

Synthesis of Polysubstituted Isoquinolines and Related Fused Pyridines from Alkenyl Boronic Esters via a Copper-Catalyzed Azidation/Aza-Wittig Condensation Sequence

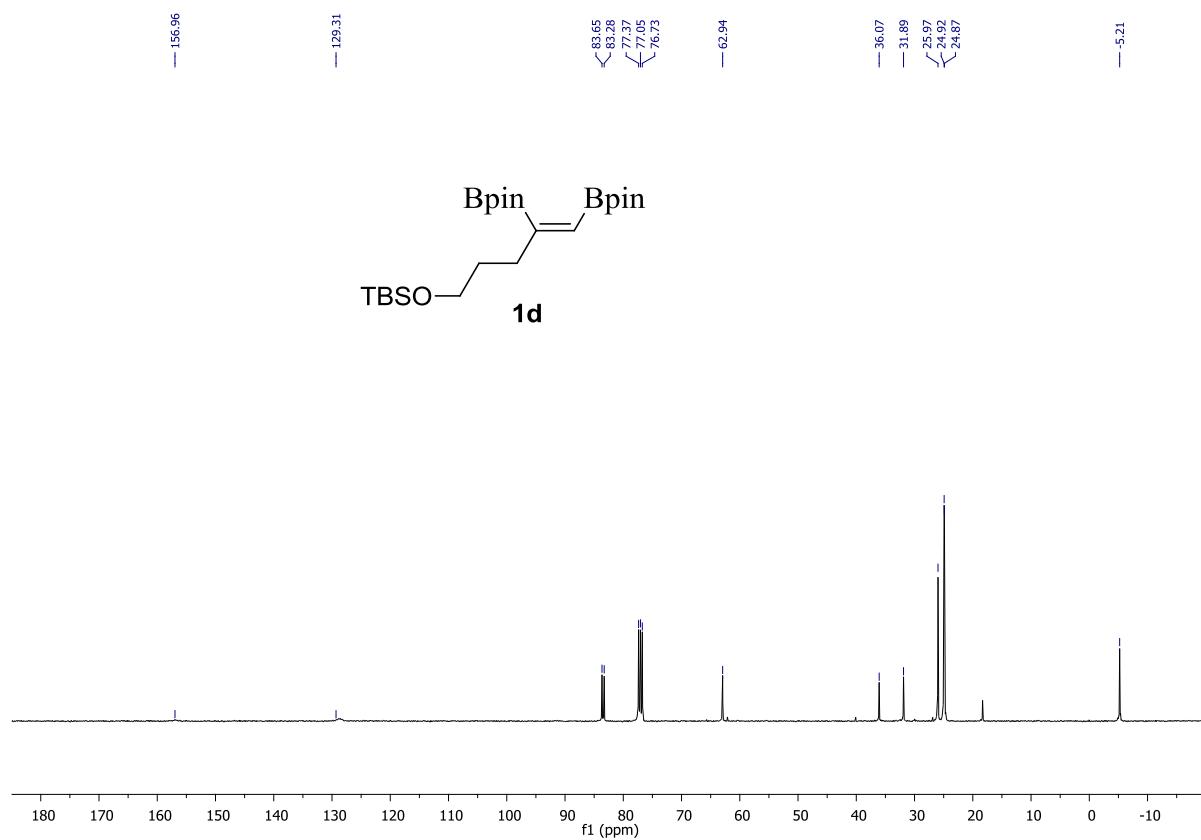
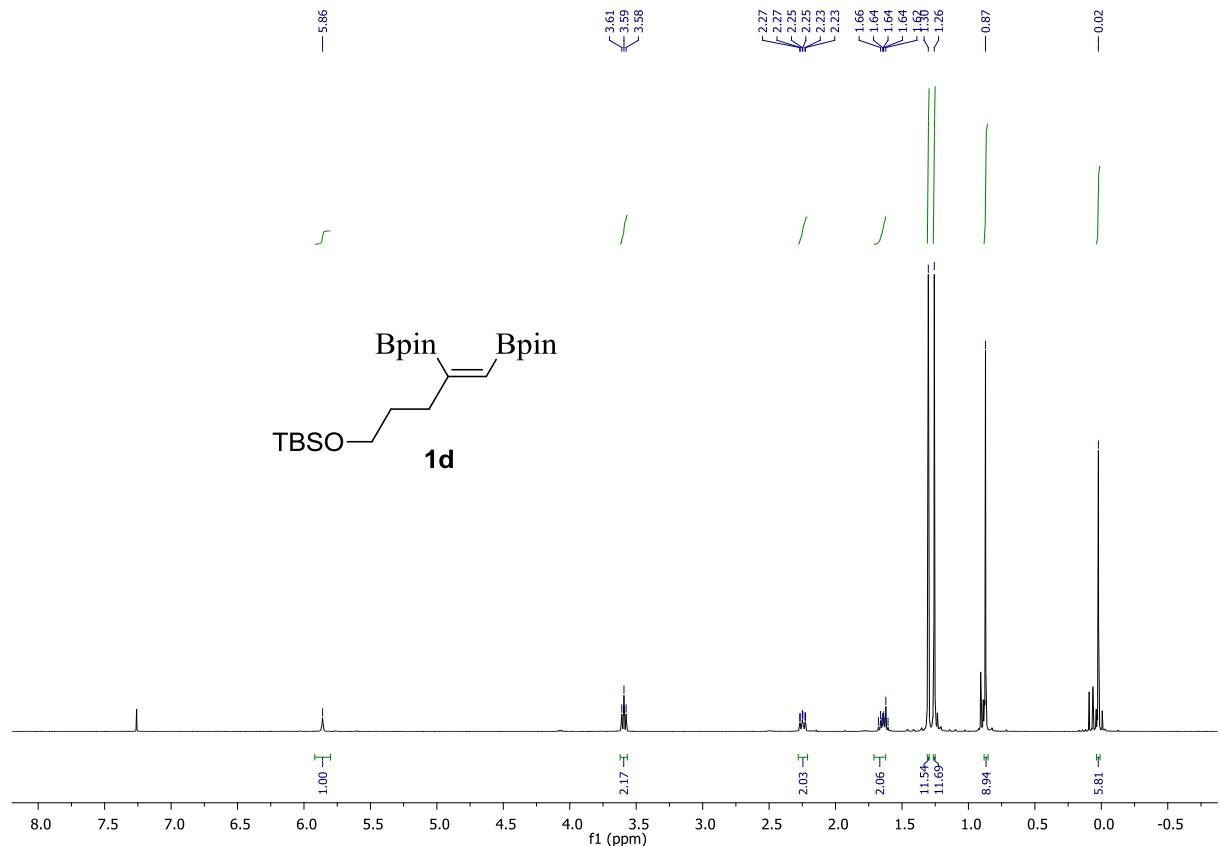
Vankudoth Jayaram,^a Tailor Sridhar,^a Gangavaram V. M. Sharma,*^a Fabienne Berrée,^b and Bertrand Carboni^{b*}

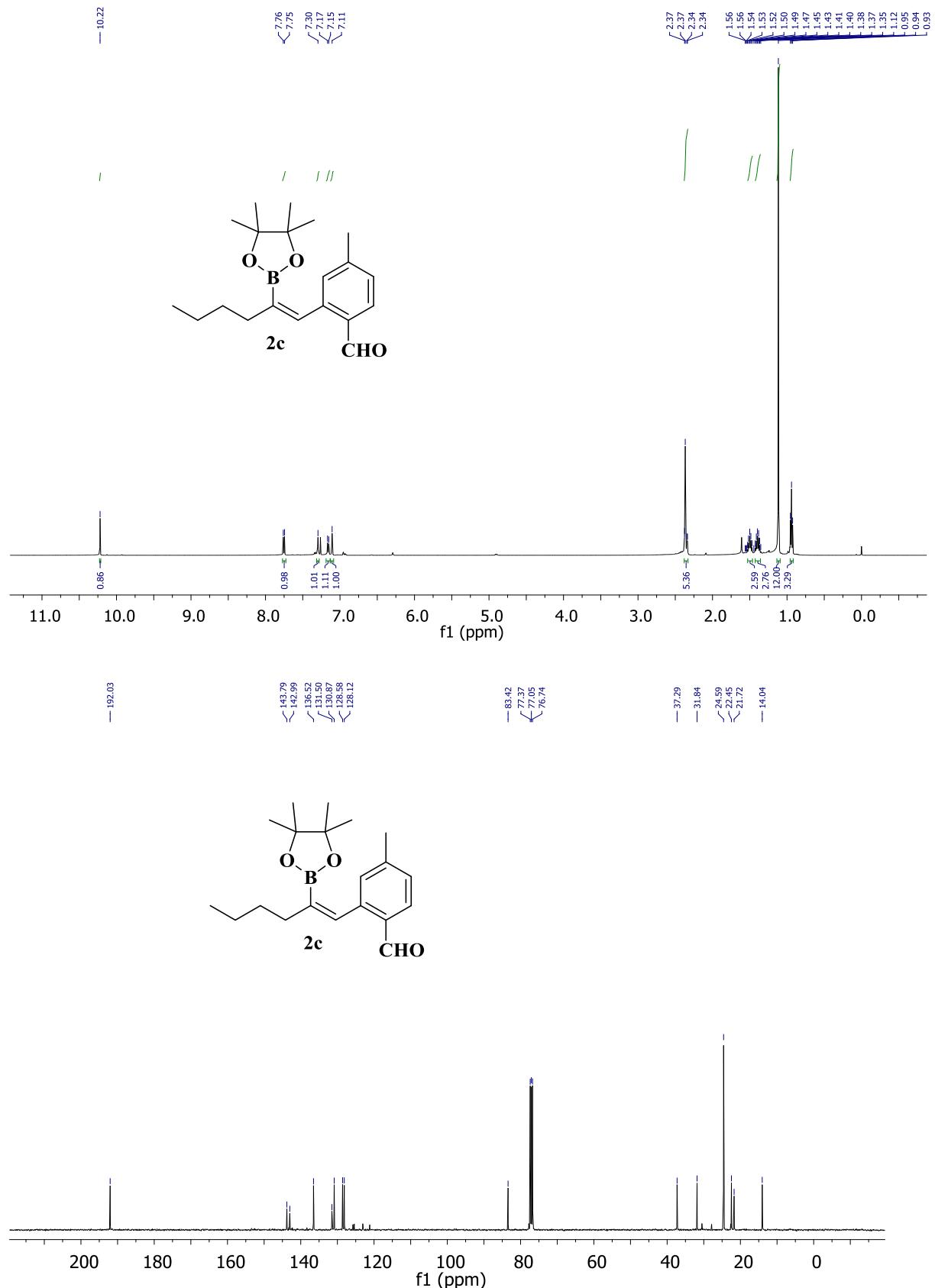
