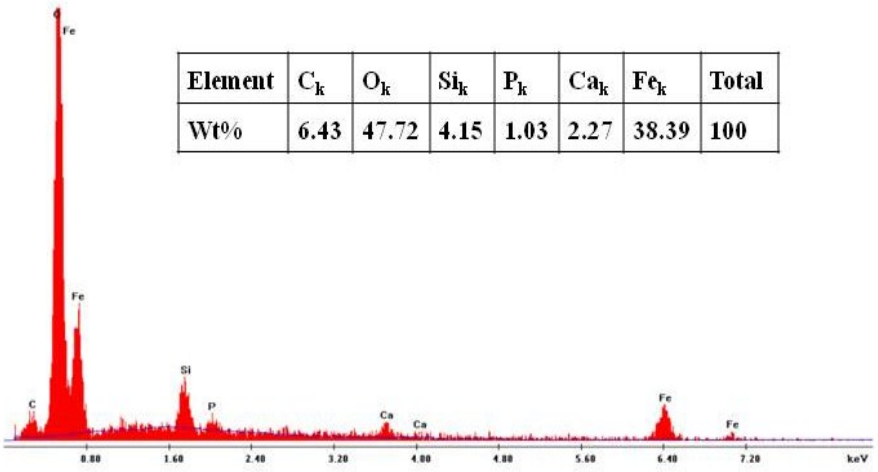
Supplementary Information (ESI)

Bacterial iron-oxide nanowires from biofilm waste as a new adsorbent for removal of arsenic from waters

Ivan Andjelkovic,[a,b] Sara Azari,[a] Mason Erkelens,[a] Peter Forward[c], Martin F. Lambert[d*] and Dusan Losic[a*]



Element	C_k	O_k	Si_k	P_k	Ca_k	Fe_k	Total
Wt%	6.43	47.72	4.15	1.03	2.27	38.39	100

Fig. S1 EDX micrograph of purified iron-oxide nanowires with their elemental composition

