Supporting Information

Fluorescent polymer dots and graphene oxide based nanocomplex for "off-on" detection of metalloproteinase-9

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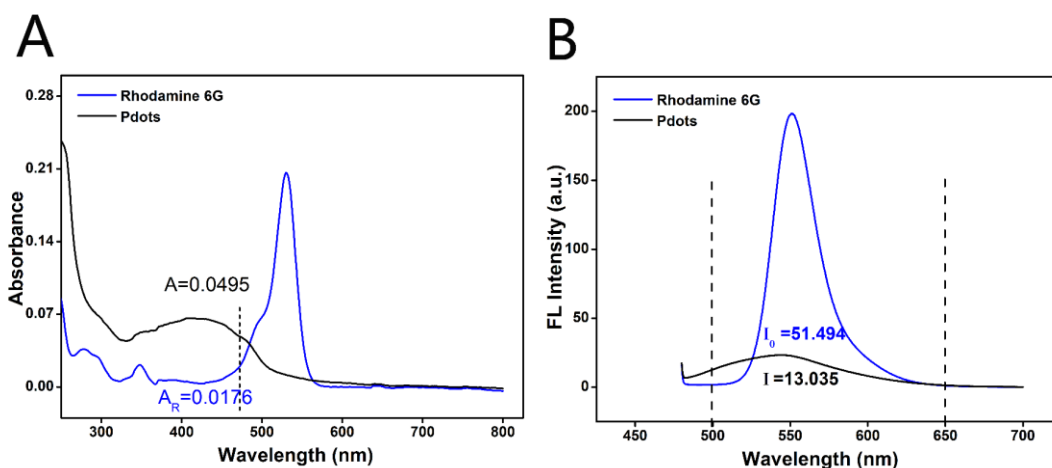
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Figure. S1 The relative quantum yield (QY) of Pdots was measured in reference to rhodamine 6G in ethanol (QY=0.95): A, The absorption spectra of the Pdots and rhodamine; B, The fluorescence spectra of Pdots and rhodamine. The formula for QY measurement is as follows:

$$QY = \frac{I}{I_0} \times \frac{A_R}{A} \times \frac{\eta^2}{\eta_R^2} \times QY_R$$

where QY is the quantum yield of the sample, I is the integral area under the fluorescence spectrum, η is the refractive index of the solvent used, and A is the absorbance at the excitation wavelength. The subscript R represents the reference.
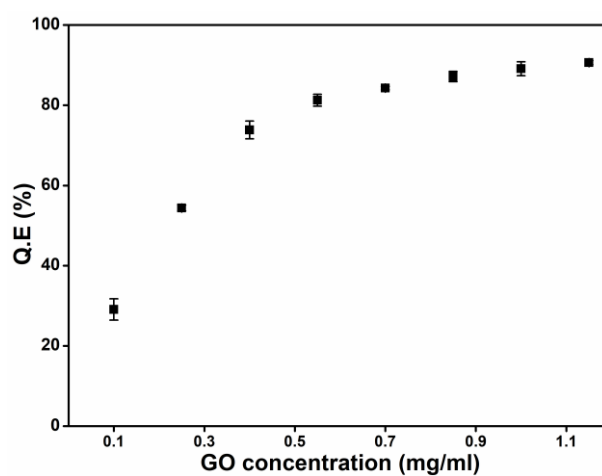

Figure. S2 Quenching effect (QE) of GO on Pep-Pdots fluorescence was determined by respectively adding increasing concentration of GO (0 – 1.15 mg/ml) into 8 mg/ml Pep-Pdots and incubate for 10 minutes at room temperature. QE was calculated based on the decreased (F) and the original (F_0) fluorescent intensity:

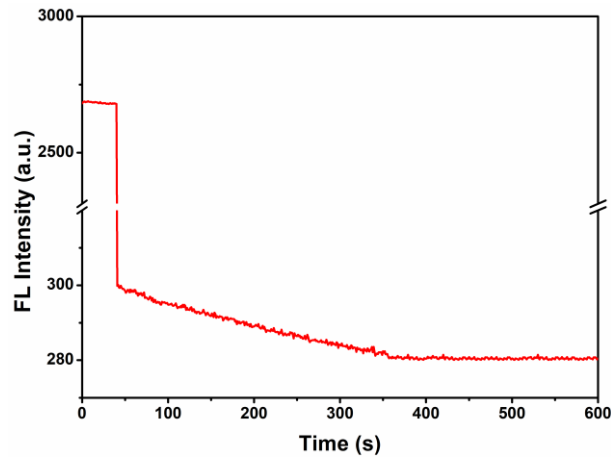$$Q.E\,(\%) = \frac{F_0 - F}{F_0} \times 100$$