^a Organic and Biomolecular Chemistry Division, CSIR–Indian Institute of Chemical Technology, Tarnaka, Hyderabad 500 007, India.

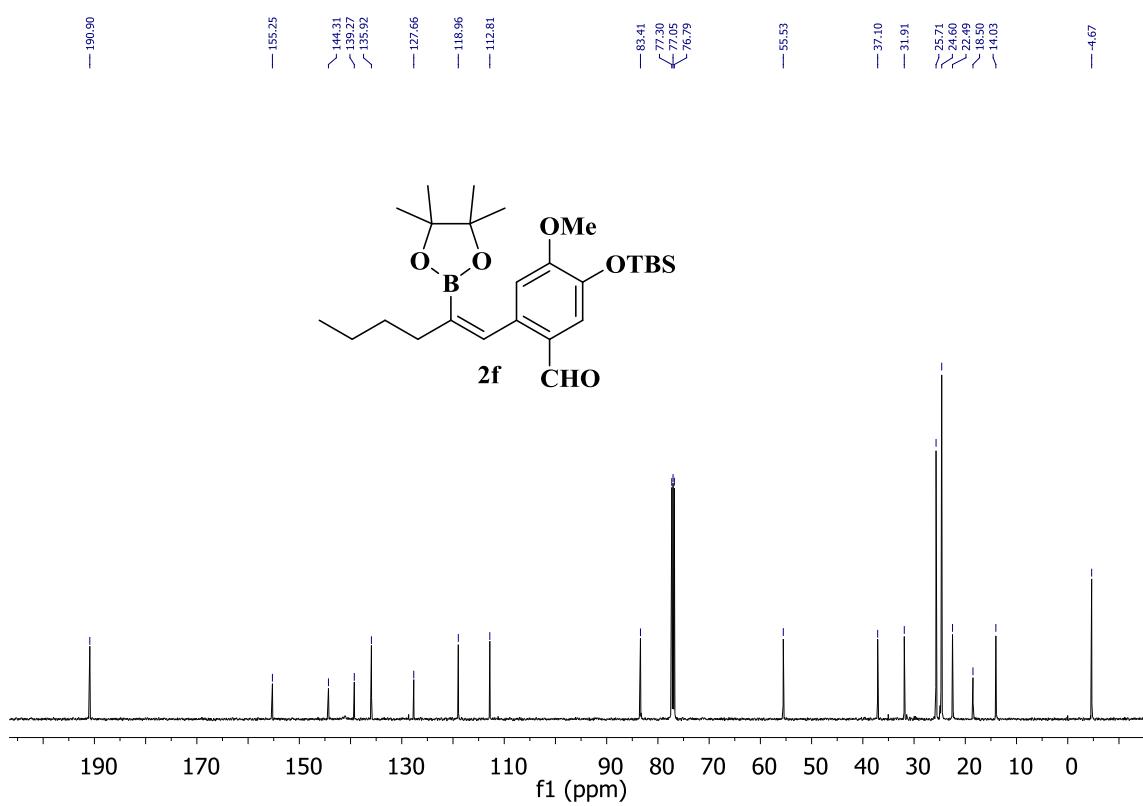
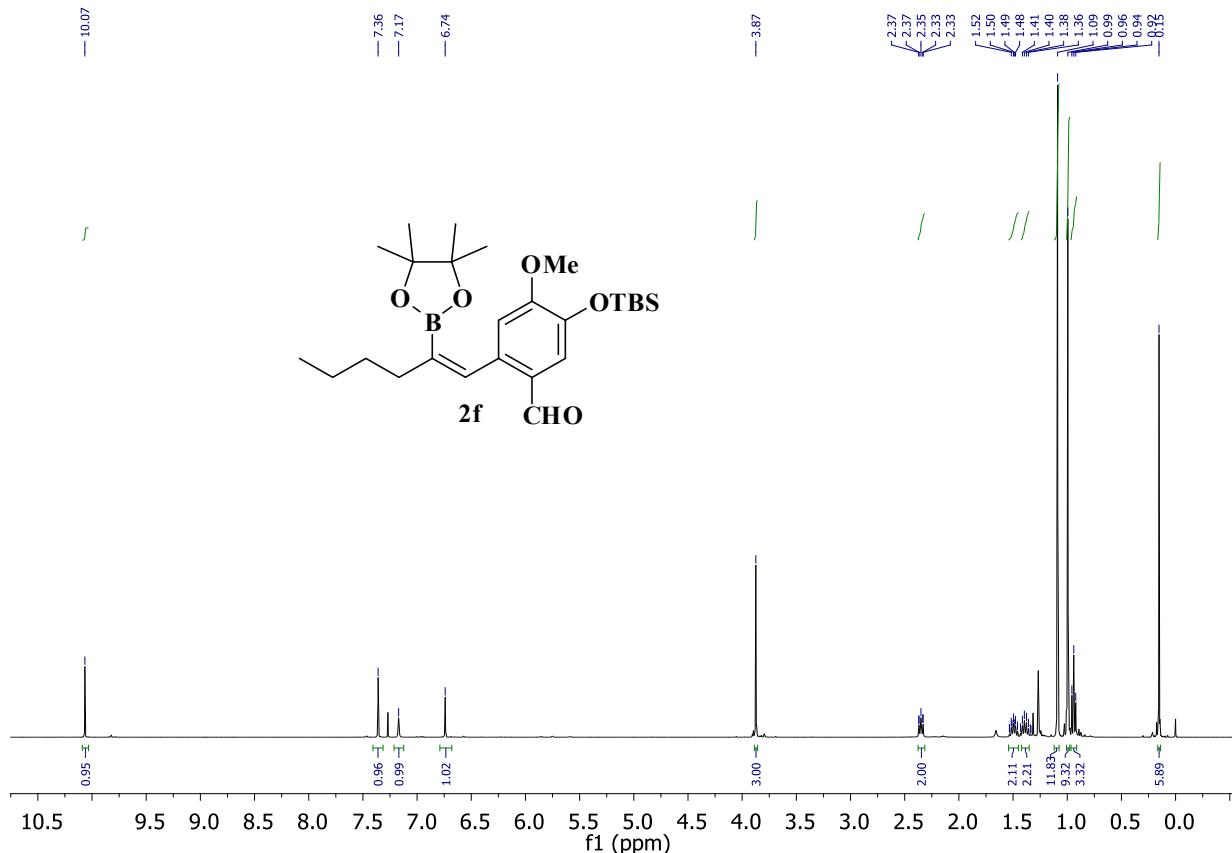
^b Institut des Sciences Chimiques de Rennes, UMR 6226 CNRS-Université de Rennes 1, 263 Avenue du Général Leclerc, Campus de Beaulieu, 35042 Rennes Cedex, France.
