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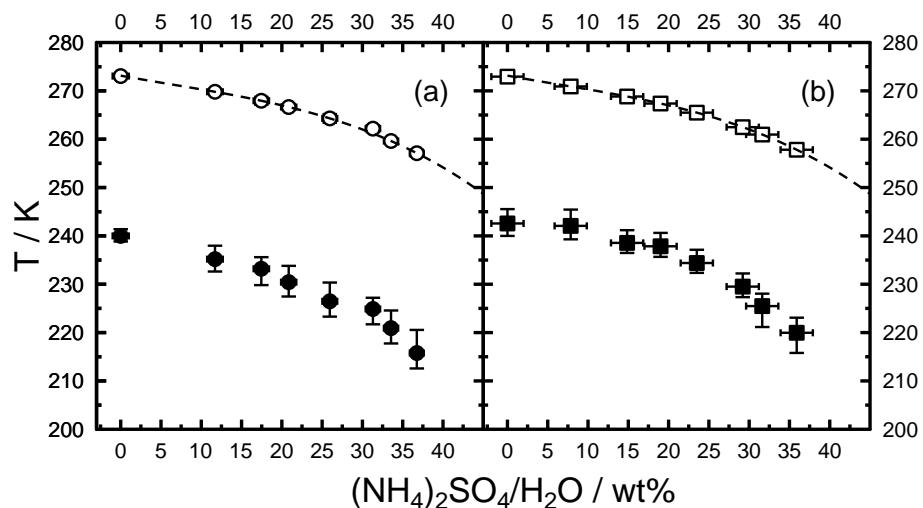
## **Supplementary Material:**

# **Immersion Freezing of Water and Aqueous Ammonium Sulphate Droplets Initiated by Humic Like Substances as a Function of Water Activity**

