

## Supporting Information

### Cascade and Iodo-Selective Base-Promoted Homolytic Aromatic Substitution

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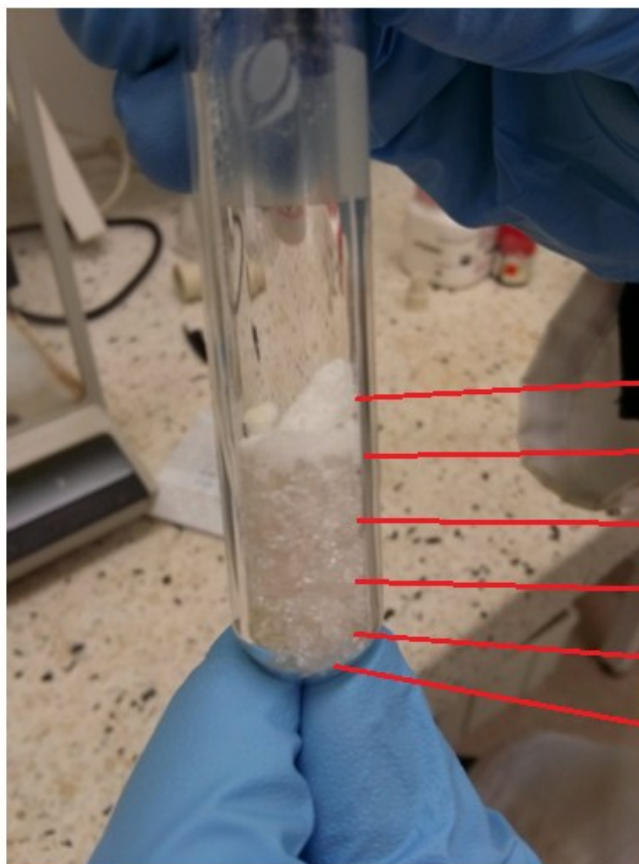
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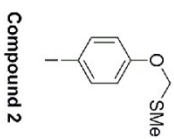
Figure 1: BHAS Reactions with arenes (solids at room temperature)

(Delayed Reaction Initiation by Arene-Melt)

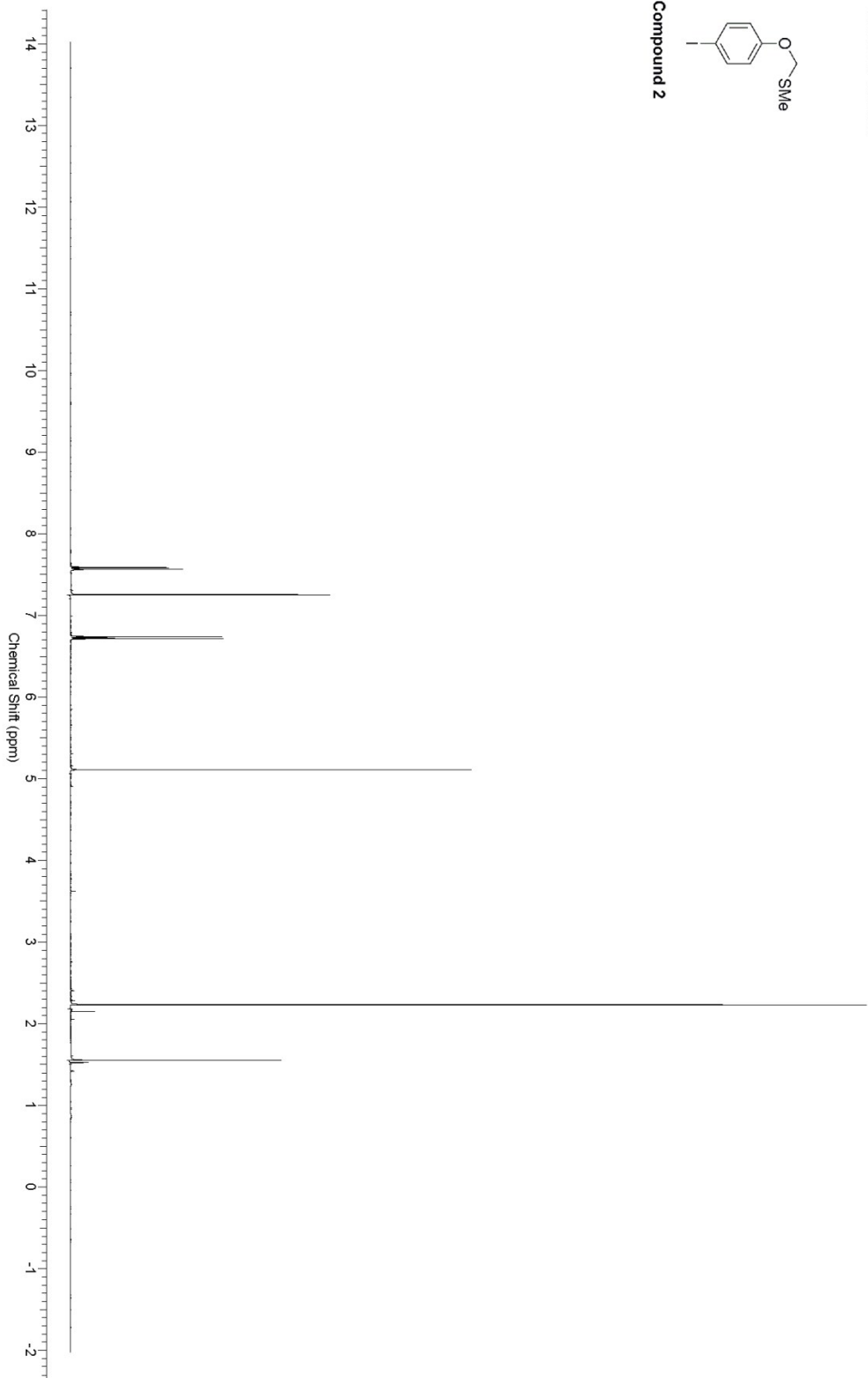


- KOtBu
- 1,4-Dimethoxy Benzene
- Bis(haloaryl)acetal
- 1,4-Dimethoxy Benzene
- 1,10-Phenanthroline
- Stirring bar

## <sup>1</sup>H and <sup>13</sup>C-NMR Spectra of Compounds



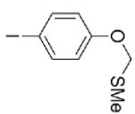
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<sup>1</sup>H NMR (CHLOROFORM-d, 400MHz): δ (ppm) 7.58 (dt, *J*=9.0, 2.0 Hz, 2H), 6.73 (dd, *J*=9.0, 2.3 Hz, 2H), 5.11 (s, 2H), 2.23 (s, 3H)  
PROTON\_data3\_01



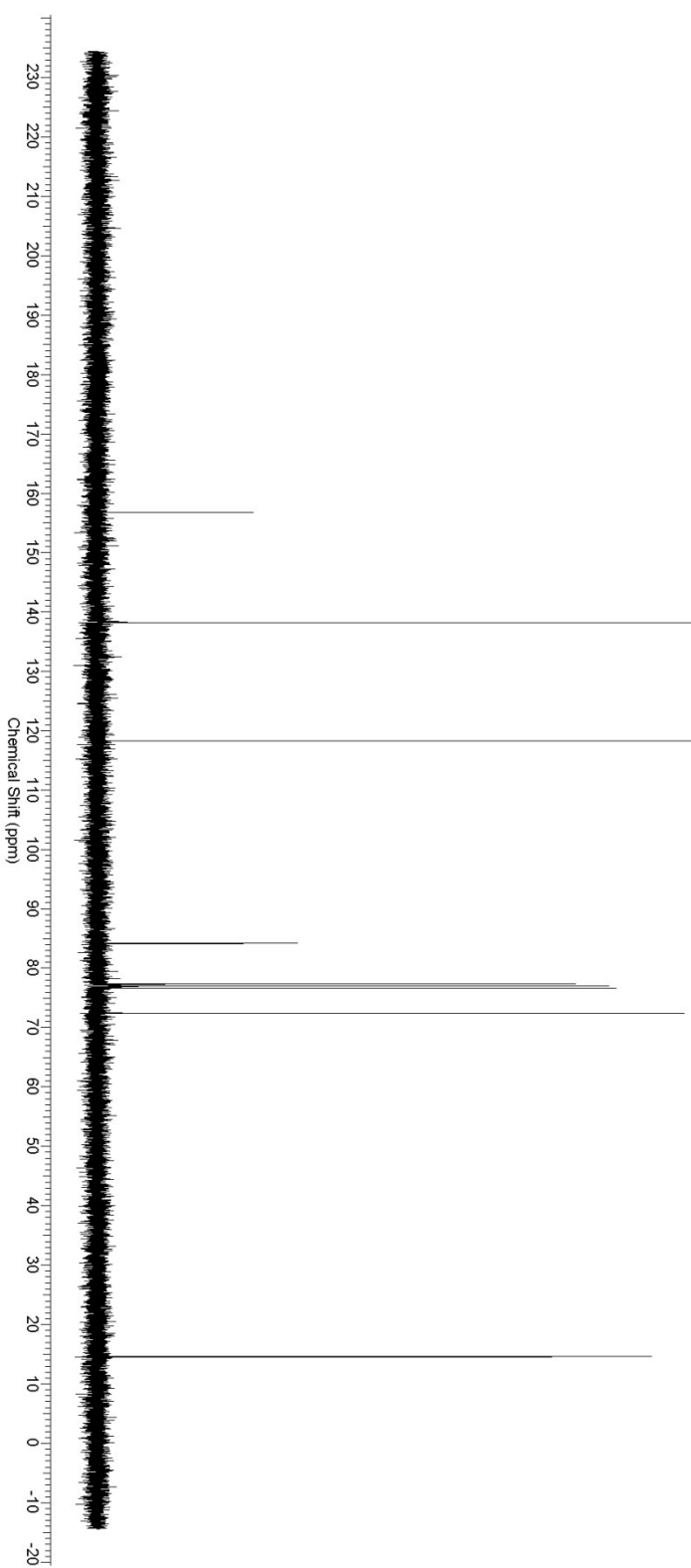
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$^{13}\text{C}$  NMR (CHLOROFORM- $d$ , 101MHz):  $\delta$  (ppm) 156.8, 138.3, 118.3, 84.2, 72.4, 14.6  
CARBON\_Lcdd3\_01



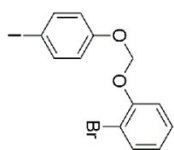
Compound 2



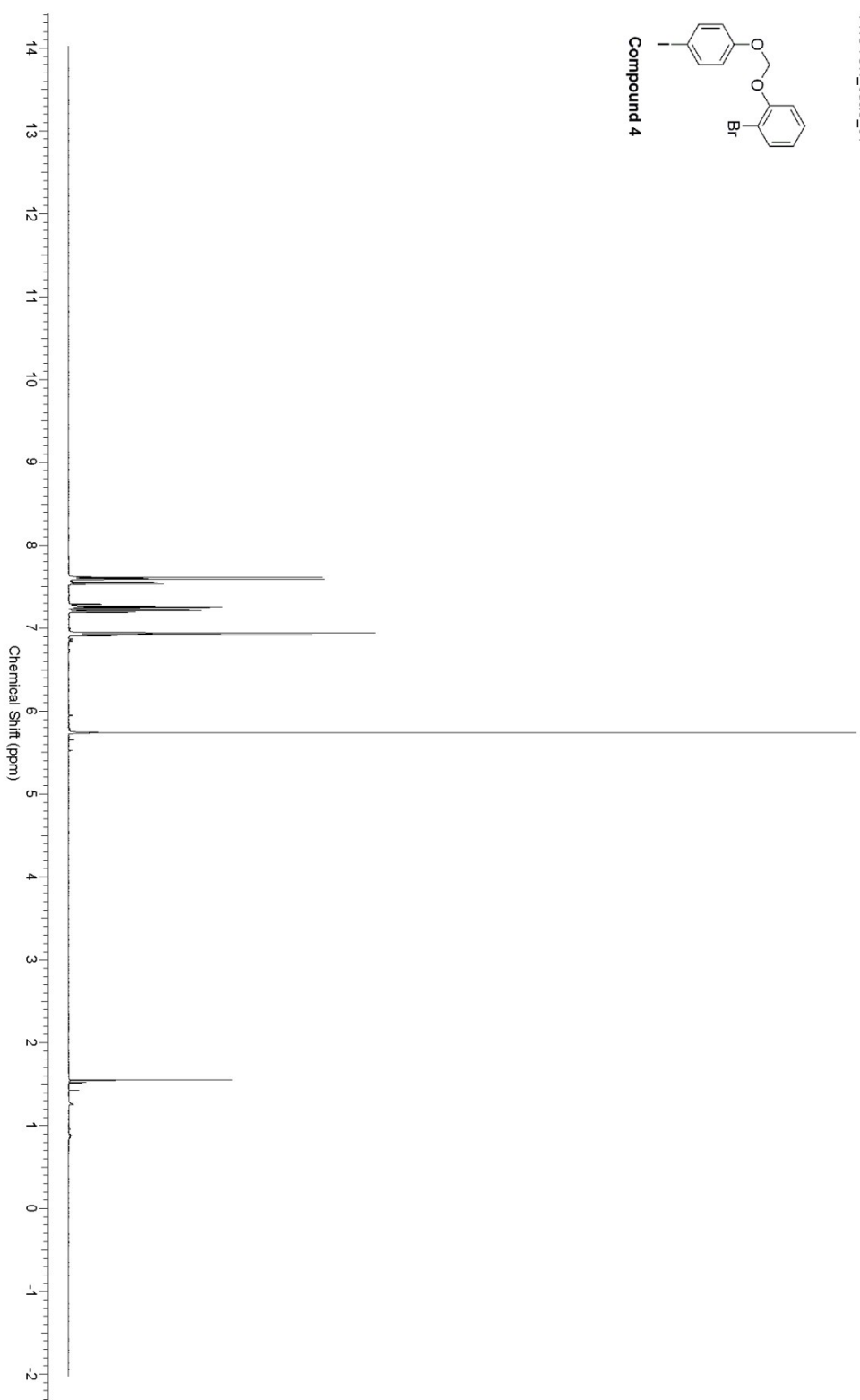
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$^1\text{H}$  NMR (400MHz, CHLOROFORM- $d$ )  $\delta$  = 7.63 - 7.57 (m, 2 H), 7.54 (dd,  $J$  = 1.6, 7.8 Hz, 1 H), 7.30 - 7.26 (m, 1 H), 7.23 - 7.16 (m, 1 H), 6.98 - 6.85 (m, 3 H), 5.74 (s, 2 H)  
PROTON\_cdd3\_01

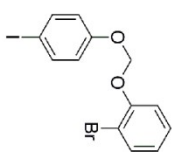


Compound 4

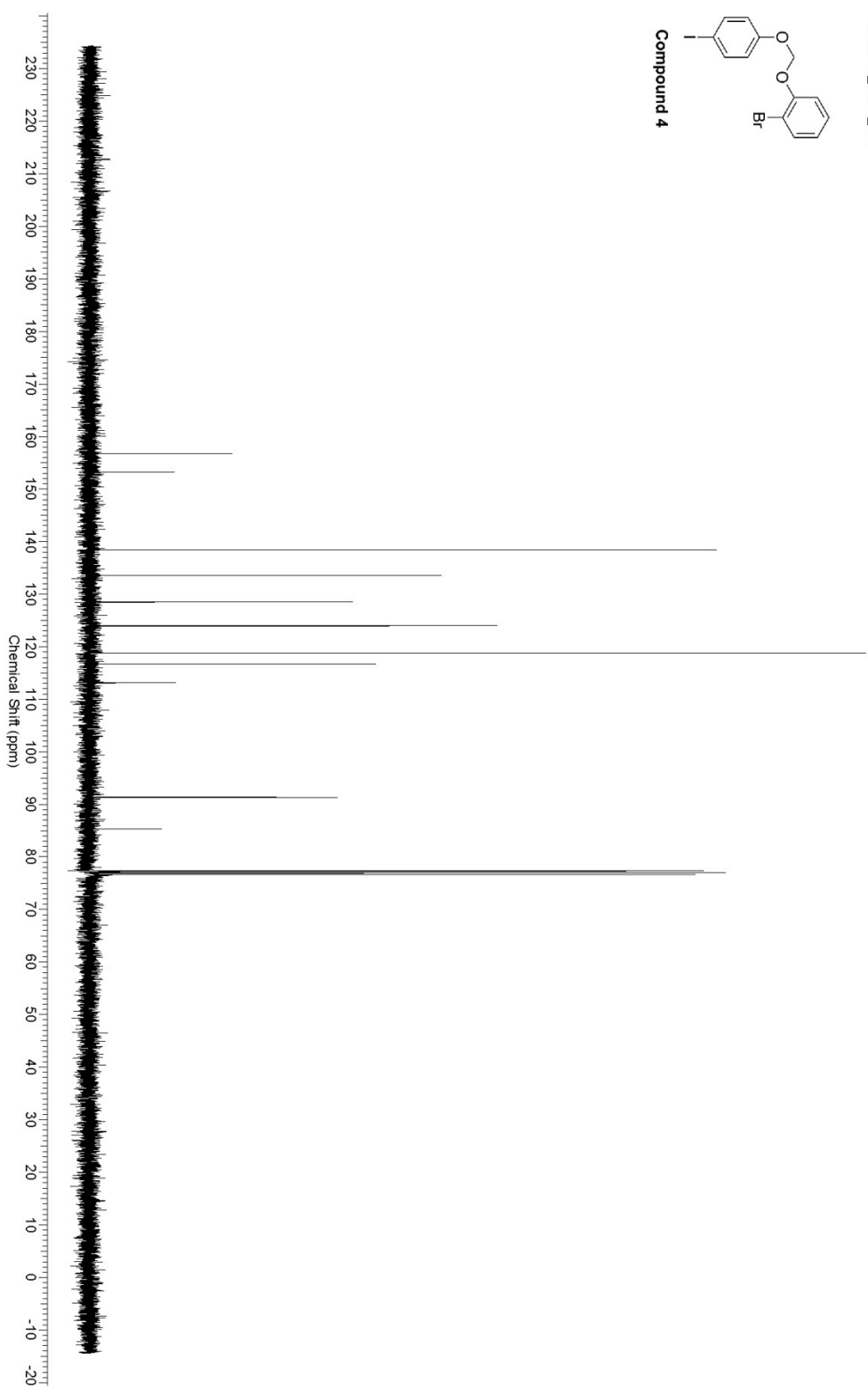


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$^{13}\text{C}$  NMR (101MHz, CHLOROFORM- $d$ )  $\delta$  = 156.8, 153.2, 138.4, 133.6, 128.5, 124.0, 118.8, 116.7, 113.1, 91.4, 85.3  
CARBON\_cdd3\_02

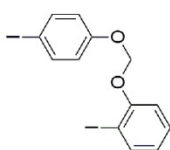


Compound 4

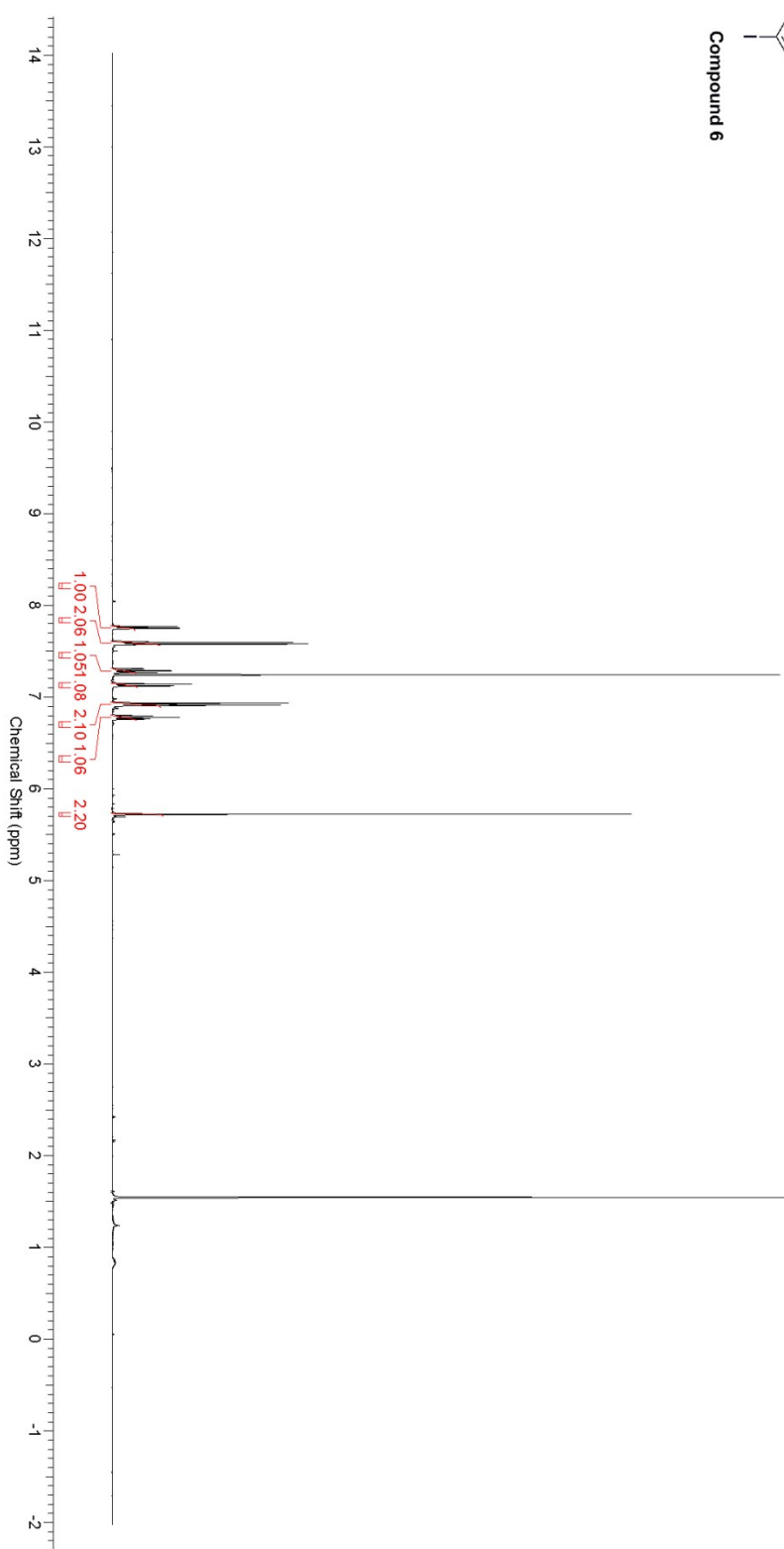


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$^1\text{H}$  NMR (400MHz, CHLOROFORM- $d$ )  $\delta$  = 7.76 (dd,  $J$  = 1.6, 7.8 Hz, 1 H), 7.61 - 7.56 (m, 6 H), 7.29 (ddd,  $J$  = 1.6, 7.2, 8.4 Hz, 3 H), 7.13 (dd,  $J$  = 1.2, 8.2 Hz, 3 H), 6.95 - 6.89 (m, 6 H), 6.78 (dt,  $J$  = 1.4, 7.5 Hz, 3 H), 5.72 (s, 6 H)  
PROTON\_cdd3\_02

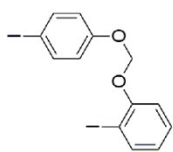


Compound 6

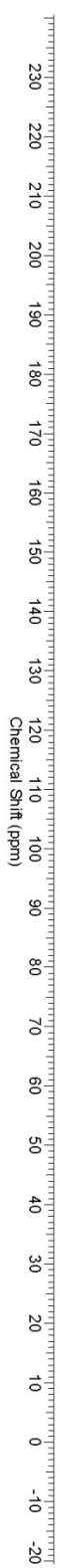




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**<sup>13</sup>C NMR (101MHz, CHLOROFORM-d)  $\delta$  = 156.7, 155.5, 139.6, 138.4, 129.5, 124.4, 118.8, 115.2, 91.2, 87.2, 85.3**  
CARBON\_cdd3\_01

