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论文

直链淀粉交联氨基酸酯取代聚膦腈杂化材料的制备

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新型高分子材料制备与加工北京市重点实验室, 北京化工大学材料科学与工程学院, 北京 100029

摘要:

利用直链淀粉与甘/丙氨酸乙酯共取代聚膦腈交联, 制得了一种具有网络结构的新型杂化材料. 实验结果表明, 淀粉衍生物上的羟基转变为醇钠后, 可与聚膦腈分子链上的P—Cl键发生亲核取代反应; 所得聚合物膜无明显相分离, 力学性能优于具有相似组成的直链淀粉/聚膦腈共混膜, 表面亲水性和吸水率与对应的共混膜接近, 且均高于纯聚膦腈膜. 因此, 该聚合物可作为杂化生物材料用于药物控制释放和组织工程方面的研究.

关键词: 氨基酸酯取代聚膦腈 直链淀粉 杂化生物材料

Preparation of Amylose Crosslinked Poly[(glycino ethyl ester)(alanino ethyl ester) phosphazene] Hybrid Biomaterial

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Abstract:

A kind of novel hybrid material was prepared by crosslinking poly[(glycino ethyl ester)_{0.6}(alanino ethyl ester)_{1.2}(chloride)_{0.2}phosphazene](PAGP₁) with amylose. The results show that the residual P—Cl groups in PAGP₁ can be nucleophilic substituted by hydroxyl groups of amylose in the form of R—ONa. The obtained hybrid polymeric film exhibited no obvious phase separation, which commonly occurred in polymer blends. The crosslinked hybrid material had better mechanical properties than the blended PAGP₂/amylose with similar composition, and was more hydrophilic than pure PAGP₂. This novel material would be a good candidate to be applied for drug-controlled release and tissue engineering applications.

Keywords: Amino acid ester polyphosphazene Amylose Hybrid biomaterial

收稿日期 2008-11-10 修回日期 网络版发布日期

DOI:

基金项目:

国家自然科学基金(批准号: 50873012)资助.

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