Table 1. Coprecipitation of As(V) with Fe(II) and Fe(III) in sulfate solutions (initial [Fe]0 = 266 mM, nd = non-detect, HFO = hydrous ferric oxide).

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[As(V)]0 pH Eh [Fe2+] [Fe] Fe removal [As(V)] [As(III)] As removal As conc.in solids mineralogy solids magnetic

 mM mV mM mM % mM mM % mg kg-1 color

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100 6.59 30.8 21.9 27.8 89.55 0.053 nd 99.95 171000±6000 amorphous HFO gray no

 50 6.23 53.7 69.6 62.3 76.58 0.018 nd 99.96 101000±500 amorphous HFO brown no

 10 6.15 61.6 56.0 84.0 68.42 nd nd 100 40600±6300 amorphous HFO brown no

5 5.78 86.3 69.8 91.0 65.79 nd nd 100 17400±800 lepido., goethite brown no

 1 5.00 187 96.2 95.5 64.10 nd nd 100 3980±230 lepido., goethite brown no

 0.5 4.83 227 86.2 95.1 64.25 nd nd 100 2070±100 goethite, lepido. brown no

 0 4.09 366 97.1 96.7 63.65 nd nd nd nd goethite brown no

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Table 2. Coprecipitation and oxidation of As(III) with Fe(II) and Fe(III) in sulfate solutions (initial [Fe]0 = 266 mM, nd = non-detect, HFO = hydrous ferric oxide).

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[As(III)]0 pH Eh [Fe2+] [Fe] Fe removal [As(V)] [As(III)] As removal As conc. in solids mineralogy solids magnetic

 mM mV mM mM % mM mM % mg kg-1 color

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100 6.62 18.1 55.1 56.8 78.65 1.06 0.29 98.65 207000±7000 amorphous HFO gray no

 50 6.34 56.8 47.9 75.6 71.58 0.22 0.32 98.92 136300±26100 SGR green no

 10 5.51 194 95.3 93.7 64.77 0.0039 0.071 99.25 31600±1150 lepidocrocite brown no

5 4.37 342 88.3 96.9 63.57 0.0024 0.047 99.01 14900±1700 goethite, lepido. brown no

 1 3.73 417 92.2 98.1 63.12 0.00051 0.0070 99.25 3280±520 goethite, lepido. brown no

 0.5 4.96 214 89.2 94.0 64.66 nd 0.0016 99.68 1850±70 goethite brown no

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