

Supplementary Material

Interaction of Arsenic Species with Organic Ligands: Competitive Removal from Water by Coagulation-Flocculation-Sedimentation (C/F/S)

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3. Results and Discussion

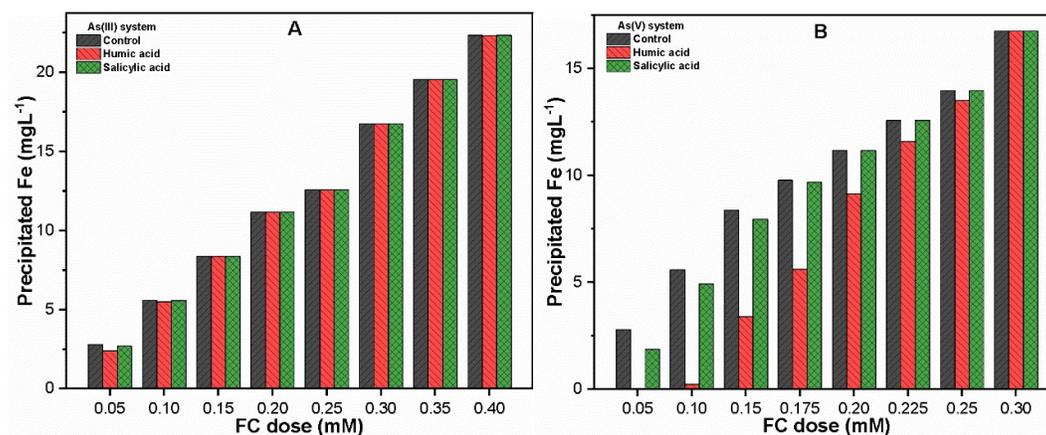


Figure S1. (A) As(III) and; (B) As(V) system (1 mgL^{-1} As(III,V) concentration) showing Fe precipitation as a function of FC dose under neutral pH (7.0 ± 0.1) in the absence (Control) and presence of 10 mgL^{-1} humic/salicylic acid.

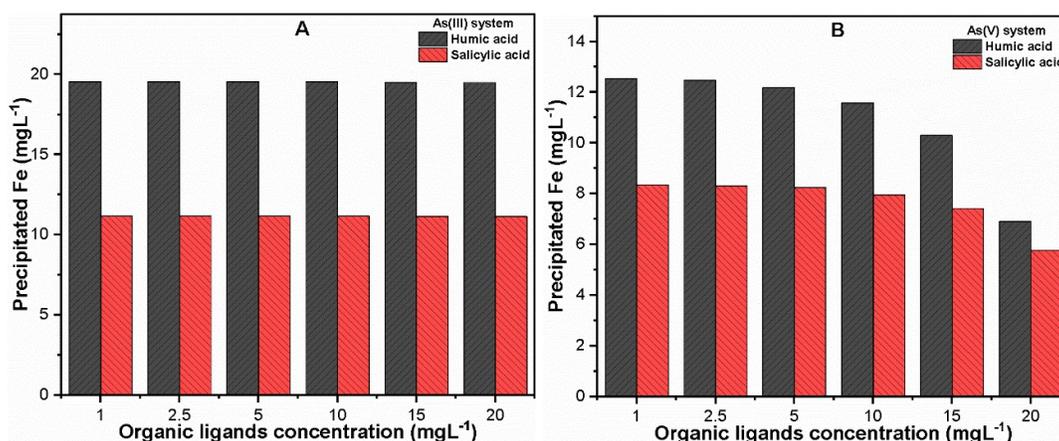


Figure S2. At various organic ligands concentration (1-20 mgL⁻¹), showing Fe precipitation in (A) As(III); and (B) As(V) system (1 mgL⁻¹ As(III,V) concentration) under optimum FC doses at neutral pH (7.0 ± 0.1).

