

## Supporting Information

### Solvatochromic structural color fabrics with favorable wearability properties

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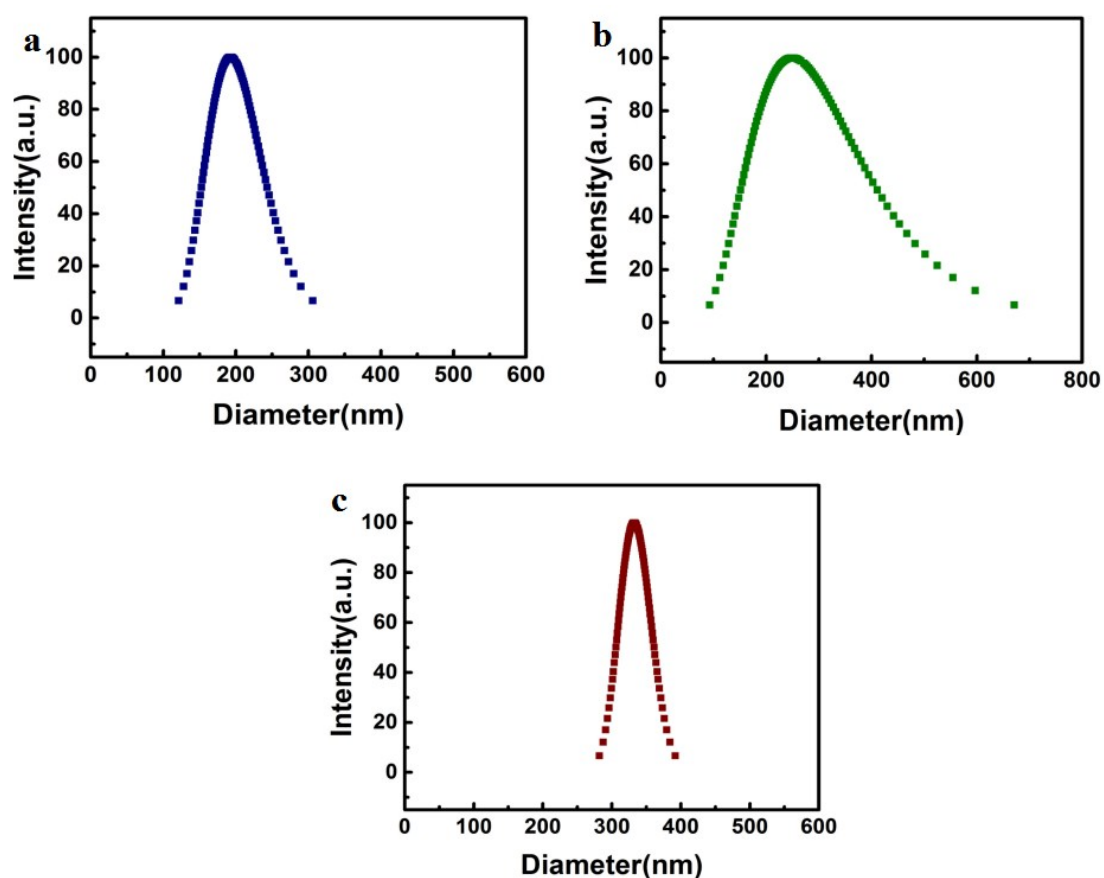


Fig. S1 Particle size distribution of different P(St-BA-AA) microspheres: (a)  $192 \pm 5$  nm, (b)  $256 \pm 5$  nm, (c)  $330 \pm 5$  nm. The PDI of P(St-BA-AA) microspheres is (a) 0.01, (b) 0.04, (c) 0.05, respectively.

