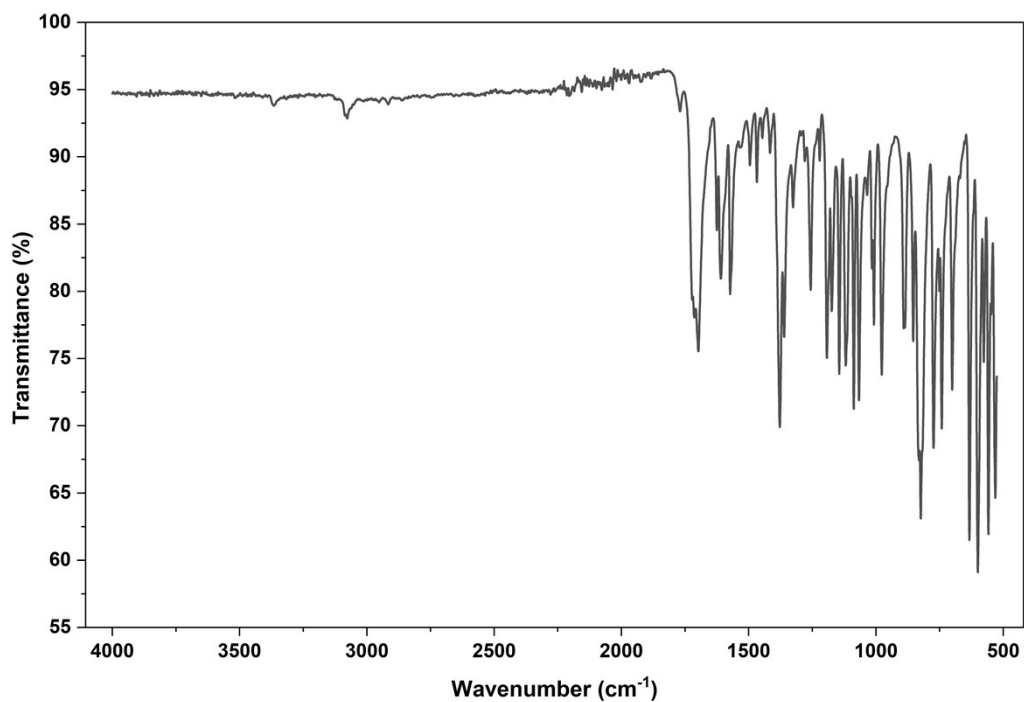


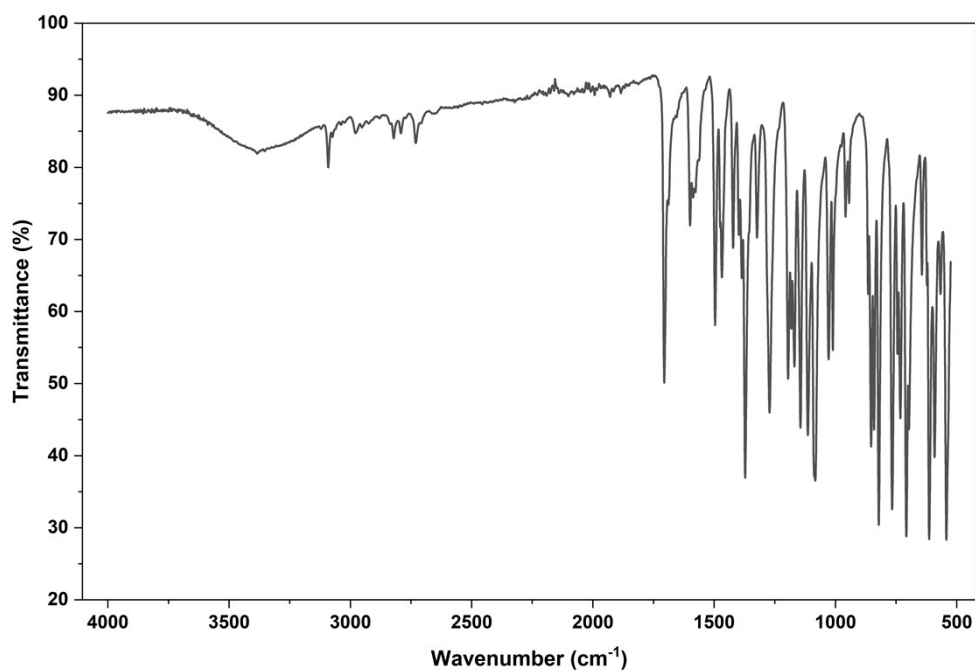
## Supporting Information

### FTIR Spectra of Synthesized Compounds

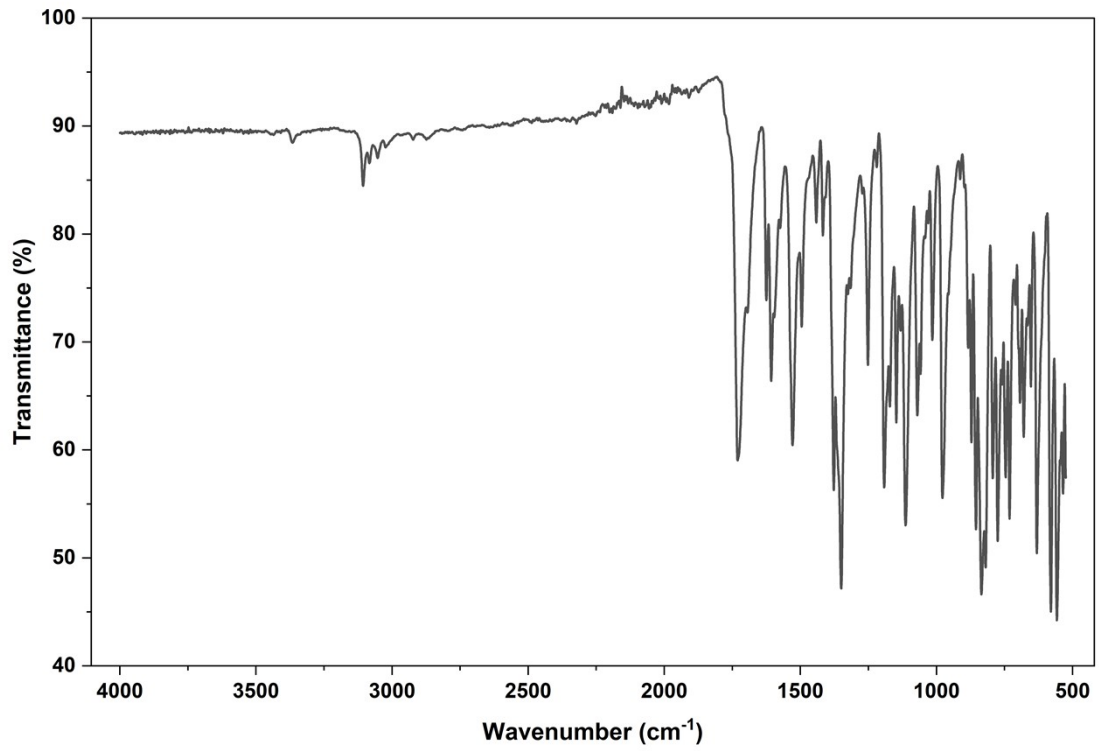
#### Compound 1



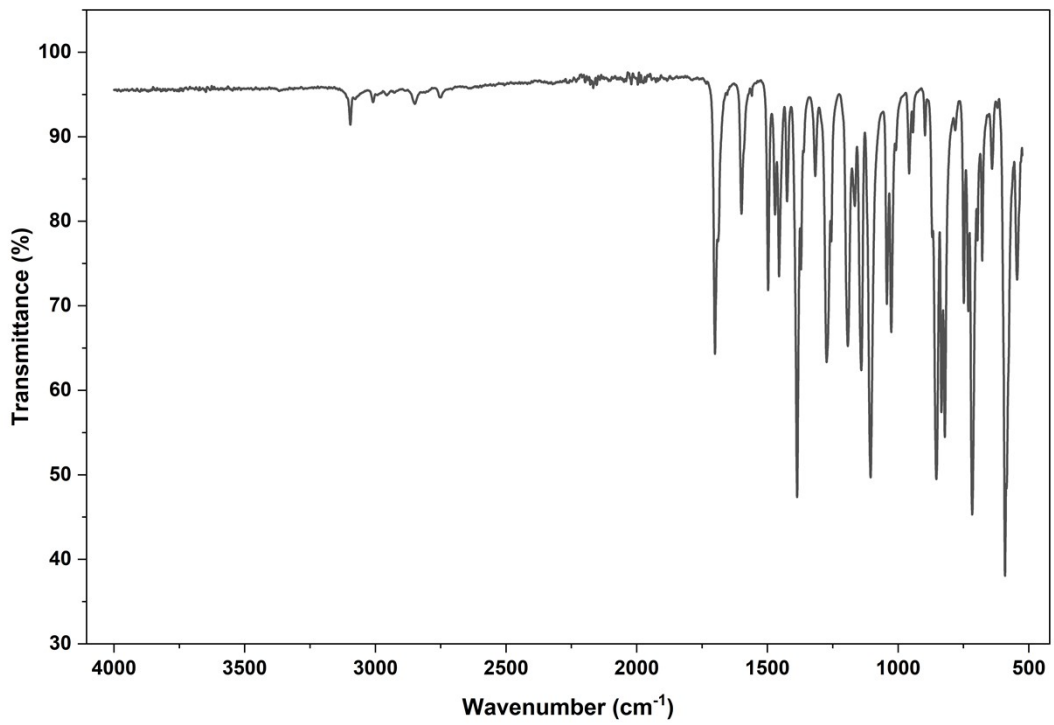
#### Compound 2



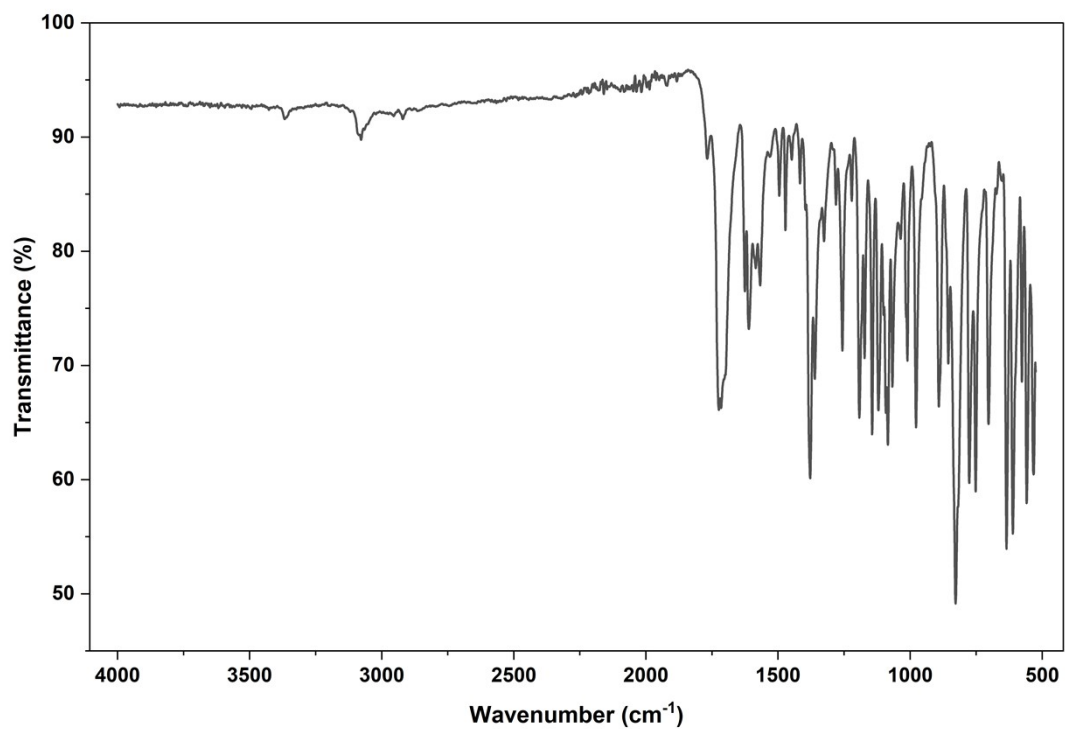
### Compound 3



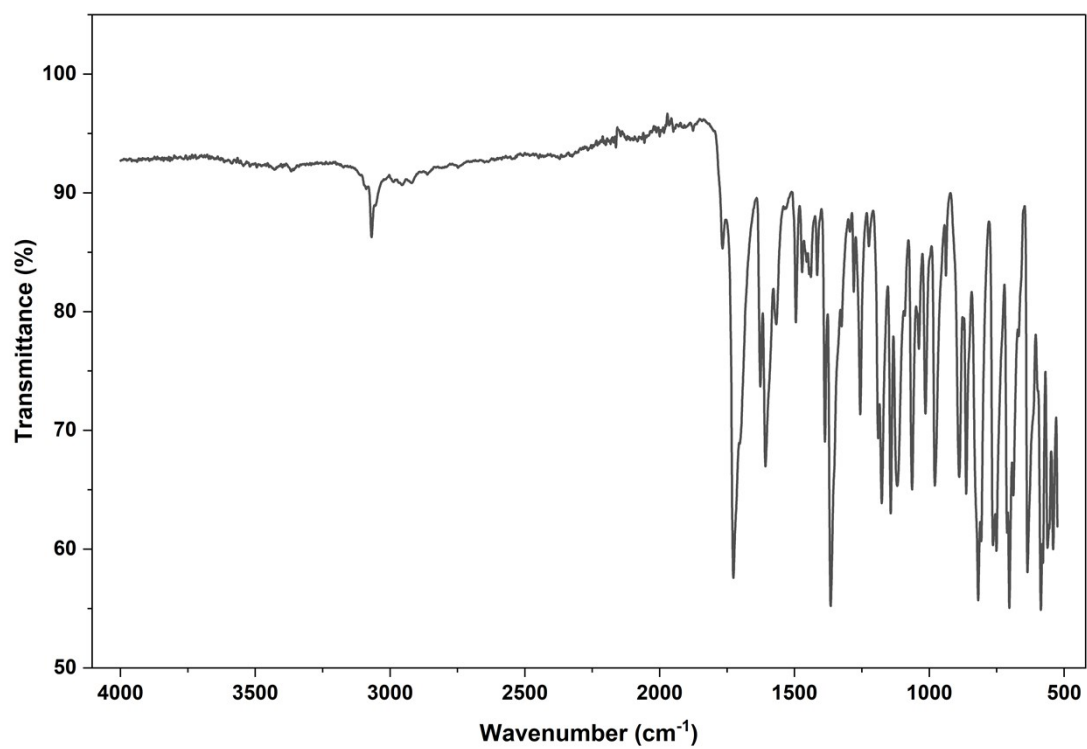
### Compound 4



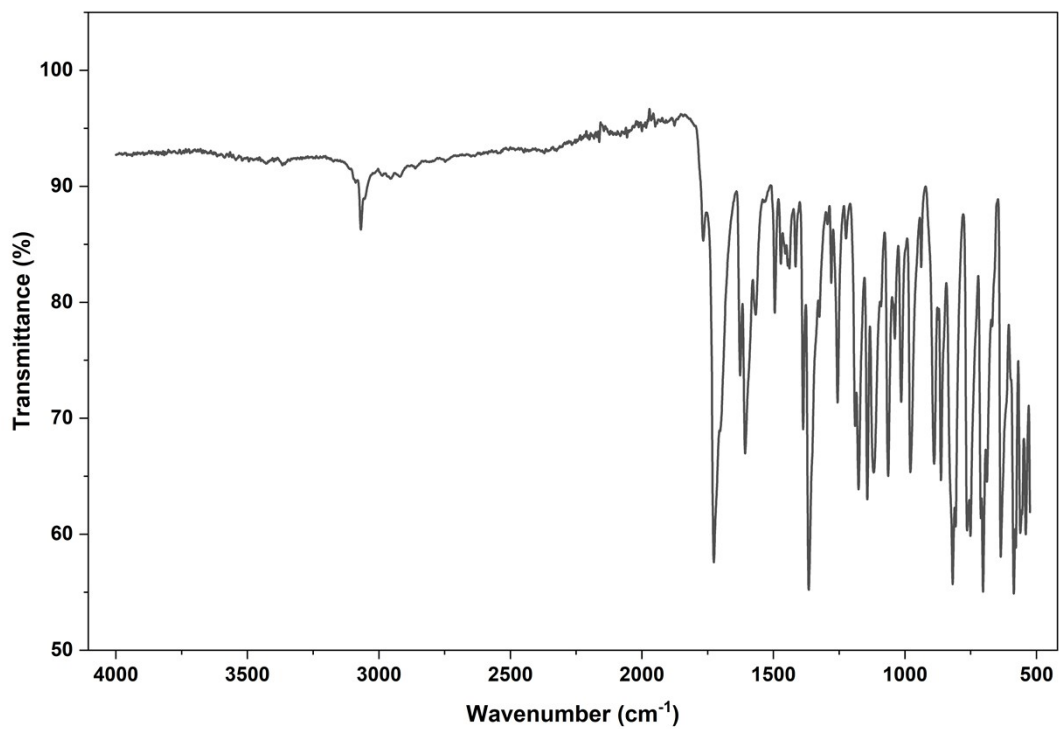
### Compound 5



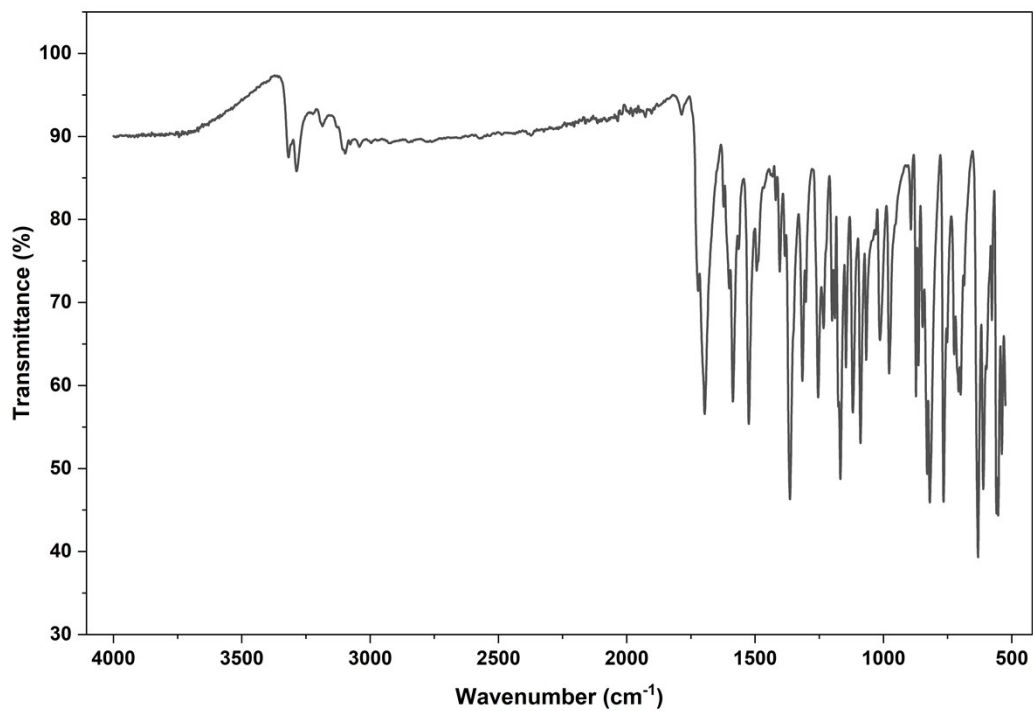
### Compound 6



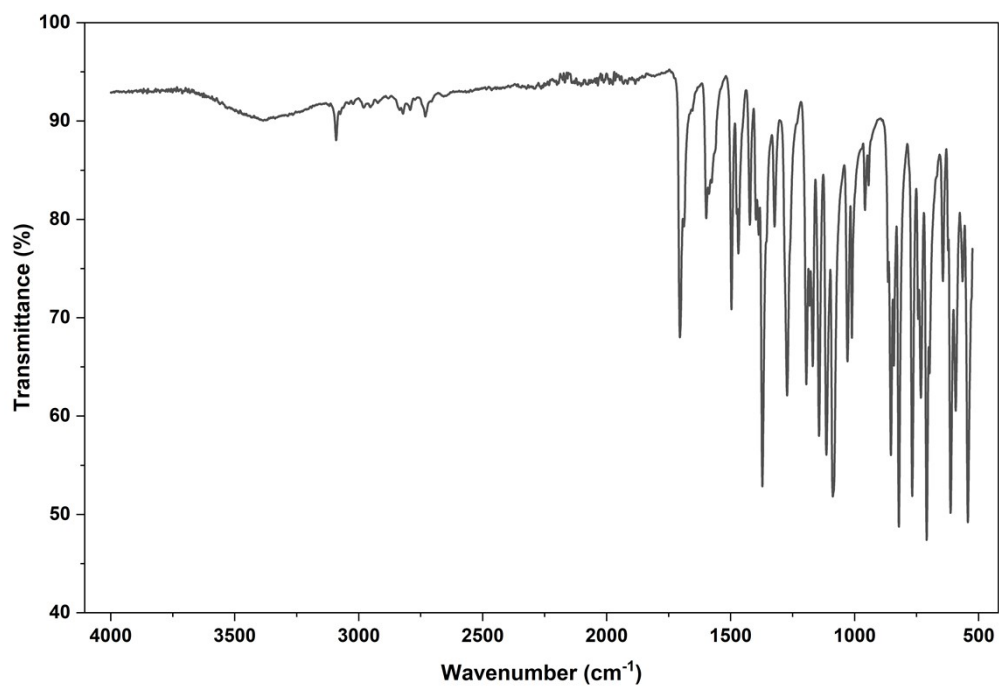
### Compound 7



### Compound 8



## Compound 9

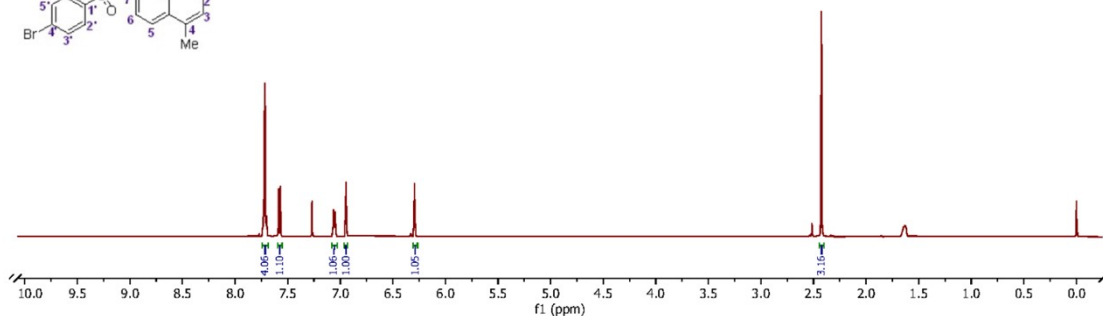
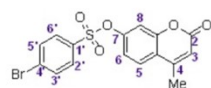
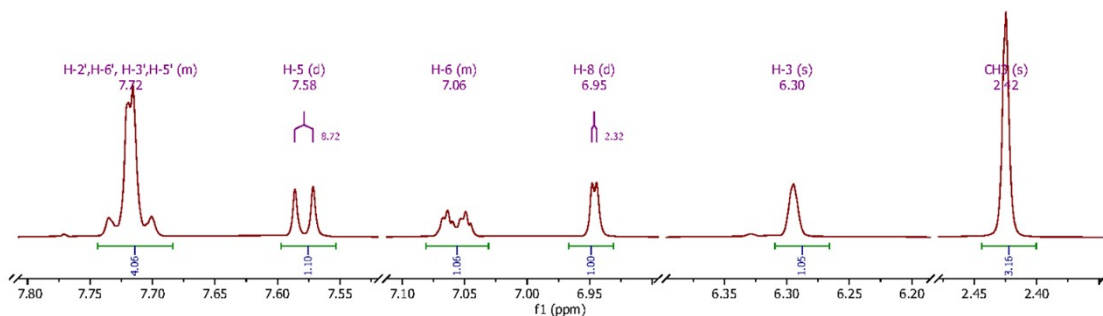


## NMR Spectra of Synthesized Compounds

### <sup>1</sup>H-NMR Spectrum (600 MHz, CDCl<sub>3</sub>) of Compound 1

4-Methyl-2-oxo-2*H*-1-benzopyran-7-yl 4-bromobenzene-1-sulfonate

