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(La_{0.6}Ca_{0.4})_{0.98}(Co_{0.8}Fe_{0.2})O_{3-δ} Membranes

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Oxygen Permeation and Stability Study of $(\text{La}_{0.6}\text{Ca}_{0.4})_{0.98}(\text{Co}_{0.8}\text{Fe}_{0.2})\text{O}_{3-\delta}$ Membranes

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Abstract

The perovskite-type oxide $(\text{La}_{0.6}\text{Ca}_{0.4})_{0.98}(\text{Co}_{0.8}\text{Fe}_{0.2})\text{O}_{3-\delta}$ (LCCF) was investigated for use as oxygen separation membrane. A 25 μm thick dense membrane on a porous LCCF support with a thickness of around 175 μm was prepared by a tape casting and lamination process. The optimum sintering temperature of the component was established to be 1050°C by analysis of microstructures of membranes sintered at different temperatures. Scanning electron microscopy (SEM) examination of cross-sections of the sintered membrane showed that it consisted of two phases, the main phase being enriched in calcium (Ca) and depleted in lanthanum (La), relative to the nominal

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