

# Minimalistic bis-triarylpyridinium cations: effective antimicrobials against bacterial and fungal pathogens

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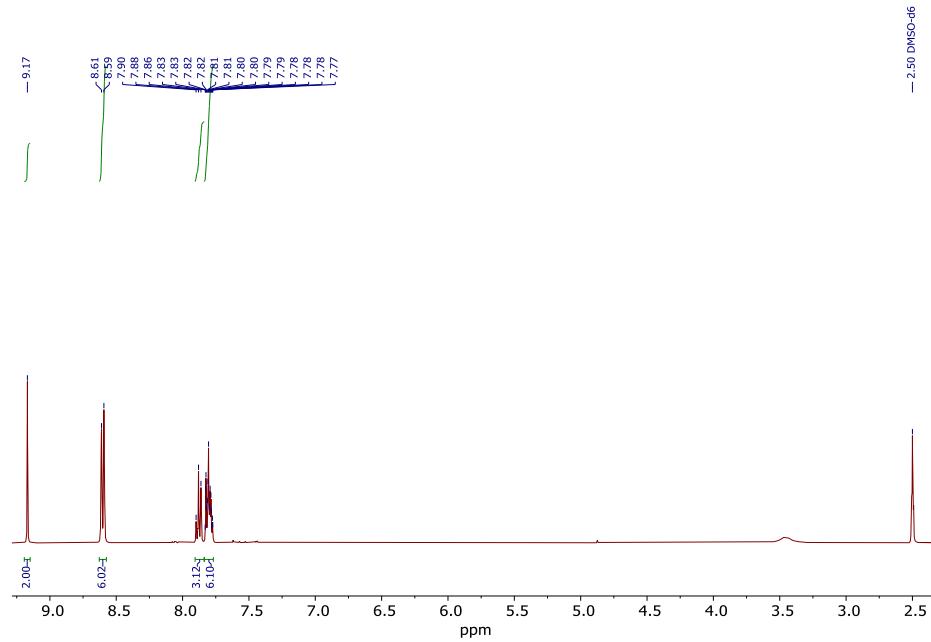
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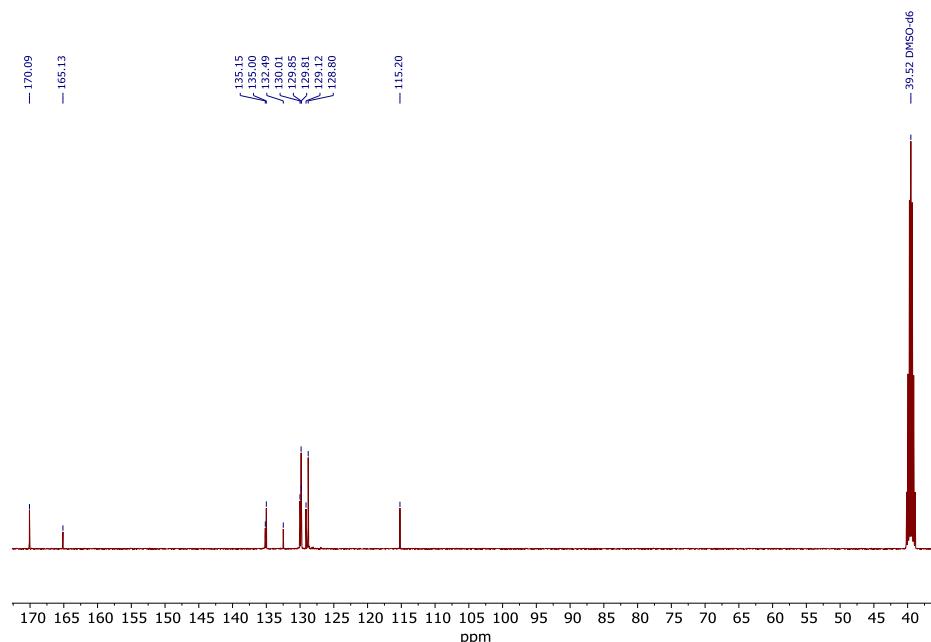
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## Spectroscopic data of compounds

### 2,4,6-triphenylpyrylium tetrafluoroborate (4a)

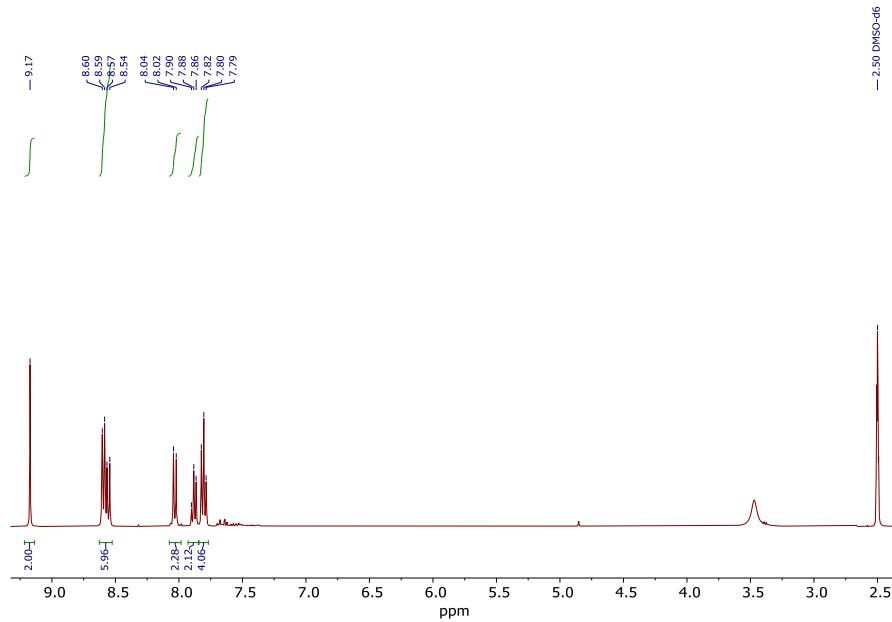


**Figure S1.** <sup>1</sup>H NMR (DMSO-d<sub>6</sub>) spectra of the precursor 2,4,6-triphenylpyrylium tetrafluoroborate (**4a**).

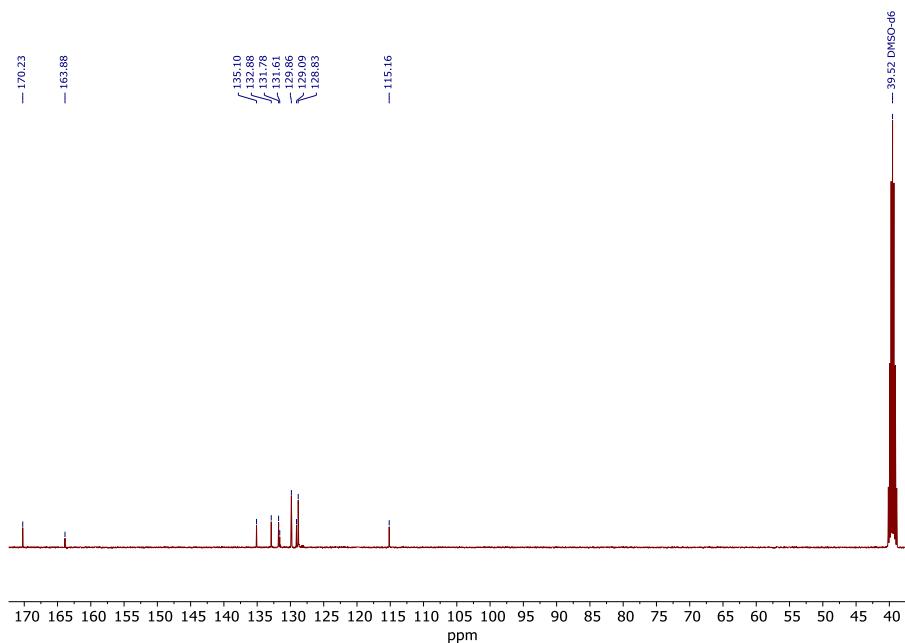


**Figure S2.** <sup>13</sup>C NMR (DMSO-d<sub>6</sub>) spectra of the precursor 2,4,6-triphenylpyrylium tetrafluoroborate (**4a**).

**4-(4-bromophenyl)-2,6-diphenylpyrylium tetrafluoroborate (**4b**)**

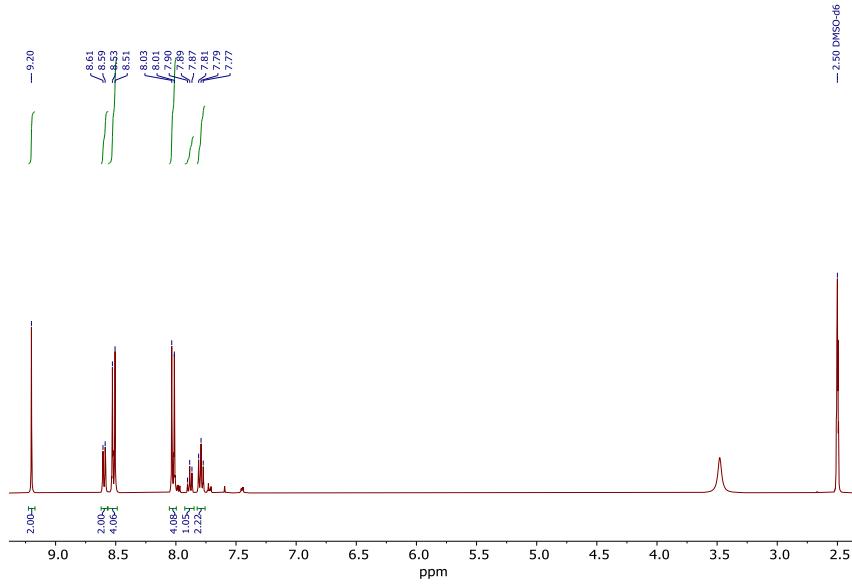


**Figure S3.** <sup>1</sup>H NMR (DMSO-d<sub>6</sub>) spectra of the precursor *4-(4-bromophenyl)-2,6-diphenylpyrylium tetrafluoroborate (**4b**)*.

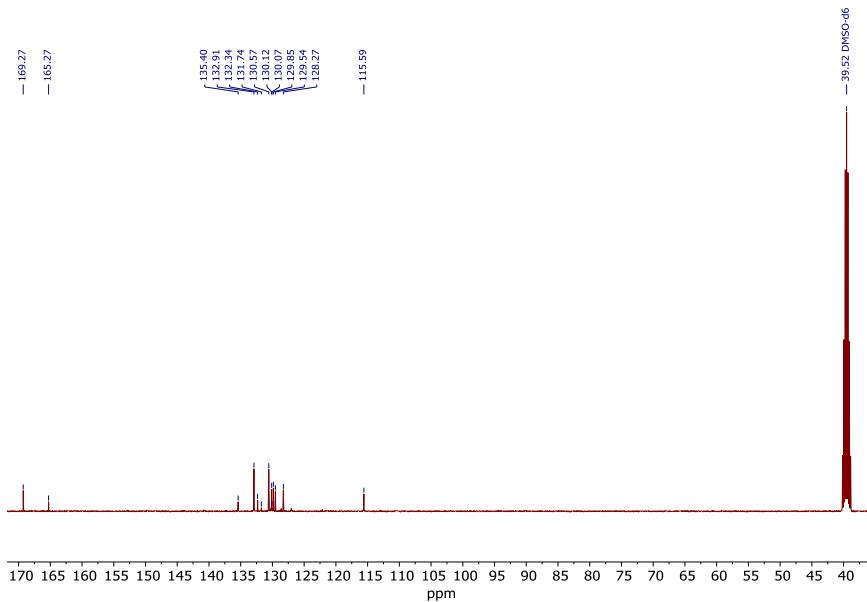


**Figure S4.** <sup>13</sup>C NMR (DMSO-d<sub>6</sub>) spectra of the precursor *4-(4-bromophenyl)-2,6-diphenylpyrylium tetrafluoroborate (**4b**)*.

**2,6-bis(4-bromophenyl)-4-phenylpyrylium tetrafluoroborate (**4c**)**

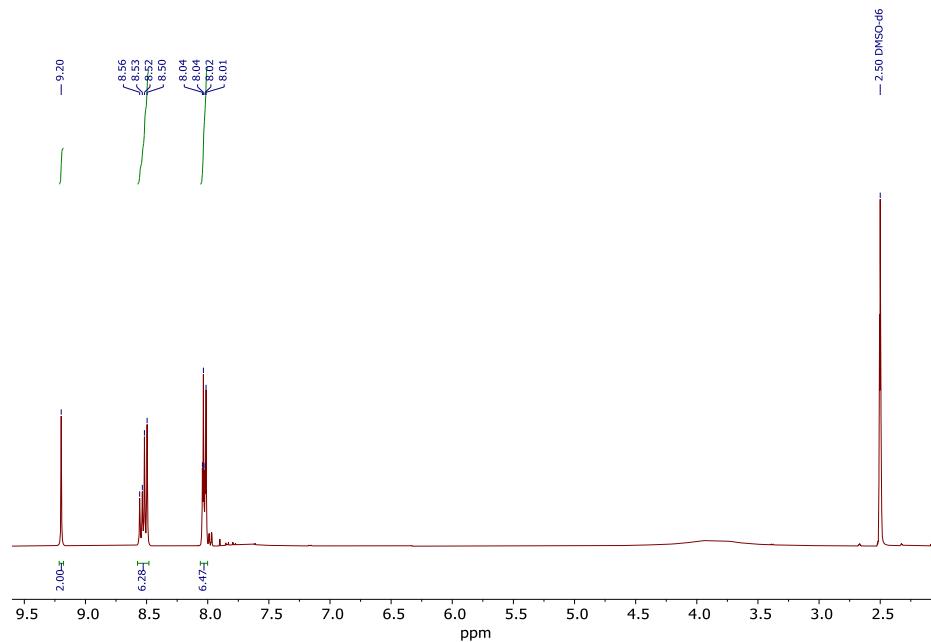


**Figure S5.** <sup>1</sup>H NMR (DMSO-d<sub>6</sub>) spectra of the precursor **2,6-bis(4-bromophenyl)-4-phenylpyrylium tetrafluoroborate (**4c**)**.

