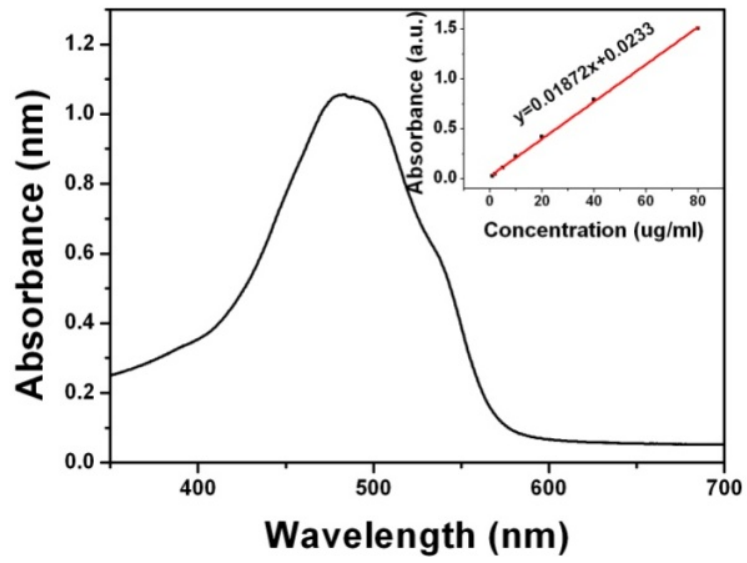


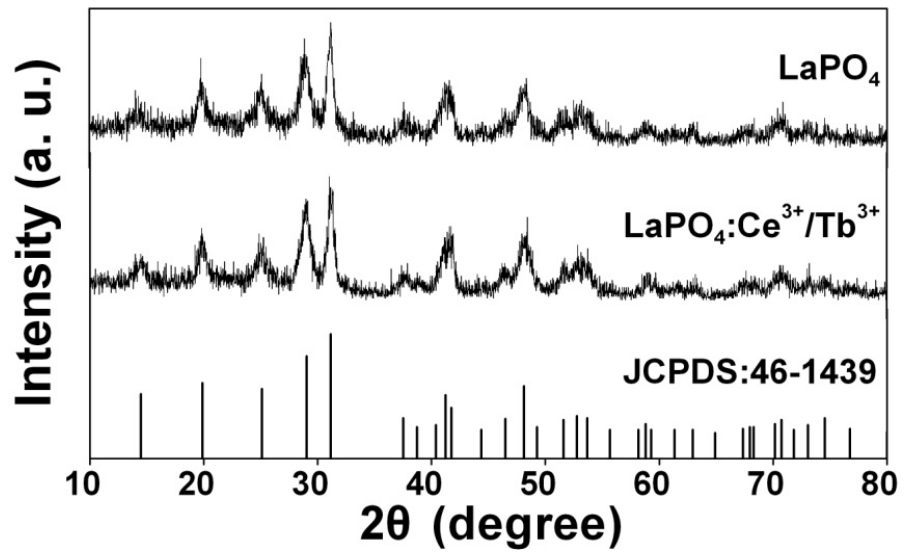
## **Electronic Supplementary Information**

### **Multifunctional LaPO<sub>4</sub>:Ce/Tb@Au mesoporous microspheres: synthesis, luminescence and controllable light triggered drug release**

