

Supporting information

A highly luminescent lanthanide-functionalized covalent organic framework for rapid and specific detection of 7-methylguanine for DNA methylation assessment

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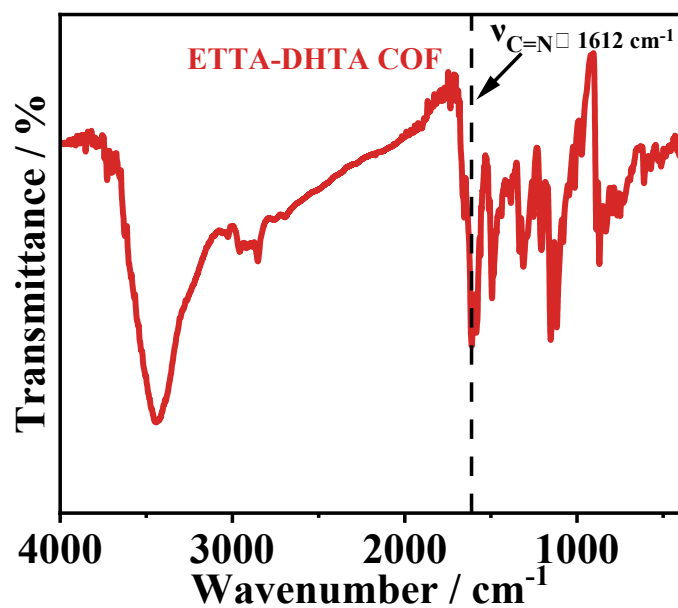


Fig. S1. FT-IR spectrum of ETTA-DHTA COF.

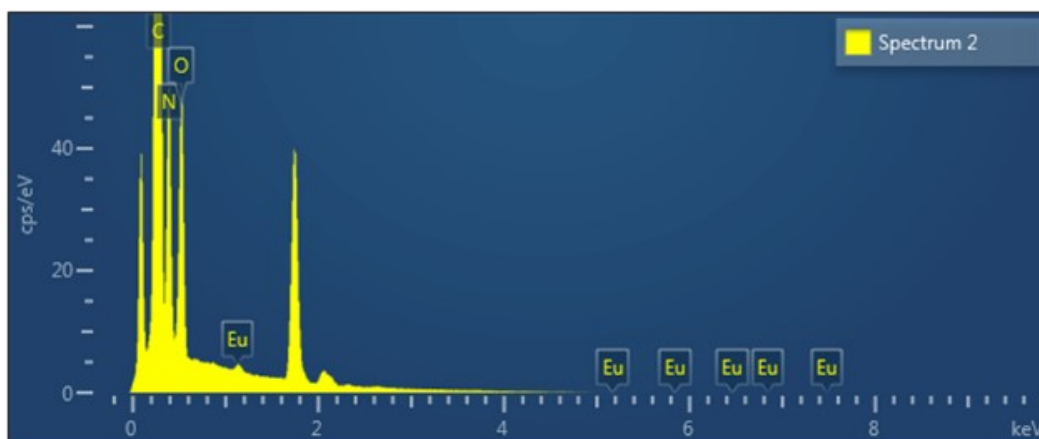


Fig. S2. EDX spectrum of DPA/Eu@ETTA-DHTA COF.

Table S1. The Eu content in DPA/Eu@ETTA-DHTA COF based on ICP-OES result.

Samples	Eu mass
DPA/Eu@ETTA-DHTA COF	0.67%

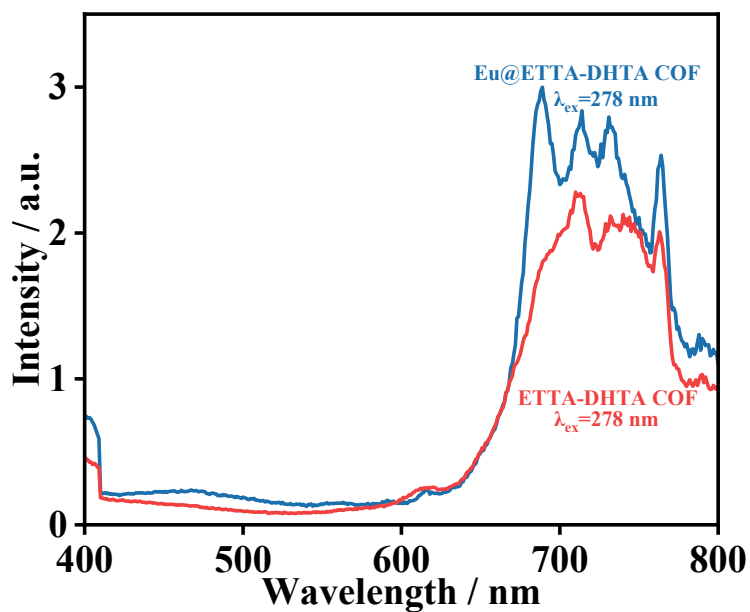


Fig. S3. The emission spectra of ETTA-DHTA COF and Eu@ETTA-DHTA.

