
A Study of the Adsorption of Ni(II) and Cu(II) by Clay Minerals

M. H. Koppelman* and J. G. Dillard

Department of Chemistry, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061, U.S.A.

* Present address: Research Department, Georgia Kaolin Co., Elizabeth, NJ 07207, U.S.A.

Abstract: The adsorption of Ni(II) and Cu(II) on to the clay minerals kaolinite, chlorite, and illite has been investigated. The quantity of Ni(II) at pH 6 and Cu(II) at pH 5 adsorbed has been found to vary in the manner chlorite > illite > kaolinite. Examination of the mode of bonding of the metal ions to the clay minerals using X-ray photoelectron spectroscopy (XPS) has been carried out. Comparison of the binding energies for metal ions in octahedral sites in selected minerals (reference minerals) and in simple nickel and copper containing compounds with values for Ni(II) and Cu(II) adsorbed on chlorite indicate that nickel(II) is probably bound as the aquo ion while copper(II) may be adsorbed as $\text{Cu}(\text{OH})^+$.

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