

Electronic Supplementary Information:

Electrochromism Based on Structural Colour Changes in a Polyelectrolyte Gel

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SEM observation of PSt CCC template.

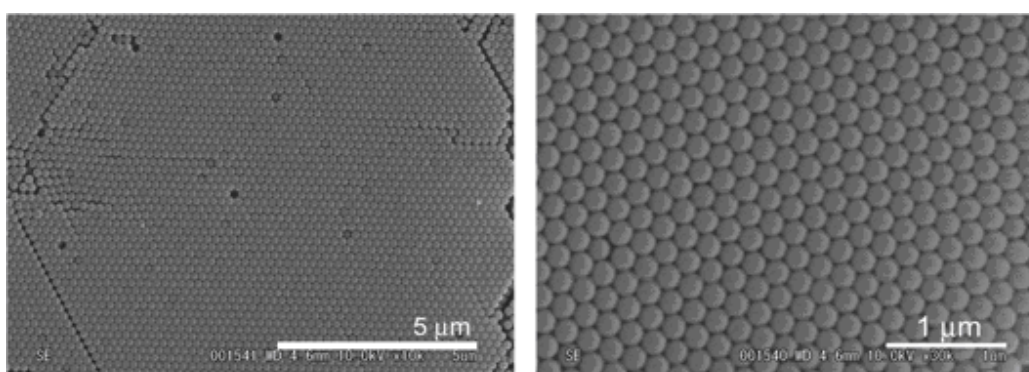


Figure S1. Typical SEM images of PSt CCC template.

Figure S1 shows the typical SEM images of the top view of a PSt CCC template. The images present the PSt spheres in a face-centered cubic (fcc) arrangement with a close-packed plane (111) oriented parallel to the glass substrate. The close-packed arrangement could extend over a large area.

Unfortunately, we could not observe the periodic porous structure of the inverse-opal polyelectrolyte gel because our polyelectrolyte gel requires a large amount of solvent even in the shrunken state. The concentration of pre-gel solution was not high enough to form a robust polymer network (total monomer concentration is 2 M). Drying of the gel for the SEM observation may lead to the disruption of the periodically ordered pores. However, we believe that the ordered structures can be maintained in solvents, which is evident from the monochromatic structural colours and the relatively sharp reflection peak of the inverse-opal gel. The SEM observation of an inverse-opal type ordered porous structure of a highly robust polymer gel has been successfully achieved by Braun et al.¹ and Wilzius et al.² We also confirmed that the ordered porous structure of an inverse-opal carbon fabricated by a similar procedure using a CCC template can be maintained through the synthetic procedure.³

References.

- (1) Lee, Y.-J.; Braun, P. V. *Adv. Mater.* **2003**, *15*, 563.
- (2) Barry, R. A.; Wilzius, P. *Langmuir* **2006**, *22*, 1369.
- (3) Tabata, S.; Isshiki, Y.; Watanabe, M. *J. Electrochem. Soc.* **2008**, *155*, K42.