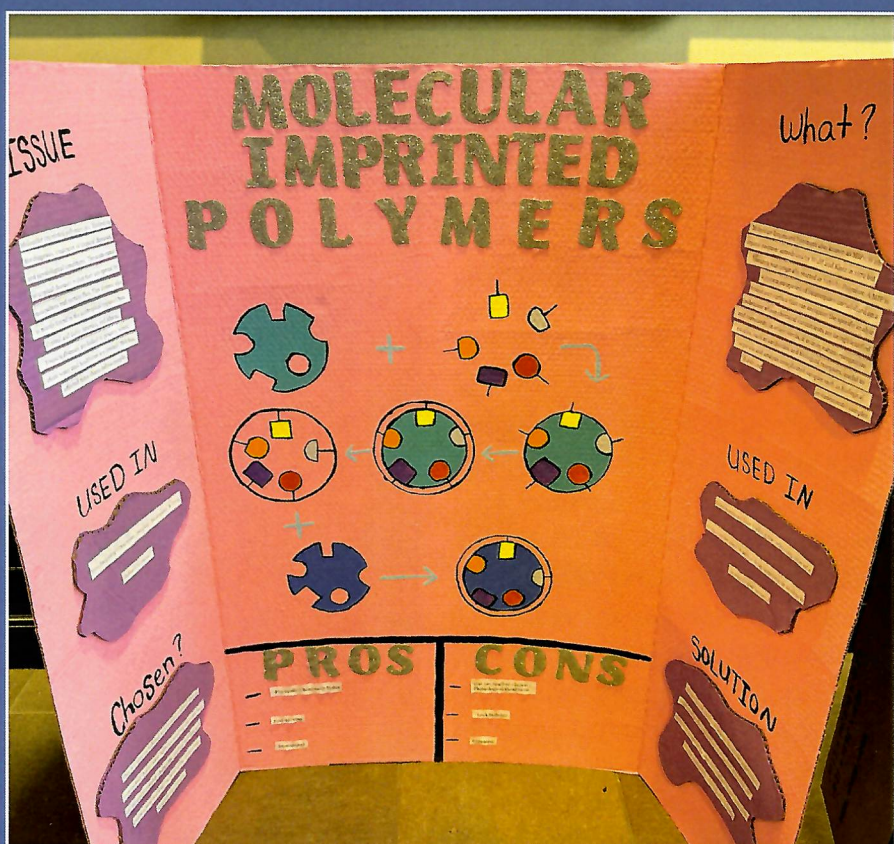
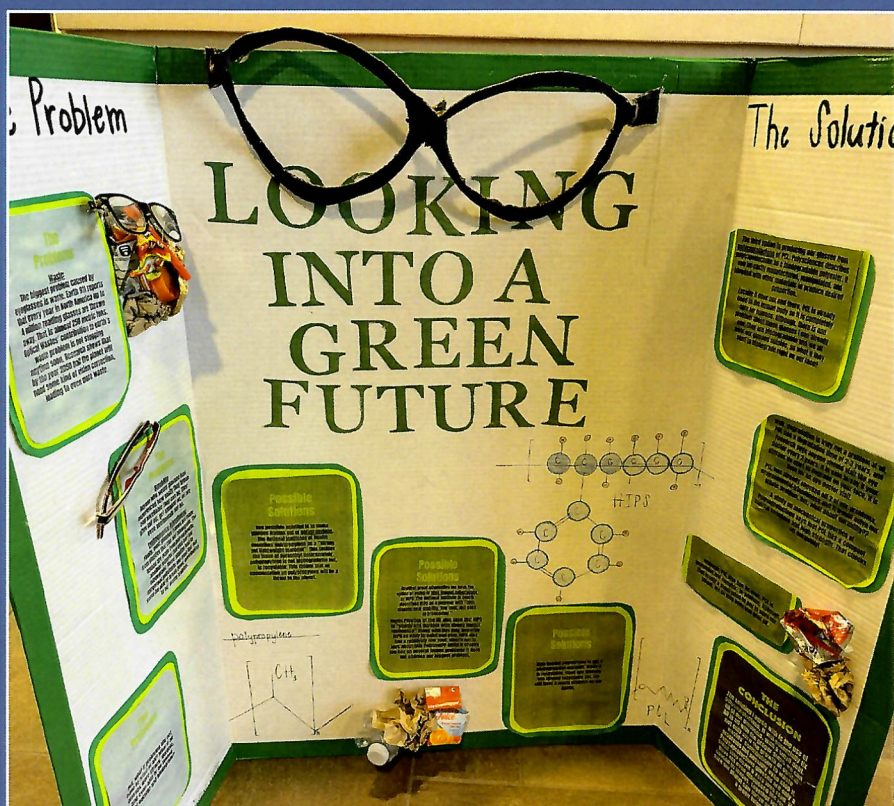
The students' research posters that presented polymer science-based discoveries and connected to an assortment of professional fields also were judged. Some research topics included treatments for genetic mutations affecting collagen production, nanomedicine applications, recyclable materials for eye glass frames, medical devices using bioabsorbable polymers and other polymer science topics.

