Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.


# Electronic Supporting Information

**Title: Electrochemically Color Tunable Poly (*N*-Isopropylacrylamide) Microgel-Based Etalons**

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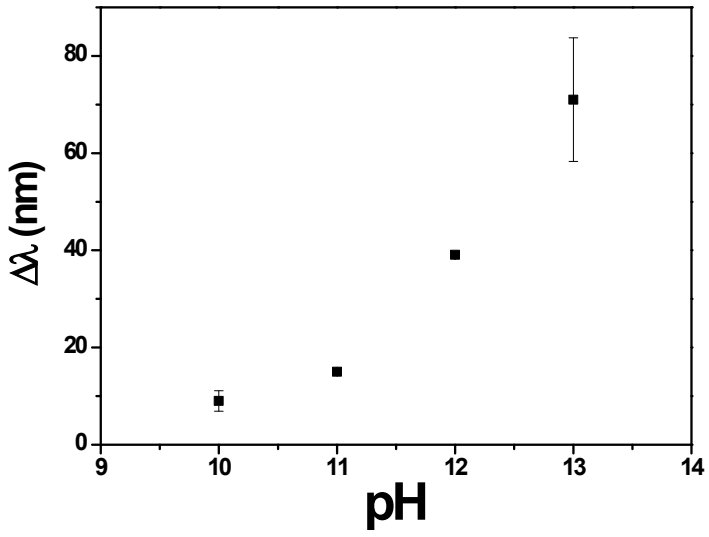


**Figure S1.** Etalon's optical response in different pH environment, $\Delta\lambda$ is $\lambda_m - \lambda_{original}$, where $\lambda_m$ is the position of the peak at a given pH (m) and $\lambda_{original}$ is the initial position of the peak when the pH=9. Each data point is the average of 3 experiments, with the error bars as the standard deviation.

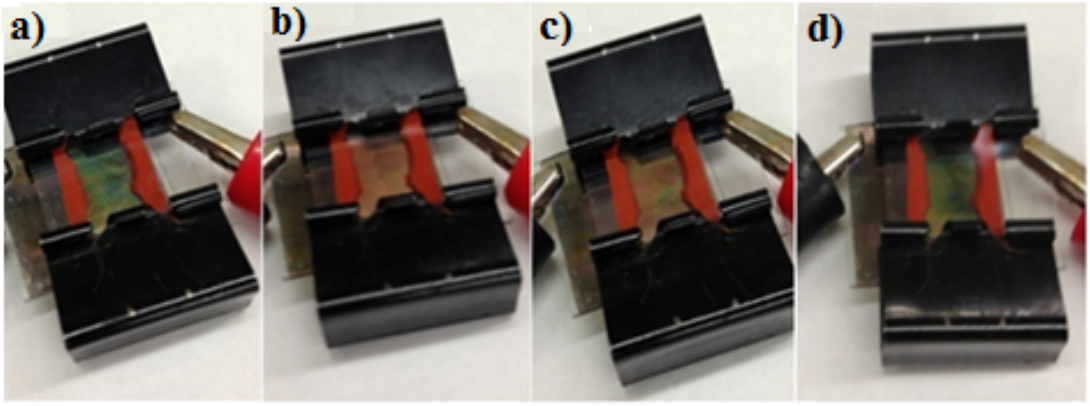


**Figure S2.** Photographs of an etalon at: a) 0 V, b) – 3 V, c) after five days at 0 V after the -3 V in (b), and d) 2 V.

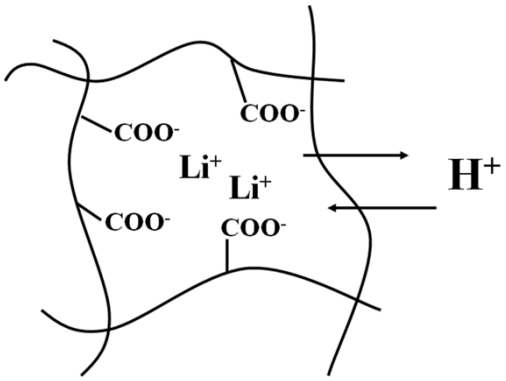


**Figure S3.** Proposed mechanism for color stability. The presence of Li ions makes the protonation of the deprotonated AAc groups difficult, hence the device's color is stable.

