ABSTRACT

In this research, ceramic membranes of La$_{1-x}$Sr$_x$Co$_{0.8}$Fe$_{0.2}$O$_{3-\delta}$ (0 ≤ x ≤ 0.4) with a diameter of 55 mm, were prepared from their powders. The powders were synthesized by the solid state method. X-ray analysis results showed that the powder had provskite structure with a negligible amount of Co$_3$O$_4$. Membrane preparations which were started by applying an uniaxial pressing force of 7 ton in a mold, can only be successful when the powder was mixed with a solution of amyllum binder prior to the molding. Sintering of green membranes at 1100 °C for 8 h produce very porous and fragile membranes. Stronger and denser membranes were produced when the green membranes were sintered further at 1250 °C. Based on SEM analysis results, La$_{0.6}$Sr$_{0.4}$Co$_{0.8}$Fe$_{0.2}$O$_{3-\delta}$ (LSCF 6482) was the densest membrane.

Keyword: Ceramic Membrane, LSCF, Perovskit, Solid State