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Supporting Information

New strategy for the azido-ascorbic acid reaction: a convenient chemosensor and its imaging in garlic slice tissues

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Table S1 The intercomparison between this work and other references about detection of AA.

Literature	Fluorescence probe	Response time	FL multiple	Applied research	Mechanism	Linear range (μM)
1	Coumarin+MnO_2	Fast	10	Rat Brain	Reduction of MnO_2	10-50
2	PLNPs+ CoOOH	10 min	3.3	Living cells and in vivo	Reduction of CoOOH	0-100
3	Tris-derived CDs-CoOOH	20 min	10	Rat Brain	Reduction of CoOOH	0.1-20
4	N-CNPs	Fast	Decrease	Human biological fluids	Spatial effect hydrogen bond	0.2-150
5	AuNCsPbS-QDs	Fast	Decrease at 813 nm	Cellular imaging Nude mice	Charge transfer of PbS-AA	3-40
6	Organic molecule	Fast	260	Vitamin drinks Orange juices	Reduction of Nitronyl-nitroxide	100-2000
7	CDs+Cr(VI)	1 min	30	No mention	Reduction of Cr(VI)	30-100
8	QDs+$KMnO_4$	1 min	10	HeLa cells	Reduction of $KMnO_4$	0-10
9	CDs	2 min	Decrease	Human serum Rat brain	Hydrogen bond	0.01-1000
10	CQDs/AuNCs+Cd^{2+}	20 min	4.5	Lake water Human serum	Bind with Cd^{2+} Disaggregate	0.15-15
11	QDs+Cu^{2+}	15 min	1.8	Fruit samples	Reduction of Cu^{2+}	10^{-9}-10
12	CDs	5 min	1.5	Urine and serum samples	Reduction of Fe^{3+}	0.2-60
13	Gold Nanoclusters+I_2	40 min	18	Lemon juice Orange juice	Reduction of I_2	0.1-10
14	GQDs+H_2O_2	Fast	2.5	Blood samples	Reduction of H_2O_2	1.11-300
15	Organic molecule	20 min	110	Plasma of osteogenic	Reduction of	0-30

				disorder Shionogi rats	Nitronyl-nitroxide	
[16]	Organic molecule	60 min	90	HeLa cells	Reduction of 2,2,6,6-tetramethyl-1-oxo-piperidinium group	0-100
[17]	Organic molecule	Fast	6.7	HEK 293 cells	Reduction of Nitronyl-nitroxide	0.08-50
This work	**Organic molecule**	**1 min**	**20**	**Garlic tissues**	**Reduction of azide group**	**0-7.5**

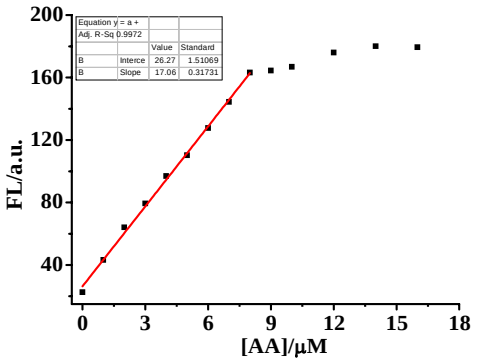

Fig. S1 The fluorescence intensity change of **probe 2** (10 μM) at 480 nm upon addition of AA, indicative of good linear relationship.

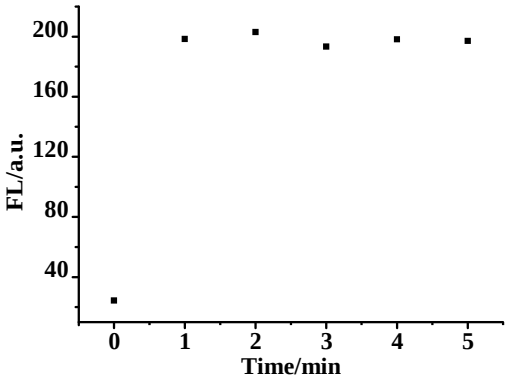

Fig. S2 The time dependence of the fluorescence enhancement of **probe 2** added of 2 equivalents of AA.

