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

![Image of monolayer solid silica spheres on the water surface](image1.jpg)

**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

![Image of solid SiO\(_2\) spheres on PS@SiO\(_2\) surface](image2.jpg)
Fig. S3. A). A few representative reflectance spectra of the PS@SiO₂ (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)

![Image](image1.png)

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 $\nu$ is the resonance frequency, $\Delta \nu$ is the frequency width, the $\lambda$ is the peak wavelength, and $\Delta \lambda$ 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