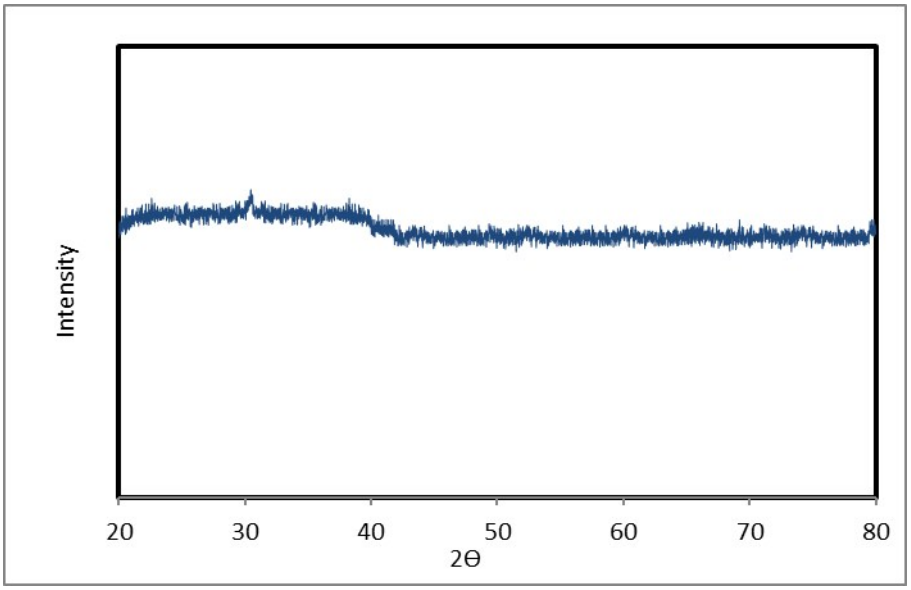


Fig. S2 XRD micrograph of purified iron-oxide nanowires

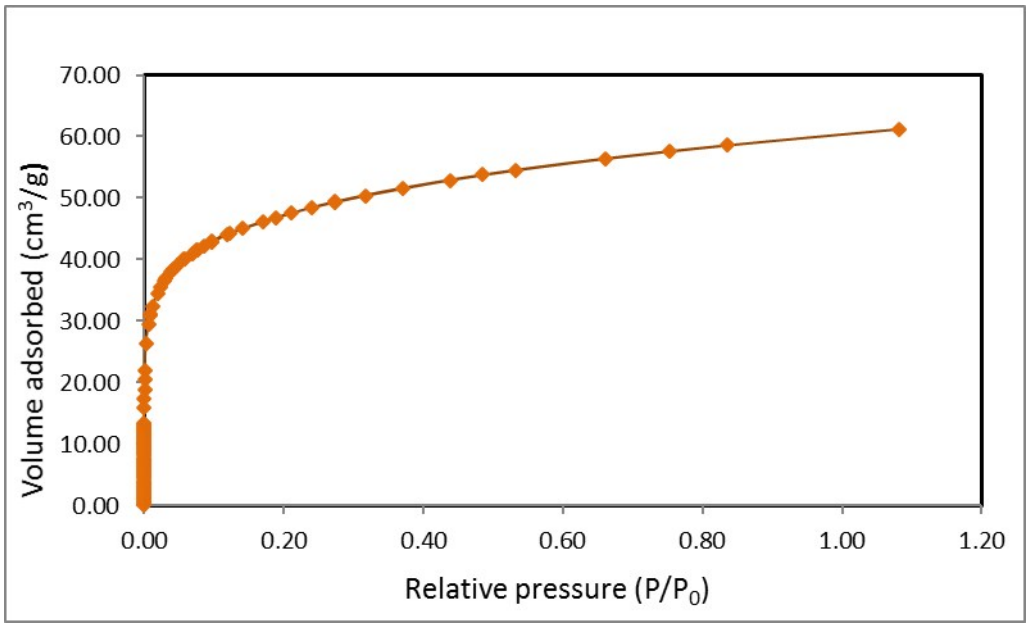


Fig. S3 BET isotherm

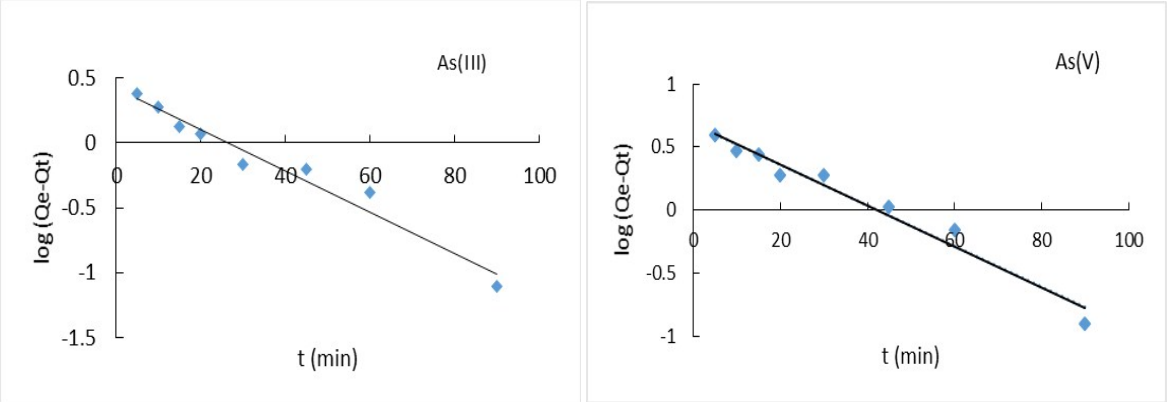


Fig. S4 Pseudo-first-order kinetic plots for adsorption of As(III) and As(V) onto iron-oxide nanowires. (Initial As concentration = 10 mg/l, dosage = 0.4 g/L, pH = 7)

