

Electronic Supplementary Information:
Initiation of the Ice Phase by Marine Biogenic Surfaces
in Supersaturated Gas and Supercooled Aqueous
Phases

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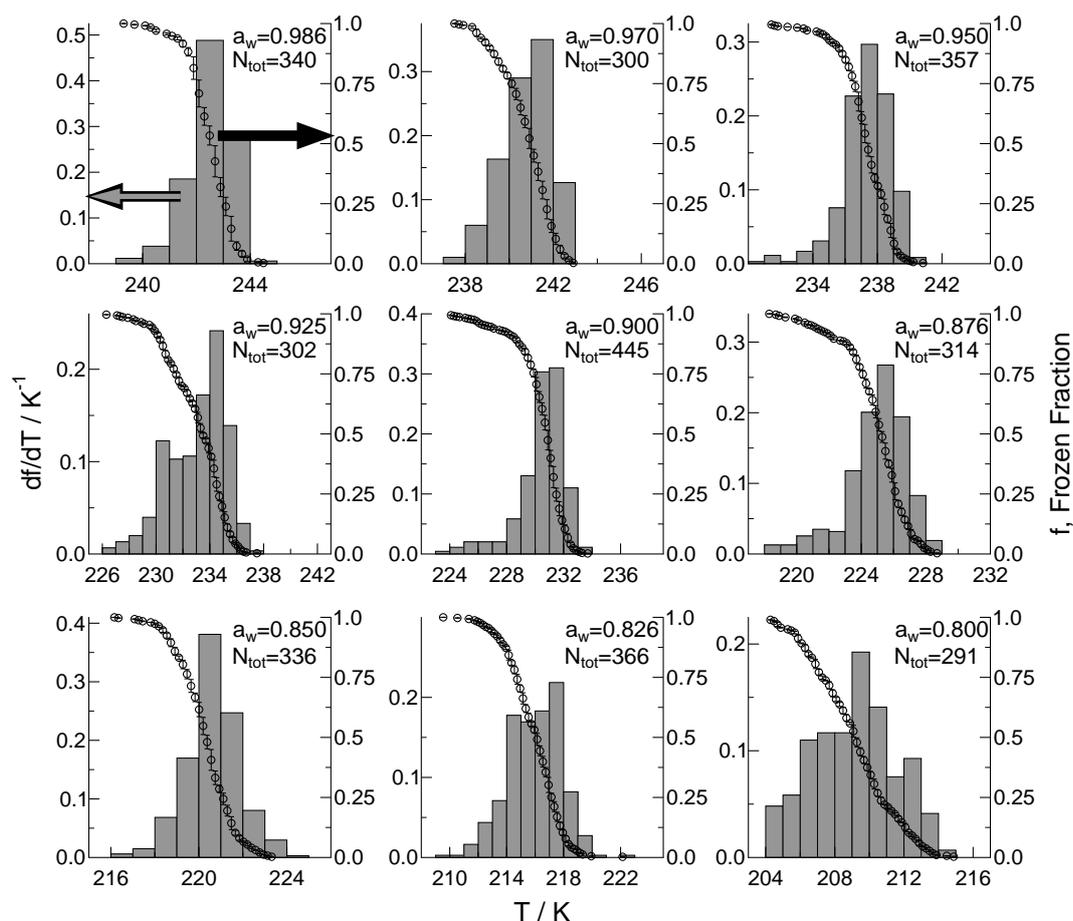


Figure S1. Summary of all observed immersion freezing events due to *N. atomus* cells as a function of a_w and T . The frozen fraction, f , of droplets in 0.2 K temperature increments is represented by black circles. Error bars indicate the range of f in a temperature increment of 0.2 K. Grey bars show the probability density histogram (PDH) binned in 1.0 K increments. For each panel, a_w and the total number of analysed droplets, N_{tot} , are given. The values for the PDH are given on the left y-axis and f on the right y-axis.

