

Electronic Supporting Information

**Light activated CMP conjugated 8-aminoquinoline turn-on
fluorescent Optode for Th⁴⁺ in aqueous environment**

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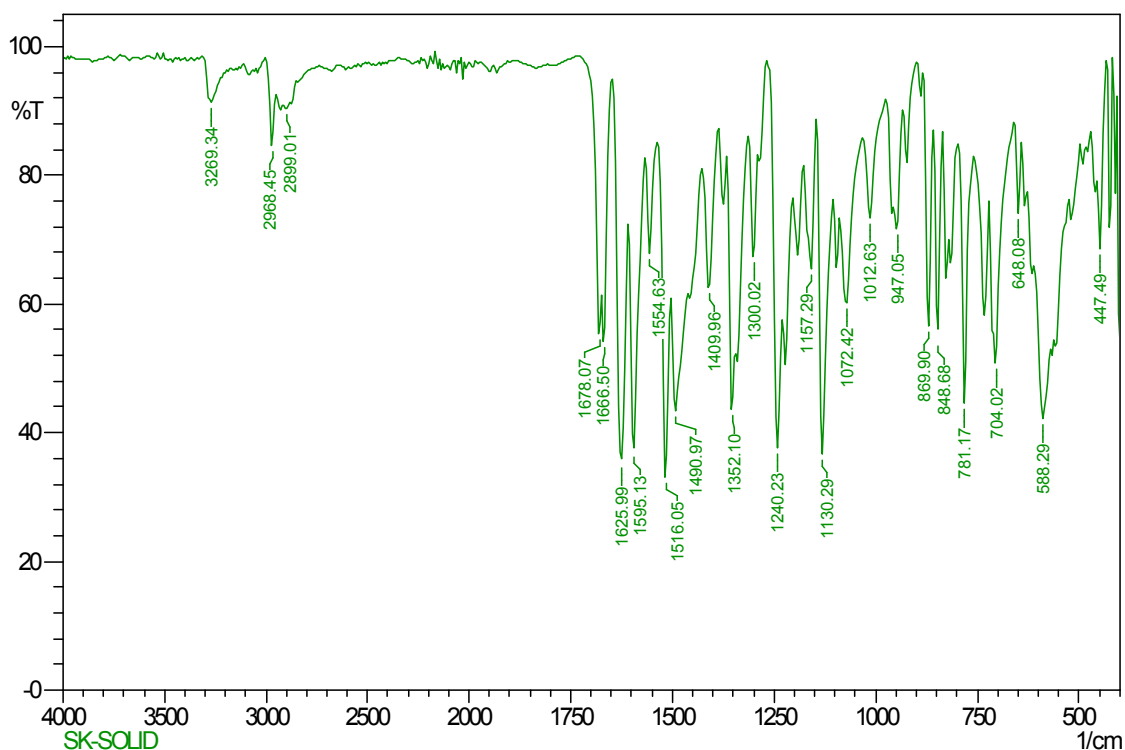
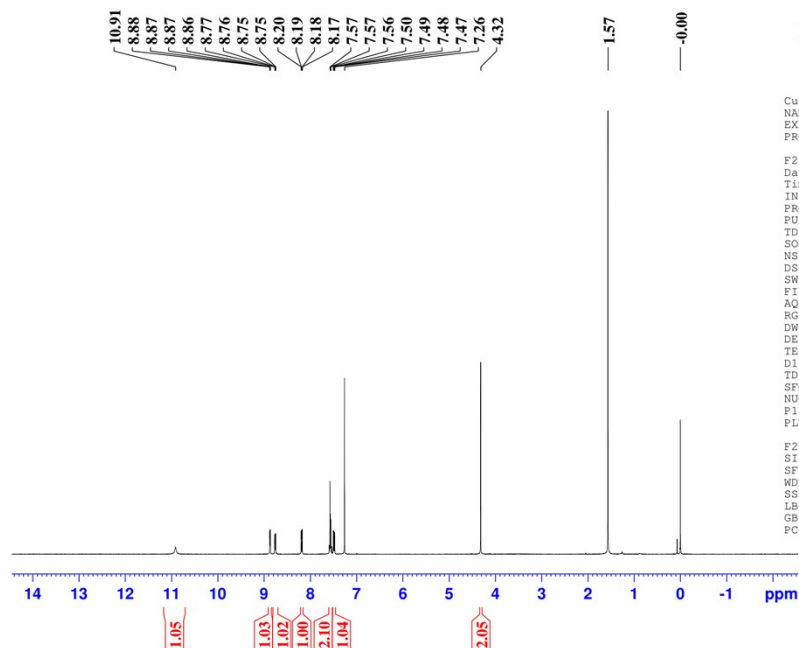


Figure 1S. FTIR of 2-chloro-N-(quinolin-8-yl) acetamide

Signature SIF VIT VELLORE
AQ-CAC-2



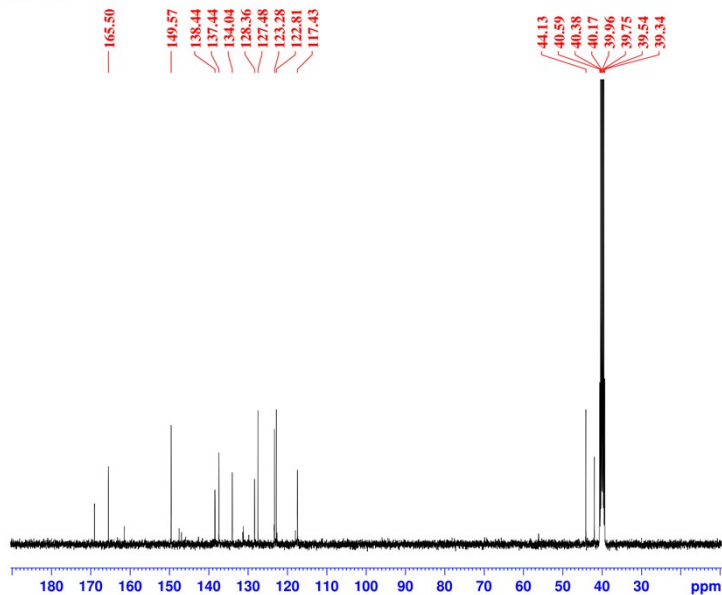
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EXPNO 3
PROCNO 1

