Supplementary Information

Surface Interactions of Monomethylarsonic Acid with Hematite Nanoparticles Studied Using ATR-FTIR: Adsorption and Desorption Kinetics

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Supplementary Data (4 pages)

1. Fig. S1
2. Fig. S2
3. Fig. S3
Fig. S1. (a) Representative ATR-FTIR absorption spectra collected as a function of time for the adsorption of 0.5 mM iAs(V)(aq) on hematite nanoparticles (6 mg film) at pH 7, I = 0.01 M NaCl, and 2 mL/min flow rate at room temperature, (b) kinetic curves generated from the
spectral feature at 875 cm$^{-1}$, and (c) observed adsorption rates as a function of spectral components.

Fig. S2. ATR-FTIR absorption spectra collected as a function of time for the adsorption of 1 mM HPO$_4^{2-}$ (aq) during the desorption of iAs(ads) at pH 7 and 2 mL/min flow rate. The estimated initial surface coverage of iAs(V) the hematite film after 30 min is $10^{13}$ molecule/cm$^2$, and that for phosphate after 10 min is $8 \times 10^{12}$ molecule/cm$^2$. 
Fig. S3. ATR-FTIR absorption spectra collected as a function of time for the adsorption of 1 mM $\text{HPO}_4^{2-}$ (aq) on a fresh hematite film at pH 7 and 2 mL/min flow rate. The estimated surface coverage of phosphate after 30 min is $1.7 \times 10^{13}$ molecule/cm$^2$. 