Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Chitosan-bodipy macromolecular fluorescent probes prepared by click reactions for highly sensitive and selective recognition of 2, 4-dinitrophenylhydrazine

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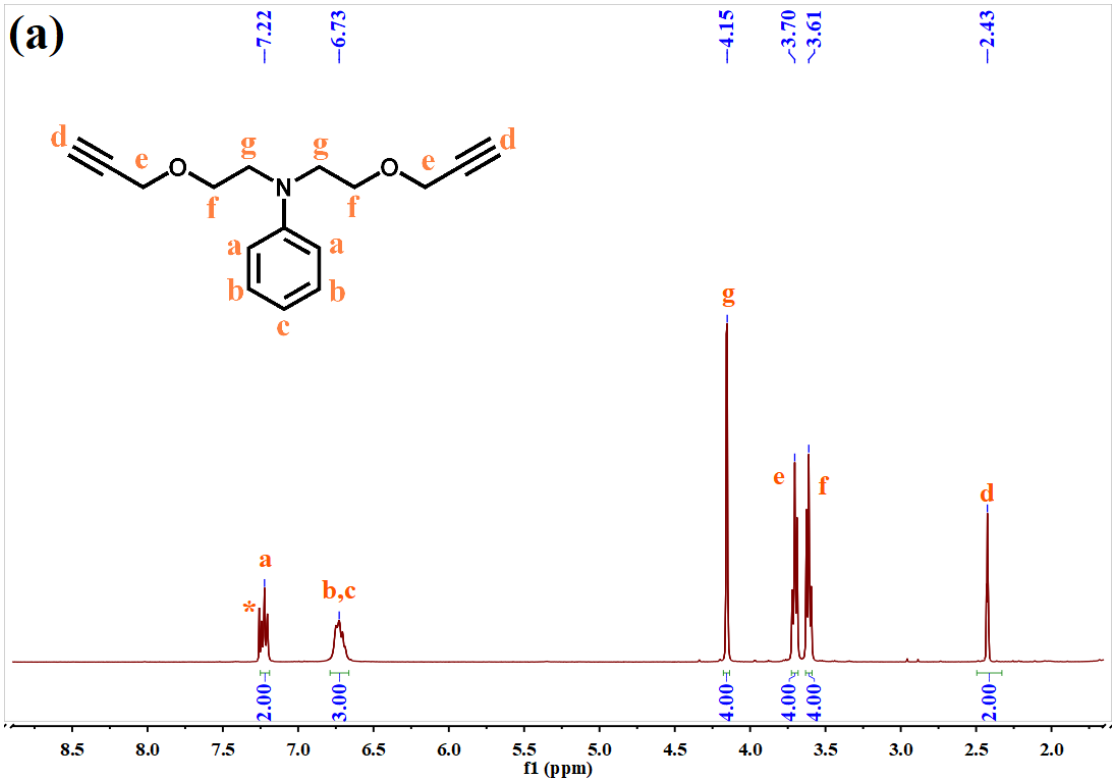
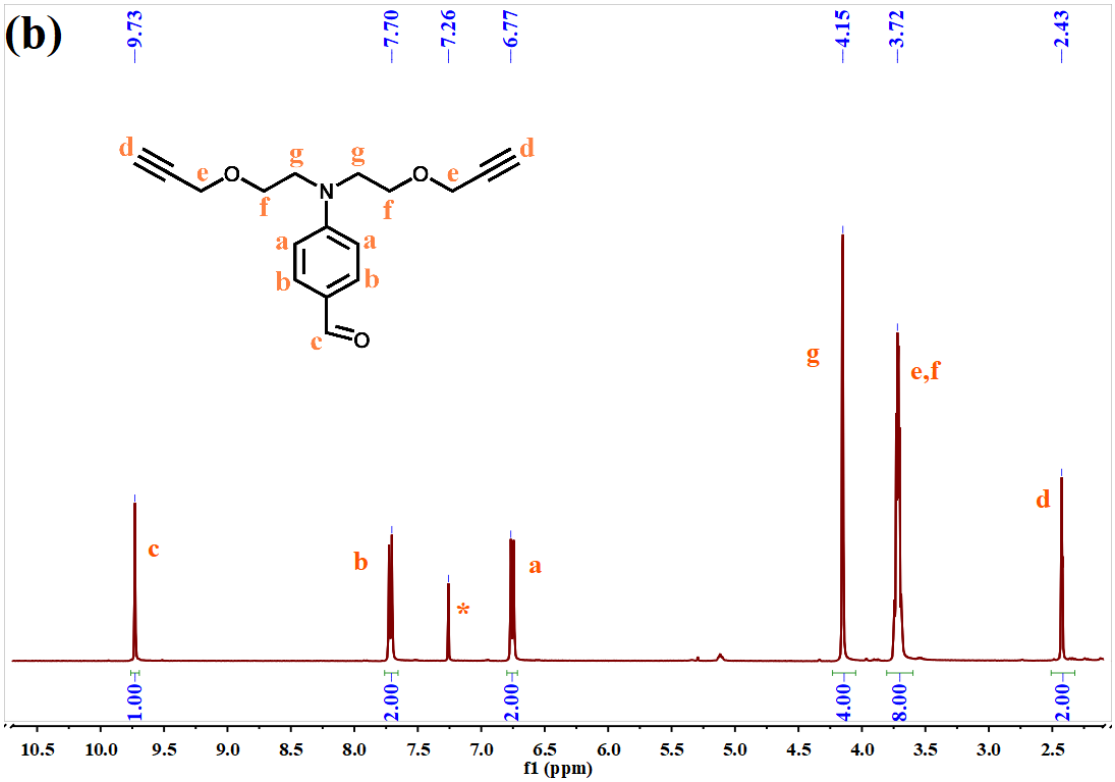
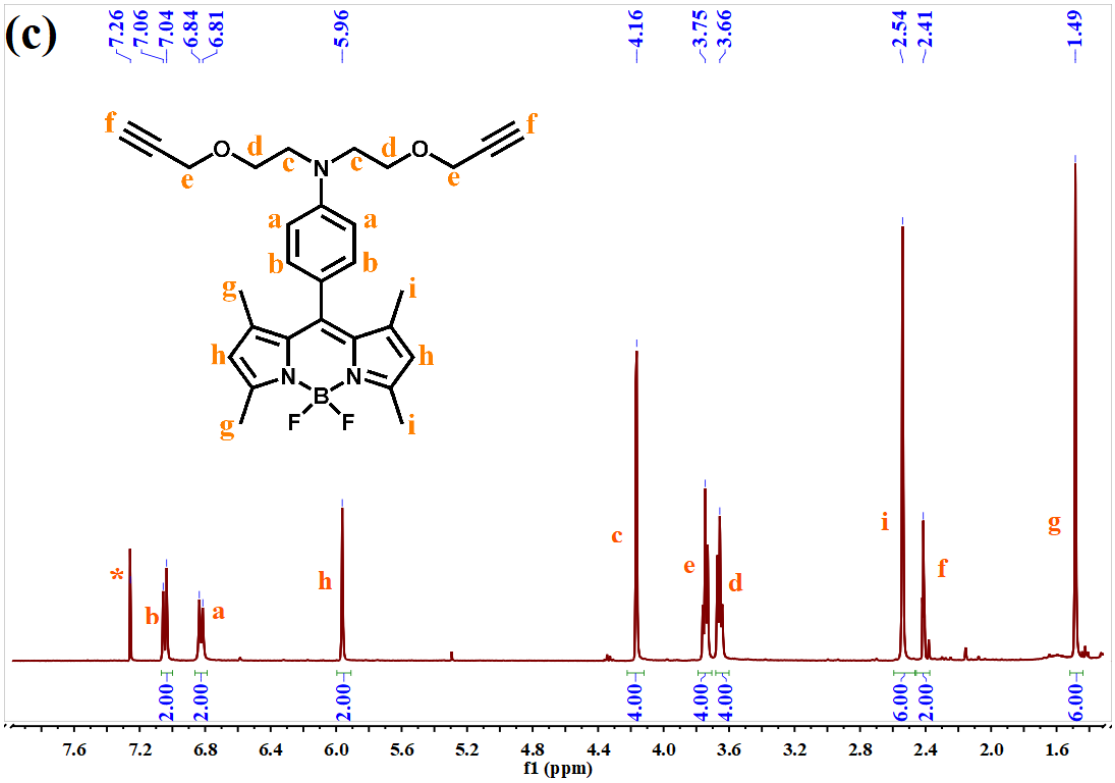
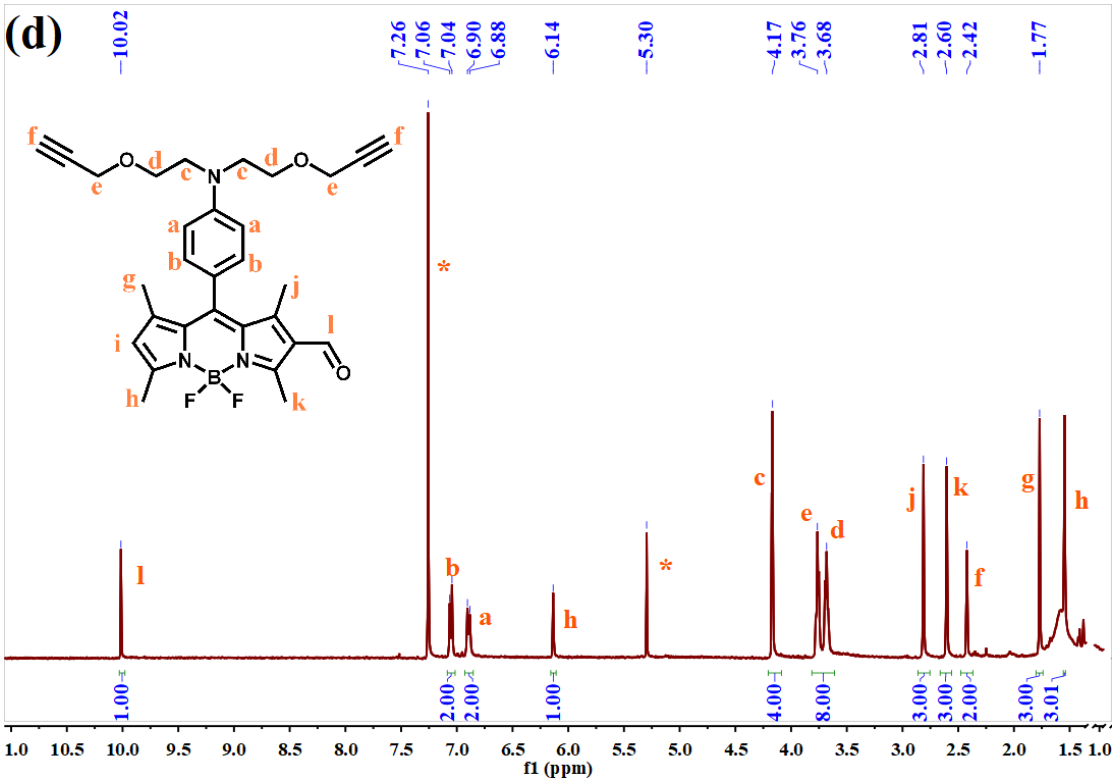

(a)
7.22
6.73
4.15
3.70
3.61
2.43
d
e
O
g
g
N
O
e
d
f
f
a
a
b
b
c
g
e
f
d
a
b,c
*
2.00
3.00
4.00
4.00
4.00
2.00
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
f1 (ppm)