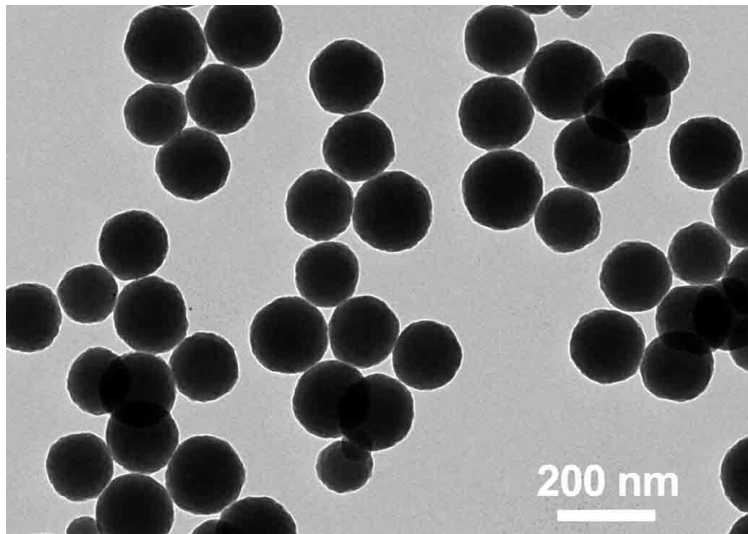
Ruichan Lv, Guixin Yang, Shili Gai\*, Yunlu Dai, Fei He, and Piaoping Yang\*



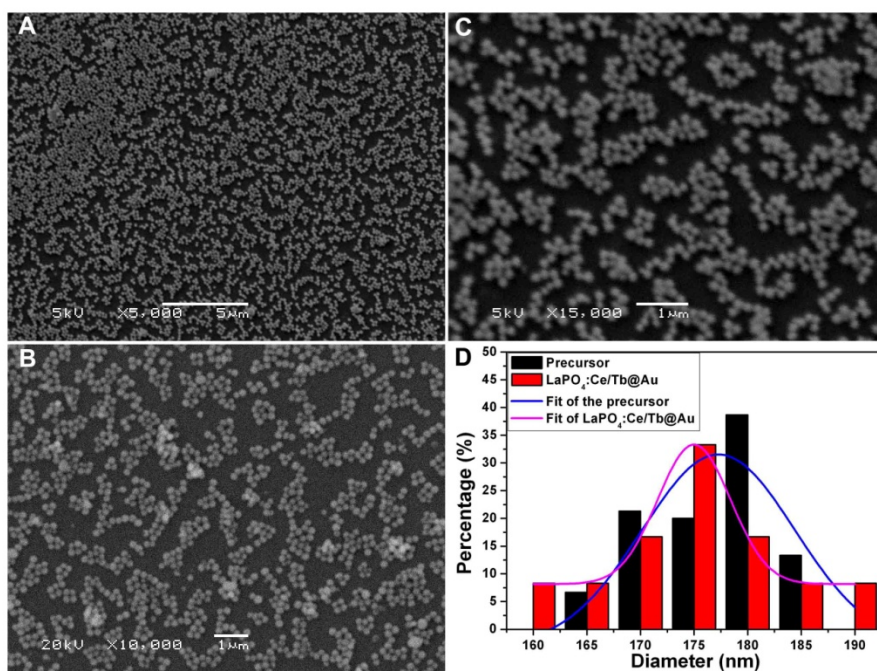
**Fig. S1** The UV-vis absorption spectrum and calibration curve of DOX solution (inset).



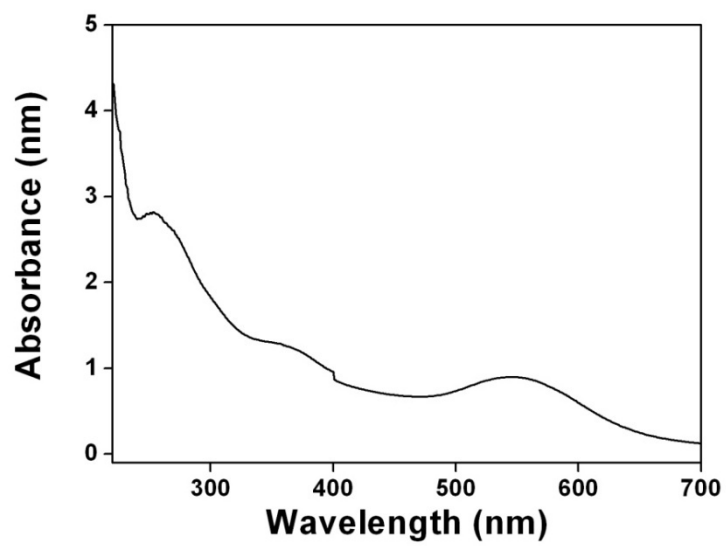
**Fig. S2** XRD patterns of  $\text{LaPO}_4$  and  $\text{LaPO}_4:\text{Ce}^{3+}/\text{Tb}^{3+}$ .