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PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
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FIDRES 0.244532 Hz
AQ 4.0894465 sec
RG 199.6
DM 62.400 usec
DE 6.50 usec
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NUC1 1H
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PLW1 16.00000000 W

F2 - Processing parameters
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SF 400.2580095 MHz
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Figure 2S. ¹H NMR of 2-chloro-N-(quinolin-8-yl) acetamide

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QUO-ACL



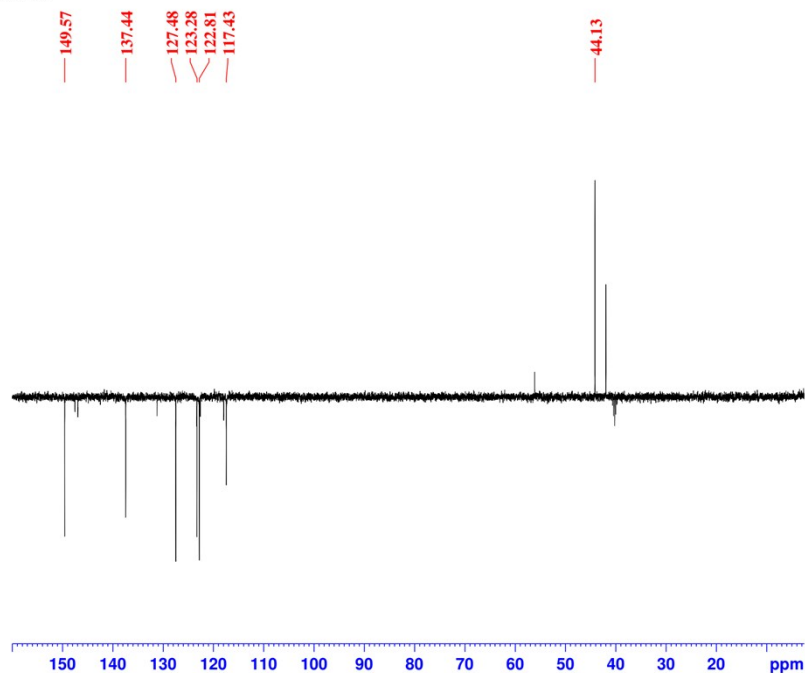
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DE 6.50 usec
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D11 0.03000000 sec
TDO 1
SFO1 100.6550186 MHz
NUC1 13C
P1 9.80 usec
PLM1 58.00000000 W
SFO2 400.2536010 MHz
NUC2 1H
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F2 - Processing parameters
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Figure 3S. ¹³C NMR of 2-chloro-N-(quinolin-8-yl) acetamide

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QUO-ACL



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EXPNO 5
PROCNO 1

F2 - Acquisition Parameters
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AQ 2.0316160 sec
RG 199.6
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DE 6.50 usec
TE 298.6 K
CHST2 145.0000000
D1 2.00000000 sec
D2 0.00344828 sec
D12 0.00002000 sec
TD0 1
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P13 2000.00 usec
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PLW1 58.00000000 W
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SPOFFS 0 Hz
SPW5 8.51080036 W
SFO2 400.2596010 MHz
NUC2 1H
CPOPRG[2] waltz16
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P4 28.54 usec
PCPD2 90.00 usec
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PLW12 0.37709999 W

F2 - Processing parameters
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SF 100.6449542 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

Figure 4S. DEPT-135 NMR of 2-chloro-N-(quinolin-8-yl) acetamide

SK-AC
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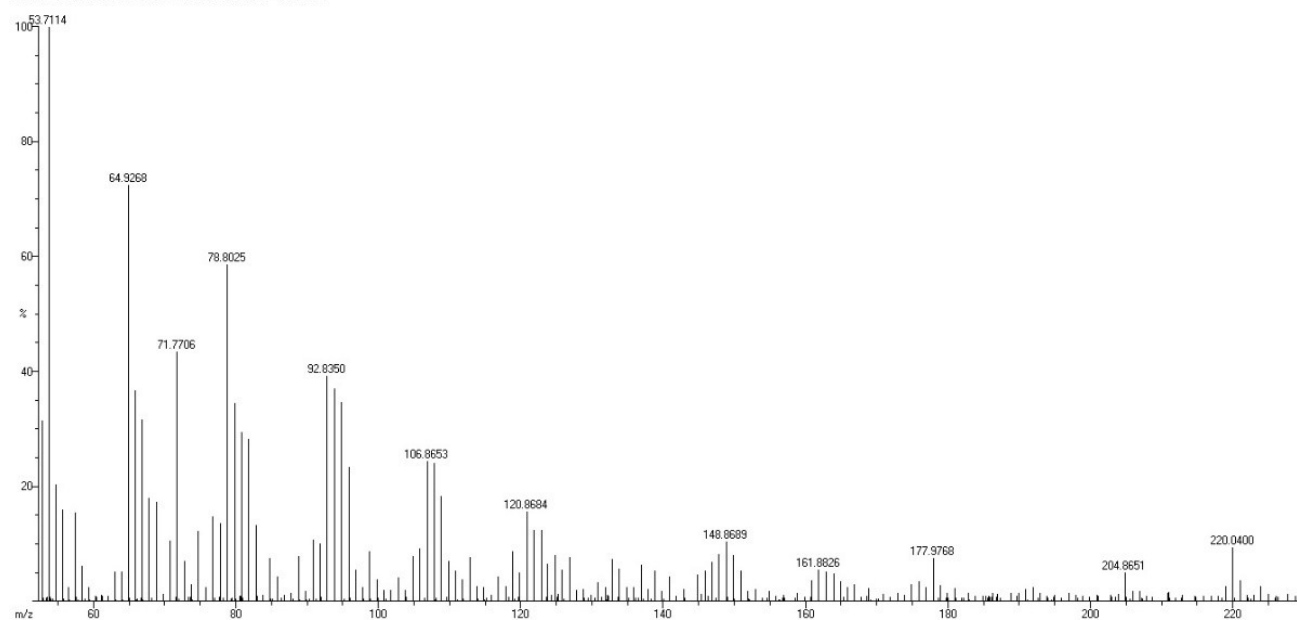


