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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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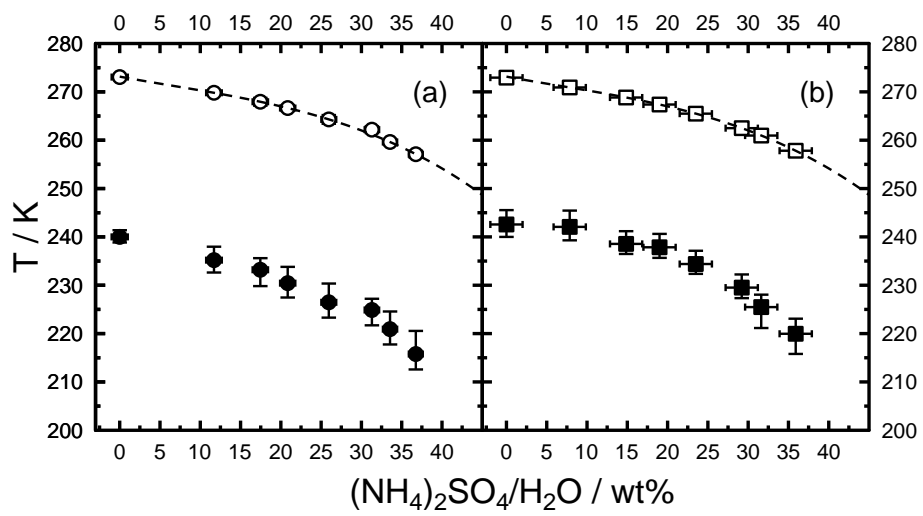


Fig. 1. Experimentally derived median freezing temperatures with 10th and 90th percentiles and mean melting temperatures with $\pm 1\sigma$ of Leonardite in water and aqueous $(\text{NH}_4)_2\text{SO}_4$ droplets (panel a) and Pahokee peat in water and aqueous $(\text{NH}_4)_2\text{SO}_4$ droplets (panel 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).

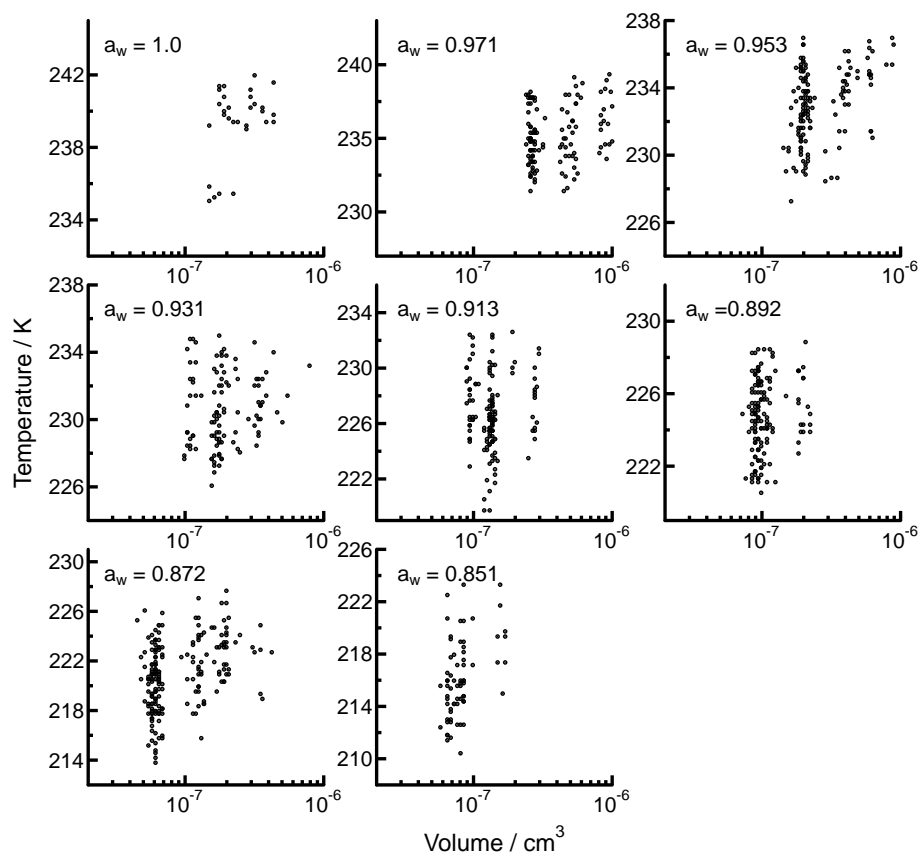


Fig. 2. Heterogeneous freezing temperatures of water and aqueous $(\text{NH}_4)_2\text{SO}_4$ droplets containing Leonardite particles shown as dots are plotted as a function of droplet volume for each investigated water activity.

