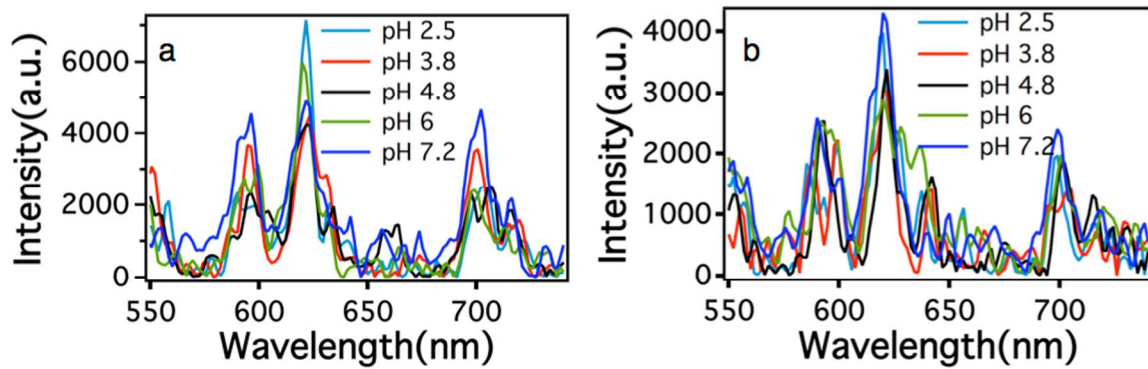
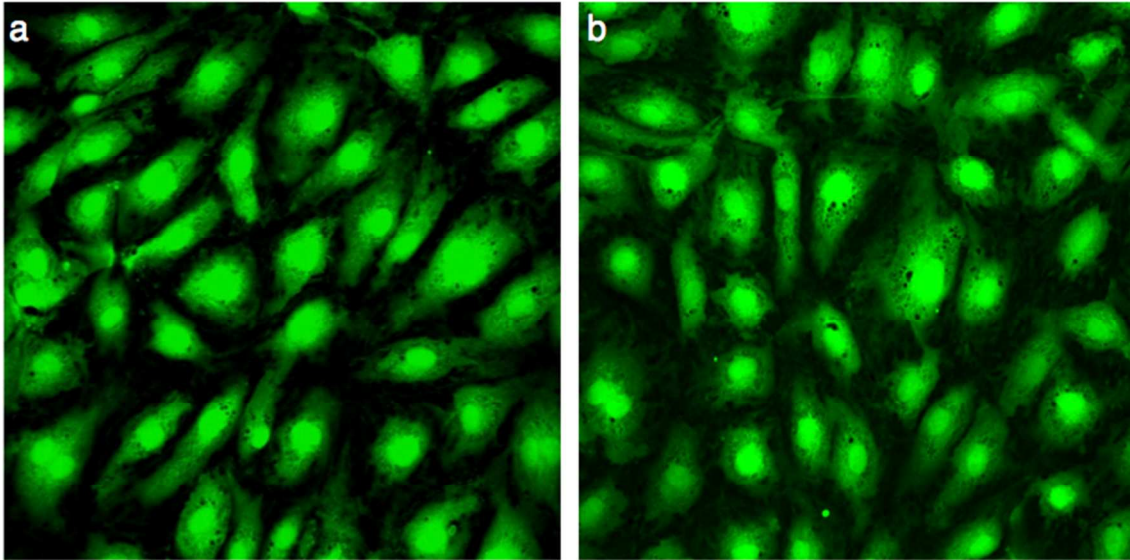


