Supporting Information of:

PEG-capped, lanthanide doped GdF_3 nanoparticles: luminescent and T_2 contrast agents for optical and MRI multimodal imaging

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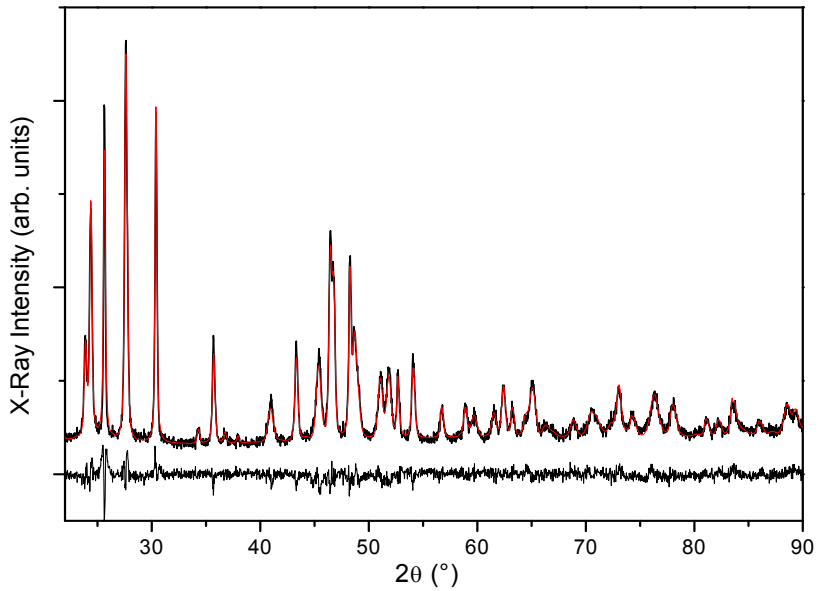

Figure SF1. XRPD pattern (black line) and Rietveld refinement (red line) for PEG-capped $GdF_3:Er^{3+},Yb^{3+}$ NPs (R_w=0.0801). Lower line: residuals between experimental and calculated data.

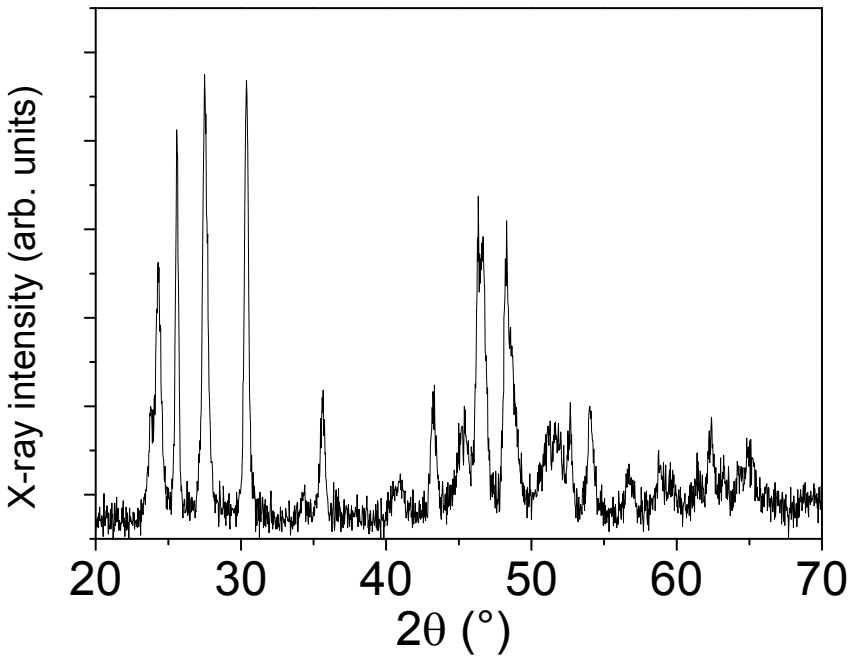

Figure SF2. XRPD pattern for uncapped $GdF_3:Er^{3+},Yb^{3+}$ NPs. Similar pattern has been obtained for the $GdF_3:Tm^{3+},Yb^{3+}$ NPs.