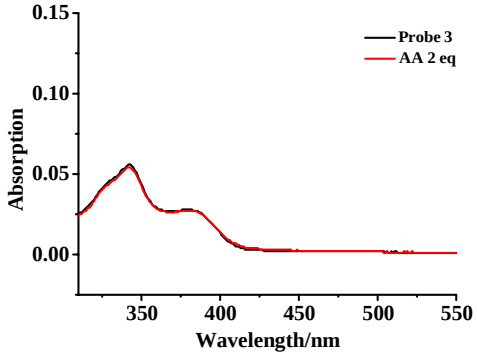

Fig. S3 The absorption spectra of **probe 3** (10 μM) upon addition of 2 equivalents of AA.

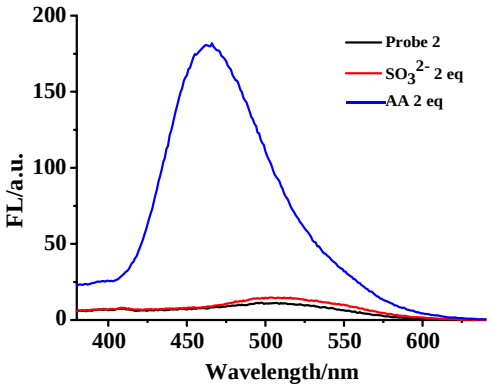

Fig. S4 The fluorescence intensity change of **probe 2** (10 μM) at 480 nm upon addition of SO_3^{2-} and AA.

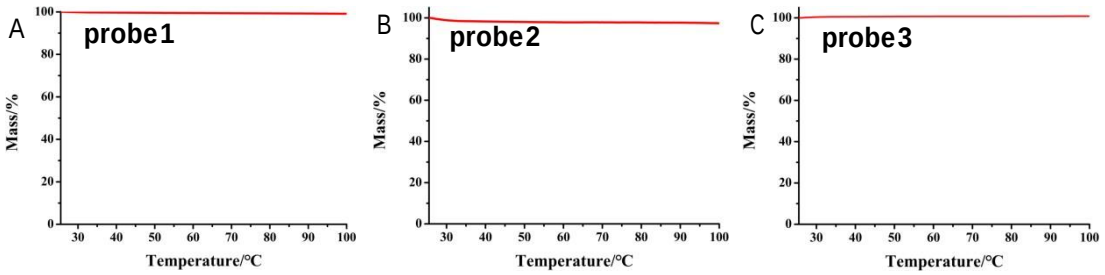

Fig. S5 The thermogravimetric analysis of **probes 1**, **2**, **3** at the temperature range of 25-100°C.

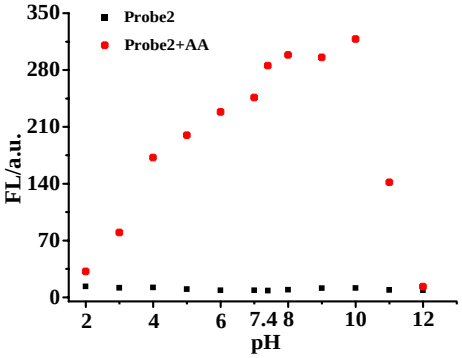

Fig. S6 The effect of pH from 2 to 12 on the fluorescence signal changes of **probe 2** (10 μM) at 480 nm in the absence and presence of 2 equivalents of AA in CH_3CN/PBS buffer (1:9, v/v, pH 7.4), λex=360 nm.

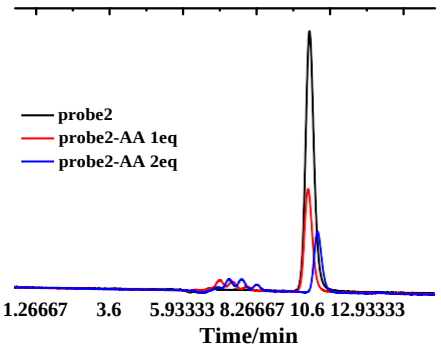

Fig. S7 HPLC analysis of the **probe 2**, **probe 2-AA** under the same condition. All the solutions were pre-filtered with methanol before HPLC detection. The peaks with retention time of 10.1 min

belonged to the **probe 2**. The retention time differed by 0.2 minutes, which belonged to instrument error.

