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研究简报

含三苯基膦聚醚醚酮酮的结构与性能

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摘要 以双[4-(对氟苯甲酰基)苯基]苯基氧化膦和对苯二酚(HQ)为单体, 合成了新型主链含三苯基膦结构的聚醚醚酮酮, 并对聚合物的结构和性能进行了表征.

关键词 聚芳醚酮 含磷化合物 亲核取代反应 双[4-(对氟苯甲酰基)苯基]苯基氧化膦

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Structure and Properties of Triphenylphosphine-contained Poly(ether ether ketone ketone)

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Abstract A novel triphenylphosphine-contained poly(ether ether ketone ketone) was synthesized from bis[4-(*p*-fluorobenzoyl)-phenyl]phenylphosphine oxide and hydroquinone by nucleophilic copolycondensation with sulfolane as the solvent. The structure was confirmed via FTIR, ^{31}P NMR and ^{1}H NMR. Electrical property, mechanical property, heat-resistance property, flame resistance and solubility were also evaluated. The results show that the polymer has an excellent heat-resistance, the glass transition temperature(T_g) is 212.6 ℃. The 5% mass loss of the polymer in nitrogen atmosphere took place at 476 ℃. The polymer is soluble in many organic solvents, such as CH_2Cl_2, $CHCl_3$, $Cl_2(CH)_2Cl_2$, $Cl(CH_2)_2Cl$, DMF, and NMP at room temperature, the polymer possesses well film ability, good mechanics property, electrical property, and the LOI is 44 which indicates that it possesses an excellent flame retardancy.

Key words Poly(aryl ether ketone) Phosphorus compound Nucleophilic substitution reaction Bis[4-(*p*-fluorobenzoyl)-phenyl]phenylphosphine oxide

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