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Influence of type of zinc salts on photoinitiated living cationic polymerization of vinyl ethers

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Abstract

Activities of a series of zinc salts in Lewis-acid-mediated cationic photopolymerization of vinyl ethers have been studied. Readily soluble zinc salts including zinc stearate, zinc acetate and zinc oxide; zinc iodide; and metallic zinc were employed as a Lewis acid in propagation stage of the cationic polymerization initiated by photolysis of a substituted vinyl halide, 1-bromo-1,2,2-tris(p-methoxyphenyl)ethene (AAVB). As a model monomer isobutyl vinyl ether (IBVE) was polymerized by the described system in the presence of the zinc salts or metallic zinc for investigation of efficiencies of the Lewis acids. Novel system containing organo-zinc compounds yielded polymers in more controlled manner. For further evaluation of potential living character of the system, polymerization of IBVE catalyzed by zinc stearate was monitored, and as a result, the polymerization showed quasi-living nature. Activity of the catalyst system in photo-induced crosslinking of difunctional vinyl ether was evaluated as well. (C) 2013 Elsevier Ltd. All rights reserved.

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