

## Supporting Information

### **Size-segregated chemical compositions of HULISs in ambient aerosols collected during the winter season in Songdo, South Korea**

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**Supplementary Figure S1.** Size-resolved samples (eight size cuts between 0.43 and 11  $\mu\text{m}$ ) collected during the (a) preheating [27 November–1 December], (b) main heating [8–12 January] and (c) postheating [12–16 March] periods using an Anderson-type air sampler.

**Supplementary Figure S2.** Relationships of the particle size with the mean DBE, AI, H/C, and O/C values of CHO class species during each sampling period. The solid lines indicate the best fit.

**Supplementary Figure S3.** Relationships of the particle size with the mean DBE, AI, H/C, and O/C values of CHON class species during each sampling period. The solid lines indicate the best fit.

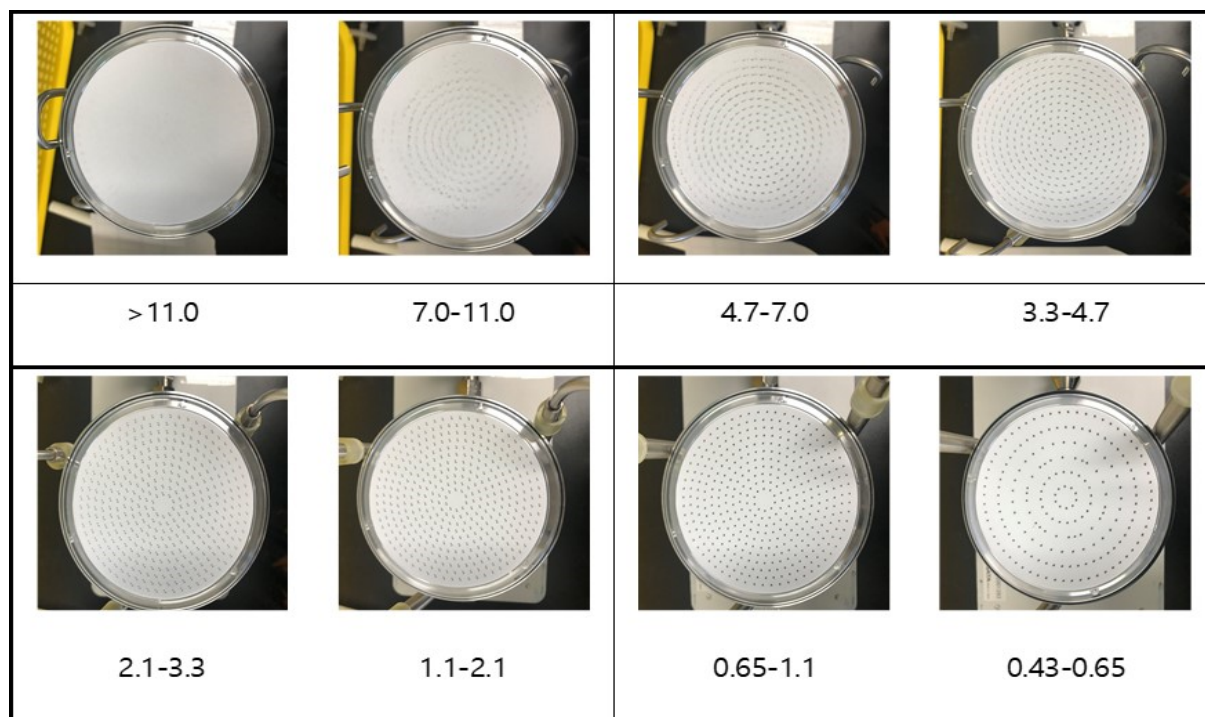
**Supplementary Figure S4.** Relationships of the particle size with the mean DBE, AI, H/C, and O/C values of CHOS class species during each sampling period. The solid lines indicate the best fit.

