

# Synthesis and biological evaluation of cyclic derivatives of combretastatin A-4 containing group 14 elements

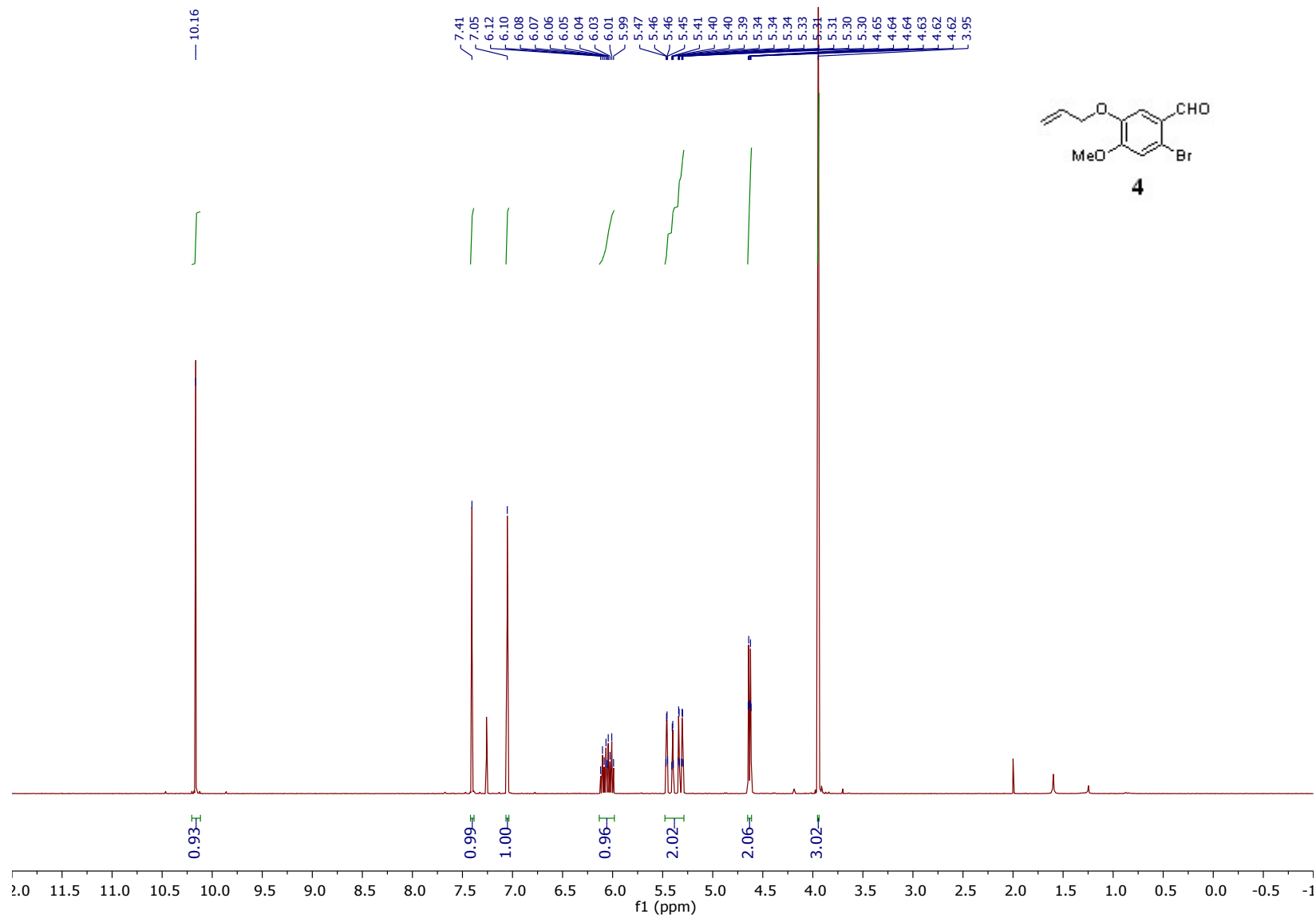
Víctor Blasco,<sup>†</sup> Juan Murga,<sup>†</sup> Eva Falomir,<sup>†</sup> Miguel Carda,<sup>†</sup> Santiago Royo,<sup>†</sup> Ana C. Cuñat,<sup>‡</sup> Juan F. Sanz-Cervera<sup>‡</sup> and J. Alberto Marco<sup>‡</sup>

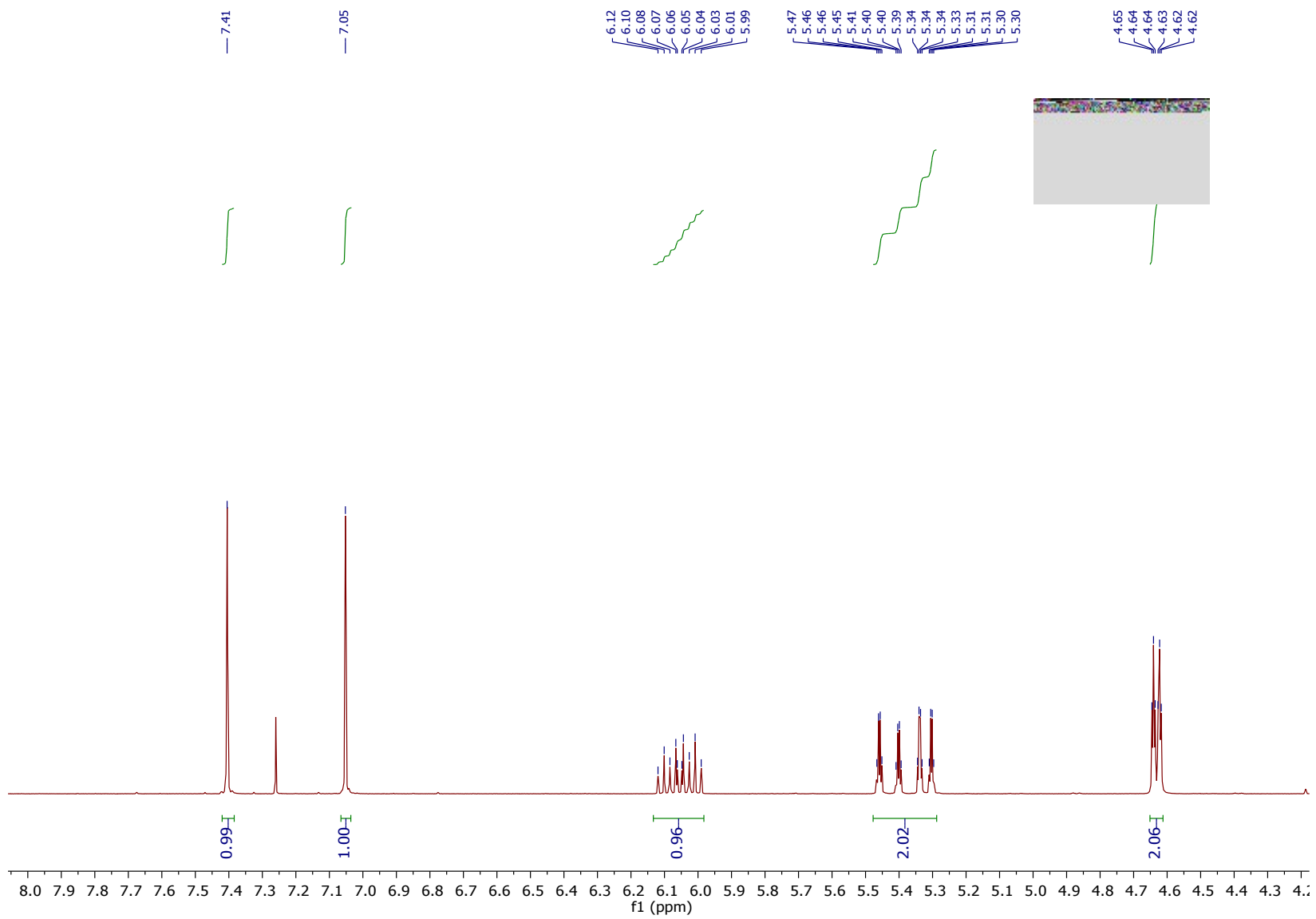
<sup>†</sup>*Depart. de Q. Inorgánica y Orgánica, Univ. Jaume I, E-12080 Castellón, Spain; and* <sup>‡</sup>*Depart. de Q. Orgánica, Univ. de Valencia, E-46100 Burjassot, Valencia, Spain*

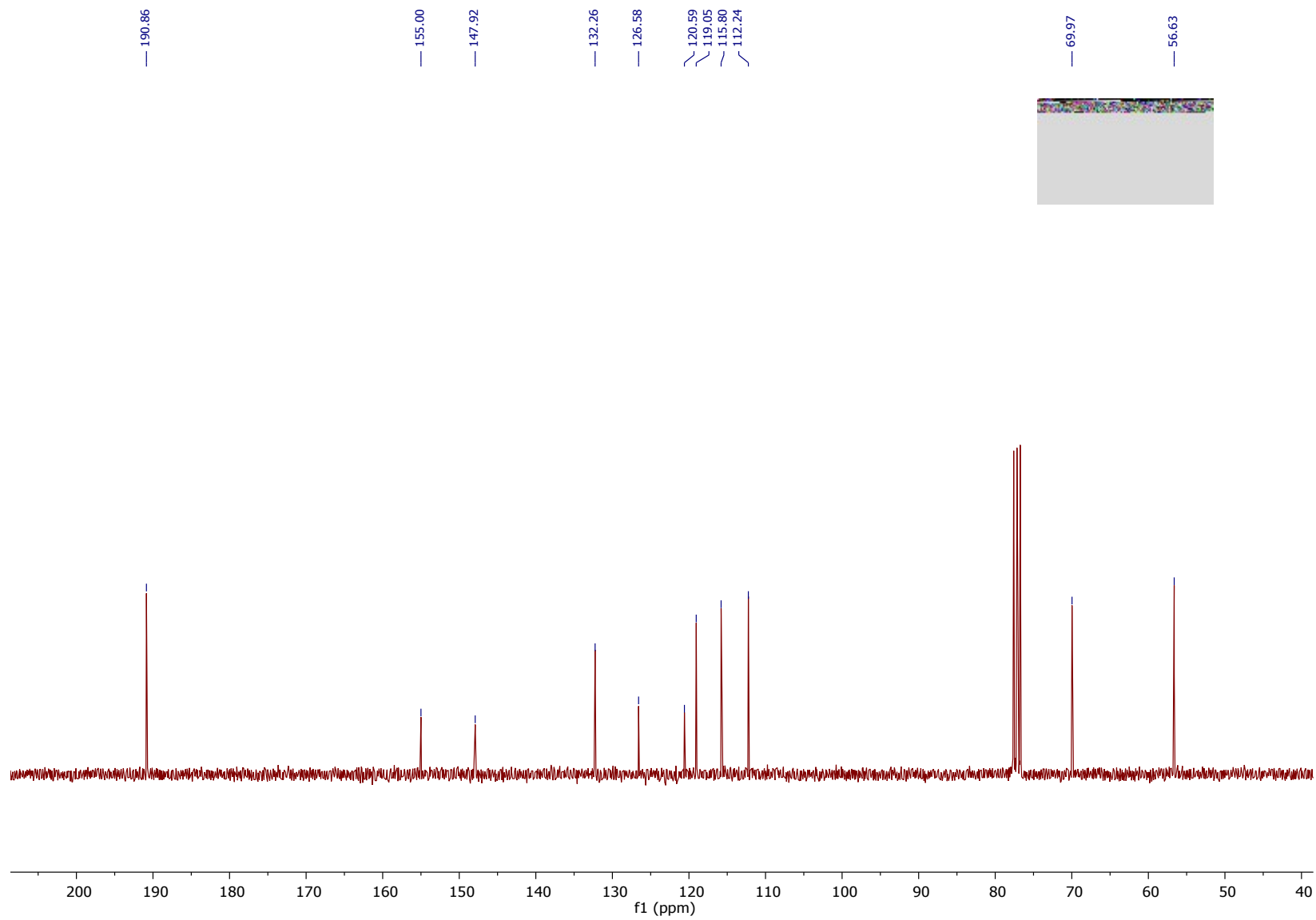
## ***Supporting Information***

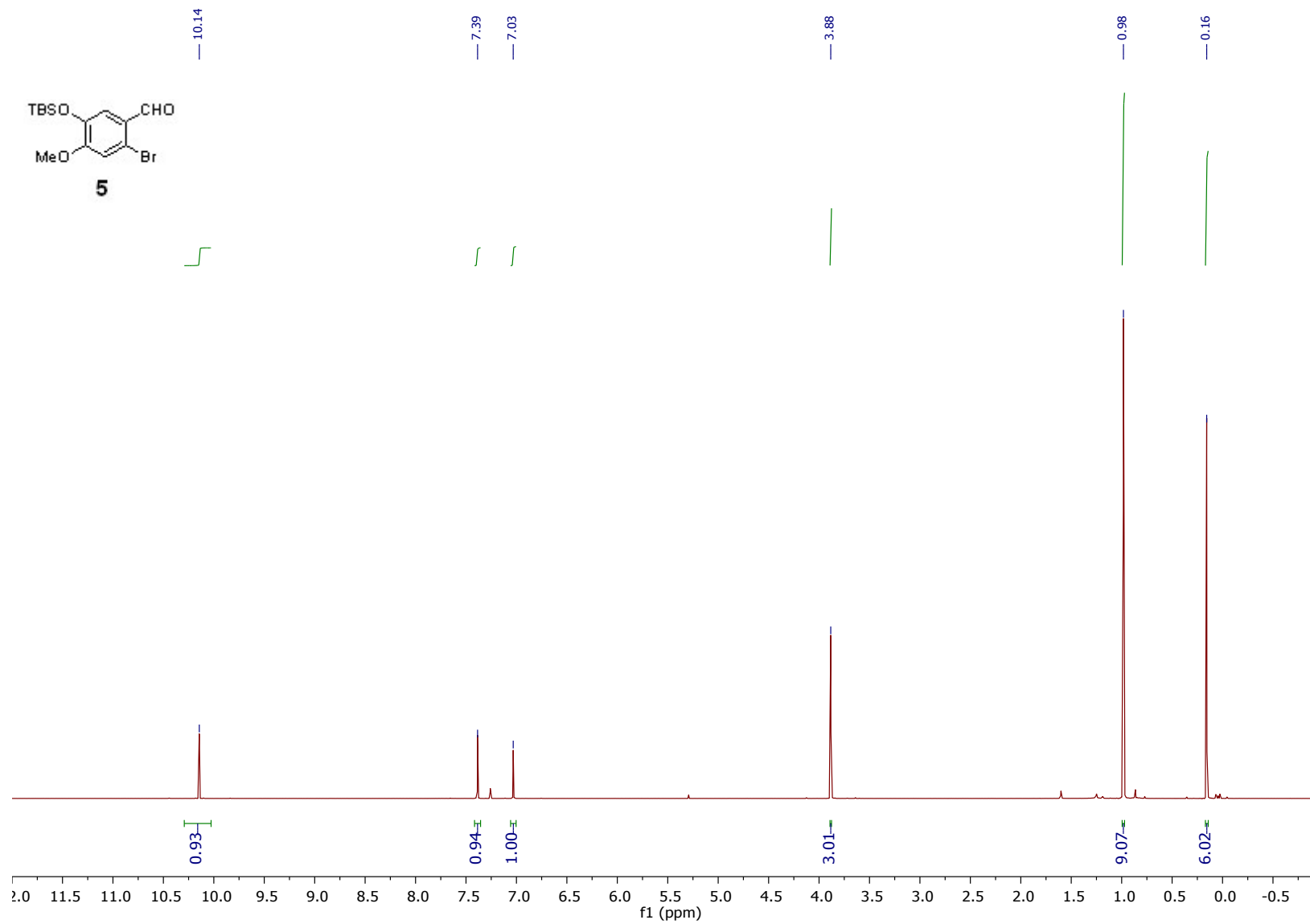
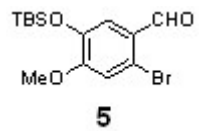
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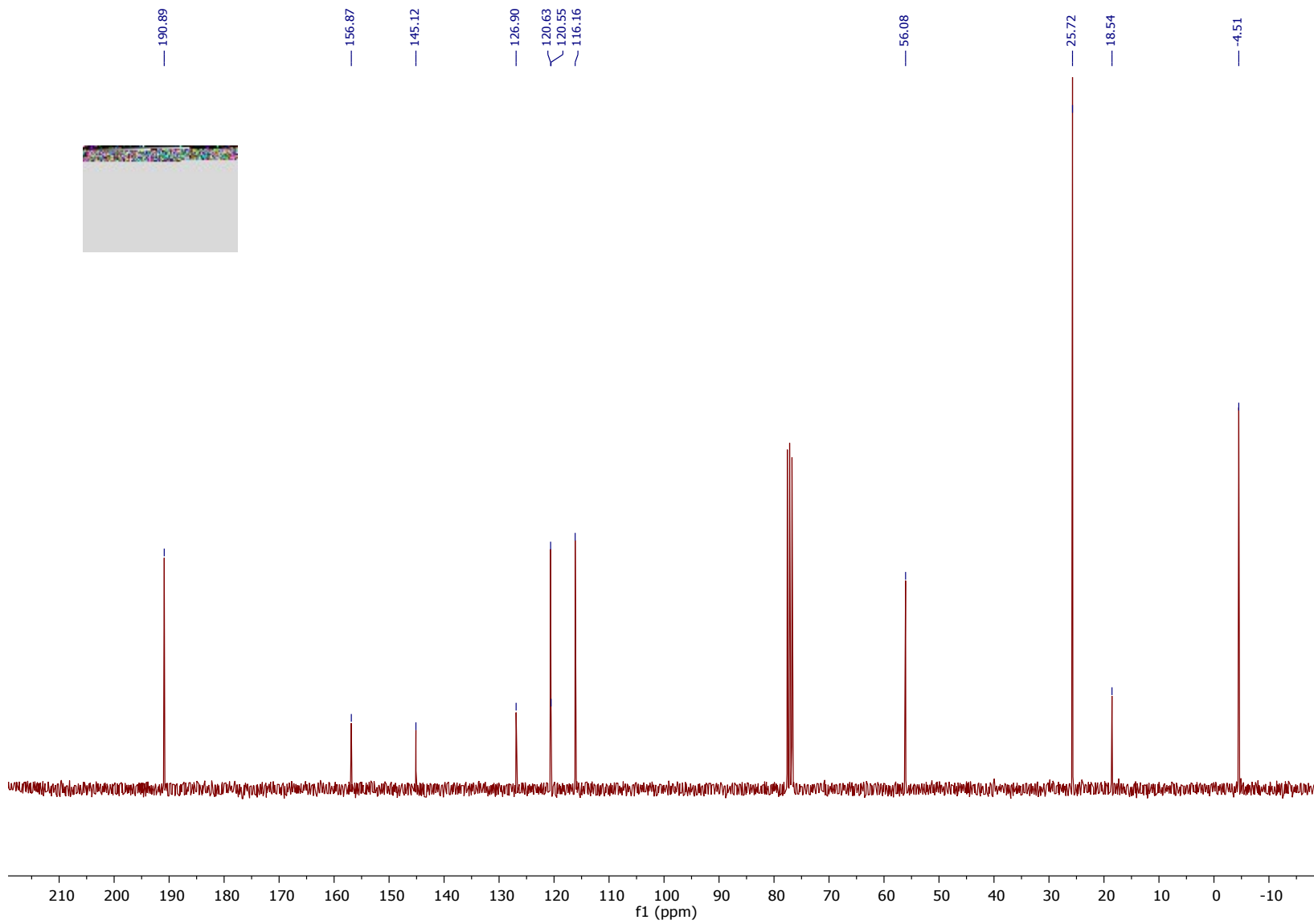
**S-2/S-93: Graphical NMR spectra of new compounds**

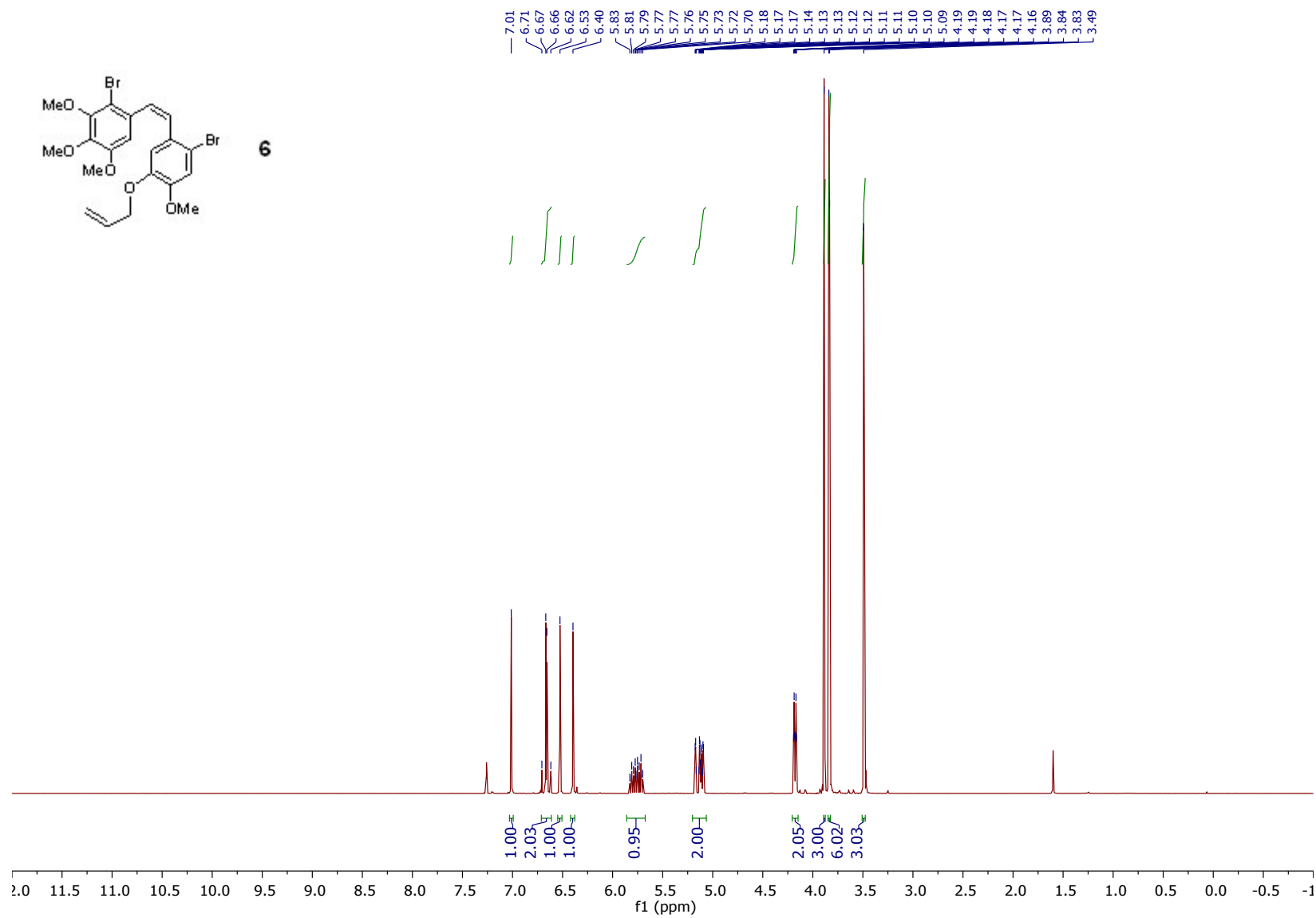


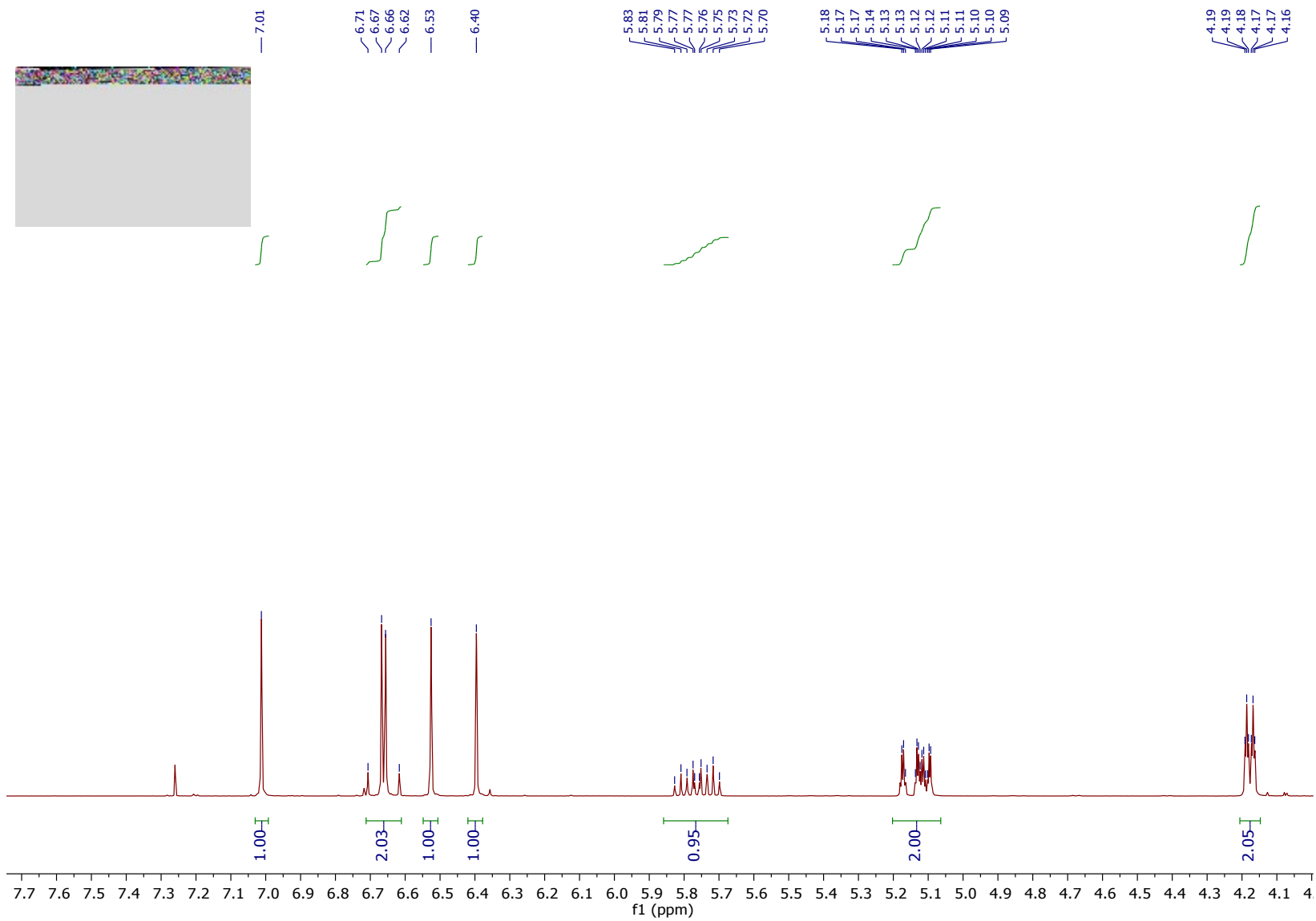




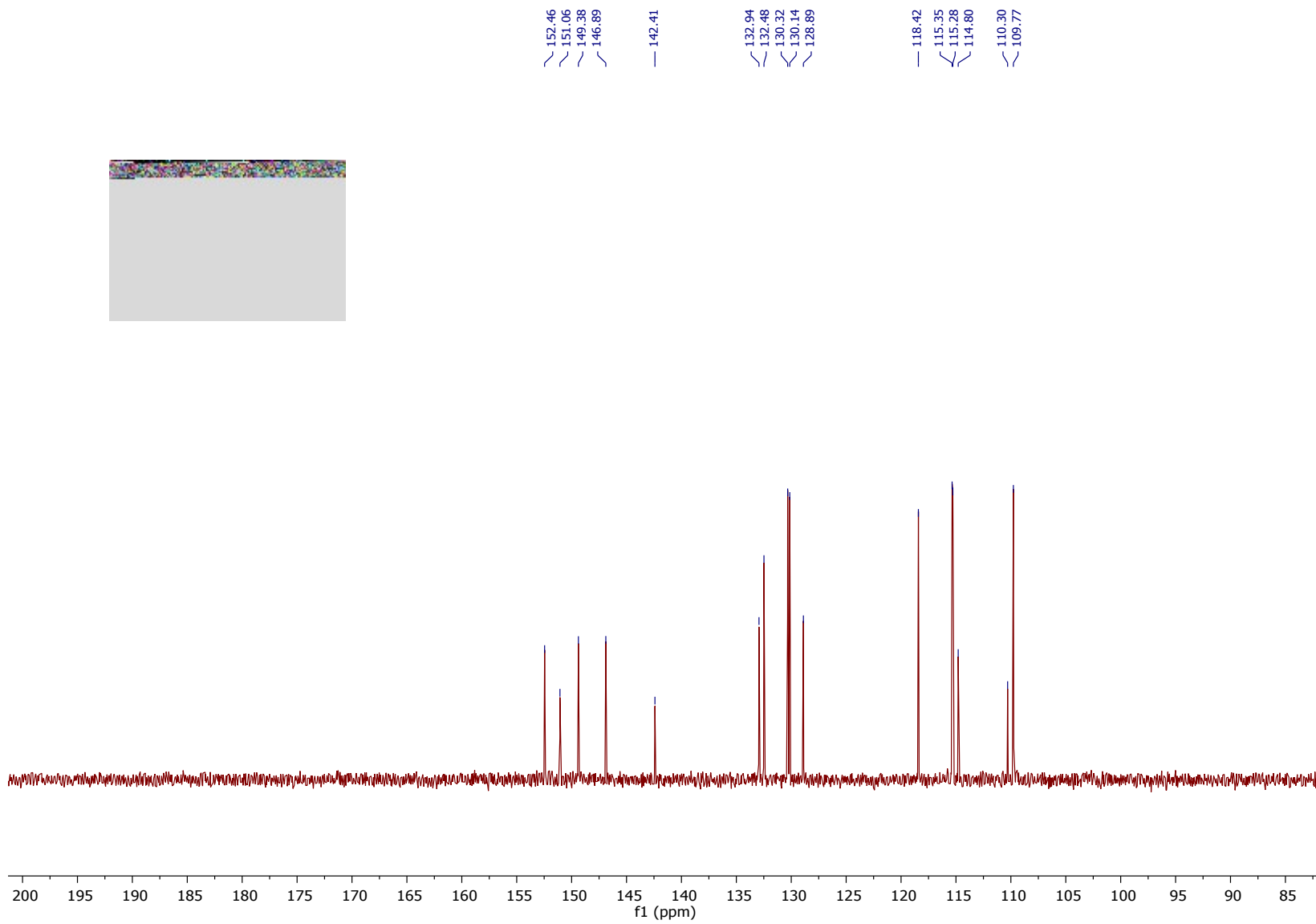


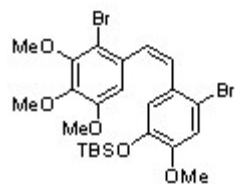




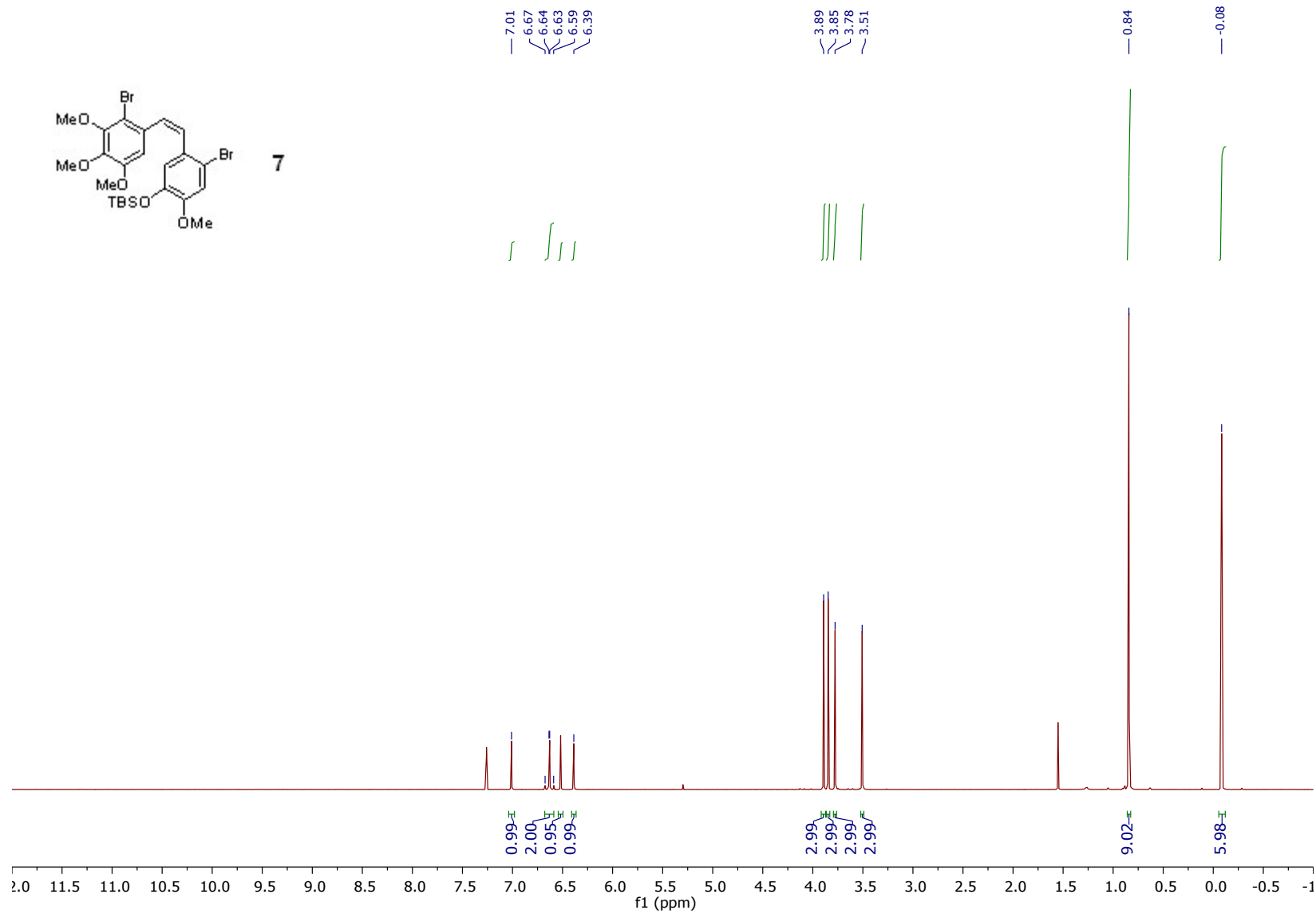


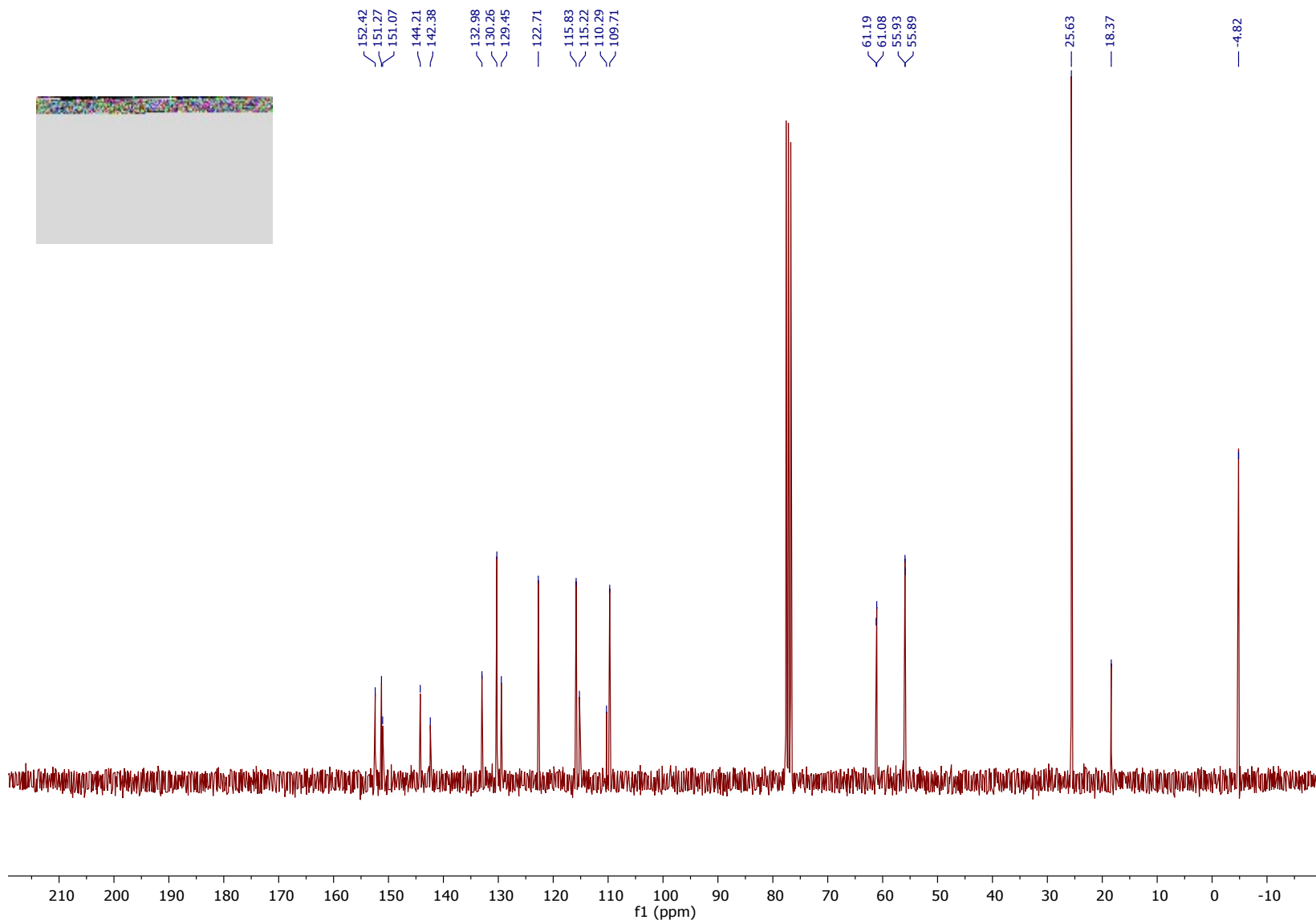


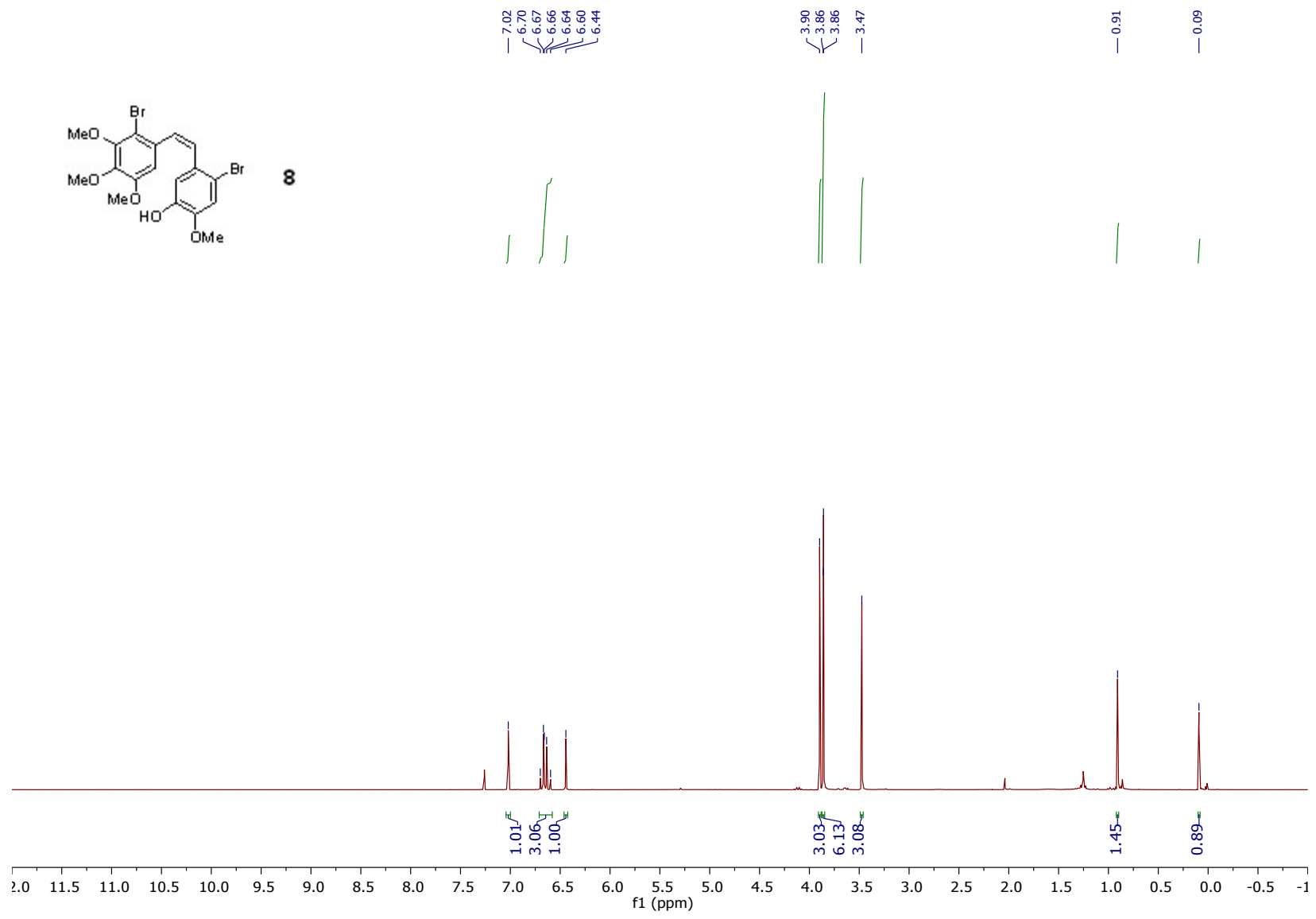
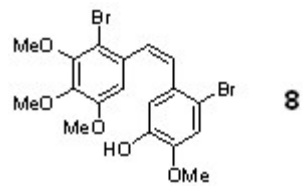