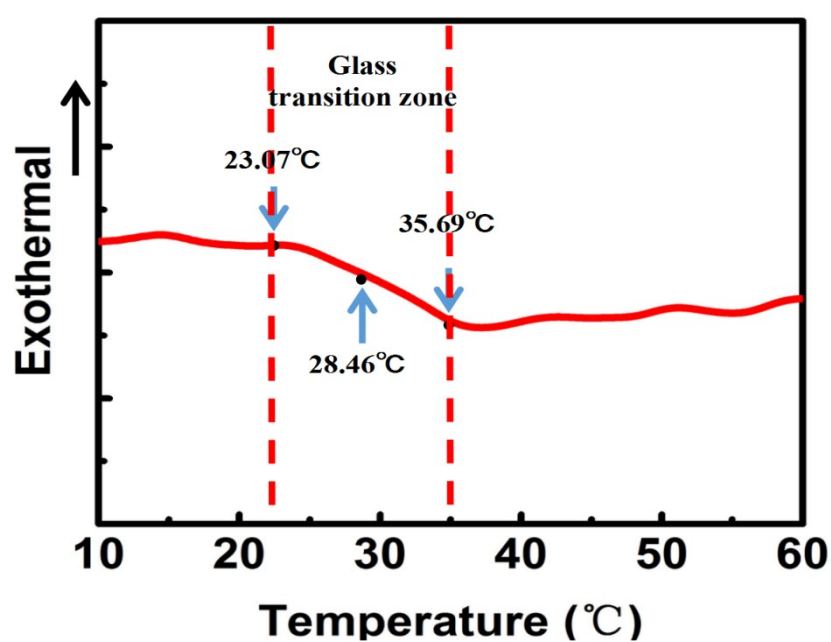


Fig. S2 Local DSC curve of P(St-BA-AA) microspheres.

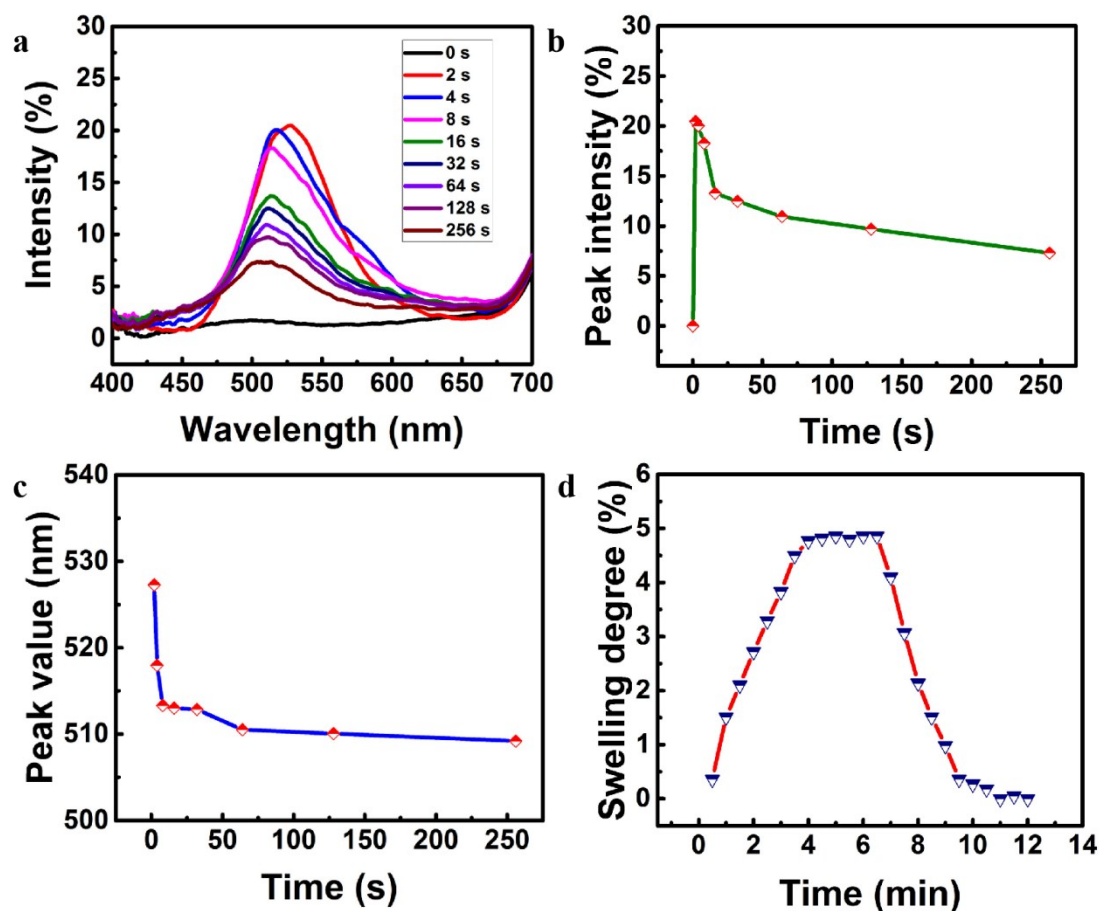


Fig. S3 (a) Reflectance spectra showing the color-changing process. (b) Peak intensity change diagram during the color-changing process. (c) Peak position change diagram during the color-changing process. (d) Swelling and deswelling curve of structural color layer in ultrapure water.