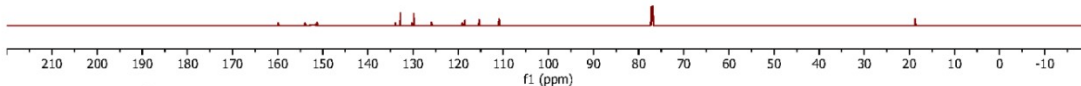
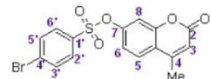
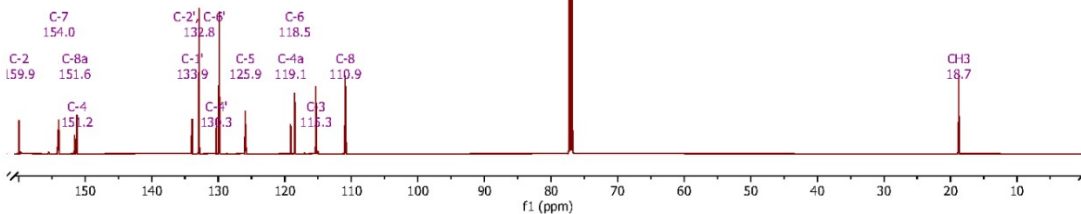
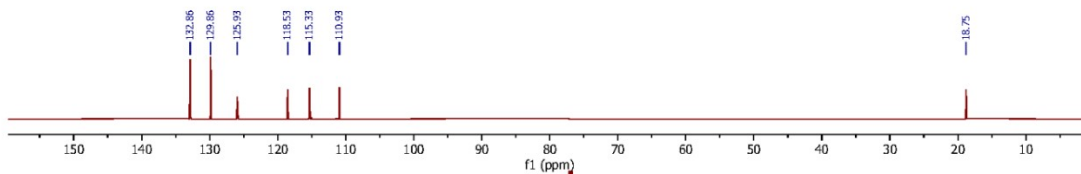
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) δ 7.76 – 7.67 (4H, m, H-2', H-6', H-3', H-5'), 7.58 (1H, d, *J* = 8.7 Hz, H-5), 7.08 – 7.03 (1H, m, H-6), 6.95 (1H, d, *J* = 2.3 Hz, H-8), 6.30 (1H, s, H-3), 2.42 (3H, s, CH<sub>3</sub>)



### <sup>13</sup>C-NMR Spectrum (151 MHz, CDCl<sub>3</sub>) of Compound 1

4-Methyl-2-oxo-2*H*-1-benzopyran-7-yl 4-bromobenzene-1-sulfonate

<sup>13</sup>C NMR (151 MHz, CDCl<sub>3</sub>) and DEPT δ 159.9 (C-2), 154.0 (C-7), 151.6 (C-8a), 151.2 (C-4), 133.9 (C-1'), 132.9 (C-2', C-6'), 130.3 (C-4'), 125.9 (C-5), 118.5 (C-6), 118.53 (C-3), 115.33 (C-4a), 110.93 (C-8), 18.7 (CH<sub>3</sub>)

