



*Supplement of*

## **Morphological features and water solubility of iron in aged fine aerosol particles over the Indian Ocean**

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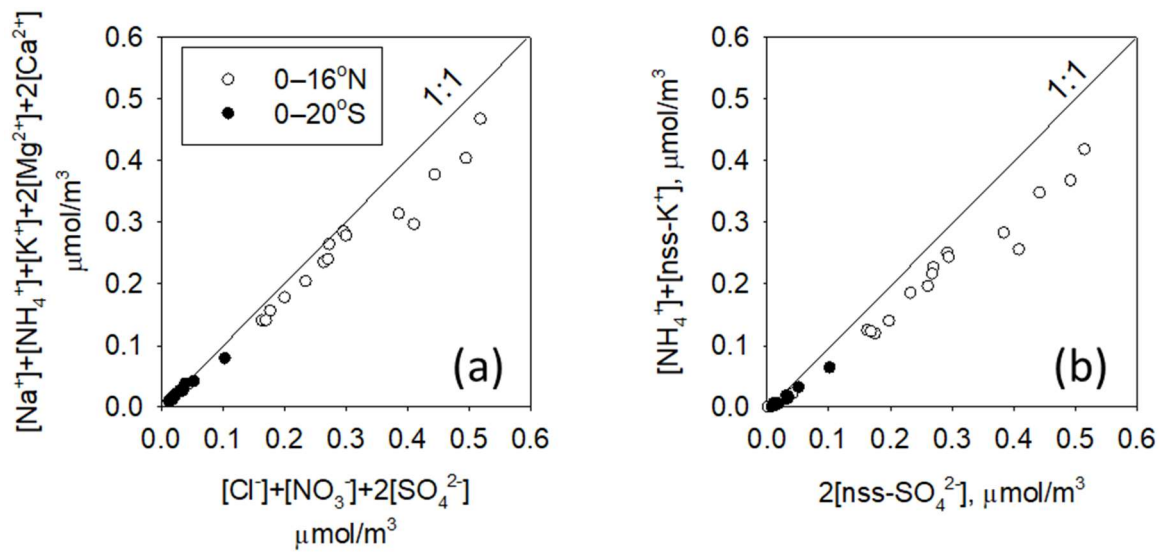


Figure S1: Scatterplots of (a) measured cation and anion amounts and (b) nss-SO<sub>4</sub><sup>2-</sup> and NH<sub>4</sub><sup>+</sup> plus nss-K<sup>+</sup> amount in equivalent concentrations. Black circles and white circles respectively represent data for samples south and north of the equator.