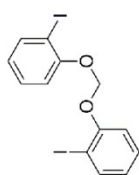


Compound 6

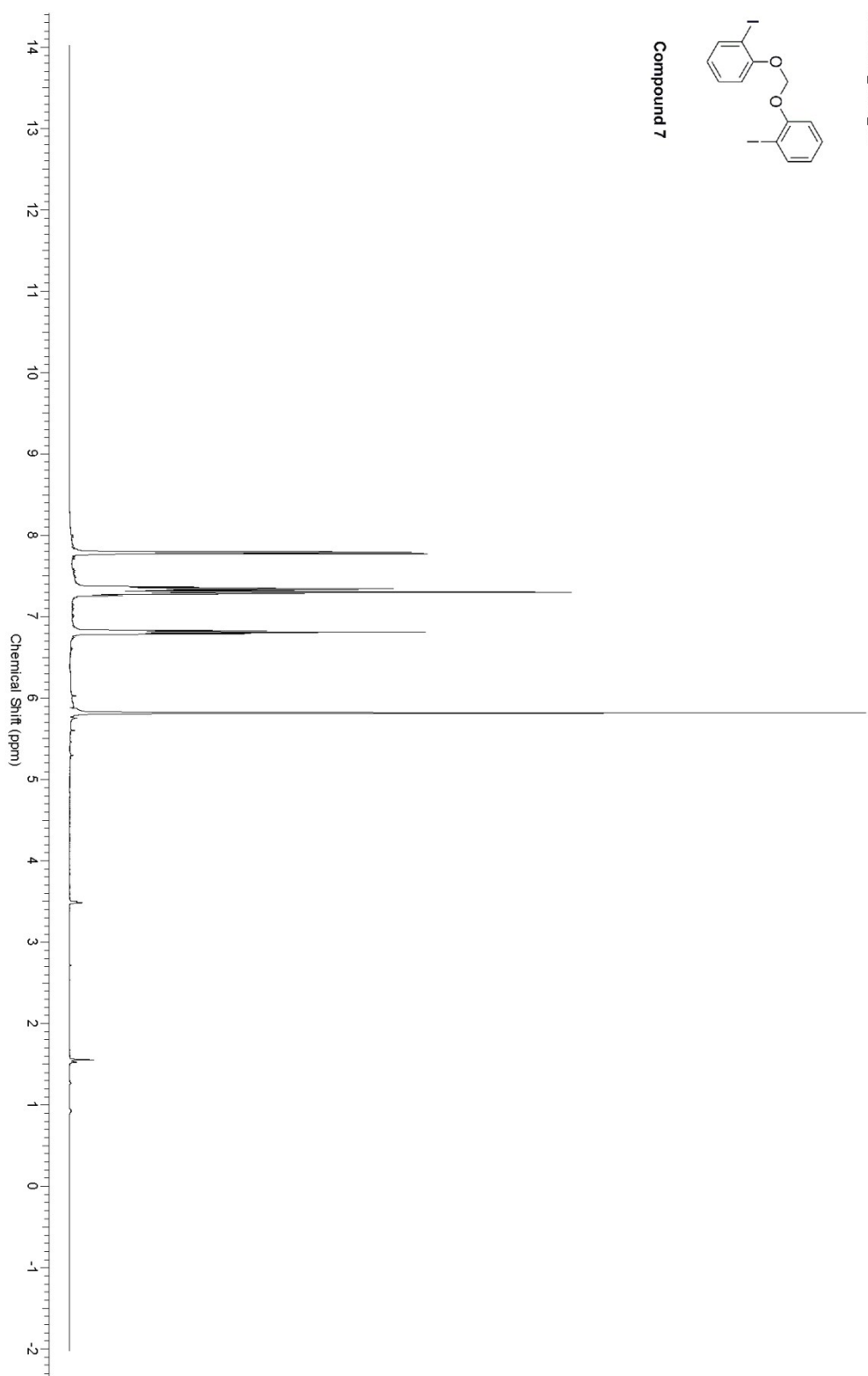


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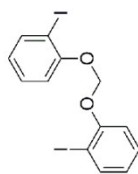
<sup>1</sup>H NMR (400MHz, CHLOROFORM-d)  $\delta$  = 7.79 (d,  $J$  = 7.8 Hz, 2 H), 7.39 - 7.32 (m, 2 H), 7.28 (s, 2 H), 6.81 (t,  $J$  = 7.6 Hz, 2 H), 5.82 (s, 2 H)  
PROTON\_cdd3\_02



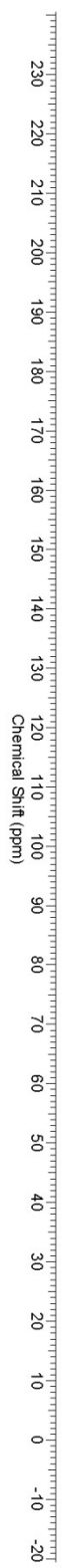
Compound 7



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<sup>13</sup>C NMR (101MHz, CHLOROFORM-d)  $\delta$  = 155.7, 139.6, 129.7, 124.4, 115.5, 91.7, 87.1  
CARBON\_cdd3\_01

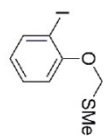


Compound 7

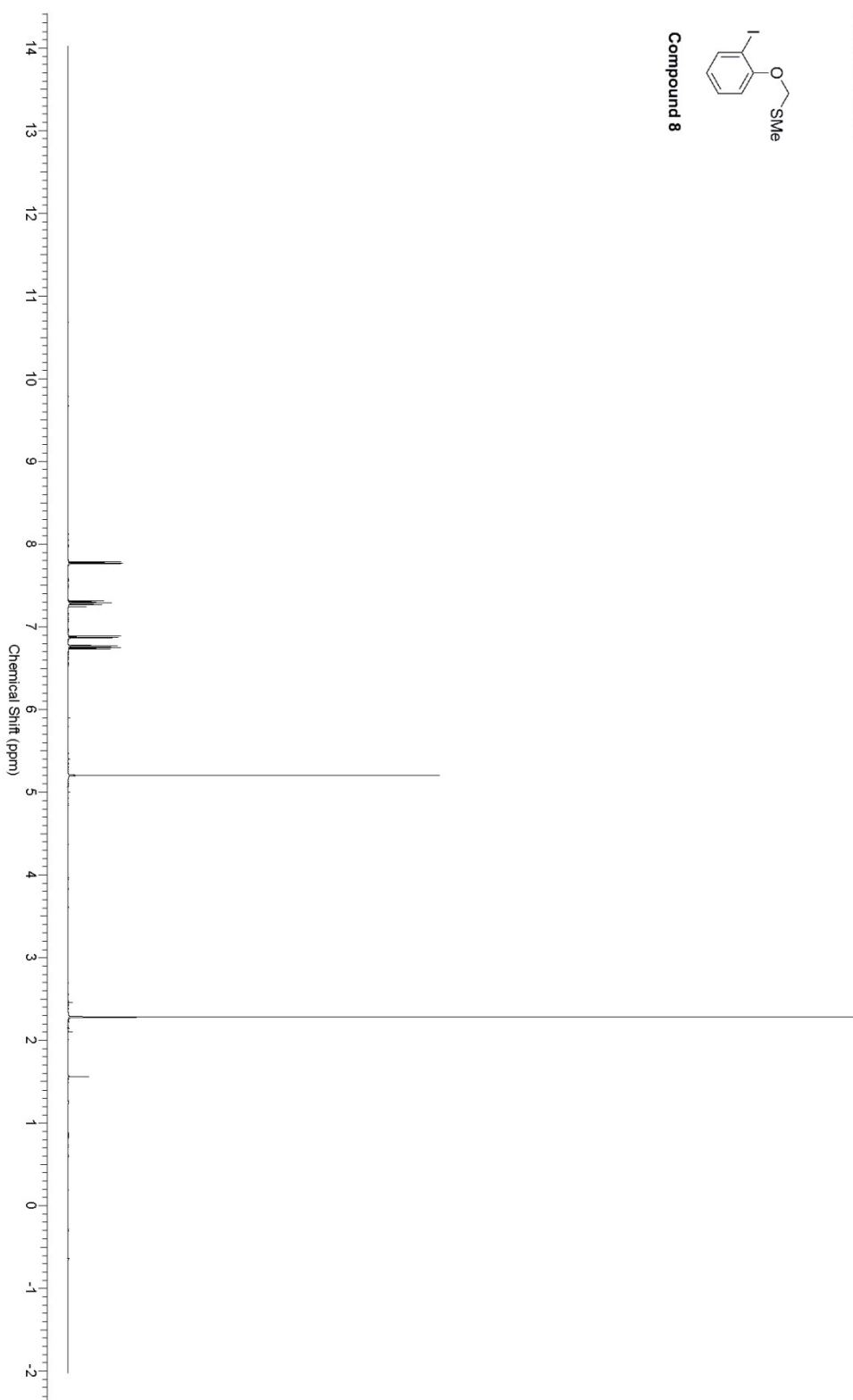


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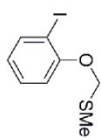
$^1\text{H}$  NMR (CHLOROFORM- $d$ , 400MHz):  $\delta$  (ppm) 7.77 (dd,  $J=7.8, 2.0$  Hz, 1H), 7.26 - 7.34 (m, 1H), 6.88 (dd,  $J=8.4, 1.4$  Hz, 1H), 6.75 (td,  $J=7.5, 1.4$  Hz, 1H), 5.20 (s, 2H), 2.28 (s, 3H)  
PROTONL\_ddd3\_01



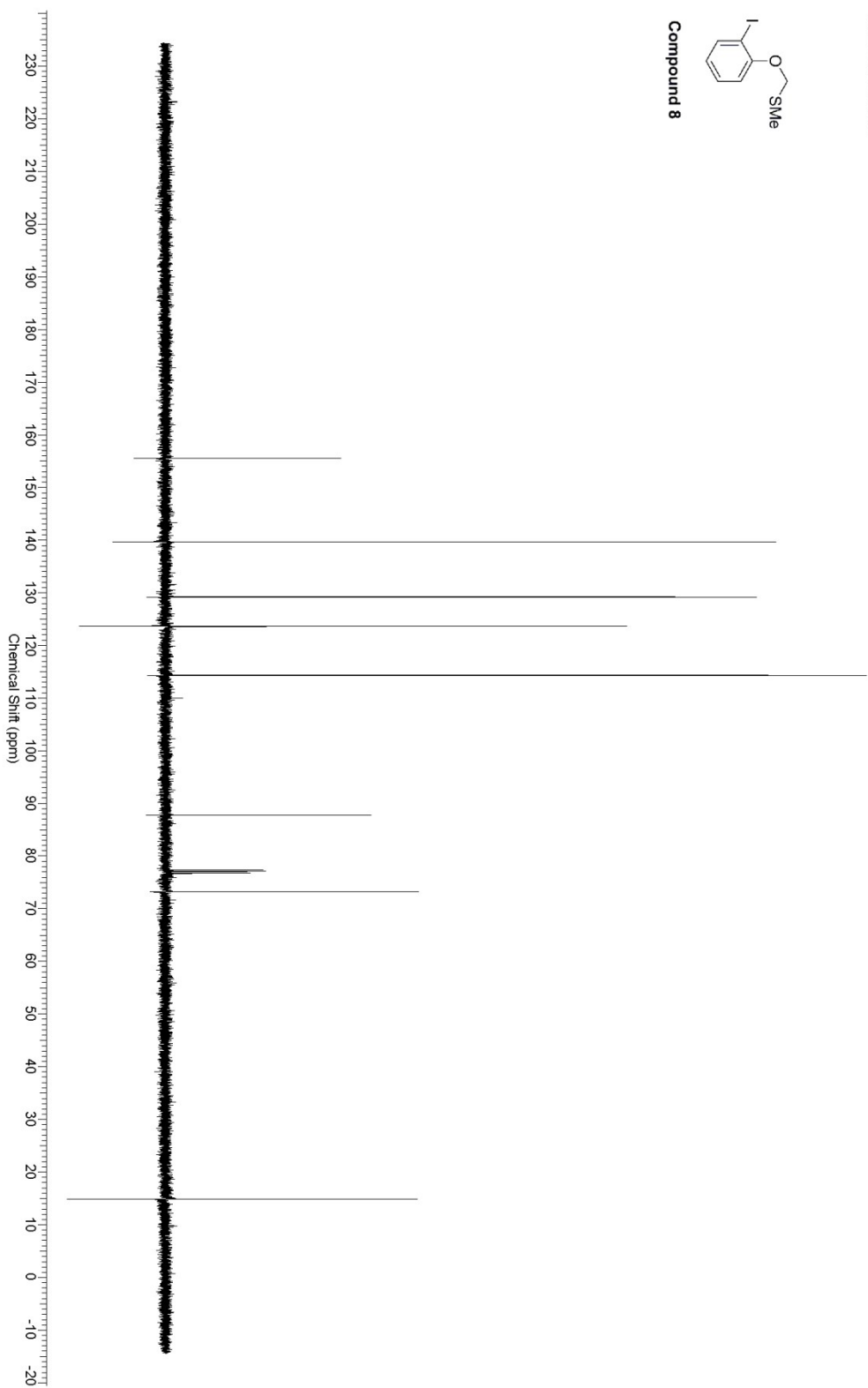
Compound 8



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 $^{13}\text{C}$  NMR (CHLOROFORM- $d$ , 101MHz):  $\delta$  (ppm) 155.5, 139.7, 129.2, 123.6, 114.3, 87.8, 73.3, 14.9  
CARBON\_ddd3\_02

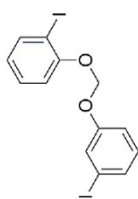


Compound 8

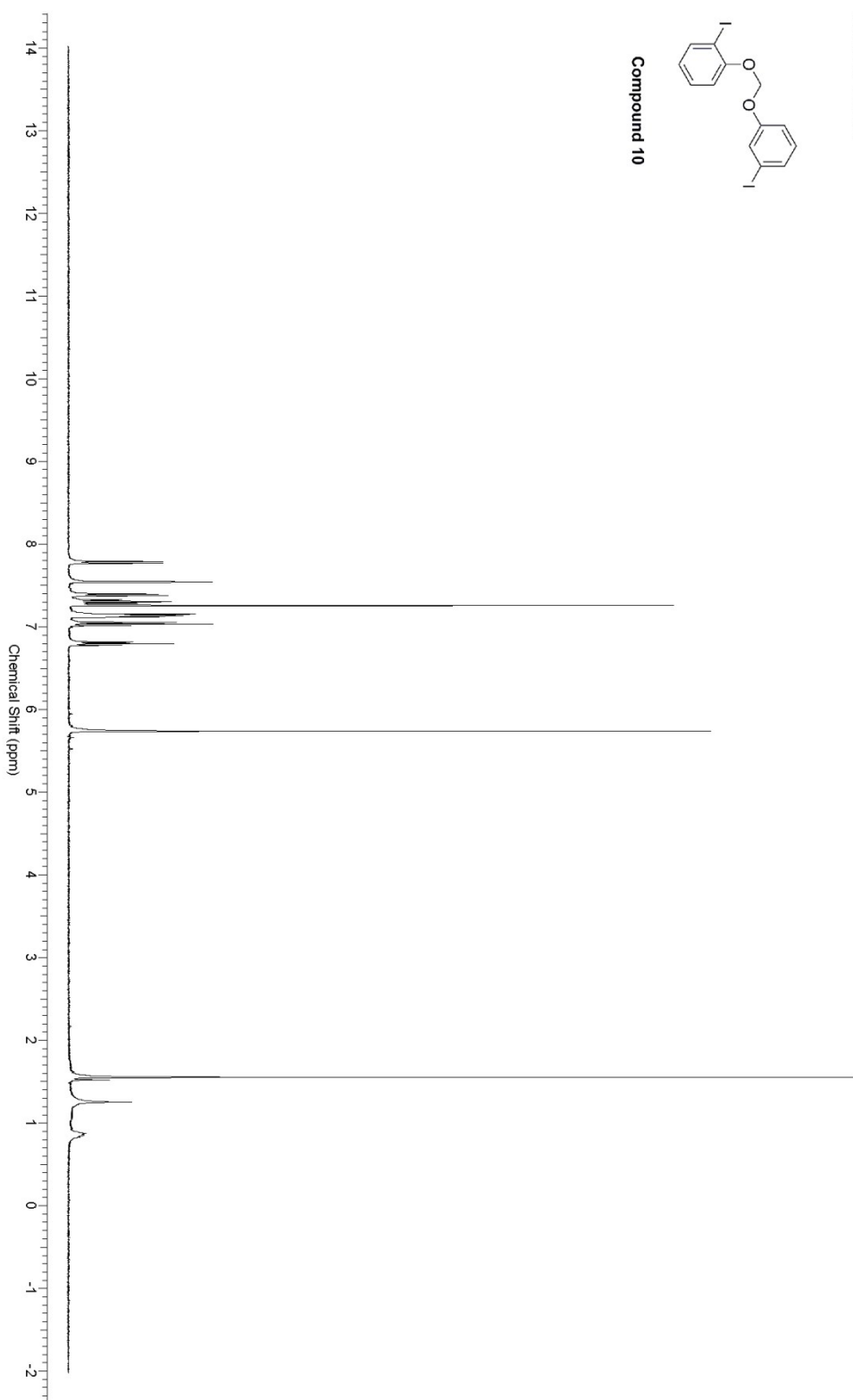


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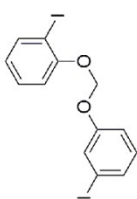
$^1\text{H}$  NMR (CHLOROFORM- $d$ , 400MHz):  $\delta$  (ppm) 7.78 (dd,  $J=7.8, 1.6$  Hz, 1H), 7.54 (d,  $J=1.6$  Hz, 1H), 7.39 (d,  $J=7.4$  Hz, 1H), 7.31 (td,  $J=8.6, 2.0$  Hz, 1H), 7.10 - 7.17 (m, 2H), 7.03 (dd,  $J=8.6, 7.4$  Hz, 1H), 6.80 (t,  $J=7.6$  Hz, 1H), 5.74 (s, 2H)  
PROTON\_odd3\_01



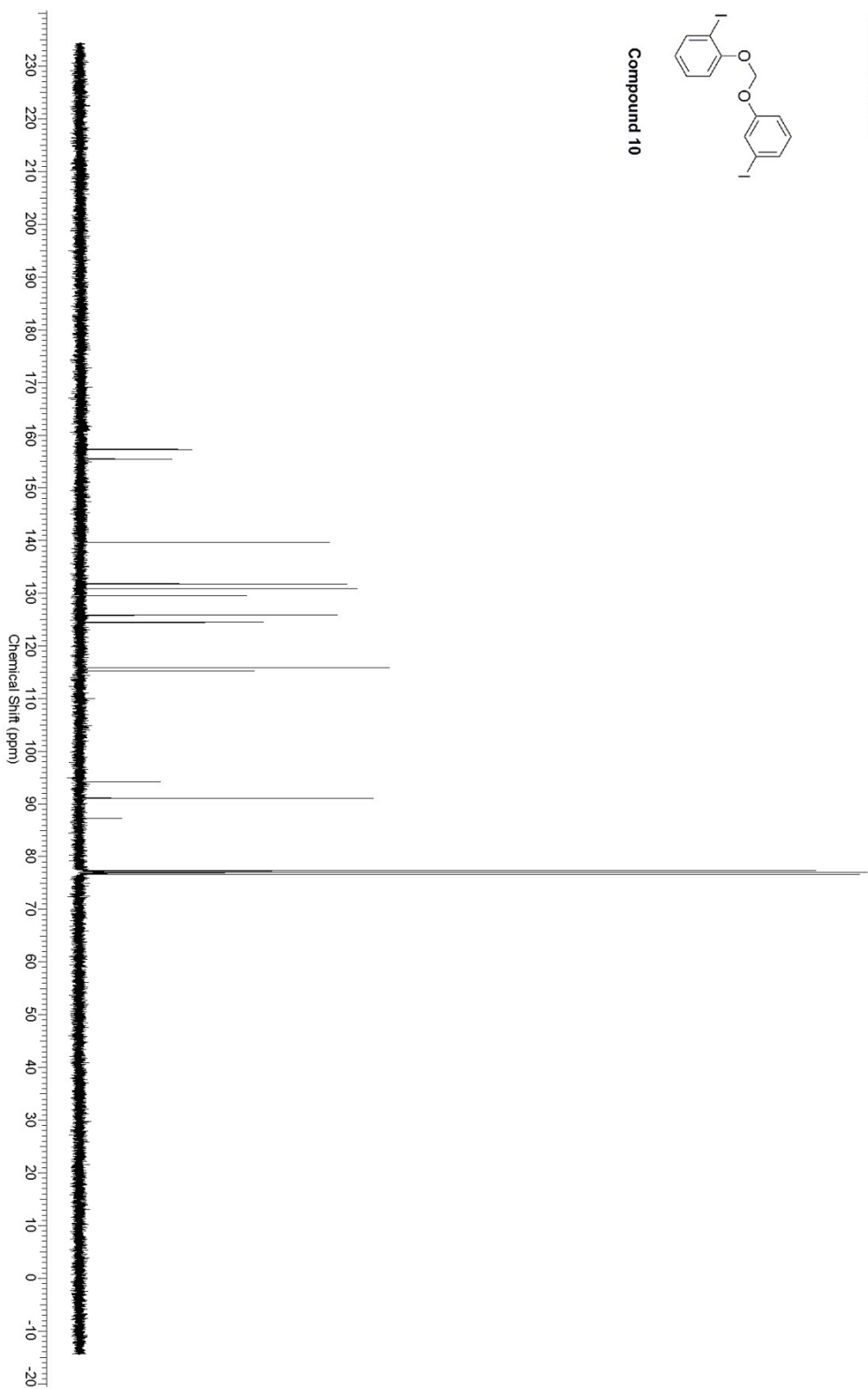
Compound 10



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**<sup>13</sup>C NMR (CHLOROFORM-d, 101MHz): δ (ppm) 157.3, 155.4, 139.7, 131.8, 130.9, 129.5, 125.8, 124.4, 115.8, 115.2, 94.2, 91.1, 87.2**  
CARBON\_ddd3\_01



