Electronic Supporting Information

pH-responsive ion transport in polyelectrolyte multilayers with strong- and weak acid repeat units.

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Contents

Quartz crystal microbalance characterization

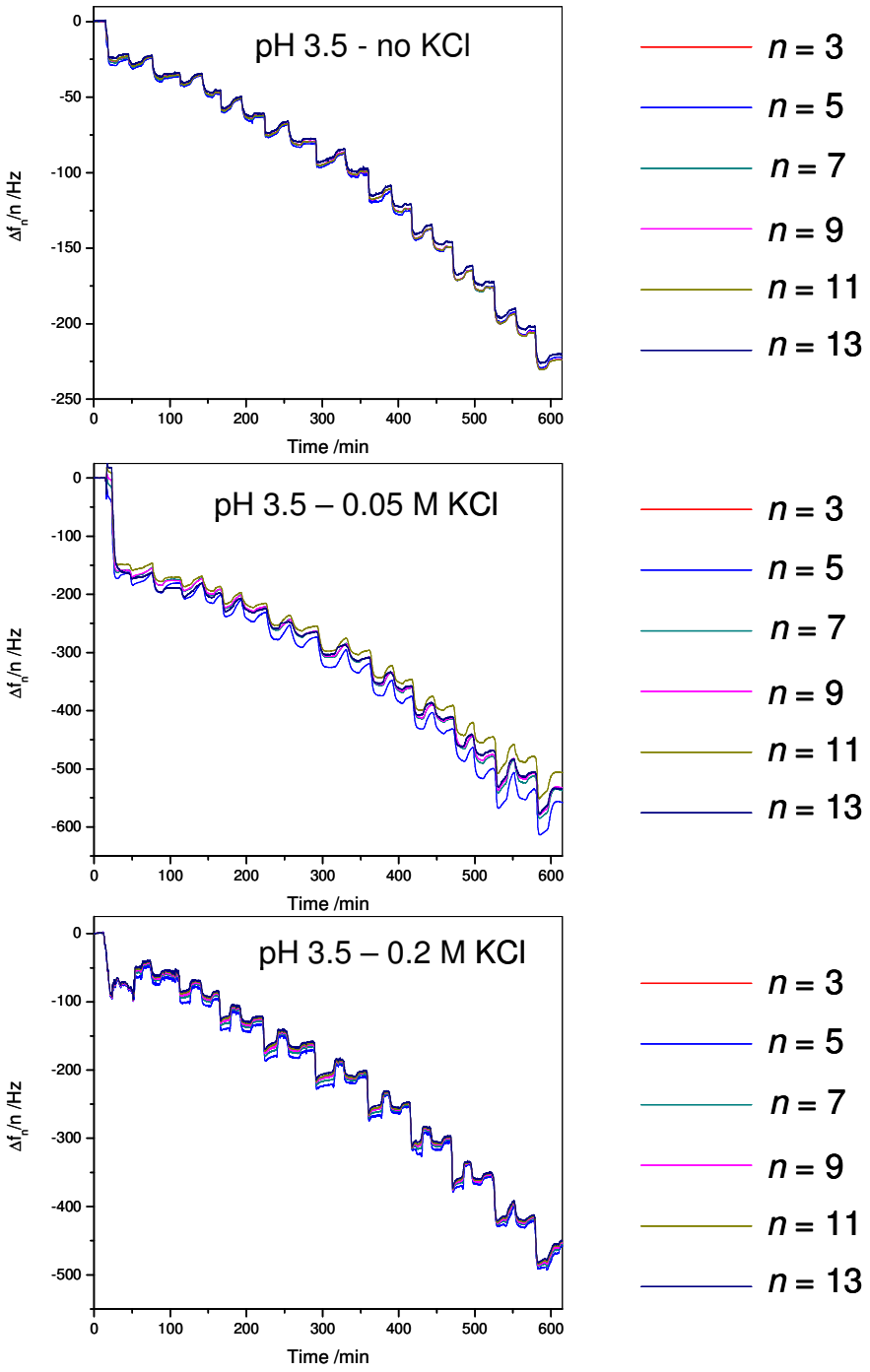

Figure S1. Representation of normalized frequency (Δf/*n*) at different overtones obtained during the multilayer growth at pH 3.5.

