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

A facile way to introduce planar defects into colloidal photonic crystals for pronounced pass bands

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Fig. S1. Photograph of monolayer solid silica spheres on the water surface

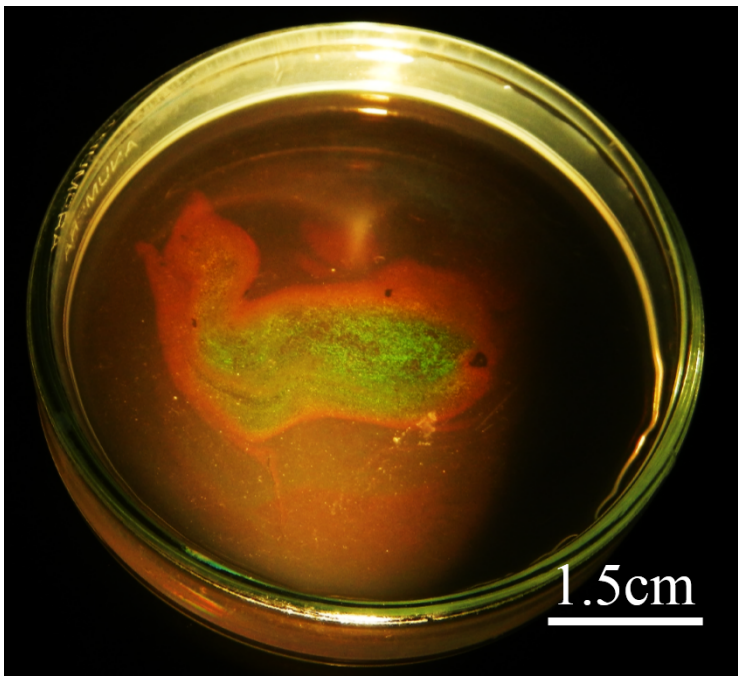
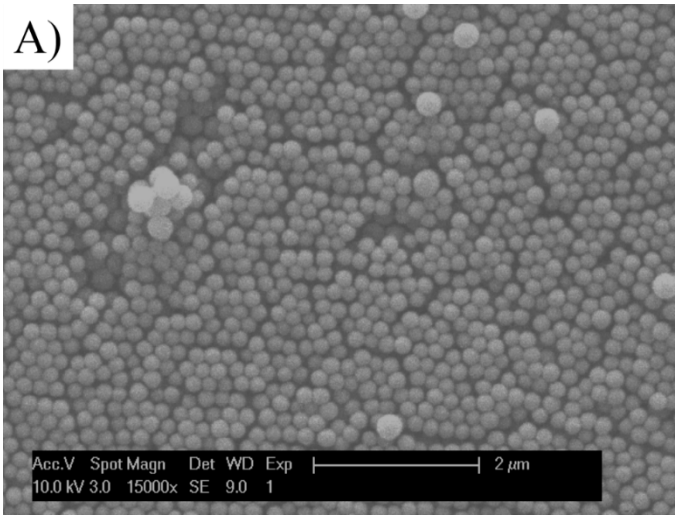


Fig. S2. The smaller monolayer of solid SiO_2 spheres on the surface of PS@SiO_2 (276 nm) CPCs. A) Diameter of 185 nm solid SiO_2 spheres; B). Diameter of 263 nm solid SiO_2 spheres



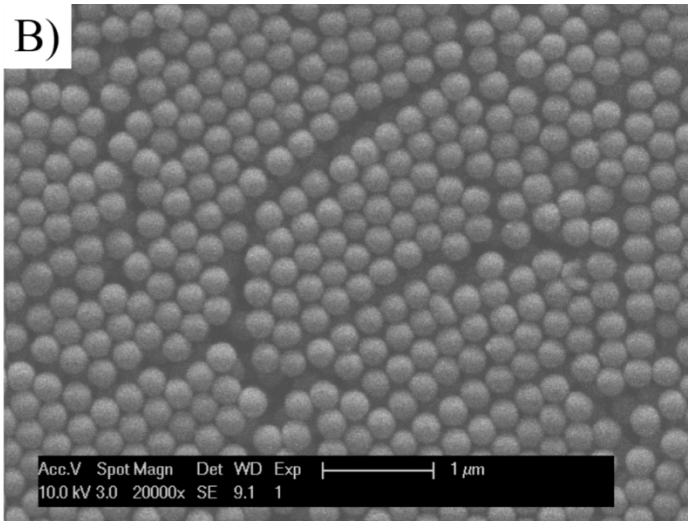


Fig. S3. A). a few representative reflectance spectra of the PS@SiO_2 (276nm) CPCs embedded 380nm monolayer solid silica spheres as a defect layer are taken from different points of the selected region; B). A microscope image showing different measuring points corresponding to the spectra of Fig. S3 A); C). A microscope image of hollow CCs containing a defect layer of 370 nm obtained after calcination. (Corresponding to the reflectance spectrum of Fig. 4h)

