

Compatibilization of Polymer Blends: Micro and Nano Scale Phase Morphologies, Interphase Characterization, and Properties

Compatibilization of polymer blends by shear pulverization

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Abstract:

Solid-state shear pulverization (SSSP) is a relatively new high-pressure and shear deformation technique, which relies on mechanochemical reactions between polymer chains in solid state. One of its applications is in the compatibilization of polymer blends. Whereas several traditional compatibilization strategies, such as the addition of premade copolymers or in situ generation of the same via reactive compatibilization exist, they have kinetic and thermodynamic challenges that limit their effectiveness. The less utilized technique to compatibilize blends is the SSSP, which utilizes mechanochemistry to enhance interfacial adhesion, stabilize the blend, and improve its properties. This chapter discusses the principles of SSSP and its application in compatibilization of polymer blend systems.