



Co-Funded By:
West Virginia EPSCoR

Advisory Committee:
Composed of representatives of
Bayer Materials Science,
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University-Industry Center for Extrusion Compounding of Additives for Superior Plastics Performance

Project Summary:

A major goal of this Center that was established in 2002 is to assist in the creation and retention of high-paying jobs in the state by expanding the research capabilities of polymer companies in support of their business lines. The Center will provide state-of-the-art laboratories and research expertise in support of the State's polymer industry. The work plan for the Center includes research in the area of polymer nanotechnology – discovering how one might improve barrier, flammability, mechanical and thermal properties and utility of plastics by the incorporation and use of additives with dimensions in the nanometer (10-9 meter) range.

Current research focus areas include (i) Improvement of wood-plastic composites, (ii) Production and properties of polymer nanocomposites, including the use of nanoclay and carbon nanofibers

with a variety of polymer matrix materials, and (iii) Recycling of polymers from end-of-life electronics materials. At the heart of the Center's capabilities is a Leistritz 27-mm twin-screw extruder with co- or counter-rotating screws. Compounded polymers can either be extruded into useful shapes or injection molded into products. All the equipment needed for structure determination and for the mechanical, thermal and flow characterization of polymers is housed in modern laboratories that form the Extrusion-Compounding Center. The Center is staffed by full-time faculty as well as adjunct faculty drawn from the polymer industry, post-Doctoral fellows, trained microscopists, and graduate and undergraduate students. A number of companies also currently support proprietary research. It is expected that the technology developed by the Center will be patented and licensed.