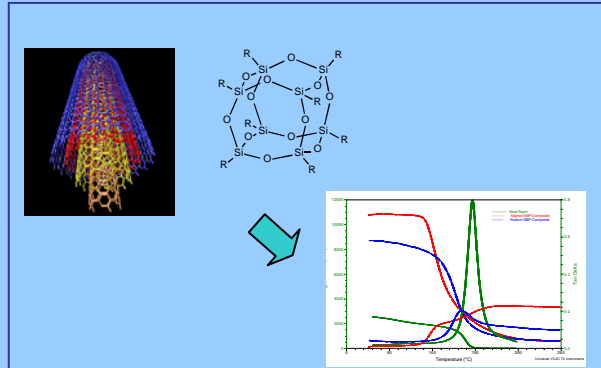


Synopsis:

Fire, Smoke and Toxicity Retardant Composites



FST testing of composites



CNTs and POSS enhancing FST properties

Background

The fire, smoke and toxicity (FST) factors of composite materials are becoming major considerations in the design and maintenance of composite structures. Conventional methods to improve fire resistance of composite materials are expensive due to the high cost of resin systems, filler materials, and high temperature insulation products. HPMI is developing low cost composite materials with improved fire and structural properties through novel resin modification techniques and low cost composite processing.

Goals

- Develop fire retardant nanocomposite materials using carbon nanotubes (CNTs) and Polyhedral Oligomeric Silsesquioxane (POSS) for improved fire-smoke-toxicity performance
- Develop a cost effective vacuum assisted resin transfer molding (VARTM) processing technique for producing fire retardant nanocomposites
- Characterize thermo-mechanical & fire properties of resulting nanocomposites

Projects/Research Highlights

- Characterization of CNTs and POSS enhanced resins
- Modification of FST properties of low cost resin with addition of CNTs and POSS
- Composite processing with VARTM
- Comprehensive FST testing of resulting nanocomposites

Benefits to Industry

- New class of low cost fire resistant materials meeting military requirements with improved thermo-mechanical, FST and structural properties
- Cost-effective fire retardant material processing technique for large structures