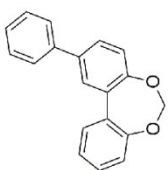
Compound 10



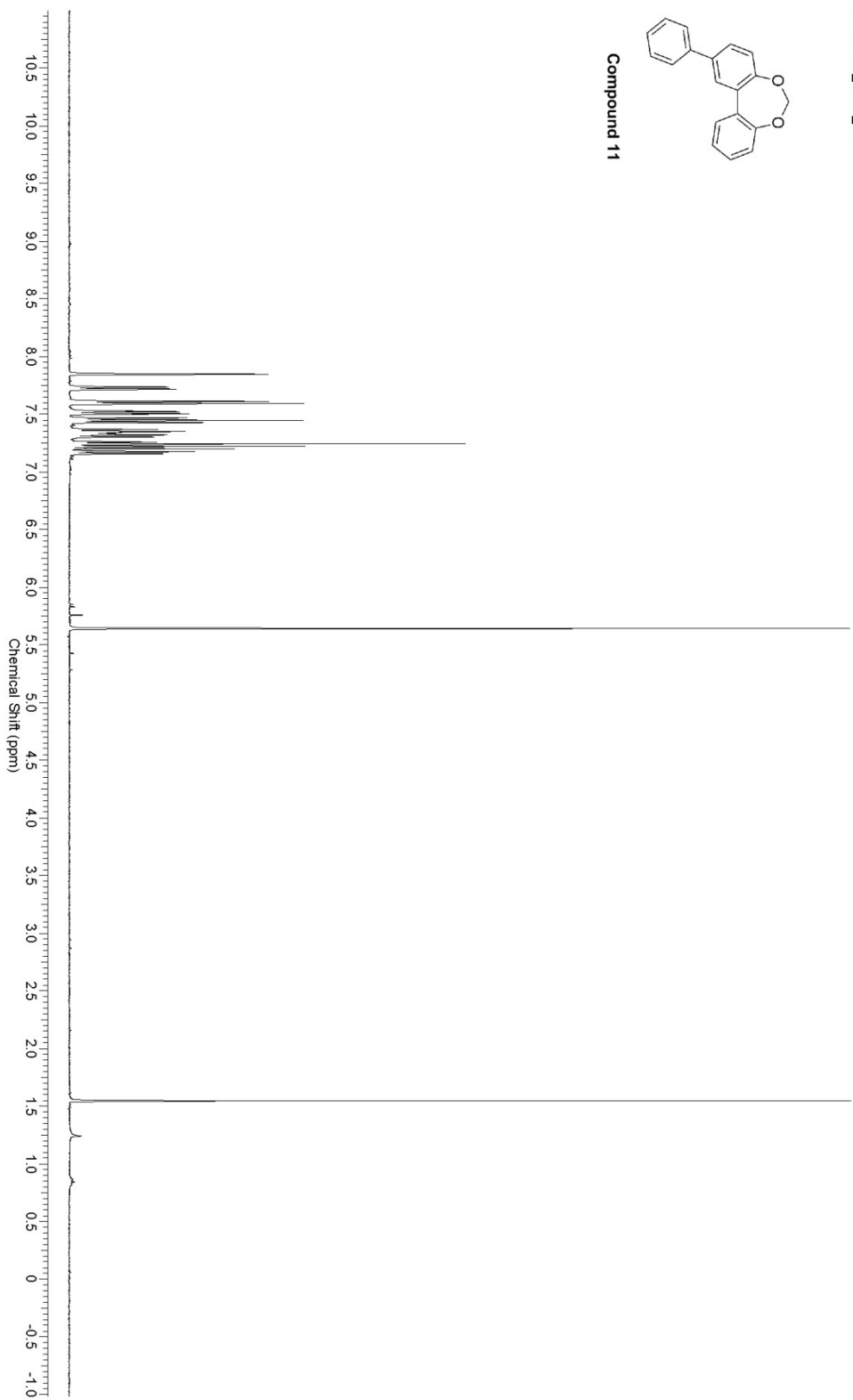
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<sup>1</sup>H NMR (400MHz, CHLOROFORM-d)  $\delta$  = 7.85 (d,  $J$  = 2.0 Hz, 1 H), 7.73 (dd,  $J$  = 1.4, 7.6 Hz, 1 H), 7.63 - 7.57 (m, 2 H), 7.51 (dd,  $J$  = 2.3, 8.2 Hz, 1 H), 7.45 (t,  $J$  = 7.4 Hz, 2 H), 7.38 - 7.29 (m, 2 H), 7.27 - 7.19 (m, 2 H), 7.17 (dd,  $J$  = 1.2, 8.2 Hz, 1 H), 5.64 (s, 2 H)  
PROTON\_cdd3\_01



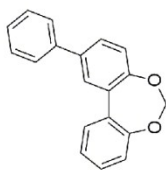
Compound 11



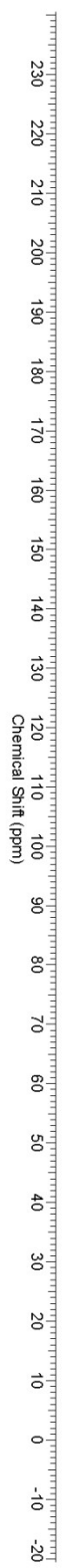


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<sup>13</sup>C NMR (101MHz, CHLOROFORM-d)  $\delta$  = 155.5, 154.6, 140.7, 137.7, 129.6, 129.2, 129.1, 128.9, 128.8, 127.7, 127.6, 127.3, 127.1, 124.7, 121.3, 121.0, 99.3  
CARBON\_Lcdd3\_01

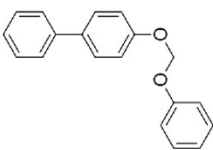


Compound 11

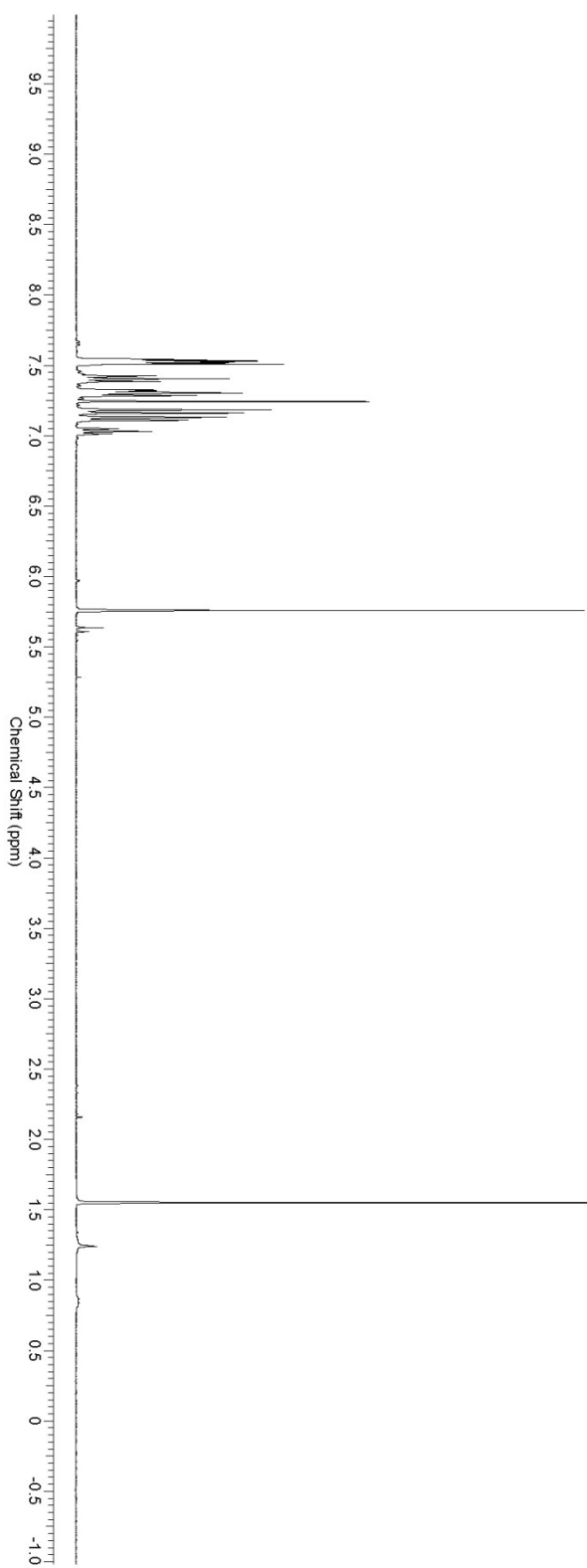


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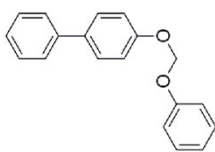
$^1\text{H}$  NMR (400MHz, CHLOROFORM-d)  $\delta$  = 7.55 - 7.50 (m, 4 H), 7.43 - 7.38 (m, 2 H), 7.33 - 7.28 (m, 3 H), 7.19 - 7.15 (m, 2 H), 7.12 (dd,  $J$  = 1.0, 8.8 Hz, 2 H), 7.03 (t,  $J$  = 7.2 Hz, 1 H), 5.76 (s, 2 H)  
PROTON\_cdd3\_02



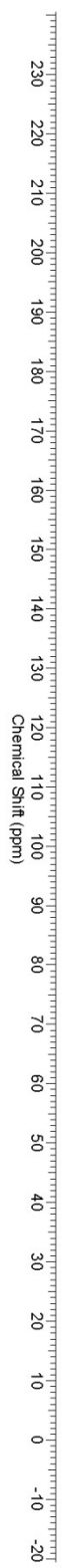
Compound 12



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**<sup>13</sup>C NMR (101MHz, CHLOROFORM-d)  $\delta$  = 156.9, 156.4, 140.6, 135.5, 129.6, 128.7, 128.2, 126.9, 126.8, 122.5, 116.7, 116.4, 91.1**  
CARBON\_cdd3\_03

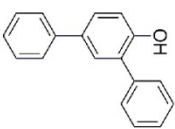


Compound 12

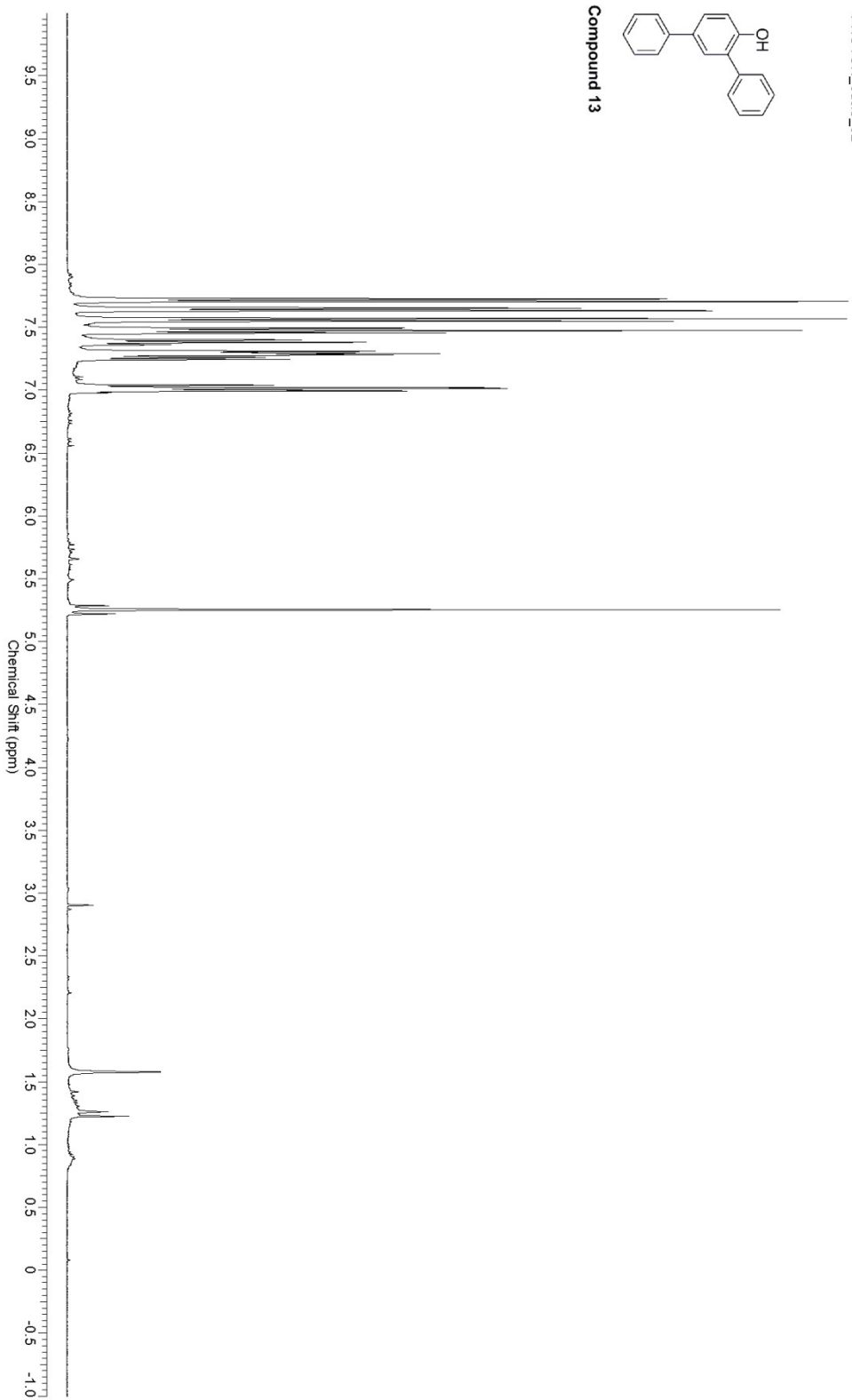


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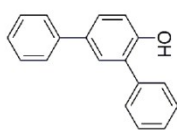
<sup>1</sup>H NMR (400MHz, CHLOROFORM-d)  $\delta$  = 7.72 (d,  $J$  = 8.2 Hz, 2 H), 7.64 (d,  $J$  = 7.4 Hz, 2 H), 7.56 (d,  $J$  = 7.8 Hz, 2 H), 7.47 (t,  $J$  = 7.6 Hz, 2 H), 7.41 - 7.35 (m, 1 H), 7.32 - 7.22 (m, 2 H), 7.05 - 6.97 (m, 2 H), 5.25 (s, 1 H)  
PROTON\_cdd3\_02



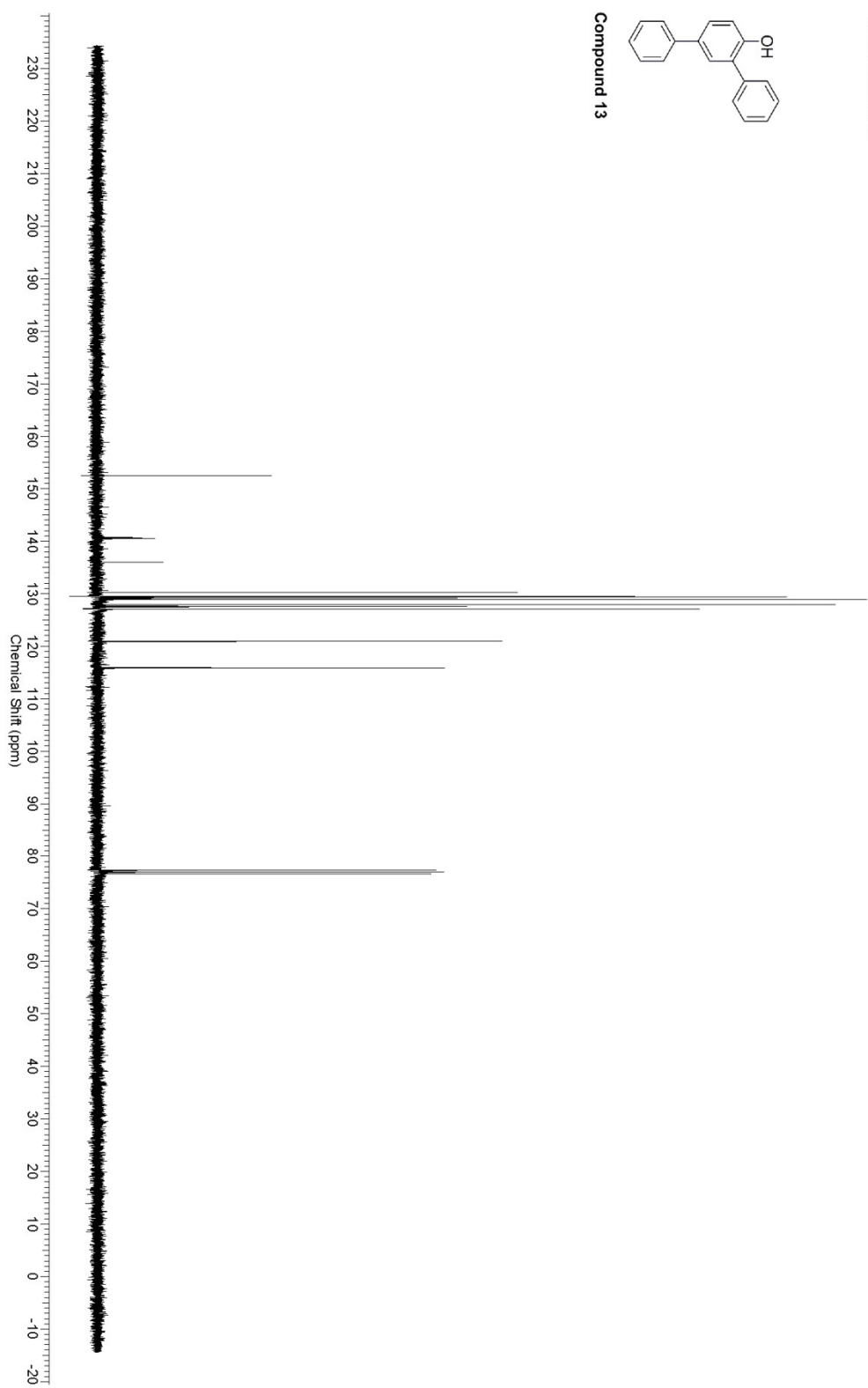
Compound 13



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**<sup>13</sup>C NMR (101MHz, CHLOROFORM-d)  $\delta$  = 152.5, 140.7, 140.5, 136.0, 130.2, 129.5, 129.2, 128.9, 127.9, 127.7, 127.5, 127.1, 120.9, 115.9**  
**CARBON\_cdd3\_01**

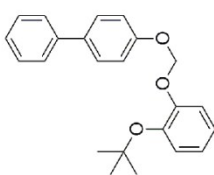


Compound 13

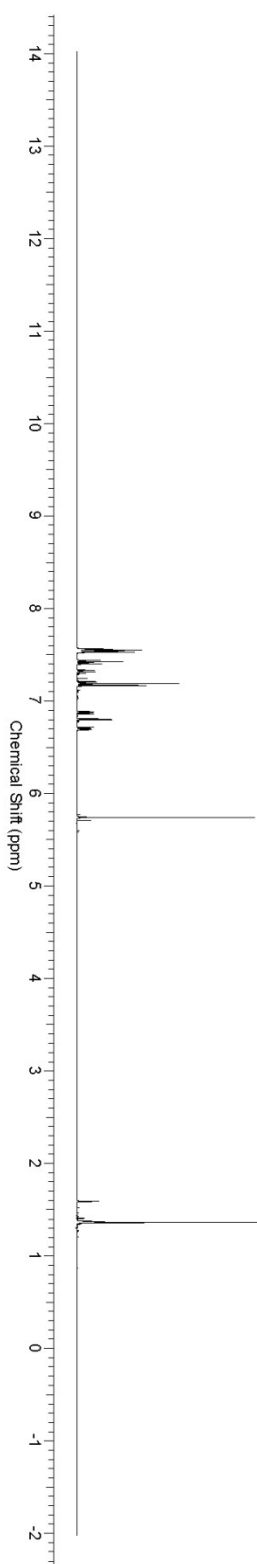


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<sup>1</sup>H NMR (400MHz, CHLOROFORM-d)  $\delta$  = 7.57 - 7.51 (m, 5 H), 7.45 - 7.39 (m, 3 H), 7.34 - 7.28 (m, 1 H), 7.19 - 7.16 (m, 3 H), 6.87 (qd,  $J$  = 1.0, 8.2 Hz, 1 H), 6.81 - 6.79 (m, 1 H), 6.81 - 6.79 (m, 1 H), 6.80 (t,  $J$  = 2.2 Hz, 4 H), 6.70 (qd,  $J$  = 0.9, 8.1 Hz, 1 H), 5.74 (s, 2 H), 1.36 (s, 9 H)  
PROTON\_Lcdd3\_01

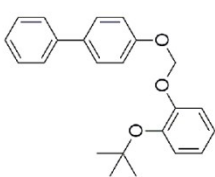


Compound 14

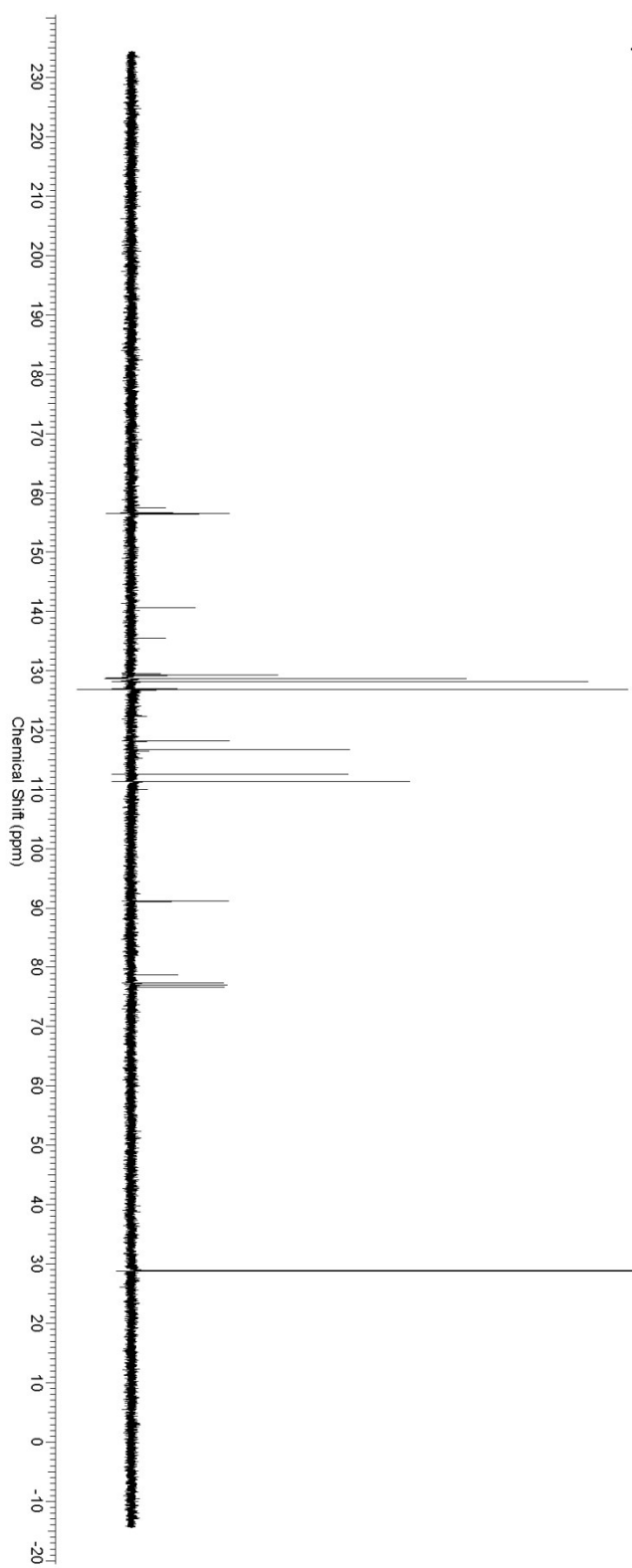


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$^{13}\text{C}$  NMR (101MHz, CHLOROFORM- $d$ )  $\delta$  = 157.4, 156.6, 156.4, 140.7, 135.5, 129.5, 129.2, 128.7, 128.2, 126.9, 126.8, 118.1, 116.7, 112.5, 111.3, 91.1, 78.7, 28.8  
CARBON\_ddd3\_01

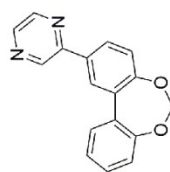


Compound 14

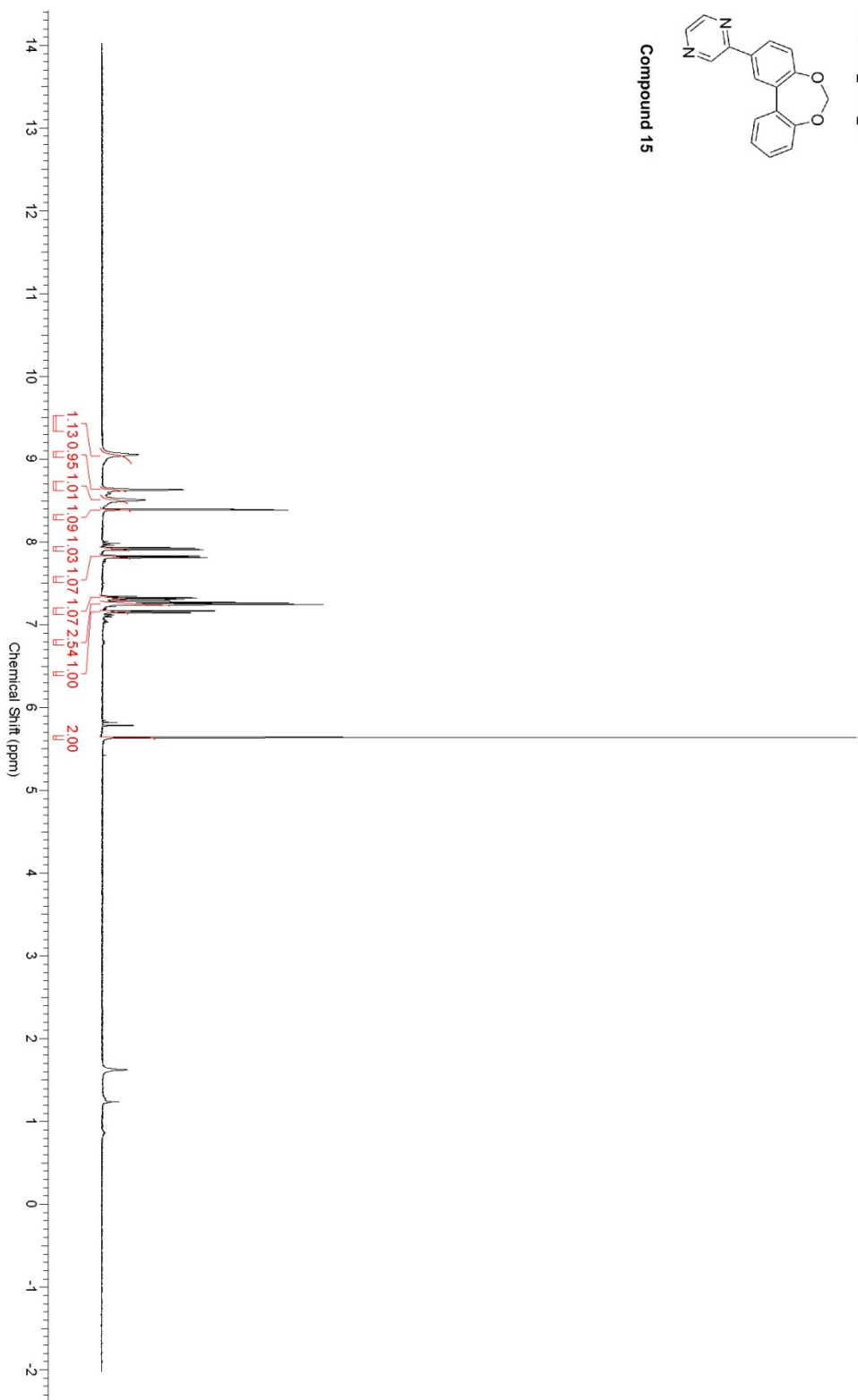


This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)

