

Hydrogen production from propane over bimetallic  
Ni-Co/Ce<sub>x</sub>Zr<sub>1-x</sub>O<sub>2</sub> catalysts

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The Catalytic performance and characterization of Ni<sub>(15wt. %)</sub>-Co<sub>x</sub>/Ce-ZrO<sub>2</sub> (where x is the respective of 0.1, 0.5, 1 and 5 wt. %) were investigated in autothermal reforming (ATR). Reaction test was conducted using a feed of H<sub>2</sub>O/C/O<sub>2</sub>=3/1/0.37 at a temperature range from 300°C to 700°C. Ceria-zirconia mixed oxide has been widely used as catalytic promoter due to its oxygen storage capacity. The catalysts were characterized by various techniques. Addition of a small amount of Co (<5 wt. %) lowered the catalytic deactivation for carbon deposition. This indicates that as long as the Ni surface is only partially covered with Co species, the active sites while the surface site ensembles required for carbon formation are blocked.