Tulane University

Physicist has key to greener polymer manufacturing

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Tulane University physicist Wayne Reed says he wants to revolutionize the polymer manufacturing sector, an important component of the global economy. Through his patented technology, Reed and colleagues see a $100 billion opportunity in the $1.2 trillion polymer industry, and the key to helping this industry become greener and more efficient.

Wayne Reed's patented technology allows real-time monitoring of polymer reactions, which are necessary to produce materials used in planes, cars, electronics and more. (Photo by Paula Burch-Celentano)

Reed's method allows real-time monitoring of polymer reactions, which are necessary to produce materials used in planes, cars, paint, adhesives, coatings, fertilizers, electronics, medicine and more. Currently, polymers are created using recipes with the results often left to chance, he says.

“Polymer manufacturing is currently wasting huge amounts of energy and non-renewable resources,” says Reed.

Through process monitoring and reaction control, the patented ACOMP automatic continuous online monitoring of polymerization reactions can change that, says Reed. It makes better use of energy, feedstock and industrial plant time, as well as preventing product failure and enhancing the safety of plant personnel. This diminishes the sector's environmental footprint and helps retain and create American manufacturing jobs.

Through a recent spin-off from his PolyRMC research center at Tulane, Advanced Polymer Monitoring Technologies, Reed and the Tulane team are developing the ACOMP platform for industrial use, establishing a new paradigm for 21st century polymer manufacturing.

In addition to polymer manufacturing, APMT's dimensions include monitoring the stability of therapeutic proteins used in the pharmaceutical industry and monitoring and controlling natural product processing, used in biofuels and renewable chemical feedstock.

For his groundbreaking accomplishments, Reed received the outstanding researcher award on April 12 from the School of Science and Engineering.

“Wayne's work is an excellent example of the interface between science and engineering,” says Nicholas Altiero, dean of the School of Science and Engineering. “While he is clearly an outstanding research scientist, he is also focused on the application of his work and its impact on technological innovation.”

Michael Ramos is a senior writer in the Office of Development.