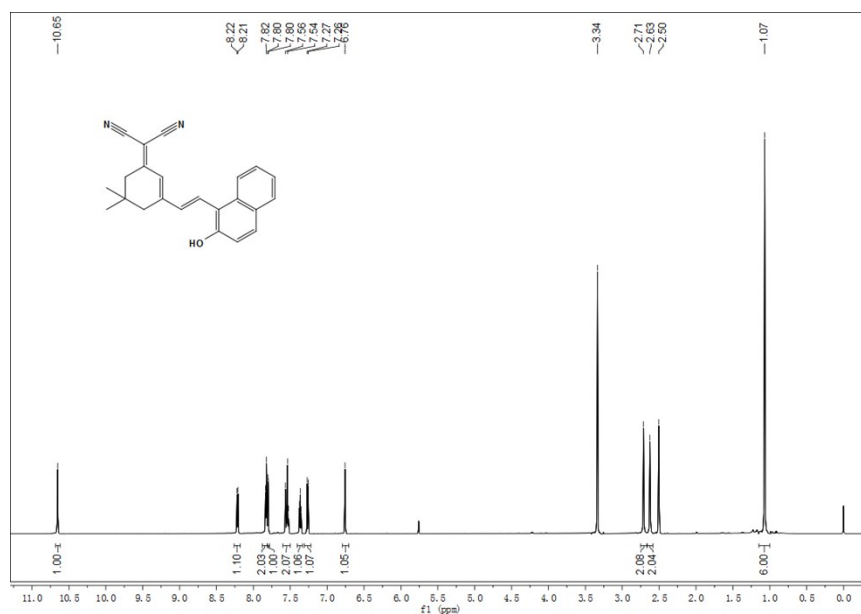


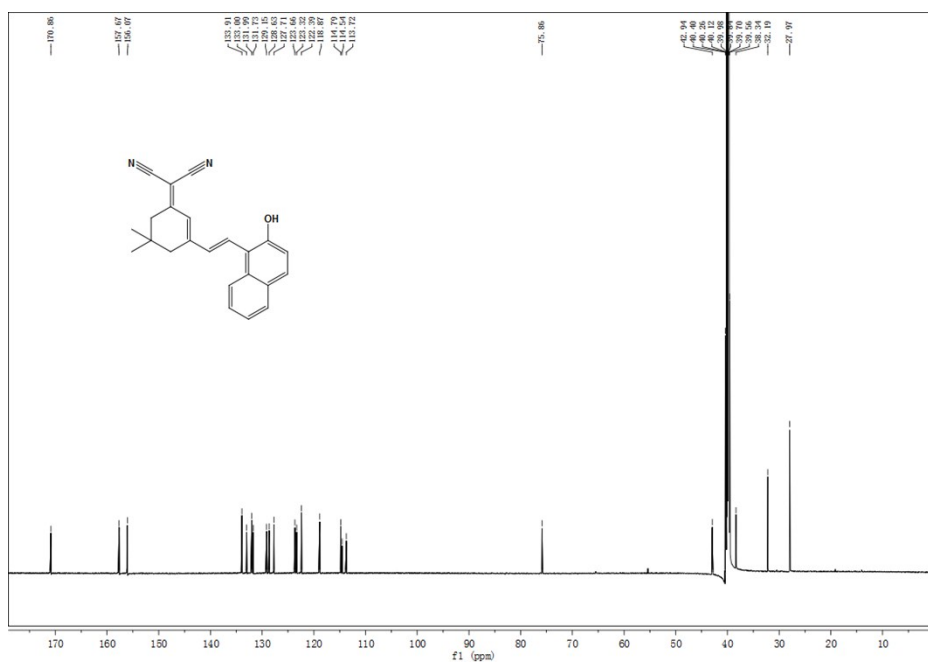
Supporting Information (SI)

An Isophorone-based NIR Probe for Hydrazine in Real Water Sample and Hermetic Space

Fig. S1: Structure characterization of the Compound 2.

