

· 基础与临床研究 ·

聚酰亚胺改性环氧树脂的合成方法

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【摘要】目的 自行合成聚酰亚胺,并用其对环氧树脂进行共混改性,探索改性的方法。**方法** 以4,4'-氧双邻苯二甲酸(4,4'-Oxydiphthalic anhydride, ODPa)、4,4'-二氨基二苯醚(4,4'-Oxydianiline, ODA)、对苯二胺(p-Phenylenediamine, PPD)、降冰片烯二酸酐(5-Norbornene-2,3-dicarboxylic Anhydride, NA)为原料,进行聚酰亚胺的合成,利用傅立叶变换红外光谱分析,对其化学结构进行表征。将合成得到的聚酰亚胺与E-51环氧树脂共混,得到改性环氧树脂。**结果** 合成的聚合物被确认为聚酰亚胺。合成所得低分子量聚酰亚胺可溶于环氧树脂,聚合后得到均一、透明的共混产物。**结论** 成功合成低分子量的聚酰亚胺以及聚酰亚胺改性的环氧树脂。

【关键词】 树脂基质 聚酰亚胺 环氧树脂 共混改性

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Synthesis of Polyimide modified epoxy resins

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【Abstract】Objective In this study, epoxy (E51) was modified with self-made polyimide to investigate an effective way to strengthen epoxy. **Methods** 4,4'-Oxydiphthalic anhydride (ODPA), 4,4'-Oxydianiline (ODA), p-Phenylenediamine (PPD) and 5-Norbornene-2,3-dicarboxylic Anhydride (NA) was used to synthesize Polymerization of Monomer Reactants (PMR) type polyimide, and the product was characterized by Fourier transform infrared. Then the polyimide was blended with epoxy. **Results** The self-made polyimide was completely imidization and could be dissolved in epoxy, and the mixture could be cured to get an even and translucent product. **Conclusion** In this experiment, the low molecular weight polyimide was synthesized successfully, and it could be blended with epoxy to get a modified product.

【Key words】 Resin Base Polyimide Epoxy Blending Modification

近年来,树脂类材料在牙科中的应用日益广泛。相较于传统的金属材料,树脂类材料不仅美

观,而且生物相容性更好,弹性模量也更接近天然牙^[1-2],并表现出逐步取代金属材料的趋势。环氧树脂(Epoxy, EP)是一类热固性树脂,具有良好的机械性能、粘接性能、耐腐蚀性和热稳定性,在口腔医学中,主要应用于牙体缺损修复、根管

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