

# Versatile Double-Bandgap Photonic Crystals of High Color Saturation

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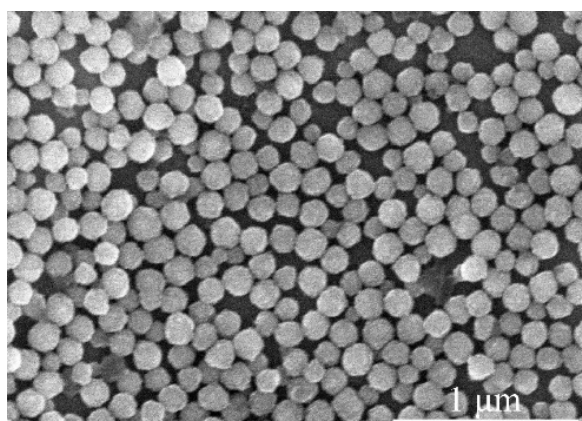


Figure S1. SEM image of Fe<sub>3</sub>O<sub>4</sub>@PVP superparamagnetic particles with a diameter of 150 nm.

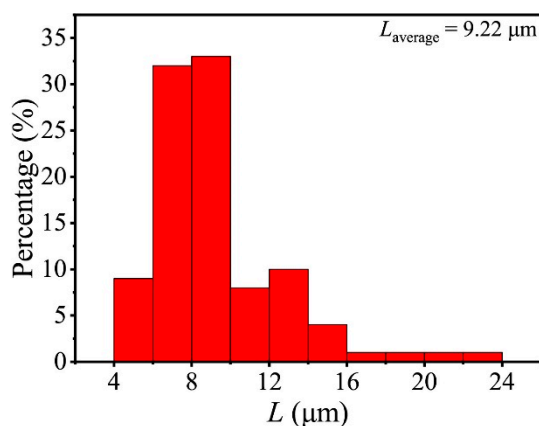


Figure S2. The length distribution diagram of green PNCs.

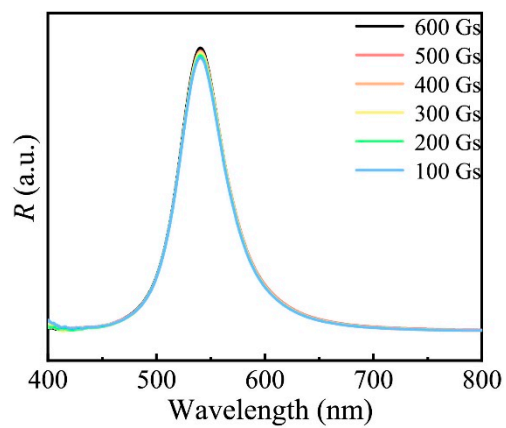


Figure S3. Reflection spectra of green PNCs under different magnetic field.

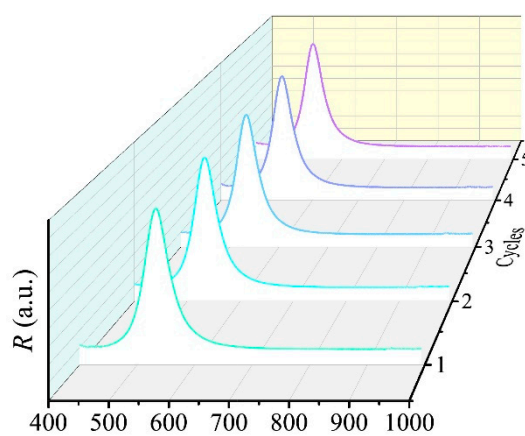


Figure S4. The cycling stability of PNCs under repeatedly applied magnetic field.

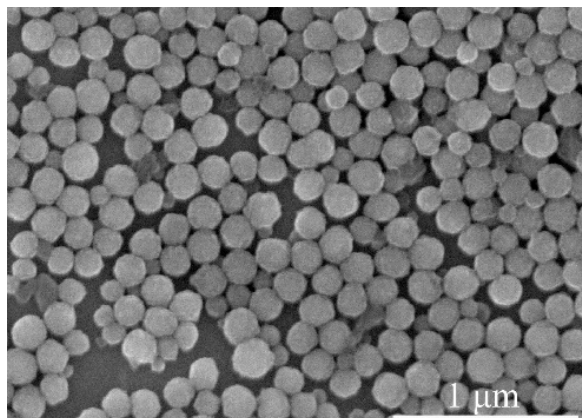


Figure S5. SEM image of  $\text{Fe}_3\text{O}_4$ @PVP superparamagnetic particles with a diameter of 180 nm.

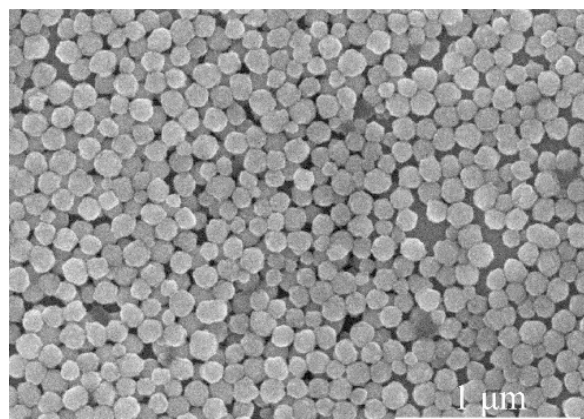


Figure S6. SEM image of  $\text{Fe}_3\text{O}_4@\text{PVP}$  superparamagnetic particles with a diameter of 120 nm.