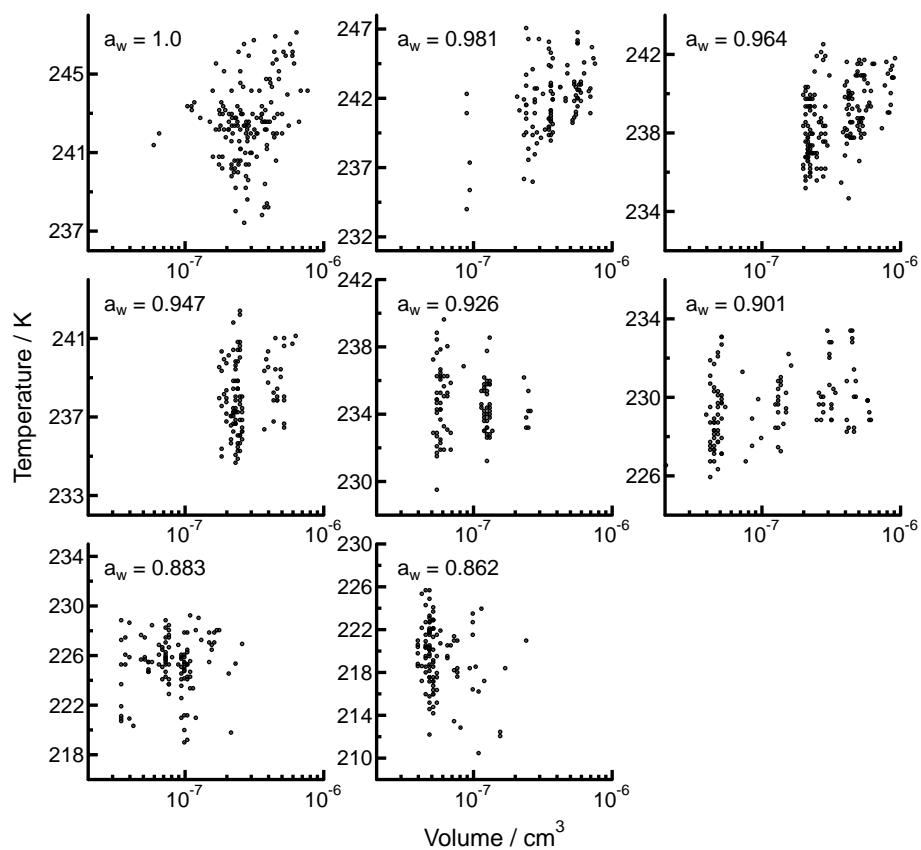


Fig. 3. Heterogeneous freezing temperatures of water and aqueous $(\text{NH}_4)_2\text{SO}_4$ droplets containing Pahokee peat particles shown as dots are plotted as a function of droplet volume for each investigated water activity.

