

عنوان مقاله:

Gas transport membranes based on novel optically active polyester/ cellulose/ZnO bionanocomposite membranes

محل انتشار:

بیستمین سمینار شیمی معدنی ایران (سال: 1397)

تعداد صفحات اصل مقاله: 1

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خلاصه مقاله:

In this work, at first commercially available ZnO nanoparticles were modified with biodegradable nanocellulose through ultrasonic irradiation technique [1]. Then, optically active bionanocomposite (BNCs) membranes composed of polyester (PE) and cellulose/ZnO BNCs are synthesized, as a novel process to enhance gas separation performance. The obtained PE/BNCs were characterized by Fourier transform-infrared spectroscopy, thermogravimetry analysis (TGA), X-ray powder diffraction, field emission-scanning electron microscopy, and transmission electron microscopy (TEM). TGA data indicated an increase thermal stability of the PE/BNCs in compared to the pure polymer. From TEM image of PE/BNCs, it can be found that the surface-modified ZnO with diametric size of less than 40 nm, uniformly dispersed in the obtained PE matrix. The results obtained from gas permeation experiments with a constant pressure setup showed that adding cellulose/ZnO to the polyester membrane structure increased the permeability of the membranes. From biodegradation test observed that the degradation occurred in a faster rate in the presence of [2]. [cellulose/ZnO in the PE matrix]

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