The second day involved an overview of the USM program, a discussion of polymer science topics with Rawlins, a tour of the Accelerator building and a challenge requiring teams of students to construct a scaled-down bridge using polymer-based materials, including dry pasta and hot melt adhesive. The students watched with anticipation as each bridge's structural load-bearing capacity was tested by enduring substantial weight.

As day two concluded, Rawlins presented awards to students who excelled in each competitive event. When asked what advice he had for Mississippi's polymer science high school students, Rawlins said, "Continue to rise to whatever challenges are in front of you. Don't ignore them and put them off. Rise to those challenges. You will keep improving and you will find that those challenges become so much fun to solve as you continue. Also, don't fear failure."

He mentioned that his "Most impactful early influence was Bob Pursley, a high school teacher and retired engineer. Pursley taught Rawlins and his classmates chemistry organic chemistry, calculus, differential equations and physics."

"There were 14 students in our group," Pursley said. "Four of us went on to receive our Ph.D.s. Everyone in



Opposite page: The 2024 participants of the Mississippi Technology Student Association's (TSA's) Polymer Science competition at the University of Southern Mississippi (USM) are pictured with USM President Joseph S. Paul. Above: Students displayed research posters they created to demonstrate their polymer science research. The posters were judged as part of the competition.

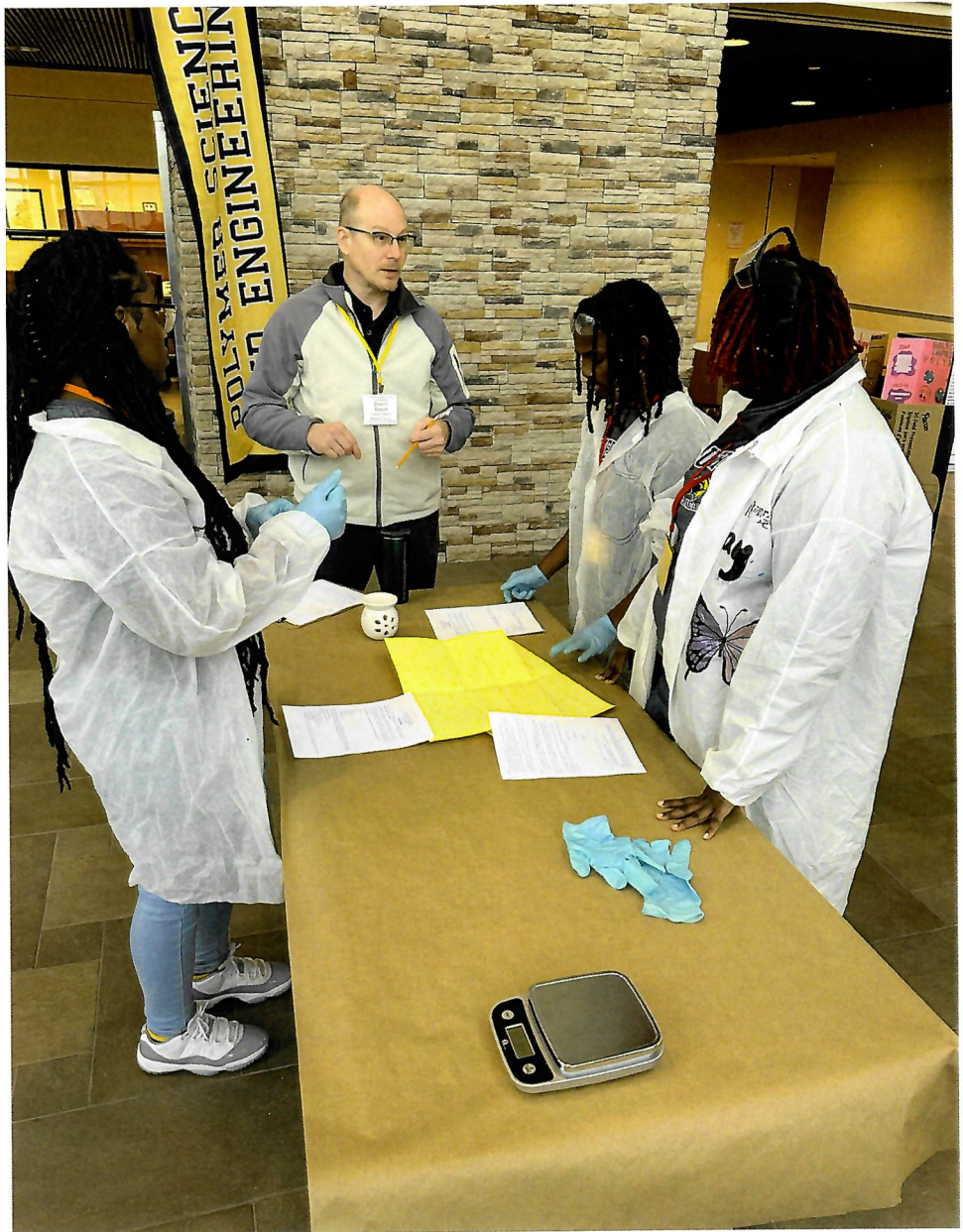


that class graduated from college with a STEM-related degree except for one who attained a successful communications and business career.”

Mississippi State University’s Research and Curriculum Unit Director Betsey Smith praised these efforts, saying, “Partnership with our institutes of higher learning regarding student organization events and curriculum development is important for sustainability and alignment with Mississippi’s workforce. USM’s School of Polymer Science and Engineering invests in the future of our CTE programs and students.”

In terms of curriculum development, the newly revised CTE polymer science curriculum was facilitated by the Mississippi Polymer Institute (MPI) Director Monica Tisack and amended with the help of Caitlyne Shirley, MPI business development manager.

Additionally, the polymer science curriculum revision team was honored to have the technical input of James Rawlins and Donna Roberts of the USM School of Polymer Science and Engineering, as well as Mississippi State University’s Advanced Composites Institute (ACI) Director Christopher Bounds and Associate Director Wayne Huberty.