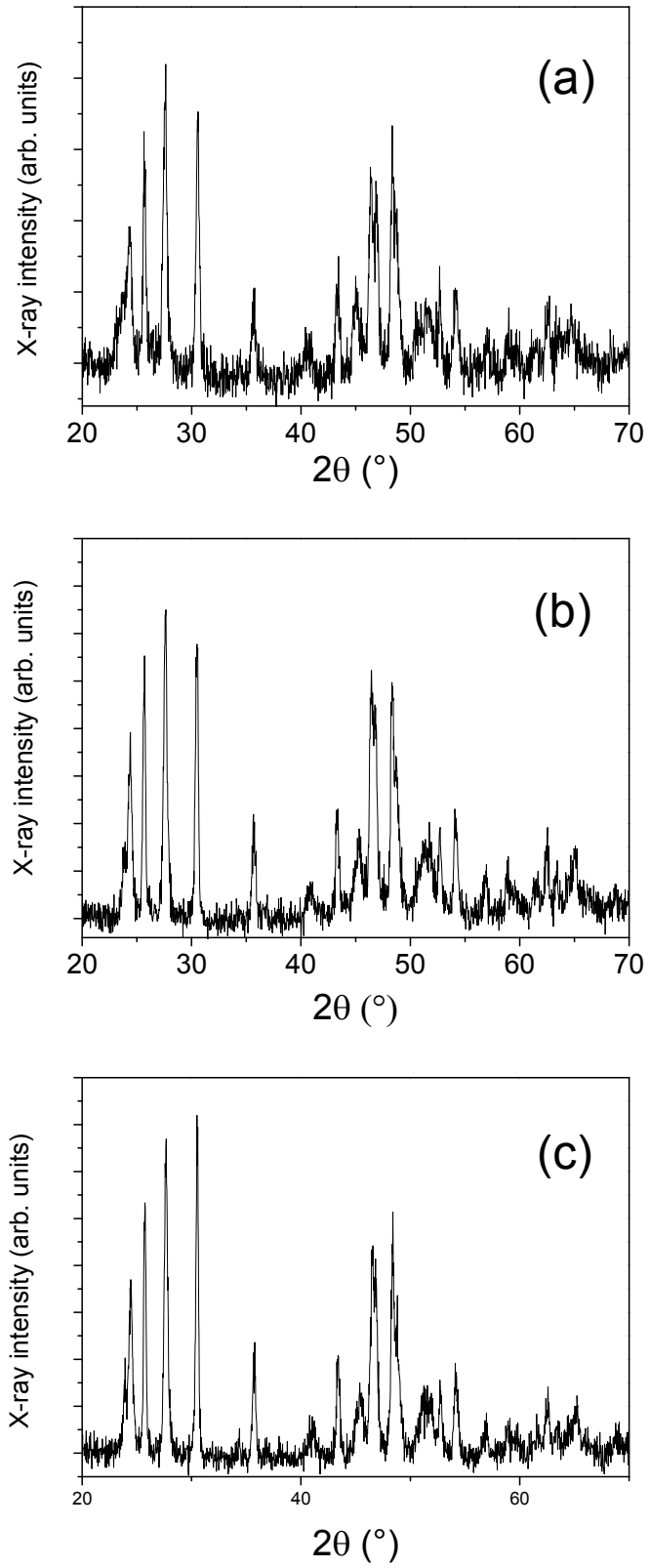

Figure SF3. X-ray powder diffraction patterns for Er^{3+}/Yb^{3+} doped GdF_3 NPs prepared under different heat treatments: (a) 140 °C; (b) 160 °C; (c) 180 °C. Similar results have been found for the Tm^{3+}/Yb^{3+} doped GdF_3 NPs.

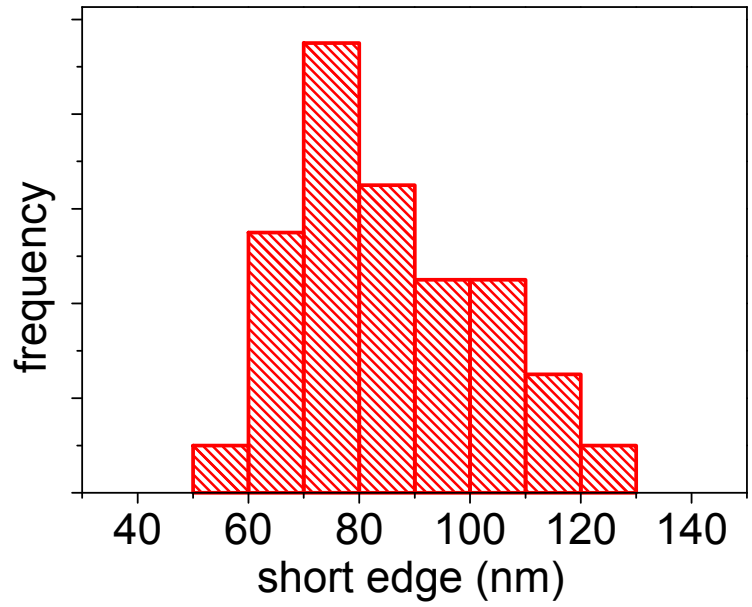

Figure SF4. Short edge size distribution for the GdF_3:Tm^{3+},Yb^{3+} NPs. Similar distribution is found for the GdF_3:Er^{3+},Yb^{3+} NPs.

