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

Supporting Information

Fabrication of crack-free photonic crystal films *via* coordination of microspheres terminated dendrimer and their performance on invisible patterned photonic displays

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Supplementary Figures

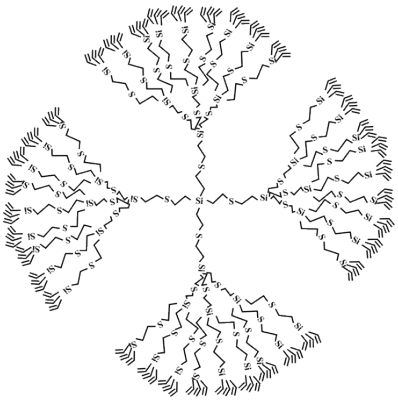

Fig. S1 Structural formula of G3-Vi dendrimer.

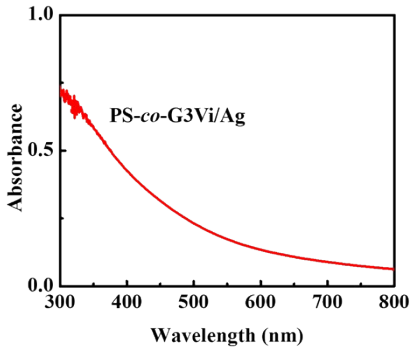

Fig. S2 UV-visible absorption spectrum of PS-*co*-G3Vi/Ag in water solvents.

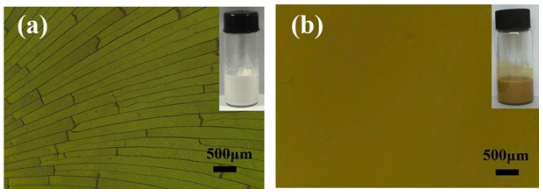

Fig. S3 Optical photographs of PS film (a) and PS-*co*-G3Vi/Ag film (b) by drop-casting. Inset: the corresponding photographs of the colloid emulsions.

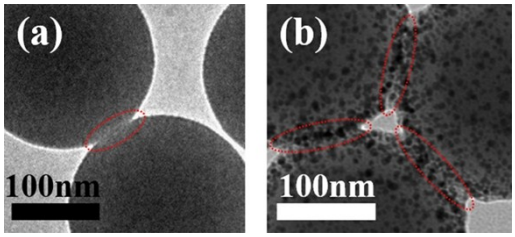

Fig. S4 TEM photographs of the contact region of pure PS microspheres (a) and PS-*co*-G3Vi/Ag microspheres (b).

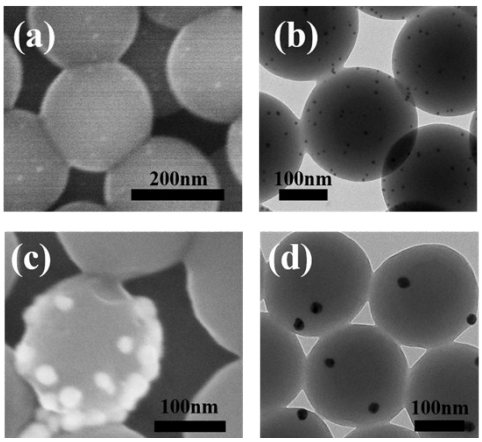

Fig. S5 Characterization of PS-*co*-G3Vi/Ag and PS-*co*-G2Vi/Ag. SEM (a) and TEM (b) images of PS-*co*-G3Vi microspheres (0.5 g of G3-Vi dendrimers). SEM (c) and TEM (d) images of PS-*co*-G2Vi microspheres (0.5 g of G2-Vi dendrimers).

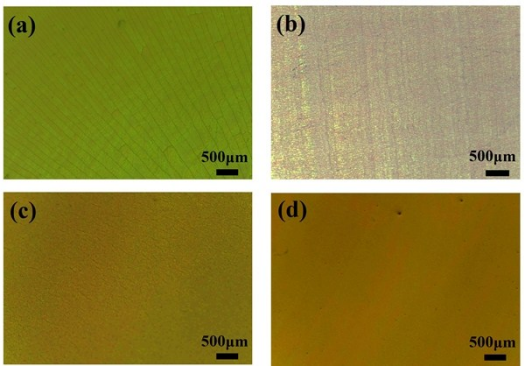

Fig. S6 Optical photographs of PS-*co*-G3Vi (5.5 g of St, 0.9 g of G3-Vi dendrimers) film (a), PS-*co*-G2Vi/Ag (5.5 g of St, 0.5 g of G2-Vi dendrimers) film (b), PS-*co*-G3Vi/Ag (5.5 g of St, 0.5 g of G3-Vi dendrimers) film (c), PS-*co*-G3Vi/Ag (5.5 g of St, 0.9 g of G3-Vi dendrimers) film (d).

