Supplementary material

Carbon Dots-Decorated Hydroxyapatite Nanowires-Lanthanide Metal-Organic Framework Composites as Fluorescent Sensors for Detection of Dopamine

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Material characterization

Table S1. The comparison of different detection method for DA detection.

Figure S1. TEM of HAPNWs (a) and zoom of TEM of HAPNWs-CDs-Tb/MOF (b).

Figure S2. Energy Dispersive Spectrometer (EDS) spectrum of the HAPNWs (a) and HAPNWs-CDs-Tb/MOF (b).

Figure S3. The emission spectra of CDs (a), Tb-MOF (b) and HAPNWs-CDs-Tb/MOF (c).

Figure S4. Stern-Volmer plot for CDs quenching on the probe by DA.

Figure S5. Emission spectra of CDs (a), Tb-MOF (b) and HAPNWs-CDs-Tb/MOF (c) solution with different excitation wavelengths.

Figure S6. Emission spectra of HAPNWs-CDs-Tb/MOF solution with (red, right) and without (black, left) DA. (Inset: The diagram of fluorescence color change).

Figure S7. Effects of pH values on fluorescence intensity of HAPNWs-CDs-Tb/MOF with (red) and without (black) DA (a), effects of interaction time on fluorescence intensity of HAPNWs-CDs-Tb/MOF with DA (b).

Figure S8. The short-term stability of HAPNWs-CDs-Tb/MOF suspension solution with (red) and without (black) DA (a), the long-term stability of HAPNWs-CDs-Tb/MOF suspension solution (b).

Figure S9. The emission spectra of Tb^{3+}, Tb^{3+} with BTC, Tb^{3+} with DA and Tb^{3+} with BTC and DA.

Table S1 The comparison of different detection method for DA detection

Detection Method	Linear Range (μM)	Detection Limit (μM)	R^2	Refs.
Electrochemical method	100-1000	0.24	0.9842	[1]
Electrochemical method	2-800	0.67	---	[2]
Colorimetric method	0.01-3.6	0.255	0.9998	[3]
Electrochemical method	5-50	1.32	0.996	[4]
Colorimetric method	1-100	0.66	0.991	[5]
Fluorescence method	0.1-200	0.01664	0.99	[6]
Fluorescence method	10-80	0.12	0.93575	[7]
Fluorescence method	0.1-100	0.032	0.999	[8]
This work	0.04-20	0.01226	0.9979	This work

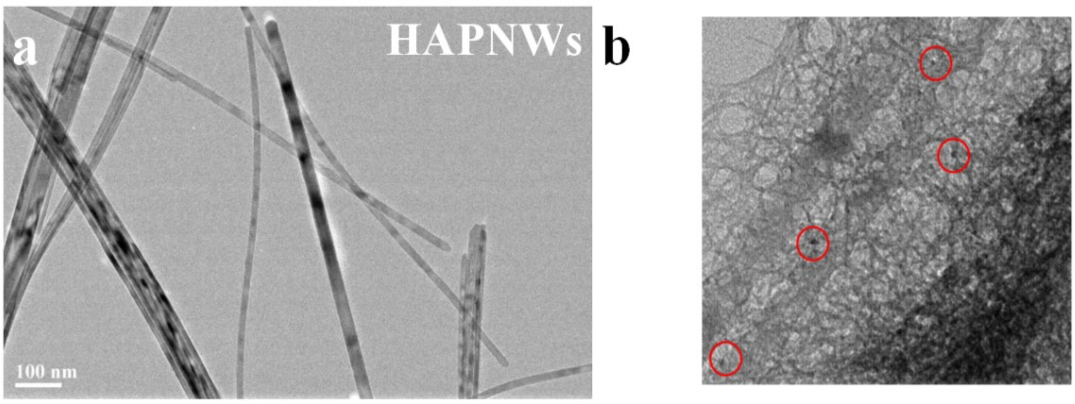

Figure S1. TEM of HAPNWs (a) and zoom of TEM of HAPNWs-CDs-Tb/MOF (b).

