Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Electronic Supplementary Information

In situ oxygenating and 808 nm light sensitized nanocomposite for multimodal imaging and mitochondira assisted chemodynamic therapy

Arif Gulzar,[a] Fei He,[a,b] Aanisa Gulzar,[c] Ye Kuang,[a] Fangmei Zhang,[a] Shili Gai,[a] Paioping Yang[a] and Chen Wang*[b]*

[a] *Key Laboratory of Superlight Materials and Surface Technology, Ministry of Education, College of Material Sciences and Chemical Engineering, Harbin Engineering University, Harbin, 150001, P. R. China*

[b] *Department of Research Guangxi Medical University Cancer Hospital, Naning 530021 China*

[c] *Department of Physics, National Institute of technology, Srinagar, J&K,190006, India*

E-mail: yangpiaoping@hrbeu.edu.cn; wang2010116@hrbeu.edu.cn

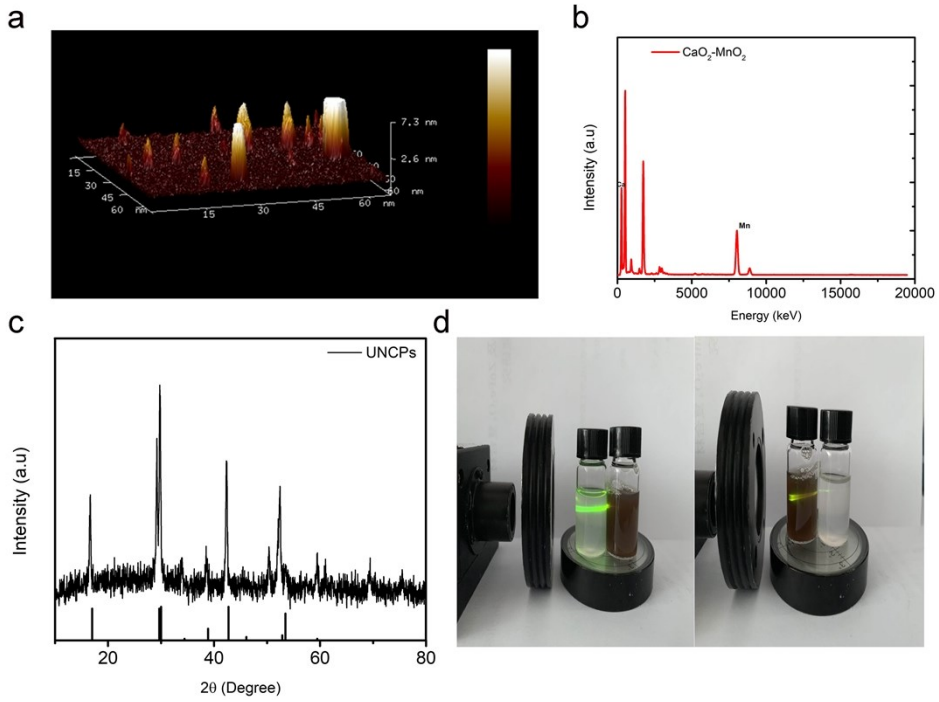

Fig. S1 (a) AFM image of CaO_2-MnO_2 nanosheet with high-resolution. (b) Corresponding EDS spectrum of CaO_2-MnO_2. (c) XRD pattern of UCNPs and JCPD card (number 27-0699). (d) UCL photos of UCNPs and CaMn-NUC visible to naked eye.

