

Carbon dioxide reforming of methane (CRM) that use nickel powder as catalyst

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We designed a new experimental set-up for measuring activity of heterogeneously catalyzed reactions. Using this set-up, we studied reduction of carbon dioxide by carbon dioxide reforming of methane (CRM) using nickel powder as catalyst. The properties of the catalysts were characterized by X-ray diffraction (XRD), Brunauer, Emmett & Teller (BET) surface area and X-ray photoelectron spectroscopy (XPS) techniques. The reactivity experiments were performed in the temperature range of 300 - 500 °C. At reactivity experiment, result showed consumption of CO₂ and CH₄ with a 1:1 stoichiometry. At the same time, carbon monoxide and hydrogen were produced, which could be used for synthesizing fuels such as methanol. During the reaction, deposition of carbon on Ni was observed, which caused deactivation of the catalyst.