esmvee@iict.res.in (G.V.M.S.).
bertrand.carboni@univ-rennes1.fr (B.C.).

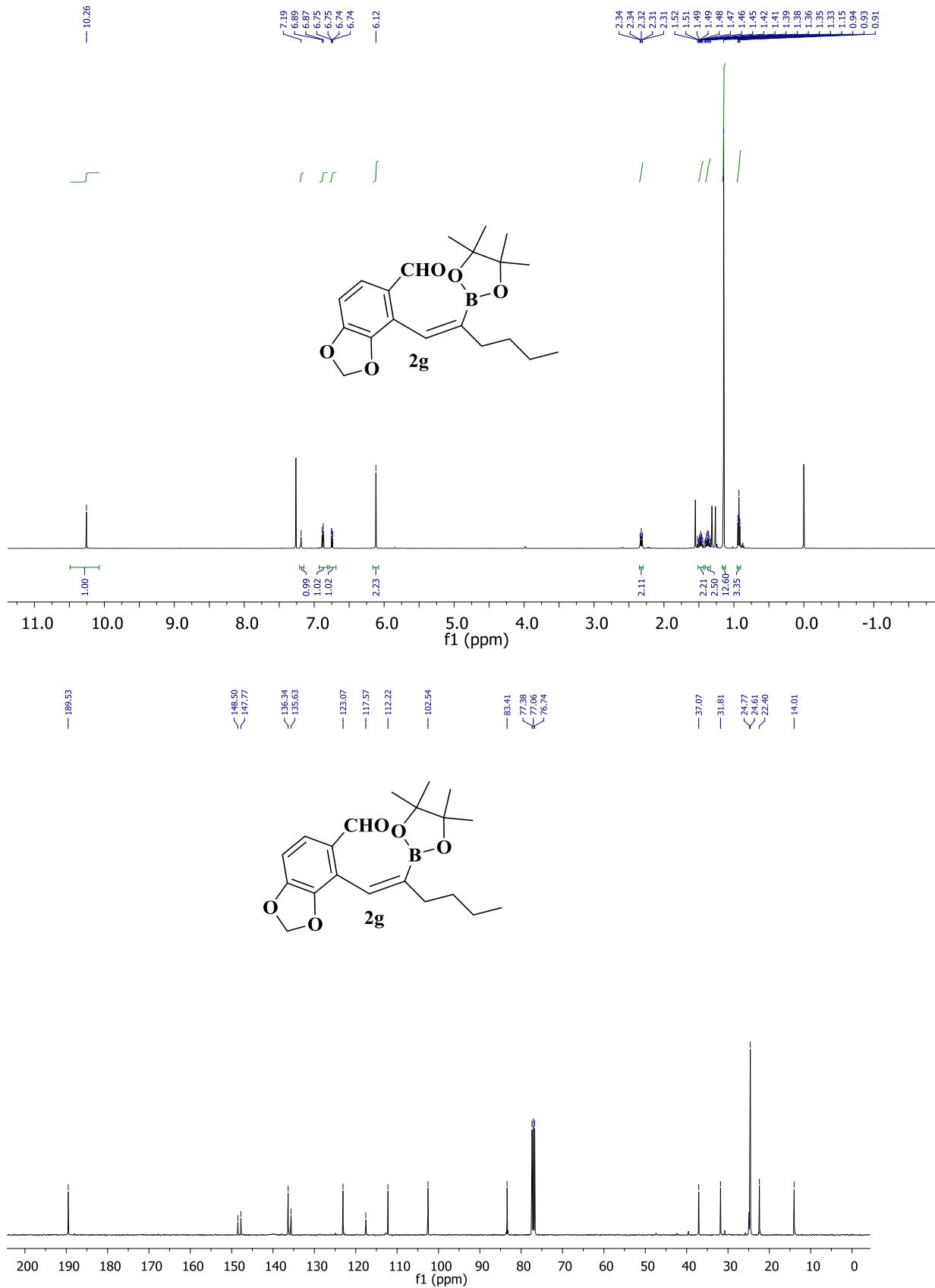
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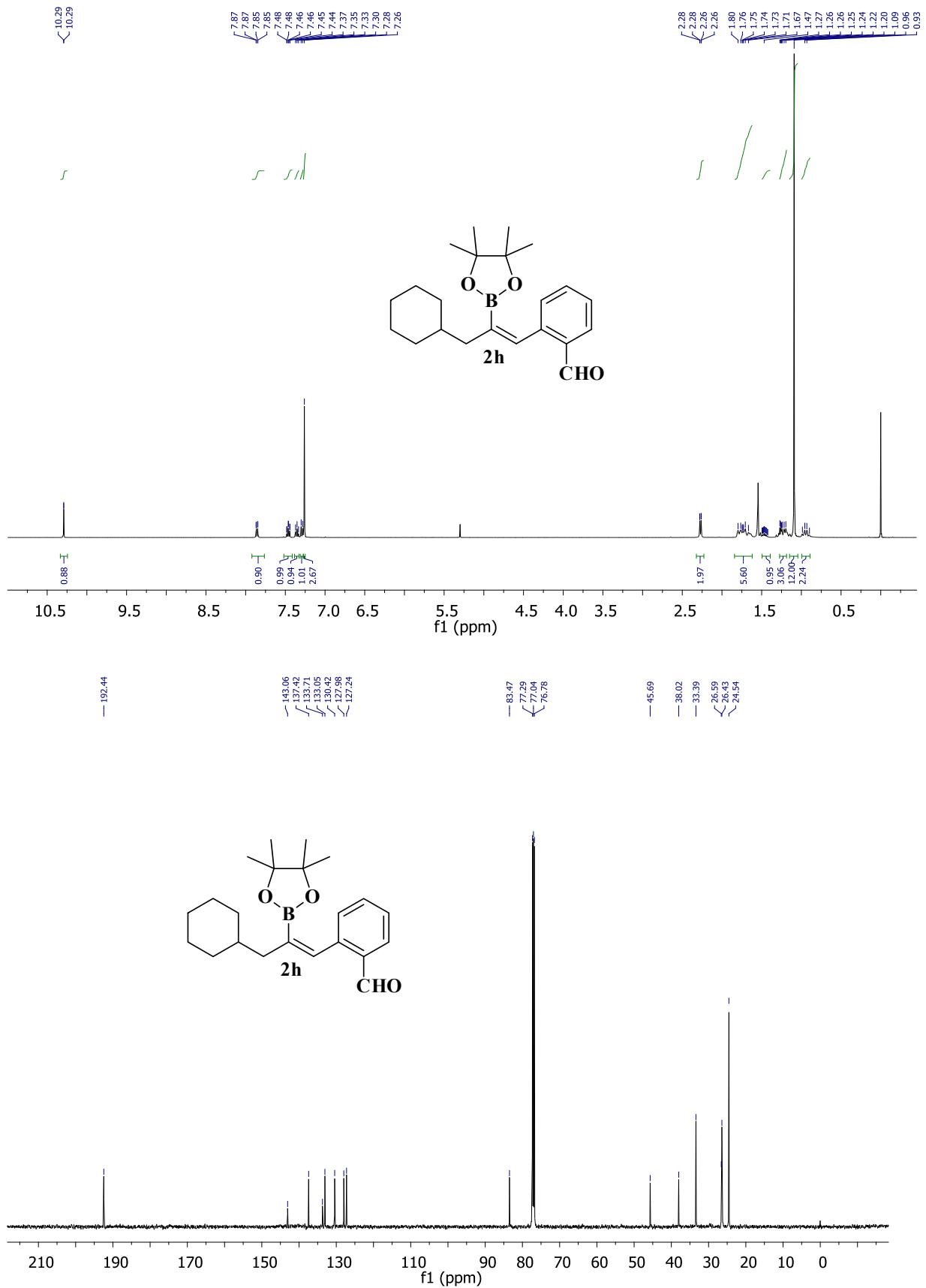