$^1\text{H}$  NMR (400MHz, CHLOROFORM- $d$ )  $\delta$  = 9.06 (br. s., 1 H), 8.63 (br. s., 1 H), 8.51 (br. s., 1 H), 8.39 (d,  $J$  = 2.0 Hz, 1 H), 7.92 (dd,  $J$  = 2.2, 8.4 Hz, 1 H), 7.82 (dd,  $J$  = 1.2, 7.8 Hz, 1 H), 7.37 - 7.29 (m, 1 H), 7.29 - 7.23 (m, 2 H), 7.16 (dd,  $J$  = 1.4, 8.0 Hz, 1 H), 5.64 (s, 2 H)  
PROTON\_Lcdd3\_01



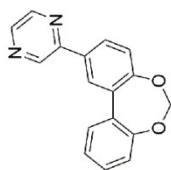
Compound 15



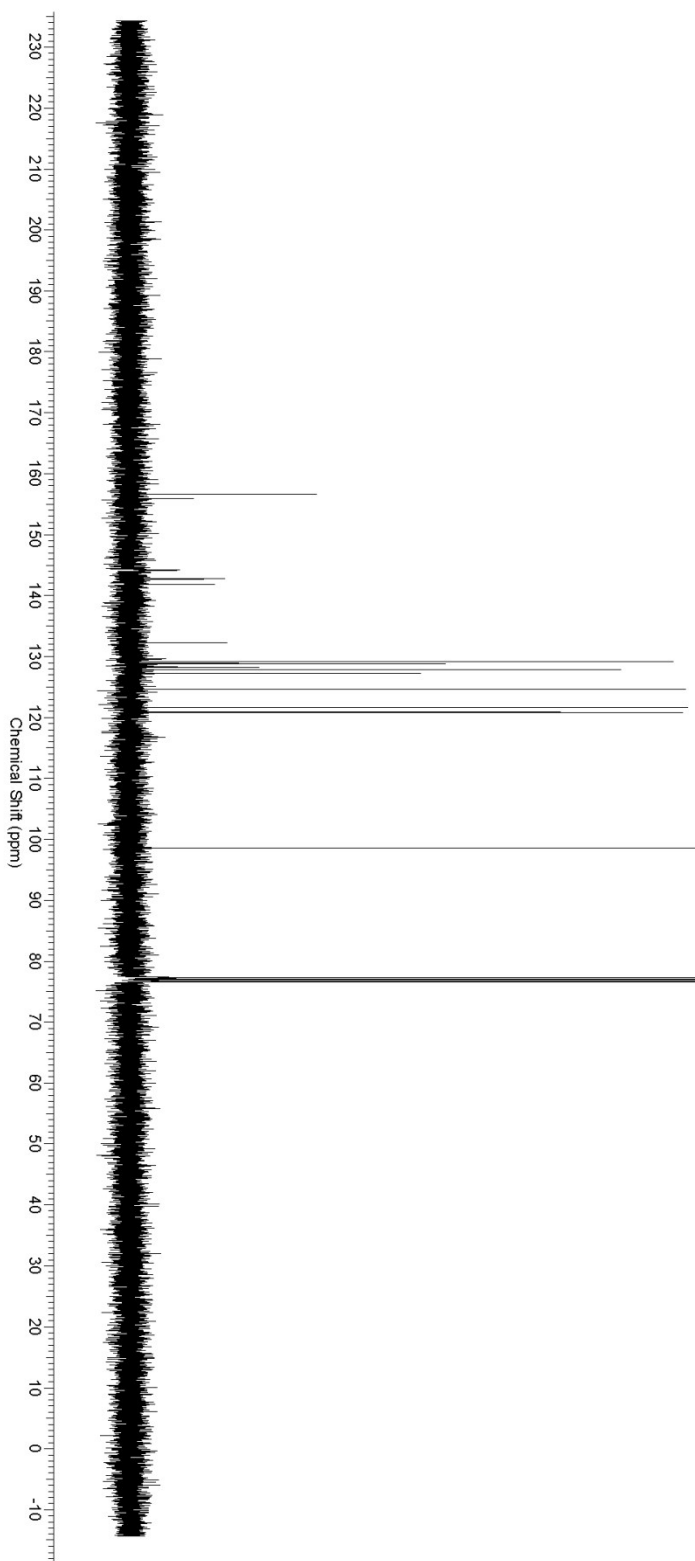


This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)

$^{13}\text{C}$  NMR (101MHz, CHLOROFORM- $d$ )  $\delta$  = 156.7, 156.0, 144.1, 142.7, 141.8, 132.3, 129.2, 128.8, 128.8, 128.2, 127.9, 127.2, 124.7, 121.6, 120.9, 98.6  
CARBON\_cdd3\_01

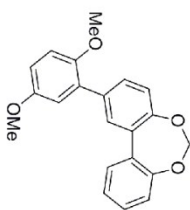


Compound 15

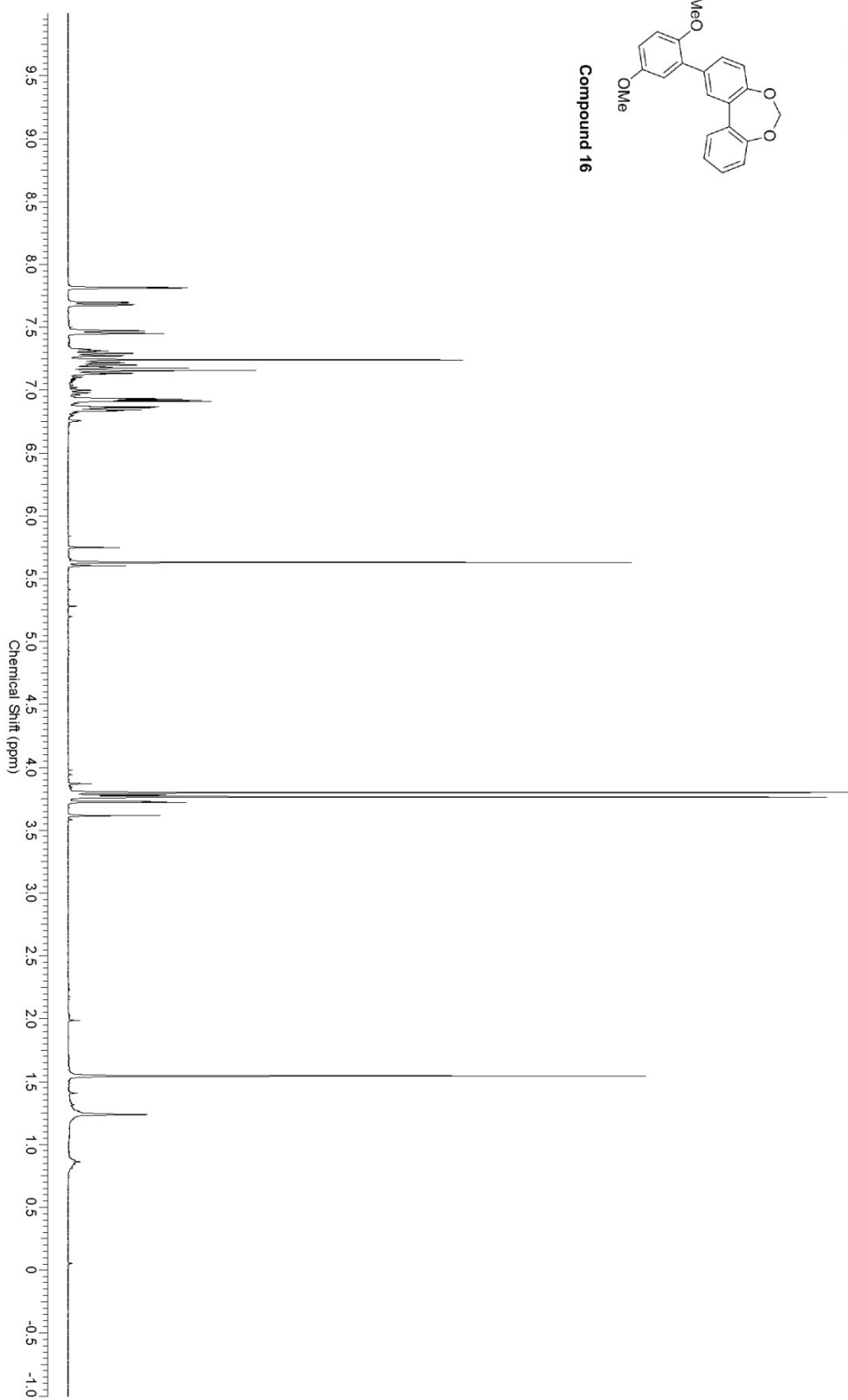


This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)

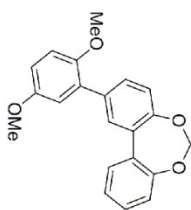
<sup>1</sup>H NMR (400MHz, CHLOROFORM-d)  $\delta$  = 7.81 (d,  $J$  = 2.0 Hz, 1 H), 7.69 (dd,  $J$  = 1.2, 7.8 Hz, 2 H), 7.46 (dd,  $J$  = 2.3, 8.2 Hz, 2 H), 7.20 (dt,  $J$  = 1.6, 7.6 Hz, 1 H), 7.18 - 7.12 (m, 4 H), 6.94 - 6.90 (m, 3 H), 6.85 (dd,  $J$  = 3.1, 9.0 Hz, 2 H), 5.63 (s, 2 H), 3.80 (s, 3 H), 3.76 (s, 3 H)  
PROTON\_cdd3\_01



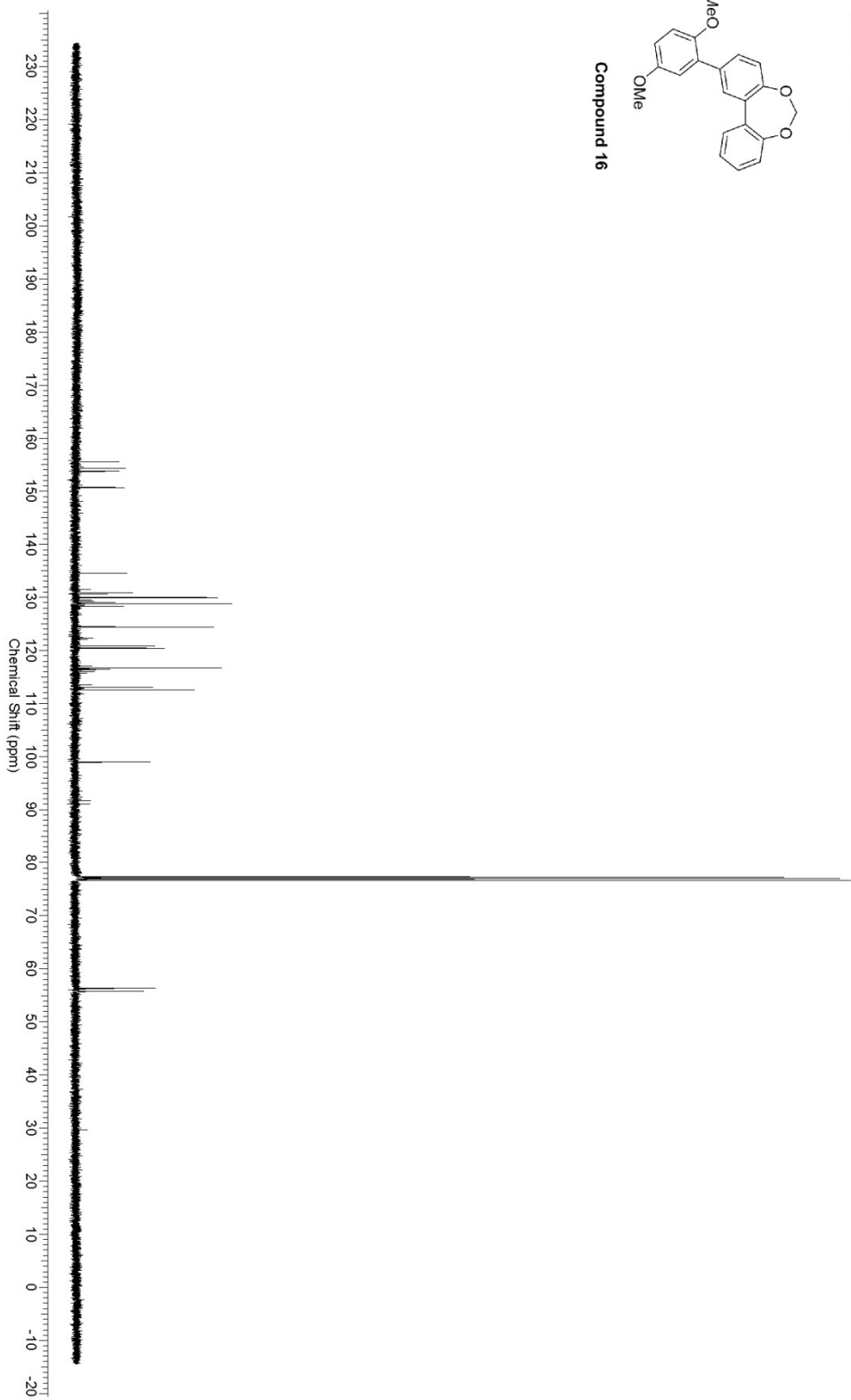
Compound 16



**This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)**  
 $^{13}\text{C}$  NMR (101MHz, CHLOROFORM- $d$ )  $\delta$  = 155.5, 154.3, 153.7, 150.7, 134.5, 130.9, 130.6, 130.6, 130.0, 129.9, 128.8, 128.8, 128.3, 124.4, 120.8, 120.4, 116.6, 113.0, 112.6, 99.0, 56.3, 55.8  
CARBON\_cdd3\_01

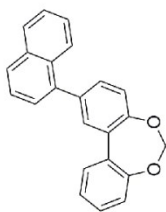


Compound 16

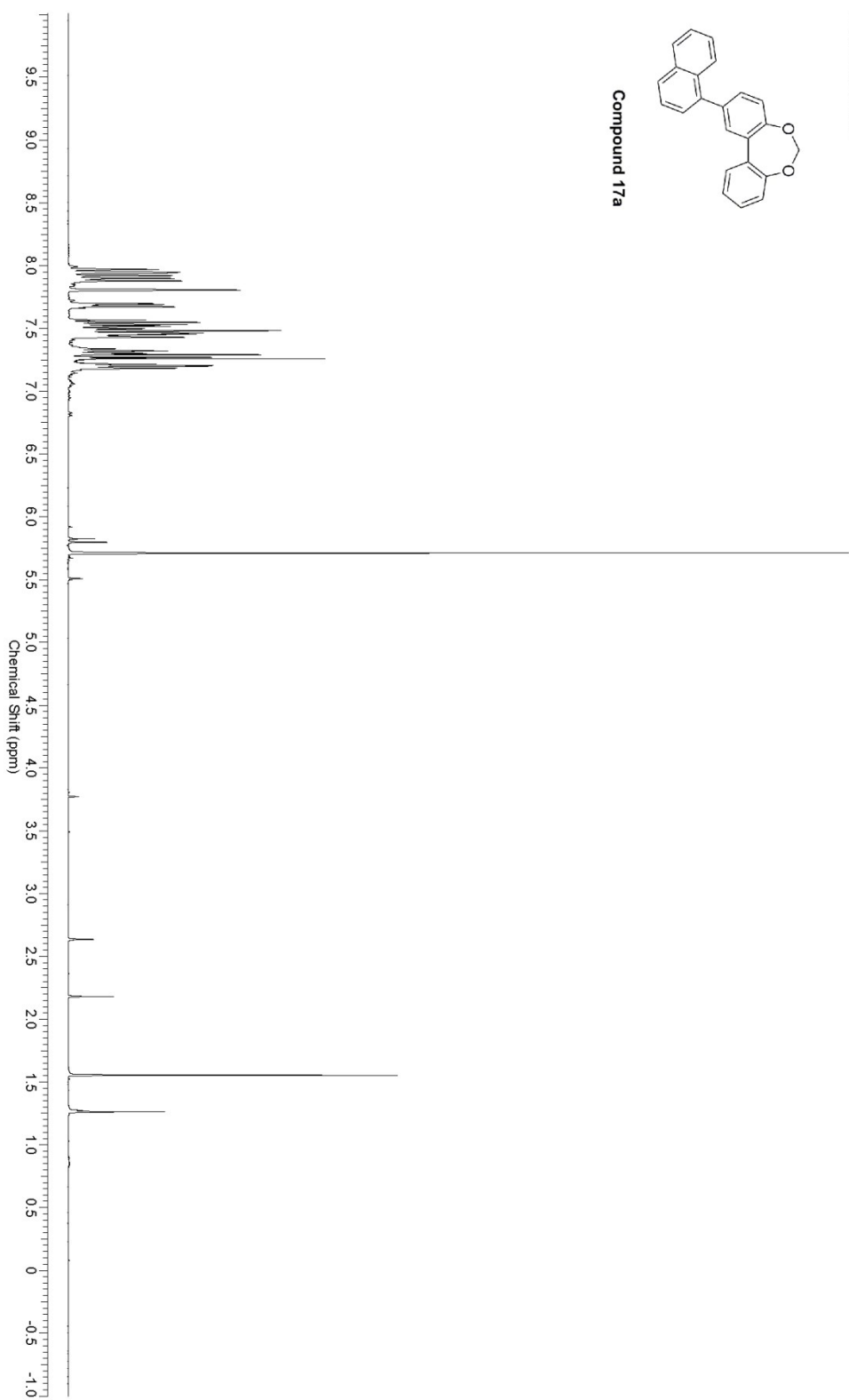


This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acclabs.com/nmrproc/](http://www.acclabs.com/nmrproc/)

<sup>1</sup>H NMR (CHLOROFORM-d, 400MHz):  $\delta$  = 7.91 - 7.98 (m, 2 H), 7.89 (d,  $J$ =8.2 Hz, 1 H), 7.81 (d,  $J$ =2.0 Hz, 1 H), 7.67 - 7.70 (m, 1 H), 7.49 - 7.58 (m, 2 H), 7.48 (s, 1 H), 7.42 - 7.47 (m, 2 H), 7.30 - 7.34 (m, 1 H), 7.28 (d,  $J$ =8.2 Hz, 1 H), 7.17 - 7.22 (m, 2 H), 5.71 ppm (s, 2 H)  
PROTON\_cdd3\_01

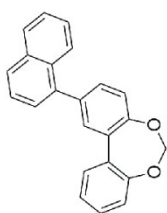


Compound 17a

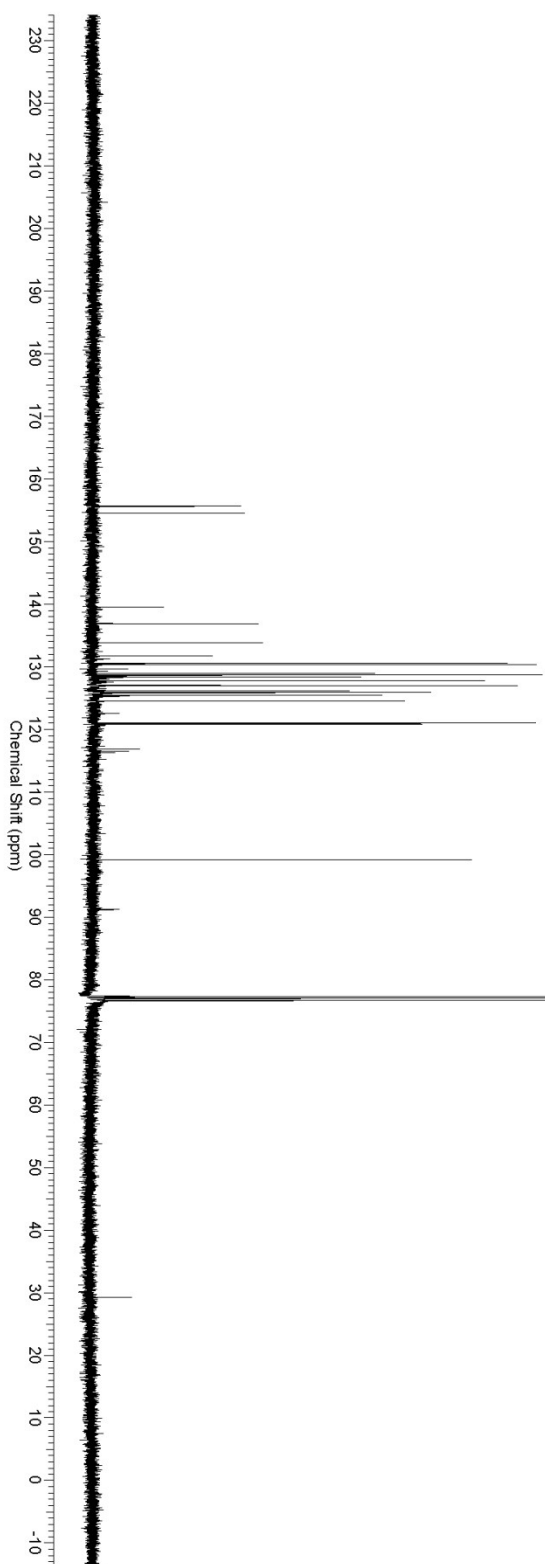


This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)

$^{13}\text{C}$  NMR (CHLOROFORM- $d$ , 101MHz):  $\delta$  = 155.6, 154.5, 139.5, 136.9, 133.8, 131.7, 130.5, 130.4, 129.0, 128.9, 128.7, 128.6, 128.3, 127.7, 127.0, 126.2, 125.9, 125.8, 125.4, 124.5, 121.0, 120.8, 99.1 ppm  
CARBON\_Ladd3\_01

