ELECTRONIC SUPPLEMENTARY INFORMATION

Thioglycerol-capped Mn-doped ZnS quantum dots bioconjugates as efficient two-photon fluorescent nano-probes for bioimaging

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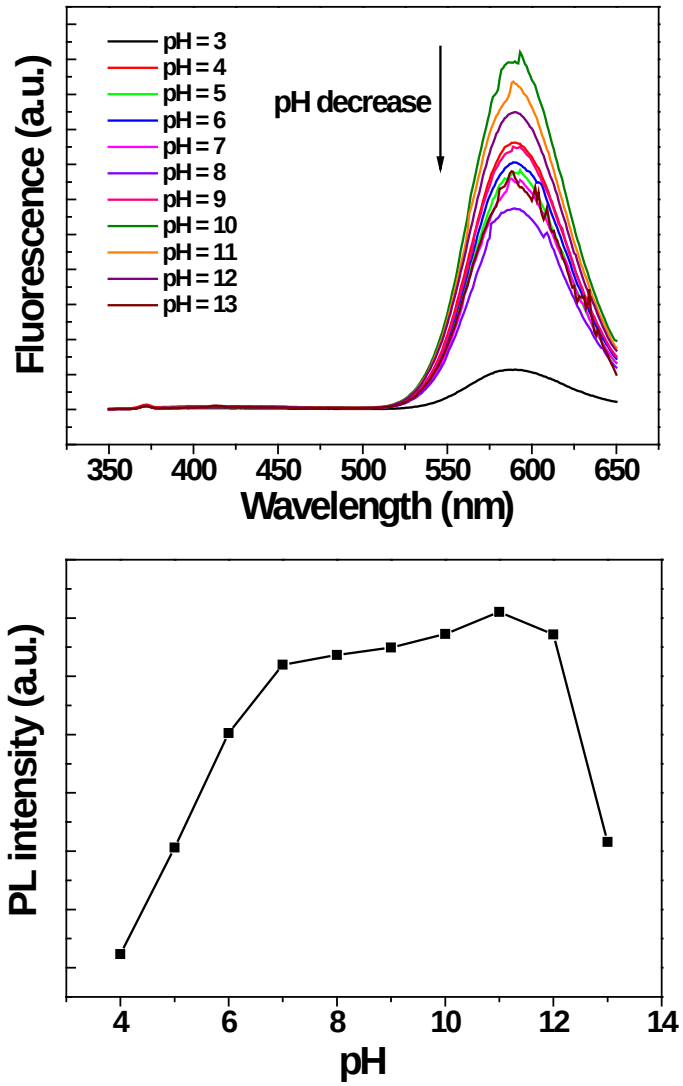


Fig. S1. Influence of pH on the PL intensity of Mn:ZnS@TG d-dots.

