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研究论文

新型PES微孔材料的制备及性能研究

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摘要 合成了新型双烯丙基聚醚砜(PES), 采用超临界CO_2作为物理发泡试剂制备微孔材料, 研究了不同发泡温度、饱和压力、发泡时间和放气时间等因素对微孔形貌的影响. 结果表明, 发泡温度在110~170 ℃之间, 随着温度的升高, 泡孔直径增加, 泡孔密度在140 ℃达到一个最大值; 随着饱和压力的升高, 泡孔直径减小, 泡孔密度增大; 发泡时间和放气时间对微孔直径和密度影响不大; 研究了在不同辐照剂量下微孔材料的交联性能, 结果表明, 在600 kGy辐照剂量以下, 交联效果不明显, 在800 kGy以上, 随着辐照剂量的增大, 凝胶含量增加, 辐照后的样品在265 ℃热处理10 min, 仍能保持完好的微孔结构.

关键词 聚醚砜 微孔材料 辐照

分类号 0631

Preparation and Properties of a Novel Poly(ether sulfone) Microcellular Material

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Abstract A modified poly(ether sulfone)(PES) was prepared by introducing diallyldihydroxybiphenyl(DA-DHBP) unit into the main chain of PES and microcellular foams of the modified PES were prepared by using supercritical carbon dioxide as the foaming agent. Before radiation crosslinking, the influence of foaming temperature, saturation pressuse, foaming time and transfer time on the microcellular morphology was investigated. The results suggest that the cell diameter increased with increasing the foaming temperature and the cell density reached the maximum at 140 ℃, when the foaming temperature ranged from 110 ℃ to 170 ℃; the cell diameter decreased and the cell density increased with saturation pressuse increased; the foaming time and transfer time almost haven't influenced on the cell diameter and cell density. After radiation crosslinking, the influence of radiation dosage on the microcellular morphology was investigated. The results suggest that the content of gelation increased gradually with the increase of radiation dosage and the radiated sample can remain the microcelllar structure well, even though the radiated sample was heat-treated at 265 ℃ for 10 min.

Key words Poly(ether sulfone) Microcellular material Radiation

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