Supplementary Material (ESI) for Journal of Materials Chemistry

Supporting Information

Polypyrrole actuators with inverse opal structures

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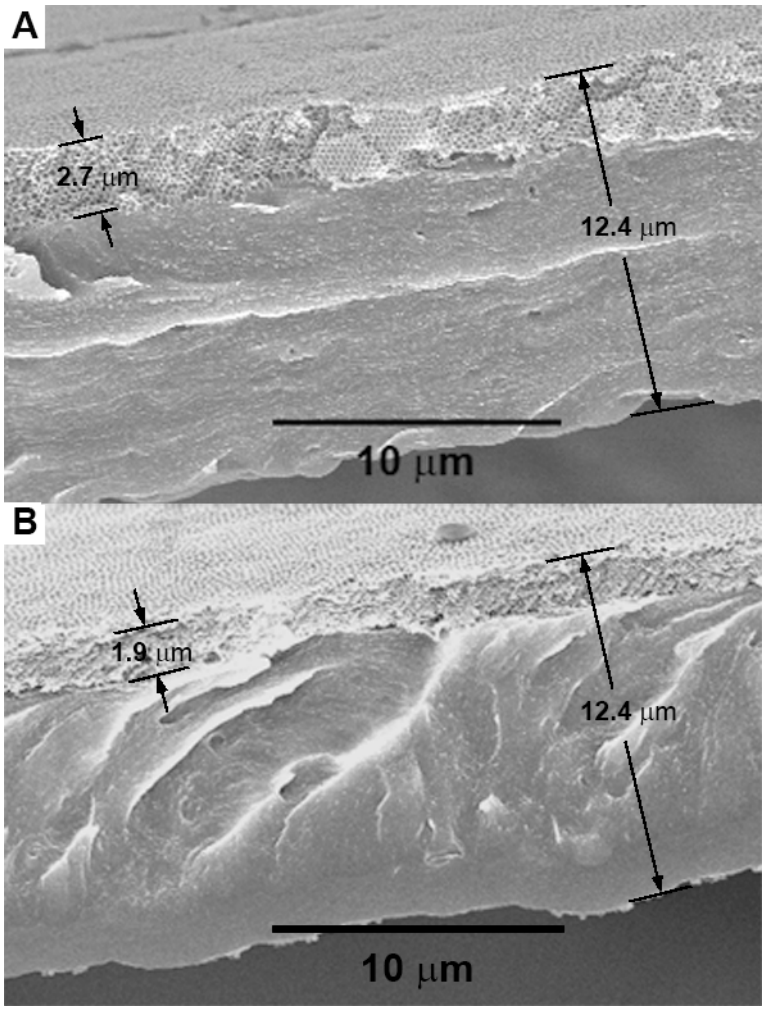

Fig. S1 SEM images of the cross sections of actuators **1** (A) and **2** (B).

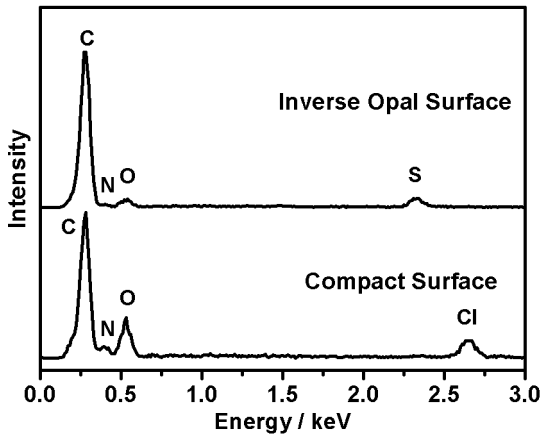

Fig. S2 EDS of the inverse opal surface and the compact surface of the bilayer PPy actuator.

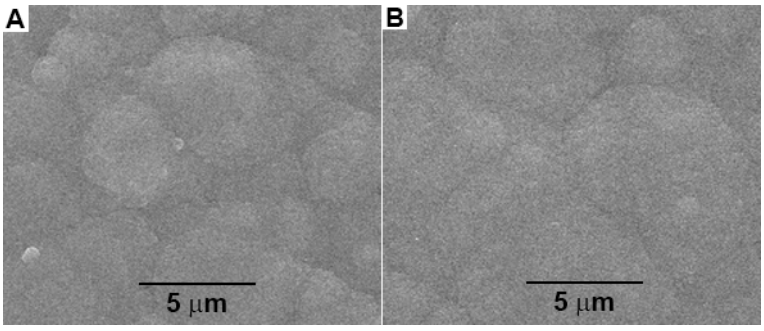

Fig. S3 SEM images of the compact surfaces of PPy(ClO_4) layers of actuators **1** (A) and **2** (B).