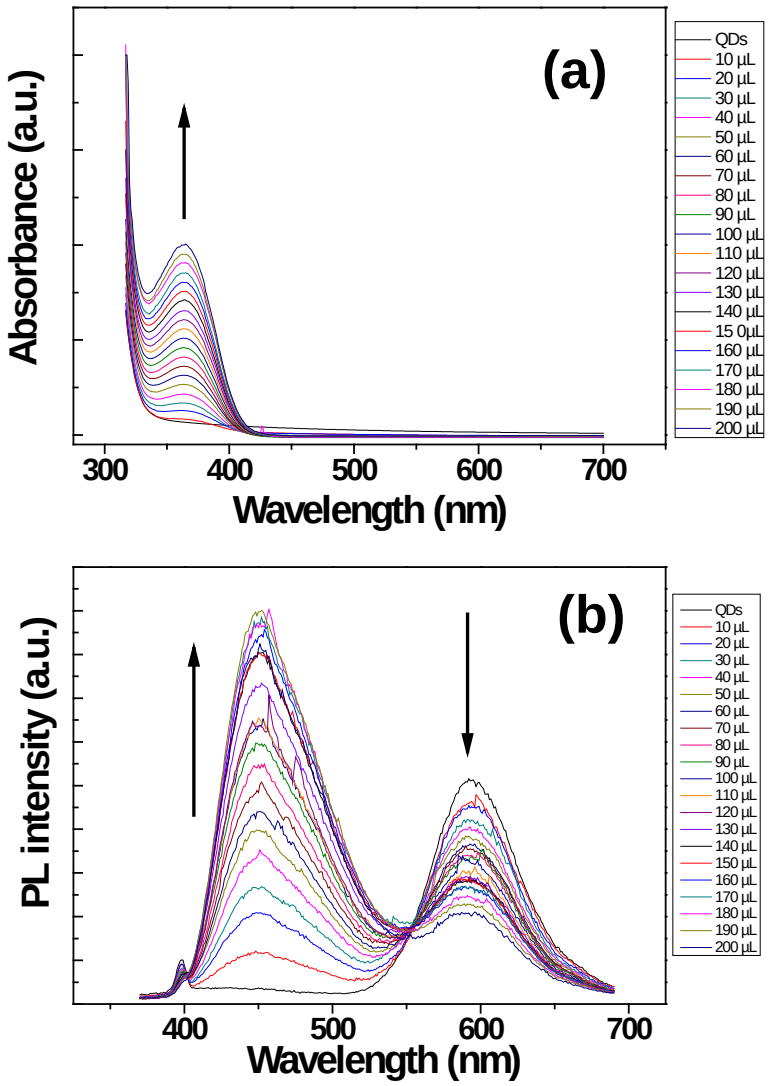
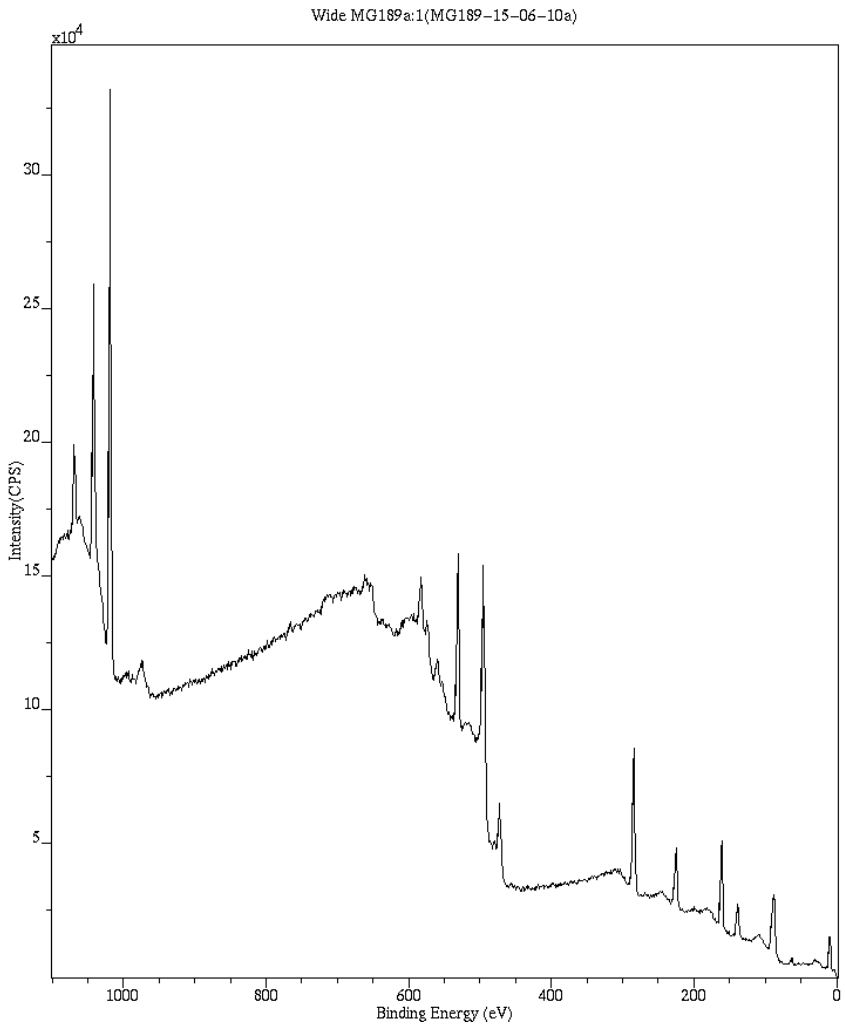


