PREPARATION OF CaTiO$_3$ PEROVSKITE MEMBRANE WITH POLYETHYLEN GLYKOL AS ADDITIVE

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Abstract
Preparation of asymmetric membrane by phase inversion method produces membrane morphology varies depend on the type of polymer and additives are used. The morphology of membrane will affect the performance of membrane as an oxygen ion conductor. In this study, CaTiO$_3$ perovskite synthesized by the solid state method. CaTiO$_3$ perovskite membrane was then prepared by phase inversion method using polieterimida (PEI) as a binder and forming the structure of perovskite oxide membrane, n-methylpyrrolidone (NMP) as the solvent phase, aqua DM as non-solvent phase, and polyethylene glycol (PEG) as an additive. PEG added at 0; 0.3; 0.5 and 0.7% w/w. The printing process produces crude membrane were subsequently sintered at a temperature of 1200 °C. Membrane morphology was performed using Scanning Electron Microscope (SEM) showed that the pattern on the membrane indicates the presence of an asymmetrical shape with tight structure, porous and porous surfaces inside. The shape and morphology of membrane pores on the body varies according to the amount of PEG added. The more the addition of PEG, the larger pore size membrane is formed in the body. Sintering at a temperature of 1200 °C causes the pores in membrane gradually shrink or even disappear for a smaller pore size.

Key Word: asymmetric membrane, perovskite, phase inversion, polyethylene glycol.