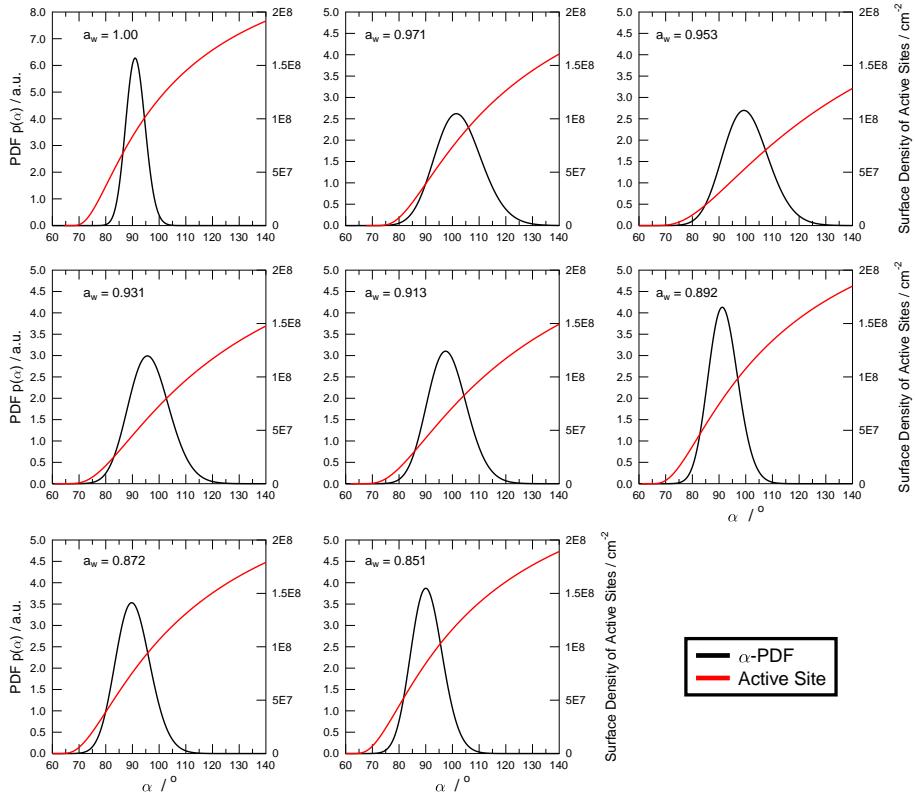
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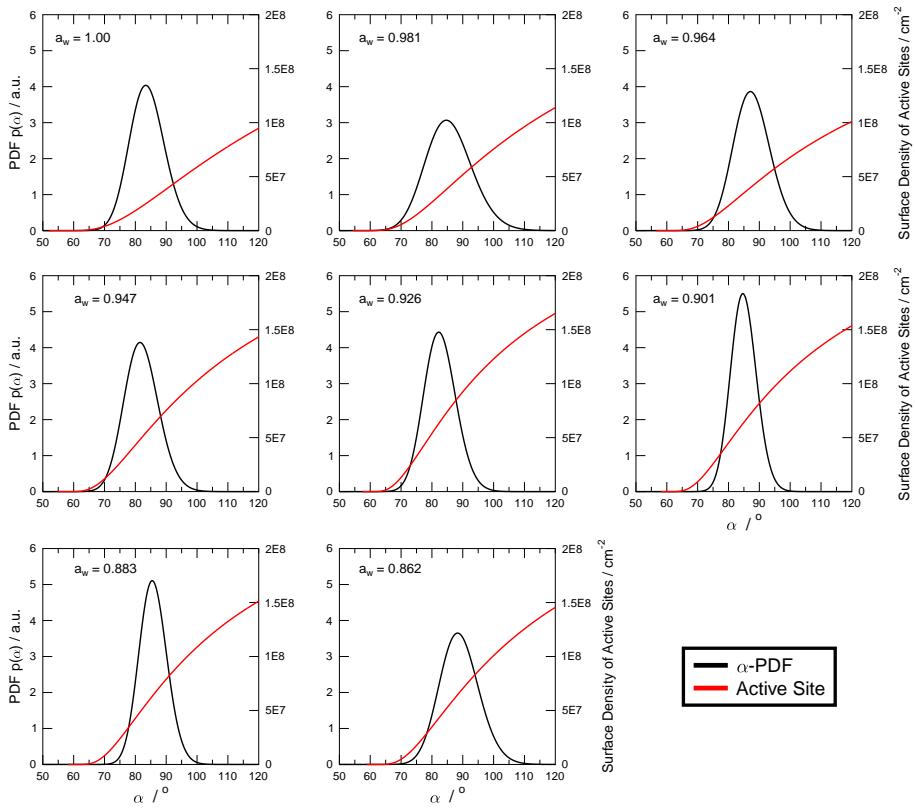
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**Fig. 1.** Experimentally derived median freezing temperatures with 10<sup>th</sup> and 90<sup>th</sup> percentiles and mean melting temperatures with  $\pm 1\sigma$  of Leonardite in water and aqueous  $(\text{NH}_4)_2\text{SO}_4$  droplets (panel a) and Pahokee peat in water and aqueous  $(\text{NH}_4)_2\text{SO}_4$  droplets (panel b) are shown as a function of  $(\text{NH}_4)_2\text{SO}_4$  wt%. Predicted ice melting curves are plotted as dashed lines (Clegg et al., 1998).



**Fig. 2.** PDF  $p(\alpha)$  (black line) and surface density of active sites distribution (red line) for water and aqueous  $(\text{NH}_4)_2\text{SO}_4$  droplets containing Leonardite for investigated  $a_w$  values.



**Fig. 3.** PDF  $p(\alpha)$  (black line) and surface density of active sites distribution (red line) for water and aqueous  $(\text{NH}_4)_2\text{SO}_4$  droplets containing Pahokee peat for investigated  $a_w$  values.

## References

Clegg, S. L., Brimblecombe, P., and Wexler, A. S.: Thermodynamic model of the system  $\text{H}^+ - \text{NH}_4^+ - \text{SO}_4^{2-} - \text{NO}_3^- - \text{H}_2\text{O}$  at tropospheric temperatures, *J. Phys. Chem. A*, 102, 2137–2154, doi:10.1021/jp973042r, 1998.