



Removal of zinc ion from industrial effluents by hydrotalcite-like compound

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Received July 16 2008; Accepted in revised form June 24, 2009

ABSTRACT

Hydrotalcite and similar compounds are found to be a potential adsorbent for removal of different metal ions. In present work we have synthesized a low-cost hydrotalcite-like compound, takovite, using the co-precipitation method. Further, part of the synthesized material was calcined at 773 K. Both normal and calcined takovite were characterized by XRD. Using this hydrotalcite-like compound the adsorption of Zn was studied in industrial effluents in a batch system by keeping different agitation times (15–1020 min), varying pH in the range 2–6 and varying the temperature in the range 283–313 K. In the controlled conditions, the percentage adsorption of Zn was found to be 76% and 93% for normal and calcined takovite respectively. The equilibrium isotherm data were analysed using Freundlich isotherm model. The values of $\log a$ and $1/b$ were found to be 0.778 and 0.083 for normal and 0.88 and 1.44 for calcined takovite, respectively, and the correlation coefficient (r^2) was 0.9849 and 0.9945 for normal and calcined takovite, respectively.

Keywords: Hydrotalcite-like compound; Takovite; Calcined takovite; Co-precipitation; Adsorption; Freundlich isotherm

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