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Electronic Supplementary Material

Rapid and sensitive colorimetric detection of dopamine based on the enhanced-oxidase mimicking activity of cerium(IV)

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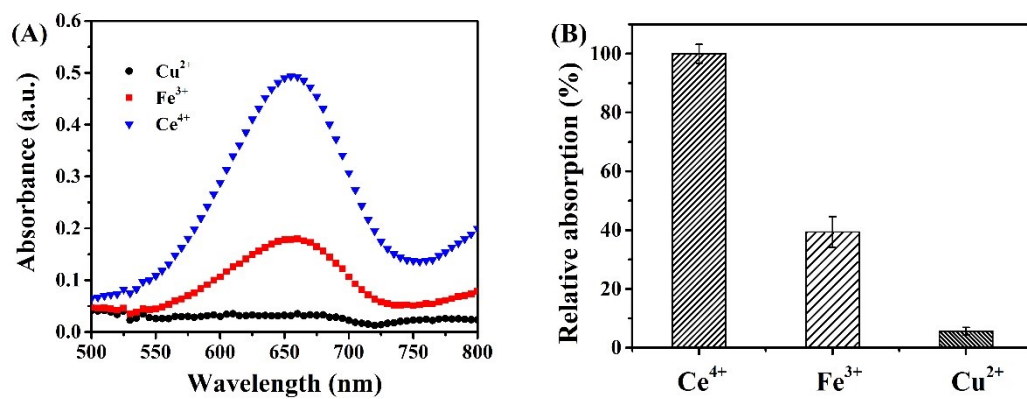


Fig. S1 UV-Vis absorbance spectra (A) and the relative absorption (B) of oxidizing TMB by different metal ions (0.1 mg mL^{-1}) in the presence of DA.

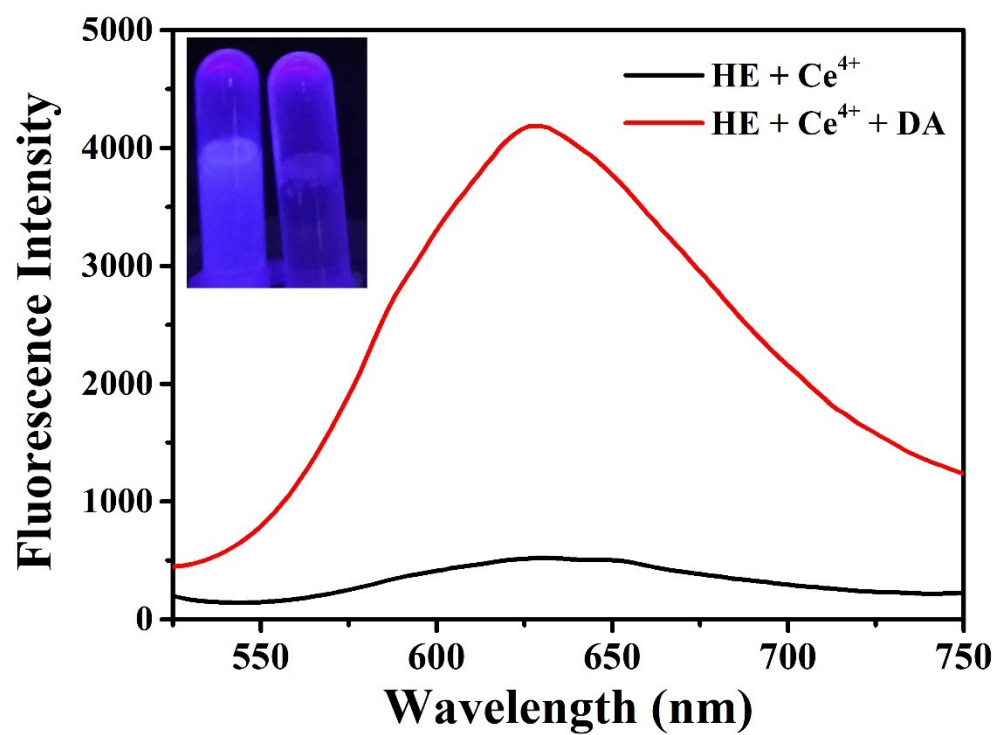


Fig. S2 Fluorescence spectrum of Ce^{4+} before and after the reaction with DA in the presence of HE (0.1 mM) probes. Inset: the corresponding photograph of different solutions under illumination of a UV lamp.

