

# Role of Pr on Ni-Mg-Al Mixed Oxides Synthesized by Microwave-Assisted Self-Combustion for Dry Reforming of Methane

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Pr (1-12% wt) promoted Ni-Mg-Al mixed oxides were synthesized by the microwave-assisted self-combustion method. The promoting role of Pr on the physical and chemical properties and the catalytic performance in dry reforming of methane (DRM) were studied. Several techniques were used to evaluate the chemical composition and the thermal, structural, reductive, basic, textural, and morphological properties of the oxides. Catalytic stability tests in DRM at 600 °C after reduction in reactant flow at 700 °C were performed. The increase in the Pr load promotes the reduction of Ni, enhances the thermal stability of the basic sites and the CO<sub>2</sub>-capture capacity at high temperature, and decreases the NiO particle sizes. Pr does not affect the conversion, but it improves the stability in correlation with the thermal stability of basic sites and NiO particle sizes. The 6% wt Pr-promoted catalyst showed the best performance among all the samples studied.