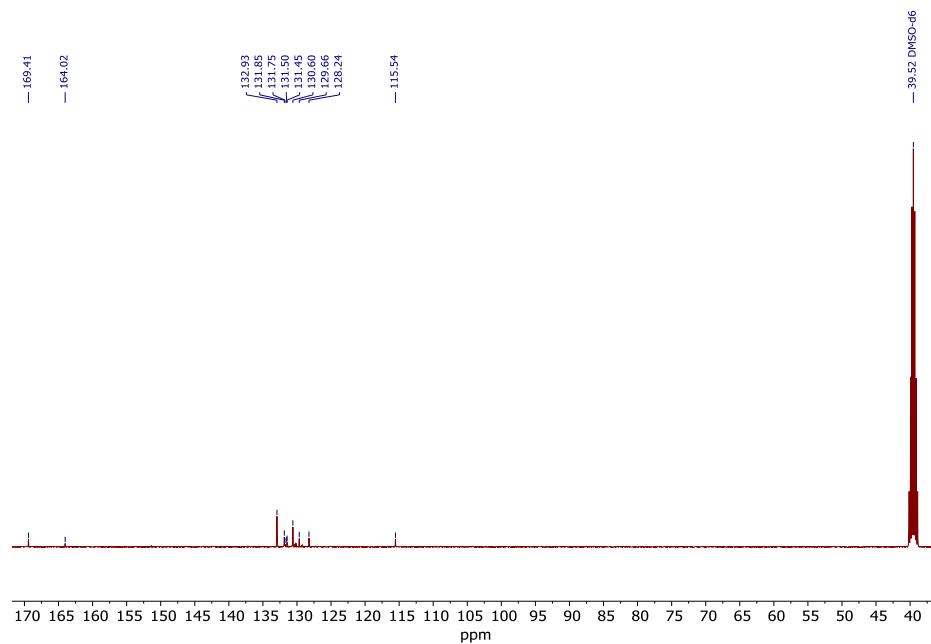


**Figure S6.** <sup>13</sup>C NMR (DMSO-d<sub>6</sub>) spectra of the precursor **2,6-bis(4-bromophenyl)-4-phenylpyrylium tetrafluoroborate (**4c**)**.

**2,4,6-tris(4-bromophenyl)pyrylium tetrafluoroborate (**4d**)**

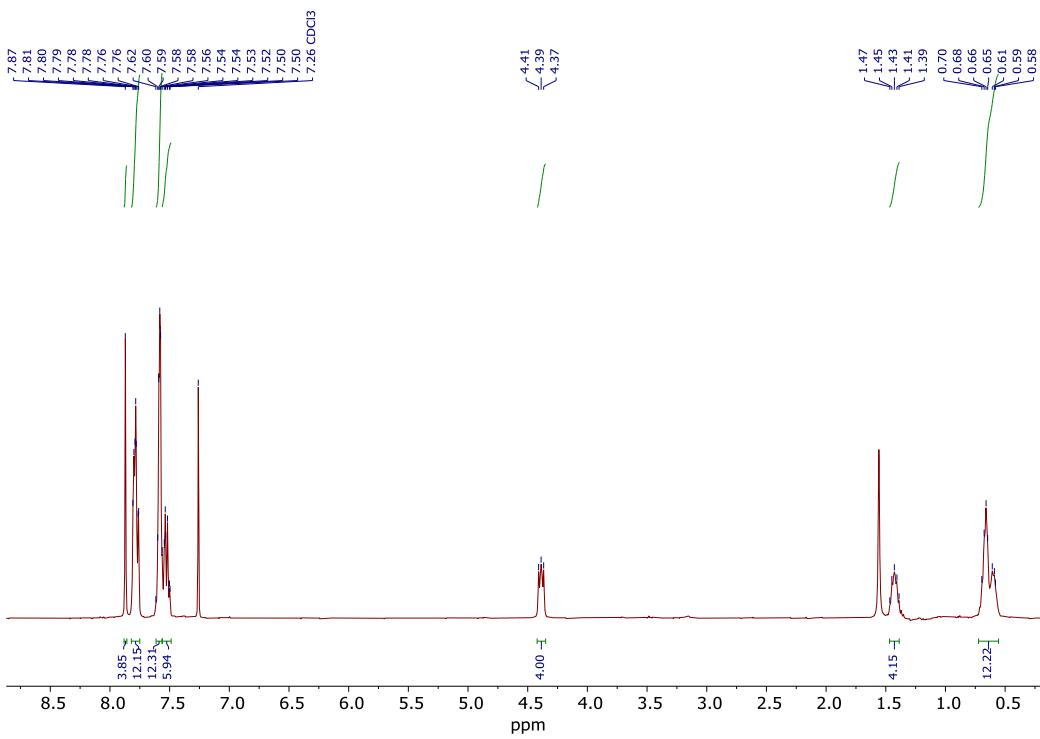


**Figure S7.** <sup>1</sup>H NMR (DMSO-d<sub>6</sub>) spectra of the precursor *2,4,6-tris(4-bromophenyl)pyrylium tetrafluoroborate (**4d**)*.

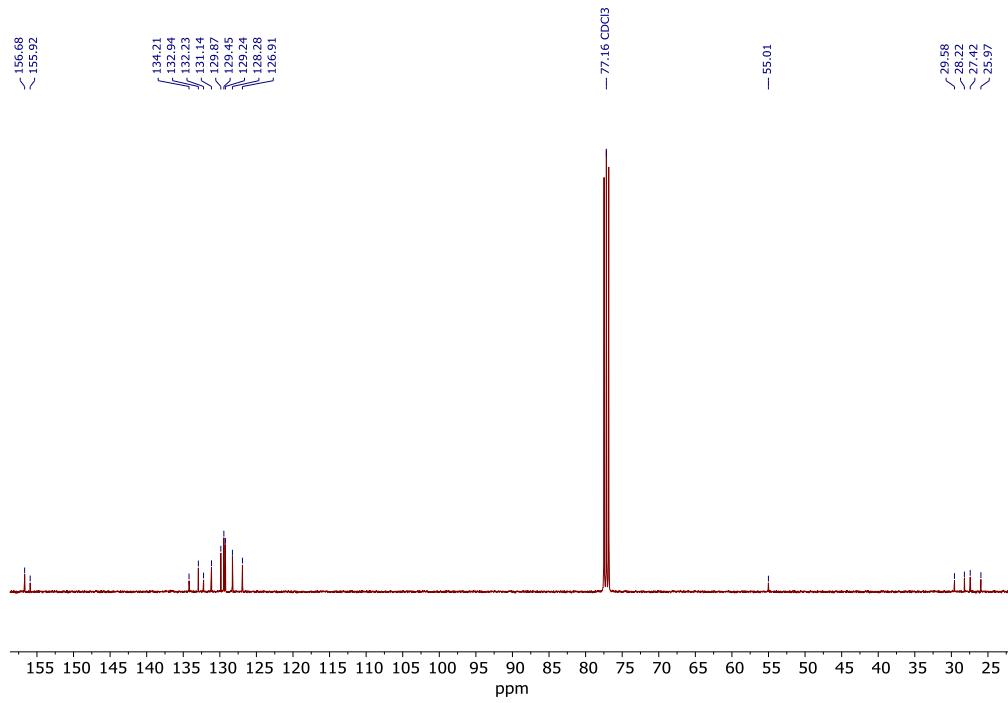


**Figure S8.** <sup>13</sup>C NMR (DMSO-d<sub>6</sub>) spectra of the precursor *2,4,6-tris(4-bromophenyl)pyrylium tetrafluoroborate (**4d**)*.

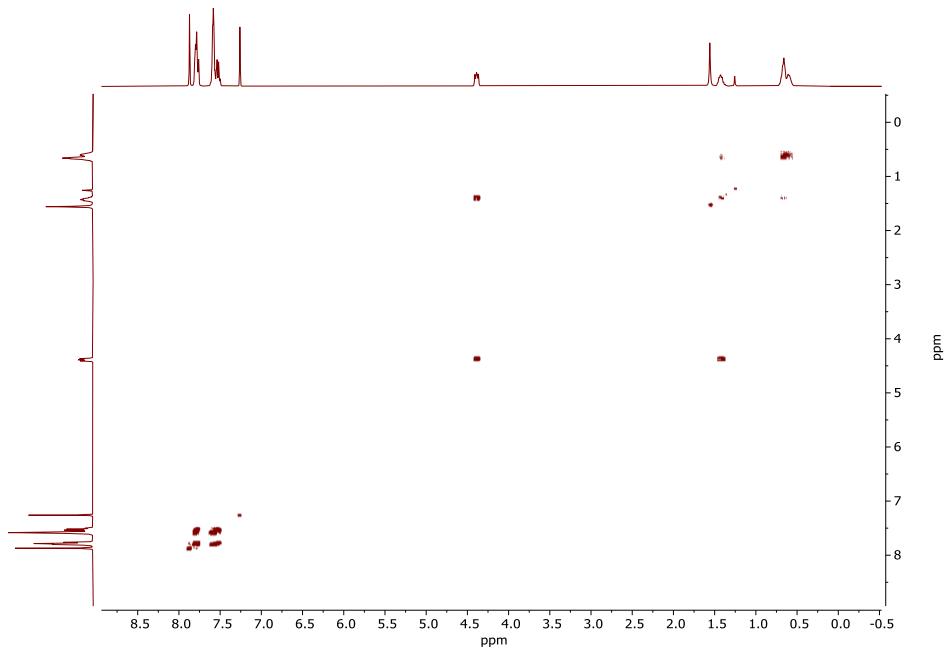
## **Compound 1a**



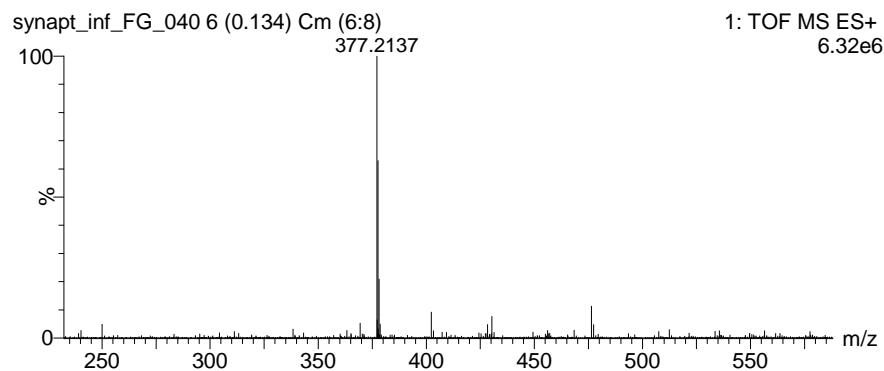
**Figure S9.**  $^1\text{H}$  NMR ( $\text{CDCl}_3$ ) spectra of compound **1a**.



**Figure S10.**  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ ) spectra of compound **1a**.



**Figure S11.**  $^1\text{H}$  COSY NMR ( $\text{CDCl}_3$ ) spectra of compound **1a**.



**Figure S12.** HRMS spectra of compound **1a**.

### Compound 1b

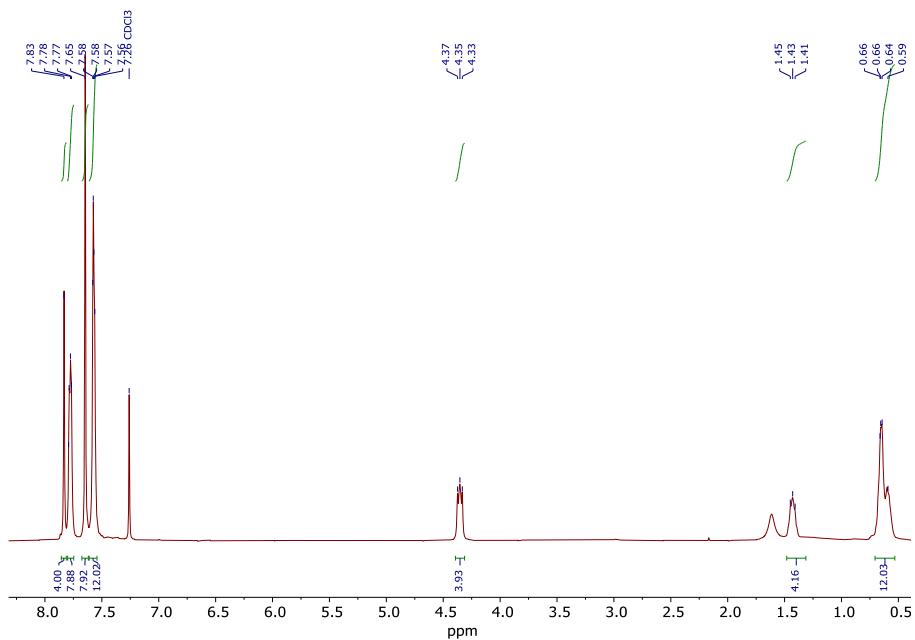


Figure S13.  $^1\text{H}$  NMR ( $\text{CDCl}_3$ ) spectra of compound 1b.

