

Title: Undulation Instabilities in the Meniscus of Smectic Membranes

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Abstract: Using optical microscopy, phase shifting interferometry, and atomic force microscopy, we characterize the undulated structures which appear in the meniscus of freestanding ferroelectric smectic-C* films. We demonstrate that these periodic structures correspond to undulations of the smectic-air interface. The resulting striped pattern disappears in the untilted smectic-A phase. The modulation amplitude and wavelength of the instability both depend on meniscus thickness. We study the temperature evolution and propose a model that qualitatively accounts for the observations.

KeyWords Plus: Liquid-Crystals; Layer Structure; Films; Strain

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