Electronic Supplementary Material (ESI) for Soft Matter


# Liquid Adsorption at Surfaces Patterned with Cylindrical Nano-Cavities.

***Supporting Material***

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## Description of X-ray reflectivity (XR) fit procedure

In the initial fitting procedure, we varied the thickness and the electron density of box 3, which corresponds to liquid coated walls. While, in principle, this would permit one to obtain an independent measure of amount of liquid adsorbed at the bottom of the cavity and on the walls, we found that for $\Delta T$ >8K this fit procedure was relatively insensitive to the amount of liquid in box 3. For this reason, we fixed the electron density in this box in subsequent fits according to the calculated wall adsorption, as estimated below. With this approach, the fit provided information on the PFMC adsorption at the bottom of the cavity (box 2) and on the top surface (box 4).

The wetting layer on the top surface was described by a box whose thickness was a fit parameter with an electron density constrained to $\rho_4 / \rho_{PFMC}$ =0.63 during the cavity filling process, and it was a free, albeit constrained, fit parameter within the range 0.63 to 1.0 after the cavities were filled. This approach is based on assumption that liquid layer covers the entire area between cavities (63% of the total surface) in a planar manner as long as the cavities were not filled. However, the wetting layer gradually becomes laterally uniform with $\rho_4$ approaches $\rho_{PFMC}$ at small $\Delta T$ after the cavities were filled.

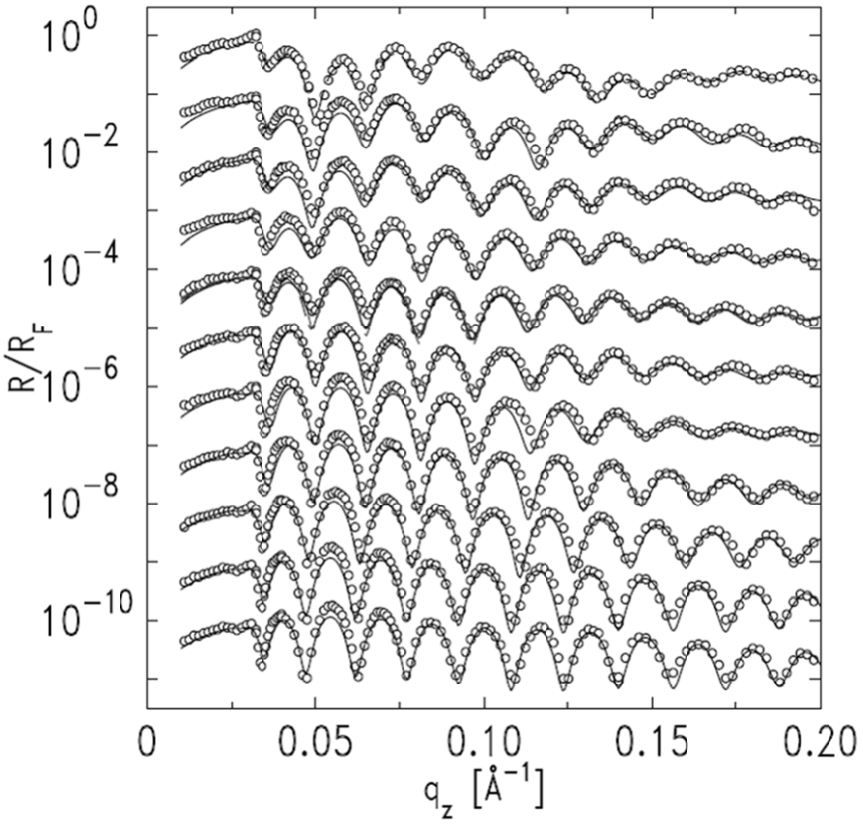


Fig. S1. Representative X-ray reflectivity profiles (circles) obtained from dry patterned surface (top), and for various ΔT in the presence of saturated PFMC vapor; shown XR profiles corresponds to the dry state (top curve) and to the wet states (second from the top and down are for $\Delta T$= 15K, 11.1K, 8.2K, 4.2K, 2.5K, 1.1K, 0.7K, 0.415K, 0.115K, 0.024K respectively. The solid lines are obtained from fitting the model electron density profile to the XR data, as described in the text.