Dwaine Braasch, Polymer science student competitors receive instructions for an activity.

Mississippi is the only state in the



Above: Student teams from Brookhaven High School (instructed by Leanne Peavey), Hancock County Career and Technical Center (instructed by Tammie Bland), Hattiesburg High School (instructed by James Brownlow), Pascagoula-Gautier College and Career Technical Institute (instructed by Toben Dubose) and Petal High School (instructed by Krystin Holmes) pose with the bridges they built using common household items during the TSA's 2024 Polymer Science Competition held at USM in January.

nation that offers high school-level CTE polymer science programs. Those programs and teachers are Brookhaven High School's Leah Ann Peavey; Hancock County Career Technical Center's Tammie Bland; Hattiesburg High School's James Brownlow; Pascagoula-Gautier College and Career Technical Institute's Toben Dubose; and Petal High School's Krystin Holmes. Holmes, the RCU New Teacher Induction (NTI) program polymer science methods trainer, prepares prospective teachers for this two-year high school CTE course.

When asked about this competition, Peavey said, "As high school Polymer Science teachers, we are fortunate to have the constant support of USM's School of Polymer Science and Engineering. Our yearly competition is designed to provide students with opportunities to apply

program-specific knowledge."

"A major benefit of our ongoing relationship with other polymer science student groups is that they can develop and demonstrate important soft

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-Bob Pursley, Teacher and Retired Engineer

skills," Peavey said. "This competitive event is challenging and thrilling to our students. It takes hours of preparation for students to best represent themselves and their school."

Tammie Bland said of the competi-

tion, "Hands-on activities are an effective teaching tool. My students enjoy learning the science of making silly putty, bouncy balls, pottery, etc."

"This event has given them an understanding of how polymers are used both industrially and experimentally. They have access to professionals that can answer tough career choice questions," she said.

All agree that the 2024 polymer science competitive event was a great success. The teachers and USM faculty said this event culminated in an exhibition of the students' hard work from throughout the school year.

Instructors and faculty who participated this year look forward to next year's event as they train and cheer on Mississippi's future STEM-related professionals. 