Fig. S2. (a) Evolution of photoluminescence spectra of Mn:ZnS@TG dots (1.25 mg in 5 mL borate buffer) upon stepwise addition (with an increment of 10 µL) of a 2.26 mM folic acid solution in sodium borate buffer. A decrease of PL QY from 13.0 (starting Mn:ZnS@TG dots) to 3.1 % (200 µL of the folic acid solution added) was observed after the addition of the folic acid solution.



Peak	Position BE (eV)	FWHM (eV)	Raw Area (CPS)	RSF	Atomic Mass	Atomic Conc %	Mass Conc %
Na 1s MG189a	1069.600	1.496	4858.3	1.685	22.990	4.21	4.22
Zn 2p MG189a	1019.500	1.361	31075.8	3.726	65.387	12.75	36.33
O 1s MG189a	531.800	2.083	8017.8	0.780	15.999	18.23	12.71
C 1s MG189a	284.650	1.876	7797.0	0.278	12.011	50.14	26.24
S 2p MG189a	162.000	2.396	5164.1	0.668	32.065	14.67	20.50

Fig. S3. XPS survey spectrum of Mn:ZnS@TG dots.

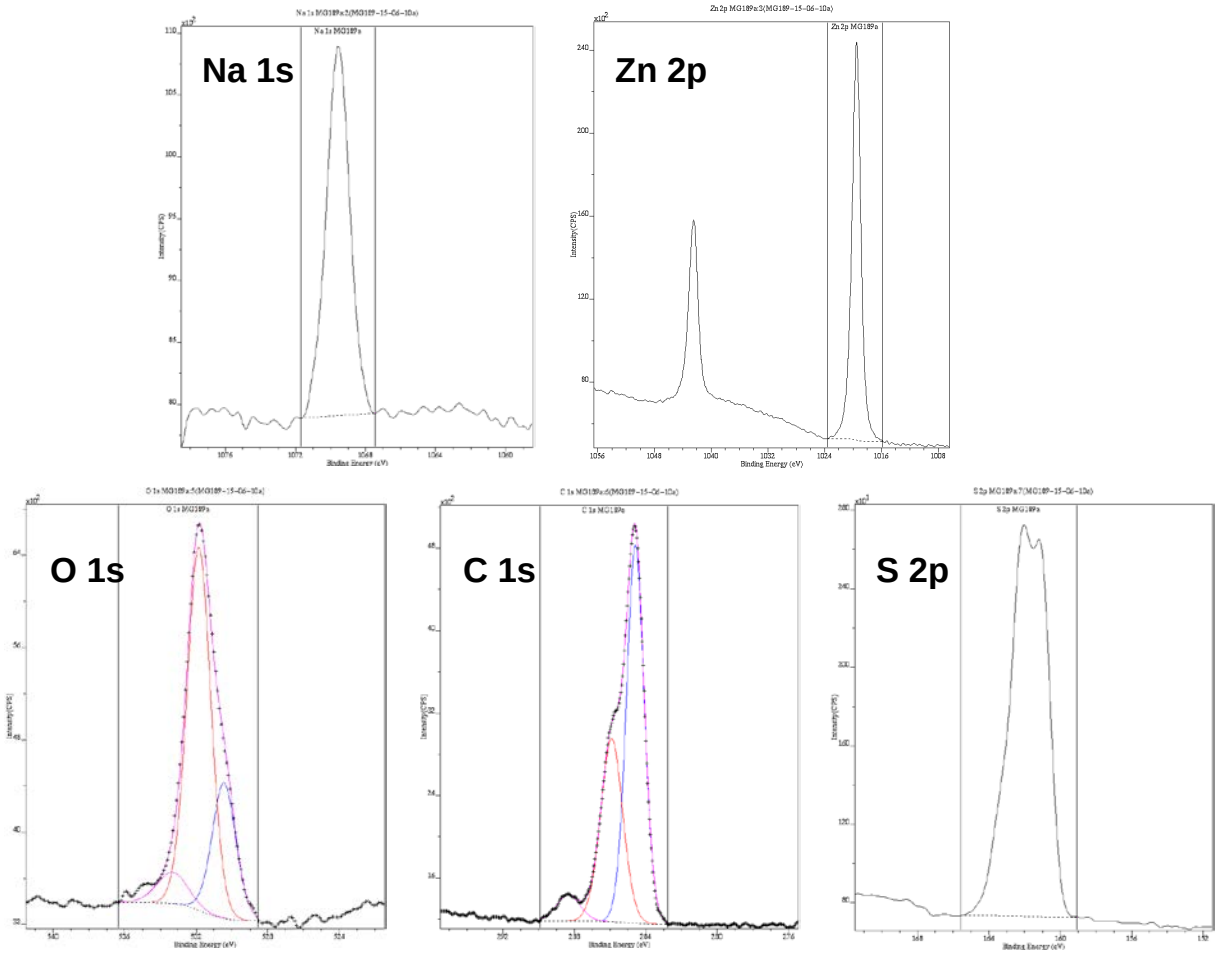
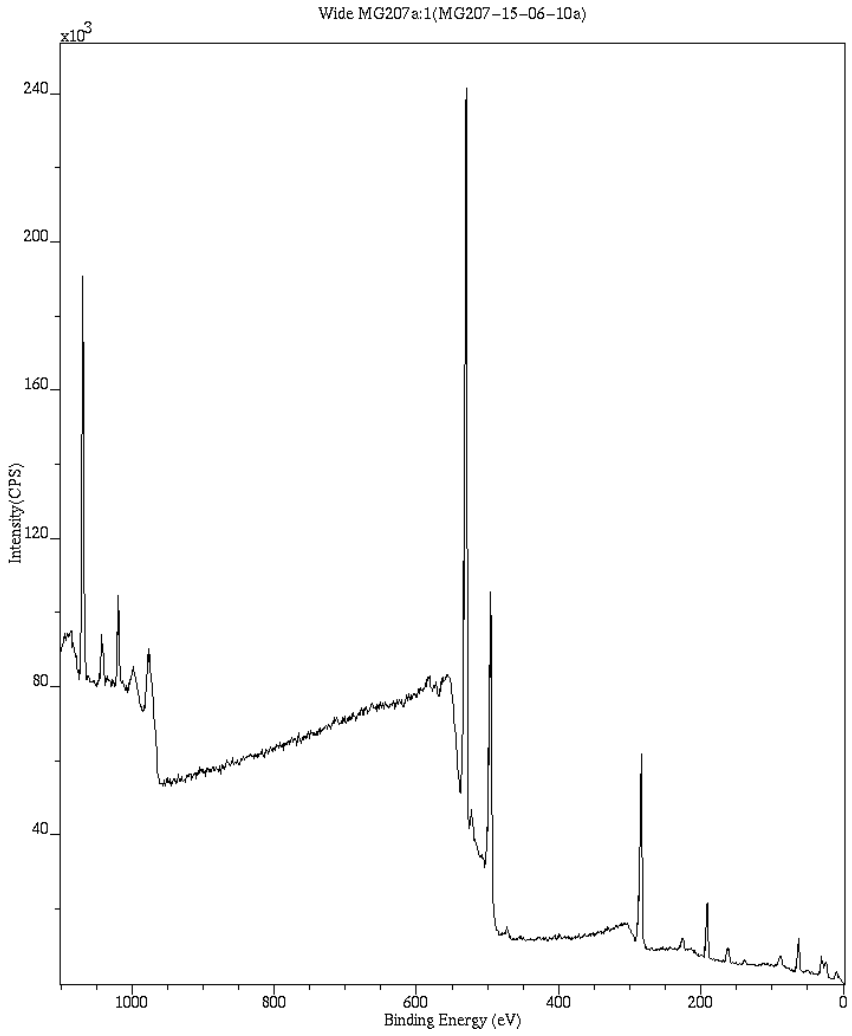


Fig. S4. High-resolution XPS spectra of Mn:ZnS@TG dots.