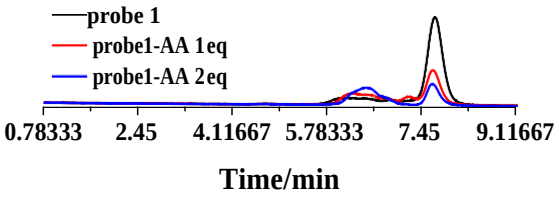

Fig. S8 HPLC analysis of the **probe 1**, **probe 1-AA** under the same condition. All the solutions were pre-filtered with methanol before HPLC detection. The peaks with retention time of 7.7 min belonged to the **probe 1**.

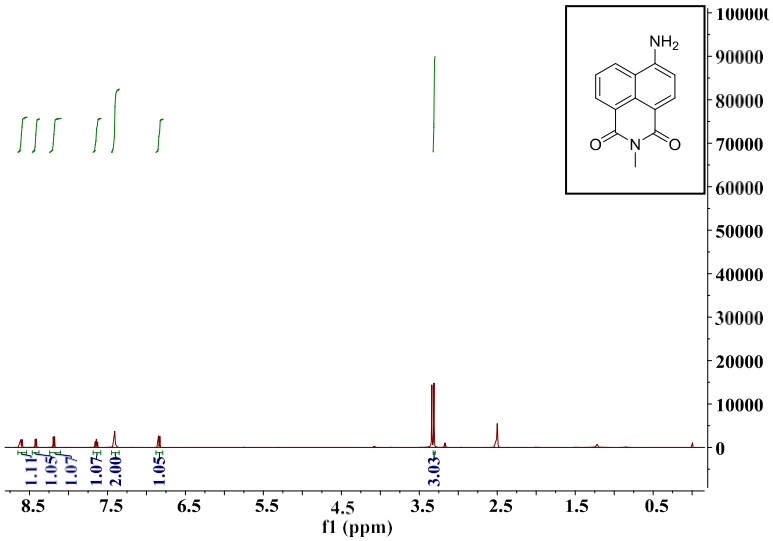

Fig. S9 The ^{1}H NMR of the 4-amino-1,8-naphthalimide

^{1}H NMR (500 MHz, DMSO-*d*) δ 8.59 (t, *J* = 10.1 Hz, 1H), 8.43 (t, *J* = 12.4 Hz, 1H), 8.19 (d, *J* = 8.4 Hz, 1H), 7.68-7.59 (m, 1H), 7.41 (s, 2H), 6.84 (d, *J* = 8.4 Hz, 1H), 3.31 (s, 3H).

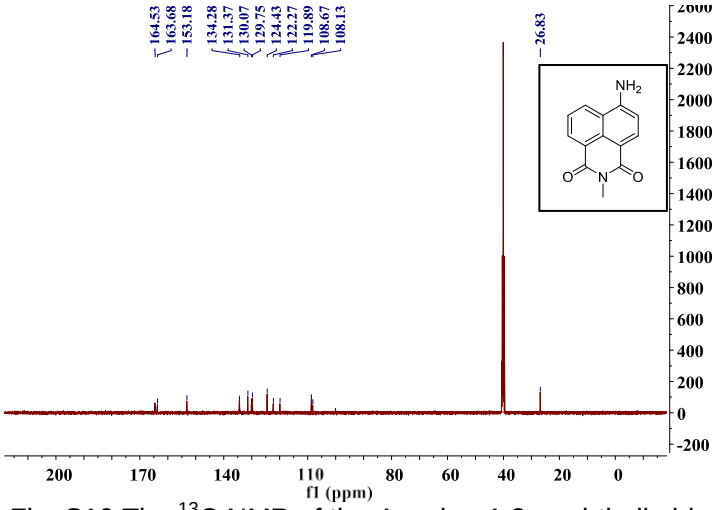

Fig. S10 The ^{13}C NMR of the 4-amino-1,8-naphthalimide

^{13}C NMR (125 MHz, DMSO-*d*) δ 164.53, 163.68, 153.18, 134.28, 131.37, 130.07, 129.75, 124.43, 122.27, 119.89, 108.67, 108.13, 26.83.