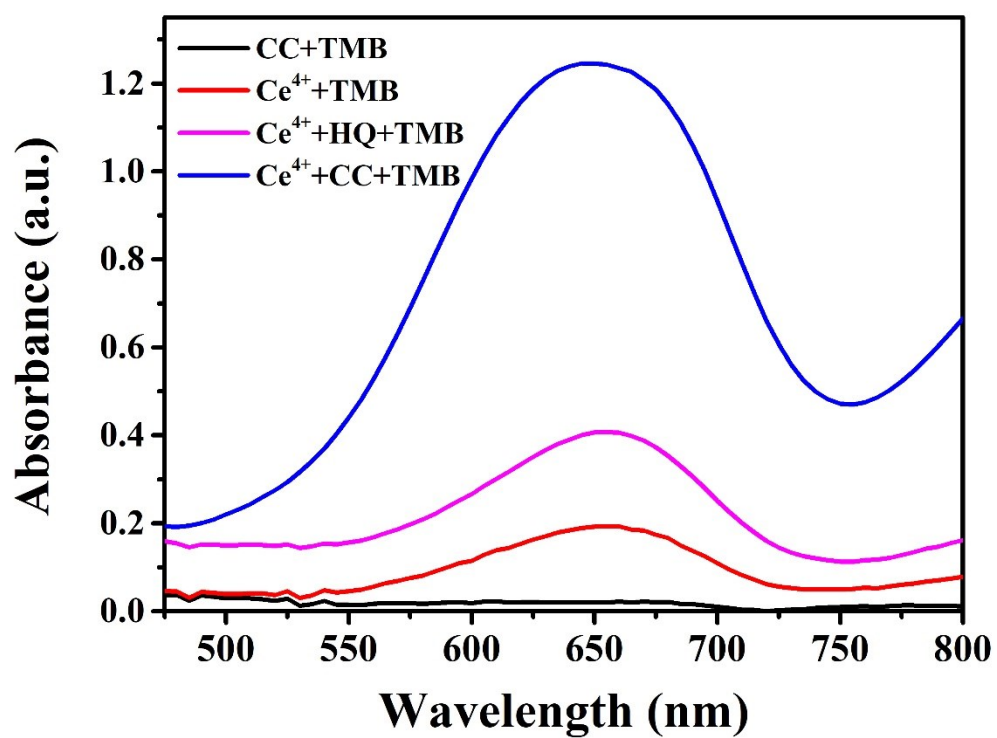


Fig. S3 UV-Vis absorption spectra of TMB (0.6 mM) in different systems (0.65 μM CC/HQ, 0.16 mg mL^{-1} Ce^{4+}).

