



Effect of SrO and ZrO₂ doped Al₂O₃ supports toward the catalytic activities of Ni-based catalysts

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Ammonia decomposition is an attractive reaction for the clean hydrogen production due to no carbon emission and high hydrogen density. The development of Ni-based catalysts over various supports were studied to obtain the catalyst with high hydrogen production. 10%wt Ni over were γ -Al₂O₃, SrO-doped Al₂O₃ and ZrO₂-doped Al₂O₃ supports were prepared in this study. The catalytic activity of these catalysts for ammonia decomposition were conducted in the tubular reactor at 450-600°C in continuous mode. Ni/SrO-doped Al₂O₃ and Ni/ZrO₂-doped Al₂O₃ catalysts exhibit higher hydrogen production than Ni/ γ -Al₂O₃ catalyst. The catalysts were characterized using BET, XRD and chemisorption techniques to study role of support. The comparison of catalytic activities of these catalysts along with the characterization results will be discussed.

Keywords: Ammonia decomposition; Hydrogen production, Ni-based catalysts