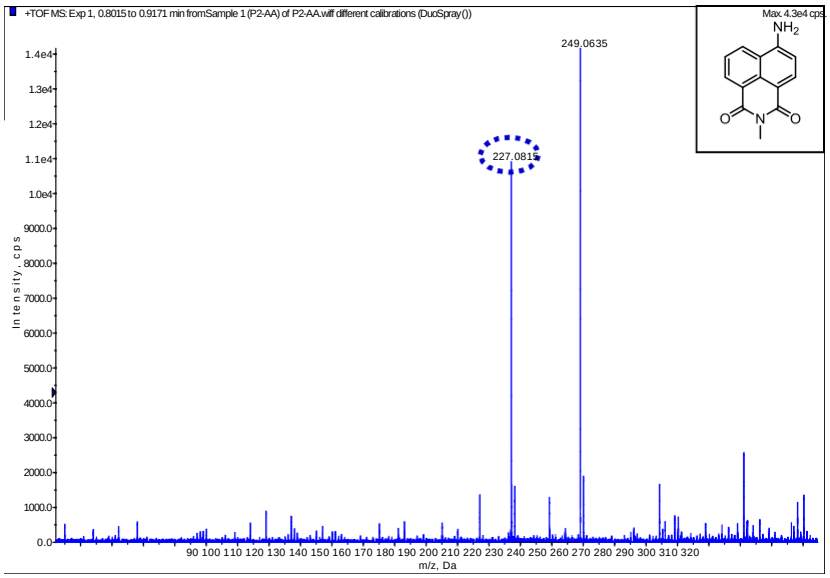

Fig. S11 The mass spectra of the 4-amino-1,8-naphthalimide

CH_2Cl_2  $PBS/CH_3CN=9:1(v/v)$

Fig. S12 The photo of **probe 2** in the presence of 2 equivalent of AA in different solvents, which is excited by a hand-held UV lamp (365 nm).