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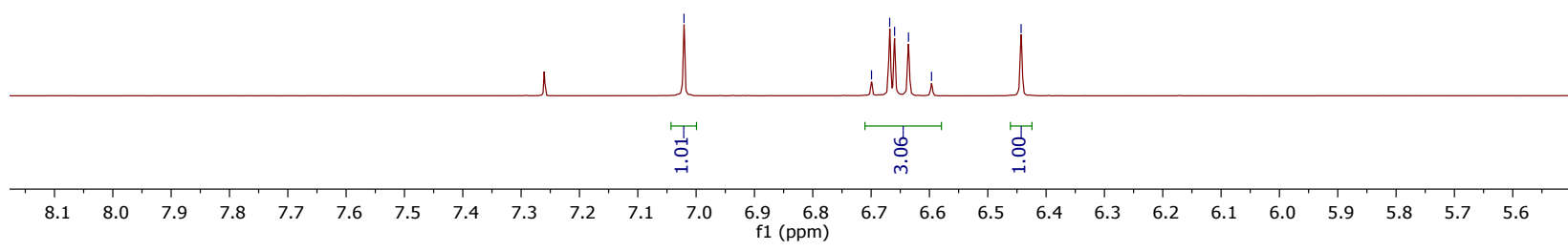








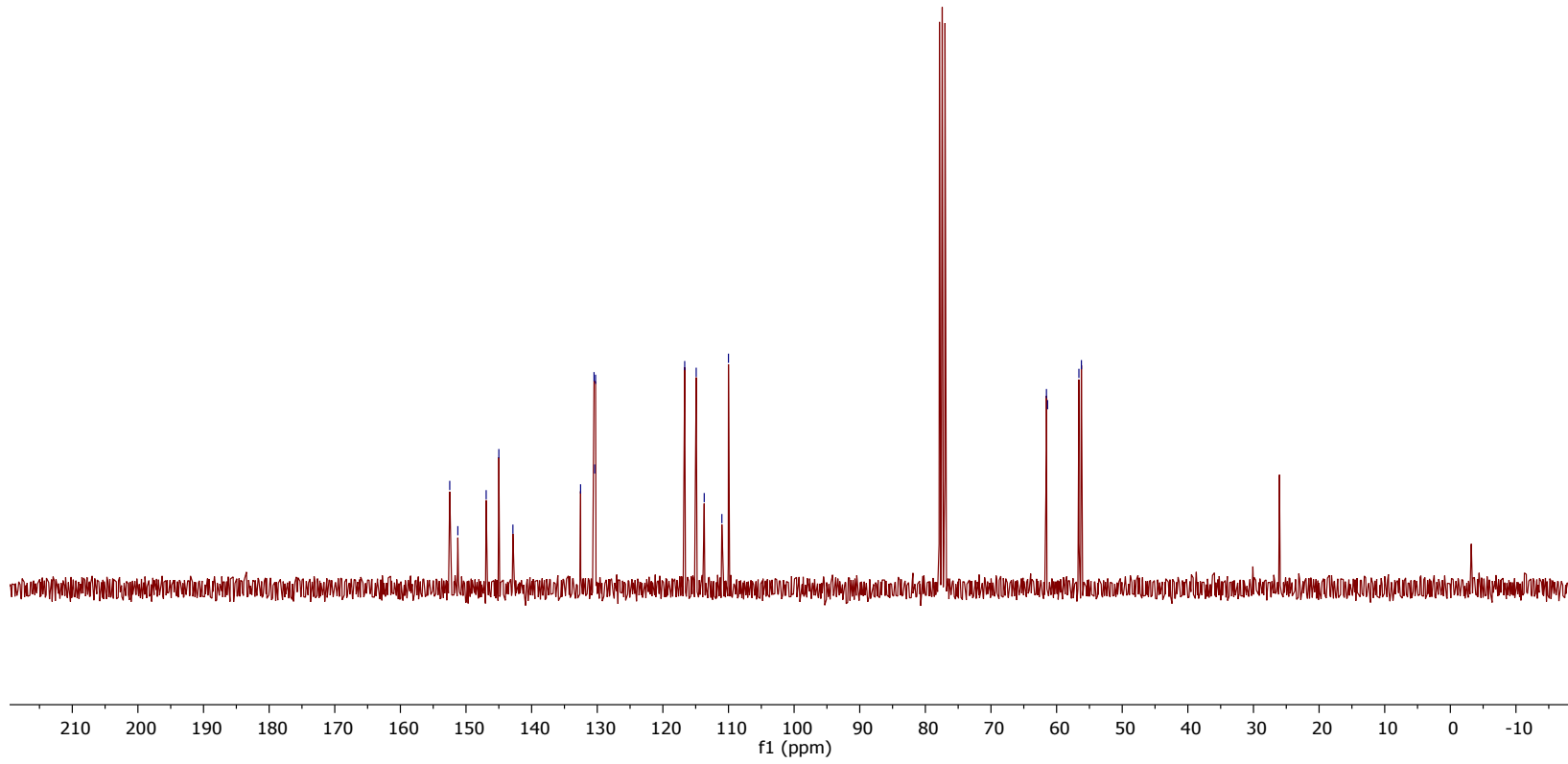
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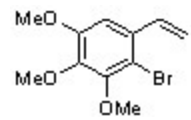




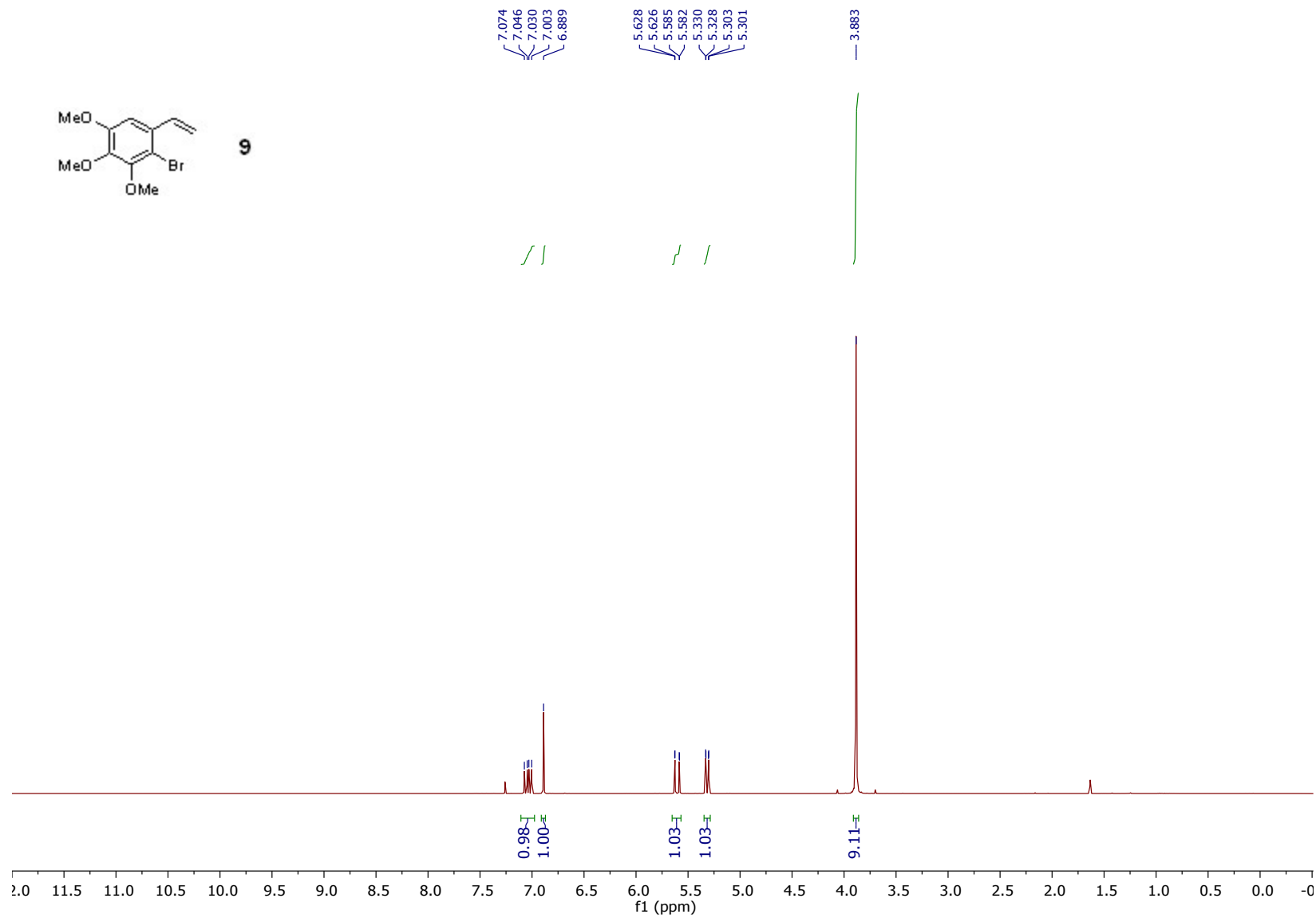
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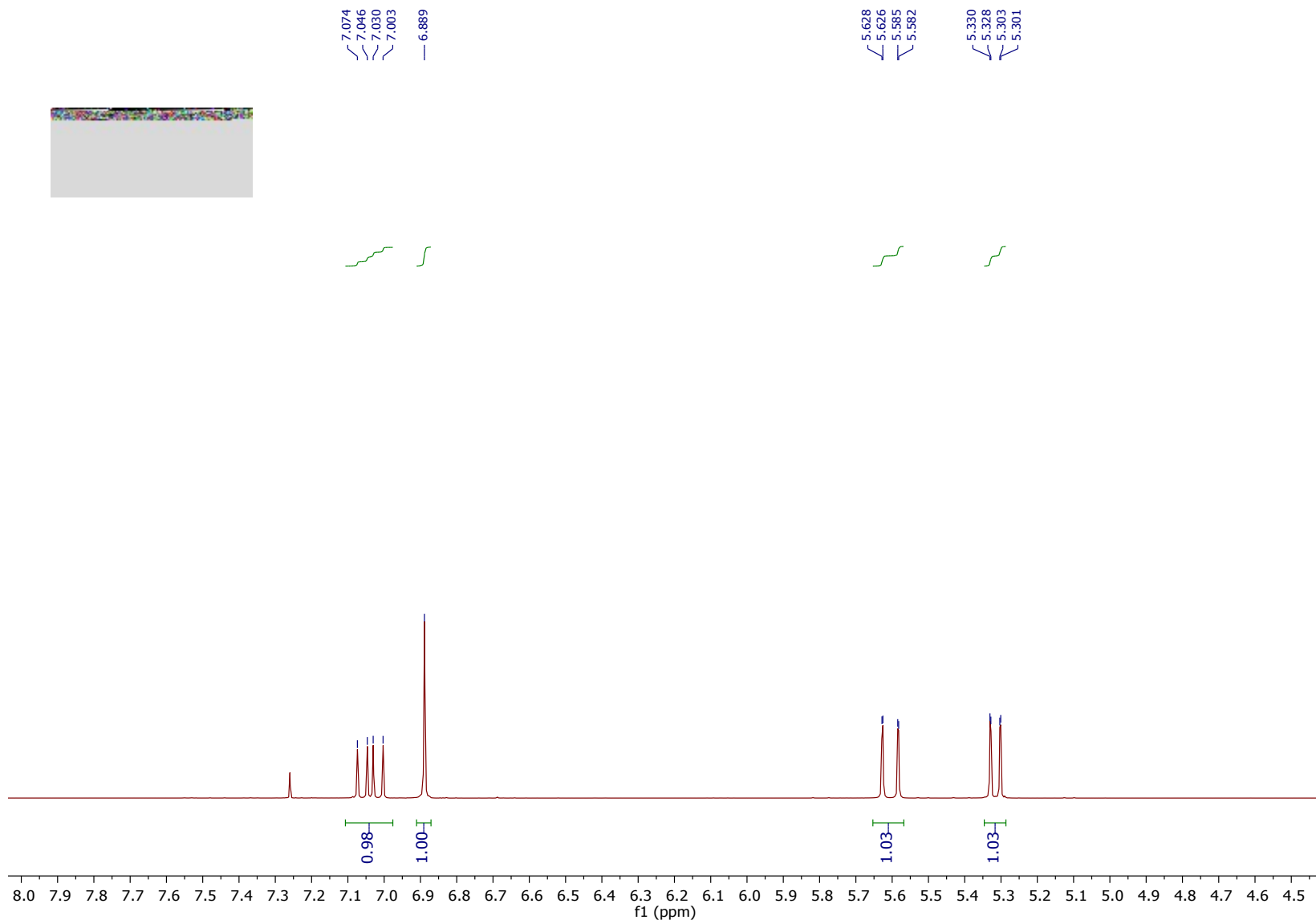
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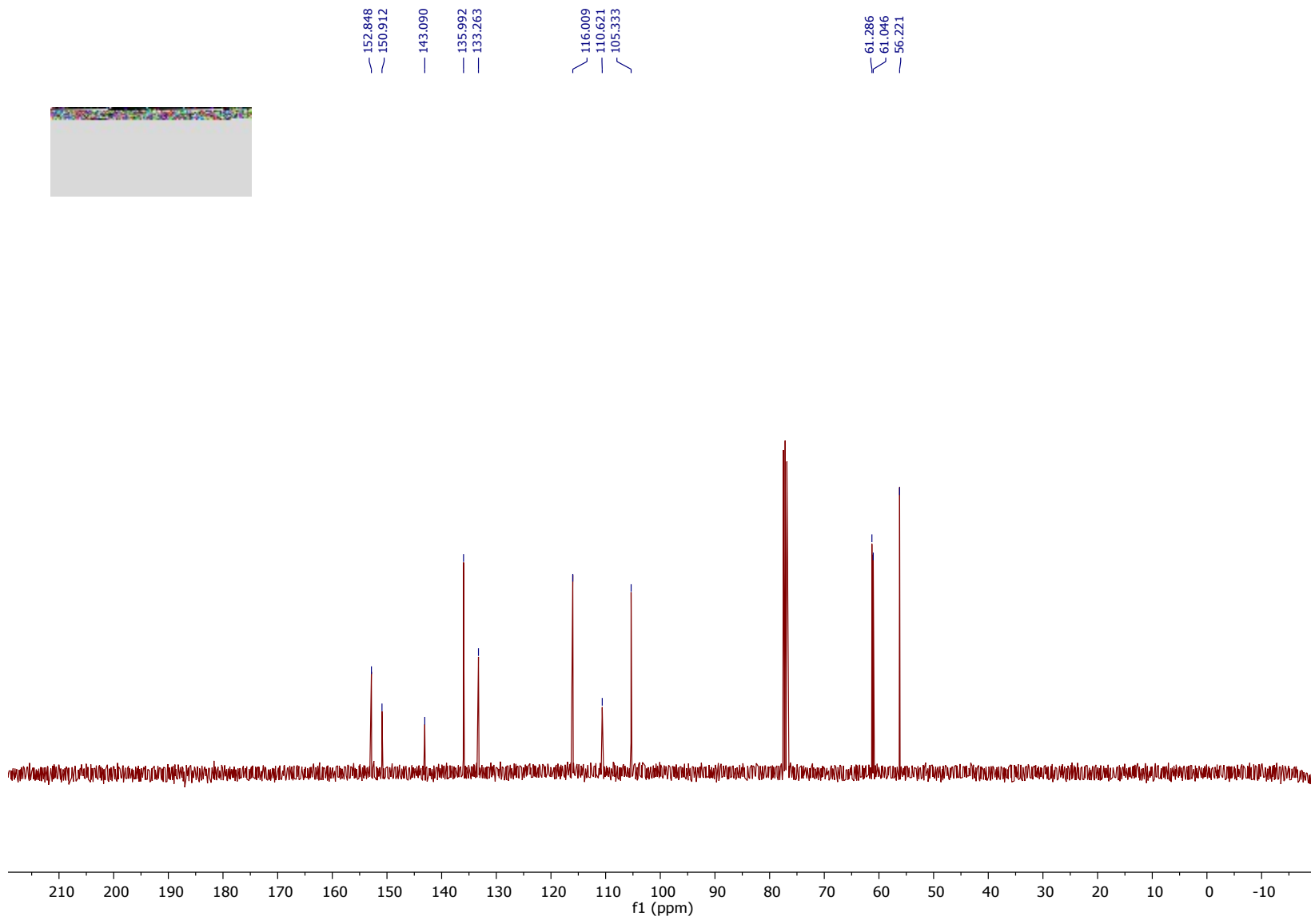


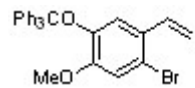
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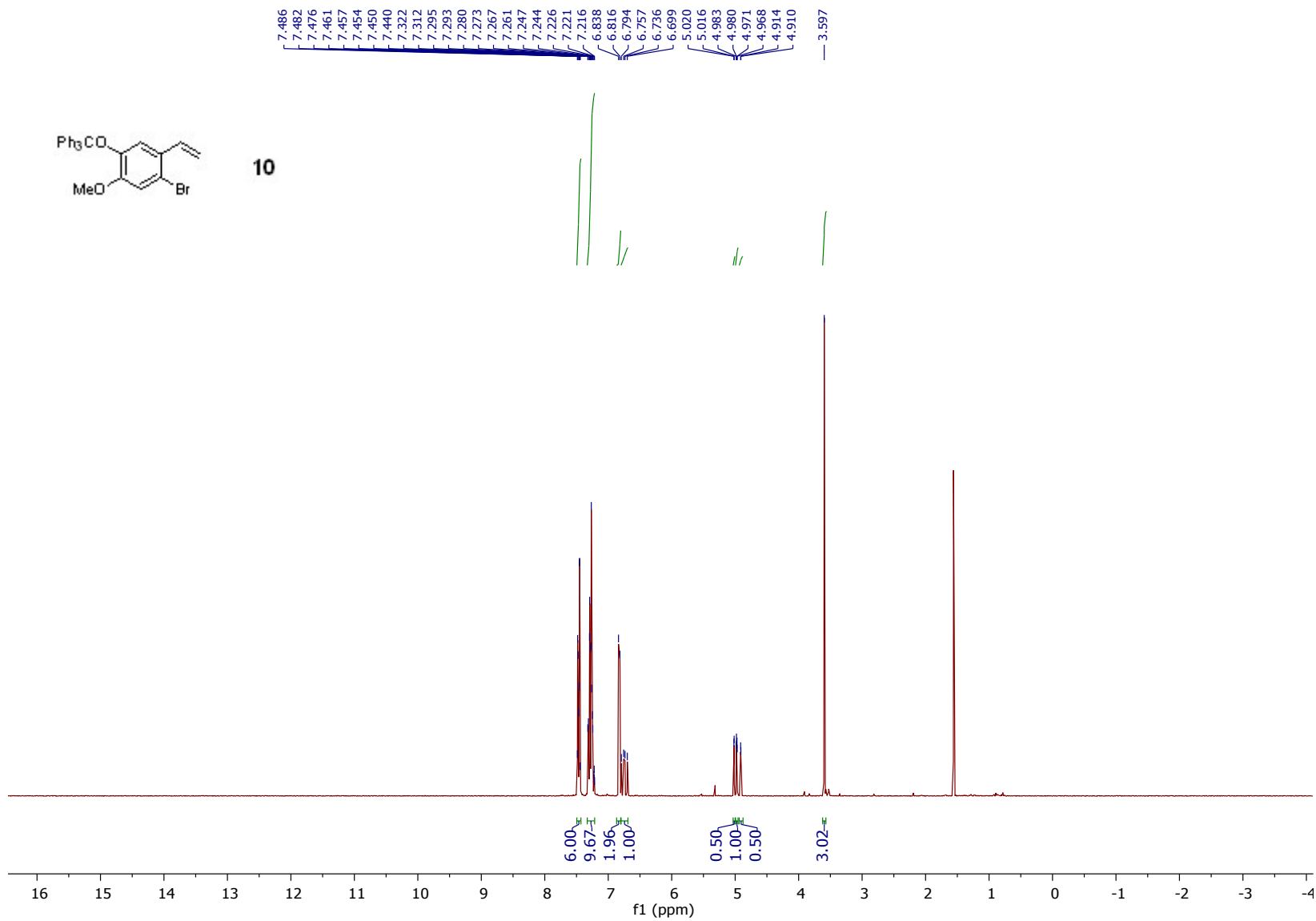


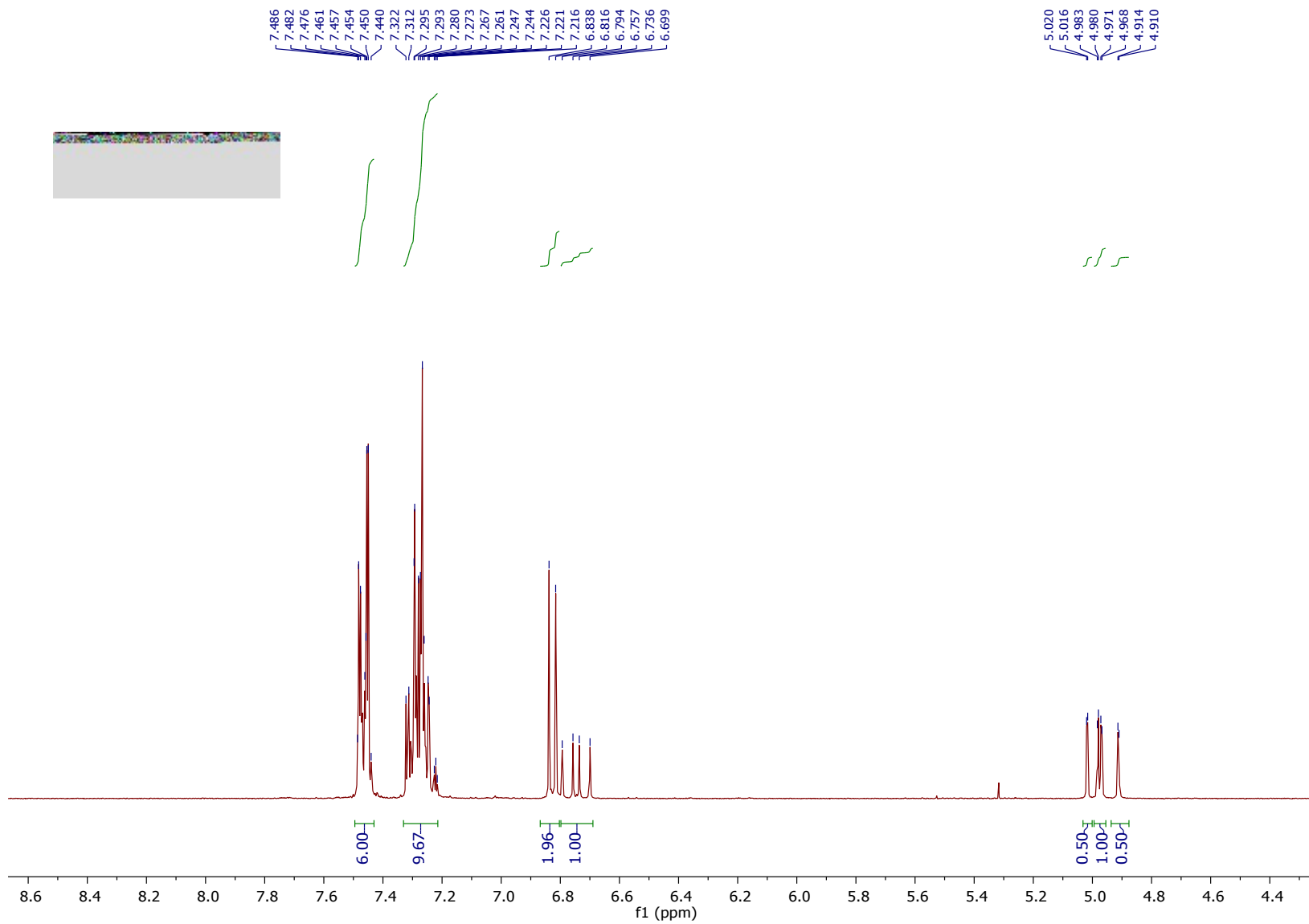


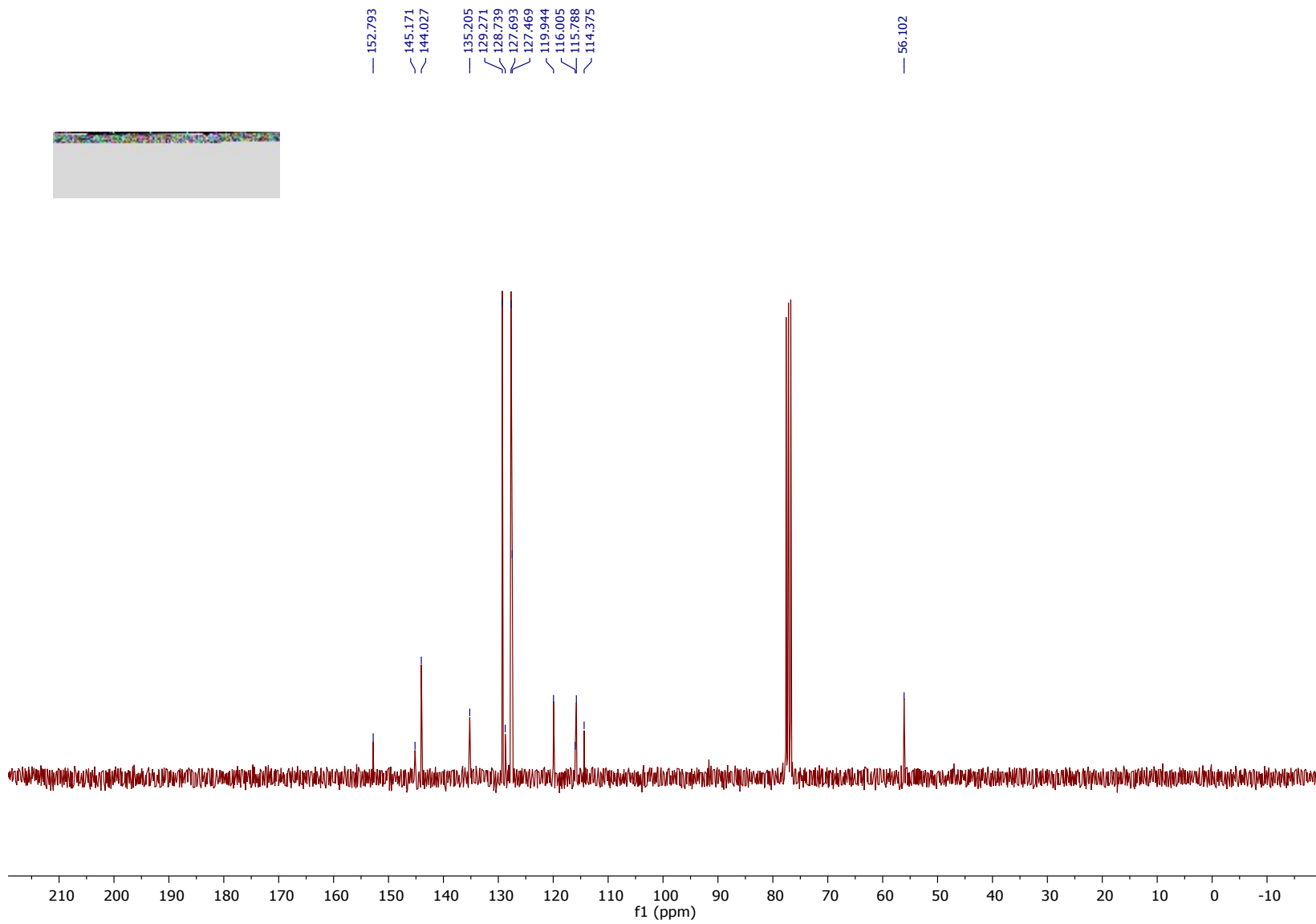


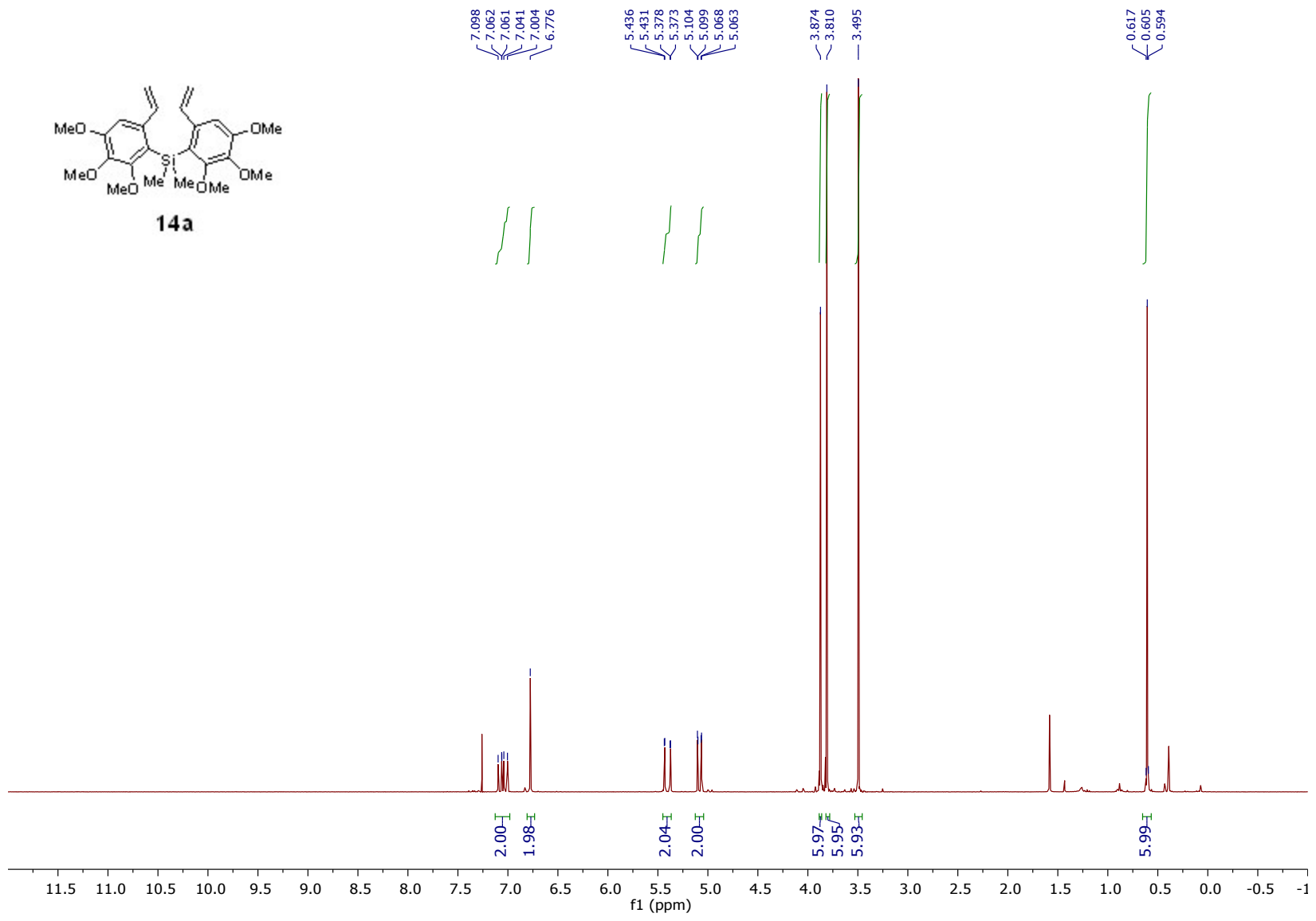
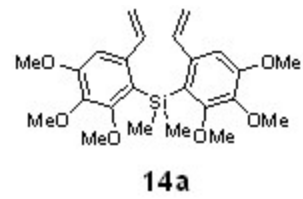


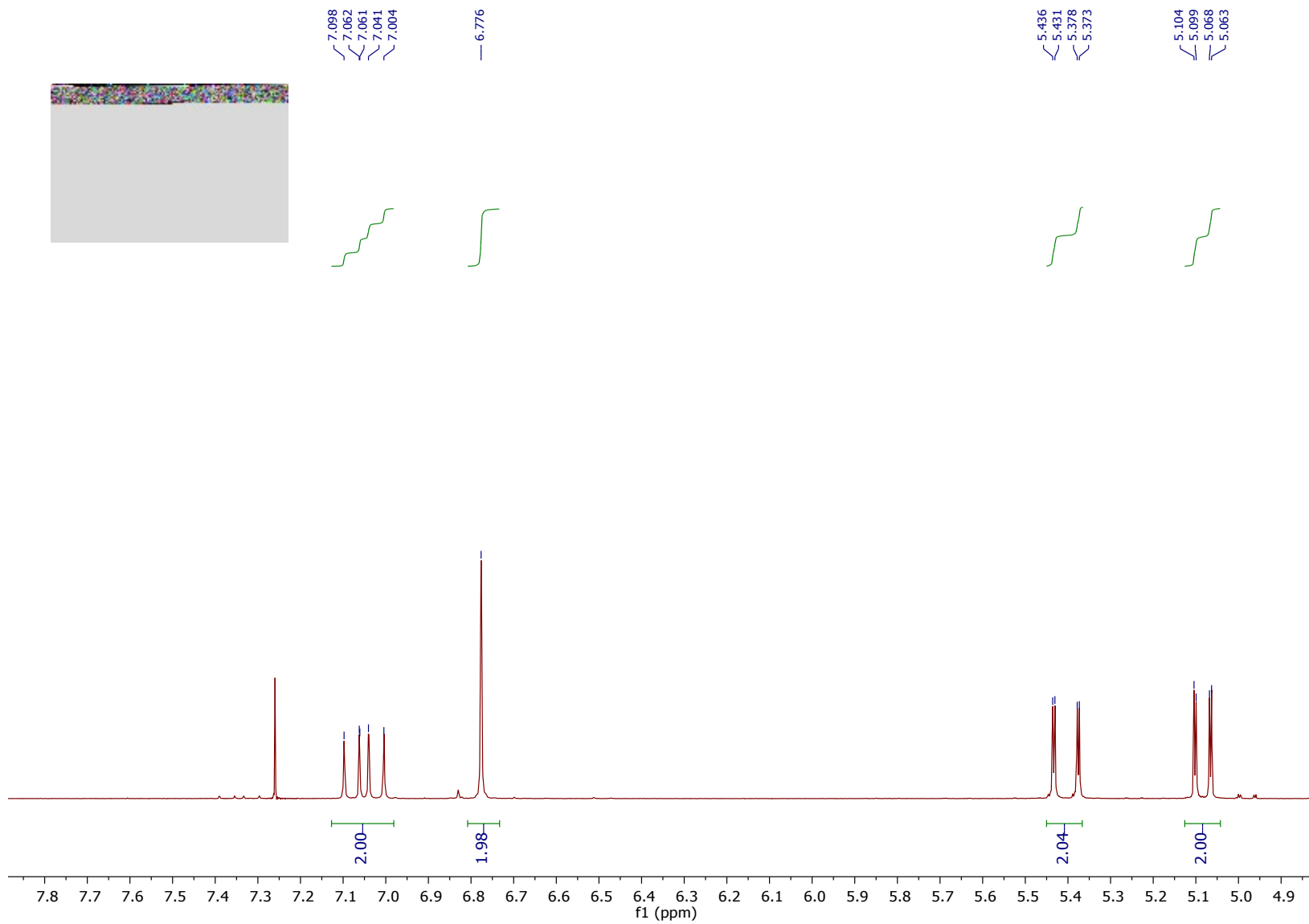
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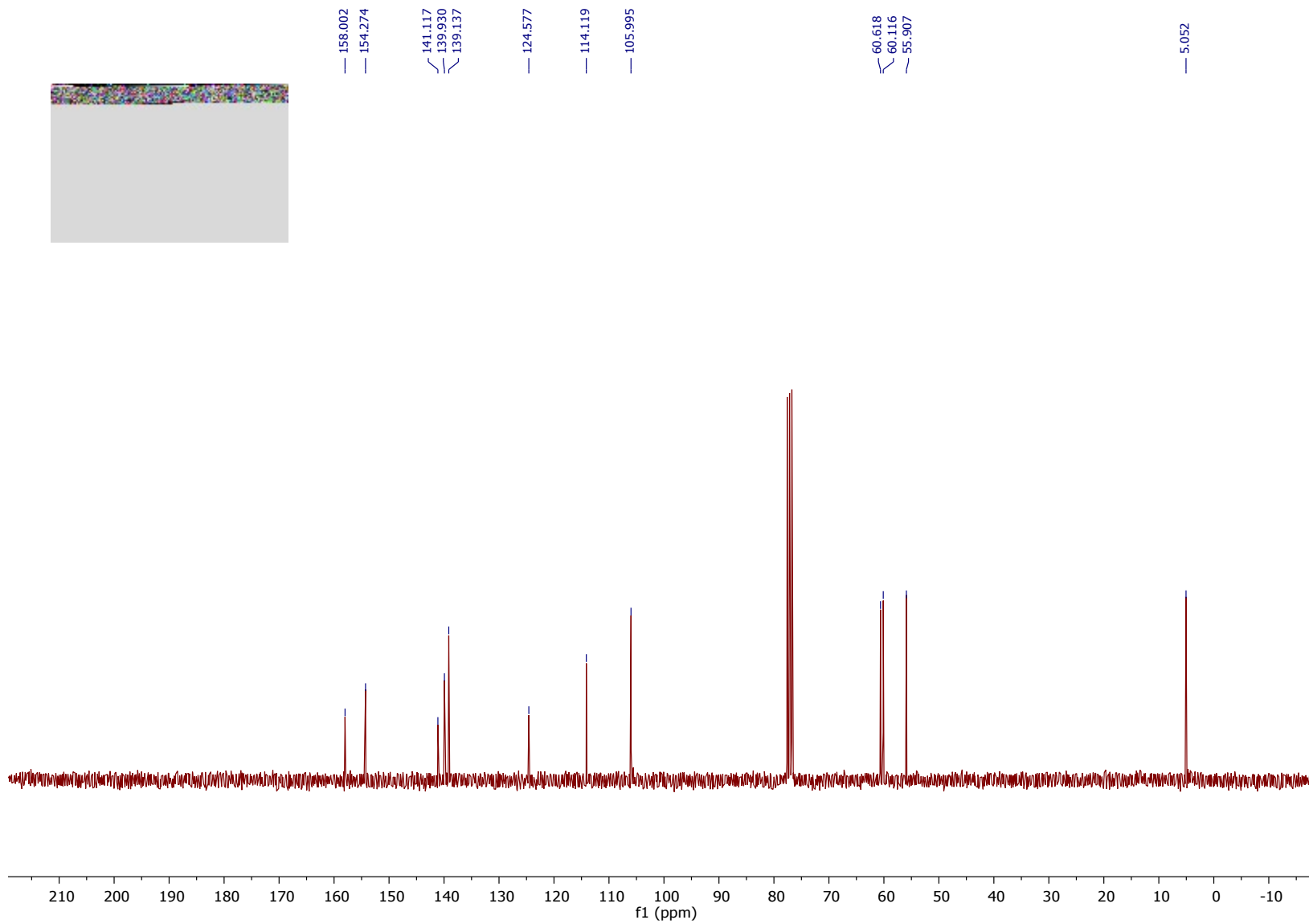


