

## Supplementary information (ESI) for

# Polymeric nanocapsules with up-converting nanocrystals cargo make ideal fluorescent bioprobes

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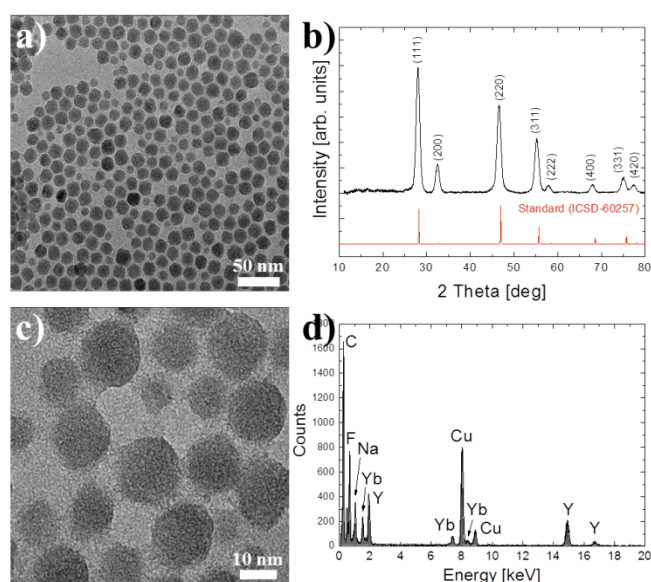
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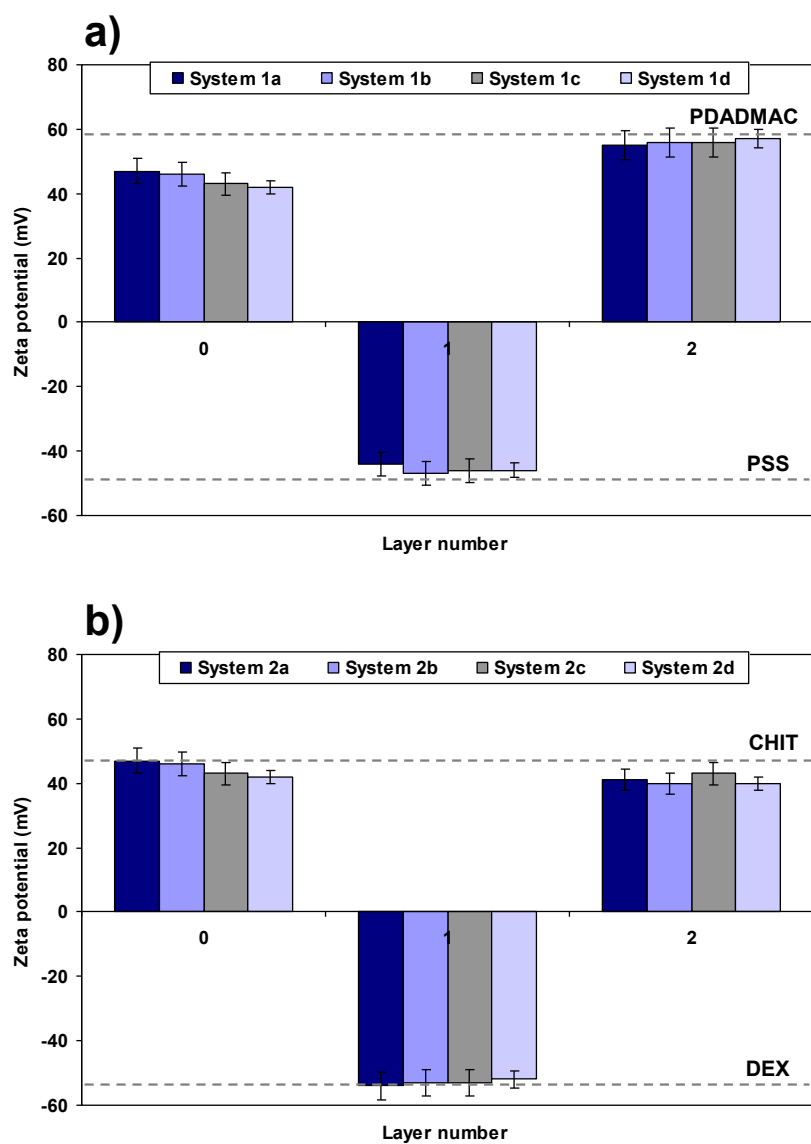
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**Fig. S1** Characterization of as synthesized  $\text{NaYF}_4:\text{Tm}^{3+}, \text{Yb}^{3+}$  NPs. TEM (a) and HRTEM (c) images of  $\text{NaYF}_4:\text{Tm}^{3+}, \text{Yb}^{3+}$  NPs dried from chloroform solutions, together with measured XRD and standard ICSD-60257 patterns (b) and EDS spectrum (d).