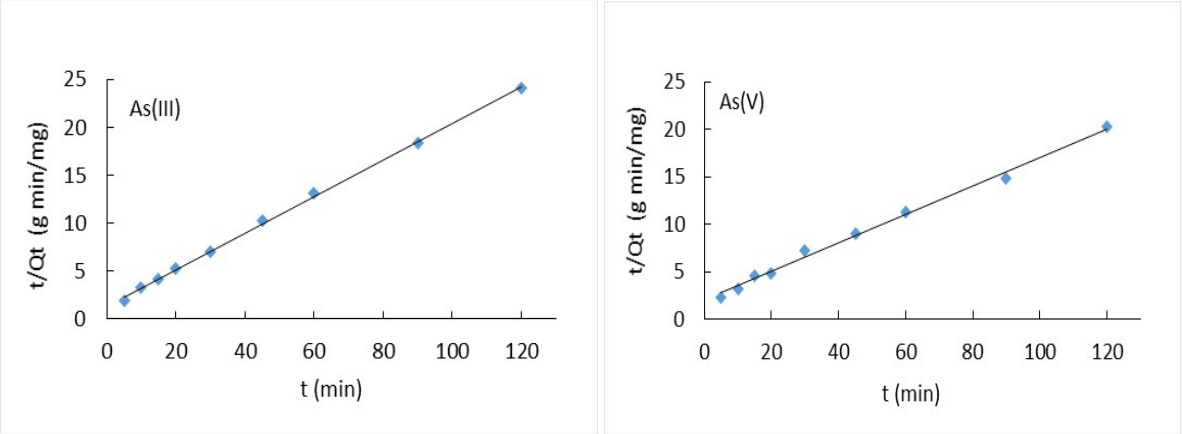


Fig S5 Pseudo-second-order kinetic plots for adsorption of As(III) and As(V) onto iron-oxide nanowires. (Initial As concentration = 10 mg/l, dosage = 0.4 g/L, pH = 7)

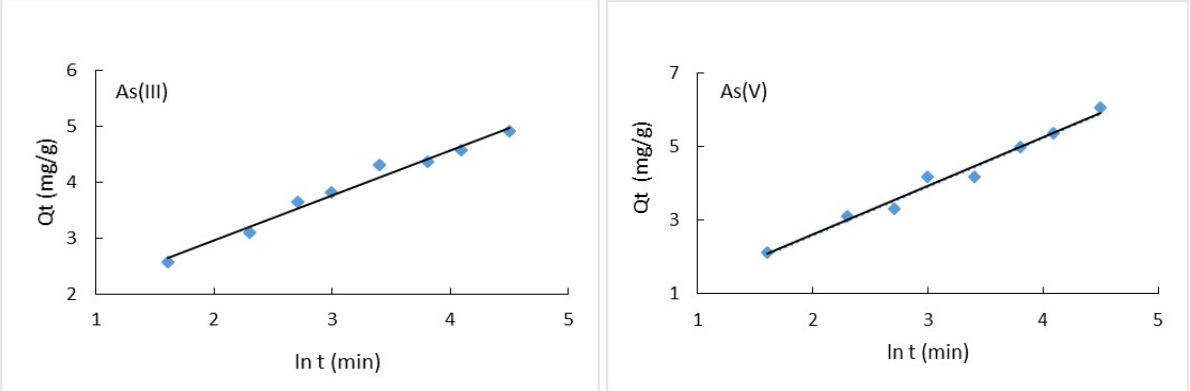


Fig. S6 Elovich plots for adsorption of As(III) and As(V) onto iron-oxide nanowires. (Initial As concentration = 10mg/l, dosage = 0.4 g/L, pH = 7)

