

Polimerisasi suspensi poli stirena-KO-(butil akrilat) dengan metode atom transfer radical polymerization (ATRP) = Suspension polymerization of poly styrene-CO- (butyl acrylate) by atom transfer radical polymerization ATRP

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Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20387222&lokasi=lokal>

Abstrak

Polimerisasi suspensi merupakan salah satu teknik polimerisasi dispersi di mana monomer terdispersi dalam air sebagai fasa kontinyunya. Pada penelitian ini dilakukan sintesis kopolimer poli[stirena-ko-(butil akrilat)] dengan teknik polimerisasi suspensi melalui metode Atom Transfer Radical Polymerization (ATRP). Variasi konsentrasi stabilizer poli(vinil alkohol) (PVA), inisiator etil -bromoisobutirat (EBIB), dan komposisi monomer dilakukan untuk mendapatkan kondisi optimum. Kondisi optimum diperoleh pada (i) konsentrasi PVA 5% dengan viskositas 1550 mPa.s, (ii) perbandingan massa total monomer dan inisiator EBIB sebesar 211:10 dengan ukuran partikel 1,832 μm serta distribusi ukuran partikel yang monomodal, dan (iii) komposisi monomer stirena dan butil akrilat sebesar 50:50 (wt/wt%) dengan temperatur transisi gelas sebesar 12,45oC. Parameter keberhasilan terjadinya kopolimerisasi dibuktikan oleh karakterisasi FTIR, DSC, dan GPC.

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Suspension Polymerization is one of dispersion polymerization technique which monomers are dispersed in water as continuous phase. In this study, synthesis of copolymers poly[styrene-co-(butyl acrylate)] by using suspension polymerization technique via Atom Transfer Radical Polymerization (ATRP) was performed. Concentration of stabilizer poly(vinyl alcohol) (PVA), initiator ethyl--bromoisobutyrate (EBIB), and monomers composition were varied to obtain The optimum conditions. The optimum conditions were obtained at (i) PVA concentration of 5% with viscosity of 1550 mPa.s, (ii) total mass ratio of monomer and initiator EBIB of 211:10 with particle size of 1,832 μm and monomodal particle size distribution, and (iii) composition between monomers styrene and butyl acrylate of 50:50 (wt/wt%) with transition glass temperature of 12,45oC. The success of the copolymerization was evidenced by FTIR, DSC, and GPC characterization.