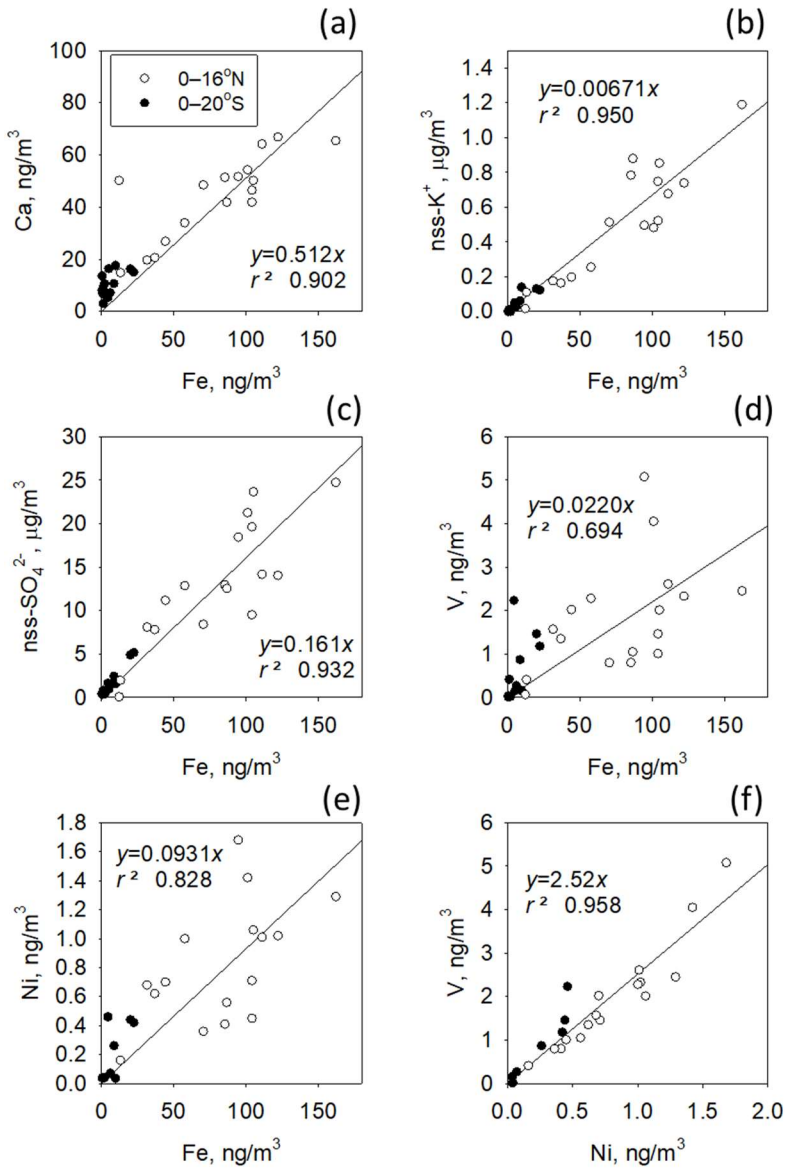


Figure S2: Scatterplots of Fe to (a) Ca, (b) nss-K<sup>+</sup>, (c) nss-SO<sub>4</sub><sup>2-</sup>, (d) V, and (e) Ni mass concentrations and (f) scatterplots of V and Ni mass concentrations. Black circles and white circles respectively represent data for samples south and north of the equator.

