Removal of lead ions from aqueous solutions using intercalated tartrate-Mg–Al layered double hydroxides

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**ABSTRACT**

The potential feasibility of layered double hydroxides (LDH) intercalated with tartrate (tartrate-Mg–Al) for the removal of lead ions from aqueous solutions was investigated. The effects of various experimental parameters such as contact time, solution pH, and adsorbent dosage were also investigated. The extent of lead ions removal increased with the increase in contact time and amount of tartrate-Mg–Al used; however, the percentage removal decreased with the increase in pH. The shape of the isotherms that was obtained from the experimental data was well fitted to the Langmuir isotherm. The fundamentals of lead removal from aqueous solution with the use of tartrate-Mg–Al could be explained by the formation of complexes between the tartrate and Pb\textsuperscript{2+} ions and for Mg–Al–NO\textsubscript{3} it was the primary surface opposite charge precipitation reaction. The results from this study indicated that the LDH which intercalated with tartrate could be used as a potential adsorbent for the removal of lead ions from aqueous solution.

**Keywords:** Layered double hydroxide; Tartrate; Lead; Metal complexes

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