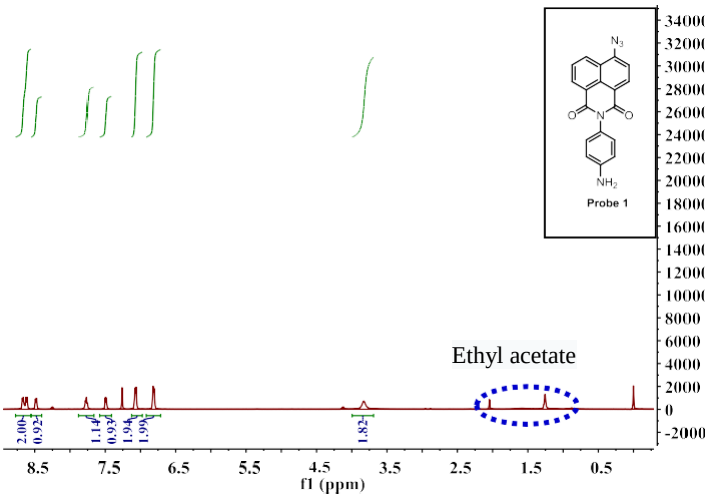

Fig. S13 The ^1H NMR of **probe 1**

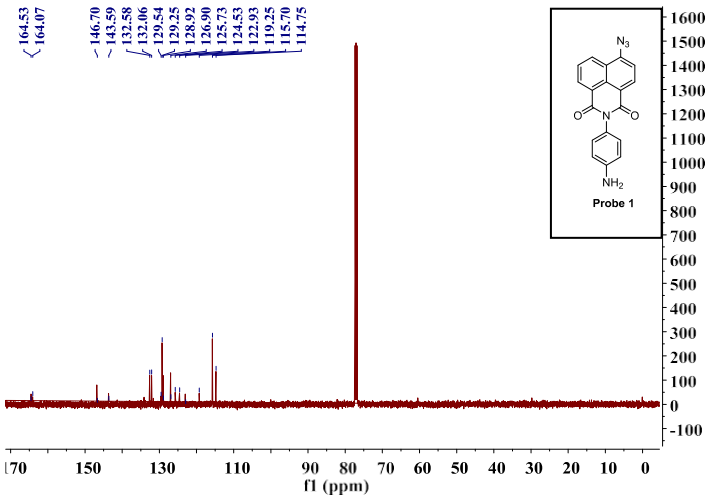

Fig. S14 The ^{13}C NMR of **probe 1**

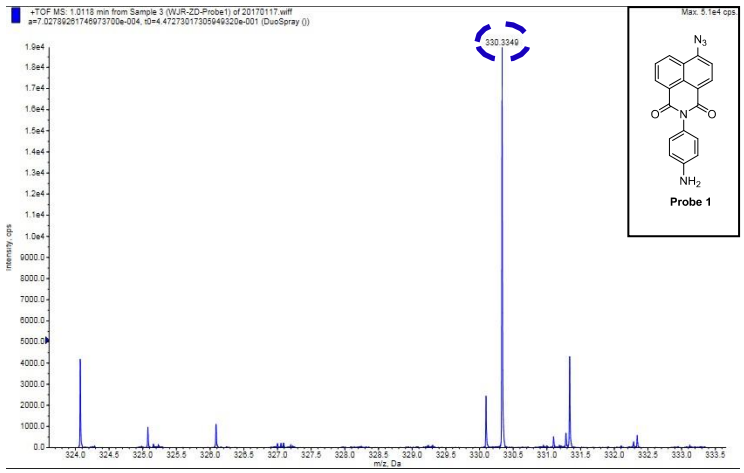

Fig. S15 The mass spectra of **probe 1**

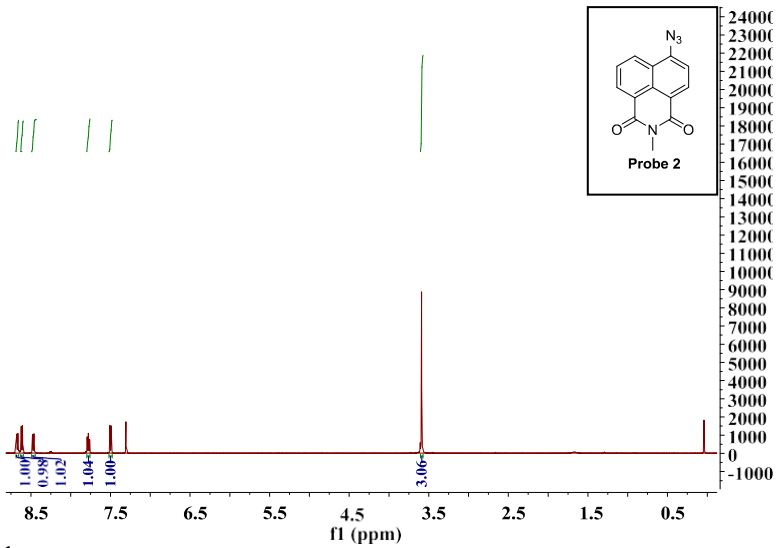

