

# Electrode Screening by Ionic Liquids

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## Supplementary Information

### Effects of probe size

Figures 1, 2 and 3 show the free energy profiles for small probes (of the size of a chloride ion with  $\sigma_{PrPr} = 0.377\text{nm}$ ). The corresponding curves for large probes with  $\sigma_{PrPr} = 0.5\text{nm}$  are shown as dashed lines with error bars. The differences between the two sizes are quantitative rather than qualitative and the curves show similar oscillations corresponding to the ionic liquid layers. The differences are least for the neutral probes, with somewhat larger differences for negative probes and the greatest changes for positive probes. The contact positions of smaller probes are nearer to the wall.

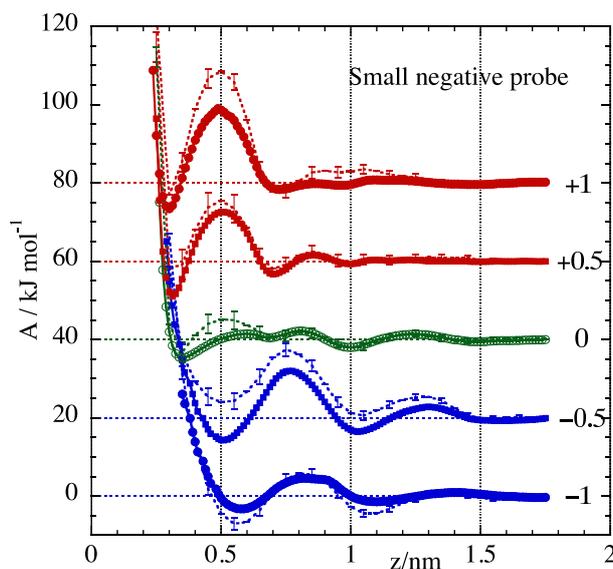


Figure 1: Comparison of free energy profiles for small and large negatively charged probes. The bold curves pertain to the small probes and the dashed curves to the large probes.

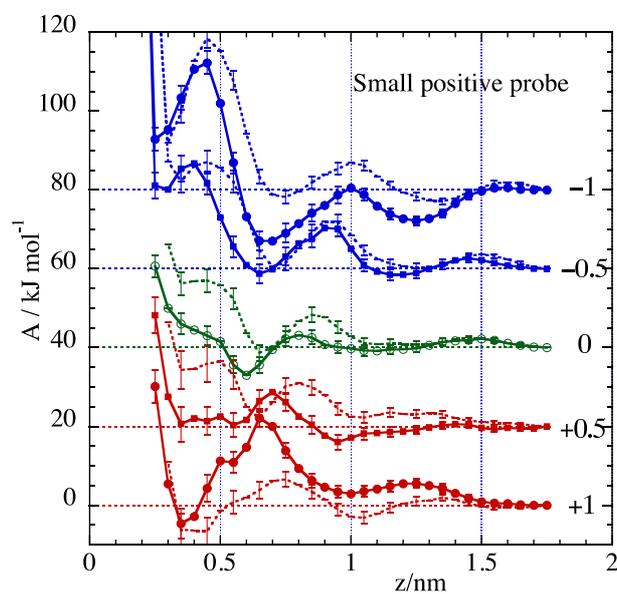


Figure 2: Comparison of free energy profiles for small and large positively charged probes. The bold curves pertain to the small probes and the dashed curves to the large probes

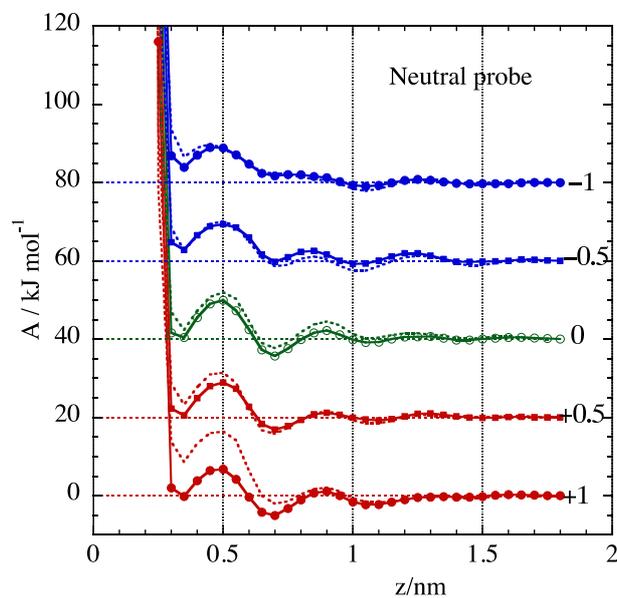


Figure 3: Comparison of free energy profiles for small and large neutral probes. The bold curves pertain to the small probes and the dashed curves to the large probes