Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B

Supporting Information

Interface-Assisted Ionothermal Synthesis, Phase Tuning, Surface Modification and Bioapplication of Ln^{3+}-doped $NaGdF_4$ Nanocrystals

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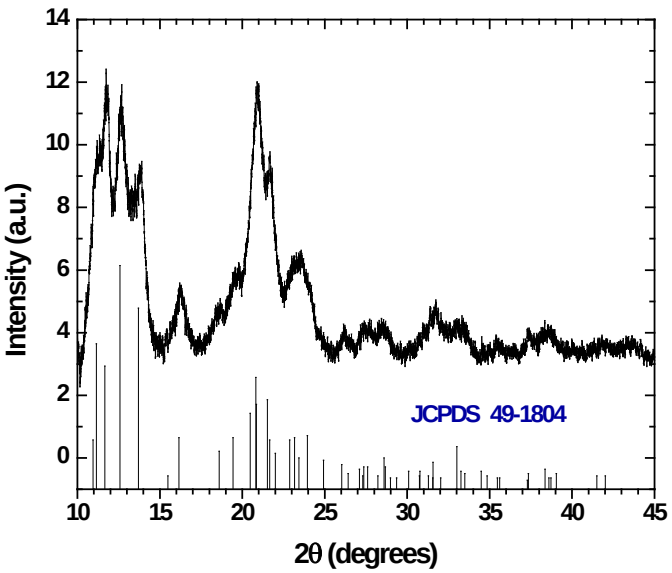

Figure S1. The XRD patterns of NCs obtained from interface-assisted ionothermal method without the addition of PEI and database standard data for orthorhombic GdF_3 (JCPDS 49-1804).

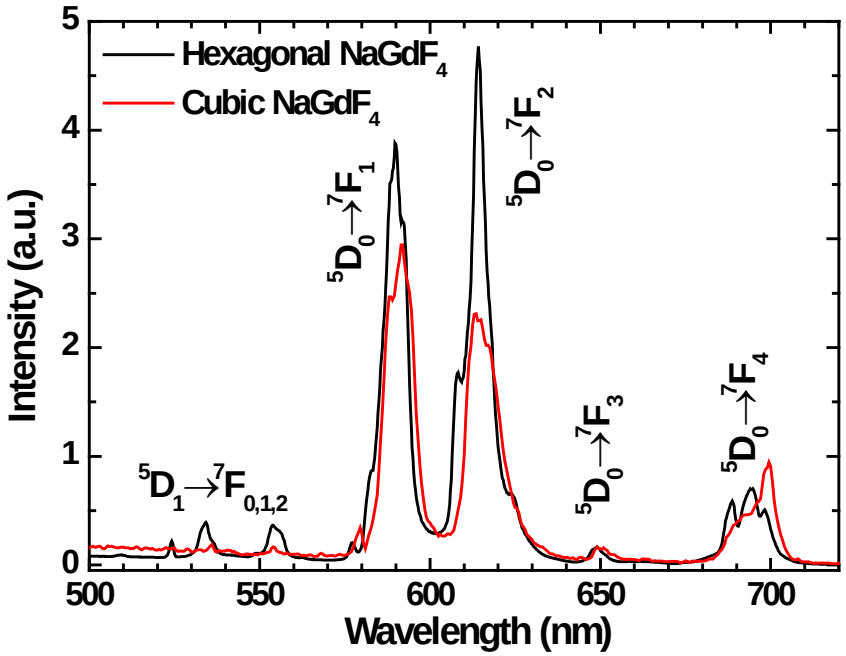

Figure S2. The emission spectra of hexagonal (black) and cubic (red) $NaGdF_4$: Ce^{3+}, Tb^{3+} NCs under the excitation of 255 nm with the same experimental setup. The hexagonal $NaGdF_4$ shows a higher emission intensity and a higher intensity ratio between $^5D_0 \rightarrow {}^7F_2/{}^5D_0 \rightarrow {}^7F_1$ than that of cubic $NaGdF_4$, indicating that the hexagonal $NaGdF_4$ is more suitable host for doping optically active Ln^{3+} ions.