Peak	Position BE (eV)	FWHM (eV)	Raw Area (CPS)	RSF	Atomic Mass	Atomic Conc %	Mass Conc %
Na 1s MG207a	1069.550	1.580	17774.5	1.685	22.990	9.00	13.58
Zn 2p MG207a	1019.450	1.346	3779.7	3.726	65.387	0.91	3.89
O 1s MG207a	531.050	1.931	31395.2	0.780	15.999	41.71	43.80
N 1s MG207a	399.150	1.591	145.4	0.477	14.007	0.32	0.29
C 1s MG207a	284.650	1.227	8256.6	0.278	12.011	31.03	24.46
B 1s MG207a	192.050	1.390	2295.1	0.159	10.823	15.68	11.14
S 2p MG207a	161.150	2.879	811.0	0.668	32.065	1.35	2.84

Fig. S5. XPS survey spectrum of Mn:ZnS@TG-FA dots.

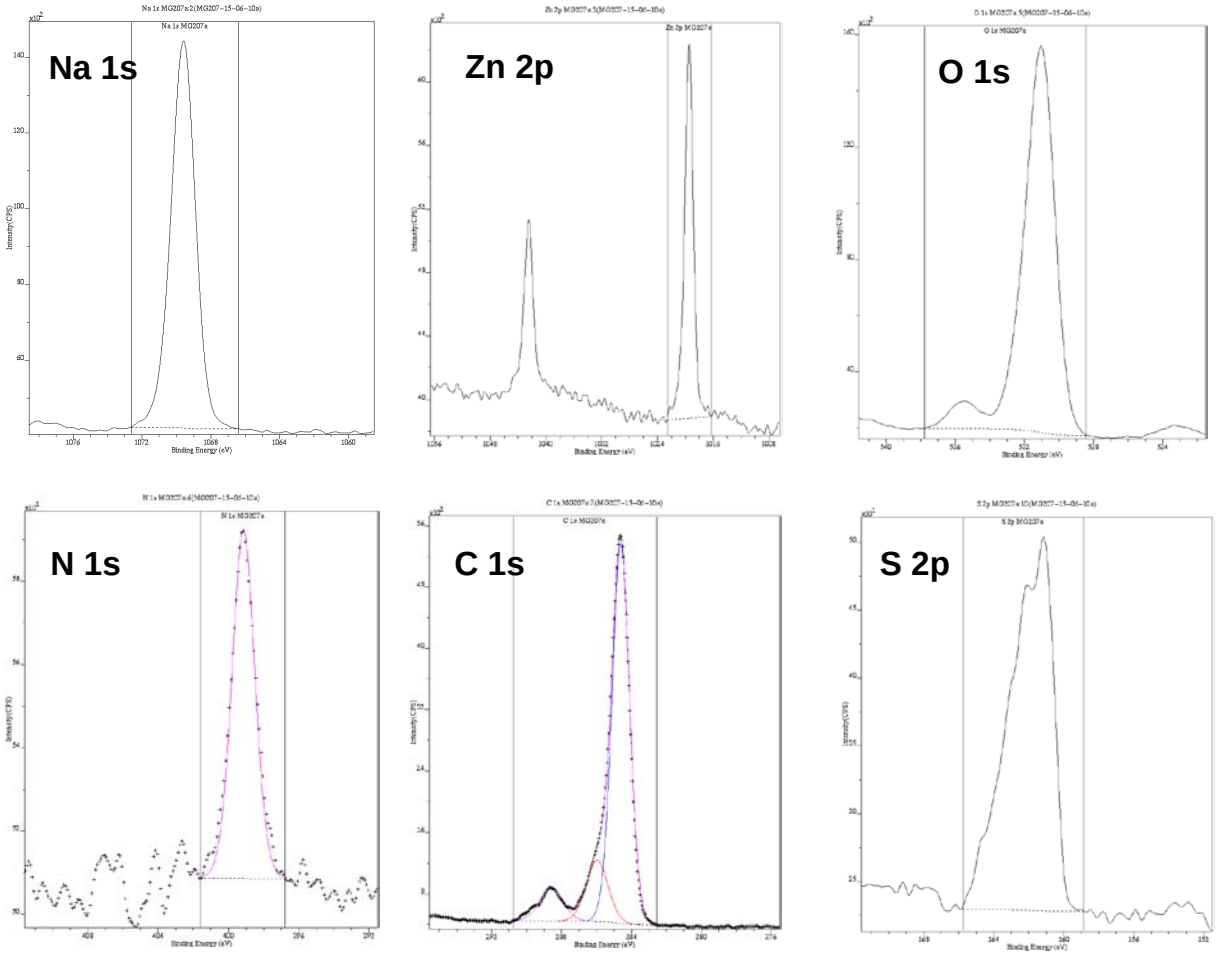


Fig. S6. High-resolution XPS spectra of Mn:ZnS@TG-FA dots.

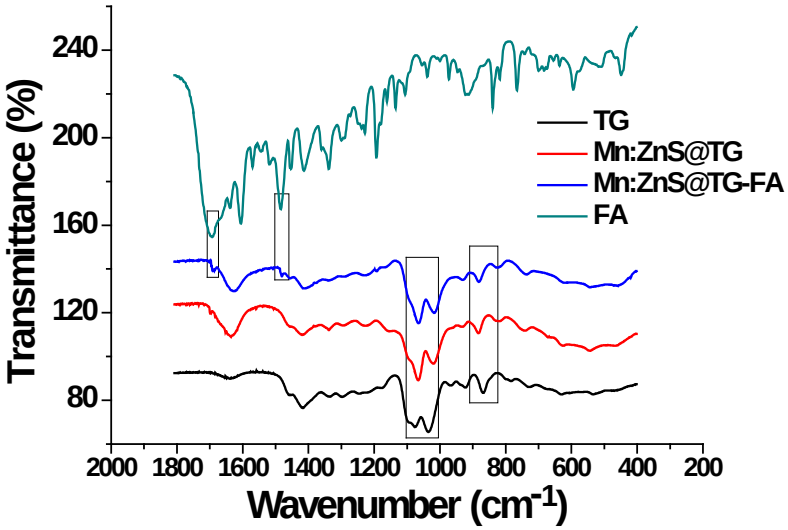


Fig. S7. FT-IR spectra of thioglycerol (TG), of Mn:ZnS@TG and Mn:ZnS@TG-FA d-dots, and of folic acid (FA).

