

Electronic Supporting information

Surfactants as Mesogenic Agents in Layer-by-Layer Assembled Polyelectrolyte/Surfactant Multilayers: Nanoarchitected "Soft" Thin Films Displaying a Tailored Mesostructure.

*Esteban Piccinini,^a Jimena S. Tuninetti,^a Joseba Irigoyen Otamendi,^b Sergio E. Moya,^b
Marcelo Ceolín,^a Fernando Battaglini,^c Omar Azzaroni^{a,*}*

^a Instituto de Investigaciones Físicoquímicas Teóricas y Aplicadas (INIFTA) – Departamento de Química, Facultad de Ciencias Exactas, Universidad Nacional de La Plata – CONICET, Suc. 4, CC 16, La Plata, Argentina.

^b Soft Matter Nanotechnology Group, CIC biomaGUNE. Paseo Miramón 182, 20009 San Sebastián, Gipuzkoa, Spain.

^c INQUIMAE, Departamento de Química Inorgánica, Analítica y Química Física, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Ciudad Universitaria, Pabellón 2 C1428EHA, Buenos Aires, Argentina.

*Corresponding Author: Omar Azzaroni. E-mail: azzaroni@inifta.unlp.edu.ar.

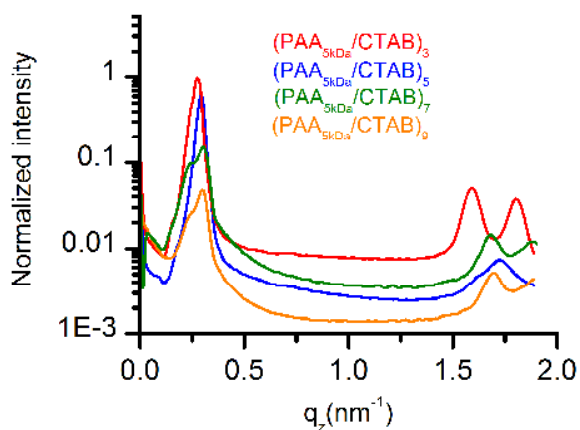


Figure S1. Out-of-plane scattering profiles extracted along the q_z direction (at $q_y = 0.16 \text{ nm}^{-1}$) from the GISAXS patterns of $(\text{PAA}_{5\text{kDa}}/\text{CTAB})_n$ multilayers for increasing number of layers.

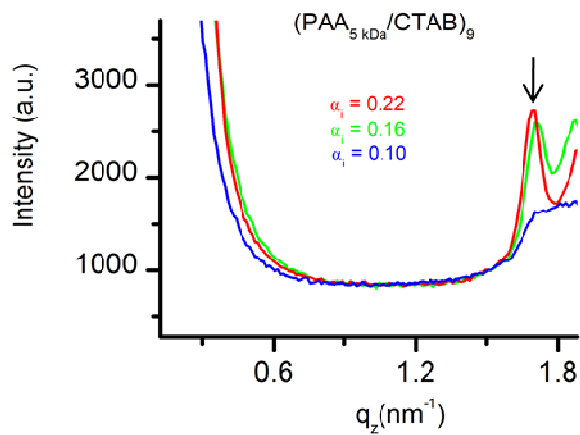


Figure S2. Out-of-plane scattering profiles extracted along the q_z direction (at $q_y = 0.16 \text{ nm}^{-1}$) from the GISAXS patterns of a $(\text{PAA}_{5 \text{ kDa}}/\text{CTAB})_9$ film measured at different angle of incidence (α_i). It can be seen a diminution of the diffraction intensity coming from the lamellar mesophase by decreasing the angle of incidence. This result suggests that the lamellar mesophase is mainly confined in the first layers of the film.

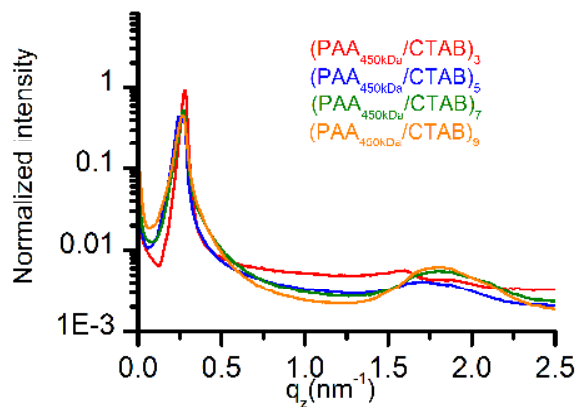


Figure S3. Out-of-plane scattering profiles extracted along the q_z direction (at $q_y = 0.16 \text{ nm}^{-1}$) from the GISAXS patterns of $(\text{PAA}_{450 \text{ kDa}}/\text{CTAB})_n$ multilayers for increasing number of layers.

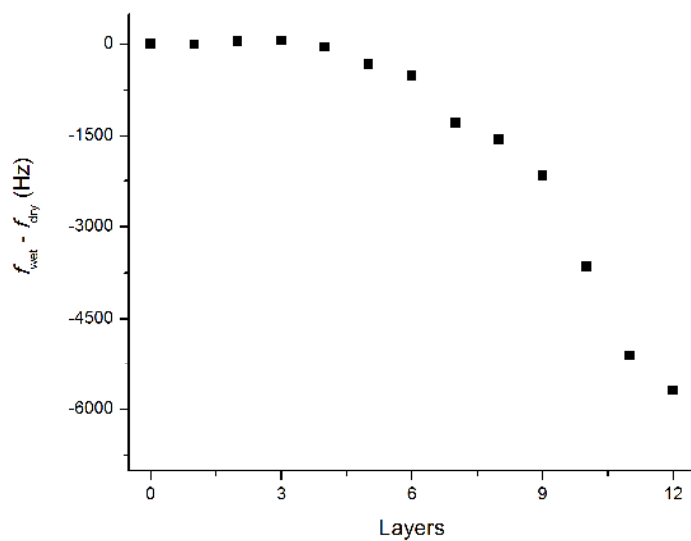


Figure S4. Microgravimetric characterization of the water uptake during multilayer growth. Experimental information was obtained by direct comparison of measurements performed in "dry state" and frequency changes detected during in-situ measurements.

Table S1. Water content of multilayers, as estimated by QCM

Number of deposition cycles	Water content (%)
1	37
3	32
5	31
7	24
9	21