

Electronic Supplementary Information (ESI)

A fluorescence “switch-on” approach to detect hydrazine in aqueous solution at neutral pH

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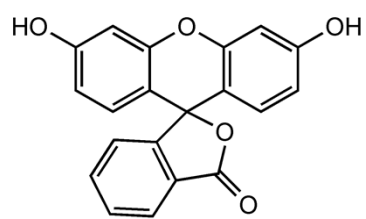
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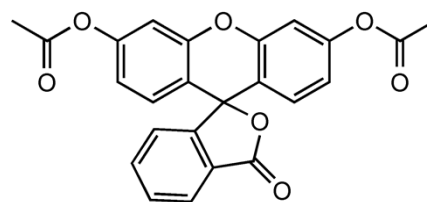
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Scheme S1 Synthesis of 3, 6-diacetoxyfluoran (FDA)



Fluorescein

Acetic Anhydride



FDA (F)

Fig. S1 FT-IR spectrum of FDA (KBr, cm^{-1})

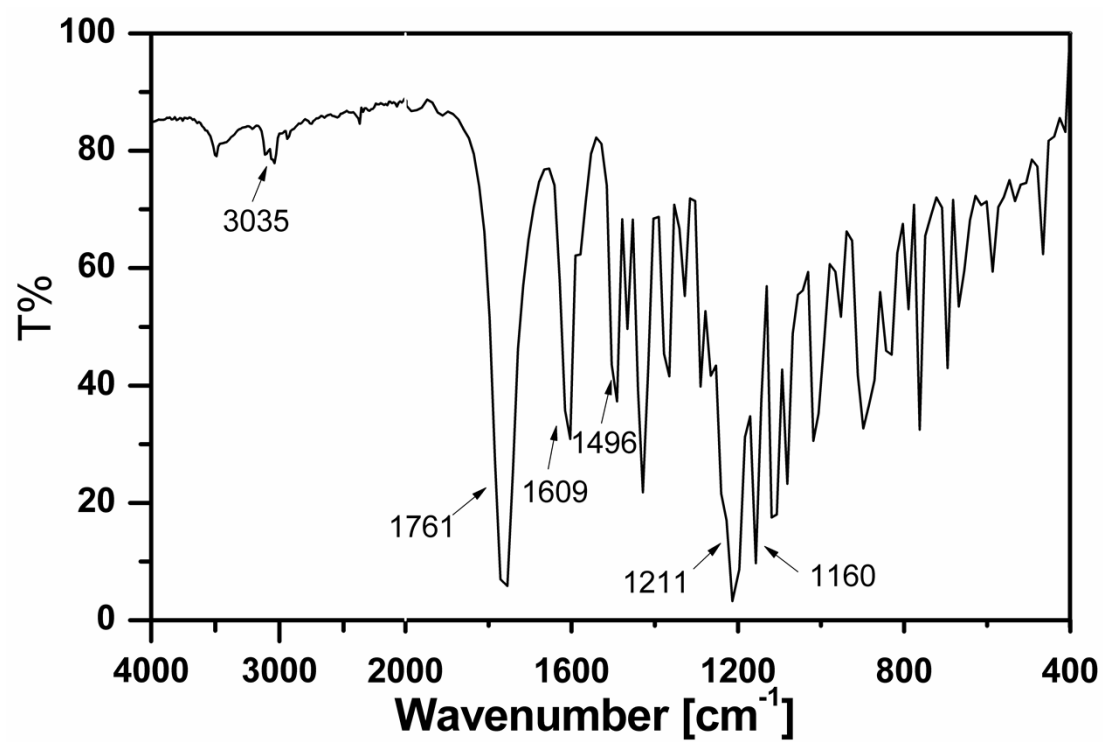


Fig. S2 ^1H NMR spectrum of FDA in DMSO- d_6

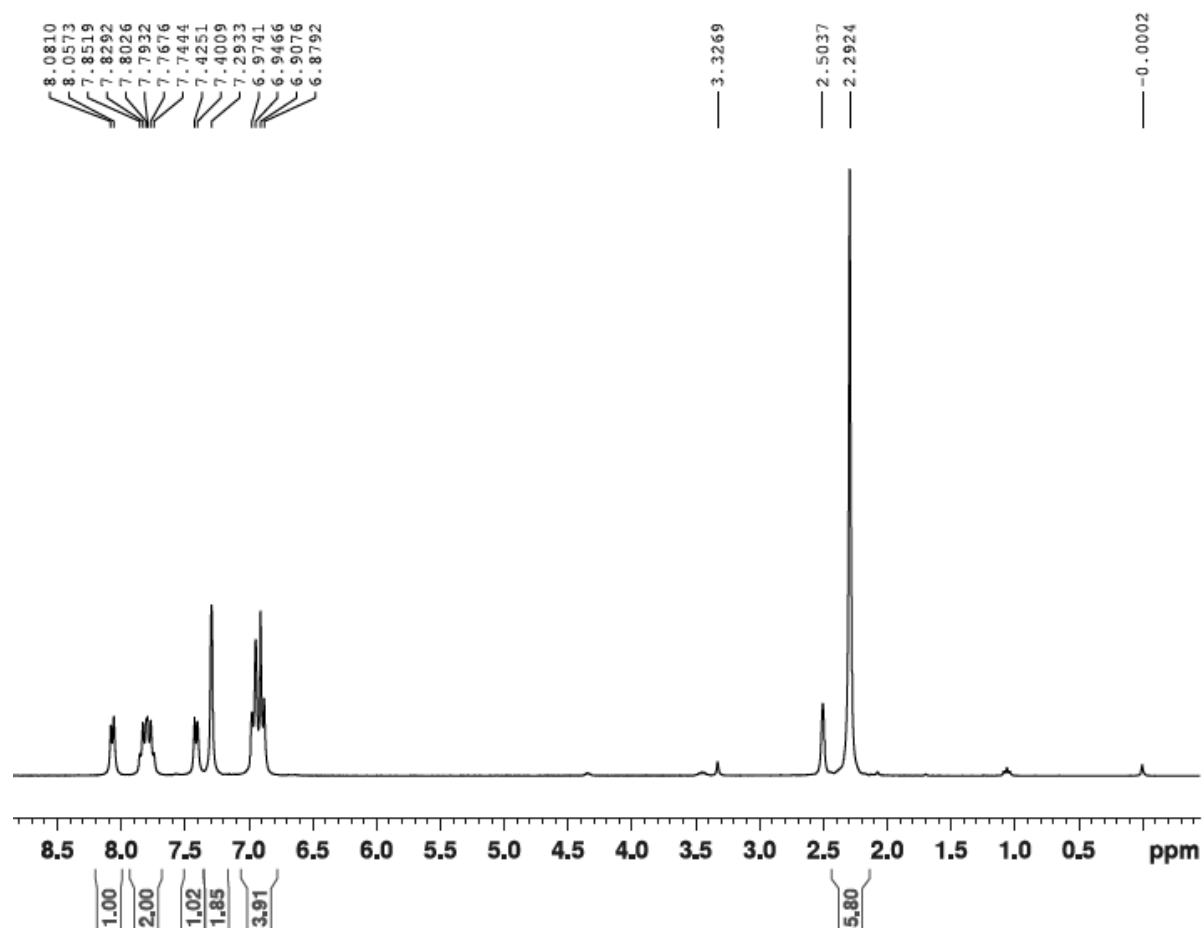