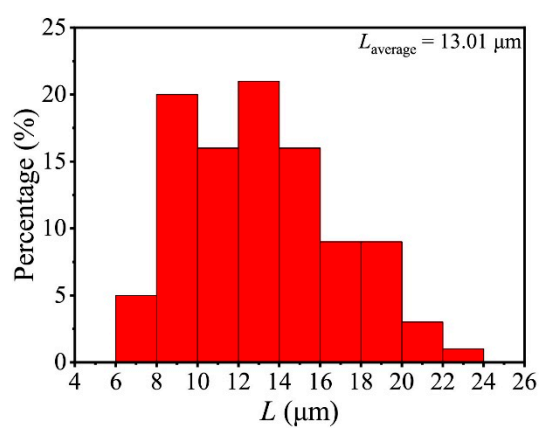


Figure S7. The length distribution diagram of red PNCs.

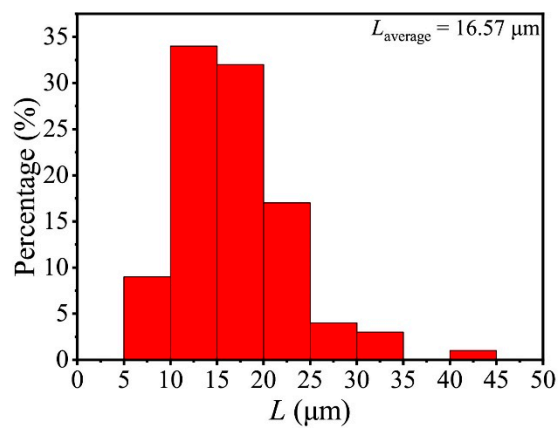


Figure S8. The length distribution diagram of blue PNCs.

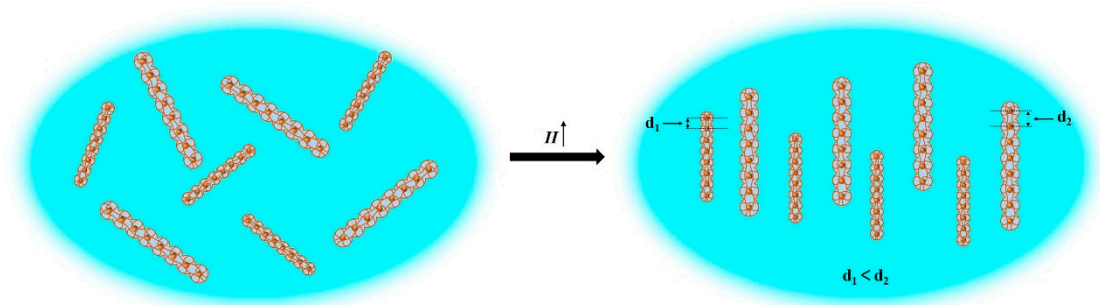


Figure S9. Magnetic induced orientation of two type of PNCs with different lattice distance ( $d_1 < d_2$ ) in an external magnetic field.

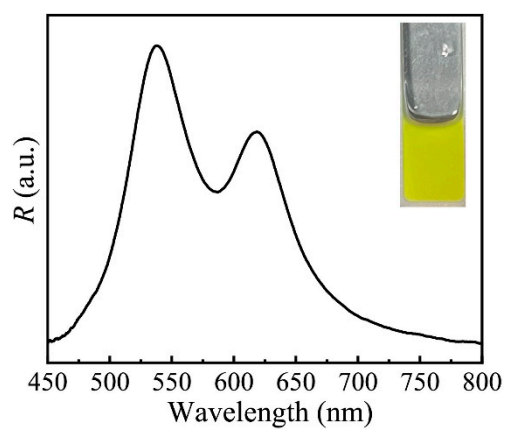


Figure S10. The reflection spectrum and digital photo of mixed PNCs (more green PNCs).

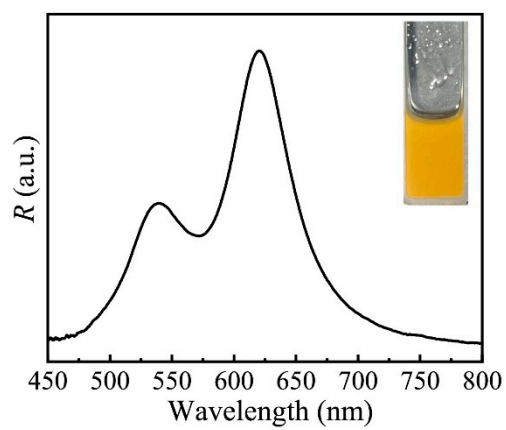


Figure S11. The reflection spectrum and digital photo of mixed PNCs (more red PNCs).