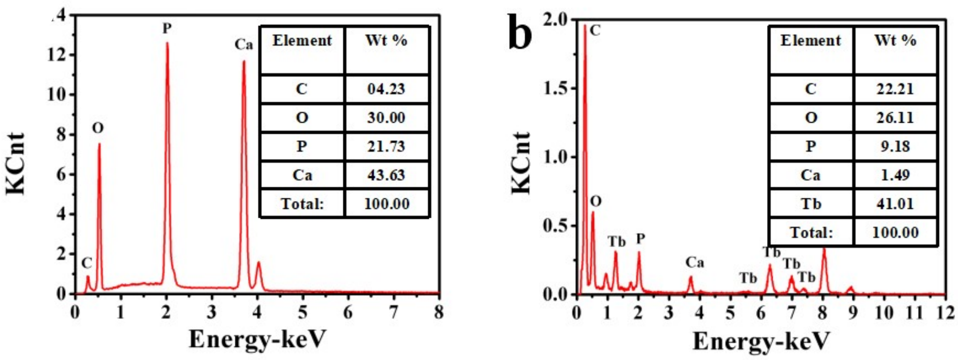

Figure S2. Energy Dispersive Spectrometer (EDS) spectrum of the HAPNWs (a) and HAPNWs-CDs-Tb/MOF (b).

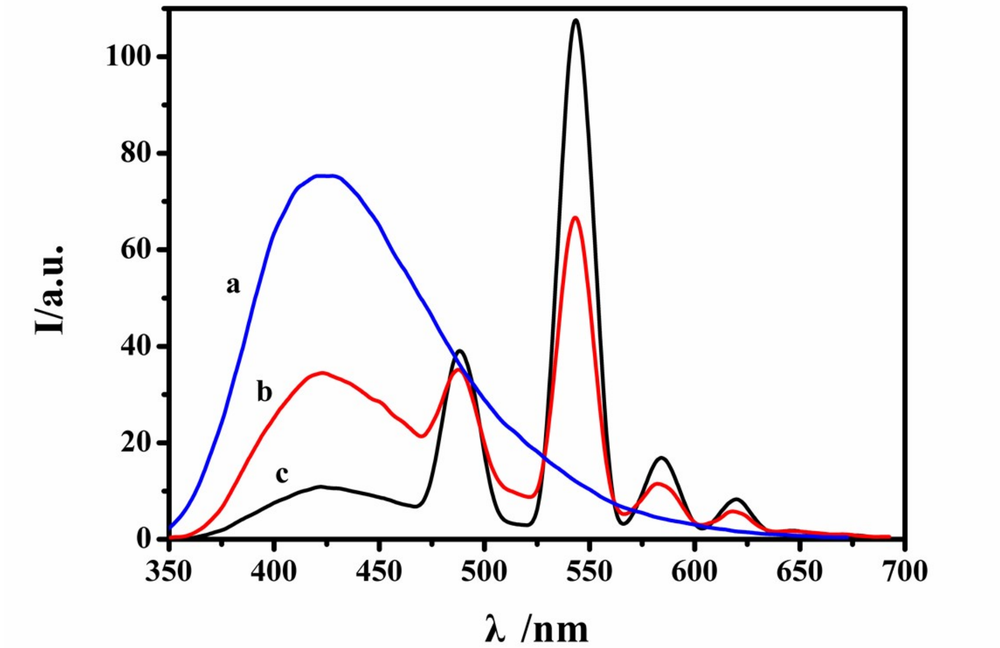

Figure S3. The emission spectra of CDs (a), Tb-MOF (b) and HAPNWs-CDs-Tb/MOF (c).