Fig. S3 ¹³C NMR spectrum of FDA in DMSO-d₆

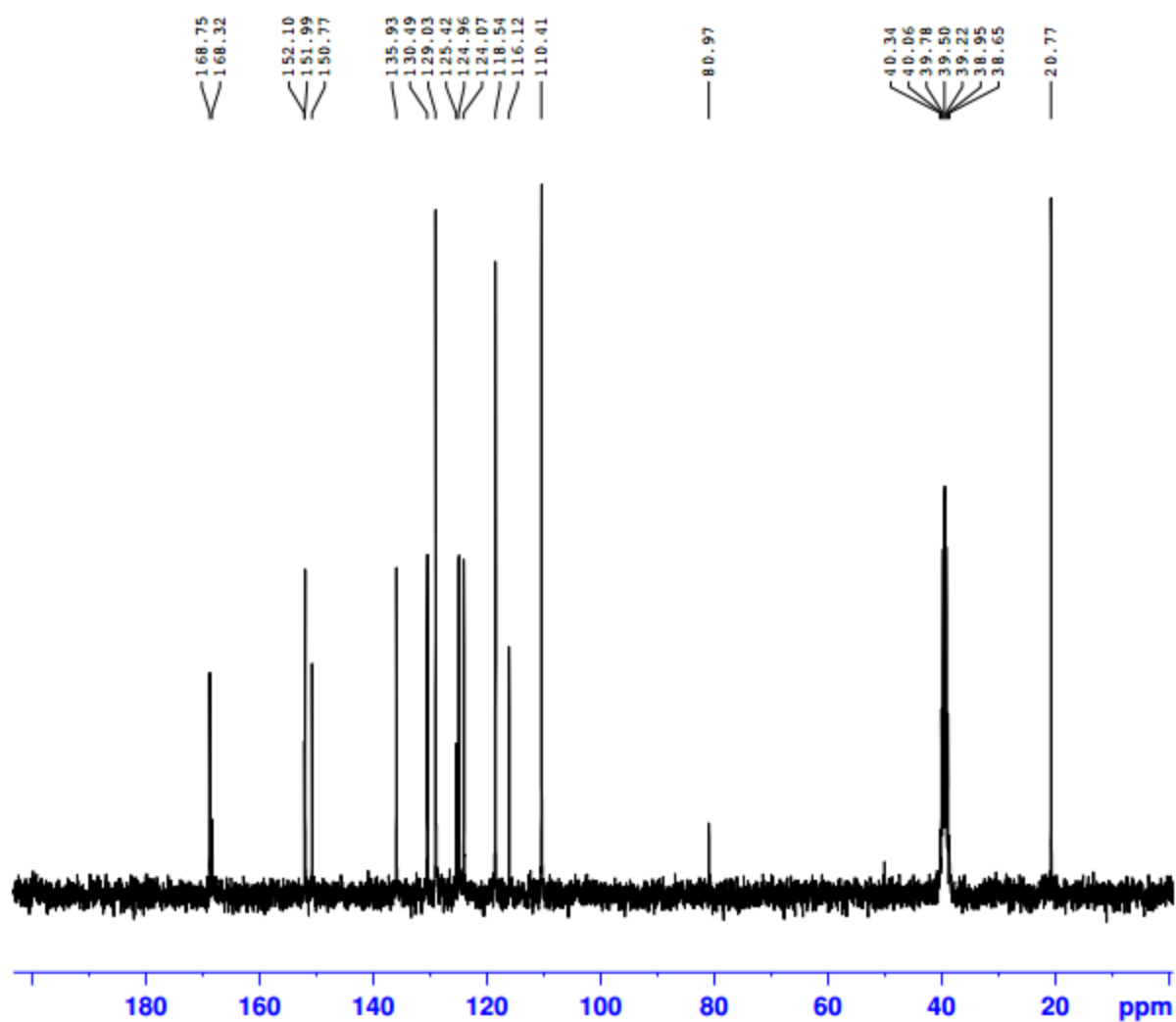


Fig.S4 Changes of fluorescence intensity of FDA and hydrazine at 515

nm with time. Experimental conditions: $[F] = 5.0 \times 10^{-6}$ M, $[\text{Hydrazine}] = 5.0 \times 10^{-4}$ M, Tris buffer (pH 7.5, 5.0 mM)