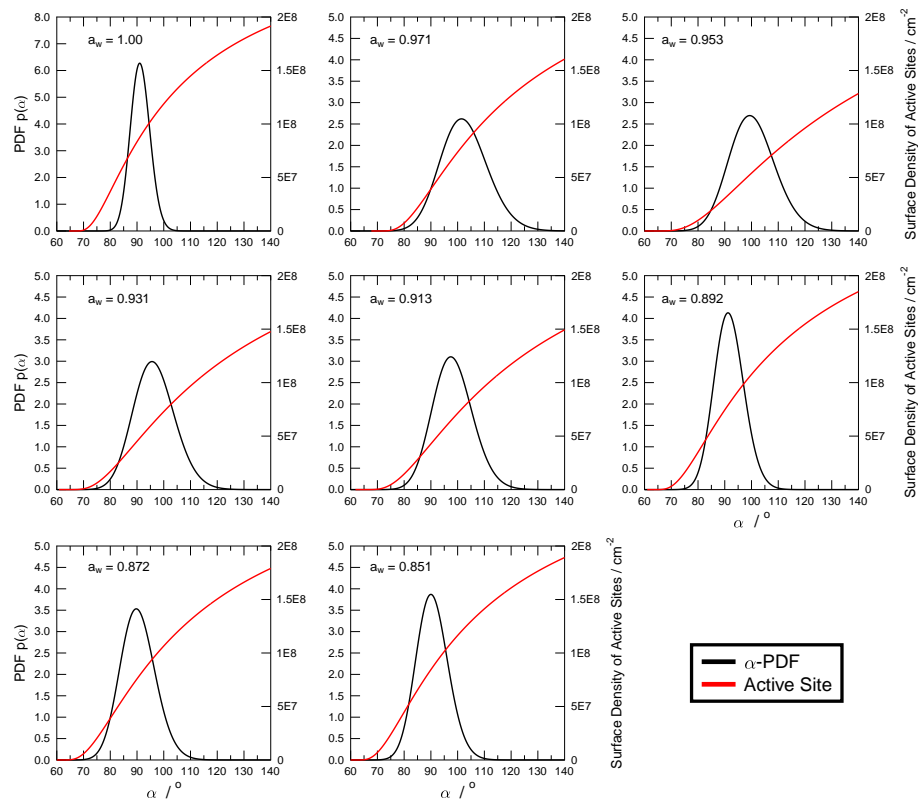


Fig. 4. PDF $p(\alpha)$ (black line) and surface density of active sites distribution (red line) for water and aqueous $(\text{NH}_4)_2\text{SO}_4$ droplets containing Leonardite for investigated a_w values. Note the different scale for the case of $a_w = 1$.

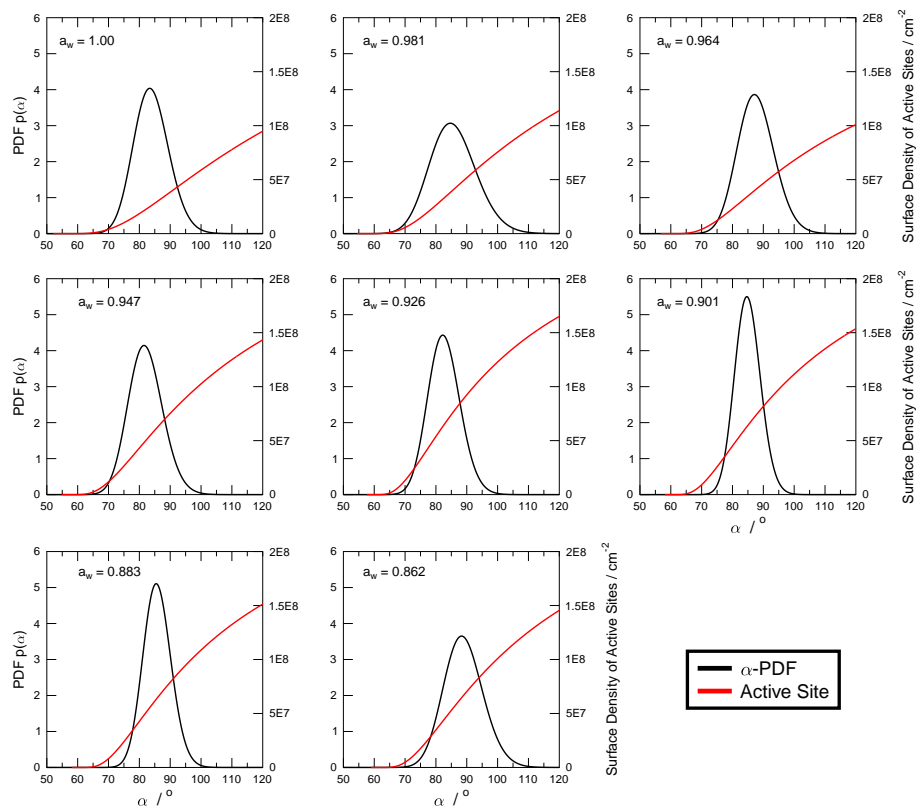


Fig. 5. PDF $p(\alpha)$ (black line) and surface density of active sites distribution (red line) for water and aqueous $(\text{NH}_4)_2\text{SO}_4$ droplets containing Pahokee peat for investigated a_w values.

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.