

Removal of Iron(II) Using Ni/Al Layered Double Hydroxide Intercalated with Keggin Ion

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Abstract	Layered double hydroxide (LDH) Ni/Al-NO ₃ was synthesized using a coprecipitation method under base condition following with intercalation using Keggin ion [a-SiW ₁₂ O ₄₀] ⁴⁻ to form Ni/Al-[a-SiW ₁₂ O ₄₀] LDH. The LDHs were characterized using XRD, FTIR, BET, and pH _{zpc} analyses. Furthermore, LDHs were applied as adsorbent of iron(II) from aqueous solution. The adsorption process was studied through the effect of adsorption time, the concentration of iron(II), and temperature adsorption. The results show the interlayer distance of LDHs was increased from 7.408 Å to 10.533 Å after intercalation process. The adsorption of iron(II) on LDHs showed that adsorption of iron(II) on both LDHs follows pseudo first-order kinetic model with R ² value is close to one. The adsorption process was spontaneous, with adsorption capacity up to 36.496 mg g ⁻¹ .
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