

Synthesis of LaNiO₃ Perovskite by EDTA-Cellulose Method and Comparison with Conventional Pechini Method: Application to Steam CO₂ Reforming of Methane

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LaNiO₃ type perovskite was synthesized by two different methods, and characterized by various techniques such as in-situ and ex-situ XRD, TPR, N₂ physisorption, CO chemisorption, TGA, FT - IR, XPS, TPH, TPSR and TEM - EDX. It was found that dried Pechini and EDTA precursors had different polymerization networks, and these two dissimilar bonding and coordination states of each precursor led to differences in physicochemical properties after the calcination. Thus, differences in particle size of perovskite and textural pores, which caused different nickel particle size and nickel particle dispersion after reduction, were obtained for both catalysts. The calcined catalysts were applied to steam CO₂ reforming of methane. It was found that the uniform particle size distribution and smaller nickel particle size for LaNiO₃ - EDTA brought positive effect on catalytic activity and stability with better carbon resistance for steam CO₂ reforming of methane.