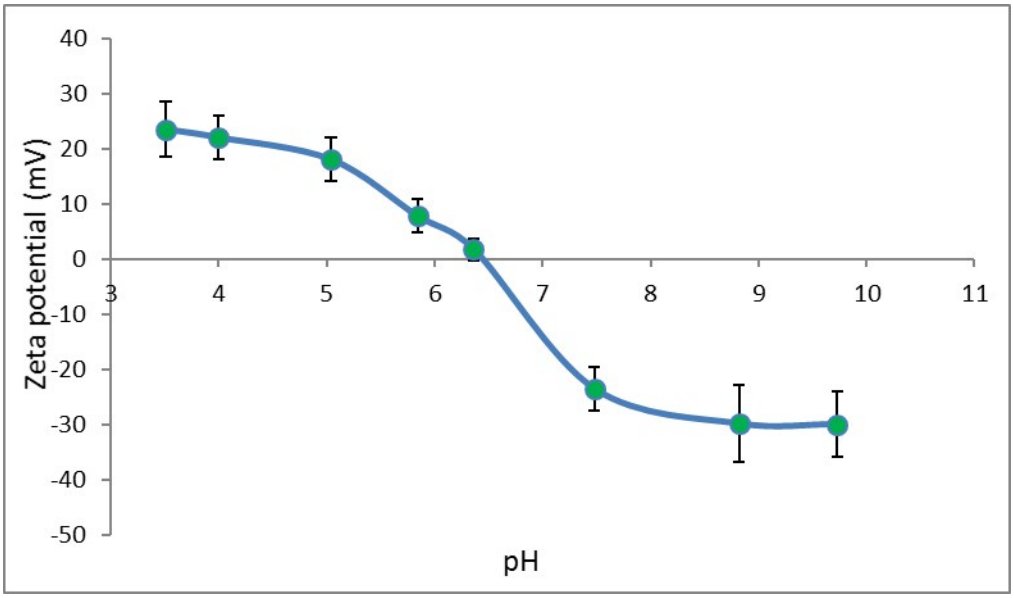


Fig. S7 Zeta-potential for iron-oxide nanowires

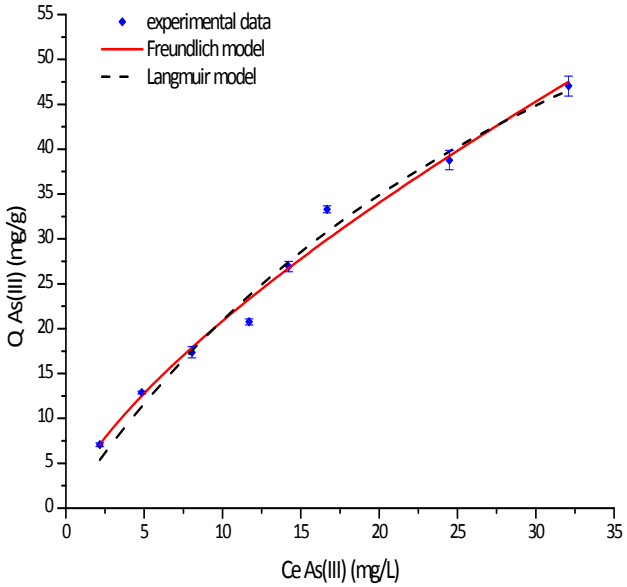


Fig. S8 Adsorption isotherm for As(III) adsorption by iron-oxide nanowires. Dosage of adsorbent 0.4 g/L, pH = 9.

