

Use of Atomic Force Microscopy (AFM) in Assessing Polynuclear Ni Surface Complexation on Clay Minerals

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A definitive understanding of metal sorption mechanisms on natural materials is necessary to accurately predict the fate of metals in the environment. Previous x-ray absorption fine structure (XAFS) spectroscopic studies have shown that mixed Ni/Al hydroxide phases form on clay mineral surfaces at surface sorption densities (Γ) much less than monolayer coverage. However, while XAFS analysis yielded local chemical environmental data, no information was provided on spatial resolution of the mixed hydroxide compounds. In this study, atomic force microscopy (AFM) was employed to observe the effect of surface sorption density and time on polynuclear Ni surface complexation.