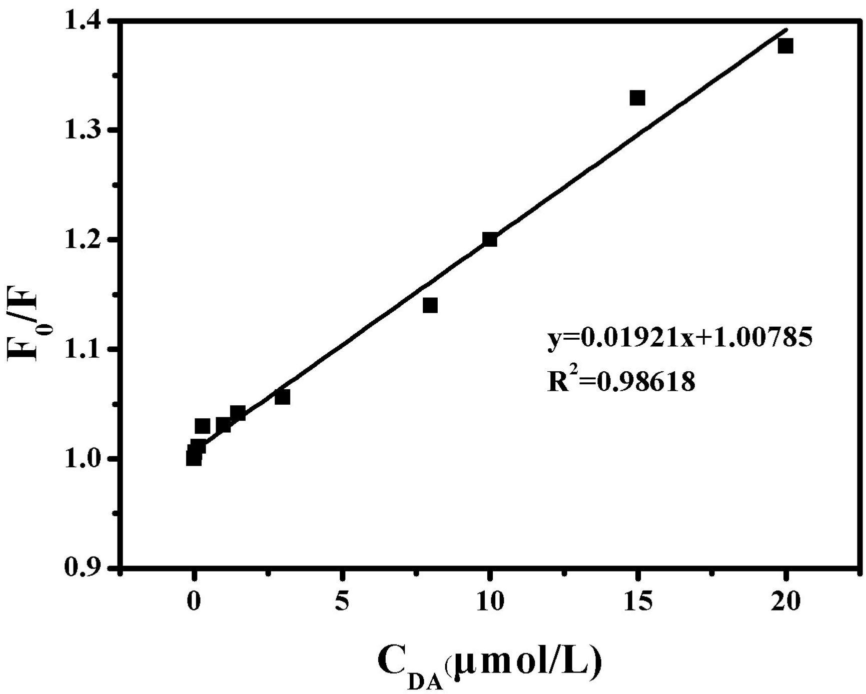

Figure S4. Stern-Volmer plot for CDs quenching on the probe by DA.

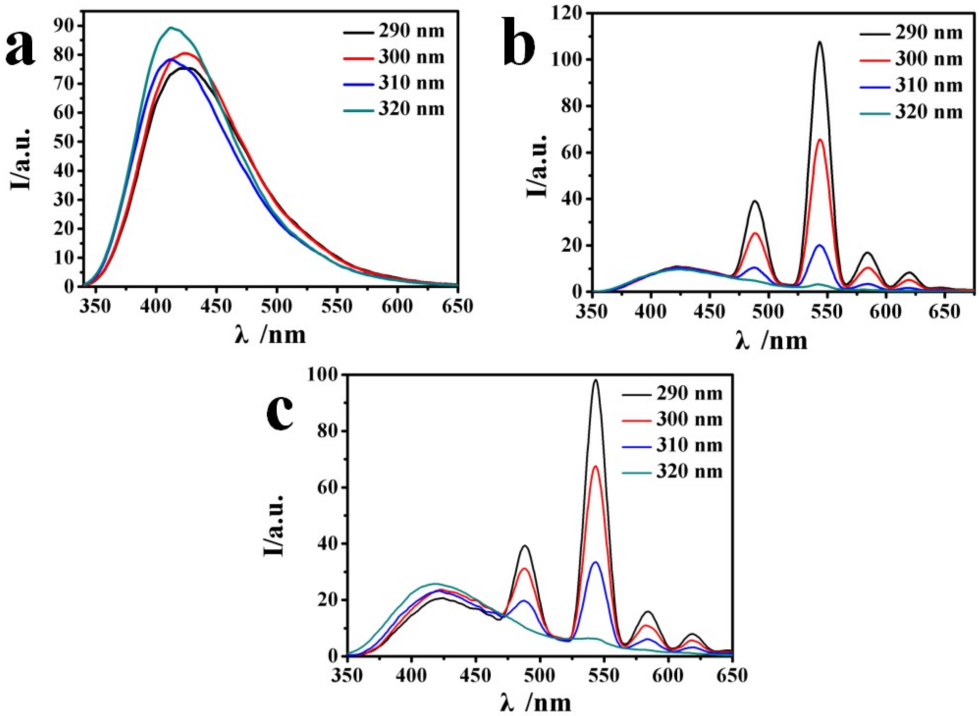

Figure S5. Emission spectra of CDs (a), Tb-MOF (b) and HAPNWs-CDs-Tb/MOF (c) solution with different excitation wavelengths.

