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Electronic Supplementary Information for

Micropatterning and Defects Engineering of Colloidal Photonic Crystals via Laser Direct Writing

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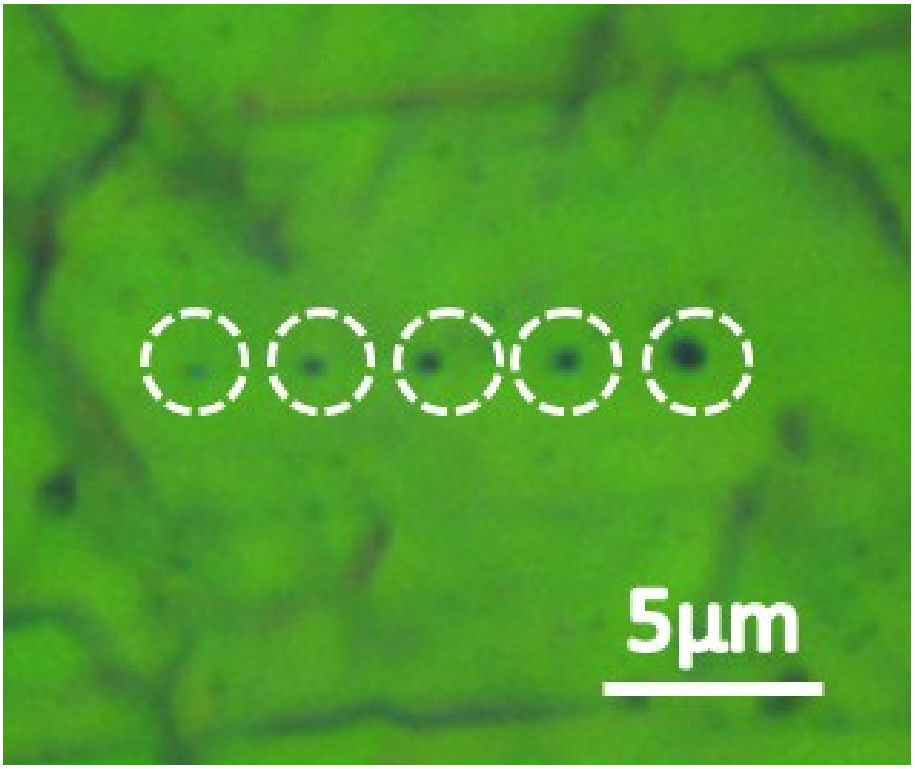

Fig. S1. Irradiation of PS opal films with increasing duration. From left to right (white dashed circles) the irradiation time is 40s, 60s, 80s, 100s and 200s respectively. Laser power is 1.5 mW.

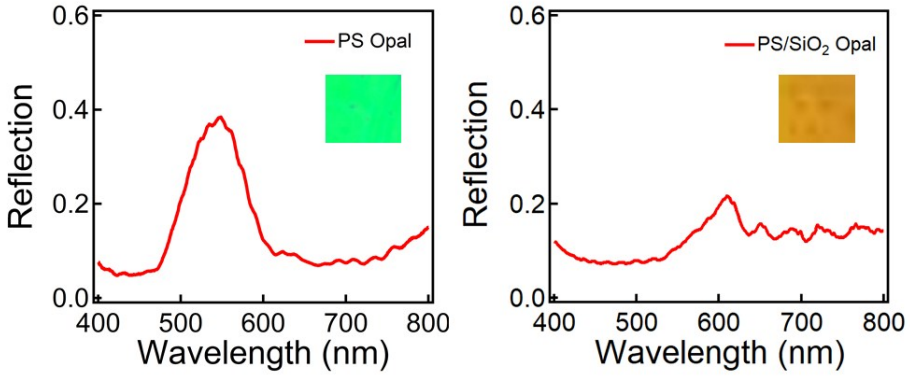

Fig. S2. Refection spectra of opal films. (a) PS opal, (b) PS/SiO_2 opal. Insets are optical bright field images.