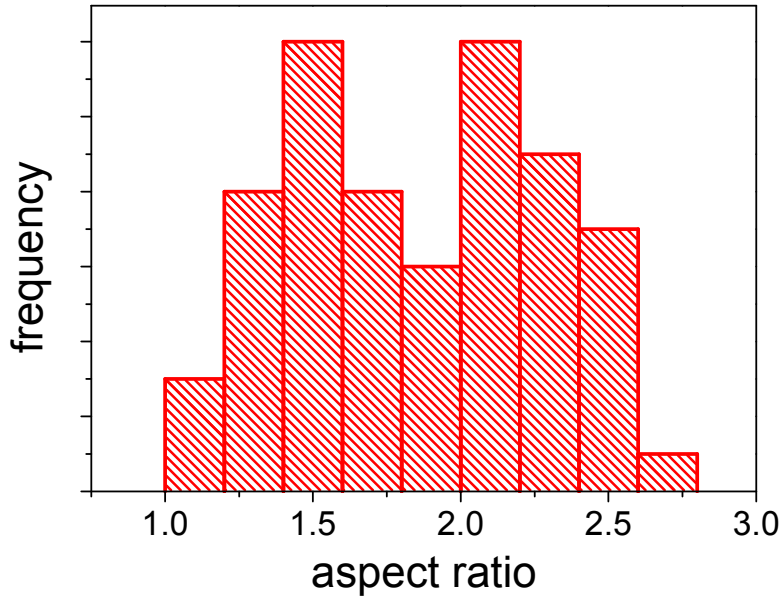

Figure SF5. Aspect ratio distribution for the GdF_3:Tm^{3+},Yb^{3+} NPs. A similar distribution is found for the GdF_3:Er^{3+},Yb^{3+} NPs.

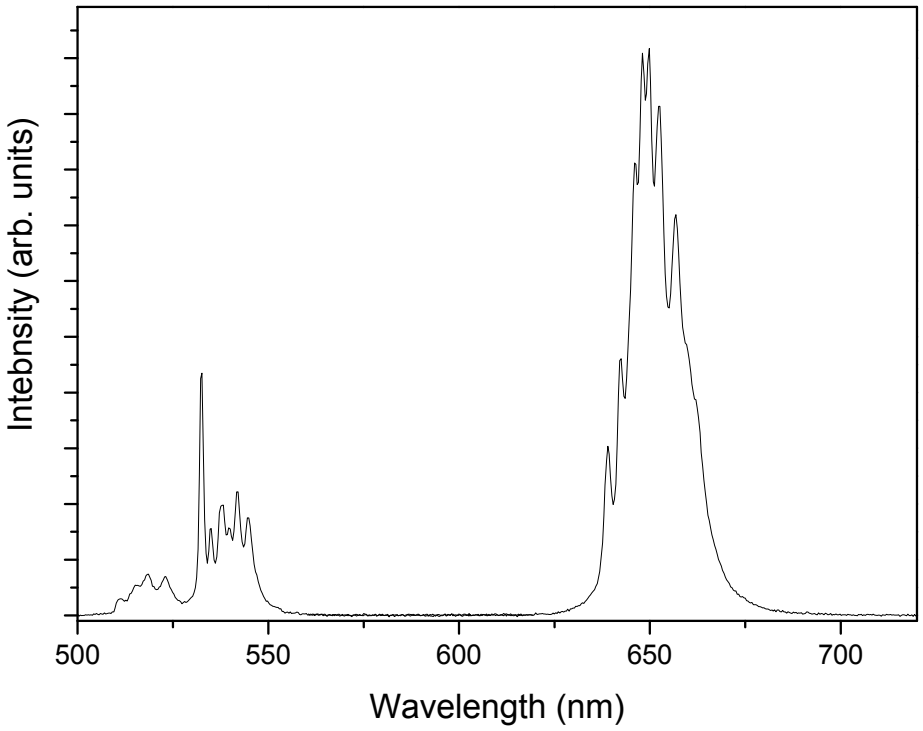

Figure SF6. Upconversion spectrum (λ_{exc}=980 nm) for the uncapped $GdF_3:Er^{3+},Yb^{3+}$ NPs in powder form. A similar spectrum has been obtained for the PEG-capped $GdF_3:Er^{3+},Yb^{3+}$ NPs.

