Preparation and characterisation of Ni-Al2O3, Ni-MgO, and Ni–Mg–Al catalysts doped by Cu or Fe for reforming of methane

Authors
A Djaidja, A Kiennemann, A Barama

Description
In the present work, two series of catalysts for CO2 reforming of methane were investigated:(i) Ni/γ-Al2O3, Ni/MgO, and Ni/MgO modified by Fe or Cu prepared by impregnation method,(ii) Ni-Al2O3, Ni-MgO, Ni-Mg-Al, and Ni–Mg–Al modified by Fe or Cu prepared by co-precipitation method. XRD, H2-TPR, IR spectroscopy, XPS, TPO, and MET techniques have been used to investigate the structure and surface properties of catalysts.

The specific surfaces areas (30–182 m2/g) depend on the pretreatment conditions and on the catalyst composition. It decreased generally when the temperature of calcination increased (from 600 to 900 C), after reduction and after reaction. A strong decrease was observed in the presence of Mg.