Electronic Supplementary Information

A multifunctional and fast-response lysosome-targetable fluorescent probe for monitoring pH and isoxaflutole

Liu Yang [†], Yan Liu [†], Mingli Yue [†], Ping Li [†], Yulong Liu [†], Fei Ye [,†], and Ying Fu [*,†]*

[†]Department of Applied Chemistry, College of Arts and Sciences, Northeast Agricultural University, Harbin 150030, P. R. China.

**Corresponding Author: Fei Ye, Email address: yefei@neau.edu.cn*

**Corresponding Author: Ying Fu, Email address: fuying@neau.edu.cn*

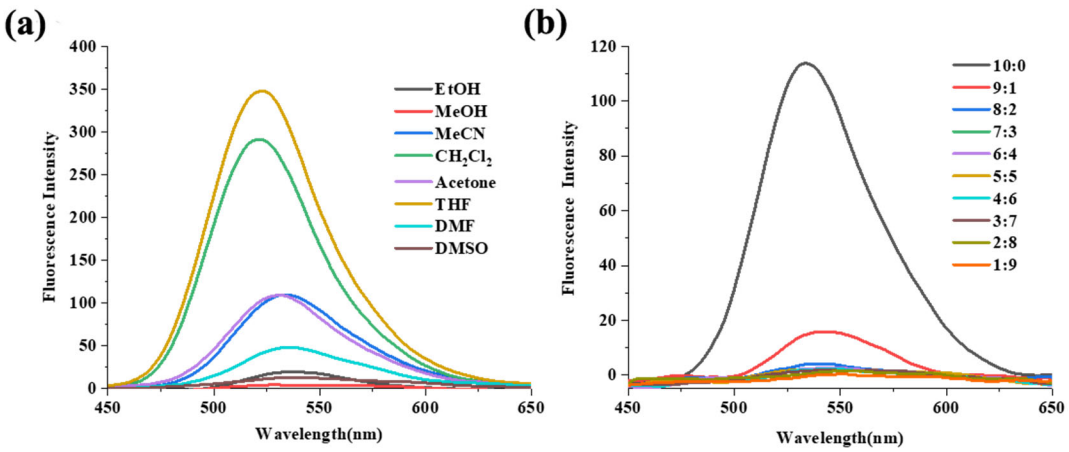


Figure S1. Solvent effect (a) and fluorescence intensity of different proportions of acetonitrile and water (b) of **MMN** at room temperature.

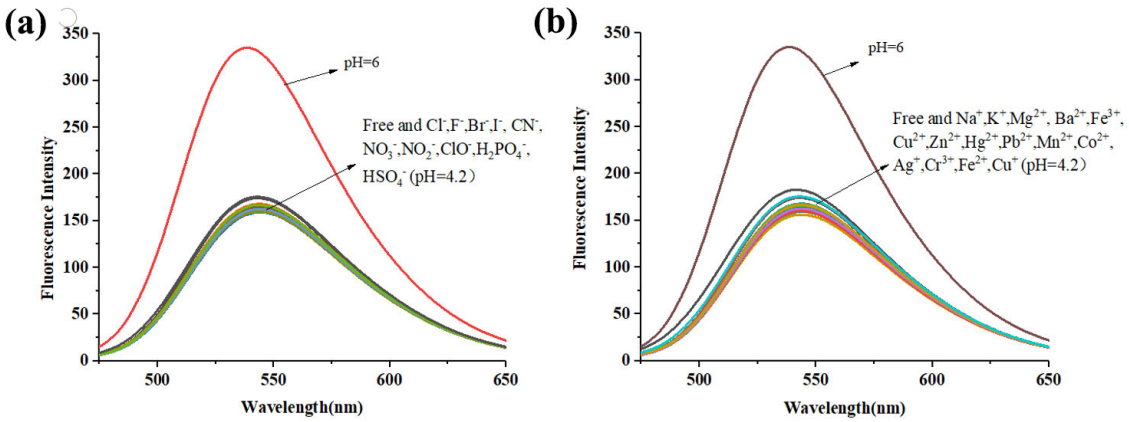


Figure S2. (a) The fluorescence spectra of **MMN** with or without various metal ions in CH_3CN/H_2O (*V*/*V*, 9/1) at pH 4.2 at room temperature.