¹ H and ¹³ C spectra of compound 1d	S2
¹ H and ¹³ C spectra of compounds 2	S3
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¹ H and ¹³ C spectra of compounds 4	S40
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¹ H and ¹³ C spectra of compounds 7	S65
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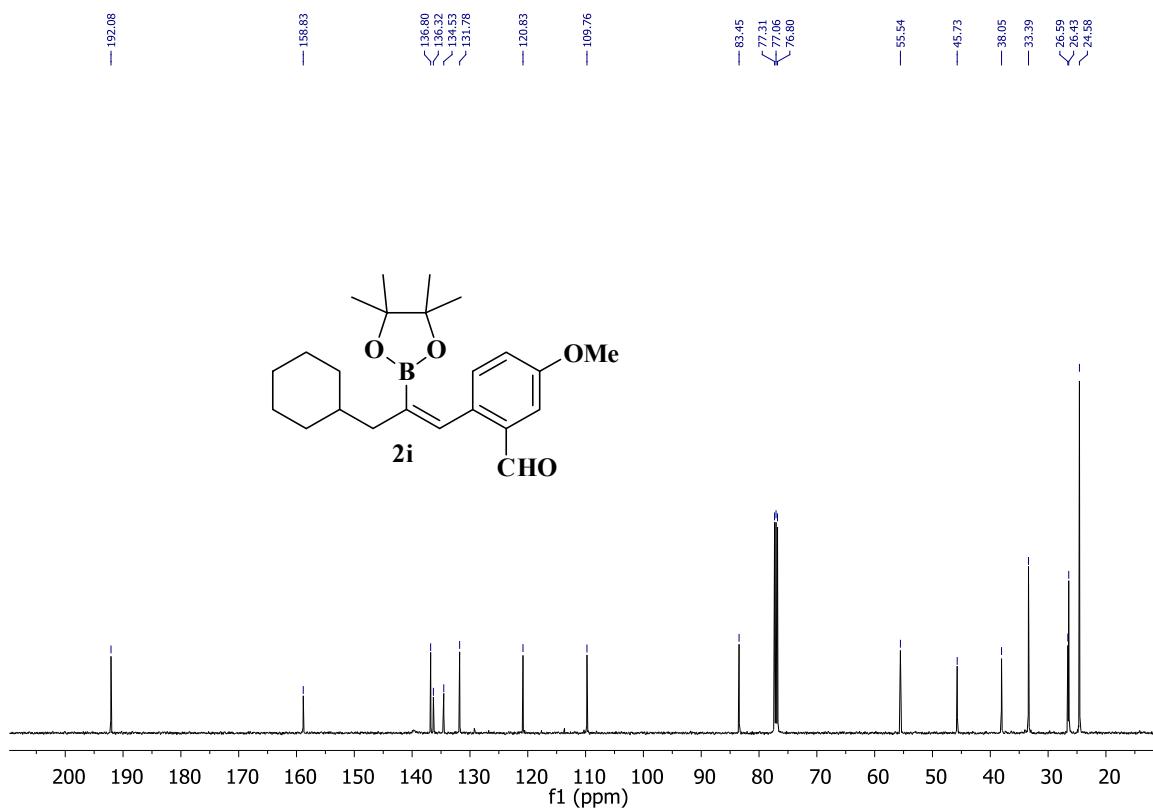
