

Steam Reforming of Methane over Ni/TiO₂-Al₂O₃ catalysts

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Ni/TiO₂-Al₂O₃ catalysts were prepared by two-step impregnation method. The investigation was a comparison on catalytic activities of commercial catalysts for methane-steam reforming, which is to apply to a reformer in Solid Oxide Fuel Cell system. As a support of steam-reforming catalyst, aluminas with gamma-phase or theta-phase are generally used. In this study, home-made catalysts, Ni on TiO₂-Al₂O₃ mixed oxide, and commercial catalysts, FCR-4 series, including Ni were tested on their activities under several reaction conditions such as steam to carbon ratio and temperature. And their methane conversions and hydrogen compositions in outlet gas were measured and calculated. In order to find out what is relevant between the activity and chemical/physical property, several characterizations for the catalysts were conducted. Additionally, comparison work on long-term stability over those catalysts was investigated.