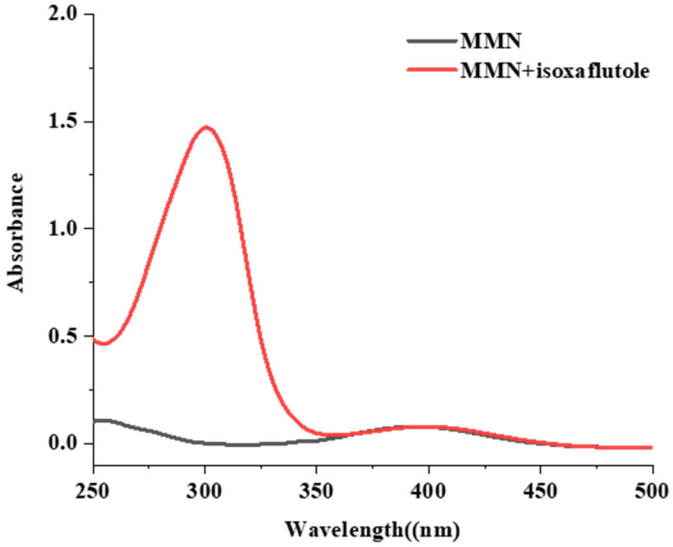


Figure S3. UV-Vis spectra change of **MMN** (10 μM) in CH_3CN solution with or without isoxaflutole (50 μM) at room temperature.

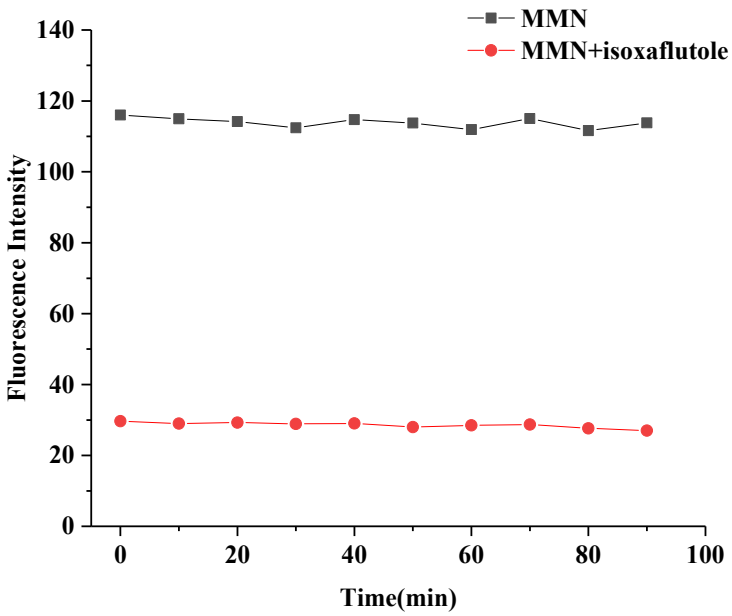


Figure S4. Fluorescence intensity of **MMN** in the absence and presence of isoxaflutole in CH_3CN solution.

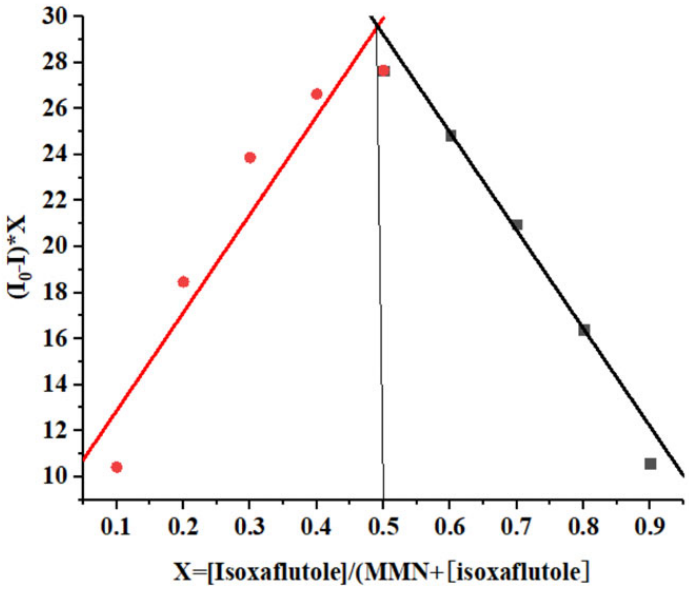


Figure S5. The Job's plot of **MMN** with isoxaflutole determined by fluorescence spectra in CH_3CN solution.

