ELECTRONIC SUPPLEMENTARY INFORMATION

# Multifunctional Eu-doped $NaGd(MoO_4)_2$ nanoparticles functionalized with poly(L-lysine) for optical and MRI imaging.

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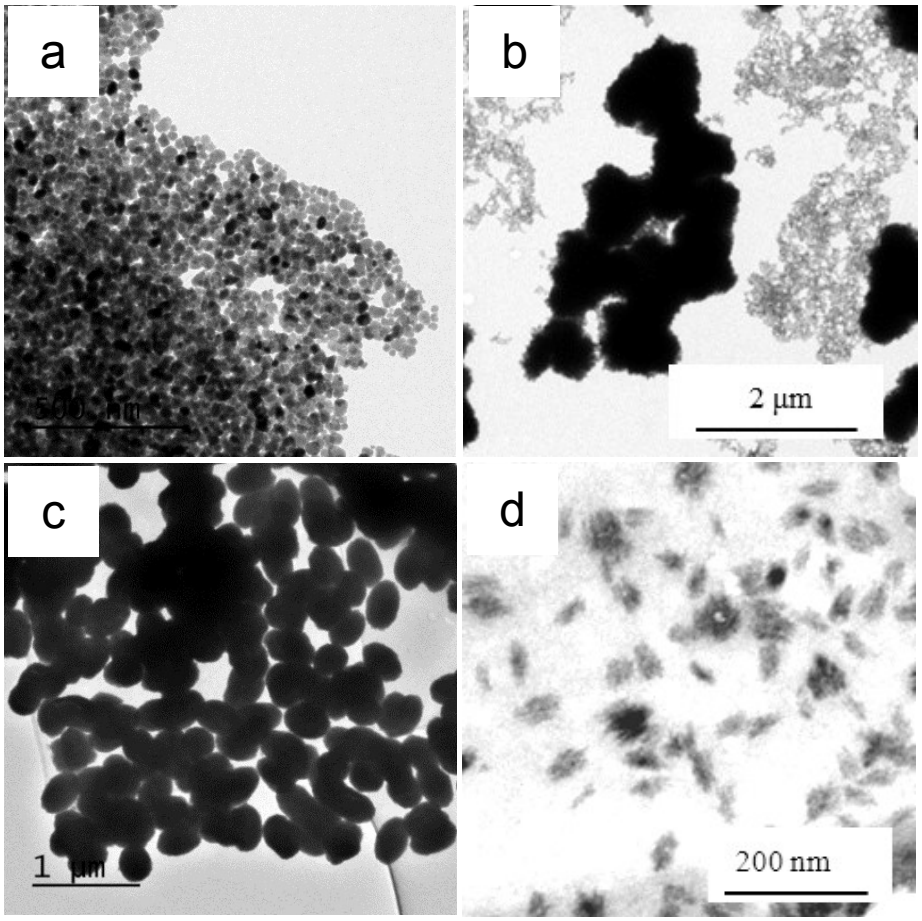


Figure S1. TEM images showing the effects on particle size and shape of different experimental parameters: (a) without sodium citrate; (b) with a mol ratio citrate/$Gd^{3+}$ = 1; (c) [Gd(III)]=0.04 M; (d) temperature of 150ºC. The other experimental parameters are shown in Table 1.

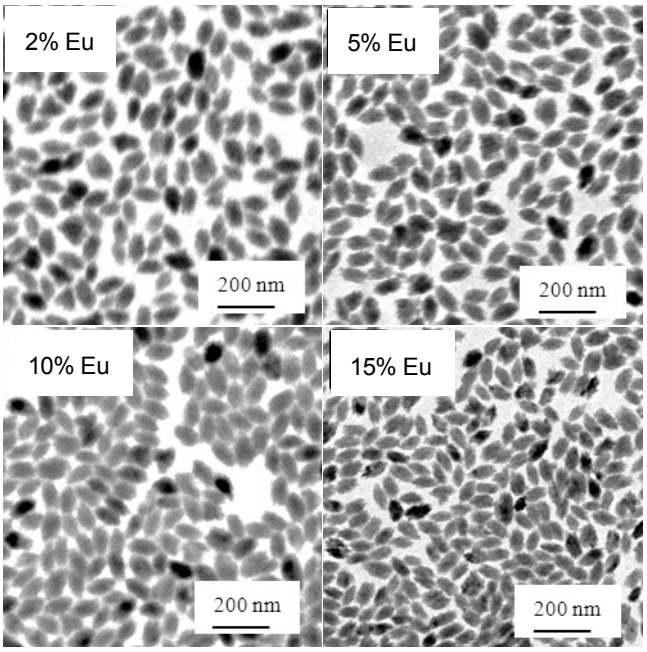


Figure S2. TEM images of the Eu-doped $NaGd(MoO_4)_2$@citrate nanoparticles having different Eu content (Eu/Eu+Gd) mol ratio = 2, 5, 10, 15%).