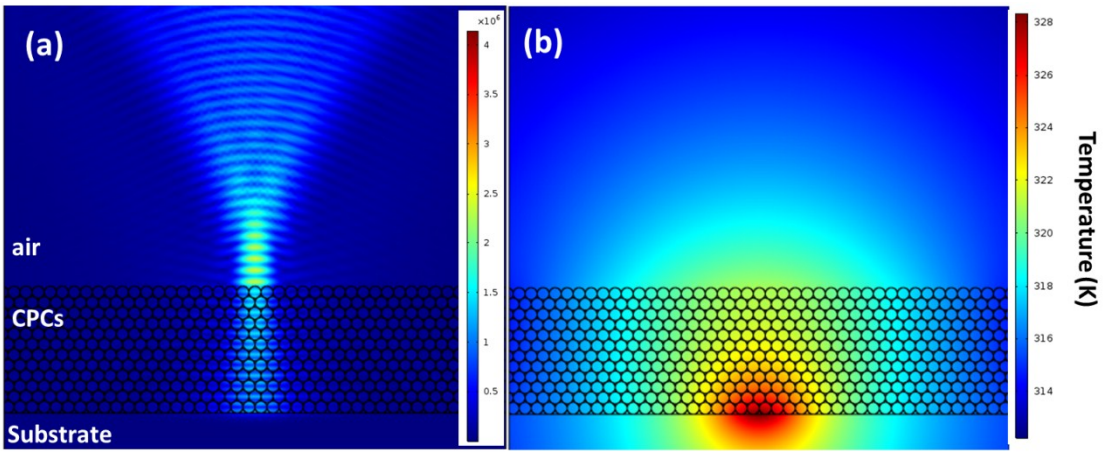

Fig. S3. (a) Electromagnetic near field profile of a focused laser beam on the surface of CPC films and (b) its photothermal distribution. Laser power: 1.5 mW. As silica and PS are non-absorptive, the photothermal heating mainly comes from the substrate (carbon), which only slightly increases the temperature.

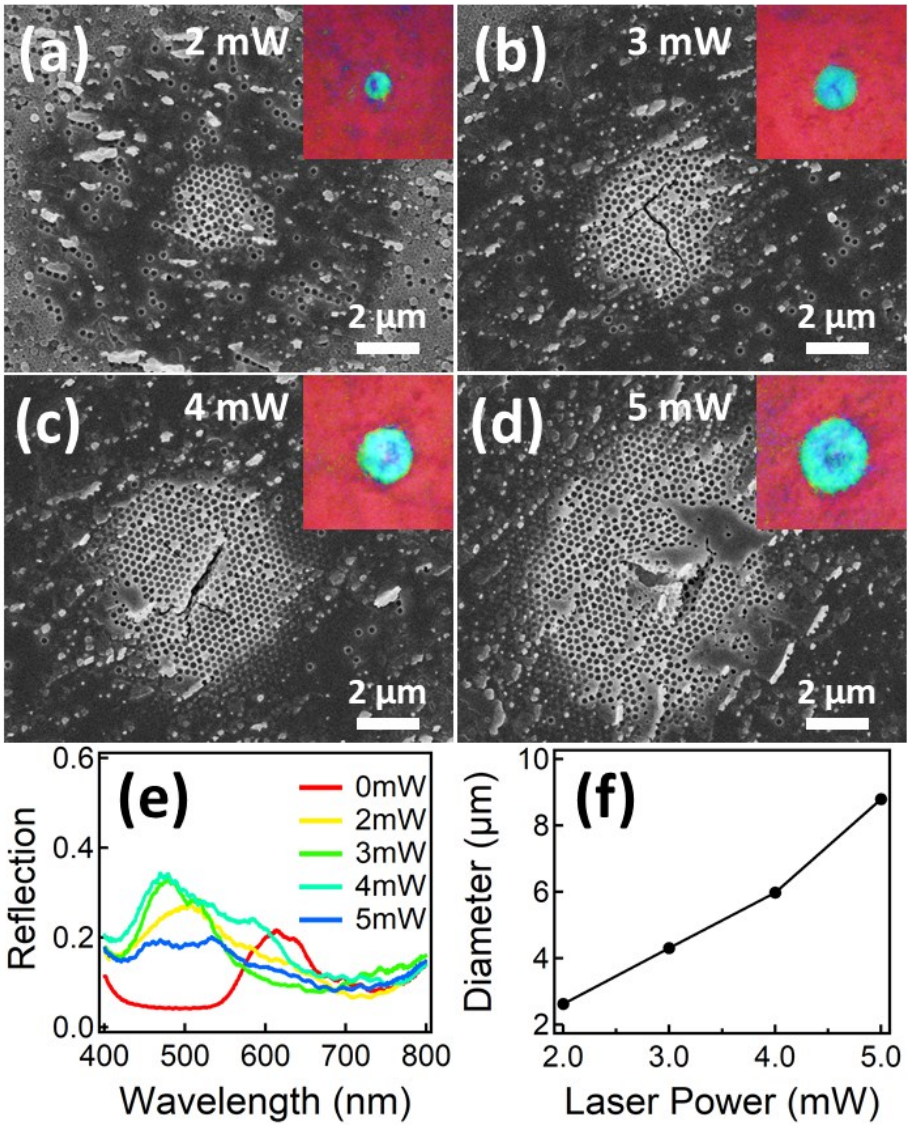

Fig. S4. Power-dependent irradiation of CPC films. SEM image of CPC films irradiated with different powers (a) 2 mW, (b) 3 mW, (c) 4 mW, (d) 5 mW, Laser irradiation time is 60 s. Insets are the BF images of the irradiated patterns. (e) Reflection spectra of CPC films irradiated with different powers and (c) change of the pattern size with laser power.

