

## **Ni Sorption/Release on Soil Clay Fractions A Kinetic and EXAFS Study**

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Assessing the mechanism(s) by which metals such as Cu, Cr, Pb and Ni sorb to mineral surfaces is necessary to successfully determine their fate in the environment. Mechanisms of metal sorption reactions in soils have often been studied on standard clay minerals and metal oxides while using a macroscopic approach. However, it is necessary to understand metal sorption mechanisms on natural, mixed systems and what effects time has on such reactions. This study examines the sorption and desorption mechanisms/kinetics of Ni (II) on the well characterized clay fraction (<0.002 mm) of a Matapeake silt loam soil. X-ray absorption fine structure (XAFS) spectroscopic analysis indicates the formation of polynuclear Ni surface complexes over rapid time scales (minutes). The desorption of Ni from the soil clay fraction is strongly affected by the formation of these complexes. The data suggests that it is possible to propose sorption mechanisms on soil clay fractions based on XAFS and kinetic analysis and on a complete characterization of the clay fraction.