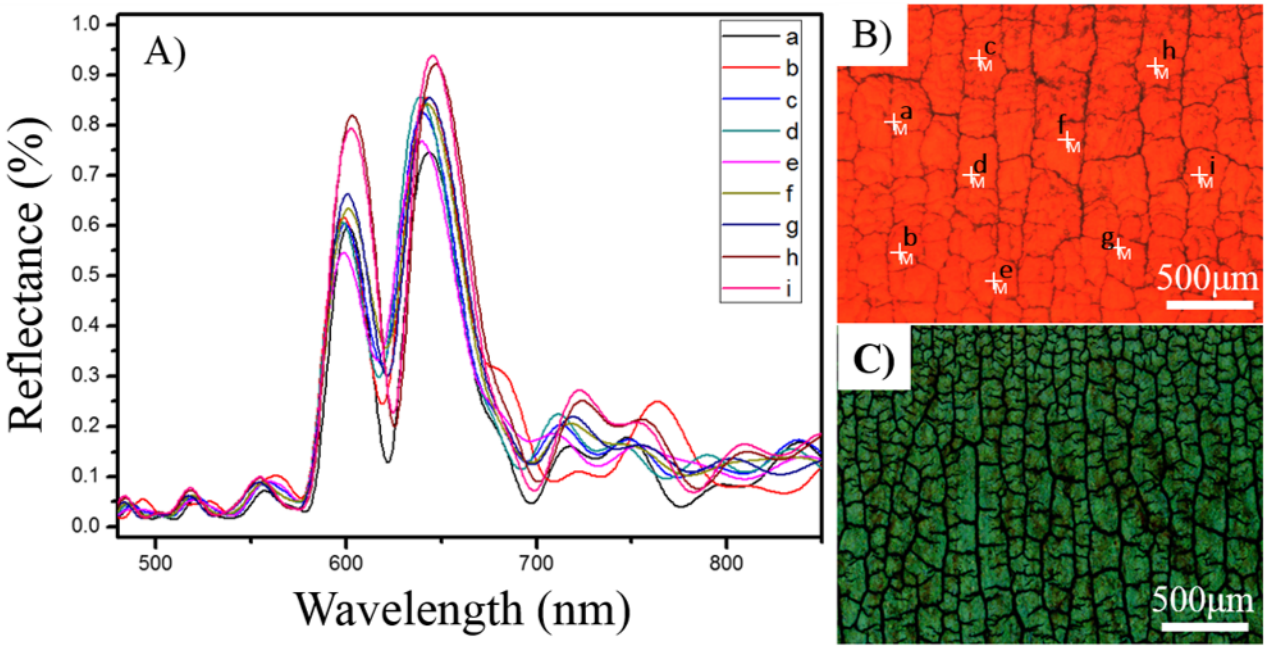


Fig. S4. The reflectance spectrum of obtained CPCs containing a defect layer of 380nm. The inset of this Fig. represents a magnified spectrum of the passband in the PBG. (Corresponding to Fig. 4d)

Q-value is given by following equation:

$$Q = \frac{\nu}{\Delta \nu} = \frac{\lambda}{\Delta \lambda}$$

Where ν is the resonance frequency, Δν is the frequency width, the λ is the peak wavelength, and Δλ is the FWHM.

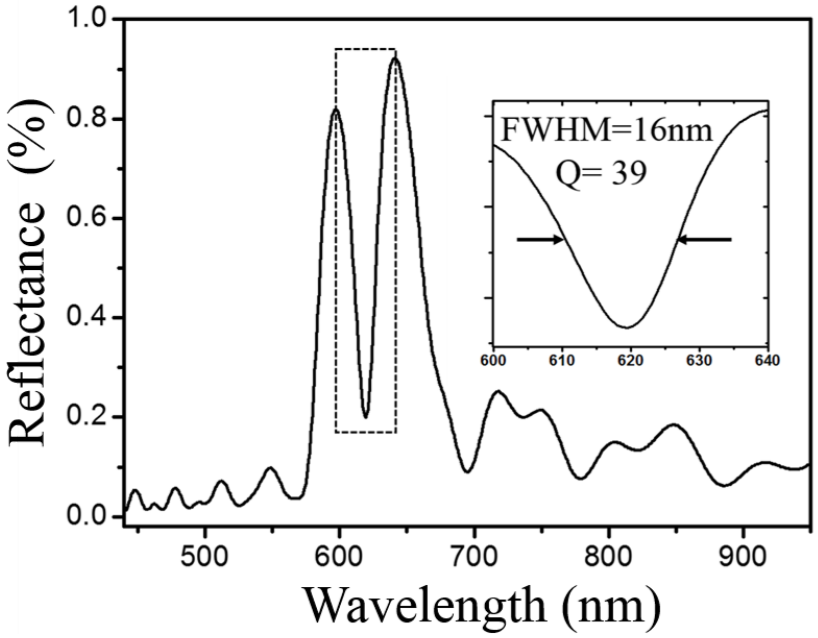


Fig. S5. Reflection spectra of the perfect CPCs for estimating the photonic band gap widths. A). PS@SiO_2 core-shell CCs; B).hollow SiO_2 spheres CCs