

Supplemental Table 1. Parameters for synthesis of natroalunite-natrojarosite solid solutions, with analysis of their chemical compositions by EDS and wet chemical methods.

Sample	<i>Synthesis parameters</i>						<i>Average EDS analyses^a</i>				<i>wet chemical analyses</i>			
	Na ₂ SO ₄ (g)	Al ₂ (SO ₄) ₃ (g)	Fe ₂ (SO ₄) ₃ (g)	0.1 N H ₂ SO ₄ (ml)	Time (h)	Final pH ^b	Na p.f.u.	Fe p.f.u.	Al p.f.u.	Fe#	Na p.f.u.	Fe p.f.u.	Al p.f.u.	Fe#
Natro1	1.47	14.0	4.60	18	46	0.09	0.87	1.55	0.90	63	0.91	1.79	1.15	61
Natro2	1.47	18.0	1.50	18	46	0.69	0.79	0.53	1.86	22	0.87	0.70	2.10	25
Natro3	0.73	7.0	2.30	22	142	0.73	0.98	1.79	0.94	66	0.90	1.89	1.00	65
Natro4	0.73	9.0	0.75	22	142	0.74	0.73	0.59	1.92	24	0.96	0.60	2.36	20
Natro5	1.56	0	16.7	22	143	-0.33	1.13	1.73	0	100	0.71	2.32	0	100
Natro6	1.49	20.2	0	22	143	0.17	0.60	0	2.10	0	0.82	0	2.69	0
Natro7	0.76	8.0	1.50	23	93	0.68	0.86	1.50	1.22	55	0.88	1.48	1.57	49
Natro8	0.78	10.0	0.40	23	93	0.71	0.54	0.26	2.19	11	0.89	0.30	2.59	10
Natro9	1.64	0	15.4	23	186	~0	0.72	2.26	0	100	0.93	2.96	0	100
Natro10	1.47	6.5	8.3	22	164	-0.3	0.97	2.48	0.18	87	0.86	2.51	0.22	92
Natro14	1.50	10.6	7.0	22	141	0.0	1.01	2.22	0.74	74	0.84	2.40	0.45	84

“p.f.u.” = atoms per formula unit, normalized to 2 S. ^aAverage EDS analysis represent 10-15 spot analyses. ^bFinal pH measured at 25 °C; since the values listed were outside the calibrated range for our pH meter (2-10), these values should be regarded as approximations. Fe# = $100 \times \text{Fe}/(\text{Fe} + \text{Al})$.