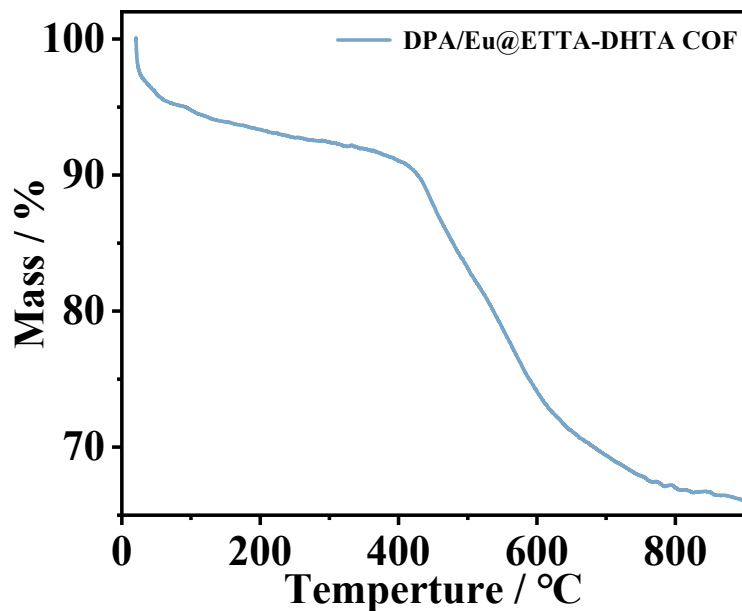


Fig. S4. Thermogravimetric analysis of DPA/Eu@ETTA-DHTA COF at temperature range of 20 - 900 °C.

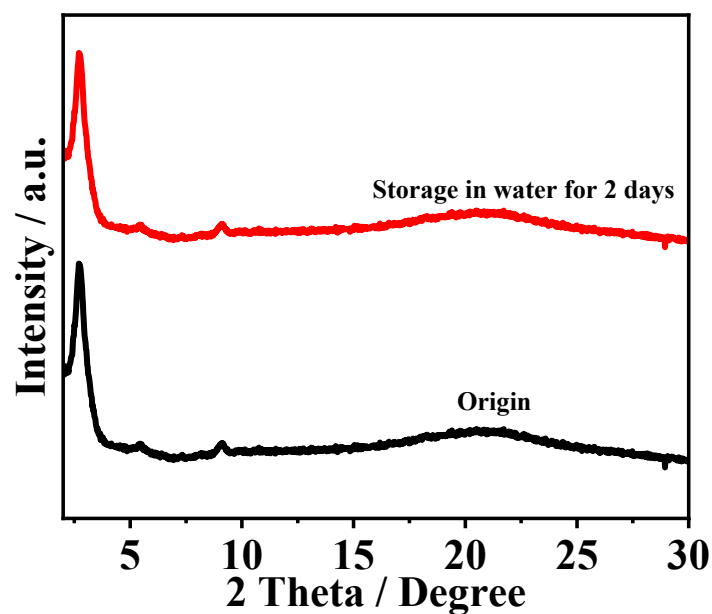


Fig. S5. PXRD patterns of DPA/Eu@COF-ETTA-DHTA before and after immersion in pure water for 2 days.

