Award Abstract #0924689

SBIR Phase II: Low Cost-Reduced Risk Manufacturing Process For Nanocoatings

NSF Org:	IIP Division of Industrial Innovation and Partnerships
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ABSTRACT

This award is funded under the American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

This Small Business Innovation Research (SBIR) Phase II project seeks to reduce the cost and risk of manufacturing nanoparticle/resin blends for coatings. Currently nanocoating resin manufacturing requires two steps; the first is the production of nanoparticles ex-situ of the coating resin using plasma or other energy intensive processes, and the second step is the addition of these nanopowders into the coating resin, usually by chemical processes and/or high energy mixing. Both steps are characterized by high cost, high environmental impact, or both. This new process reduces manufacturing steps, lowers cost and avoids direct exposure to hazardous nanopowders.

The broader impacts/commercial potential of this project is the creation of a roadmap for development of nanoparticle-containing coatings/composites by a one-step process. Potential cost savings are anticipated to be 25% or substantially more compared to existing processes. Coating performance enhancements not otherwise attainable are anticipated as well. Most importantly, health risks posed by inhalation of nanoparticulate powders, currently of unknown toxicity, are

completely avoided. The largest potential of this project is the potential reduction of environmental, health and safety risks.

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