Short Communication

Synthesis, Characterization and Electrochemical Properties of a Novel Cobalt-Free $\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Fe}_{0.8}\text{Mn}_{0.2}\text{O}_{3-\alpha}$ Intermediate-Temperature Cathode Material

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In this paper, a novel cobalt-free cathode of $\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Fe}_{0.8}\text{Mn}_{0.2}\text{O}_{3-\alpha}$ (BSFMn) and electrolyte of $\text{BaZr}_{0.1}\text{Ce}_{0.7}\text{Y}_{0.2}\text{O}_{3-\alpha}$ (BZCY) were prepared by nitrate citric acid method. A single cell of NiO-BZCY | BZCY | BSFMn was assembled by a simple and effective slurry spin coating method and its H_2 /air fuel cell performance was also tested. The BSFMn, BZCY and NiO-BZCY were analyzed by X-ray diffraction (XRD). And a single cell after testing was analyzed using scanning electron microscopy (SEM). The maximum output power densities of NiO-BZCY | BZCY | BSFMn were $216 \text{ mW}\cdot\text{cm}^{-2}$, $351 \text{ mW}\cdot\text{cm}^{-2}$ and $500 \text{ mW}\cdot\text{cm}^{-2}$ at 600°C , 650°C and 700°C , respectively.

Keywords: Cathode; Electrolyte; Fuel cell; Anode; Nitrate citric acid method

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