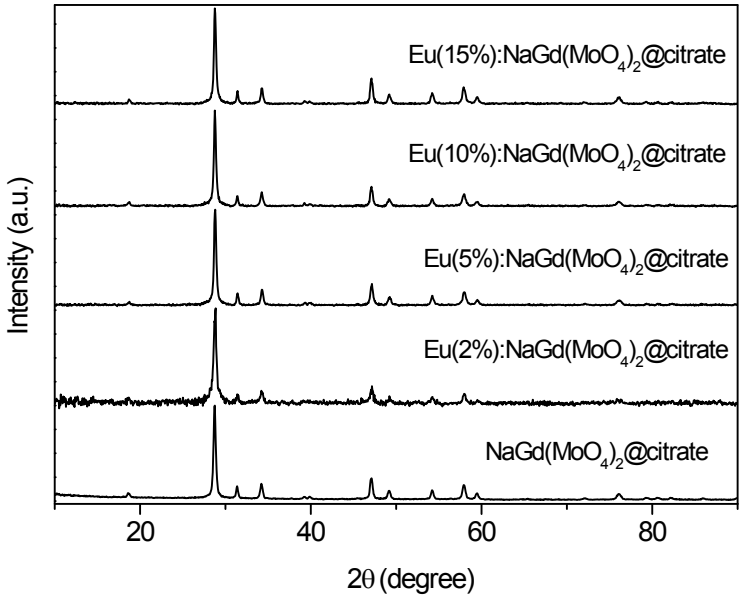


Figure S3. X-ray diffraction patterns obtained for the $NaGd(MoO_4)_2$@citrate nanoparticles doped with different amounts of Eu (Eu/Eu+Gd molar ratio).

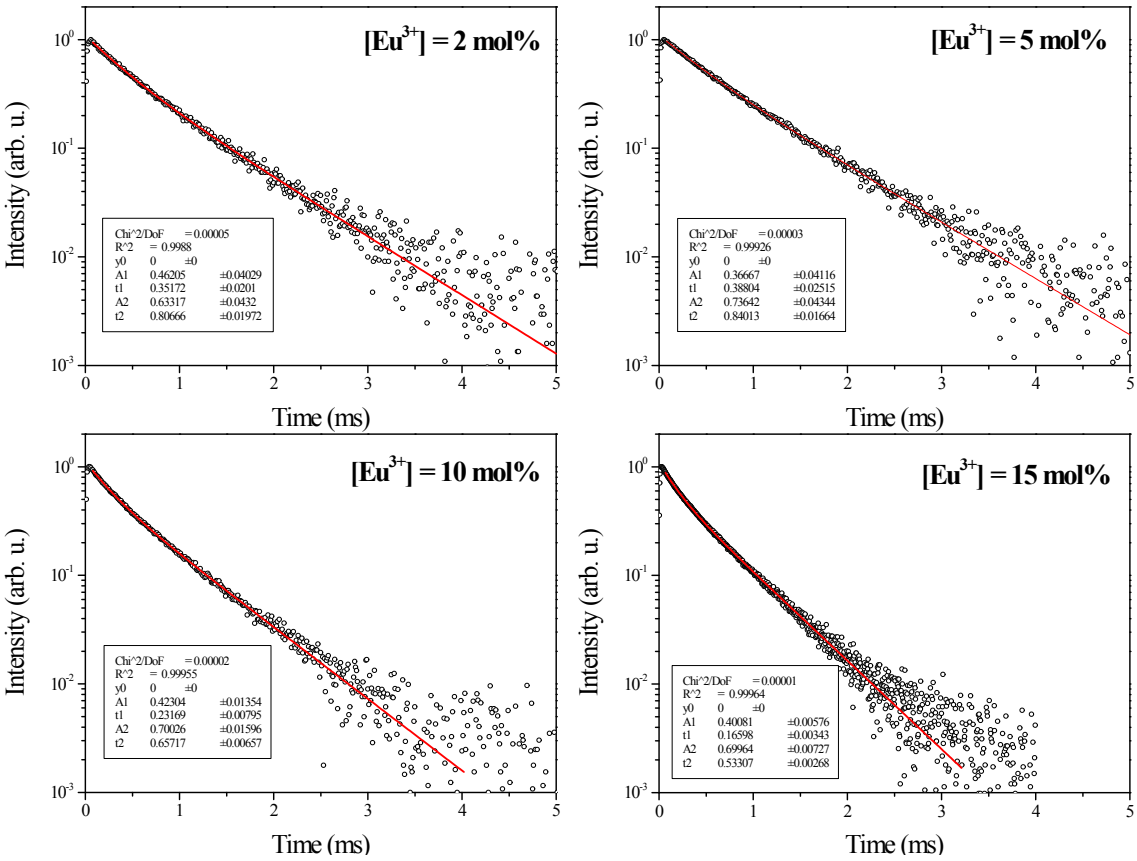


Figure S4. Fitting of the luminescence decays using a bi-exponential dependence, eq. (1), for the different $Eu^{3+}$ concentrations.