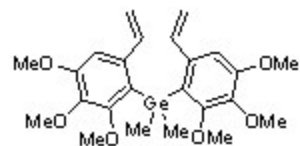




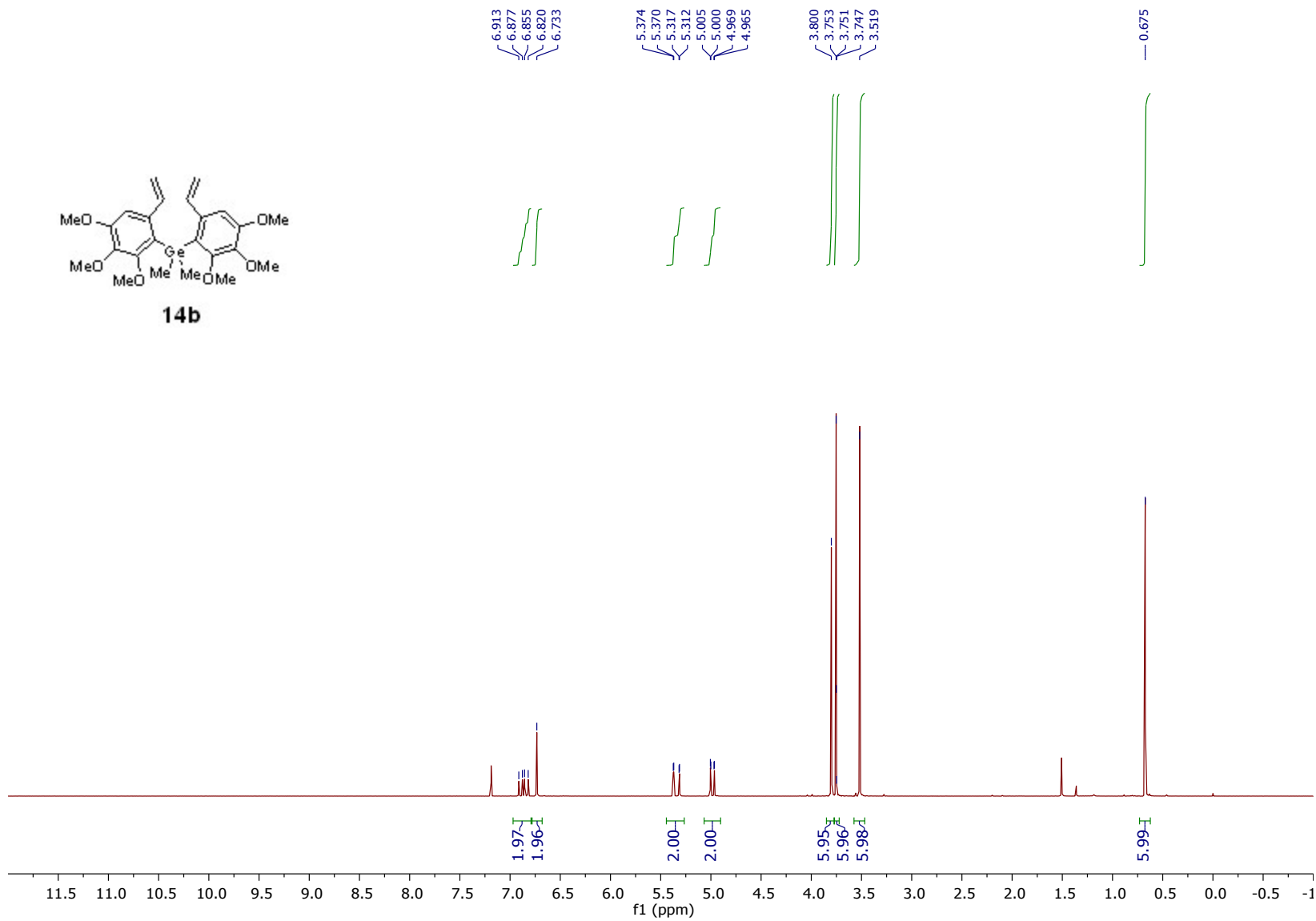




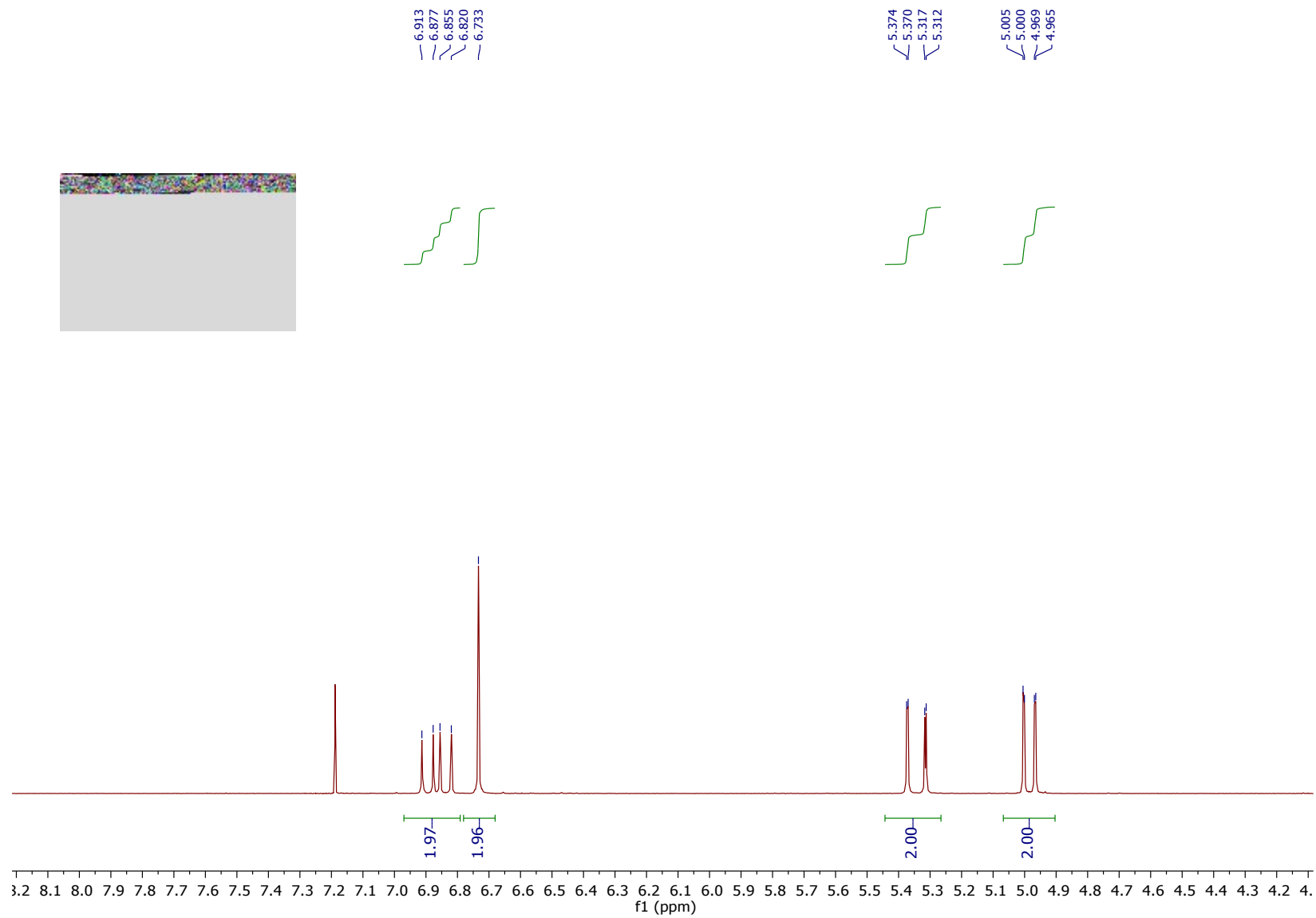


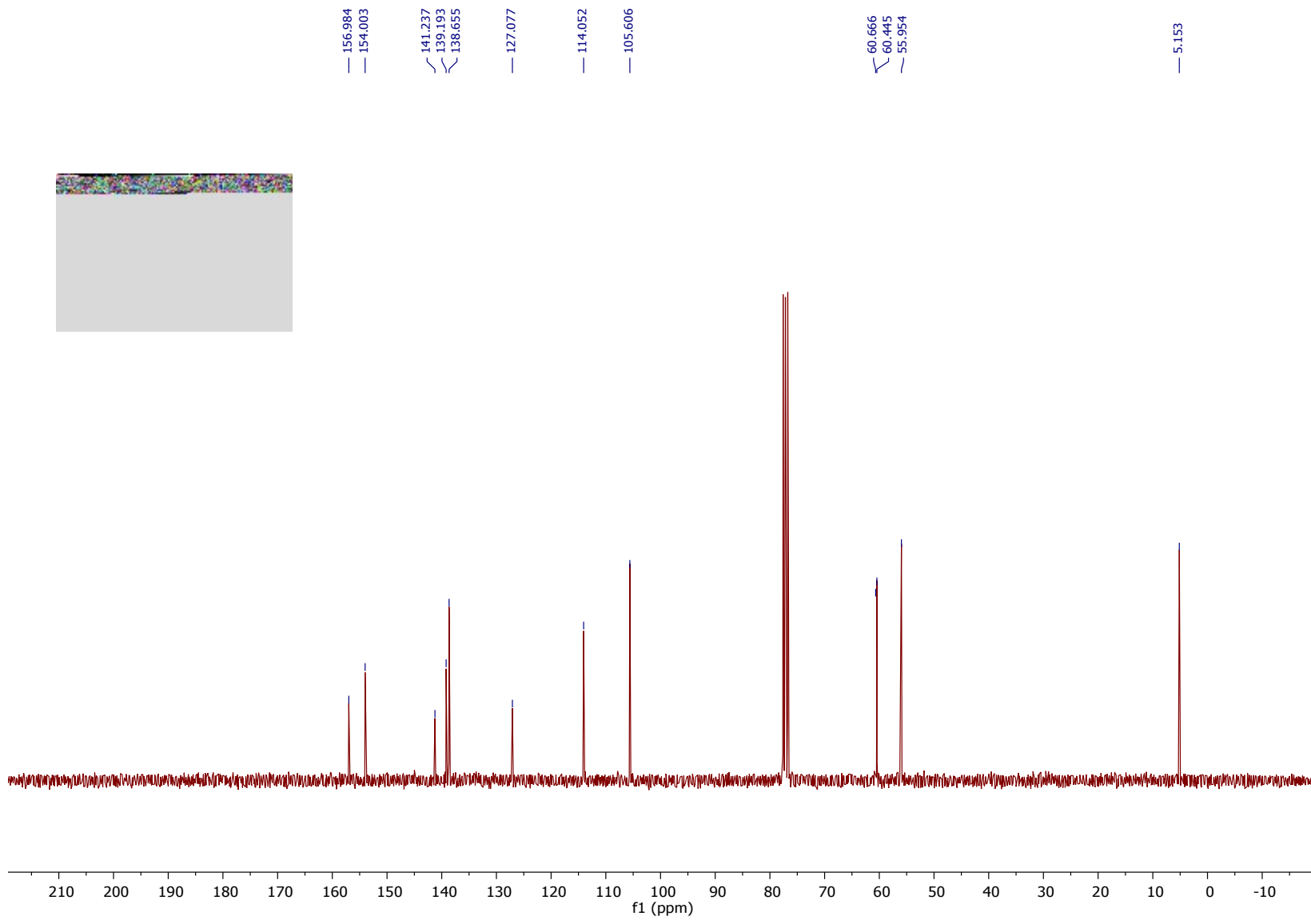


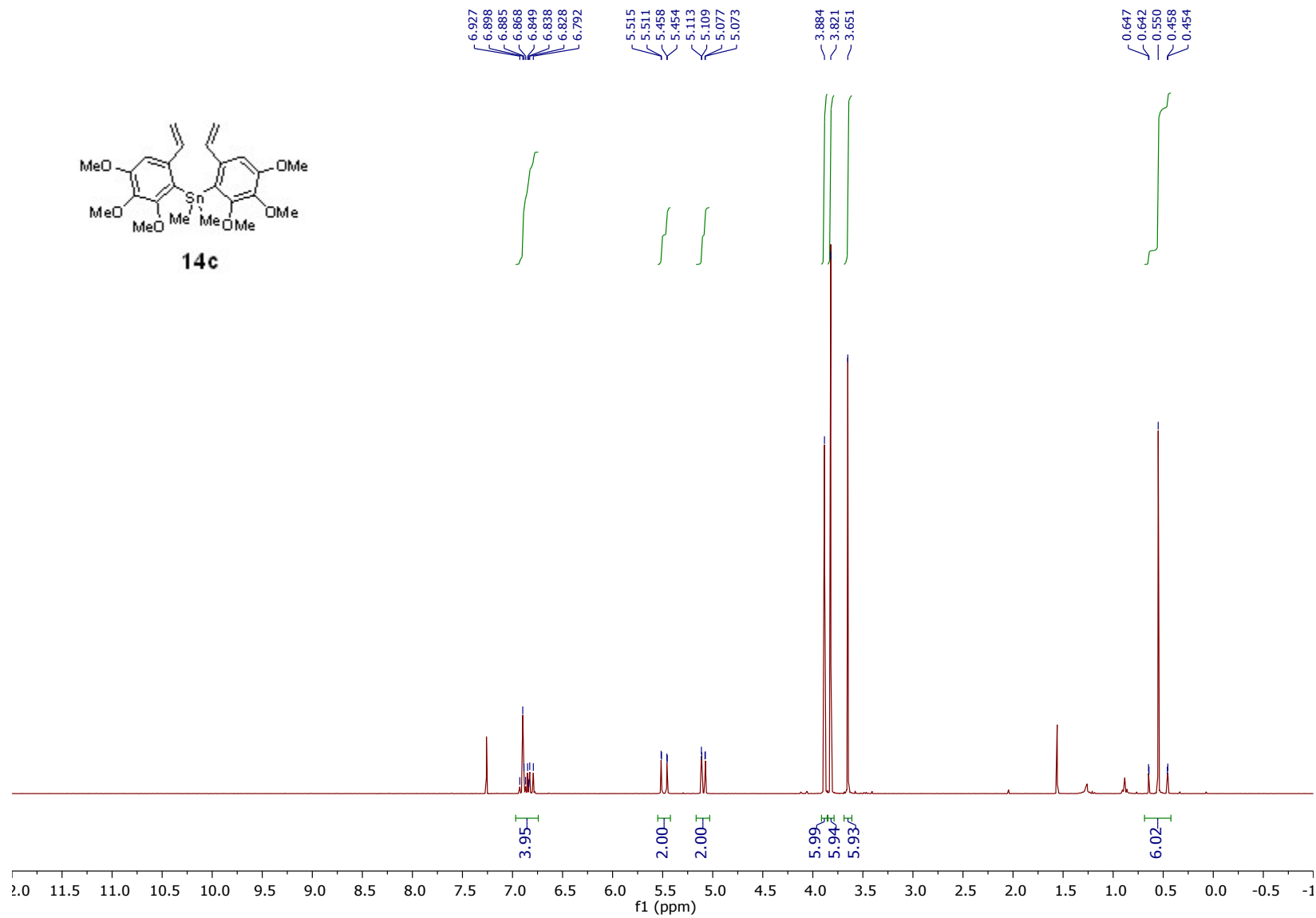
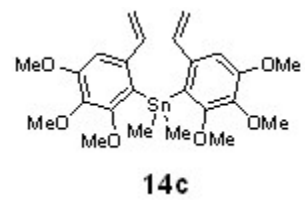
**14b**

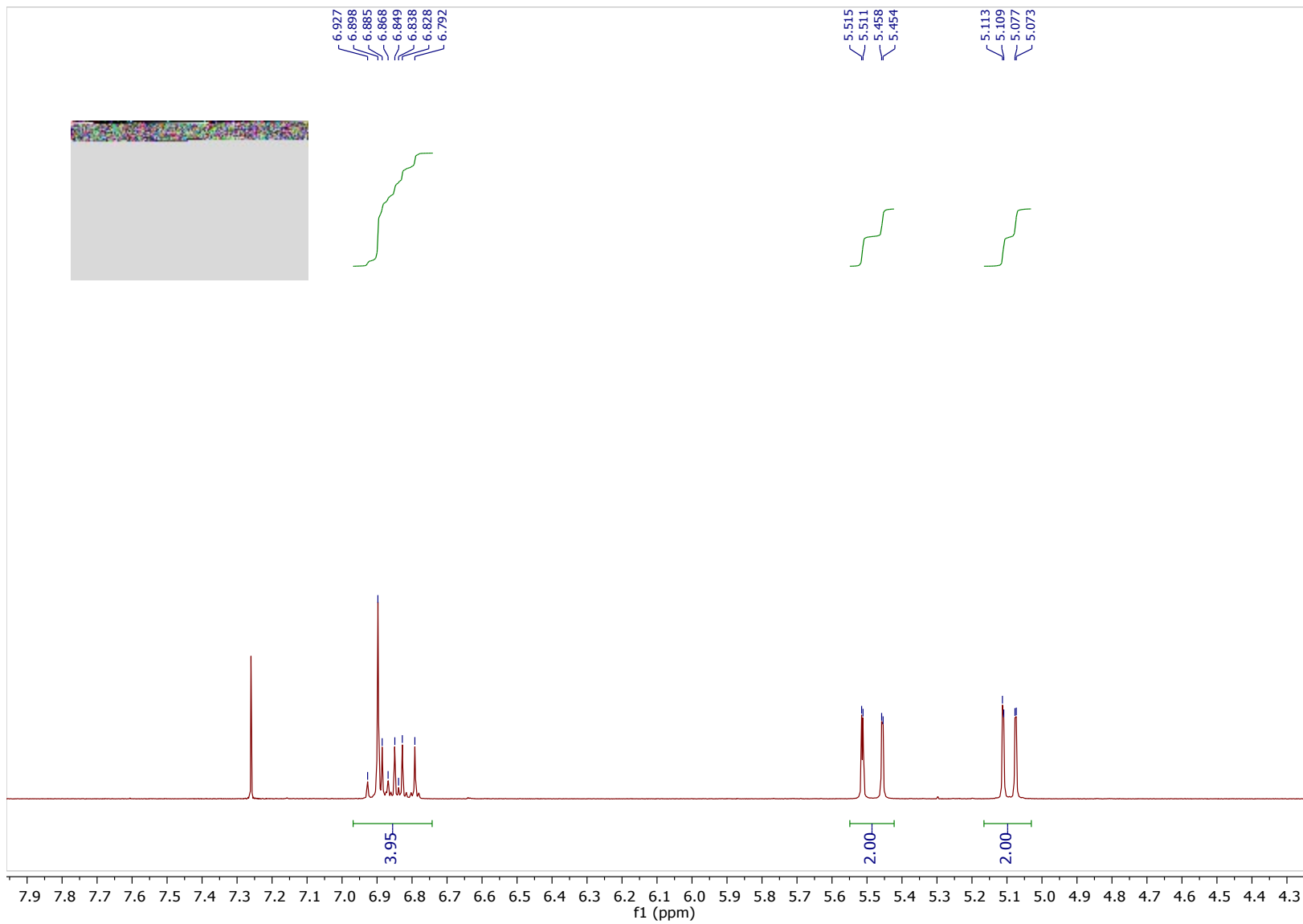


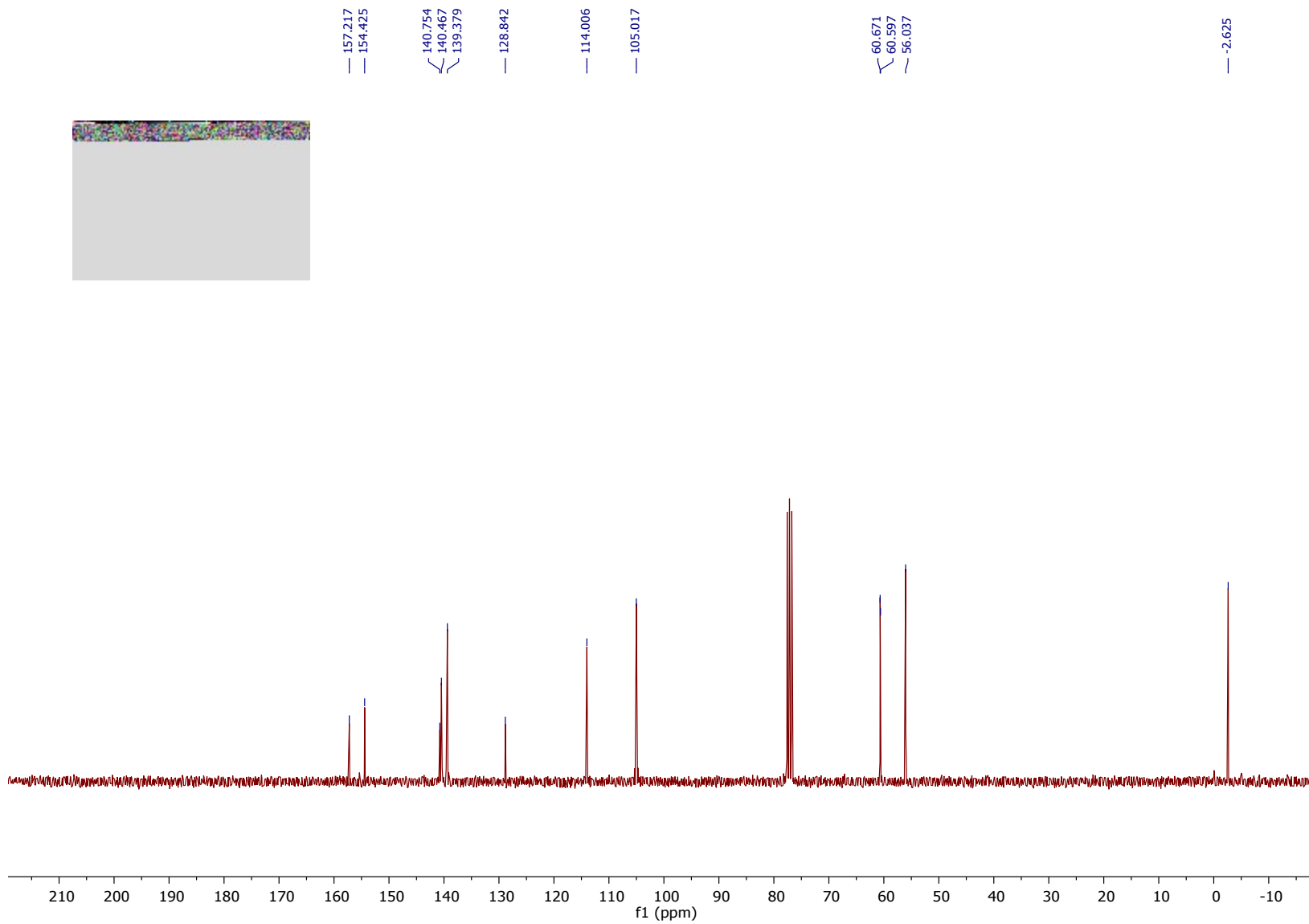


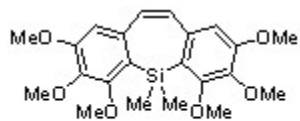




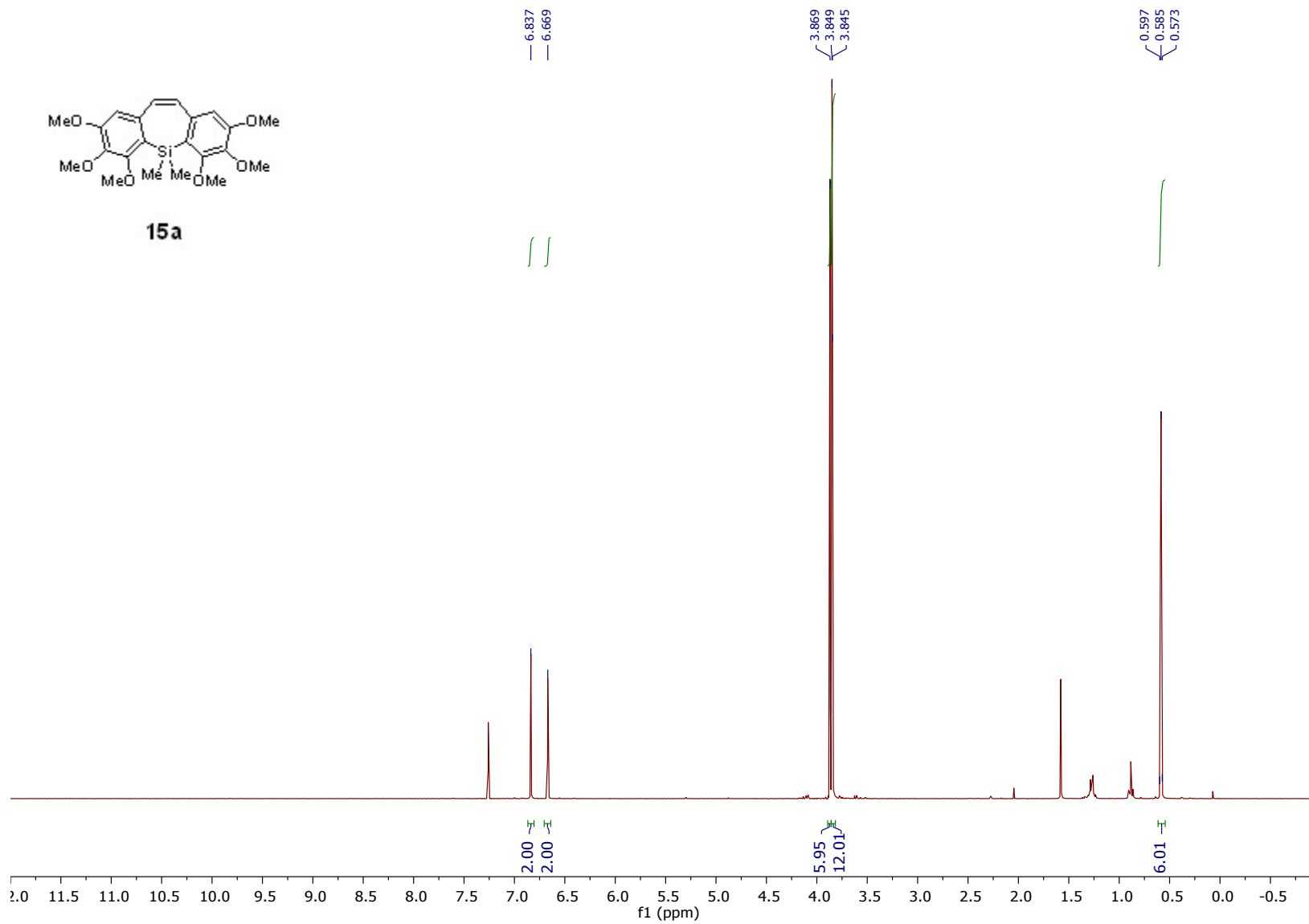


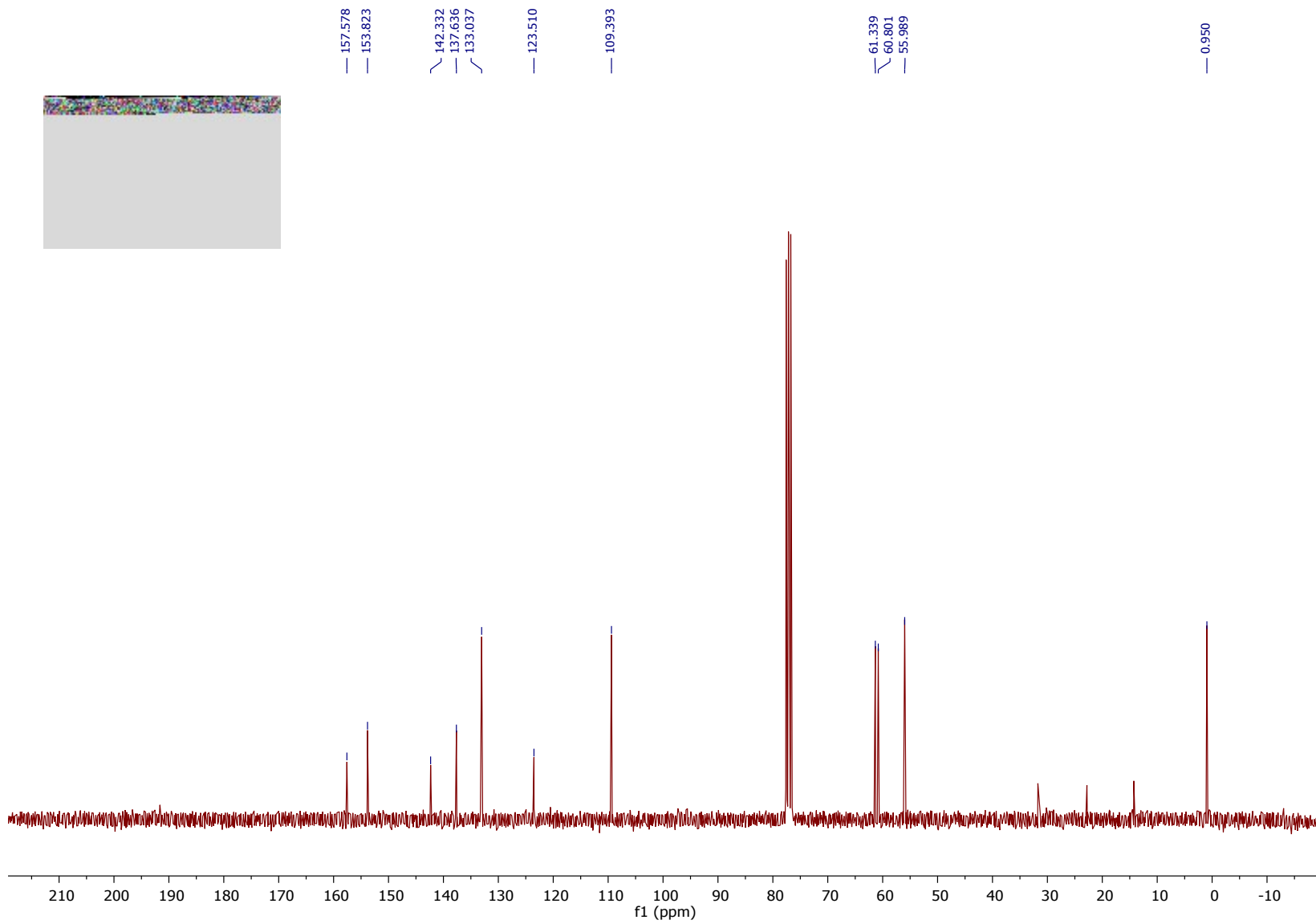


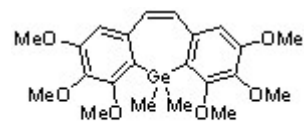




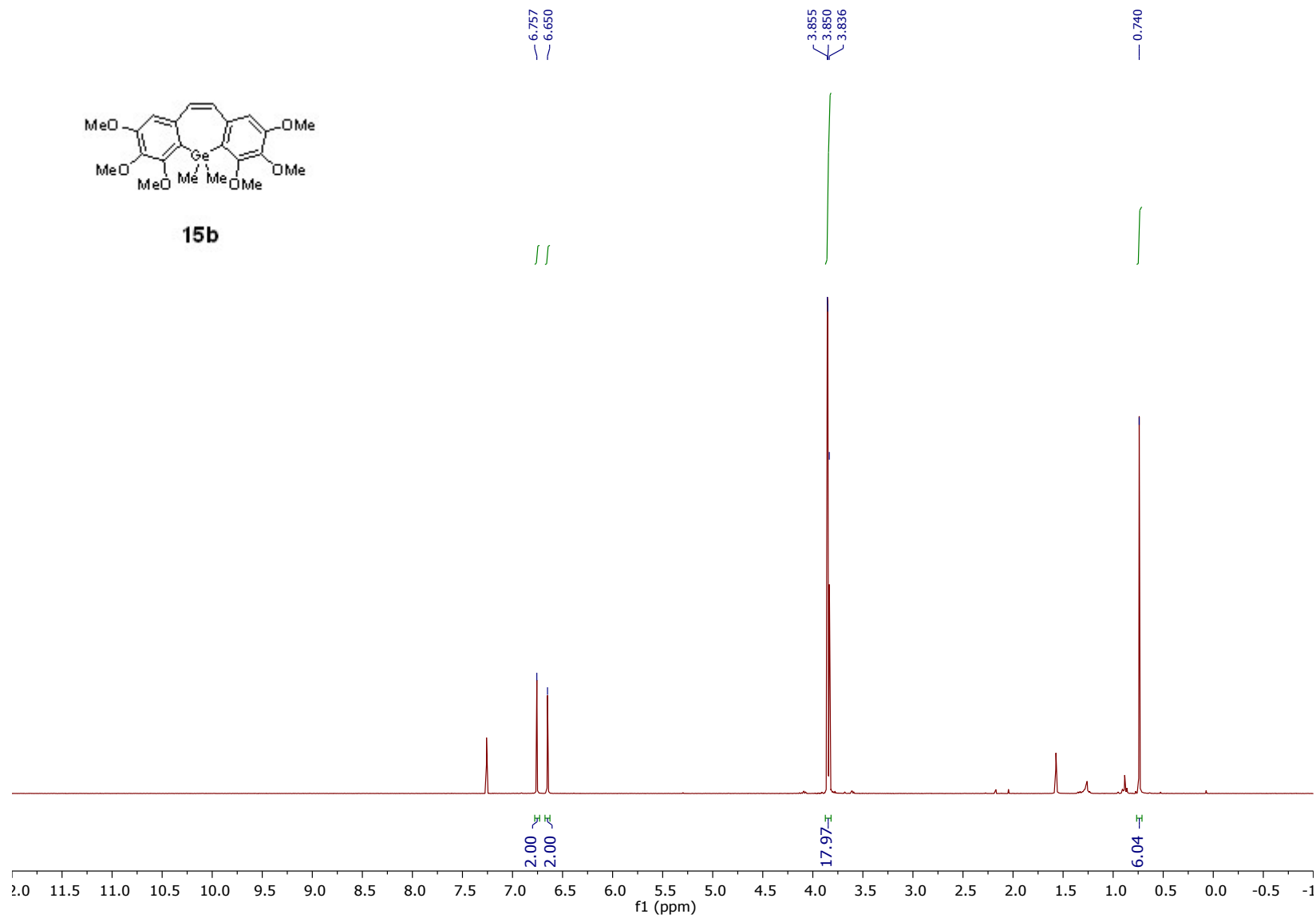
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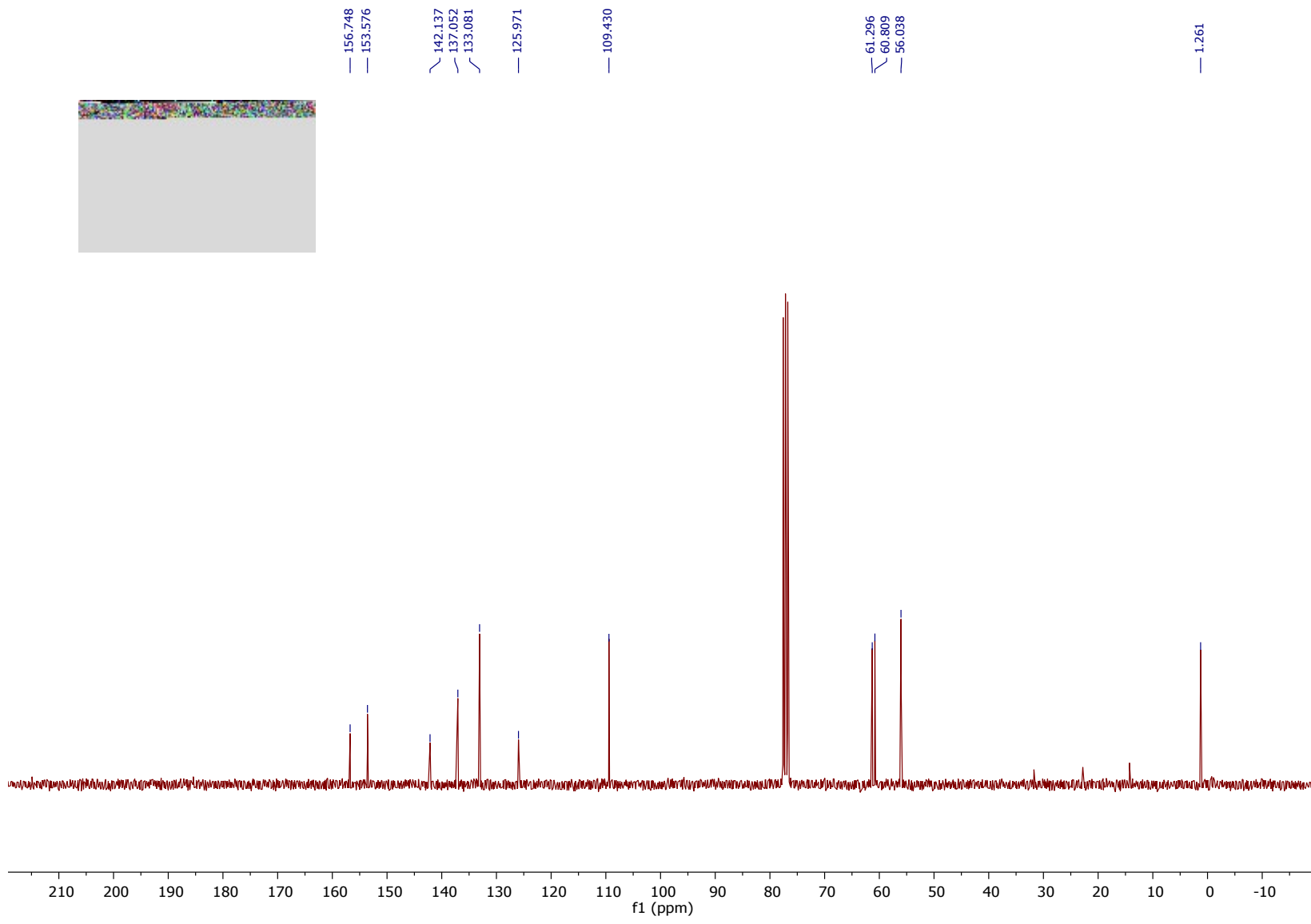




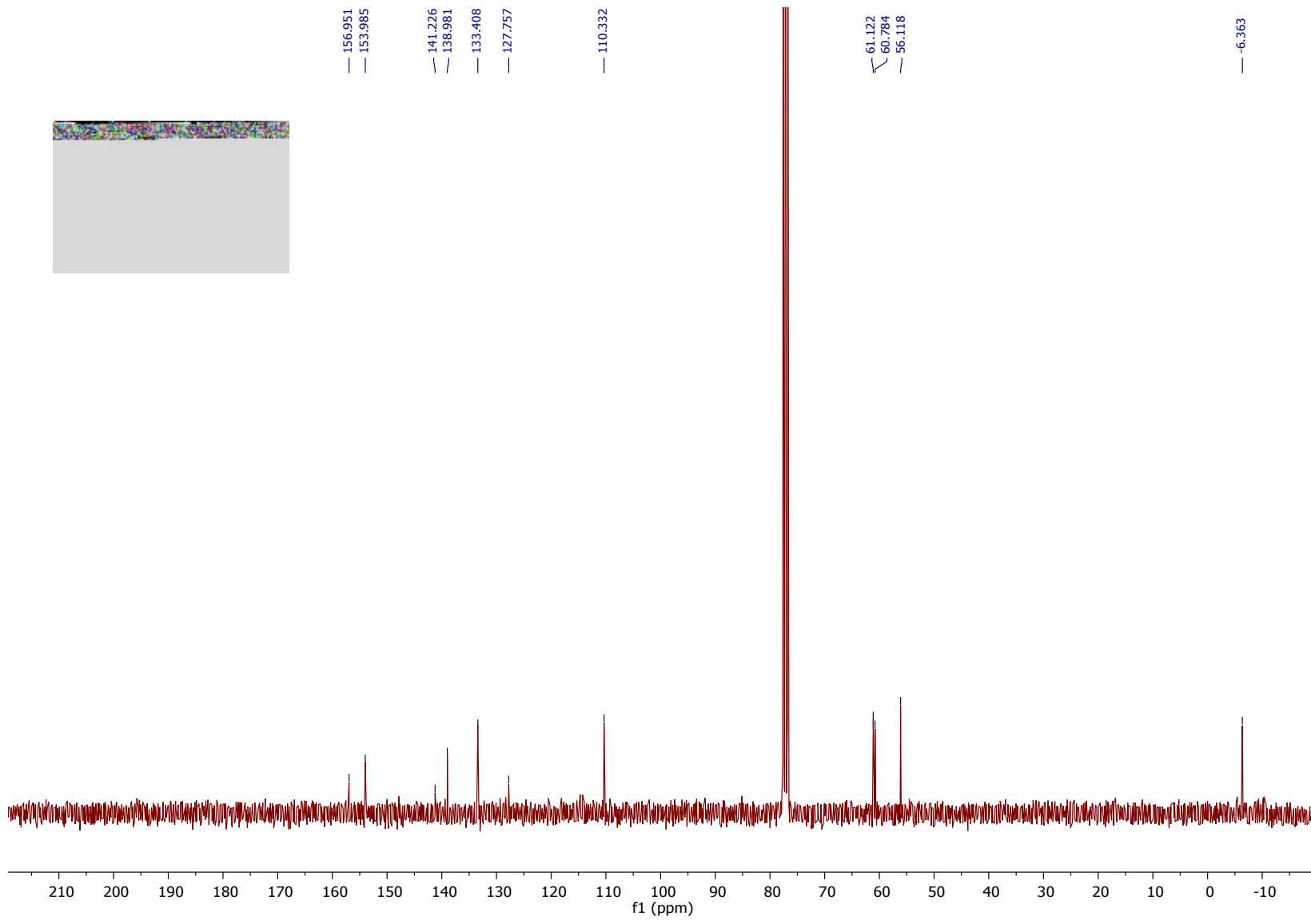
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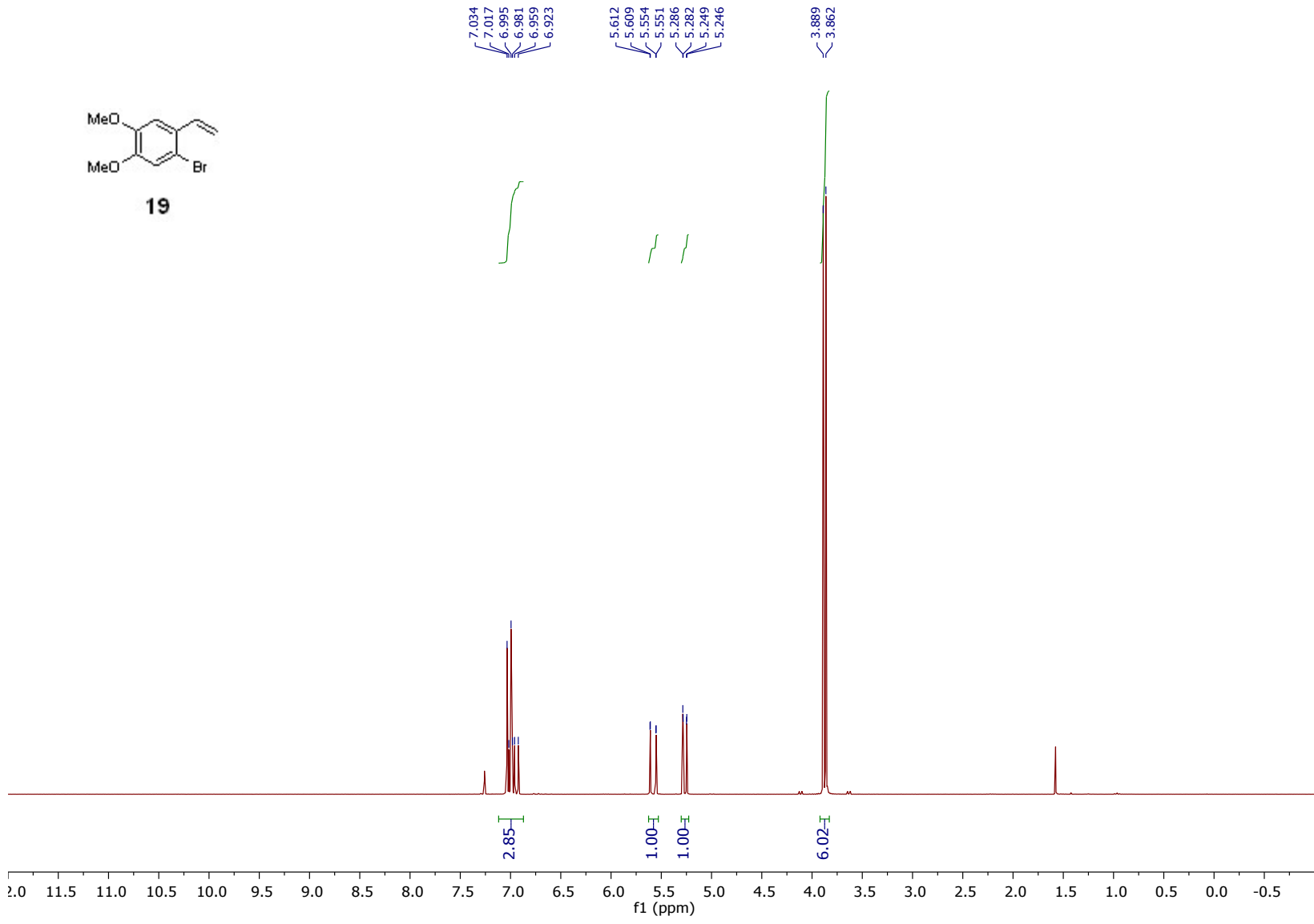
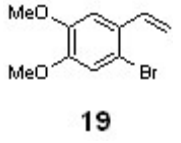