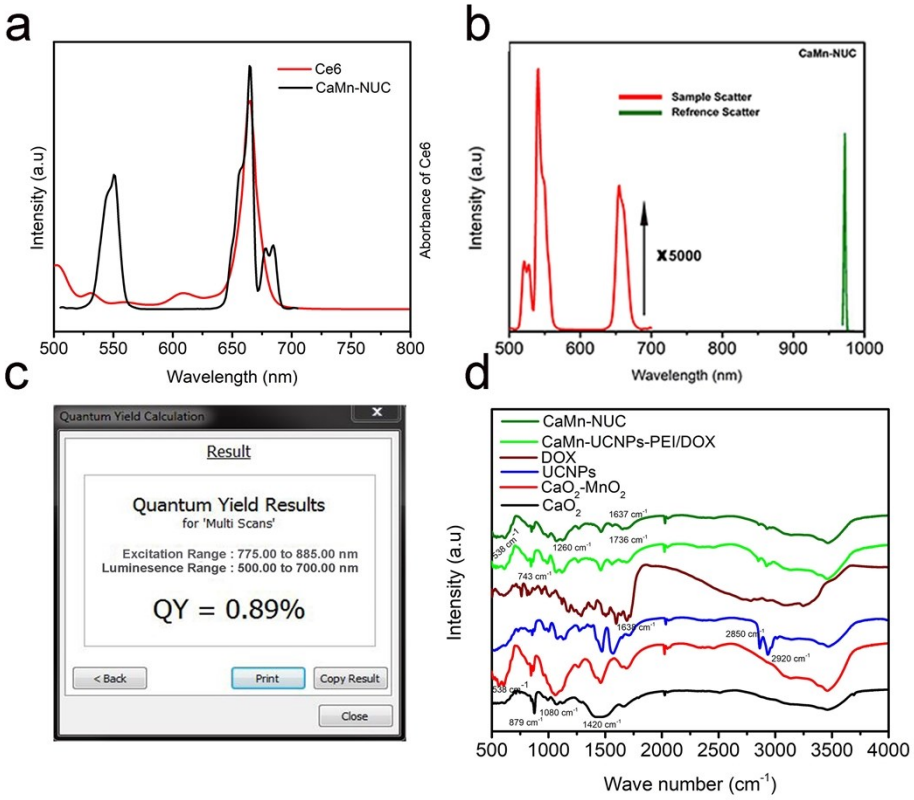

Fig. S2 (a) UV-Vis absorption spectrum and UCL spectrum of Ce6 and CaMn-NUC. (b,c) Quantum yield of CaMn-NUC at region of 500-700 nm under 808 nm laser excitation. The current is set at 2.00. The emission intensity of the UCNPs is displayed 5,000 times higher of the real value. (d) FTIR spectra of different samples.