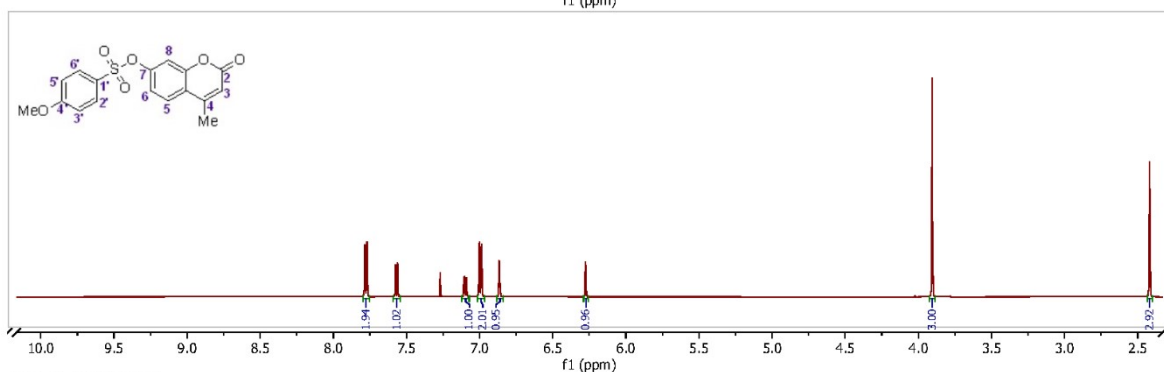
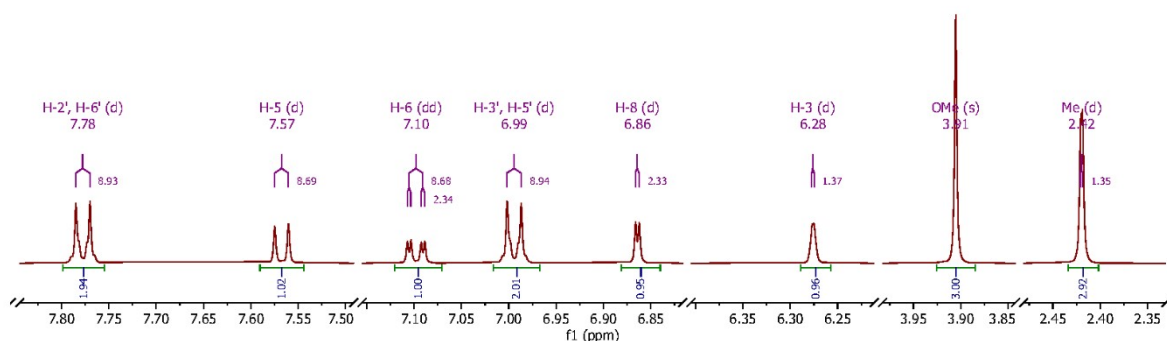


Dr:Hawsawi-CS-01.279.fid

## <sup>1</sup>H-NMR Spectrum (600 MHz, CDCl<sub>3</sub>) of Compound 2

4-Methyl-2-oxo-2H-1-benzopyran-7-yl 4-methoxybenzene-1-sulfonate

<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) δ 7.78 (2H, d, J = 8.9 Hz, H-2', H-6'), 7.57 (1H, d, J = 8.7 Hz, H-5), 7.10 (1H, dd, J = 8.7, 2.3 Hz, H-6), 6.99 (2H, d, J = 8.9 Hz, H-3', H-5'), 6.86 (1H, d, J = 2.3 Hz, H-8), 6.28 (1H, d, J = 1.4 Hz, H-3), 3.91 (2H, s, OCH<sub>3</sub>), 2.42 (3H, d, J = 1.4 Hz, CH<sub>3</sub>)

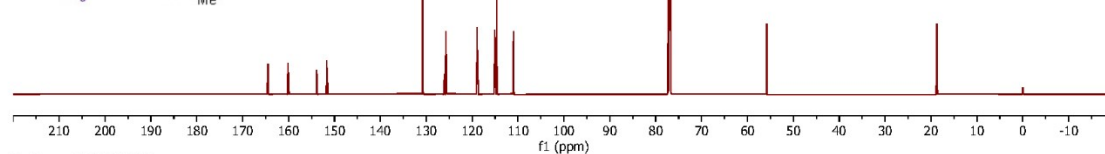
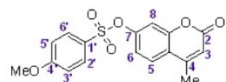
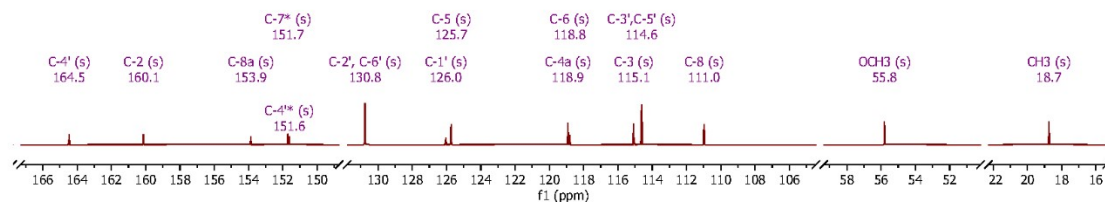
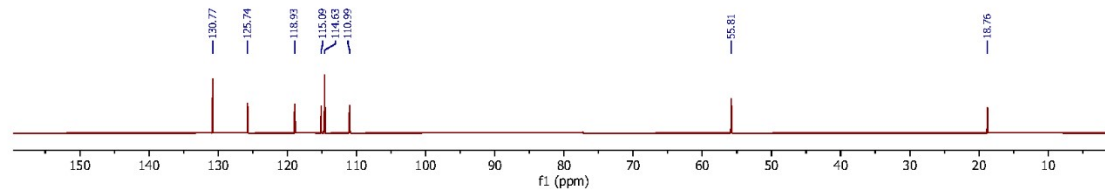


Dr.Hawsawi-CS-2.198.fid —

## <sup>13</sup>C-NMR Spectrum (151 MHz, CDCl<sub>3</sub>) of Compound 2

4-Methyl-2-oxo-2H-1-benzopyran-7-yl 4-methoxybenzene-1-sulfonate

<sup>13</sup>C NMR (151 MHz, CDCl<sub>3</sub>) and DEPT δ 164.5 (C-4'), 160.1 (C-2), 153.9 (C-8a), 151.7 (C-7\*), 151.6 (C-4''), 130.8 (C-2', C-6'), 126.1 (C-1'), 125.7 (C-5), 118.9 (C-4a), 118.8 (C-6), 115.1 (C-3), 114.6 (C-3', C-5'), 111.0 (C-8), 55.8 (OCH<sub>3</sub>), 18.7 (CH<sub>3</sub>)

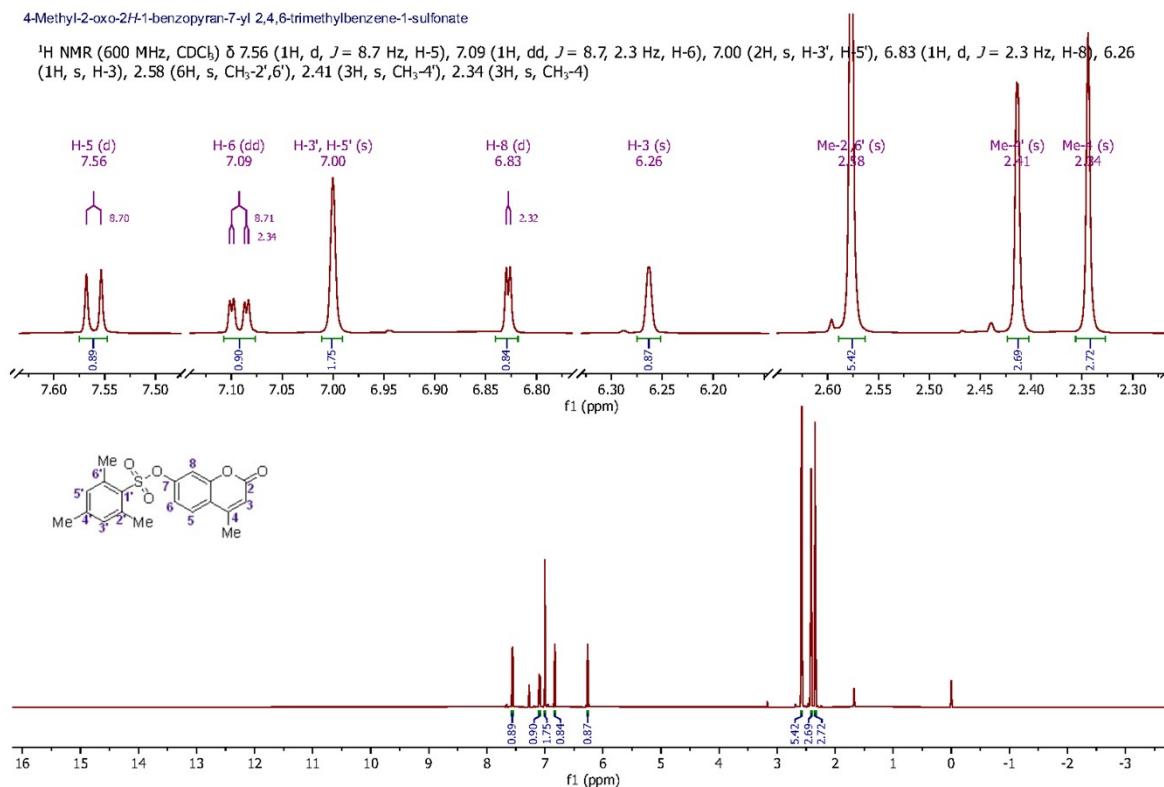


Dr.Hawsawi-CS-2.199.fid —

## <sup>1</sup>H-NMR Spectrum (600 MHz, CDCl<sub>3</sub>) of Compound 3

4-Methyl-2-oxo-2H-1-benzopyran-7-yl 2,4,6-trimethylbenzene-1-sulfonate

<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) δ 7.56 (1H, d, *J* = 8.7 Hz, H-5), 7.09 (1H, dd, *J* = 8.7, 2.3 Hz, H-6), 7.00 (2H, s, H-3', H-5'), 6.83 (1H, d, *J* = 2.3 Hz, H-8), 6.26 (1H, s, H-3), 2.58 (6H, s, CH<sub>3</sub>-2',6'), 2.41 (3H, s, CH<sub>3</sub>-4'), 2.34 (3H, s, CH<sub>3</sub>-4')

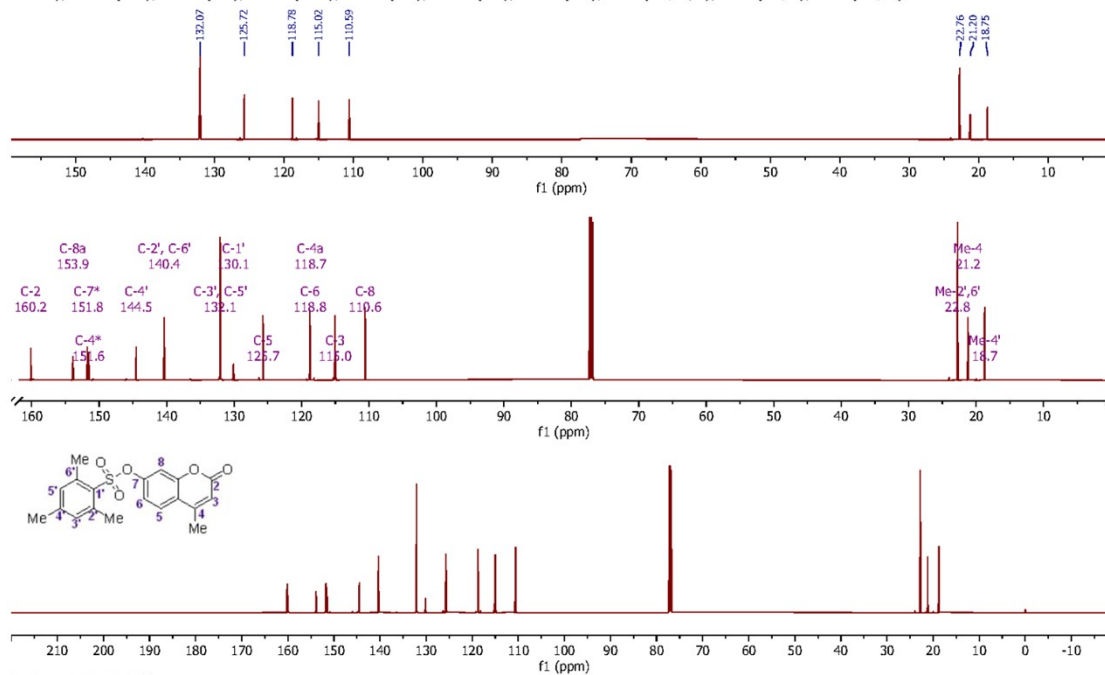


Dr.Hawsawi-CS-3.218.fid —

## <sup>13</sup>C-NMR Spectrum (151 MHz, CDCl<sub>3</sub>) of Compound 3

4-Methyl-2-oxo-2H-1-benzopyran-7-yl 2,4,6-trimethylbenzene-1-sulfonate

<sup>13</sup>C NMR (151 MHz, CDCl<sub>3</sub>) and DEPT δ 160.2 (C-2), 153.9 (C-8a), 151.8 (C-7\*), 151.6 (C-4\*), 144.5 (C-4'), 140.4 (C-2', C-6'), 132.1 (C-3', C-5'), 130.1 (C-1'), 125.7 (C-5), 118.8 (C-4a), 118.78 (C-6), 118.7 (C-4a), 115.0 (C-3), 115.0 (C-8), 110.6 (C-8), 22.8 (CH<sub>3</sub>-2',6'), 21.2 (CH<sub>3</sub>-4'), 18.7 (CH<sub>3</sub>-4')