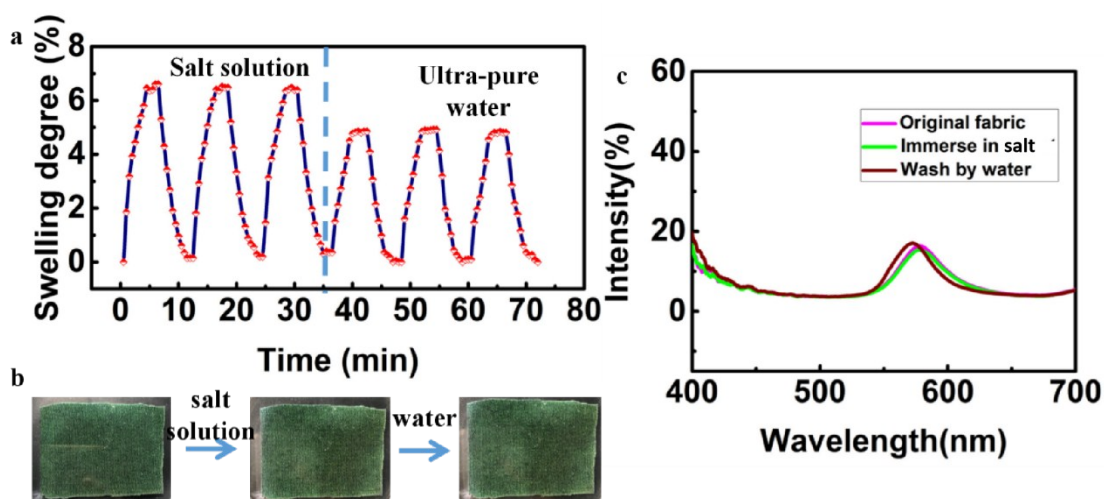


Fig. S4 (a) Swelling and deswelling curve of structured color fabric in high concentration salt solution and ultrapure water. (b) Optical photo of structured color fabric swelled in high concentration salt solution and ultrapure water. The size of the fabric used is 6 x 5 cm. (c)

Reflectance spectra of fabrics wetted by high concentration salt solution and ultrapure water, respectively.

