

论文

芳氧基钇在DMF中引发丙烯腈聚合的动力学研究

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摘要 用单组分三(2,6-二叔丁基4-甲基苯氧基)钇配合物 $[Y(OAr)_3]$ 引发丙烯腈聚合,发现介质对聚合反应的影响很大,在介电常数较大的极性溶剂 N,N -二甲基甲酰胺(DMF)中,AN聚合反应的活性较高,在50℃下聚合3h,丙烯腈聚合反应转化率达到94%,所得聚丙烯腈(PAN)含52%间规结构.在DMF中聚合反应速率与单体、引发剂的浓度分别呈一级关系,丙烯腈聚合反应的表现活化能为 $22.1\text{ kJ}\cdot\text{mol}^{-1}$.

关键词 [丙烯腈](#) [芳氧基钇](#) [聚合反应动力学](#)

分类号

KINETICS OF ACRYLONITRILE POLYMERIZATION INITIATED BY $Y(OAr)_3$ in DMF

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Abstract It was found that yttrium tris(2,6-di-tert-butyl-4-methyl phenolate) could be an effective initiator for polymerization of acrylonitrile. The study of influence of solvent showed that DMF with high dielectric constant gave higher conversions (>94%) at 50℃, 3 h. The kinetics of acrylonitrile polymerization using $Y(OAr)_3$ in DMF was investigated by the weight method. The results indicated that the rate of polymerization showed a first order relationship with respect to both the monomer (AN) concentration and the initiator $[Y(OAr)_3]$ concentration, respectively, and the overall activation energy of polymerization reaction was $22.1\text{ kJ}\cdot\text{mol}^{-1}$ according to the Arrhenius equation. ¹³C-NMR studies showed that the PAN prepared had a syndiotactic triad (rr) content of 52%.

Key words [Acrylonitrile](#) [Y\(OAr\)₃](#) [Polymerization kinetics](#)

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