Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Manipulating the emission intensity and lifetime of $NaYF_4:Yb^{3+},Er^{3+}$ simultaneously by embedding them into CdS photonic crystals

Xin Su†, Xiaoqian Sun†, Suli Wu* and Shufen Zhang

State Key Laboratory of Fine Chemicals, Dalian University of Technology, 2 Linggong Road, Dalian 116024, P.R. China

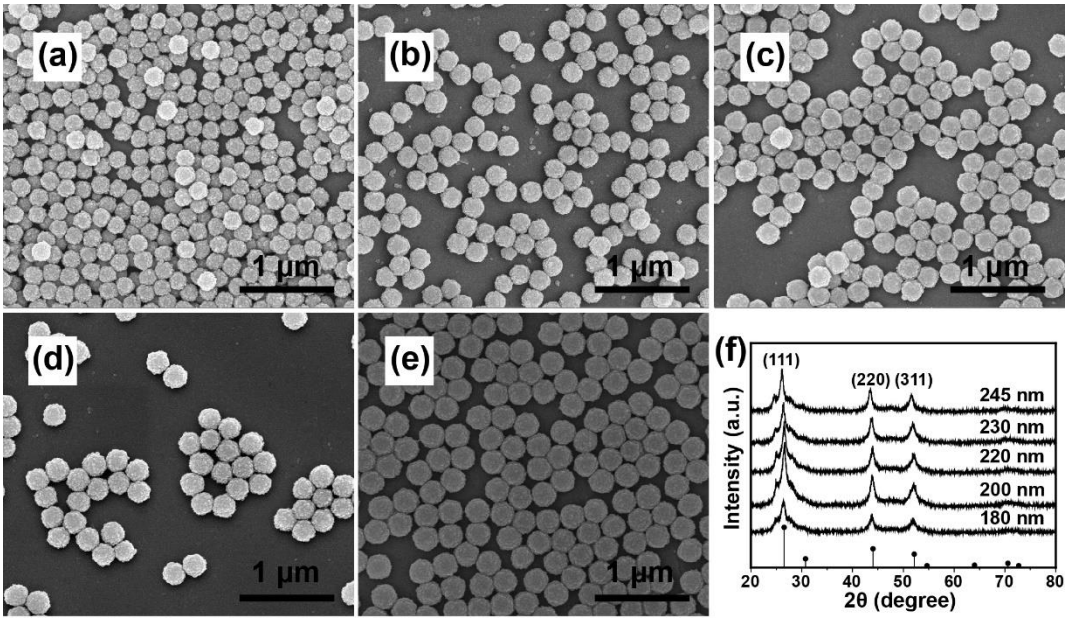

Figure S1 SEM images of monodisperse CdS spheres with different diameters: (a)180 nm; (b)200 nm; (c)220 nm; (d)230 nm; (e)245 nm; (f)XRD patterns of CdS spheres of sample a~e.

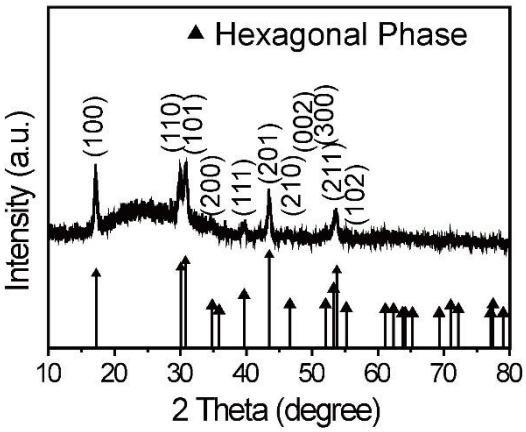

Figure S2 XRD pattern of the obtained UCNPs before surface modification

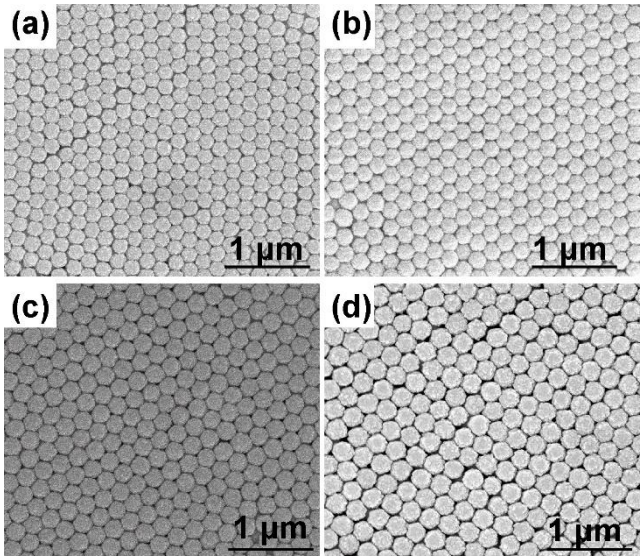

Figure S3 SEM images of pure CdS PCs prepared from spheres with different diameters: (a)180 nm; (b)200 nm; (c)220 nm; (d)245 nm.

