Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supplementary information

Enhanced up-conversion luminescence from $NaYF_4$:Yb,Er nanocrystals by Gd^{3+} ions induced phase transformation and plasmonic Au nanosphere arrays

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EDX spectra of $NaYF_4$ nanocrystals for Gd15 sample.

We have measured the EDX pattern of $NaYF_4$ nanocrystals to reveal the existence of doped elemental Gd. Fig. S1 shows the typical EDX spectra of sample Gd15 and the existence of Gd in the $NaYF_4$ nanocrystals can be clearly indicted.

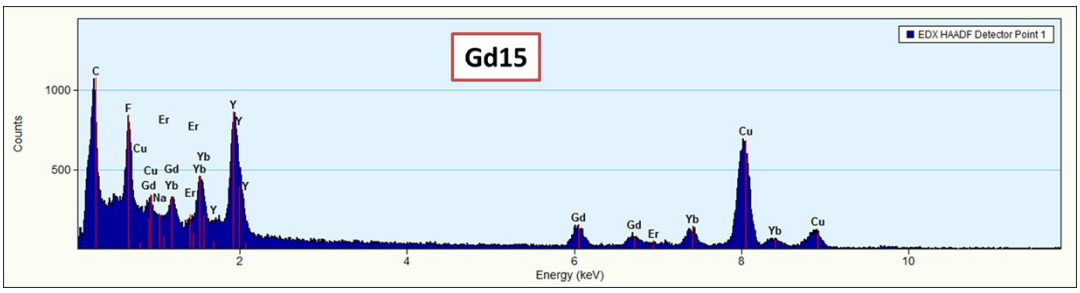

Fig. S1 the typical EDX spectra of $NaYF_4$ nanocrystals for Gd15 sample.

FE-SEM images of $NaYF_4$ nanocrystals on the Au nanoarrays substrate

Cross-sectional and top view FE-SEM images of $NaYF_4$ nanocrystals on the Au nanoarrays substrate are shown in Fig. S2. It is shown that the thickness of $NaYF_4$ nanocrystals film is about 500 nm and the $NaYF_4$ nanocrystals film on the Au sphere structure is smooth with a compact structure.

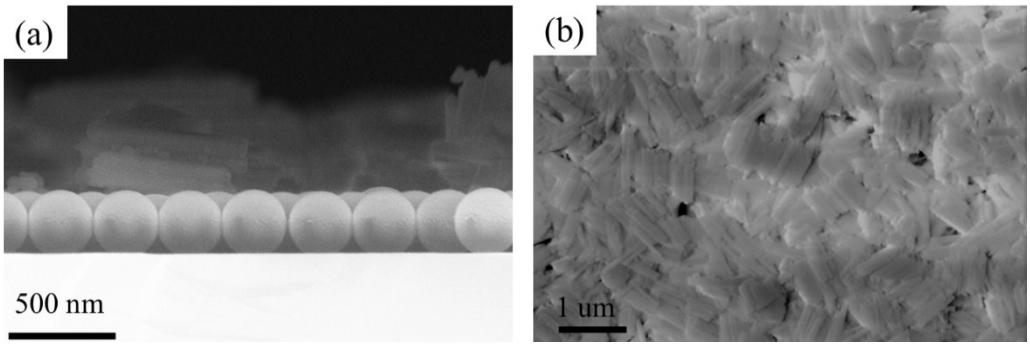

Fig. S2 Cross-sectional and top-view FE-SEM images of $NaYF_4$:Yb,Er nanocrystals on Au nanoarrays, respectively.