

Supporting Information for: Vesicle Origami and the Influence of Cholesterol on Lipid Packing

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Brewster-angle Microscopy

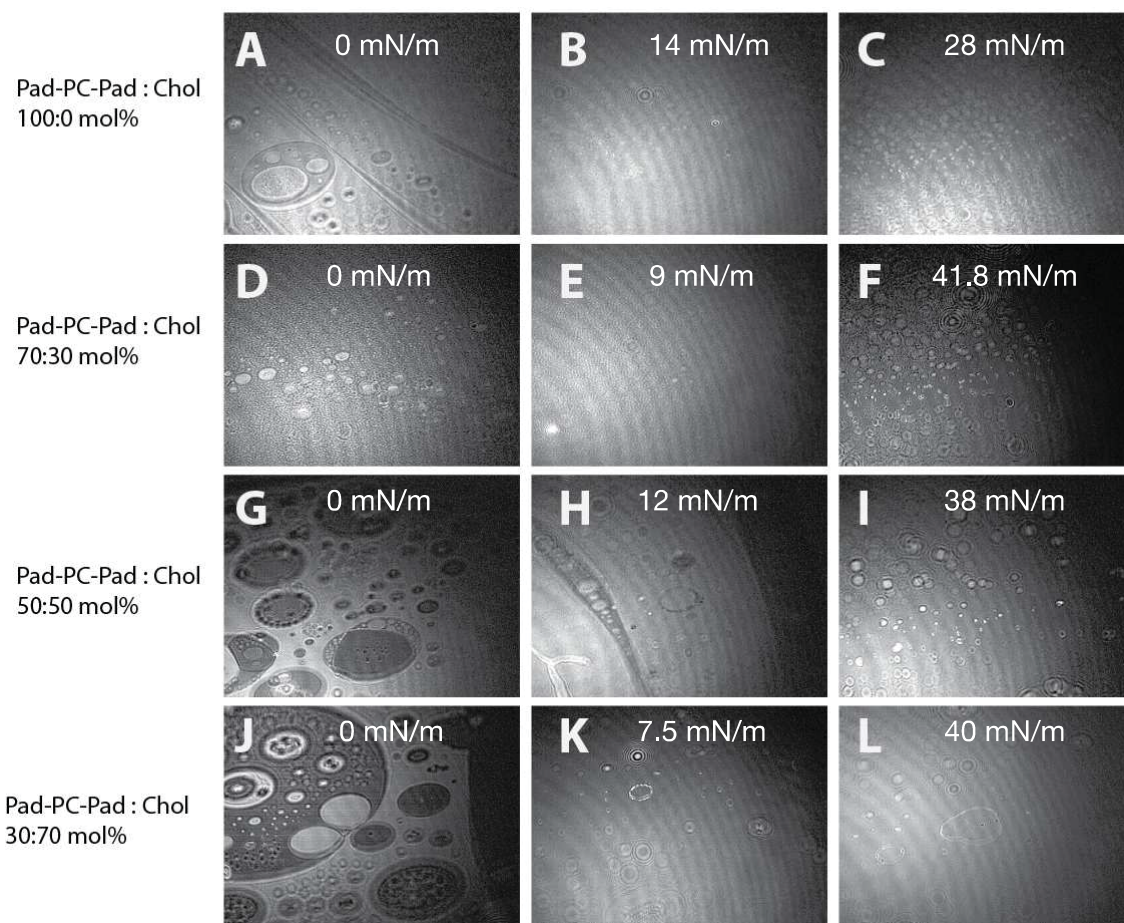


Figure S1. Brewster angle micrographs of Pad-PC-Pad:cholesterol monolayers at different surface pressures at room temperature. Each micrograph is scaled to 535 μm x 510 μm .

