

Deactivation behavior of Ni/hexaaluminate and Ni/Al₂O₃ in the CH₄ reforming CO₂

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CH₄ reforming of CO₂ was performed at 700°C using Ni/hexaaluminate as a catalyst. Supported Ni catalysts have been reported to be effective for the CH₄ reforming of CO₂, but they suffer from serious deactivation due to carbon deposition, sintering of the particles, and phase transformation. We used hexaaluminate instead of conventional Al₂O₃ support. Hexaaluminate has been the excellent support for the high-temperature catalytic combustion reaction. The catalytic activities of various catalysts were measured at 700°C using gas chromatography, and the reaction was maintained up to 72 h for the investigation of deactivation phenomena. Compared to conventional Ni/Al₂O₃, hexaaluminate shows higher resistance to coke deposition, which was confirmed by TGA and EA data.