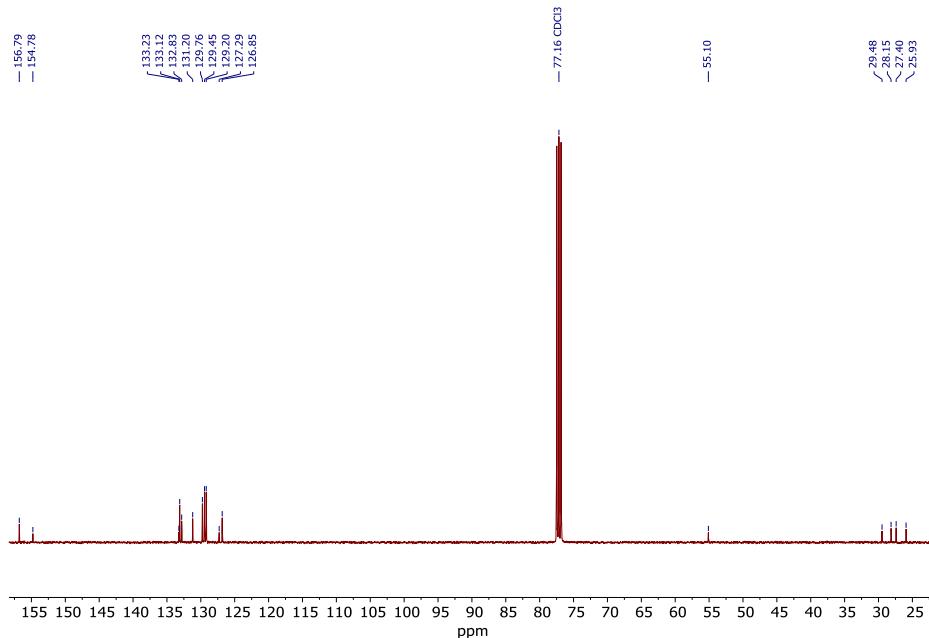
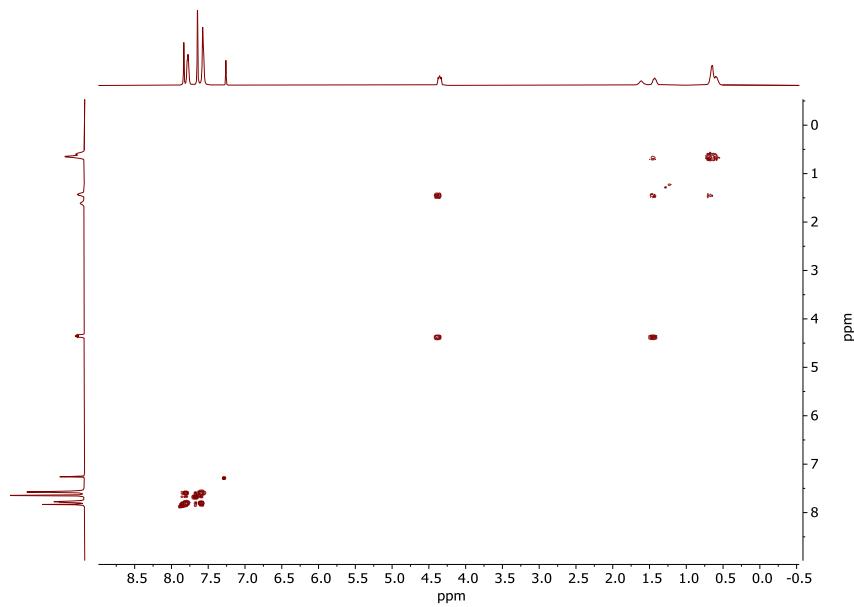
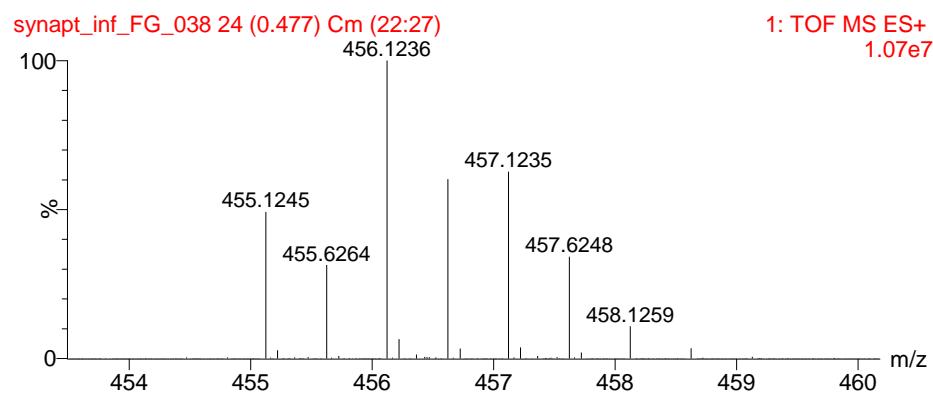


Figure S14.  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ ) spectra of compound 1b.



**Figure S15.**  $^1\text{H}$  COSY NMR ( $\text{CDCl}_3$ ) spectra of compound **1b**.



**Figure S16.** HRMS spectra of compound **1b**.

### Compound 1c

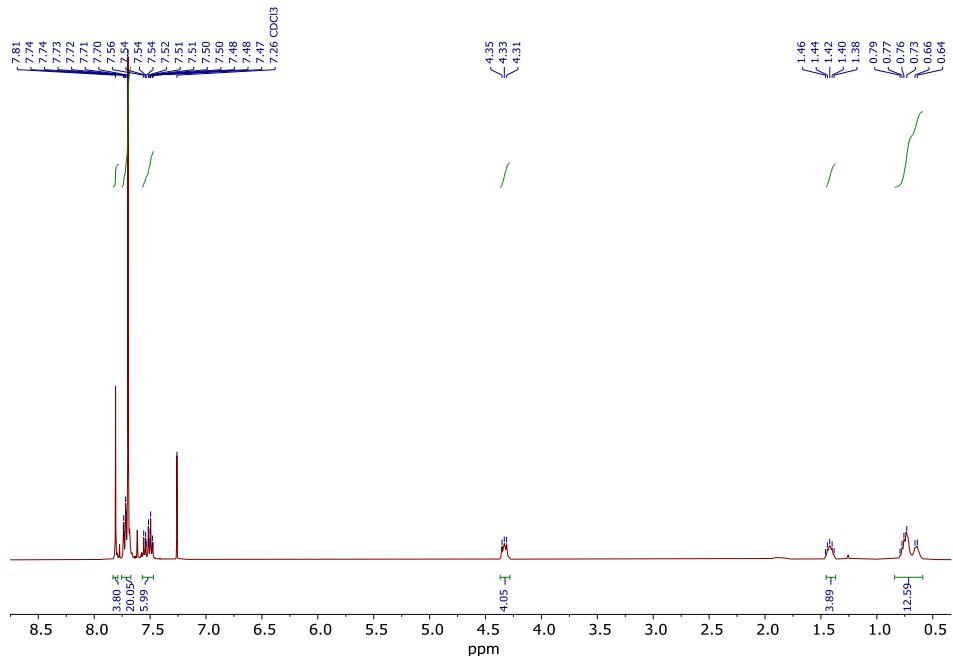


Figure S17. <sup>1</sup>H NMR (CDCl<sub>3</sub>) spectra of compound 1c.

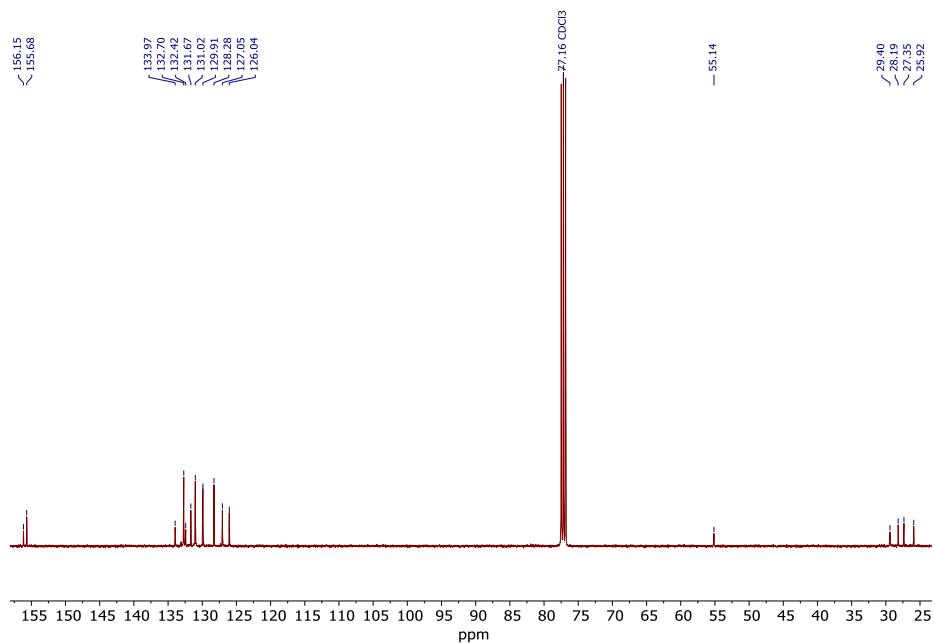
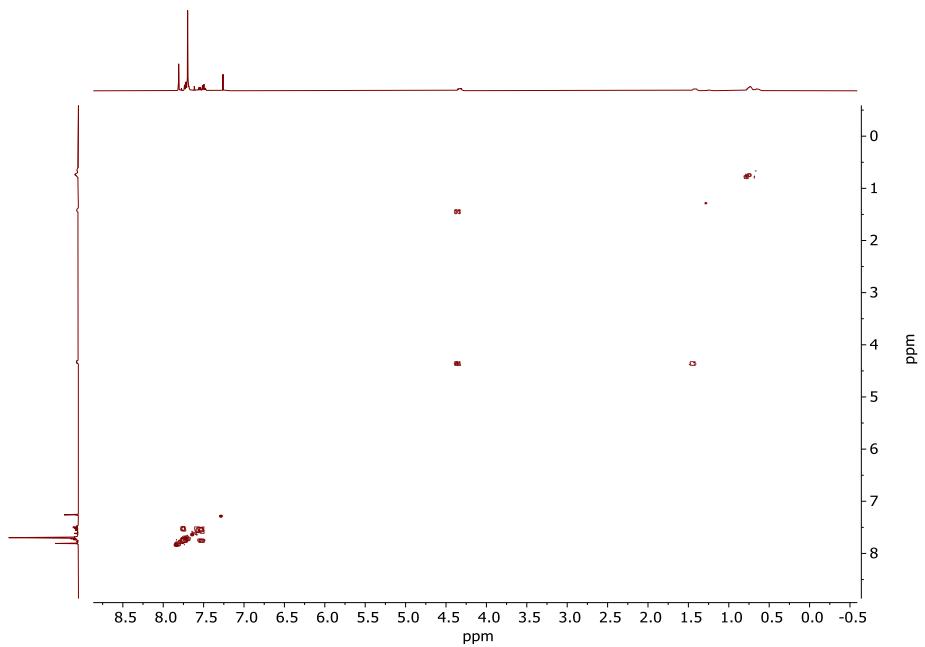
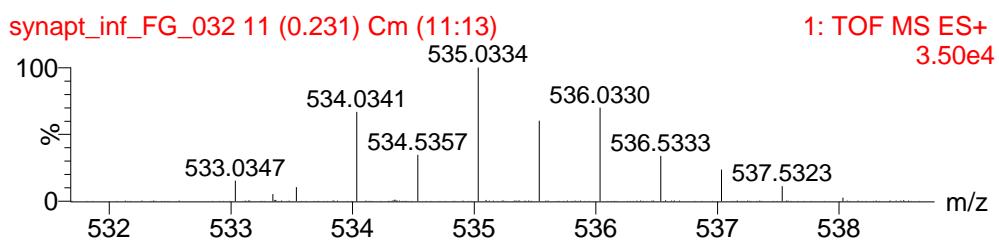


Figure S18. <sup>13</sup>C NMR (CDCl<sub>3</sub>) spectra of compound 1c.

