

Potential Use of Precipitates from Acid Mine Drainage (AMD) as Arsenic Adsorbents

Karina Torres-Rivero ^{1,2,*}, Julio Bastos-Arrieta ^{3,4}, Antonio Florido ^{1,2} and Vicenç Martí ^{1,2}

¹ Departament d'Enginyeria Química, Escola d'Enginyeria de Barcelona Est (EEBE), Universitat Politècnica de Catalunya, BarcelonetaTEch (UPC), Av. Eduard Maristany 16, 08019 Barcelona, Spain; antonio.florido@upc.edu (A.F.); vicens.marti@upc.edu (V.M.)

² Barcelona Research Center for Multiscale Science and Engineering, Av. Eduard Maristany 16, 08019 Barcelona, Spain

³ Departament d'Enginyeria Química i Química Analítica, Facultat de Química, Universitat de Barcelona, Martí i Franquès 1-11, 08028 Barcelona, Spain; julio.bastos@ub.edu

⁴ Institut de Recerca de l'Aigua (IdRA), Universitat de Barcelona (UB), 08028 Barcelona, Spain

* Correspondence: karina.torres.rivero@upc.edu

Table S1. ICP-OES limits of detection for every element concentration presented in Peña del Hierro AMD-0 and AMD-1 and AMD-2

Element	LOD (mg L ⁻¹)	
	PFe-AMD0	PFe-AMD1/2
Fe	0.13	0.040
Al	0.42	0.030
S	0.16	0.144
Mg	0.24	0.120
Cu	0.07	0.001
Ca	0.94	0.014
Zn	0.1	0.002
As	0.03	0.008
Ni	0.05	0.002
Cd	0.01	0.001
Pb	0.02	0.004
Na	1.54	0.050
K	2.48	0.090
SO ₄ ²⁻	0.07	0.060