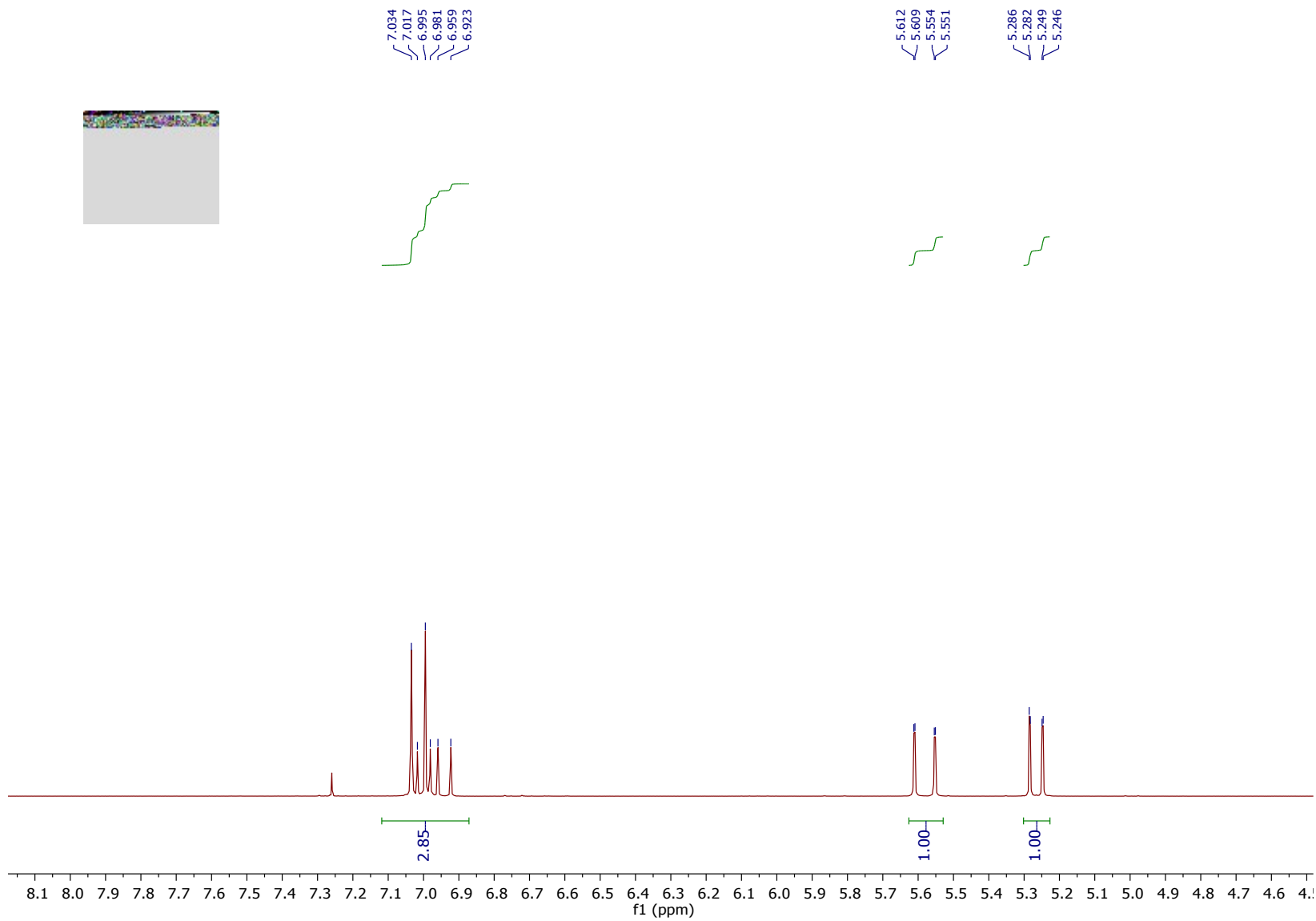


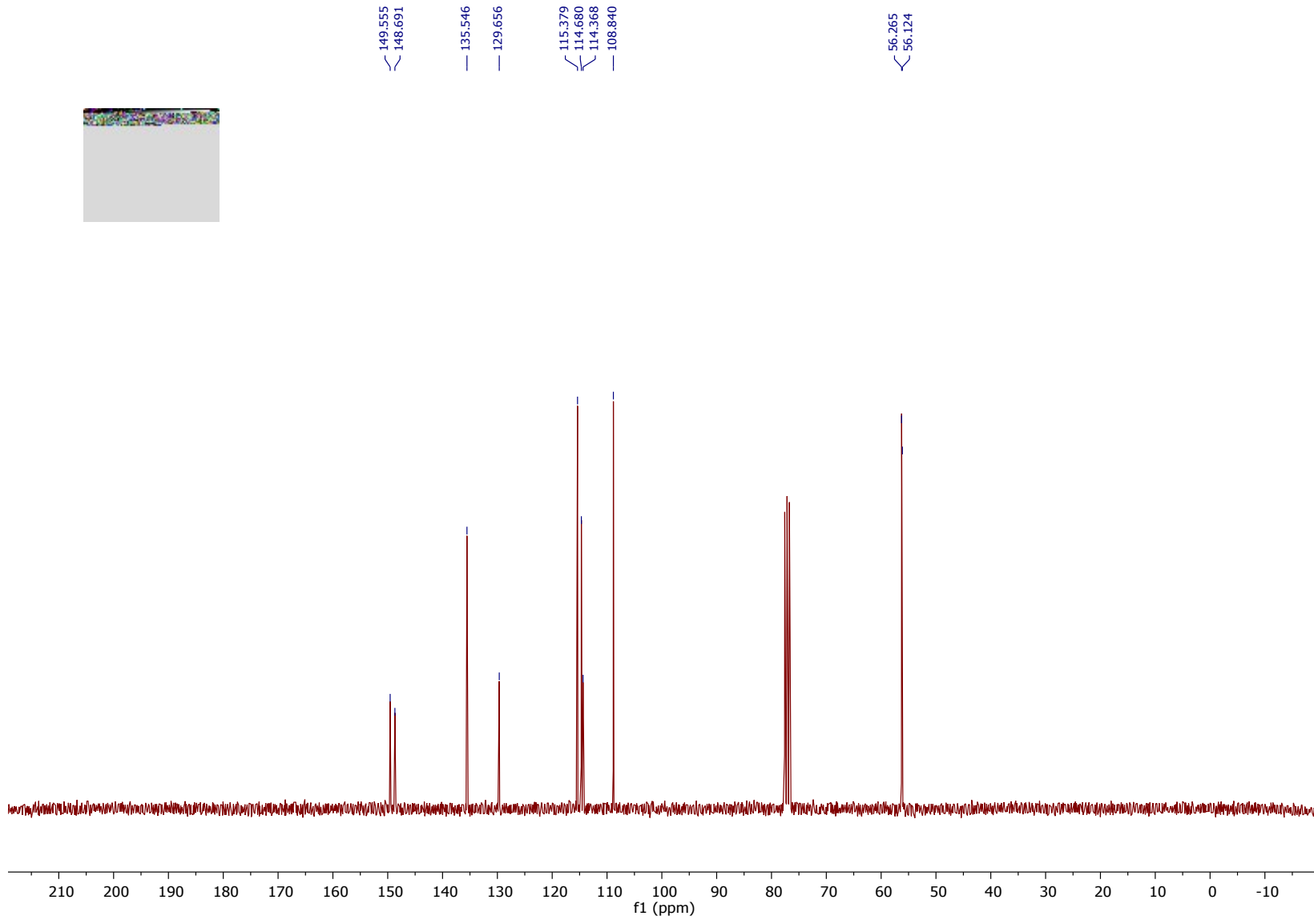


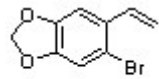




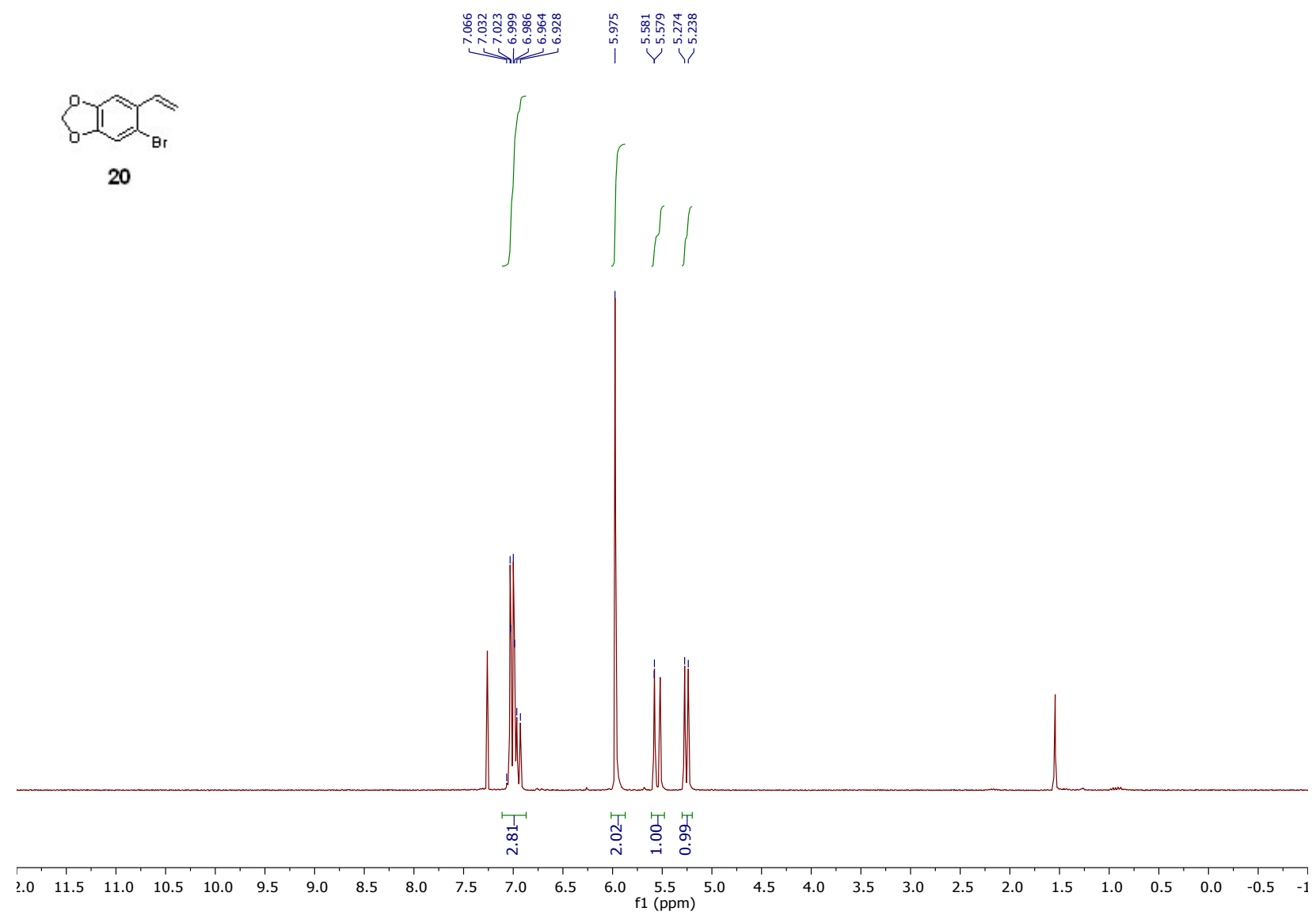


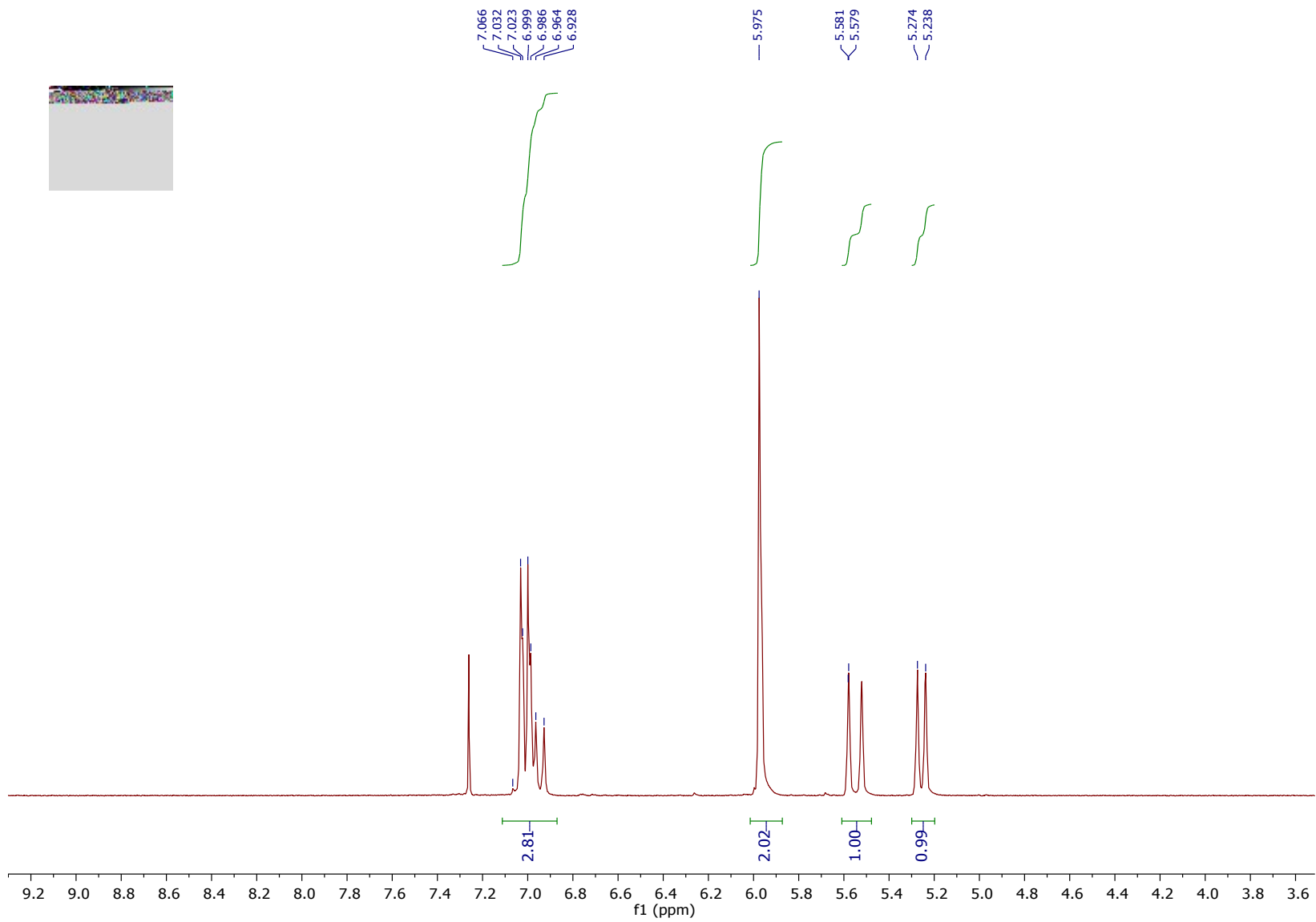






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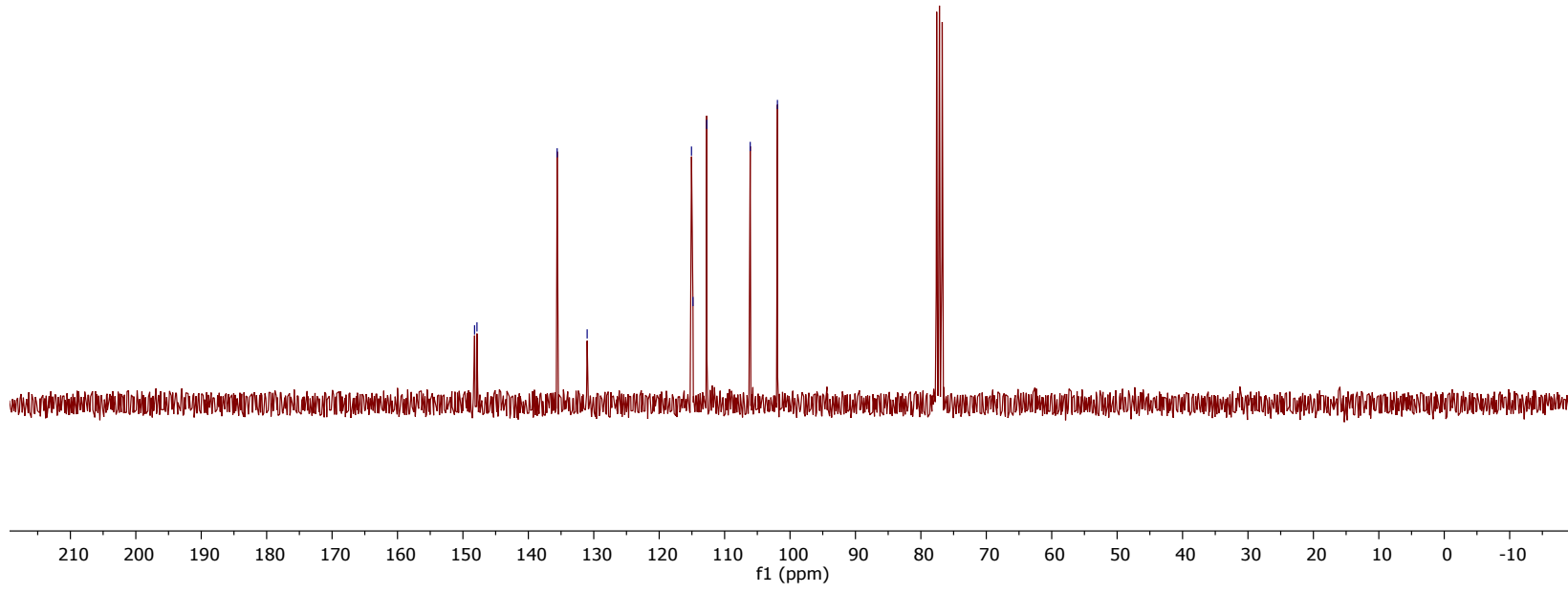


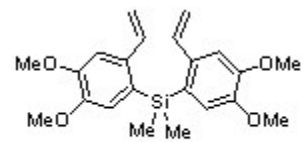




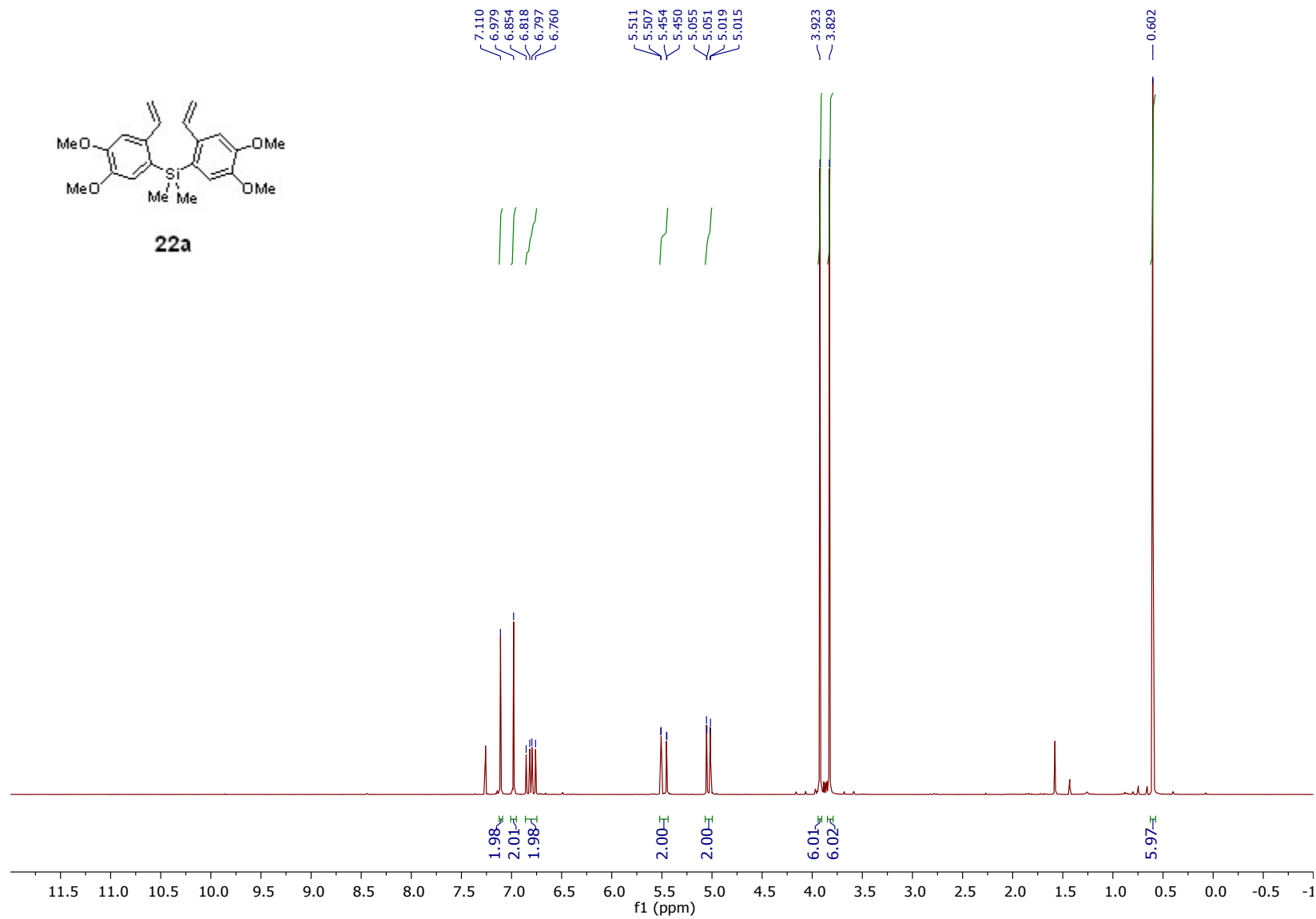


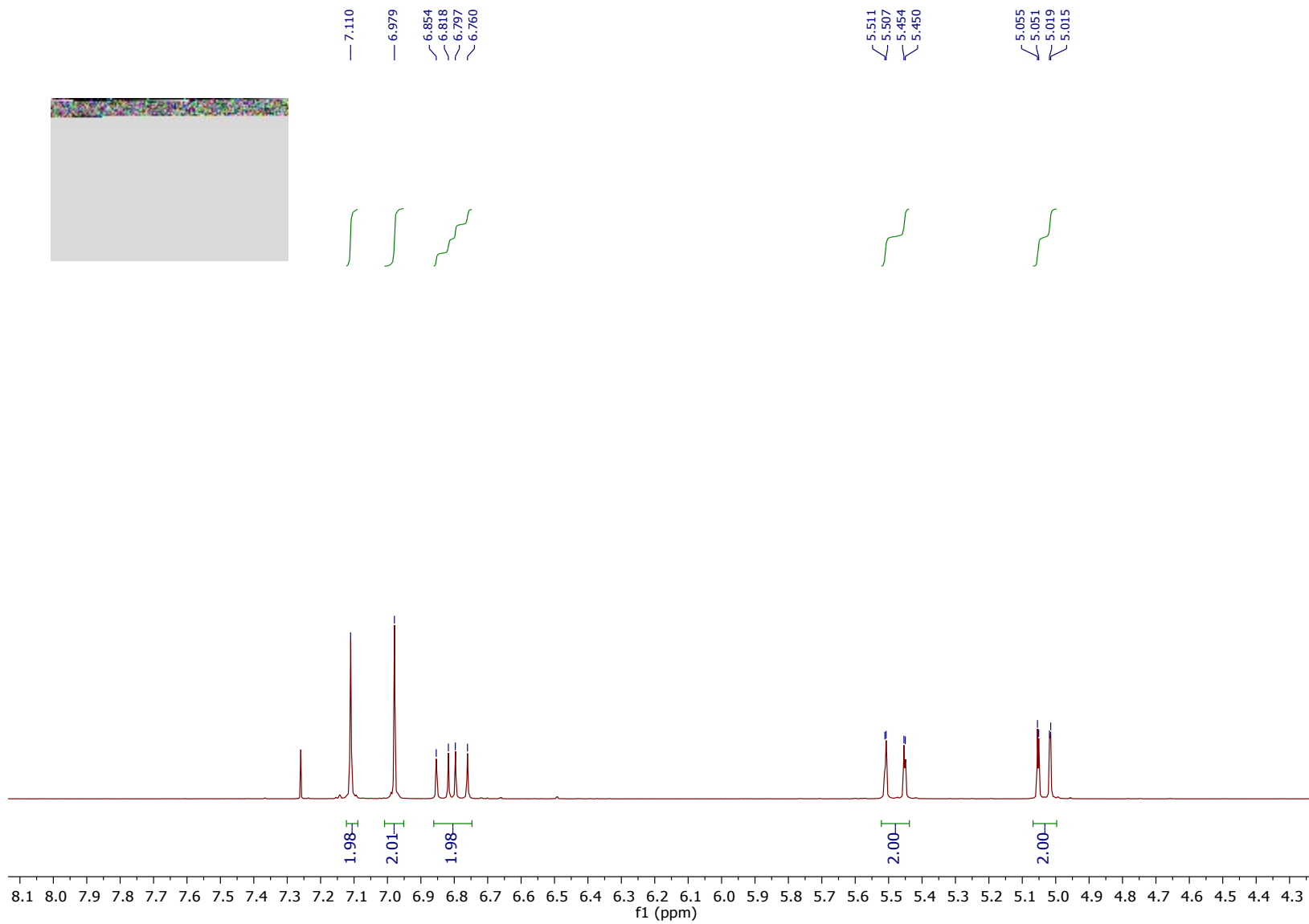
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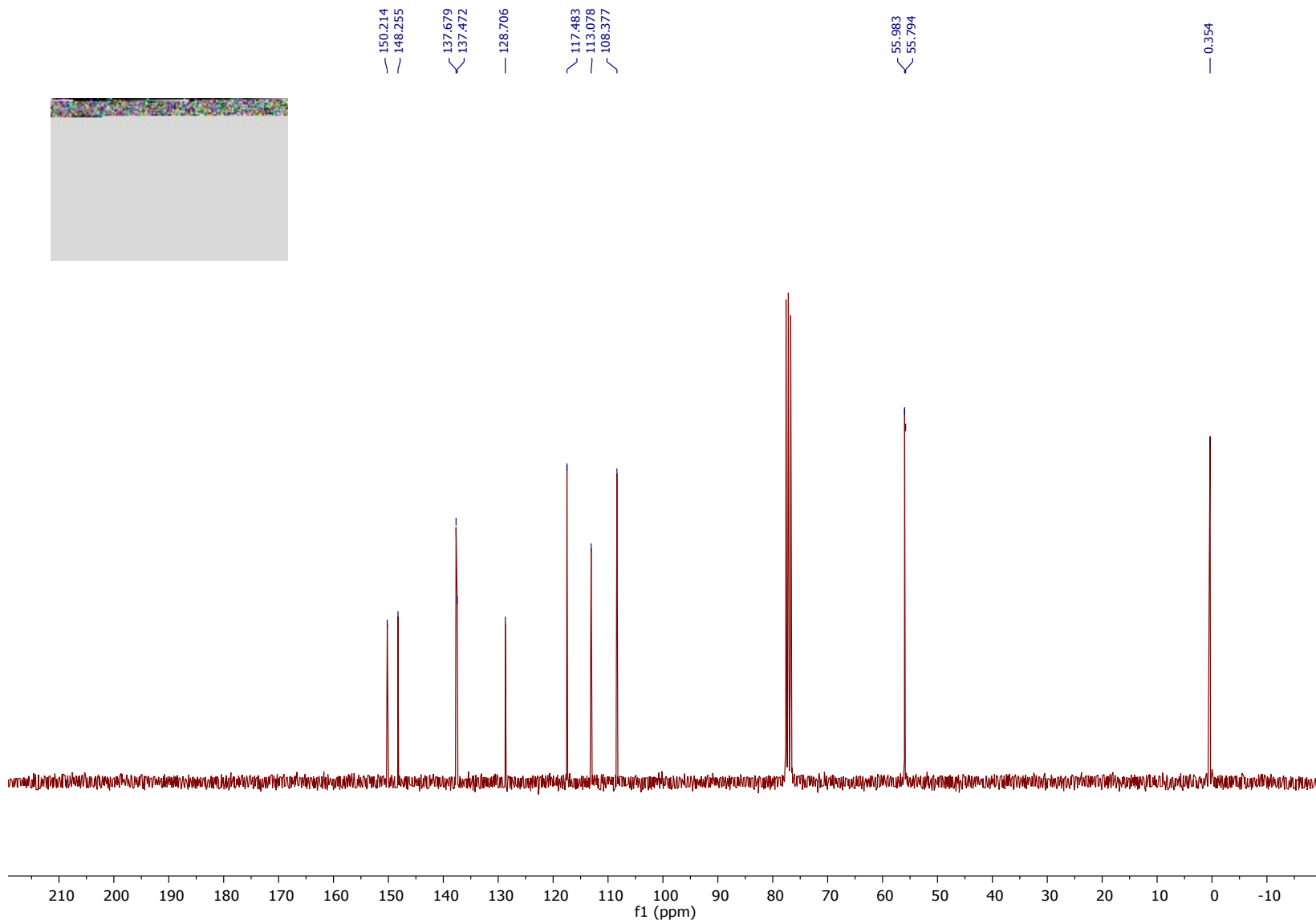


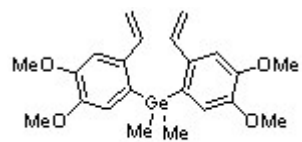


22a

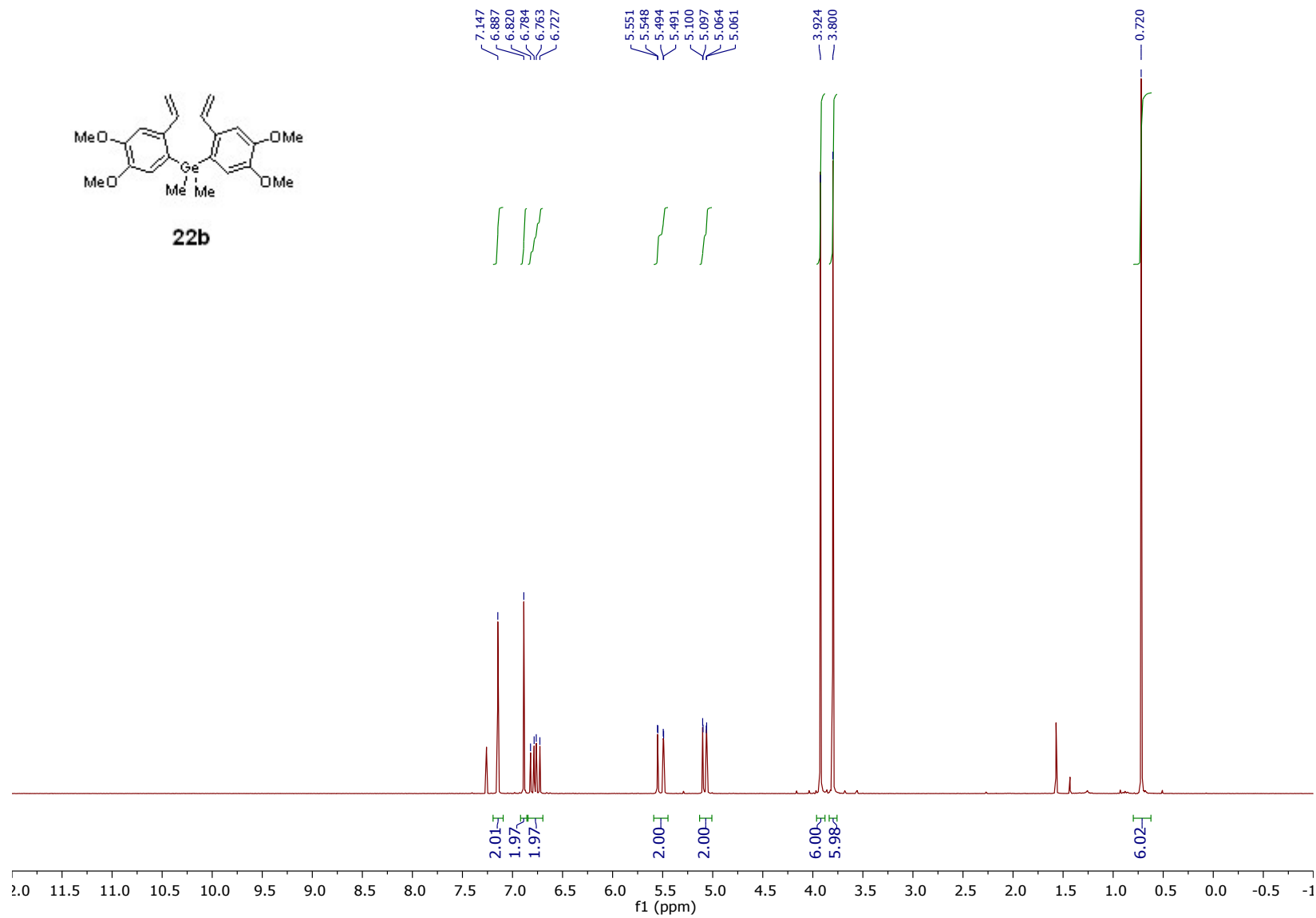


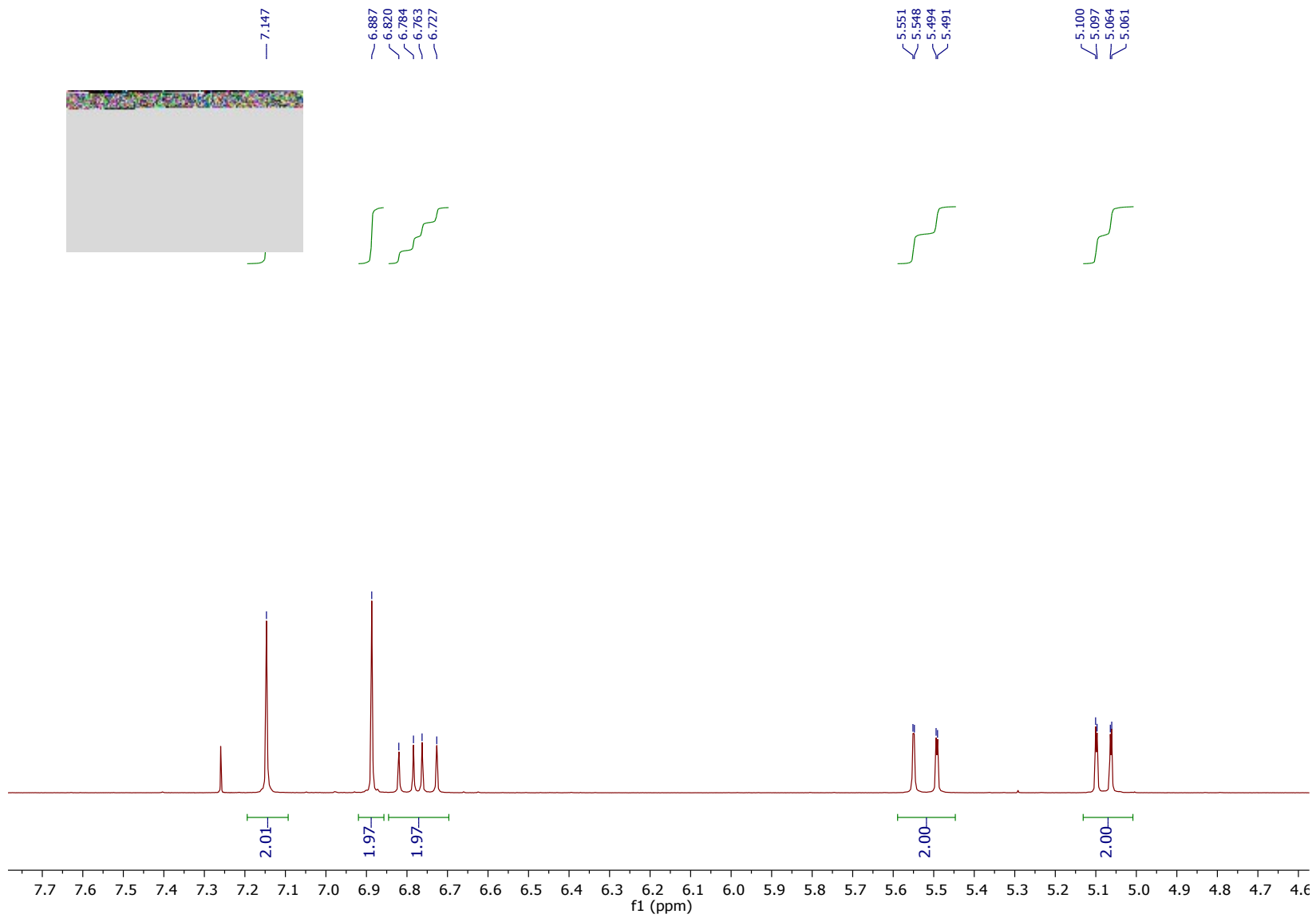


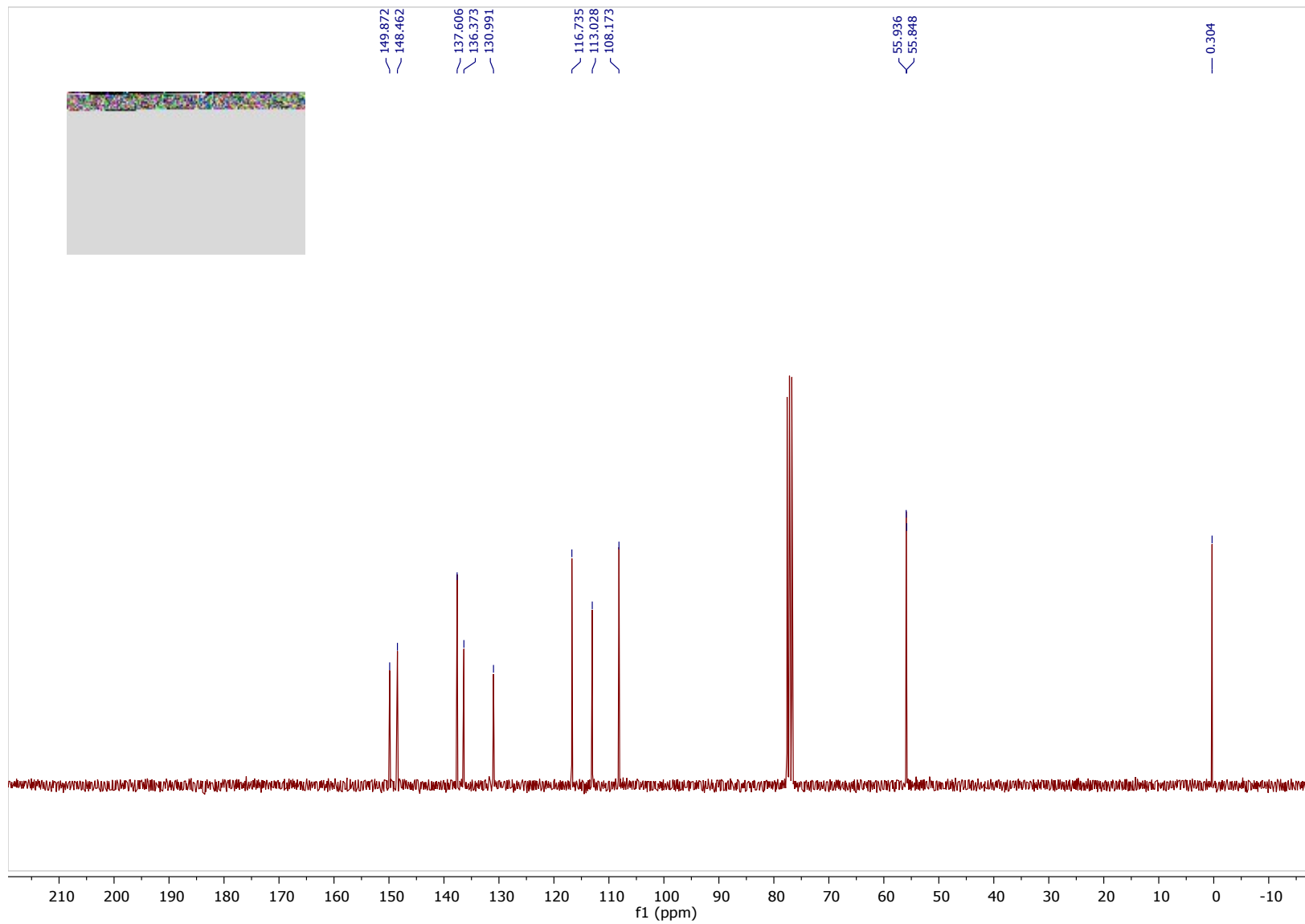


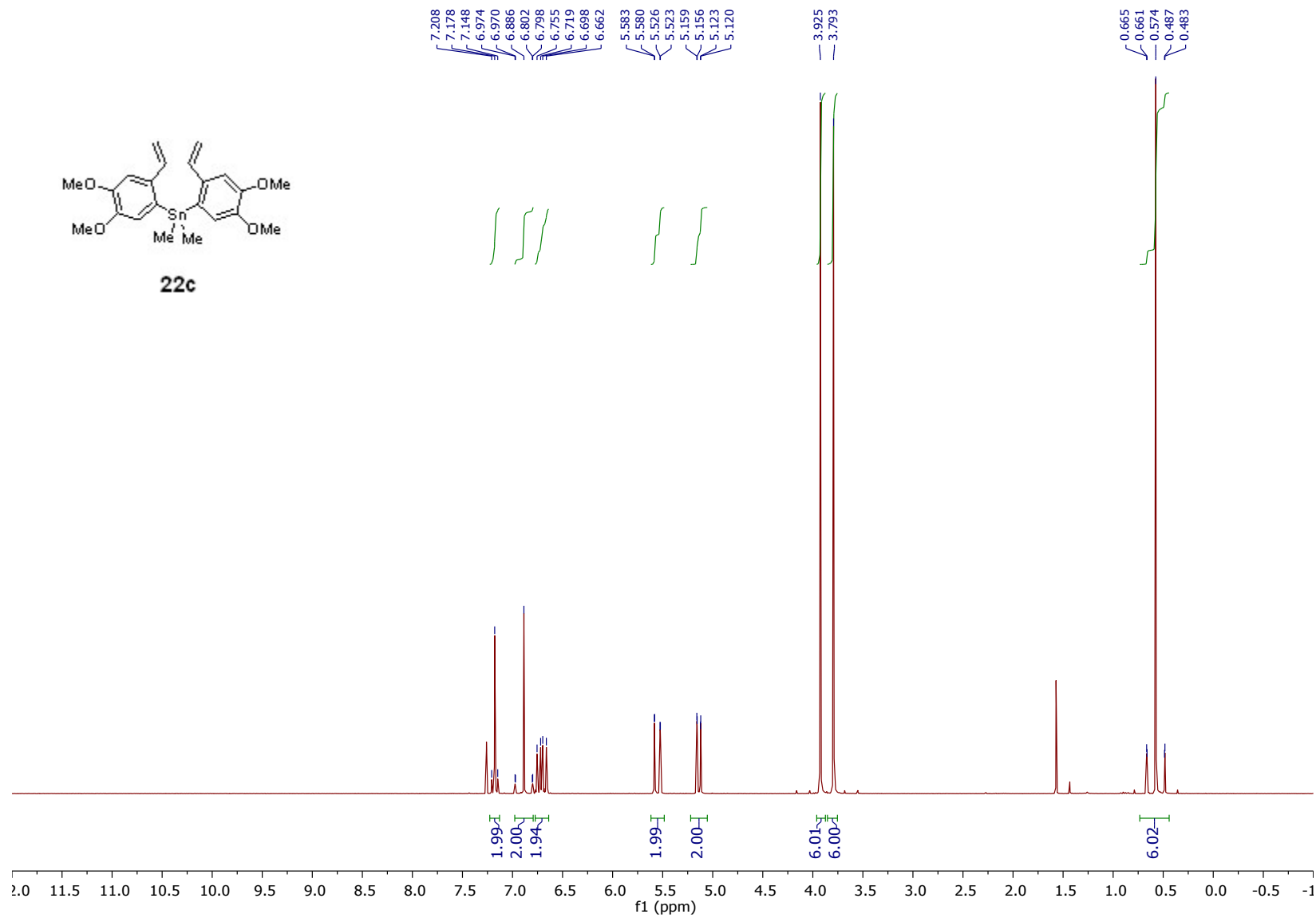


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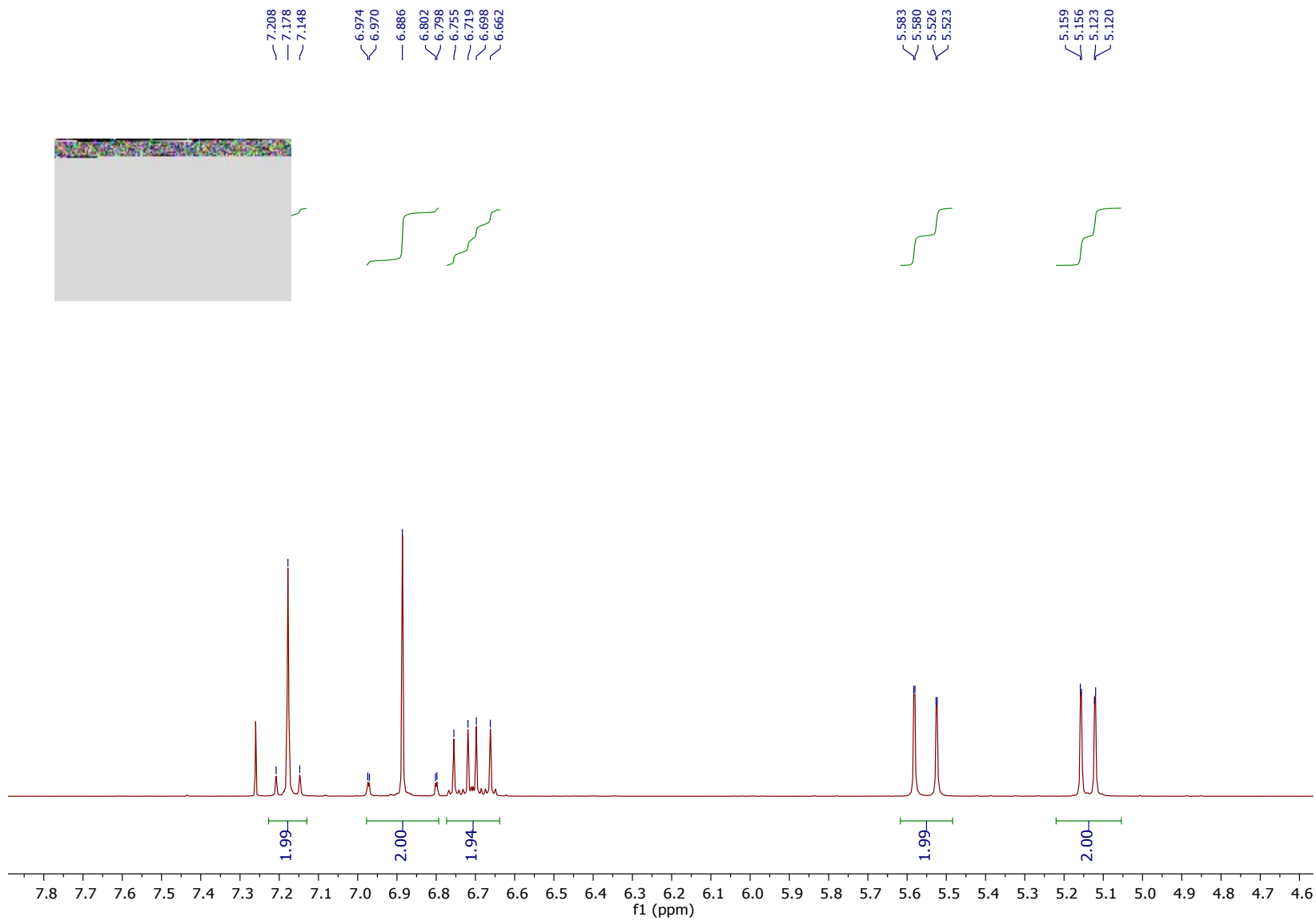


