

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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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.

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.