Synthesis and characterization of $La_{0.6}Sr_{0.4}Fe_{0.8}Ni_{0.2}O_3$ as the cathode materials of Solid Oxide Fuel Cell

삼시, 심경보[1], 양오봉*
전북대학교; [1]전북대학교 화학공학과
(obyang@chonbuk.ac.kr*)

In this paper, a Pr0.6Sr0.4Fe0.8Ni0.2O3 (LSFN) powder materials as cathode materials for solid oxide fuel cells were synthesized by the glycine nitrate method using their nitrate salts as starting materials and glycine as oxidizer and fuel. Compounds are prepared at different temperature by simple glycerin-nitrate method. The extensive structural crystalline studies revealed that the synthesized La.6Sr.4Fe.8Ni.2O3 materials composed of the small particles clusters with highly porous structure, which exhibited a single phase orthorhombic structure. The electrode of synthesized materials achieved high electrical conductivity of ≥ 250 Scm-1. By the doping of Ni on LSF materials, the structural and electrical conductivity properties of LSFN materials are improved. Samarium doped cerium oxide (SDC) as electrolyte supported symmetric LSFN/SDC/LSFN cells were fabricated by a screen printing method for impedance study. The structural, crystalline, electrical and impedance properties of synthesized LSFN materials would be discussed in detail.