Electronic Supplementary Material (ESI) for Nanoscale

Electronic Supplementary Information

"Nano-windmill" driven by a flux of water vapour: comparison to the rotating ATPase

Patrycja Nitoń, Andrzej Żywociński, Marcin Fiałkowski and Robert Hołyst

Institute of Physical Chemistry of the Polish Academy of Sciences
44/52 Kasprzaka Street, 01-224 Warsaw, Poland

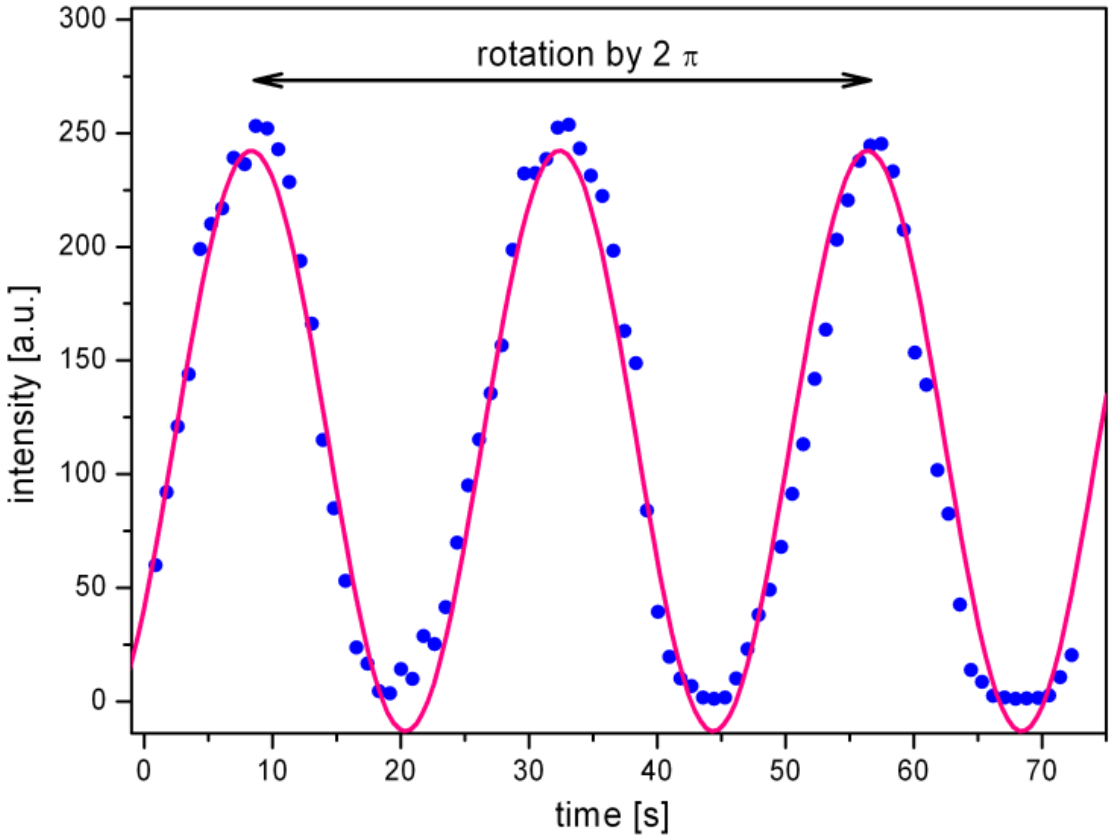

Fig. S1 Intensity of light reflected from the central part of rotating domain in the monolayer measured as a function of time. Intensity was measured by analysis of images recorded with frequency of 1 Hz. Results were fitted to a sine function and the period of rotation was found as the fitted parameter. Plot shows the results recorded at 293.15 K (20°C) and the period 48 s was found.

