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Synthesis and characterization of hypercrosslinked hydroxyl functionalized co-polymer beads

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ABSTRACT

Hydroxyl functionalized beaded copolymers were synthesized from 2-hydroxy ethyl methacrylate by suspension polymerization using two different crosslinking agents (EDMA, DVB) and diluents (1,1,2,2-tetrachloroethane, 1,2-dichlorobenzene). Microporous beads with high surface area were successfully synthesized and characterized by different techniques. Maximum surface area obtained was 564 m²/g bearing uniform, spherical as well as non-aggregation images of beads. Thermal properties such as DTG and DSC reveal that, type of crosslinker (flexible/rigid) is major while its concentration is minor parameter that affect decomposition and softening temperature of copolymer. Swelling ratio of copolymer beads was examined as a function of crosslinker and crosslink density. Swelling behavior is in accordance with copolymer-solvent interaction parameter.

Keywords

Copolymer, Surface area, Suspension polymerization, Swelling ratio, Morphology

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