Fig. S16 The ^{1}H NMR of **probe 2**

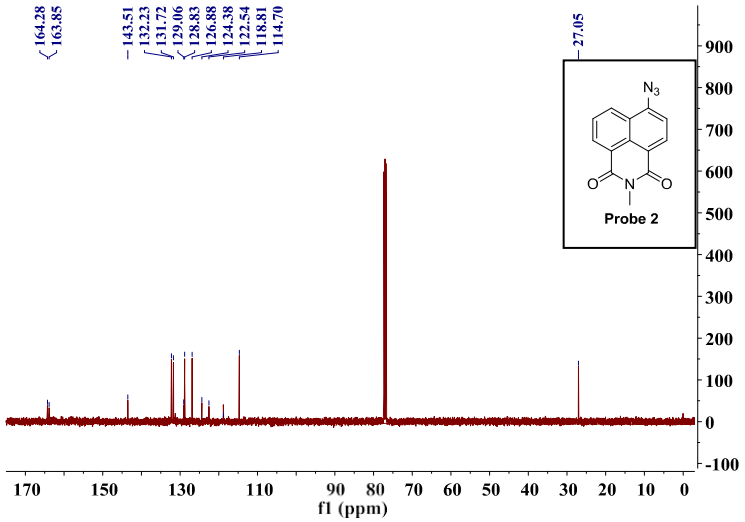

Fig. S17 The ^{13}C NMR of **probe 2**

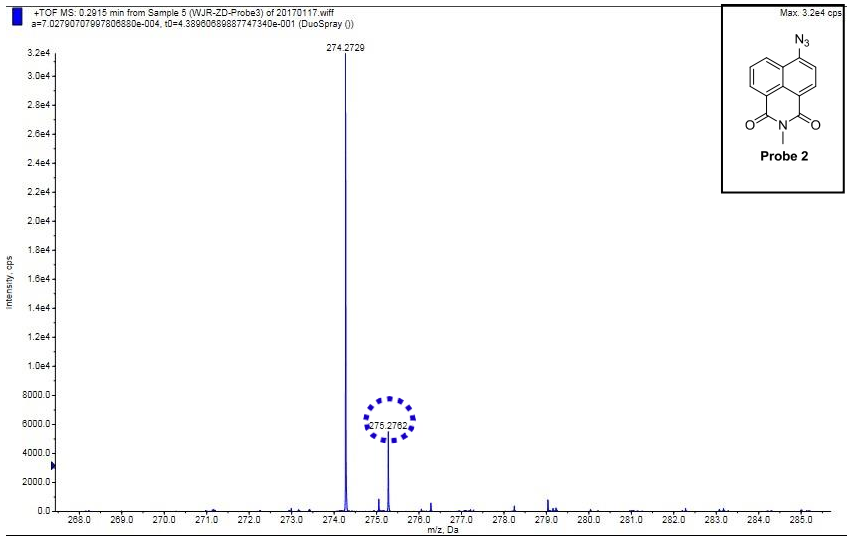

Fig. S18 The mass spectra of **probe 2**

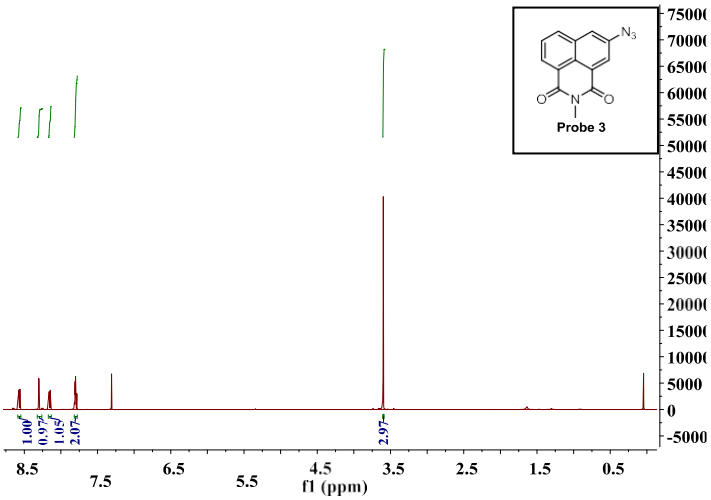

Fig. S19 The ^{1}H NMR of **probe 3**

