

An Overview on Recent Advances in NSF-EPSCoR Nano-Biomaterials Research Thrust

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ABSTRACT

The presentation will focus on the recent advances through NSF-EPSCoR Nano and Biomaterials Research thrust being carried out at six doctoral granting institutions in Alabama. The Nano and Biomaterials Research Thrust involves the development of new nanostructured materials with enhanced thermal, physical, mechanical, and biodegradable properties. The tasks being carried out are divided in three main areas: *polymeric nanocomposites*, *advanced green composites*, and *synthesis of nanoparticles for drug delivery applications*. In polymeric nanocomposites area research is being carried out to include nanoparticles like nanoclay, single and multiwalled carbon nanotubes, metal and metal oxide nanoparticles to improve the performance of polymers which are then used for fabrication of fiber reinforced composites for different high technology applications. Advanced green composites research is looking at the use of plant based polymers and natural fibers as viable alternates to synthetic polymers and fibers which are petroleum based and non-biodegradable. In the studies on synthesis of nanoparticles for drug delivery applications different types of nanoparticles are being synthesized using microwave and sonochemical methods.