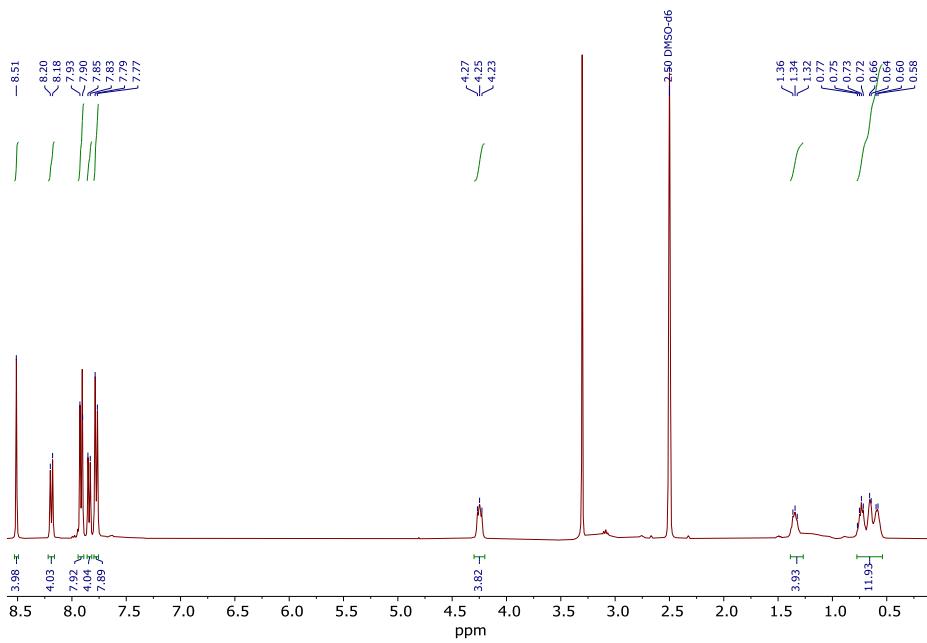


**Figure S19.**  $^1\text{H}$  COSY NMR ( $\text{CDCl}_3$ ) spectra of compound **1c**.

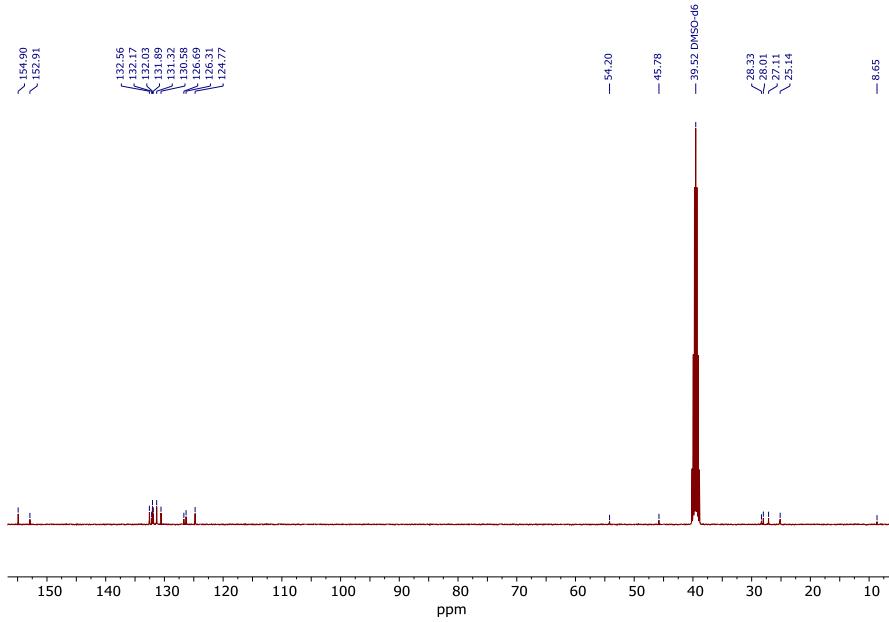


**Figure S20.** HRMS spectra of compound **1c**.

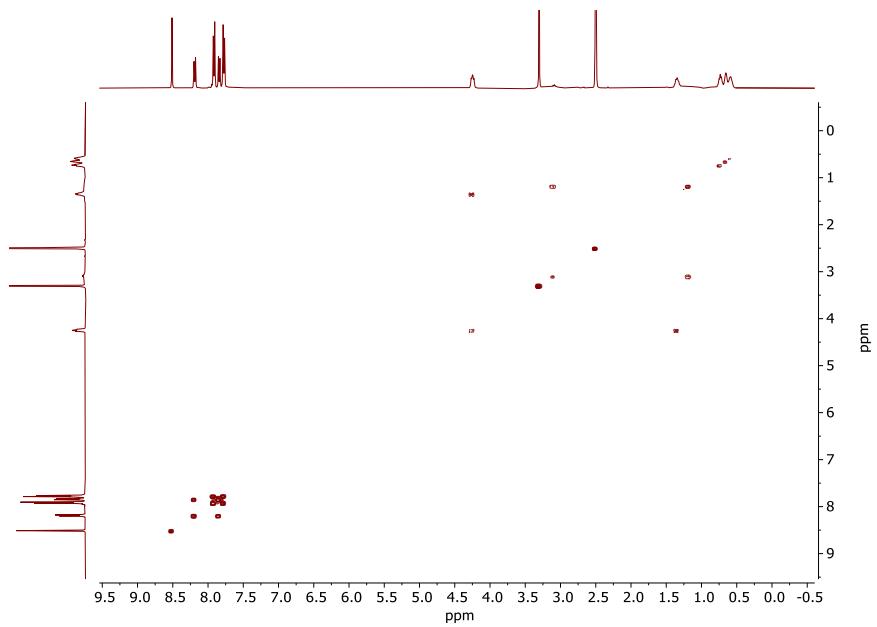
## Compound 1d



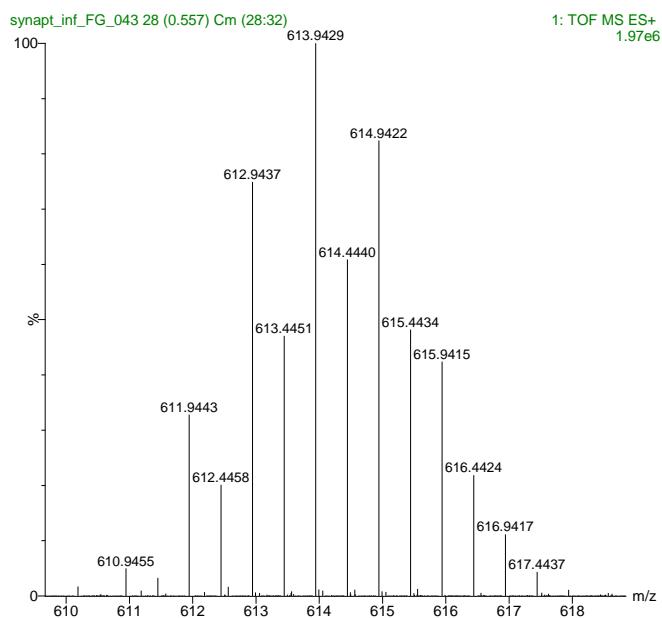
**Figure S21.**  $^1\text{H}$  NMR ( $\text{CDCl}_3$ ) spectra of compound **1d**.



**Figure S22.**  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ ) spectra of compound **1d**.

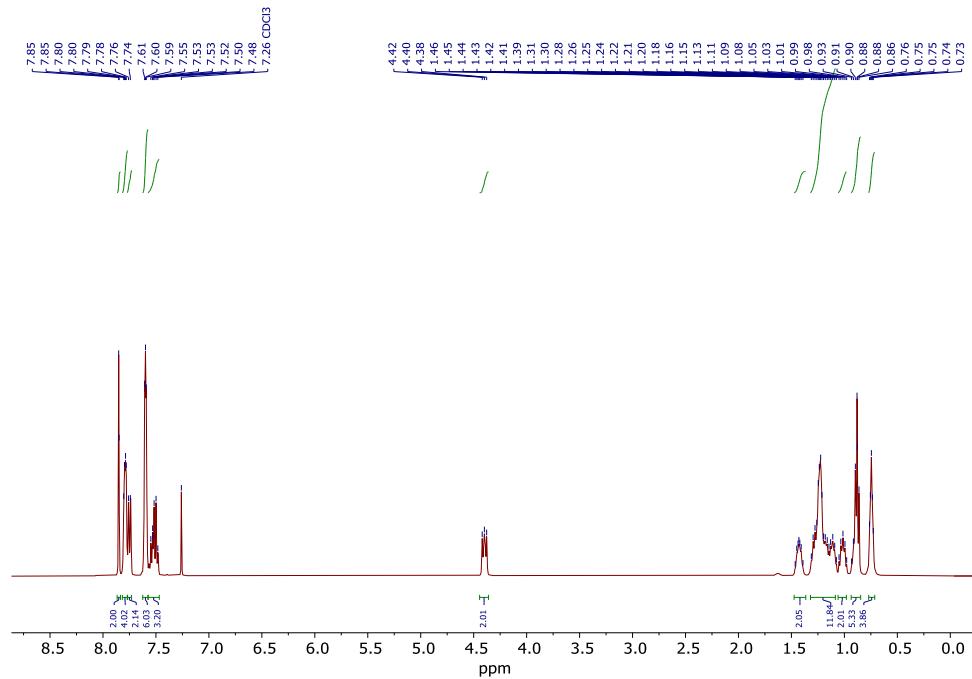


**Figure S23.**  $^1\text{H}$  COSY NMR ( $\text{CDCl}_3$ ) spectra of compound **1d**.

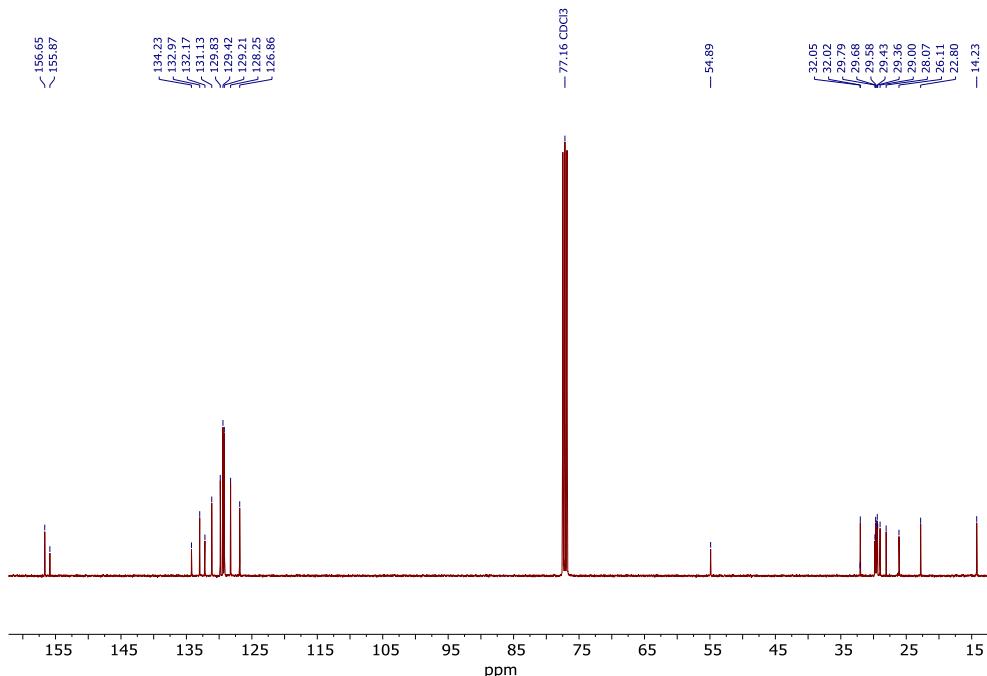


**Figure S24.** HRMS spectra of compound **1d**.

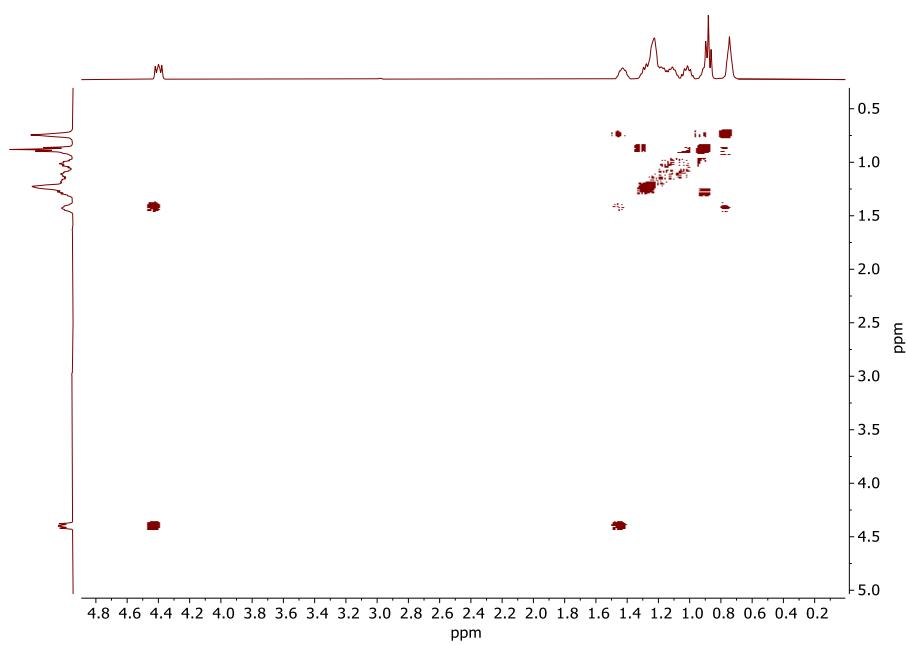
## Compound 2a



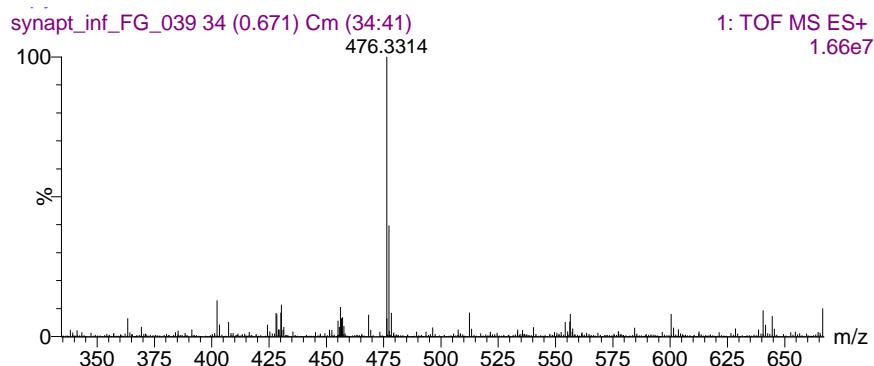
**Figure S25.**  $^1\text{H}$  NMR ( $\text{CDCl}_3$ ) spectra of compound 2a.