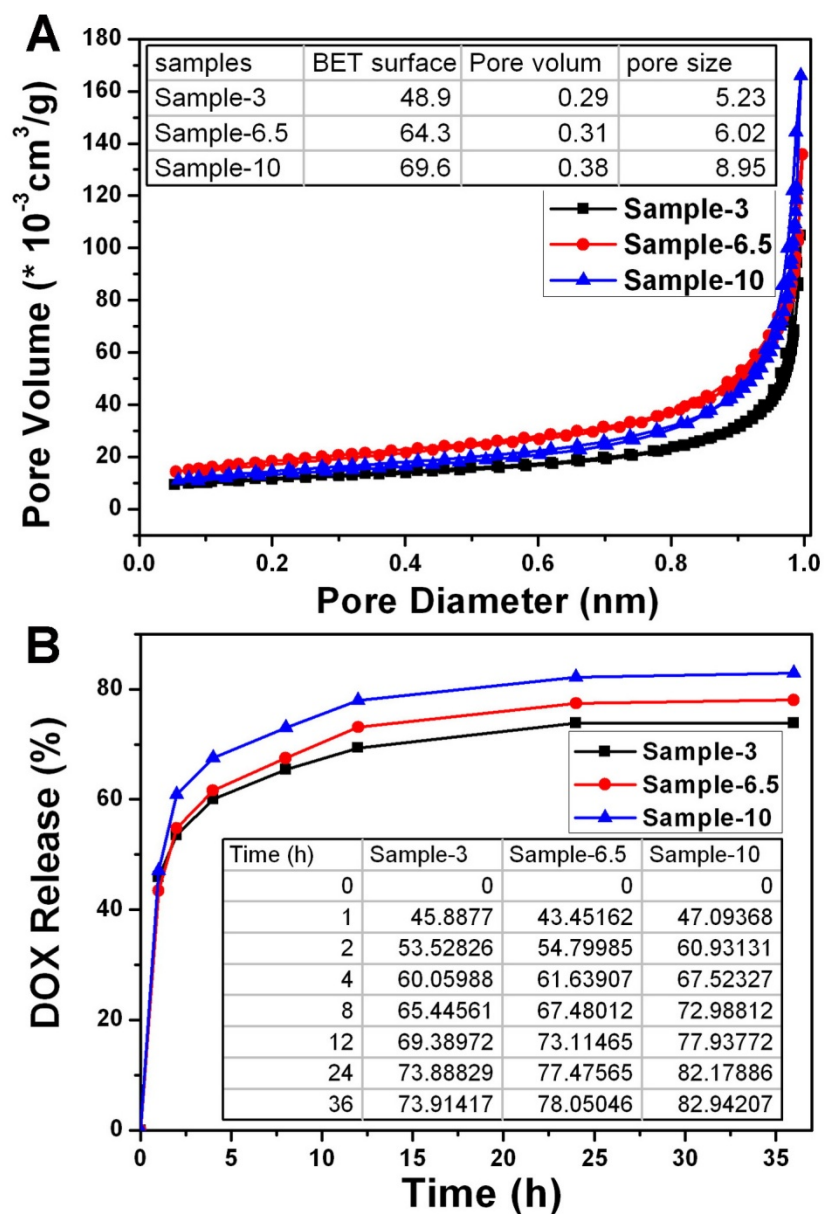
**Fig. S3** TEM image of the La(OH)CO<sub>3</sub>:Ce/Tb precursor.