(b)
9.73
7.70
7.26
6.77
4.15
3.72
2.43
d
e
O
g
g
N
O
e
d
f
f
a
a
b
b
c
O
g
e,f
d
c
b
*
a
1.00
2.00
2.00
4.00
8.00
2.00
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
f1 (ppm)


(c)
7.26
7.06
7.04
6.84
6.81
5.96
4.16
3.75
3.66
2.54
2.41
1.49
f
e
d
c
N
O
a
b
g
i
h
B
F
*
2.00
4.00
6.00
f1 (ppm)


(d)
10.02
7.26
7.06
7.04
6.90
6.88
6.14
5.30
4.17
3.76
3.68
2.81
2.60
2.42
1.77
l
j
k
O
*
1.00
2.00
4.00
8.00
3.00
f1 (ppm)

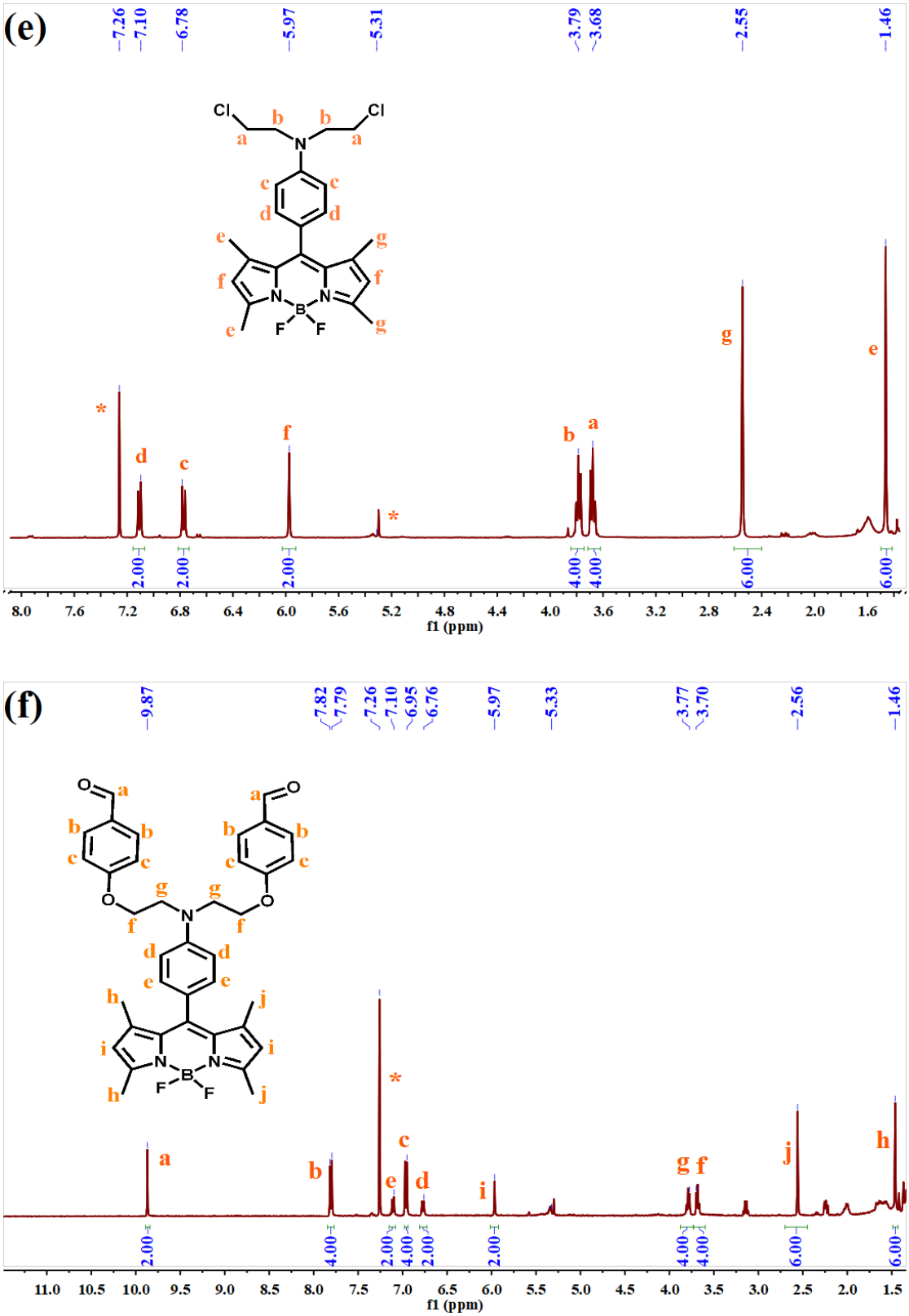
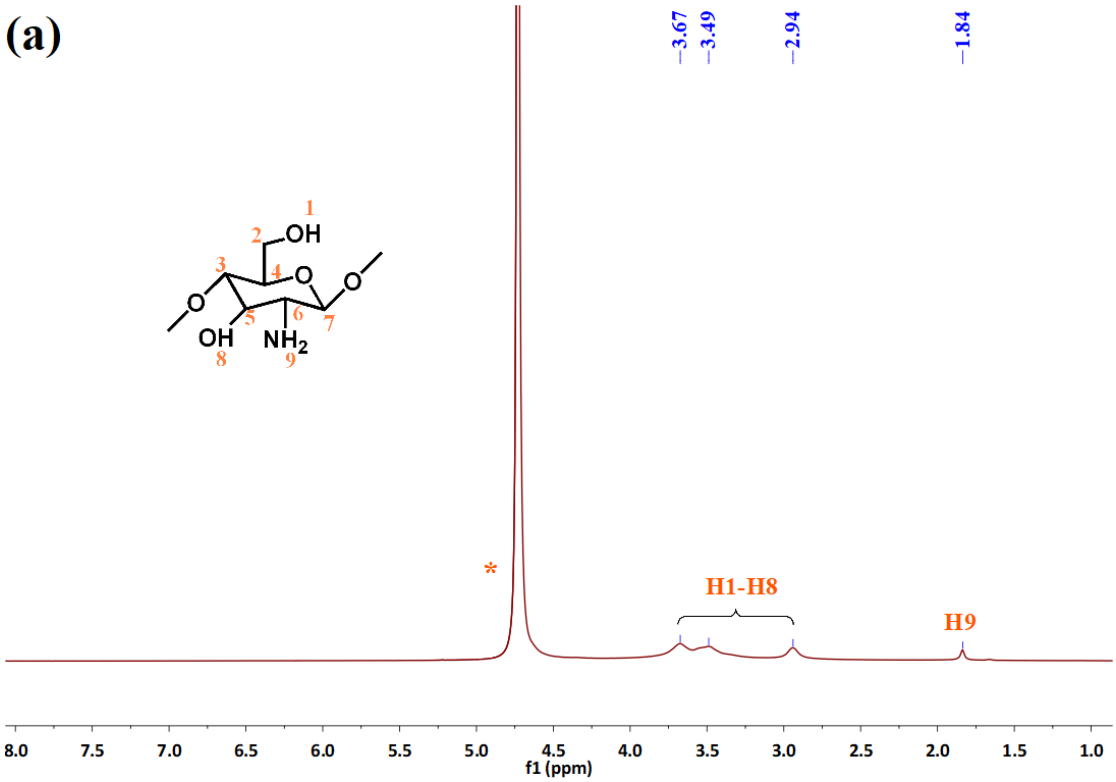
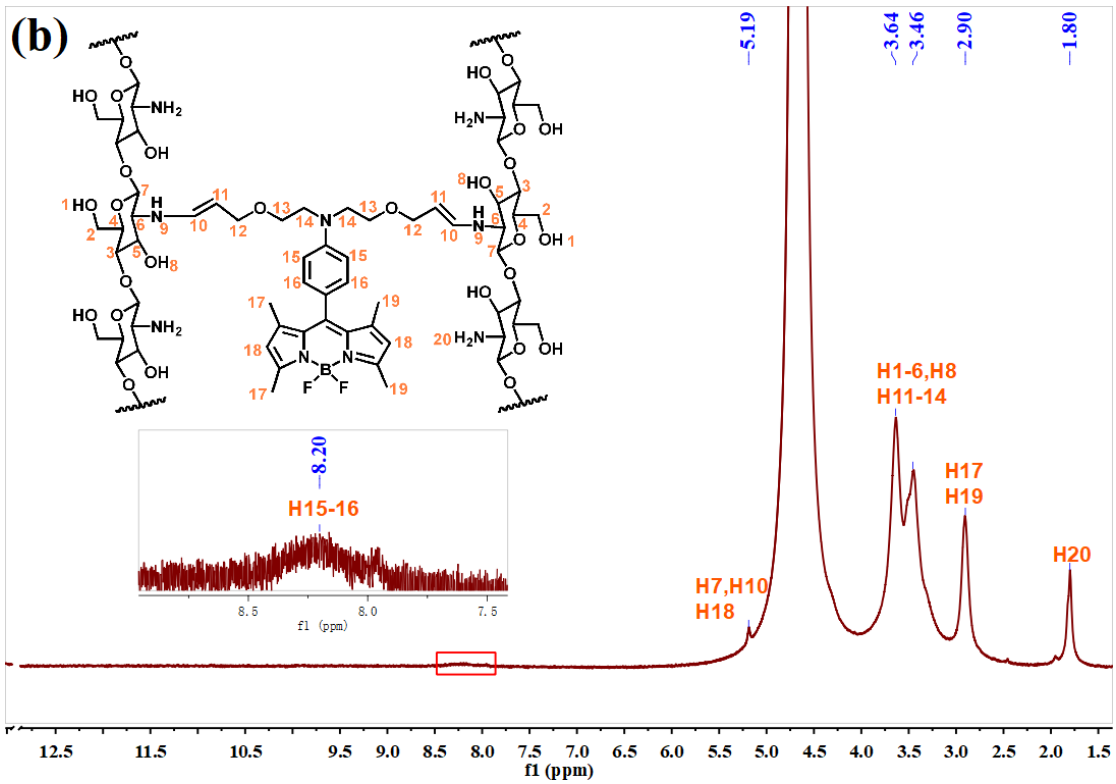


Figure S1. The ^{1}H NMR spectra of (a) **NO-1**, (b) **NO-2**, (c) **NO-3**, (d) **NO-4**,

(e) **BO-1** and (f) **BO-2**.


