

Supplementary Materials

Fluorescent Assay for Acetylcholinesterase Activity and Inhibitor Screening Based on the Lanthanide Organic/Inorganic Hybrid

Materials

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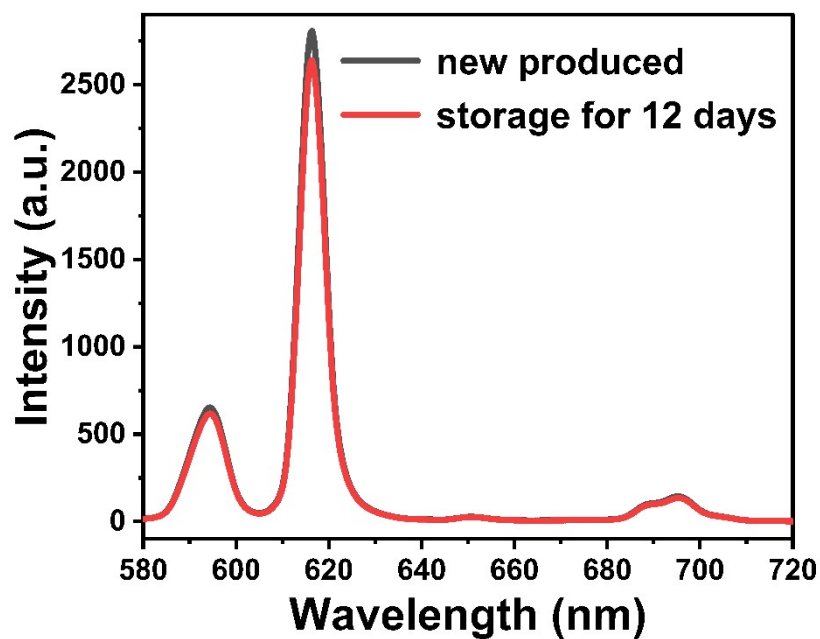


Fig.S1. Fluorescence emission spectrum of $\text{Eu}(\text{DPA})_3@Lap$ new produced and storage in room temperature for 12 days, respectively.

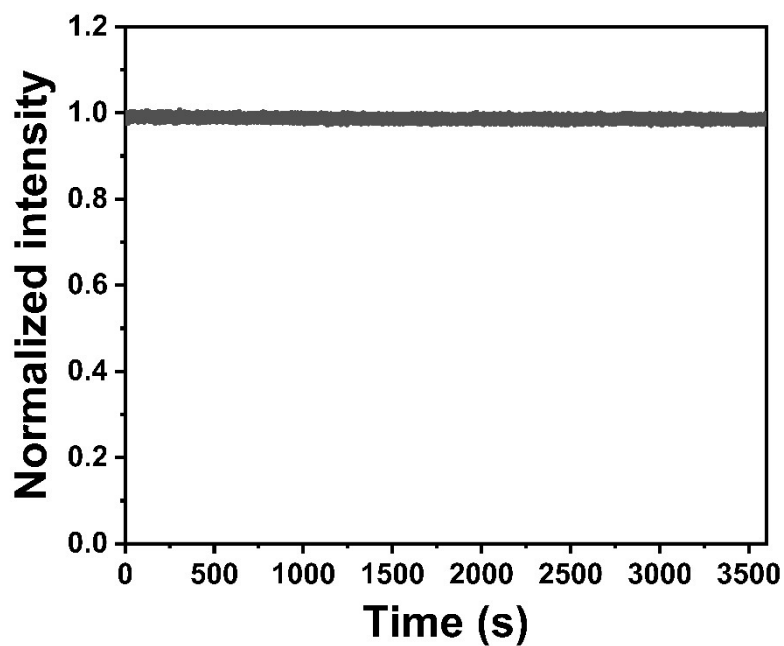


Fig.S2. Plot of normalized fluorescence intensities of the $\text{Eu}(\text{DPA})_3@Lap$ versus exposure time.