**Figure S26.**  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ ) spectra of compound 2a.

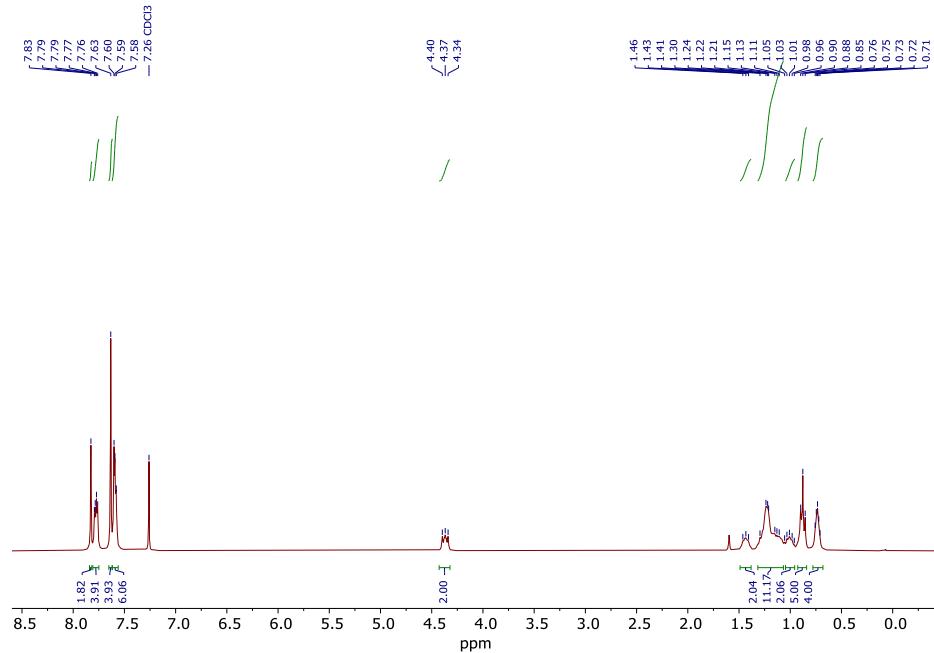


**Figure S27.**  $^1\text{H}$  COSY NMR ( $\text{CDCl}_3$ ) spectra of compound **2a**.

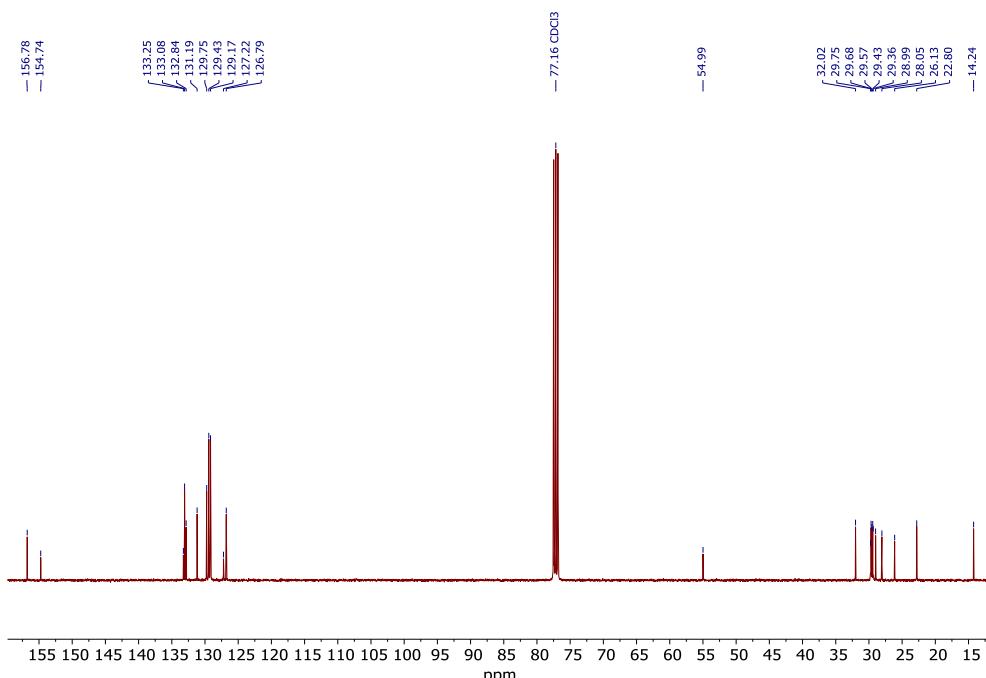


**Figure S28.** HRMS spectra of compound **2a**.

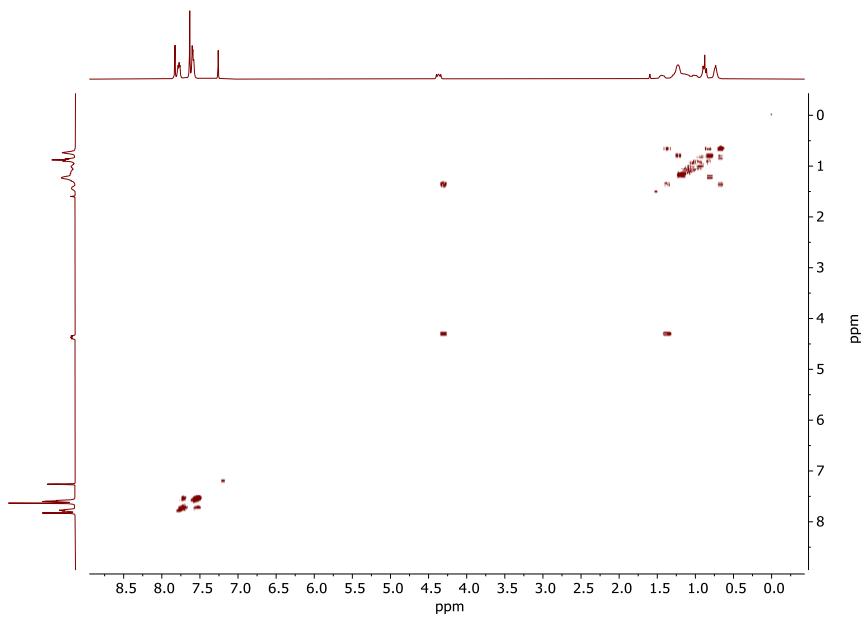
## Compound 2b



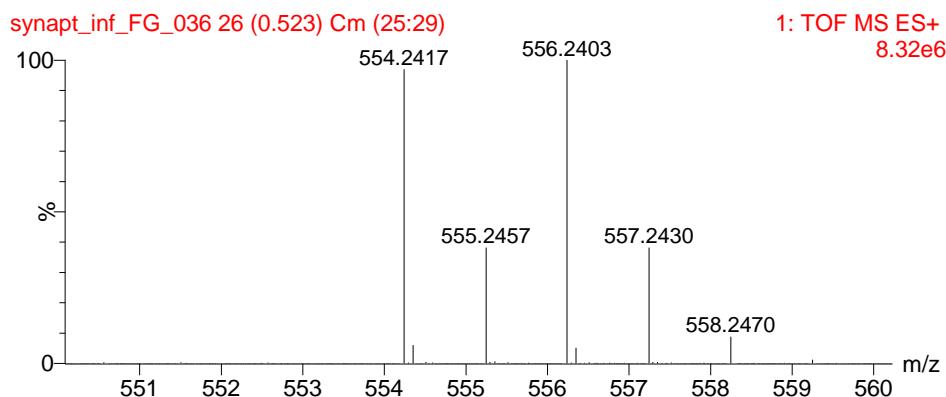
**Figure S29.**  $^1\text{H}$  NMR ( $\text{CDCl}_3$ ) spectra of compound **2b**.



**Figure S30.**  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ ) spectra of compound **2b**.

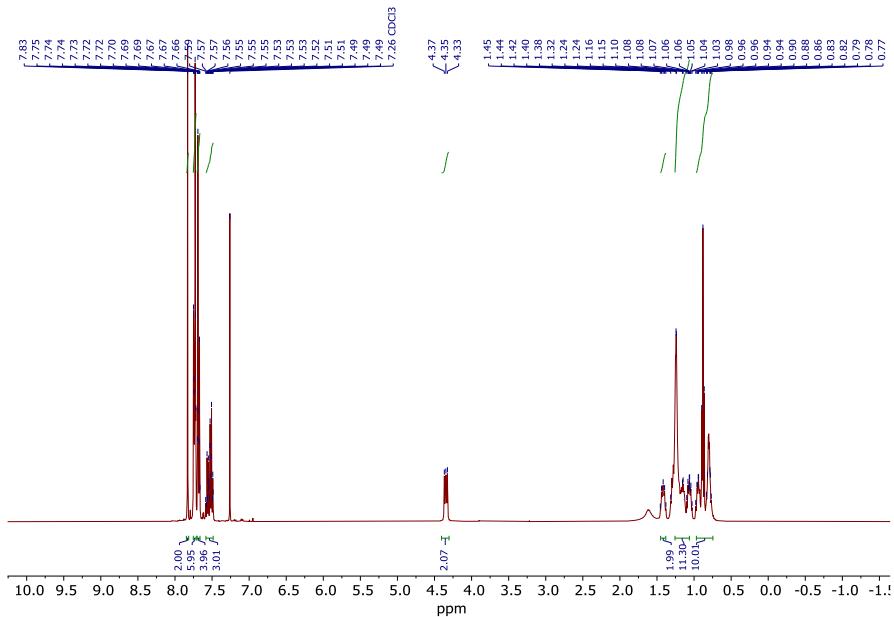


**Figure S31.**  $^1\text{H}$  COSY NMR ( $\text{CDCl}_3$ ) spectra of compound **2b**.

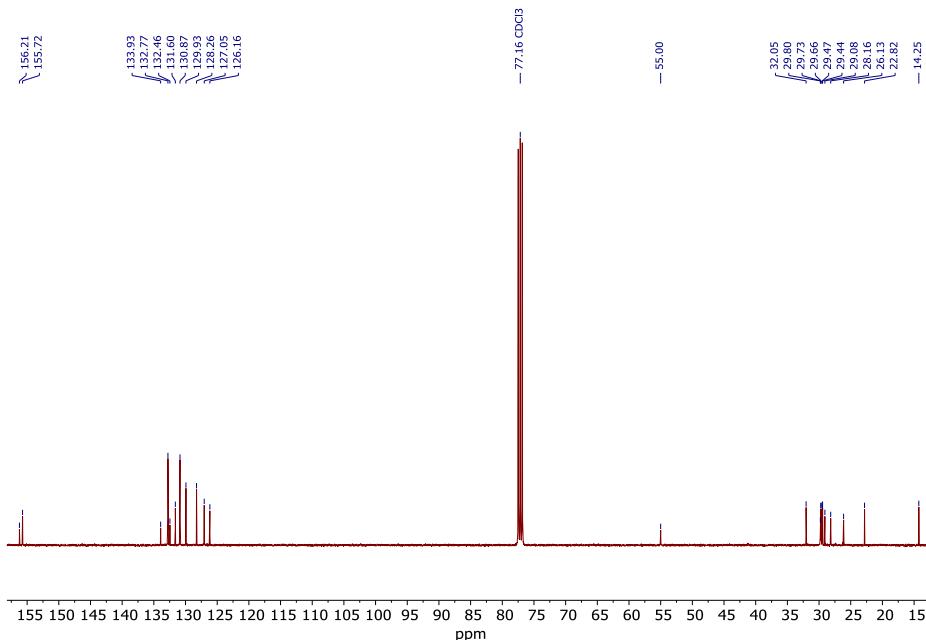


**Figure S32.** HRMS spectra of compound **2b**.

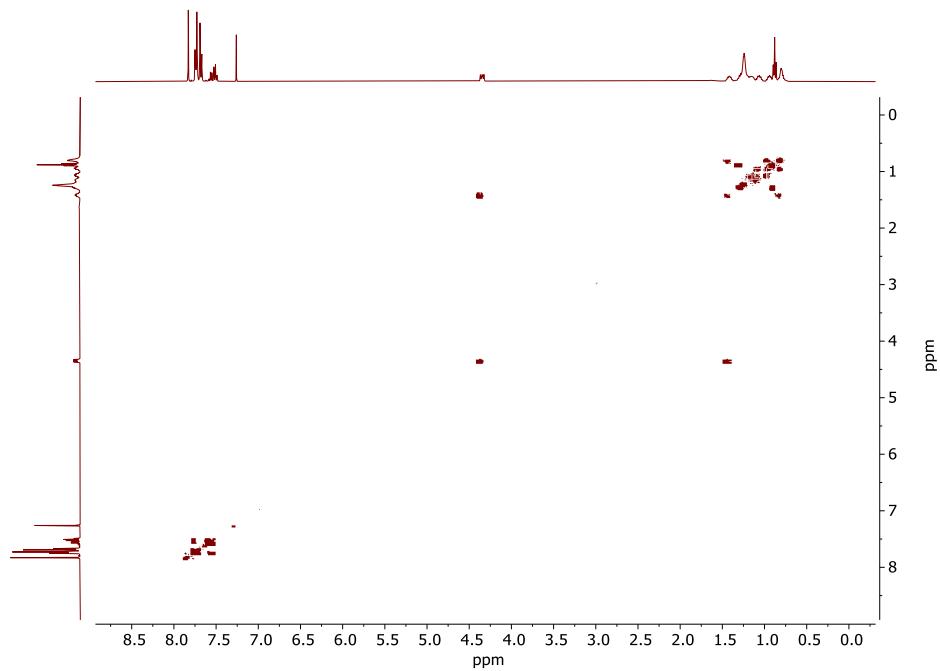
## Compound 2c



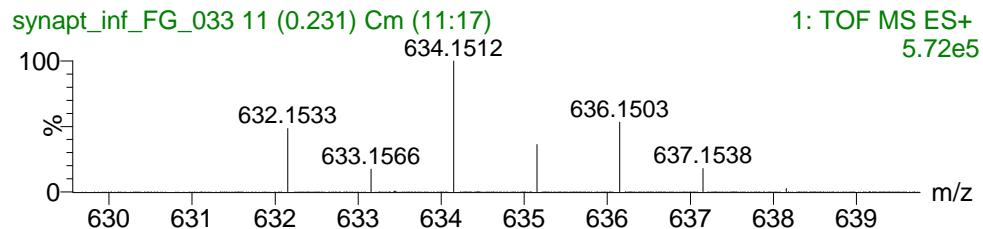
**Figure S33.**  $^1\text{H}$  NMR ( $\text{CDCl}_3$ ) spectra of compound 2c.



