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催化、动力学与反应器

离子液体催化合成丙交酯

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摘要 丙交酯是合成可降解材料聚乳酸的重要中间体。以D、L-乳酸为原料，在离子液体催化剂存在下脱水环化合成丙交酯，研究了反应过程中离子液体的种类及用量等因素对丙交酯产率的影响，粗产品经重结晶纯化得到高纯度D、L-丙交酯，通过熔点、红外光谱和紫外光谱对产品进行了表征；实验表明，以离子液体为催化剂制备丙交酯具有可行性，体系粘度降低，反应条件温和，有利于丙交酯的生成；确定了[NH(C_2H_5)$_3$][HSO_4]为催化剂时的适宜工艺条件为催化剂用量5 wt%，缩聚温度110～140℃，解聚温度190～250℃。

关键词

聚乳酸 丙交酯 离子液体 合成

分类号

Preparation of lactide using ionic liquid catalyst

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Abstract

Lactide, the important intermediate for synthesis of poly lactic acid, was prepared from D,L-lactic acid with ionic liquid as catalyst. High purity lactide was obtained by recrystallization, and identified with melting point measurement and infrared ray spectroscopy. The influence factors, such as the type and dosage of ionic liquid on the yield of lactide were discussed in the preparation of lactide. The results showed that ionic liquid as catalyst was feasible and could lower the viscosity of the reaction system for preparation of lactide under mild reaction conditions, and the optimum conditions for using ［NH(C_2H_5)$_3$］［HSO_4］ catalyst were that the dosage of catalyst was 5%(mass), oligomerization and depolymerization temperature were in the range of 110—140℃ and 190—250℃ respectively.

Key words

poly lactic acid lactide ionic liquid synthesis

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