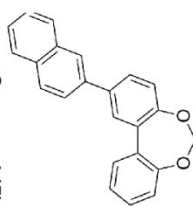


Compound 17a

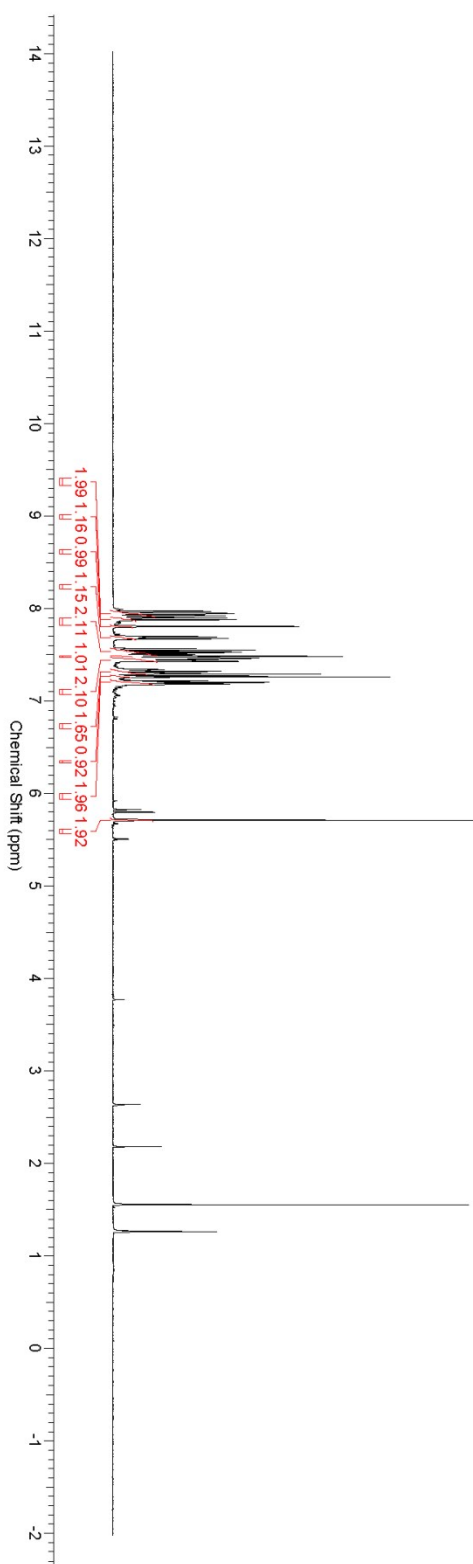


This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)

<sup>1</sup>H NMR (400MHz, CHLOROFORM-d)  $\delta$  = 7.98 - 7.91 (m, 12 H), 7.89 (d,  $J$  = 8.2 Hz, 7 H), 7.81 (d,  $J$  = 2.0 Hz, 6 H), 7.68 (dd,  $J$  = 1.4, 8.0 Hz, 7 H), 7.58 - 7.49 (m, 12 H), 7.48 (s, 6 H), 7.47 - 7.42 (m, 12 H), 7.35 - 7.28 (m, 10 H), 7.28 - 7.25 (m, 5 H), 7.23 - 7.17 (m, 12 H), 5.71 (s, 11 H) PROTON\_cadd3\_01

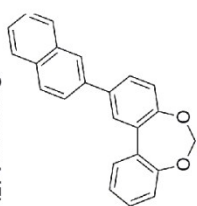


Compound 17b

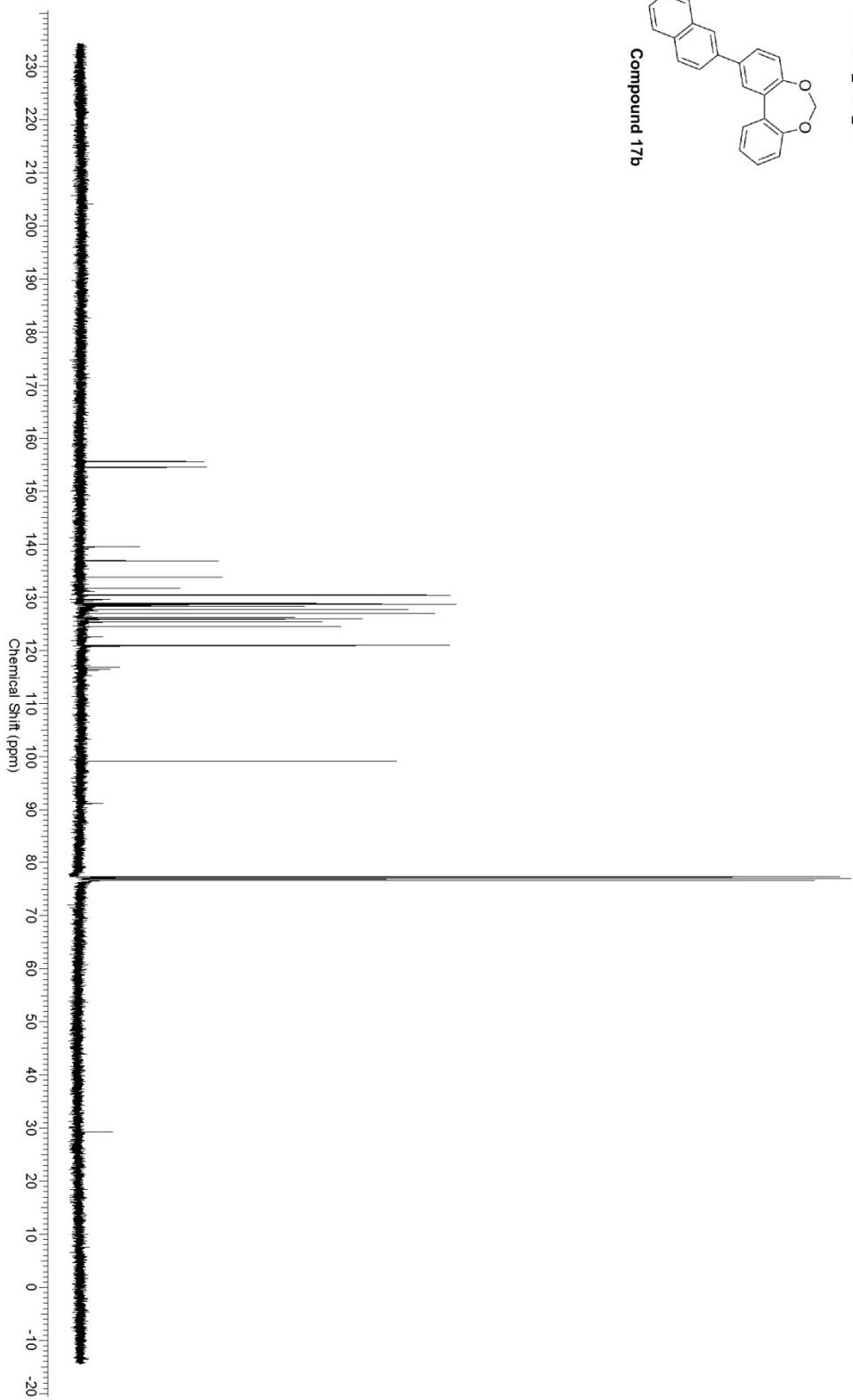


This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)

<sup>13</sup>C NMR (101MHz, CHLOROFORM-d)  $\delta$  = 155.6, 154.5, 139.5, 136.9, 133.8, 131.7, 130.5, 130.4, 129.6, 129.6, 129.6, 129.0, 128.9, 128.7, 128.6, 128.5, 128.3, 127.7, 127.0, 126.2, 125.9, 125.8, 125.4, 125.3, 124.5, 122.5, 121.0, 120.8, 116.8, 116.5, 116.5, 99.1  
CARBON\_Lcdd13\_01

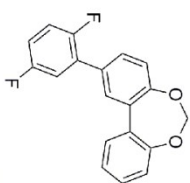


Compound 17b

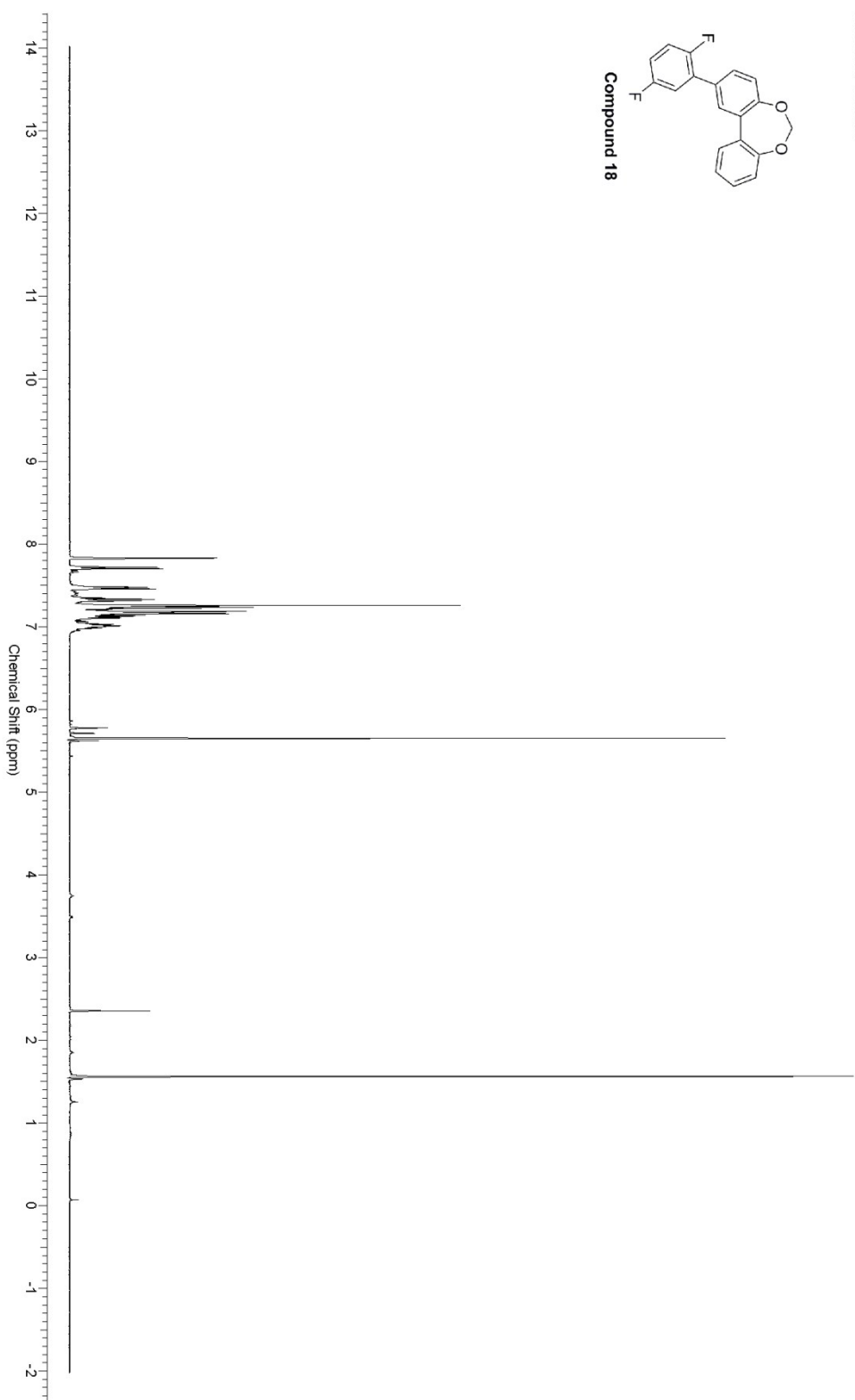


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$^1\text{H}$  NMR (CHLOROFORM- $d$ , 400MHz):  $\delta$  (ppm) 7.83 (s, 1H), 7.71 (dd,  $J=7.8, 1.6$  Hz, 1H), 7.47 (dt,  $J=8.5, 1.8$  Hz, 1H), 7.30 - 7.36 (m, 1H), 7.20 - 7.26 (m, 2H), 7.15 - 7.20 (m, 2H), 7.12 (dd,  $J=9.4, 4.7$  Hz, 1H), 6.97 - 7.05 (m, 1H), 5.65 (s, 2H)  
PROTON\_odd3\_01



Compound 18

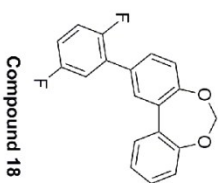


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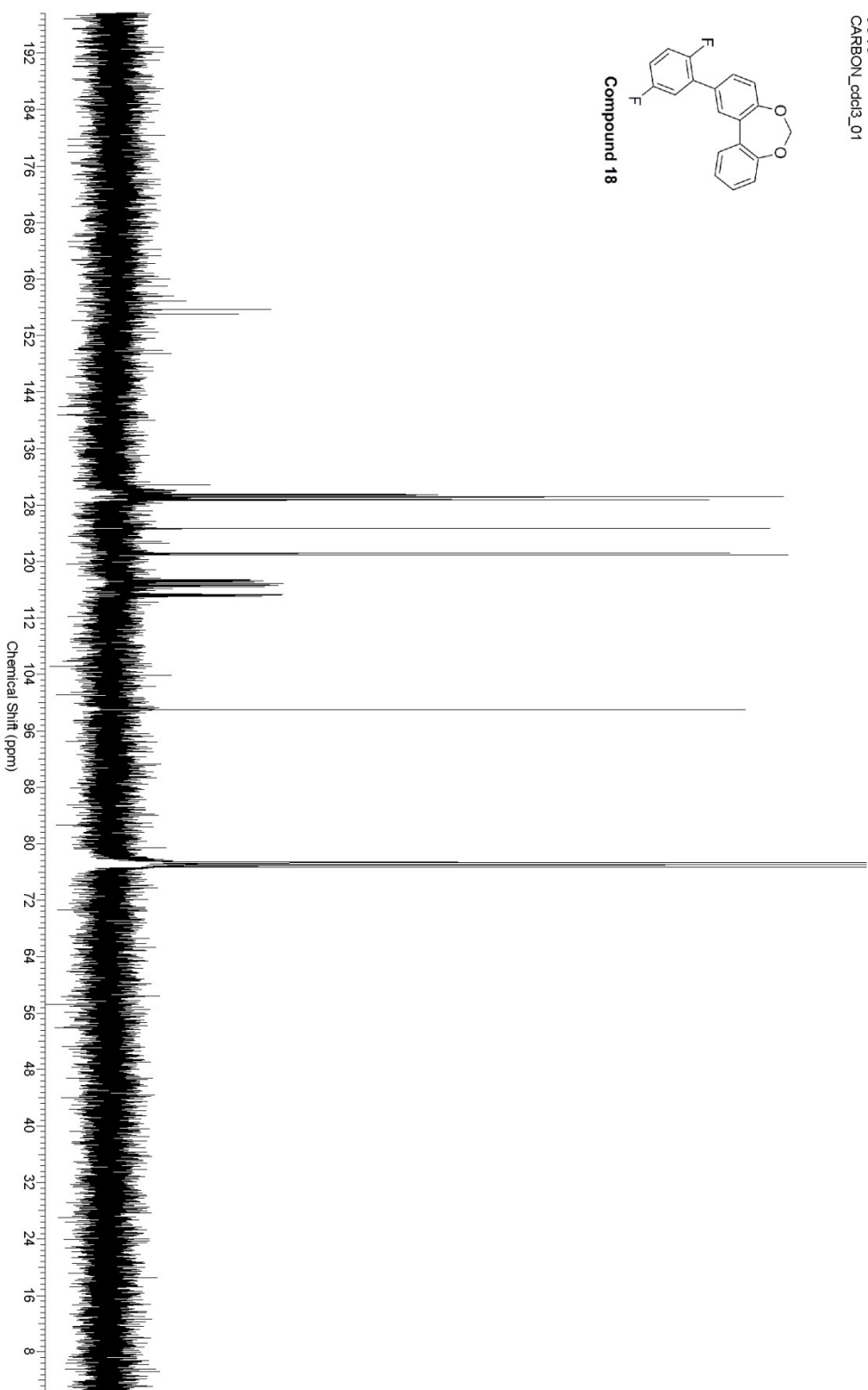


This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlab.com/nmrproc/](http://www.acdlab.com/nmrproc/)

$^{13}\text{C}$  NMR (CHLOROFORM- $d$ )  $\delta$ : 155.7, 155.1, 130.9, 129.5, 129.3, 129.1, 128.7, 128.7, 124.7, 121.2, 120.9, 117.3, 117.1, 116.9, 116.6, 116.4, 115.3, 115.1, 99.0  
CARBON\_Ladd3\_01

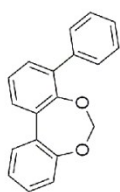


Compound 18

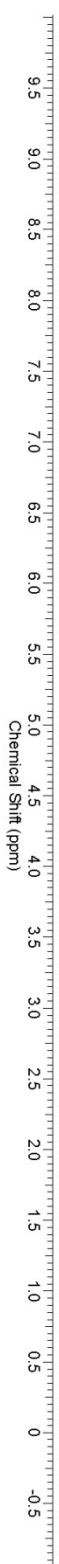


This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)

<sup>1</sup>H NMR (400MHz, CHLOROFORM-d)  $\delta$  = 7.64 (dd,  $J$  = 1.8, 7.6 Hz, 1 H), 7.62 - 7.58 (m, 1 H), 7.58 - 7.53 (m, 2 H), 7.48 - 7.42 (m, 2 H), 7.42 - 7.38 (m, 2 H), 7.32 (s, 2 H), 7.31 - 7.26 (m, 1 H), 7.20 (dd,  $J$  = 1.2, 7.8 Hz, 1 H), 5.52 (s, 2 H)  
PROTON\_cadd3\_01

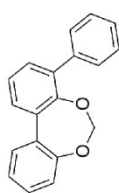


Compound 20



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<sup>13</sup>C NMR (101MHz, CHLOROFORM-d)  $\delta$  = 153.8, 151.5, 137.9, 134.7, 132.2, 130.9, 130.3, 129.5, 129.2, 129.1, 128.1, 127.3, 125.0, 124.8, 121.0, 101.0  
CARBON\_cdd3\_01

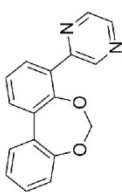


Compound 20

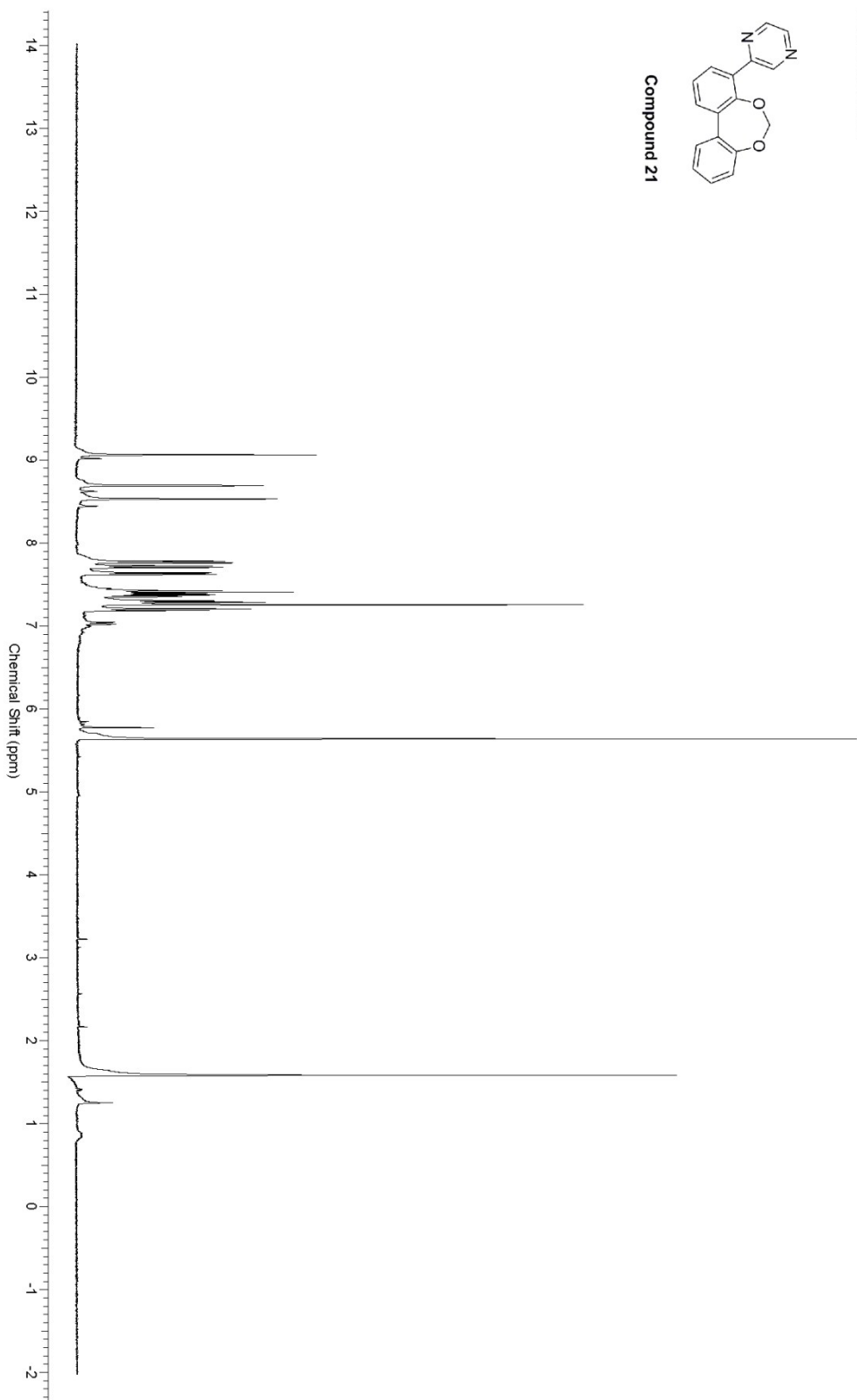


This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)

<sup>1</sup>H NMR (400MHz, CHLOROFORM-d)  $\delta$  = 9.06 (s, 1 H), 8.69 (s, 1 H), 8.53 (d,  $J$  = 2.3 Hz, 1 H), 7.80 - 7.75 (m, 1 H), 7.71 (d,  $J$  = 7.8 Hz, 1 H), 7.63 (d,  $J$  = 7.4 Hz, 1 H), 7.44 - 7.34 (m, 3 H), 7.29 (t,  $J$  = 7.4 Hz, 1 H), 7.20 (d,  $J$  = 7.8 Hz, 1 H), 5.64 (s, 2 H)  
PROTON\_cdd3\_03

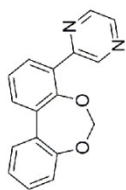


Compound 21

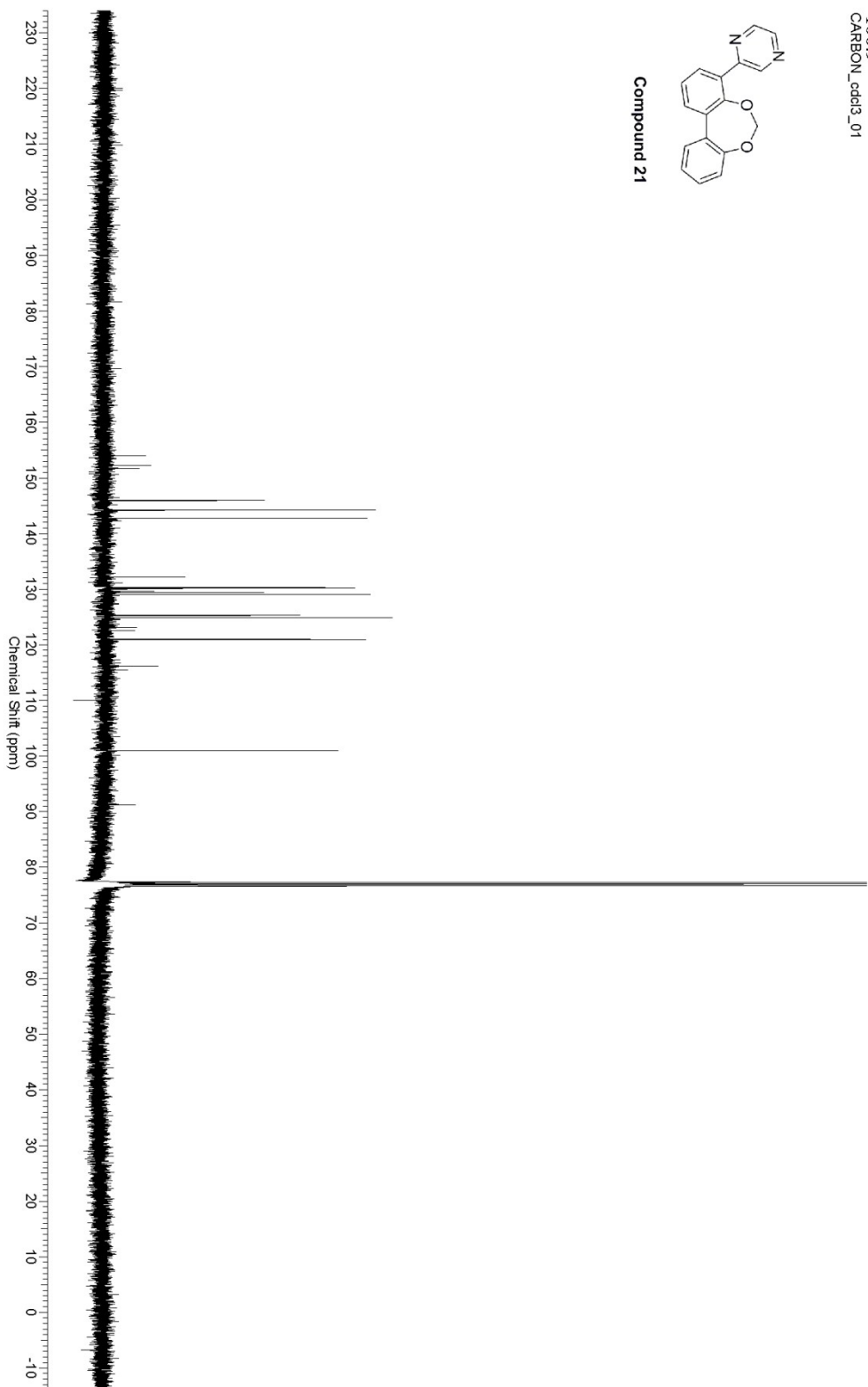


This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)

