

WVNano is West Virginia's focal point for discovery and innovation in nanoscale science, engineering and education. The initiative's central objective is to foster an interdisciplinary research environment and diversify the state's economic base through cultivation and growth of research in targeted areas including:

- **Polymers** - Synthetic fibers, suspensions and emulsions, blends and nano-composites, fiber-reinforced plastics, and materials characterization. Current work includes the recycling of polymers from end-of-life electronic applications.
- **Energy and Energy Materials** - Materials for the efficient generation, conversion, storage and transport of energy; nanophase materials for sensors, coatings, and devices; fabrication and modeling of high performance polymers and composites; and the mechanical properties of high performance materials. This is part of a growing effort in the college to establish a comprehensive graduate educational and research program in materials engineering.
- **Optoelectronic Materials** - Investigation of nucleation and growth mechanisms for diamond, silicon carbide, and gallium nitride, development of novel processing techniques, and computational and theoretical modeling of growth processes. The research areas cover aspects of materials science and semiconductor electronics to design, grow, fabricate, and characterize novel electronic and photonic devices and small subsystems.
- **Fluid Particle Sciences** - Wet/dry agglomeration phenomena, particle size and shape characterization, sedimentation, classification, prediction of fine powder flow properties, material science of fine powders, particle coating in fluidized beds, and application of fluid bed coatings to the pharmaceutical industry.





- **Functional Biomaterials** – Employing recombinant DNA techniques and biologically directed methods to create molecules with specific sequence, molecular weight, functionality, and properties that are not completely controlled in chemically synthesized molecules for the formation of tissue scaffolds or drug-delivery vehicles. This is part of an enhanced college effort to institute a biomedical engineering educational and research program.

Long range goals for WVNano include:

- **Advancing research** in molecular recognition and transport by building core research strengths in electronic and photonic materials, devices and biomolecular research
- **Building a center of integrative research** addressing molecular recognition applications in health, security, energy and environment
- **Facilitating research** across colleges, and departments, industry and government

The WVU College of Engineering and Mineral Resources (CEMR) has faculty active in all areas that support the WVU Research Trust, including energy, life sciences, biometrics and security and nanotechnology. WVU invested more than \$30 million over the past decade in college teaching and research laboratories, equipment and specialized facilities.

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