

**194 - Simultaneous As(III) and As(V) retention by hydrous Mn(IV) oxide**

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Heterogeneous As(III) oxidation by Mn(IV) oxides is generally thought to result in the retention of only As(V) at the oxide mineral surface. Using stirred-flow oxidation experiments coupled with solid-phase analysis using As and Mn K-edge XANES, and EXAFS spectroscopy we demonstrate that As(III) and As(V) is retained simultaneously. As(III) retention occurs in conjunction with the appearance of dissolved As(III) and Mn(II) and solid-phase Mn(II). Desorption experiments reveal that As(III) is equally desorbed by 1 mM solutions of NaCl, CaCl<sub>2</sub>, and Na<sub>2</sub>PO<sub>4</sub>, suggesting a weakly bound complex. However, Na<sub>2</sub>PO<sub>4</sub> results in the most As(V) desorption with less As(V) released by CaCl<sub>2</sub> and no As(V) desorption by NaCl. Our results demonstrate that multiple As binding mechanisms may occur during As(III) oxidation by Mn(IV) oxides.

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**Spectroscopic Investigations of Metal Interactions at Mineral/Water/Microbial Interfaces (08:00 AM - 11:05 AM)**

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