Supporting Information

Enhanced Heterogeneous Uptake of Sulfur Dioxide on Mineral Particles through Modification of Iron Speciation during Simulated Cloud Processing

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Table 3.

Table S1. Properties of the standard clay and ATD samples

	IMt-2	NAu-2	SWy-2	ATD
Total Iron Content (% mass from Source Clays Repository Website)	5.55	26.19	2.58	-
Total Iron Content (% mass from XRF)	5.57	27.32	3.88	1.80
Total Iron Content (% mass from ICP-AES)	5.45±0.04	26.30±0.57	2.36±0.56	1.48±0.56
Specific Surface Area (m^2/g from N_2-BET)	20.1±1.5	19.8±1.3	22.6±2.3	4.3±0.3

Table S2. Chemical composition of the standard clay and ATD samples

Sample	SiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5	Total	Total Fe
IMt-2	59.57	19.47	7.95	0.05	2.42	0.37	0.08	8.72	0.99	0.07	99.75	5.57
NAu-2	54.99	2.81	39.03	n.d.	0.95	1.45	0.19	0.14	0.23		99.79	27.32
SWy-2	67.61	19.27	5.55	0.32	3.08	1.77	1.30	0.77	0.21	0.05	100.12	3.88
ATD	78.11	7.19	2.57		1.22	3.03	1.39	2.06	0.46		99.21	1.80

Table S3. Parameters of the Mössbauer spectra for the samples

		IS (mm/s)	QS (mm/s)	H_f (T)	LW (mm/s)	A (%)	Fe species
IMt-2	D_1	0.24	0.85	-	0.56	66.03	Al/Si, poor oct-Fe^{3+}
	D_2	1.30	2.40	-	0.44	33.97	Al/Si -Fe^{2+}
IMt-2 after CP	D_1	0.36	0.63	-	0.56	68.55	Al/Si, poor oct-Fe^{3+}
	D_2	1.13	2.78	-	0.46	31.45	Al/Si -Fe^{2+}
NAu-2	D_1	0.36	0.26	-	0.54	87.15	Al/Si, oct-Fe^{3+}
	D_2	0.41	1.22	-	0.21	12.85	Al/Si, X-Fe_xO
NAu-2 after CP	D_1	0.36	0.29		0.53	88.44	Al/Si, oct-Fe^{3+}
	D_2	0.41	1.20		0.26	11.56	Al/Si, X-Fe_xO
SWy-2	D_1	1.05	2.46	-	0.74	18.34	Al/Si-Fe^{2+}
	D_2	0.39	0.70	-	0.57	81.66	Al/Si-Fe^{3+}
SWy-2 after CP	D_1	0.88	2.34	-	0.82	17.09	Al/Si-Fe^{2+}
	D_2	0.36	0.61	-	0.58	82.91	Al/Si-Fe^{3+}
ATD	D_1	0.36	0.65	-	0.51	38.96	Al/Si-Fe^{3+}
	D_2	0.99	2.25	-	1.21	29.20	Al/Si-Fe^{2+}
	S_1	0.39	-0.13	51.1	0.47	31.84	α-Fe_2O_3
ATD after CP	D_1	1.06	2.54	-	0.50	10.91	Al/Si -Fe^{2+}
	D2	0.37	0.61		0.44	32.95	Al/Si-Fe^{3+}
	D3	0.67	1.21	-	1.23	23.81	Fe^{3+}
	S1	0.37	-0.21	51.0	0.52	32.33	α-Fe_2O_3