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Liquefied Chitin/Polyvinyl Alcohol Based Blend Membranes: Preparation, Characterization and Antibacterial Activity

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Highlights

- Liquefied chitin products were first used to modify the polymer materials
- The influences of LBMC on characteristics and performances of the LBMC/PVA blend membranes were evaluated.
- Mechanical property and thermal stability were remarkably strengthened under optimal blend membrane.
- The incorporation of LBMC obviously enhanced the antibacterial activity of blend membranes.

Abstract: To expand the applications of fishing industrial wastes, the liquefaction technique was employed to convert chitin into liquids, which were first further used for the modification of polymer materials. Ball-mill treated chitin was effectively liquefied into polyols in polyethylene glycol 400/glycerin mixed solvent. FTIR, ¹H NMR and size exclusion chromatography analyses of liquefied chitin turned out that depolymerization and deacetylation reactions occurred during liquefaction process. The liquefied chitin/polyvinyl alcohol blend membranes with various mixing ratios were prepared and characterized by FTIR and SEM. In addition, transparency, tensile strength, elongation at break, water absorption, water retention and antibacterial properties were thoroughly discussed. The mechanical property and thermal stability were greatly enhanced under the optimized

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