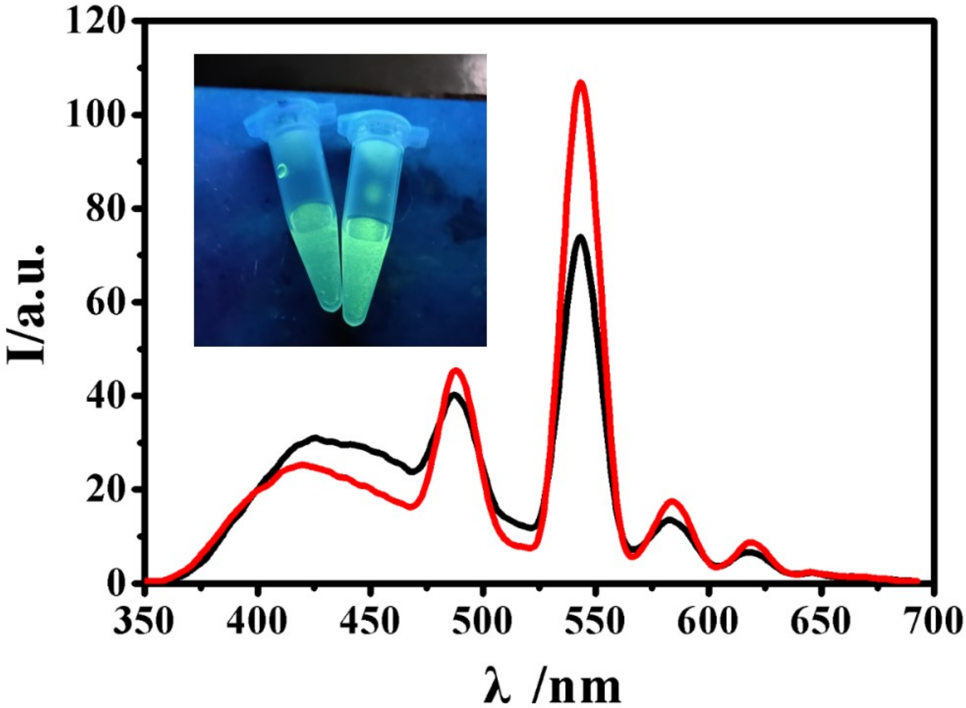

Figure S6. Emission spectra of HAPNWs-CDs-Tb/MOF solution with (red, right) and without (black, left) DA. (Inset: The diagram of fluorescence color change).

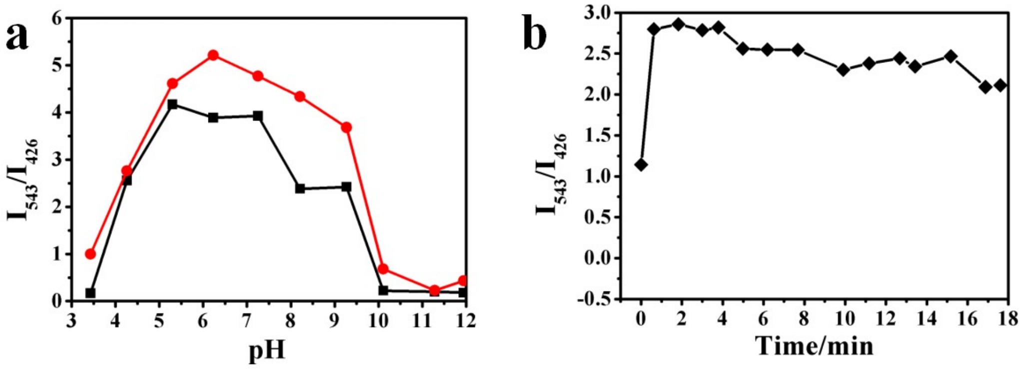

Figure S7. Effects of pH values on fluorescence intensity of HAPNWs-CDs-Tb/MOF with (red) and without (black) DA (a), effects of interaction time on fluorescence intensity of HAPNWs-CDs-Tb/MOF with DA (b).