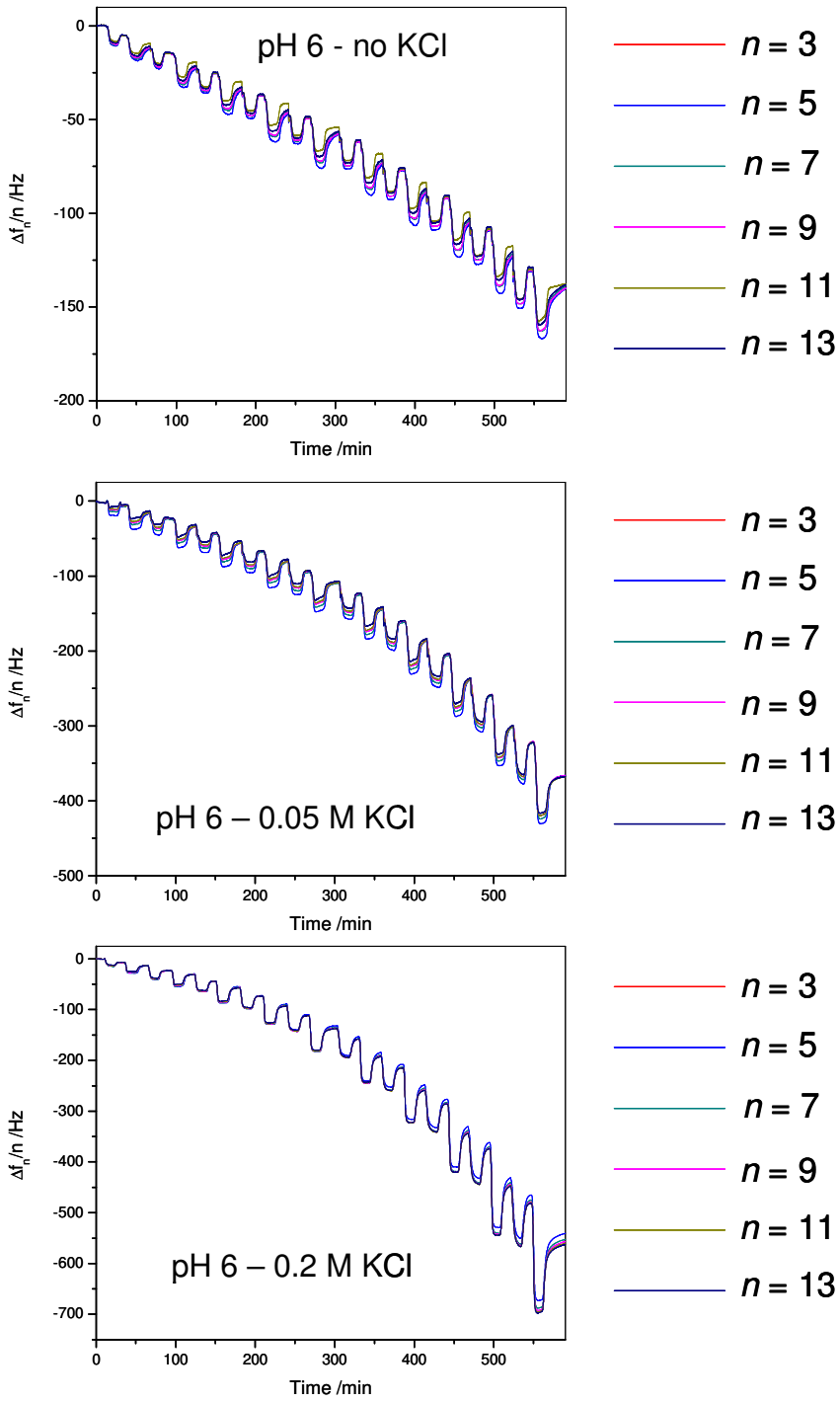

Figure S2. Representation of normalized frequency (Δf/*n*) at different overtones obtained during the multilayer growth at pH 6.