Figure. S3 The optimum time for quenching was investigated by adding GO (final concentration:1.0 mg/ml) into Pep-Pdots solution after 40s and record the fluorescence at 536 nm during the time 0-600s.
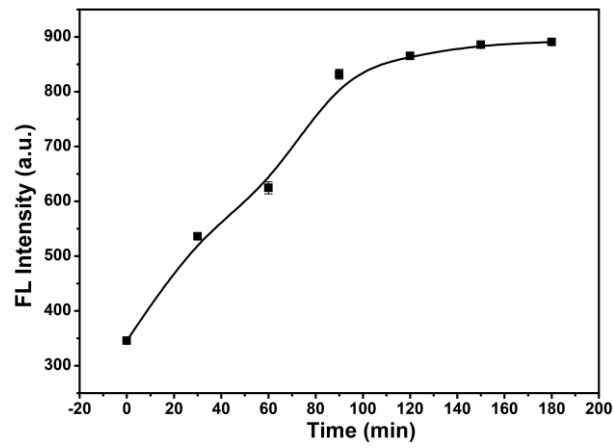

Figure. S4 Fluorescence recovery in GO-Pep-Pdots nanocomplex as a function of reaction time in the presence of MMP-9 (final concentration:80 ng/ml).
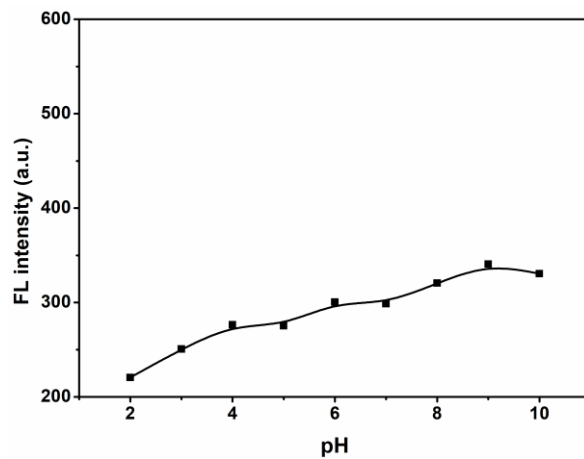

Figure. S5 Fluorescence intensity of the GO-Pep-Pdots nanocomplex at varying pH.
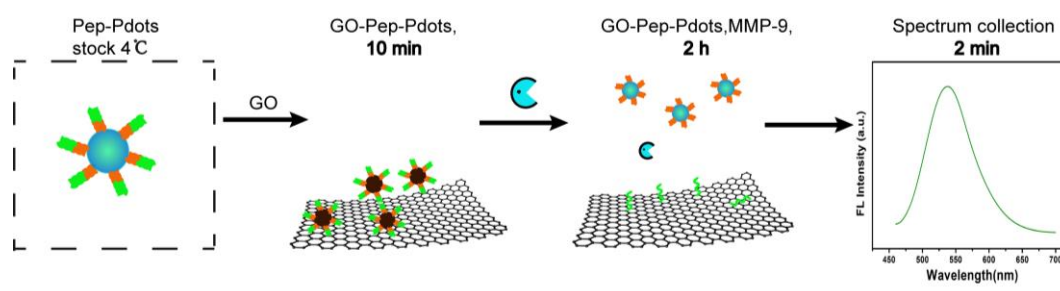
Figure. S6 Schematic representation of steps and the time taken for each.

Table. S1 The pathological information of the prostate patients and healthy people.

Patient No.	Age (Years)	Cancer staging[a]	Gleason score[b]
1	64	-	-
2	72	-	-
3	68	-	-
4	71	2	4+3
5	75	2	3+3
6	74	3	4+3
7	72	2	3+4
8	78	4	4+5
9	76	1	3+3
10	75	2	3+4
11	77	2	4+4
12	59	2	3+3
13	79	2	3+4

[a,b] Important indicators of classification of urinary and male reproductive system tumors in WHO.