$^{13}\text{C}$  NMR (101MHz,  $\text{CH}_2\text{Cl}_2$ )  $\delta$  = 154.0, 152.3, 151.7, 145.9, 144.2, 142.7, 132.2, 130.3, 130.3, 130.1, 129.4, 129.1, 125.3, 124.9, 121.0, 116.2, 100.9  
CARBON\_cdd3\_01

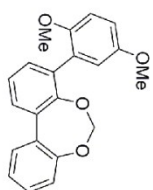


Compound 21

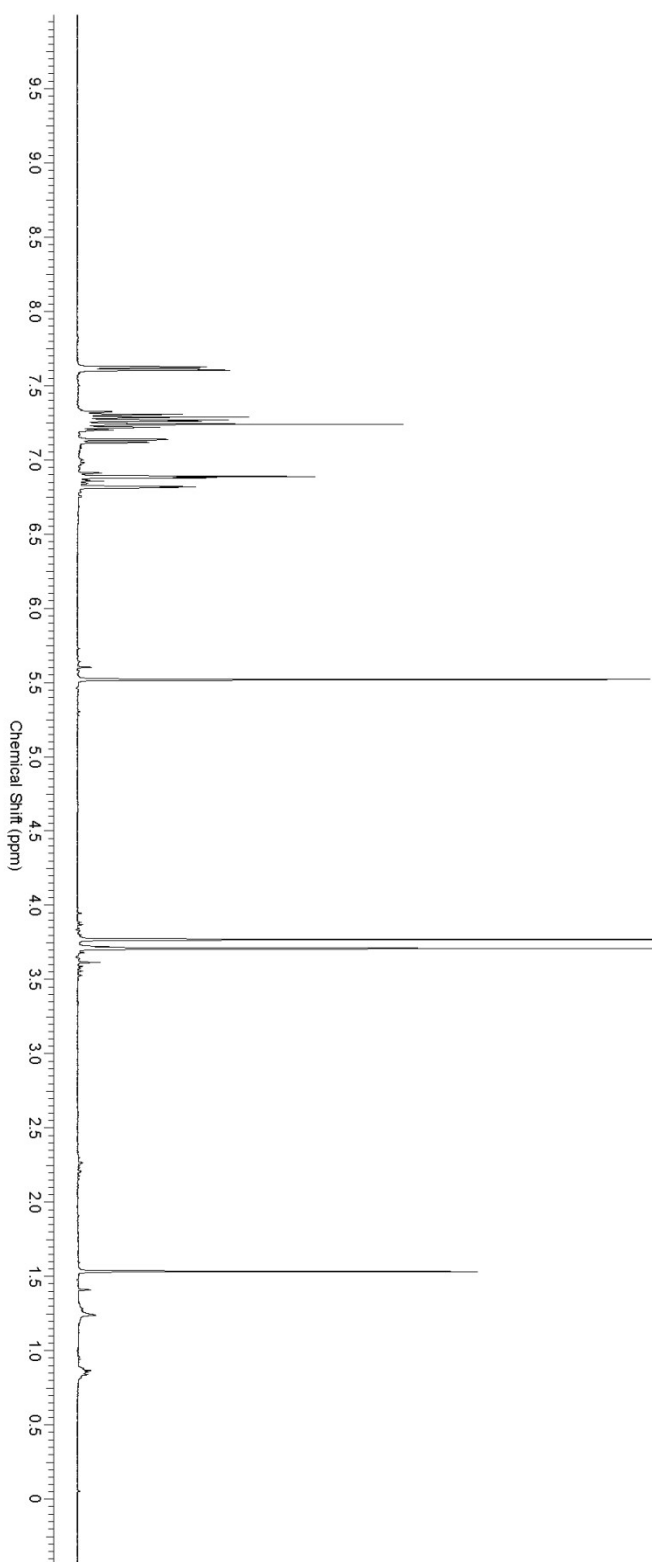


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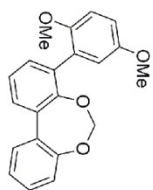
<sup>1</sup>H NMR (400MHz, CHLOROFORM-d)  $\delta$  = 7.62 (dd,  $J$  = 1.8, 7.6 Hz, 2 H), 7.34 - 7.25 (m, 2 H), 7.25 - 7.20 (m, 2 H), 7.13 (dd,  $J$  = 1.2, 7.8 Hz, 1 H), 6.92 - 6.85 (m, 2 H), 6.82 (d,  $J$  = 2.0 Hz, 1 H), 5.52 (s, 2 H), 3.77 (s, 3 H), 3.71 (s, 3 H)  
PROTON\_cdd13\_01



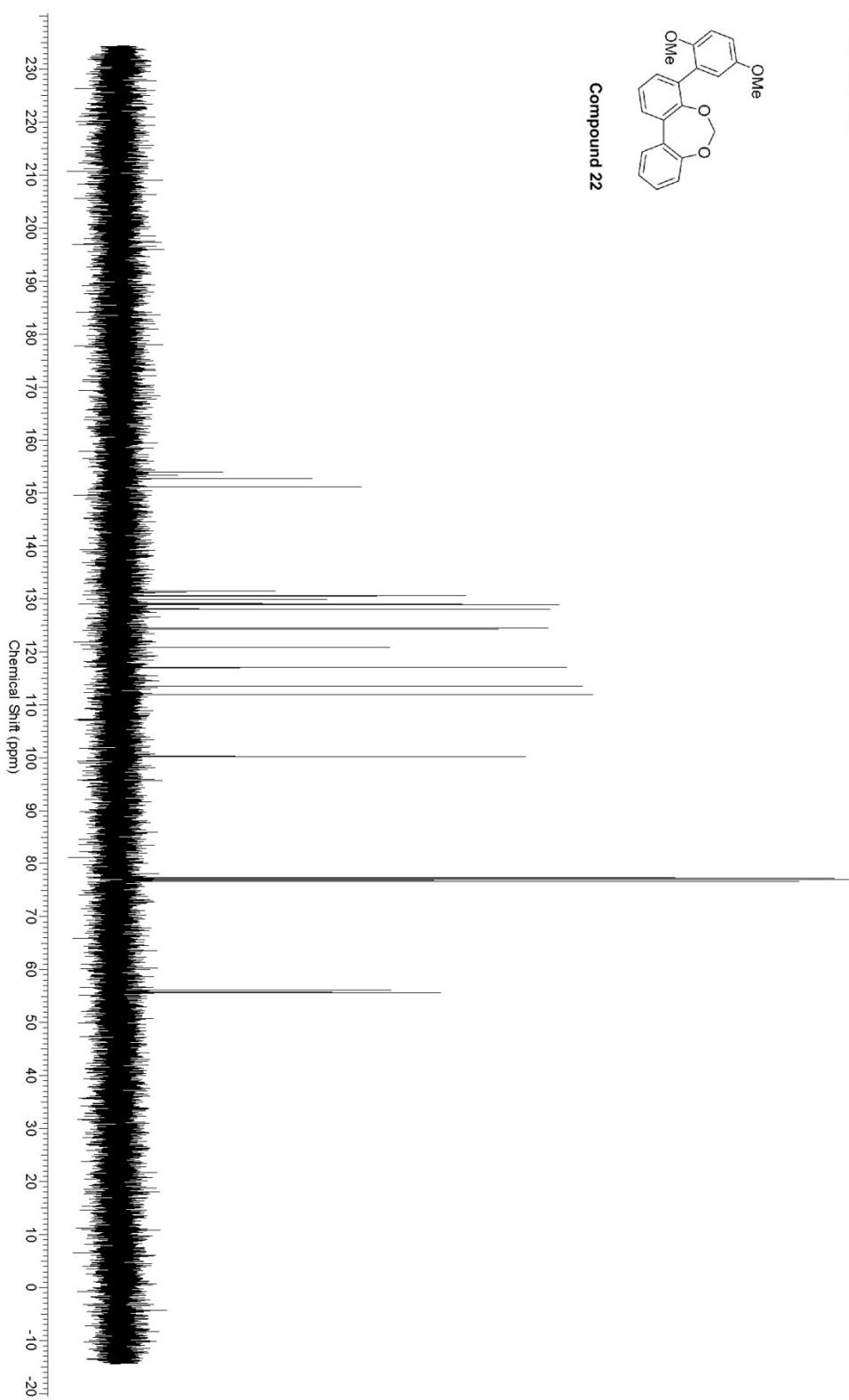
Compound 22



**This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)**  
**<sup>13</sup>C NMR (101MHz, CHLOROFORM-d)  $\delta$  = 154.0, 153.3, 152.7, 151.2, 131.5, 131.2, 130.6, 129.9, 129.2, 129.0, 128.2, 128.1, 124.5, 124.3, 120.9, 117.0, 113.5, 111.9, 100.2, 77.3, 77.3, 77.0, 76.7, 56.2, 55.7**  
**CARBON\_cdd3\_01**

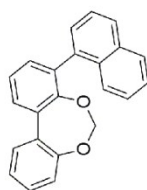


**Compound 22**

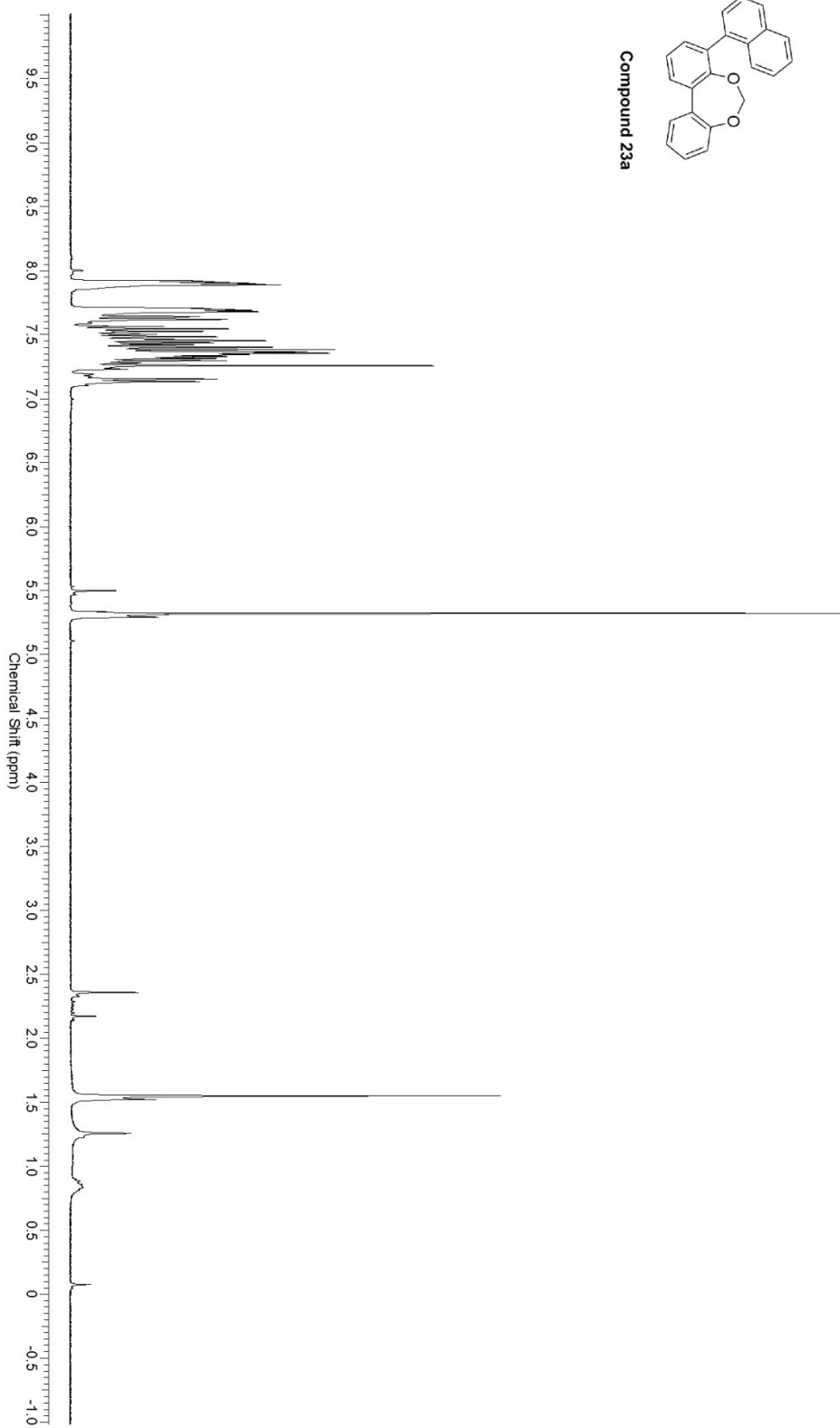


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<sup>1</sup>H NMR (400MHz, CHLOROFORM-d)  $\delta$  = 7.90 (dd,  $J$  = 3.9, 8.2 Hz, 2 H), 7.69 (ddd,  $J$  = 1.8, 3.7, 7.4 Hz, 2 H), 7.63 (d,  $J$  = 8.6 Hz, 1 H), 7.57 - 7.52 (m, 1 H), 7.48 (t,  $J$  = 7.4 Hz, 1 H), 7.46 - 7.41 (m, 1 H), 7.39 (d,  $J$  = 7.8 Hz, 1 H), 7.37 - 7.32 (m, 2 H), 7.32 - 7.27 (m, 1 H), 7.14 (dd,  $J$  = 1.4, 7.6 Hz, 1 H), 5.40 - 5.19 (m, 3 H)  
PROTON\_add3\_01



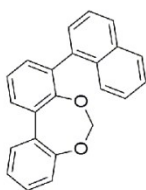
Compound 23a



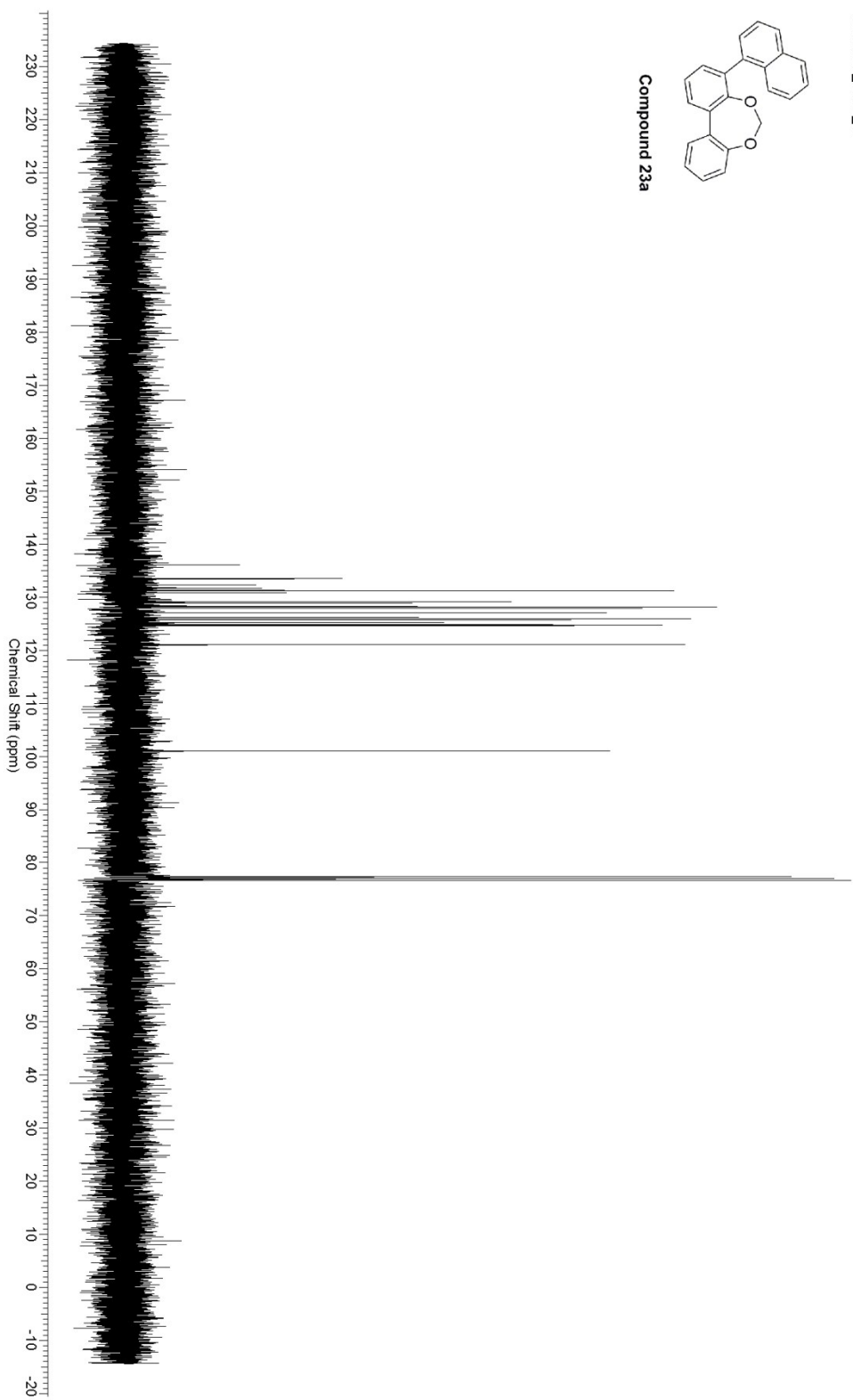


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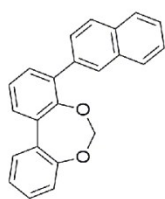
$^{13}\text{C}$  NMR (101MHz, CHLOROFORM- $d$ )  $\delta$  = 154.0, 152.2, 136.1, 133.5, 133.4, 132.4, 131.8, 131.3, 130.9, 129.1, 129.0, 128.3, 128.1, 127.9, 127.1, 126.2, 126.0, 125.8, 125.2, 124.8, 124.7, 121.0, 101.0  
CARBON\_Ladd3\_01



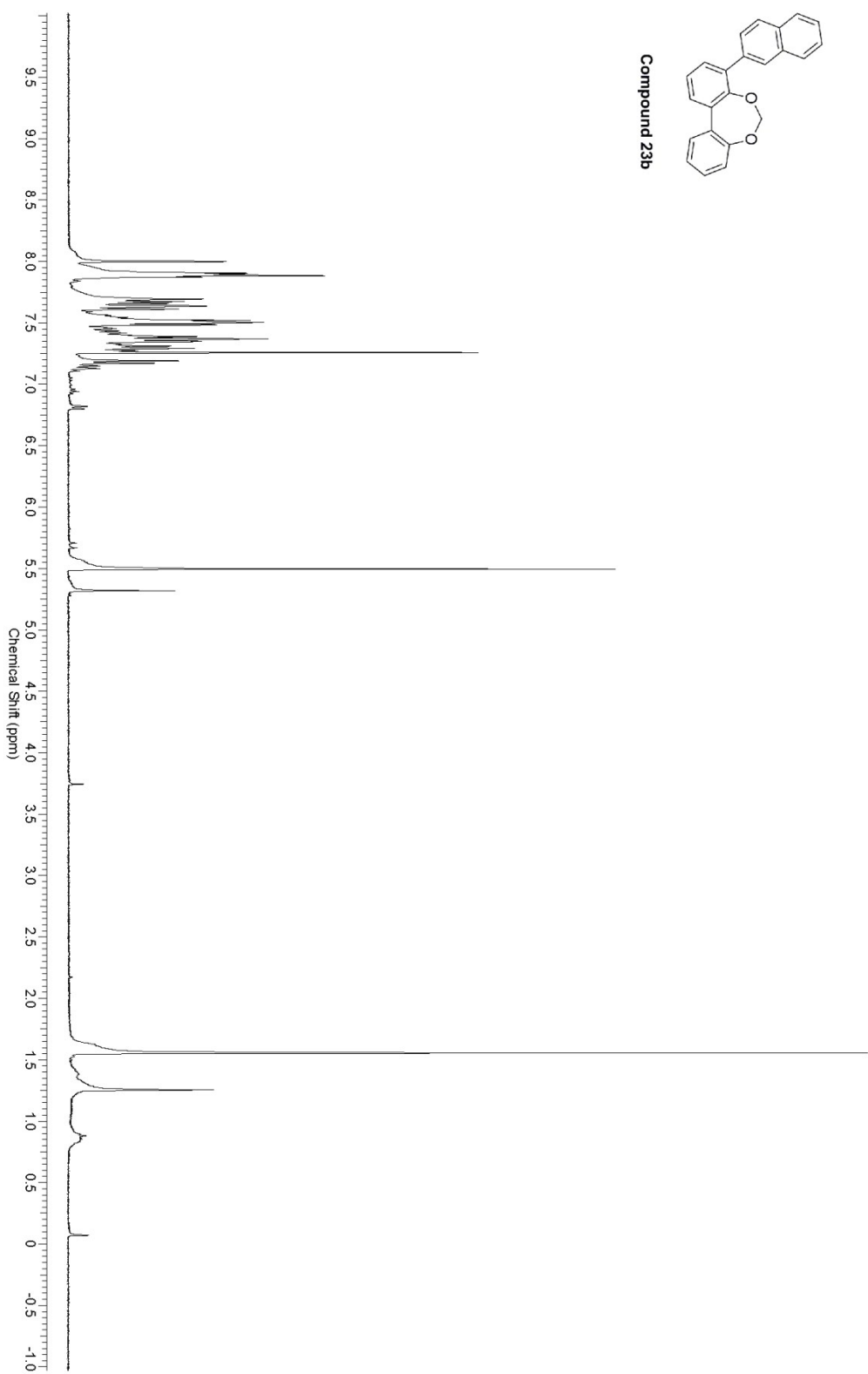
Compound 23a



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(Probably journal format "JOC" unregistered)  
PROTON\_cdd13\_04

