Electronic supplementary information

Contaminant removal by efficient separation of in-situ formed layered double hydroxide compounds from mine wastewaters

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Table S1. Ionic composition of acid (pH 4.5) mine wastewater.

Ion	mg/L	mM
Na^{+}	7.3×10^{2}	3.2×10^{1}
K^{+}	3.2×10^{1}	8.2×10^{-1}
Mg^{2+}	3.5×10^{2}	1.5×10^{1}
Ca^{2+}	3.0×10^{2}	7.5
Al^{3+}	1.0×10^{1}	3.7×10^{-1}
Fe^{3+}	1.7×10^{1}	3.0×10^{-1}
Mn^{2+}	1.7×10^{1}	3.1×10^{-1}
Cl^{-}	1.5×10^{3}	4.2×10^{1}
SO_4^{2-}	5.8×10^{2}	6.0
Cd^{2+}	6.2×10^{-2}	5.5×10^{-4}
Ce^{3+}	1.5	1.0×10^{-2}
Co^{2+}	3.4	5.8×10^{-2}
Cu^{2+}	3.0×10^{1}	4.8×10^{-1}
La^{3+}	7.2×10^{-1}	5.2×10^{-3}
Nd^{3+}	6.0×10^{-1}	4.2×10^{-3}
Ni^{2+}	7.3	1.2×10^{-1}
Sr^{2+}	1.1	1.2×10^{-2}
Y^{3+}	2.5×10^{-1}	2.8×10^{-3}
Zn^{2+}	9.6	1.5×10^{-1}
CO_3^{2-}	2.1	3.4×10^{1}

Table S2. The concentration of PSS, DXS and phosphate at the isoelectric points.

	PSS (mg/g)	**DXS (mg/g)**	**Phosphate (mM)**
Sample 1	12	4.5	0.0084
Sample 2	0.4	6.8	0.0207
Sample 3	13.5	46.0	0.0096
Sample 4	0.9	1.1	0.0010