(a)
3.67
3.49
2.94
1.84
OH
NH2
*
H1-H8
H9
f1 (ppm)


(b)
5.19
3.64
3.46
2.90
1.80
8.20
H15-16
H1-6,H8
H11-14
H17
H19
H20
H7,H10
H18
f1 (ppm)

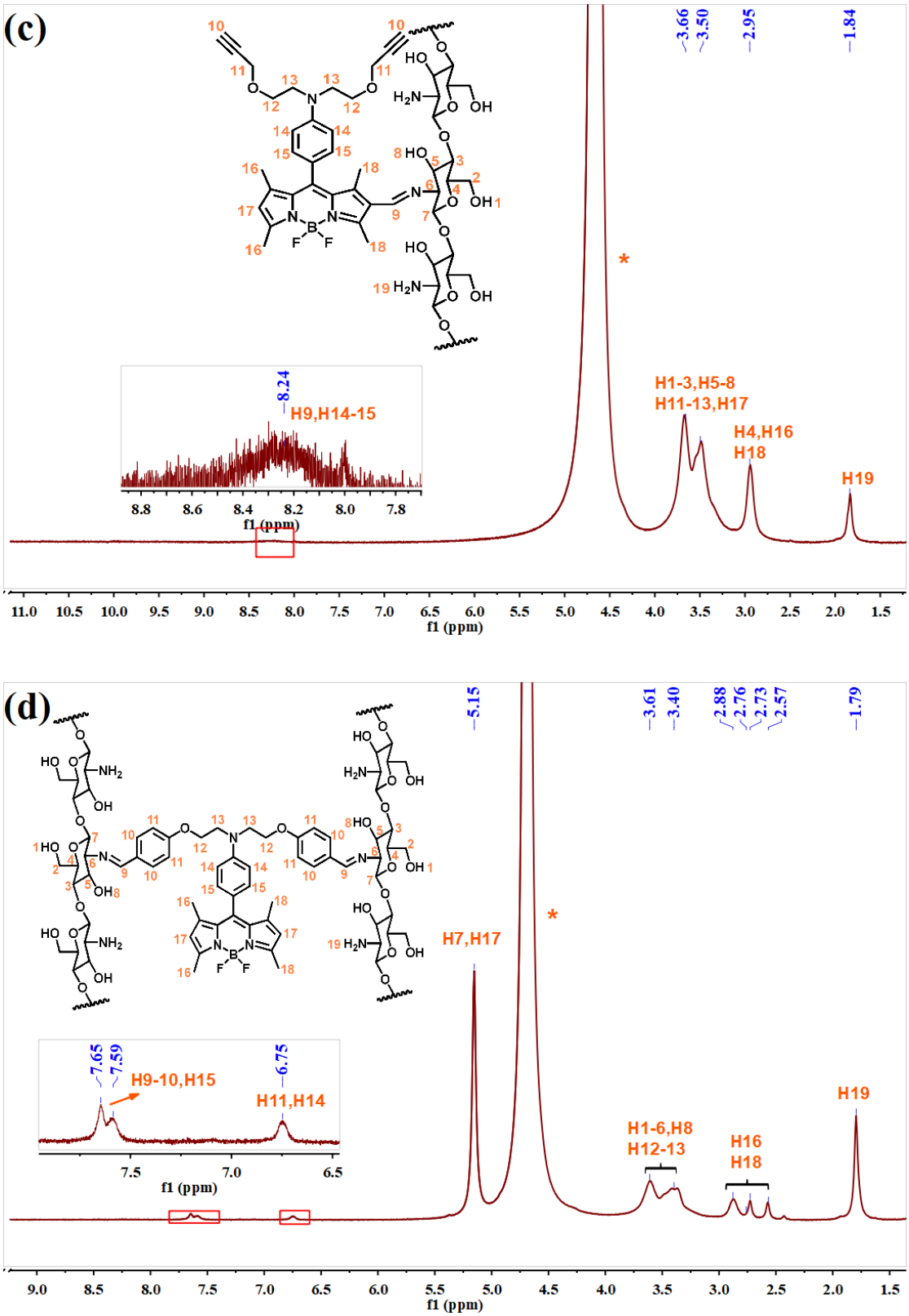


Figure S2. The ^{1}H NMR spectra of (a) **C0**, (b) **C1**, (c) **C2** and (d) **C3**.

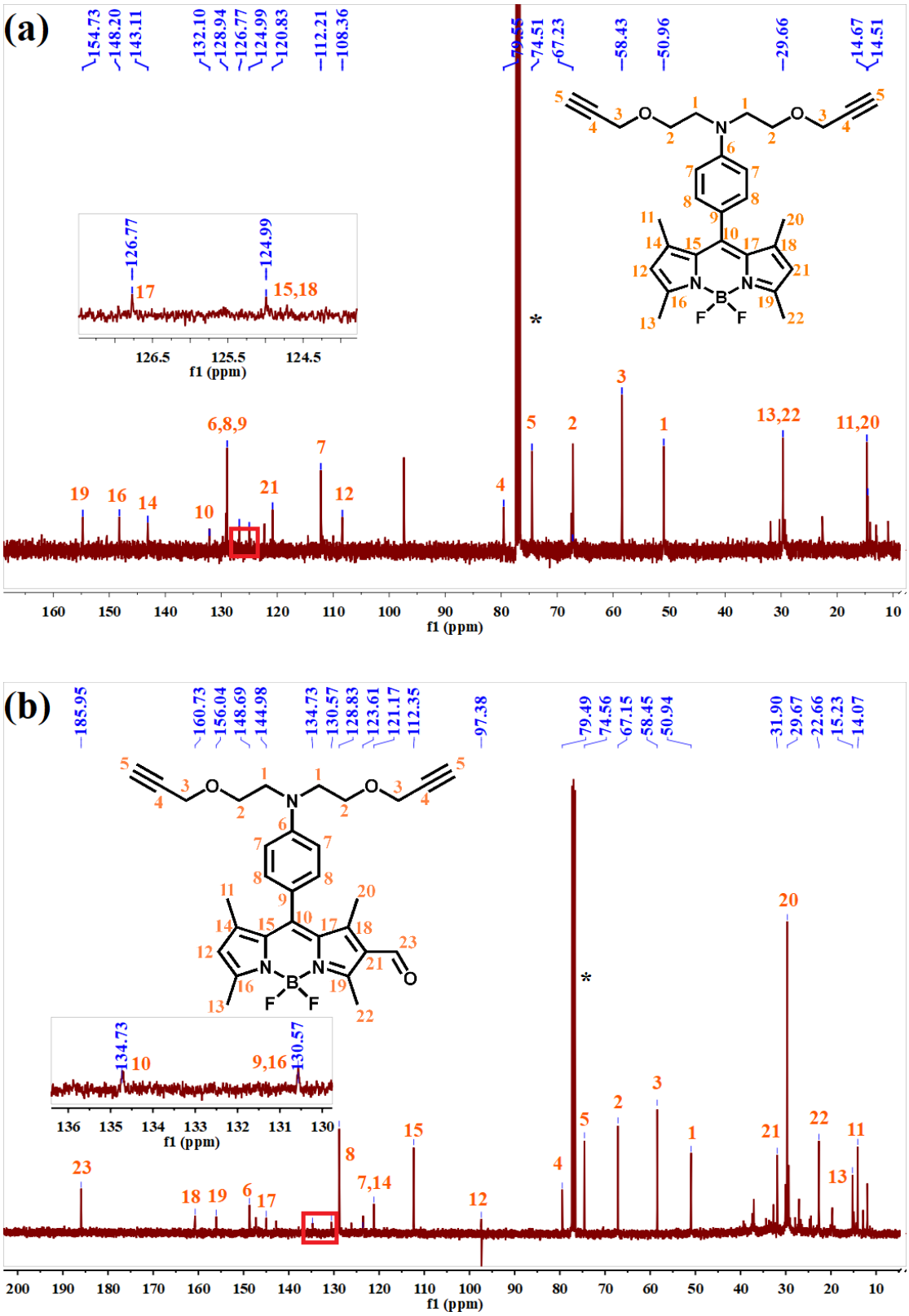
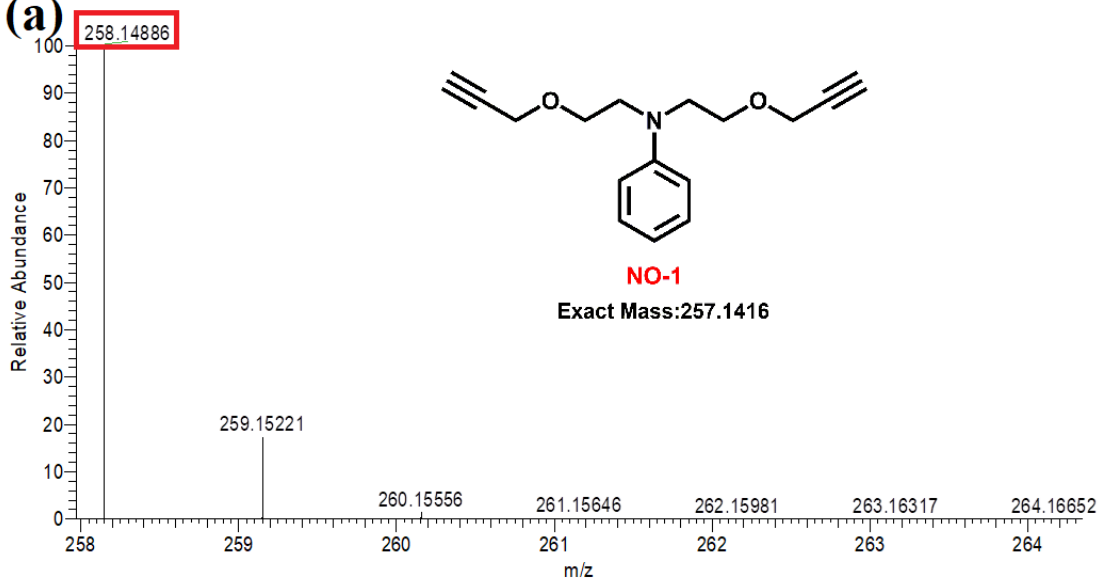


Figure S3. The ^{13}C NMR spectra of (a) **NO-3** and (b) **NO-4**.

C16H19O2N +H: C16 H20 O2 N1 pa Chrg 1

(a)

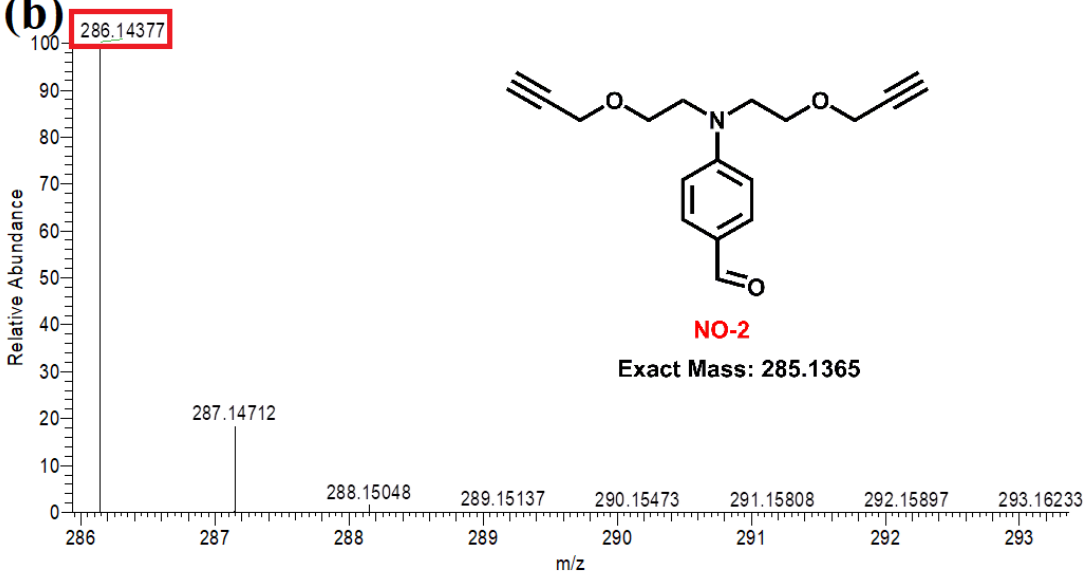


NO-1

Exact Mass:257.1416

C17H19O3N +H: C17 H20 O3 N1 pa Chrg 1

(b)