**Figure S34.**  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ ) spectra of compound 2c.

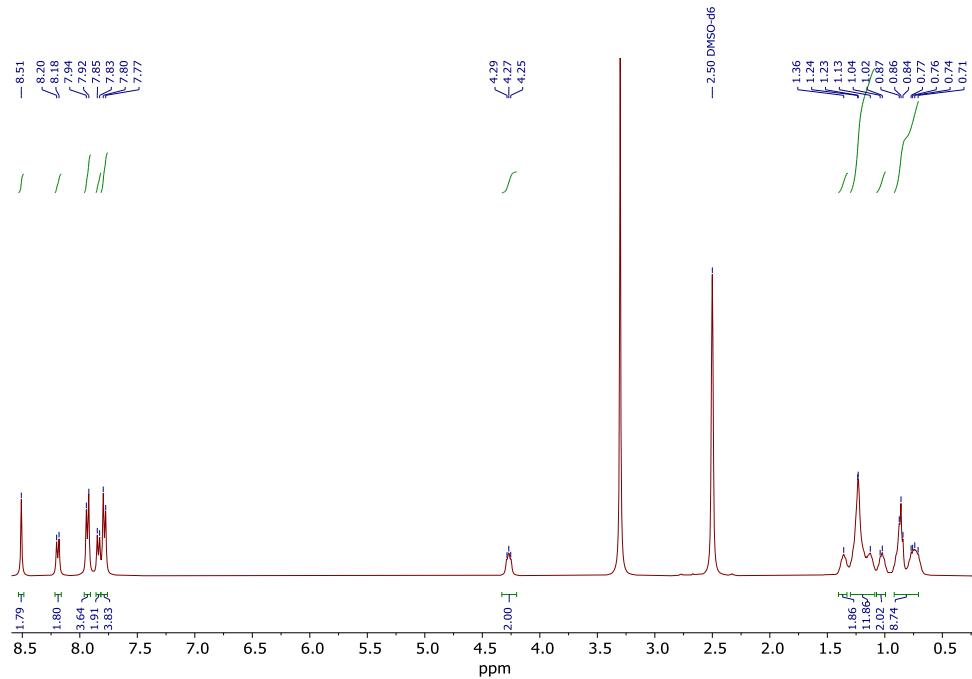


**Figure S35.**  $^1\text{H}$  COSY NMR ( $\text{CDCl}_3$ ) spectra of compound **2c**.

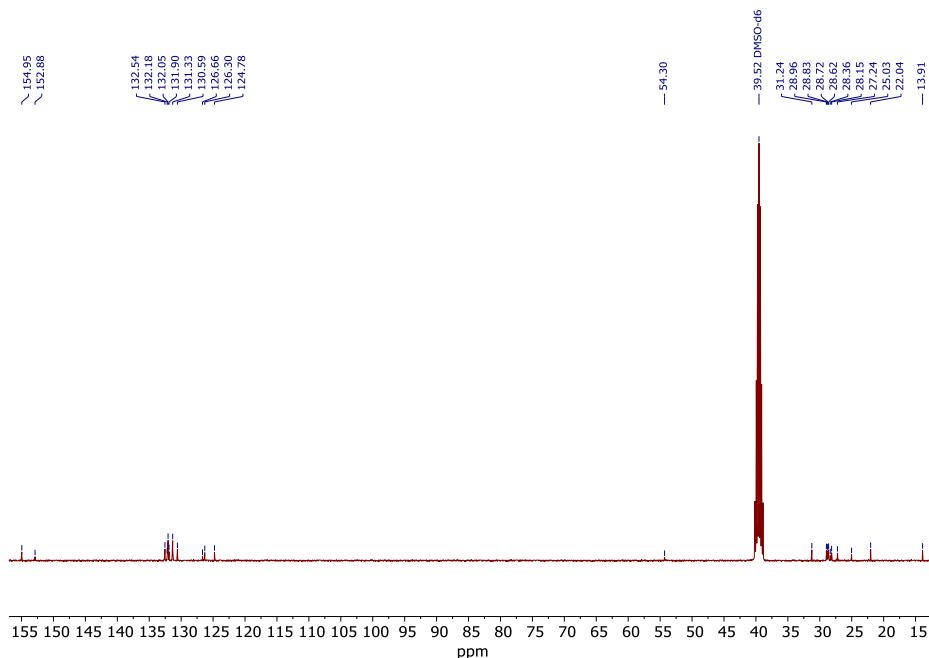


**Figure S36.** HRMS spectra of compound **2c**.

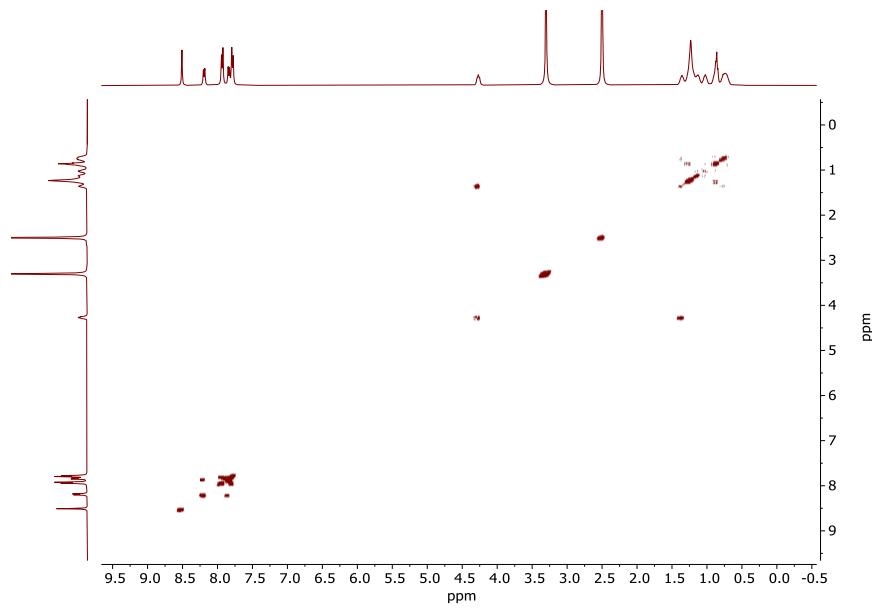
## **Compound 2d**



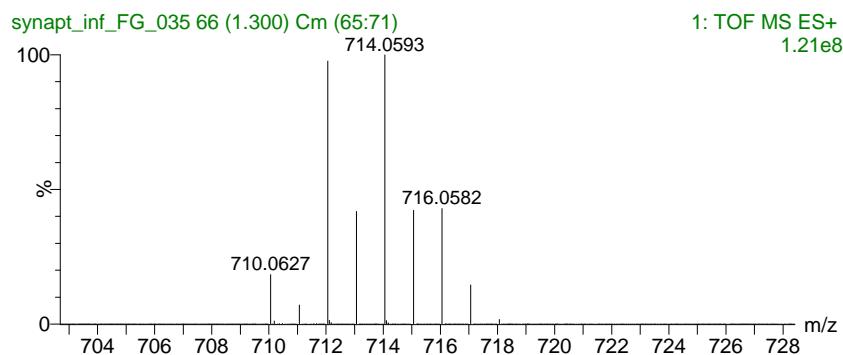
**Figure S37.**  $^1\text{H}$  NMR (DMSO- $\text{d}_6$ ) spectra of compound **2d**.



**Figure S38.**  $^{13}\text{C}$  NMR (DMSO-d<sub>6</sub>) spectra of compound **2d**.

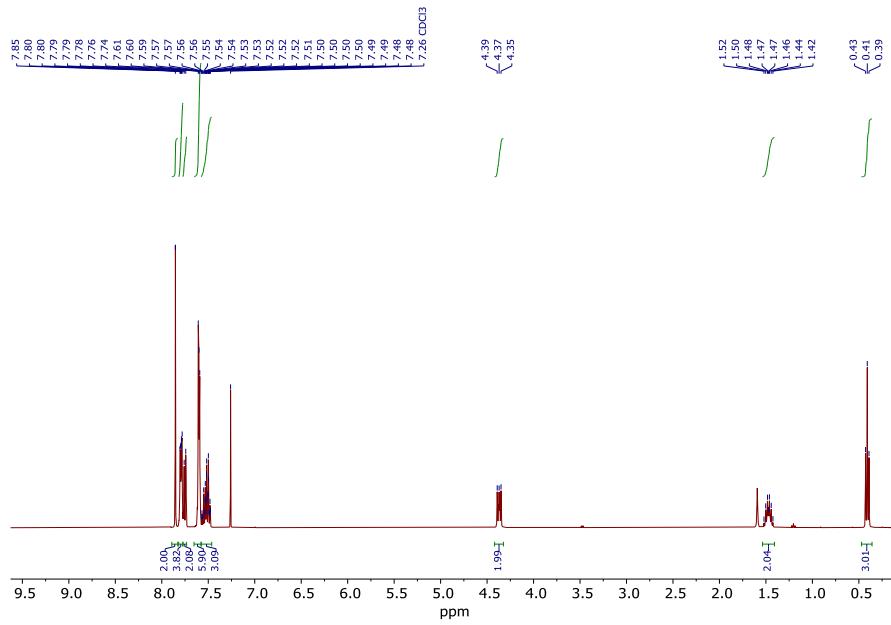


**Figure S39.**  $^1\text{H}$  COSY NMR (DMSO-d<sub>6</sub>) spectra of compound **2d**.

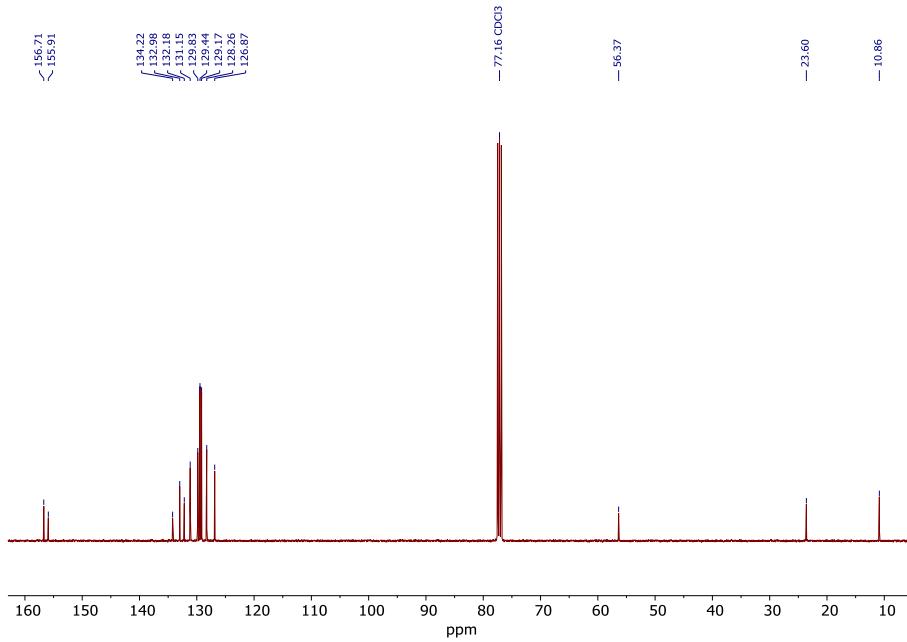


**Figure S40.** HRMS spectra of compound **2d**.

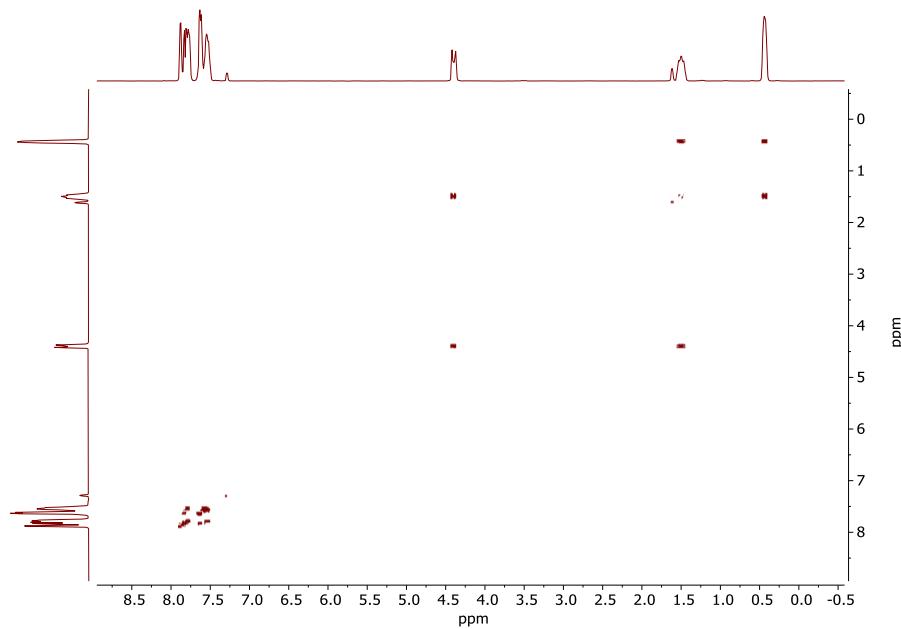
## Compound 3a



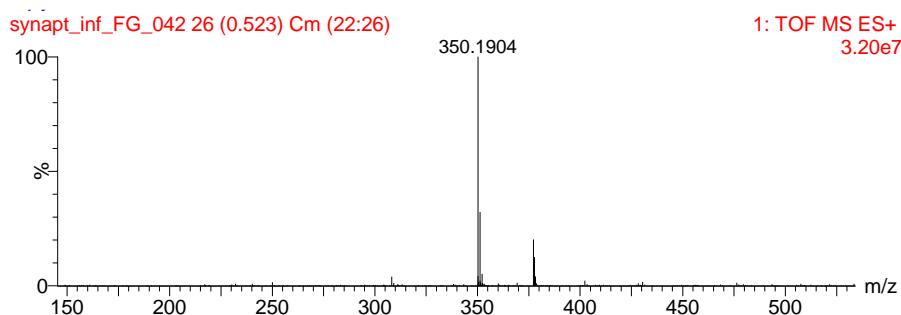
**Figure S41.**  $^1\text{H}$  NMR ( $\text{CDCl}_3$ ) spectra of compound **3a**.