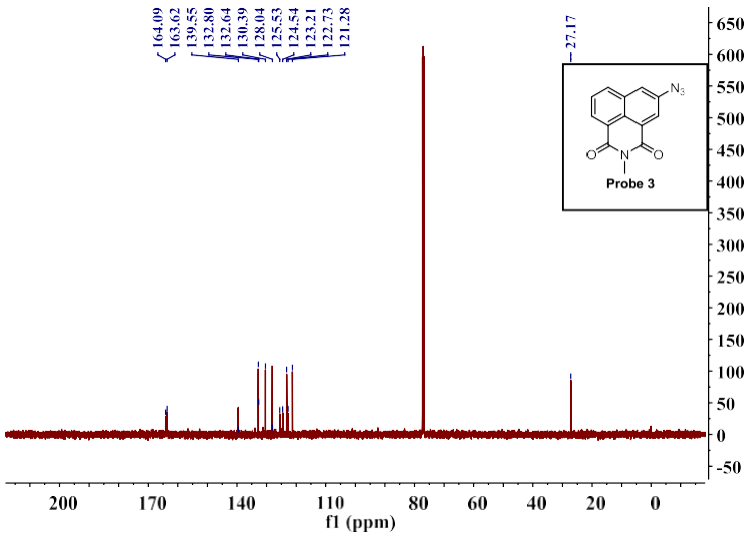

Fig. S20 The ^{13}C NMR of **probe 3**

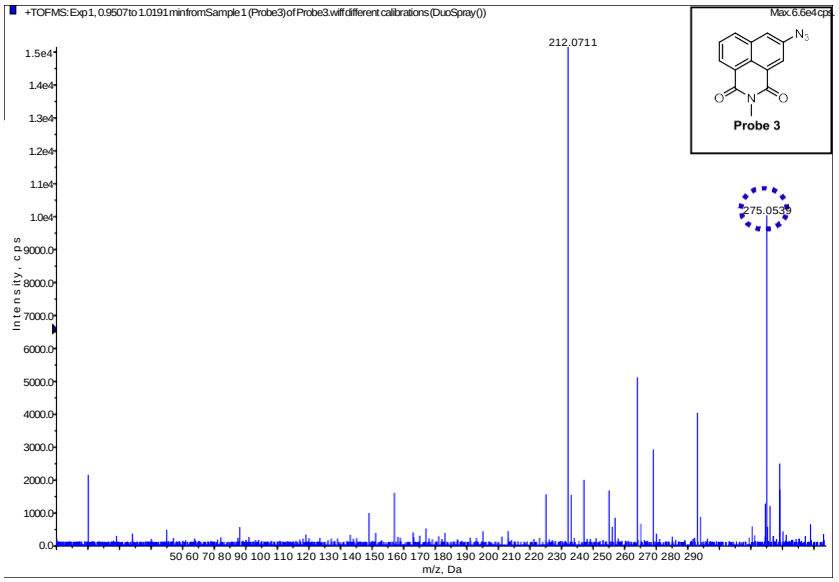

Fig. S21 The mass spectra of **probe 3**

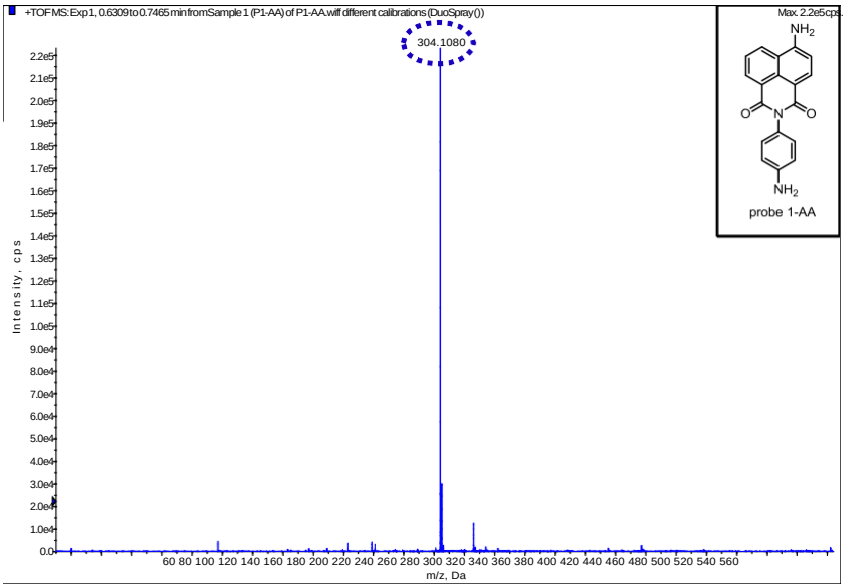

Fig. S22 The mass spectra of **probe 1**-AA**.**

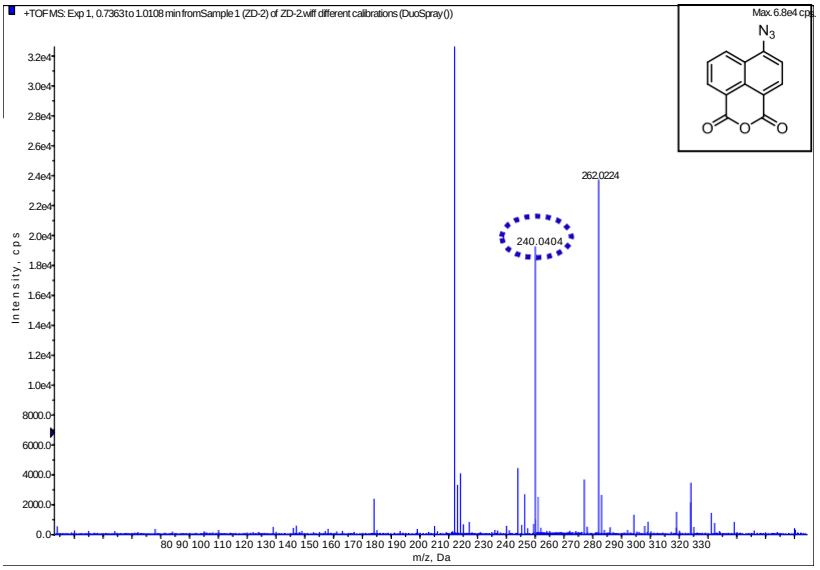

