

Supplementary Material to "Sulfate adsorption at the buried hematite/solution interface investigated using total internal reflection (TIR)-Raman spectroscopy"

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1. Supplementary Figures

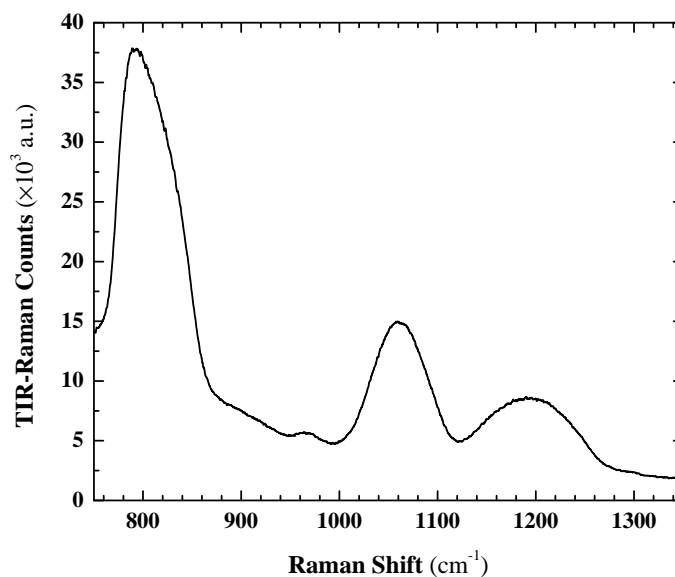


Figure S1. Parasitic scatter from fused silica TIR element.

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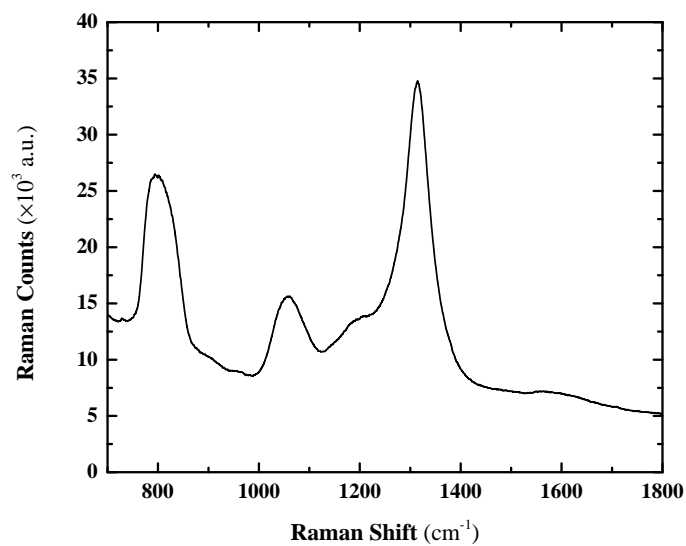


Figure S2. Parasitic scatter from 100 nm-thick hematite film coated fused silica TIR element.

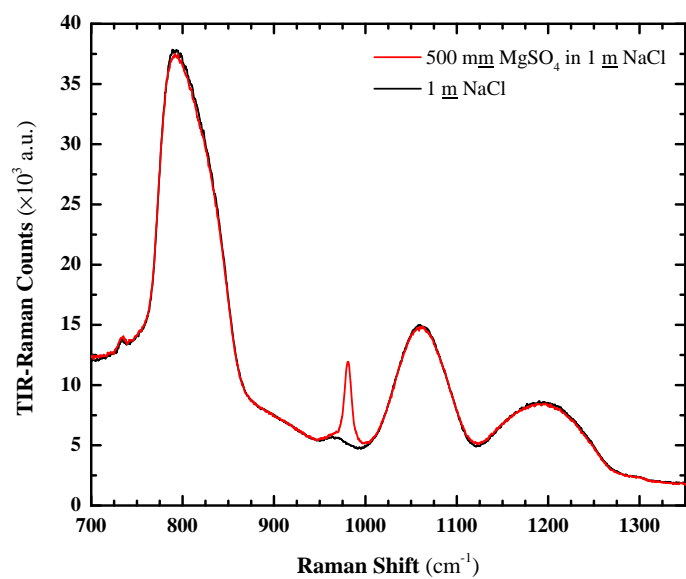


Figure S3. Typical mineral/solution TIR-Raman spectrum (*red trace*) pre-subtraction from the background parasitic scatter (*black trace*) spectrum.

