

TITLE

**Modeling the
nanoparticle-
reinforced composite**

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Polymer-based composite reinforced with low contents of nanoparticles have received considerable attention. Many applications including biomedical used microfibers combined with nanoparticles to improve mechanical properties of materials. Various nanoparticles with different shapes and sizes are used to improve the mechanical properties of resin-based matrix. In this talk, we will demonstrate the mechanical advantage of nanoparticle reinforced composite in comparison with the microfiber reinforced composite through combined mean-field homogenization and finite element methods. The stresses in the microstructure were analyzed with the representative volume element. The effect of the interface between matrix and nanoparticle, the filler sizes, as well as the clustering and distribution of clusters on the mechanical of the composite are presented.

Biography

Dr. Linxia Gu is an assistant professor in Mechanical & Materials at the University of Nebraska-Lincoln. She received her Ph.D degree in Mechanical Engineering in December 2004 from University of Florida. Her research interests include multi-scale modeling and material characterization, fluid-structure interaction, and their application in biomedical field. She has authored over 50 peer-reviewed publications, served as editorial board member of two scientific journals, invited for many grant review panels, and organized symposiums at multiple international conferences.