**Supplementary Figure S5.** Carbon number and DBE plots of the HULISs in particles between 1.1 and 2.1  $\mu\text{m}$  (stage three fractions) in the pre- (**a**, **d**, **g** and **j**), main- (**b**, **e**, **h** and **k**), and postheating (**c**, **f**, **i** and **l**) periods. (Color code: CHO, blue; CHON, red; CHOS, green; and CHONS, purple).

**Supplementary Figure S6.** Results for three day air mass back trajectories collected at hourly intervals during each sampling period. (**a**) preheating, (**b**) main heating and (**c**) postheating periods. The black star indicates the sampling spot of Songdo.

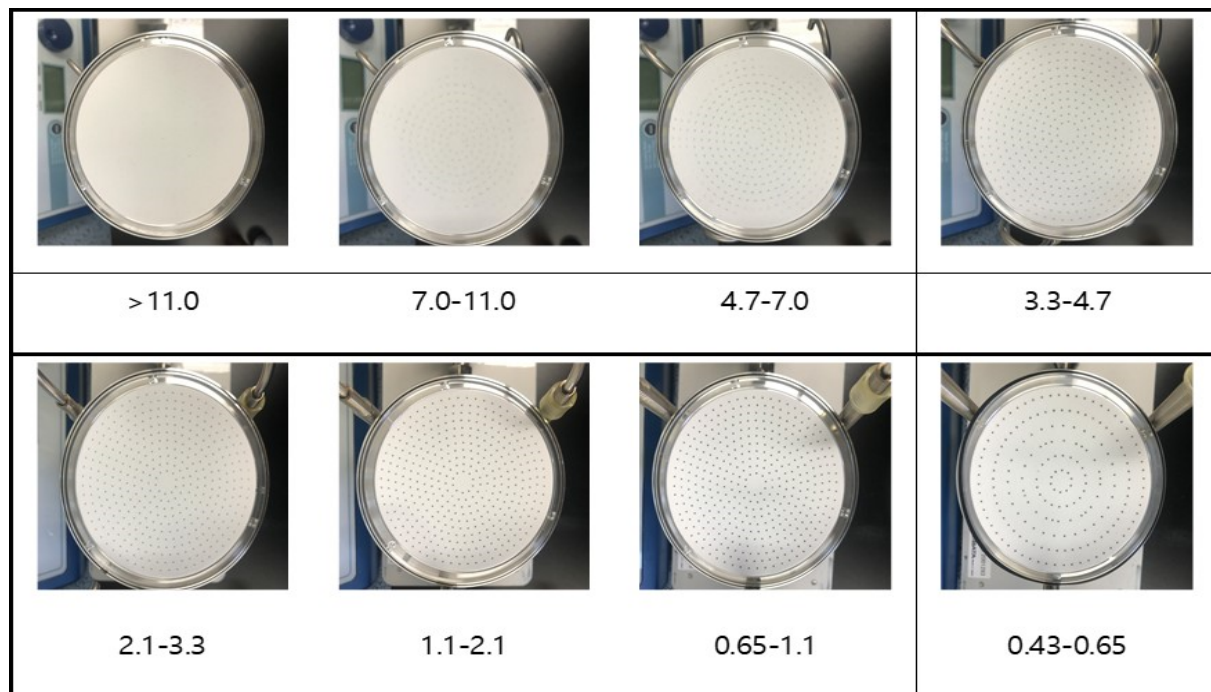
**Suppl. Fig. S1.**

**(a)**











**Suppl. Fig. S1. *continued.***

**(b)**

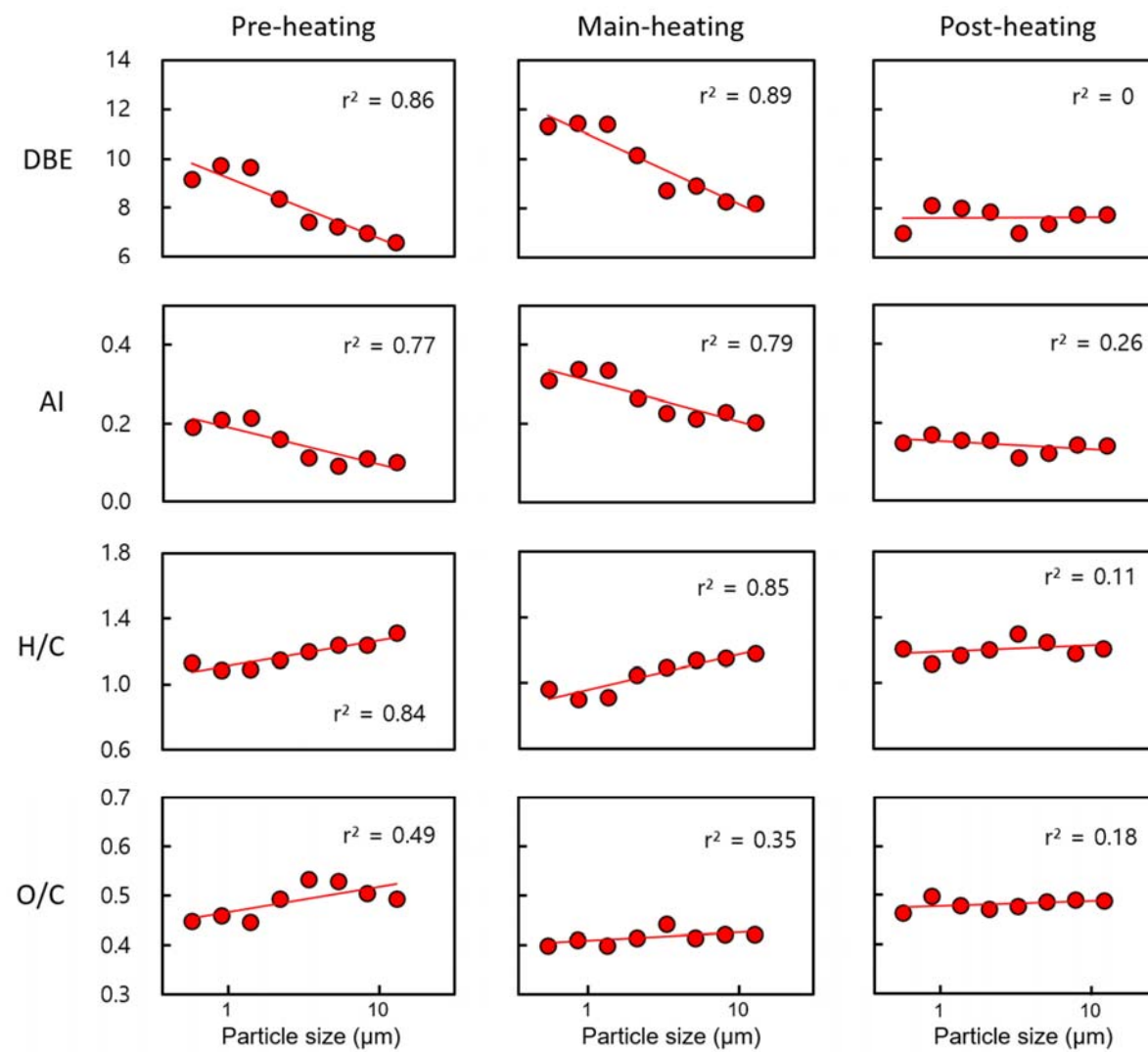


