Electronic Supplementary Material (ESI) for Biomaterials Science.
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Supporting Information

Multifunctional nanoprobes based on upconverting lanthanide doped CaF_2: towards biocompatibile materials for biomedical imaging

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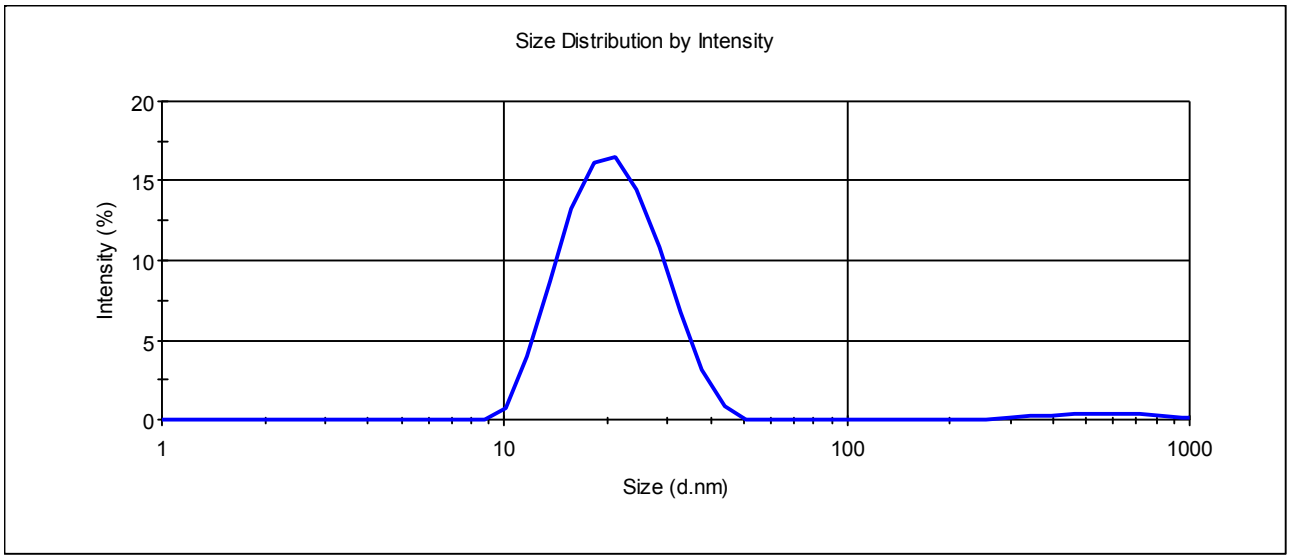

Figure S1. Hydrodynamic particle size distribution measured by DLS technique for the CaF_2:Gd,Yb,Tm NPs. Similar results have been obtained for the CaF_2:Gd,Yb,Er NPs.

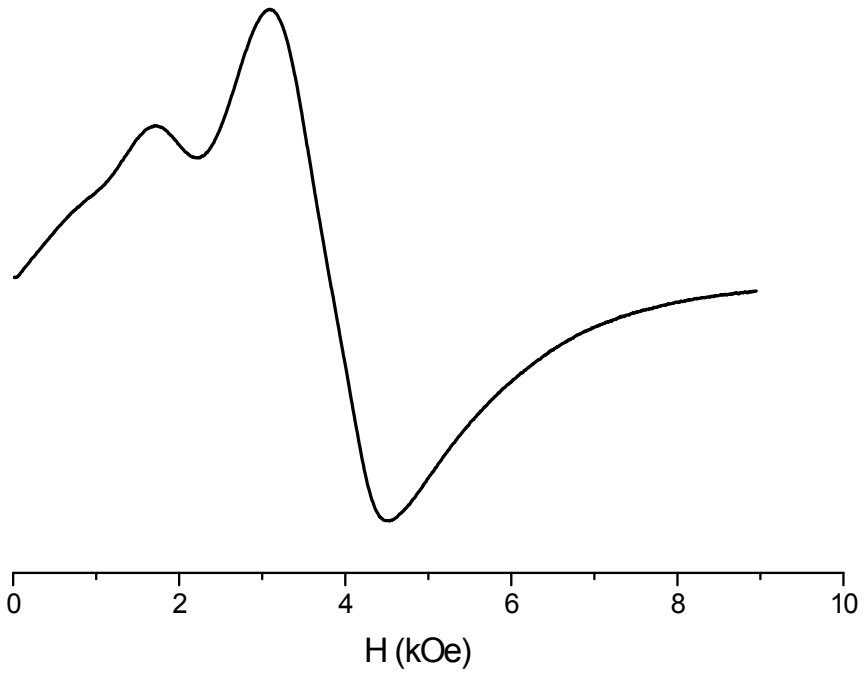

Figure S2. X-band (9.40 GHz) EPR spectrum of tridoped CaF_2:Gd,Yb,Er NPs with reduced Gd^{3+} content (Ca:Gd:Yb:Er molar ratio of 70:8:20:2), recorded at 10 K. The reduced Gd^{3+} ions content leaves more evidence for the Yb^{3+} and Er^{3+} signals.

