

Characteristics of Ni/YSZ coated with SDC doped with Co, Ni and Pd

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20 mol% samarium doped cerium oxide (Sm_{0.2}Ce_{0.8}O_{1.9}, SDC) has a superior ionic conductivity than 8 mol% yttria stabilized zirconia (Y_{0.08}Zr_{0.92}O_{1.96}, YSZ) commercially available in Solid Oxide Fuel Cell (SOFC). Performance can be improved by doping SDC with Ni/YSZ, which is a common anode in SOFC. In this study, a sample coated on Ni/YSZ by doping with Co, Ni and Pd in addition to SDC is applied to the methane dry reforming reaction. After synthesizing a coating solution using colloidal Ce, coating was performed 5 times for the desired thickness. The SEM image confirmed whether the coating on Ni/YSZ was successful. Then, through gas chromatograph analysis and EIS electrical performance measurement, it was confirmed how the SDC coating and additionally doped metal materials affected the DRM reaction. And to obtain data on carbon coking of samples after DRM reaction, TPO and SEM analysis were performed. As a result, the sample in which SDC was doped with Co showed the highest performance.