Supporting Information

Calcein-modified Zr(IV)-based metal-organic framework as a visualized sensor for calcium ion

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Figure S1. Colors of UiO-66-NH_2 (right) and UiO-66-NH_2@Calcein (left).

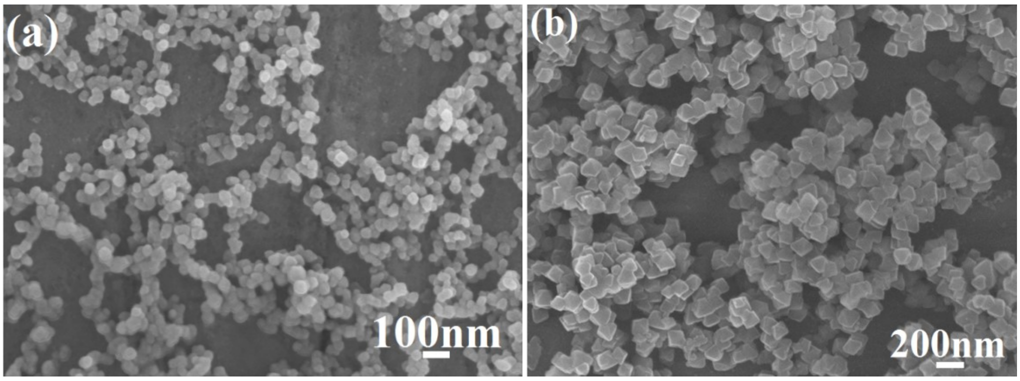

Figure S2. FESEM images of UiO-66-NH_2 synthesized in different solvents: (a) DMF and deionized water with the volume ratio of 1:1, and (b) DMF.

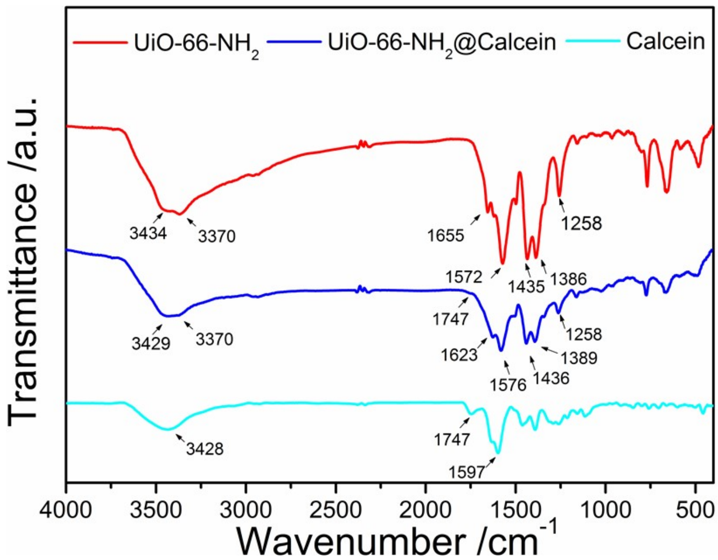

Figure S3. FTIR spectra of UiO-66-NH_2, Calcein and UiO-66-NH_2@Calcein.

