Innovation Network for Collaborative Product Development in the Wisconsin Plastics Industry Cluster

Principal Investigator: Dr. Dharmaraj Veeramani, University of Wisconsin-Madison

Project Partners: ***Educational Institutions*** - UW-Madison (lead institution), UW-Stout, UW-Platteville, Milwaukee Area Technical College; ***Industry*** – Phillips Plastics, Serigraph, Flambeau Corporation, Teel Plastics, Bemis Manufacturing, Georgia Pacific, Kelch Corporation, Engineering Industries, Kaysun Corporation, Simtec Silicone Parts, Advanced Design Concepts, RTP Company and The Madison Group; ***Federal Research Laboratory*** – USDA Forest Products Laboratory; ***Economic Development and Industry Outreach organizations*** - UW-Extension Small Business Development Centers, Eau Claire / Chippewa Falls Economic Development Association; ***Other State Entities & Stakeholders*** – Office of the Governor, Wisconsin Manufacturers & Commerce, Wisconsin Technology Council, Forward Wisconsin.

The plastics industry is one of the few industries in which the U.S. still holds a strong leadership in the global market. Yet, the threats of global competition are real – Original equipment manufacturers (OEMs) and other large customers of the plastics industry are increasingly outsourcing their fabrication, production and assembly operations to suppliers in foreign countries who can manufacture products at a much lower unit cost (due to lower material, labor and overhead costs and fewer regulatory constraints) than can US suppliers. The implications of this trend are very serious for Wisconsin where manufacturing comprises 23% of the workforce. Among the fifty states, Wisconsin has the 10^{th} highest employment in the plastics industry and its growth rate in the past five years is the fifth highest in the country. Strategic initiatives that will create a sustainable competitive advantage for the Wisconsin plastics industry are imperative for the continued success of this industry in Wisconsin and in the United States. Wisconsin is, therefore, adopting an industry cluster based approach for economic development, and has recognized the plastics industry cluster as critical to the state's future economic success. At the core of this cluster-based strategy is innovation driven economic growth which is precisely the focus of NSF's Partnership for Innovation program. The proposed project is therefore timely and well-aligned with the state's strategic plan for economic development – It will create a sustainable strategic structure and process for Wisconsin's plastics industry cluster to maintain its competitive advantage by using knowledge-driven innovation as a way to stay ahead of technology diffusion to foreign competitors and the price erosion effects that accompany technology maturity.

This project will foster innovation-driven sustainable economic growth in Wisconsin's plastics cluster by:

(1) Catalyzing innovation through knowledge creation, technology transfer and industry application of emerging and novel methods and tools for polymer engineering and polymer processing resulting in the development and commercialization of unique high-value products, processes and services that have a substantial advantage over the present state of the art;
(2) Building human capital through workforce education and training to build know-how and application of innovative polymer materials, engineering, and processes in industry; and
(3) Enhancing enabling infrastructure for networking, collaboration, problem-solving and entrepreneurship to catalyze innovation and to capitalize on innovation-based opportunities through collaborative product development and commercialization.

We have a passionate leadership team with proven technical expertise in the proposed areas of innovation and successful experience in managing several large university-industry collaborative efforts. We have a strong group of committed influential partners from multiple educational institutions, industry, government entities, business and entrepreneurial organizations who have developed a shared vision and a carefully developed execution plan to ensure success and sustainability.

The **intellectual merit** of the proposed activity lies in the creation, transfer and application of emerging materials, tools and technologies that lead to the development of new plastics products and processes having superior characteristics, economic potential for commercialization, and high knowledge content, thus posing high barriers for foreign competition.

The **broader impacts** of the proposed activity will include a scientifically and technologically literate and diverse workforce (from high-school students to PhDs) prepared to capitalize on this new knowledge to drive innovation and productivity growth, and an infrastructure that enables innovation through networking, collaboration and entrepreneurship in Wisconsin's plastics industry.