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Supplementary information for:

Mesoporous silica coated $Gd_2(CO_3)_3$:Eu hollow nanospheres for simultaneous cell imaging and drug delivery

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Biocompatibility of the $Gd_2(CO_3)_3$:Eu @$mSiO_2$ HNSs

Since most Gd^{3+}-based contrast agents metabolize mainly via the kidney, the kidney cells of the rat were chosen to judge the $Gd_2(CO_3)_3$:Eu @$mSiO_2$ HNSs' cytotoxicity. Cells of rat kidney were plated in 96-well plate incubated in a culture medium supplemented with 10% fetal bovine serum (FBS) and 1% penicillin/streptomycin at 37 ºC under 5% CO_2 for 96 h to allow the cells to attach to the wells. The culture medium was then replaced with a culture medium containing $Gd_2(CO_3)_3$:Eu @$mSiO_2$ HNSs with different concentrations and the cells were incubated for another 24 h. The cells were then washed with the culture medium without $Gd_2(CO_3)_3$:Eu @$mSiO_2$ HNSs twice. A 200 μL culture medium containing 10% MTT was introduced on the cells, followed by a 4 h incubation under the same conditions to allow the formation of formazan dye. After the culture medium was removed, the purple formazan product was allowed to dissolve in DMSO for 10 min. The amount of formazan formed by the

cells was measured with an enzyme-linked immunosorbent assay reader at 490 nm. The following formula was used to evaluate the inhibition of cell growth by $Gd_2(CO_3)_3$:Eu @$mSiO_2$ HNSs.

Cell viability (%) = (mean Abs of treatment group/mean Abs of control)×100 %

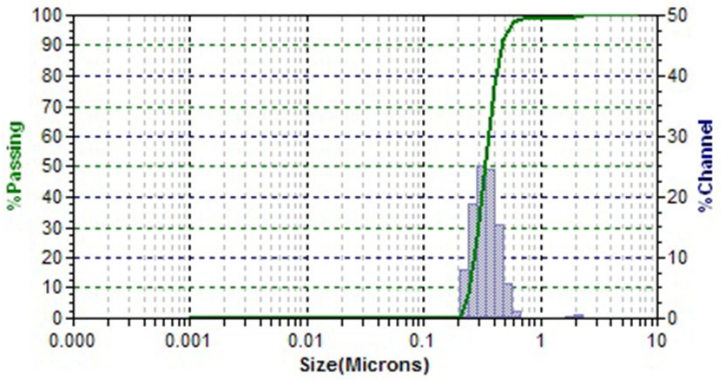

Fig S1. Hydrodynamic diameters of $Gd_2(CO_3)_3$:Eu@$mSiO_2$ HNSs in deionized water as measured by DLS.

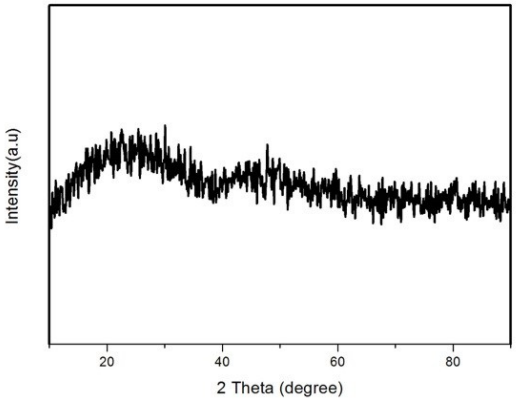

Fig S2. XRD pattern of $Gd_2(CO_3)_3$:Eu HNSs

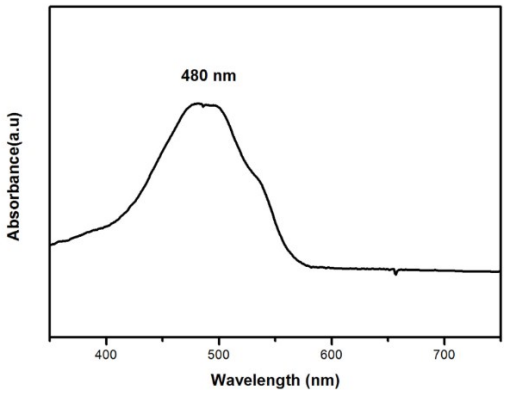

Fig S3. UV-vis absorption spectrum of DOX in PBS

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To demonstrate the potential fields of application in vivo, the biocompatibility of the HNSs was measured using the MTT assay on the rat kidney cells. The viabilities of rat kidney cells treated with $Gd_2(CO_3)_3$:Eu@$mSiO_2$ at various concentrations are depicted in Fig S4. with the viability of the untreated cells set to 100 %. As can be seen, the as-prepared sample showed almost no toxicity to rat kidney cells.

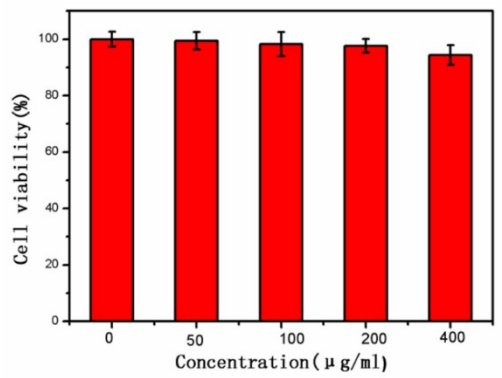

Fig S4. Cell viabilities of rat kidney cells treated with $Gd_2(CO_3)_3$:Eu@$mSiO_2$ at various concentrations