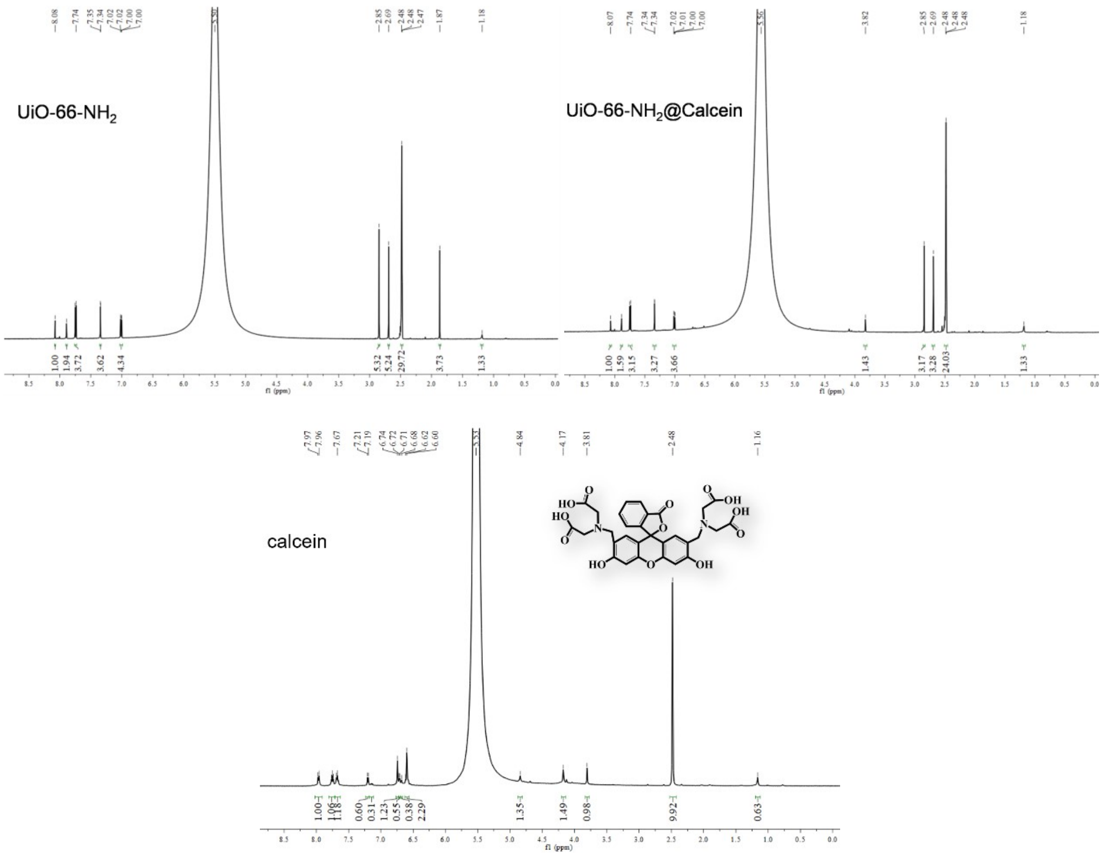

Figure S4. [1]H NMR spectra of as-obtained UiO-66-NH_2, UiO-66-NH_2@Calcein and calcein.

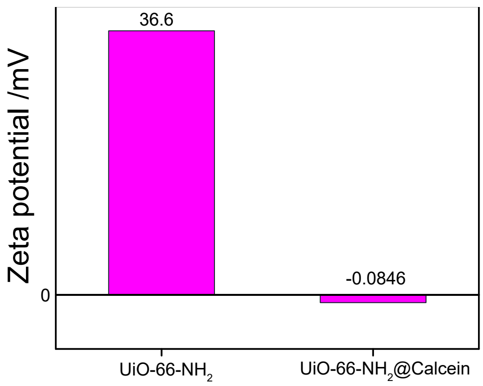

Figure S5. Zeta potentials of UiO-66-NH_2 and UiO-66-NH_2@Calcein.

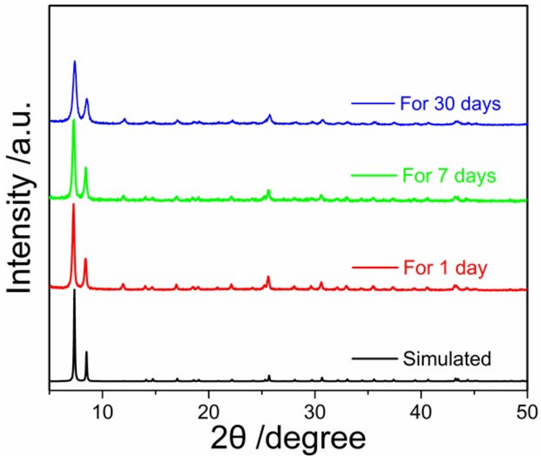

Figure S6. PXRD patterns of UiO-66-NH_2@Calcein immersed in water for 1, 7 and 30 days, respectively.