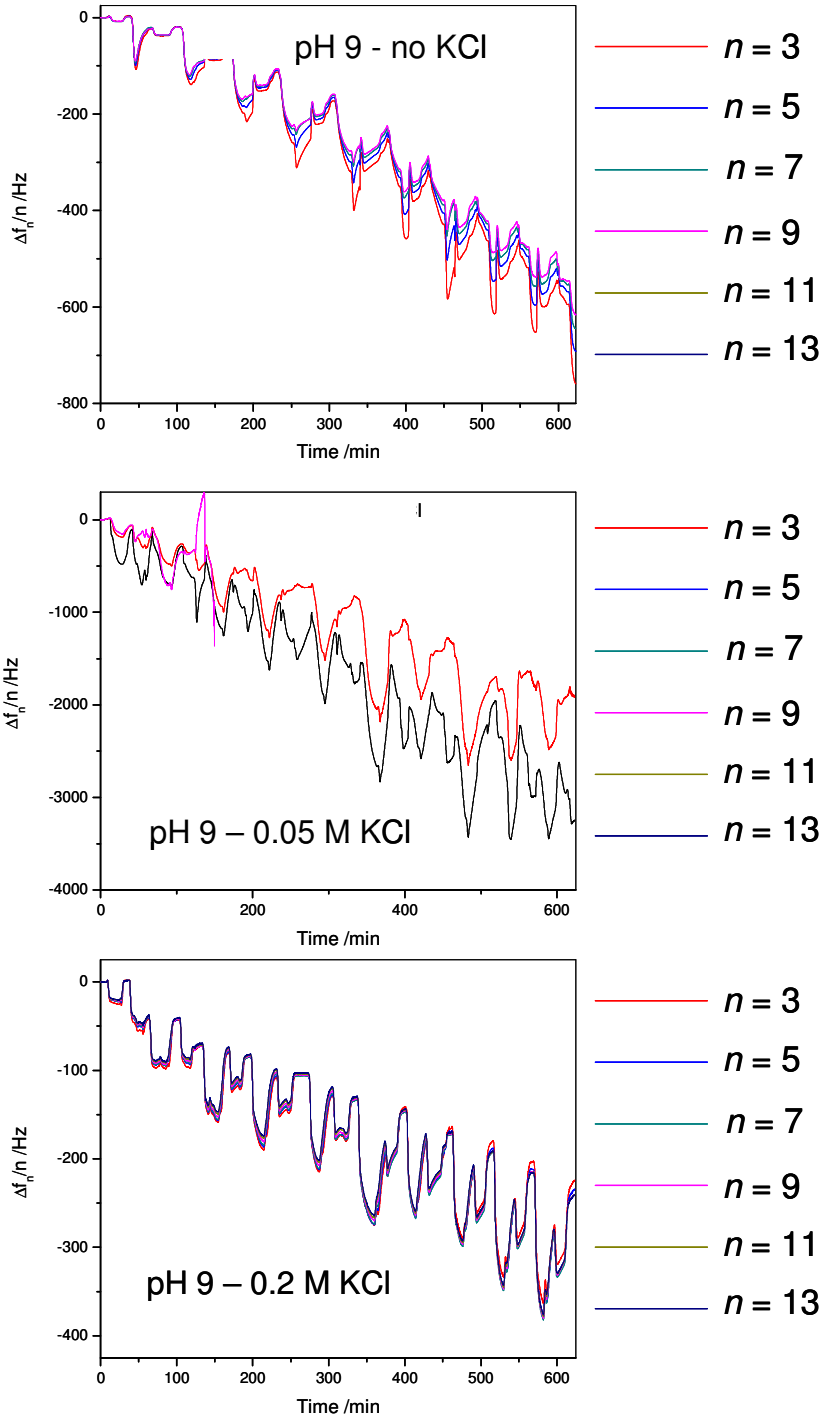

Figure S3. Representation of normalized frequency (Δf/*n*) at different overtones obtained during the multilayer growth at pH 9.

Water content of multilayers

Hydration or water content of the multilayers estimated from the areal mass obtained with QCM-D (m_{QCM}, wet mass) and SPR (m_{SPR}, dry mass) experiments by using the equation:[1]