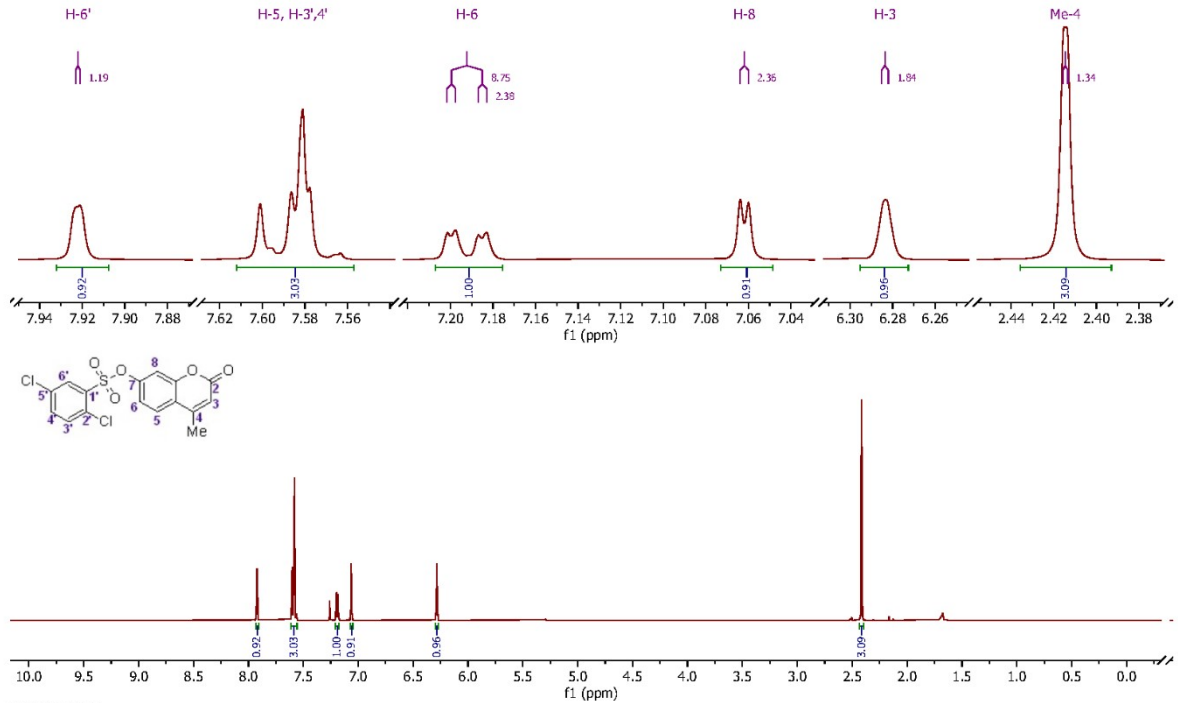


Dr.Hawsawi-CS-3.219.fid —

## <sup>1</sup>H-NMR Spectrum (600 MHz, CDCl<sub>3</sub>) of Compound 4

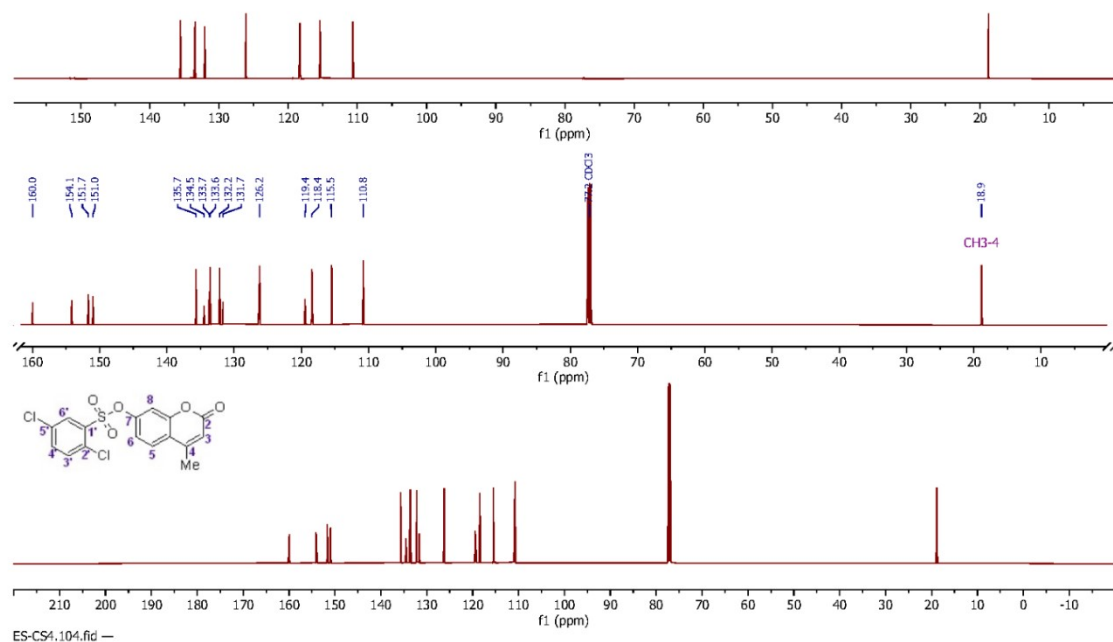
4-Methyl-2-oxo-2H-1-benzopyran-7-yl 2,5-dichlorobenzene-1-sulfonate

<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) δ 7.92 (1H, d, *J* = 1.2 Hz, H-6'), 7.73 – 7.43 (3H, m, H-5, H-3', H-4'), 7.19 (1H, dd, *J* = 8.8, 2.4 Hz, H-6), 7.06 (1H, d, *J* = 2.4 Hz, H-8), 6.28 (1H, d, *J* = 1.8 Hz, H-3), 2.41 (3H, d, *J* = 1.3 Hz, CH<sub>3</sub>-4)



## <sup>13</sup>C-NMR Spectrum (151 MHz, CDCl<sub>3</sub>) of Compound 4

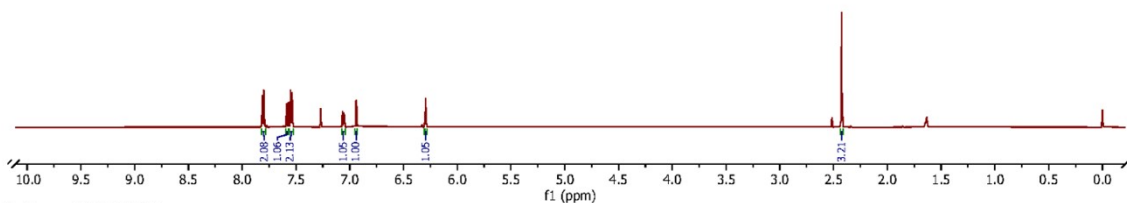
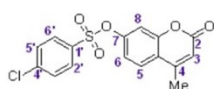
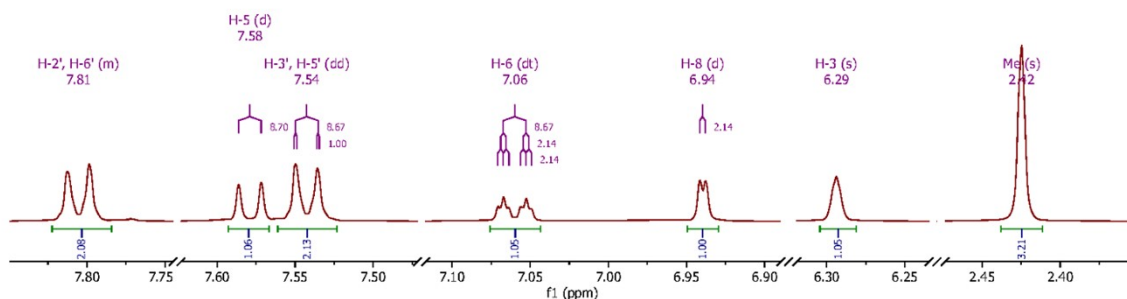
<sup>13</sup>C NMR (151 MHz, CDCl<sub>3</sub>) and DEPT δ 160.0, 154.1, 151.7, 151.0, 135.7, 134.5, 133.7, 133.6, 132.2, 131.7, 126.2, 119.4, 118.4, 115.5, 110.8, 18.9.



## <sup>1</sup>H-NMR Spectrum (600 MHz, CDCl<sub>3</sub>) of Compound 5

4-Methyl-2-oxo-2H-1-benzopyran-7-yl 4-chlorobenzene-1-sulfonate

<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) δ 7.85 – 7.76 (2H, m, H-2', H-6'), 7.58 (1H, d, *J* = 8.7 Hz, H-5), 7.54 (2H, dd, *J* = 8.7, 1.0 Hz, H-3', H-5'), 7.06 (1H, dt, *J* = 8.7, 2.1 Hz, H-6), 6.94 (1H, d, *J* = 2.1 Hz, H-8), 6.29 (1H, s, H-3), 2.42 (3H, s, CH<sub>3</sub>).

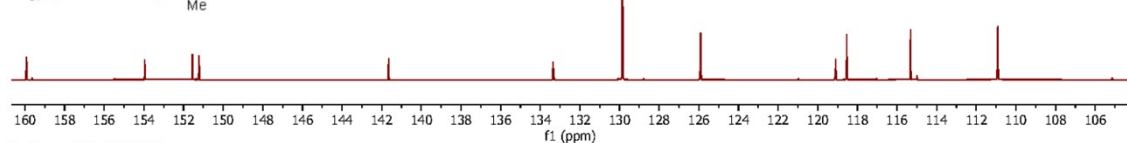
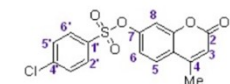
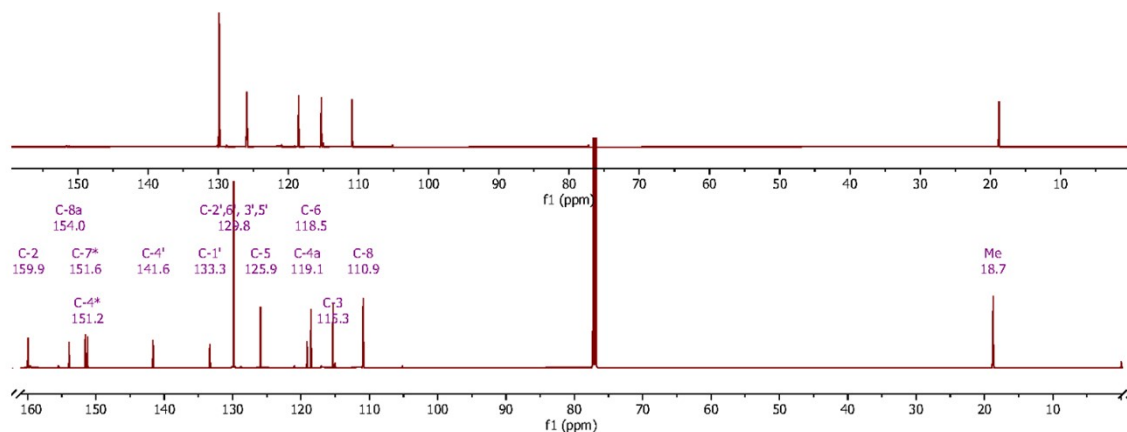


Dr.Hawsawi-CS-05.318.fid —

## <sup>13</sup>C-NMR Spectrum (151 MHz, CDCl<sub>3</sub>) of Compound 5

4-Methyl-2-oxo-2H-1-benzopyran-7-yl 4-chlorobenzene-1-sulfonate

<sup>13</sup>C NMR (151 MHz, CDCl<sub>3</sub>) and DEPT δ 159.9 (C-2), 154.0 (C-8a), 151.6 (C-7\*), 151.2 (C-4\*), 141.7 (C-4'), 133.4 (C-1'), 129.9 (C-2',6',3',5'), 125.9 (C-5), 119.1 (C-4a), 118.5 (C-6), 115.3 (C-3), 110.9 (C-8), 18.7 (CH<sub>3</sub>-4)

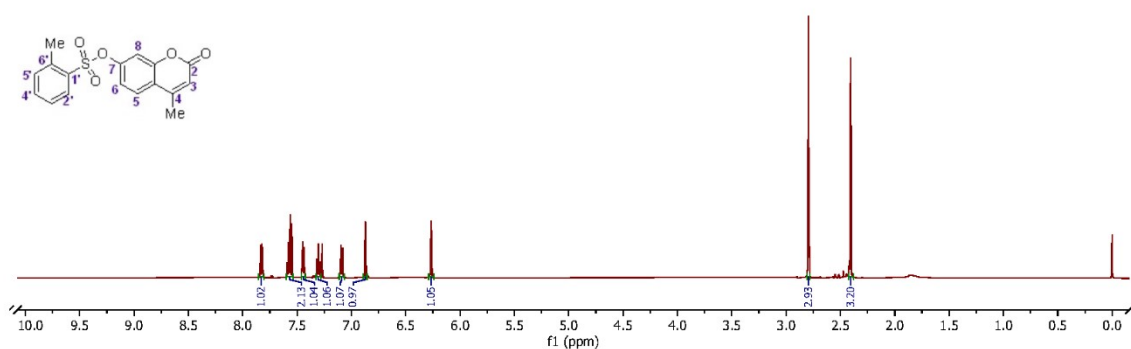
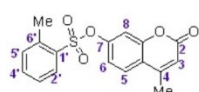
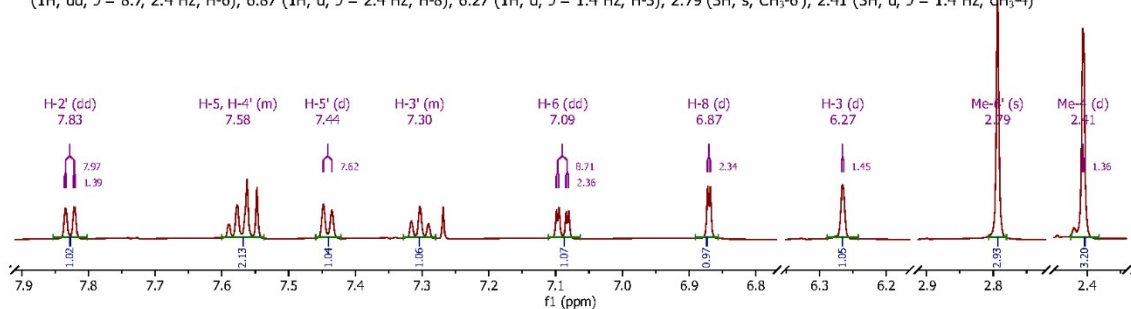