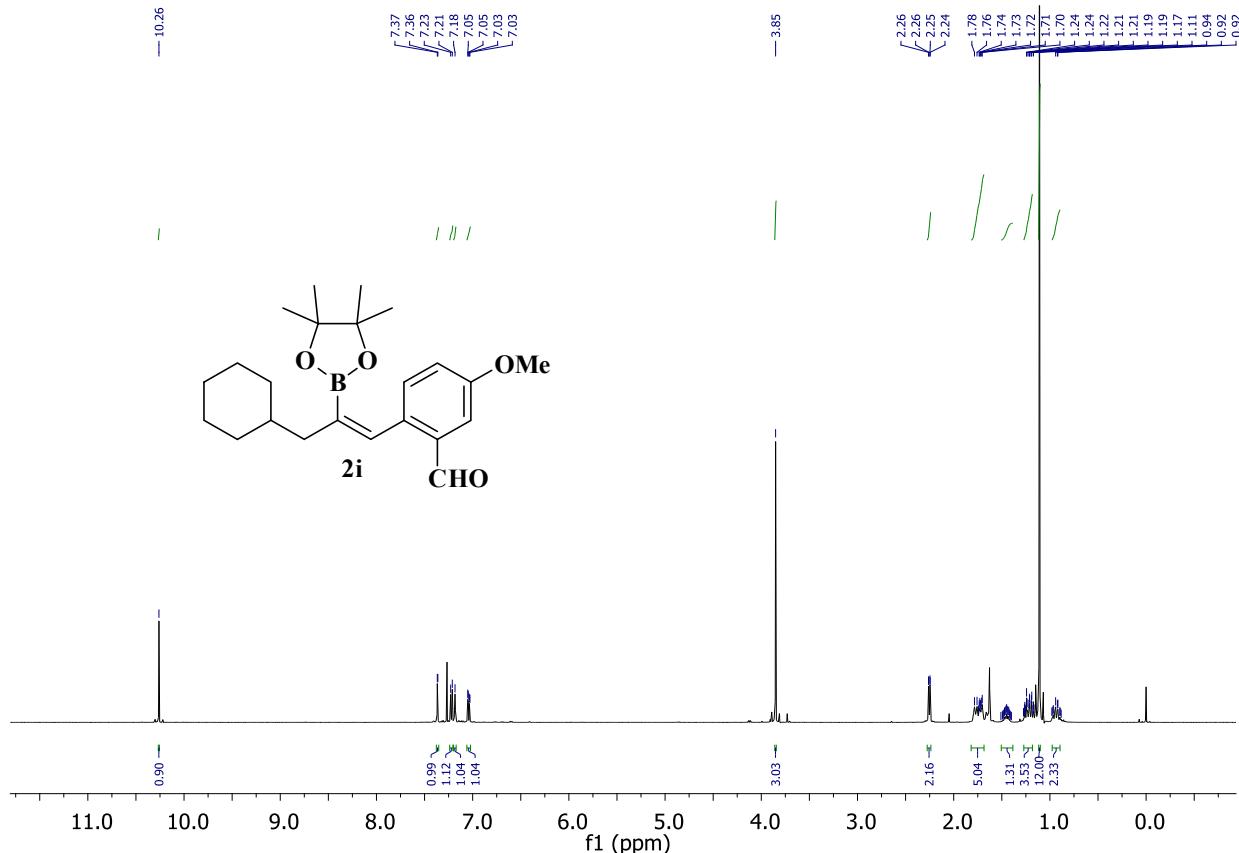


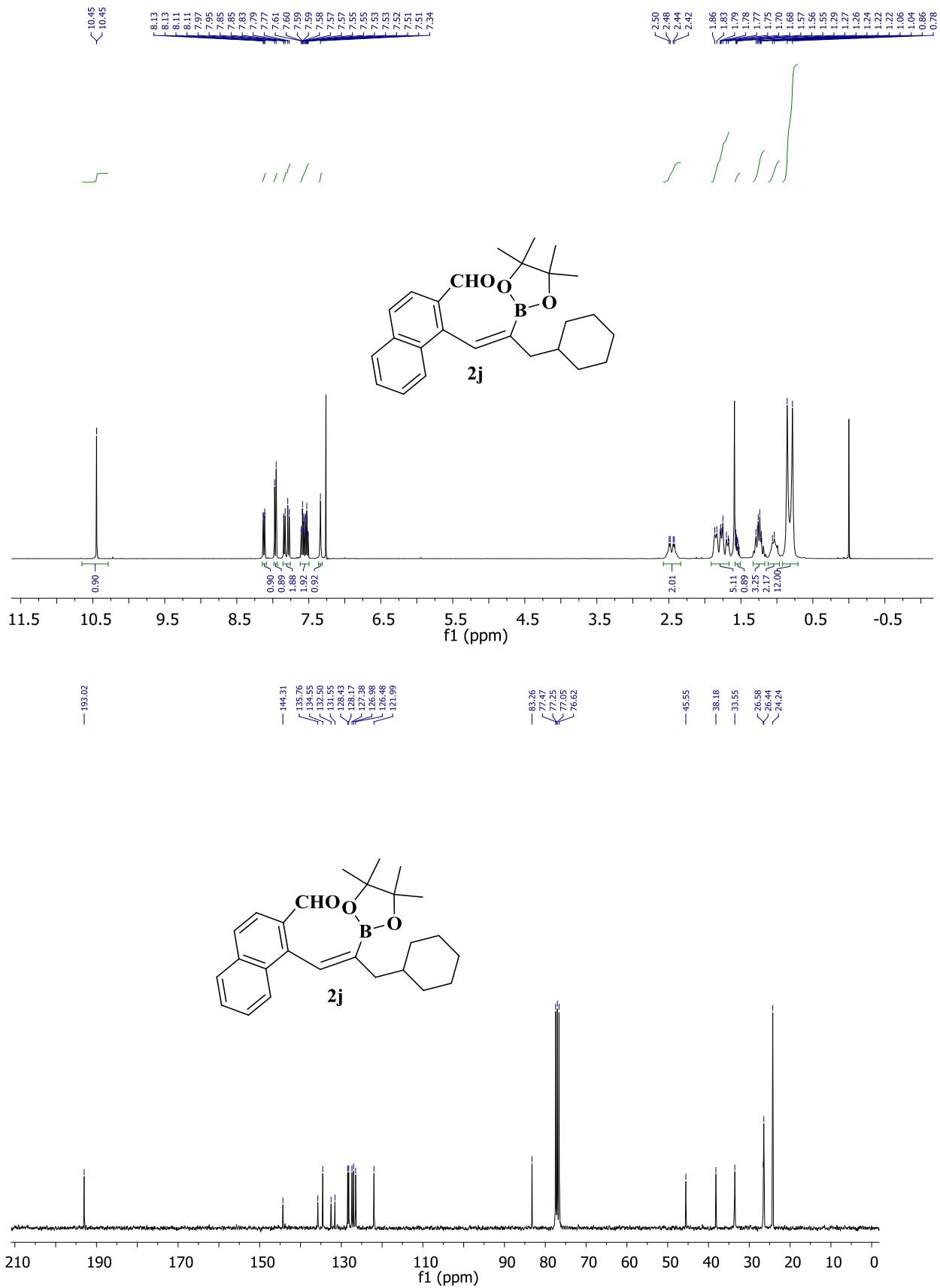


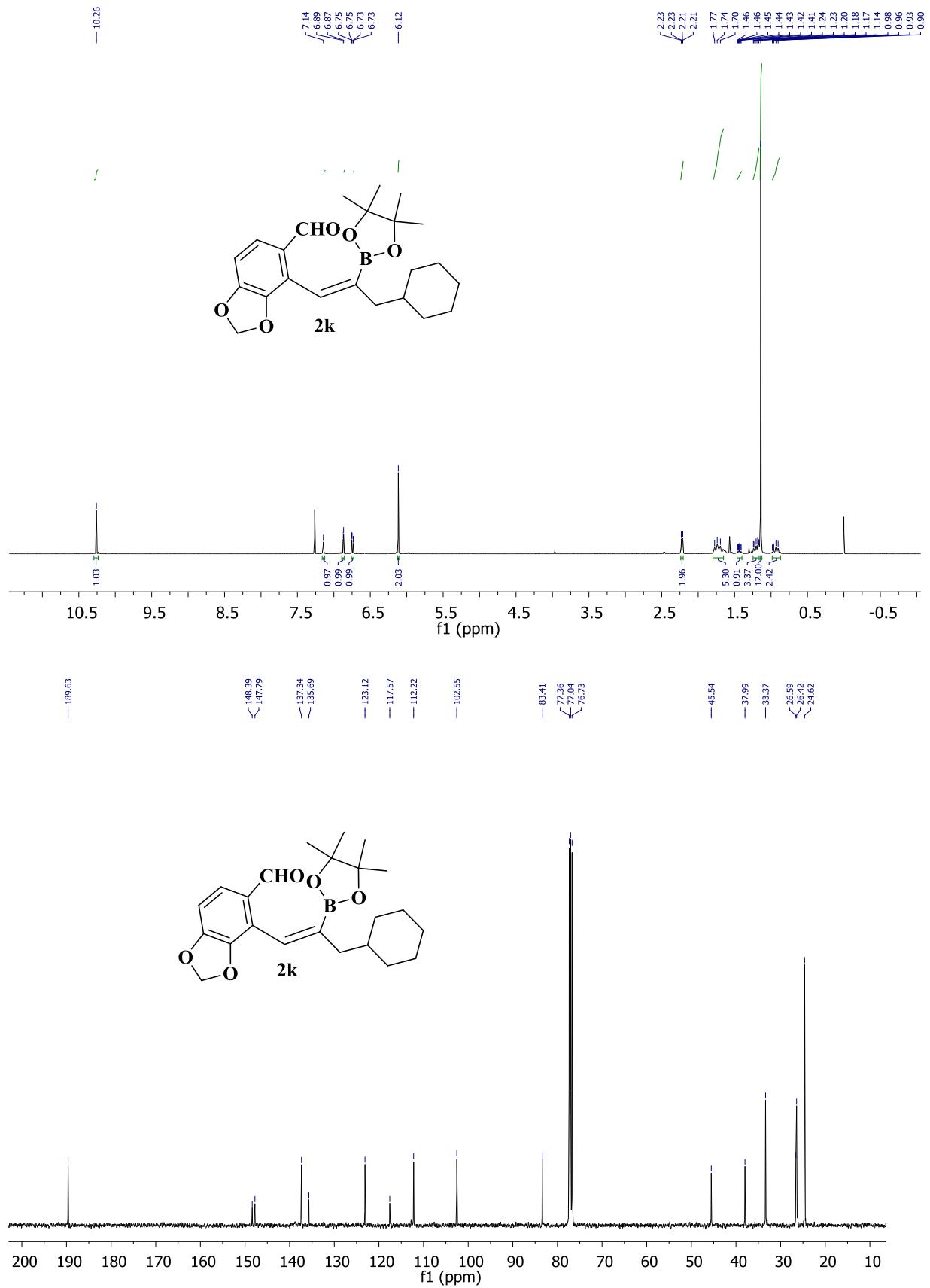


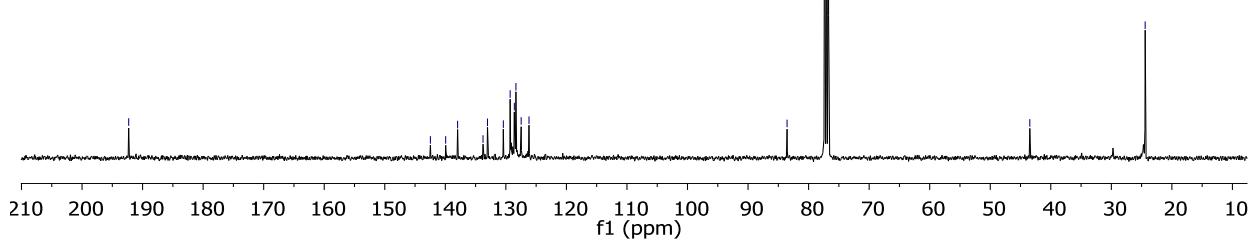