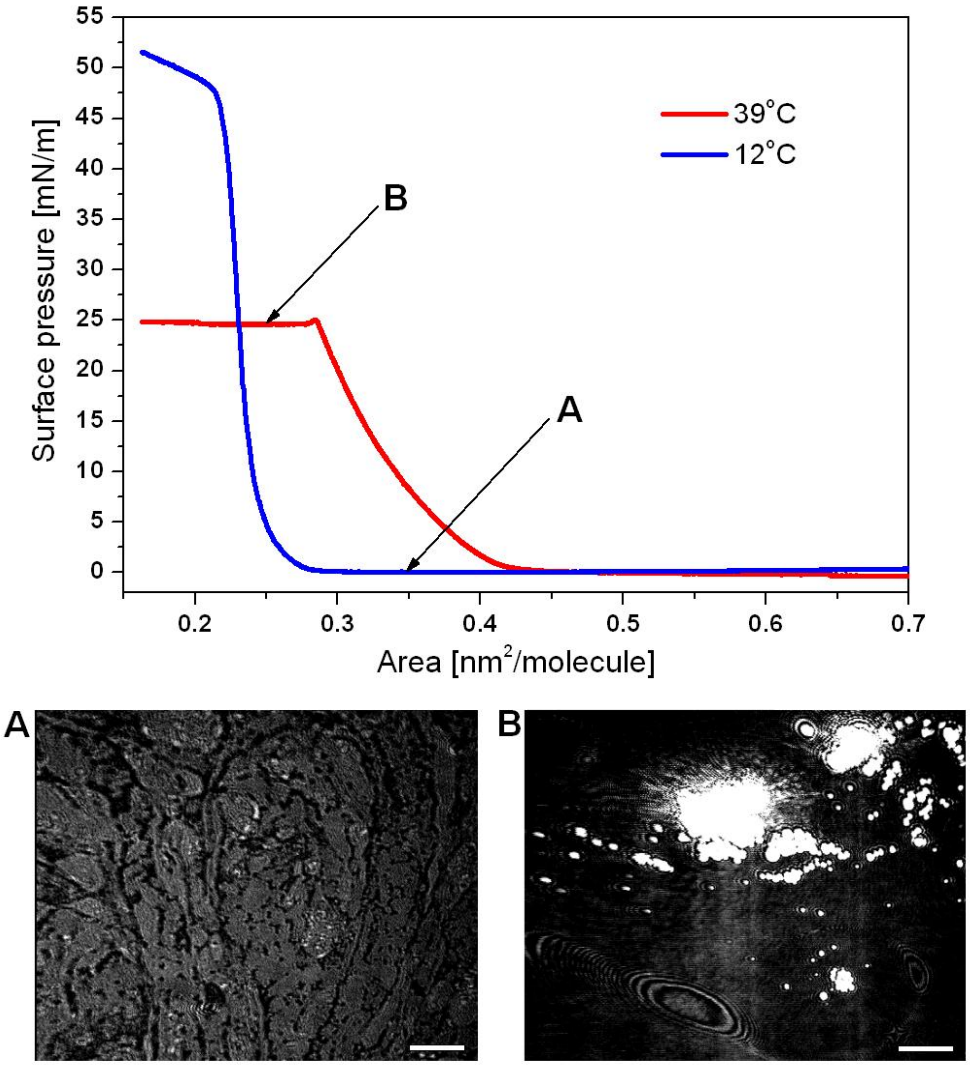

Fig. S2 Isotherm of the ferroelectric liquid crystal (surface pressure vs. area per molecule) at the air/water interface at 285.2 K (12°C) and 312.2 K (39°C); letters A and B in the plot indicate the conditions at which the BAM images, shown below the plot, were recorded: A – rafts of solid phase in coexistence with gas phase or uncovered surface of water, B – collapse of the monolayer and crystallization of the rotating liquid phase to random aggregates of solid phase; white bars in the images show the length of 500 μm.

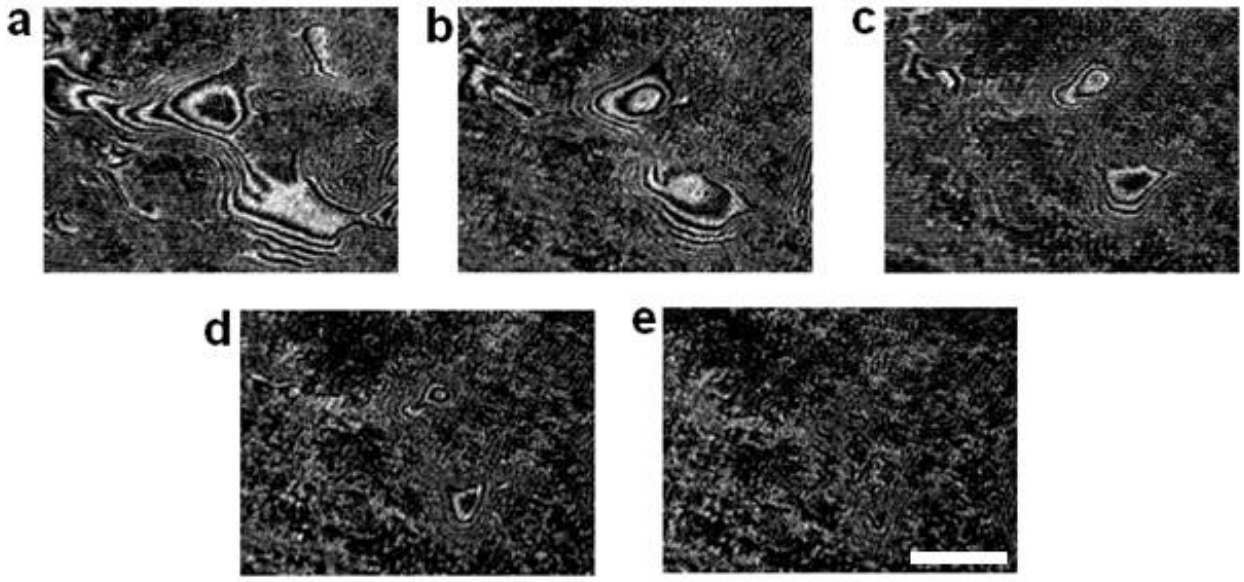

Fig. S3 Sequence of the images recorded with 60 s time delay showing a disappearance of oscillatory pattern after decrease of temperature below 285.2 K (12°C); the rotating liquid phase vanishes leaving a texture which corresponds to coexistence of liquid phase and solid phase; white bar in the image e corresponds to length of 500 μm.