

## **Effect of oxalate and cysteine on desorption of Hg(II) on kaolinite**

Wasana U Senevirathna, Hong Zhang, Baohua Gu

### **Abstracts (150 words)**

Desorption of Hg(II) on kaolinite as affected by oxalate and cysteine was studied by varying pH (3-7), ligand concentration (0.25, 1.0 mM), and temperature (15-35 °C). The desorption strongly depended on pH, increasing with decreasing pH. Without organic ligands, >90% of Hg(II) desorbed at pH 3 within 2 h, but <10% at pH 7; the desorption was similar with oxalate. The pH effect was much less for cysteine, with similar desorption (~20-50% in 2 h) at all pH studied. These observations are consistent with the previous finding that Hg(II) is sorbed favorably as hydroxylated species at high pH, suggesting that oxalate is probably ineffective in enhancing the Hg(II) desorption because of its weak binding with carboxyl ligand. Cysteine greatly decreased the Hg(II) desorption, especially at low pH. This may result from the ternary complex formation between kaolinite and cysteine through carboxylic groups and between cysteine and Hg(II) through thiol groups.