
Materials Research Science and Engineering Center
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Modification of Epoxy Resins with Reactive Diblock Copolymers Synthesized through
Nitroxide-Mediated Living Free Radical Polymerization

Reactive diblock copolymers have been used to modify epoxy resins. These copolymers form ordered microstructures when blended with epoxy precursors before cure, and the microstructures are retained after curing. Specifically we will synthesize these reactive diblock copolymers using nitroxide-mediated living free radical polymerization. One example of these copolymers is one in which the miscible block is a random copolymer of glycidyl methacrylate and methyl acrylate, while the immiscible block is made of isoprene. A variety of copolymers will be made with differing reactive monomer units. Eventually these copolymers will be made into blends with the epoxy precursors. The effects of the incorporation of these block copolymers on the epoxy composite physical properties will be studied.