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**Figure S1**: FT-IR spectra of the samples: **Fh-6**- synthesis of ferrihydrite-6-lines; **Fh-SW** synthesis of ferrihydrite in artificial seawater 4.0; **Fh-SW-NH4SCN-1**- synthesis of ferrihydrite in artificial seawater 4.0 being that NH4SCN plus Fe (NO3)39H2O together in the beaker; **Fh-SW-NH4SCN-2**- synthesis of ferrihydrite in artificial seawater 4.0 being that NH4SCN plus KOH together in the burette; **Fh-DW-NH4SCN-1**- synthesis of ferrihydrite in distilled water being that NH4SCN plus Fe(NO3)39H2O together in the beaker; **Fh-DW-NH4SCN-2**- synthesis of ferrihydrite in distilled water being that NH4SCN plus KOH together in the burette. **Goe**-goethite