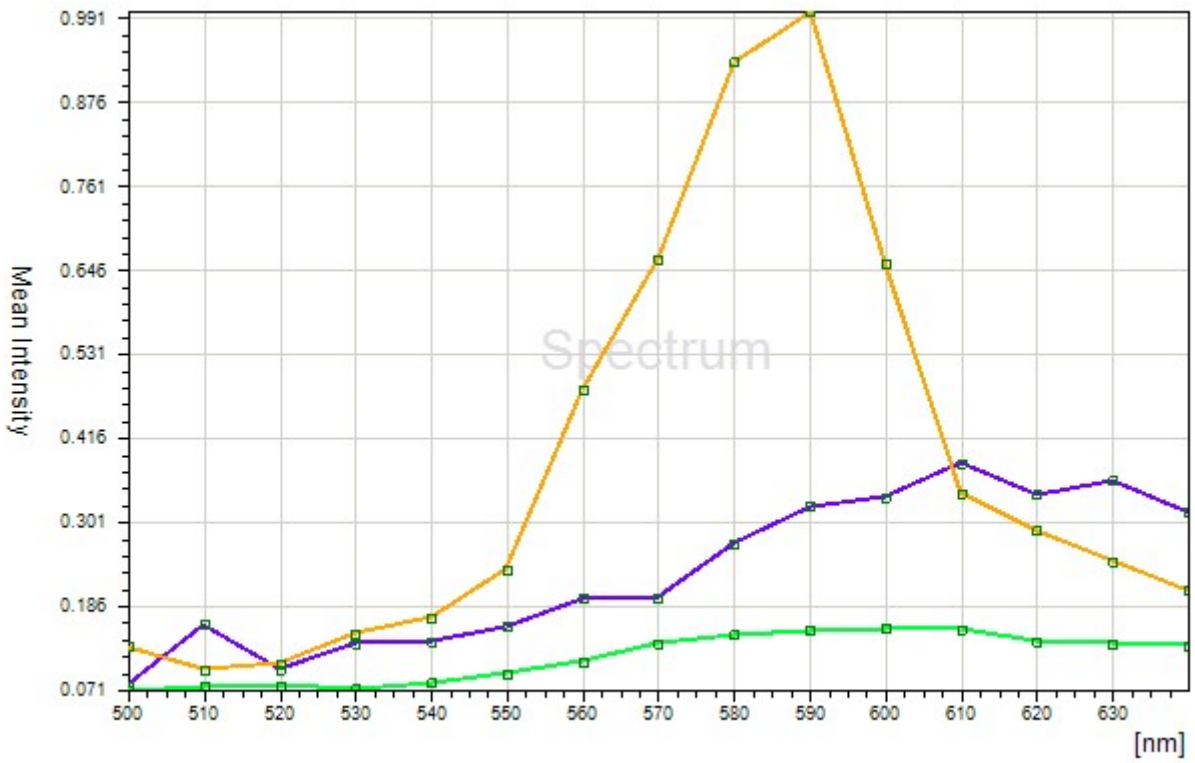


Fig. S8. Fluorescence emission spectra of Mn:ZnS@TG d-dots after biphotonic excitation at 720 nm (the sample was scanned from 500 to 640 nm).

