

Ni/Al₂O₃ Catalyst Prepared by Spray Pyrolysis and EISA Method for Dry Reforming of Methane

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Methane dry reforming reaction is a way of producing synthesis gas by utilizing CH₄ and CO₂ which also has value of diminishing greenhouse gas. Yet, the process is early in the day since the catalyst for reaction is not efficient enough. One of the conditions of efficient catalyst is reducing preparation steps while maintaining or enhancing the catalyst performance.

The one-pot synthesis that prepare catalyst by mixing all the precursors including support precursors and active metal precursors. The intermediate product of catalyst, form of mixed oxide, is de-alloyed by reduction process yielding strong metal support interaction, advantageous for hinder the sintering of active metal. For the catalyst having stable performance in one-pot synthesis, it is favorable to synthesize thermodynamically metastable mixed oxide and cautiously conduct the heat-treatment to reveal active metal.

Ni/Al₂O₃ catalyst synthesized in one-pot manner by spray pyrolysis method and simultaneous evaporation induced self-assembly. The amorphous as-synthesized catalysts were calcined and reduced for methane dry reforming reaction.