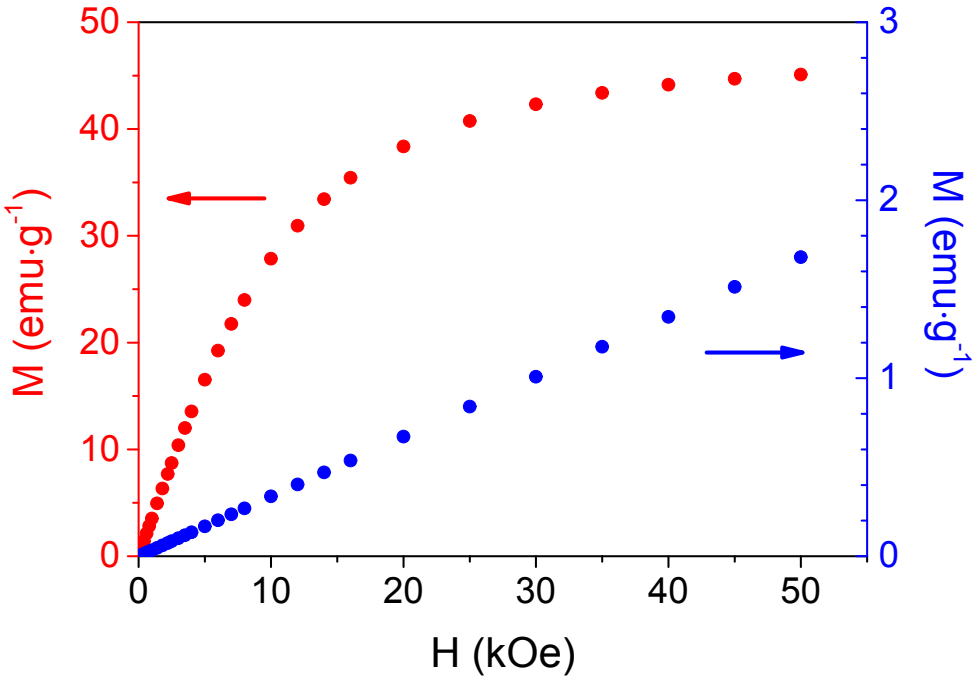

Figure S3. Isothermal magnetization curves measured at 2.5 K (red dots) and 300 K (blue dots) for CaF_2:Gd,Yb,Tm NPs.