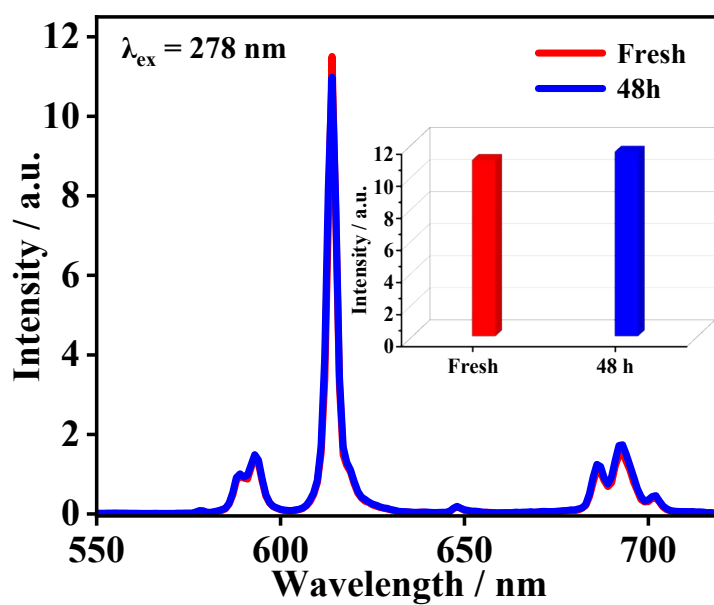


Fig. S6. Fluorescence spectra ($\lambda_{ex} = 278 \text{ nm}$) of DPA/Eu@ETTA-DHTA COF before (red) and after (black) storage in water for 48 h.

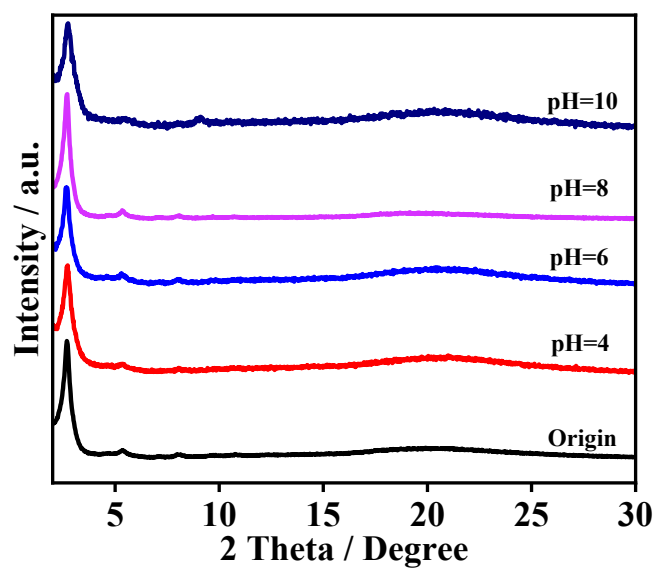


Fig. S7. PXRD patterns of DPA/Eu@ETTA-DHTA before and after immersing in aqueous solutions with different pH values for 48 h.

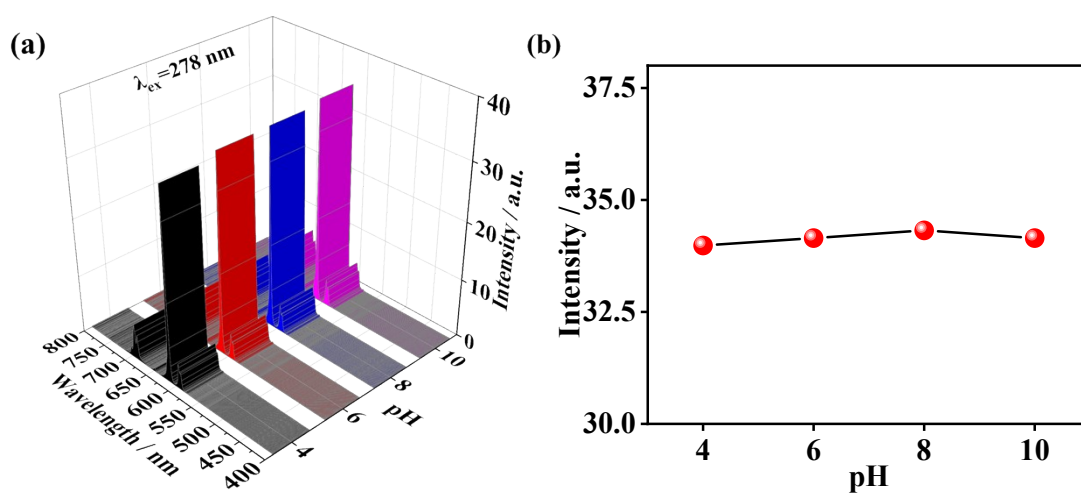


Fig. S8. (a) Luminescence spectra and (b) emission intensity (614 nm) of DPA/Eu@ETTA-DHTA in aqueous solutions with different pH values.