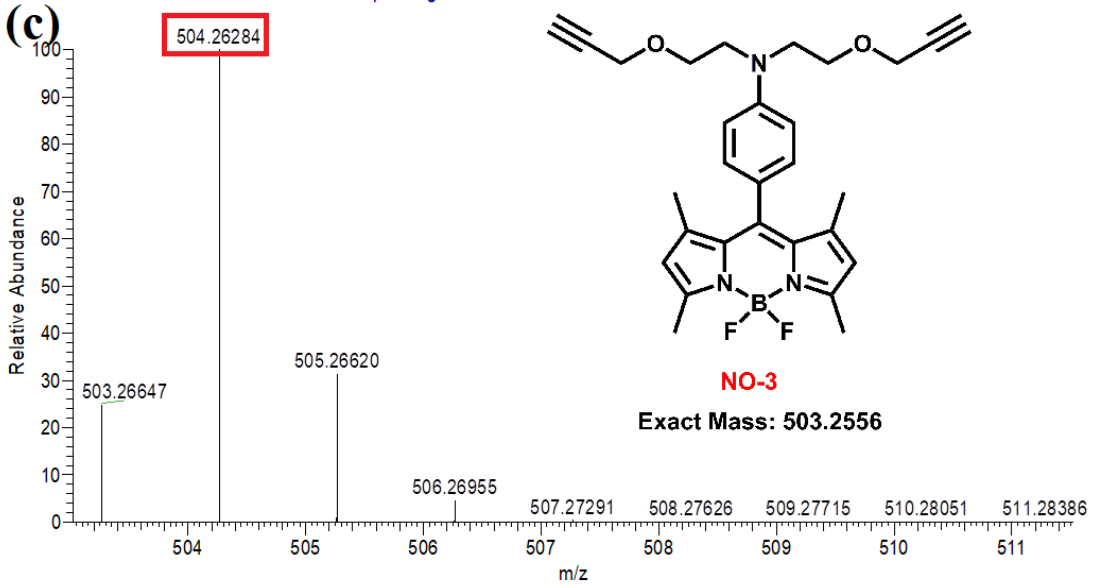


NO-2

Exact Mass: 285.1365

C29H32O2N3BF2 +H: C29 H33 O2 N3 B1 F2 pa Chrg 1

(c)

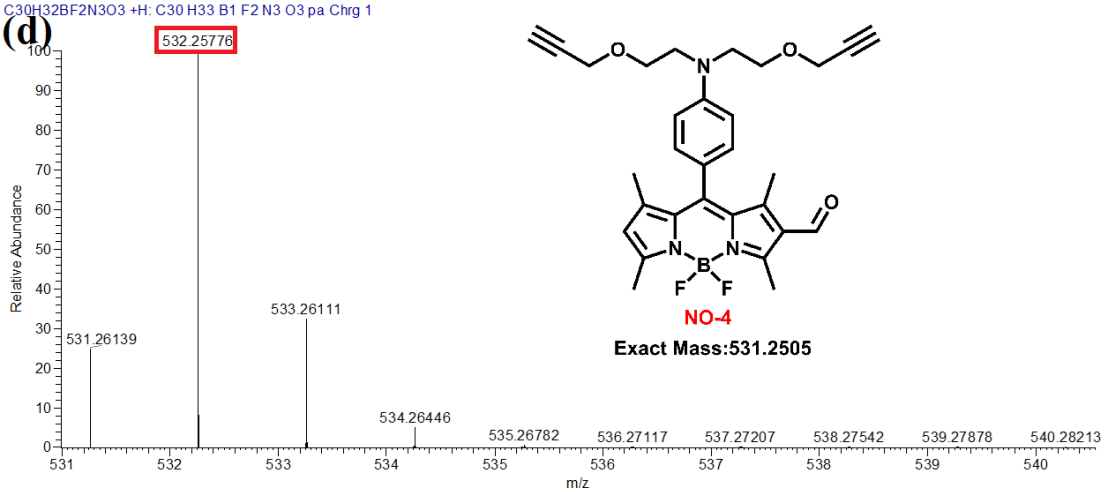


NO-3

Exact Mass: 503.2556

C30H32BF2N3O3 +H: C30 H33 B1 F2 N3 O3 pa Chrg 1

(d)



NO-4

Exact Mass:531.2505

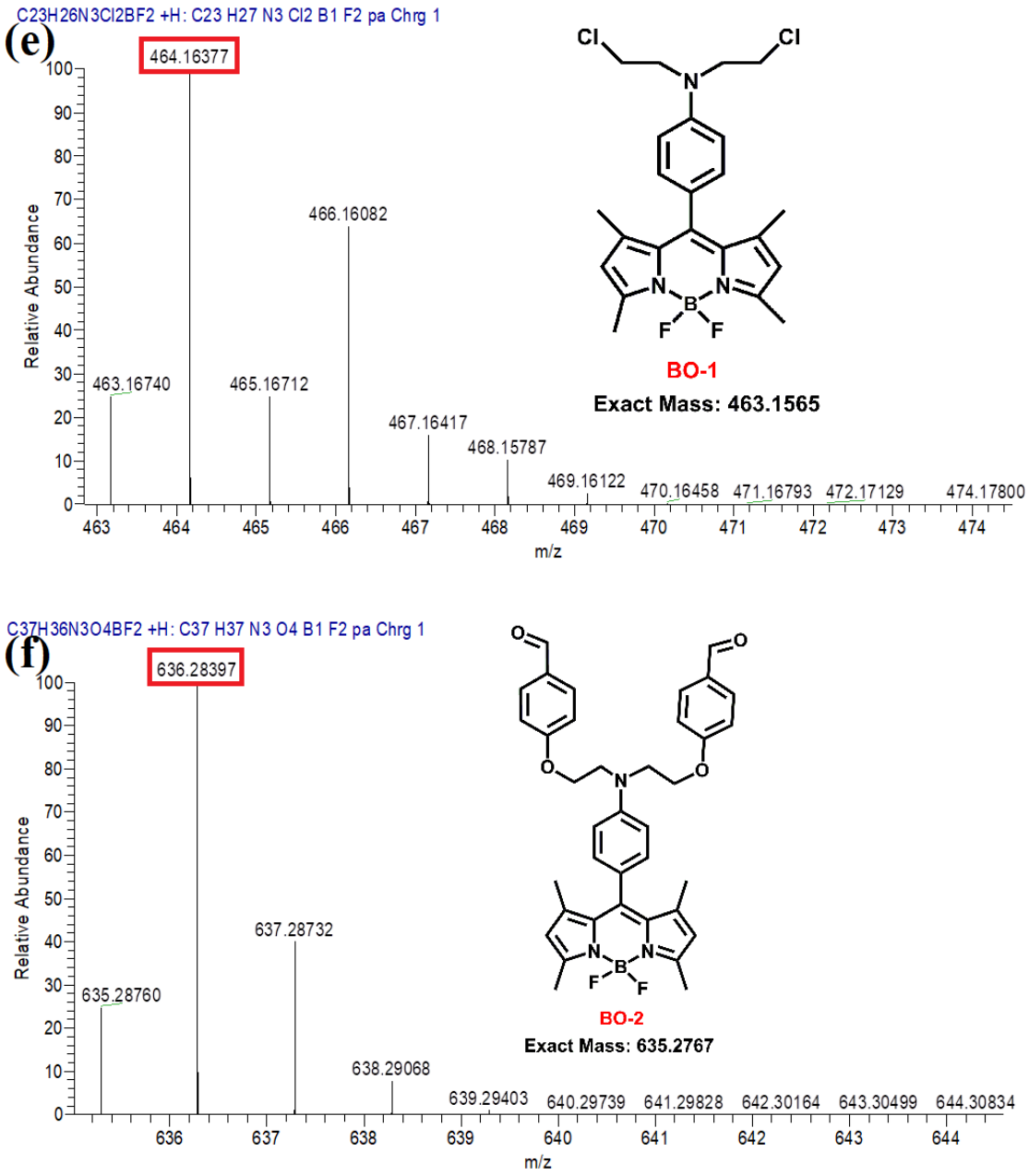


Figure S4. (a) **NO-1**, (b) **NO-2**, (c) **NO-3**, (d) **NO-4**, (e) **BO-1** and (f) **BO-2**.

