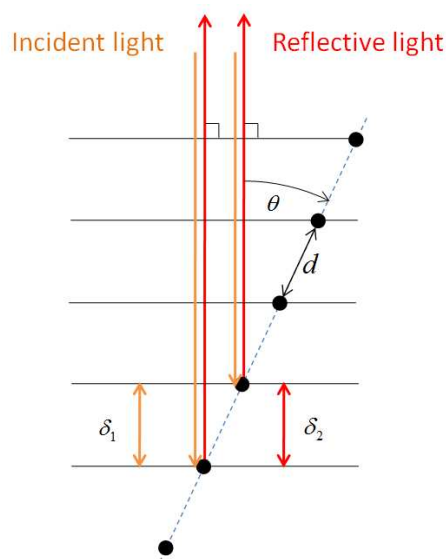# Photonic Printing through the Orientational Tuning of Photonic Structures and Its Application to Anti-counterfeiting Labels

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$$\lambda = \delta_1 + \delta_2 = nd(\cos\theta + \cos\theta) = 2nd\cos\theta$$

Figure S1. Schematic illustration and calculation to the reflection of tilted photonic structure, when the incident or reflective light is projected or collected along the normal direction of the film.
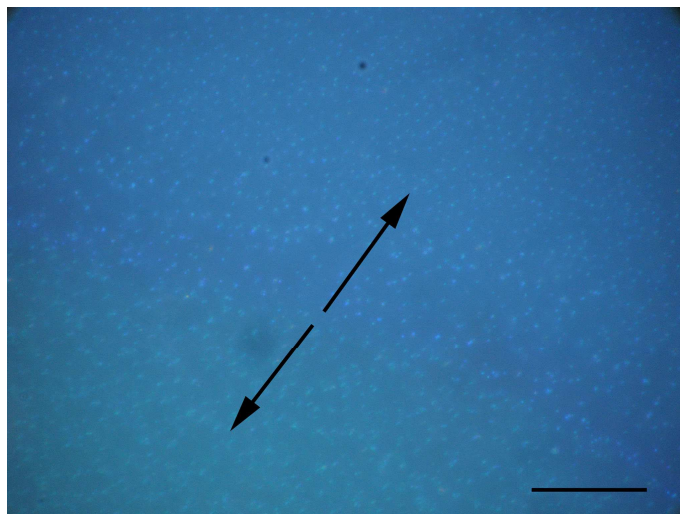

Figure S2. Optical microscope images of the boundary of two neighboring region with opposite orientations. The particle chains are titled away from the vertical direction and lean to two opposite directions as marked by the black arrow. The scale bar is 20 μm.
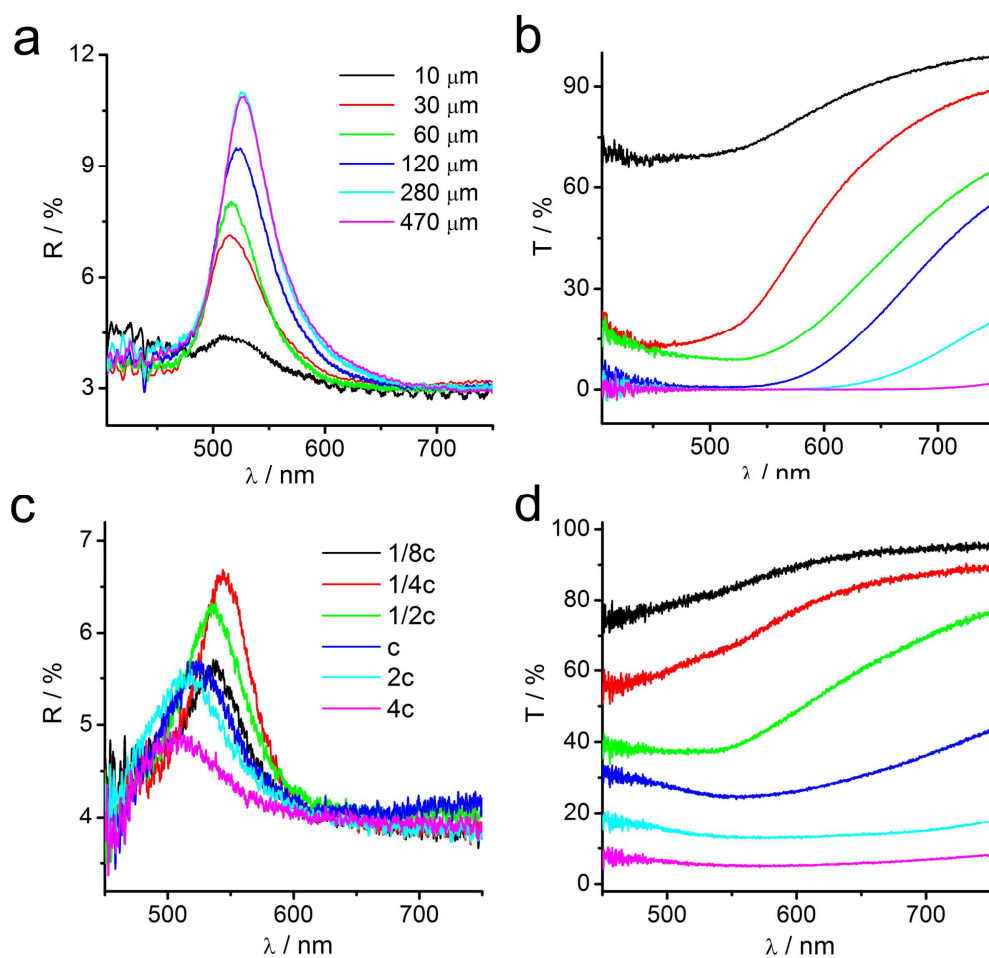
Figure S3. (a) Reflection and (b) transmission spectra of photonic crystal films with various thicknesses and same particle density (8.6 mg/cm^3) (c) Reflection and (d) transmission spectra of samples with different particle densities and same thickness (30 μm).
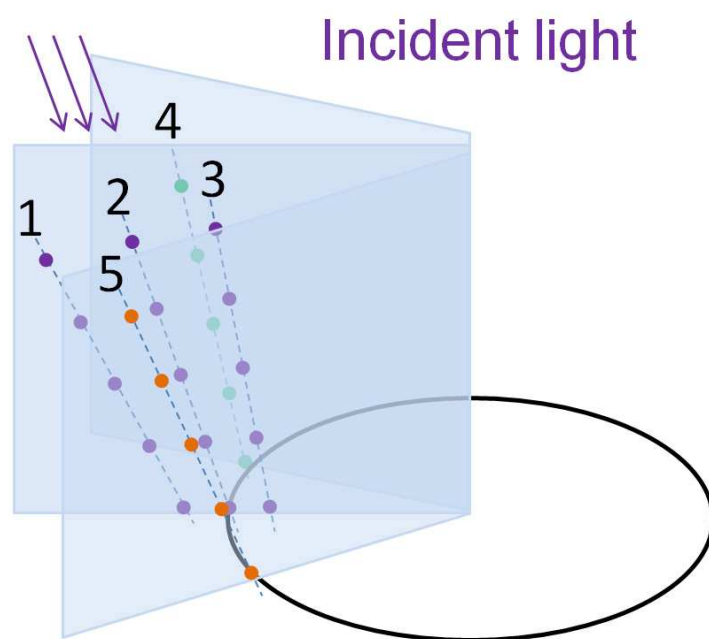
Figure S4. The schematic illustration to the formation of color halo and its color distribution.