$$\text{Hydration (\%)} = \frac{(m_{QCM} - m_{SPR})}{m_{QCM}} \times 100$$

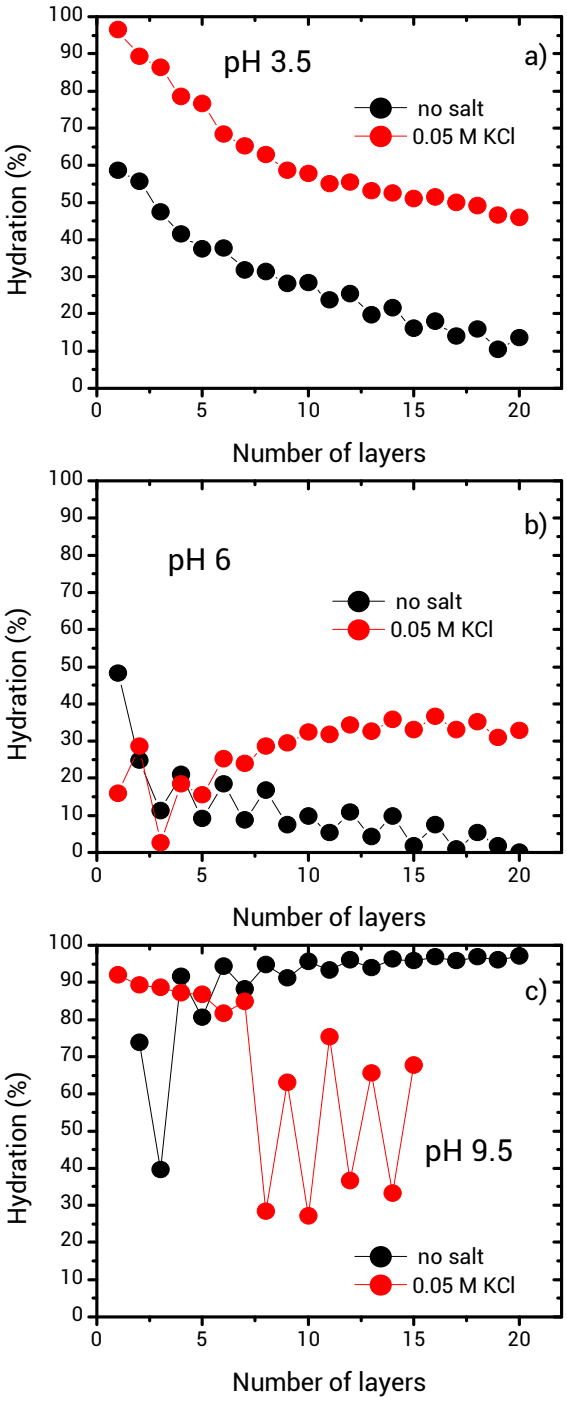

Figure S4. Hydration of PSS-MA/PDADMAC assembly as a function of the number of assembled layers.