20 The fitting line is linearized for all data.

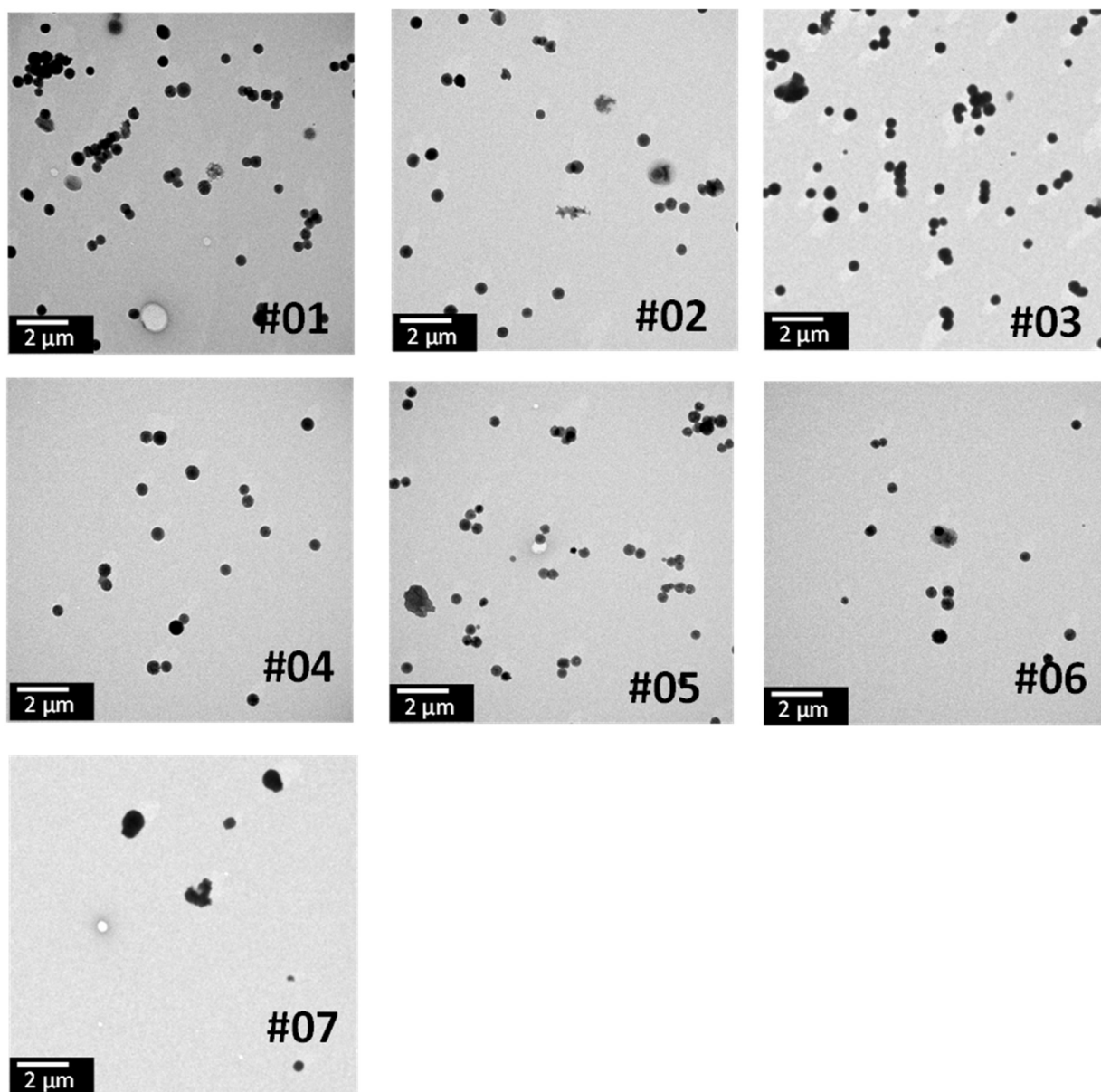
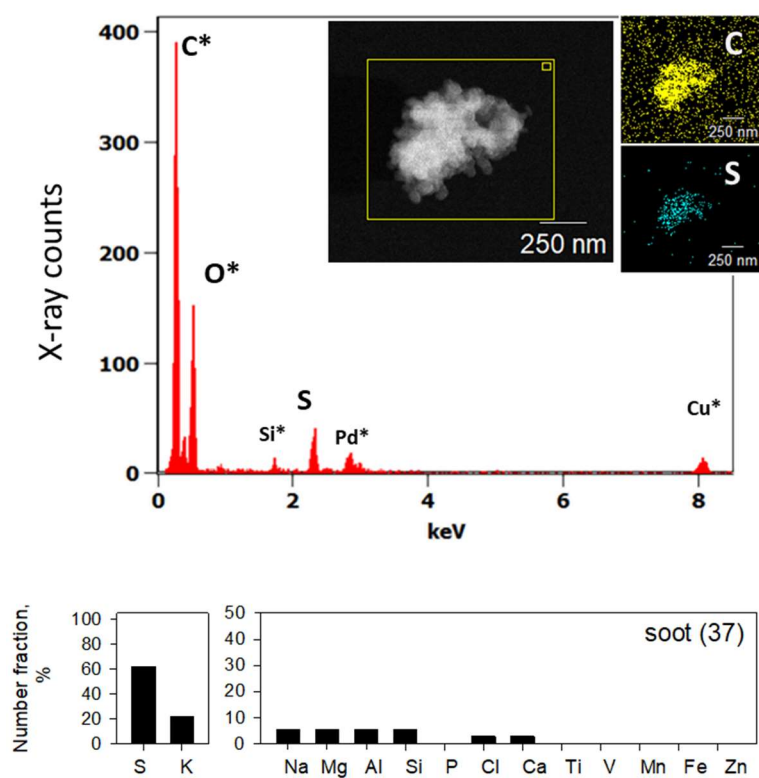


Figure S3: Electron micrographs for (a) sample nos. 01–07.



**Figure S4: Extracted X-ray count spectrum, STEM image and elemental map of soot particle (upper) and number fraction of each-element-containing particles in soot particles (lower). X-ray spectra were extracted from areas surrounded by yellow rectangles of the same size. Elements marked with asterisks include the background.**

**Table S1: Number of Fe-containing particles by type**

Sample ID	Fe sphere in metal (spherical fly ash)		Fe with Si, Al or Ca heterogeneously (mineral dust)	FeO <sub>x</sub> aggregation	Other shaped Fe	Small Fe thickly coated by sulfate
	in Si or Al	without Si and Al				
No. 01	0	0	1	0	0	2
No. 02	0	0	0	1	0	1
No. 03	4	0	2	1	1(1)*	9
No. 04	5	0	1	1(1) *	1	2
No. 05	0	2	2(1) *	0	1(1) *	5
No. 06	0	0	0	0	0	2
No. 07	0	0	0	0	0	1

\* Numbers in brackets are the number of bare type (without sulfate) Fe-containing particles.