Electronic Supplementary Material (ESI) for Soft Matter

Homo- and hetero-interactions between air bubbles and oil droplets measured by atomic force microscopy - Supporting information

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Dielectric data and Hamaker functions

Figure 1 shows the dielectric data used to calculate Hamaker functions. The Lifshitz method was used to perform the calculations.[1] Figure 2 shows the effect of using the different water constructions on the resulting Hamaker function for air-water-TD, at different salt concentrations.

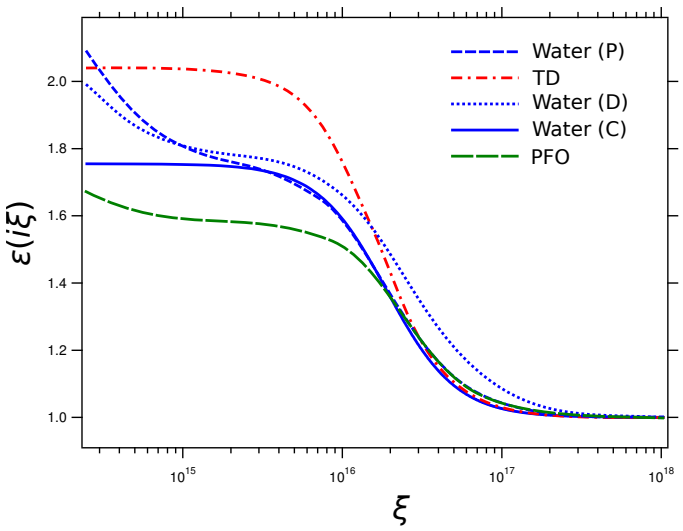

Figure 1: The dielectric constructions for the materials used in these experiments which were used to calculate Hamaker functions. For the three water functions, 'P' is the Parsegian-Weiss construction,[2] 'D' is the construction of Dagastine *et al.*[3] and 'C' is the Cauchy construction, using values from Hough and White.[4] 'TD' refers to tetradecane, and 'PFO' to perfluorooctane.

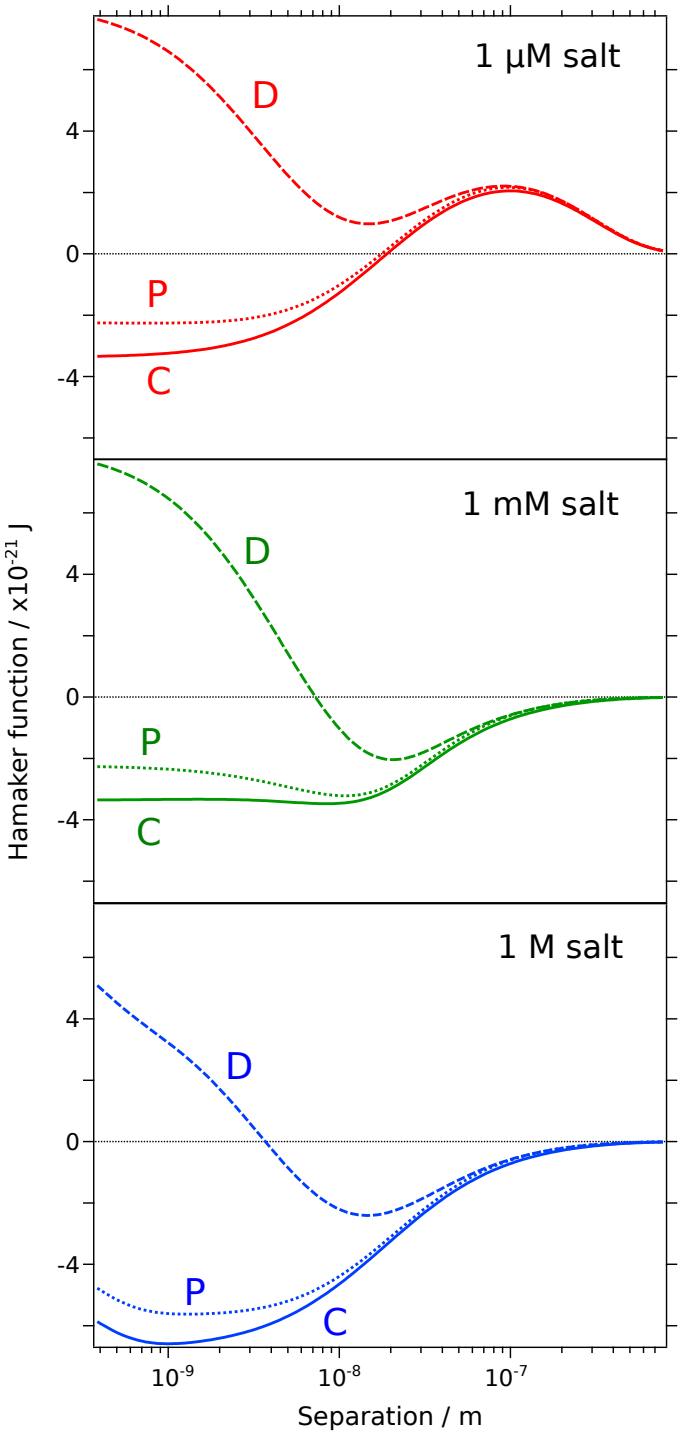

Figure 2: Calculated Hamaker functions for air-water-TD using different constructions for the dielectric function of water, and at different salt concnetrations.

References

[1] I. E. Dzaloshinskii, E. M. Lifshitz and L. P. Pitaerskii, *Adv. Phys.*, 1961, **10**, 165–209.

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[3] R. R. Dagastine, D. C. Prieve and L. R. White, *J. Colloid Interface Sci.*, 2000, **231**, 351–358.

[4] D. B. Hough and L. R. White, *Adv. Colloid Interface Sci.*, 1980, **14**, 3–41.