Dr.Hawsawi-CS-05.319.fid —

## <sup>1</sup>H-NMR Spectrum (600 MHz, CDCl<sub>3</sub>) of Compound 6

4-Methyl-2-oxo-2H-1-benzopyran-7-yl 2-methylbenzene-1-sulfonate

<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) δ 7.83 (1H, dd, *J* = 8.0, 1.4 Hz, H-2'), 7.61 – 7.51 (2H, m, H-5, H-4'), 7.44 (1H, d, *J* = 7.6 Hz, H-5'), 7.34 – 7.28 (1H, m, H-3'), 7.09 (1H, dd, *J* = 8.7, 2.4 Hz, H-6), 6.87 (1H, d, *J* = 2.4 Hz, H-8), 6.27 (1H, d, *J* = 1.4 Hz, H-3), 2.79 (3H, s, CH<sub>3</sub>-6'), 2.41 (3H, d, *J* = 1.4 Hz, CH<sub>3</sub>-4)

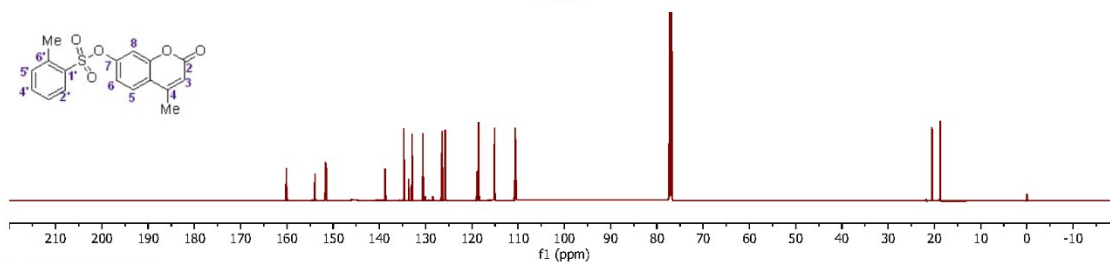
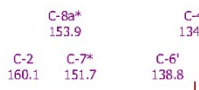
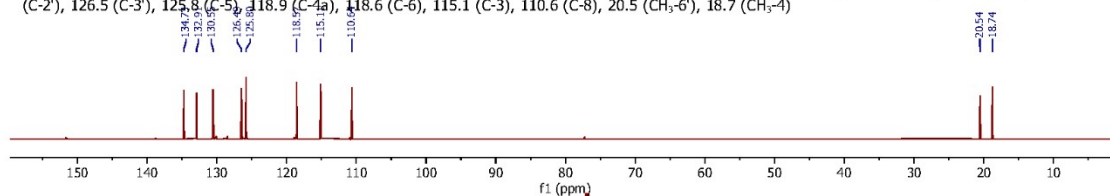


Dr.Hawsawi-CS-07.238.fid —

## <sup>13</sup>C-NMR Spectrum (151 MHz, CDCl<sub>3</sub>) of Compound 6

4-Methyl-2-oxo-2H-1-benzopyran-7-yl 2-methylbenzene-1-sulfonate

<sup>13</sup>C NMR (151 MHz, CDCl<sub>3</sub>) and DEPT δ 160.1 (C-2), 153.9 (C-8a\*), 151.7 (C-7\*), 151.5 (C-4\*), 138.8 (C-6'), 134.7 (C-4'), 133.7 (C-1'), 132.9 (C-5'), 130.5 (C-2'), 126.5 (C-3'), 125.8 (C-3'), 125.8 (C-5), 118.9 (C-4a), 118.6 (C-6), 115.1 (C-3), 110.6 (C-8), 20.5 (CH<sub>3</sub>-6'), 18.7 (CH<sub>3</sub>-4)

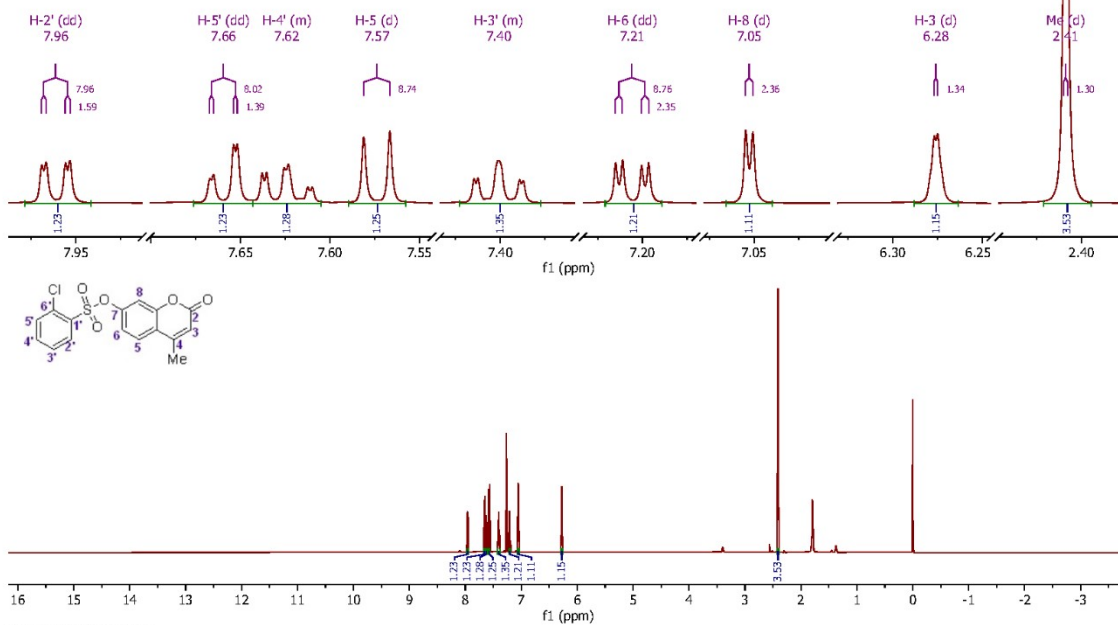


Dr.Hawsawi-CS-07.239.fid —

## <sup>1</sup>H-NMR Spectrum (600 MHz, CDCl<sub>3</sub>) of Compound 7

4-Methyl-2-oxo-2H-1-benzopyran-7-yl 2-chlorobenzene-1-sulfonate

<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) δ 7.96 (1H, dd, *J* = 8.0, 1.6 Hz, H-2'), 7.66 (1H, dd, *J* = 8.0, 1.4 Hz, H-5'), 7.65 – 7.59 (1H, m, H-4'), 7.57 (1H, d, *J* = 8.8 Hz, H-5), 7.43 – 7.37 (1H, m, H-3'), 7.21 (1H, dd, *J* = 8.8, 2.4 Hz, H-6), 7.05 (1H, d, *J* = 2.4 Hz, H-8), 6.28 (1H, d, *J* = 1.3 Hz, H-3), 2.41 (4H, d, *J* = 1.3 Hz, CH<sub>3</sub>-4)

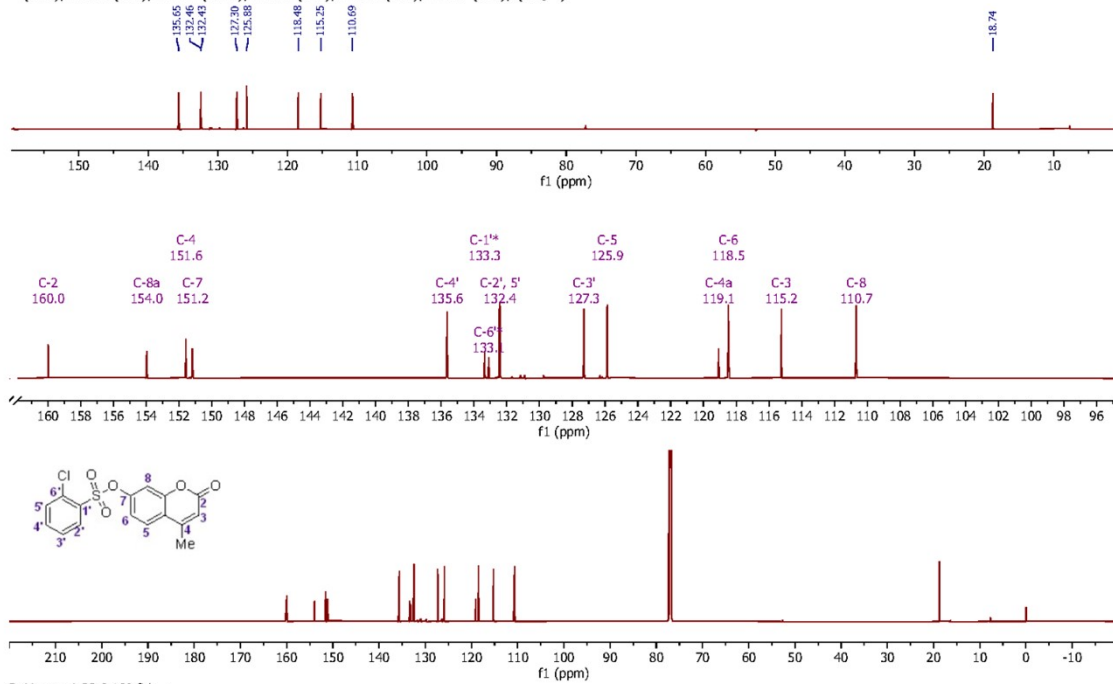


Dr.Hawsawi-CS-8.168.fid —

## <sup>13</sup>C-NMR Spectrum (151 MHz, CDCl<sub>3</sub>) of Compound 7

4-Methyl-2-oxo-2H-1-benzopyran-7-yl 2-chlorobenzene-1-sulfonate

<sup>13</sup>C NMR (151 MHz, CDCl<sub>3</sub>) and DEPT δ 160.0 (C-2), 155.0 (C-8a), 151.6 (C-4), 151.2 (C-7), 135.6 (C-4'), 133.4 (C-6\*), 133.1 (C-1'), 132.4 (C-2', 5'), 127.3 (C-3'), 125.9 (C-5), 119.1 (C-4a), 118.5 (C-6), 115.2 (C-3), 110.7 (C-8), (CH<sub>3</sub>-4).

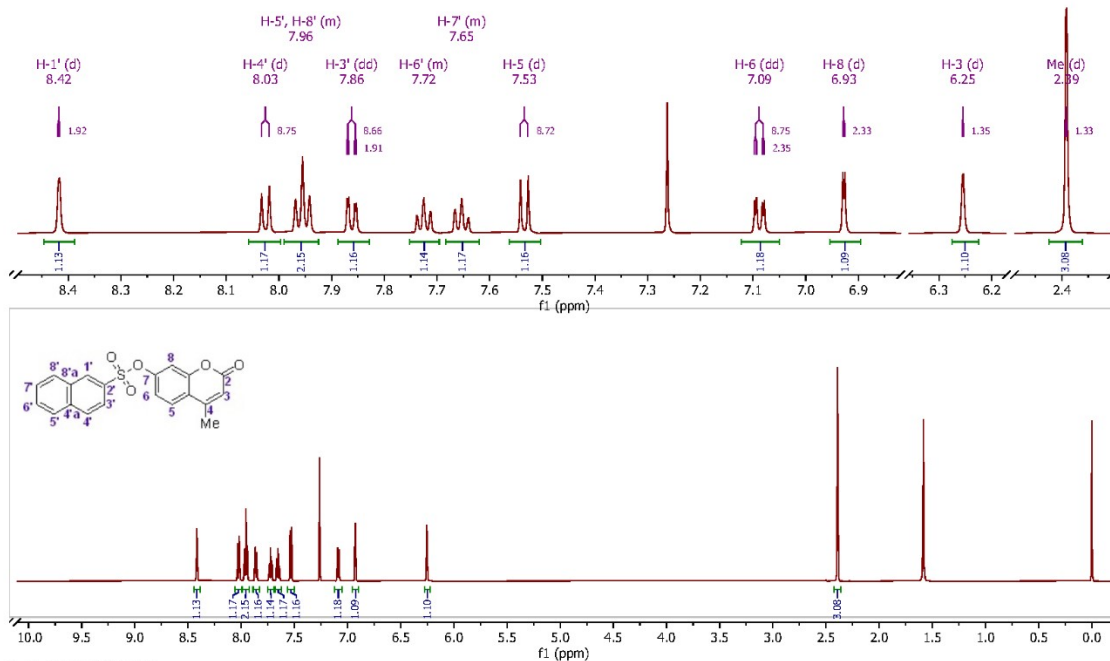


Dr.Hawsawi-CS-8.169.fid —

## <sup>1</sup>H-NMR Spectrum (600 MHz, CDCl<sub>3</sub>) of Compound 8

4-Methyl-2-oxo-2H-1-benzopyran-7-yl naphthalene-2-sulfonate

<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) δ 8.42 (1H, d, J = 1.9 Hz, H-1'), 8.03 (1H, d, J = 8.8 Hz, H-4'), 7.99 – 7.92 (2H, m, H-5', H-8'), 7.86 (1H, dd, J = 8.8, 1.9 Hz, H-3'), 7.76 – 7.70 (1H, m, H-6'), 7.68 – 7.61 (1H, m, H-7'), 7.53 (1H, d, J = 8.7 Hz, H-5), 7.09 (1H, dd, J = 8.7, 2.3 Hz, H-6), 6.93 (1H, d, J = 2.3 Hz, H-8), 6.25 (1H, d, J = 1.3 Hz, H-3), 2.39 (3H, d, J = 1.3 Hz, CH<sub>3</sub>-4)