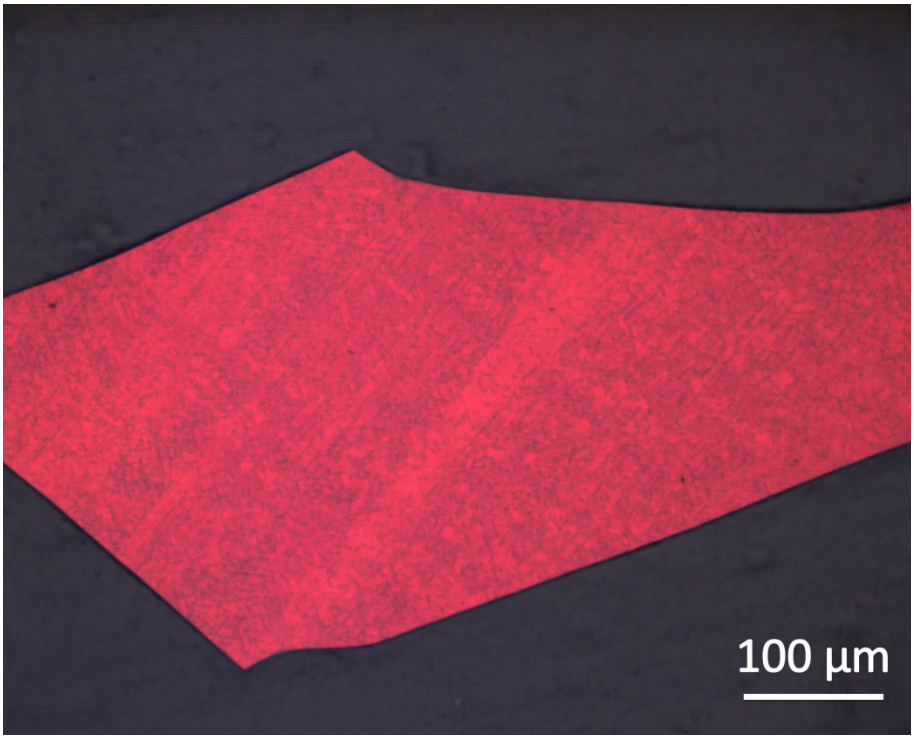

Fig. S5. Bright field image of crack-free PS/SiO_2 CPC films.

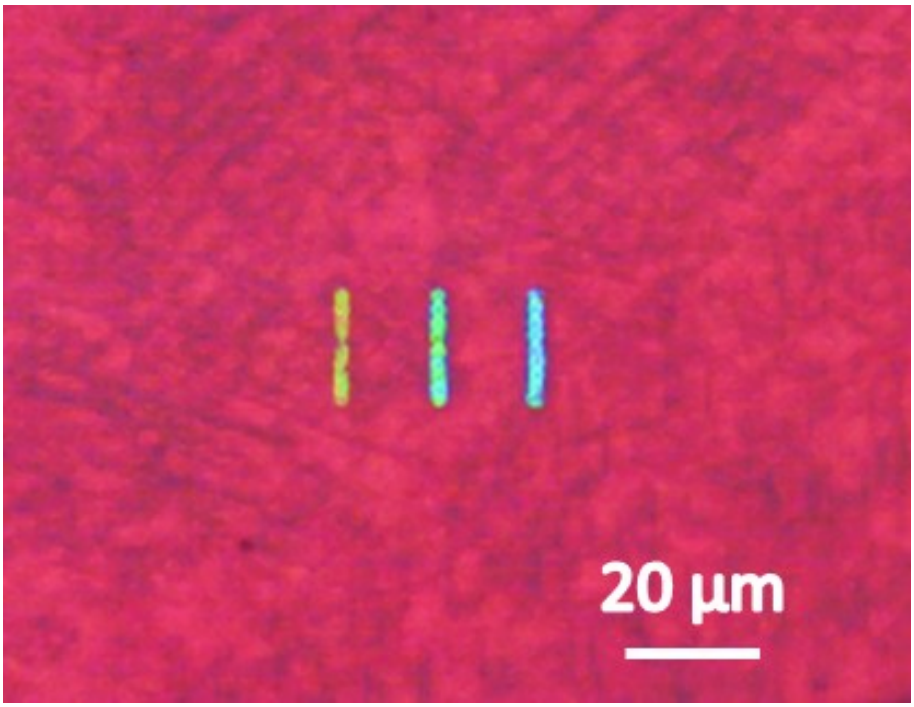

Fig. S6. Laser direct writing of different color lines on the PS/SiO_2 CPC films. Laser power: 1.5 mW, irradiation time for single pixel: 45 s for yellow, 100 s for green and 200 s for cyan. The step size is 2 µm.