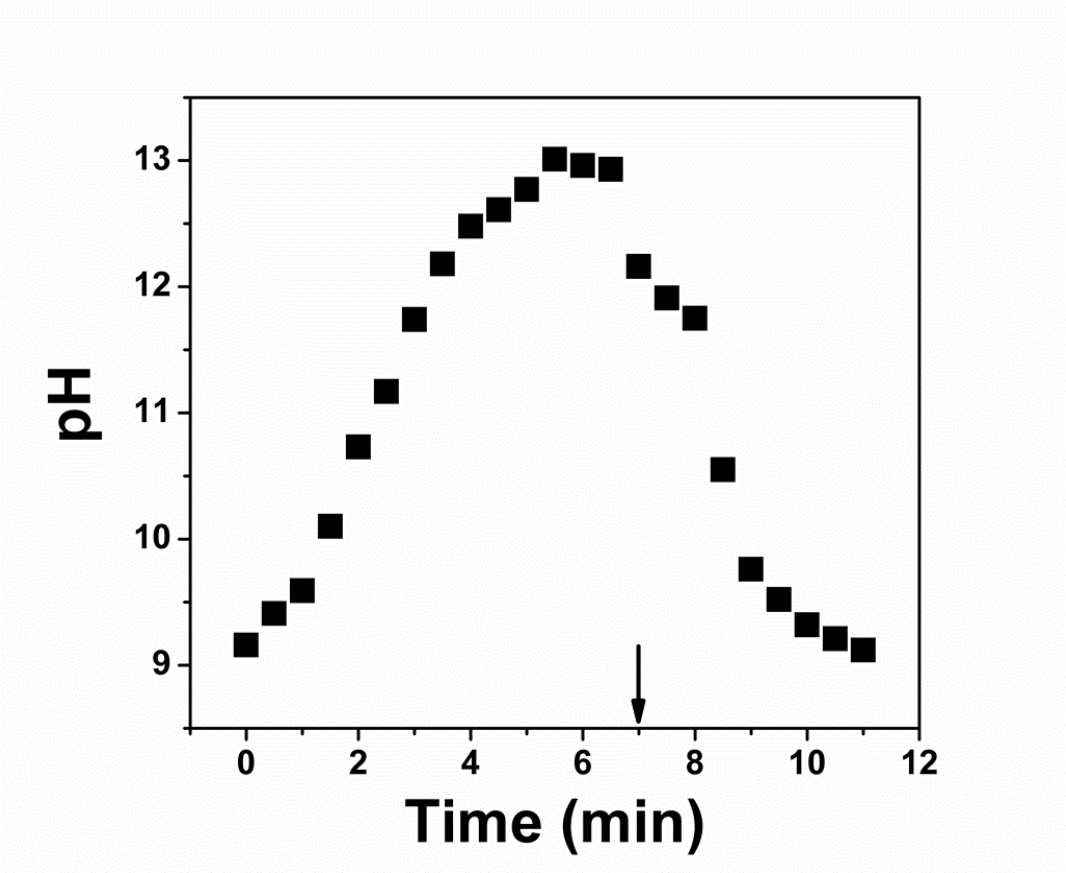


**Figure S4.** -3V is applied across the cell. After 7 min (as the arrow points out), the potential is removed.

**Table S1.** Wavelength shift upon removal of the indicated potentials and overnight stabilization.

| Removed potential (V) | Shift after overnight (nm) |
|---|---|
| -2 | 0.6±0.6 |
| -2.5 | 10±7 |
| -3 | 70±10 |