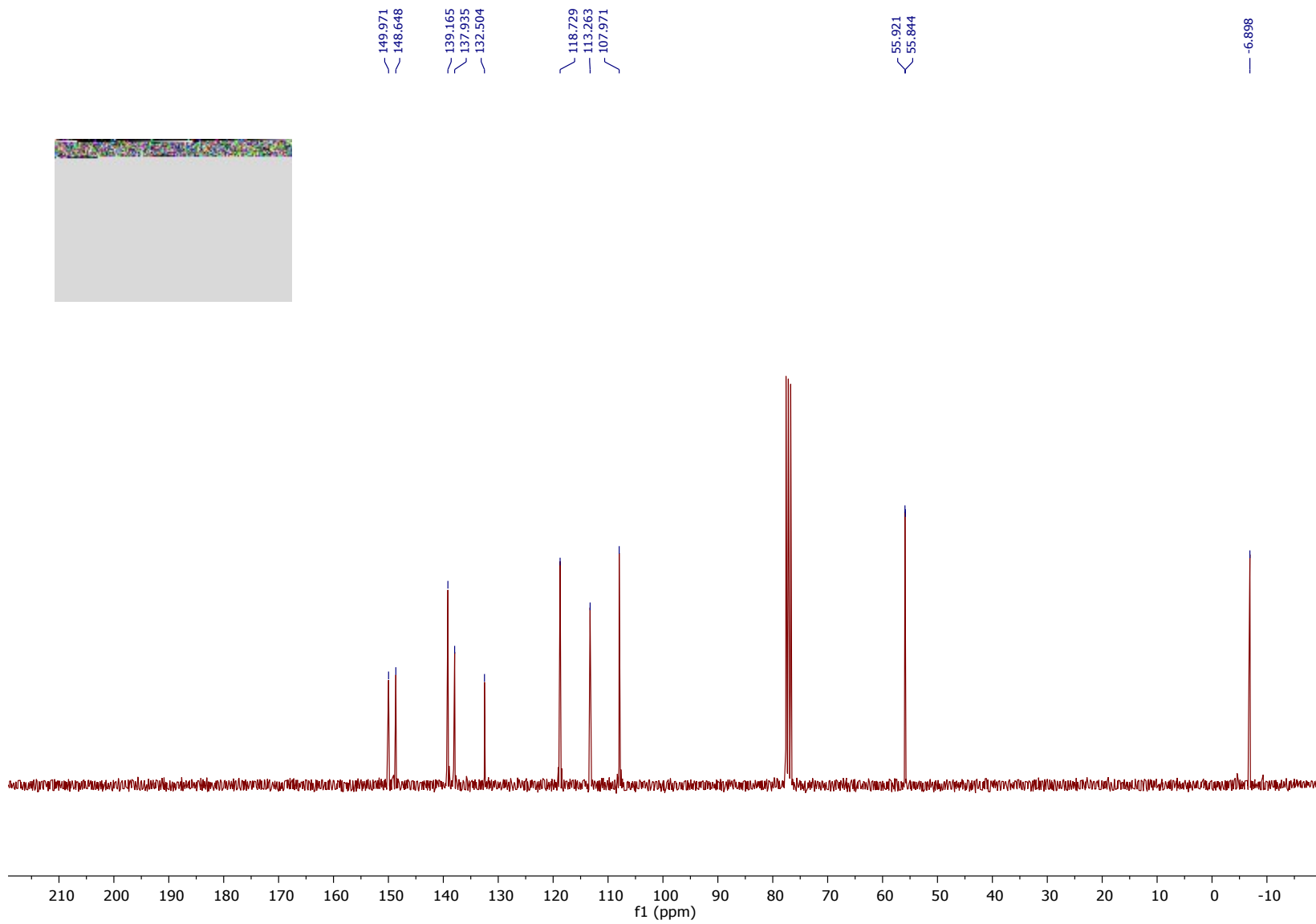




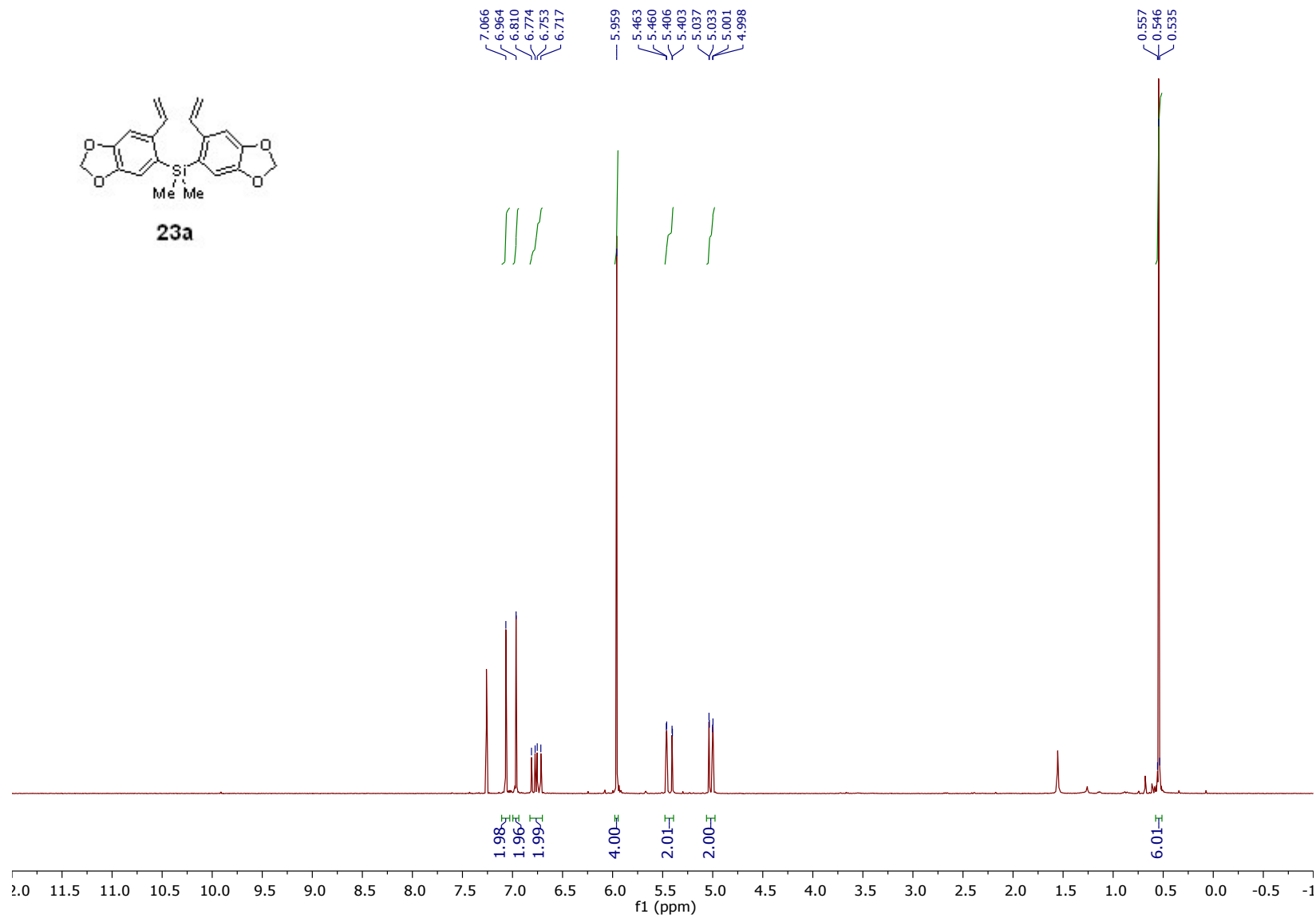
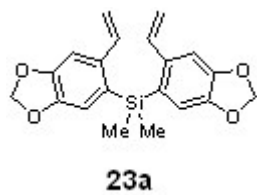


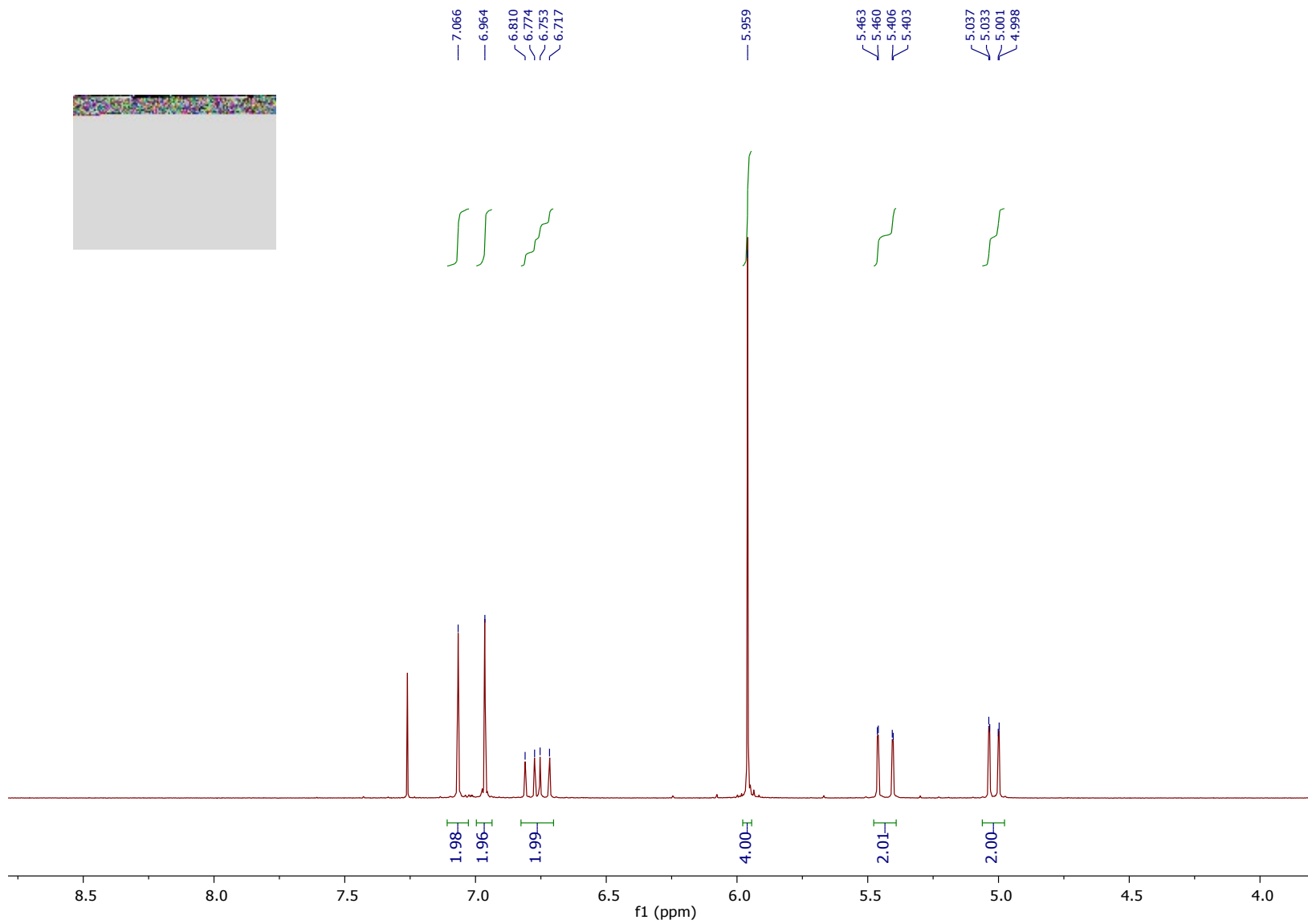




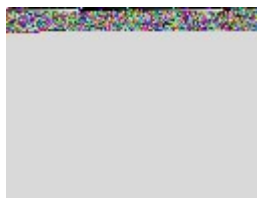


S-50





S-52



149.25  
147.14

138.93  
137.35

130.42

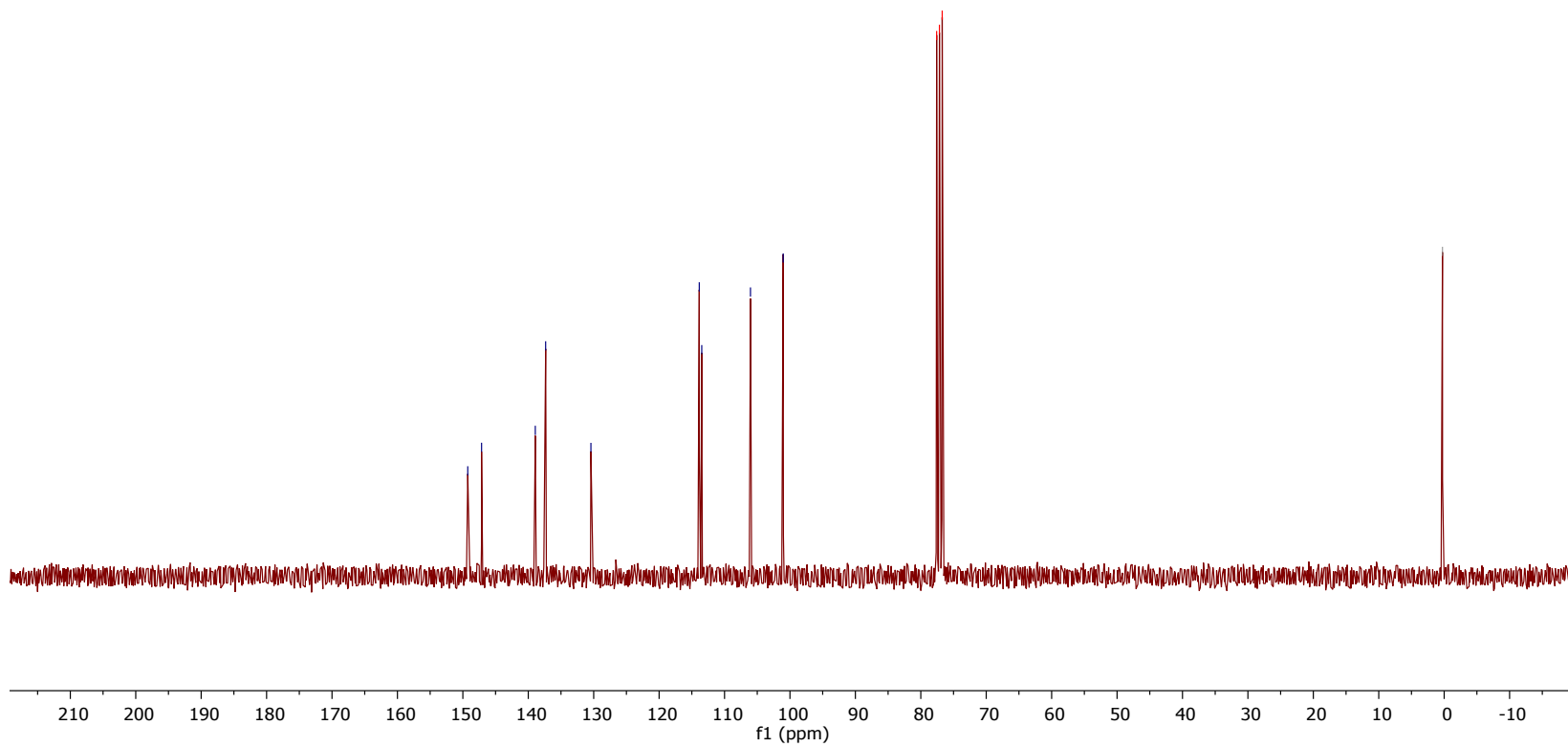
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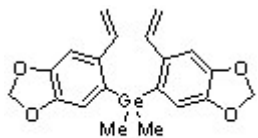
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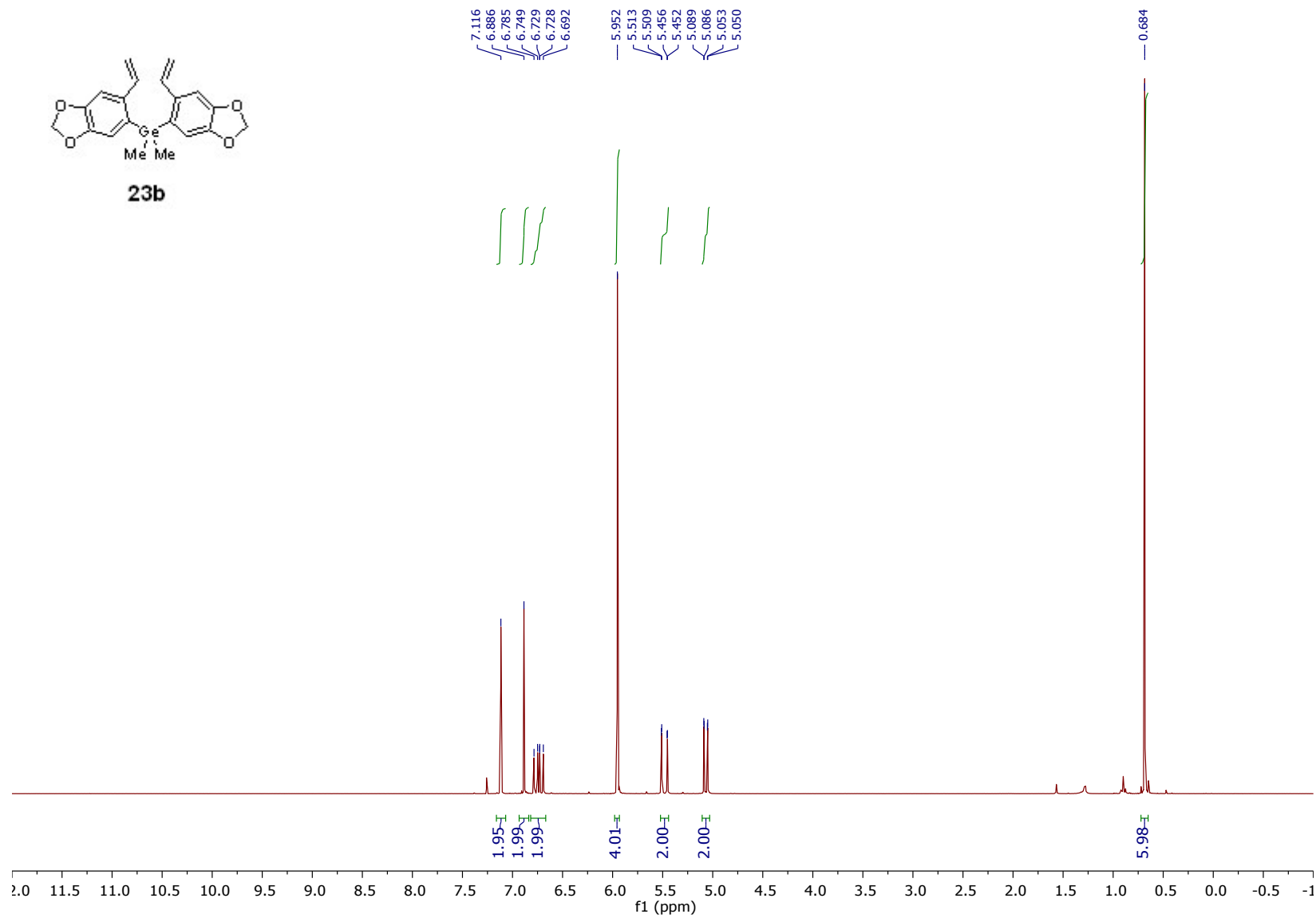
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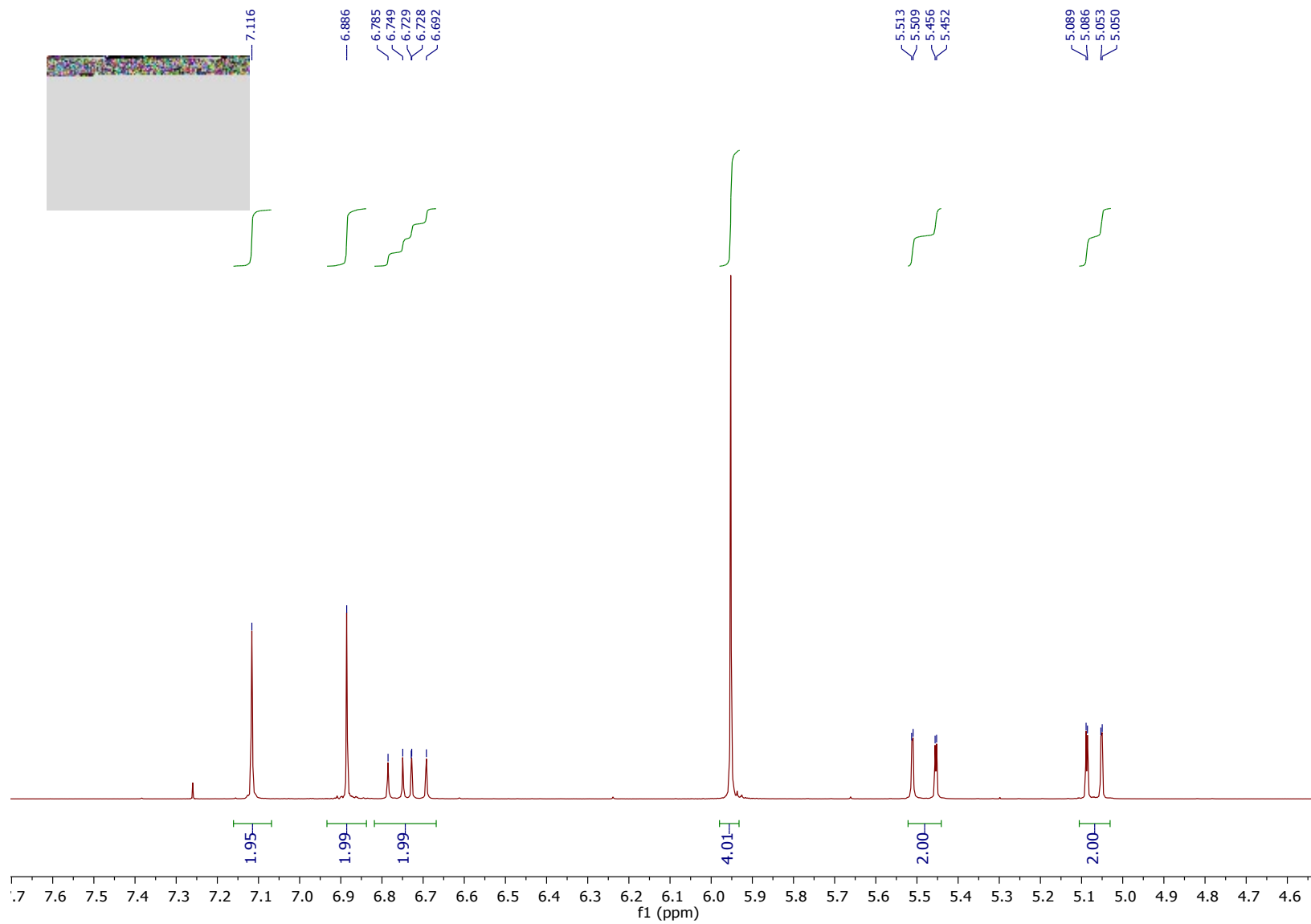
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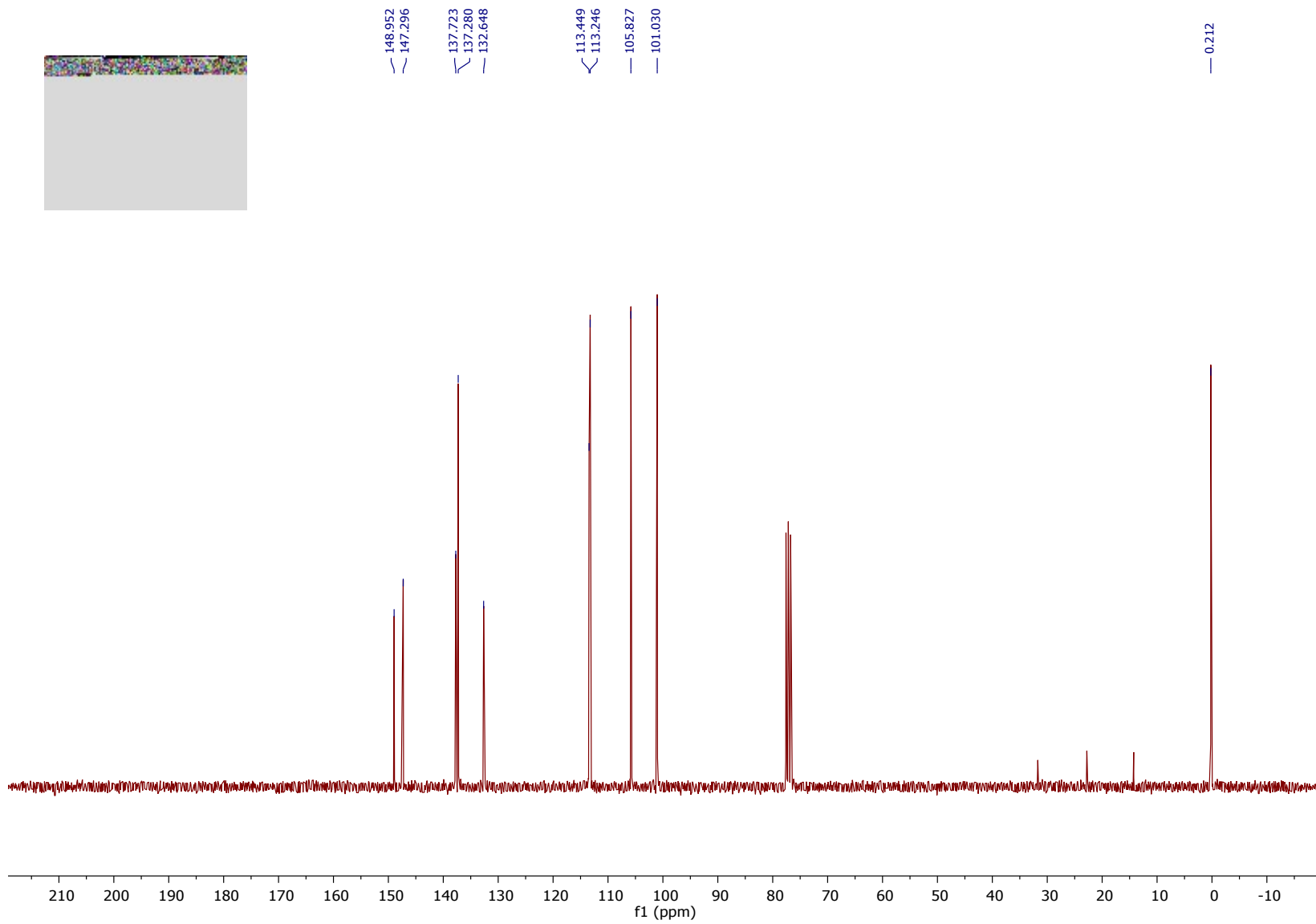


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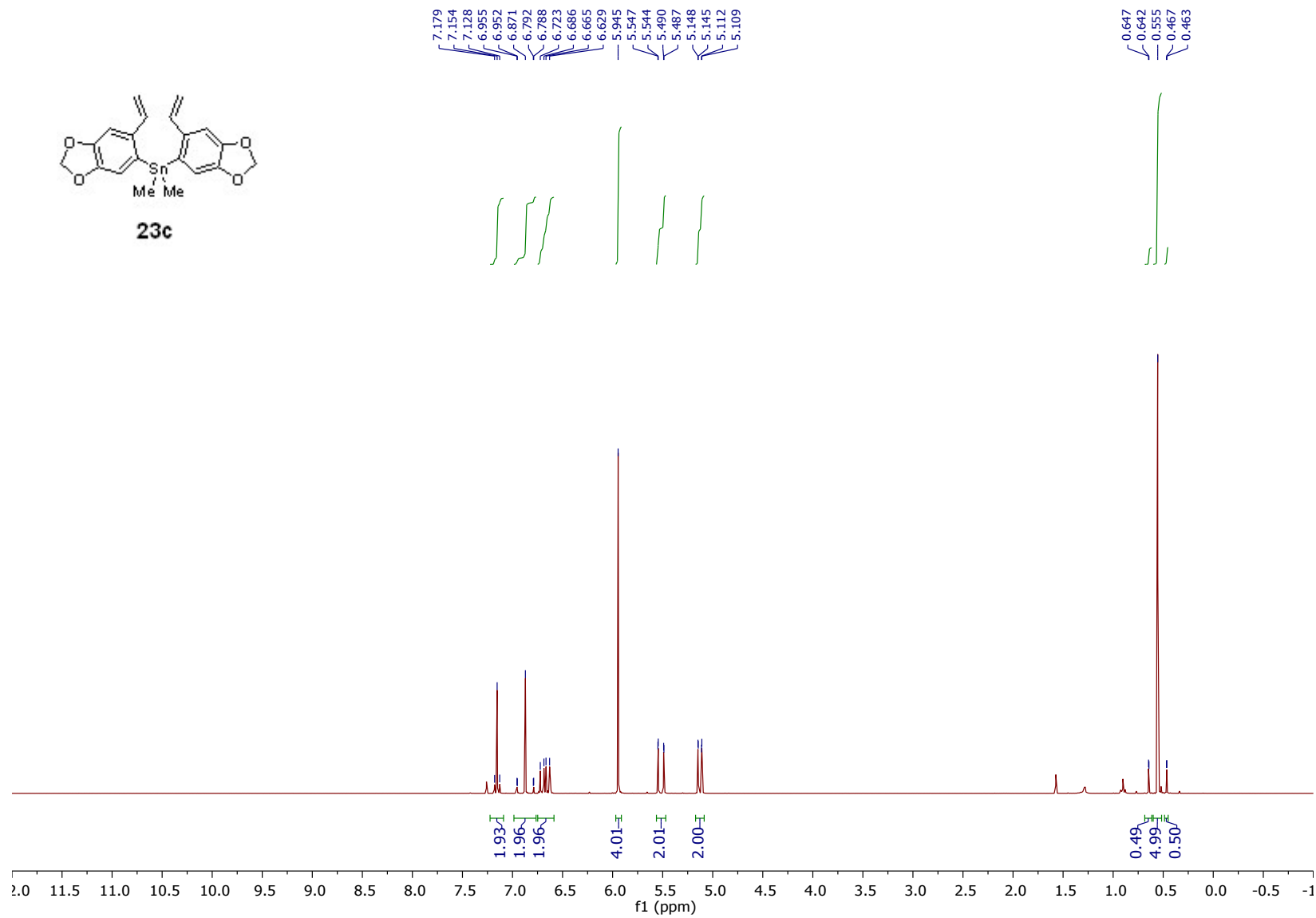
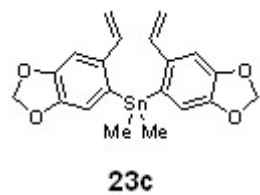


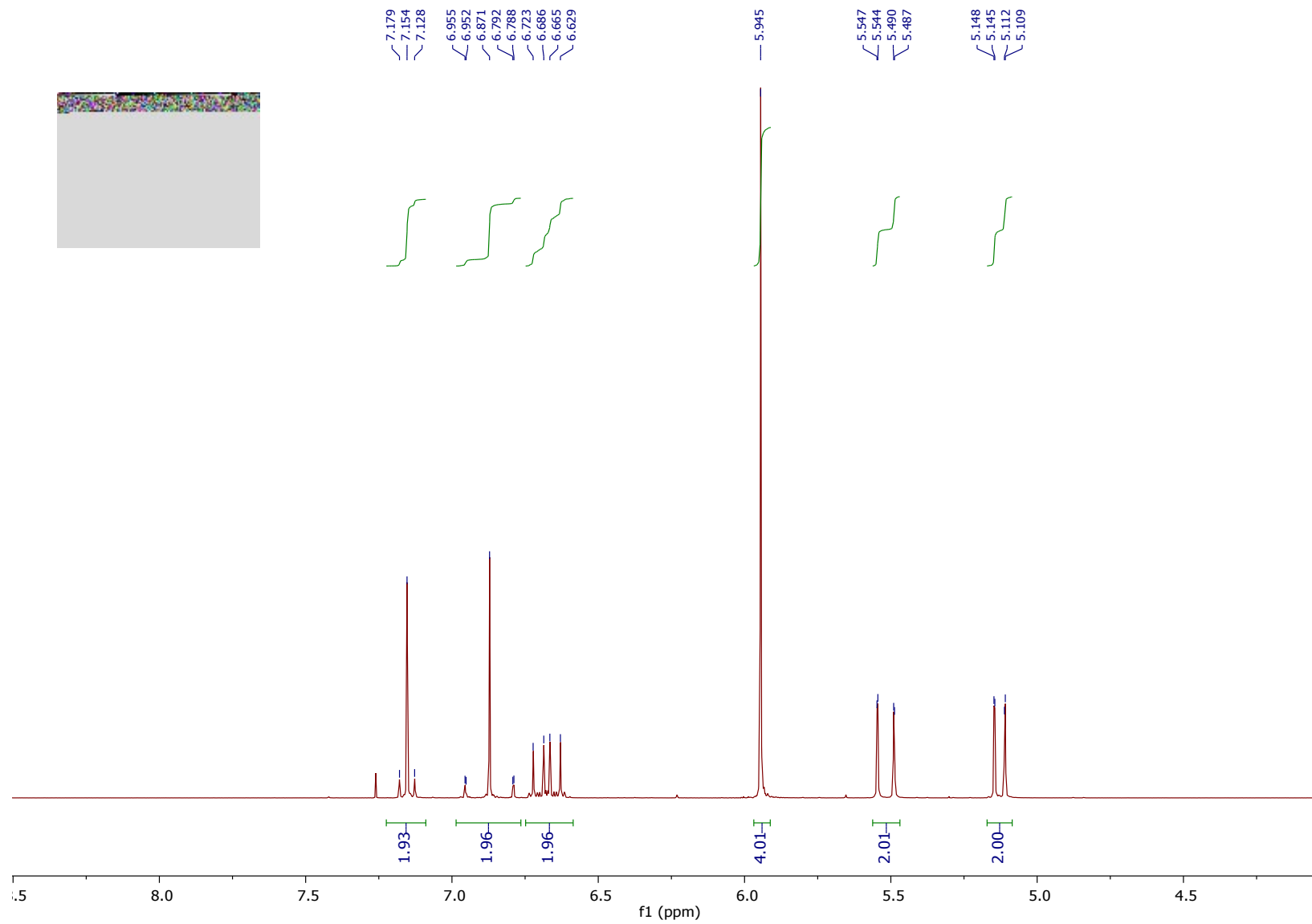


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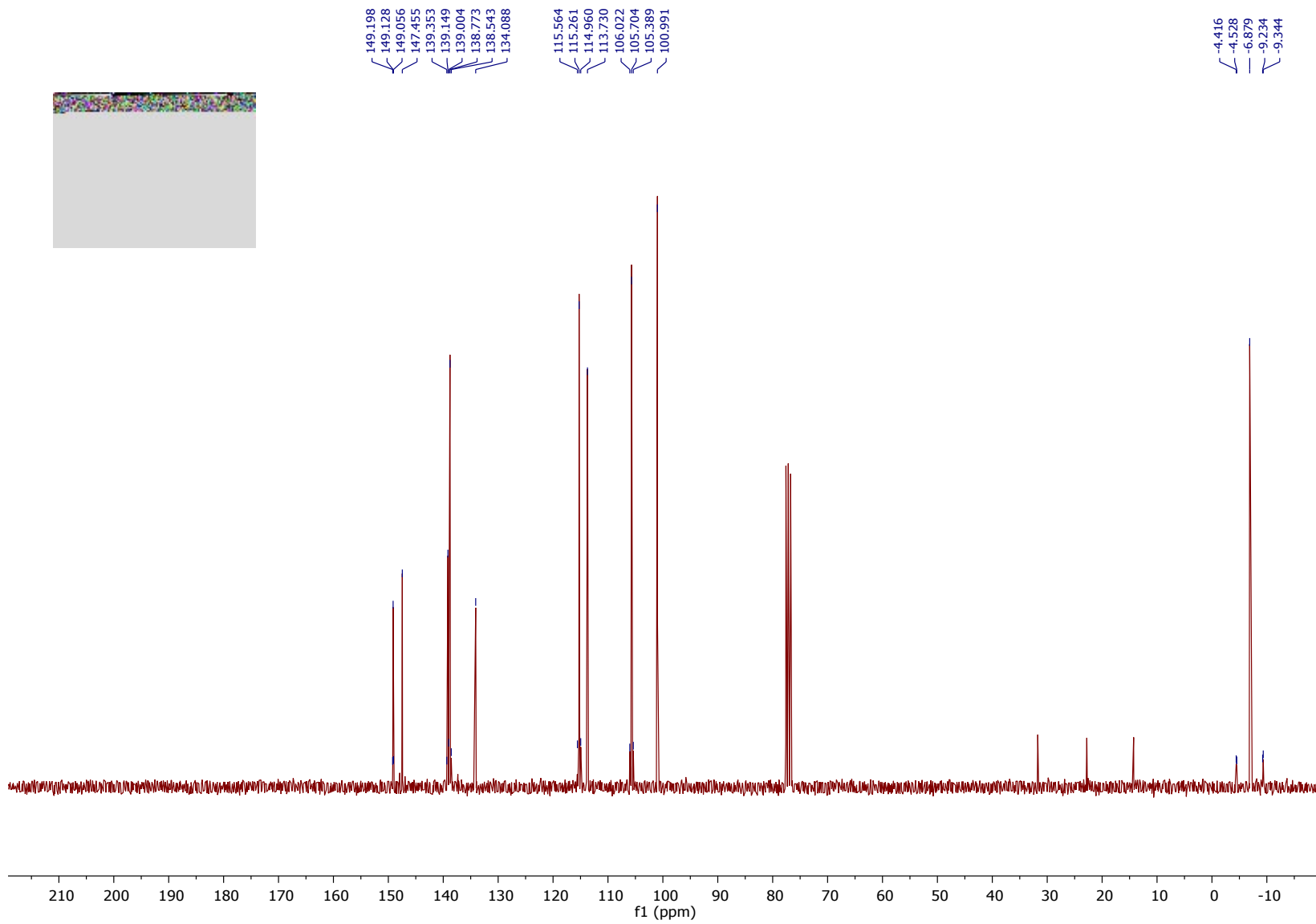