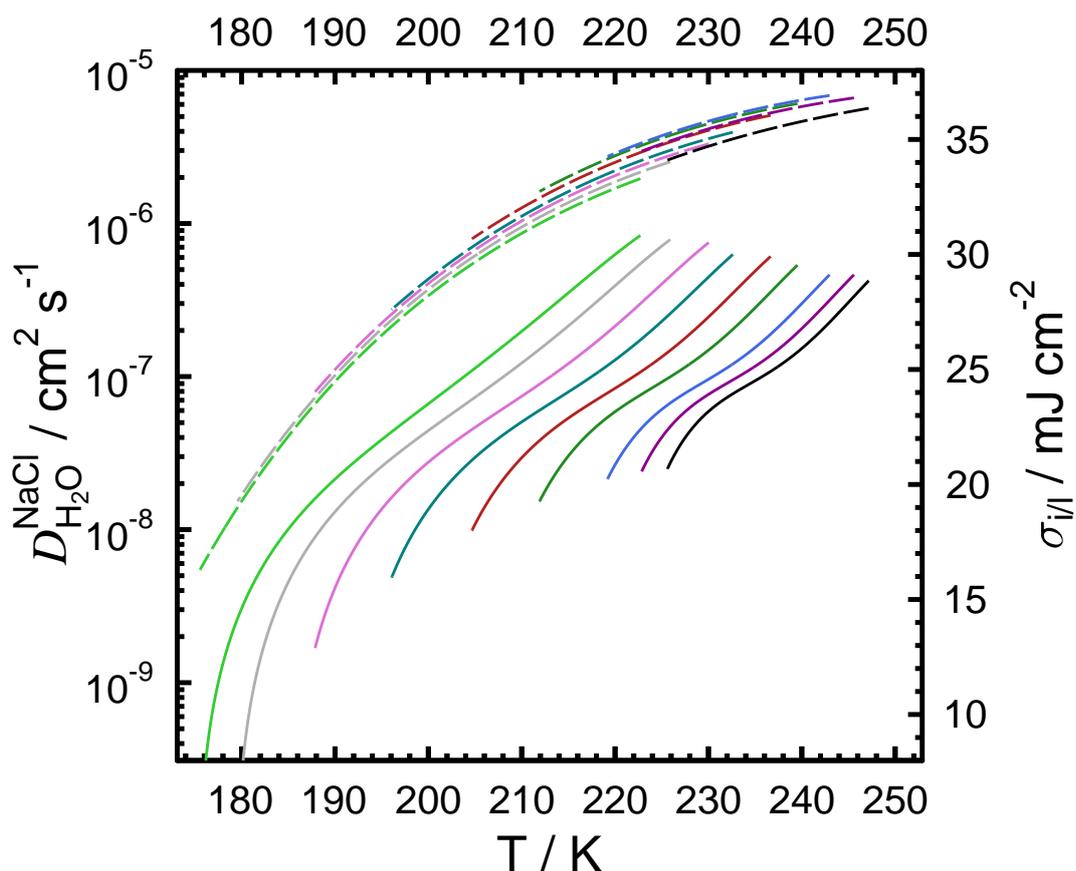


Figure S2. Thermodynamic variables employed in calculations of contact angles. In aqueous NaCl solution, the water diffusion coefficient, $D_{\text{H}_2\text{O}}^{\text{NaCl}}$, is given as dashed lines and the interfacial energy of ice, $\sigma_{i/l}$, is given by solid lines as a function of T and a_w . $D_{\text{H}_2\text{O}}^{\text{NaCl}}$ is derived from Kim and Yethiraj¹ and extrapolated to lower T . $\sigma_{i/l}^{\text{NaCl}}$ is derived from theoretical homogeneous ice nucleation rate coefficients² and employs $D_{\text{H}_2\text{O}}^{\text{NaCl}}$. Black, purple, blue, green, red, teal, magenta, grey, and lime colors correspond to a a_w of 0.986, 0.970, 0.950, 0.925, 0.900, 0.876, 0.850, 0.826, and 0.800.

References

- [1] J. S. Kim and A. Yethiraj, *J. Phys. Chem. B*, 2008, **112**, 1729–1735.
- [2] T. Koop, B. P. Luo, A. Tsias and T. Peter, *Nature*, 2000, **406**, 611–614.