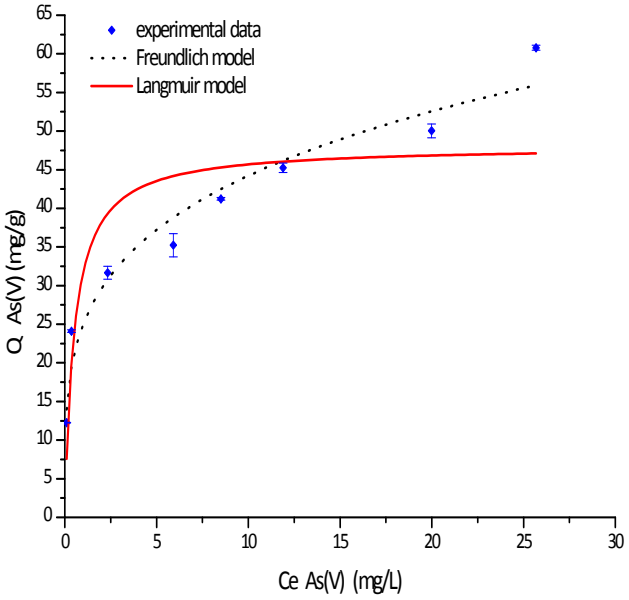


Fig. S9 Adsorption isotherm for As(V) adsorption by iron-oxide nanowires. Dosage of adsorbent 0.4 g/L, pH = 3.

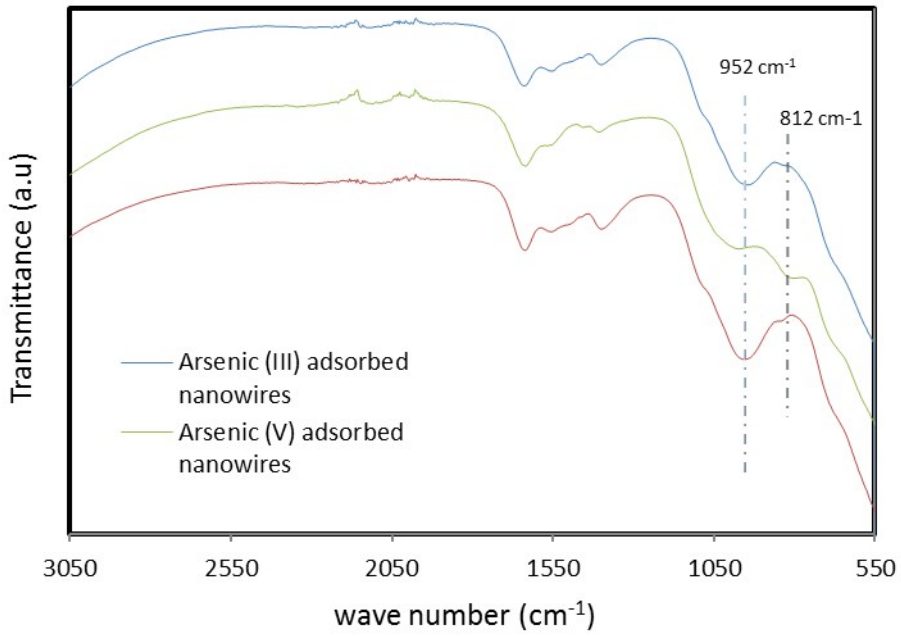


Fig. S10 FTIR spectra of pristine iron oxide nanowires and arsenic adsorbed iron-oxide nanowires

Table S1. Comparison of the adsorption capacity of As(III) and As(V) on iron-oxide nanowires with similar natural and synthetic materials.

Adsorbent	**pH**	**Dosage (g/L)**	**Concentration range (mg/L)**	**Adsorption capacity (mg/g)**		**Reference**
				As(III)	**As(V)**	
Amorphous iron hydroxide	7	0.00445	0.05-50	38.5	34.0	1
Goethite	5.5	100	10-1000	7.5	12.4	2
Ferrihydrite	7.4	0.2-0.9	0.325	-	0.285	3
Ultrathin γ-Fe_2O_3 nanosheets	7	0.067	0.5-30	109.5	39.1	4
Chitosan thiomer	7	2.5	0.01-0.05	17.0	17.6	5
Mn-feroxyhyte	6	0.1	0.2-2.0	30.0	34.5	6
Iron-oxide nanowires	3 for As(V) 9 for As(III)	0.4	10-50	104.5	48.1	This study

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