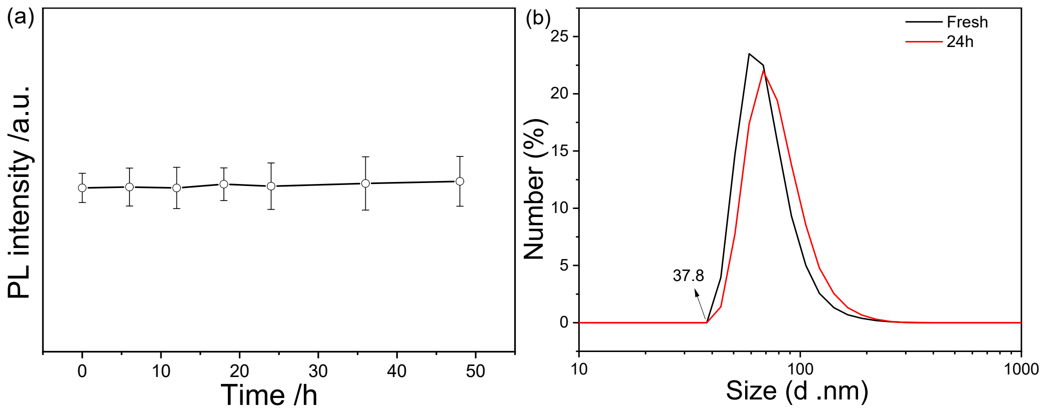

Figure S7. (a) The fluorescence intensity changes of UiO-66-NH_2@Calcein dispersed in water for 0 ~ 48 h; and (b) **The DLS results of the UiO-66-NH_2@Calcein suspension before and after placed for 24 h.**

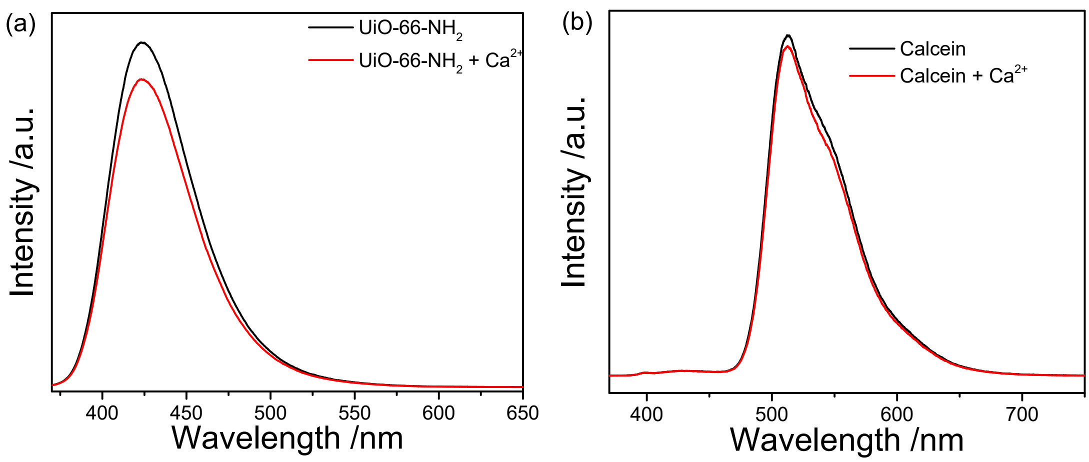

Figure S8. Fluorescence emission spectra of UiO-66-NH_2 (a) and calcein (b) before and after adding Ca^{2+} ions.

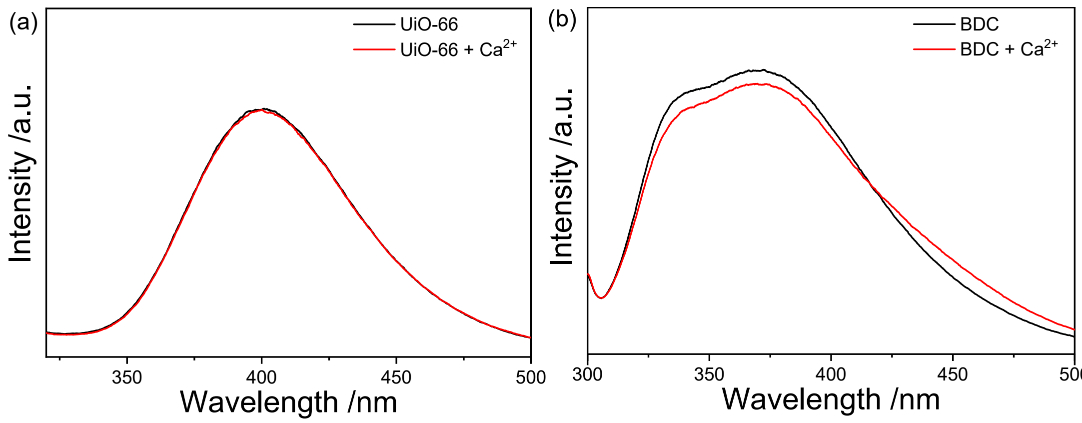

Figure S9. Fluorescence emission spectra of UiO-66 (a) and BDC (b) before and after adding Ca^{2+} ions under the excitation of 280 nm light.