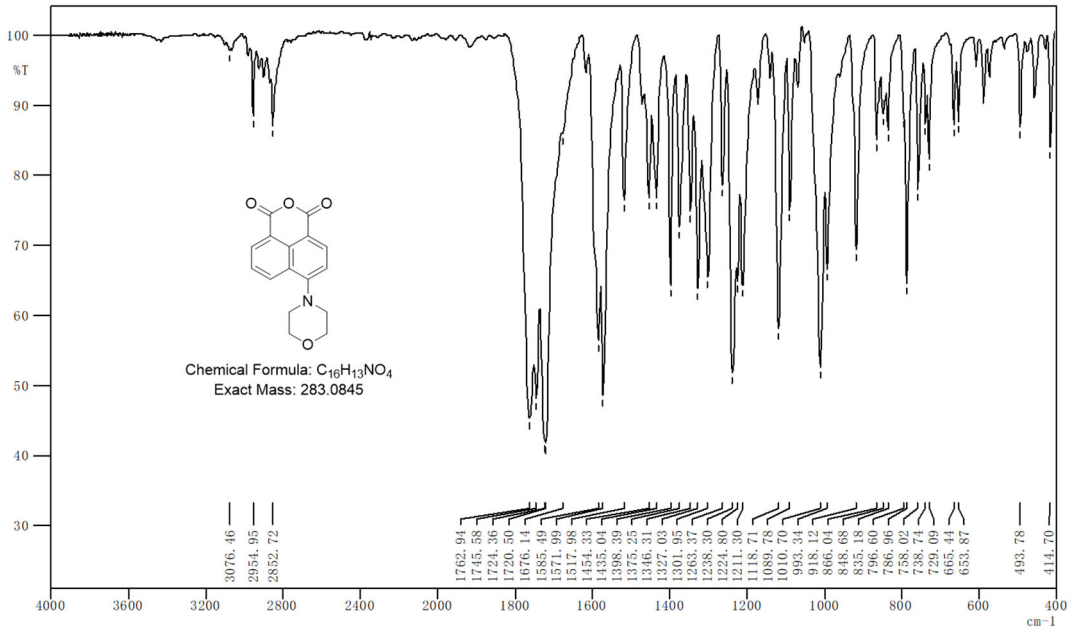


Figure S6. IR spectrum of compound **1**.

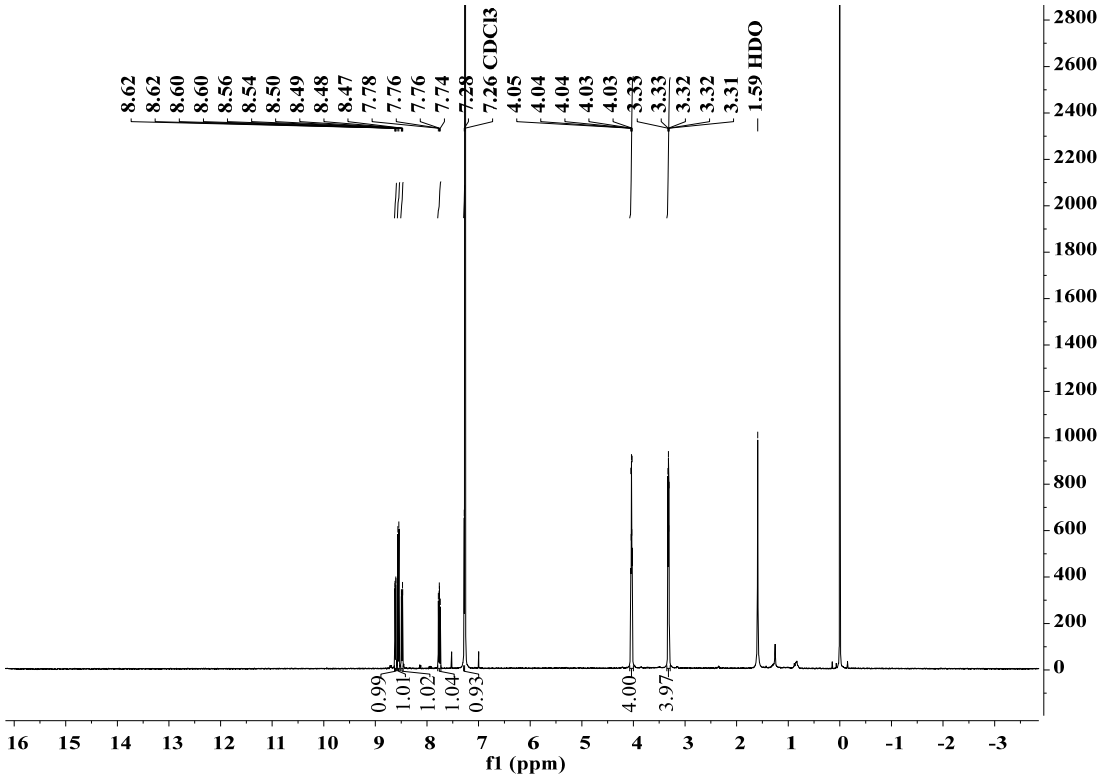


Figure S7. ^{1}H NMR spectrum of compound **1**.

