ELECTRONIC SUPPLEMENTARY INFORMATION (ESI)

Figure E.S.I. 1 i) DLS results for Mg_span NPs. Average hydrodynamic diameter: a) 162 nm, b) 142 nm, c) 142 nm ii) DLS results for Mg_mix NPs. Average hydrodynamic diameter: a) 520, b) 300, c) 460 nm

Figure E.S.I. 2 SEM micrograph of Ca_span
Figure E.S.I. 3. a). IR spectra of Mg(OH)$_2$ (a) and Ca(OH)$_2$ (b) NPs synthesized with 3:1 mix

Figure E.S.I. 4. Raman spectra of the used surfactants
Figure E.S.I. 5. TGA-DSC data of pure surfactants
Figure E.S.I. 6. Results of the LDH-based assay and the AlamarBlue assay for Ca_mix NPs (A, B) and Mg_Sm_mix (C, D)
Figure E.S.I. 7 Energy levels diagrams for a) Eu$^{3+}$ and b) Tb$^{3+}$