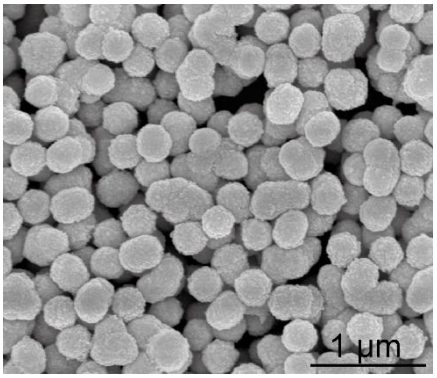

Figure S4 The SEM image of the disordered CdS/$NaYF_4$:Yb^{3+},Er^{3+} composite film.

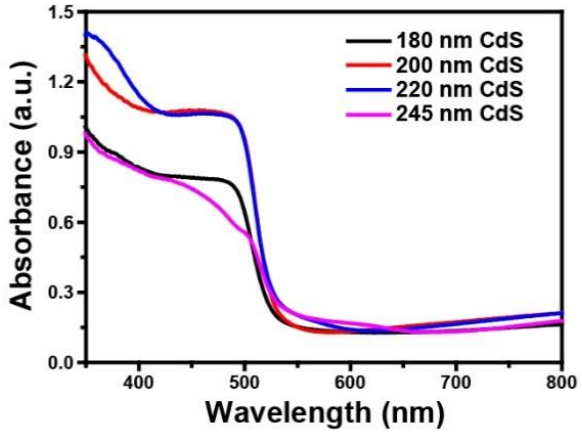

Figure S5 Absorption spectra of the CdS/UCNPs composite PC films obtained from 180 nm, 200 nm, 220 nm and 245 nm CdS spheres

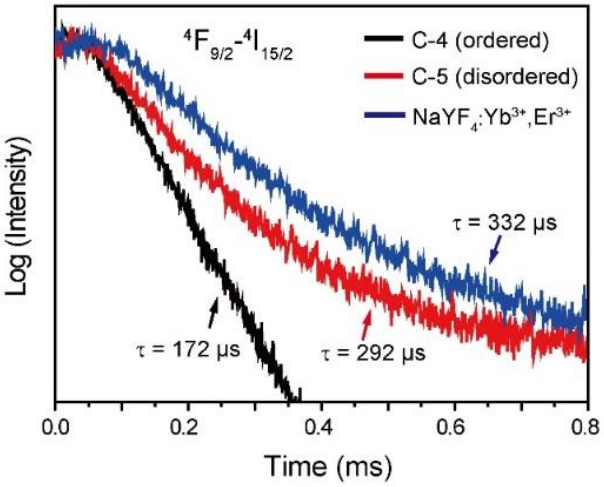

Figure S6 Luminescence decay curves of Er^{3+} ions (red emission) in the UCNPs, CdS/UCNPs composite PC film (C-4) and CdS/UCNPs composite film (C-5)

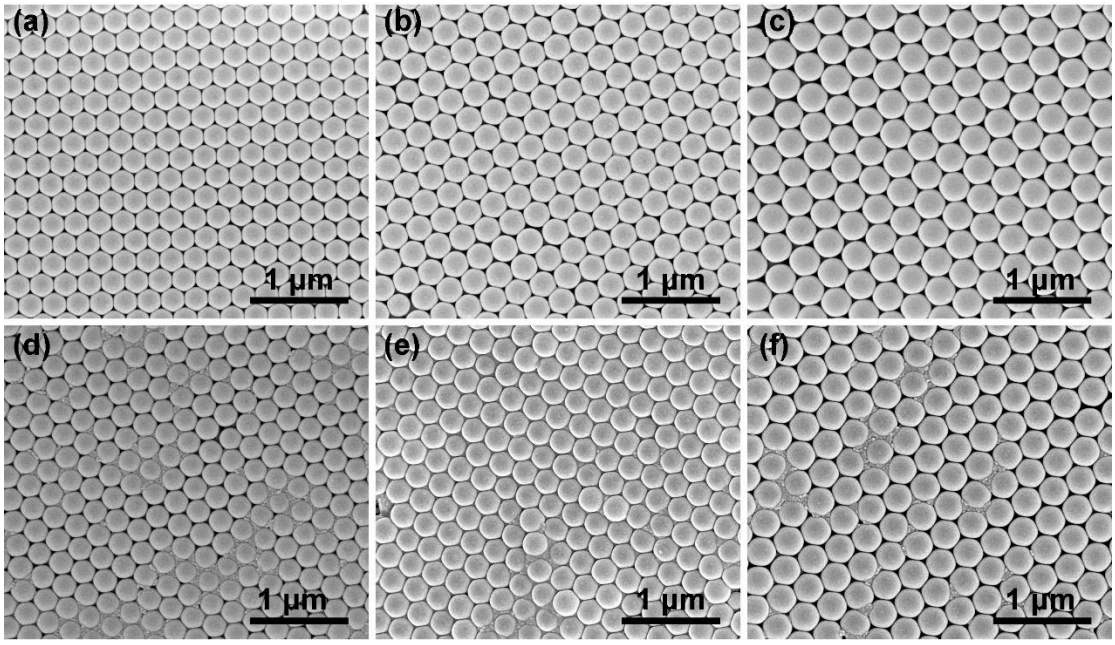

Figure S7 SEM images of (a~c) pure PS PCs and (d~f) PS/$NaYF_4$:Yb^{3+},Er^{3+} composite PCs with PS spheres in different diameters as build blocks. (a,d) 245 nm; (b,e) 270 nm; (c,f) 297 nm.