

Supporting Information

Counterion-Tunable Thermosensitivity of Strong Polyelectrolyte Brushes

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Table S1. Summary of the refractive indices (n) of SPBs obtained from the ellipsometry measurements at a wavelength of 589.3 nm in water at 17 °C.

Type of SPBs	PSSNa	PSSP ₄₄₄₂	PSSP ₄₄₄₄	PSSP ₄₄₄₆	PSSP ₄₄₄₈
n	1.416	1.436	1.447	1.471	1.481

Table S1 shows that the refractive indices of SPBs are dependent on the type of the counterions. For the PSSP_{444m} brushes, the refractive index of SPBs increases with increasing value of m.

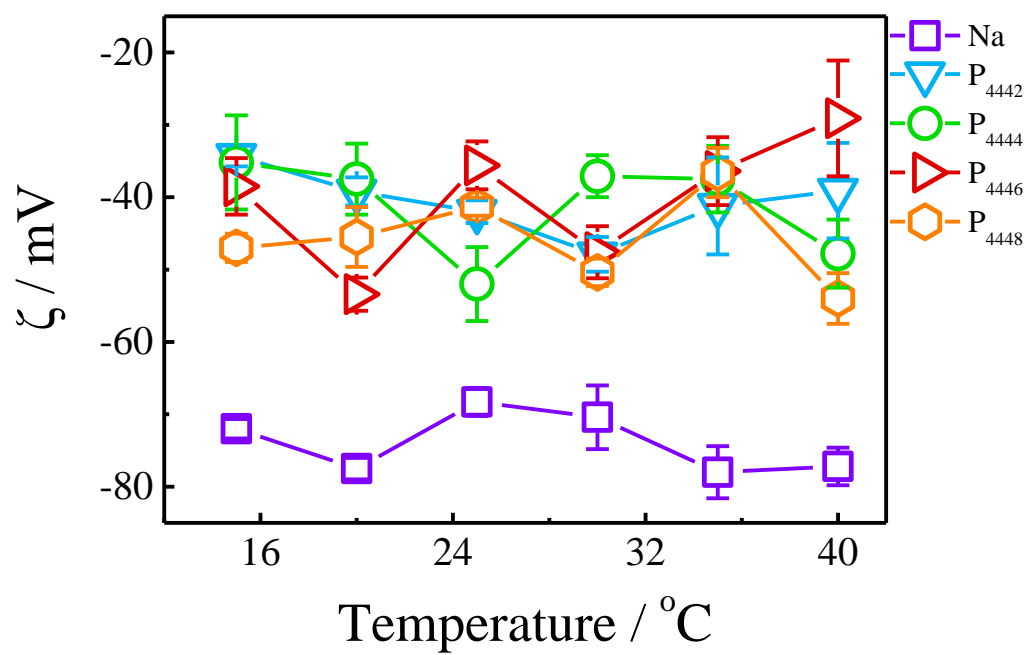


Figure S1. Zeta potentials (ζ) of both the PSSNa and the PSSP_{444m} brushes as a function of temperature.

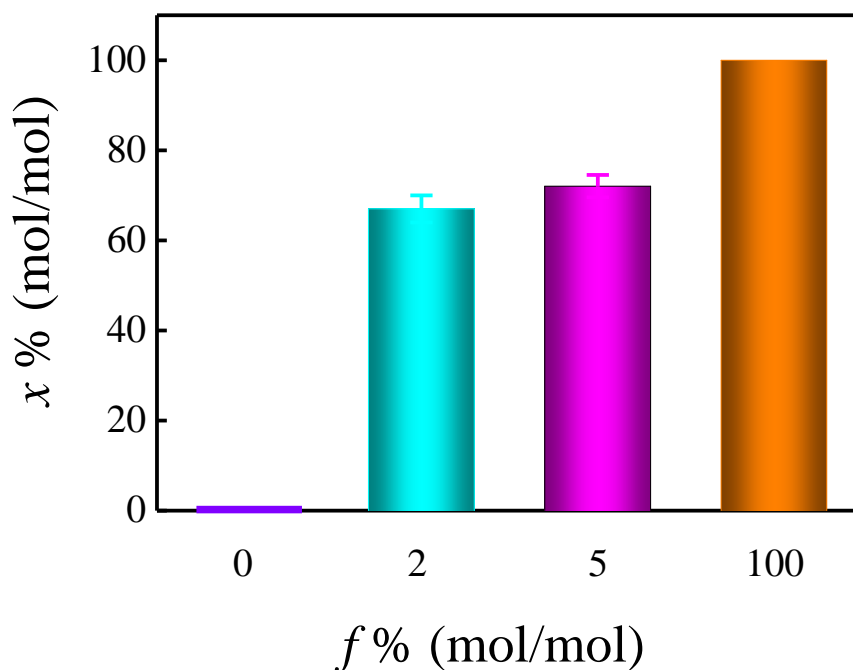


Figure S2. The molar fraction of the P_{4448}^+ counterion (x) in the brushes as a function of the molar fraction of the P_{4448}^+ ion (f) in the mixed salt solutions.

In this work, the molar fraction of P_{4448}^+ counterion in the brushes is in agreement with the atomic ratio of phosphonium to sulfur (P/S) of the PSSNa/ P_{4448} brushes. Therefore, the molar fraction of P_{4448}^+ counterion in the brushes can be obtained from the XPS measurements by normalizing the values of P/S of the PSSNa/ P_{4448} brushes to the value of P/S of the PSSP $_{4448}$ brushes. In Figure S2, the molar fraction of the P_{4448}^+ counterion in the brushes is larger than that of the P_{4448}^+ ion in the mixed salt solutions, indicating that the P_{4448}^+ counterion has a higher affinity to the negatively charged sulfonate group than the Na^+ counterion.