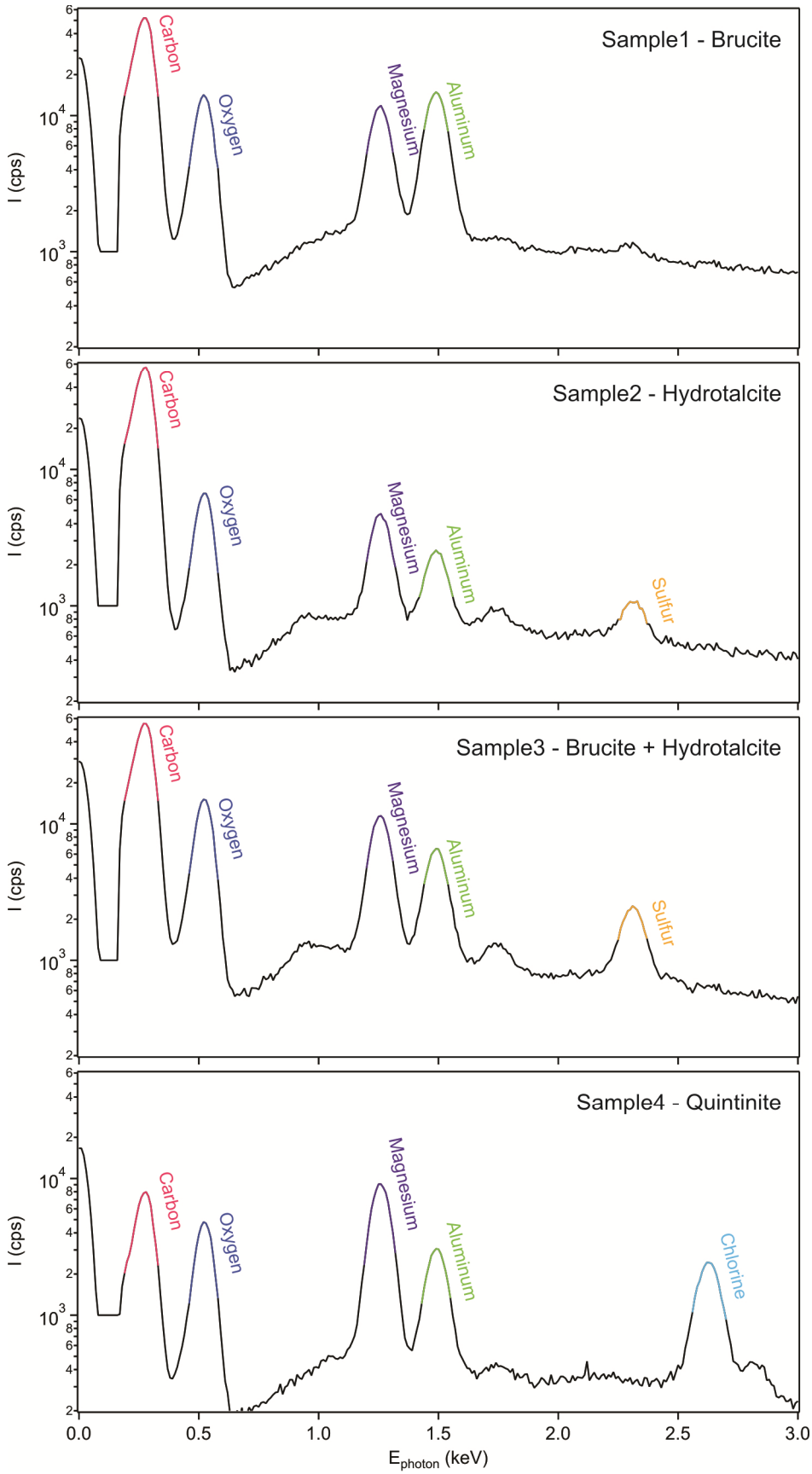

Fig. S1 Elemental composition of the solid Samples 1-4. The presence of carbon is dominant due to the carbon tape sample holder.

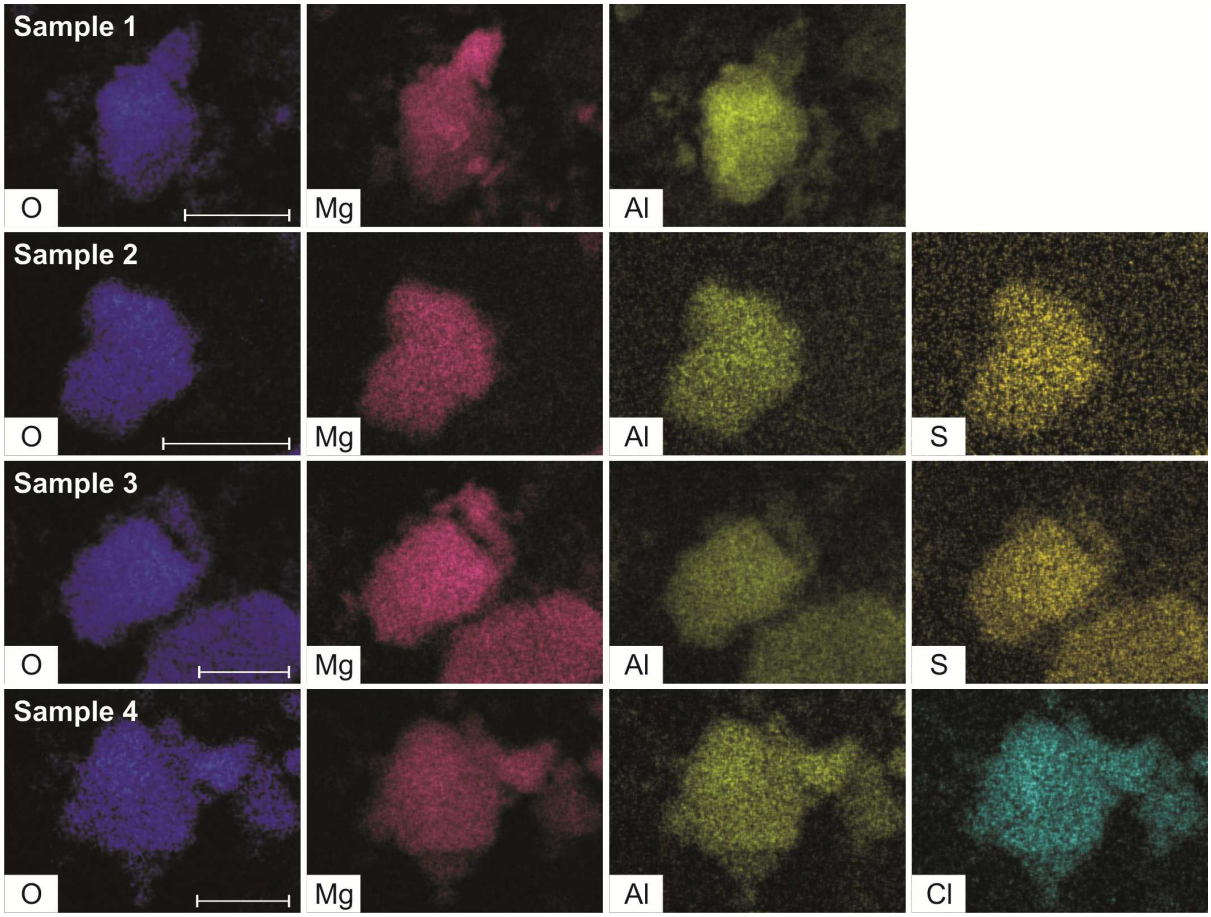

Fig. S2 Elemental distribution images in Sample1-4 determined by SEM-EDX measurements. The scale bars refer to 3 μm distance.