**Fig. S2** Layer-to-layer variations of the zeta potential for PSS/PDADMAC (a) and DEX/CHIT coated polymeric template (n=0), empty and loaded by NaYF<sub>4</sub>:Tm<sup>3+</sup>,Yb<sup>3+</sup> NPs (see descriptions for the systems in Table 1).

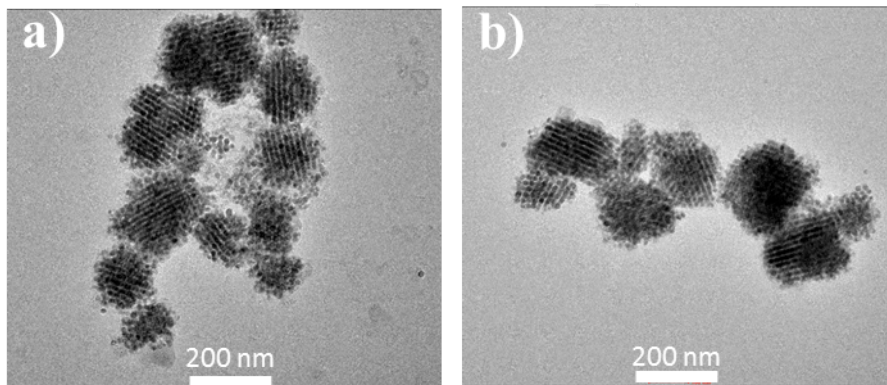


Fig.S3. Representative TEM images of polymeric nanocapsules with  $\text{NaYF}_4:\text{Tm}^{3+}, \text{Yb}^{3+}$  NPs showing the dispersion of their morphology and sizes.

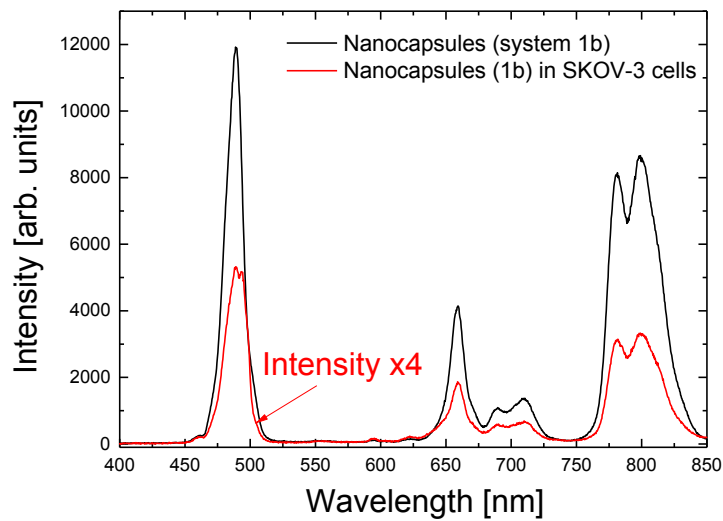


Fig. S4. Representative up-conversion emission spectra of dried solution of nanocapsules (system 1b according to the Table 1) loaded with  $\text{NaYF}_4:\text{Tm}^{3+}, \text{Yb}^{3+}$  NPs and after incubation with cancer ovarian SKOV-3 cells.