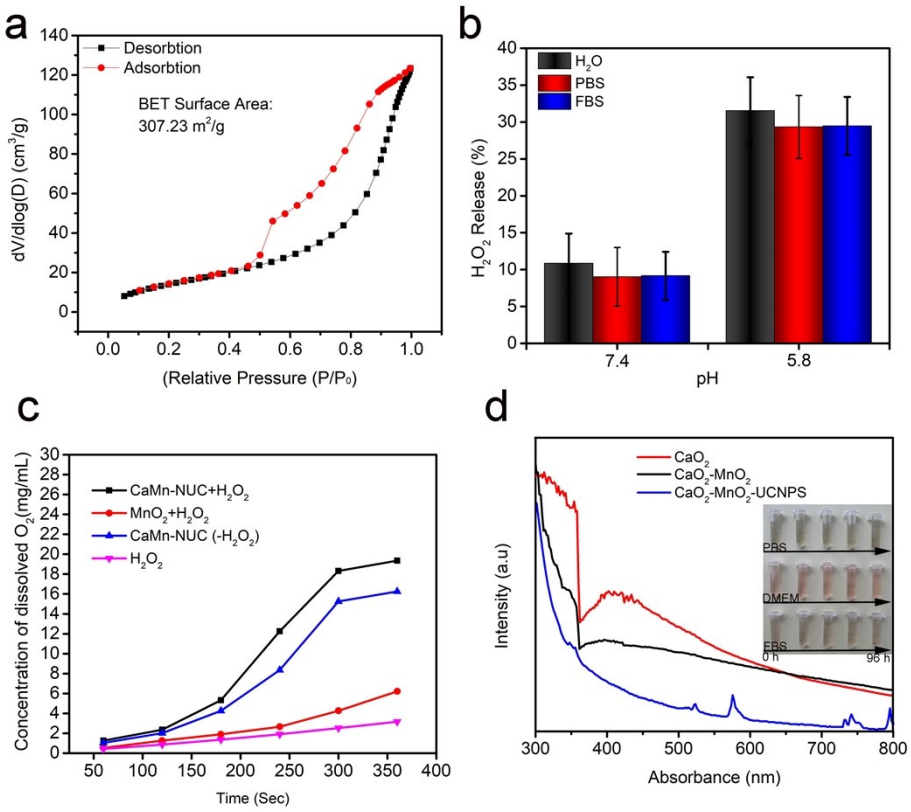

Fig. S3 (a) The N_2 absorption-desorption isotherm and (b) In vitro H_2O_2 generation in H_2O, PBS and FBS under differnt pH conditions (c) *In vitro* O_2 evolution in presence of acidic H_2O_2 subjected to different materials. (d) UV-Vis spectrum and photostability of CaO_2,CaO_2-MnO_2 and CaMn-NUC. Data is represented as mean ±SD (n=6).

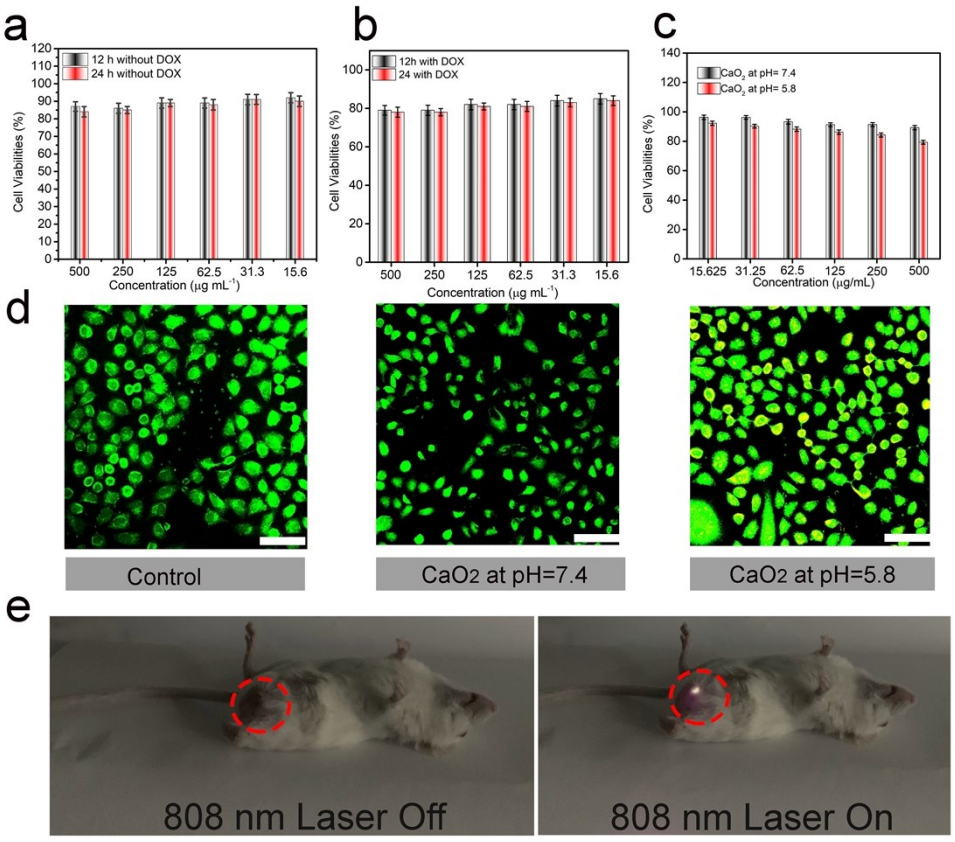

Fig. S4 (a) Cell viability of L929 cells treated with different concentration of CaMn-UCNPs-Ce6.(b) Cell viability of L929 cells treated with different concentration of CaMn-NUC (c)) Cell viability of L929 cells incubated with CaO_2 at two different pH values. Statistical analysis was performed using Student's two-tailed t test *$p < 0.05$. (d) CSLM images of HeLa cancer cells after various treatment with CaO_2 at pH 7.4 and 5.8, dyed with AM/ PI. Scale bar 50 μm.(e) The *in vivo* UCL imaging on a U14-tumor-bearing Kunming female mouse injection with CaMn-NUC at a power density of 0.5 W/cm^2.