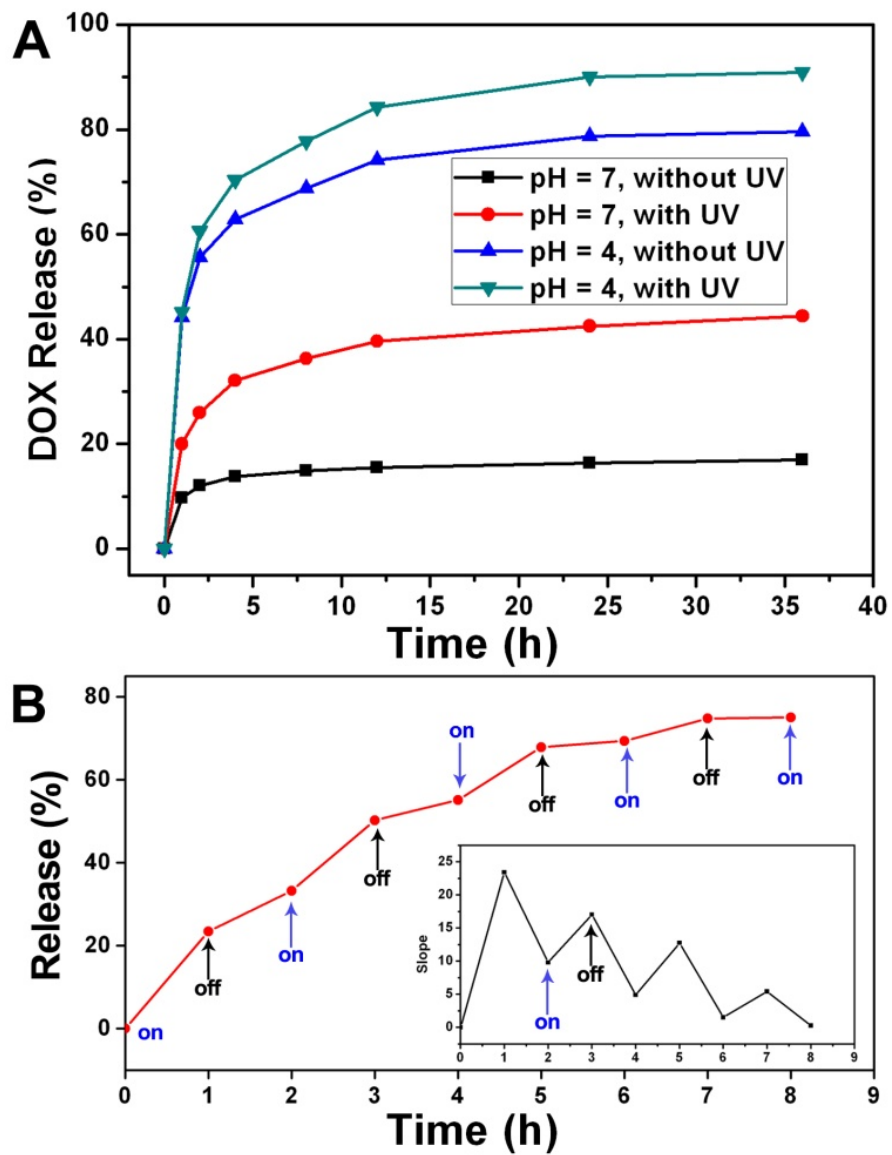
**Fig. S4** SEM image of the as-prepared  $\text{LaPO}_4:\text{Ce}/\text{Tb}@\text{Au}$  MMs (A-C) and the diameter distribution diagrams of the precursor and  $\text{LaPO}_4:\text{Ce}/\text{Tb}@\text{Au}$  (D).