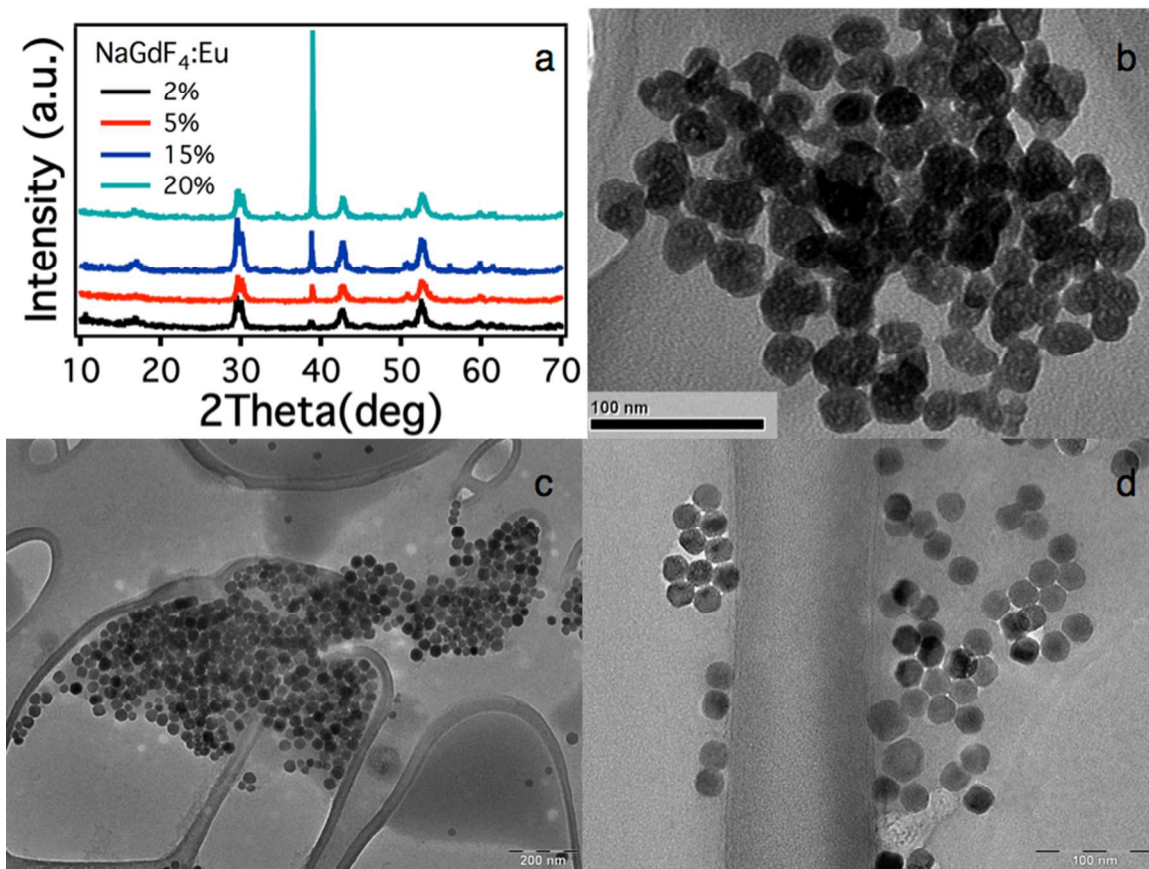
Supplementary Figure S1: a) X-ray diffraction of hydrothermally synthesized BaGdF₅:10%Eu. TEM micrographs of a) hydrothermally synthesized BaGdF₅:10%Eu; c) BaGdF₅:10%Eu synthesized by thermal decomposition; d) Flame synthesized Gd₂O₃ d).



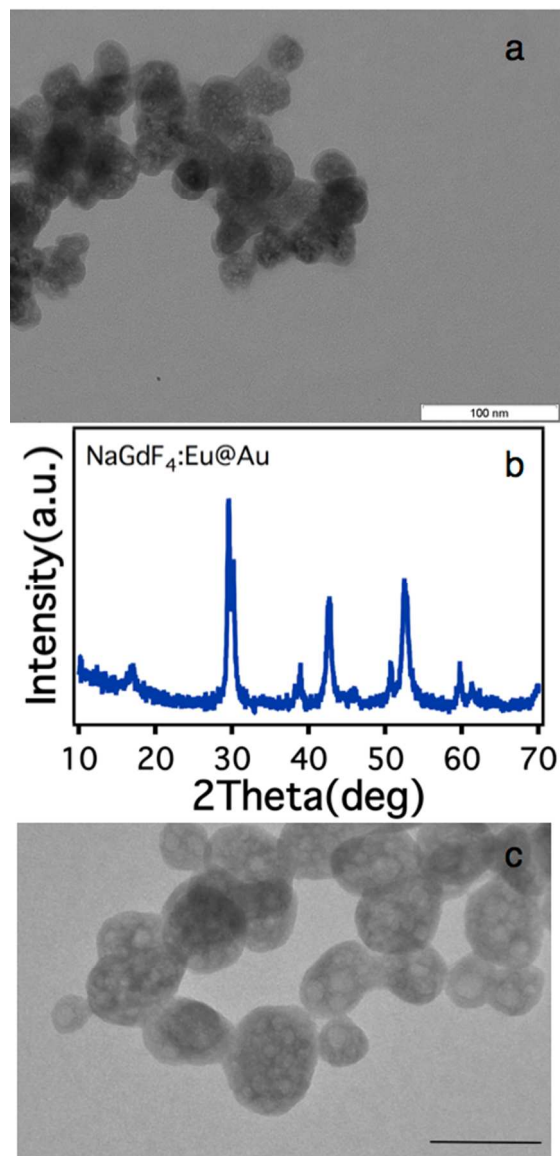
Supplementary Figure S2. X-ray excited luminescence from hexagonal NaGdF₄:15%Eu at different pHs and at a) 2.5mg/mL and b) 2mg/mL concentrations.



