

用于树脂传递模塑成型的苯乙炔封端的酰亚胺预聚体制备

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摘要:

采用4-苯乙炔苯酐(4-PEPA)、1,3-二(3-氨基苯氧基-4'-苯酰基)苯(BABB)和4,4'-双(3-氨基苯氧基)二苯甲酮(APBP)合成了两种苯乙炔苯酐封端的聚酰亚胺预聚体PI-1和PI-2, 并对预聚体的熔体黏度、稳定性、固化后树脂的热稳定性和机械性能等进行了研究. 结果表明, 制备的预聚体具有较高产率(>95%); 与其它PEPA封端的聚酰亚胺相比, 两种预聚物在较低温度(200 °C)时均具有很低的熔体黏度(1 Pa·s)和良好的熔体黏度稳定性, 固化后玻璃化温度达到300 °C以上, 可适用于树脂传递模塑(RTM)成型制备耐高温高性能树脂基复合材料, 且在成型工艺上有了很大改善; 固化后的树脂具有优异的热稳定性和良好的机械性能.

关键词: 聚酰亚胺; 预聚体; 苯乙炔封端

Preparation of Resin Transfer Moldable Phenylethynyl-terminated Imide Oligomers

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Abstract:

Two kinds of novel phenylethynyl terminated imide oligomers were prepared with BABB, APBP and PEPA. The melt viscosity stability of the oligomers and thermal stability, mechanical properties of cured resins were studied in this paper. The results show that the oligomers can be used to prepare the high performance resin-based composite materials *via* resin transfer molding(RTM) due to their low melt viscosities(about 1 Pa·s) and excellent stability at 200 °C. The cured resins exhibit excellent thermal stability and mechanical properties.

Keywords: Polyimide; Oligomer; Phenylethynyl-terminated

收稿日期 2009-03-31 修回日期 网络版发布日期

DOI:

基金项目:

吉林省科技厅科技支撑项目(批准号: 20086023)资助.

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