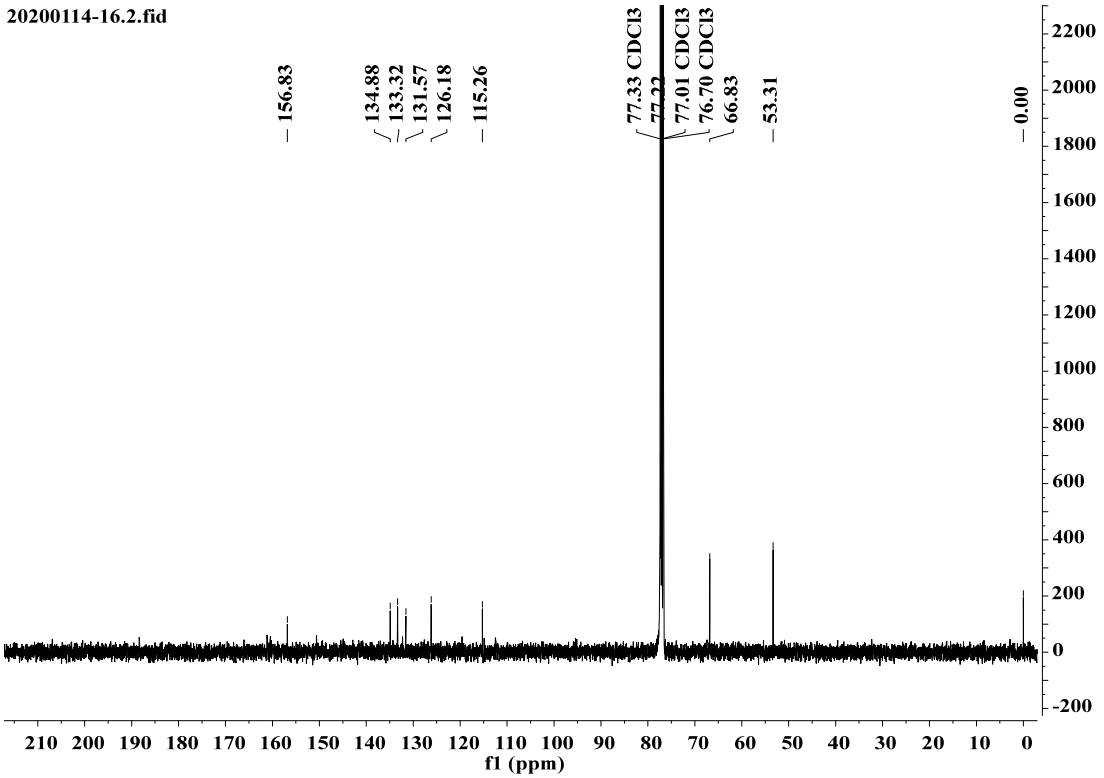


Figure S8. ^{13}C NMR spectrum of compound **1**.