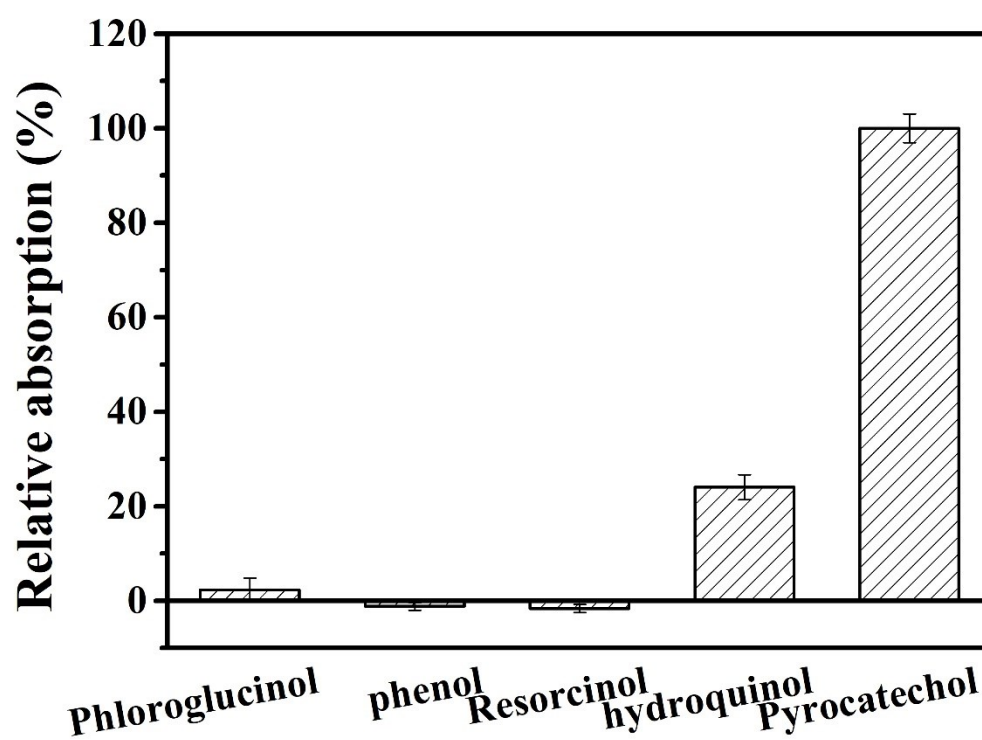


Fig. S4 The relative absorption of oxidizing TMB by Ce⁴⁺ in the presence of different phenols (0.65 μ M).

