

The Performance of Cu/Ni alloy based on perovskite catalyst anode in SOFC type reactor

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The traditional materials used in SOFCs(Solid Oxide Fuel Cell) are strontium-doped lanthanum manganite (LSM) as the cathode, yttria-stabilized zirconia (YSZ) as the electrolyte and a Ni cermet as the anode in dry reforming. But the dry reforming should be operated at high temperature because the dry reforming is an intensive endothermic reaction ($\Delta H^{\circ}_{298} = 247 \text{ kJ/mol}$). Under such severe condition, nickel based catalyst was deactivated by exposure to concentrated methane which cause carbon deposition on the catalyst surface. Therefore, many researches have been focused on the development of catalyst, which has high activity and high resistance to carbon deposition for long term operation. In this work, we examined perovskite oxide anode, Cu-Ni alloy doped perovskite catalyst anode, similar to conventional Ni based anodes. Cu doped perovskite catalyst anode showed poor catalytic activity and low power generation performance. But, Cu-Ni alloy doped perovskite catalyst anode showed higher catalytic activity and power generation performance.