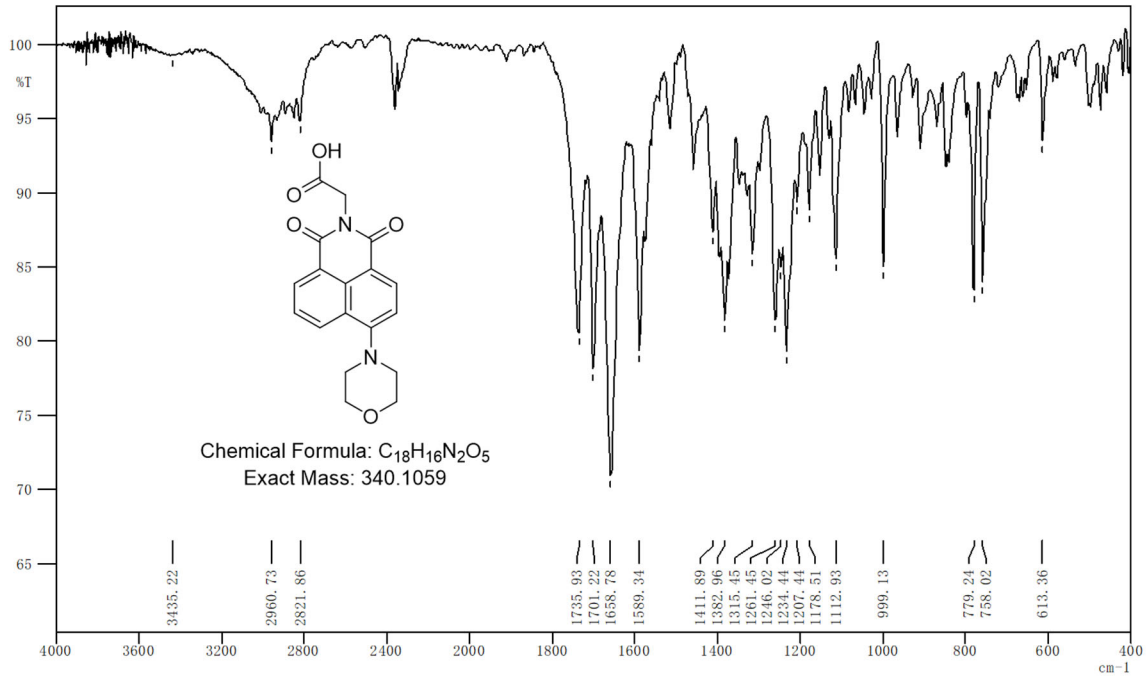


Figure S9. IR spectrum of compound **2**.

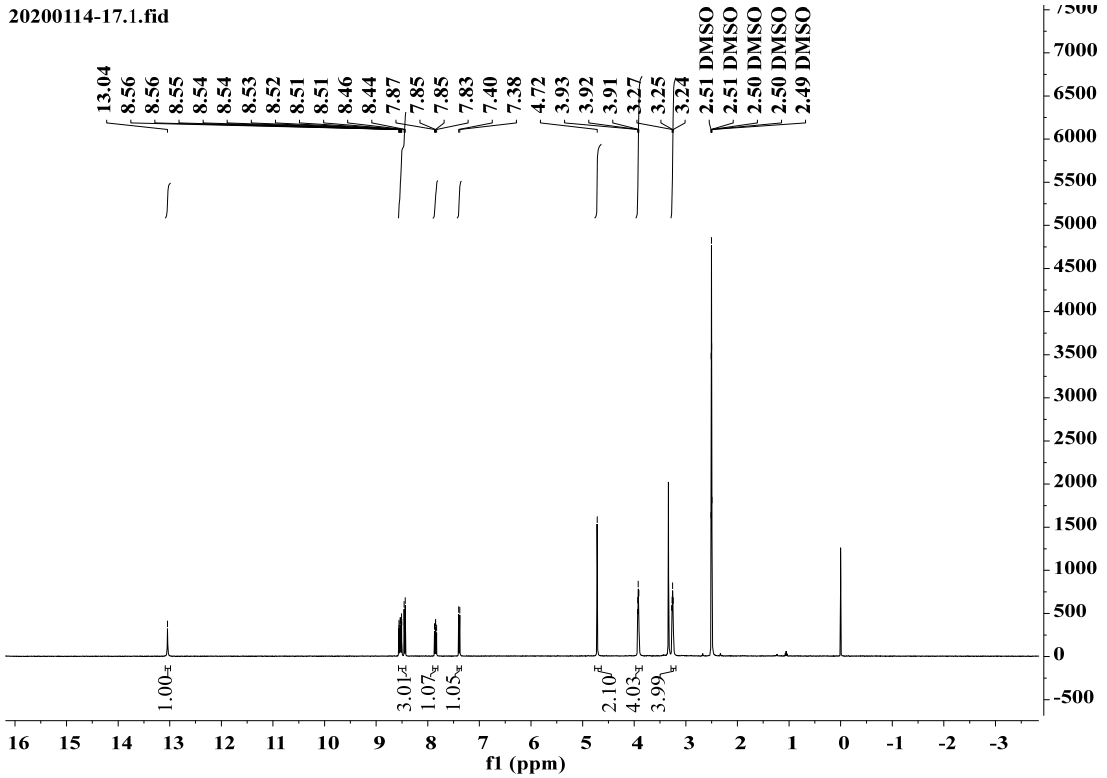


Figure S10. ^{1}H NMR spectrum of compound **2**.