Figure 5S. HR mass of 2-chloro-N-(quinolin-8-yl) acetamide

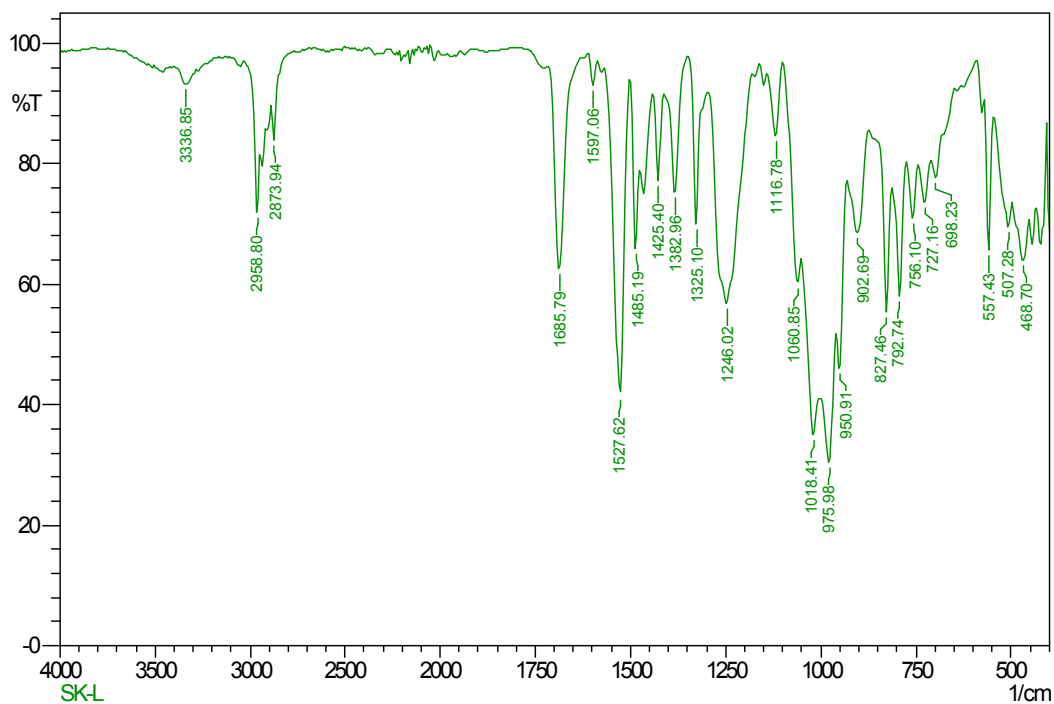


Figure 6S. FTIR of spectra L

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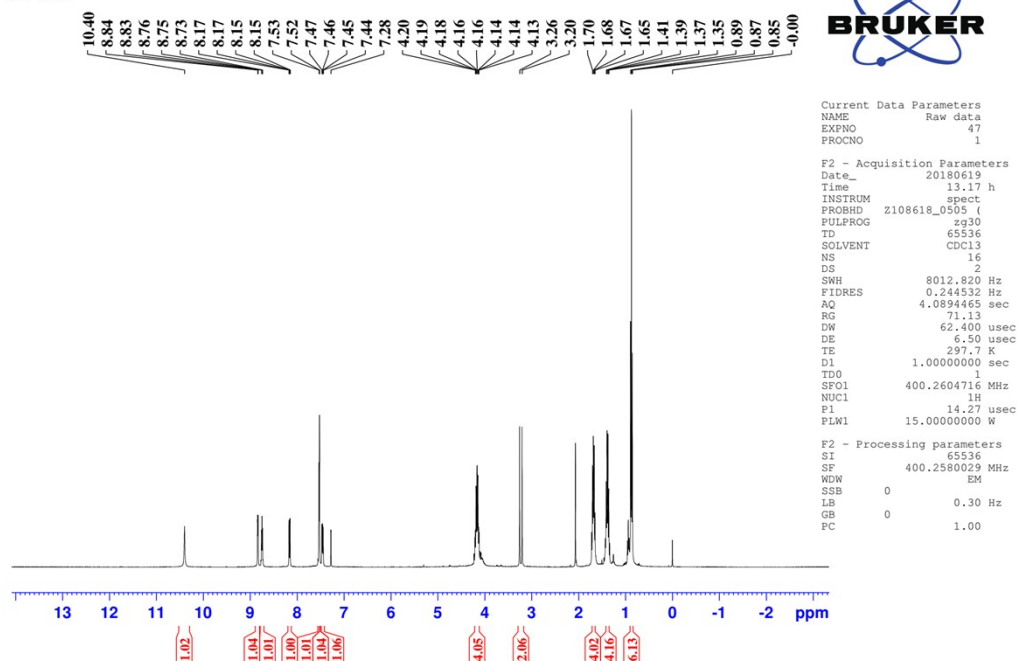
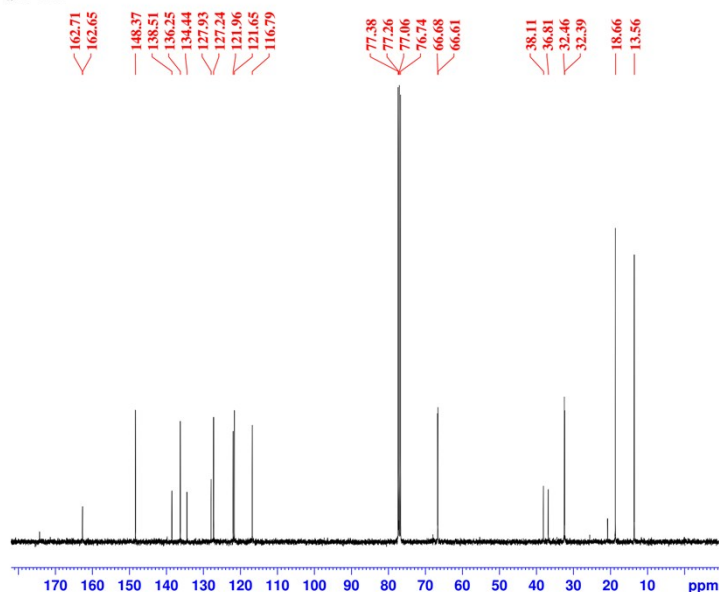


