

Supporting Information

Highly swellable ultrathin poly(4-vinylpyridine) multilayer hydrogels with pH-triggered surface wettability

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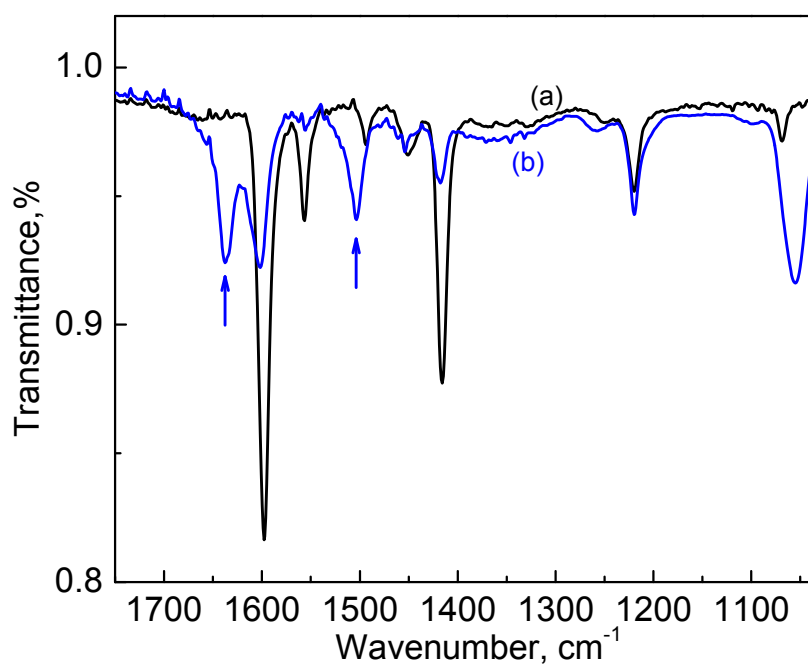


Figure S1. FT-IR of poly(4-vinylpyridine) (a) and poly(4-vinylpyridine)-co-(aminopropyl)methacrylamide copolymer containing 4% of (aminopropyl)methacrylamide units after hydrolysis of a *t*BOC protective group (b). The samples were prepared on potassium bromide pellets by dropping polymer solution in methanol on the pellet and evaporating methanol. The arrows point to bands at 1637 cm⁻¹ corresponding to C=O group in (aminopropyl)methacrylamide units and at 1503 cm⁻¹ corresponding to N-H bending vibration.