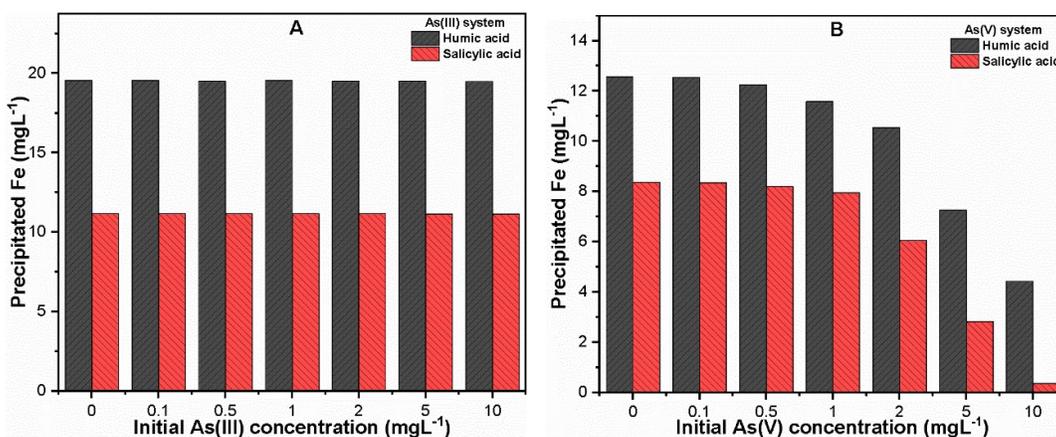


Figure S3. At various As concentration (0-10 mgL⁻¹) and humic/salicylic acid (10 mgL⁻¹) showing Fe precipitation in (A) As(III) and; (B) As(V) system under optimum FC doses at neutral pH (7.0 ± 0.1).

3.1. Fourier Transform Infrared Spectroscopy (FT-IR) of Powder Chemicals

The FT-IR analysis of powdered chemicals were recorded to expound the bond formation and functional groups as presented in Figure S4. The peaks around ~3655 and 2980 cm⁻¹ corresponds to the partial N-H stretch and asymmetric stretching vibrations of C-H bond respectively [17,52]. The two small peaks at ~1654 and 1608 cm⁻¹ was attributed to the symmetric and asymmetric stretching vibrations of C=O (COO⁻) [50]. Moreover, the peaks in the range 1400–900 cm⁻¹ corresponds to the enrichment of aliphatic or carbohydrate –OH functional groups in humic and salicylic acid [53]. The broad band observed at 832 cm⁻¹ was attributed to As(V)-O stretching vibrations, while the two broad peaks that observed at 575 and 750 cm⁻¹ was ascribed to the stretching vibration of As(III)-O bond [54]. Furthermore, the bands at ~674 and 555 cm⁻¹ was subjected to the stretching vibrations of C-H and C-O-C groups respectively [17].

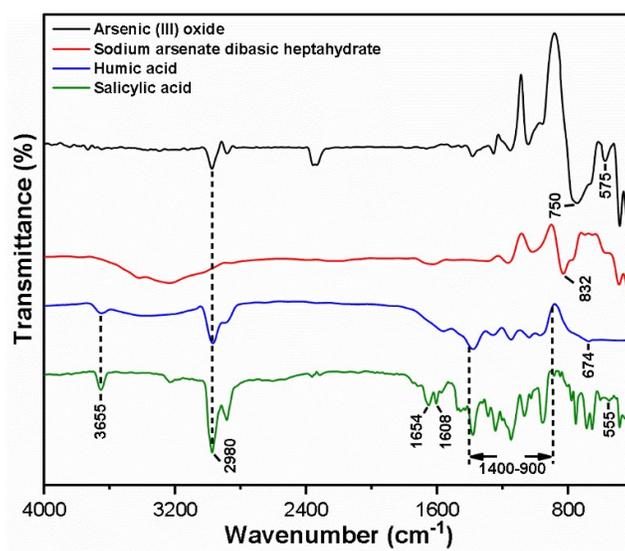


Figure S4. FT-IR spectra of arsenic (III) oxide, sodium arsenate dibasic heptahydrate, humic and salicylic acid powder.