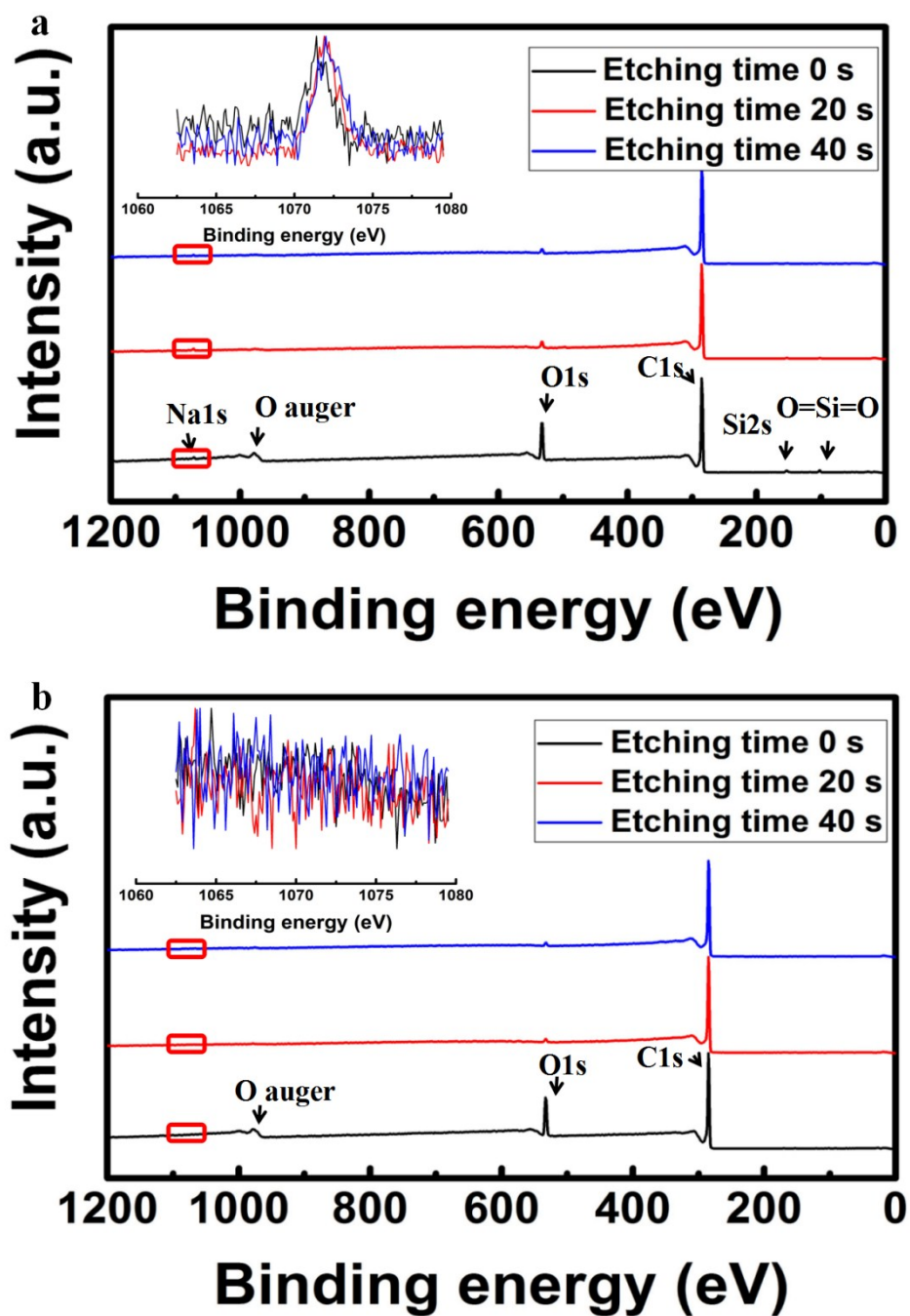


Fig. S5 XPS spectra of structural color fabric surface tested after swelling in salt solution (a), and washing by ultra-pure water (b).

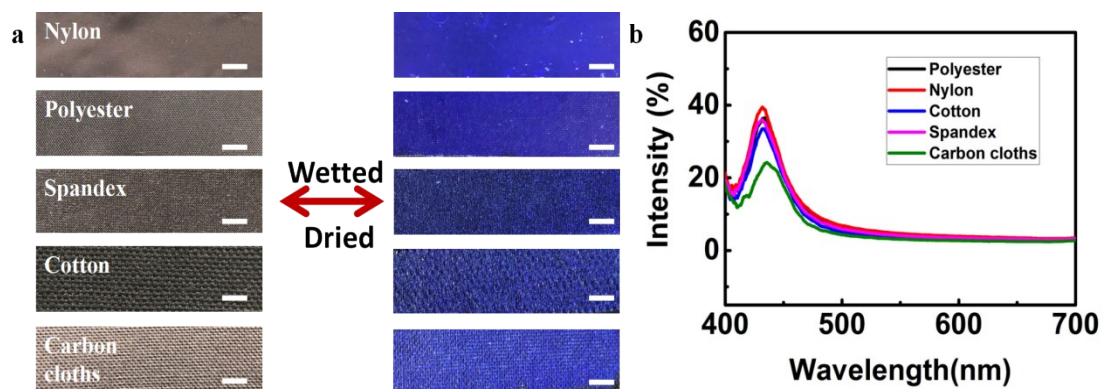


Fig. S6 (a) Optical photographs of structural color fabrics using nylon, polyester, spandex, cotton, and carbon fiber as the substrate textiles, respectively. Scale bars are 1cm. (b) Reflectance spectra of wetted structural color fabrics.

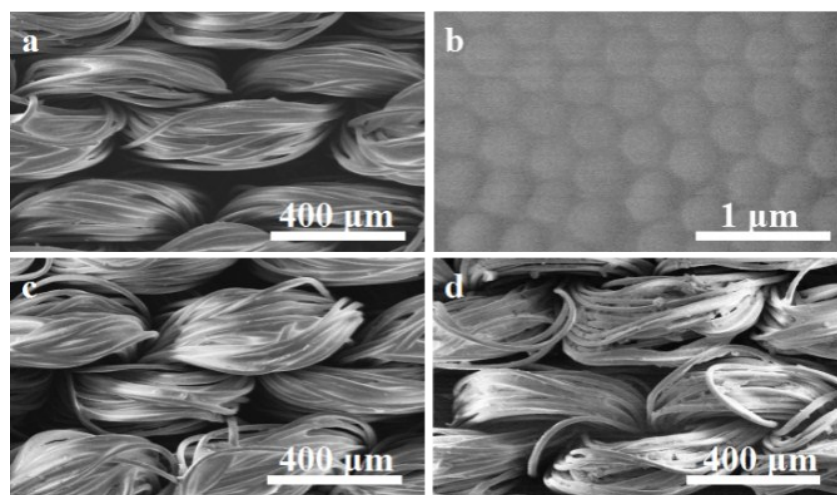


Fig. S7 (a) SEM image of as-prepared structural color fabrics. (b) Partial enlargement of (a). (c) SEM image of fabrics after washing 10 cycles. (d) SEM image of fabrics after 100 stretching cycles.