Supplementary Material (ESI) for Journal of Materials Chemistry

Supplementary information

Photoluminescence Modification in Upconversion Rare-Earth Fluoride Nanocrystal Arrays Constructed Photonic Crystals

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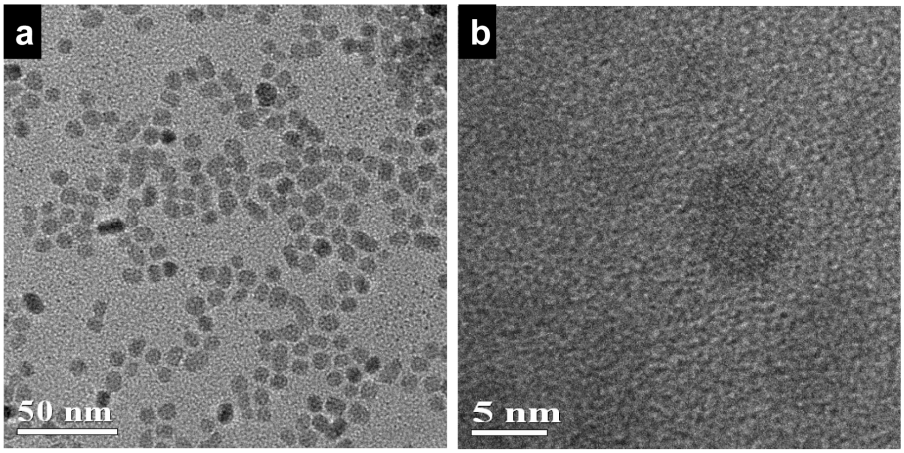

Figure S1 TEM (a) and HRTEM (b) images of the upconversion α-$NaYF_4$: 20 wt.%Yb^{3+}/2 wt.%Er^{3+} nanocrystals prepared by using oleic acid as a stabilizing agent, and NaF and $Re(NO_3)_3$ as precursors at 130 °C for 12 h under hydrothermal condition.

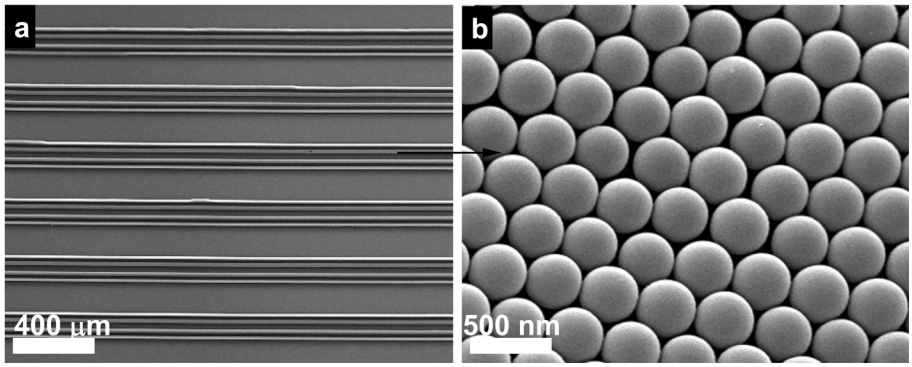

Figure S2 SEM images of the PS colloid hierarchical arrays on the silicon substrate by micromolding in capillaries (MIMIC) method with PDMS mold.