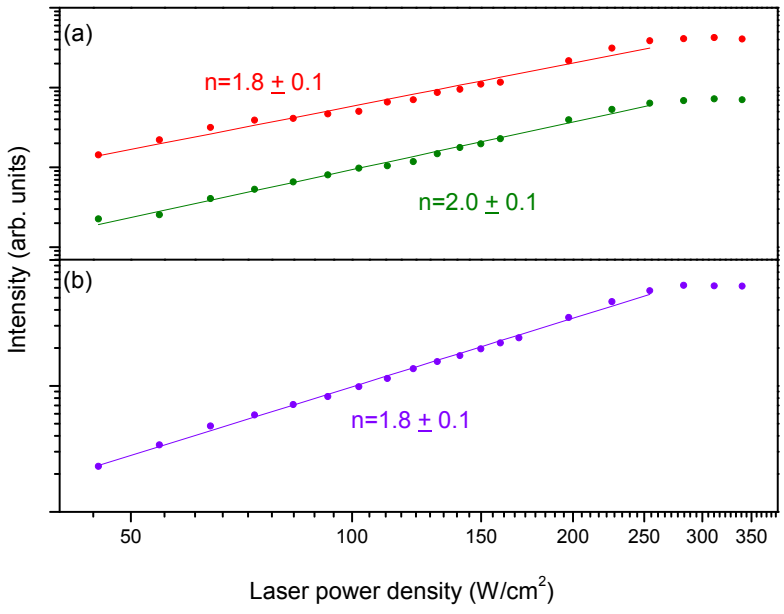

Figure SF7. Upconversion power study (λ_{exc}=980 nm) for water dispersion of (a) $GdF_3:Er^{3+}$, Yb^{3+} (0.60 g/l) (green: λ_{em}=550 nm, red: λ_{em}=660 nm); (b) $GdF_3:Tm^{3+}$, Yb^{3+} (0.47 g/l) (λ_{em}=810 nm).

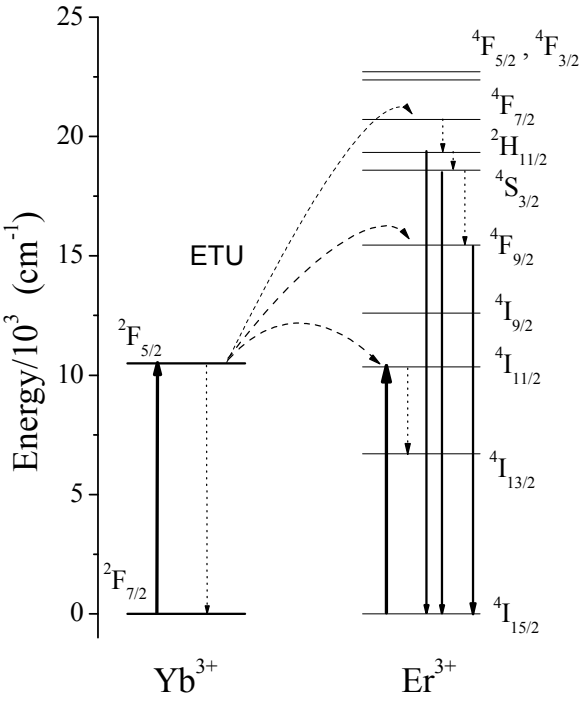

Figure SF8. Schematic representation of upconversion processes for Er^{3+}/Yb^{3+} ions (λ_{exc}=980 nm).

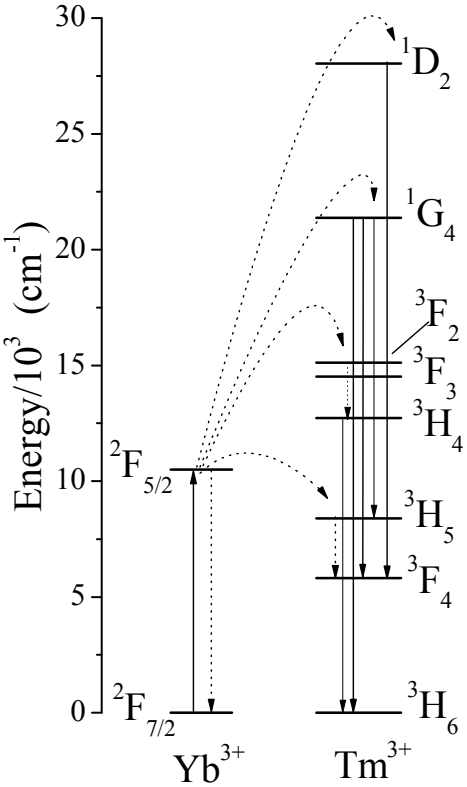

Figure SF9. Schematic representation of upconversion processes for Tm^{3+}/Yb^{3+} ions (λ_{exc}=980 nm).