**Figure S42.**  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ ) spectra of compound **3a**.

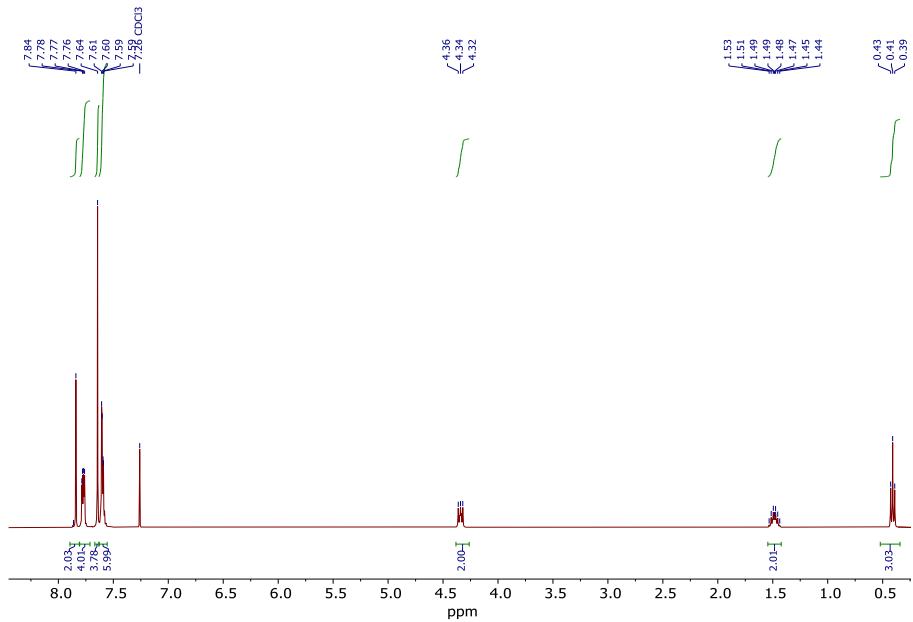


**Figure S43.**  $^1\text{H}$  COSY NMR ( $\text{CDCl}_3$ ) spectra of compound **3a**.

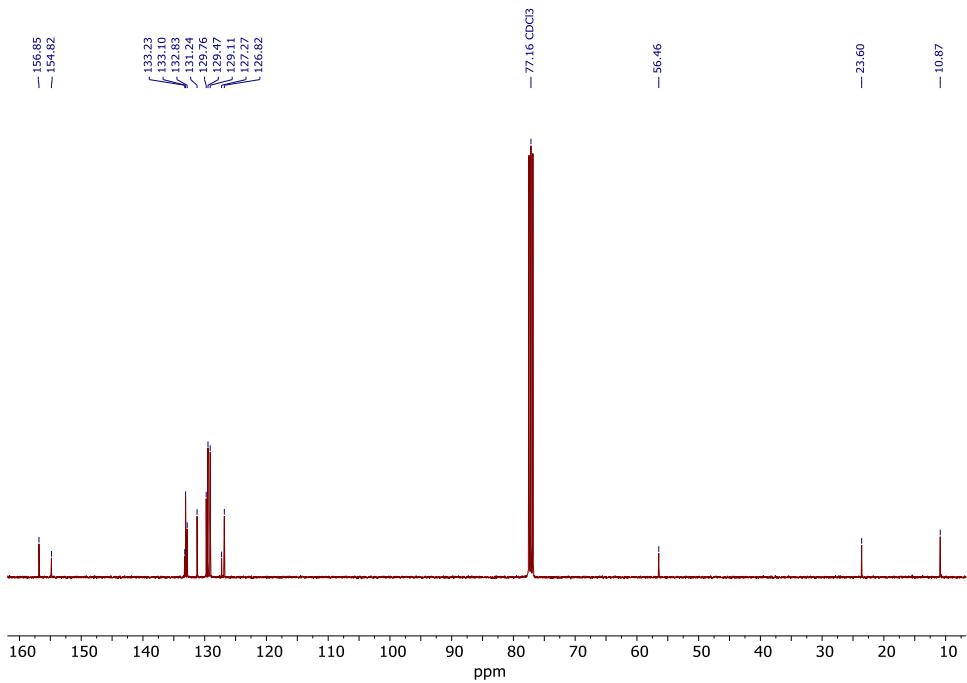


**Figure S44.** HRMS spectra of compound **3a**.

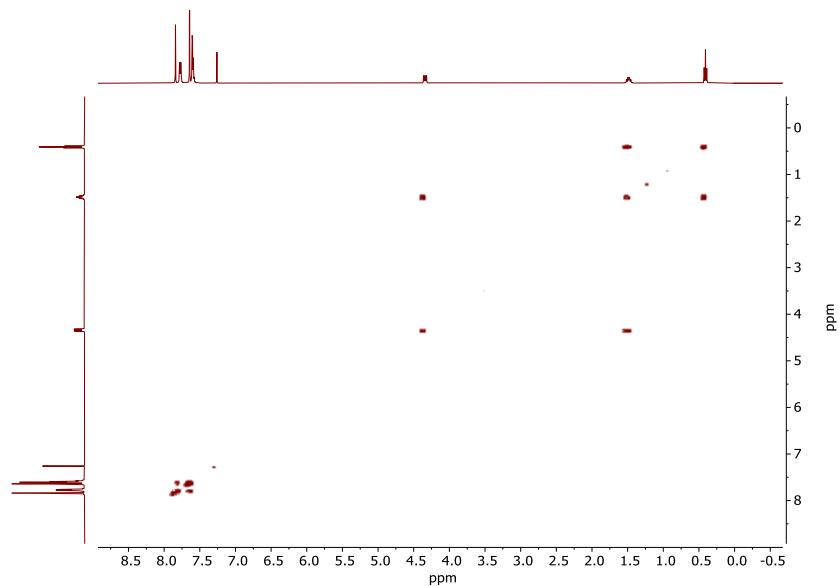
## Compound 3b



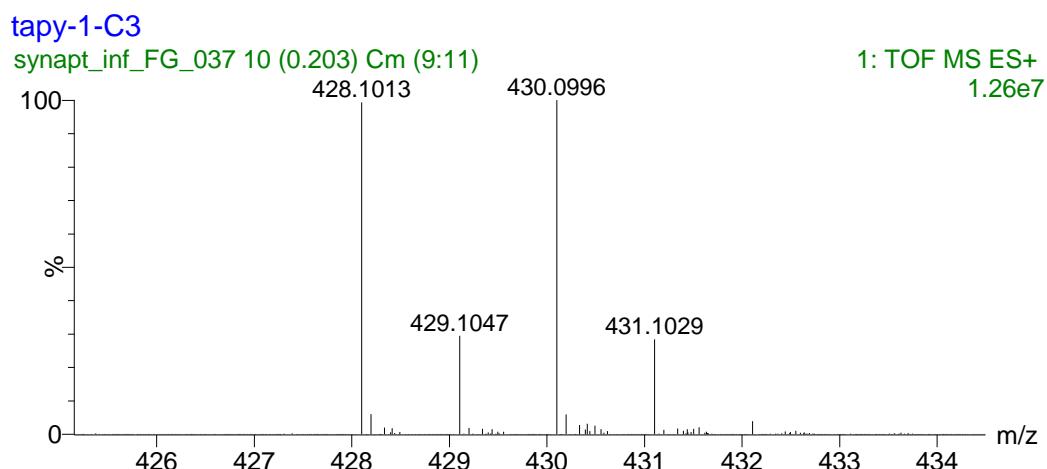
**Figure S45.**  $^1\text{H}$  NMR ( $\text{CDCl}_3$ ) spectra of compound **3b**.



**Figure S46.**  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ ) spectra of compound **3b**.

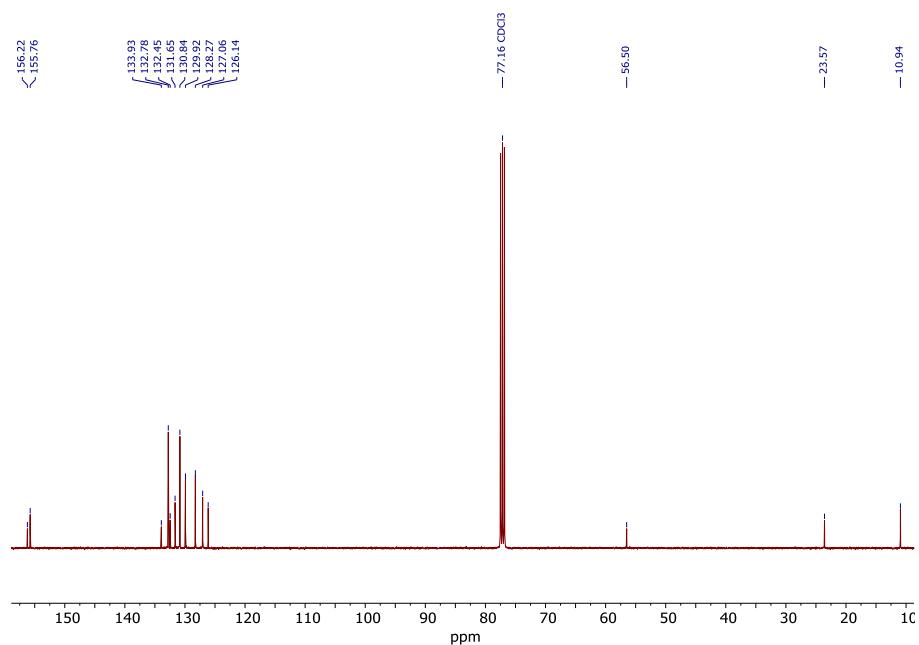
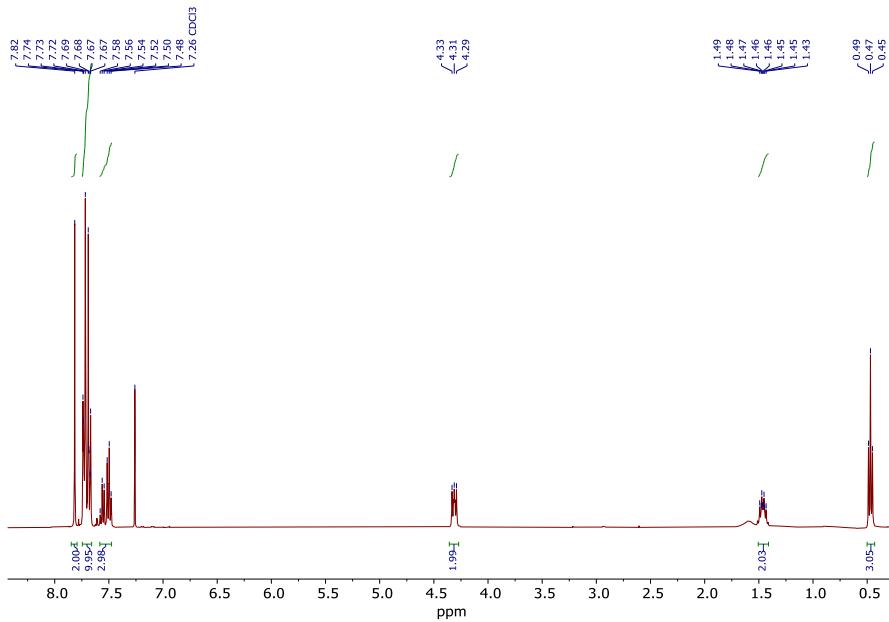


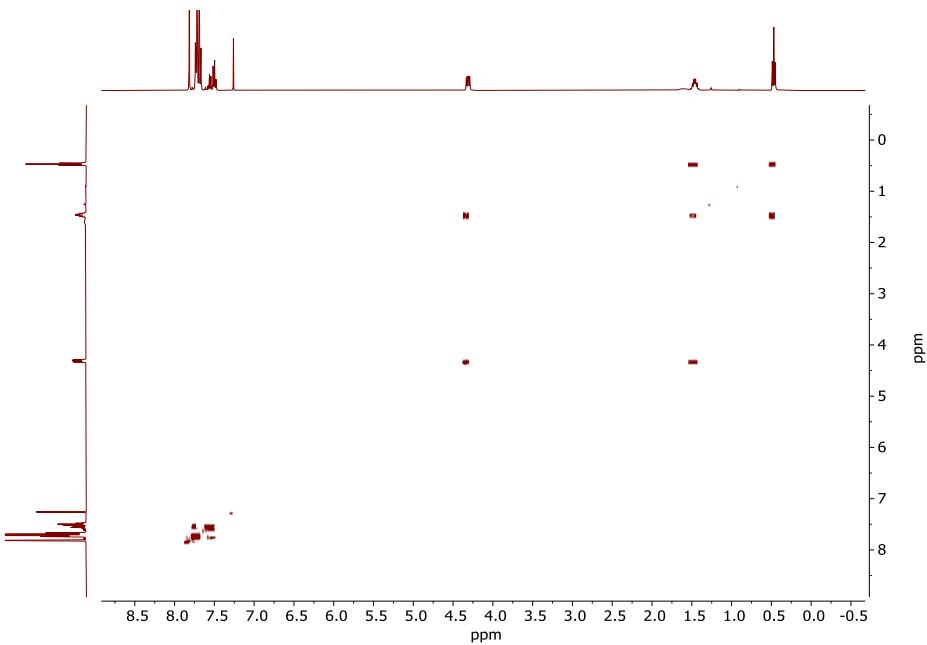
**Figure S47.**  $^1\text{H}$  COSY NMR ( $\text{CDCl}_3$ ) spectra of compound **3b**.