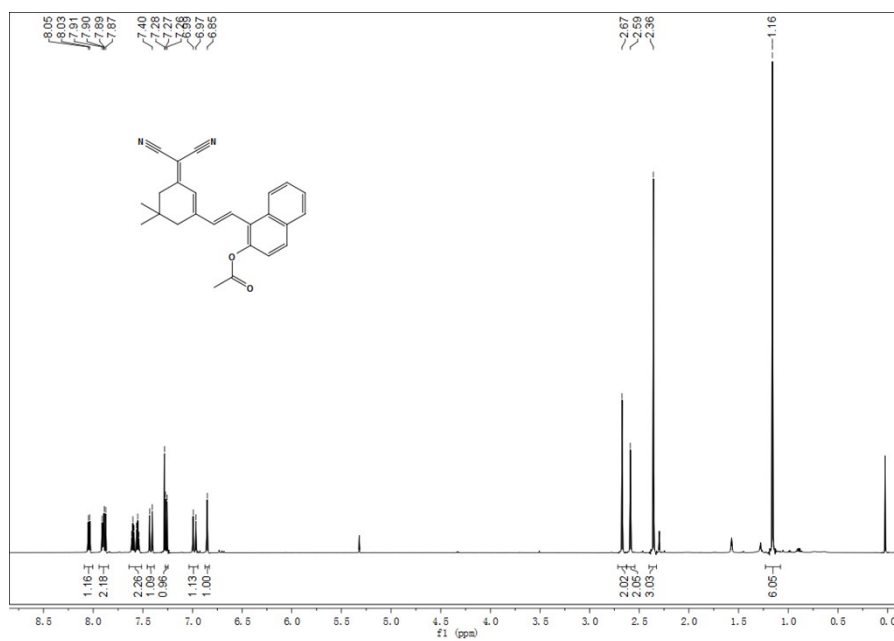


The ^1H NMR (600 MHz) spectra of Compound **2** in $\text{DMSO}-d_6$.

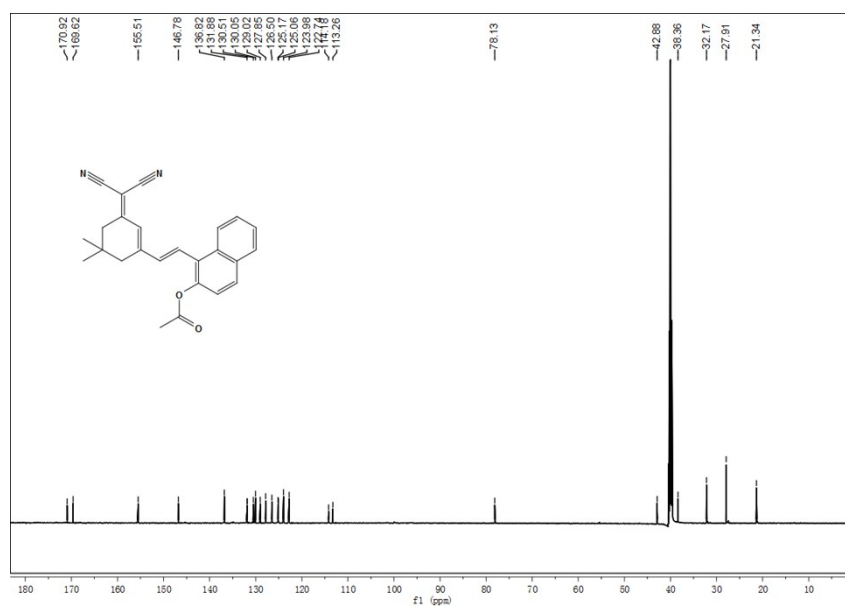


The ^{13}C NMR (150 MHz) spectra of compound **2** in DMSO- d_6 .