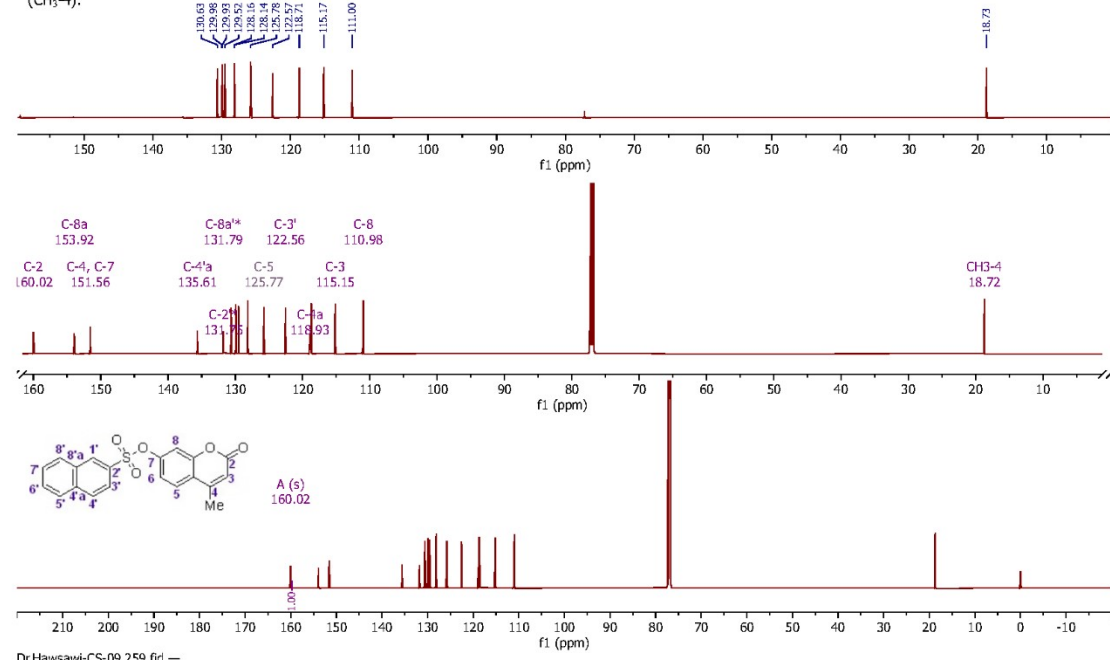


Dr.Hawsawi-CS-09.258.fid —

## <sup>13</sup>C-NMR Spectrum (151 MHz, CDCl<sub>3</sub>) of Compound 8

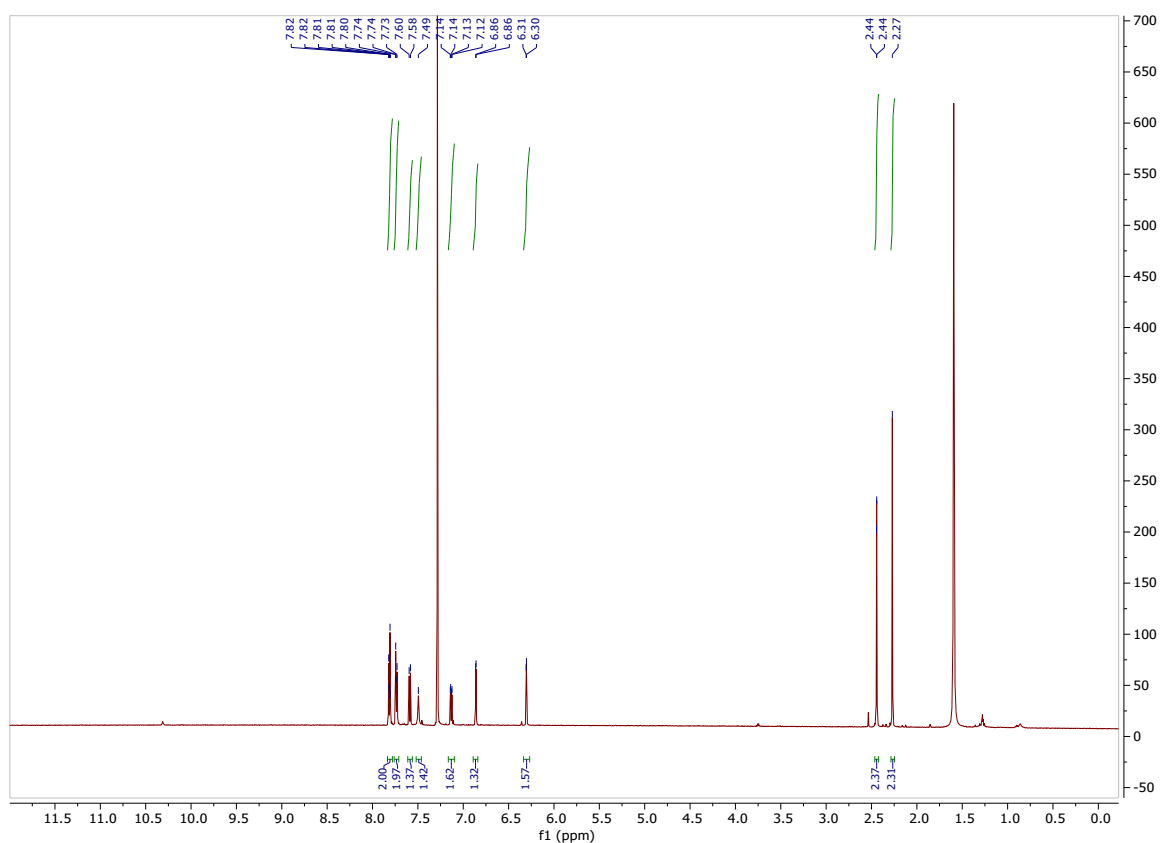
4-Methyl-2-oxo-2H-1-benzopyran-7-yl naphthalene-2-sulfonate

<sup>13</sup>C NMR (151 MHz, CDCl<sub>3</sub>) and DEPT δ 160.0 (C-2), 153.9 (C-8a), 151.6, 151.5 (C-4 and C-7), 135.6 (C-4'a), 131.79, 131.75 (C-8a and C-2'), 130.6 (C-1'), 130.0, 129.9 (C-4' and C-6), 129.5 (C-8), 128.2, 128.1 (C-5' and C-7'), 125.8 (C-5), 122.6 (C-3'), 118.9 (C-4a), 118.7 (C-6), 115.2 (C-3), 111.0 (C-8), 18.7 (CH<sub>3</sub>-4).

