

Electronic Supplementary Information

Patterning and pixelation of colloidal photonic crystals for addressable integrated photonics

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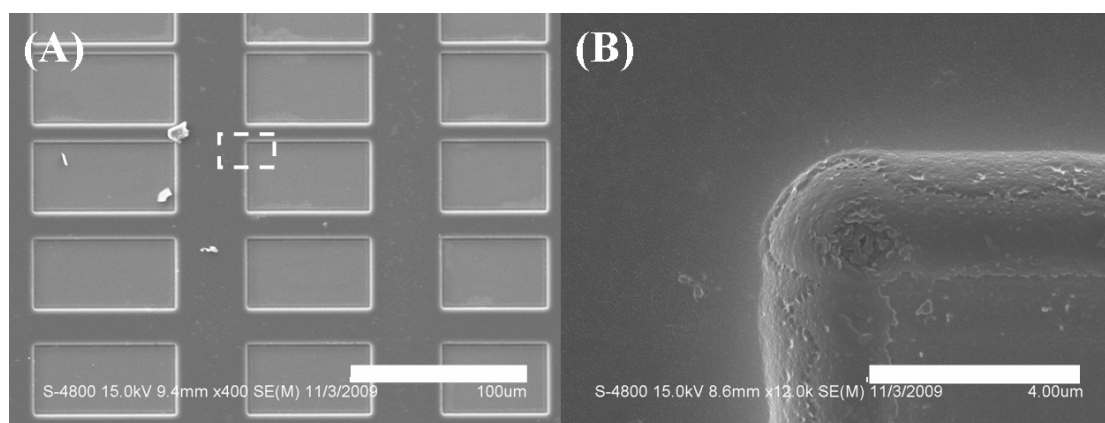


Fig. S1 (A) SEM images of patterned silicon substrate with photoresist (AZ9918). The scale bar is 100 μm . (B) Magnified view of the white-framed region in (A). The scale bar here is 4 μm .