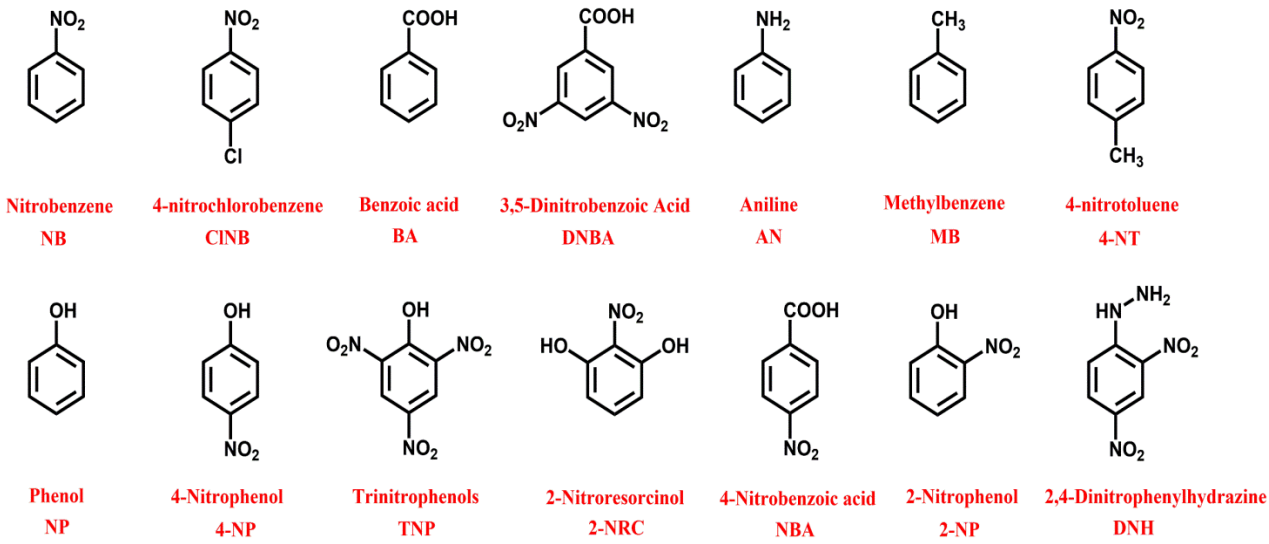


Figure S5. Structural formula for aromatic nitro compounds

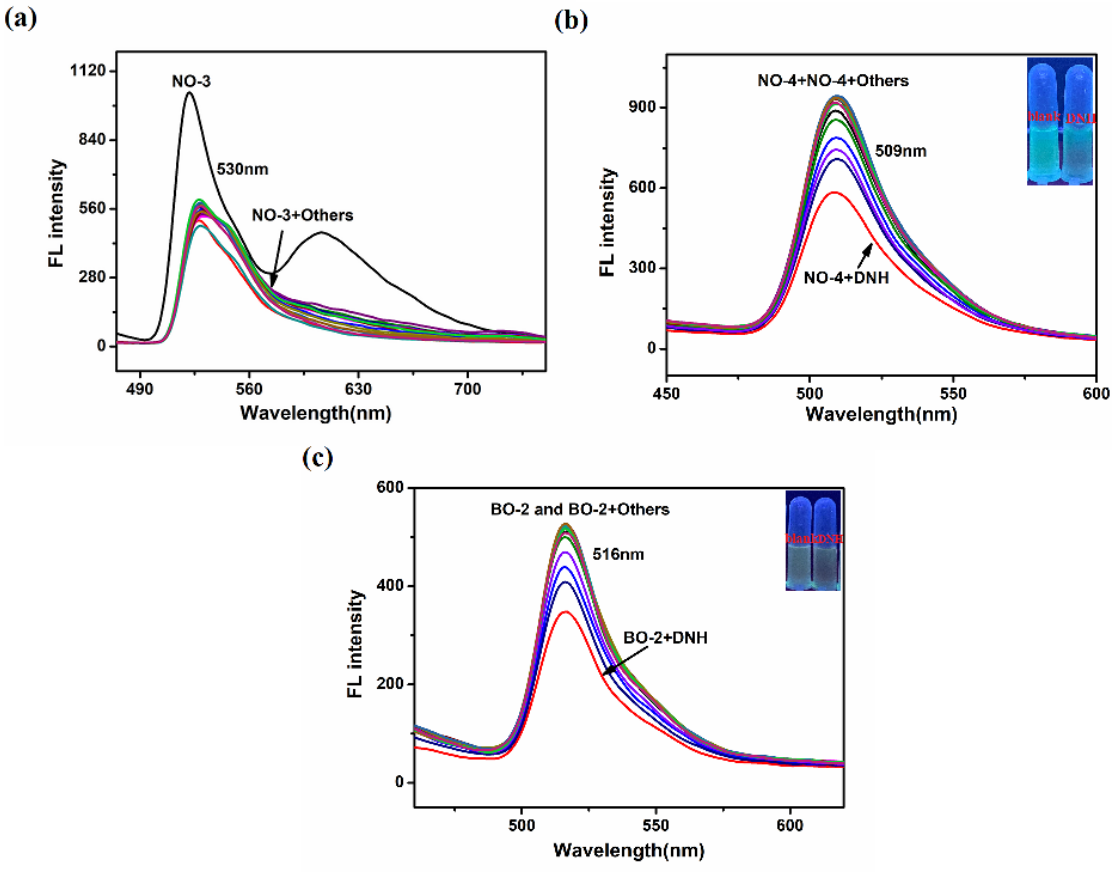
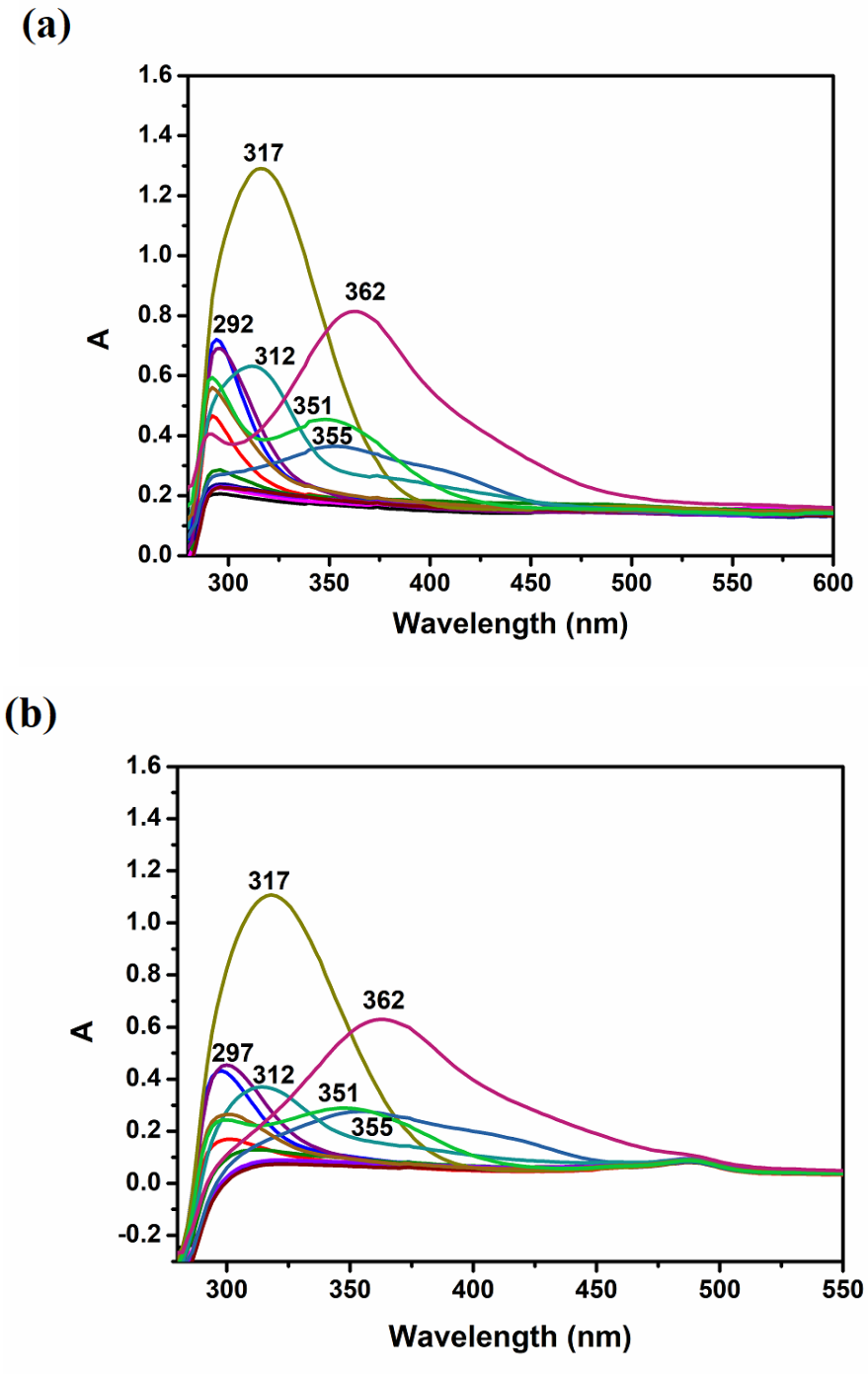


Figure S6. Fluorescence spectra of (a) **NO-3** (λex = 400 nm), (b) **NO-4** (λex = 365nm) and (c) **BO-2** (λex = 365 nm) in the presence of 75μL nitro compounds in aqueous ethanol solution (ethanol: water=1:1.5, v: v). Insert: photograph of DNH with blank sample under UV light. The excitation and emission slits were both 10 nm for **NO-3**, **NO**-4 and **BO-2** fluorescence

spectroscopy studies.



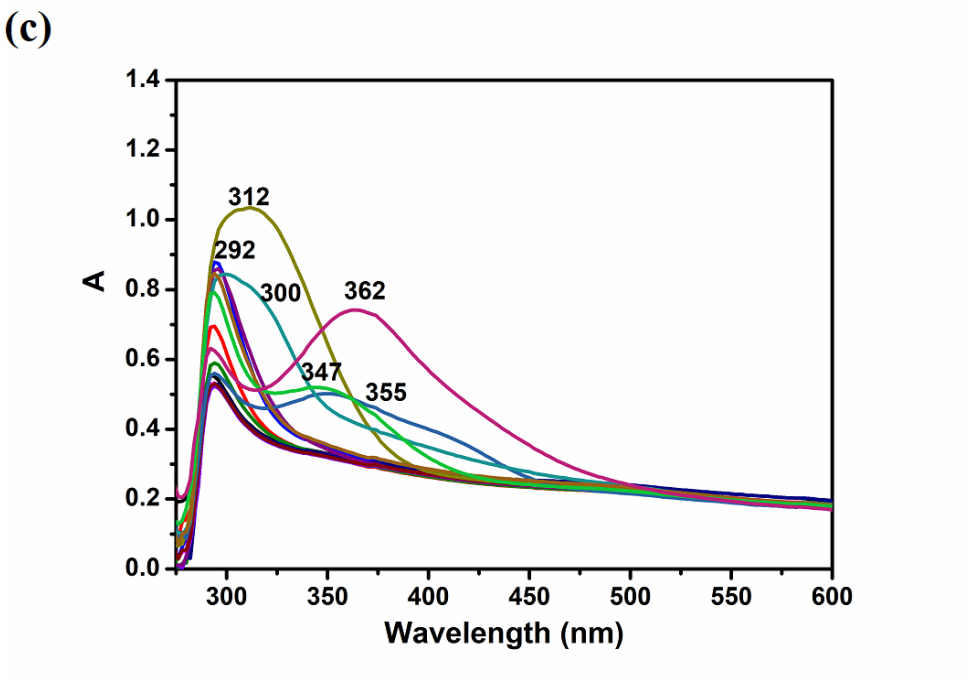


Figure S7. UV–vis absorption of (a) **C1**, (b) **C2**, (c) **C3**

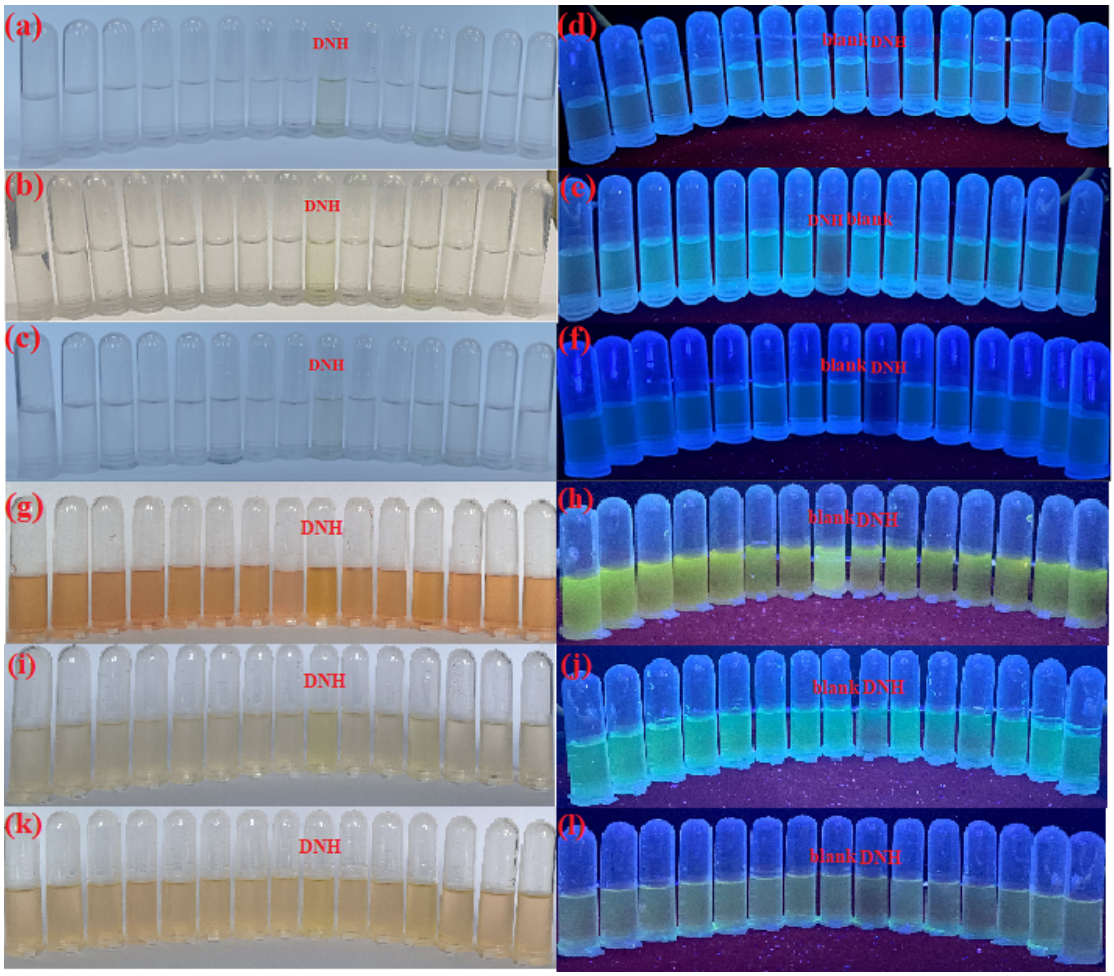
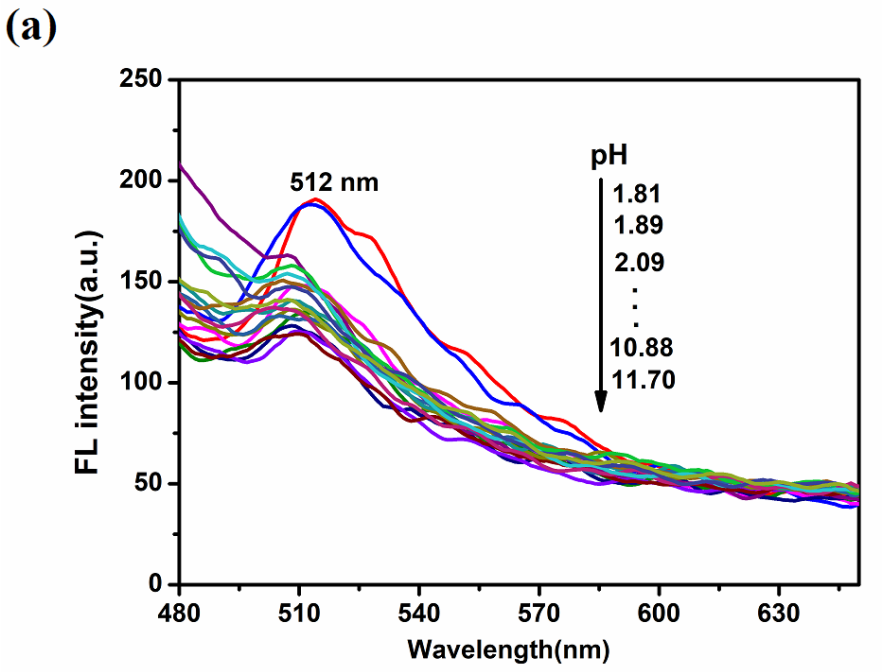


