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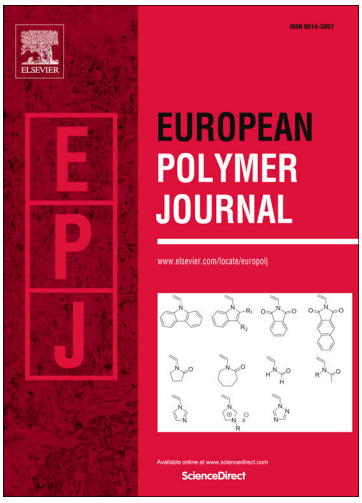

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Alternating Radical Copolymerization of Vinyl Acetate and *tert*-Butyl-2-trifluoromethacrylate

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Abstract: Alternating conventional radical copolymerization of *tert*-butyl-2-trifluoromethacrylate (a non-homopolymerizable fluoromonomer under radical initiation) with vinyl acetate, initiated by 2,2'-azo-bis(4-methoxy-2,4-dimethyl valeronitrile) at 40 °C is presented. The study of the kinetics of the copolymerization using various $[VAc]_0/[MAF\text{-}TBE]_0$ feeds showed that an equimolar feed of comonomers led to the highest apparent copolymerization rate (K_{app} = 4 × 10^{-4} s^{-1}). The resulting copolymers had a nearly perfect alternating structure over a very wide range of comonomer feed compositions ($f_{MAF\text{-}TBE}$ = 0.05 to 0.95) until complete consumption of one of the monomers. The reactivity ratios were measured to be: $r_{MAF\text{-}TBE}$ = 0 and r_{VAc} = 0.014 at 40 °C and the Alfrey and Price parameters for MAF-TBE were calculated ($Q_{MAF\text{-}TBE}$ = 1.18 and $e_{MAF\text{-}TBE}$ = 1.84).

Keywords: alternating copolymerization; fluoropolymer; radical polymerization; thermal properties; vinyl acetate.