Fig. S23 The mass spectra of compound **2.**

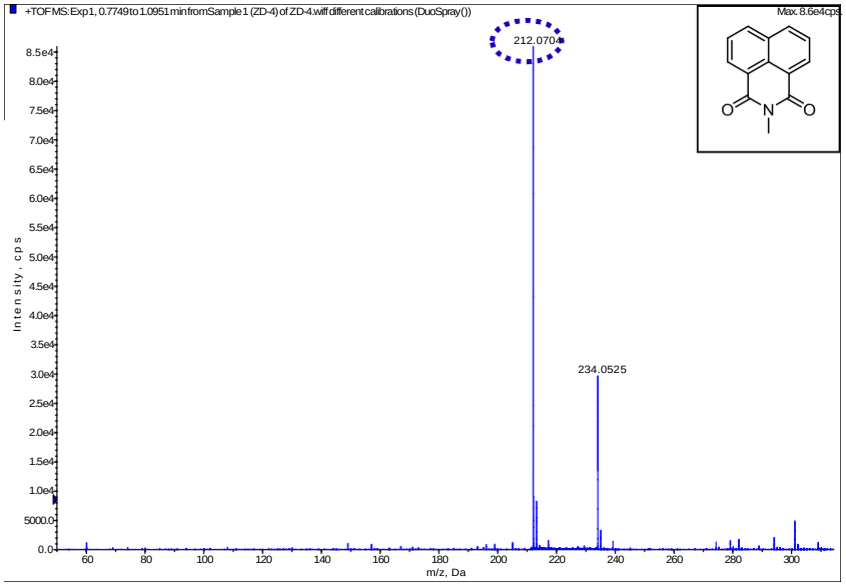

Fig. S24 The mass spectra of compound **4.**

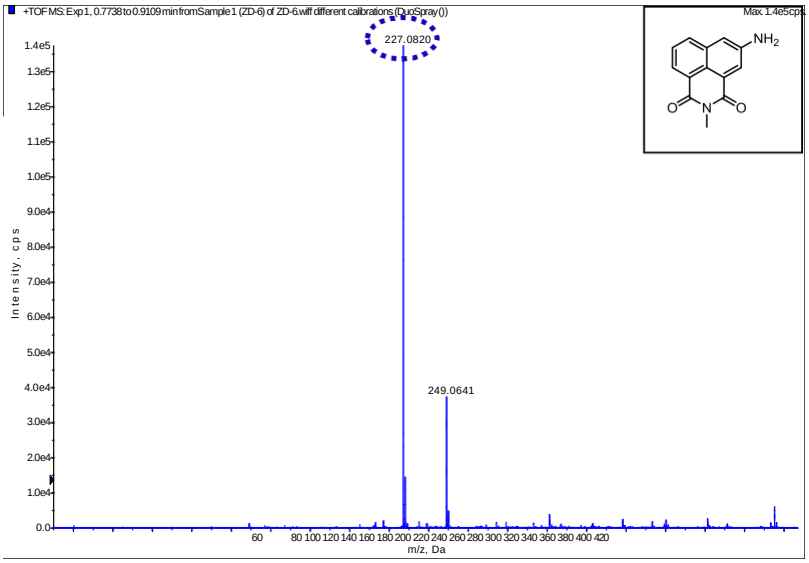

Fig. S25 The mass spectra of compound **6.**

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