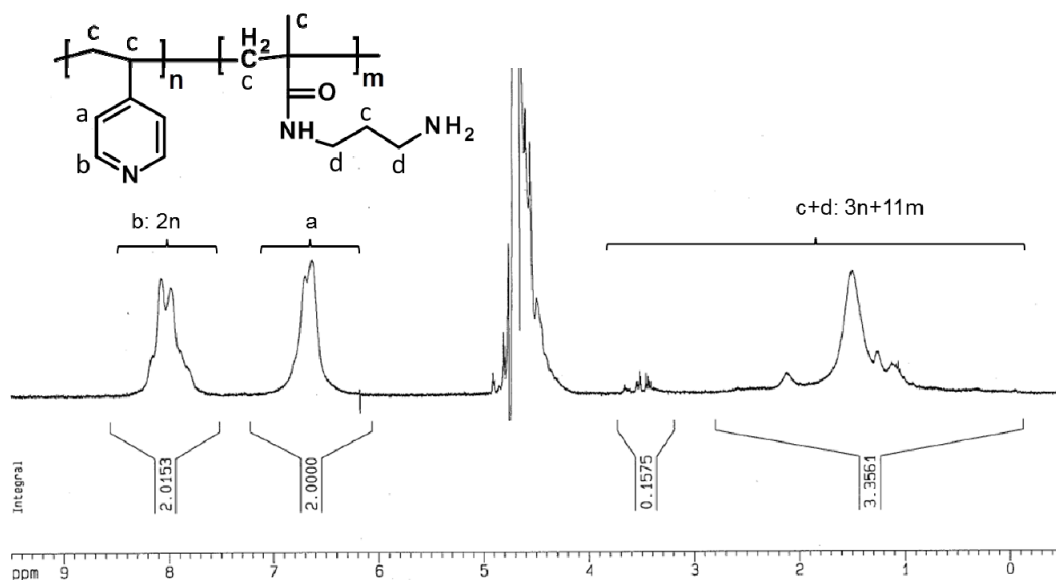


Figure S2. ^1H -NMR of poly(4-vinylpyridine)-co-(aminopropyl)methacrylamide copolymer containing 4% of (aminopropyl)methacrylamide units after hydrolysis of a *t*BOC protective group. The fraction of ((aminopropyl)methacrylamide)-containing units was calculated as follows: $f=m/(m+n)$, where m/n ratio was calculated from the integral intensities corresponding to pyridyl protons¹ ($2n$; δ : 7.5-8.6 ppm) and to $-\text{CH}_2-$ protons ($3n+11m$; δ : 0-3.8 ppm). The spectrum was taken in D_2O .

Table S1. Synthesis and characterization of PVP-NH₂-m copolymers.

Sample	[4-VP]/[t-BOCAPMA]	Temp	Time	M _w	PDI
PVP-NH ₂ -1	100 / 1	68°C	5h	113,213	1.32
PVP-NH ₂ -4	20 / 1	68°C	3h	152,587	1.45
PVP-NH ₂ -7	7 / 1	68°C	7.5h	141,641	1.43

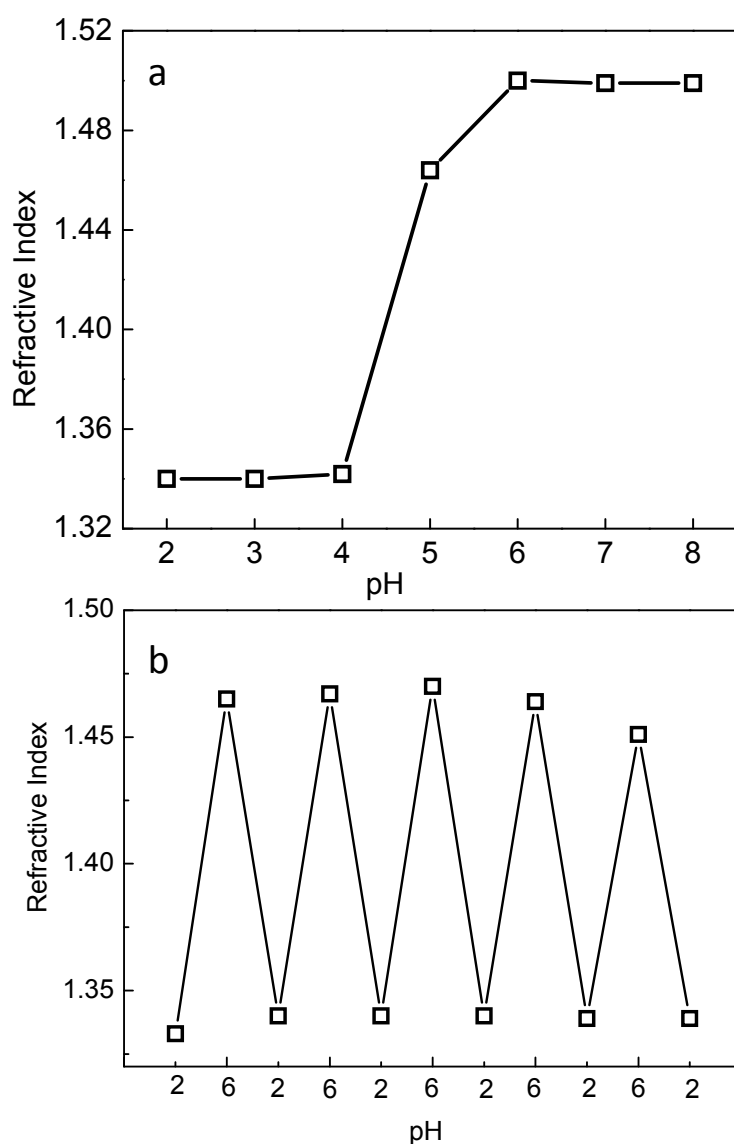


Figure S3. pH-dependent changes of the refractive index for (PVP)₂₀ multilayer hydrogel prepared from PVP-NH₂-4. Ellipsometry measurements were performed in a liquid cell using 0.01 M phosphate buffer solutions with specific pH values (a). Reversible variations of the refractive index for the hydrogel film in response to pH changes from pH=2 to pH=6 (b).