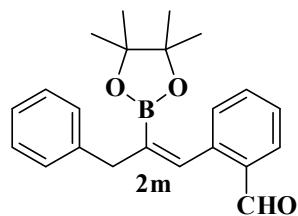
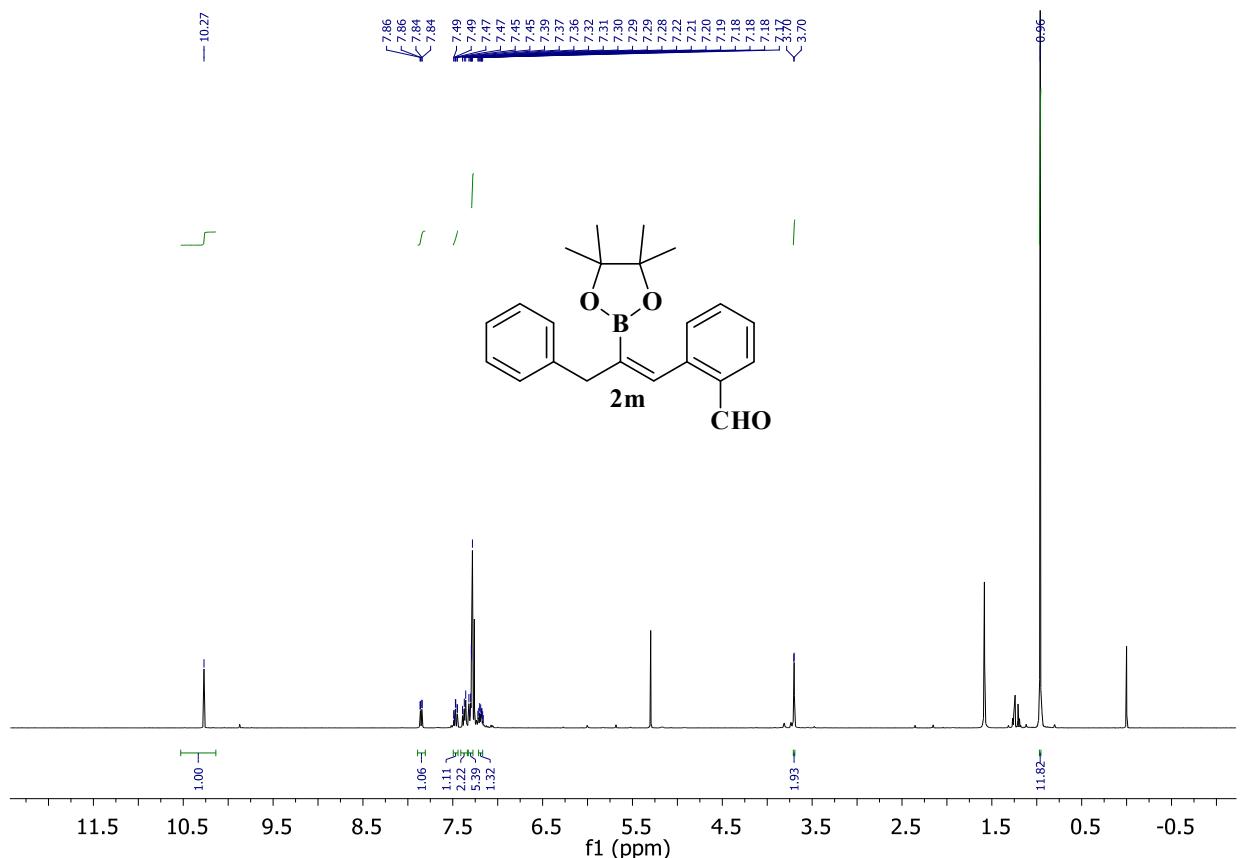


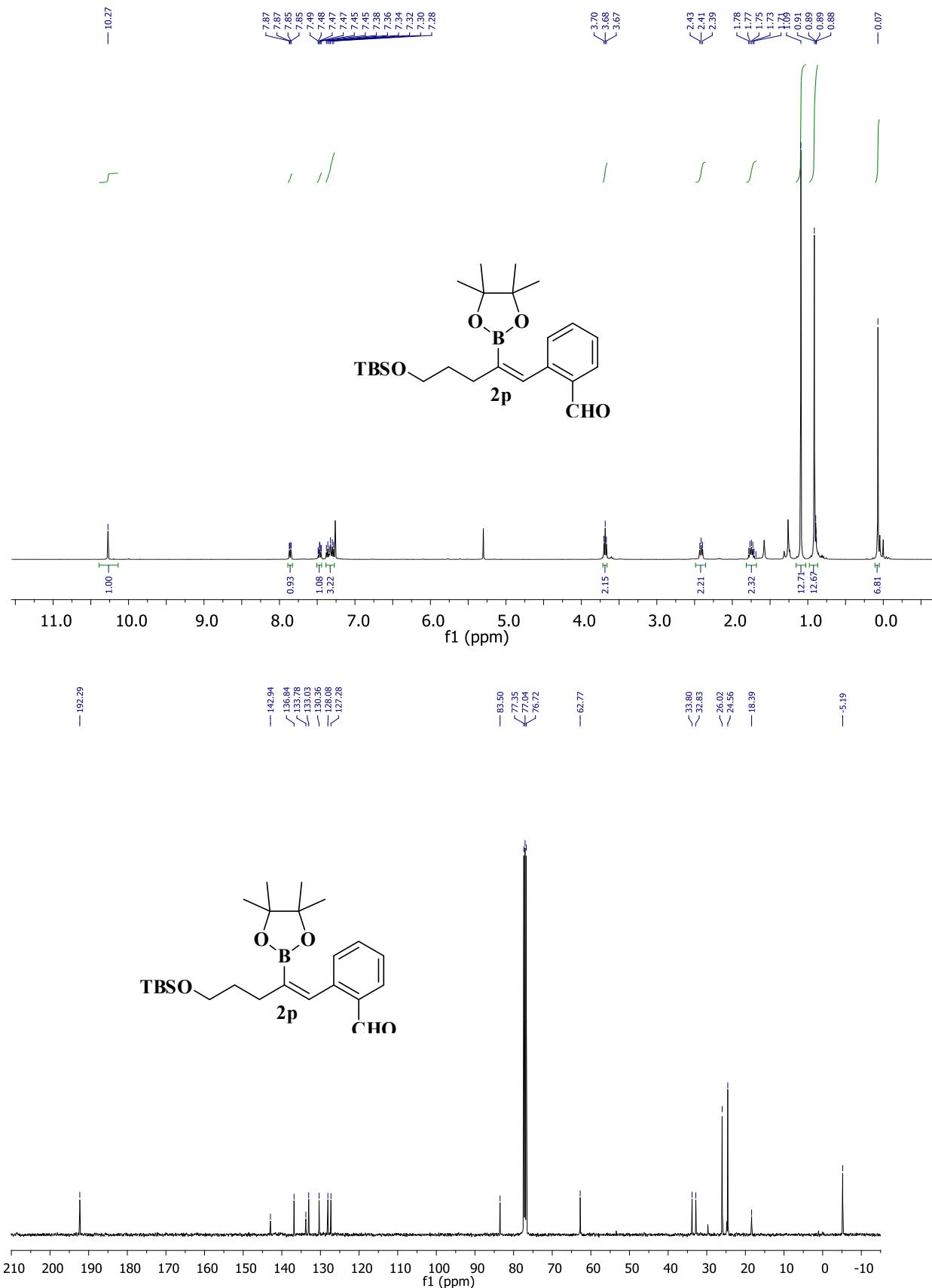


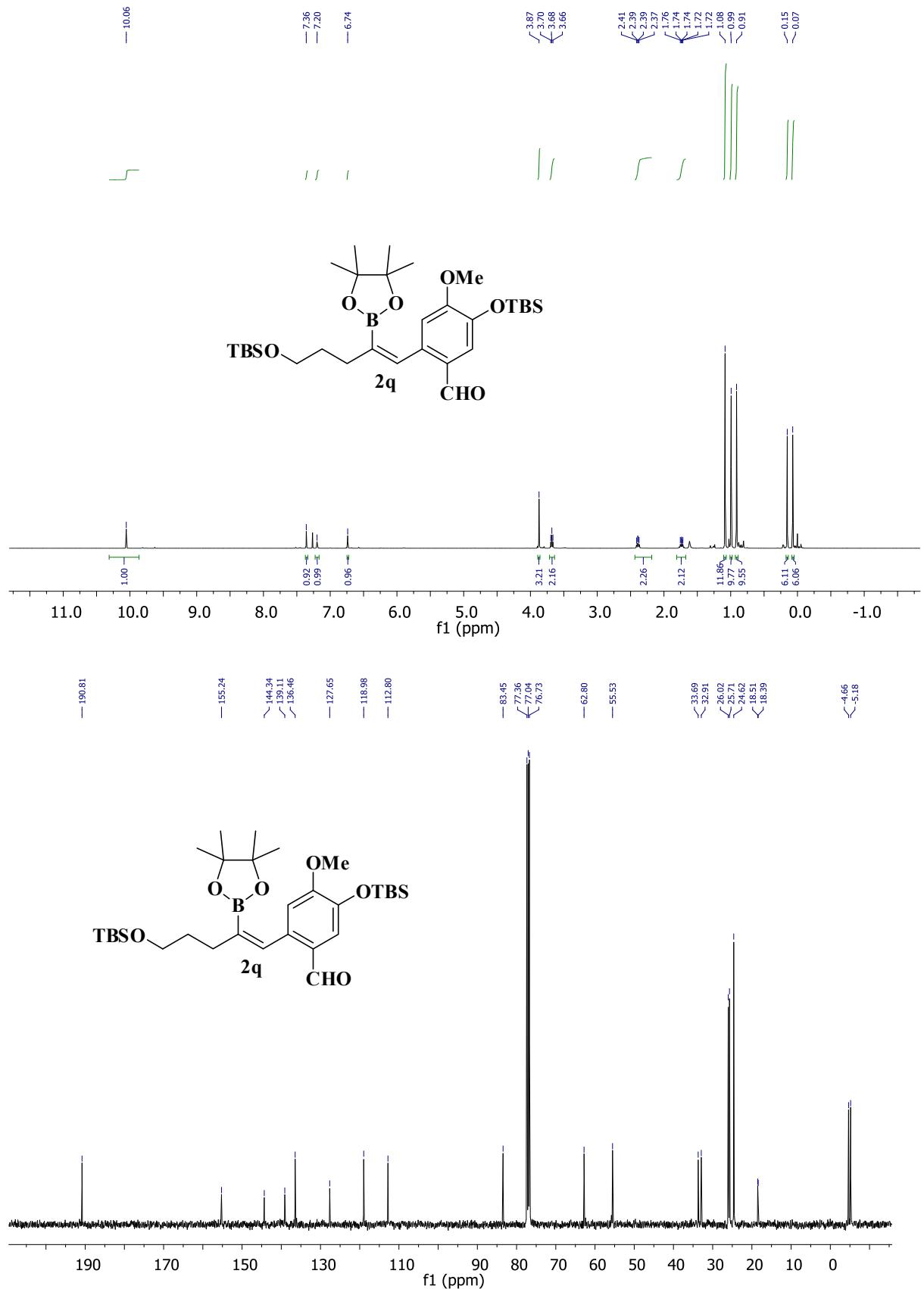


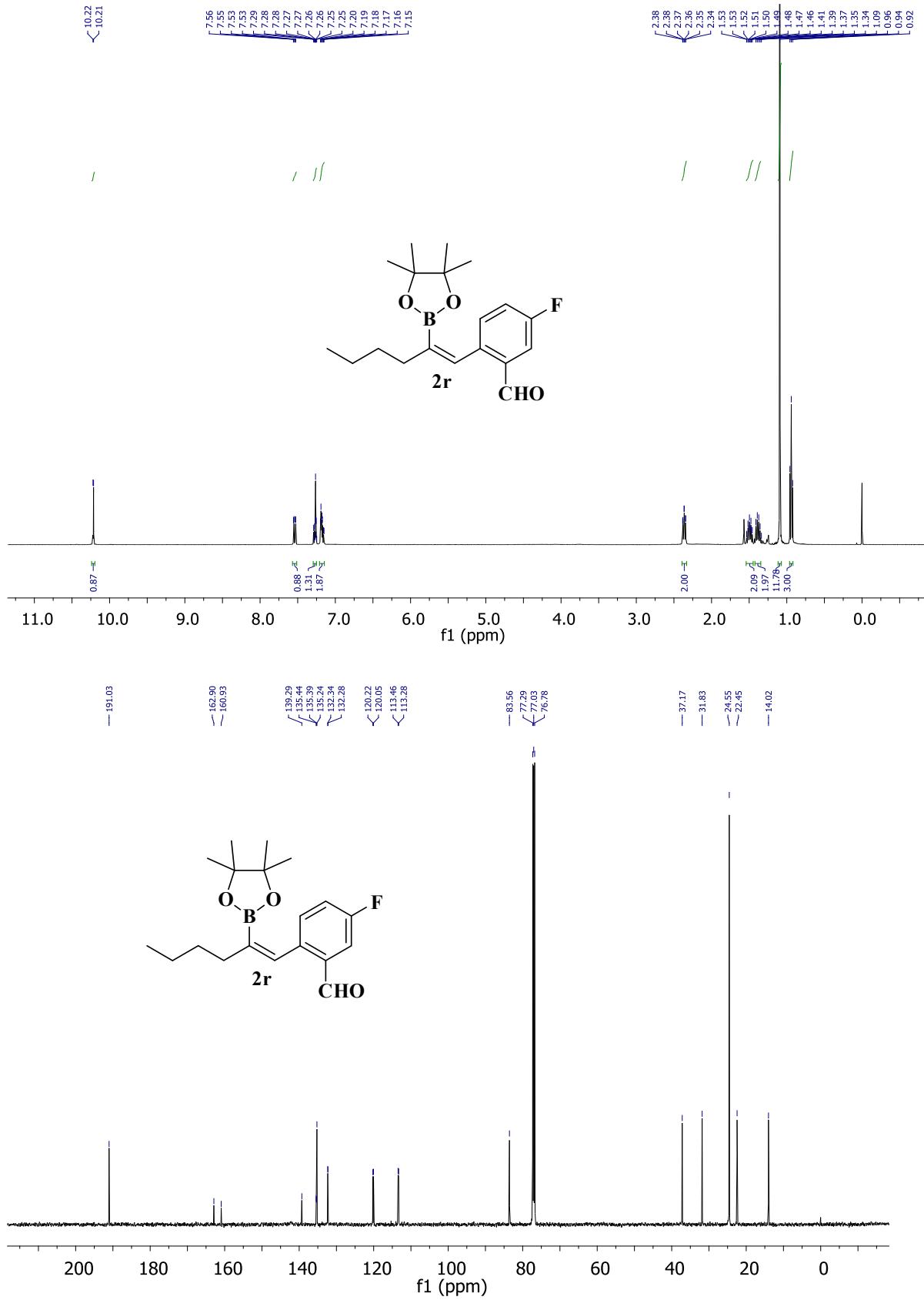