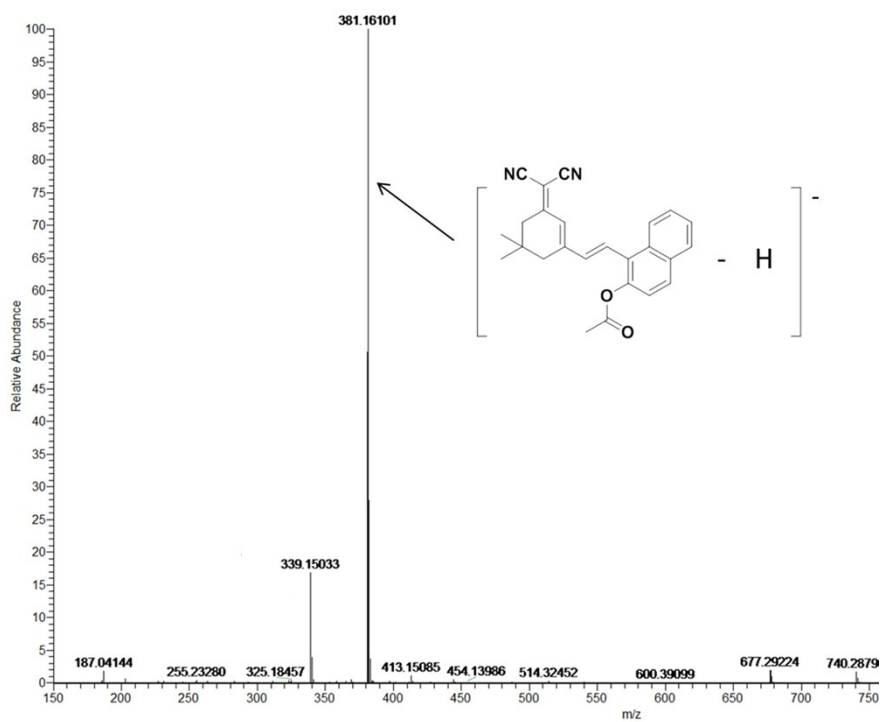
Fig. S2: Structure characterization of the **Probe**.



The ^1H NMR (600 MHz) spectra of **Probe** in CDCl_3 .

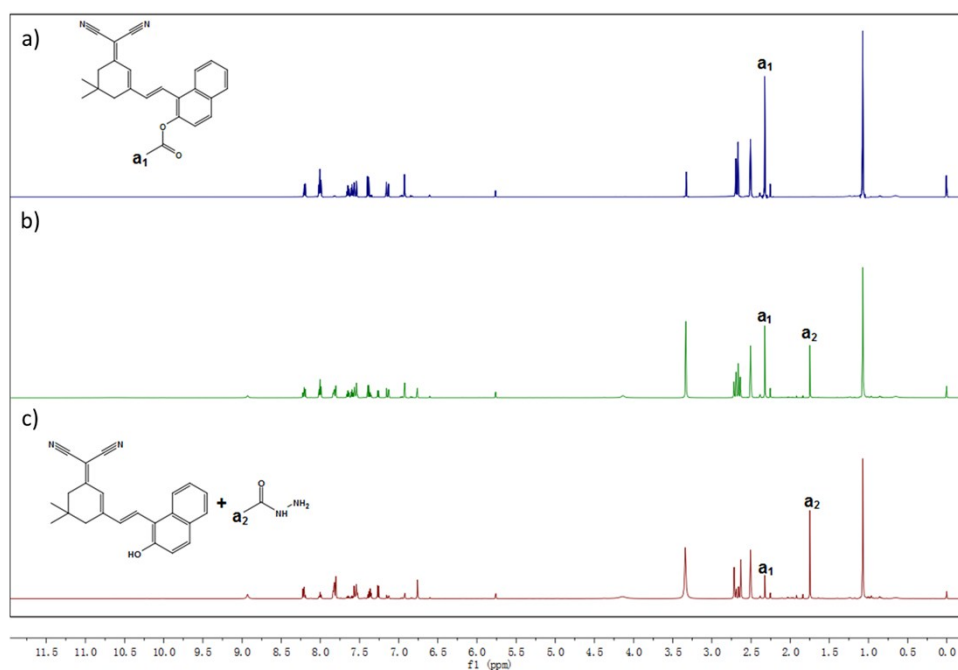


The ^{13}C NMR (150 MHz) spectra of **probe** in $\text{DMSO}-d_6$.



ESI-MS m/z : [**Probe** - H]⁺ Calcd. for C₂₅H₂₁N₂O₂ 381.16813; Found 381.16101.

