

材料化学工程与纳米技术

聚乳酸/丝素共混膜的制备及其性能

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收稿日期 2007-4-9 修回日期 2007-9-28 网络版发布日期 2008-3-11 接受日期

摘要

用分子量为10万的聚乳酸(PLLA)对丝素膜进行改性,研究不同的聚乳酸加入量对丝素膜性能的影响,对聚乳酸/丝素共混膜进行了一系列表征。万能电子试验机的测试结果表明,经聚乳酸改性后,丝素膜的断裂强度,断裂伸长率有了较大的改善,当加入聚乳酸占丝素质量为5%时,丝素膜的强度可达到27.1 MPa,伸长率达4.4%;改性后的丝素膜的亲水性有一定程度降低,溶失率则明显减小,透汽透湿性也有所提高;红外光谱测试表明,改性后的丝素膜含有较多的 β 构象成分。

关键词

[聚乳酸](#) [丝素膜](#) [改性](#)

分类号

Preparation and properties of polylactic acid/silk fibroin blend membrane

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Abstract

The blend membranes of regenerated SF (silk fibroin) / polylactic acid (PLLA) with molecular weight 100000 were prepared by using different ratios of SF and polylactic acid, and the effects of polylactic acid on silk fibroin were studied. The structures and properties of these membranes were characterized by a series of tests. Through an electronic mechanical testing system, it was demonstrated that the tensile strength and elongation at break of the blend membrane were improved greatly. When the mass percentage of PLLA reached 5%, tensile strength could reach 27.1 MPa, and elongation at break could reach 4.4%. The hydrophilicity of the blend membrane decreased, and its solubility was reduced evidently, but its water permeability increased. The FTIR measurement indicated that the amount of β -sheet structures of the blend membrane was greater than the pure membrane.

Key words

[polylactic acid](#) [silk fibroin membrane](#) [modification](#)

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