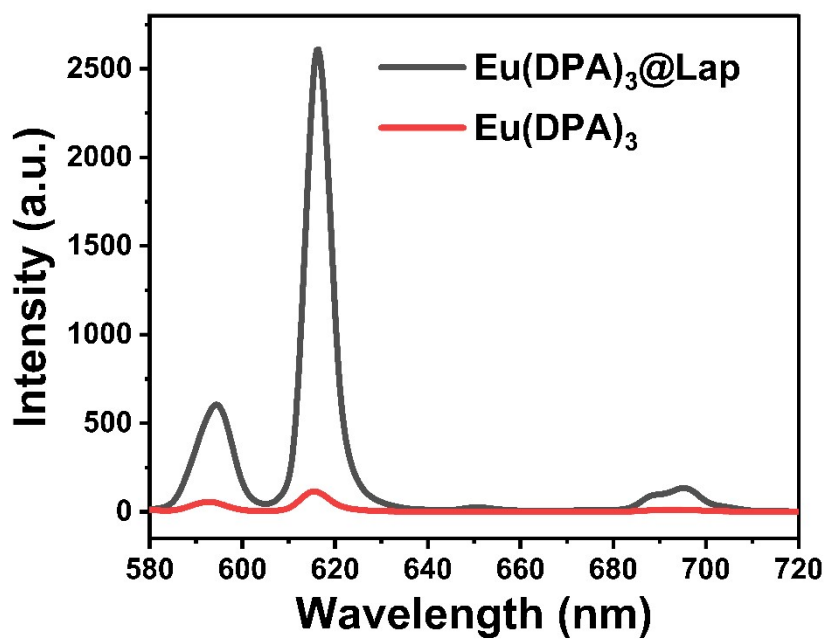


Fig.S3. Fluorescence emission spectrum of Eu(DPA)_3 and $\text{Eu(DPA)}_3@Lap$.

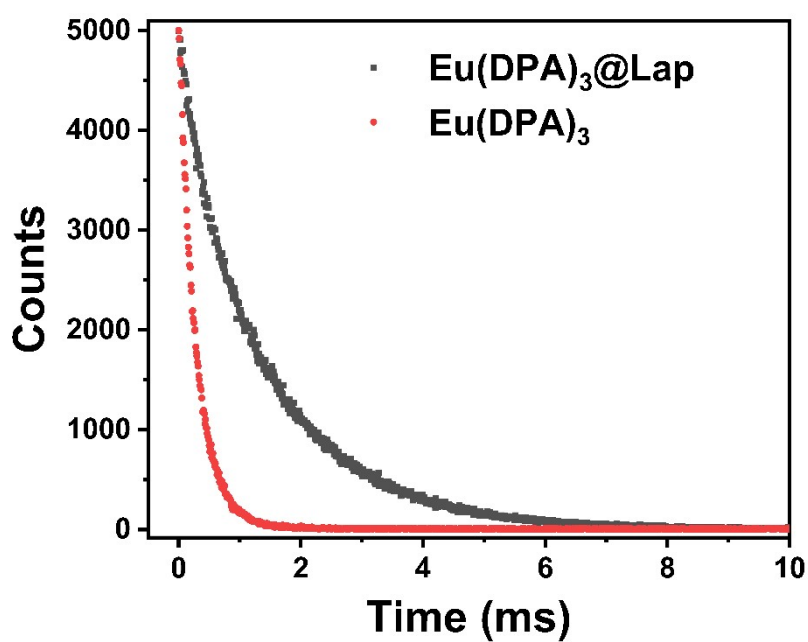


Fig.S4. Fluorescence decays of Eu(DPA)_3 and $\text{Eu(DPA)}_3@Lap$.

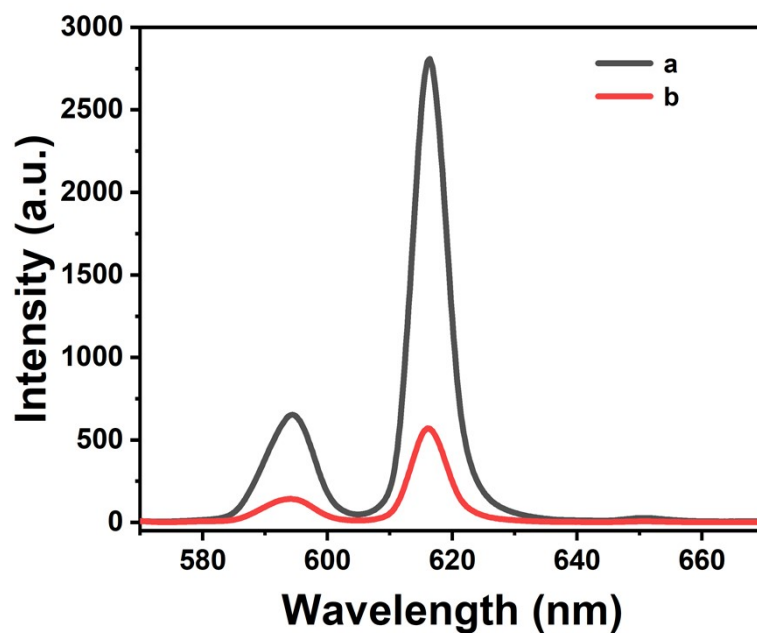


Fig.S5. Luminescence spectra of the $\text{Eu(DPA)}_3\text{@Lap}$ (a), $\text{Eu(DPA)}_3\text{@Lap-Cu}^{2+}$ (b).

