

Stereoselective alternating copolymerization of aliphatic acetylenes with sulfur dioxide. Tsonis, C. P.; Ali, A.; Wazeer, M. I. M.. Chem. Dep., Univ. Pet. Miner., Dhahran, Saudi Arabia. *Polymer* (1986), 27(12), 1991-8

Abstract

Purified terminal aliph. acetylenic hydrocarbons were copolymerized with liq. SO₂ in the presence of tert-BuOOH [75-91-2] at low temp. Neither SO₂ nor tert-BuOOH alone was capable of polymerizing pure alkynes. Aged (impure) alkynes were copolymerized with SO₂ in the absence of tert-BuOOH. All resulting alkyne-SO₂ copolymers were alternating with 100% trans configuration regardless of the nature of the alkyne, the solvent, or temp. A mechanism was proposed in which SO₂ homolytically decomposed the organic hydroperoxide into free radicals which initiate the polymerization. The alkyne-SO₂ charge transfer complex was formed in solution, and the initiation and propagation steps probably involved this complex in equilibrium with its monomers.