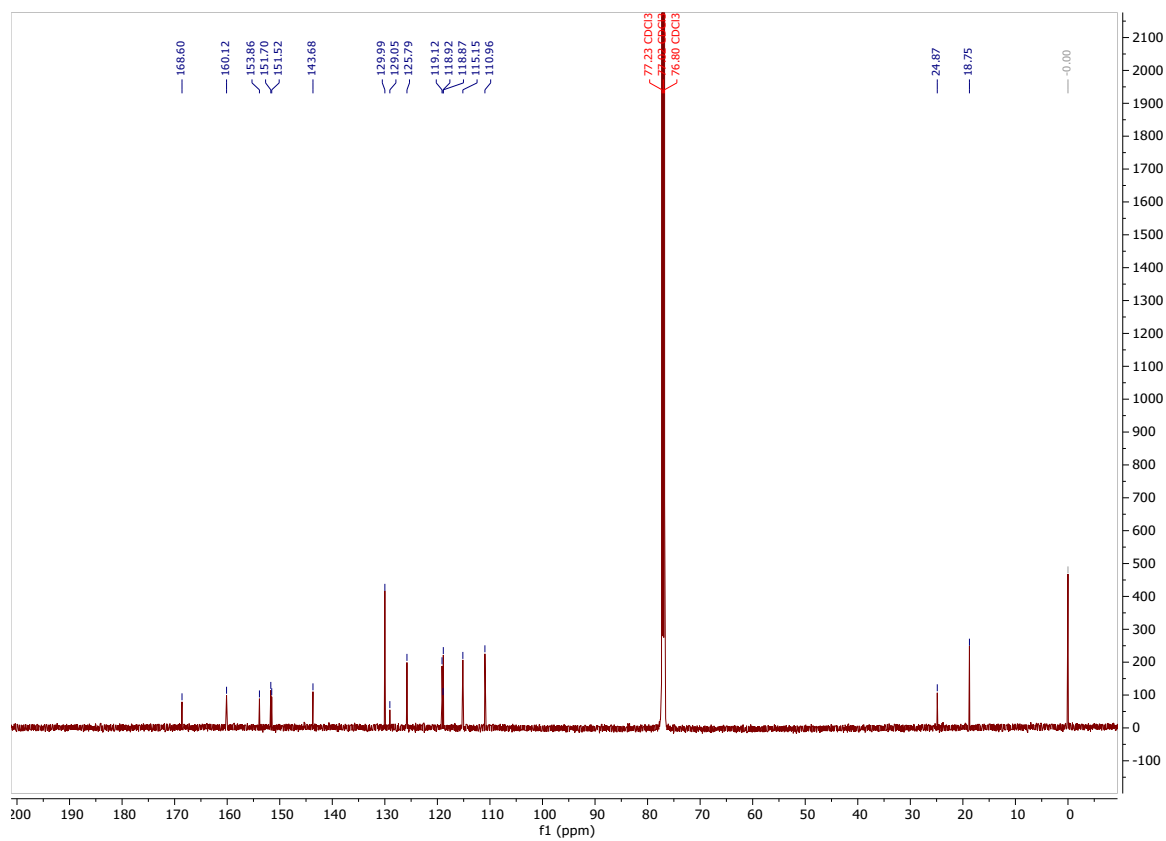


Dr.Hawsawi-CS-09.259.fid —

### <sup>1</sup>H-NMR Spectrum (600 MHz, CDCl<sub>3</sub>) of Compound 9

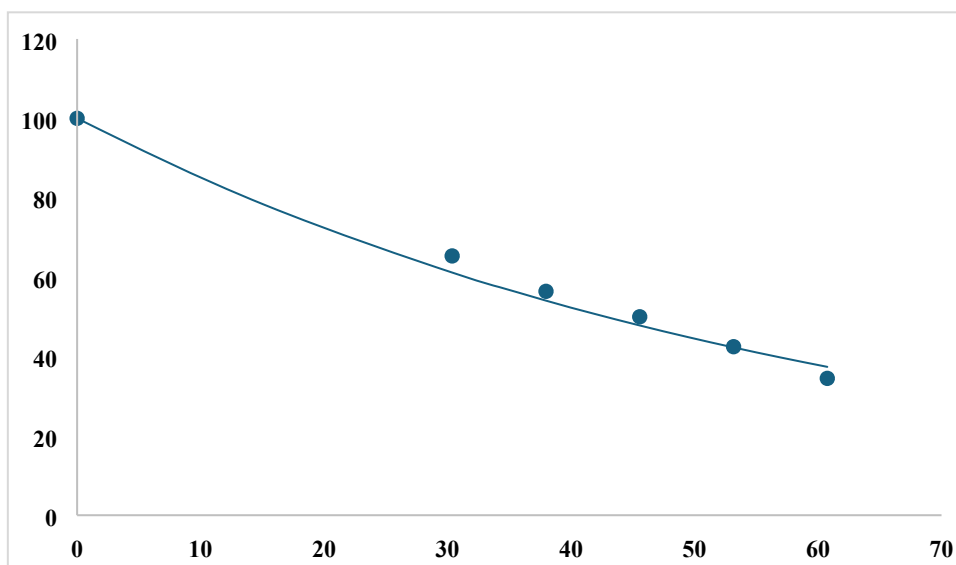


### <sup>13</sup>C-NMR Spectrum (151 MHz, CDCl<sub>3</sub>) of Compound 9

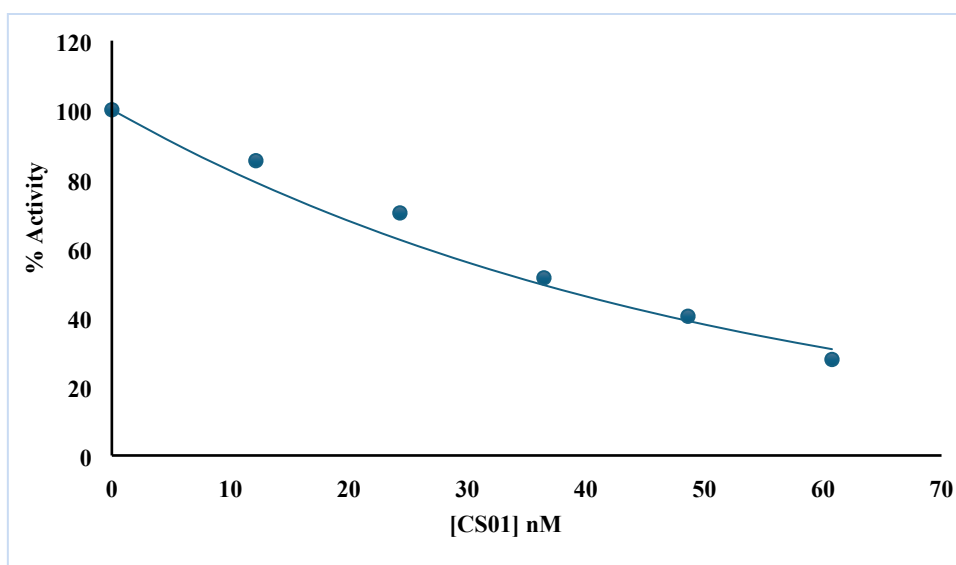


**IC<sub>50</sub> Curve Graphs of All the Synthesized Compounds against AChE and BChE**

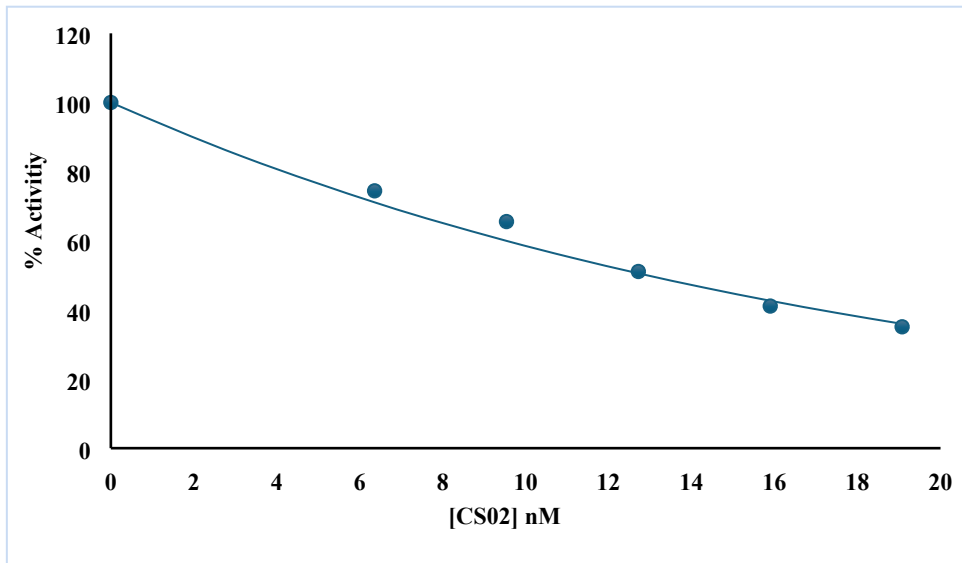
**Compound 1 (AChE)**



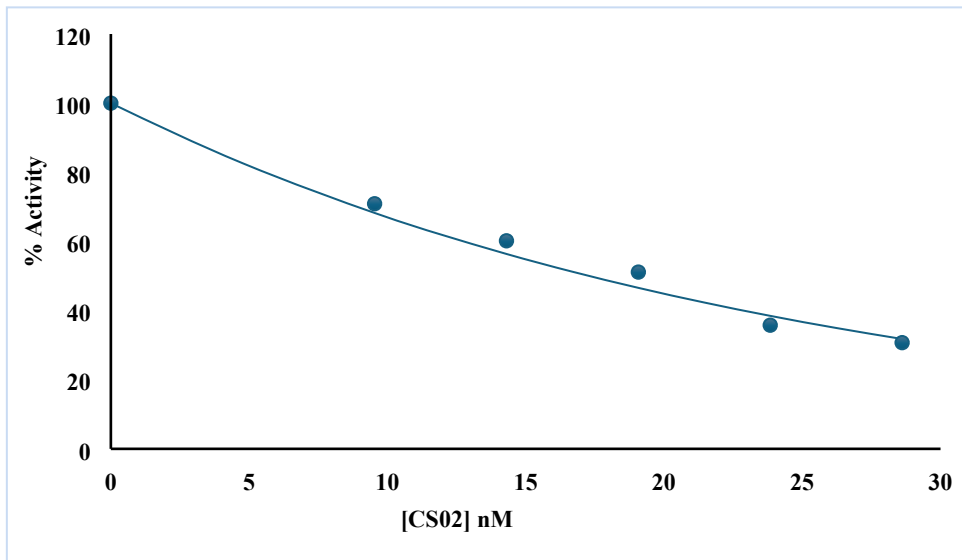
**Compound 1 (BChE)**



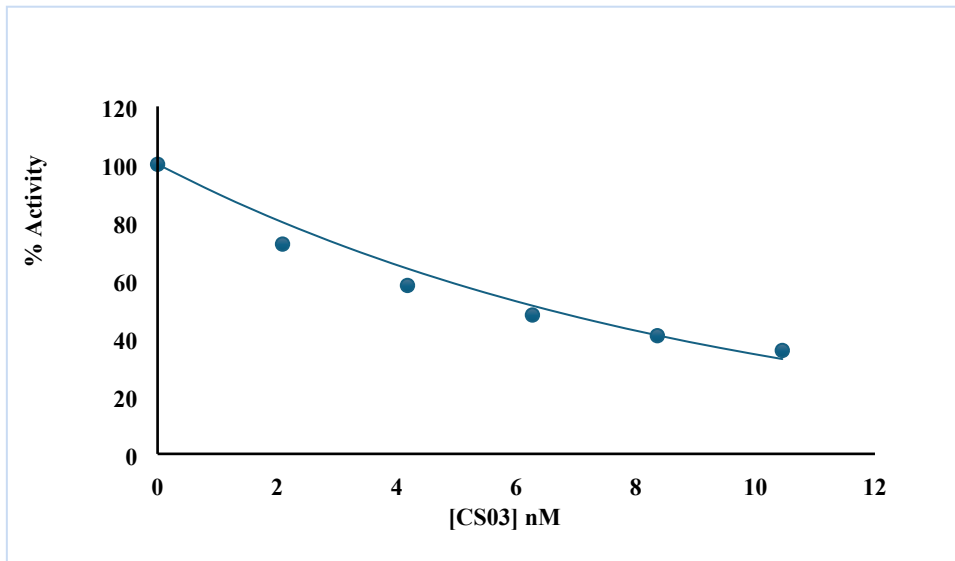
### Compound 2 (AChE)



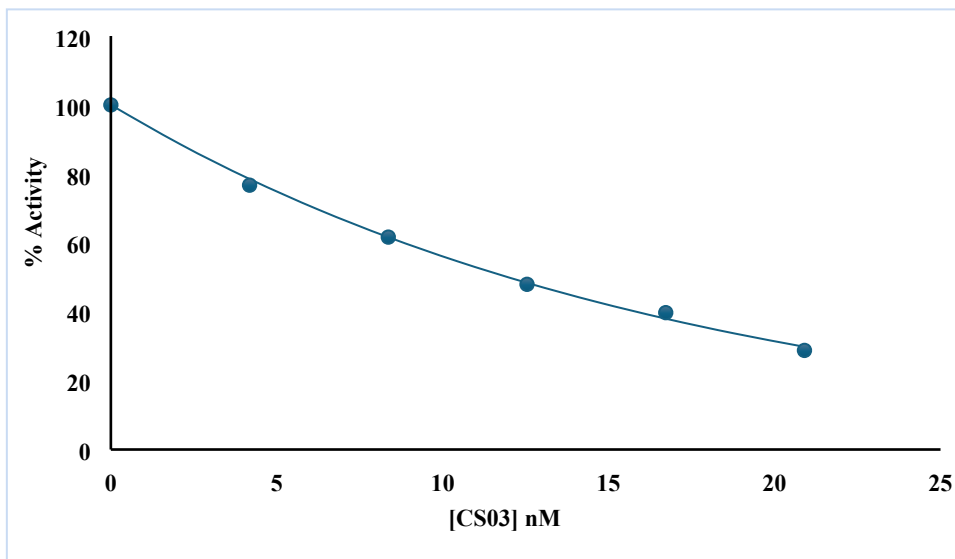
### Compound 2 (BChE)



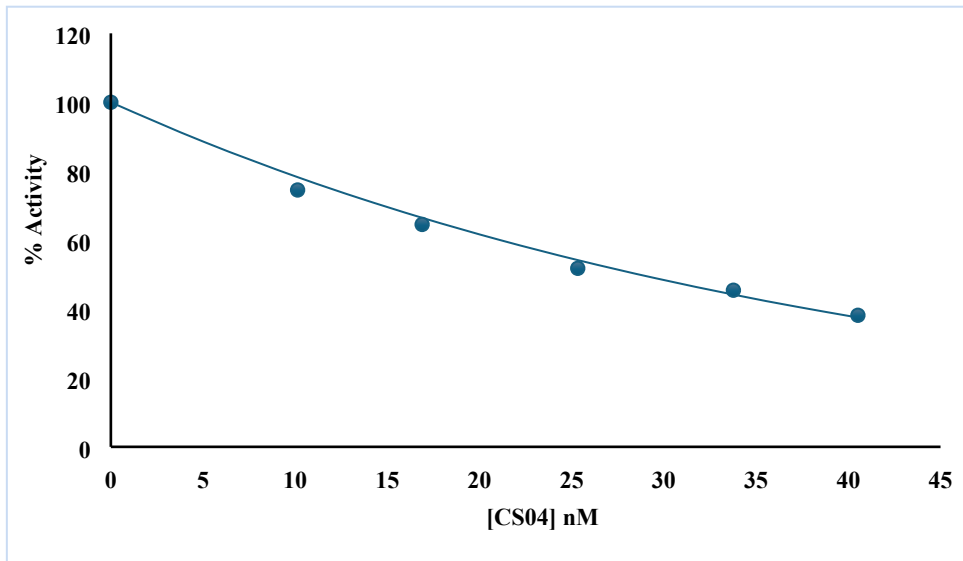
### Compound 3 (AChE)



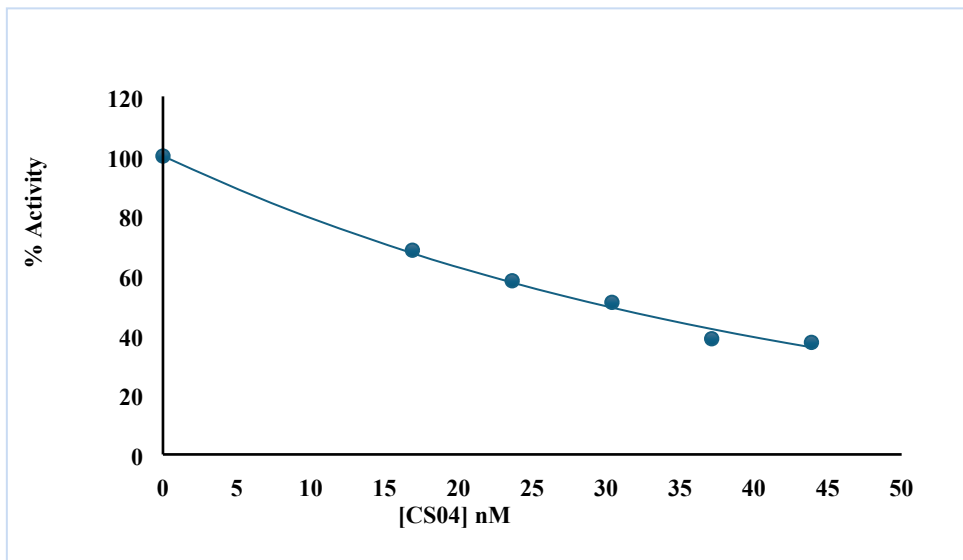
### Compound 3 (BChE)



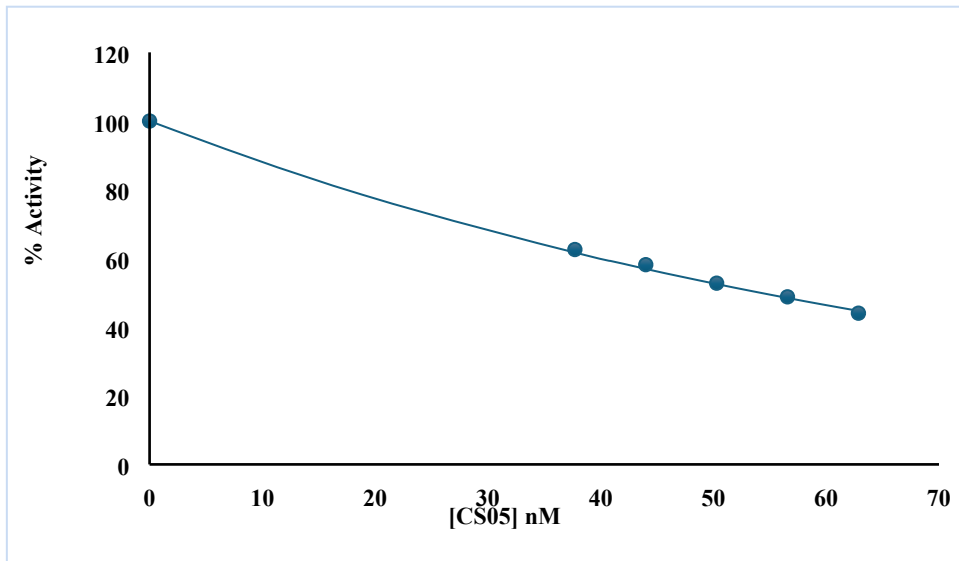
### Compound 4 (AChE)



