
A Study on the Cation Exchange of $[\text{Co}(\text{NH}_3)_6]^{3+}$ from H-Co $(\text{NH}_3)_6$ -Vermiculite by Inorganic and Quaternary Ammonium Ions

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Abstract: The exchange of $[\text{Co}(\text{NH}_3)_6]^{3+}$ from its vermiculite complex has been carried out with a number of inorganic and alkyl quaternary ammonium ions of varying ionic sizes. The distribution and selectivity coefficients of the desorbing ions increase in the order: $\text{Li} < \text{Na} < \text{NH}_4 < \text{K} < \text{Rb} < \text{H} < \text{Cs}$ for the monovalent, $\text{Ca} < \text{Mg}$ for the bivalent and $(\text{C}_2\text{H}_5)_4\text{N} < (\text{CH}_3)_4\text{N} \ll \text{CTA}$ (cetyl trimethyl ammonium) $< \text{CP}$ (cetyl pyridinium) for the organic ions. The ΔG° values of some of the cation exchange reactions have been calculated by an equation of Kielland (1935).

Clays and Clay Minerals; November 1975 v. 23; no. 5; p. 361-364; DOI: [10.1346/CCMN.1975.0230506](https://doi.org/10.1346/CCMN.1975.0230506)

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