

INFLUENCE OF pH ON SURFACE PRECIPITATE FORMATION OF NI(II) ON PYROPHYLLITE.

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Precipitation kinetics of heavy metals on natural surfaces has recently become an area of great interest. Spectroscopic studies have shown that formation of mixed metal complexes can occur within a matter of minutes, even with surface loadings less than monolayer coverage. Considering soil pHs around the world vary dramatically, pH could play an important role in determining the extent of surface precipitation. In this study, in-situ atomic force microscopy (AFM) and batch techniques were employed to examine precipitation of Ni on pyrophyllite, an ideal 2:1 clay mineral, over a 24 hour period and at pHs of 7.5, 6.5, and 5.5. Dissolution of metal surface precipitates and the overall alteration of the mineral surface are very important in determining the fate of metals in the environment. Using a Fluid Cell, AFM was utilized to follow in-situ dissolution of the surface precipitates and the results were compared with batch dissolution studies.