Electronic Supplementary Information for

Molecularly Clean Ionic Liquid/Rubrene Single-Crystal Interfaces Revealed by Frequency Modulation Atomic Force Microscopy

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Figs. S1 and S2:
The FM-AFM images used for counting the number of defect sites.

Fig. S3:
An FM-AFM image of rubrene (001) taken in water.

Fig. S4:
The force plotted with respect to the tip–sample distance calculated from the frequency shift curves in Fig. 4.

Reference S1:
J. E. Sader and S. P. Jarvis, *Appl. Phys. Lett.*, 2004, **84**, 1801.

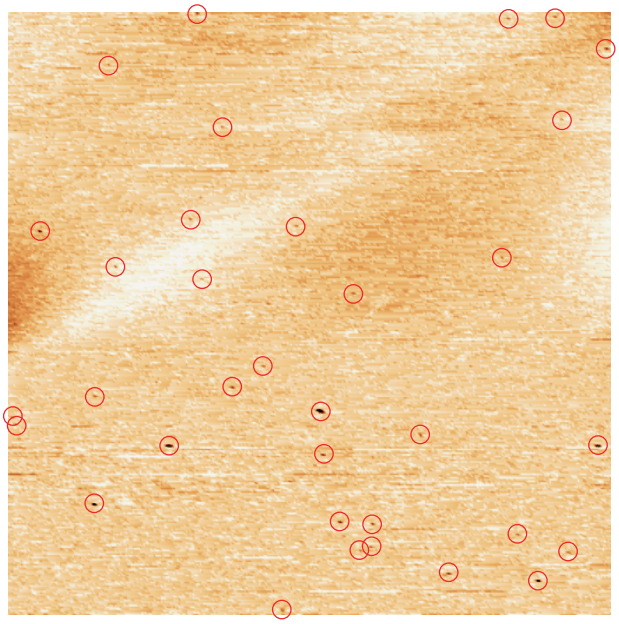

Fig. S1. The FM-AFM image of Fig. 1(b) (2×2 μm^2) with circles showing the position of defect sites. There were 34 identified defects, resulting in a defect density of 8.5×10^8 /cm^2.

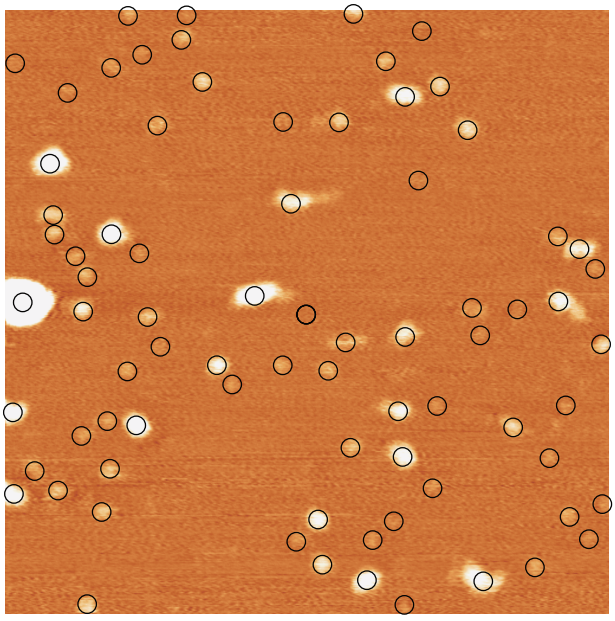

Fig. S2. The FM-AFM image of Fig. 1(c) (300×300 nm^2) with circles showing the position of defect sites. There were 77 identified defects, resulting in a defect density of 8.6×10^{10} /cm^2.

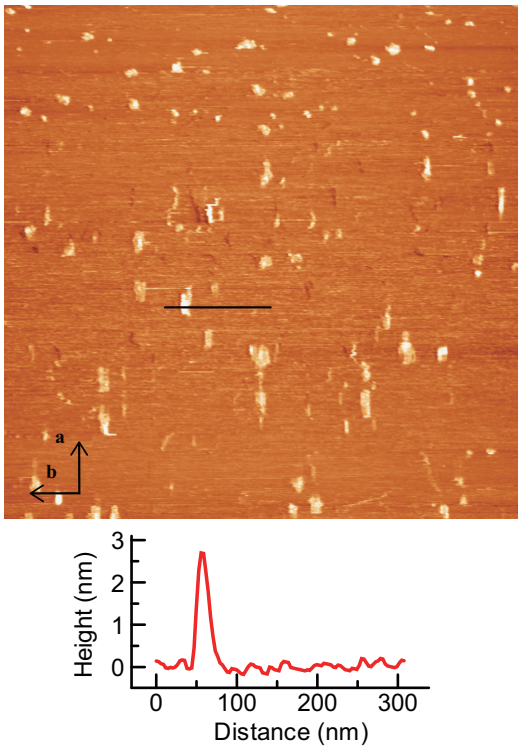

Fig. S3. Typical FM-AFM image (1.5 × 1.5 μm^2) of the rubrene surface taken in water. Line profile along the solid line in the image is shown below. The following imaging conditions were used; Δf = +100 Hz, f_0 = 138.8 kHz, and A_{p-p} = 0.50 nm.

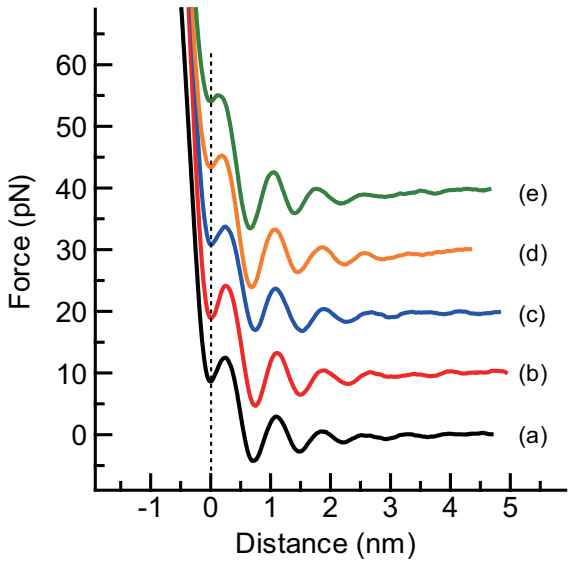

Fig. S4. (a)–(e) The force plotted with respect to the tip–sample distance calculated from the frequency shift curves in Fig. 4 using the method of Sader and Jarvis.[S1] Each curve is laterally shifted to align the local minimum nearest to the rubrene surface and vertically shifted by 10 pN × n (n = 0, 1, 2, 3, 4) for clarity.