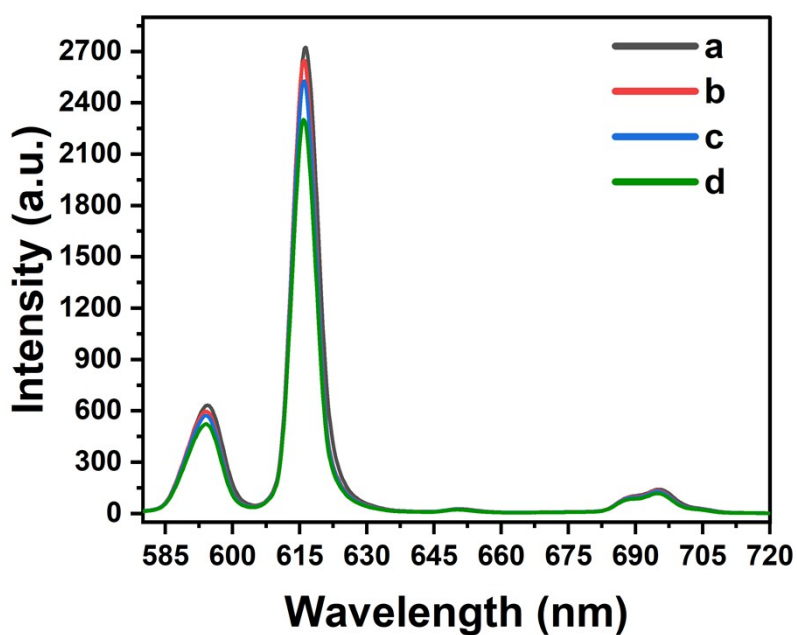


Fig.S6. Luminescence spectra of the $\text{Eu(DPA)}_3\text{@Lap}$ (a), $\text{Eu(DPA)}_3\text{@Lap-AChE}$ (b), $\text{Eu(DPA)}_3\text{@Lap-ATCh}$ (c) and $\text{Eu(DPA)}_3\text{@Lap-ATCh-AChE}$ (d).

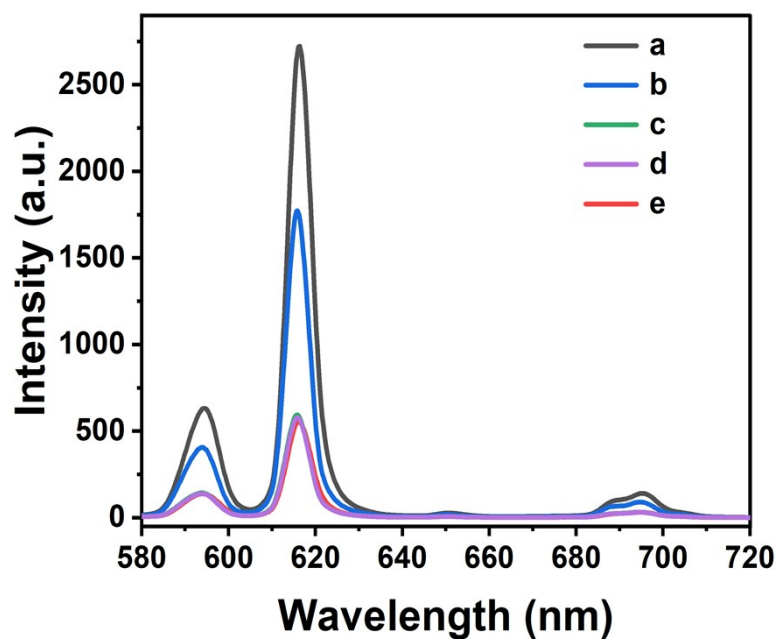


Fig.S7. Luminescence spectra of the $\text{Eu(DPA)}_3\text{@Lap}$ (a), $\text{Eu(DPA)}_3\text{@Lap-Cu}^{2+}\text{-ATCh-AChE}$ (b), $\text{Eu(DPA)}_3\text{@Lap-Cu}^{2+}\text{-ATCh}$ (c), $\text{Eu(DPA)}_3\text{@Lap-Cu}^{2+}\text{-AChE}$ (d) and $\text{Eu(DPA)}_3\text{@Lap-Cu}^{2+}$ (e).

