生物合成微濾膜之研究

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ABSTRACT

Membrane Technology in water sanitation for potable use is gaining increasing attention globally. In the water and wastewater treatment industry, this technology is becoming more sophisticated and specialized. Globally 2.6 billion persons rely on unsafe water for drinking; this research aims to develop a biodegradable membrane to decontaminate wastewater of bacteria, which is the major cause of waterborne diseases.

In this study the development and characterization of Cross-linked Green Biodegradable Chitosan-Glycerol membranes, for wastewater microfiltration applications were investigated. In this study chitosan was isolated as biosynthesized α-chitin from crustacean waste material obtained in Taiwan. Chitosan was used to synthesize green polymer membranes in combination with Glycerol. The membranes were synthesized via a novel process and cross-linked in a novel cross-linking media. Characterization of the membranes was done via Thickness Testing, Static Swelling Studies, Tensile Strength, Fourier Transform Infrared Spectroscopy-Attenuated Total Reflectance, Digital Microscopy and Scanning Electron Microscopy-Energy Dispersive X-Ray Spectroscopy. A model is also here proposed for the surface chemistry of the synthesized membranes.

Microfiltration performance of the synthesized membranes determined that the membranes are suitable for microfiltration applications. Moreover, the membranes were effective at 92%- 95% removal of bacteria notably, Escherichia coli from wastewater.

Keywords : Biodegradable、Membrane、Microfiltration、Chitosan-Glycerol、Characterization、Wastewater

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