Figure 7S. ¹H NMR spectra of L

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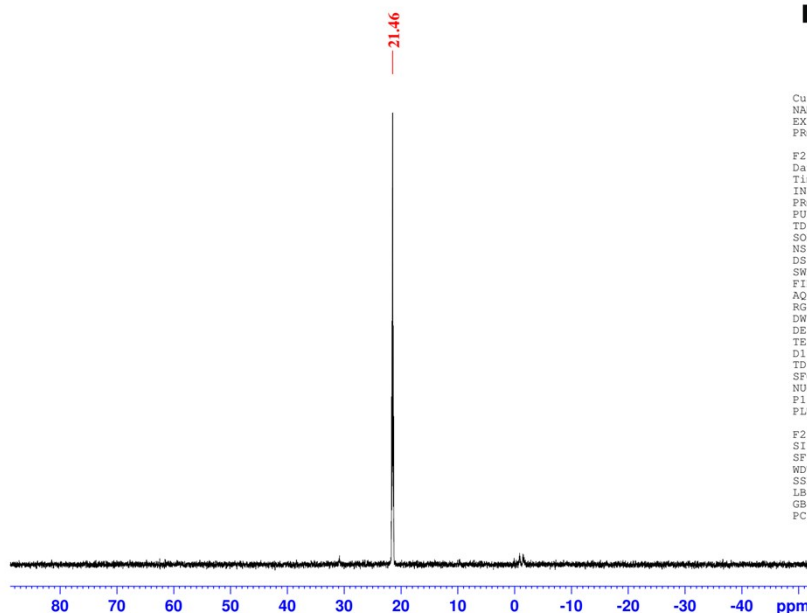
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PROCNO 1

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SOLVENT CDCl3
NS 512
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FIDRES 0.733596 Hz
AQ 1.3631488 sec
RG 88.69
DW 20.800 usec
DE 6.50 usec
TE 298.6 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1
SFO1 100.6550186 MHz
NUC1 13C
P1 9.80 usec
PLW1 58.00000000 W
SFO2 400.2596010 MHz
NUC2 1H
PCPD2[2] waltz16
PCPD2 90.00 usec
PLW2 15.00000000 W
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PLW13 0.18968000 W

F2 - Processing parameters
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SF 100.6449542 MHz
WDW EM
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LB 1.00 Hz
GB 0
PC 1.40

Figure 8S. ^{13}C NMR spectra of L

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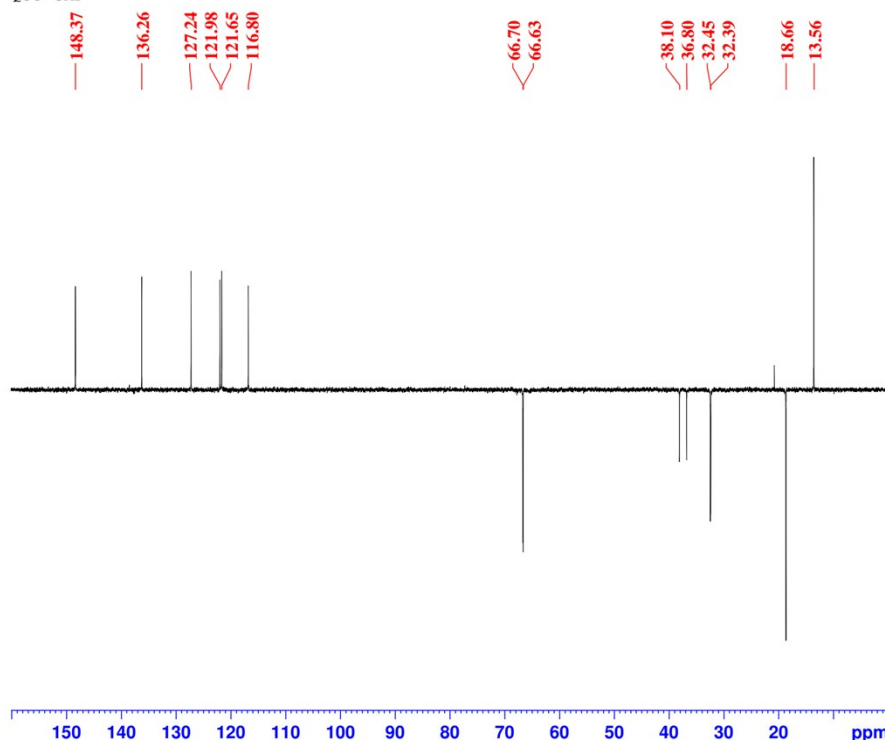
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EXPNO 36
PROCNO 1

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TD 65536
SOLVENT CDCl3
NS 32
DS 4
SWH 64102.563 Hz
FIDRES 1.956255 Hz
AQ 0.5111808 sec
RG 139.6
DW 7.800 usec
DE 6.50 usec
TE 296.6 K
D1 2.00000000 sec
TD0 1
SFO1 162.0193069 MHz
NUC1 31P
P1 14.50 usec
PLW1 15.00000000 W