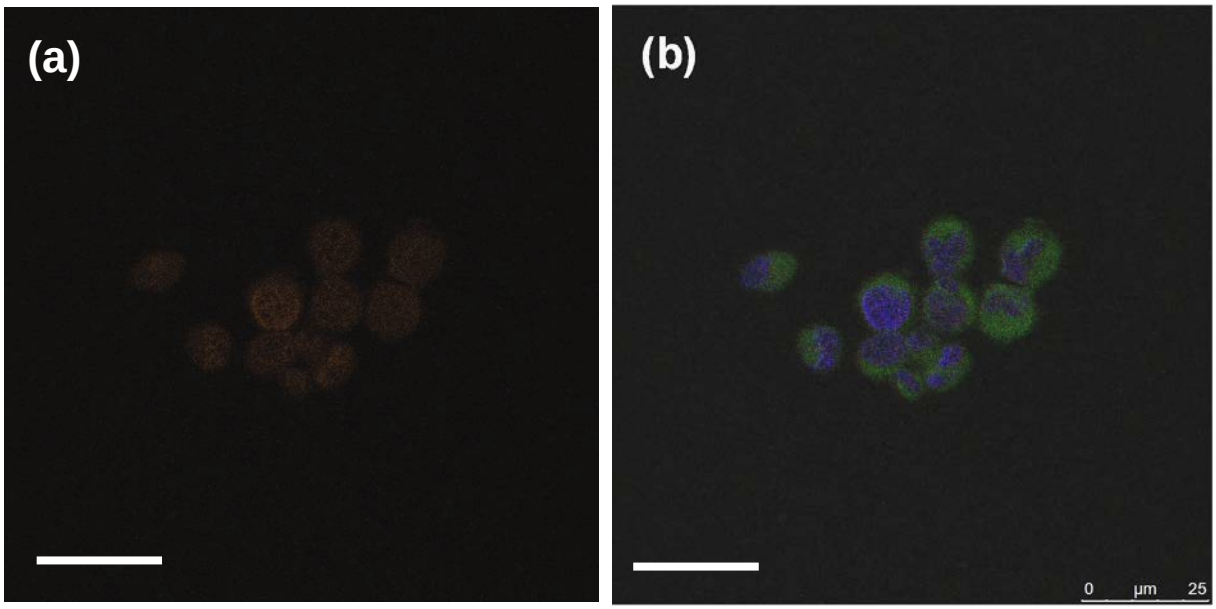


Fig. S9. Confocal fluorescence imaging of human T47D cells labelled with (a) Mn:ZnS@TG dots, and (b) Hoechst and JC1 organic dyes. Scale bar = 25 µm.

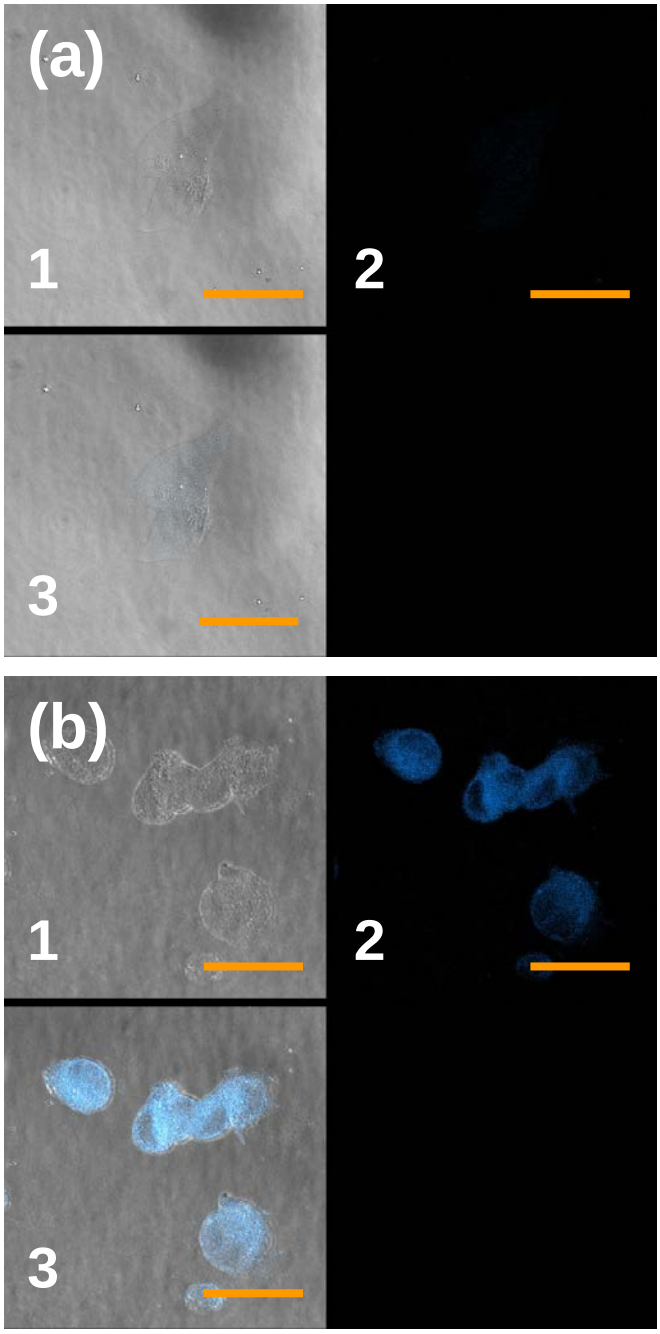


Fig. S10. Confocal microscopic images of T47D cells treated with Mn:ZnS@TG-FA dots. Cells in (a) were saturated with free FA for 2 h before treatment with the dots, while cells in (b) were not saturated with free FA. Images "1" are the transmission images, "2" are the corresponding fluorescence images, and "3" the overlays of fluorescence and transmission images. Two-photon confocal microscopy images were obtained with laser excitation at 800 nm. All fluorescence images are presented in false color. Scale bar = 10 μm.