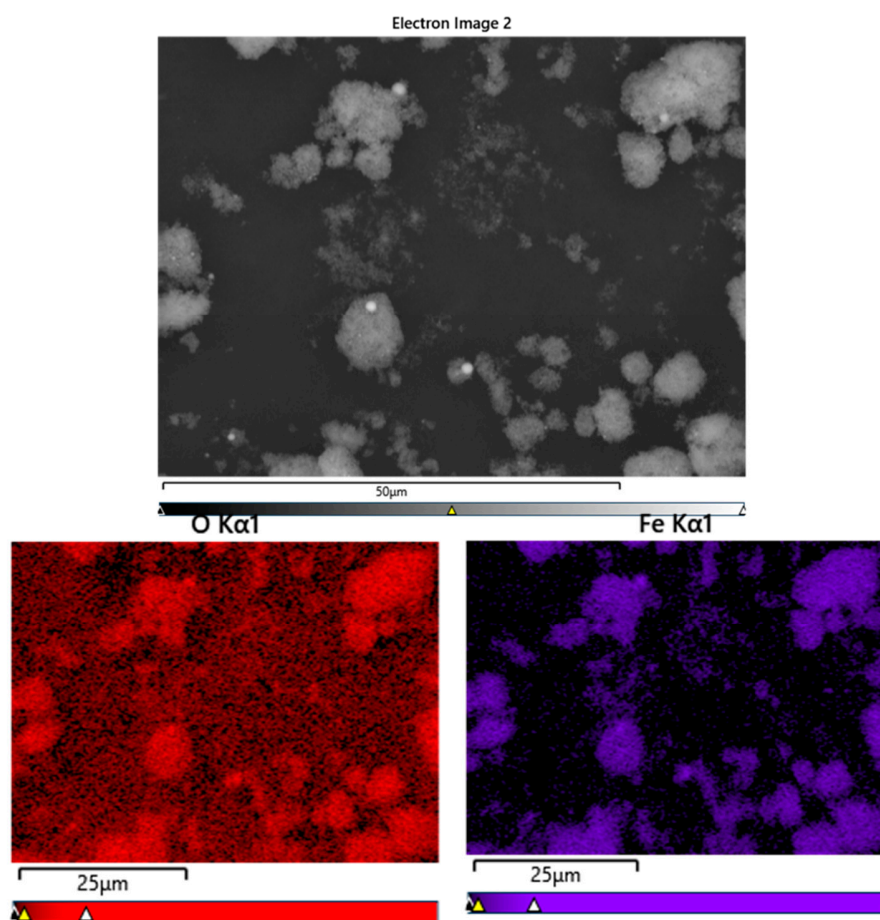


Figure S1. Energy dispersive X-ray (EDX) mapping analysis of nanohematite

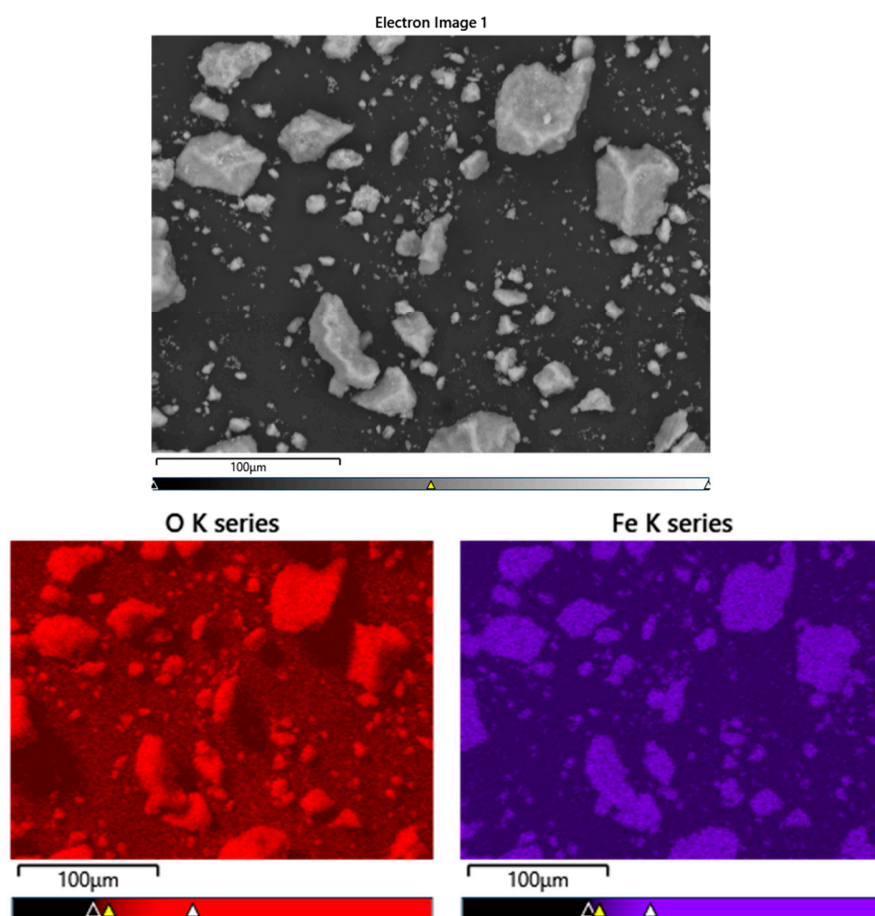