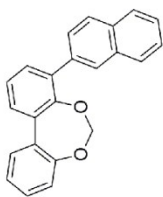


Compound 23b

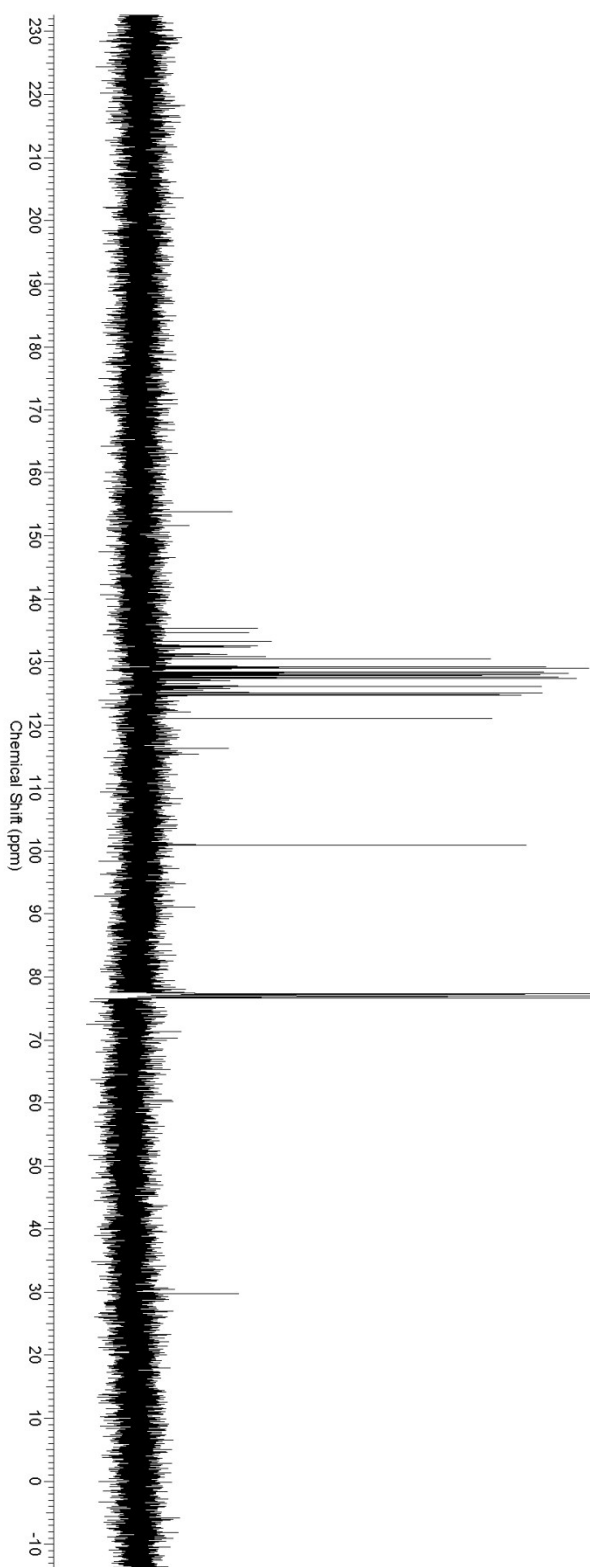


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<sup>13</sup>C NMR (CHLOROFORM-d, 101MHz):  $\delta$  = 153.8, 151.6, 135.4, 134.6, 133.3, 132.5, 132.3, 130.5, 129.2, 129.0, 128.4, 128.1, 127.9, 127.6, 127.4, 127.1, 126.1, 126.0, 125.1, 124.8, 121.0, 100.9 ppm  
CARBON\_cdd03\_01

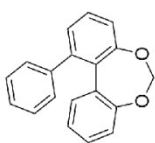


Compound 23b

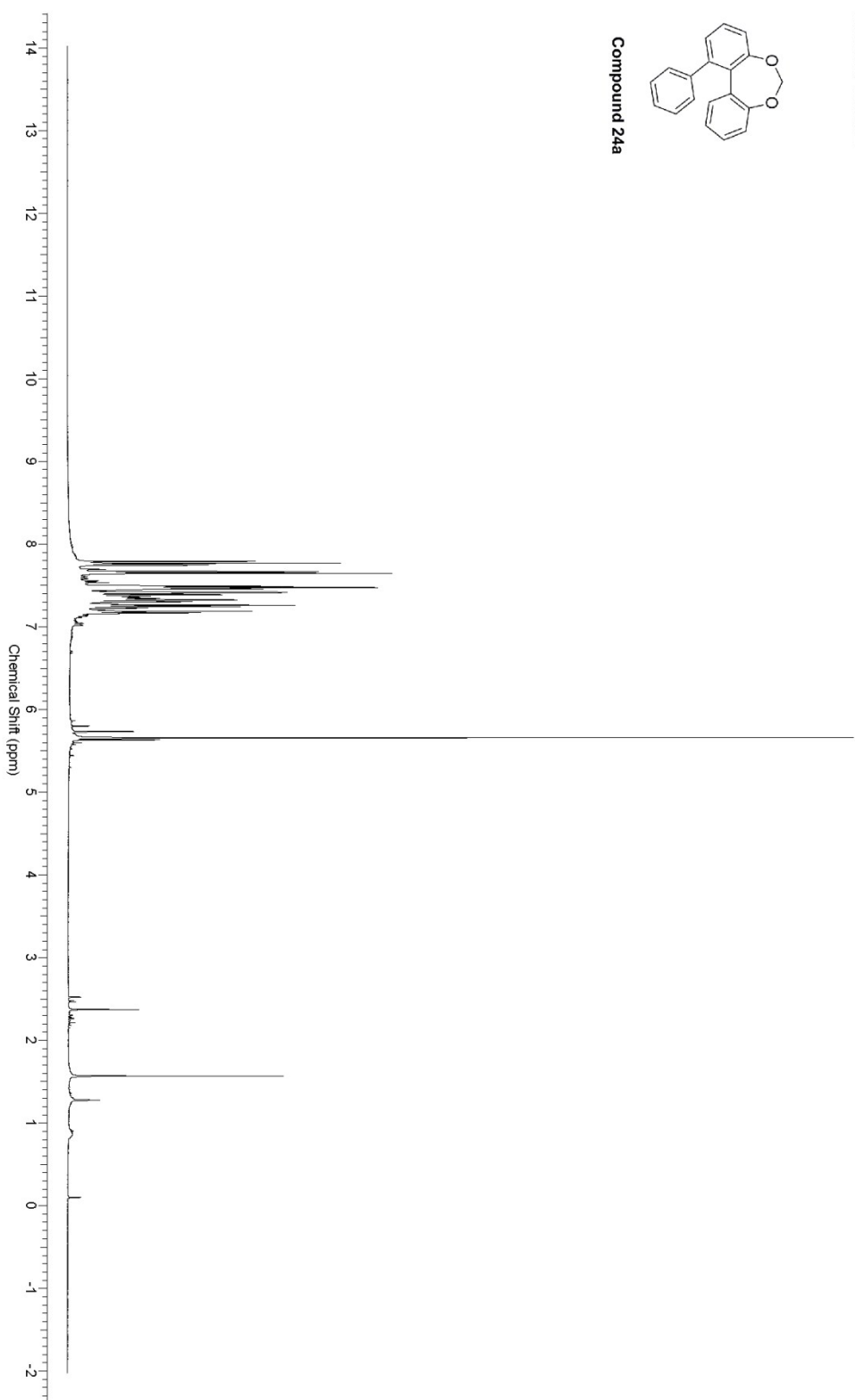


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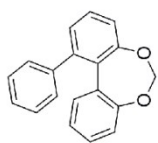
<sup>1</sup>H NMR (CHLOROFORM-d, 400MHz):  $\delta$  (ppm) 7.77 (dd,  $J=9.8, 8.6$  Hz, 2H), 7.66 (d,  $J=8.2$  Hz, 2H), 7.48 (dd,  $J=7.8, 5.1$  Hz, 3H), 7.40 - 7.42 (m, 1H), 7.35 (td,  $J=5.1, 1.6$  Hz, 1H), 7.31 (d,  $J=7.4$  Hz, 1H), 7.26 (d,  $J=7.8$  Hz, 1H), 7.18 (d,  $J=7.8$  Hz, 1H), 5.66 (d,  $J=0.8$  Hz, 2H)  
PROTON\_odd3\_02



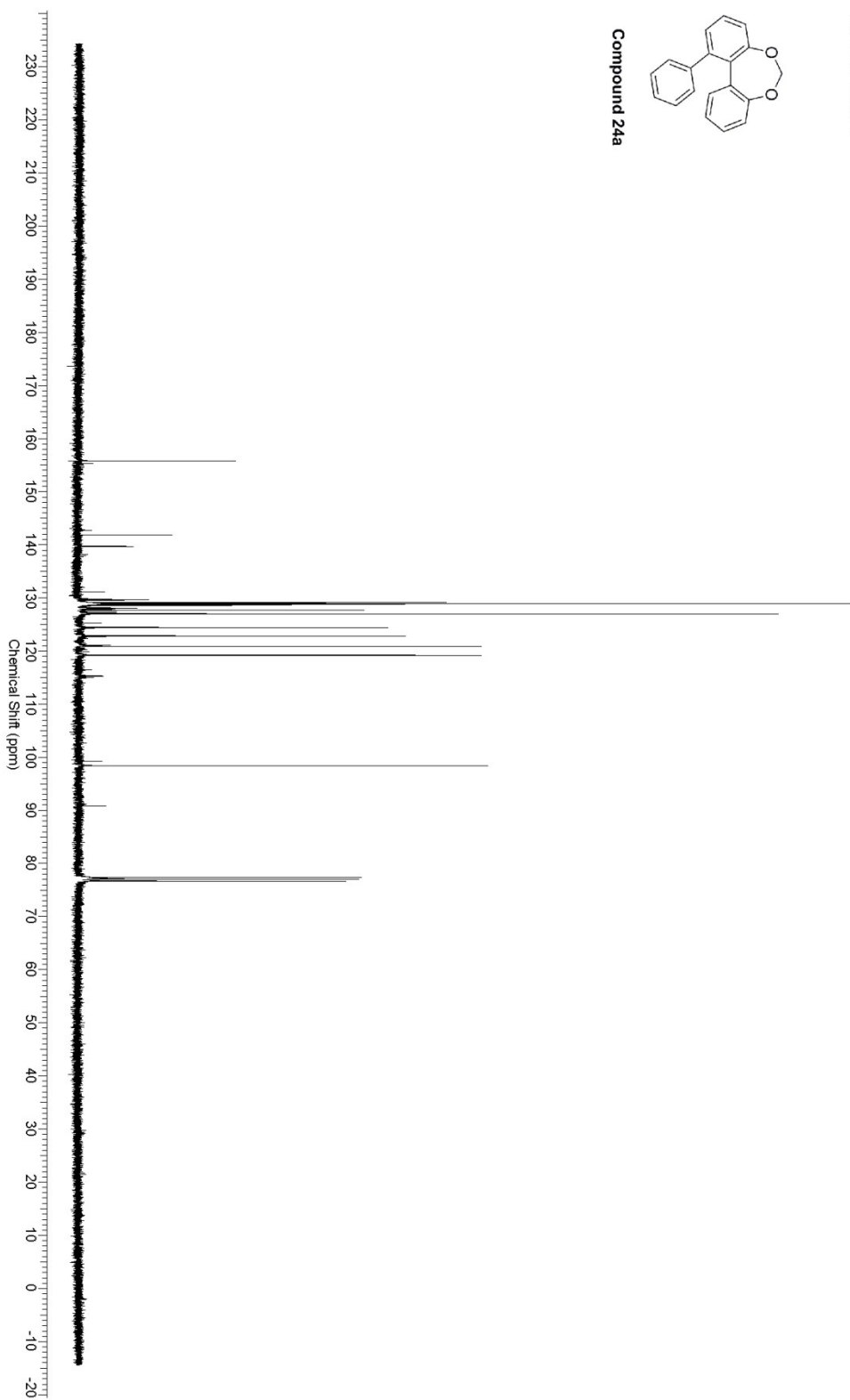
Compound 24a



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**<sup>13</sup>C NMR (CHLOROFORM-d, 101MHz):**  $\delta$  (ppm) 155.8, 155.7, 141.8, 139.7, 139.7, 129.6, 129.1, 128.9, 128.8, 128.8, 127.7, 124.4, 122.9, 120.9, 119.2, 98.4  
CARBONL\_cdd3\_01

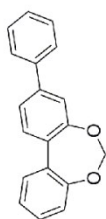


Compound 24a

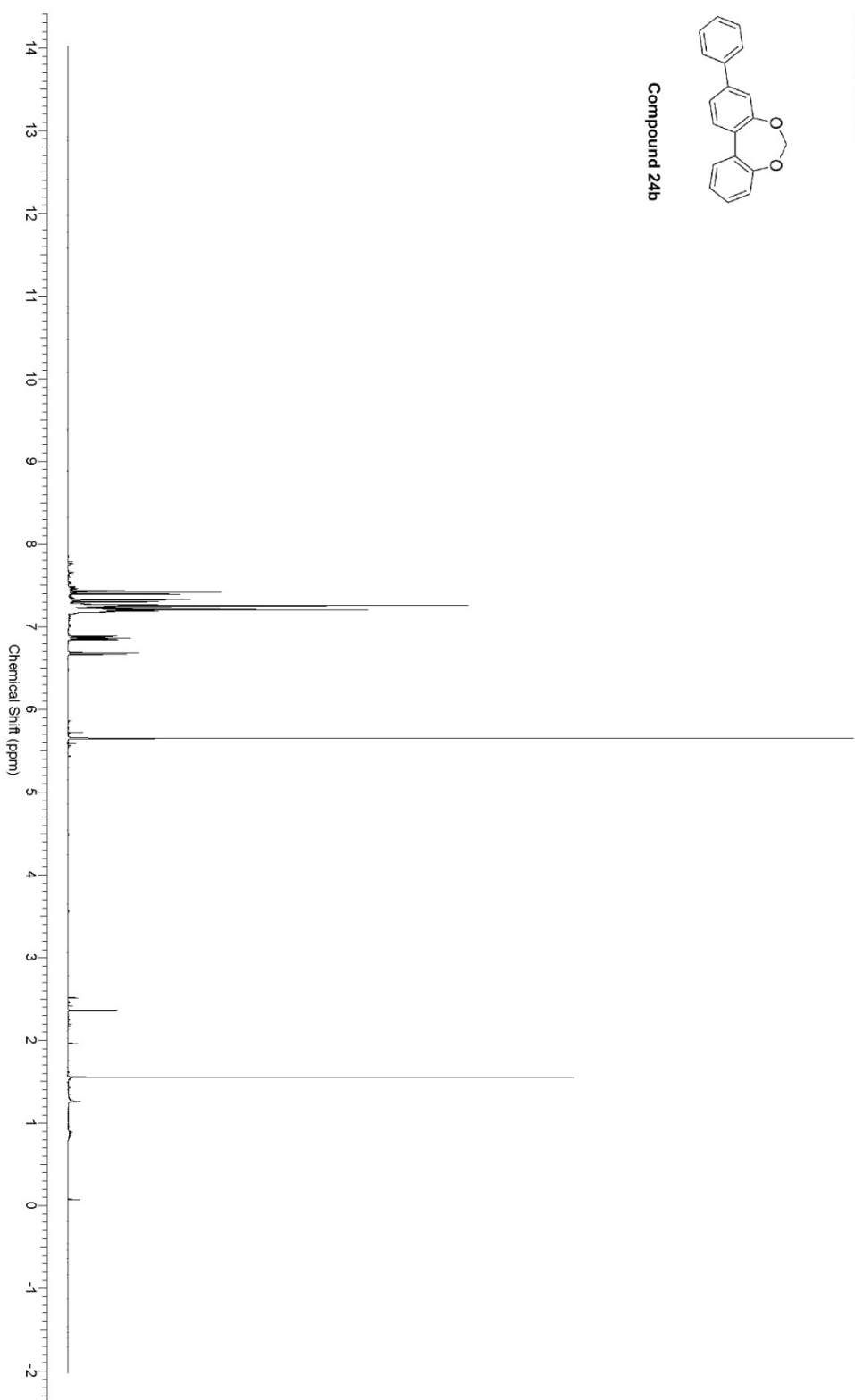


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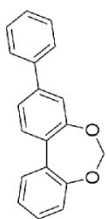
<sup>1</sup>H NMR (CHLOROFORM-d, 400MHz):  $\delta$  (ppm) 7.41 (t,  $J=7.8$  Hz, 1H), 7.31 (dd,  $J=7.4, 1.2$  Hz, 1H), 7.24 - 7.28 (m, 4H), 7.22 - 7.23 (m, 1H), 7.18 - 7.21 (m, 3H), 6.86 (ddd,  $J=7.8, 6.3, 2.0$  Hz, 1H), 6.66 - 6.69 (m, 1H), 5.64 - 5.66 (m, 2H)  
PROTON\_cdd3\_01



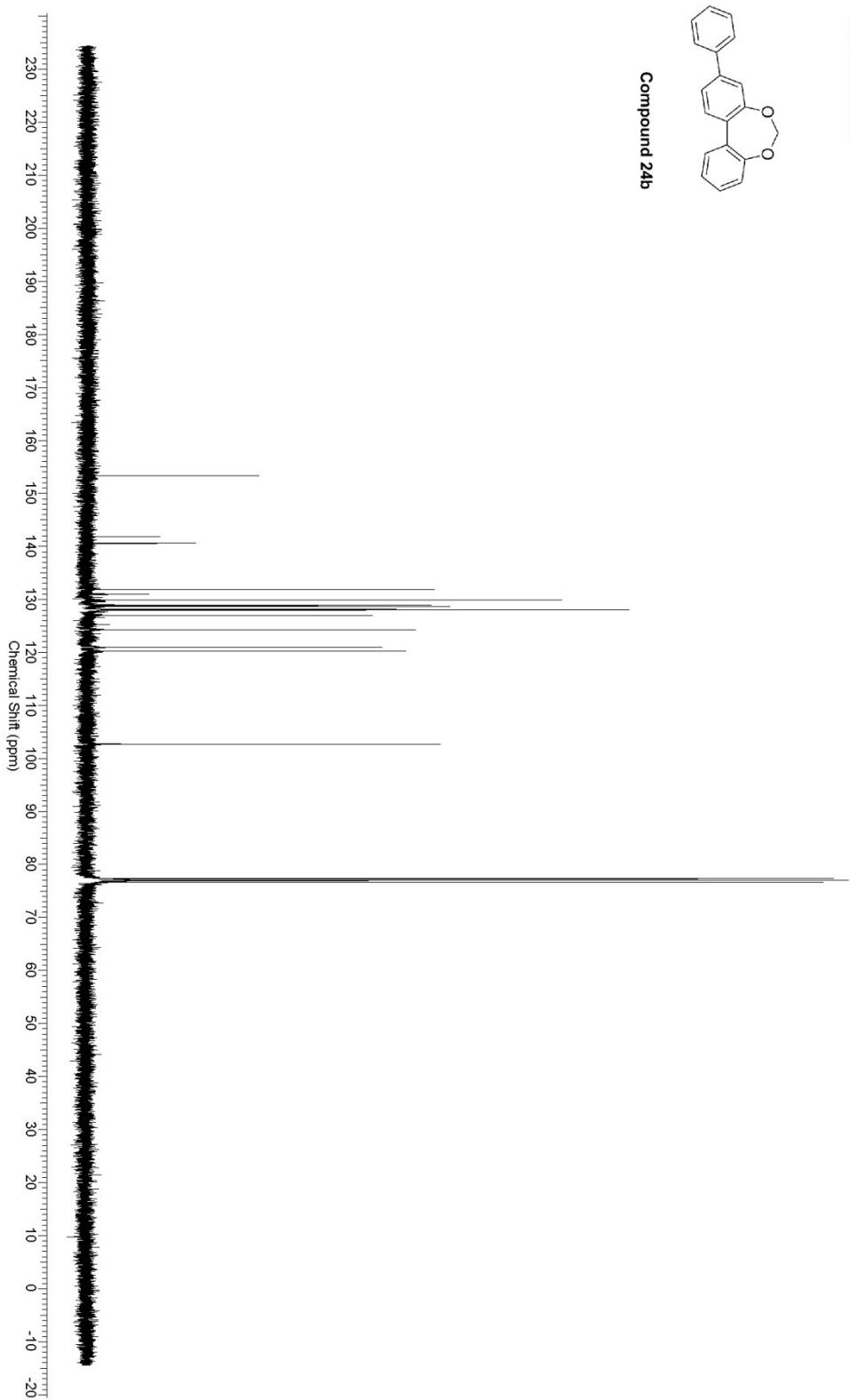
Compound 24b



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<sup>13</sup>C NMR (CHLOROFORM-d, 101MHz):  $\delta$  (ppm) 153.3, 141.9, 140.6, 131.9, 131.8, 131.0, 129.9, 128.8, 128.6, 128.2, 128.1, 127.9, 126.9, 124.2, 121.0, 120.2, 102.7  
CARBONL\_odd3\_01

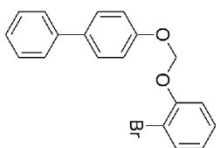


Compound 24b

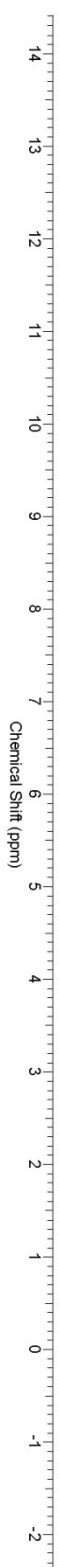


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$^1\text{H}$  NMR (400 MHz, CHLOROFORM- $d$ )  $\delta$  7.52 - 7.52 (m, 1H), 7.50 - 7.62 (m, 5H), 7.41 (t,  $J$  = 8.22 Hz, 2H), 7.41 (t,  $J$  = 7.63 Hz, 2H), 7.31 (q,  $J$  = 7.04 Hz, 1H), 7.27 (dd,  $J$  = 3.52, 4.70 Hz, 2H), 7.22 (d,  $J$  = 8.61 Hz, 2H), 6.89 - 6.96 (m, 1H), 5.81 (s, 2H)  
PROTON\_cdd3\_01

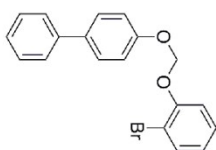


Compound 43

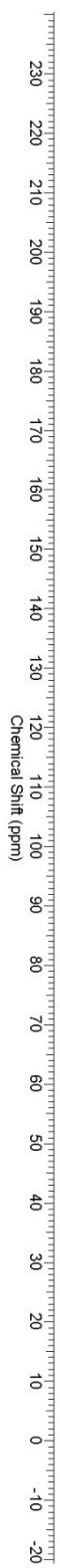




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 $^{13}\text{C}$  NMR (101 MHz, CHLOROFORM- $d$ )  $\delta$  156.3, 153.4, 140.5, 135.6, 133.5, 128.7, 128.5, 128.2, 126.9, 126.8, 123.7, 116.7, 116.6, 113.0, 91.5  
CARBON\_ddd3\_01



