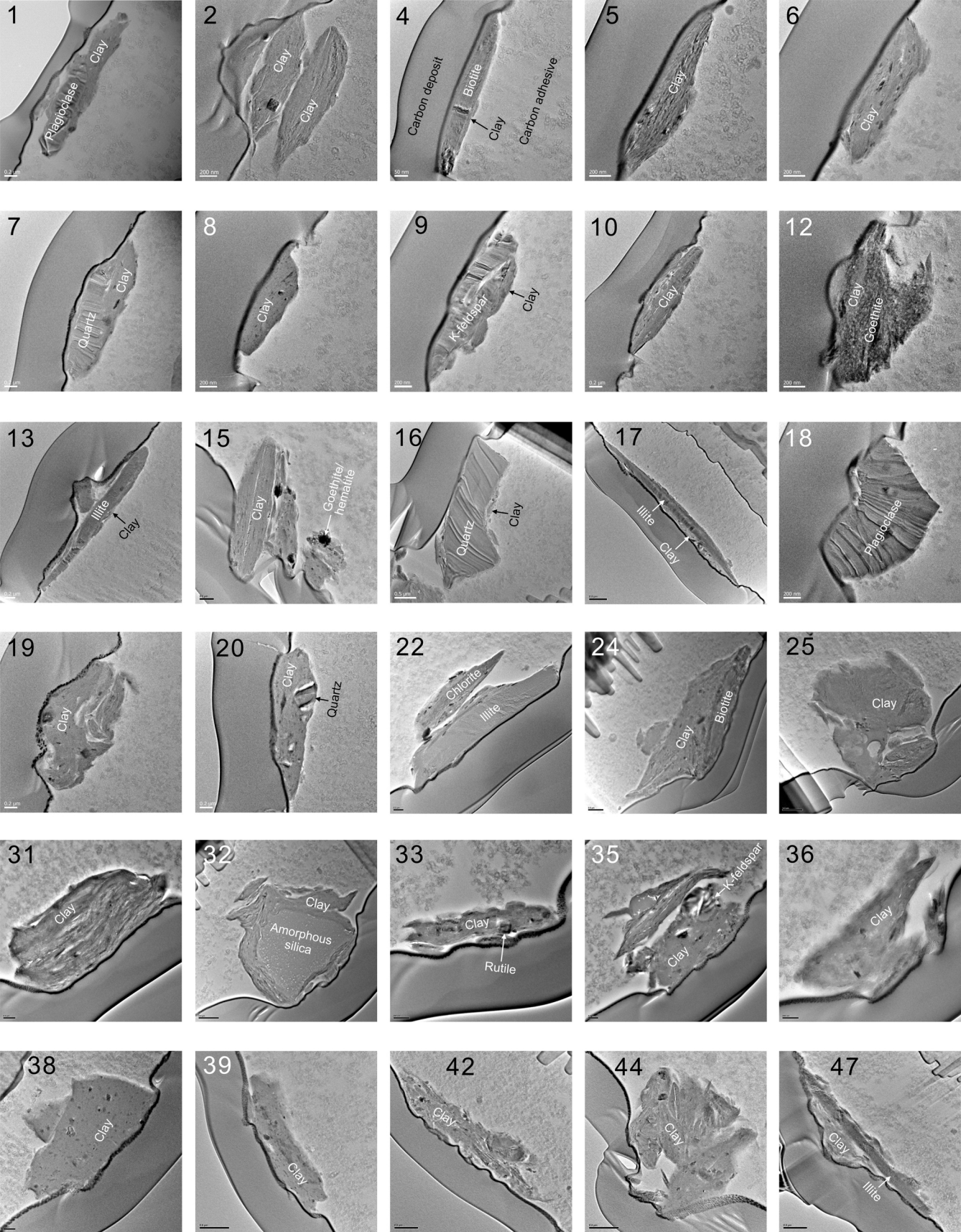
Supplementary Table 1. Ratio of three axes of ellipsoidal particles and their Fe (hydr)oxide contents.

Particle No.	Axis				Fe (hydr)oxides volume %
	c	b	a		
1	1.4	1.0	0.3		1.2
2	1.3	1.0	0.8		0.6
3	1.1	1.0	0.5		50.0
4	1.3	1.0	0.1		0.0
5	1.1	1.0	0.3		0.5
6	1.3	1.0	0.1		3.5
7	1.3	1.0	0.3		1.7
8	2.0	1.0	0.3		5.5
9	1.3	1.0	0.3		0.0
10	1.1	1.0	0.3		2.9
11	1.5	1.0	0.6		9.4
12	1.6	1.0	0.5		55.7
13	1.3	1.0	0.3		0.0
14	1.2	1.0	0.6		91.2
15	1.2	1.0	0.8		5.0
16	1.7	1.0	0.4		0.5
17	1.9	1.0	0.1		3.6
18	2.0	1.0	0.7		0.0
19	1.7	1.0	0.5		2.0
20	1.1	1.0	0.3		8.6
21	1.1	1.0	0.5		3.0
22	1.2	1.0	0.4		1.5
23	1.5	1.0	0.3		0.8
24	1.2	1.0	0.3		6.7
25	1.4	1.0	0.9		0.4
26	1.2	1.0	0.5		0.8
27	1.0	1.0	0.8		7.7
28	1.5	1.0	0.7		0.7
29	1.4	1.0	0.6		1.2
30	1.2	1.0	0.6		0.6
31	1.2	1.0	0.5		0.0
32	2.0	1.0	1.0		0.0
33	1.2	1.0	0.2		9.1
34	1.4	1.0	0.2		1.0
35	1.5	1.0	0.9		1.2
36	1.8	1.0	0.5		2.3
37	1.2	1.0	0.8		0.1
38	1.1	1.0	0.6		10.4
39	1.5	1.0	0.3		10.1
40	1.1	1.0	0.9		2.6
41	1.4	1.0	0.4		0.0
42	1.4	1.0	0.2		3.2
43	1.1	1.0	0.4		15.0
44	1.3	1.0	1.0		1.9
45	1.4	1.0	0.1		27.6
46	1.6	1.0	0.6		4.2
47	1.6	1.0	0.2		0.1
48	1.7	1.0	1.0		0.0
Average	1.4	1.0	0.6	Average	3.5*
Standard deviation	0.3		0.3	Standard deviation	5.1
Median	1.3		0.5	Median	1.8

*Excluding exceptionally high Fe oxide contents (particle 3, 12, 14)

Supplementary Figure 1. TEM images of the cross sections of 30 dust particles not presented in the text.