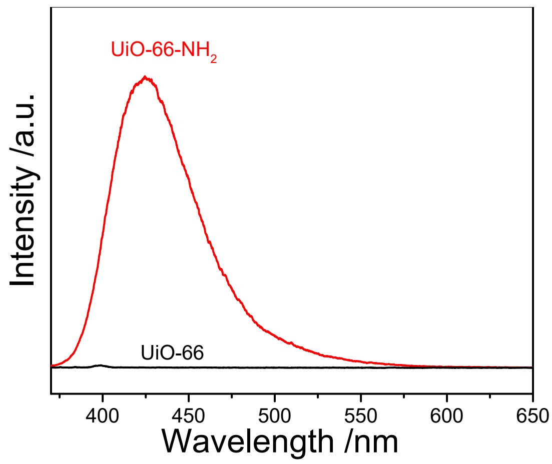

Figure S10. Fluorescence emission spectra of UiO-66-NH_2 and UiO-66 **under the excitation of 344 nm light**.

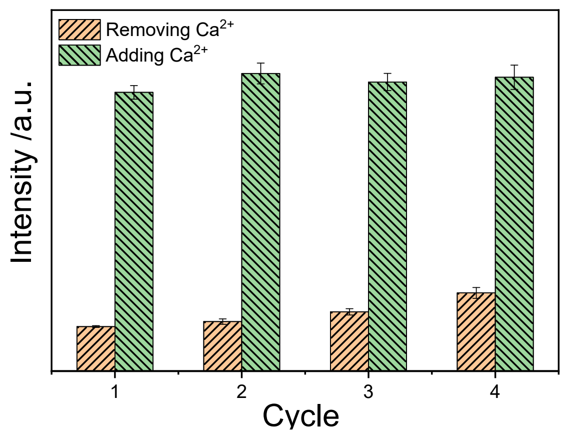

Figure S11. Cycle experiments of the as-prepared probe. Error bars: standard deviation (SD), experimental times: n = 3.

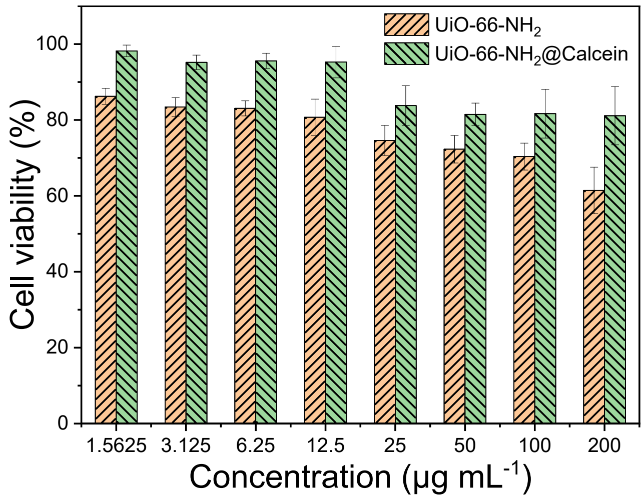

Figure S12. The viabilities of HeLa cell incubated in the suspensions containing various concentrations of UiO-66-NH_2 and UiO-66-NH_2@Calcein.

Table S1. Detection limit comparison of several Ca^{2+} ion sensors

Ca^{2+} sensor	Detection limit	Ref.
$NiCo_2O_4$/three-dimensional graphene foam	4.45 μM	1
triazolyl coumarin molecule	2.61 μM	2
fluorescent dye oregon-green bapta-1 (OG-dextran)	0.1−100 mM	3
Co_3O_4	4 μM	4
Co_3O_4 conical nanotube on F-doped tin oxide	3.7 μM	5
PC-PDA	0.97μM	6
UiO-66-NH_2@Calcein	0.6μM	this work

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