F2 - Processing parameters
SI 32768
SF 162.0274083 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

Figure 9S. ^{31}P NMR spectra of L

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QUO-CMP



Current Data Parameters
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EXPNO 50
PROCNO 1

F2 - Acquisition Parameters
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FIDRES 0.492219 Hz
AQ 2.0316160 sec
RG 199.6
DW 31.000 usec
DE 6.50 usec
TE 298.1 K
CNST2 145.0000000
D1 2.00000000 sec
D2 0.00344828 sec
D12 0.0002000 sec
TD0 1
SFO1 100.6530057 MHz
NUC1 13C
P1 9.80 usec
P13 2000.00 usec
PLM0 0 W
PLW1 58.00000000 W
SPNAM[5] Crp60comp.4
SFOAL5 0.500
SFOFFS5 0 Hz
SPW5 8.51080036 W
SFO2 400.2596010 MHz
NUC2 1H
CPDPRG[2] waltz16
P3 14.27 usec
P4 28.54 usec
PCPD2 90.00 usec
PLW2 15.00000000 W
PLW12 0.37709999 W

F2 - Processing parameters
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SF 100.6449542 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

Figure 10S. DEPT-135 NMR spectra of **L**

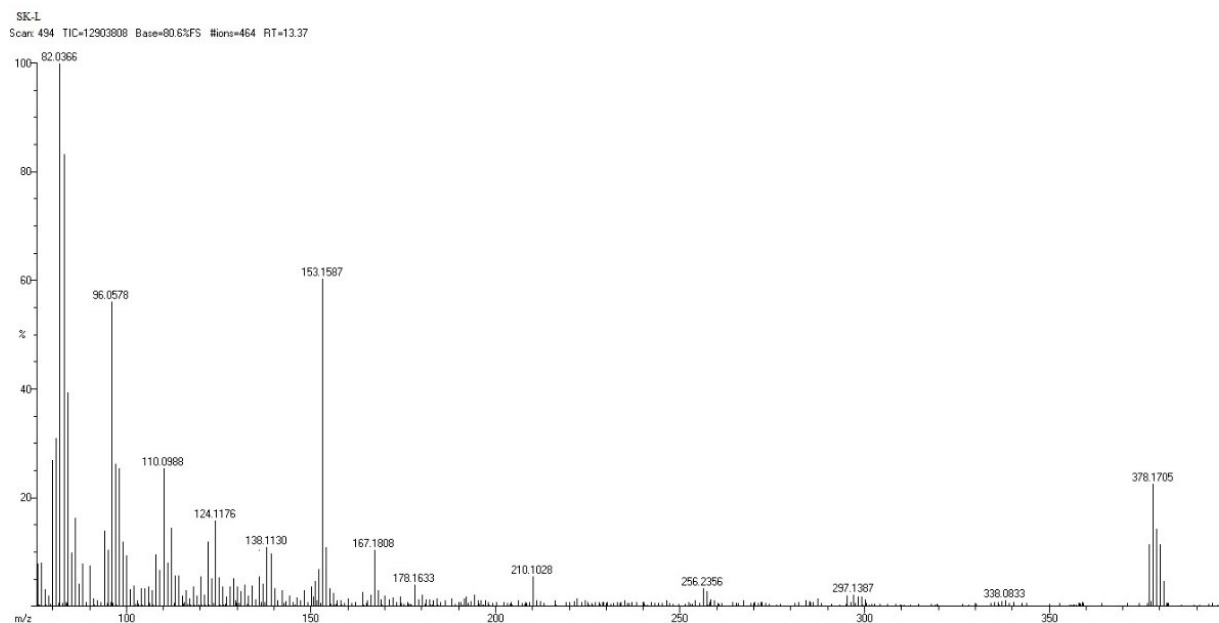


Figure 11S. HR mass spectra of **L**

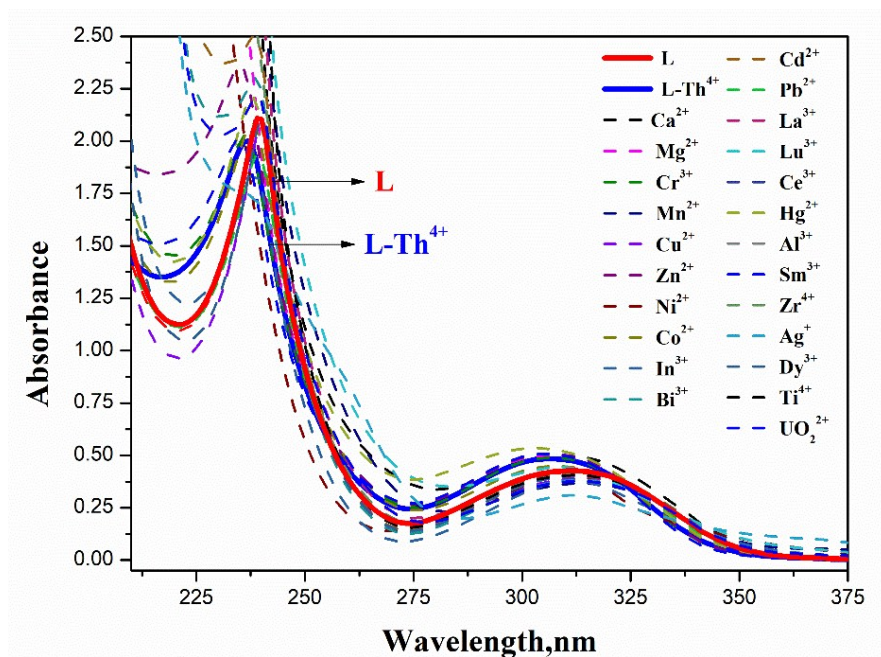


Figure 12S. UV-Vis spectral response of **L** with other metal ions in $\text{CH}_3\text{CN}:\text{H}_2\text{O}$ (9:1, v/v)