Figure S8. photographs of all sensors recognizing nitro compounds, NB, ClNB, BA, DNBA, AN, MB ,4-NT, blank, DNH, NP, 4-NP, TNP, 2-NRC, NBA, 2-NP from left to right (a) **C1** under natural light, (b) **C2** under natural light, (c) **C3** under natural light, (d) **C1** under fluorescence, (e) **C2** under fluorescence, (f) **C3** under fluorescence, (g) **NO-3** under natural light, (h) **NO-3** under fluorescence, (i) **NO-4** under natural light, (j) **NO-4** under fluorescence, (k) **BO-2** under natural light and (l) **BO-2** under fluorescence.

.



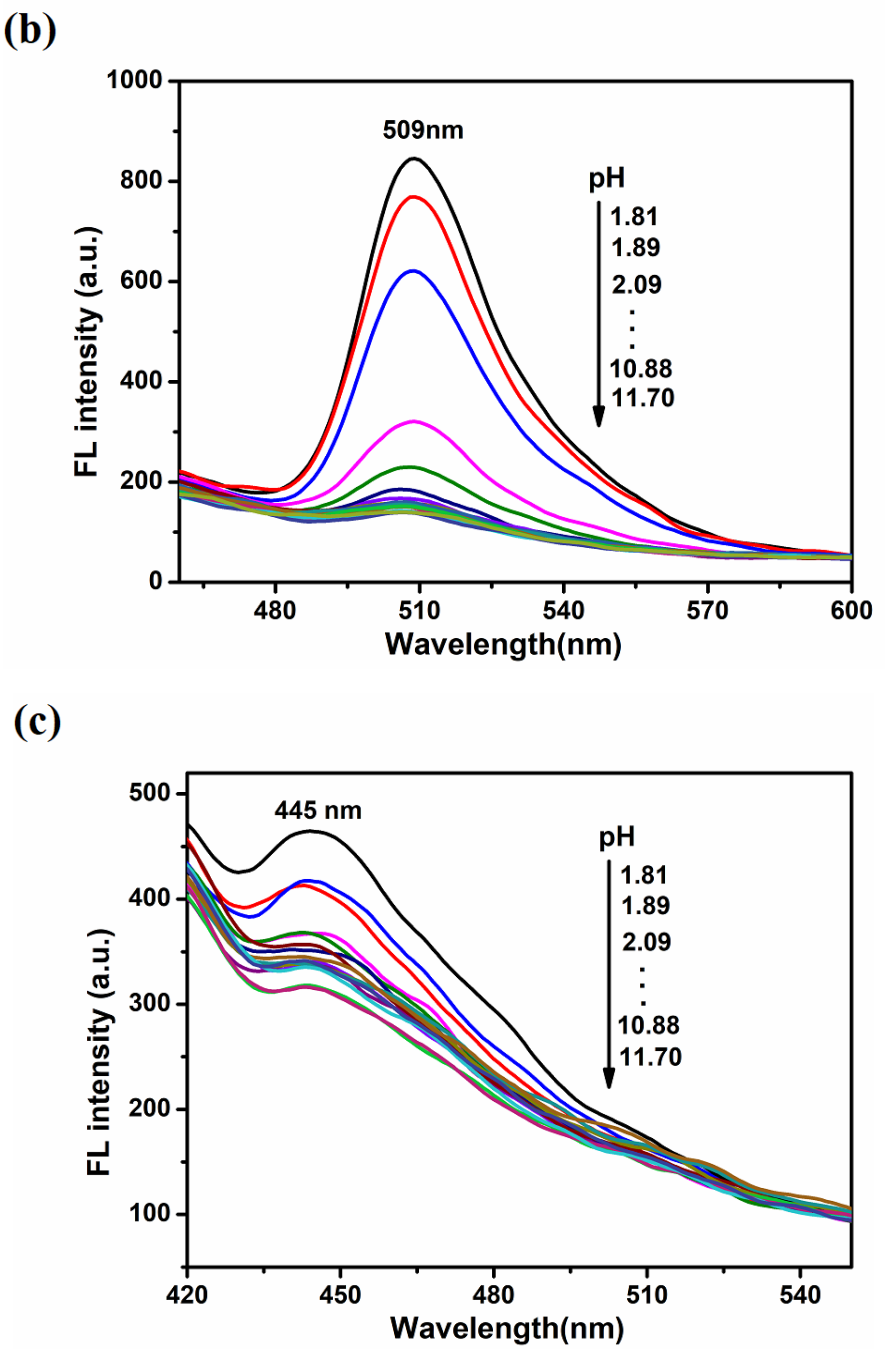


Figure S9. (a) Fluorescence spectra of **C1** (λex = 400 nm), (b) **C2** (λex = 365 nm) and (c) **C3** (λex = 365 nm) at different pH values

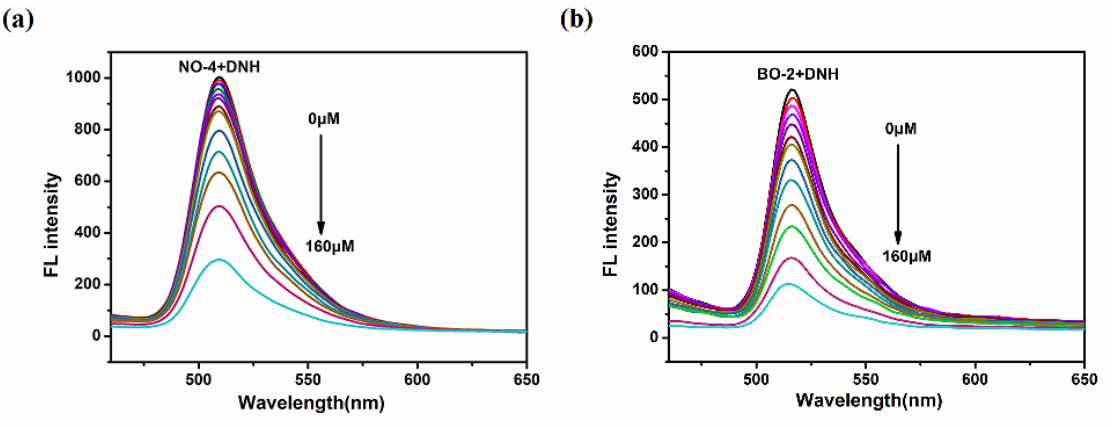


Figure S10. Fluorescence intensity changes of **NO-4** and **BO-2** in the presence of different concentrations of DNH. (a) **NO-4** + DNH (λex = 365 nm) and (b) **BO-2** + DNH (λex = 365 nm)