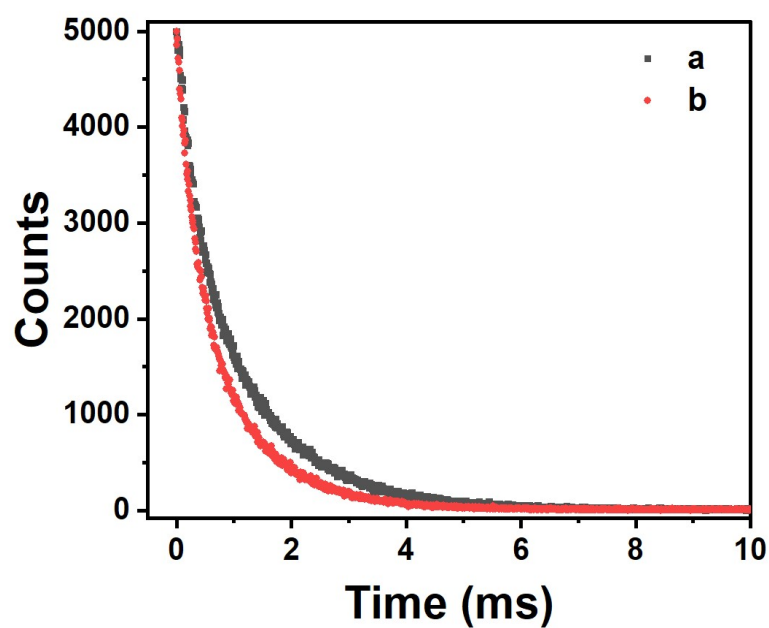


Fig.S8. Luminescence lifetimes of the $\text{Eu(DPA)}_3\text{@Lap-Cu}^{2+}\text{-ATCh-AChE}$ (a) and $\text{Eu(DPA)}_3\text{@Lap-Cu}^{2+}$ (b).

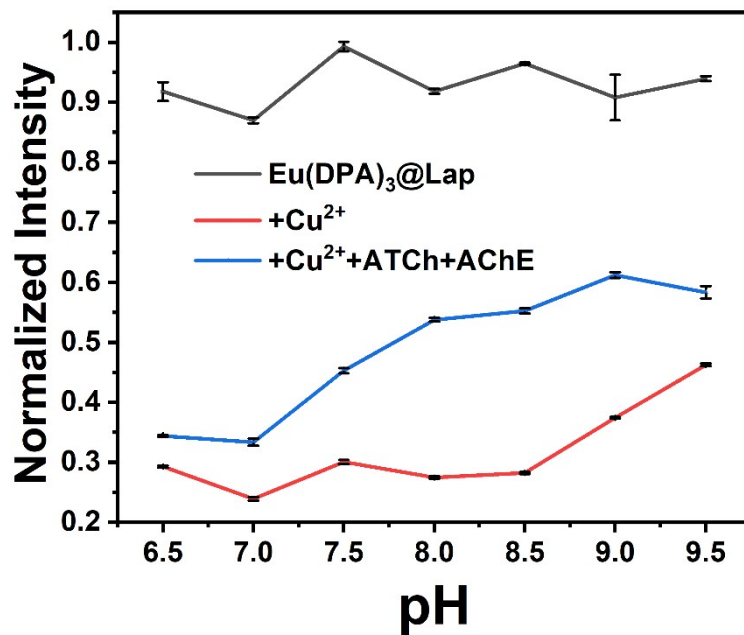


Fig.S9. Fluorescence intensity of the Eu(DPA)₃@Lap (a), Eu(DPA)₃@Lap-Cu²⁺ (b) and Eu(DPA)₃@Lap-Cu²⁺-ATCh-AChE (c) in various pH.

