pH-driven Ordering Transitions in Liquid Crystal induced by Conformational Changes of Cardiolipin

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Figure S1. Optical micrographs (crossed polars) of 5CB hosted in gold grids supported on DMOAP-treated glass slides in contact with A) water B) aqueous solution of 0.5 mM CL vesicles. Scale bar = $40 \mu m$.



Figure S2. Cross-polarized optical images of 5CB films with an aqueous solution of (A) 0.1 mM NaOH) and (C) 0.1 mM HCl. (B) and (D) represent the 12 h incubation and immediately effect of 5CB films corresponds to A and B respectively after addition of an aqueous solution of 0.5 mM CL. Scale bar = $40 \mu m$.



Figure S3. Optical micrographs (crossed polars) of 5CB films in contact with an aqueous solution of CL of A-F) 0.1 mM, G-L) 0.03 mM and M-R) 0.003 mM at pH 2 – 7. Scale bar = $40 \mu m$.



Figure S4: Optical micrographs (crossed polars) of 5CB films in contact with an buffer solution (pH = 7) of 0.1 mM CL with A, E) 5 mM, B, F) 10 mM, C, G) 50 mM and D, H) 100 mM aqueous solution of Ca²⁺ and Na⁺, respectively. Graph showing the average gray scale intensity of optical images of 5CB at CL laden aqueous LC interface on exposure with increasing CaCl₂ and NaCl concentration. Scale bar = 40 μ m.



Figure S5. Surface pressure (π)-area per molecule (A_m) isotherm for cardiolipin on A) pH 2, B) pH 8 and C) pH 8 (5mM Ca²⁺) based subphase at 25 °C.



Figure S6. PM-IRRAS spectra generated from head group region of CL monolayers prepared at pH 2, pH 8 and pH 8 in presence of Ca²⁺onto SAM prepared using mercaptohexanoic acid supported on a uniformly deposited gold film.



Figure S7. Deconvoluted spectra in the interfacial C=O stretching region of the CL at (a) pH 2 and (b) pH 8. (C) PM-IRRAS of 6-mercaptohexanoic acid terminated SAMs indicating a mixture of non-hydrogen bonded (1736 cm⁻¹) and hydrogen-bonded (1716 cm⁻¹) carbonyl groups at the surface of SAMs.