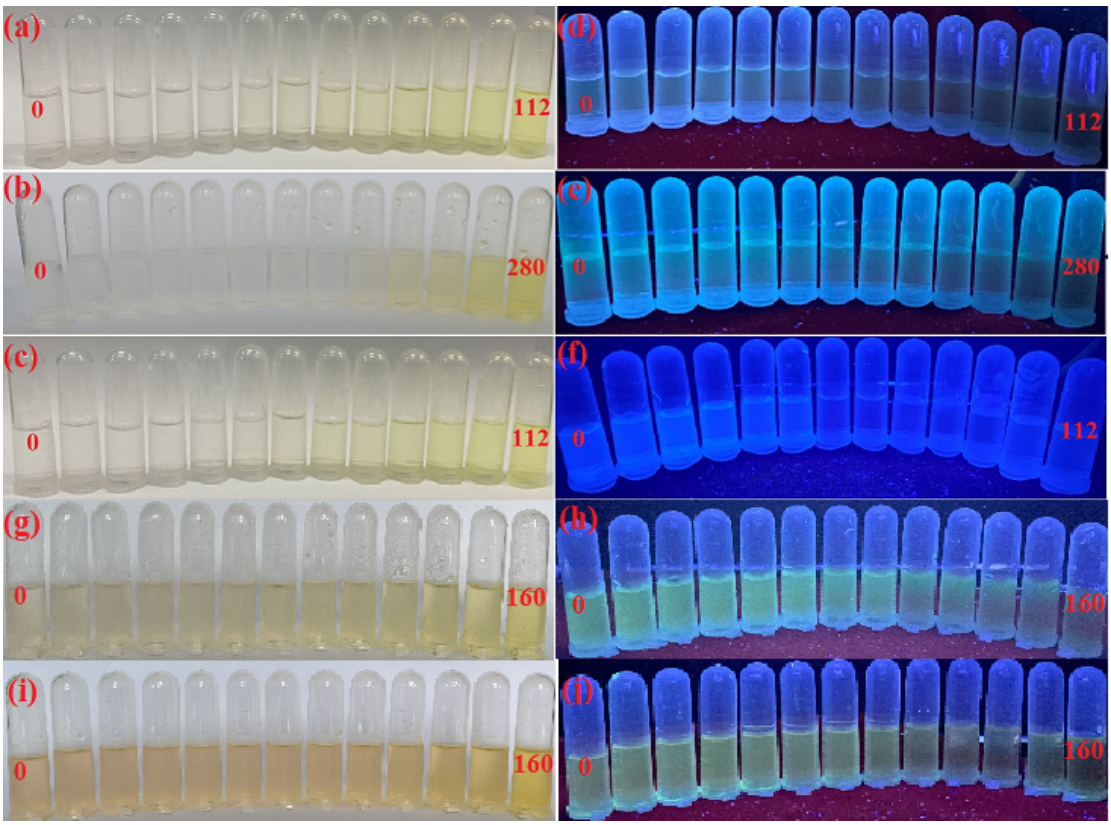
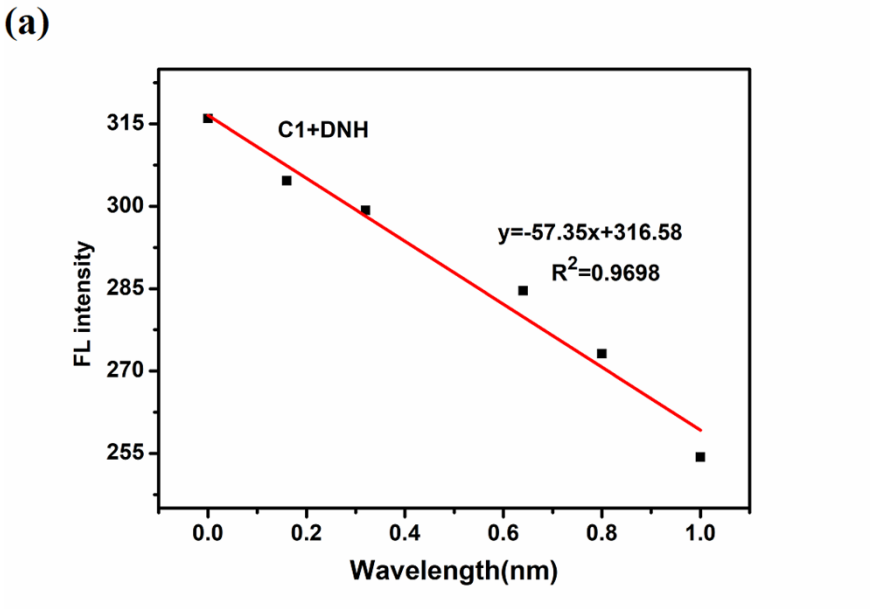
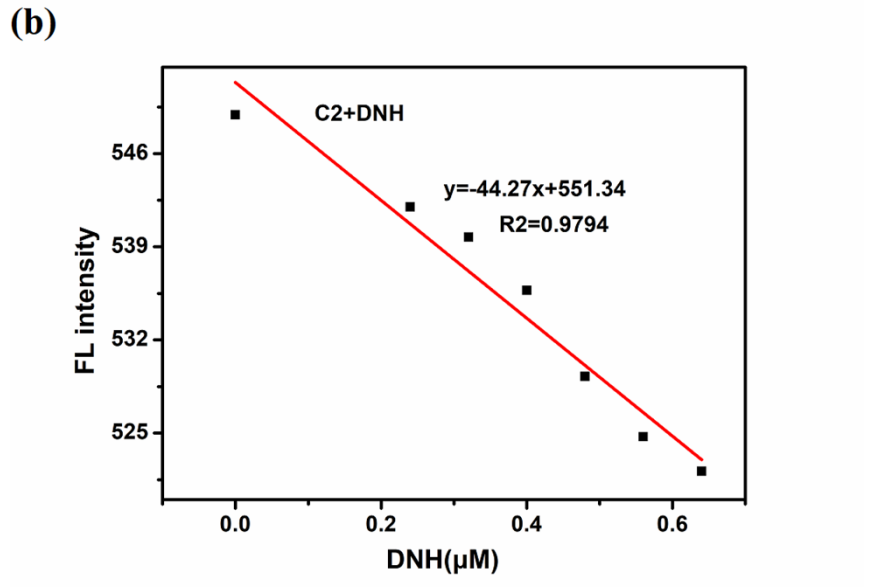


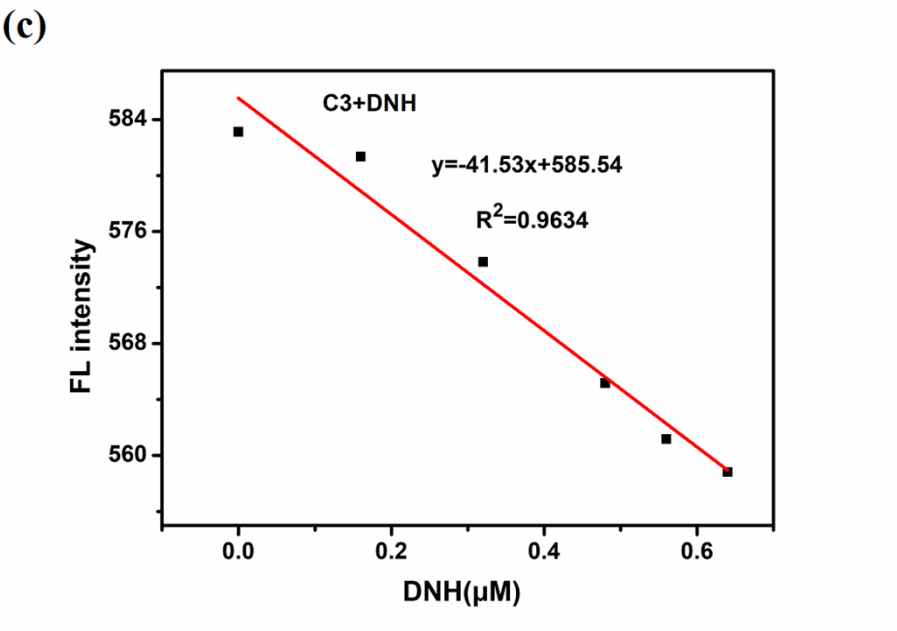
Figure S11. Photographs of sensors for fluorescence titration of DNH. (a) **C1** with DNH under natural light, (b) **C2** with DNH under natural light, (c) **C3** with DNH under natural light, (d) **C1** with DNH under fluorescence, (e) **C2** with DNH under fluorescence, (f) **C3** with DNH under fluorescence, (g) **NO-4** with DNH under natural light, (h) **NO-4** with DNH under fluorescence, (i)

BO-2 with DNH under natural light and (j) **BO-2** with DNH under fluorescence.

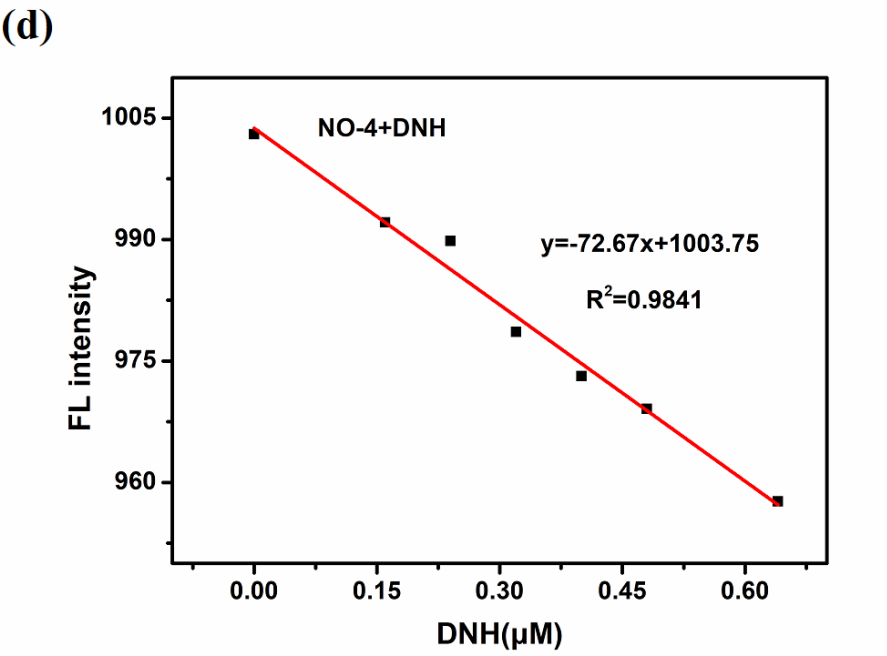




(c)


C3+DNH
y=-41.53x+585.54
R2=0.9634
FL intensity
584
576
568
560
0.0
0.2
0.4
0.6
DNH(μM)

(d)


NO-4+DNH
y=-72.67x+1003.75
R2=0.9841
FL intensity
1005
990
975
960
0.00
0.15
0.30
0.45
0.60
DNH(μM)

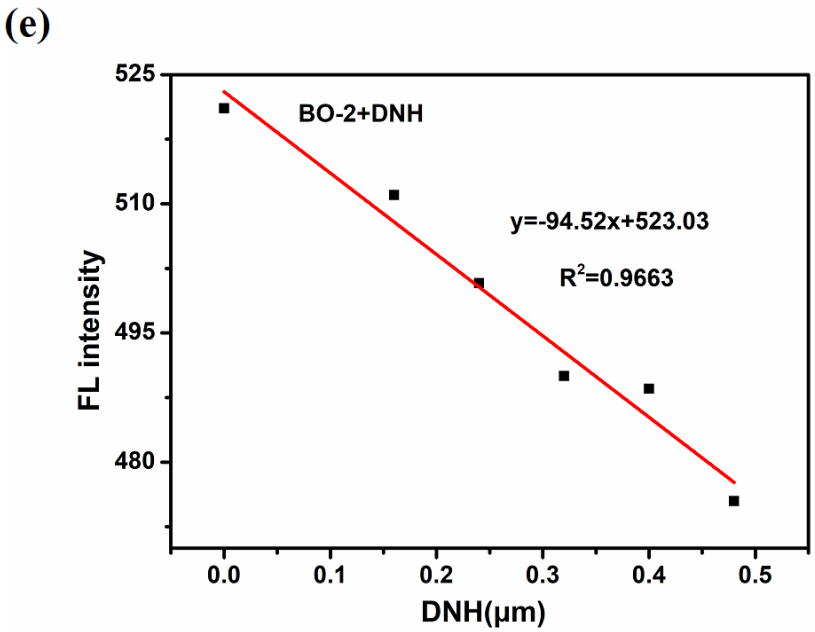
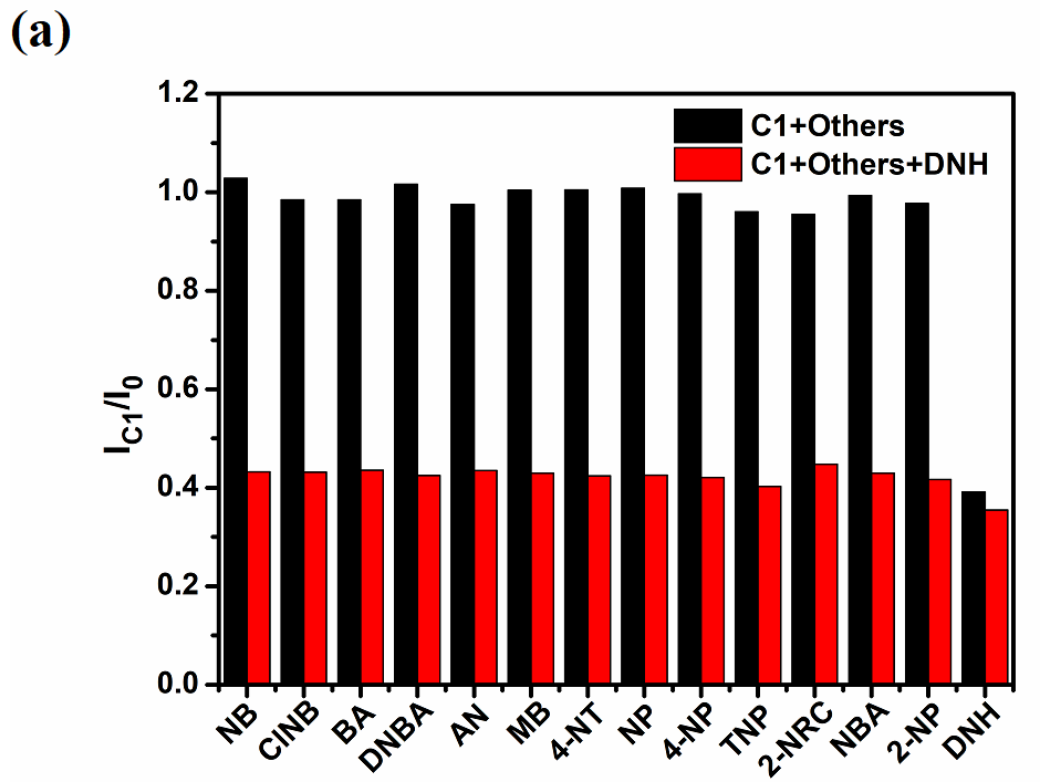


