

Effects of Organic Ligands on the Rates and Mechanisms of Ni Sorption at the Mineral/Water Interface.

N. U. YAMAGUCHI, D L. SPARKS, *Univ. of Delaware*

Stability of metals in the soil environment is increased with aging time via surface precipitation. Recent studies indicate that Ni forms either an [alpha]-Ni hydroxide or a Ni-Al layered double hydroxide (LDH) precipitate on mineral surfaces. The formation of the precipitate is related to dissolution of the mineral surface. Organic ligands form stable complexes with metals and also play an important role in mineral dissolution. However, the effects of organic ligands on metal sorption have not been examined over long reaction times. The objective of this study was to determine the rates and mechanisms of Ni sorption and mineral dissolution in the presence of organic ligands. UV/VIS and XAFS spectroscopies were conducted on minerals on which Ni was sorbed at pH7.5. Citrate inhibited Ni sorption, especially affecting the formation of Ni-Al LDH. On the other hand, salicylate had little effect on Ni sorption kinetics or mechanisms.

Noriko U. Yamaguchi, 302-831-1595, ynoriko@udel.edu