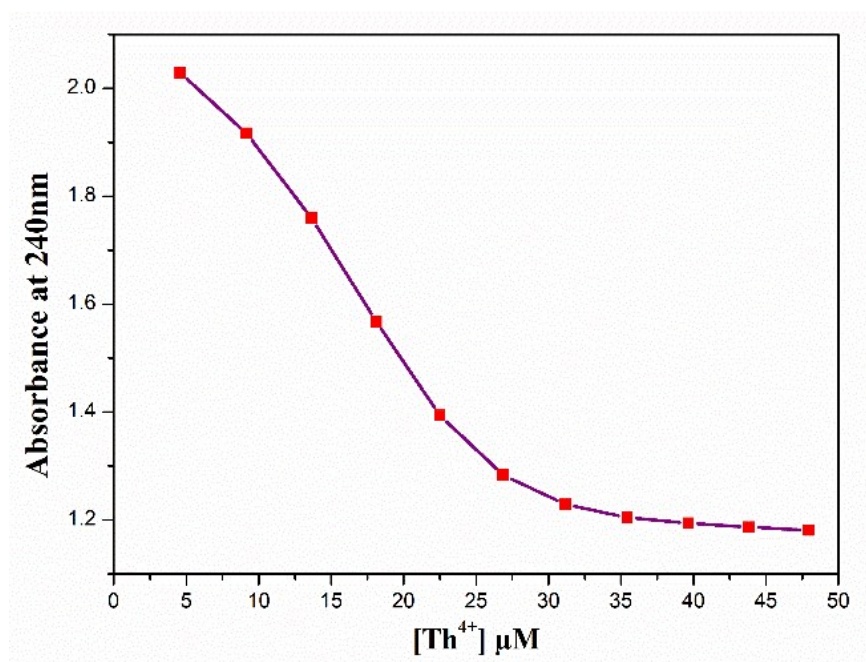


Figure 13S. Change in absorbance at 240 nm of **L** (50 μM) with Th^{4+} (0-50 μM)

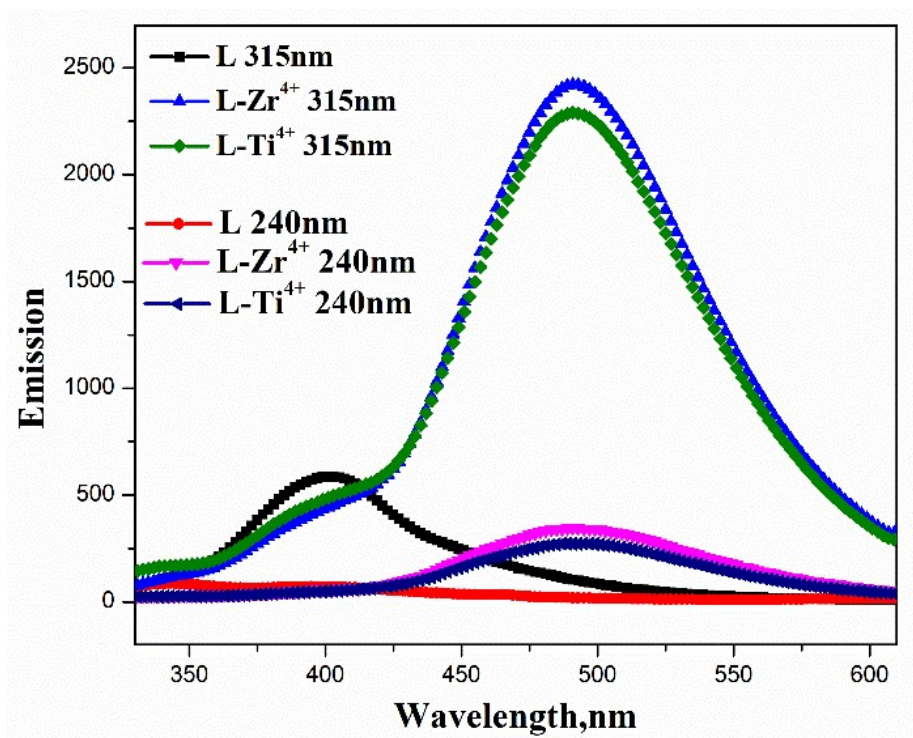


Figure. 14S. Fluorescence spectral change of L, L-Zr⁴⁺ and L-Ti⁴⁺ upon an excitation at 240 nm and 315 nm

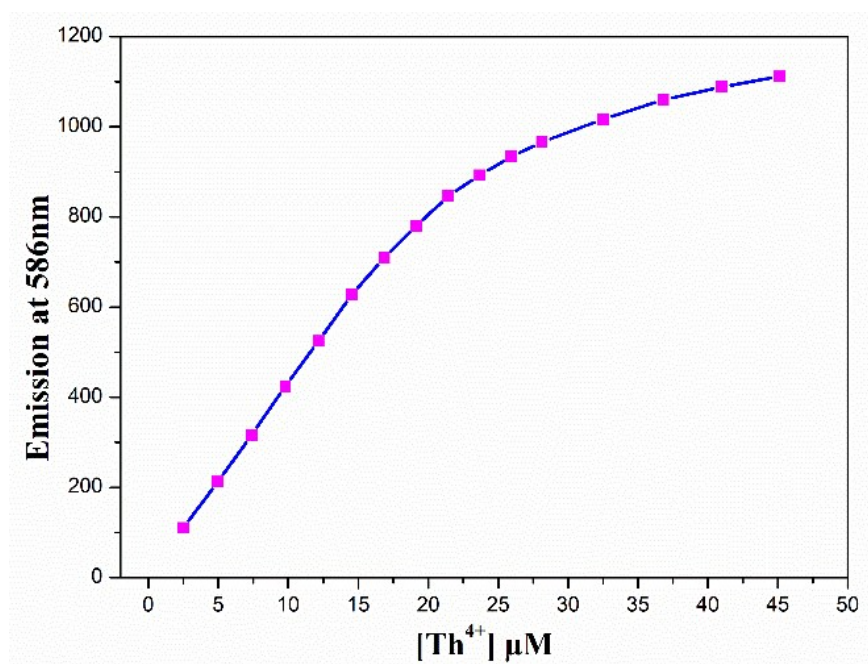


Figure 15S. Change in emission at 486 nm of L (50 μM) with Th⁴⁺ (0-50 μM)

