

未定

超支化不饱和聚酯酰胺的辐射效应

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摘要 以红外光谱法、核磁共振谱法、凝胶渗透色谱技术以及凝胶含量、特性粘数测定为手段,研究了电离辐射对超支化不饱和聚酯酰胺(HUPEA)化学结构、表观分子量、特性粘数等的影响。研究表明,在所研究的吸收剂量范围内,不管是溶液辐照或是固体辐照, HUPEA都没有出现凝胶化;辐照前后,尽管聚合物核磁共振谱没有明显变化,但聚合物红外光谱图中的一些吸收峰发生位移、强度减弱或消失;固体辐照时,聚合物表观分子量及特性粘数随吸收剂量增加而下降。分析认为,出现上述现象的原因在于,超支化大分子之间缺乏链缠结,辐射作用下整个聚合物体系不会凝胶化,即大分子之间不易形成化学连接,而其大分子内部会出现辐射交联。

关键词

分类号

Radiation Effect on Hyperbranched Unsaturated Polyesteramides

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Abstract The effect of irradiation on chemical structures, apparent molecular weights, intrinsic viscosities of hyperbranched unsaturated polyesteramides (HUPEA), was studied by infrared spectroscopy (IR), nuclear magnetic resonance spectrometry (NMR), gel permeation chromatography (GPC) and the measurement of gel and intrinsic viscosity. The results show that no gel has been found in irradiated polymers in solid state or in solution form over a wide range of absorbed dose, and that several absorption bands in IR spectra displace, or disappear, especially that there is a trend of decreasing apparent molecular weights of polymers in solid state with increasing the absorbed dose. These might be attributed to lack of entanglement between macromolecules in hyperbranched polymers, in contrast to high molecular weight linear polymers with a greater degree of chain entanglement, and intramolecular crosslinking instead of intermolecular crosslinking initiated by ionizing irradiation.

Key words

DOI

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