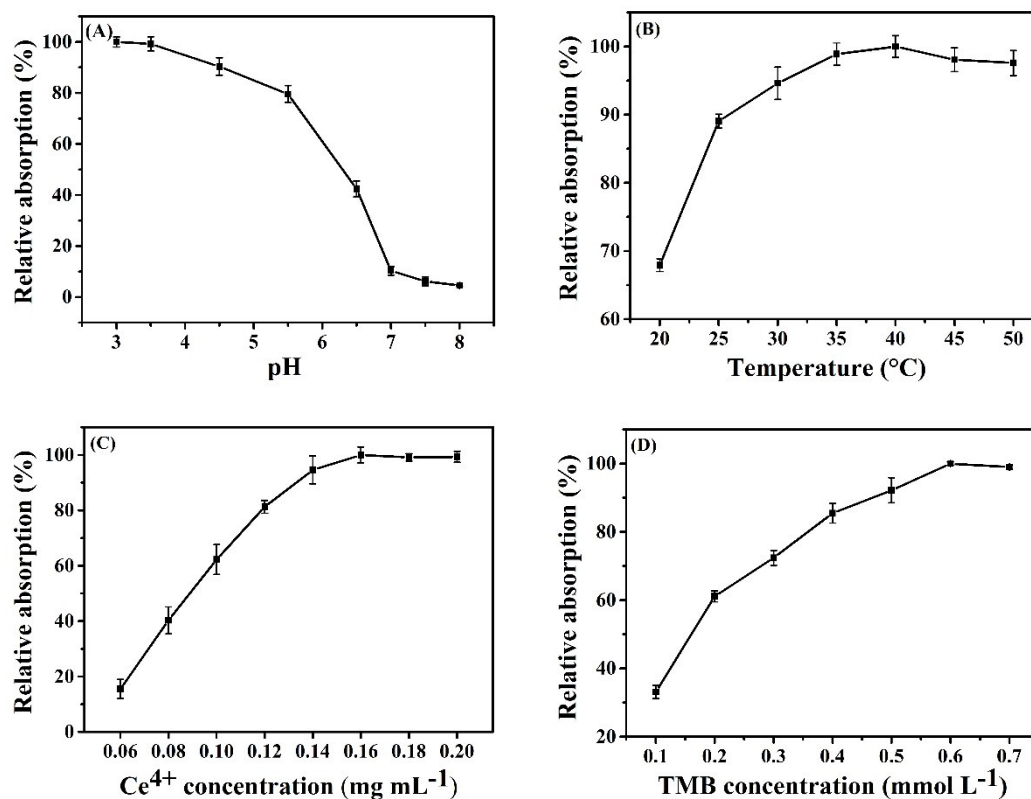


Fig. S5 The optimization of (A) pH, (B) temperature and concentrations of (C) Ce⁴⁺, (D) TMB for DA sensing. The error bars represent the standard deviation of three trials. (Relative absorption (%) = $\Delta A / \Delta A (\text{max}) \times 100\%$, $\Delta A = A - A_0$, A and A₀ represent the absorption value of Ce⁴⁺-TMB system with the existence or nonexistence of DA, respectively.) The highest absorption was set as 100%.

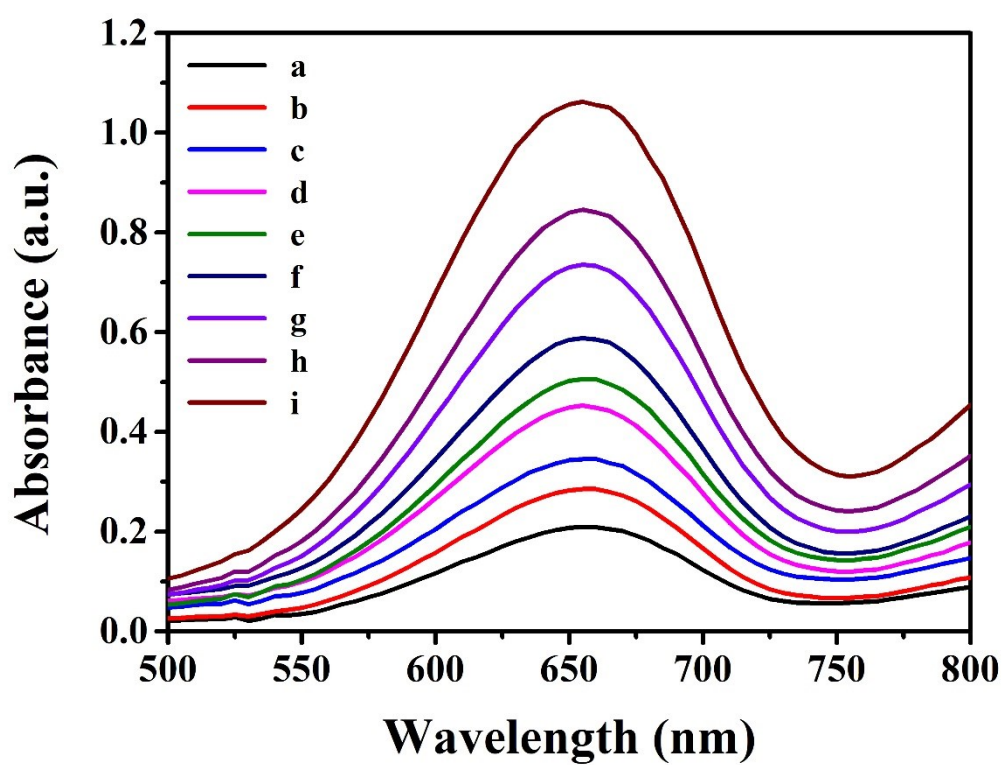


Fig. S6 Detection of DA in urine samples. (a) 0 μM , (b) 0.01 μM , (c) 0.05 μM , (d) 0.1 μM , (e) 0.15 μM , (f) 0.2 μM , (g) 0.25 μM , (h) 0.35 μM , (i) 0.45 μM DA were spiked to the assay system, respectively.

Table S1. Results for the determination of DA in human serum samples

Sample	Original content	Added (nM)	Found (nM)	Recovery (%)	RSD (% _{n=3})
Serum 1	ND	18	16.6	92.2	4.0
	ND	180	170.3	94.6	2.2
	ND	360	348.9	96.9	4.4
Serum 2	ND	18	16.8	93.3	2.4
	ND	180	168.6	93.7	3.3
	ND	360	338.9	94.1	5.2

ND: not detected.