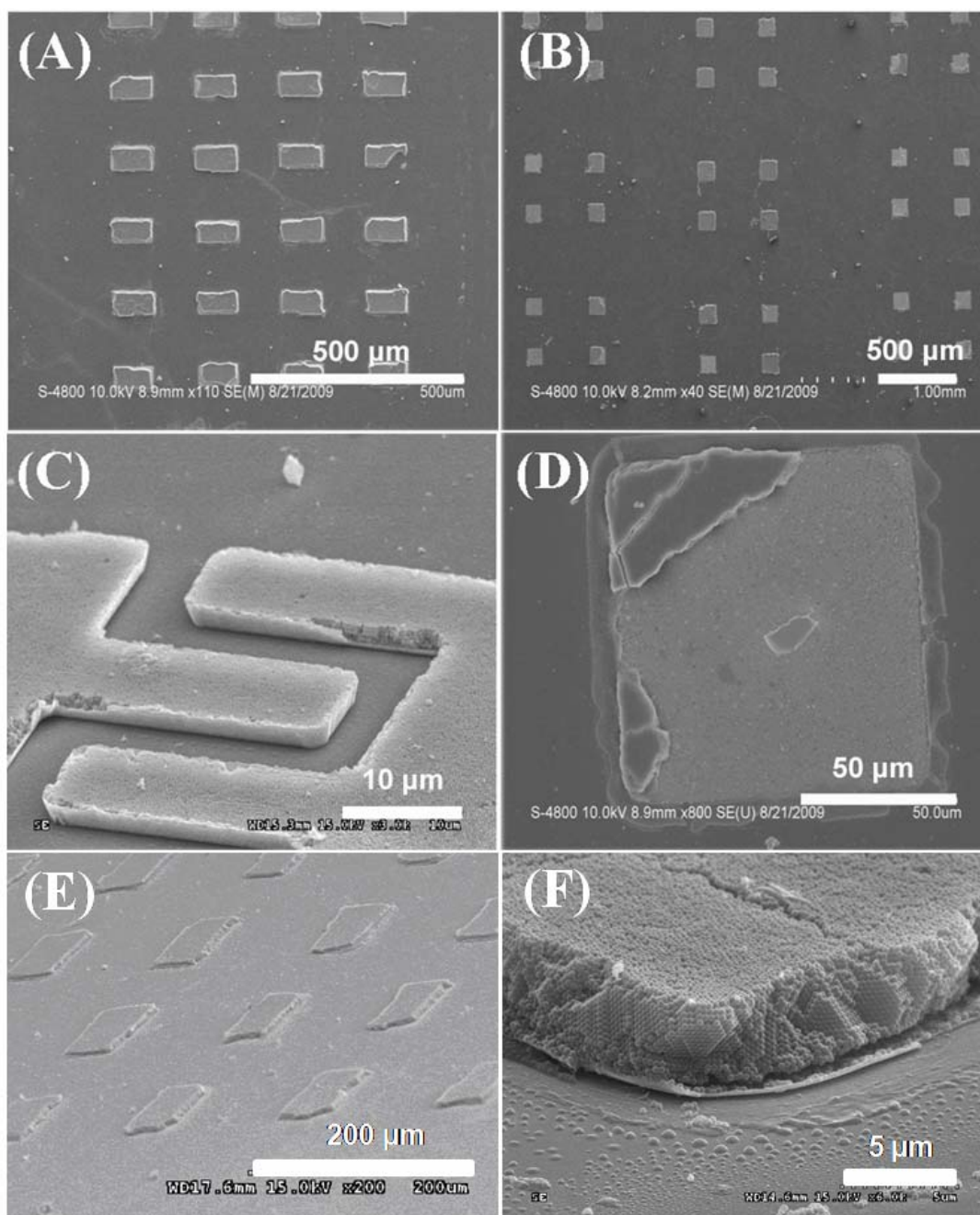


Fig. S2. Large scale view of patterned CPCs with different sizes and shapes. (A) rectangular ($100 \times 50 \mu\text{m}$), (B) square ($100 \times 100 \mu\text{m}$), (C) complex shape. We can see that the CPCs patterns are well preserved through weak (250 W) ultrasonication in a short (2 sec) time although minor destruction is observed. However, ultrasonication with long time (more than 10 sec) or strong power (250 W) may result (D) in severe destruction of the CPCs on the copper pattern. (E) and (F) are the side views of the patterned CPCs, from which we can see the number of the layers of the patterned CPCs is up to 20 layers.