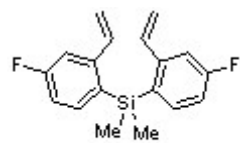




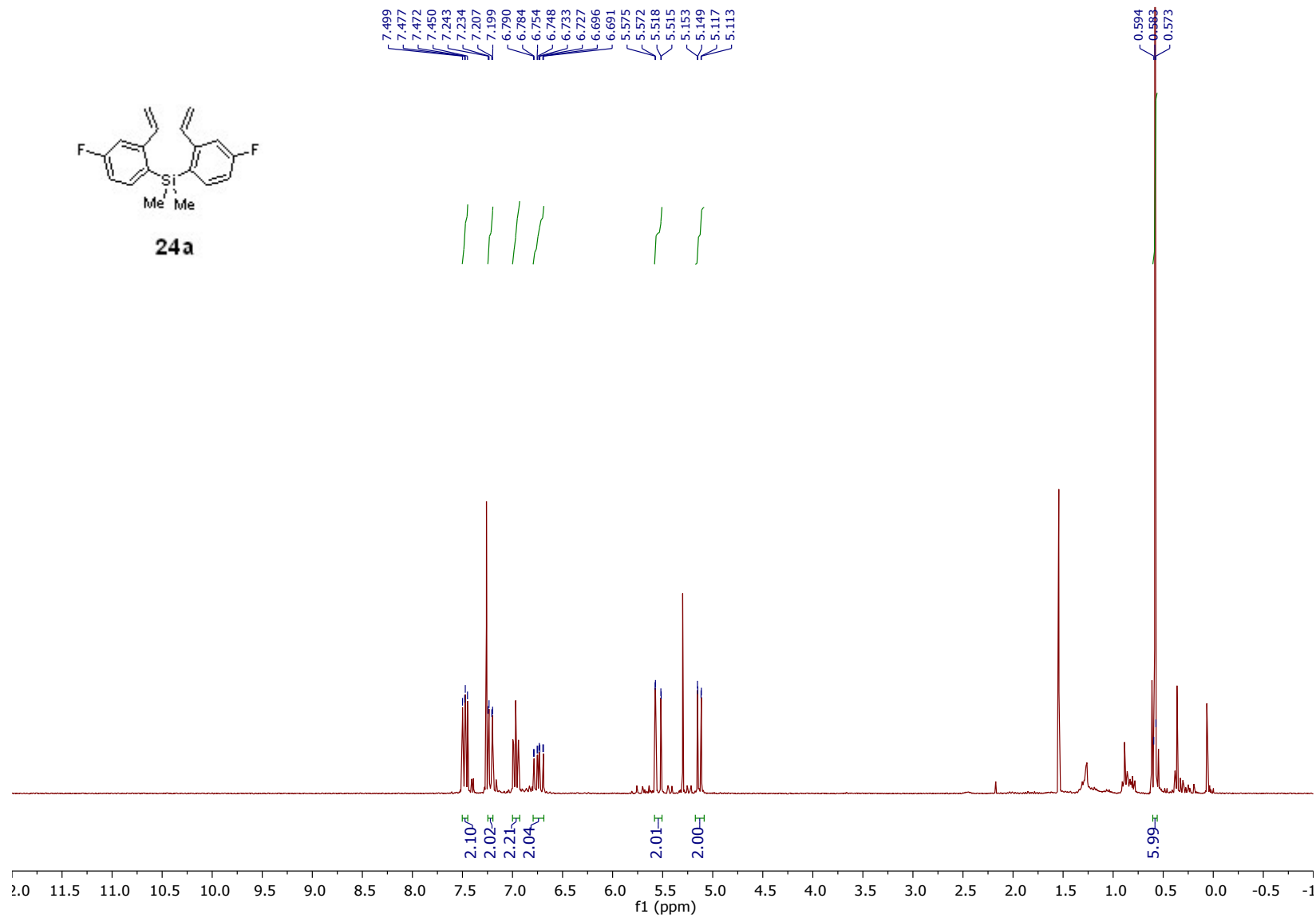


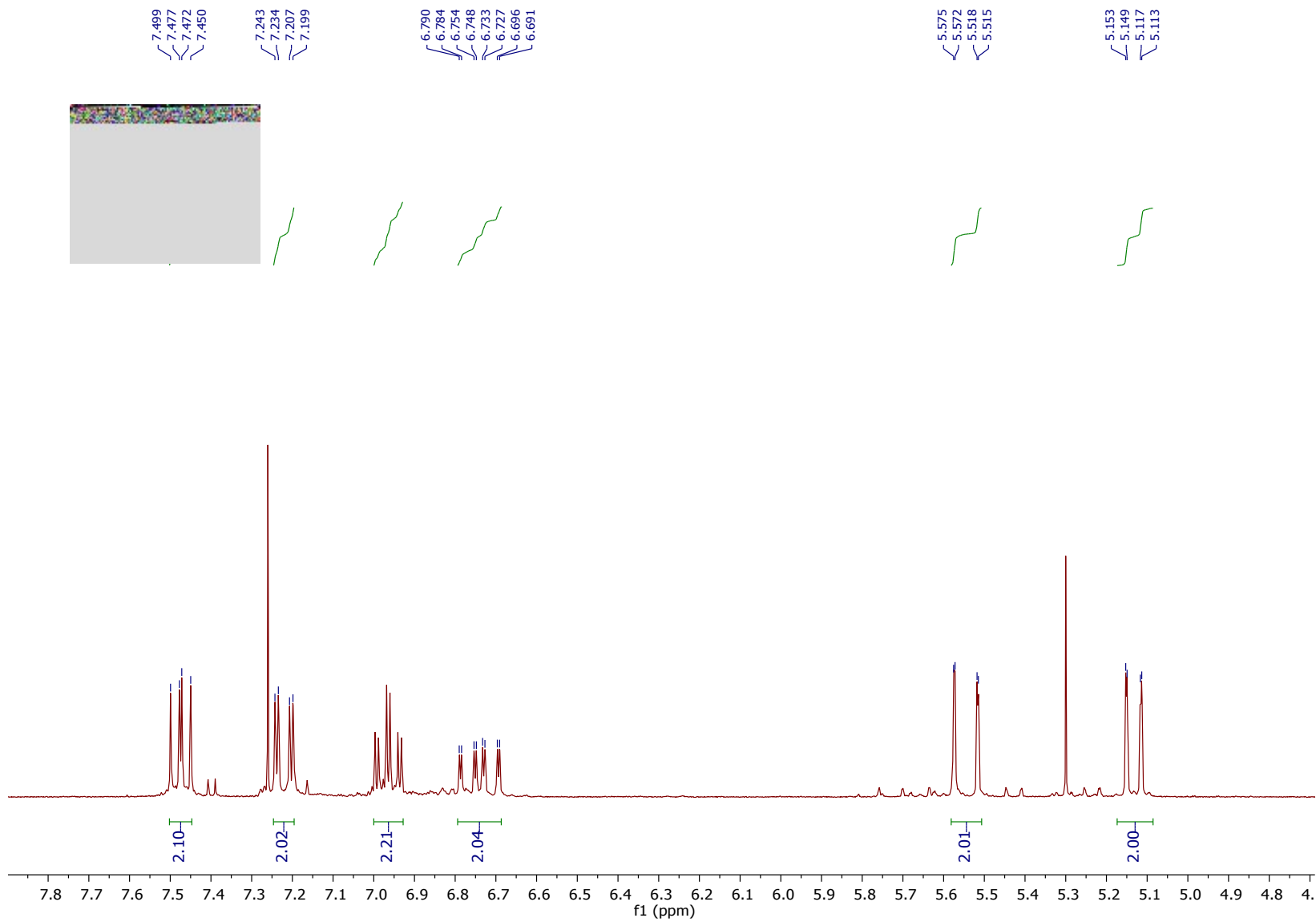
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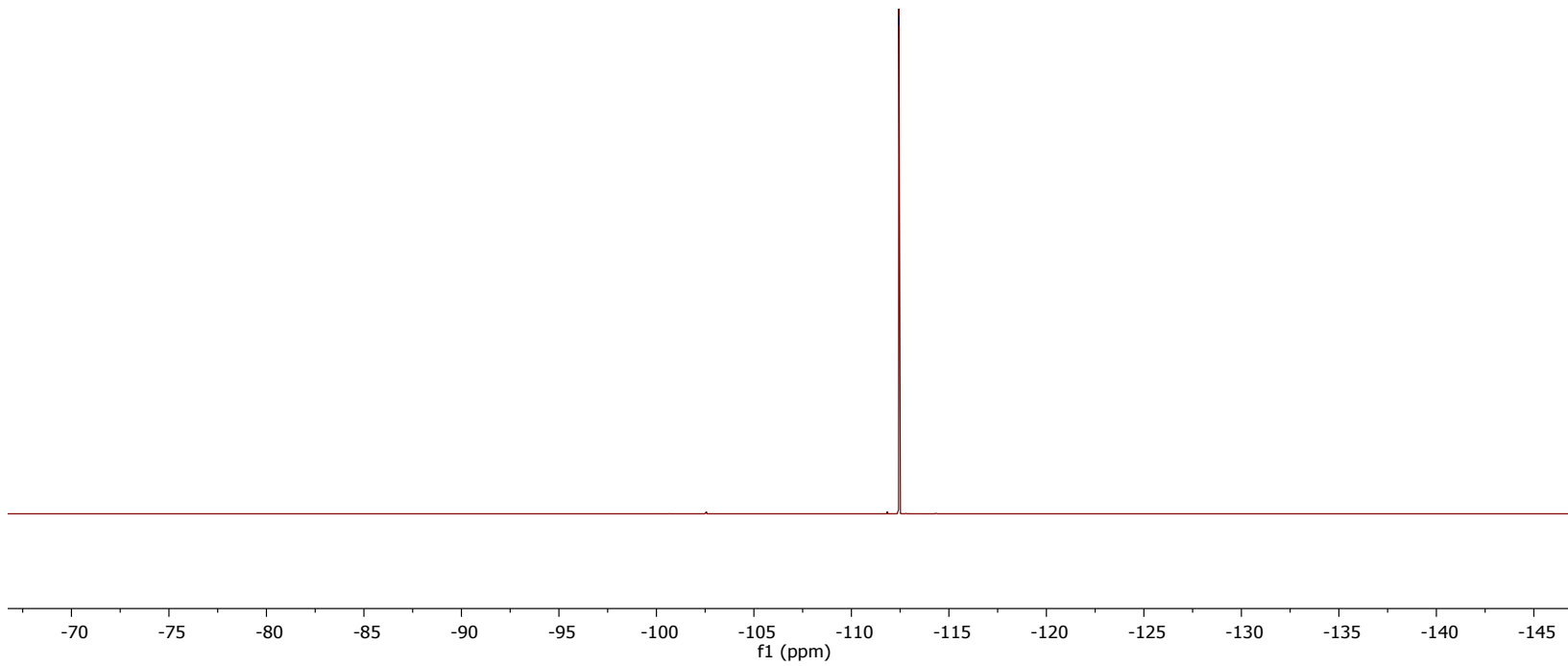
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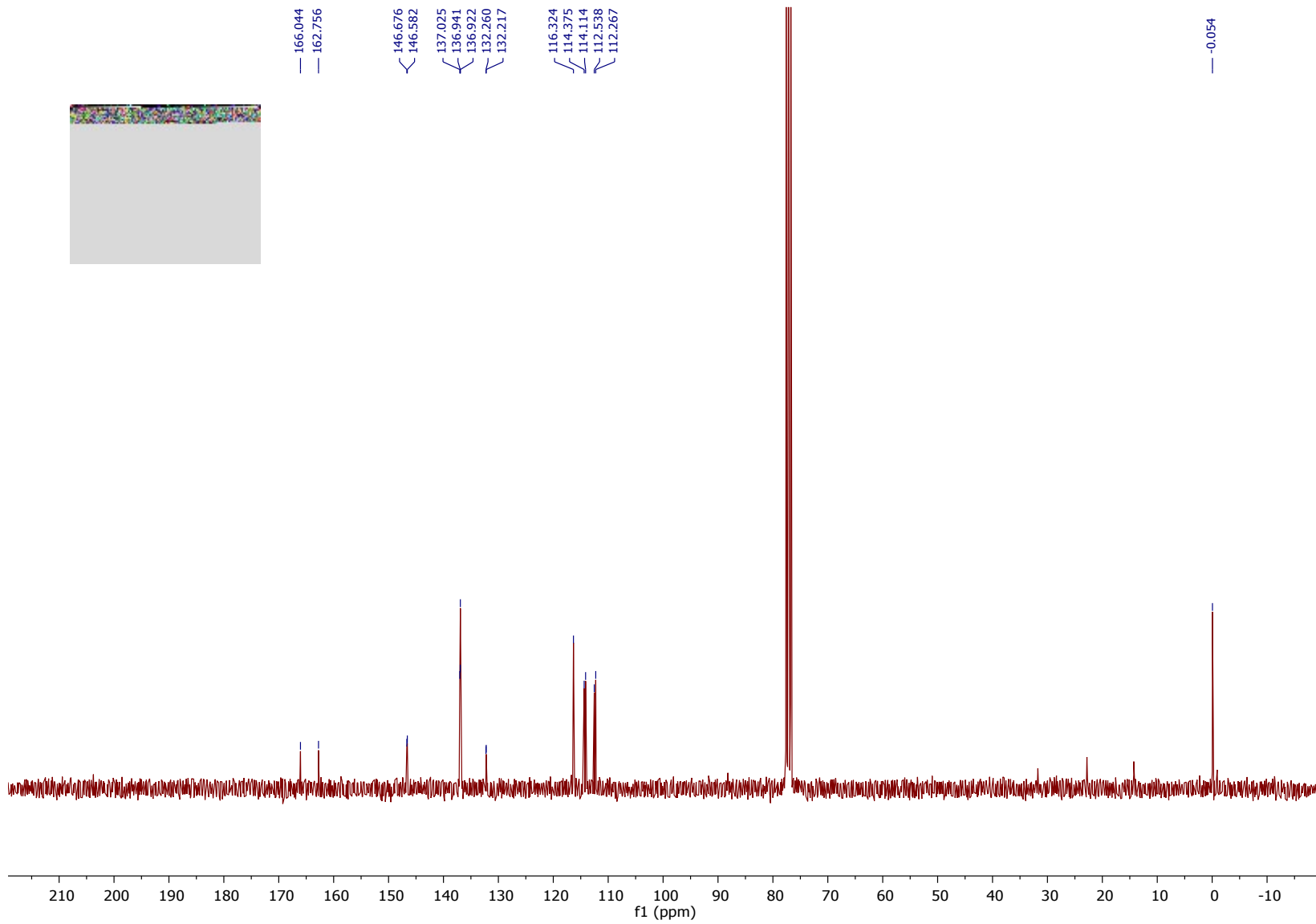




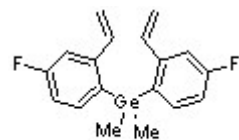
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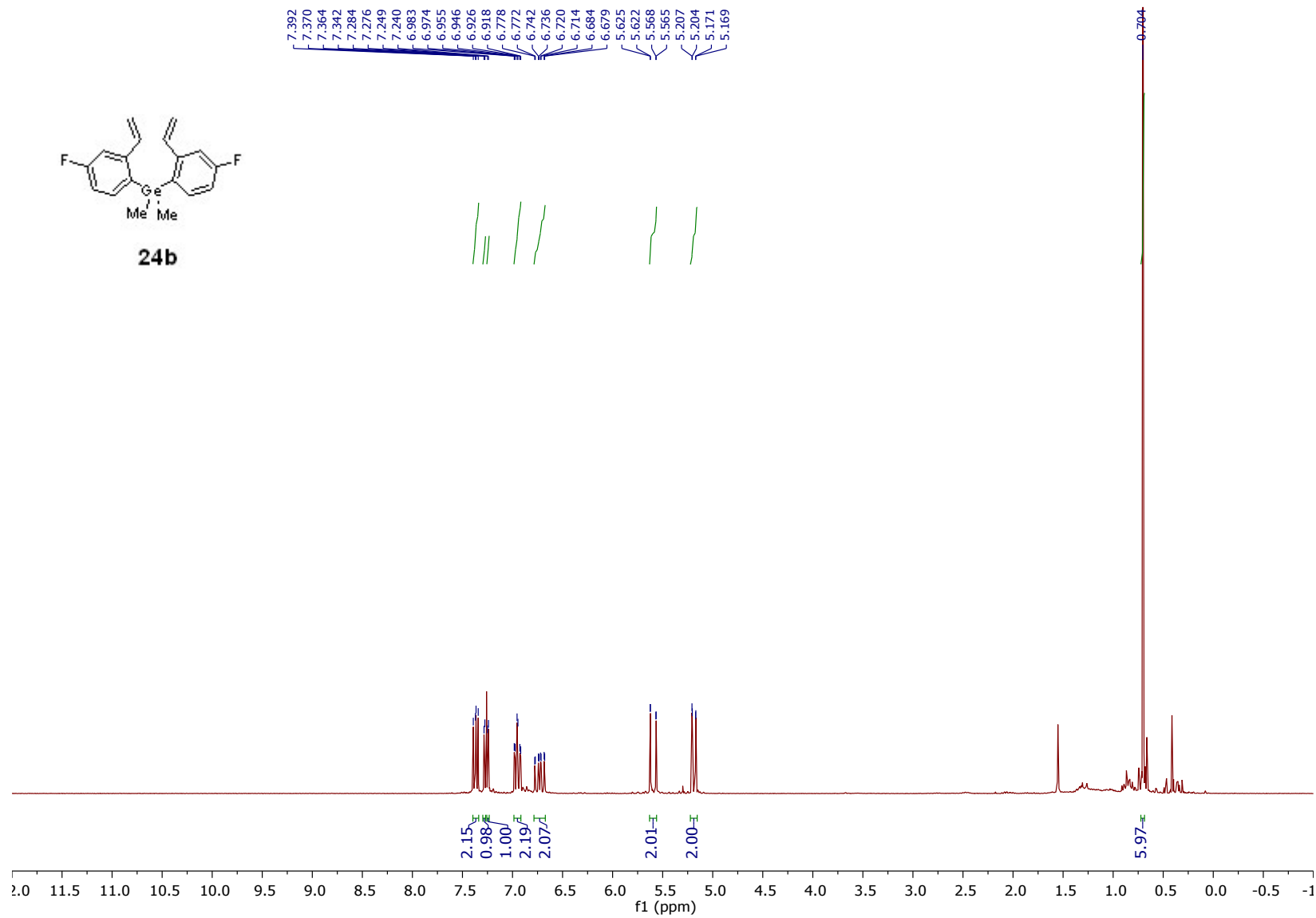
S-62



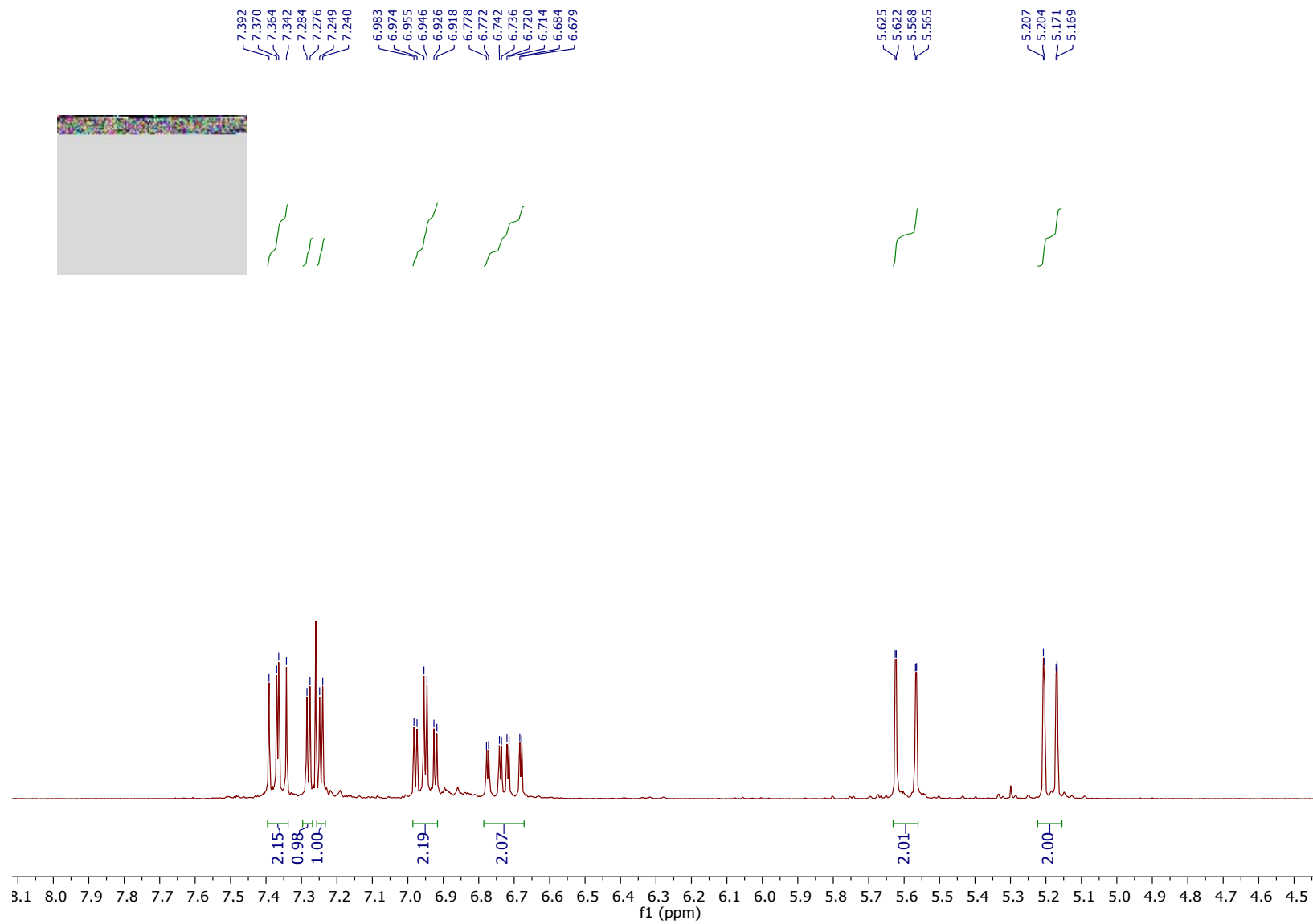
S-63

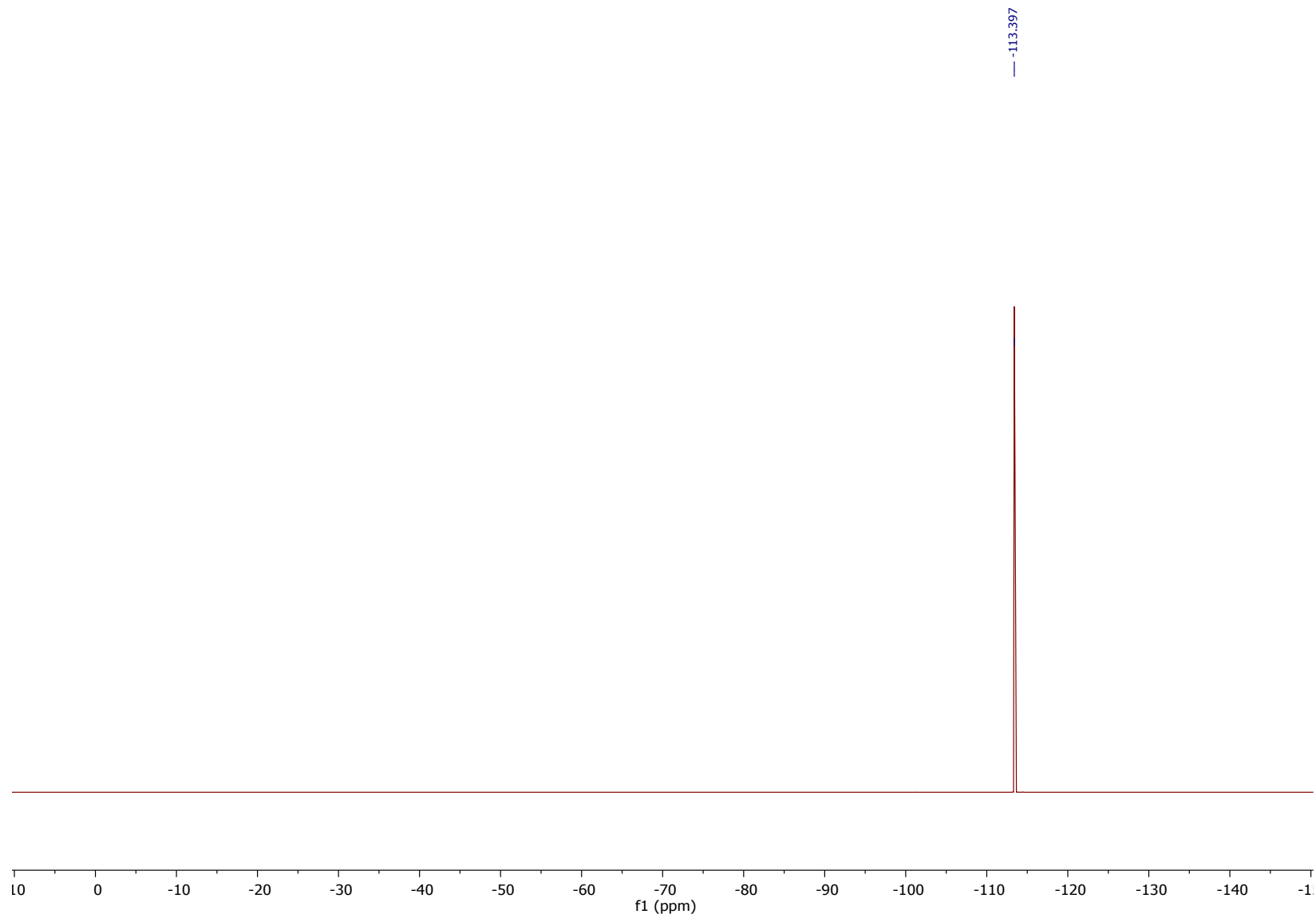


**24b**

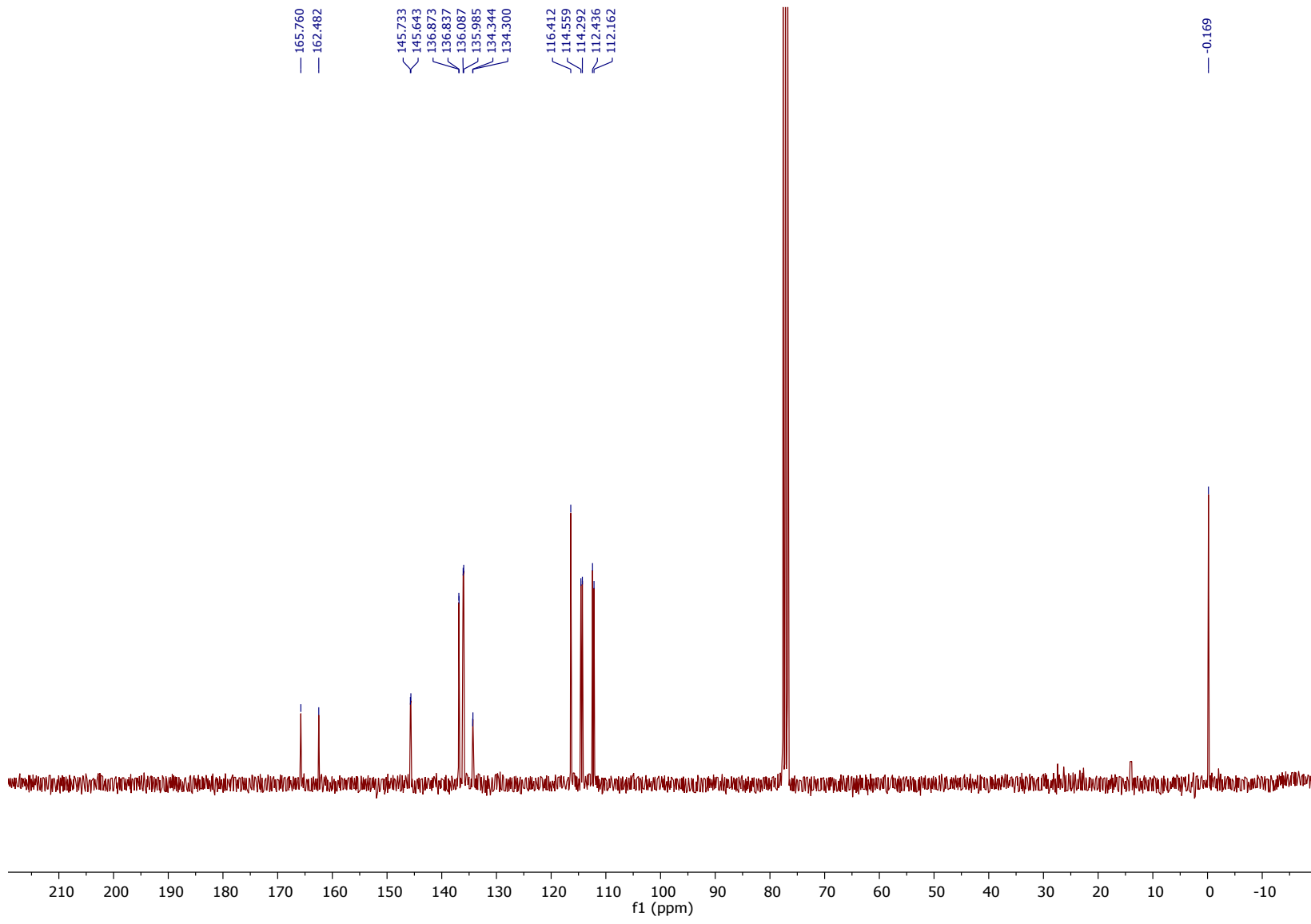




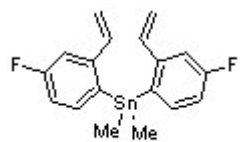




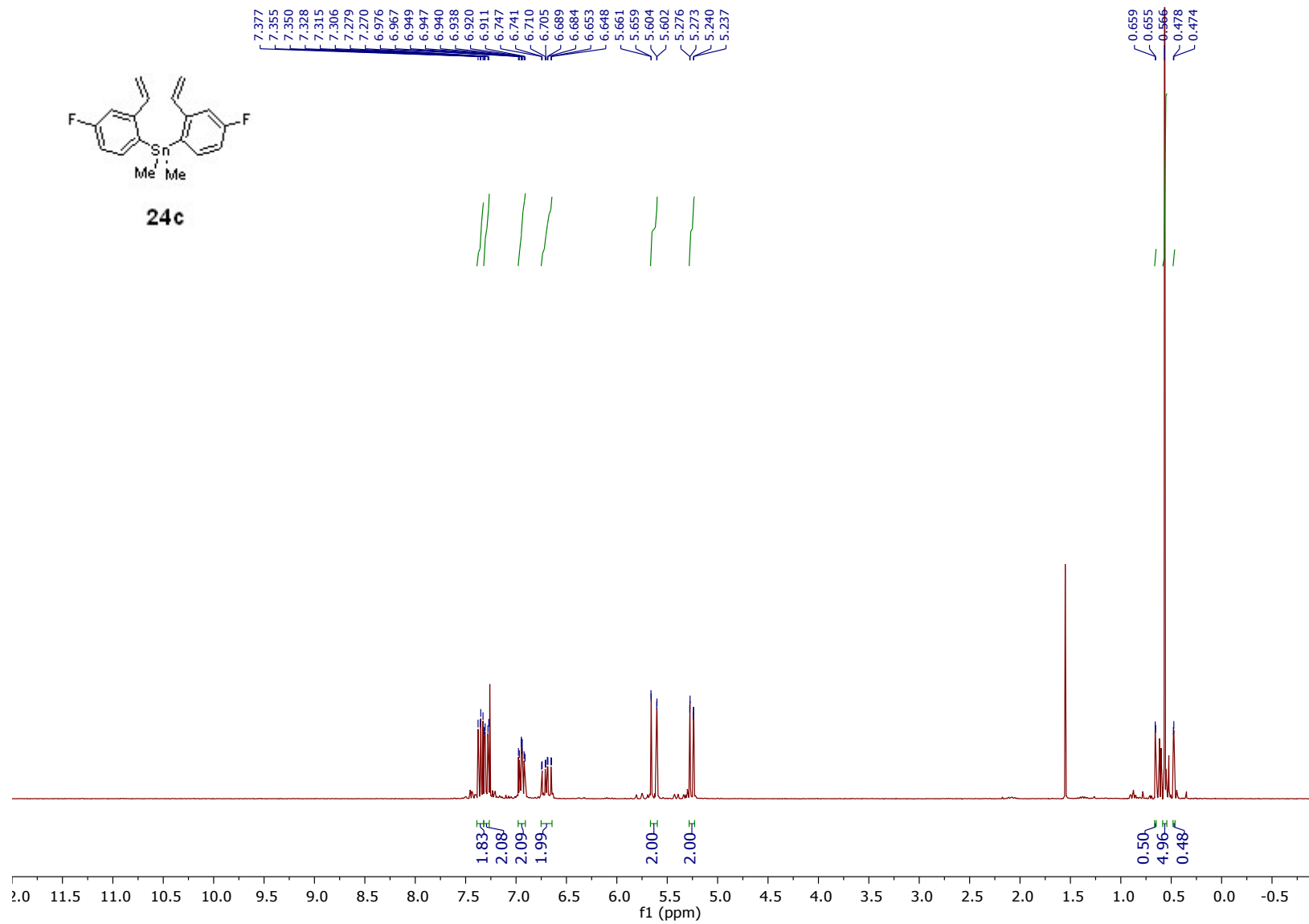
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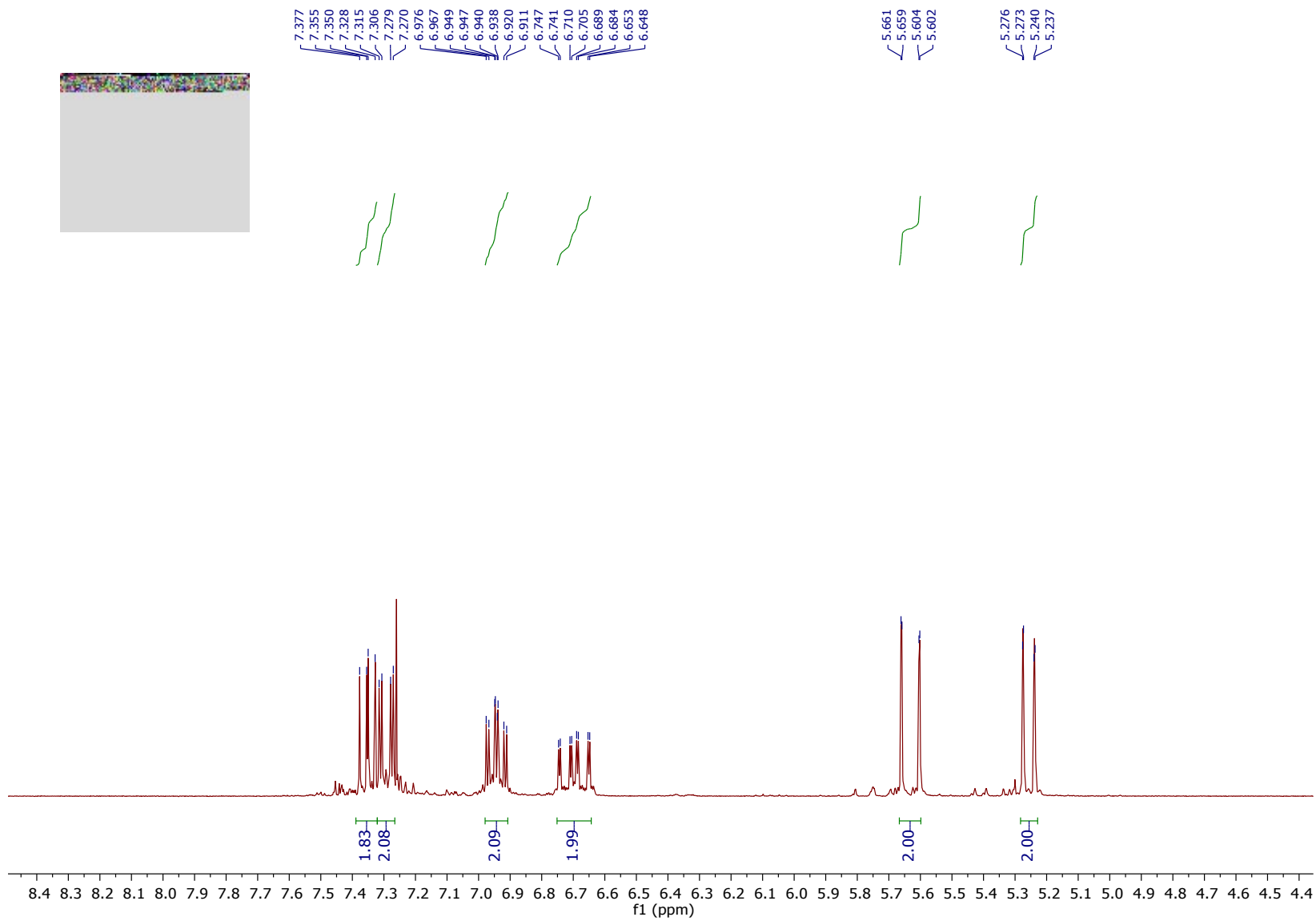


