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SYNTHESIS OF CYCLOALIPHATIC METHACRYLATE AND DIFUNCTIONAL METHACRYLATE ETHER DIMER AND THEIR COPOLYMERIZATION AND CYCLOPOLYMERIZATION VIA REVERSIBLE ADDITION-FRAGMENTATION CHAIN-TRANSFER (RAFT) POLYMERIZATION

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Copolymers were synthesized by copolymerizing with cycloaliphatic methacrylate based on 8-hydroxymethyltricyclo[5.2.1.0^{2,6}]decane (TCD-MA) with maleic anhydride or N-substituted maleimide. The molecular weights determination by gel permeation chromatography showed that the polymers were obtained in very high molecular weights ($M_n > 50000$). The thermal properties of the copolymers were studied with differential scanning calorimetry. Reversible Addition-Fragmentation Chain-Transfer (RAFT) polymerization was used in the cyclopolymerization of a difunctional methacrylate ether dimer of tricyclo[5.2.1.0^{2,6}]deca-8-yl hydroxymethylate (ED-TCDHM) in toluene at 60 °C. Cyclopolymers having tetrahydropyran ring repeat units were obtained in high conversions with controlled molecular weights and low polydispersities.