

Link-Functionalized Poly(methyl acrylate) for Studying Mechanochemical Triggers

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Mechanical activation of a single azo unit in link-functionalized poly(ethylene glycol) polymers (40 and 60 kDa) was successfully achieved using ultrasound. Future investigations, however, require polymers with a broader range of molecular weights, including ultrahigh molecular weight polymers. Simple coupling reactions are insufficient to obtain higher molecular weight materials, and therefore, single electron transfer (SET) living radical polymerization is being used to produce link-functionalized poly(methyl acrylate) (PMA) polymers up to a molecular weight of 1 million. With these PMA polymers, the limiting molecular weight value for the ultrasound stress-induced activation of a benzocyclobutene link can be investigated. These LFPs are also being used to study mechanochemical response with a more sensitive stress activation technique, a cross-slot flow cell.