Figure S2. Energy dispersive X-ray (EDX) mapping analysis of Bayoxide

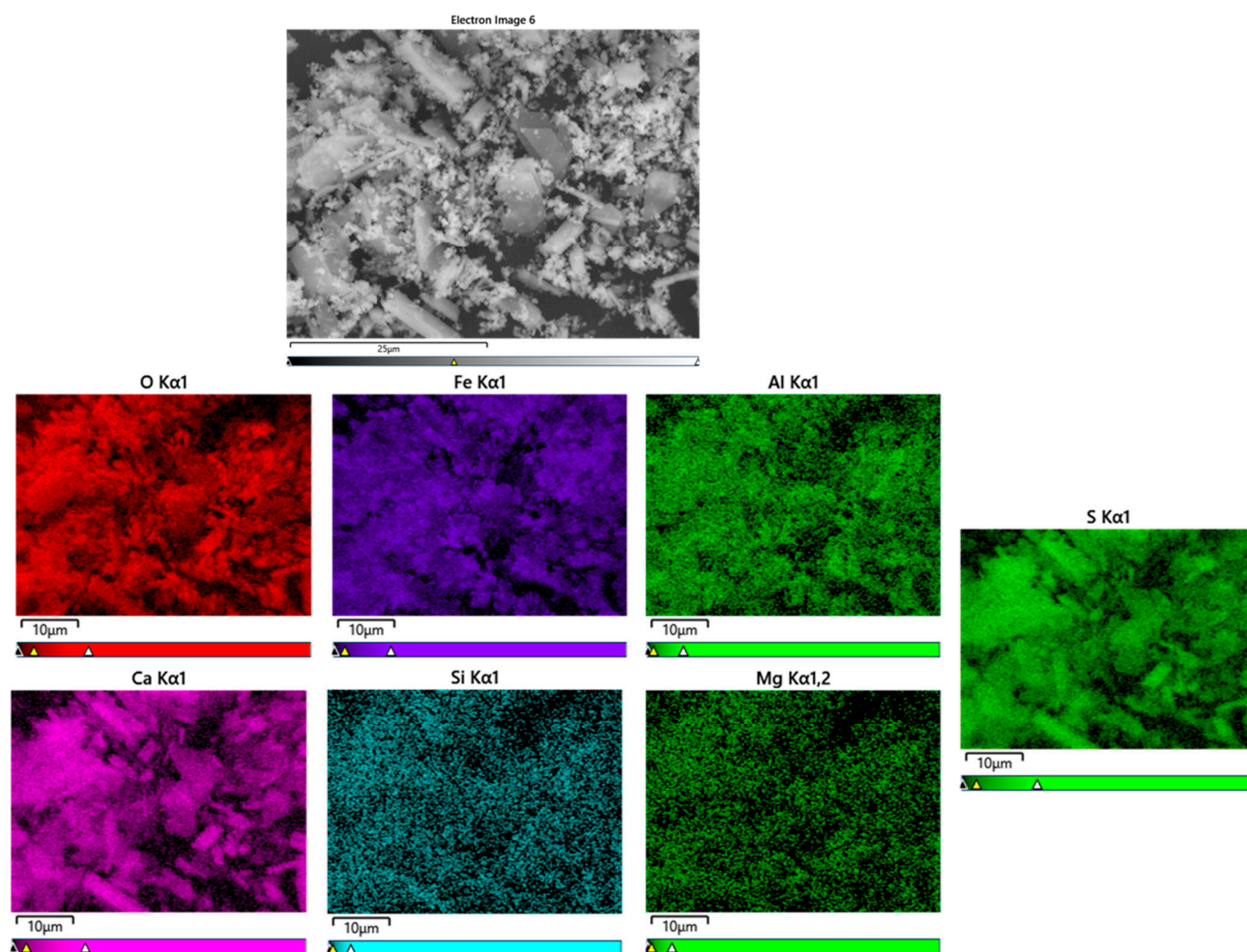


Figure S3. Energy dispersive X-ray (EDX) mapping analysis of OxPFe1

