

Kinetics of Cu(II) Adsorption/Desorption on α -FeOOH Using Pressure-Jump Relaxation Kinetics. P.R. Grossl*, D.L. Sparks and C. Ainsworth, *University of Delaware and Battelle Pacific Northwest Laboratories.*

The adsorption/desorption behavior of Cu^{2+} on α -FeOOH (goethite) was investigated using pressure-jump relaxation kinetics. Relaxation methods allow one to measure reaction rates on millisecond time scales. In this study, the equilibrium of a goethite suspension containing Cu^{2+} was rapidly perturbed and the time to approach equilibrium at ambient pressure (relaxation time, τ) was monitored using conductivity. The initial total soluble Cu levels ranged from 0.1 to 1 mM, background electrolyte concentrations ranged from 2 to 10 mM NaNO_3 , and pHs from 3.5 to 7.0. The goethite (surface area = $50 \text{ m}^2\text{g}^{-1}$) suspension concentrations ranged from 5 to 15 g L^{-1} . Data from the relaxation studies along with static Cu^{2+} adsorption studies, provides information regarding the type of surface complex (inner versus outer sphere) Cu^{2+} forms with goethite and will help to predict the fate of Cu in soil environments.

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