Figure S12. Linear fit plots of detection limit for (a) **C1**+DNH, (b) **C2**+DNH, (c) **C3**+DNH, (d) **NO-4**+DNH and (e) **BO-2**+DNH



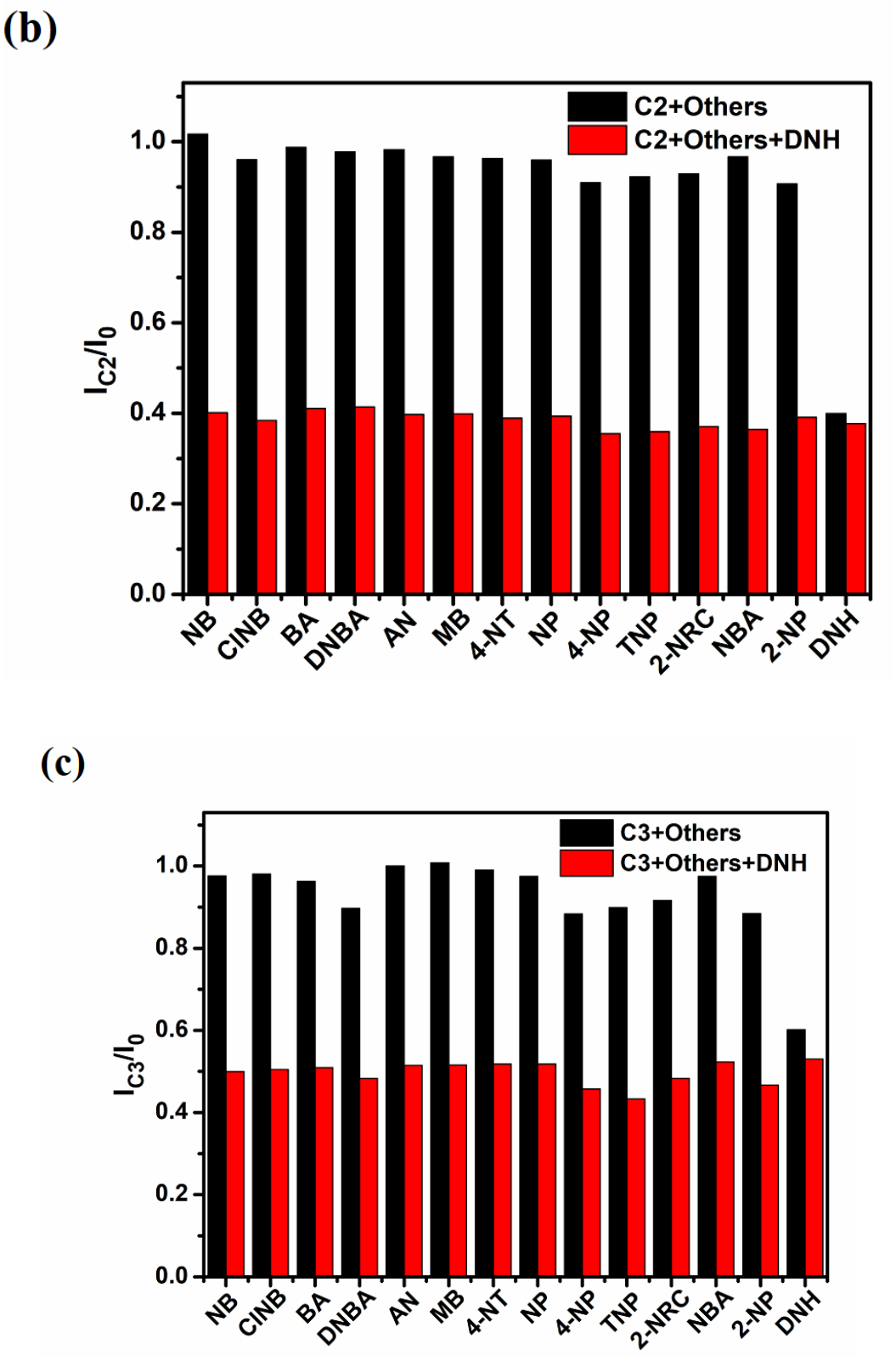
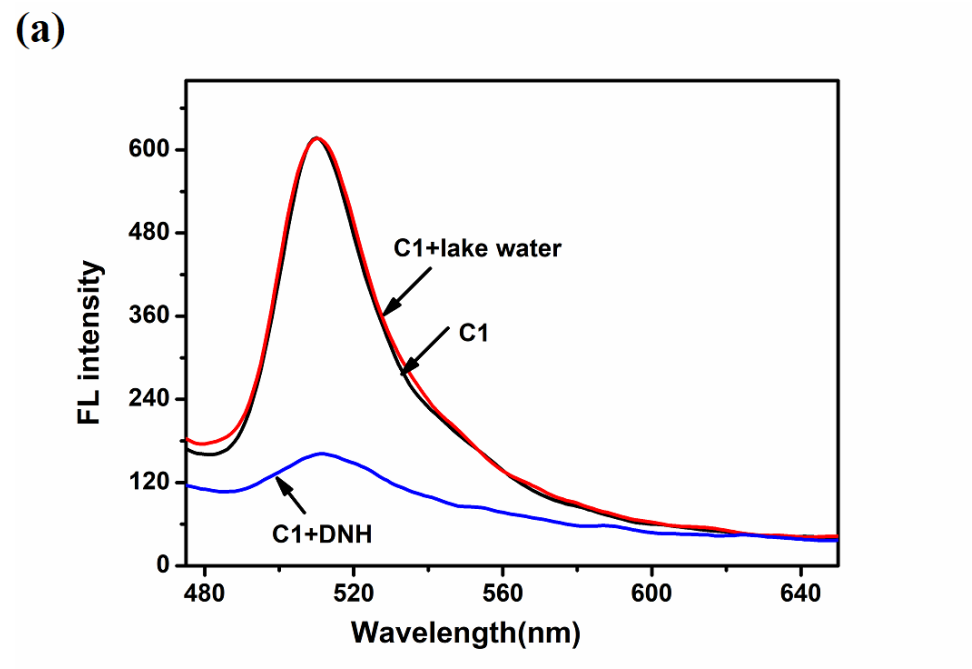
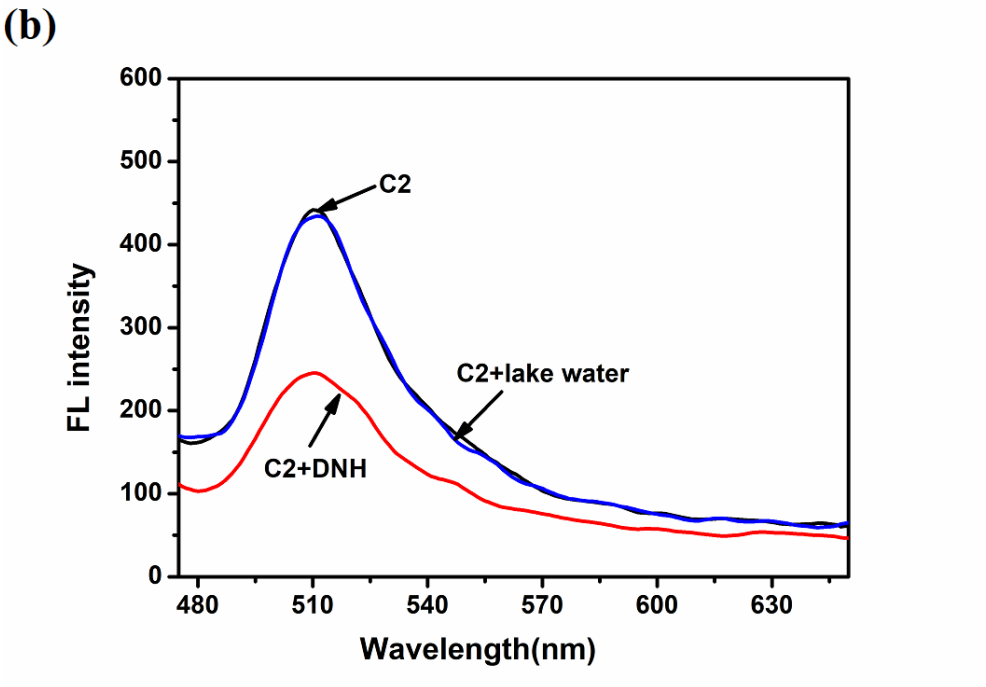


Figure S13. Fluorescence intensity of (a) **C1**, (b) **C2**, (c) **C3** with other other nitro compounds in aqueous acetic acid (1%). Black bars represent the addition of different nitro groups compound into the solution of the corresponding sensor. The red bar indicates the subsequent addition of

DNH to the solution.





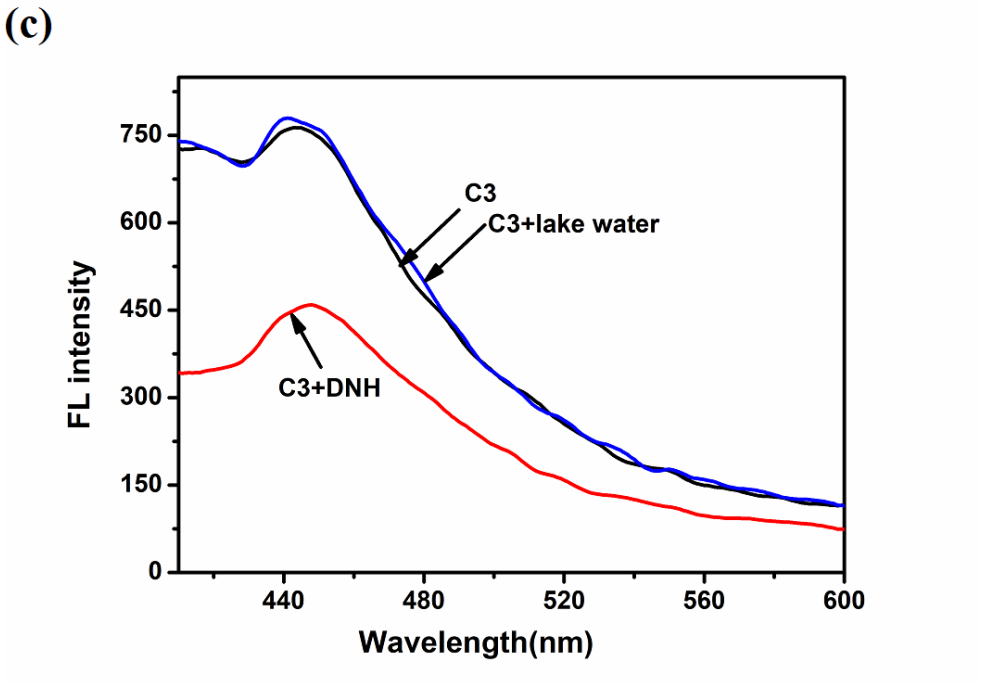


Figure S14. Lake water application fluorescence spectra of (a) **C1**, (b) **C2** and (c) **C3**.