

研究论文

超临界二氧化碳中丙烯酸与苯乙烯共聚

曹现福^{1,2}, 陈德宏^{1,2}, 张靓靓^{1,2}, 许凯¹, 陈鸣才¹

1. 中国科学院广州化学研究所, 广州 510650;
2. 中国科学院研究生院, 北京 100039

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摘要 以超临界二氧化碳为介质, 进行丙烯酸与苯乙烯共聚反应, 合成出具有疏水链段结构的改性丙烯酸聚合物. 研究了压力和投料比对聚合反应的影响. 用红外光谱、紫外光谱和核磁共振谱分析其结构及组成. 采用粘度计测定其水溶液粘度随pH值的变化. 研究表明, 该聚合物水溶液具有明显的疏水缔合作用.

关键词 [超临界二氧化碳](#) [丙烯酸](#) [苯乙烯](#) [共聚](#) [疏水缔合](#)

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Copolymerization of Acrylic Acid with Styrene in Supercritical Carbon Dioxide

CAO Xian-Fu^{1,2}, CHEN De-Hong^{1,2}, ZHANG Liang-Liang^{1,2}, XU Kai¹, CHEN Ming-Cai¹

1. Guangzhou Institute of Chemistry, Chinese Academy of Sciences, Guangzhou 510650, China;
2. Graduate School of the Chinese Academy of Sciences, Beijing 100039, China

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Abstract A series of hydrophobically associating polymers were synthesized in supercritical carbon dioxide by copolymerization acrylic acid with different amounts of styrene at 65°C. The effects of the pressure of CO₂ and the concentrations of styrene were observed. The

structure and compositions of the copolymer were determined by IR, UV and ¹H NMR spectra. The products were perfect white solid powder. Different pressures and contents of styrene led to different morphology of the products and yields. The conversion of each comonomer was above 90% when the mass fraction of styrene in the comonomers was below 5% at 15—19 MPa and 65 °C. The viscosities of aqueous solution of the copolymers showed an obvious dependence on pH and shearing time, which suggests that the copolymers can hydrophobically associate in aquatic solution.

Key words [Supercritical carbon dioxide](#); [Acrylic acid](#); [Styrene](#); [opolymerization](#); [Hydrophobical association](#)

通讯作者:

陈鸣才 mcchen@gic.ac.cn

作者个人主页: 曹现福^{1,2}; 陈德宏^{1,2}; 张靓靓^{1,2}; 许凯¹; 陈鸣才¹

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