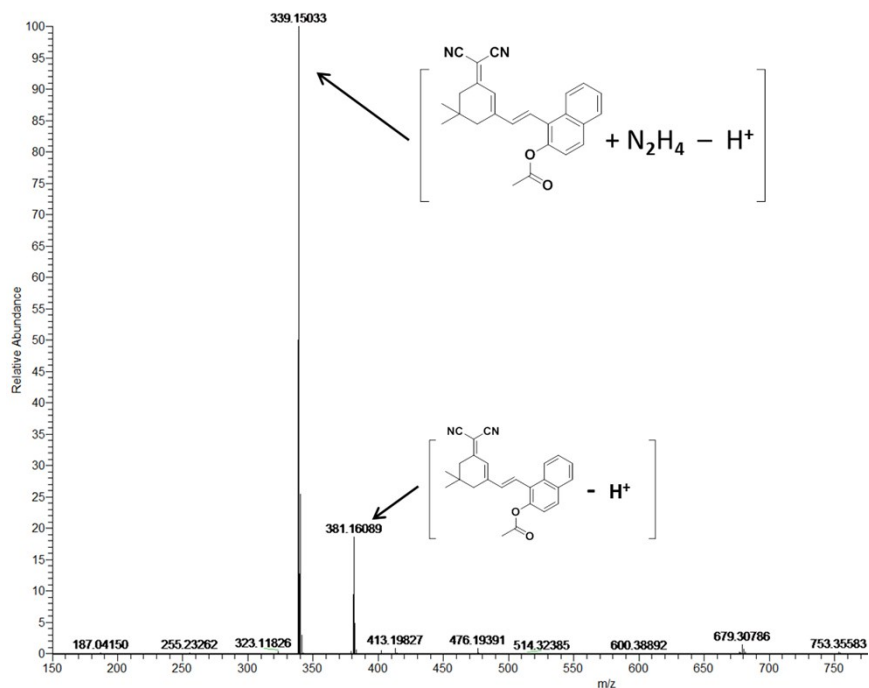
Fig. S3: 1D ¹H NMR titration of the **Probe** and probe-hydrazine.



¹H NMR spectra of probe upon addition of hydrazine in DMSO-*d*₆. (a) Only probe; (b) Intermediate mixture: probe with 1 equal of hydrazine; (c) End mixture: probe with 2 equal of

hydrazine.

Fig. S4: The ESI-MS of Probe after addition of hydrazine.



ESI-MS m/z : [Probe + hydrazine - H]⁺ Calcd. for $C_{23}H_{20}N_2O$ 339.15756. Found 339.15033.

Fig. S5 The actual images for probe coated filter paper upon exposure to gaseous hydrazine vapored from different concentrations of hydrazine aqueous solution. Upper: under ambient light; Lower: under a hand-hold UV lamp with an excitation at 365 nm in dark.

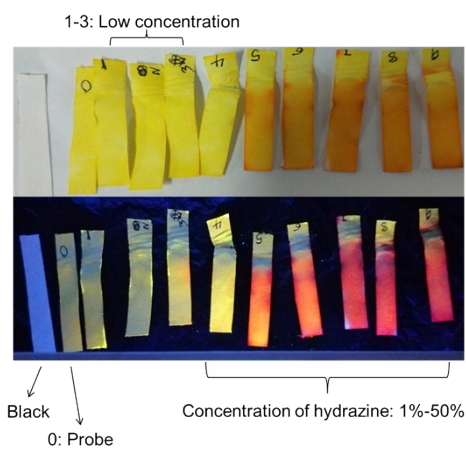
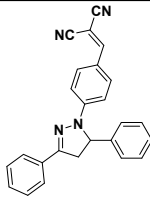
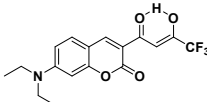
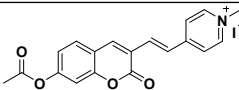
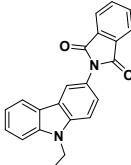
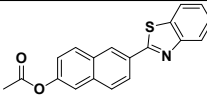
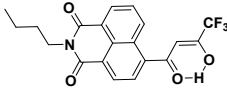
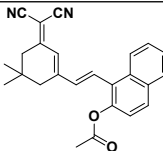


Table S1: Comparison of response time, linear range and LOD of some reported hydrazine sensors.

Sl. No.	Chemosensors	Response time	Linear range	Limit of detection (LOD)	Ref.
1		30 min	15-35 μM	6.16 μM	[1]
2		9 h	0-14 μM	0.26 μM	[2]
3		60 min	—	—	[3]
4		100 min	100-400 μM	2.67 μM	[4]
5		60 min	0-20 μM	0.96 μM	[5]
6		60 min	0-5 μM	0.10 μM	[6]
7		10 min	0-200 μM (UV) 2-12 μM	0.082 μM	This work

Supplementary References

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Y. Ran, H. Xu, K. Li, K. Yu, J. Yang and X. Yu, *RSC Adv.*, 2016, **6**, 111016–111019.
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