

Lamellar phases with intercalated permanganate and persulfate anions as reactants for chlorinated solvents-contaminated water

K.M. DIETMANN* AND V.RIVES

GIR-QUESCAT, Dpto. Química Inorgánica, Universidad de Salamanca, 37008 Salamanca, Spain (*correspondence: kdietmann@usal.es)

Contamination of groundwater and soils by chlorinated solvents is a worldwide problem. Commonly, solutions of oxidising agents, e.g. permanganate and persulfate, are used in *in-situ* processes to oxidise chlorinated solvents. These reactants show high reactions rates, but are usually effective only for about several minutes up to one hour.

In this study, layered double hydroxides (LDHs) with the hydrocalcite and hydrocalumite-like structures, containing permanganate or persulfate anions in the interlayer, were prepared by coprecipitation under supersaturation conditions, aiming to study the effect of the layered host on the named reaction by these oxidation agents. The solid samples have been characterised by powder X-ray diffraction, thermal analyses, Fourier transform infrared spectroscopy, specific surface area assessment and particle size distribution. Stock solutions were analysed using gas chromatography-mass spectrometry and uv-vis spectrometry to evaluate the concentration of free chloride anions and check the presence of metabolites of the studied contaminants. Preliminary results showed that despite intercalation, the studied oxidising agents keep their properties, but showed slower reaction rates if compared to unintercalated materials.

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