

论文

电纺聚乙烯醇超细纤维膜的性能研究

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摘要 由电纺制备聚乙烯醇(PVA)超细纤维膜,以扫描电镜观察纤维的微观形貌,用X射线衍射研究超细纤维膜的结晶行为,并测定了PVA超细纤维膜的力学性能和吸水性.结果表明,PVA超细纤维的平均直径为 (184 ± 26) nm,超细纤维中PVA的结晶度和晶体有序程度较浇铸膜低.超细纤维膜的拉伸强度、模量和断裂伸长率均较浇铸膜差,吸水率在300%以上,高于浇铸膜.

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分类号

PROPERTIES OF ULTRAFINE FIBROUS POLY(VINYL ALCOHOL) MEMBRANES BY ELECTROSPINNING

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Abstract Ultrafine fibrous membranes of poly(vinyl alcohol)(PVA) were prepared by electrospinning from aqueous solutions of fully hydrolyzed PVA. The morphology of the electrospun PVA fibers was observed under a scanning electron microscope. The crystallization behavior was investigated by X-ray diffraction(XRD). Mechanical properties and water uptake of the fibrous PVA membrane were also evaluated. Results suggested that the average diameter of ultrafine PVA fibers was (184 ± 26) nm. XRD analysis exhibited poor development of crystallinity in electrospun fibrous PVA membranes. The tensile strength, tensile modulus and elongation at break of the fibrous PVA membrane were (5.10 ± 0.77) MPa, (236 ± 27) MPa and $(8.28\pm 2.38)\%$ respectively, indicating weak mechanical properties compared with the casting PVA film. Water uptake of fibrous PVA membranes was more than 300%, higher than that of the casting PVA film. Crosslinking of the fibrous PVA membrane did not show significant influence on its water uptake.

Key words [PROPERTIES OF ULTRAFINE FIBROUS POLY\(VINYL ALCOHOL\) MEMBRANES BY ELECTROSPINNING](#)

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