Clemson University spin-off uses corn to make plastics, provide cleaner air

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The Pendleton-based Clemson University spin-off company received a $100,000 Phase I Small Business Innovative Research award (SBIR) from the National Science Foundation to demonstrate the commercial feasibility of plastics partially derived from renewable sources like corn. This award builds on a previously earned Phase II $500,000 and two SBIR $100,000 grants received from the NSF small business program.

Most plastics, varnishes and packaging foams are made from oil-based chemicals, which are derived from petroleum. Stiffer environmental regulations and consumer conscience are driving the search for materials that are recyclable, renewable and less polluting. Polylactic acid is a byproduct of corn. It currently is used in some pill coatings and sutures because it easily dissolves -- a property not desirable in drink containers, boat coatings and packaging.

Clemson University professor Dennis Smith and his research group have found a new way to replace up to 50 percent of the chemicals that make regular plastics with polylactic acid. The end product is a plastic that has both the environmental friendliness of the corn-based product and the durability of regular plastics. Potentially, this new material could reduce by 5 billion pounds per year the amount of single-use, nonbiodegradable plastics discarded by consumers. And reduce the air pollutants from plants that produce plastics for everything from cars to airplanes to golf clubs.

"By finding commercial applications for Clemson research, Tetramer is

fueling South Carolina's knowledge-based economy," said Earl H. Wagener, CEO of Tetramer. "We're creating jobs that will help keep the top researchers coming out of the university in the Upstate."

This NSF grant allowed Tetramer to hire three more employees, bringing total employment to eight. The company plans to staff 20 full-time employees over the next five years. In addition to possible jobs for Clemson's engineering graduates, Tetramer will expand to employ technicians trained by local technical institutes.

Wagener, a 1967 Clemson graduate in physical organic chemistry, returned to South Carolina to head the company. Wagener has 36 years of new product commercialization and venture capital experience at Dow Chemical, Stepan Co. and The ChemQuest Group Inc.

Tetramer was formed in February 2001 by professors in Clemson's Center for Optical Materials Science and Engineering Technologies. COMSET is the only university research and development lab in the region focused on the development of new optical materials. Their research attracted more than $13 million in sponsored research during the center's first three years.

COMSET recently was designated a state center by the S.C. Commission on Higher Education and granted $5 million in matching funds for an endowed faculty member. The faculty position is a cornerstone of Clemson's plan to invest $70 million over the next five years at the Clemson Research Park to make the Upstate a magnet for the advanced materials industry cluster. A $21 million advanced materials research laboratory is near completion at the research park.

Source: Clemson University