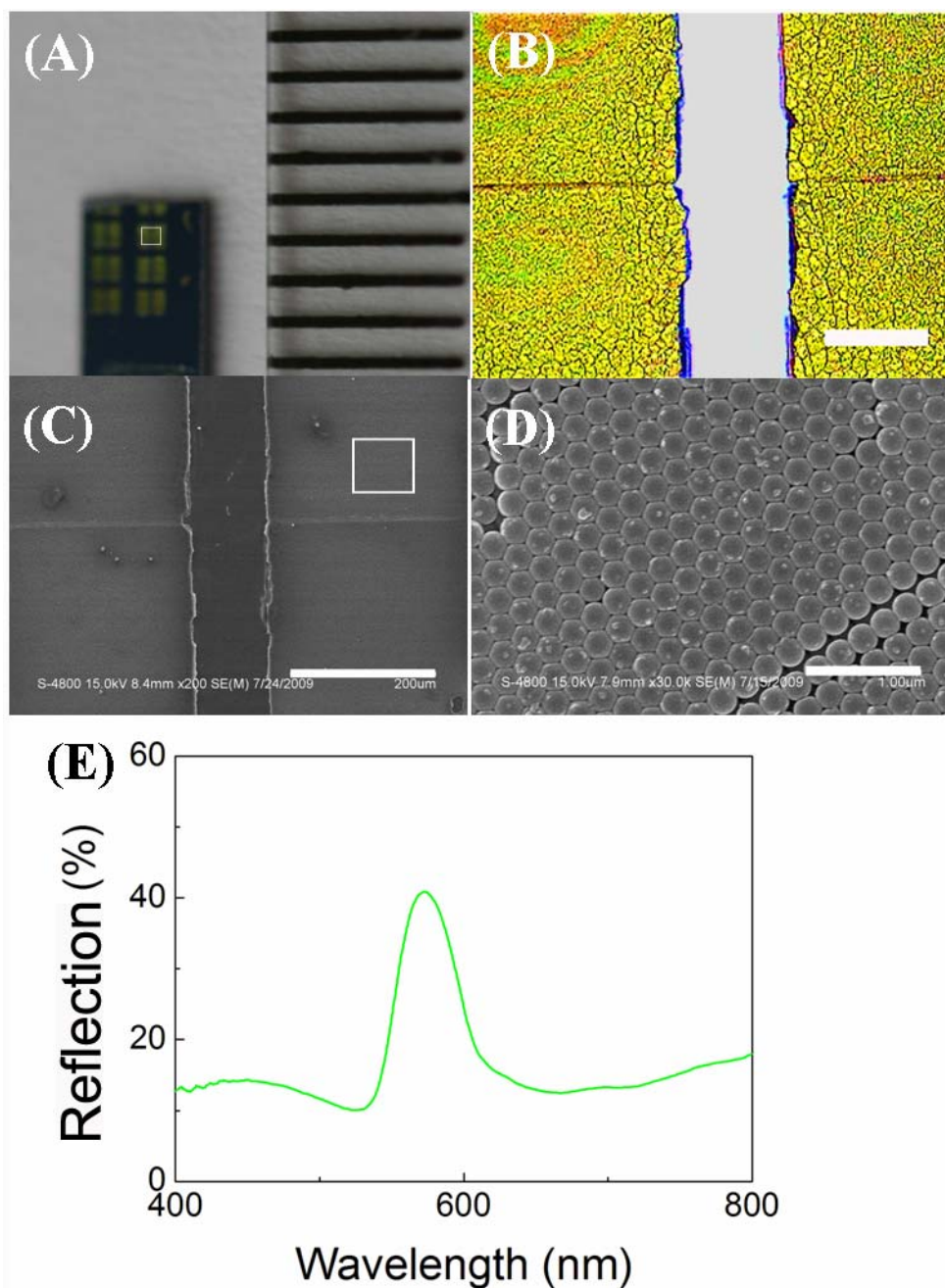


Fig. S3. (A) Photograph of patterned PS CPCs on a silicon wafer with a ruler beside (each grid represents 1 mm); (B) Optical microscope image of the patterned PS CPCs magnified from the white framed region in (A); (C) Corresponding SEM image (scale bars are 100 and 200 μm , respectively); (D) Magnified view from the white-framed region in (C) with scale bar of 1 μm ; (E) Reflection spectrum of the patterned CPCs made of PS spheres.

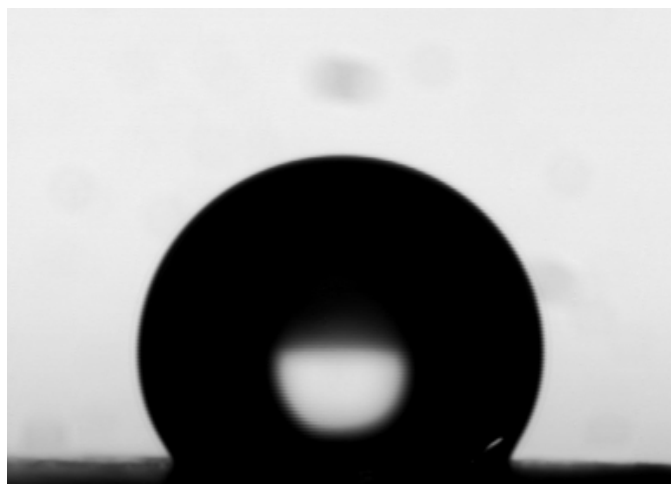


Fig. S4. Photograph demonstrating the water contact angle measurement on the hydrophobic surface of patterned silica CPCs treated with octadecyltrichlorosilane (OTS), showing a contact angle of $\sim 120^\circ$.