Preparation and pervaporation performance of chitosan-poly(methacrylic acid) polyelectrolyte complex membranes for dehydration of 1,4-Dioxane

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Polyelectrolyte complex (PEC) membranes composed of chitosan (CS) and poly(methacrylic acid) (PMAA) were prepared by blending the polymer solutions in different ratios. The chemical interaction and crystallinity of the resulting PEC membranes were respectively analyzed by Fourier transform infrared spectroscopy and wide-angle X-ray diffraction. Differential scanning calorimetry (DSC) was used to characterize the thermal properties of the membranes. The membranes thus obtained were subjected for pervaporation (PV) separation of water-dioxane mixtures. The effects of PMAA content, zeolite loading, and temperature on the performance of the membranes were systematically investigated.
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