

Thesis Title	Preparation of Porous Polymer Composite Membranes for Use as Alkali Battery Separators
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ABSTRACT

In this research, porous polyvinyl alcohol (PVA) and polyvinyl alcohol composite membranes were prepared by partial dissolution technique. The polyvinyl alcohol/polyvinylchloride (PVA/PVC) blend film was casted and crosslinked with 5% wt. glutaraldehyde solution. The porous structure was performed by leach PVC with tetrahydrofuran solvent. Then the physical properties, chemical properties, thermal properties, mechanical properties and ion conductivity of the porous PVA membrane were examined. The effects of PVC content, 0-20% wt., was studied. Moreover, the porous PVA composite membrane was fabricated by adding nanoparticle of inorganic fillers; silicon dioxide, titanium dioxide and aluminium oxide. The effects of inorganic fillers content, 0-20% wt., to properties of the porous PVA composite membrane were investigated. The results showed that the porous PVA membrane with 10% wt. PVC (PVA/10%PVC) had highest ion conductivity. Furthermore, the addition of inorganic fillers resulted in the increase of mechanical properties and ion conductivity of the porous PVA composite membrane.