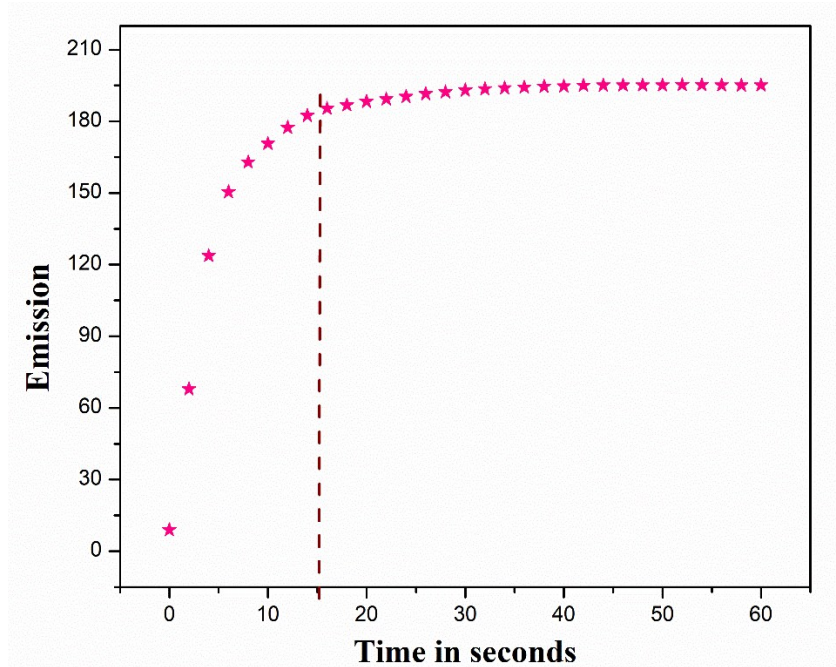


Figure 16S. Time response curve of optode-10

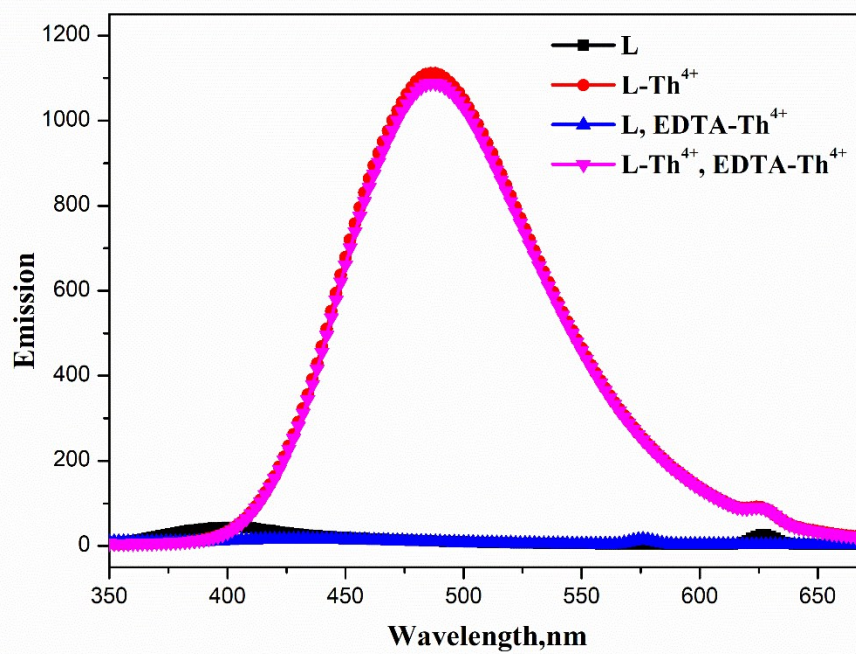


Figure 17S. Dynamic emission response of optode-10

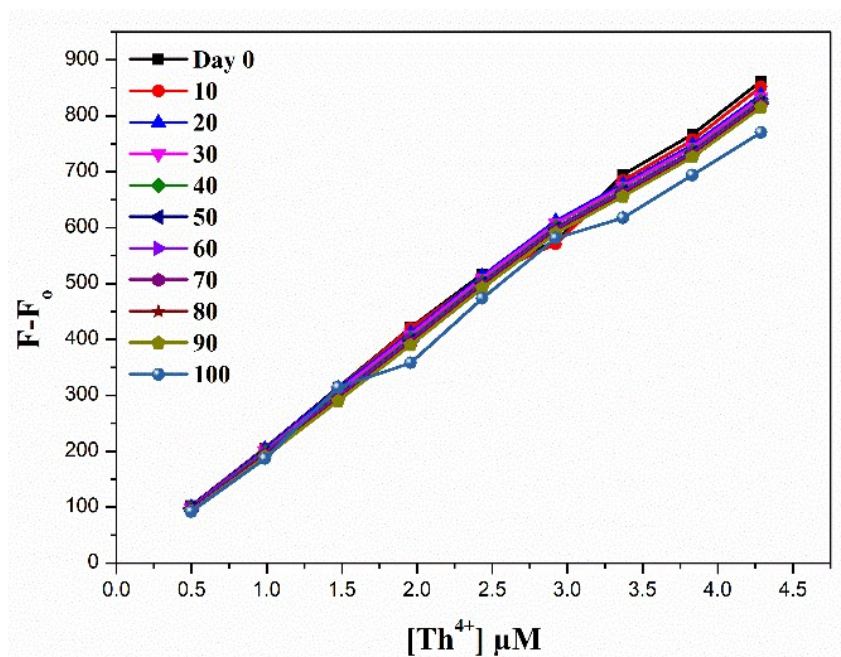
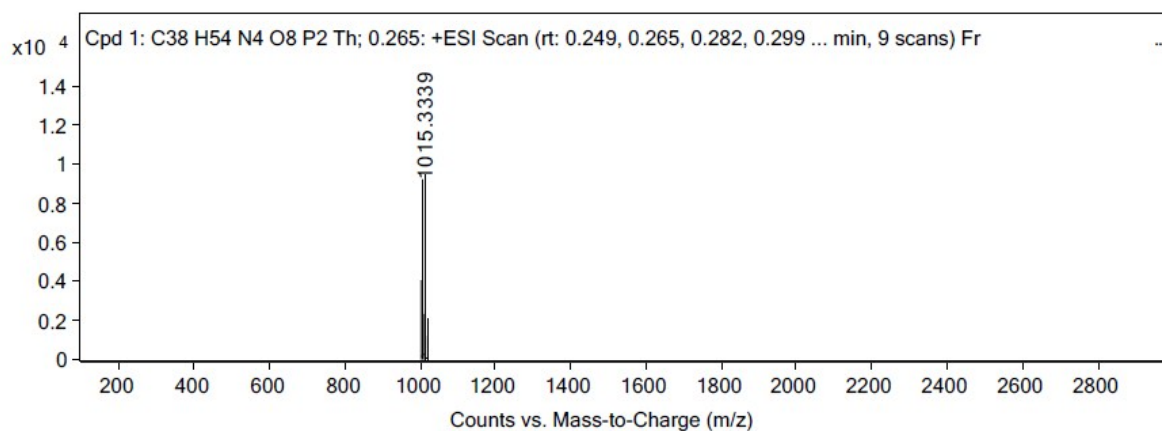
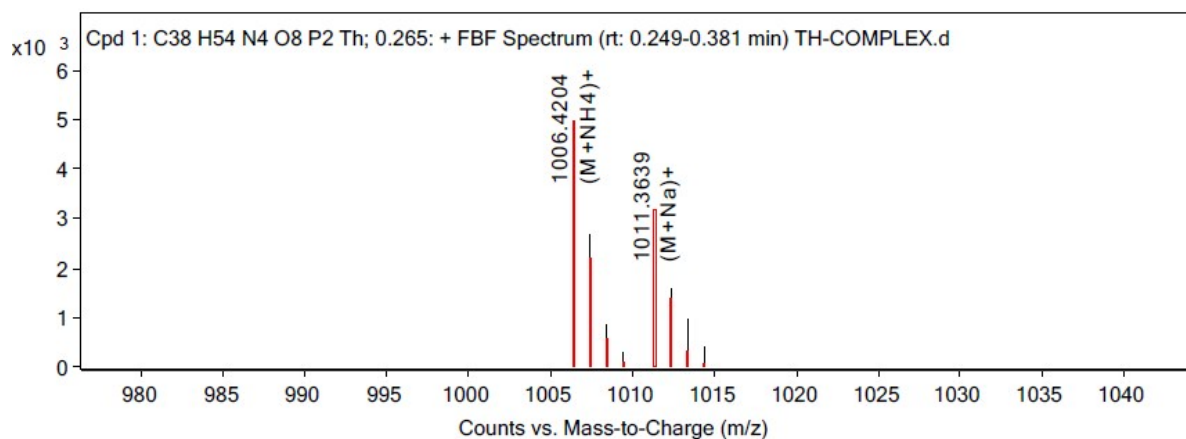
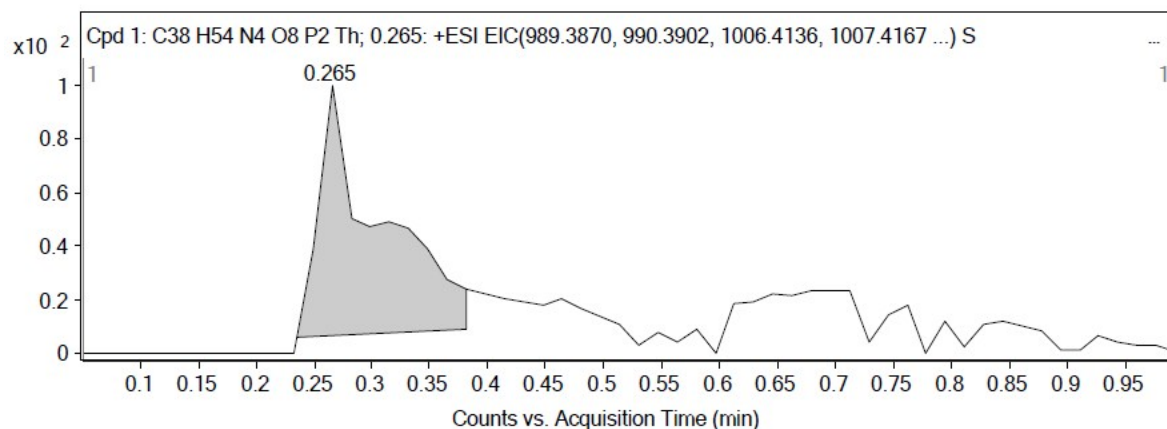


Figure 18S. Lifetime study of optode-10 sensor



MS Spectrum Peak List

m/z	z	Abund	Ion
1006.4204	1	3920.34	(M+NH ₄) ⁺
1007.4059	1	2674.13	(M+NH ₄) ⁺
1008.4062	1	874.67	(M+NH ₄) ⁺
1009.3945	1	307.68	(M+NH ₄) ⁺
1011.3639	1	2034.13	(M+Na) ⁺
1012.3706	1	1576.83	(M+Na) ⁺
1013.3636	1	947.59	(M+Na) ⁺
1014.3923	1	388.76	(M+Na) ⁺

Figure 19S. LC chromatogram and mass spectra of L-Th complex