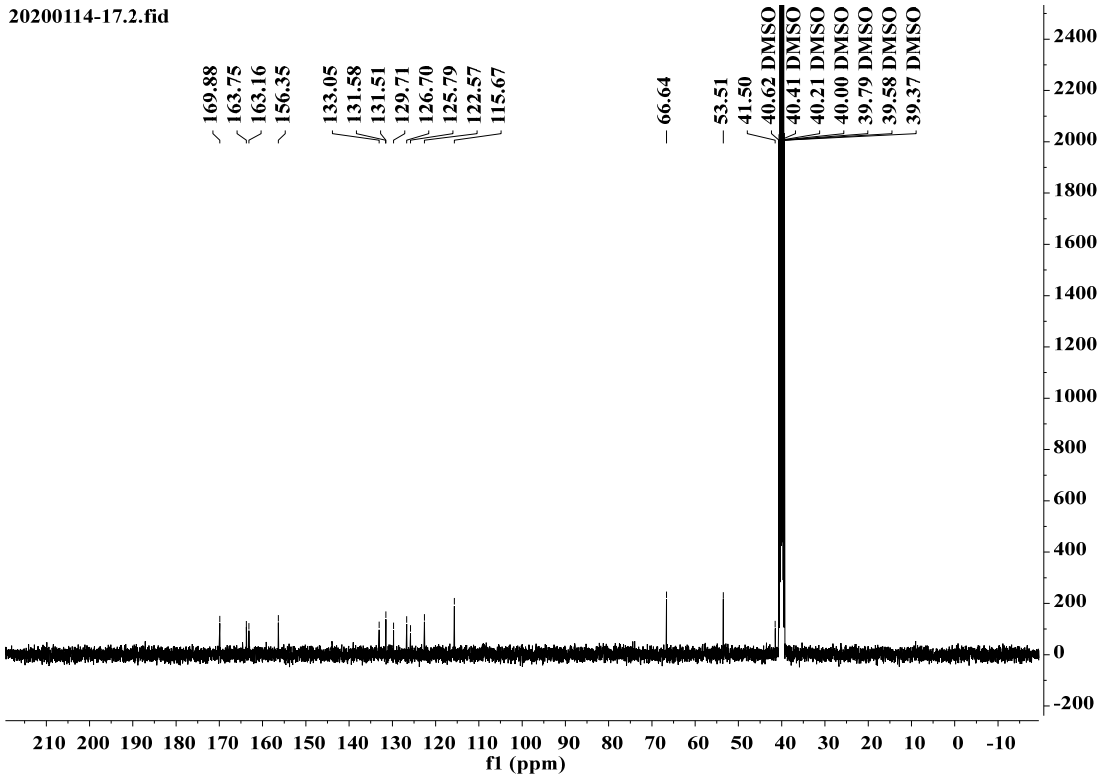


Figure S11. ^{13}C NMR spectrum of compound **2**.