Atomic force microscopy – Topography and phase imaging

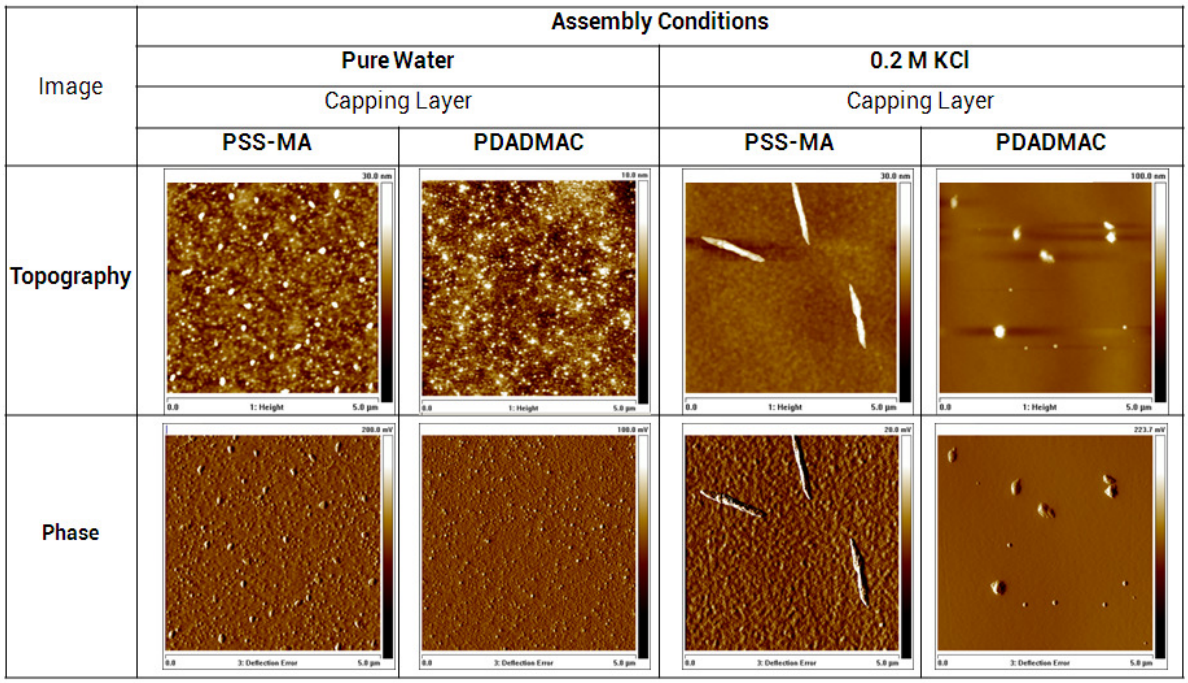

Figure S5. Atomic force microscopy characterization including topography and phase imaging of $(PSS\text{-}MA/PDADMAC)_9PSS\text{-}MA$ ("PSS-MA capping layer") and $(PSS\text{-}MA/PDADMAC)_{10}$ ("PDADMAC capping layer") multilayers assembled in pure water and in the presence of 0.2 M KCl.

X-ray photoelectron spectroscopy characterization – Raw data

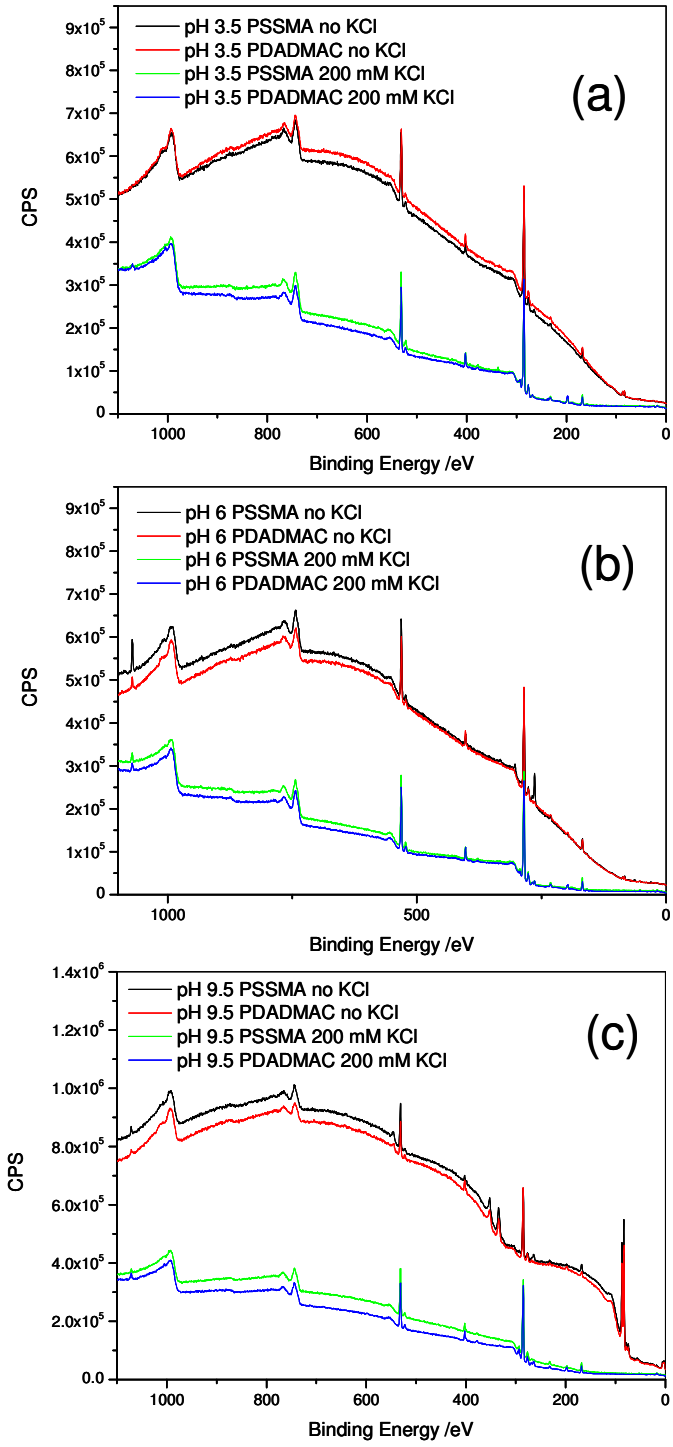

Figure S6. XPS characterization of PSS-MA/PDADMAC multilayers grown under different assembly conditions: (a) pH 3.5, (b) pH 6, (c) pH 9.

References

[1] J. J. Ramos, S. Stahl, R. P. Richter and S. E. Moya, *Macromolecules,* 2010, **43**, 9063-9070.