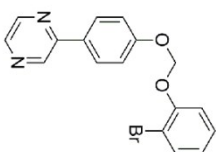
Compound 43



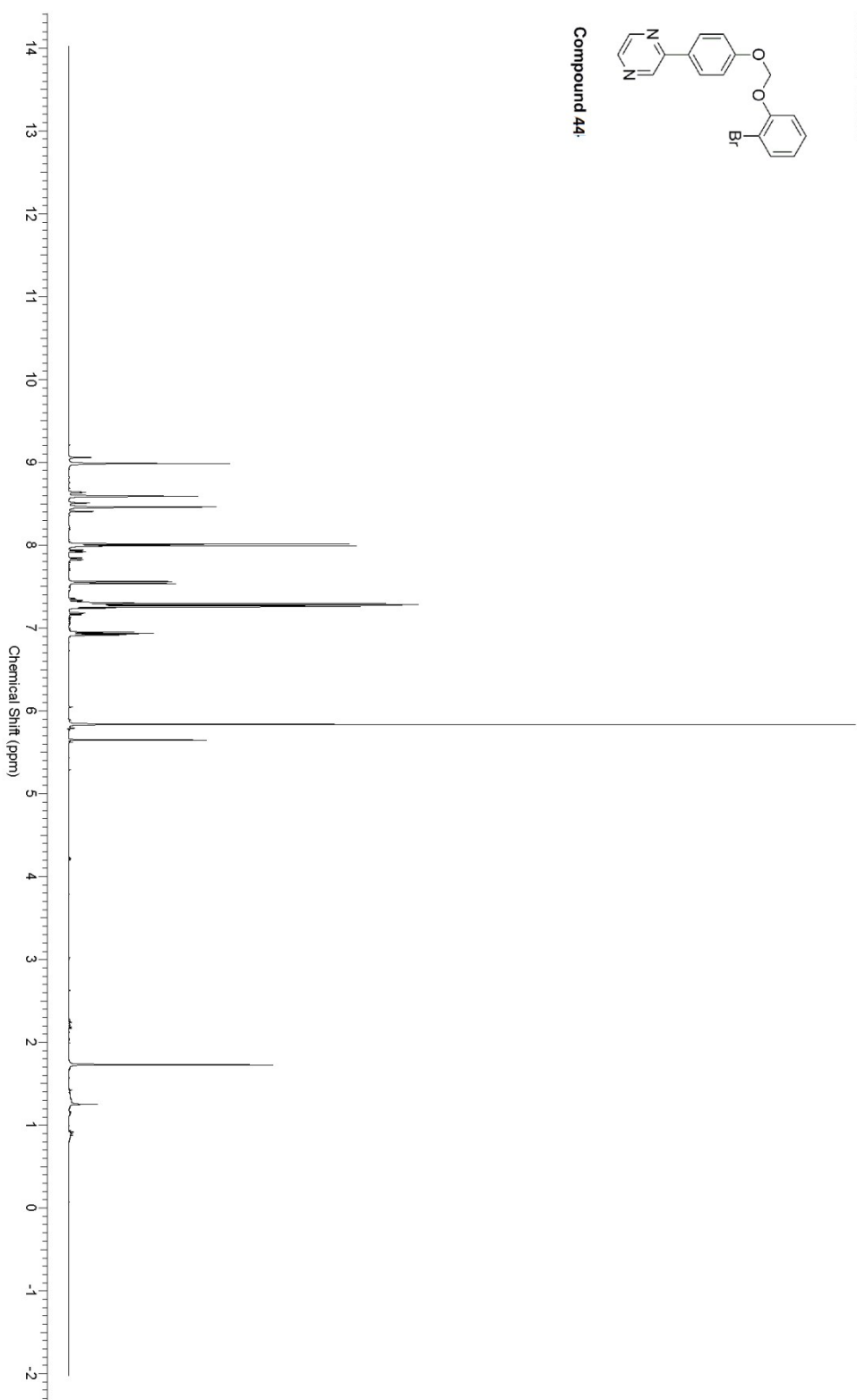
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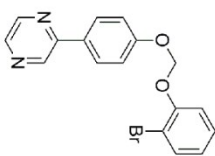
$^1\text{H}$  NMR (CHLOROFORM- $d$ , 400MHz):  $\delta$  (ppm) 8.98 (d,  $J=0.8$  Hz, 1H), 8.59 (dd,  $J=2.3, 1.6$  Hz, 1H), 8.46 (d,  $J=2.3$  Hz, 1H), 7.98 - 8.03 (m, 2H), 7.55 (dd,  $J=7.8, 1.2$  Hz, 1H), 7.25 - 7.32 (m, 4H), 6.90 - 6.97 (m, 1H), 5.84 (s, 2H)  
PROTON\_ddd3\_01



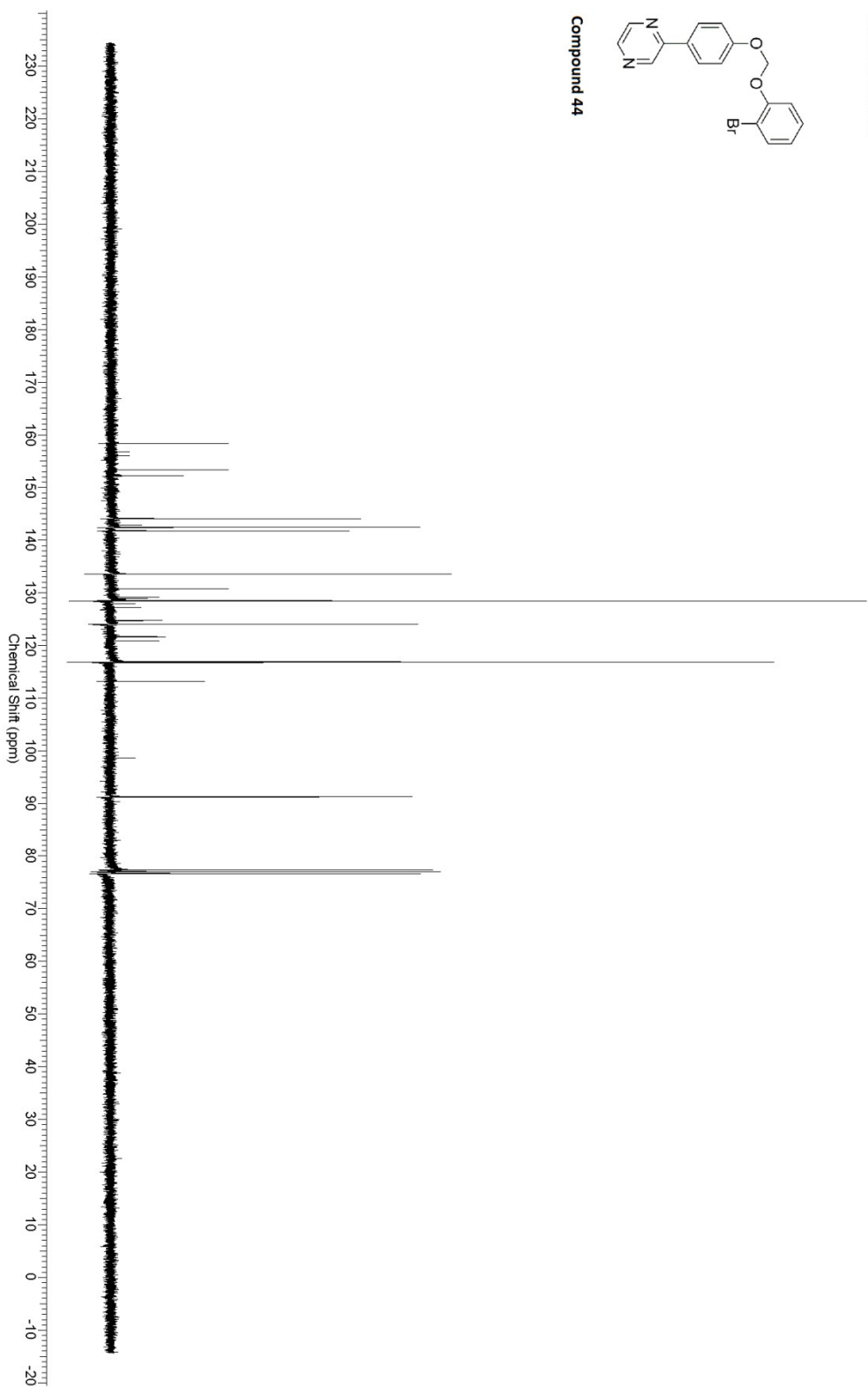
Compound 44:



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<sup>13</sup>C NMR (CHLOROFORM-d, 101MHz): δ (ppm) 158.4, 153.3, 152.3, 144.1, 142.4, 141.8, 133.6, 130.7, 128.5, 128.4, 124.0, 116.9, 116.8, 113.2, 91.2  
CARBON\_ddd3\_01

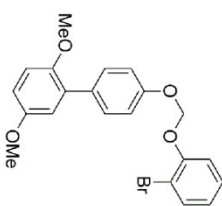


Compound 44

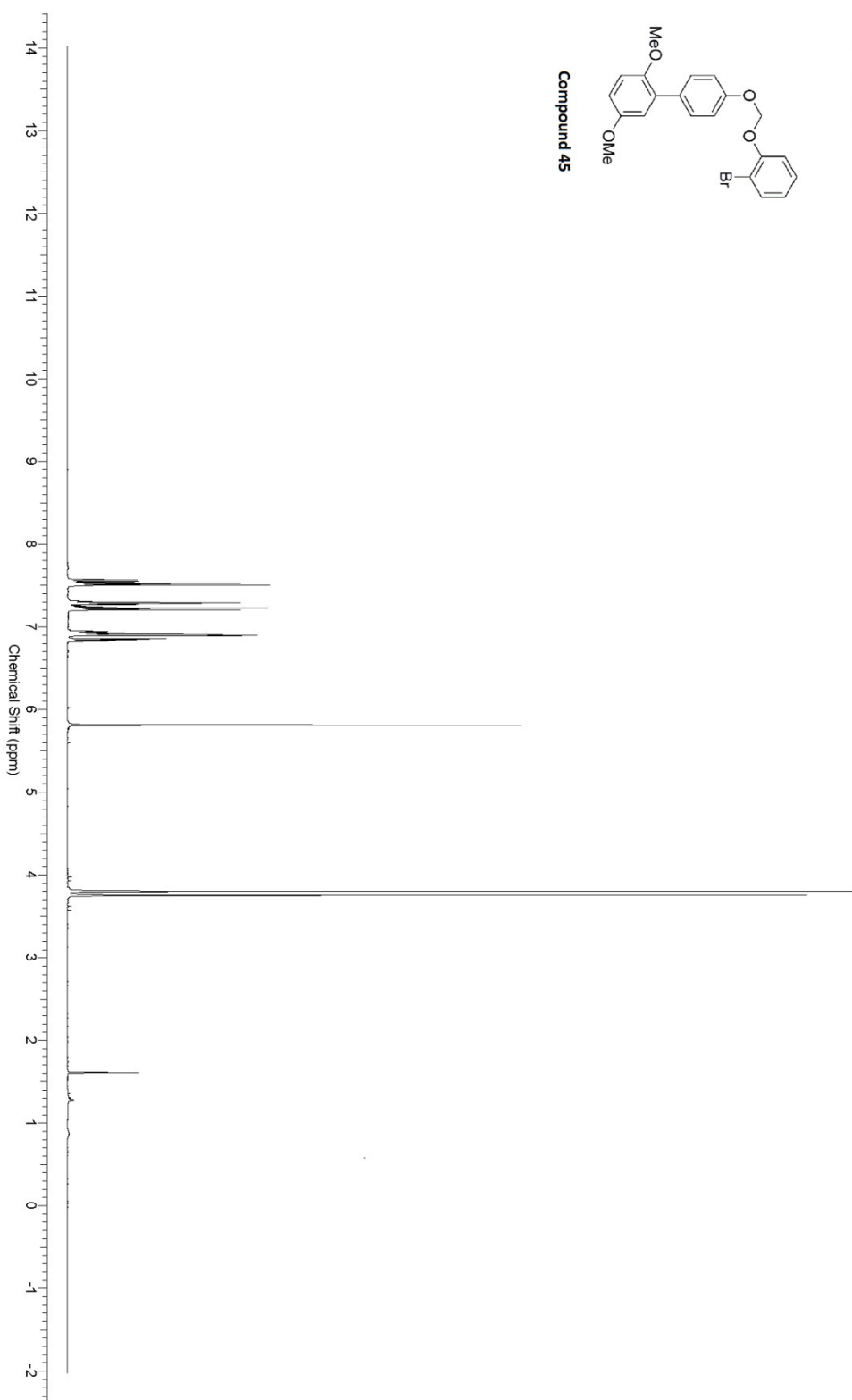


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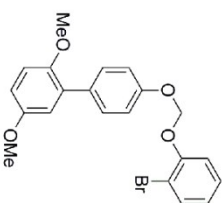
<sup>1</sup>H NMR (CHLOROFORM-d, 400MHz):  $\delta$  (ppm) 7.56 (dd,  $J=8.0, 0.9$  Hz, 1H), 7.50 - 7.53 (m, 2H), 7.25 - 7.31 (m, 2H), 7.22 (d,  $J=8.5$  Hz, 2H), 6.88 - 6.96 (m, 3H), 6.84 (dd,  $J=8.6, 3.4$  Hz, 1H), ~~5.79~~ ~~5.84~~ (m, 2H), 5.81 (s, 5H), 3.80 (s, 3H), 3.75 (s, 3H)  
 PROTON\_cdd3\_03



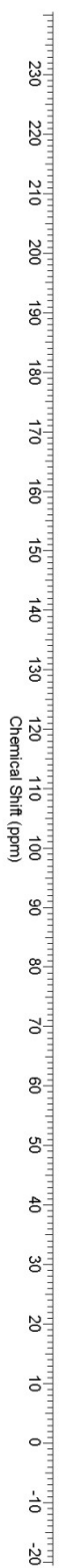
Compound 45



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<sup>13</sup>C NMR (CHLOROFORM-d, 101MHz): δ (ppm) 156.1, 153.7, 153.5, 150.7, 133.5, 132.7, 131.0, 130.7, 128.5, 123.7, 116.7, 116.6, 116.0, 113.0, 112.8, 112.5, 91.5, 56.3, 55.8  
CARBON\_Ladd3\_01



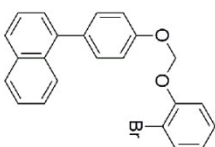
Compound 45



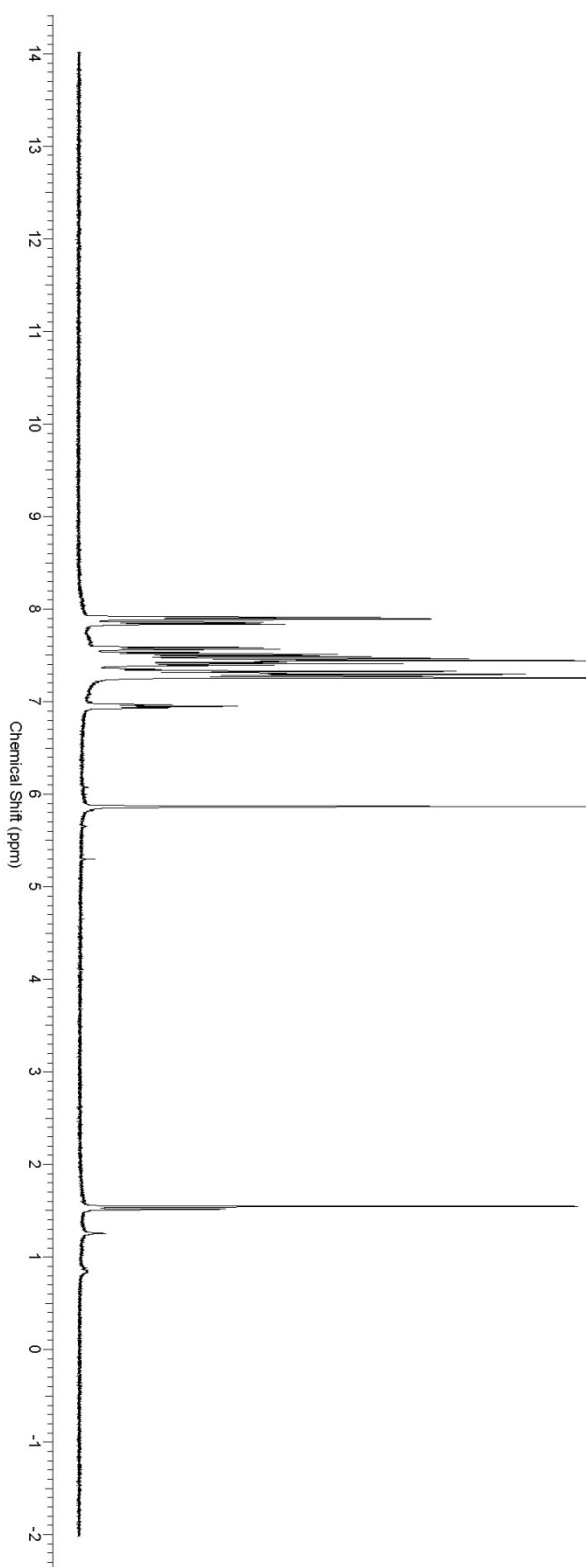
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<sup>1</sup>H NMR (CHLOROFORM-d, 400MHz):  $\delta$  (ppm) 7.90 (d,  $J=8.2$  Hz, 2H), 7.85 (d,  $J=8.2$  Hz, 1H), 7.58 (d,  $J=7.8$  Hz, 1H), 7.47 - 7.54 (m, 2H), 7.39 - 7.47 (m, 4H), 7.30 - 7.36 (m, 2H), 7.29 (d,  $J=8.2$  Hz, 2H), 6.95 (t,  $J=7.2$  Hz, 1H), 5.87 (s, 2H)  
PROTON\_odd3\_01

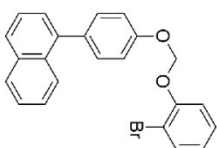


Compound 46a

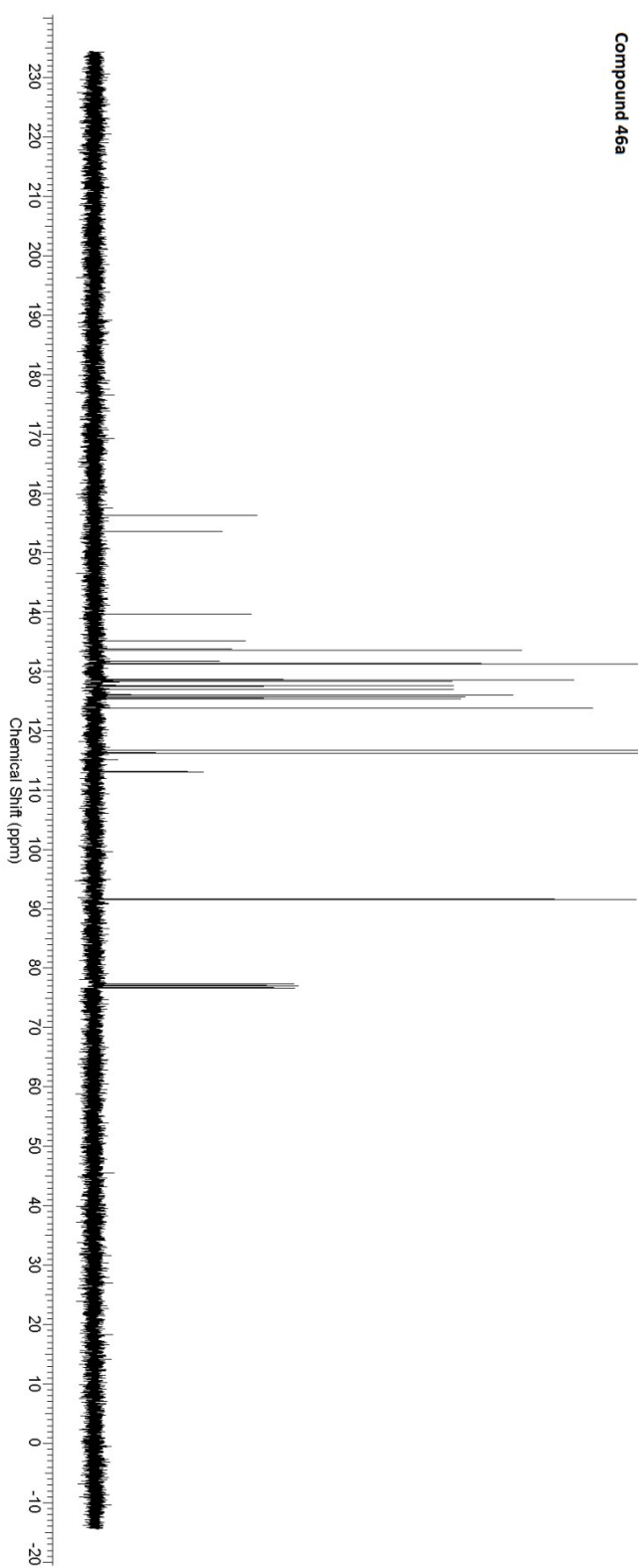


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$^{13}\text{C}$  NMR (CHLOROFORM- $d$ , 101MHz):  $\delta$  (ppm) 156.3, 153.5, 139.6, 135.1, 133.8, 133.6, 131.7, 131.3, 128.6, 128.3, 127.5, 127.0, 126.0, 126.0, 125.8, 125.4, 123.8, 116.7, 116.3, 116.3, 113.1, 91.6  
CARBON\_Ladd3\_01

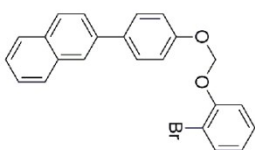


Compound 46a

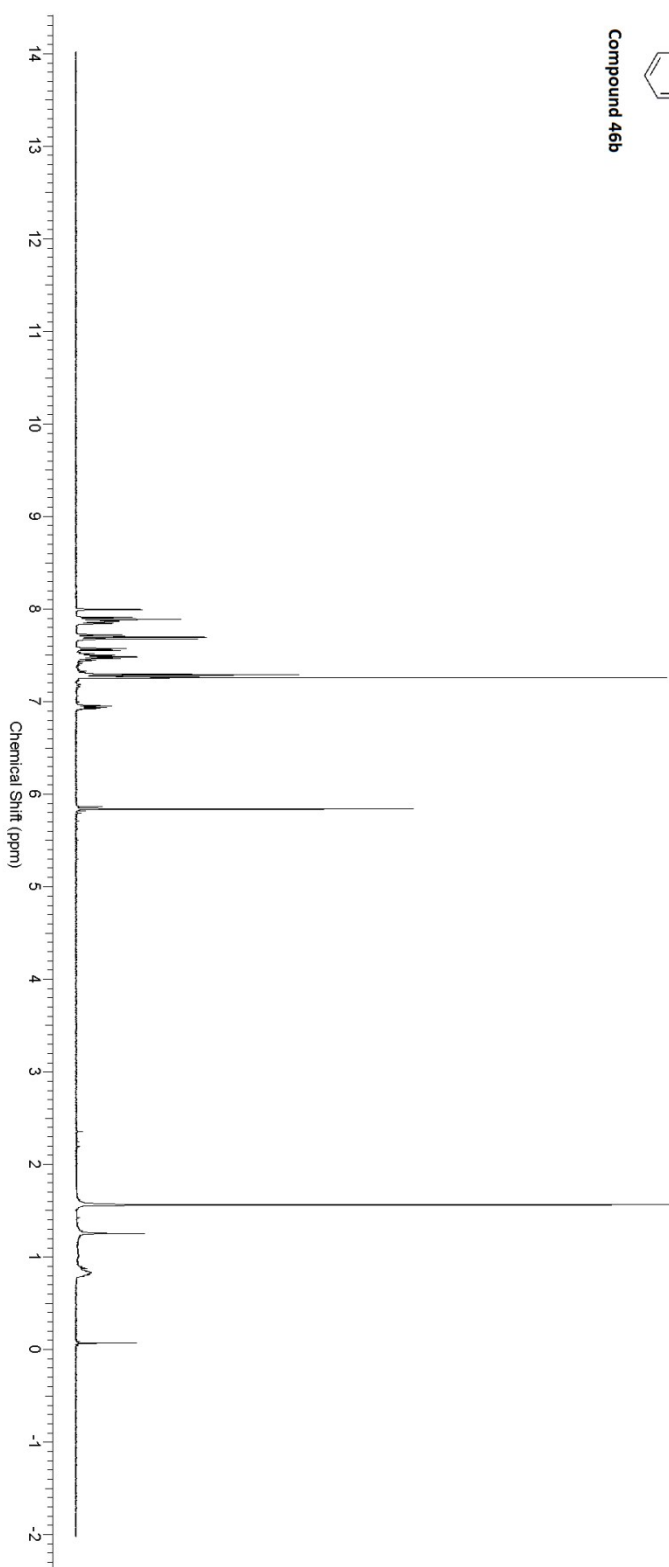


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<sup>1</sup>H NMR (CHLOROFORM-d, 400MHz):  $\delta$  (ppm) 7.99 (s, 1H), 7.88 (q,  $J=8.2$  Hz, 3H), 7.72 (dd,  $J=8.6, 2.0$  Hz, 1H), 7.66 - 7.70 (m, 2H), 7.56 (d,  $J=8.2$  Hz, 1H), 7.44 - 7.52 (m, 2H), 7.26 - 7.31 (m, 4H), 6.91 - 6.97 (m, 1H), 5.84 (s, 2H)  
PROTON\_cdd3\_01



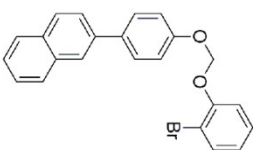
Compound 45b





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$^{13}\text{C}$  NMR (CHLOROFORM- $d$ , 101MHz):  $\delta$  (ppm) 156.5, 137.9, 135.6, 135.6, 133.7, 133.5, 132.4, 128.6, 128.5, 128.4, 128.1, 127.6, 126.3, 125.8, 125.4, 125.3, 123.8, 116.8, 116.8, 113.1, 91.6  
CARBON\_Ladd3\_01



Compound 46b