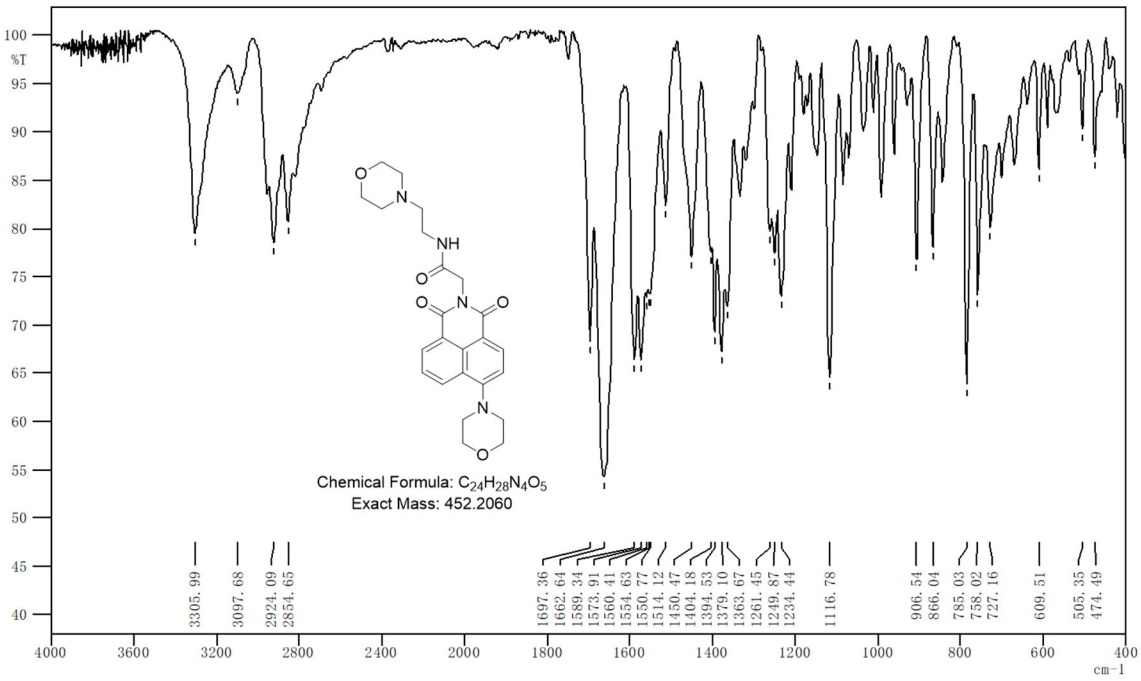


Figure S12. IR spectrum of compound **MMN**.

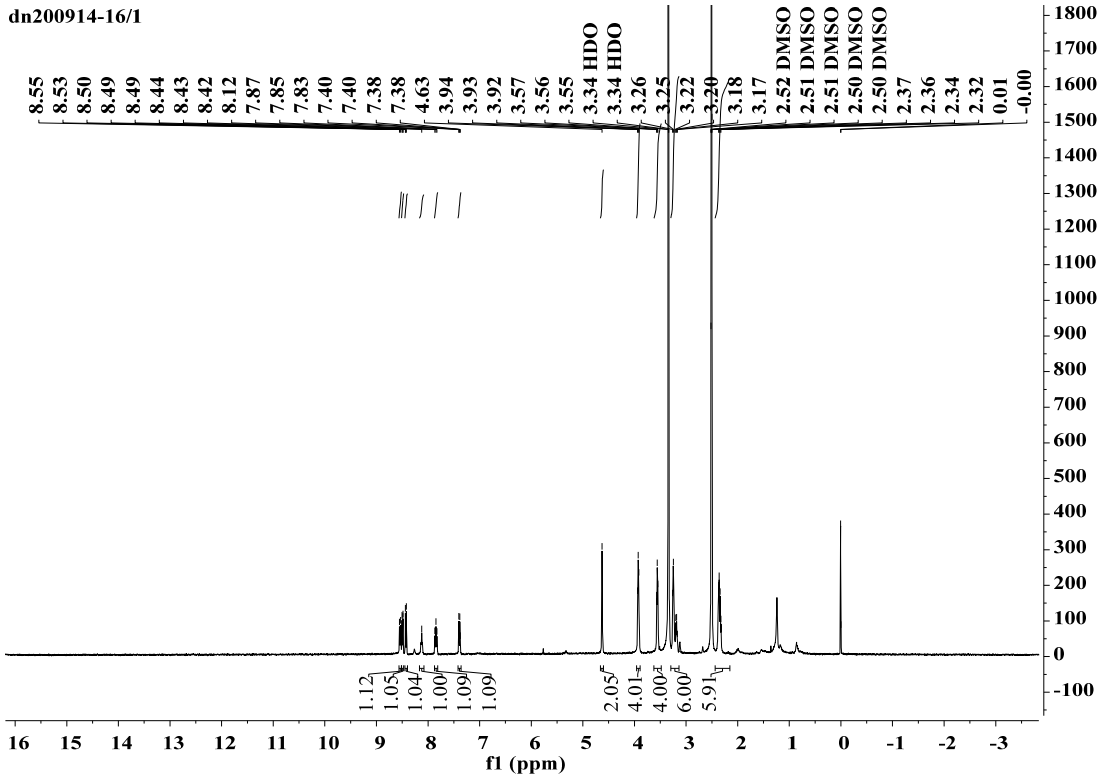


Figure S13. ^{1}H NMR spectrum of compound **MMN**.