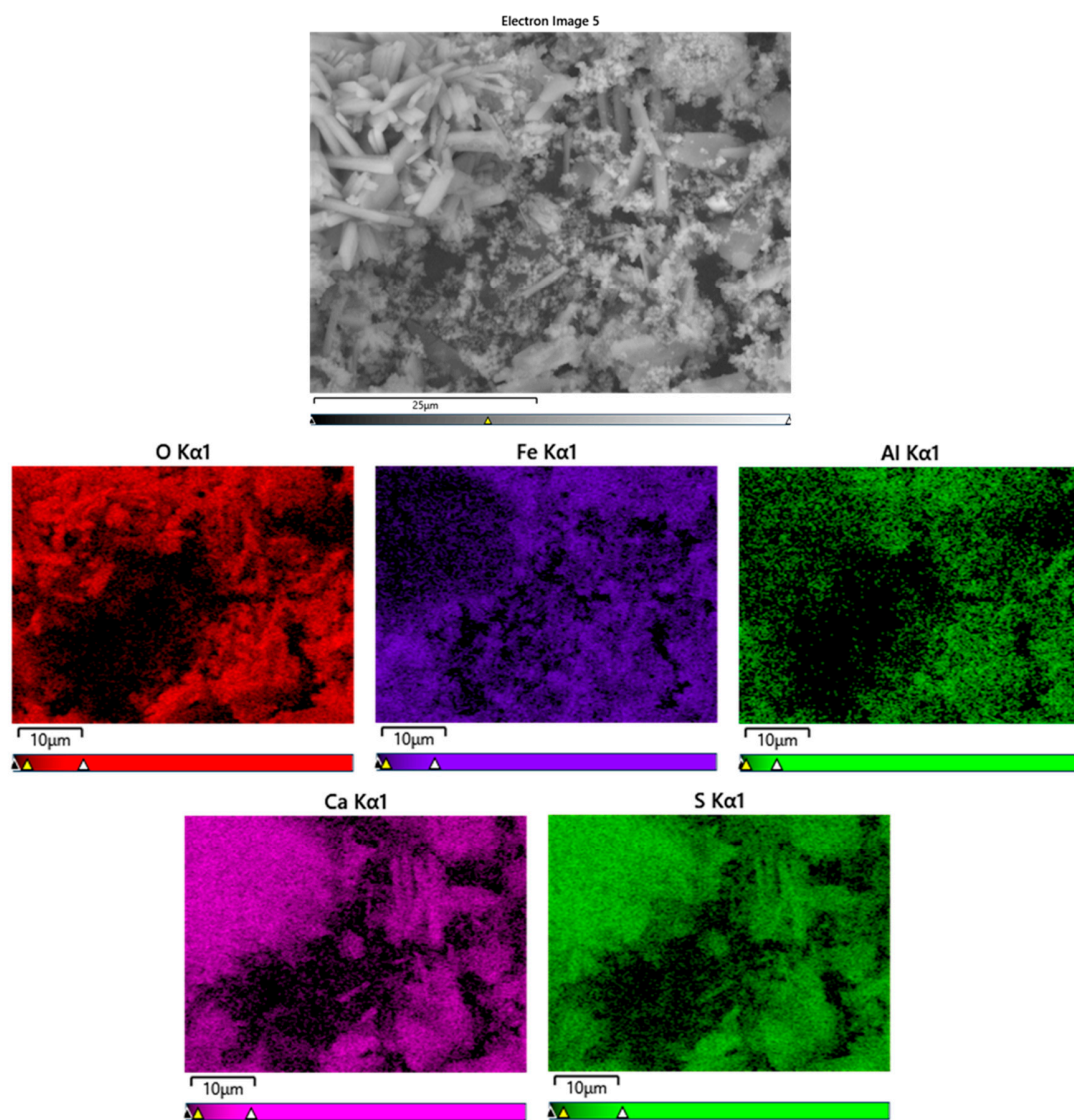


Figure S4. Energy dispersive X-ray (EDX) mapping analysis of OxPFe2

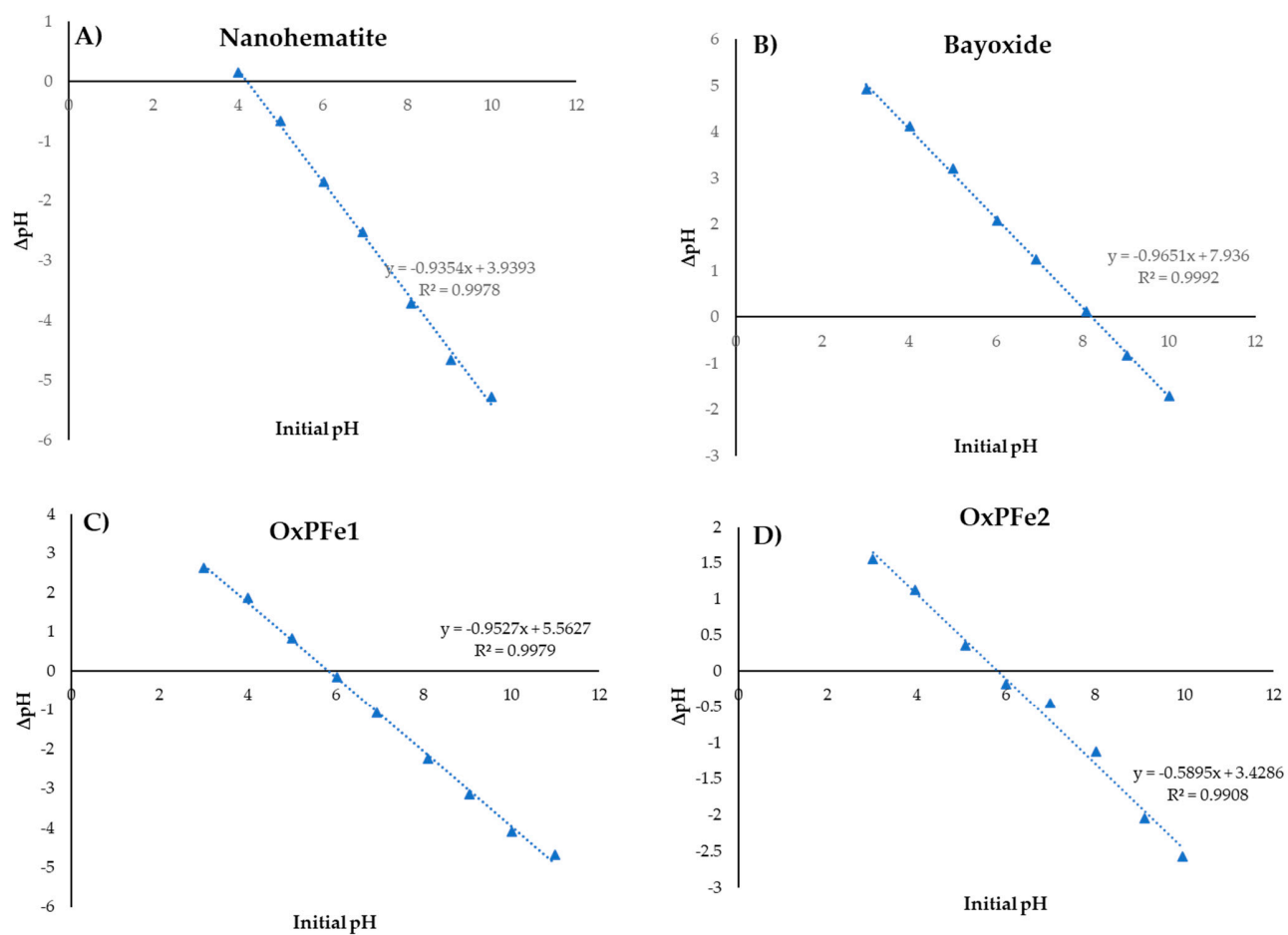


Figure S5. Calculated point of zero charge (pH_{PZC}) using the immersion technique for A) Nanohematite, B) Bayoxide®, C) OxPFe1, and D) OxPFe2