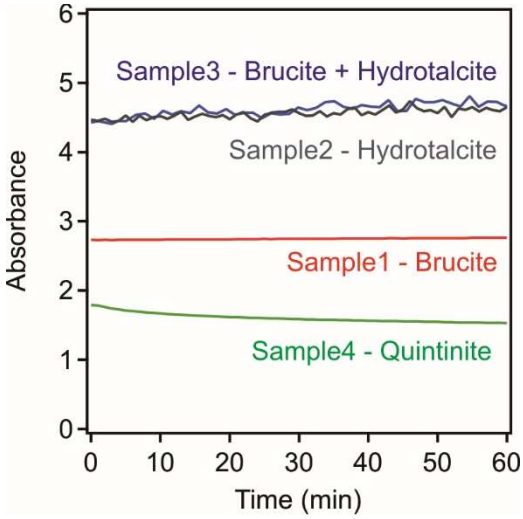

Fig. S3 Time-resolved absorbance measurements performed at 450 nm for the original Samples 1-4.

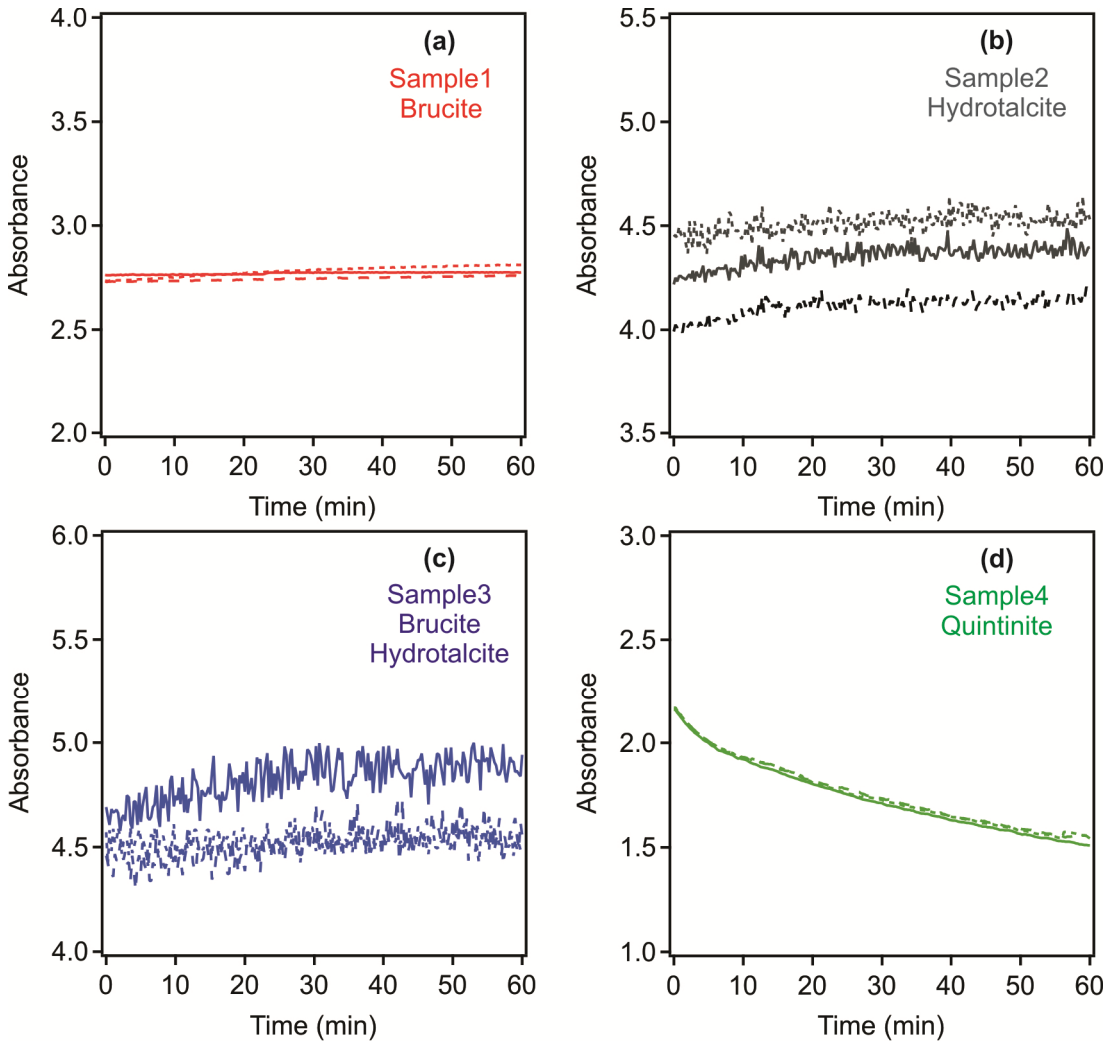

Fig. S4 Time-resolved absorbance measurements performed at 450 nm for the original Samples 1-4 in the presence of PSS (solid lines), DXS (dotted lines) and phosphate (dotted line). The dose of the flocculants was set to the charge neutralization condition.