S-67



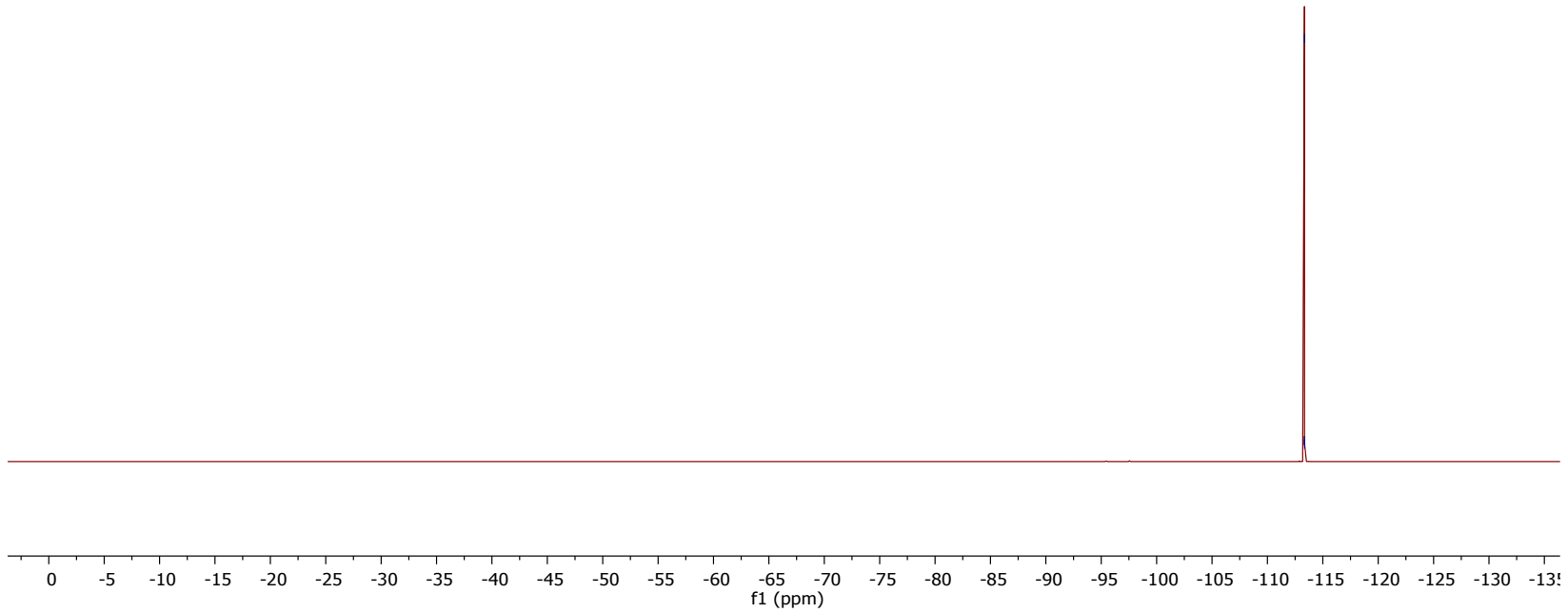
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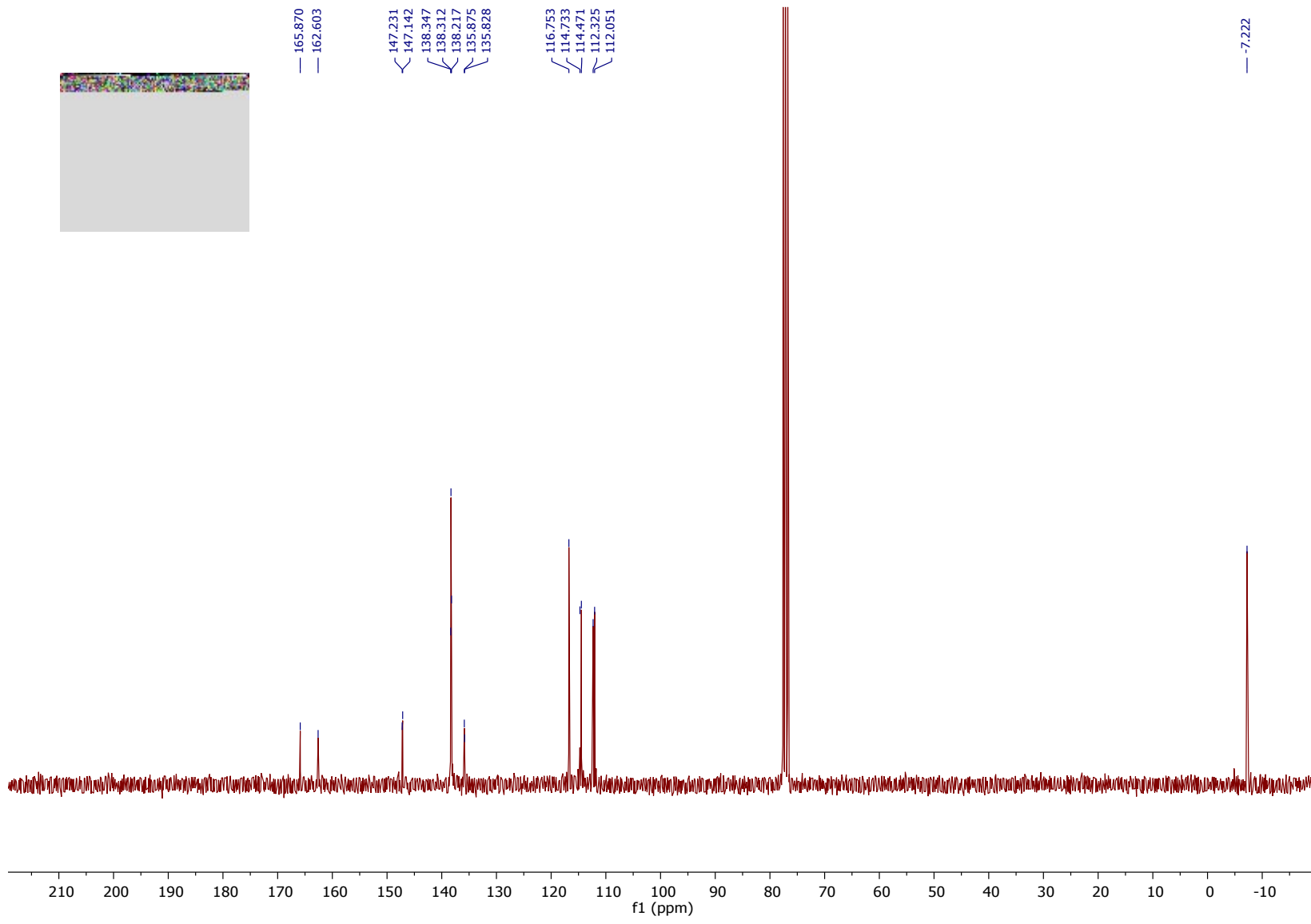




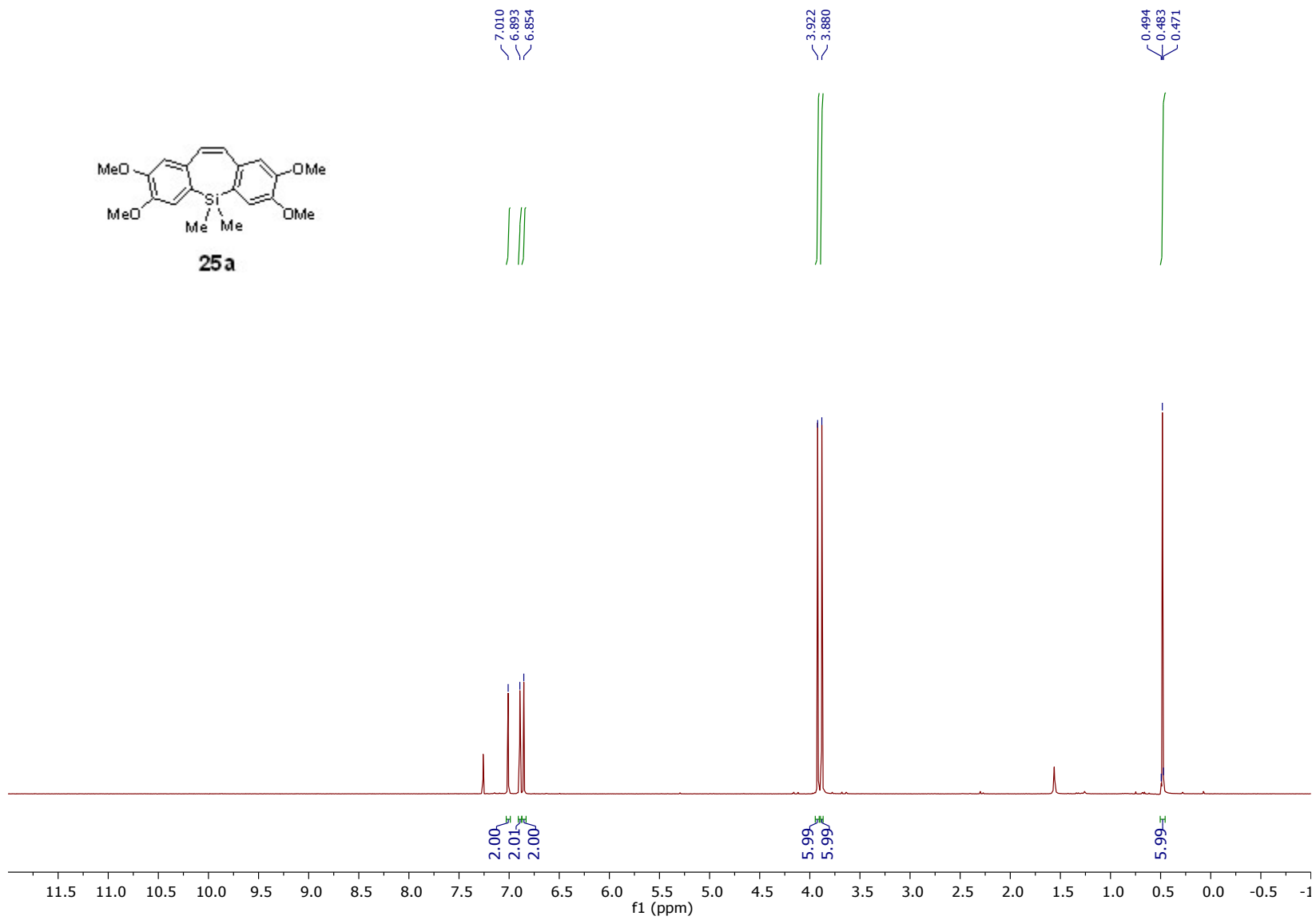
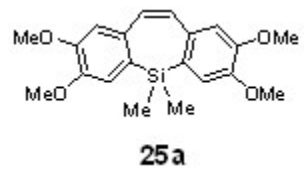
-113.333  
-113.347  
-113.361



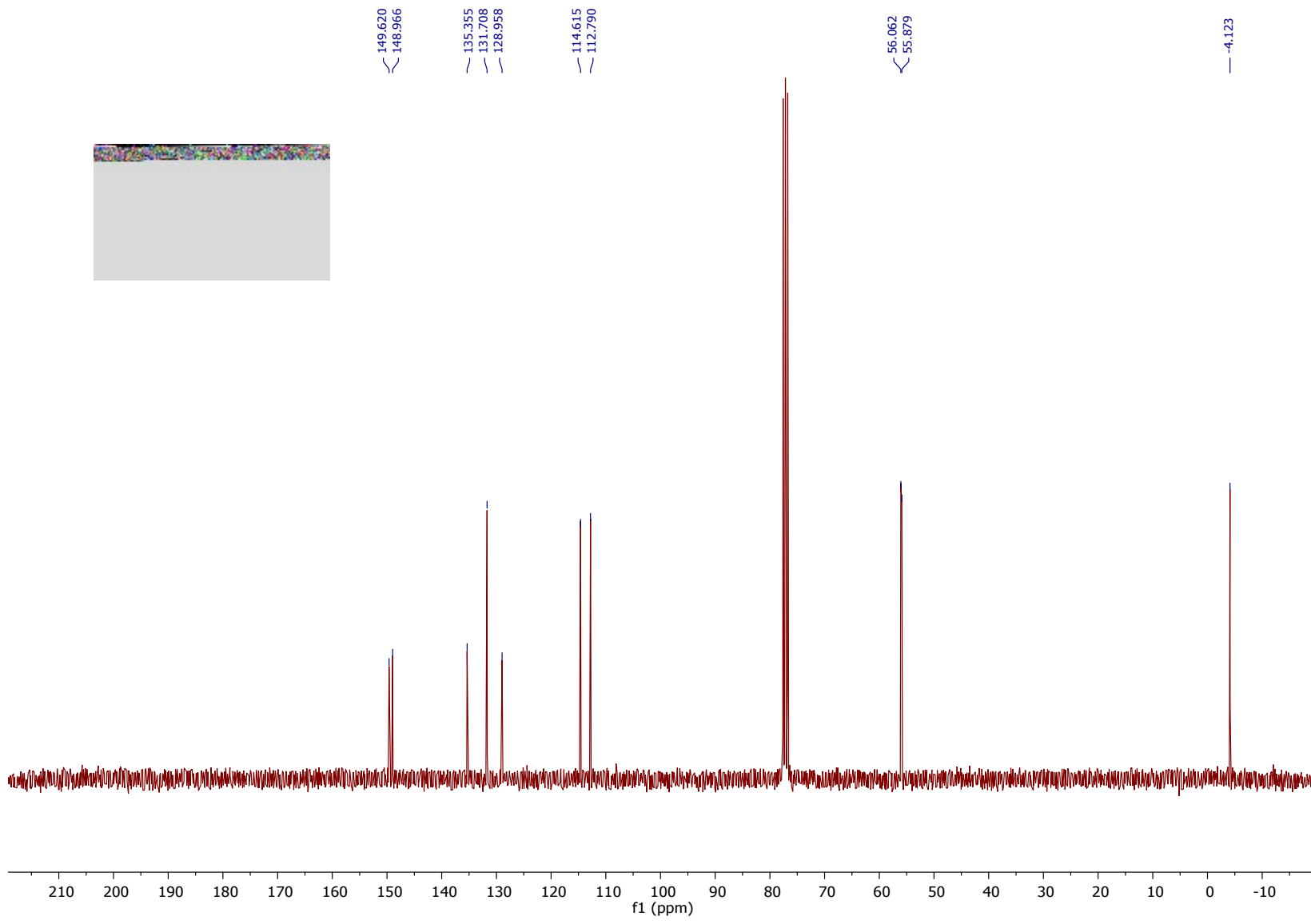
S-70



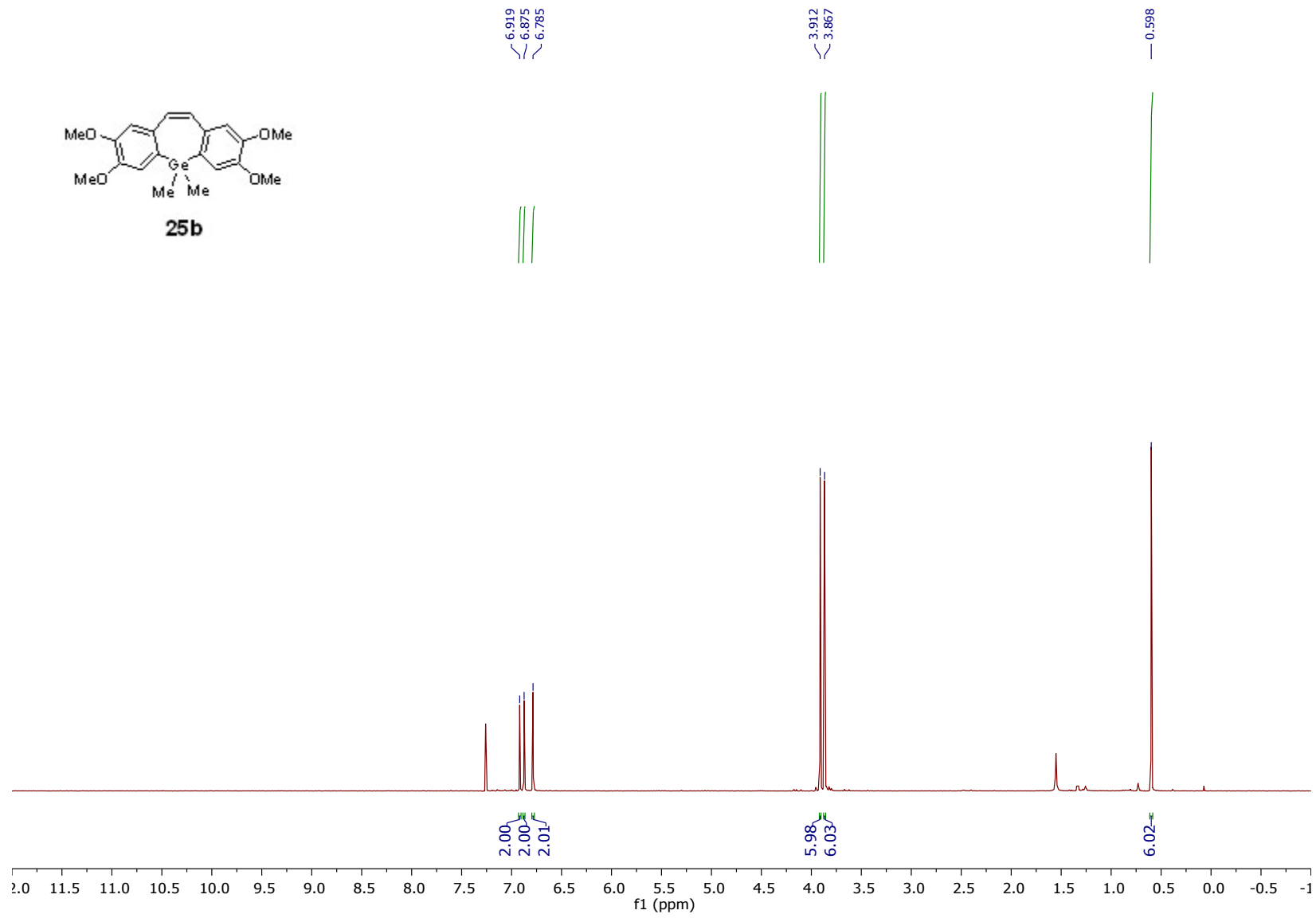
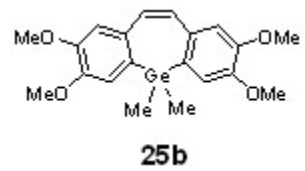
S-71

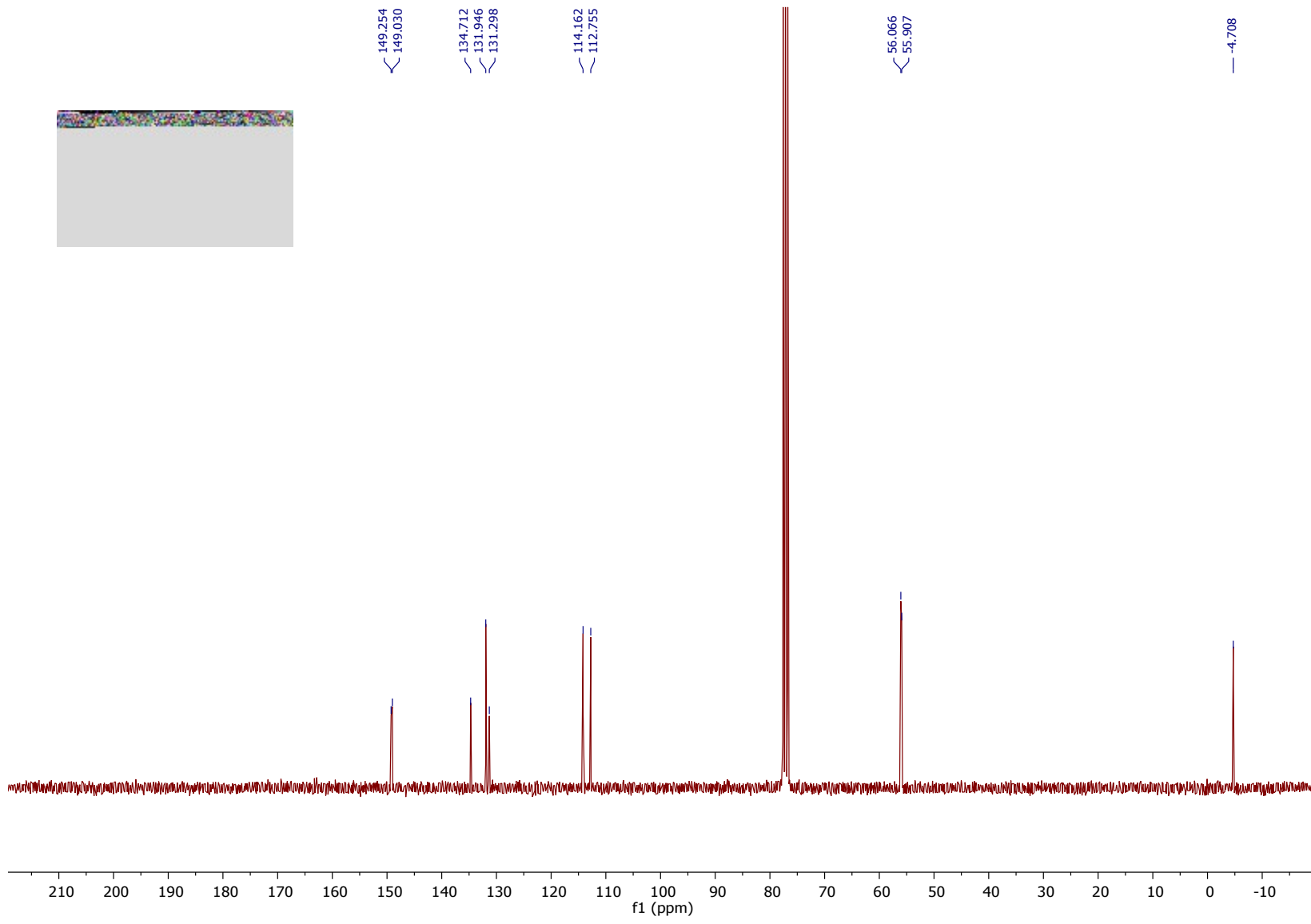




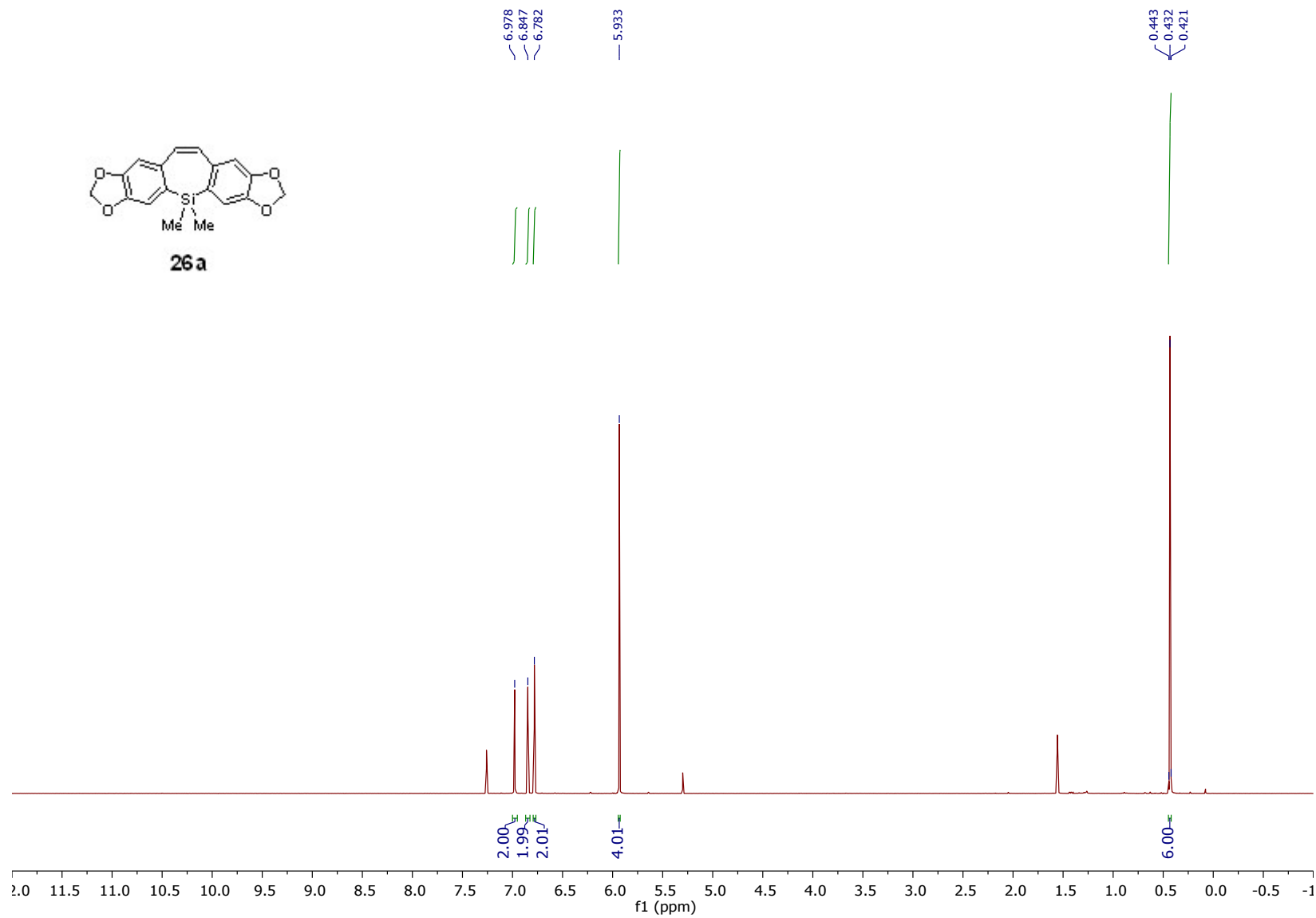
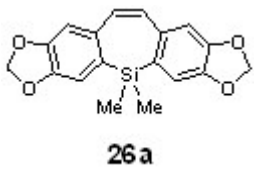


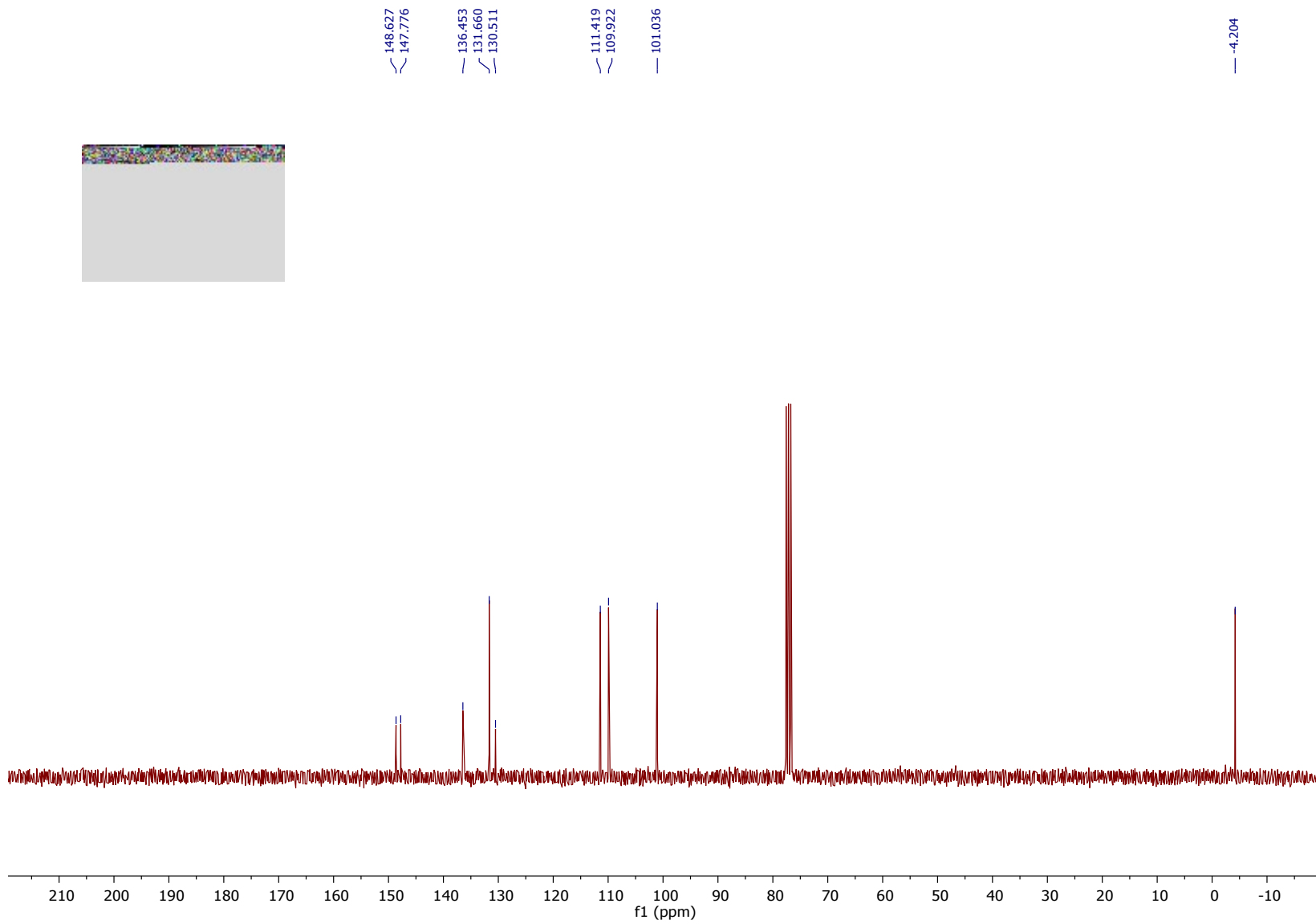
S-73



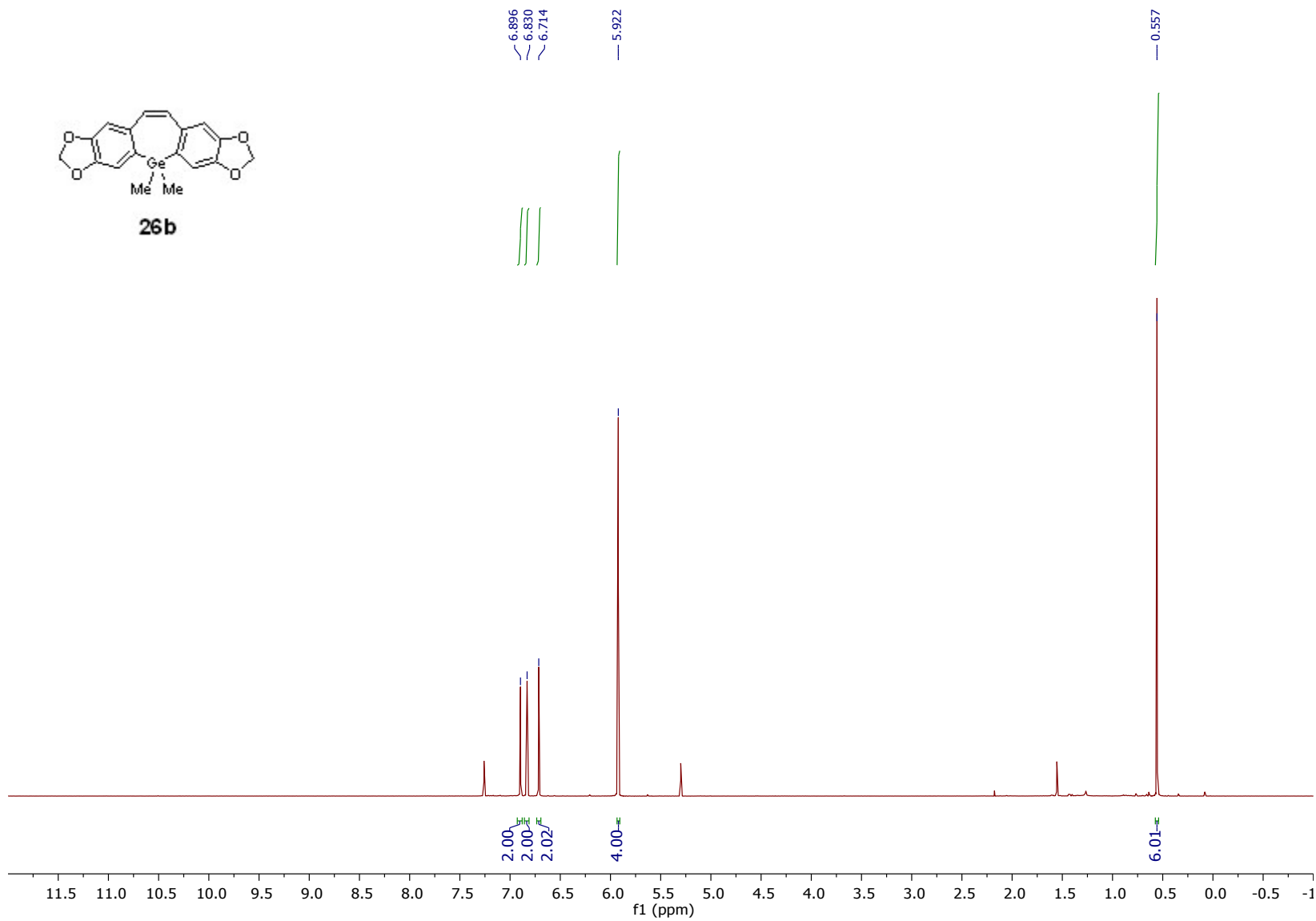
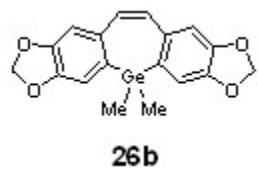


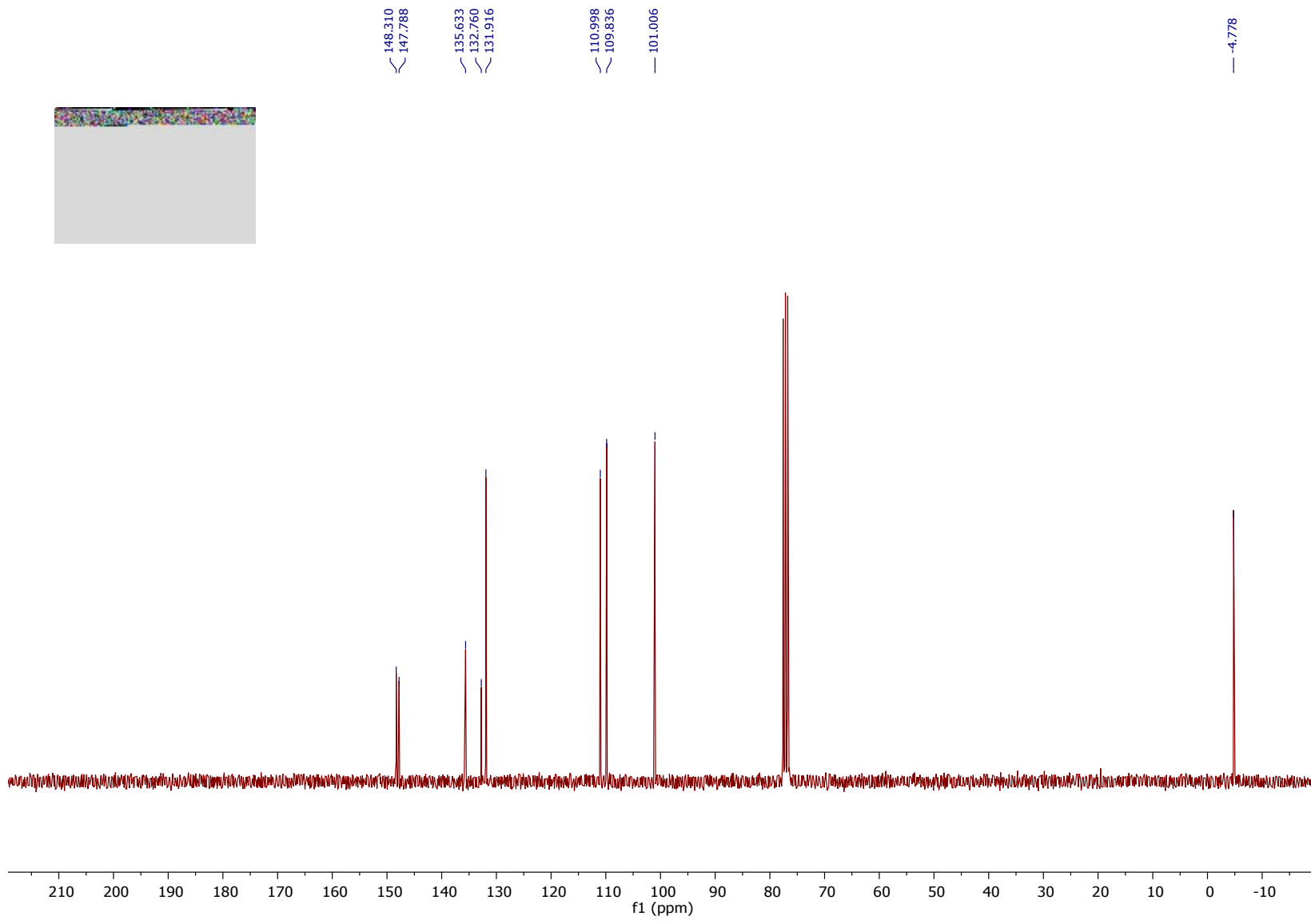
S-75



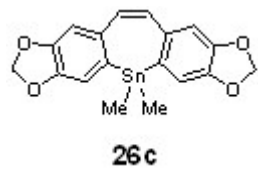


S-77



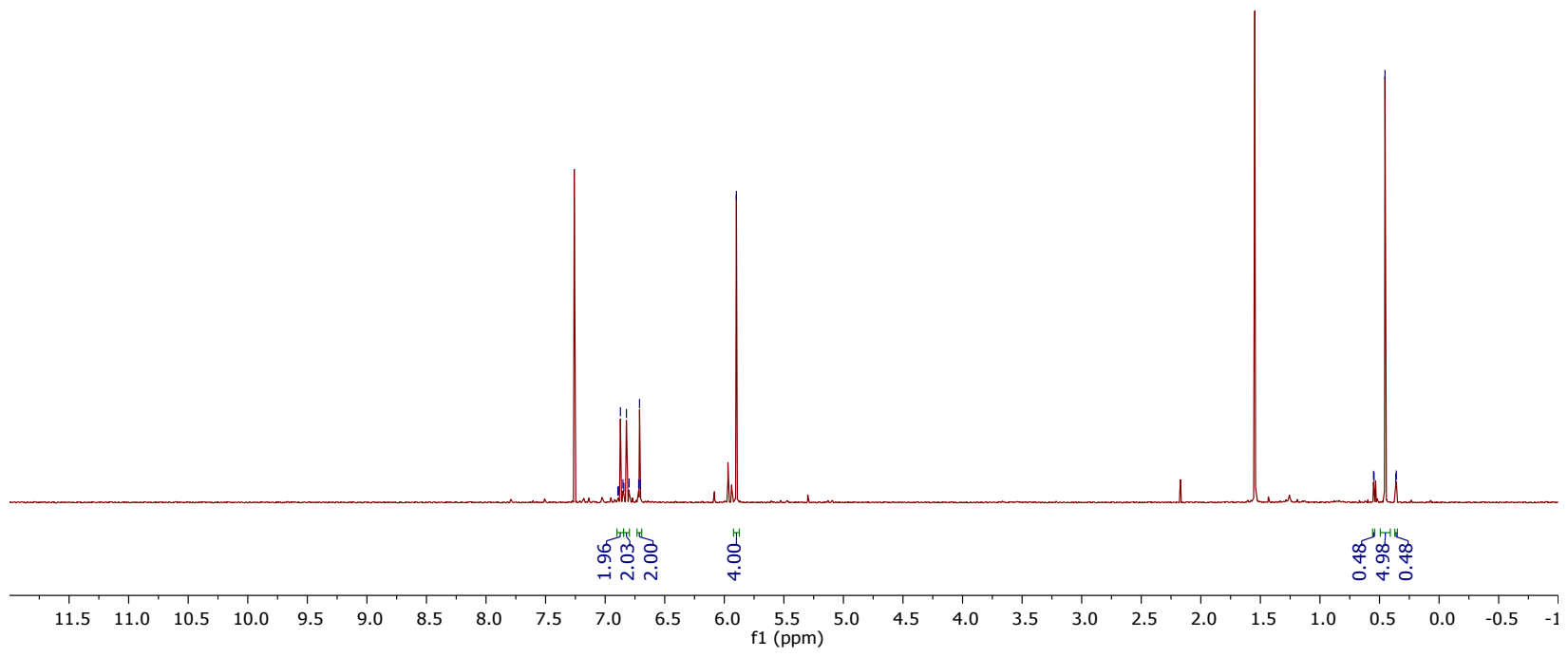


S-79

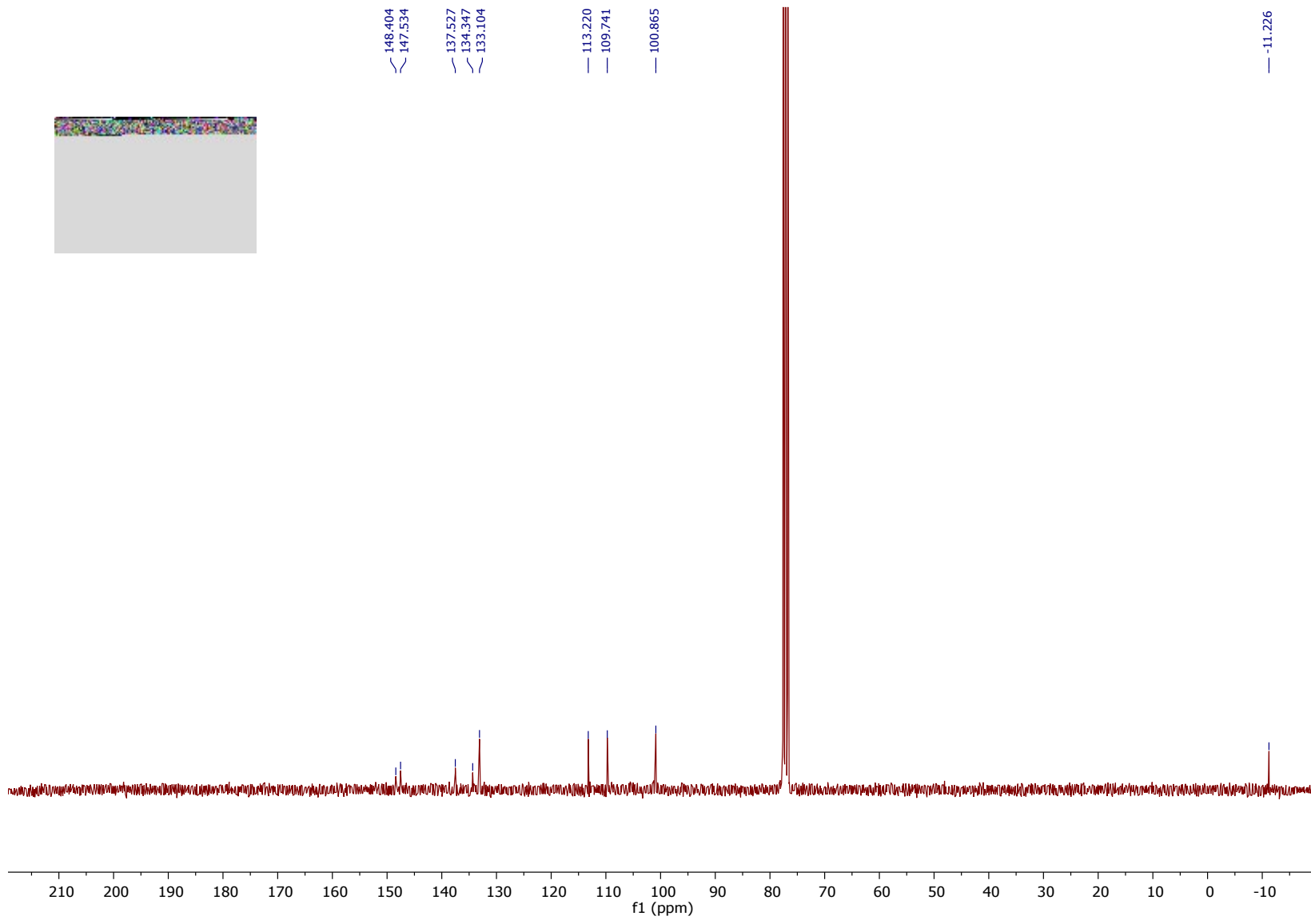


6.894  
6.888  
6.872  
6.851  
6.843  
6.822  
6.799  
6.719  
6.711  
6.704  
5.898

