Electronic Supplementary Material (ESI) for Environmental Science: Nano.

Electronic Supplementary Information for

Al-substitution-induced defect sites enhance adsorption of Pb^{2+} on hematite

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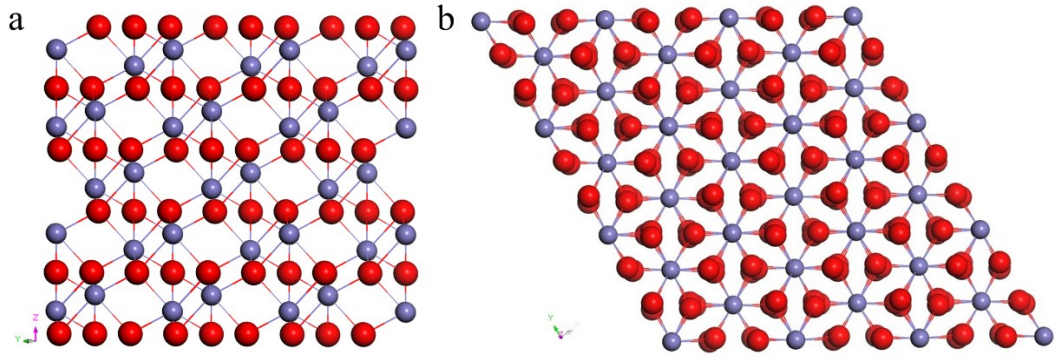

Figure s1. Hematite structure with (001) facets on the side (a) and top view (b). The directions of the crystallographic axes are also shown for reference.

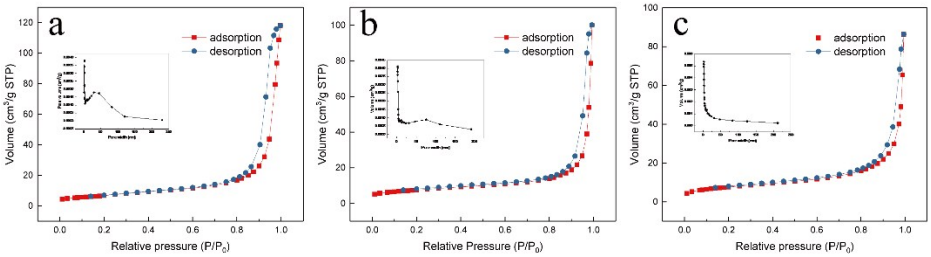

Figure s2. (a-c) Nitrogen adsorption-desorption isotherms of H-0, H-5 and H-10. Insets: Pore volume distribution curves.

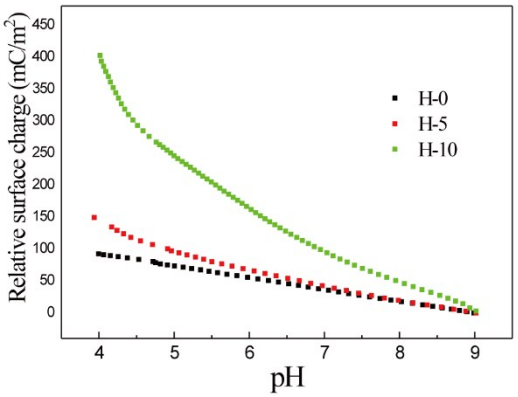

Figure s3. Relative charge density (mC/m^2) as a function of pH at 0.01 mol/L KNO_3.

Table s1. Fitting parameters used for O (1s) spectra of Al-doped hematite samples.

Sample	B.E/eV	Surface Species	FWHM eV	Percent %
H-0	530.01	O^{2-}	1.97	67.04
	531.01	OH^-	1.97	22.32
	532.53	H_2O	2.22	10.64
H-5	529.84	O^{2-}	1.97	58.69
	531.03	OH^-	1.97	22.53
	532.54	H_2O	2.22	17.87
H-10	529.86	O^{2-}	1.97	37.01
	531.08	OH^-	1.97	39.38
	532.79	H_2O	2.22	23.60

Table s2. Langmuir fitting parameters for Pb^{2+} adsorption onto Al-substituted hematite

samples	pH	K(L/mg^2)	Qmax		R^2
			μmol/m^2	mmol/kg	
H-0	5	13.64	0.82	22.76	0.90
	6	12.64	6.49	158.64	0.95
H-5	5	8.06	1.23	32.51	0.96
	6	23.6	6.98	184.31	0.96
H-10	5	7.21	3.51	109.70	0.96
	6	13.8	10.46	289.45	0.97