Sintesis polimer core-shell stirena-butil akrilat : pengaruh jenis inisiator dan pengikat silang glisidil metakrilat terhadap ukuran dan distribusi ukuran partikel

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Abstrak

Polimer emulsi core-shell merupakan polimer sintetis yang saat ini sedang berkembang dalam berbagai bidang industri, salah satunya untuk aplikasi coating. Dalam penelitian ini dilakukan sintesis polimer emulsi core-shell stirena-butil akrilat dengan teknik batch untuk core dan teknik semikontinu untuk core-shell untuk mempelajari pengaruh penggunaan jenis inisiator termal APS dan NaPS dalam sintesis polimer core stirena dan core-shell stirena-butil akrilat serta pengaruh penambahan glisidil metakrilat (GMA) sebagai pengikat silang terhadap polimerisasi core stirena.
Dari hasil penelitian diperoleh polimer core stirena dengan hasil konversi 61,90% untuk inisiator APS dan 73,52% untuk inisiator NaPS, ukuran partikel yang relatif sama, 49,97 nm untuk inisiator APS dan 43,80 nm untuk inisiator NaPS dan keduanya bersifat monomodal (monodispers). Penambahan pengikat silang GMA pada polimer core stirena diperoleh hasil konversi 73,52%, ukuran partikel 43,80 nm dan monodispers sedangkan tanpa penambahan GMA diperoleh hasil konversi 73,48%, ukuran partikel 65,00 nm dan monodispers. Untuk polimer core-shell stirena-butil akrilat didapatkan persen hasil konversi dengan inisiator APS sebesar 26,98% dan inisiator NaPS sebesar 45,61%, ukuran partikel sebesar 77,92 nm untuk inisiator APS dan 48,72 nm untuk inisiator NaPS dan distribusi ukuran partikel keduanya bersifat monomodal (monodispers).
<hr>Core-shell emulsion polymer is a synthetic polymer that is currently being developed in various industries, one for coating application. In this research has been synthesed the styrene-butyl acrylate core-shell emulsion polymer with a batch technique for core and semicontinu technique for core-shell to study the effect of type of thermal initiator APS and NaPS in the synthesis of styrene core and styrene-butyl acrylate core-shell polymer and the effect of glisidil methacrylate (GMA) as a cross-linker on the polymerization of styrene core.
From this research has been obtained the styrene cores polymer with percent conversion were 61.90% for APS initiator and 73.52% for NaPS initiator, particle size were relatively similar, 49.97 nm for APS initiator and 43.80 nm for NaPS initiator and both the initiator obtained monomodal (monodisperse) particle distribution. The addition of GMA as cross-linker in the styrene core polymer obtained the percent conversion was 73.52%, the particle size was 43.80 nm and monodisperse while the polymerization of styrene core without the addition of GMA obtained 73.48% percent conversion, particle size was 65.00 nm and monodisperse. For styrene-butyl acrylate core-shell polymers obtained the percent conversion with the APS initiator was 26.98% and 45.61% for the NaPS initiator, particle size was 77.92 nm for APS initiator and 48.72 nm for NaPS initiator and both particle size distributions were monomodal (monodisperse).