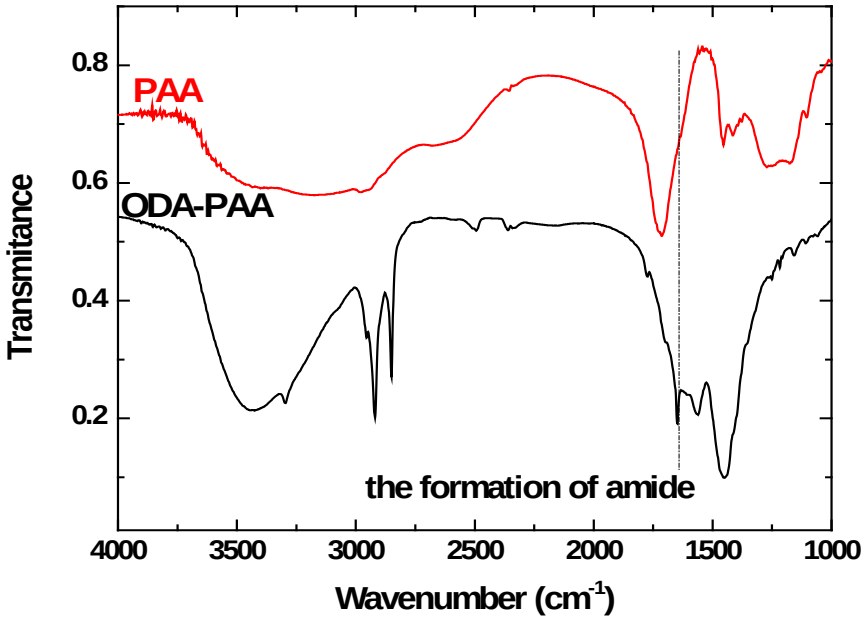

Figure S3. FTIR spectra of polyacrylic acid (PAA) and octadecylamine modified polyacrylic acid (ODA-PAA). The band centered at 1655 cm^{-1}, which can be ascribed to amide band, indicates the successful linkage of ODA with PAA.

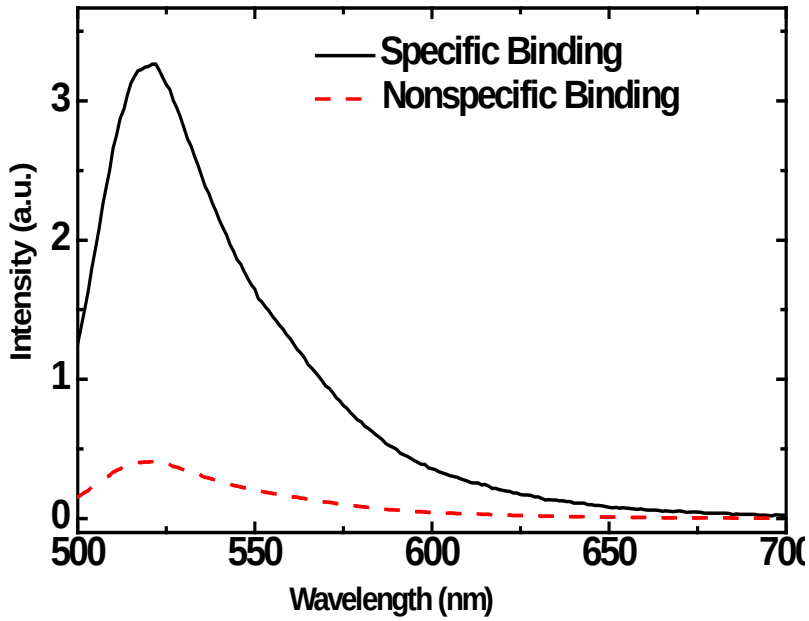

Figure S4. RT emission spectra (black solid) of the biotinylated $NaGdF_4$ NCs after bioconjugation with FITC–labeled avidin in phosphate buffered saline solution (pH=7.4) under excitation at 485 nm. The red dotted line is the control experiment measured for non-biotinylated pure $NaGdF_4$ NCs. The weak signal is attributed to non-specific binding of avidin to the NC surface. Because of neat $NaGdF_4$ NCs we employed, no Ln^{3+} emissions are expected to be observed in the visible spectral region.