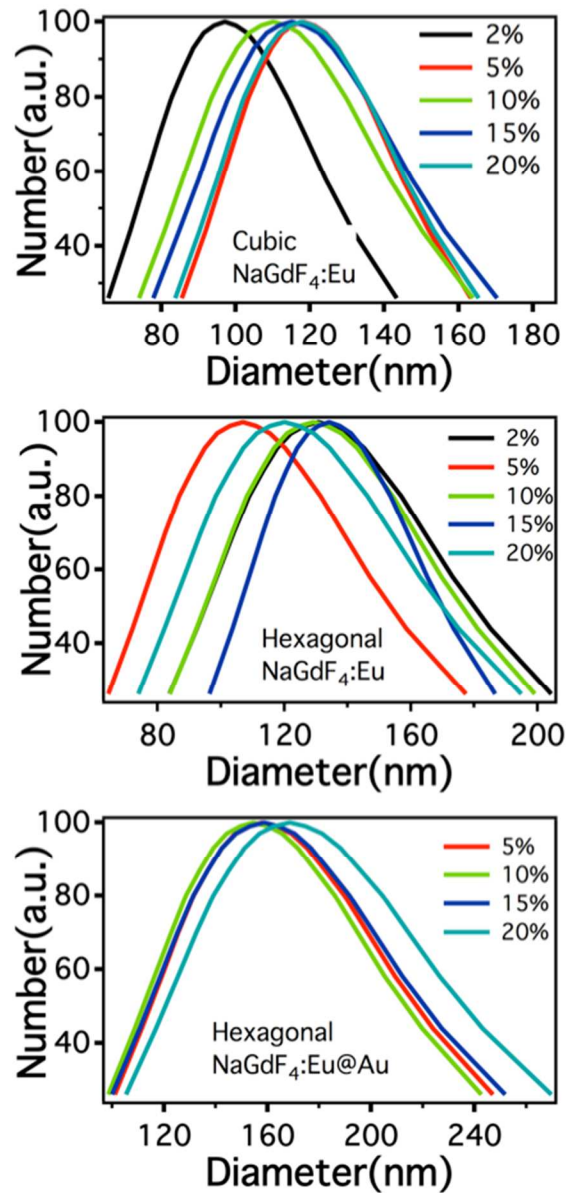
Supplementary Figure S3. Hexagonal $\text{NaGdF}_4:15\%\text{Eu}$ exposed to human endothelial cells a) Calcein/PI control; b) $50\mu\text{g}/\text{mL}$ concentration.



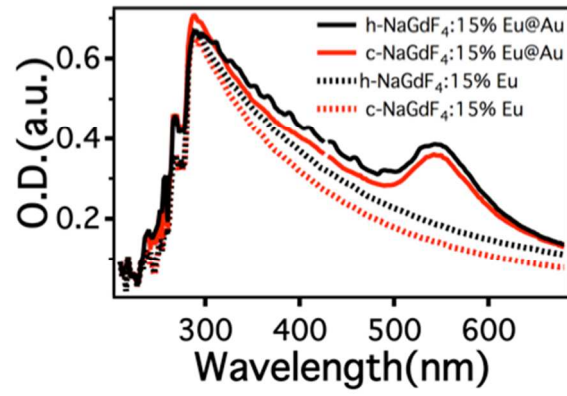
Supplementary Figure S4 X-ray diffraction data for hexagonal NaGdF₄:Eu (a). TEM micrographs of cubic b) and hexagonal NaGdF₄:15%Eu c)&d).



