

论文

## 含树枝状大分子PAMAM的苯乙烯乳液聚合

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**摘要** 将树枝状大分子PAMAM (4.5代)作为种子,以苯乙烯为代表性单体进行乳液聚合.研究表明,加入树枝状大分子PAMAM时,所制得的聚合物乳液粒子平均粒径在30~50nm之间,小于100nm,且大小分布均匀;所制备的聚合物在 $1670\text{cm}^{-1}$ 左右处出现酰胺的特征吸收峰,在 $3300\text{cm}^{-1}$ 左右处出现N-H伸缩振动特征峰;说明树枝状大分子PAMAM起到种子的作用,所制备的聚合物含树枝状大分子PAMAM.

**关键词** [树枝状大分子](#) [聚合物乳液](#) [纳米粒子](#) [乳液聚合](#)

分类号

## EMULSION POLYMERIZATION OF STYRENE CONTAINING DENDRIMER PAMAM

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**Abstract** Dendrimers and dendritic polymers have applications in a diverse range of many fields including medical, electronics, nanotechnology, biology and catalysis. Dendrimers are known for their well-defined, highly branched architectures that are built in a stepwise manner. Using dendrimer PAMAM (generation 4.5) as seed, the monodisperse and nano-sized polystyrene emulsions containing dendrimer PAMAM have been obtained by seed emulsion polymerization. The size and size distribution of particles were characterized by Transmission Electron Microscopy (TEM) and Dynamic Light Scattering (DLS). It has been found that when PAMAM is used, the diameters of emulsion particles are much smaller than 100 nm, and the particles are nearly monodisperse, which are not easily obtained from other emulsion polymerization systems. The FT-IR spectrums showed obviously that, when PAMAM is used, there are absorption peak at *ca.*  $1670\text{cm}^{-1}$  and stretching peak at *ca.*  $3300\text{cm}^{-1}$  which mean that the dendrimer is included in the obtained polymer.

**Key words** [Dendrimer](#) [Polymer emulsion](#) [Nano-particles](#) [Emulsion polymerization](#)

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