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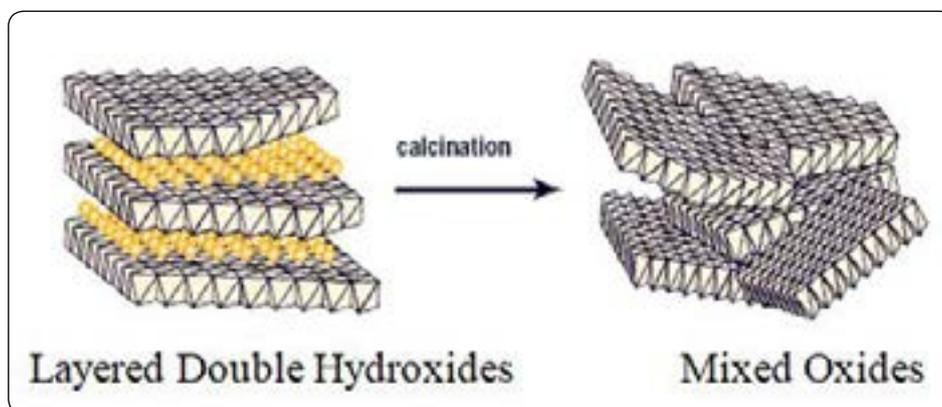
MATERIALS SCIENCE AND CHEMISTRY

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Catalytic synthesis of alky pyrazines over mixed oxides obtained from LDHs materials

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In our study, mixed oxides obtained from layered double hydroxides (LDHs) were evaluated as catalysts in pyrazines synthesis by cyclization of different 1,2 diamines with propylene glycol. For this purpose, the LDHs materials with a $[M^{2+}_{1-x}M^{3+}_x(OH)_2]_x + [A^{n+}_{x/n}] \cdot mH_2O$ general formula, where $M^{2+} = Ni, Zn, Cu$ and $M^{3+} = Cr, Fe, Co$, were obtained by two methods: co-precipitation and mechanochemical route. The LDH with a M^{2+}/M^{3+} molar ratio of 3 was prepared at pH=10 by co-precipitation of two solutions: A (nitrates solutions) and B (alkaline solution) under low supersaturation. Both solutions were added simultaneously at a feed flow of $60 mL \cdot h^{-1}$ and mixed at room temperature under vigorous stirring in a batch reactor. The gel obtained was aged 18 h at $75^\circ C$, cooled to room temperature, filtered and washed with bi-distilled water until a neutral pH (7) of the washing water was reached. The drying of the hydrotalcite gel was performed at $90^\circ C$ for 24 h in air flow. In the mechanochemical route, the required amounts of nitrates, Na_2CO_3 and NaOH were directly milled in a mortar for 1 h. The resulted white paste was then washed with bi-distilled water until pH of 7, and dried at $90^\circ C$ for 24 h. Dried samples were subsequently calcined at $450^\circ C$ in order to achieve the mixed oxides. The catalytic activity measurements were carried out at atmosphere pressure in a fixed-bed down-flow integral reactor at $300-400^\circ C$. There is a significant influence in the conversion and selectivity values offered by the type of cation used, the method of preparation of LDH precursors, the temperature, space velocity and the molar ratio of the reactants. The Lewis acid sites play an important role in activity values of catalytic materials.



Biography

Florina Teodorescu, a Senior Researcher, has her expertise in novel organic synthesis and catalyze. Her capabilities include techniques and methods required for materials synthesis and characterization and analytical skills necessary for characterization of organic compounds.

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