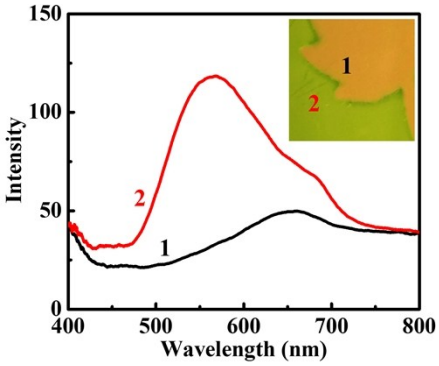

Fig. S7 Reflectance spectra of patterned region 1 (black) and unpatterned region 2 (red). Inset: the corresponding photographs.

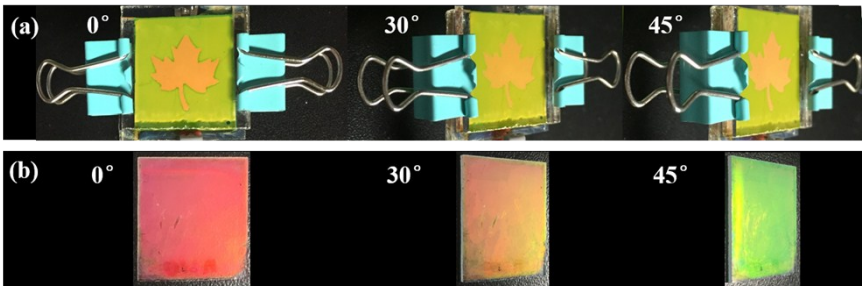

Fig. S8 Photonic colors of (a) patterned photonic display device and (b) highly ordered CPC film *via* vertical deposition from 0°, 30°, 45° angles, respectively.

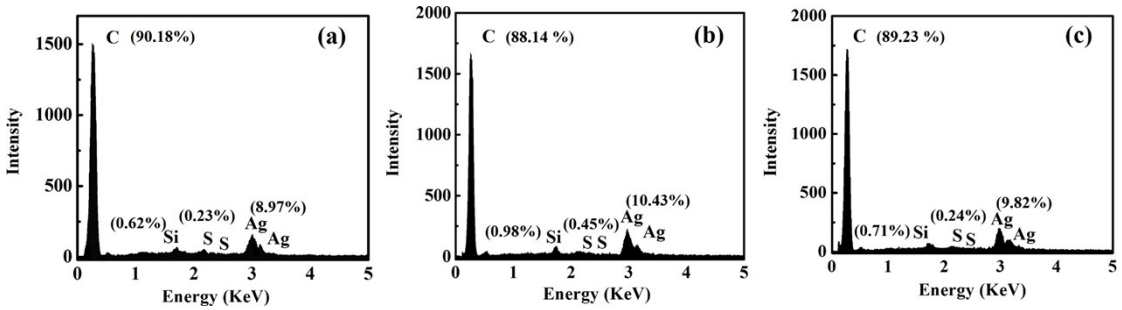

Fig. S9 EDS spectra of 163 nm (a), 180 nm (b) and 232 nm (c) diameters of PS-*co*-G3Vi/Ag microspheres, respectively.

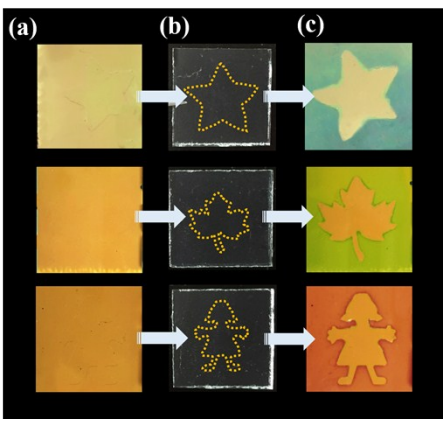

Fig. S10 Schematic representation of invisible patterned photonic display with blue, green and red structural colors. The images of original invisible patterned photonic display devices (a), the corresponding photographs of patterned electrodes (b), and the devices with electrical stimulus (c).