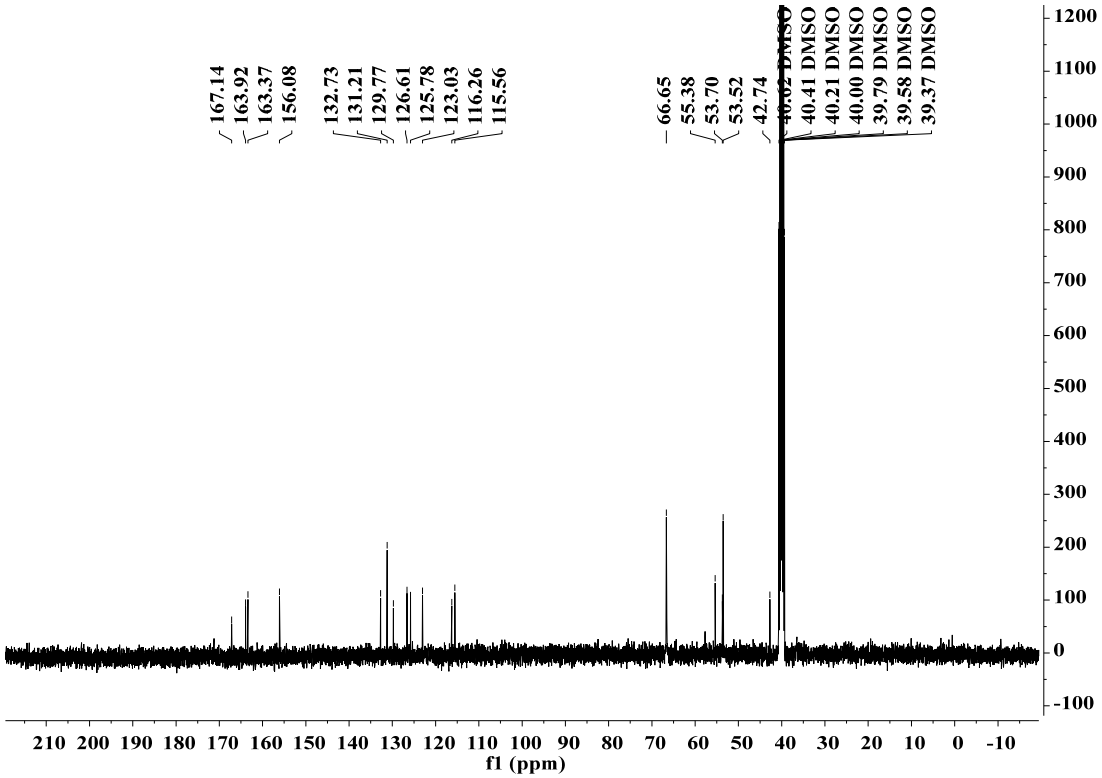


Figure S14. ^{13}C NMR spectrum of compound **MMN**.

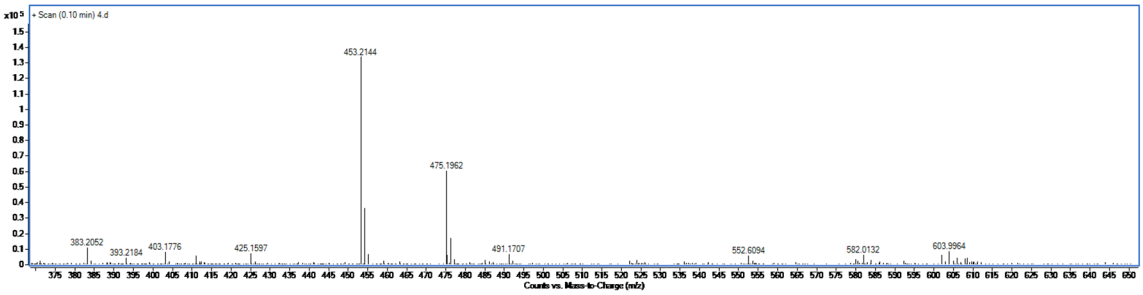


Figure S15. Mass Spectrum ($M+H^+$) of compound **MMN**.

Table S1. The comparison of binding constants with other reported fluorescent probes.

Type	Probe	Binding constant (K) (M^{-1})	Detecting pesticides	Ref.
Off-on	**MMN**	3.7×10^{5}	Isoxaflutole	This work
On-off	**Rho B@1**	9.08×10^{4}	nitenpyram	[1]
Off-on	**Tb@UiO-66**	5.36×10^{2}	teflubenzuron	[2]
On-off	**RhB@Zr-MOF**	9.01×10^{4}	nitenpyram	[3]

References:

1. L. Yang, Y.L. Liu, C.G. Liu, F. Ye, Y. Fu, Two luminescent dye@MOFs systems as dual-emitting platforms for efficient pesticides detection, J. Hazard. Mater. **2020**, 381, 120966.

2. L. Yang, Y.L. Liu, X.X. Ji, C.G. Liu, Y. Fu, F. Ye, A novel luminescent sensor based on Tb@UiO-66 for highly detecting Sm^{3+} and teflubenzuron, J. Taiwan Inst. Chem. Eng. **2021**, 126, 173–181.

3. L. Yang, Y.L. Liu, C.G. Liu, Y. Fu, F. Ye, A built-in self-calibrating luminescence sensor based on RhB@Zr-MOF for detection of cations, nitro explosives and pesticides, RSC Adv. 2020, 10, 19149–19156.