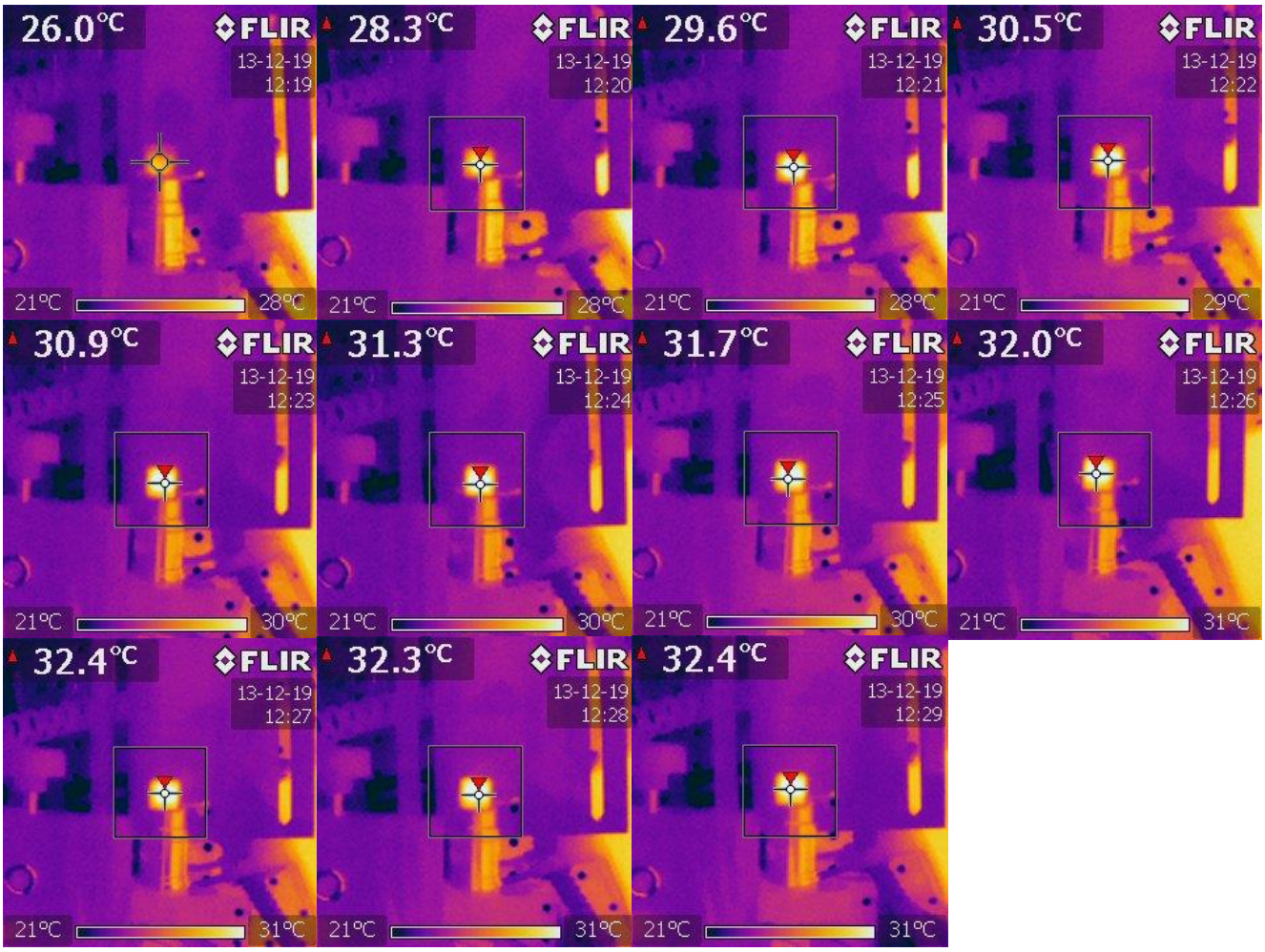

Figure S4. Infrared camera pictures for the CaF_2:Gd,Yb,Er NPs (seen from above).

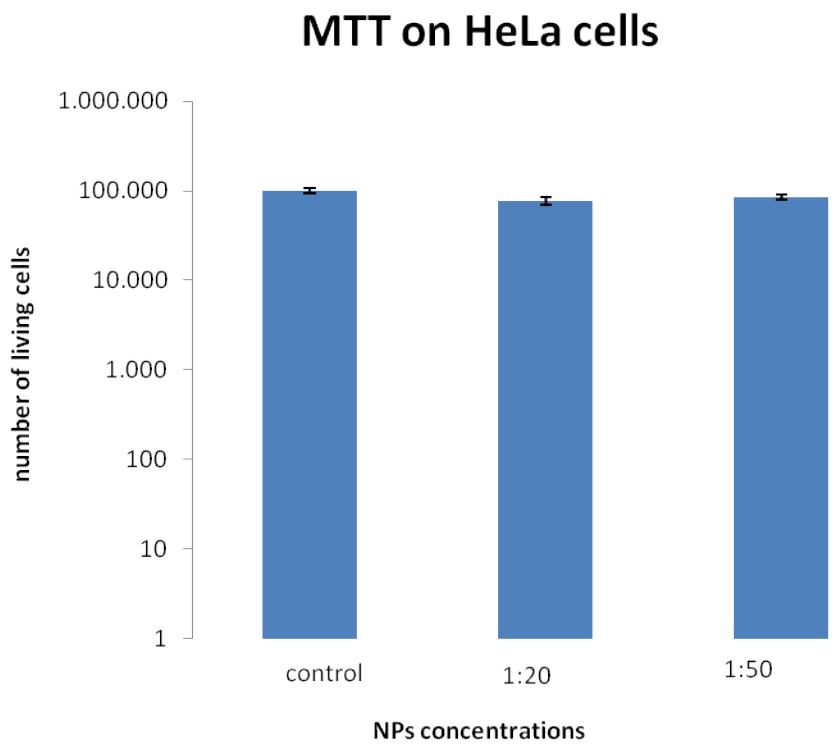

Figure S5. Toxicity tests for different dilutions of CaF_2:Gd,Yb,Tm NPs on He-La cells.