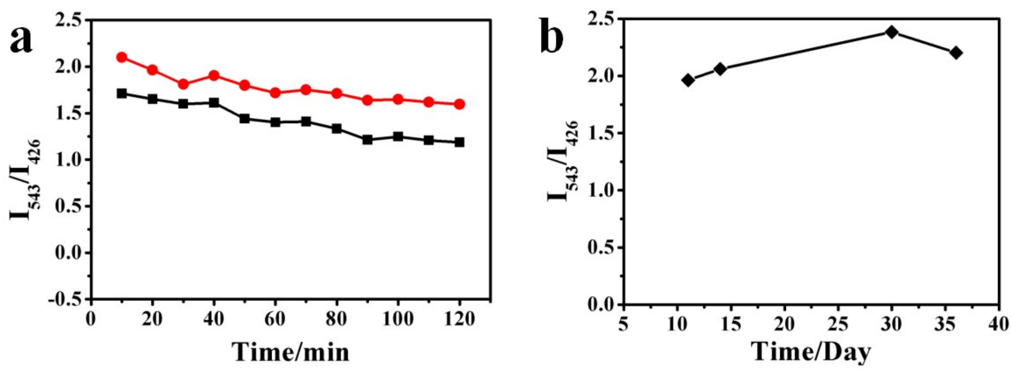

Figure S8. The short-term stability of HAPNWs-CDs-Tb/MOF suspension solution with (red) and without (black) DA (a), the long-term stability of HAPNWs-CDs-Tb/MOF suspension solution (b).

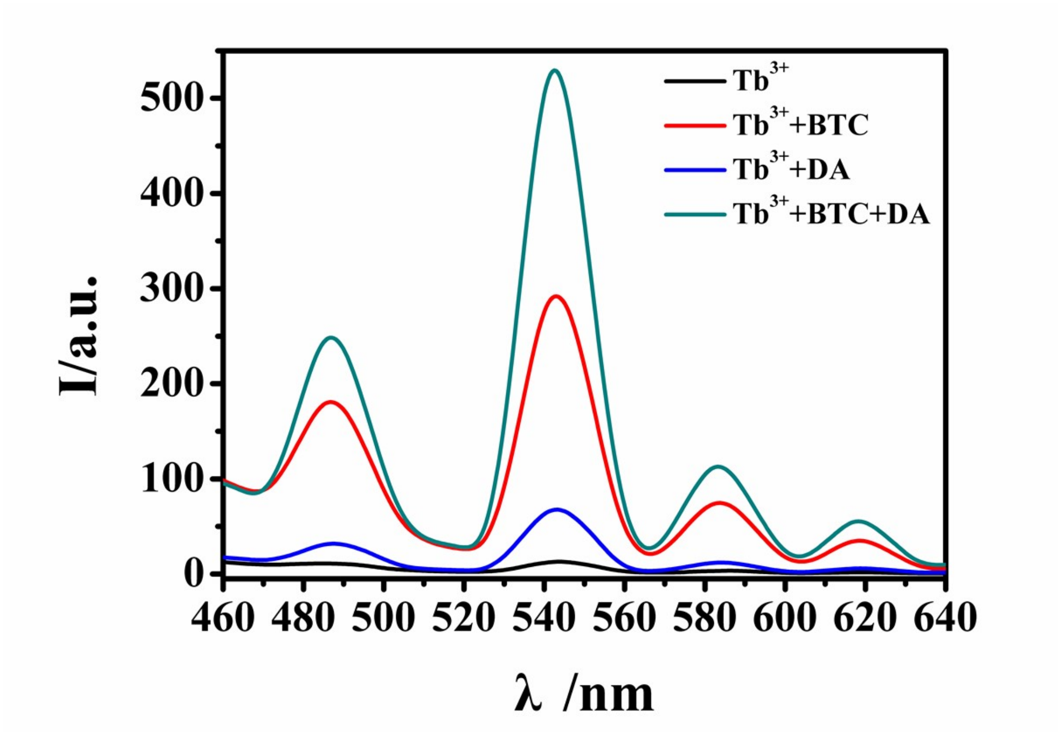

Figure S9. The emission spectra of Tb^{3+}, Tb^{3+} with BTC, Tb^{3+} with DA and Tb^{3+} with BTC and DA.

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