**Fig. S5** The absorption spectrum of gold nano-sphere solution.

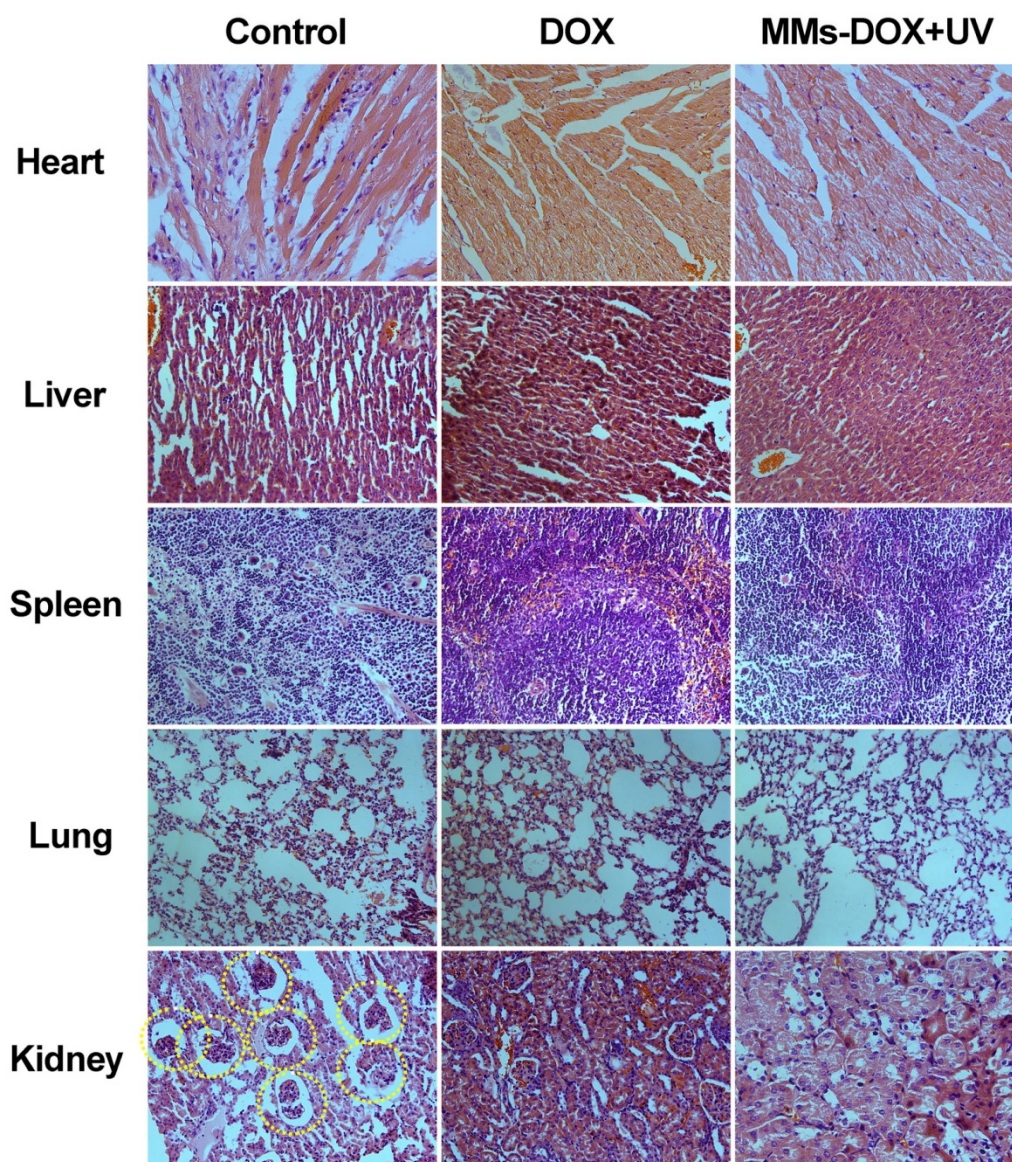


**Fig. S6** Nitrogen adsorption/desorption isotherm (A) and DOX release efficiency (B) of  $\text{LaPO}_4\text{:Ce/Tb}$  MMs with different initial pH values.



**Fig. S7** DOX release efficiency of LaPO<sub>4</sub>:Ce/Tb@Au MMs (A) and the release efficiency with and without the UV irradiation (B).





**Fig. S8** H&E stained images of mice heart, liver, spleen, lung, and kidney organs treated with different groups: control, pure DOX, and  $\text{LaPO}_4:\text{Ce}/\text{Tb}@\text{Au}$  MMs-DOX with UV irradiation.