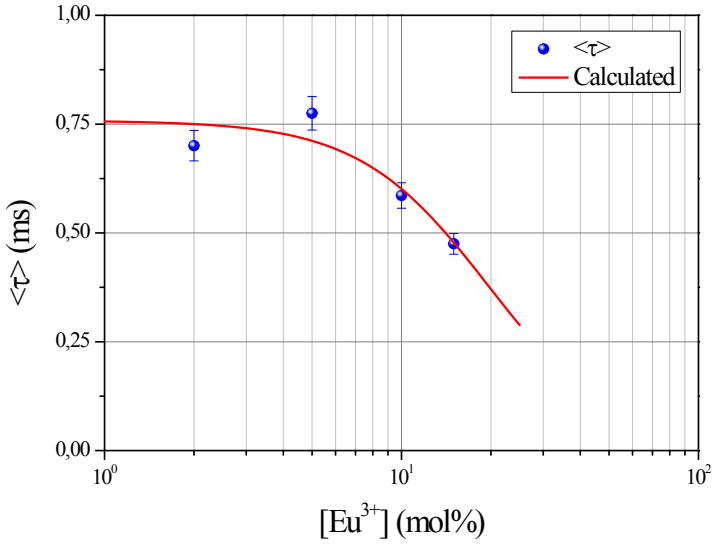


Figure S5. Experimental dependence of the average lifetimes with $Eu^{3+}$ concentration (symbols), and the fitting considering a quadratic concentration dependence for the quenching rate: $\frac{1}{\tau} = \frac{1}{\tau_0} + V[Eu]^2$, with $\tau_0$ = 0,758 ms and V = 0,00344 $s^{-1}$ $(mol\%)^{-2}$ (full line).

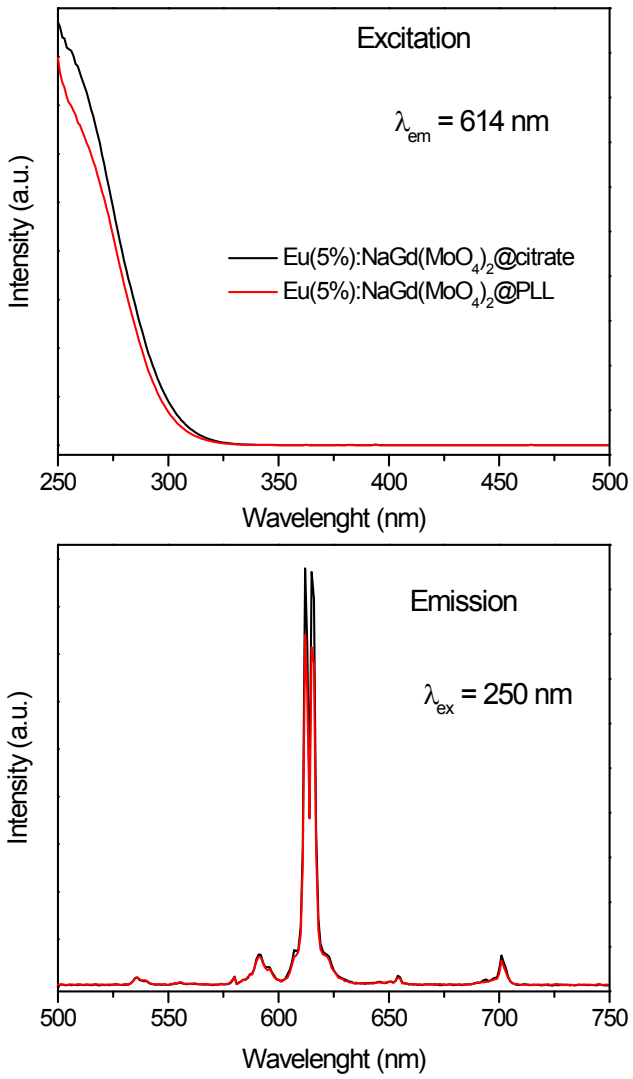


Figure S6. Excitation spectra ($\lambda_{em}$=614 nm) (top) and emission spectra ($\lambda_{ex}$=250 nm) (bottom) recorded before and after PLL-functionalization.