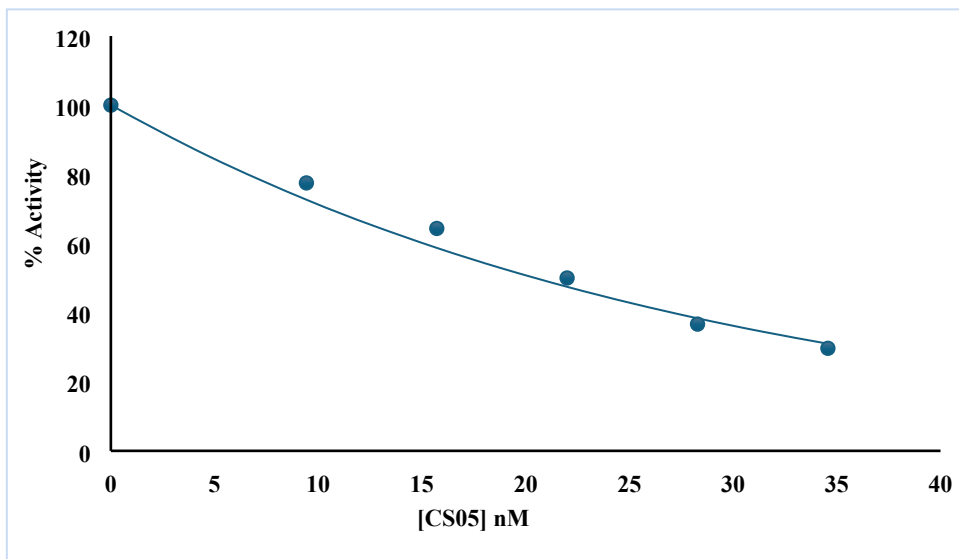
### Compound 4 (BChE)



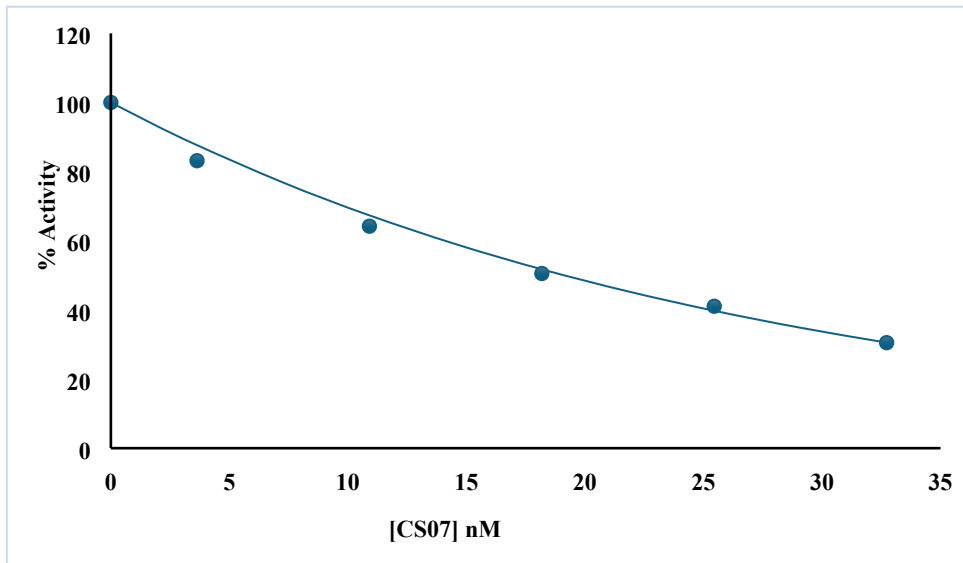
### Compound 5 (AChE)



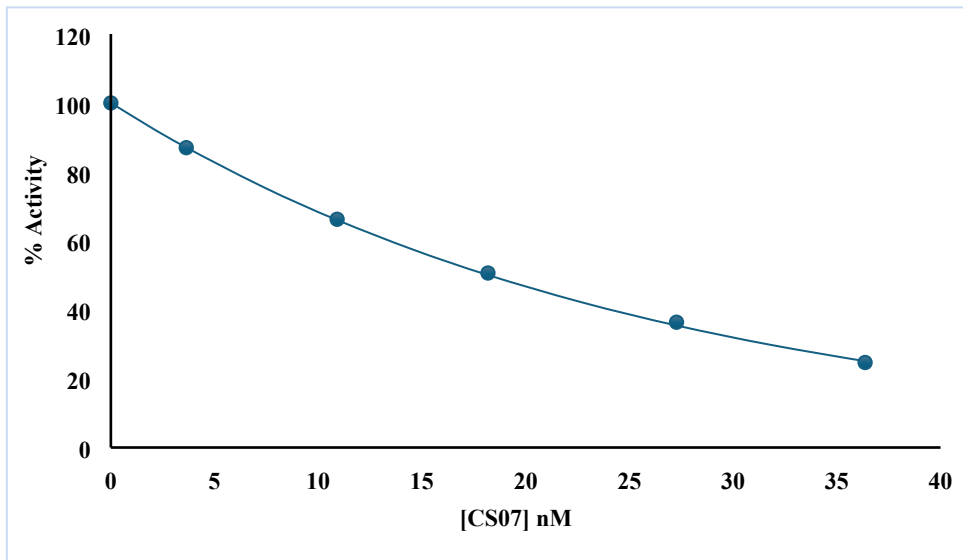
### Compound 5 (BChE)



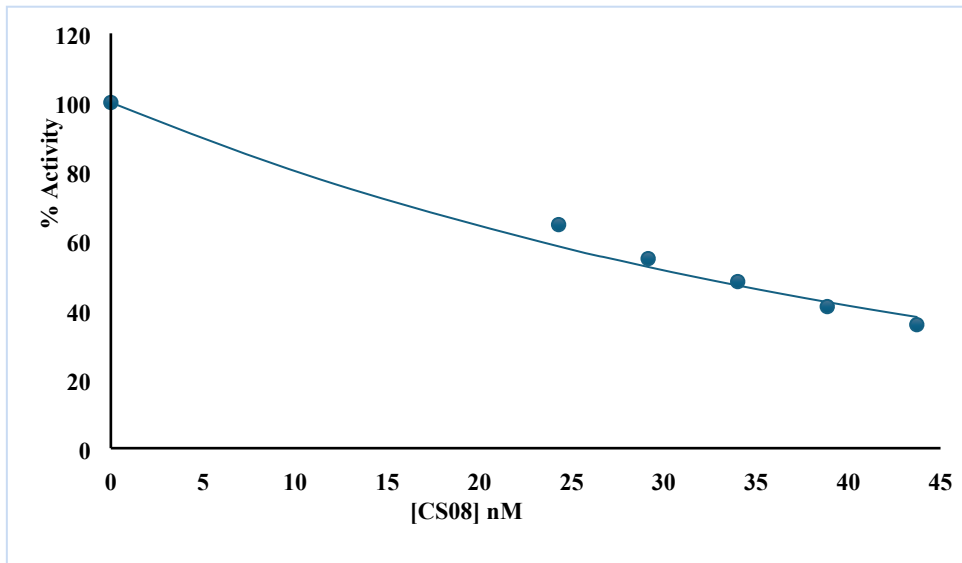
### Compound 6 (AChE)



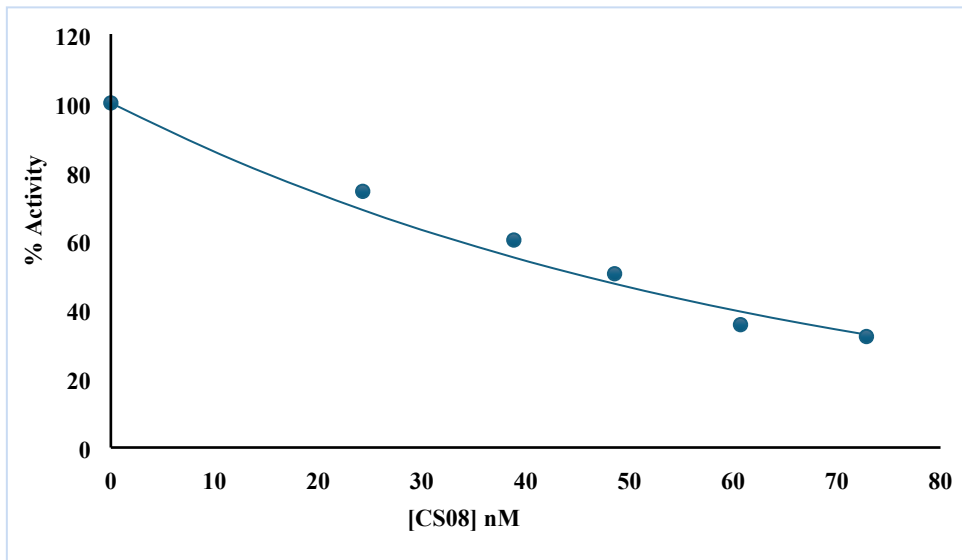
### Compound 6 (BChE)



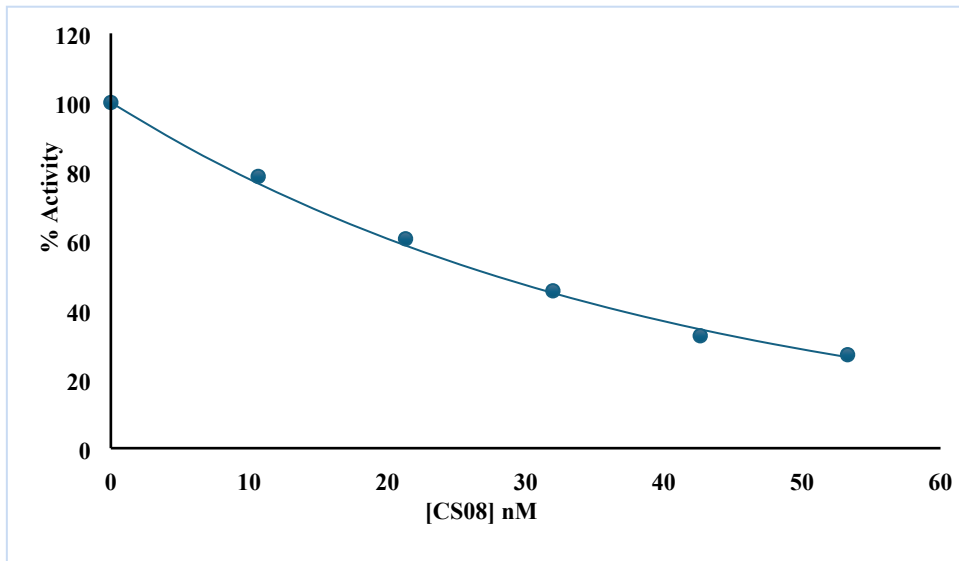
### Compound 7 (AChE)



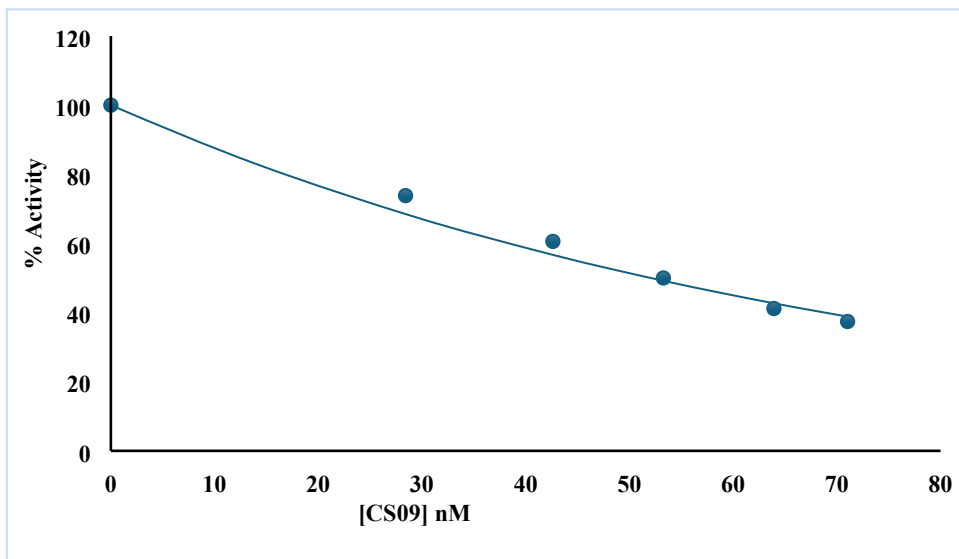
### Compound 7 (BChE)



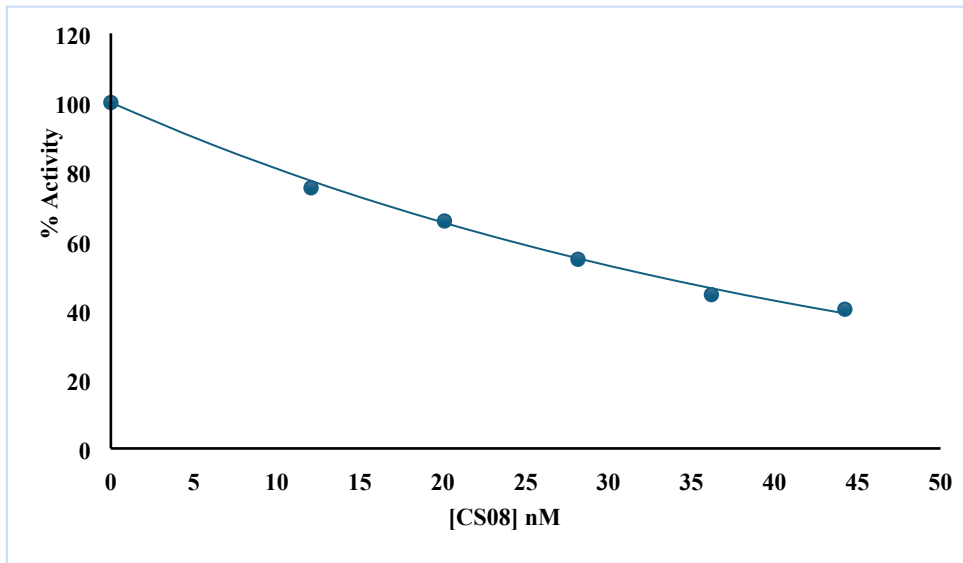
### Compound 8 (AChE)



### Compound 8 (BChE)



### Compound 9 (AChE)



### Compound 9 (BChE)

