

The preparation of NaA zeolite membrane on a porous α - Al_2O_3 tube by hydrothermal synthesis

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In this study, synthesis of NaA zeolite membrane for water was selectively separated by pervaporation using from water/ethanol mixtures. Pervaporation processes could have advantages of a low energy demand than distillation. Pervaporation was preferred to separate azeotropic mixtures or isomers. Zeolite membranes show better thermal, mechanical, chemical stabilities than polymer membranes. Water could be effectively separated from water/organic mixtures using NaA Zeolite membrane which has high hydrophilicity. The NaA zeolite was seeded on the outer surface on α - Al_2O_3 . And it was hydrothermally synthesized. Crystalline structure of NaA zeolite and the surface of the membranes were characterized by XRD and SEM. It was confirmed that the prepared zeolite membrane had a uniform thickness of 4~5 μm . The effect of mole fraction of ethanol and temperature of pervaporation on the total permeation flux and the separation factor was investigated.