

Preparation and characterization of poly(methyl methacrylate) derivatives having self-healing properties through the thermally reversible Diels-Alder reaction.

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In this study, we synthesized the furan-functionalized copolymer for self-healing materials. The furan monomer(furoyl ethyl ether methacrylate, FEEMA) obtained from the reactions between furoyl chloride and 2-hydroxy ethyl methacrylate was copolymerized with ethylene glycol methyl ether methacrylate (EGMA) with various feed ratio to show the effect of furan group on self-healing property.

Also 1,1'-(methylenedi-4,1-phenylene)bismaleimide is used as a cross-linker for thermally reversible Diels-Alder reaction. The stable film could be obtained within the specific range of ratio between furan group in copolymer and crosslinker, which shows the self-healing property.