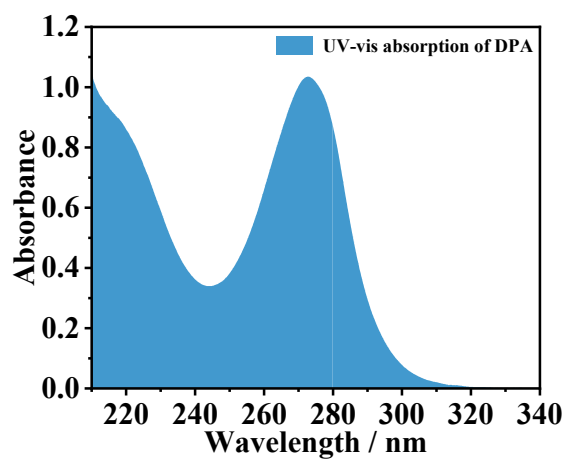


Fig. S9. UV-vis adsorption spectrum of DPA.

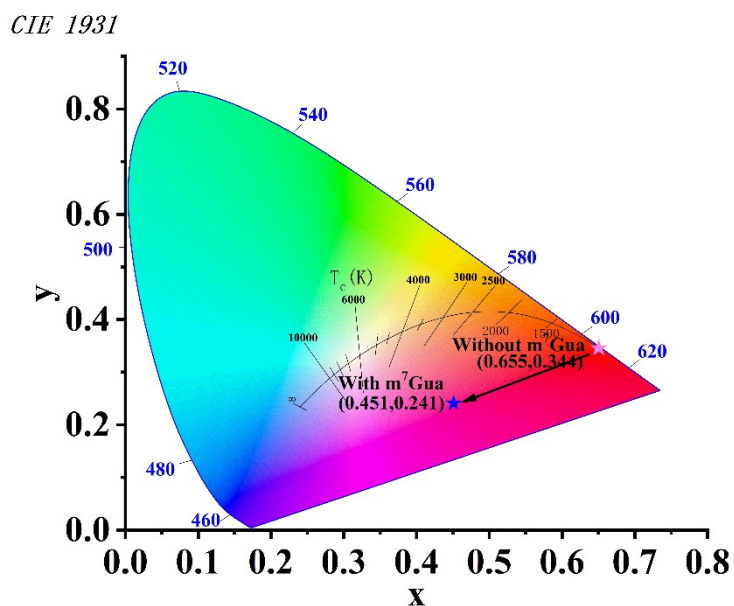


Fig. S10. CIE chromaticity diagram of DPA/Eu@ETTA-DHTA COF before and after adding m⁷Gua.

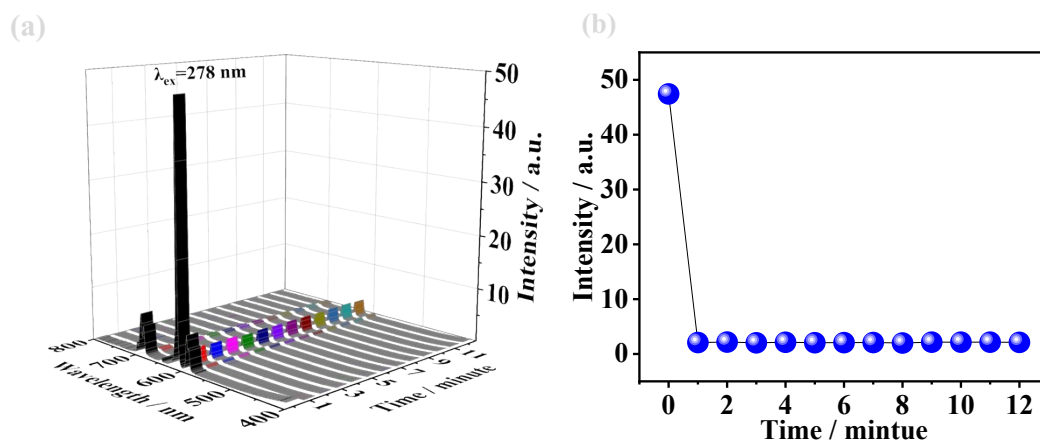


Fig. S11. Changes in fluorescence spectra of DPA/Eu@ETTA-DHTA COF (a) and the corresponding intensity at 614 nm (b) over interaction time with m⁷Gua.