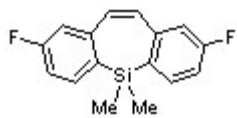
0.550  
0.546  
0.454  
0.363  
0.359



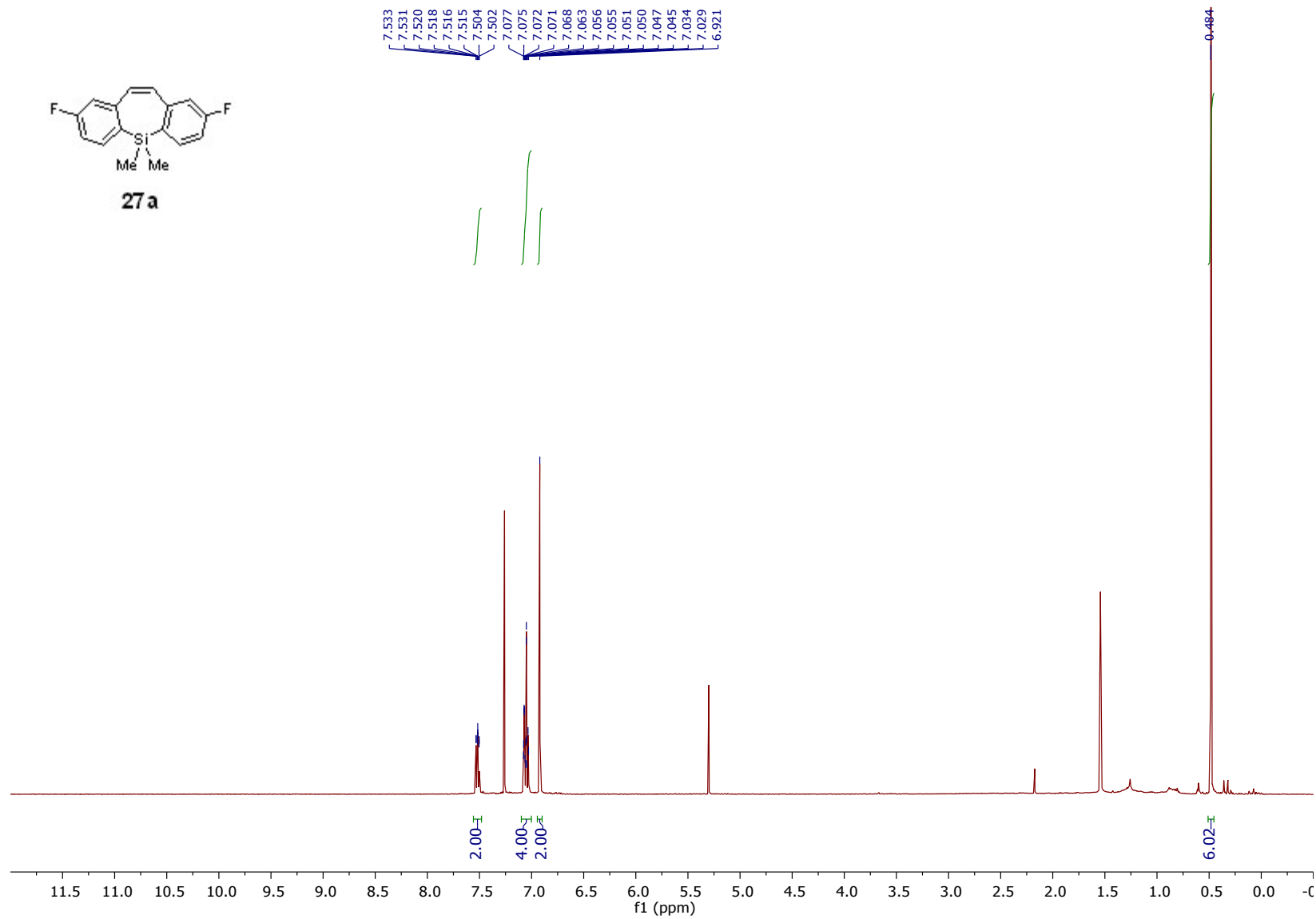


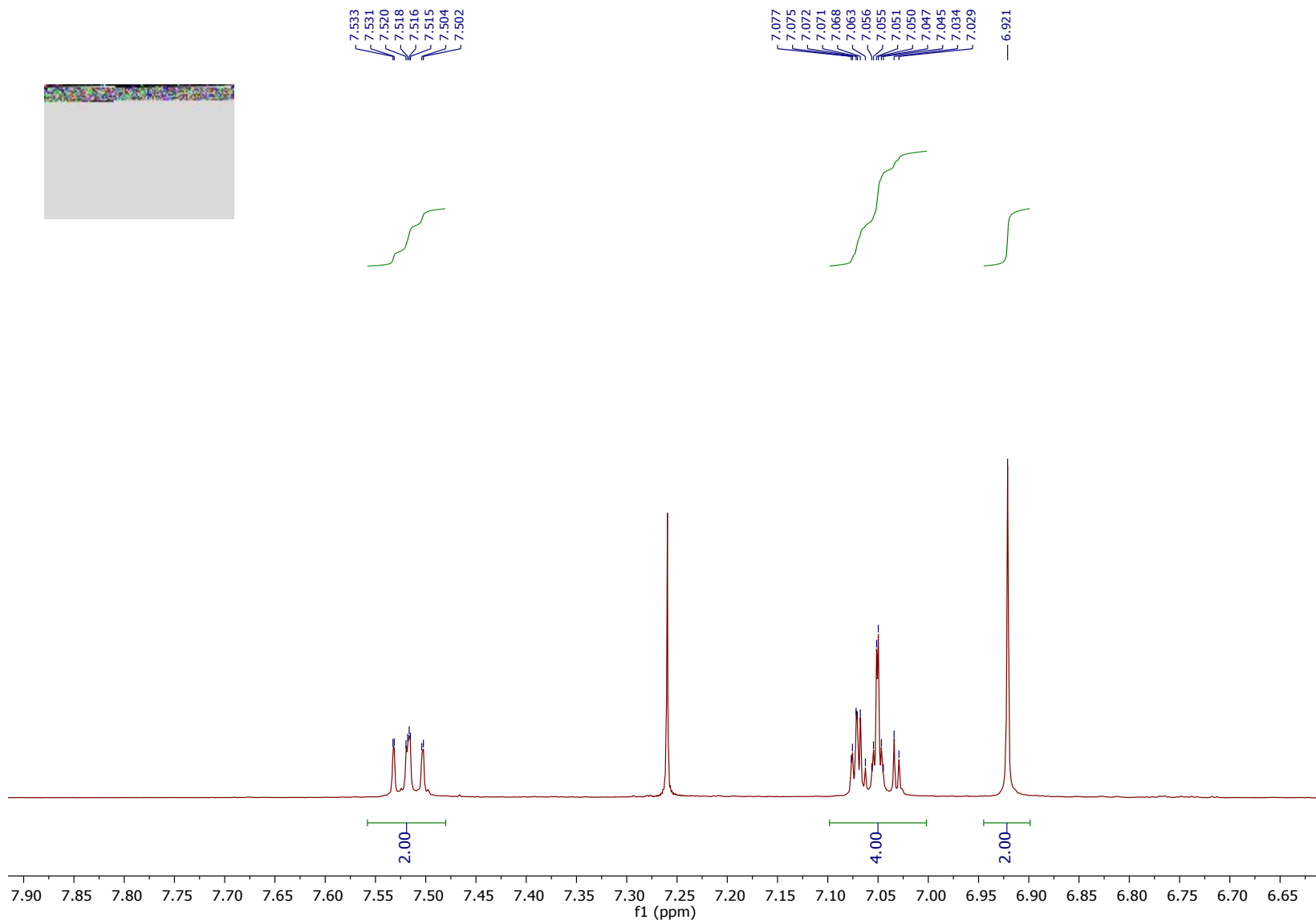


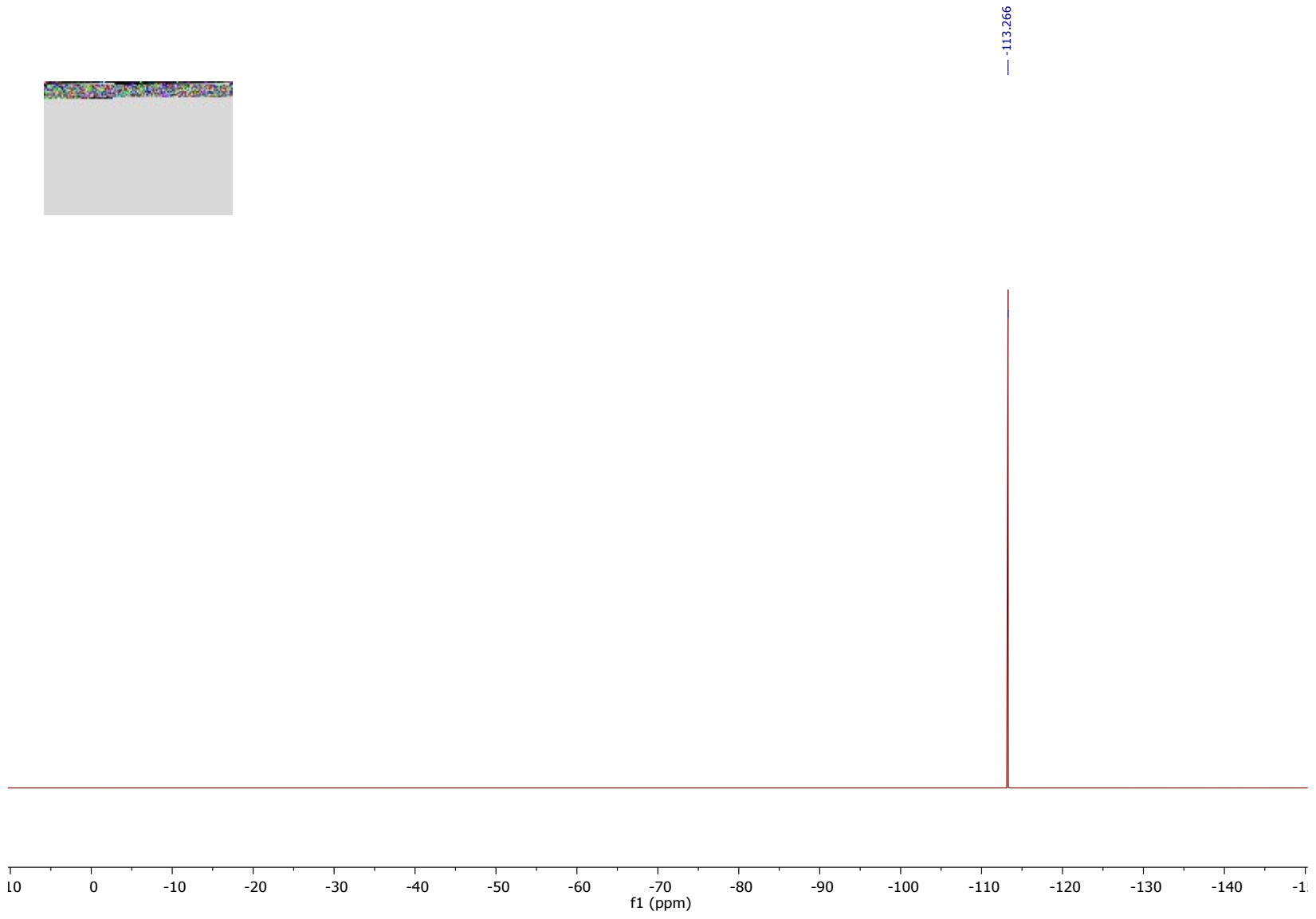
S-81



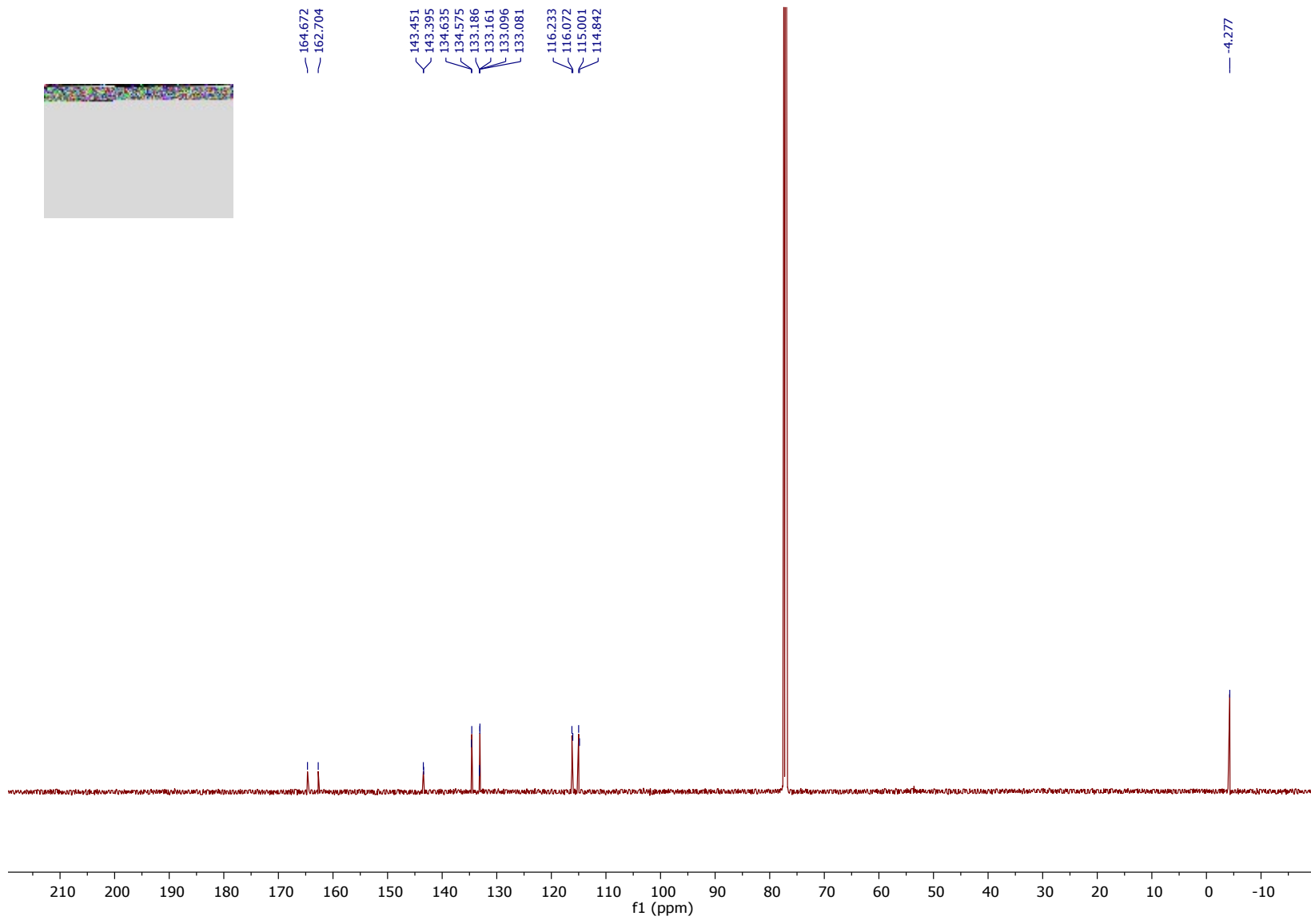
27a



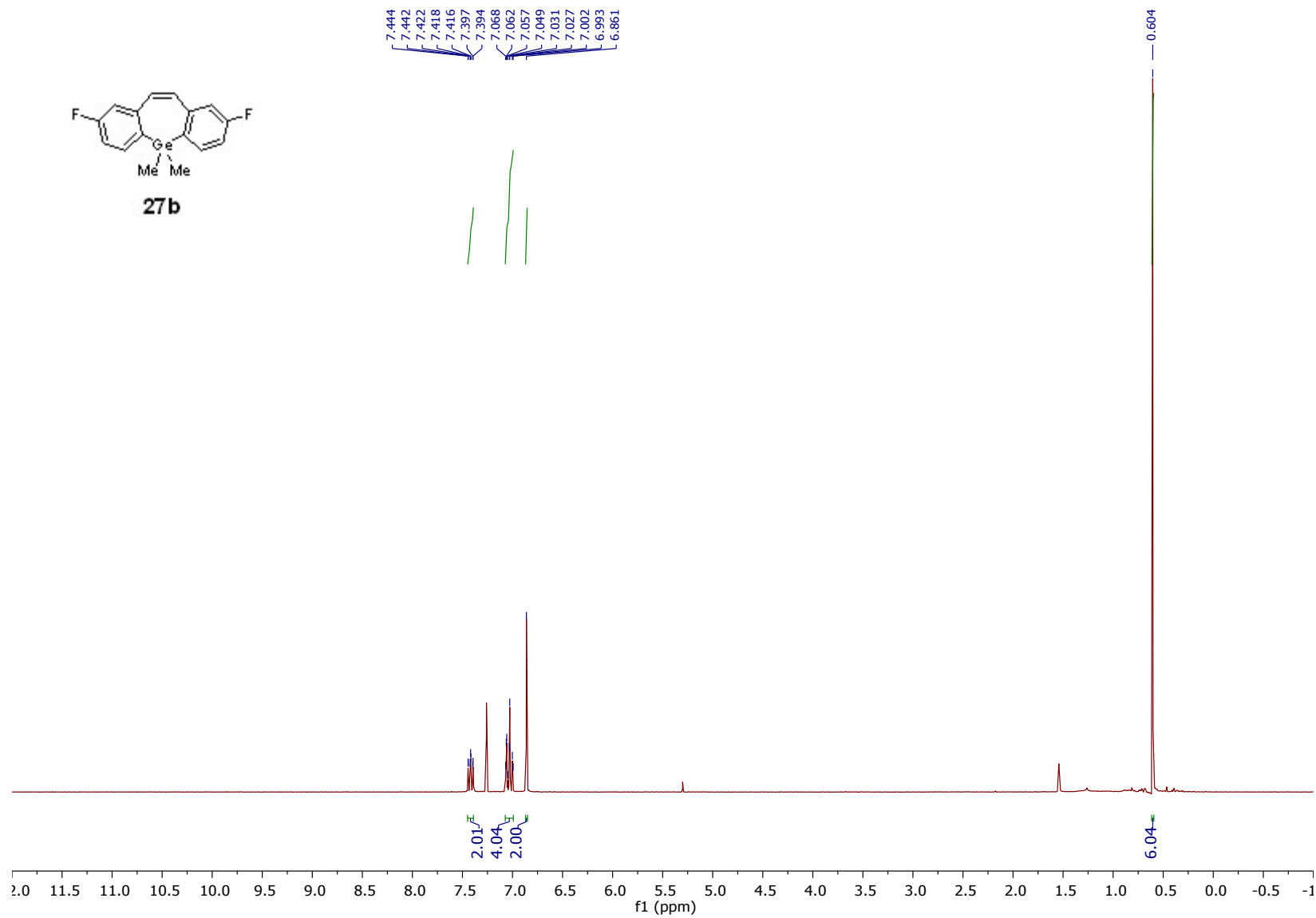
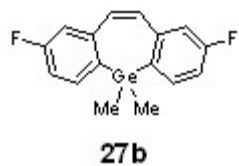


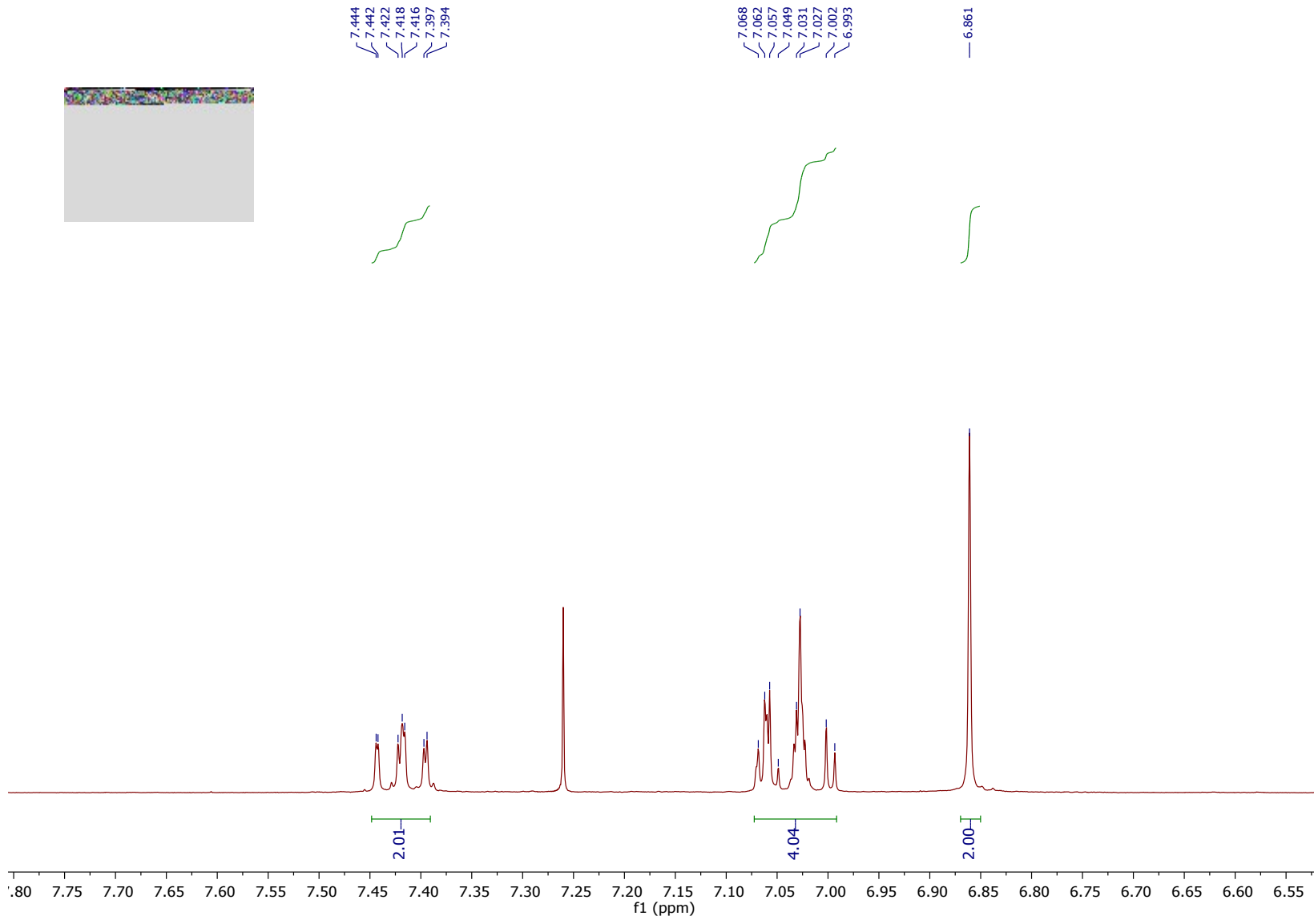


S-84



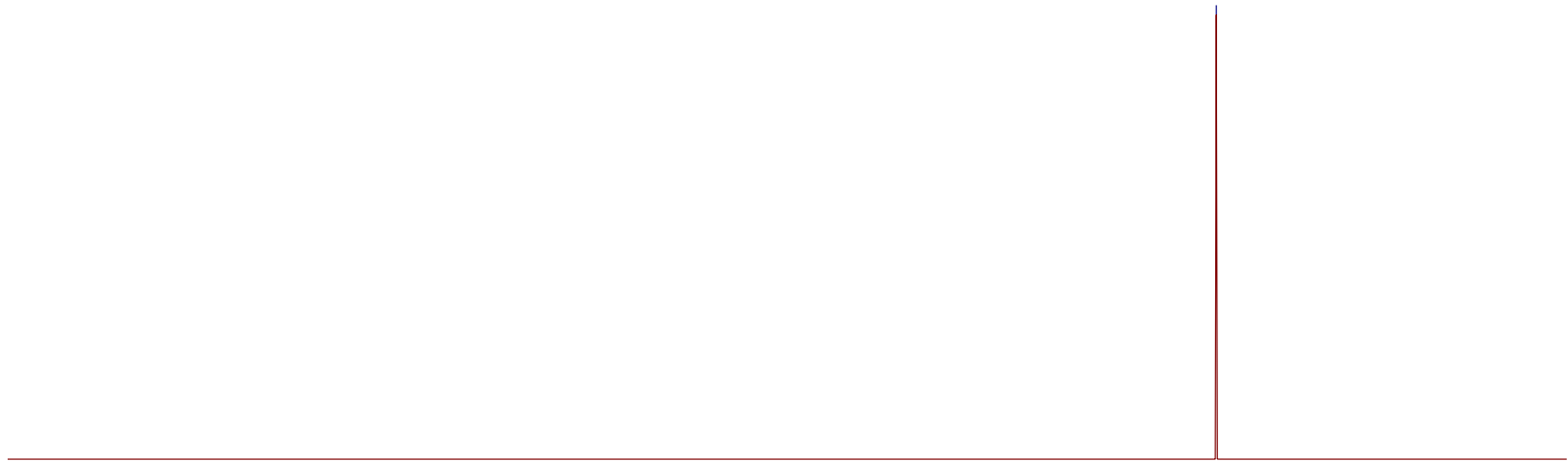
S-85







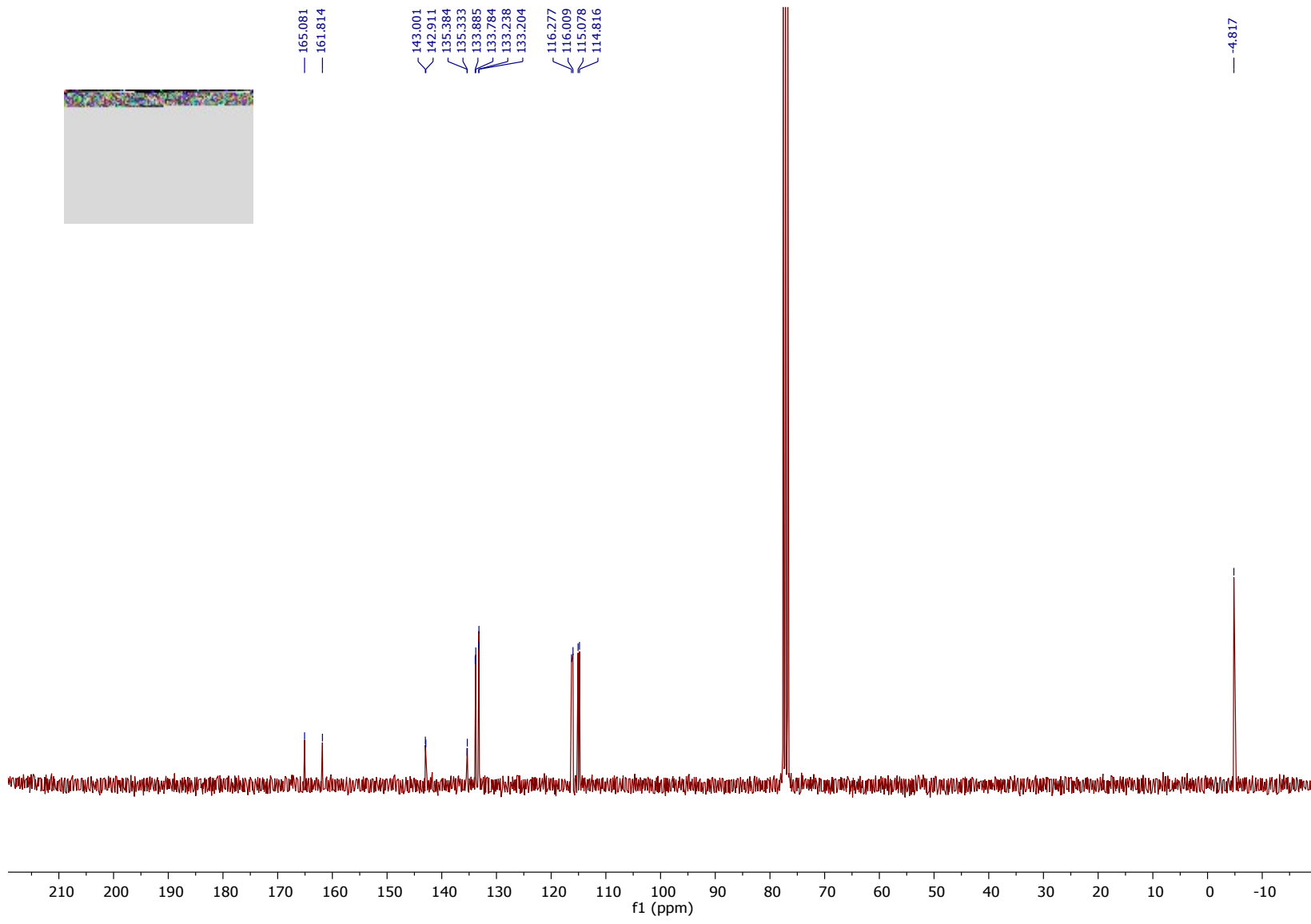
— -114.209

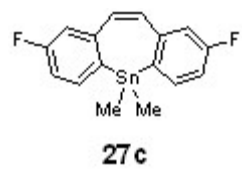


10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150  
f1 (ppm)

S-88

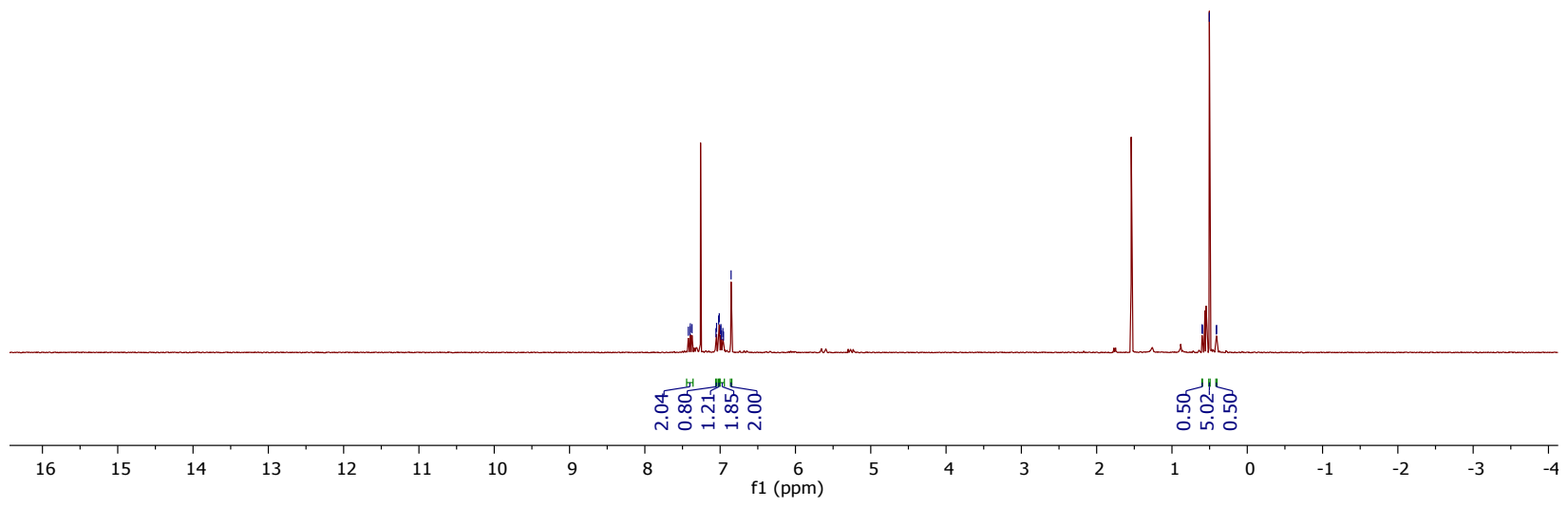


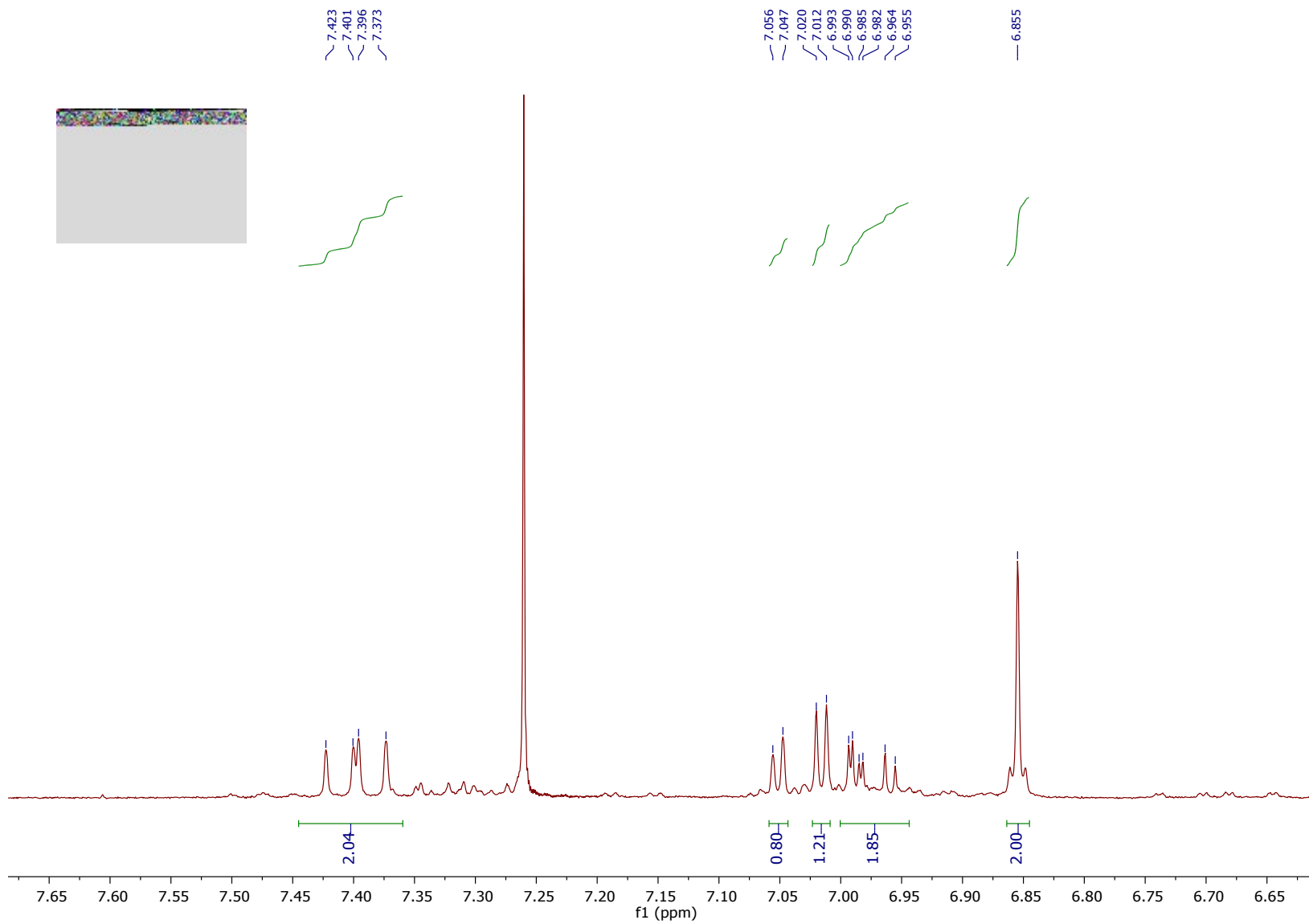




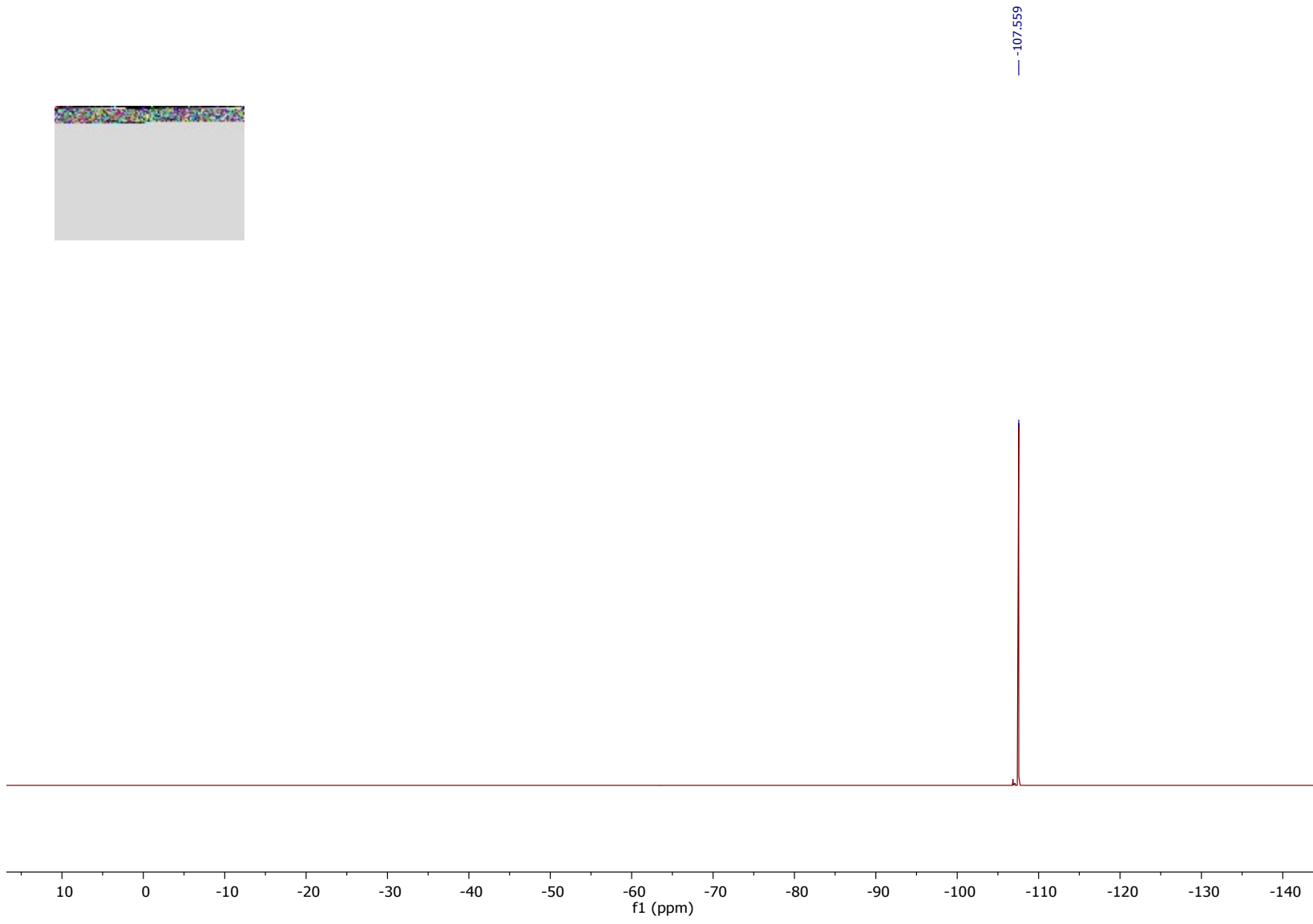
7.423  
7.401  
7.396  
7.373  
7.056  
7.047  
7.020  
7.012  
6.993  
6.990  
6.985  
6.982  
6.964  
6.955  
6.855

0.600  
0.596  
0.504  
0.411  
0.407

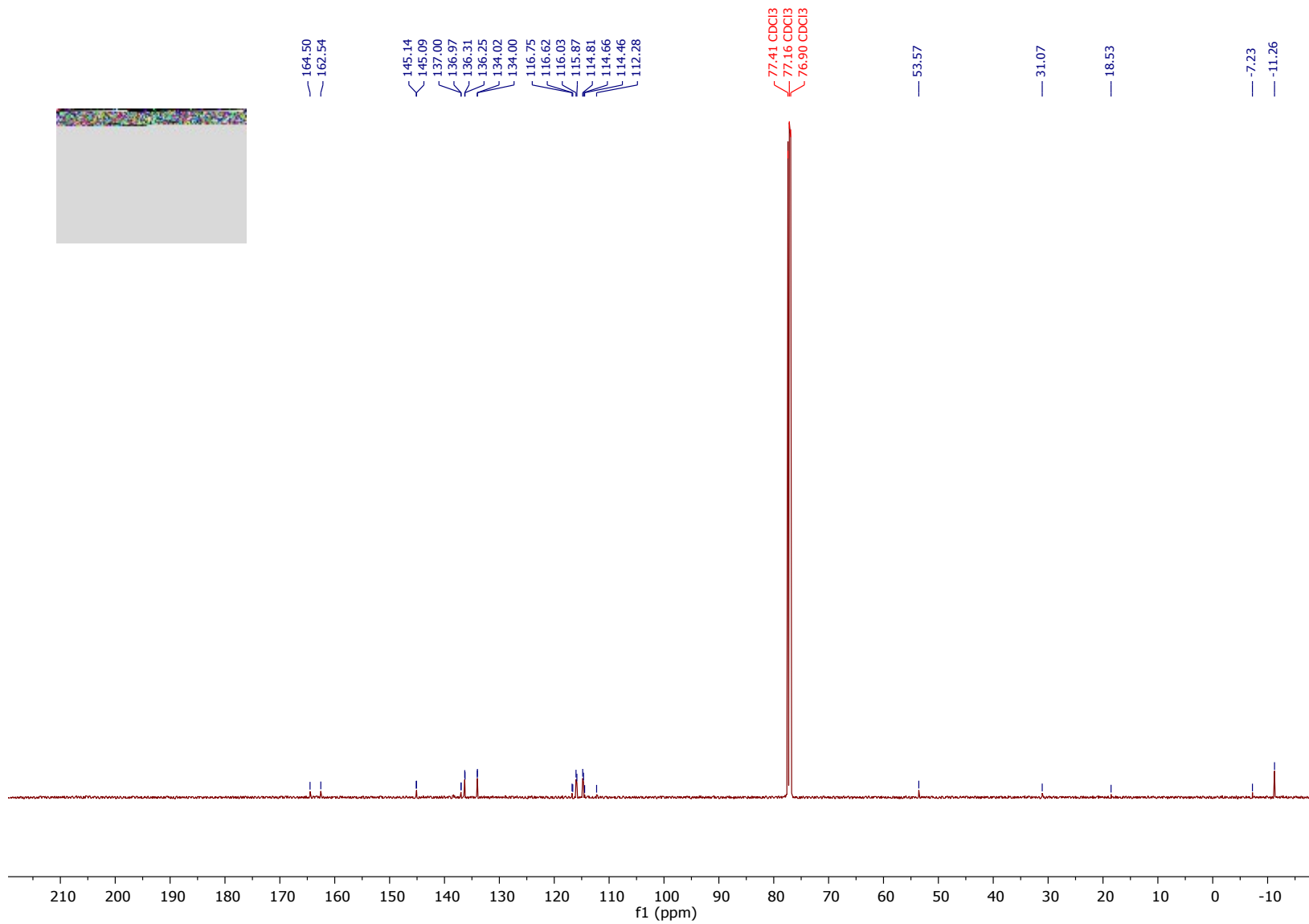




S-91



S-92



S-93