2. Supplementary Tables

TABLE S1. Peak fitting parameters for TIR-Raman spectra shown in Figs. 5A,B.

Time [s]	Peak Nr.	Assignment	Peak frequency [cm^{-1}]	FWHM [cm^{-1}]	Height	Area
10	1	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	977.53	10.605	1508.9	25134
	2	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1062.5	66.604	582.32	60924
20	1	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	978.02	11.887	327.44	6114.1
	2	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	990.02	6.5819	445.66	4607.6
	3	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1060	44.507	478.99	33486
30	1	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	977.37	13.032	918.47	18802
	2	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	992.77	8.5035	4992.1	66681
	3	$\nu_{\text{SS}}\text{-SO}_3$	1042.3	19.56	413.02	12690
	4	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1072.3	34.446	603.23	32640
	5	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1125.4	8.7382	365.2	5012.7
	6	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1195.1	14.672	275.74	6354.8
40	1	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	979.75	20.055	1963.9	61865
	2	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	993.45	8.4987	11155	148920
	3	$\nu_{\text{SS}}\text{-SO}_3$	1041.2	25.123	477.89	18859
	4	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1074.6	37.486	902.23	53126
	5	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1127.7	12.946	1050.8	21368
	6	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1195.1	13.165	607.63	12566
50	1	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	977.68	12.578	1597.1	31551
	2	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	989.75	8.4462	6488.8	86088
	3	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	994.62	6.0027	11977	112930
	4	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1069.1	54.295	823.32	70218
	5	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1095.8	3.5215	222.67	1231.7
	6	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1127.9	10.948	1259.2	21654
	7	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1195.5	16.633	634.38	16574
60	1	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	976.99	9.0877	1515.4	21633
	2	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	988.78	8.9418	8563.4	120280
	3	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	994.68	5.875	13595	125460
	4	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1069.4	45.827	775.22	55804
	5	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1095.9	7.8191	296.09	3636.7
	6	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1128	9.8382	1500.7	23191
	7	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1196.1	9.7762	712.1	10935
90	1	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	975.64	12.738	1813.8	36292
	2	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	987.97	7.4394	14803	172980
	3	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	994.42	6.4502	13567	137360
	4	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1075	24.859	786.96	30730
	5	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1096.2	12.259	801.09	15427
	6	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1127.9	10.242	2099.7	33780
	7	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1148.3	8.0276	441.31	5564.8
	8	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1196.5	11.697	558.67	10265
120	1	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	976.58	8.2734	2059.4	18137
	2	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	990.17	9.8424	23921	250610
	3	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1096.4	8.918	883.98	12383
	4	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1128.1	7.2927	1693.6	19400
	5	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1149.8	6.1434	893.94	8626.5
180	1	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	990.72	8.4886	21632	195460
	2	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1097.3	8.3401	698.11	9145.7
	3	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1128.8	5.9706	1255.9	11779
	4	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1150.3	5.2338	1056.7	8687.7
240	1	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	990.79	8.4123	20746	185770
	2	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1097.4	8.6031	736.59	9954.1
	3	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1129	6.2087	1197.9	11683
	4	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1150.1	5.9013	1039.6	9636.9
300	1	$\nu_{\text{SS}}\text{-SO}_4^{2-}$	990.78	8.2633	20348	178980
	2	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1098.2	4.3971	552.03	3812.8
	3	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1128.9	4.094	1028.3	6608.8
	4	$\nu_{\text{AS}}\text{-SO}_4^{2-}$	1150.4	3.7528	819.27	4829.5