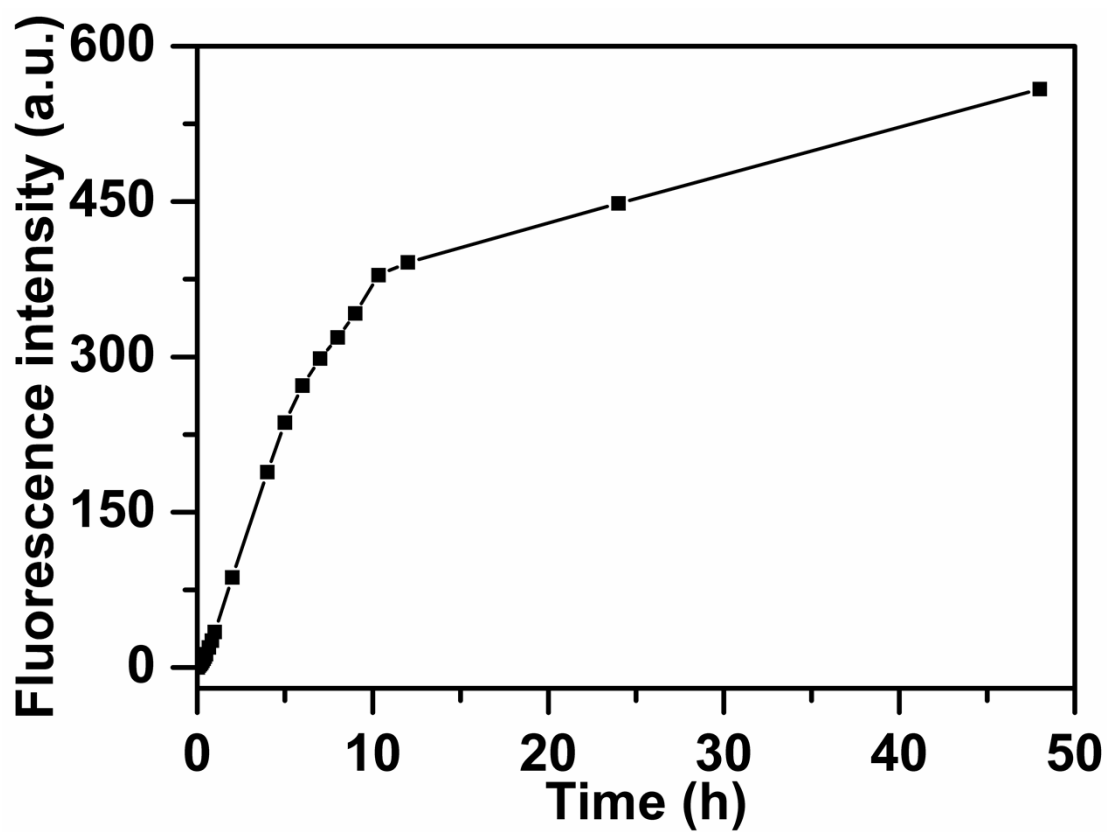


Fig.S5 Fluorescence response of FDA to hydrazine, common anions and

cations respectively. Experimental conditions: $[F] = 5.0 \times 10^{-6}$ M, $[\text{Hydrazine}] = [M^{n+}] = [A^{n-}] = 5.0 \times 10^{-4}$ M, a Tris buffer (pH 7.5, 5.0 mM)

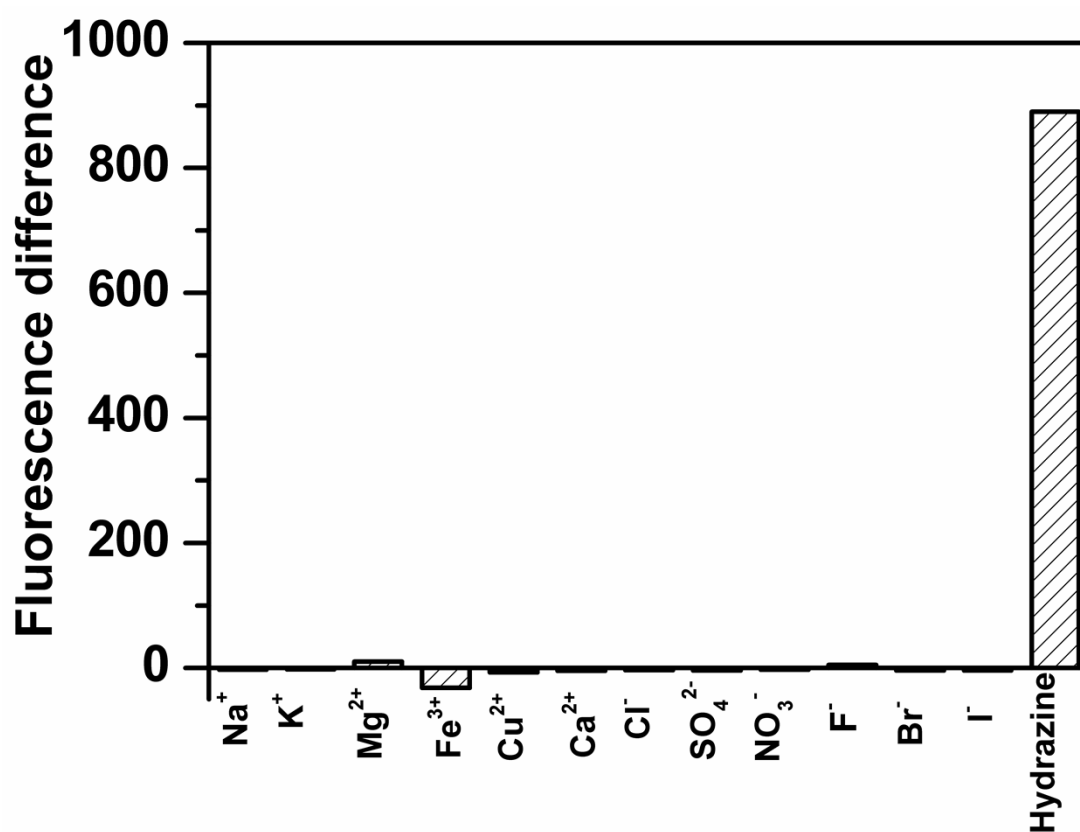


Fig.S6 Fluorescence response of FDA to hydrazine with co-exist

common anions and cations. Experimental conditions: $[F] = 5.0 \times 10^{-6} \text{ M}$, $[\text{Hydrazine}] = [M^{n+}] = [A^{n-}] = 5.0 \times 10^{-4} \text{ M}$, a Tris buffer (pH 7.5, 5.0 mM)