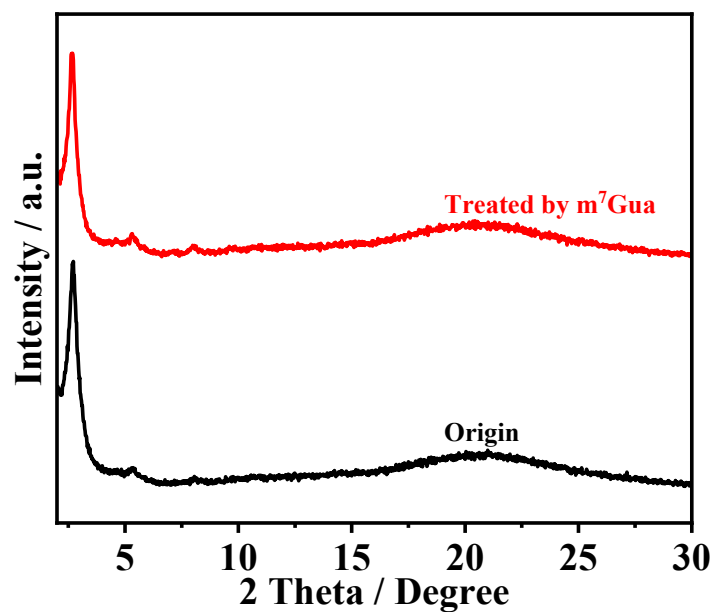


Fig. S12. PXRD patterns of DPA/Eu@ETTA-DHTA before and after treated by m⁷Gua for 48 h.

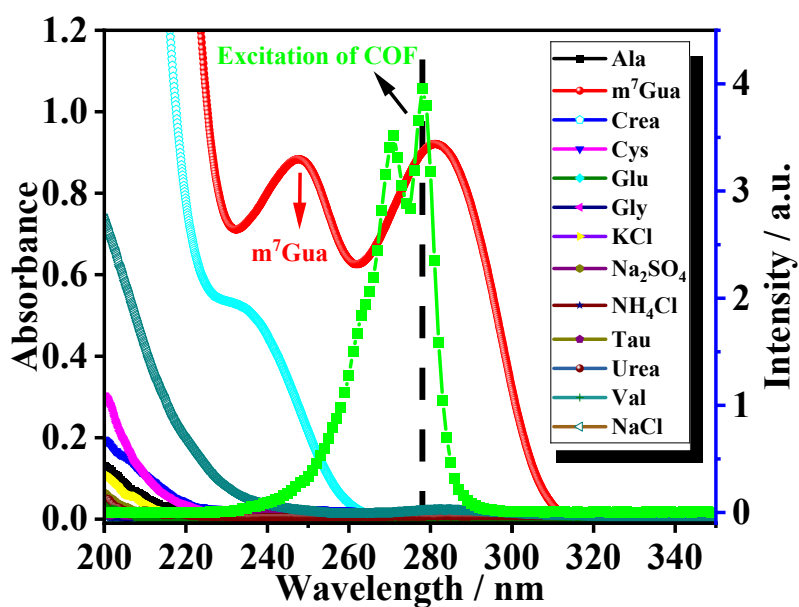


Fig. S13. UV-vis spectra of various urine components and the excitation spectrum of DPA/Eu@ETTA-DHTA.

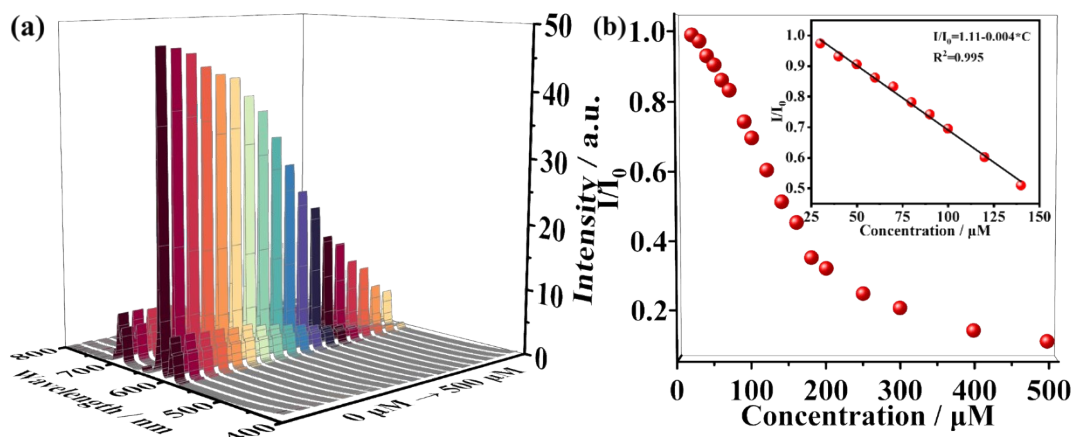


Fig. S14. (a) Fluorescence spectra of DPA/Eu@ETTA-DHTA in urine specimen spiked with different concentrations of $m^7\text{Gua}$ ($\lambda_{\text{ex}} = 278 \text{ nm}$). (b) The relationship between luminescence quenching efficacy (I/I_0) and incremental concentration of $m^7\text{Gua}$ in urine.