**Suppl. Fig. S1. *continued.***

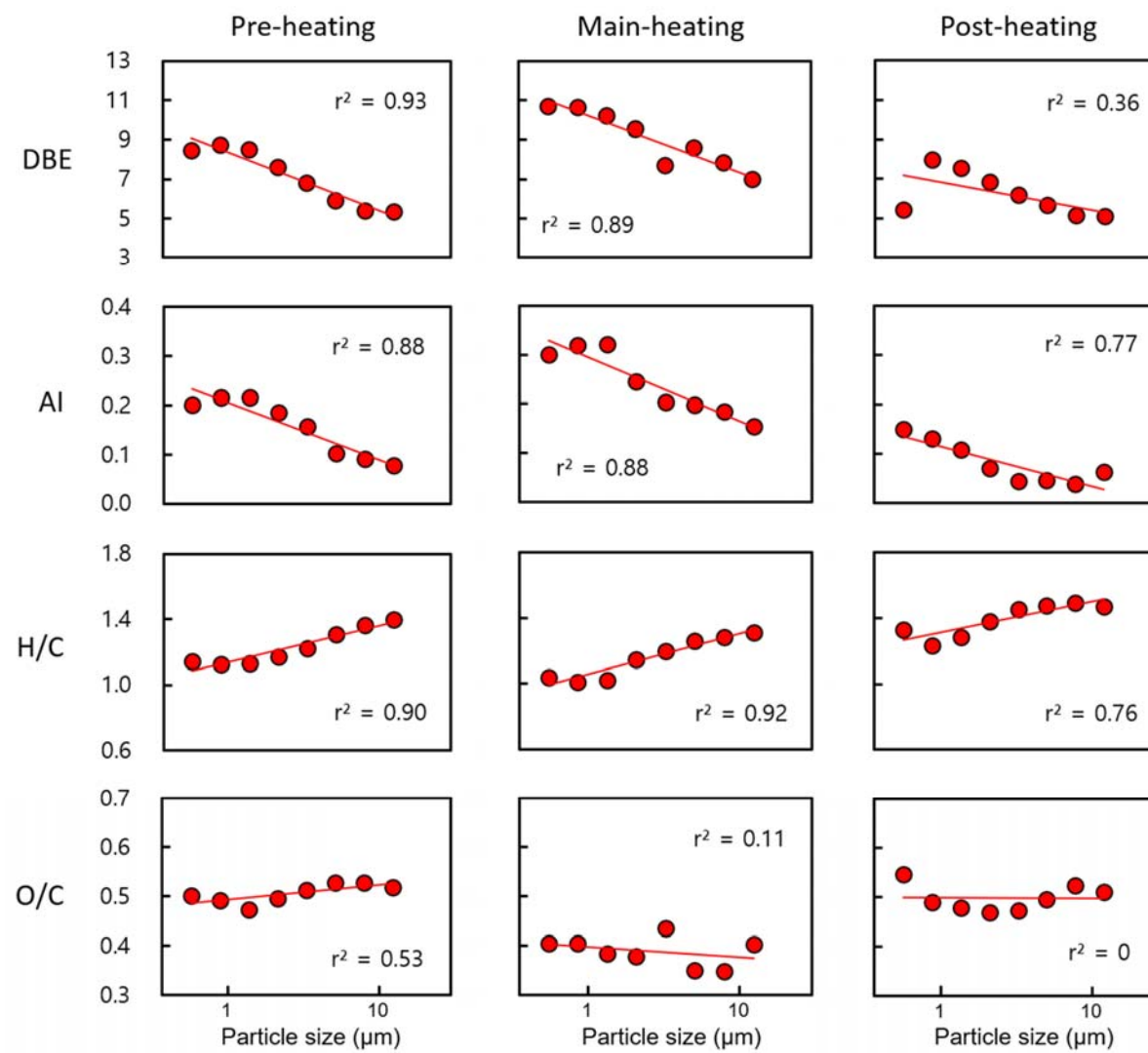
**(c)**

			
>11.0	7.0-11.0	4.7-7.0	3.3-4.7
			
2.1-3.3	1.1-2.1	0.65-1.1	0.43-0.65

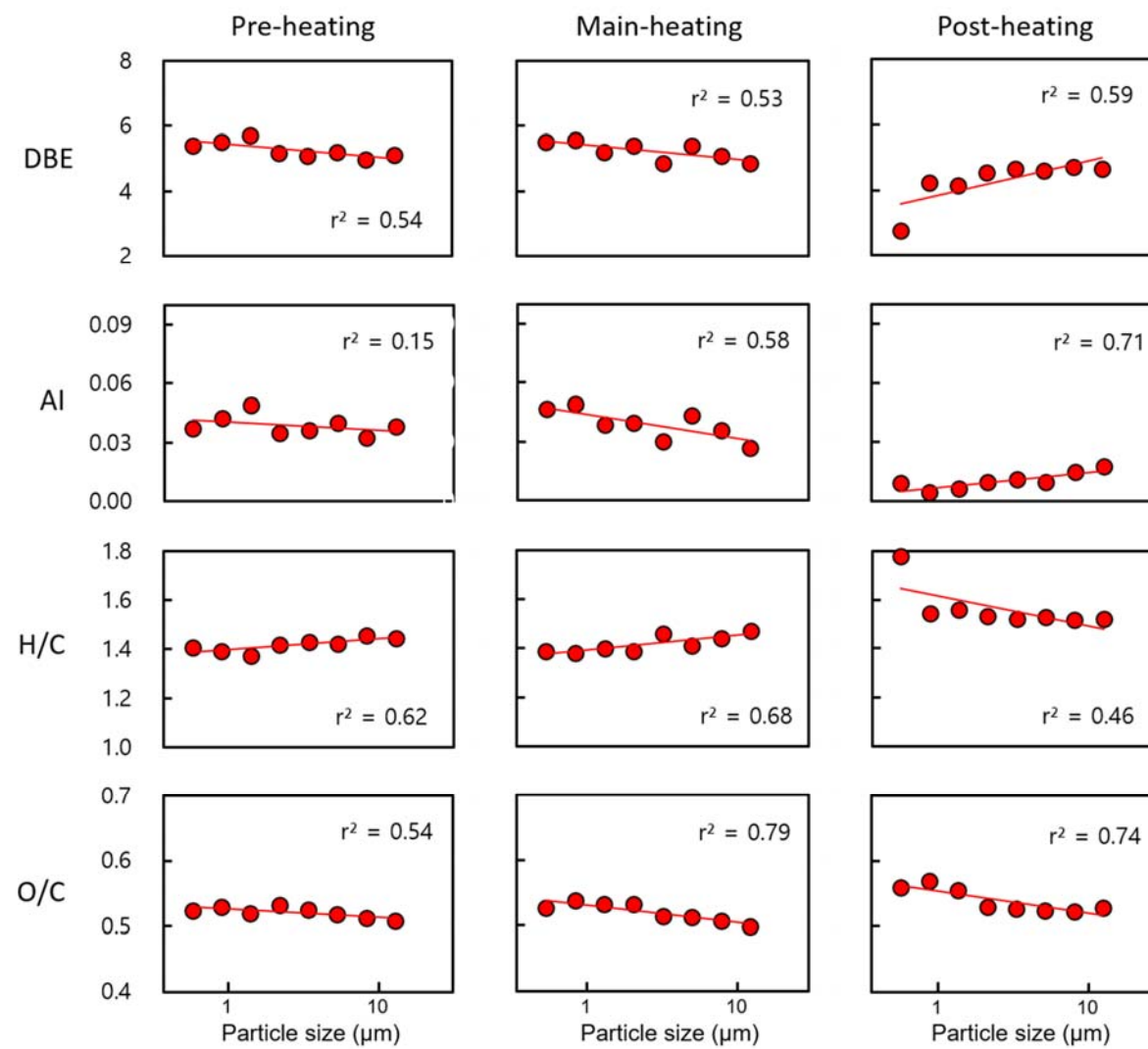
Suppl. Fig. S2.



Suppl. Fig. S3.