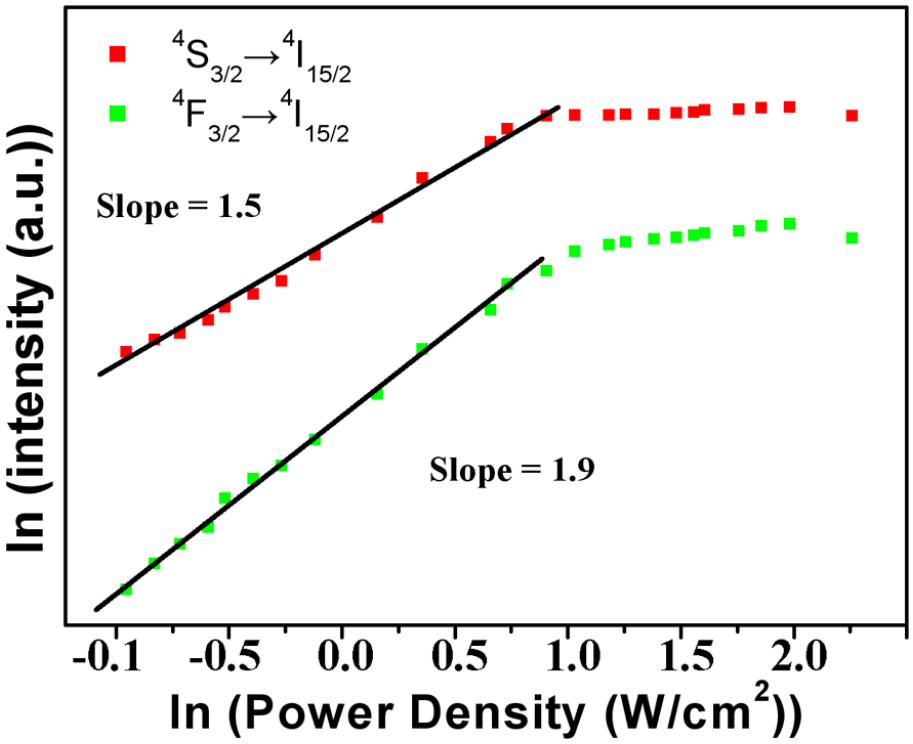

Figure S3 Power dependence of the upconversion emissions of α-$NaYF_4$: 2 wt.% Er^{3+}/20 wt.% Yb^{3+} excited with a 978 nm laser diode. Both the slopes for the red and green curves are about 2 at relatively low excitation densities, showing a two-photon emission process. At high excitation density the slope of the curve is reduced due to saturation of the UC process.

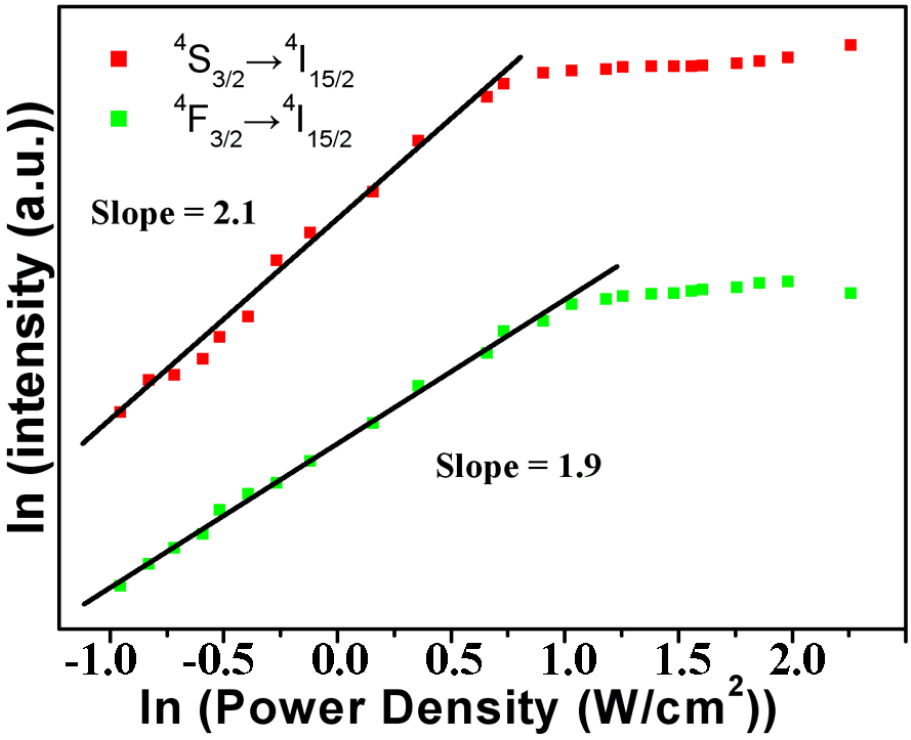

Figure S4 Power dependence of the upconversion emissions of β-$NaYF_4$: Yb^{3+}/Er^{3+} excited with a 978 nm laser diode.