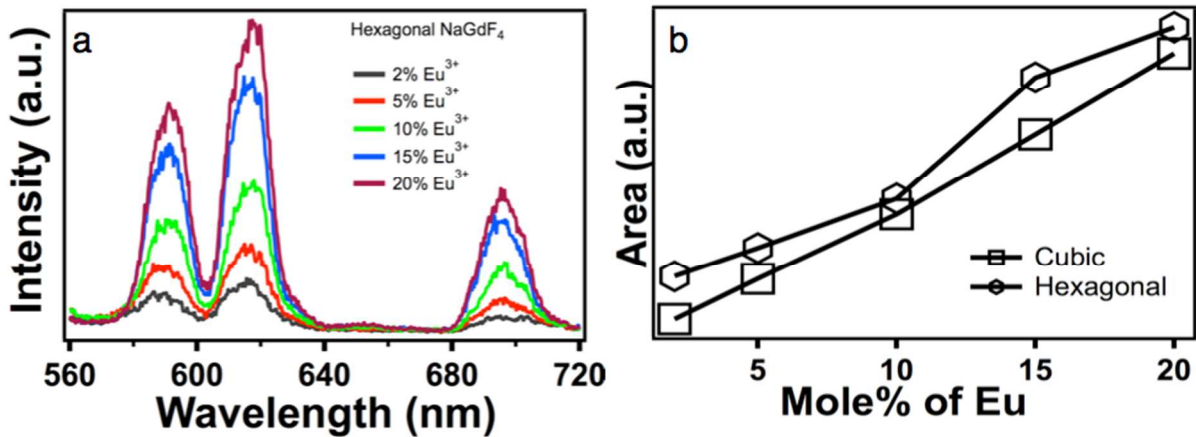
Supplementary Figure S5. TEM image of NaGdF₄:15%Eu@Au (a). (b) X-ray diffraction micrograph (b) and TEM image (c) of hexagonal NaGdF₄:15%Eu@Au. The scale bar in (c) corresponds to 50 nm.



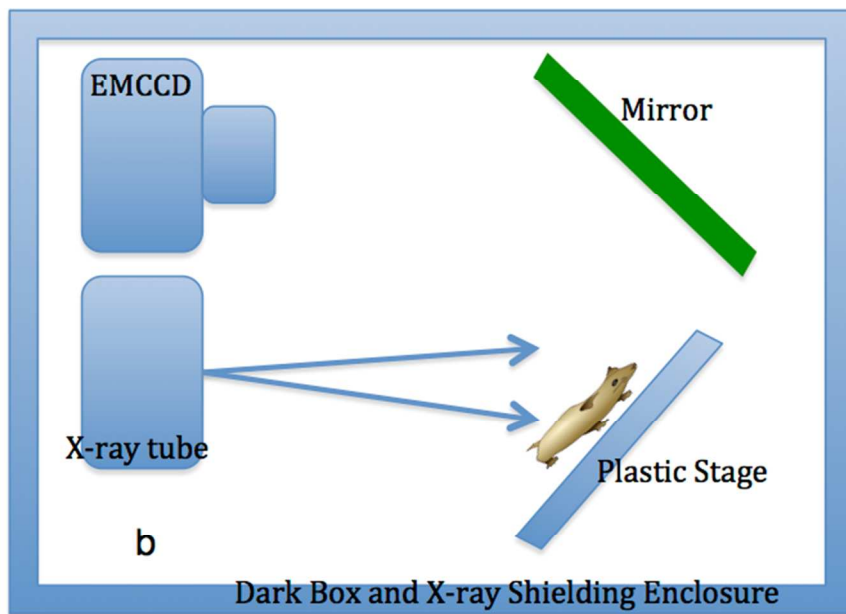
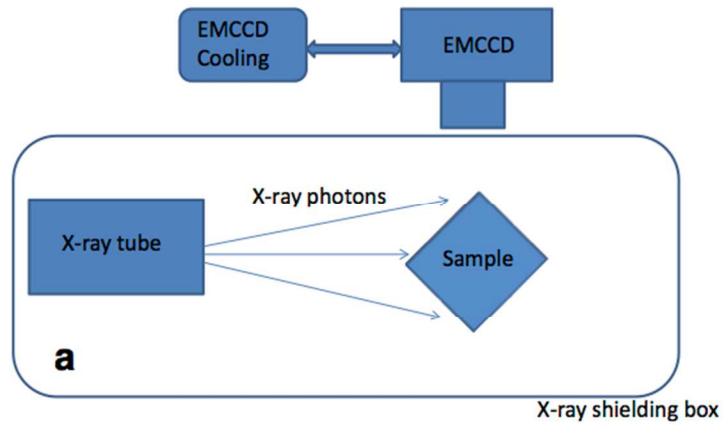
Supplementary Figure S6. Hydrodynamic size distribution of NaGdF₄:Eu nanoparticles established by dynamic light scattering.



Supplementary Figure S7 Absorbance spectra of cubic and hexagonal nanoparticle solutions of NaGdF₄:15%Eu and NaGdF₄:15%Eu@Au (1.5mg/mL).



Supplementary Figure S8. Photoluminescence spectra of hexagonal NaGdF₄:x%Eu (a). Integrated area in the 550 to 750 nm region of the spectra of cubic and hexagonal for different mole% of Eu doped in NaGdF₄. The concentration of the nanoparticle solution in water was 2.5mg/mL.



Supplementary Figure S9 Schematic of the X-ray luminescence measurement from (a) cuvette and (b) animal study.