Supplementary Data of paper entitled "2-line ferrihydrite: Synthesis, characterization and its adsorption behaviour for removal of Pb(II), Cd(II), Cu(II) and Zn(II) from aqueous solutions", by K.Rout, M. Mohapatra and S. Anand

Table S1

Comparison of synthesis procedure of 2-line ferrihydrite by precipitation

Material and condition	Characterisation	Property studied	Ref.
0.05M $Fe(NO_3)_3$ neutralised with 1M NaOH till pH 7	XRD and pore size distribution	Pore size distribution	[12]
0.2M $Fe(NO_3)_3$ neutralised wirh 1MNaOH till pH 7.5	XRD, Raman, TEM, SEM	Arsenic adsorption	[13]
$Fe(NO_3)_3.9H_2O$ soln. neutralised with NH_4OH soln. till pH 10	Mossbauer spectroscopy, and XAFS	surface structure and its effect on phase transformation	[14]
Cornell and Schwertmann method	-	Adsorption studies of Mo and V onto ferrihydrite	[15]
$Fe(NO_3)_3.9H_2O$ soln. neutralised with KOH soln till pH 7.5.	FT-IR, Raman	Thermal transformations of ferrihydrite	[16]
1.48 M $FeC1_3$ soln. + 1.48 M H_3BO_3 soln neutralised with I.1 M Na_2CO_3	XRD, Mossbauer spectroscopy	Ferrihydrite modification by boron doping	[17]
Schwertmann and Cornell method	-	Arsenite and Arsenate Adsorption:	[18]
36 mM $Fe(NO_3)_3$ soln. + 12 mM $NaNO_3$ soln neutralised with 4 M NaOH till pH 8.0	-	Modelling molybdate and tungstate adsorption to ferrihydrite	[19]

Ref. 12-19 of main manuscript
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Fig. S1

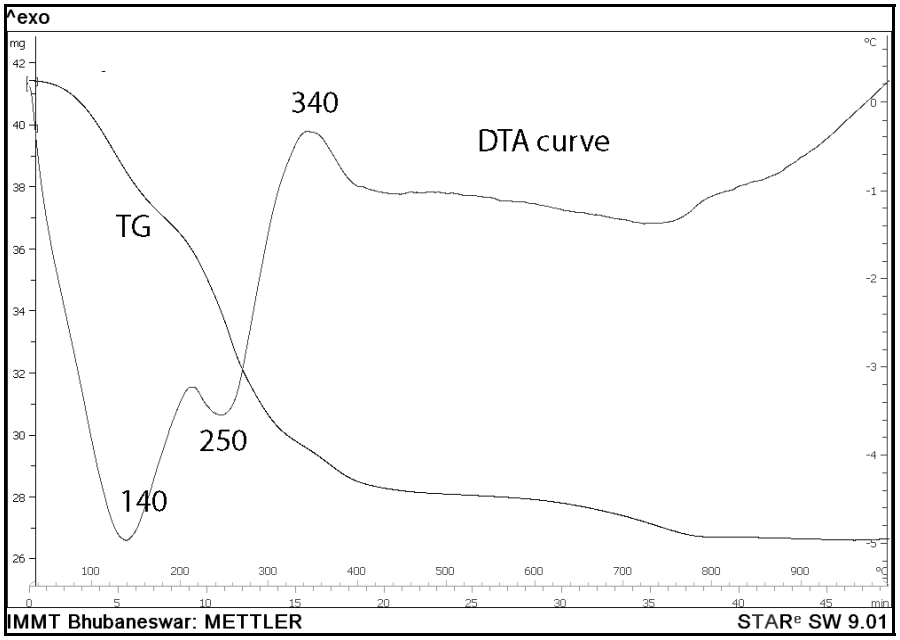

Fig. S1 TG-DTA traces of 2-line ferrihydrite sample

Fig. S1 gives TG-DTA traces of 2-line ferrihydrite. From the mass loss could be divided in three steps in the temperature range of 30–400°C considering the peaks observed in DTA trace. The first mass loss step with a weight loss 7.2% in the temperature range of 30-140°C accompanied with an endo peak at 140^{o}C was mainly assigned to the removal of free water or physisorbed water .[24] The second weight loss of 16.5% in the range of 140-270^{o}C

accompanied with an endo-peak at 250^{o}C was associated with partial decomposition of ferrihydrite.[25] Synthetic ferrihydrite generally gives a single sharp exothermic DTA peak between 300 to 350^{0}C. [26] Weight loss of 8.9% corresponding to an exo- peak at 340^{o}C could be due to final formation of hematite which results from energy released on the re-crystallization of hematite.[27]

Ref. 24-27 of main manuscript

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Fig. S2 shows the SAED pattern with diffused rings confirming the powder to be weakly crystalline.

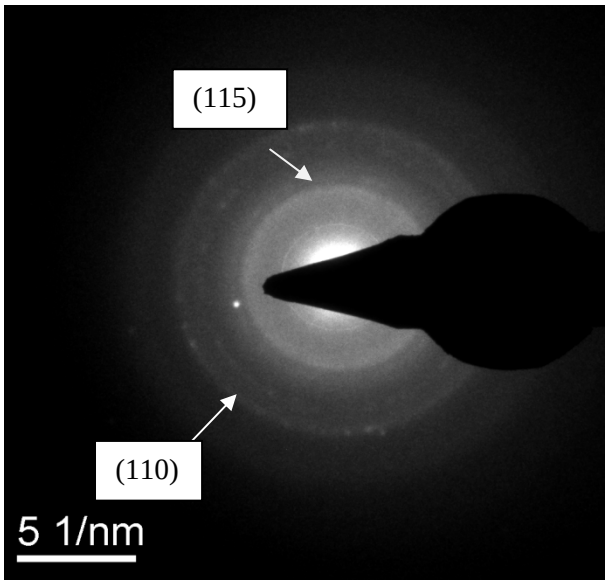

Fig. S2 SAED pattern of 2-line ferrihydrite