Sintesis dan karakterisasi polimer suspensi poli stirena ko butil akrilat melalui polimerisasi radikal bebas = Synthesis and characterization of suspension polymer poly styrene co butyl acrylate by free radical polymerization

Agustina, author

Abstrak

Pada penelitian ini dilakukan sintesis polimer suspensi poli[stirena-ko-(butil akrilat)] melalui polimerisasi radikal bebas untuk mempelajari pengaruh komposisi monomer stirena dan butil akrilat terhadap temperatur transisi gelas (Tg) kopolimer, serta mempelajari pengaruh konsentrasi inisiator benzoil peroksida terhadap solid content, viskositas dan ukuran partikel kopolimer. Dari hasil penelitian diperoleh bahwa, komposisi monomer mempengaruhi nilai Tg kopolimer, dengan semakin banyak komposisi monomer stirena yang digunakan, semakin tinggi nilai Tg kopolimer yang dihasilkan. Komposisi monomer optimum diperoleh pada saat perbandingan komposisi antara stirena dengan butil akrilat 55:45, dengan Tg yang dihasilkan sebesar 38,18ºC. Konsentrasi inisiator mempengaruhi nilai solid content dan viskositas, akan tetapi tidak mempengaruhi ukuran partikel kopolimer. Konsentrasi inisiator optimum diperoleh pada saat konsentrasi inisiator 1% dari berat monomer total, dengan nilai solid content yang dihasilkan sebesar 39,34% dan viskositas kopolimer sebesar 781,25 centiPoise. Karakterisasi menggunakan FTIR, GPC dan DSC menunjukkan bahwa polimer suspensi poli[stirena-ko-(butil akrilat)] telah berhasil disintesis.
<hr>In this research, suspension polymers of poly[styrene-co-(butyl acrylate)] synthesis was done by using free radical polymerization method to study not only the effects of various monomer composition of styrene and butyl acrylate on the glass transition temperature (Tg), but also to study the effects of various initiator concentration of benzoyl peroxide on the solid content, viscosity and particle size of copolymer. The result showed that monomer composition affected the Tg of copolymers. The more amount of styrene used, the higher value of Tg copolymers produced. Optimum monomer composition was obtained when the composition ratio between styrene and butyl acrylate 55:45, with the value of Tg of 38,18ºC. Initiator concentration affected the value of solid content and viscosity, but didn?t affect the particle size of copolymer. Optimum initiator concentration was obtained when the initiator concentration 1% from the total weight of monomers, with the value of solid content of 39,34% and the viscosity of 781,25 centiPoise. The FTIR, GPC and DSC result showed that suspension polymers of poly[styrene-co-(butyl acrylate)] has been successfully synthesized.