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Cu,Ni-BASED HYDROTALCITE-LIKE COMPOUNDS AS CATALYSTS FOR THE HYDROGENATION OF CINNAMALDEHYDE IN LIQUID PHASE. PART 1: SYNTHESIS AND CHARACTERIZATION

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Abstract

The paper reports data relative to the preparation of a series of layered double hydroxides (LDHs) with Cu²⁺/Ni²⁺/Mg²⁺/Al³⁺ molar ratios in the synthesis mixture from 1:0:1:1 to 0:1:1:1. LDHs have been synthesized by low supersaturation co-precipitation method under identical conditions. The samples of as-synthesized LDHs have been characterized for phase composition and their properties by XRD, FT-IR spectroscopy, DR UV-Vis spectroscopy, TPR, TG-DTG and chemical analysis. The results have indicated high crystalline materials with layered structure and high degree of substitution of the copper and nickel cations in the brucite-like layers. Also, the TPR analysis showed that the reducibility of copper cations increases with an increase in the nickel content. The liquid phase hydrogenation of cinnamaldehyde has been carried out over a non-calcined layered double hydroxide as test reaction. The results indicated that not only the mixed oxides resulted from LDH precursors, but also the non-calcined LDH (*in situ* reduction of the catalyst with hydrogen at 150 °C was performed) can activate the hydrogenation of unsaturated organic compounds under mild reaction conditions.

Key words: cinnamaldehyde, layered double hydroxides, liquid phase hydrogenation

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