A novel Ni-doped $Sr_{0.92}Y_{0.08}TiO_3$ catalysts for dry reforming of methane

권병완[1], 김군식[1], 오주형[1], 이병용[1,2], 장성철[1], 윤성필[1],
한종희[1], 남석우[1], 함형철[1,†]
[1]한국과학기술연구원; [2]푸른기술원
(hchahm@kist.re.kr†)

Dry (CO2) reforming of methane (DMR) is an important role in both scientific and industrial field. The syngas from DMR can be used a wide range of industry such as fuel as fuel cell and products of higher alkanes and oxygenates by means Fischer-Tropsch synthesis. The most widely used catalysts for DMR are based on Ni. In general DMR methane with CO2 is converted into H2 and CO on the surface of the conventional Ni-based catalyst through a pathway that produces carbon fibers. The factor limiting the commercialization of DMR is poor long-term stability of the catalyst due to the catalyst deactivation because of the formation of carbon deposits on the catalyst surface. Therefore, a new catalyst material is required for DMR having a good long-term stability. A class of materials called the perovskite (ABO3) have been used to study DMR. The perovskite-based catalyst exhibits excellent coking resistance for DMR due to inherent oxygen mobility. This study demonstrates the development of SYT (Y-substituted SrTiO3)-based perovskite oxide as advanced catalyst for DMR as function of GHSV (Gas Hourly Space Velocity), temperature, and ratios of CH4 to CO2.