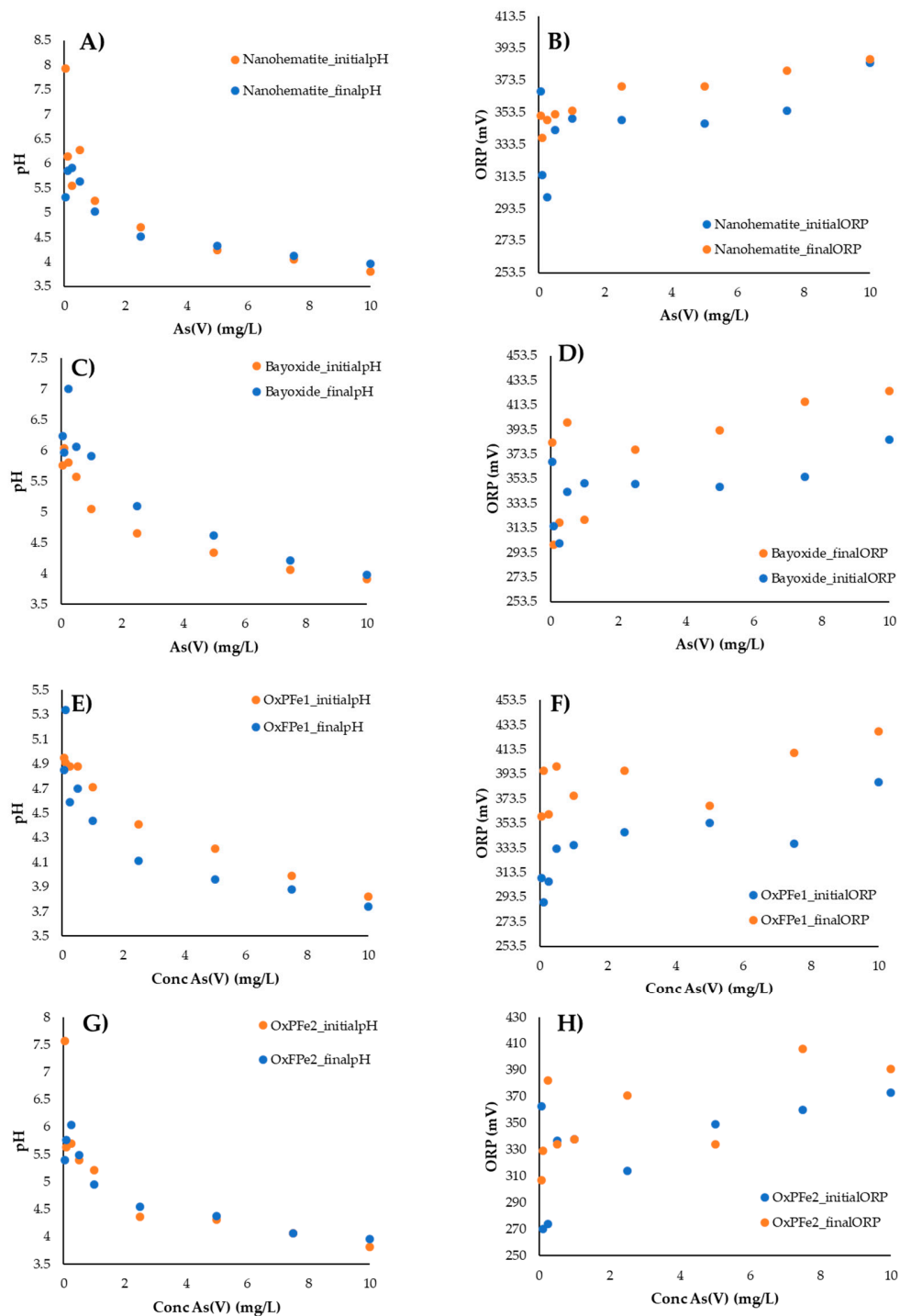


Figure S6. pH and oxidation redox potential (ORP) values before and after putting in contact the studied solids and the As(V) solutions A), B) Nano hematite; C), D) Bayoxide® E), F) OxPFe1, and G), H) OxPFe2.

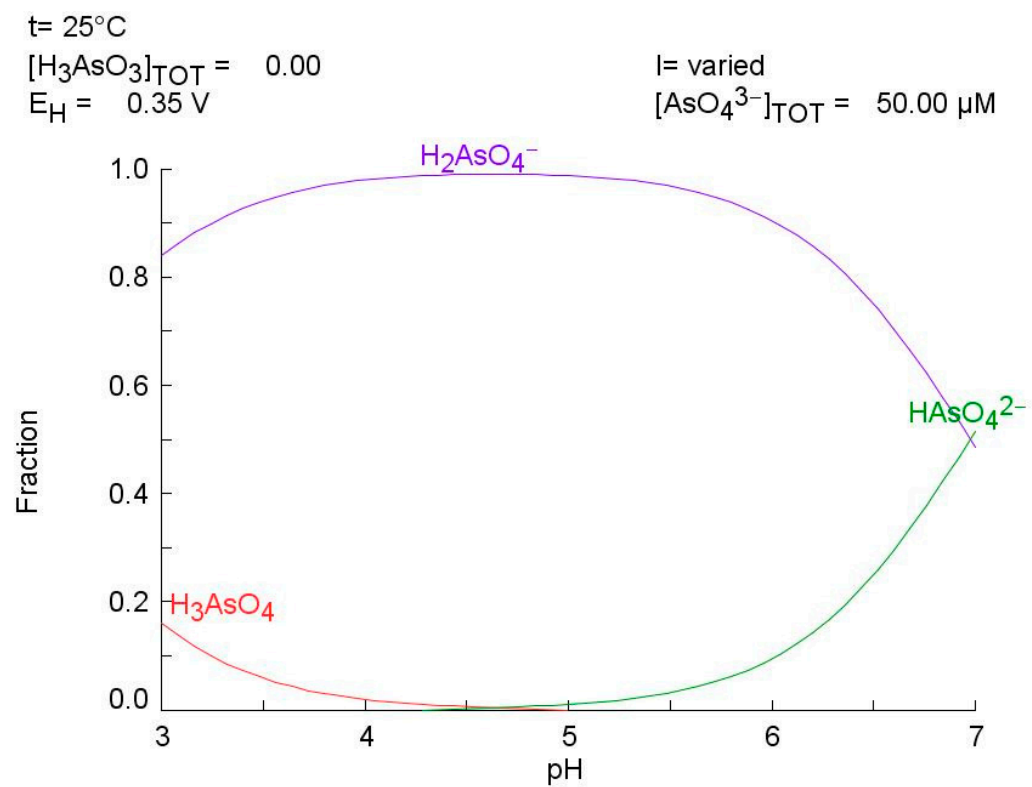


Figure S7. Theoretical aqueous speciation of As(V) as a function of adsorption conditions (redox potential (ORP)=0.35 V, total As(V) corresponding to 3.7 mg/L)