Fig. S4 Optical images recorded during the process of actuator **2** bending in 1.0 mol L^{-1} $LiClO_4$ aqueous solution by voltammetric scanning in the potential range of –1.0 (A) and +1.0 V (E), versus SCE at a scan rate of 50 mV s^{-1}; the actuators were held with the inverse opal side to the right.

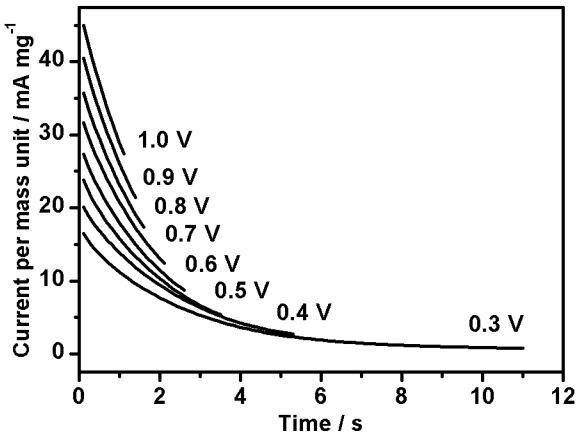

Fig. S5 Chronoamperograms recorded during the processes of actuating actuator **3** from vertical position to 90° at different potentials in the aqueous solution of 1.0 mol L^{-1} $LiClO_4$.

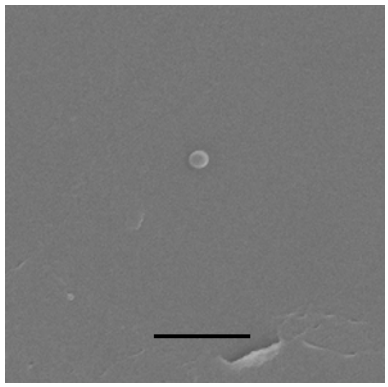

Fig. S6 SEM image of the flat film surface after actuation (from −0.2 to 1.0 V and stopped at 1.0 V) in 1.0 mol L^{-1} $LiClO_4$ aqueous solution containing 0.4 wt.% PS particles with diameter of 200 nm. Scale bar: 1 μm.

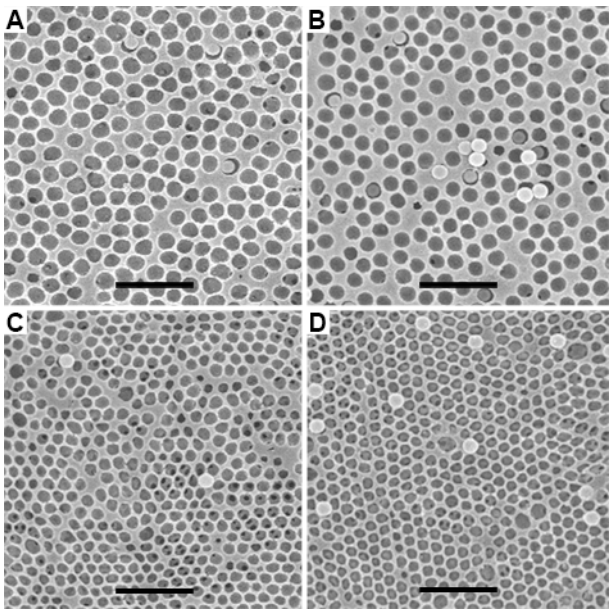

Fig. S7 SEM images of the inverse opal surface of actuator **1** (A, B) and actuator **2** (C, D) after dipping in 1.0 mol L^{-1} $LiClO_4$ aqueous solution containing 0.4 wt.% PS particles with diameter of 200 nm (A, C) or actuation (from −0.2 V to 1.0 V and stopped at 1.0 V) in this solution with clamped end to prevent from bending movement (B, D). Scale bars: 1 μm.