SAXS and WAXS Bilayer Data

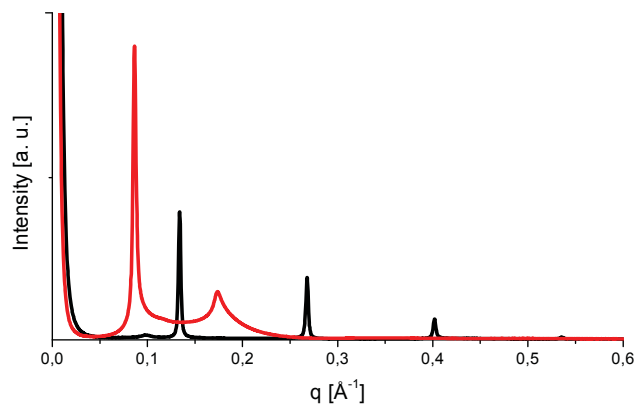


Figure S2: Small Angle X-Ray Scattering pattern of Pad-PC-Pad (20 wt% lipid dispersion in water, black line – 15 °C, red line – 40 °C) showing the interdigitation below the main transition temperature $T_m = 37$ °C and the absence of interdigitation above T_m .

Table TS1: Peak positions of Pad-PC-Pad in Small-Angle X-Ray Scattering.

Pad-PC-Pad	q_1 [Å ⁻¹]	q_2 [Å ⁻¹]	q_3 [Å ⁻¹]	q_4 [Å ⁻¹]	q_1^* [Å ⁻¹]	q_2^* [Å ⁻¹]
15 °C lamellar	0.134	0.268	0.402	0.536		
40 °C lamellar					0.087	0.175

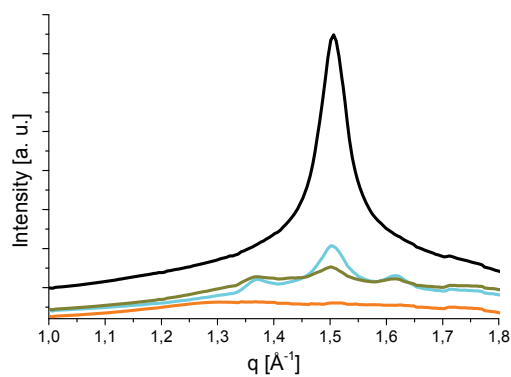


Figure S3: WAXS of 20 wt% Pad-PC-Pad dispersions in water at 15 °C (black - Pad-PC-Pad, cyan - Pad-PC-Pad with 10 mol% cholesterol, dark yellow - Pad-PC-Pad with 20 mol% cholesterol, orange - Pad-PC-Pad with 40 mol% cholesterol).

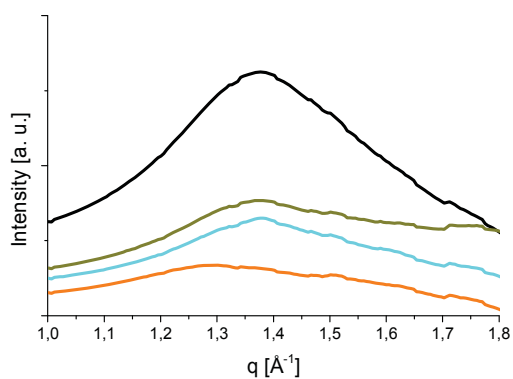


Figure S4: WAXS of 20 wt% Pad-PC-Pad dispersions in water at 40 °C (black - Pad-PC-Pad, cyan - Pad-PC-Pad with 10 mol% cholesterol, dark yellow - Pad-PC-Pad with 20 mol% cholesterol, orange - Pad-PC-Pad with 40 mol% cholesterol).

Table TS2: Peak positions in WAXS patterns and calculated cross-sectional areas per chain.

sample	T [°C]	q_{1xy} [\AA^{-1}]	q_{2xy} [\AA^{-1}]	q_{3xy} [\AA^{-1}]	A_0 [\AA^2]
Pad-PC-Pad	15	1.506			20.1
	40	1.38 halo			23.9
Pad-PC-Pad 10 mol% Cholesterol	15	1.377	1.504	1.615	20.6
	40	1.37 halo			24.3
Pad-PC-Pad 20 mol% Cholesterol	15	1.365	1.501	1.615	20.7
	40	1.35 halo			25.0