

Electronic Supplemental Information (ESI)

Angle- and Strain-Independent Coloured Free-Standing Films Incorporating Non-spherical Colloidal Photonic Crystals

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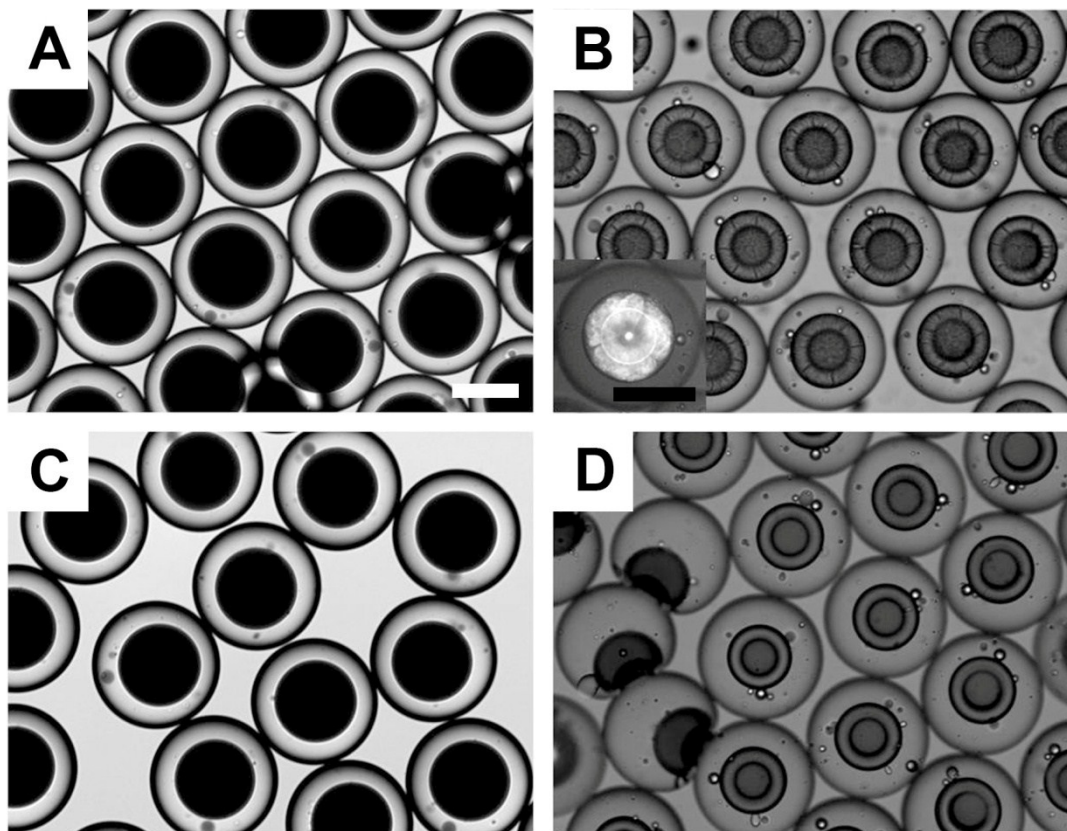


Fig. S1 Optical microscopy images of generated double emulsions with (A, B) 31.5 μm and (C, D) 39 μm shell thickness. (A, C) Double emulsions with thick shell right after collection in DI water. (B, D) Double emulsions with non-spherical buckled CPCs collected in 50 mM NaCl solution. The inset is a reflection-mode image of optical microscope, which shows bright structural colour over the entire inner droplets. Scale bars are 100 μm.

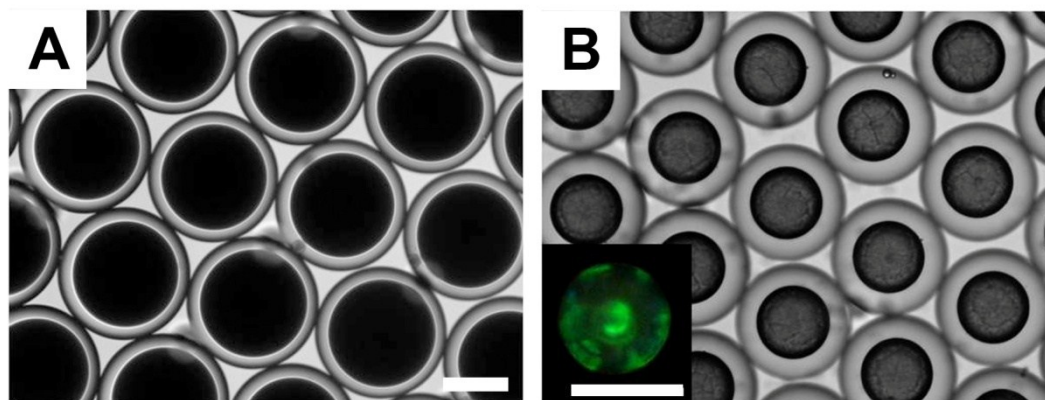


Fig. S2 Optical microscopy images of generated double emulsions using only silicone oil as the middle phase. (A) Double emulsions after collection in DI water. (B) Double emulsions with spherical shape of CPCs collected in 50 mM NaCl solution. The inset is a dark-field image of CPCs using 200 nm PS particles. Scale bars are 100 μm.

