

# INVITED LECTURE – DONALD R. PAUL



PPS-26

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## Polymer-Nanoparticle Materials

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There has been much interest in incorporation of nanoparticles into polymer formulations focusing especially on both processing and performance issues. High aspect ratio particles like clay platelets or nanotubes have been of interest for mechanical reinforcement, flame retardance, and other functions. In most cases, when rigid fillers are added to a polymer, toughness is reduced even in the case of nanofillers. As a result, rubber toughening in combination with nanoparticle reinforcement has been of some interest. More recently, it has been realized that nanoparticles, especially clay platelets, can significantly alter the morphology of polymer blends; typically dispersed phase particle size is greatly reduced probably as a result of a reduction in the rate of phase coalescence. Since the properties of blends depend on the size of the dispersed polymer phase, many questions, and possibly opportunities, arise when nanoparticles are incorporated into multiphase polymer blends. These issues will be explored in this presentation.

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