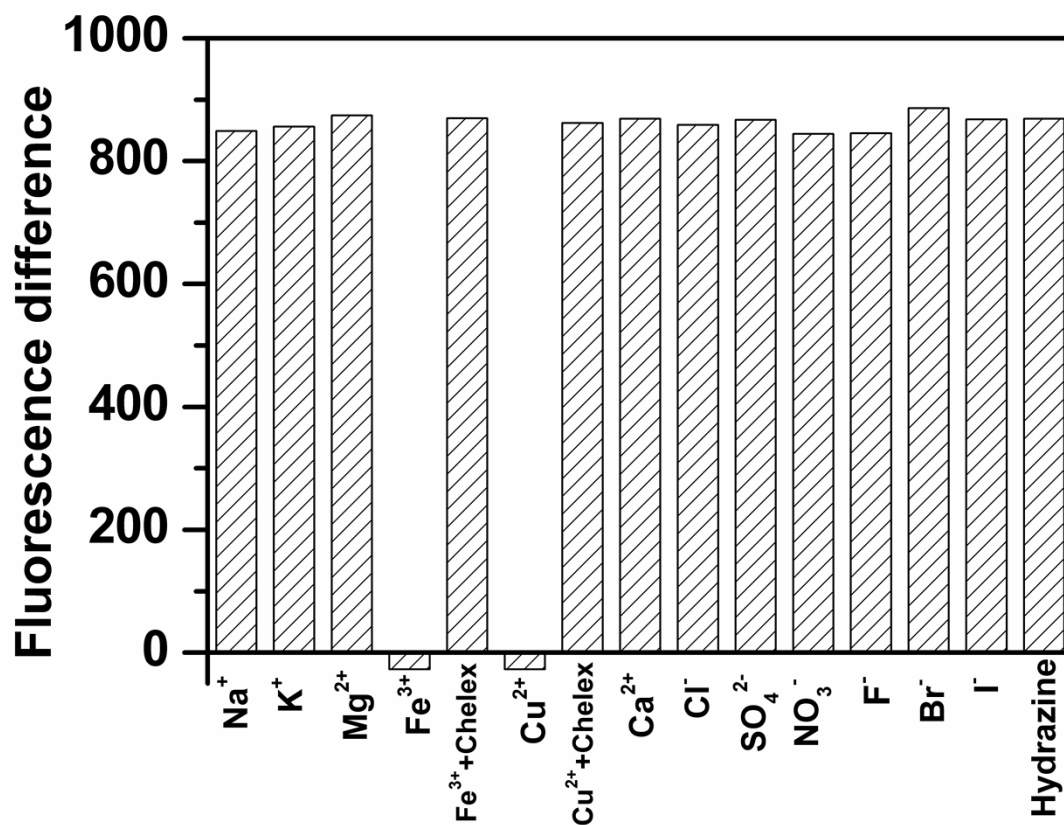


Table S1

Comparison of the working conditions and analytical characteristics of several selected fluorimetric methods for detection of hydrazine

Reagents	Working conditions	Linear range ($\times 10^{-7}$ mol L ⁻¹)	LOD ($\times 10^{-9}$ mol L ⁻¹)	References
5-Chlorosalicylaldehyde	Ethanol/water/acetatic acid (30/66/4)	2-93	80	[2]
Dichlorofluoresceinacetates	Tris buffer (pH 8.0)/DMSO (1/1)	0-250	90	[14]
2-(4-((4-(Benzo[d]thiazol-2-yl)phenyl)ethynyl)benzylidene)-malononitrile	THF/H ₂ O (1/1)	0.6-1.2	3.4	[11]
Levulinated Coumarin	Acetate buffer (pH 4.5)/DMSO (3/7)	-	2460	[13]
Cy7A	Acetate buffer (pH 4.5)/DMSO (1/9)	100-800	25	[3]
3, 6-diacetoxyfluoran	Tris buffer (pH 7.5, 5.0mM)	12.5-250	31	This work