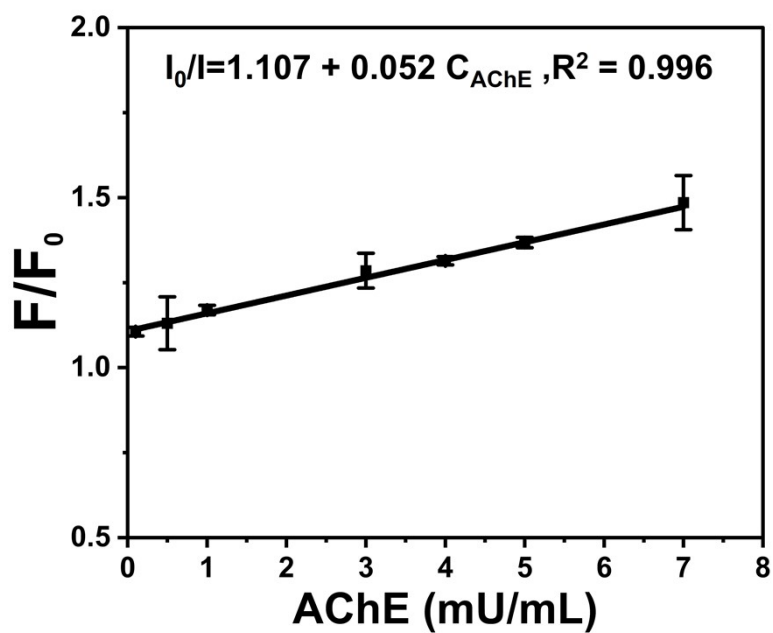


Fig.S10. Fluorescence intensities (presented as I_0/I) at 616 nm of the sensing system versus the AChE activities in 2% human serum (HS).

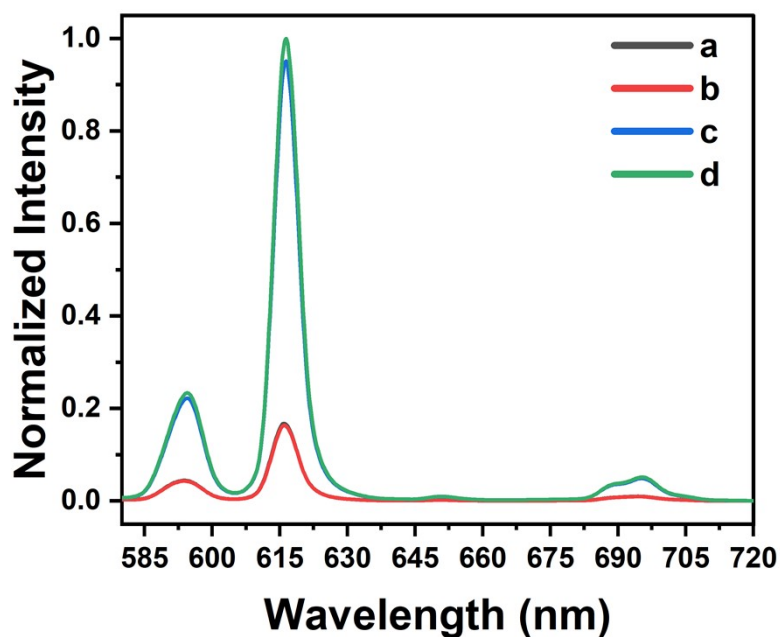


Fig.S11. Luminescence spectra of the $\text{Eu}(\text{DPA})_3@Lap\text{-Cu}^{2+}$ (a), $\text{Eu}(\text{DPA})_3@Lap\text{-Cu}^{2+}$ - tacrine (b), $\text{Eu}(\text{DPA})_3@Lap$ - tacrine (c) and $\text{Eu}(\text{DPA})_3@Lap$ (d).

Table S1. Comparison of various detection methods for AChE activity

Method	Sensing system	LOD (mU/mL)	Linear range (mU/mL)	Ref.
Liquid crystal	5CB microdroplets	6.6	6.6–66000	1
Fluorescence	GQDs@Tb/GMPICP	5	5–400	2
Fluorescence	Perylene probe/MnO ₂ NS	2.5	5-100	3
Fluorescence	CQDs/AuNCs	1.08	0.5–5	4
Colorimetric assay	ATCh/TMB/H ₂ O ₂	0.5	2.0-14	5
Colorimetric assay	Au@PDA NPs hydrogel	0.9	2.5 – 25	6
Fluorescence	$\text{Eu}(\text{DPA})_3@Lap$	0.5	1-18	This work

Table S2. Results of recovery efficiency in the analysis of human serum samples.

sample	Spiked (mU/mL)	Found (mU/mL)	Recovery (%)	RSD (%; n=3)
1	7	7.50 ± 0.14	107.1	1.9
	10	9.77 ± 0.10	97.7	1.0
	15	15.80 ± 0.37	105.3	2.4
2	7	7.49 ± 0.11	107.0	1.4
	10	9.85 ± 0.26	98.5	2.6
	15	14.22 ± 0.44	94.8	3.1

References.

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