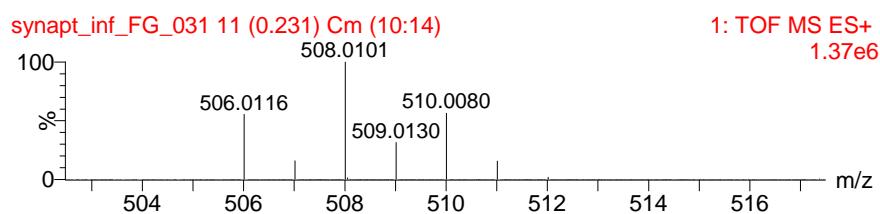
**Figure S48.** HRMS spectra of compound **3b**.

### Compound 3c



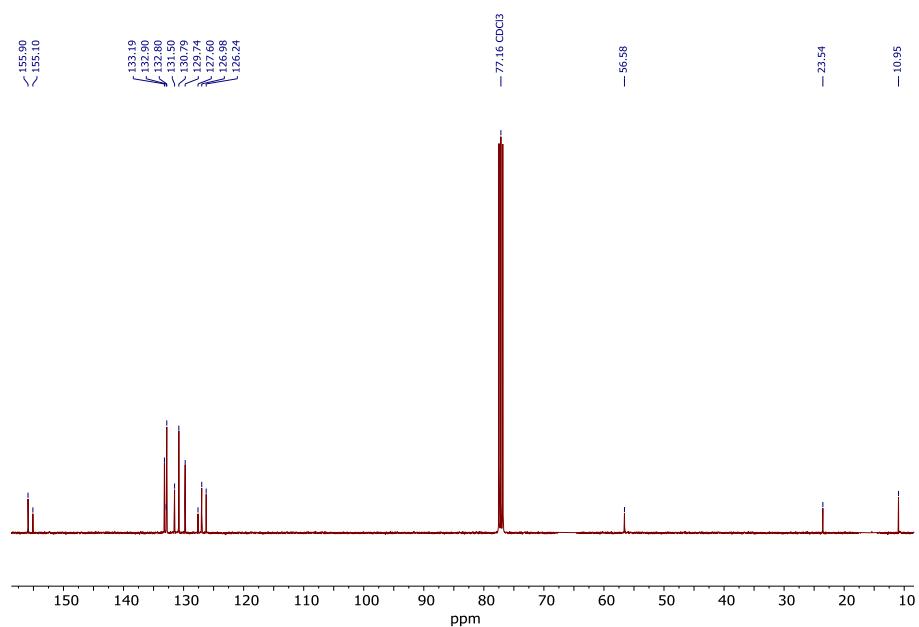
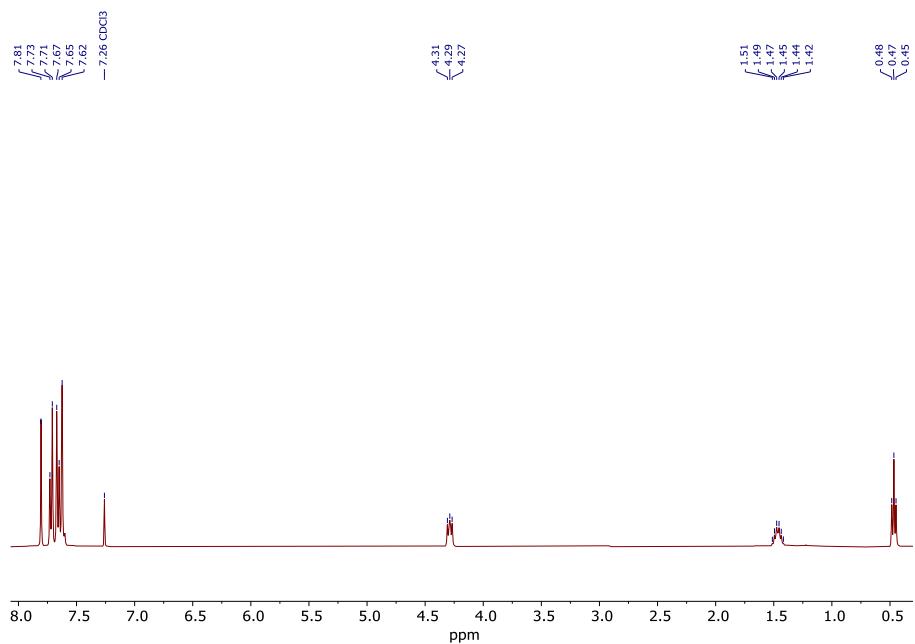


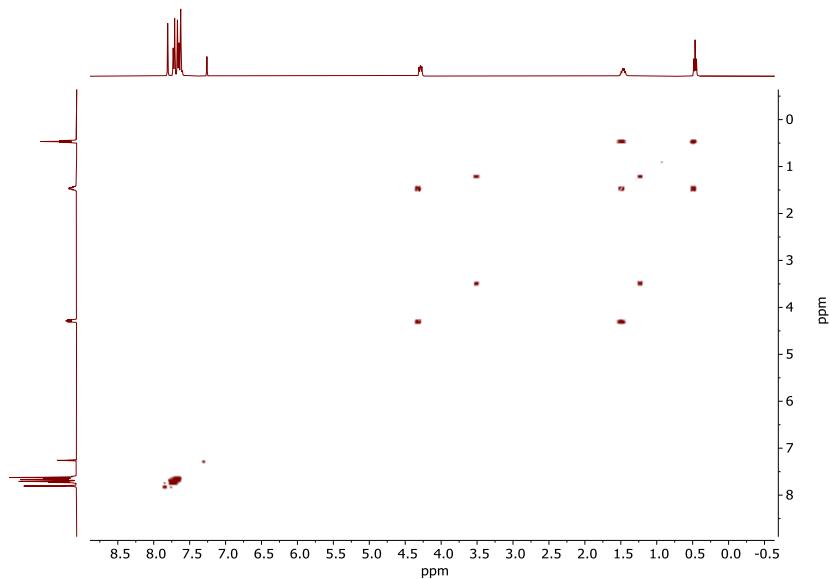
**Figure S51.**  $^1\text{H}$  COSY NMR ( $\text{CDCl}_3$ ) spectra of compound **3c**.



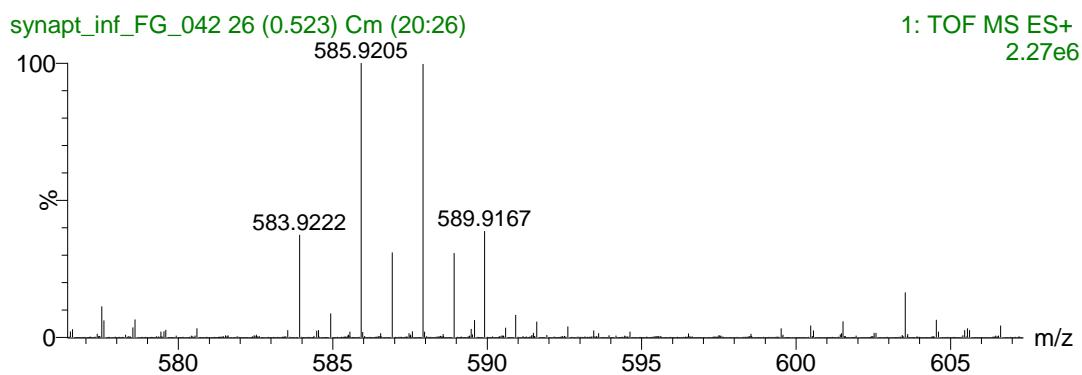
**Figure S52.** HRMS spectra of compound **3c**.

### Compound 3d

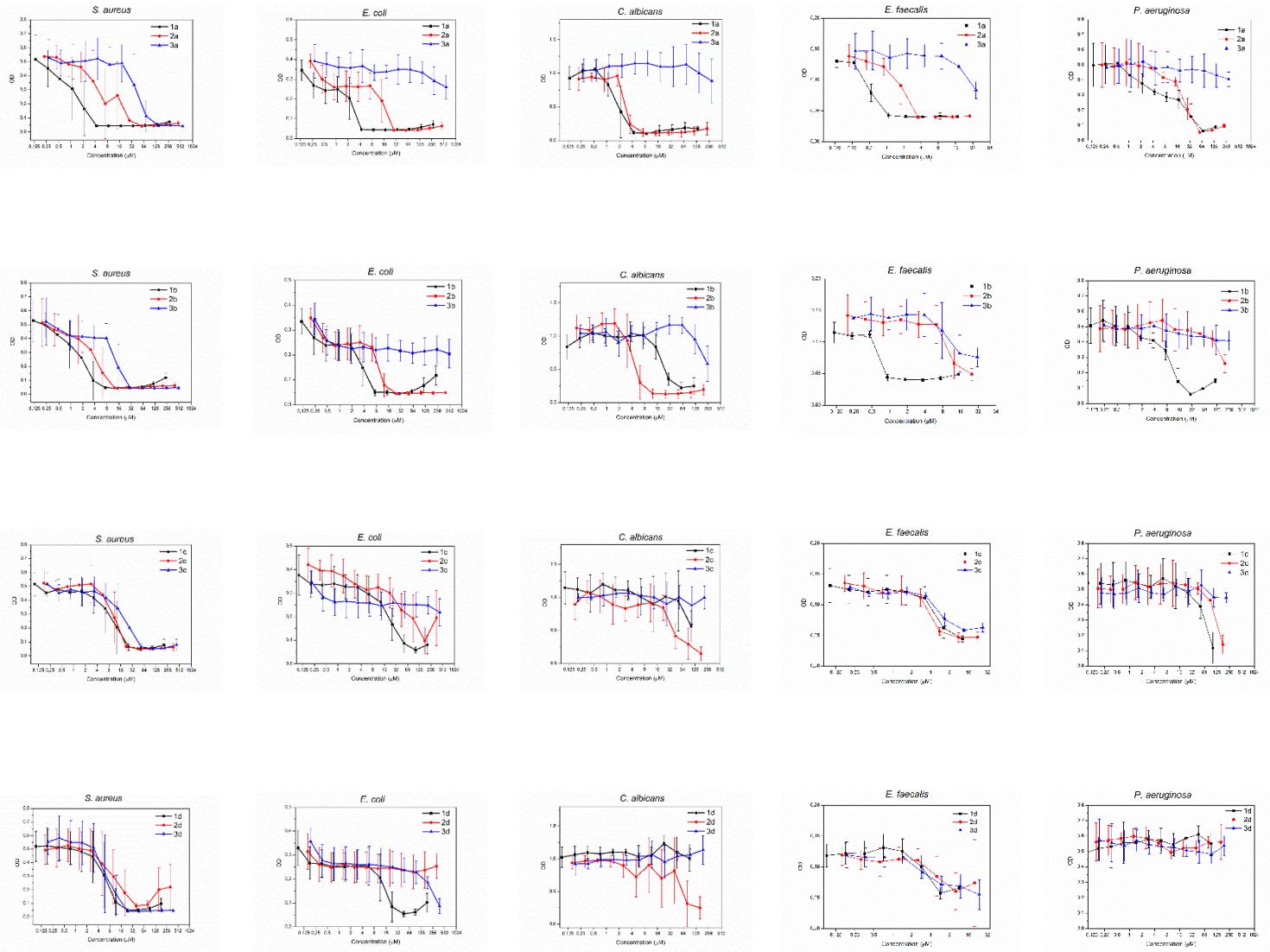




**Figure S55.**  $^1\text{H}$  COSY NMR ( $\text{CDCl}_3$ ) spectra of compound **3d**.



**Figure S56.** HRMS spectra of compound **3d**.



**Figure S57.** Determination of MICs for all the studied compounds.