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Synthesis and characterization of new HDL materials and their application in water depollution

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Layered Double hydroxides (LDH) belong to the class of inorganic lamellar compounds and have a high anion insertion capacity. The basic structure of LDH compounds is similar to that of a natural hydrotalcite $Mg_6Al_2(OH)_{16}CO_3 \cdot 4H_2O$, in this structure magnesium (divalent cation), has been replaced by aluminum (trivalent cation) with a general formula: $[(OH)_2]_x + [An^-]_x/n \cdot mH_2O$. In recent years, LDH compounds have received considerable attention; Anion exchange properties have been widely studied. Interest in the magnetic and electrochemical properties of LDH allows heterogeneous catalysis and applications in the treatment of polluted water. LDH compounds have been used as adsorbents or catalysts in the degradation reaction to non-biodegradable products. In this work, ZnCuAl-CO₃-type LDH samples were synthesized. The products have been used as catalysts in the deg-

radation of sodium diclofenac with hydrogen peroxide. The LDH samples are obtained by coprecipitation at constant pH with a molar ratio R (R=MII/MIII) equal to 2. The prepared LDH compounds are characterized by XRD, SEM, and FTIR. Certain parameters were tested such as the mass of the catalyst, the volume of H₂O₂ oxidant, the temperature, and the contact time.

Biography

Abderrahmane Hiri is a Ph.D. graduate in the Department of Environmental Chemistry at the Inorganic chemistry laboratory, M'sila University, Algeria. His research interest is nanochemistry, materials characterization, and applications of water pollution.

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