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微乳液中苯乙烯聚合反应的研究

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摘要 测定了十二烷基磺酸钠(As)/正丁醇/20%苯乙烯/水体系相平衡。用油溶性偶氮二异丁腈(AIBN)和水溶性过二硫酸钾(K~2S~2O~8)为引发剂,研究了油包水(W/O)、双连续(BC)和水包油(O/W)型微乳液介质中苯乙烯的聚合反应。得到了苯乙烯转化率和聚苯乙烯分子量与体系水含量之间的关系,讨论了微乳液结构对聚合作用的影响。并通过电镜观察了聚苯乙烯的形貌,求得了聚苯乙烯的粒径,同时用^1HNMR研究了苯乙烯在微乳液液滴中的增溶位置,分析了聚合作用的实验结果。

关键词 聚合 苯乙烯 微乳 质子磁共振谱法 十二烷基磺酸钠 相平衡 聚苯乙烯 增溶作用 山东省自然科学基金

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Studies on polymerization of styrene in microemulsions

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Abstract The isothermal phase diagram for the system sodium dodecyle sulfonate/n-butanol/20% styrene/water has been determined at 40℃. The polymerization of styrene in O/W, W/O, and BC microemulsions was investigated by using the water-soluble potassium persulfate and oil- soluble azo-bis-isobutyronitrile (AIBN) as initiators. The relationship between the conversion rate of styrene, the molecular weight of polystyrene and the water content of the system was obtained, and the effect of microemulsion structures on the polymerization of styrene was also discussed. With the microscope, the feature of polystyrene particles was observed and the diameter was 20～60nm. At the same time, in order to analyze the polymerization of styrene, the solubilization site of styrene in microemulsion drops was studied by ^1H NMR spectra.

Key words POLYMERIZATION STYRENE MICROEMUSION PROTON MAGNETIC RESONANCE SPECTROMETRY PHASE EQUILIBRIUM POLYSTYRENE DISSOLVING

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