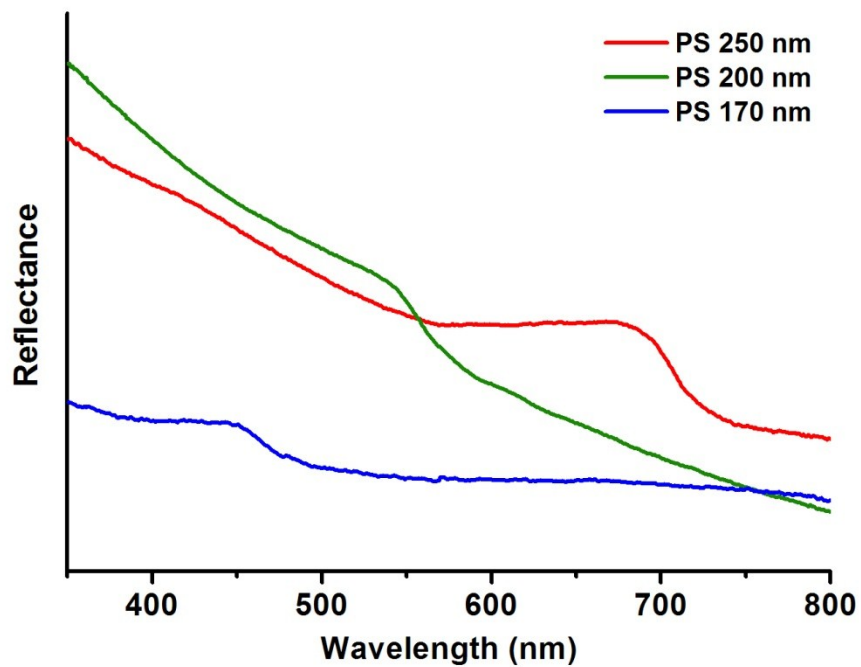


Fig. S3 Reflectance spectra of free-standing films of spherical CPCs which are collected in the low concentration of NaCl solution (50 mM) using PS particles 250 nm (Red), 200 nm (Green) and 170 nm (Blue) in diameter.

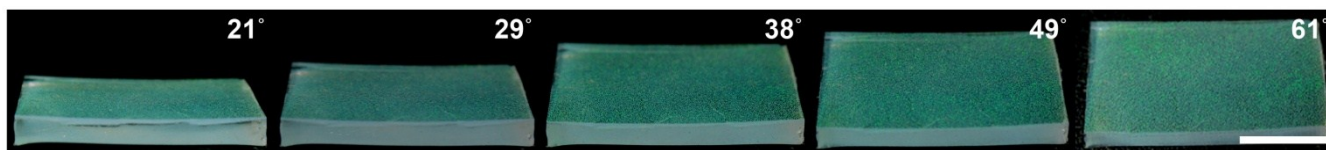


Fig. S4 Photographs of angle-independent free-standing CPCs films taken at different directions of observation. The incident light is parallel to the direction of observation. Scale bar is 1 cm.

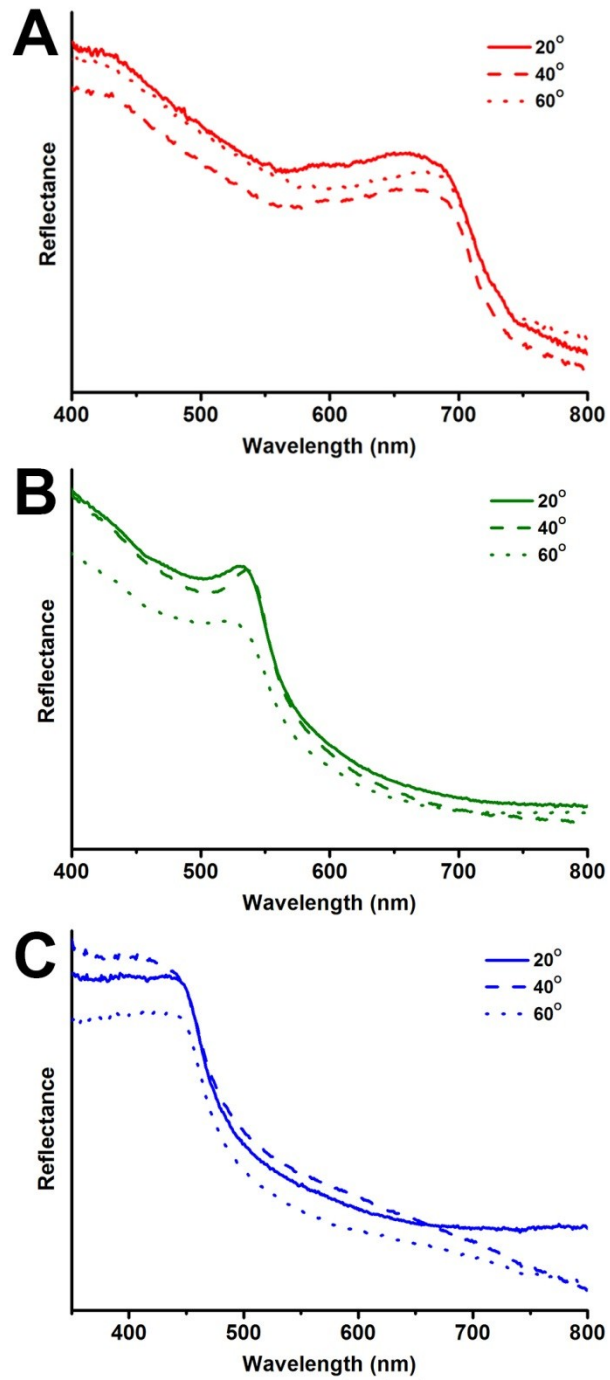


Fig. S5 Reflectance spectra of free-standing films of non-spherical CPCs at different angles. Non-spherical CPCs are made of 250 nm (Red), 200 nm (Green) and 170 nm (Blue) PS particles and are collected in a NaCl solution (50 mM) using.