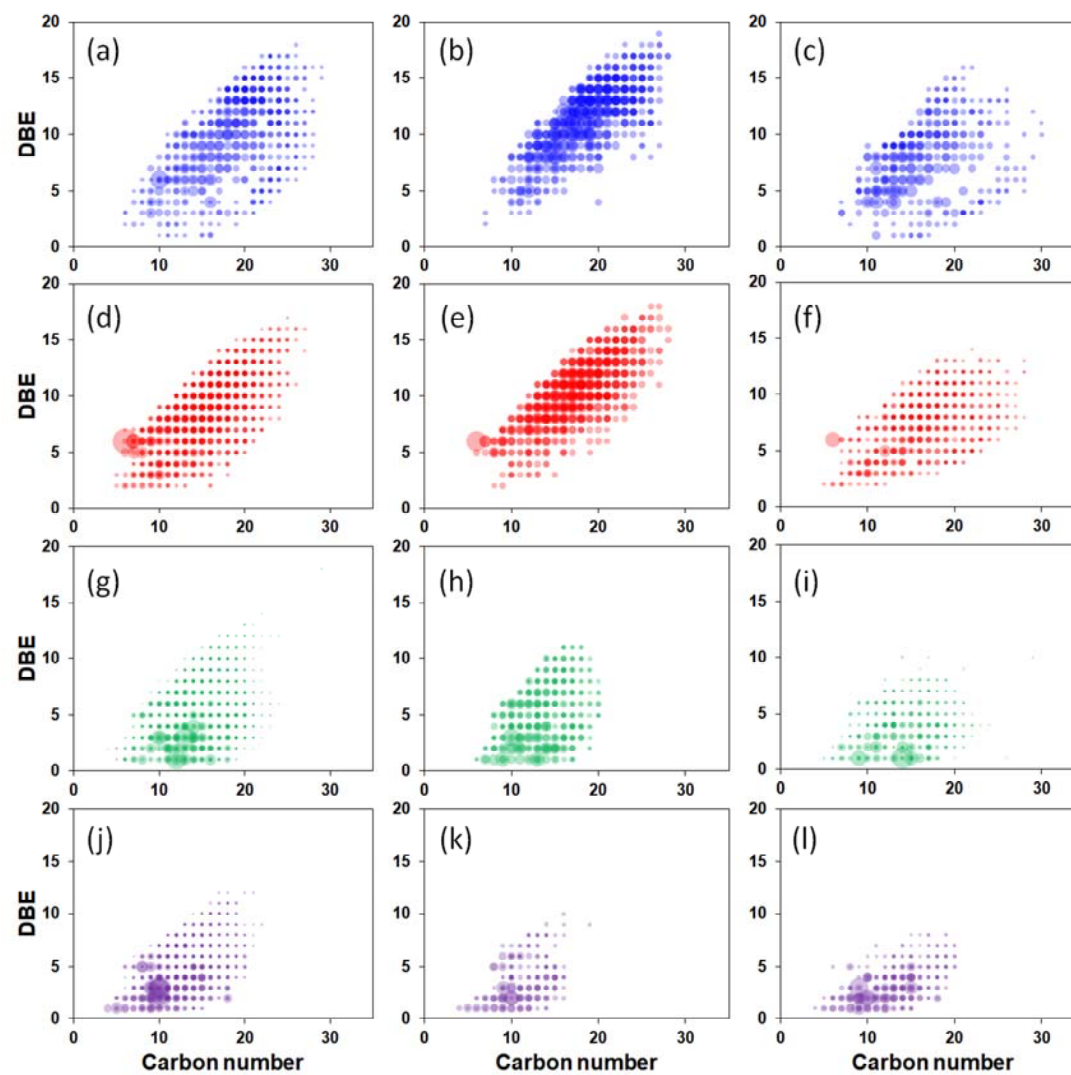


Suppl. Fig. S4.





Suppl. Fig. S5.



Suppl. Fig. S6.

