

论文

聚碳酸酯/TiO₂超细纤维的制备与表征

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摘要

静电纺丝是一种有效制备超细纤维的重要方法. 以钛酸丁酯作为TiO₂先驱体实现了聚碳酸酯(PC)/TiO₂的制备, 采用TEM、SEM、红外光谱、X射线衍射等方法进行理化性能表征, 并测试了材料的抗菌性能. 结果表明: 当PC与钛酸丁酯质量比为9:1时电纺纤维尺寸较均匀, 珠状物最少; 7:3时纤维膜对大肠杆菌的抗菌率达到87%左右, 以期用于过滤膜、防护服及医疗纺织材料等领域.

关键词 [聚碳酸酯](#) [复合超细纤维](#) [抗菌性能](#)

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Preparation and Characterization of Polycarbonate/TiO₂ Ultrafine Fibers

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Abstract

Functional ultrafine fibers of polycarbonate (PC)/TiO₂ were prepared by electrospinning of PC solutions mixed with butyl titanate for possible anti-bacterial applications. Three different mixture ratios, *i.e.* 9:1, 8:2, and 7:3 by mass between PC and butyl titanate were applied. These fibers were then characterized by scanning electron microscope (SEM), transmission electron microscope (TEM), Fourier transform infrared spectroscopy (FTIR) and X-ray diffraction (XRD). Furthermore, anti-bacterial performance of the nonwoven fiber mats on escherichia coli was also measured. Experimental results show that when the ratio of PC and butyl titanate is 9:1, the resulting fibers are most uniform with least beads on the fiber surfaces. When this ratio is increased to 7:3, however, as high as 87% of the escherichia coli bacteria are killed. The present work demonstrates that an attachment of titania into PC ultrafine fibers leads to a significant improvement in their anti-bacterial ability.

Key words [polycarbonate](#) [composite ultrafine nanofibers](#) [anti-bacterial performance](#)

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