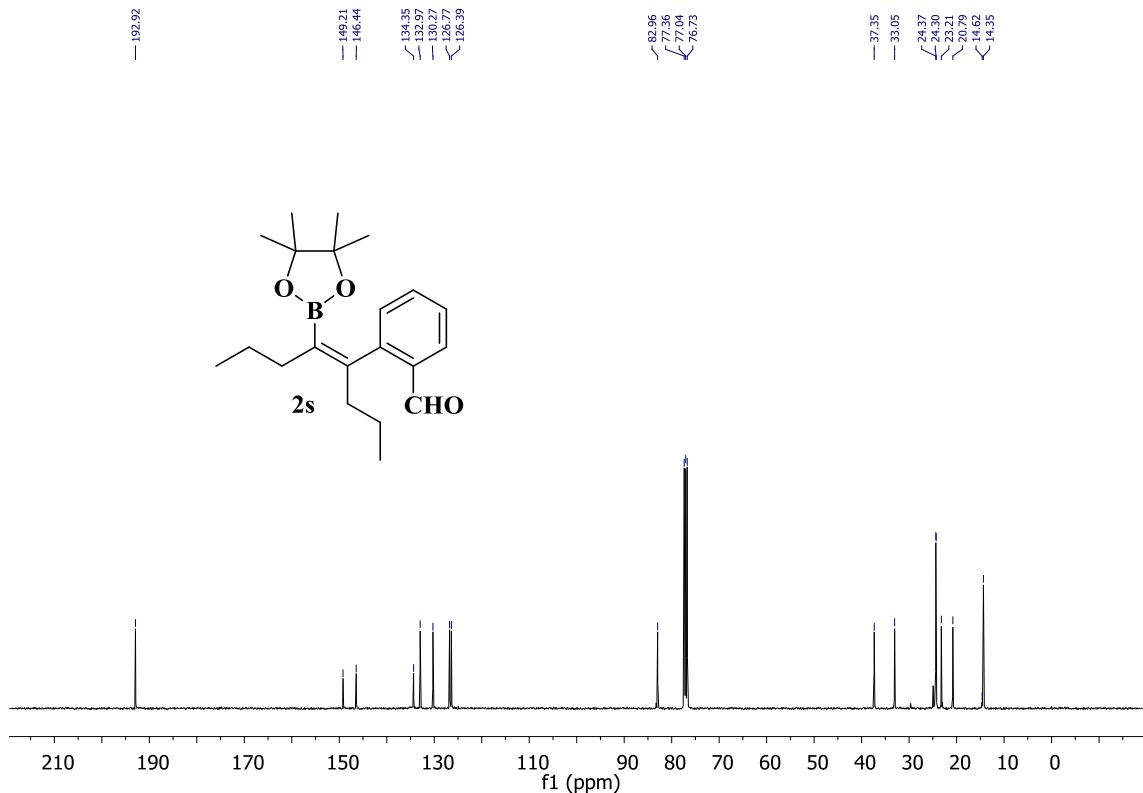
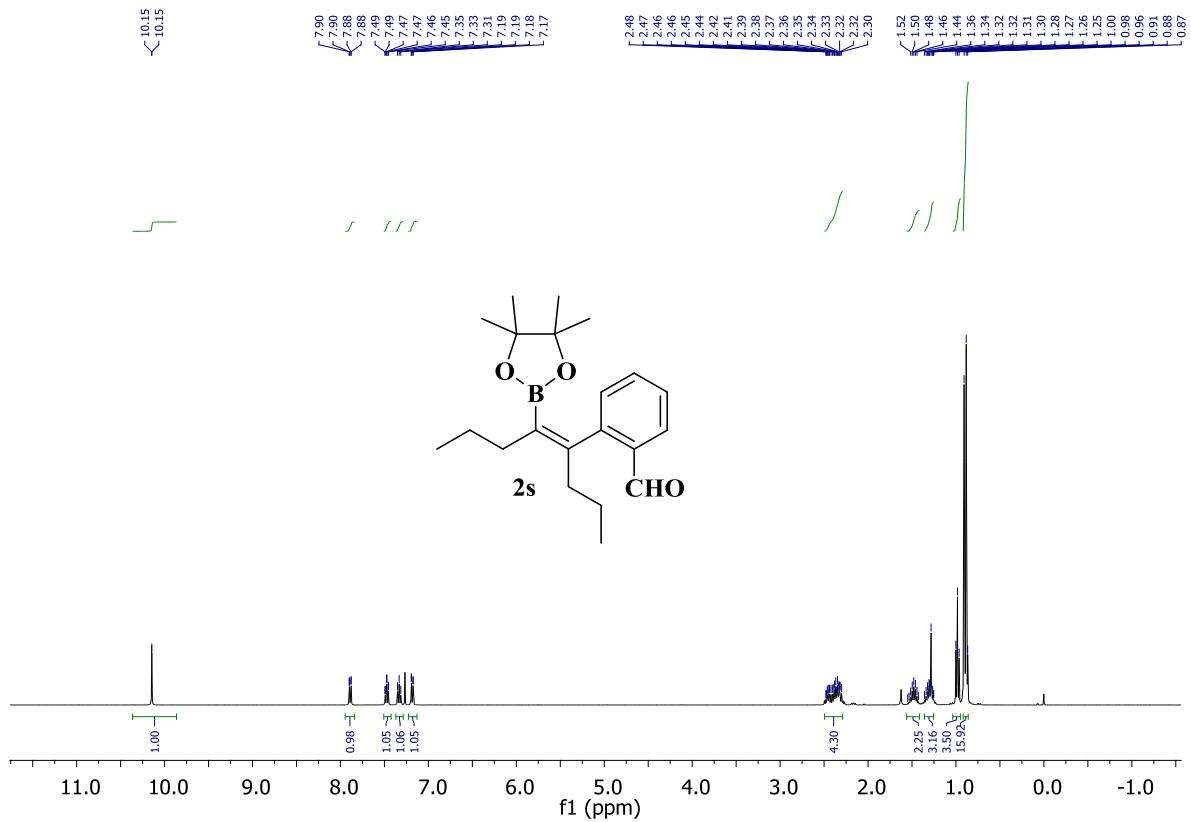


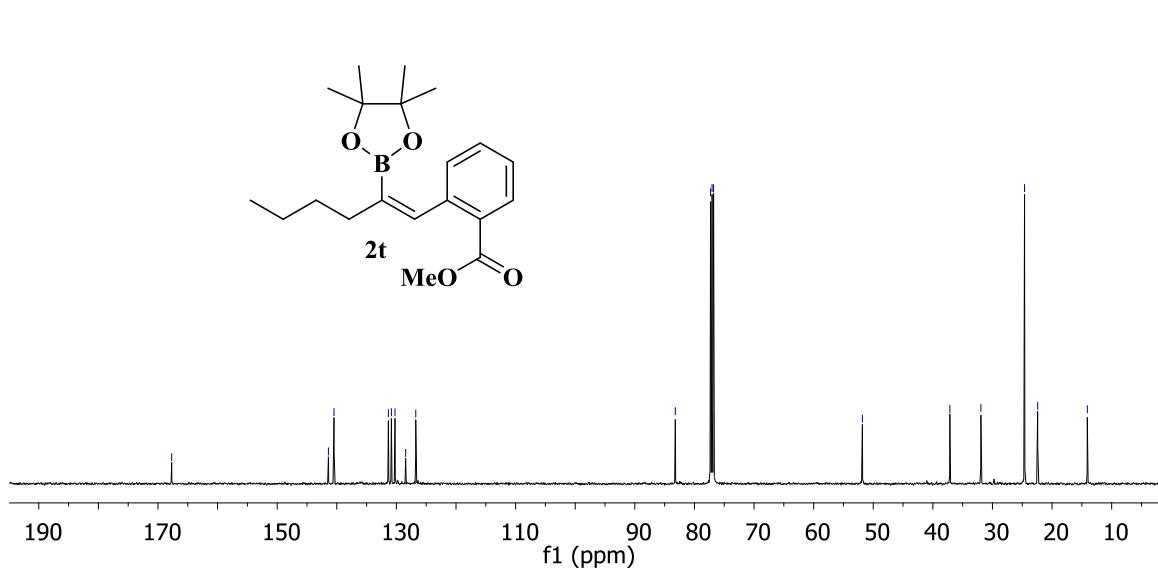
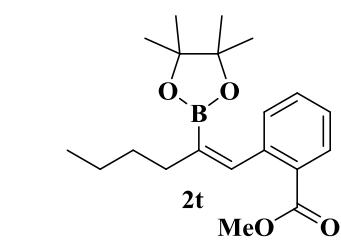
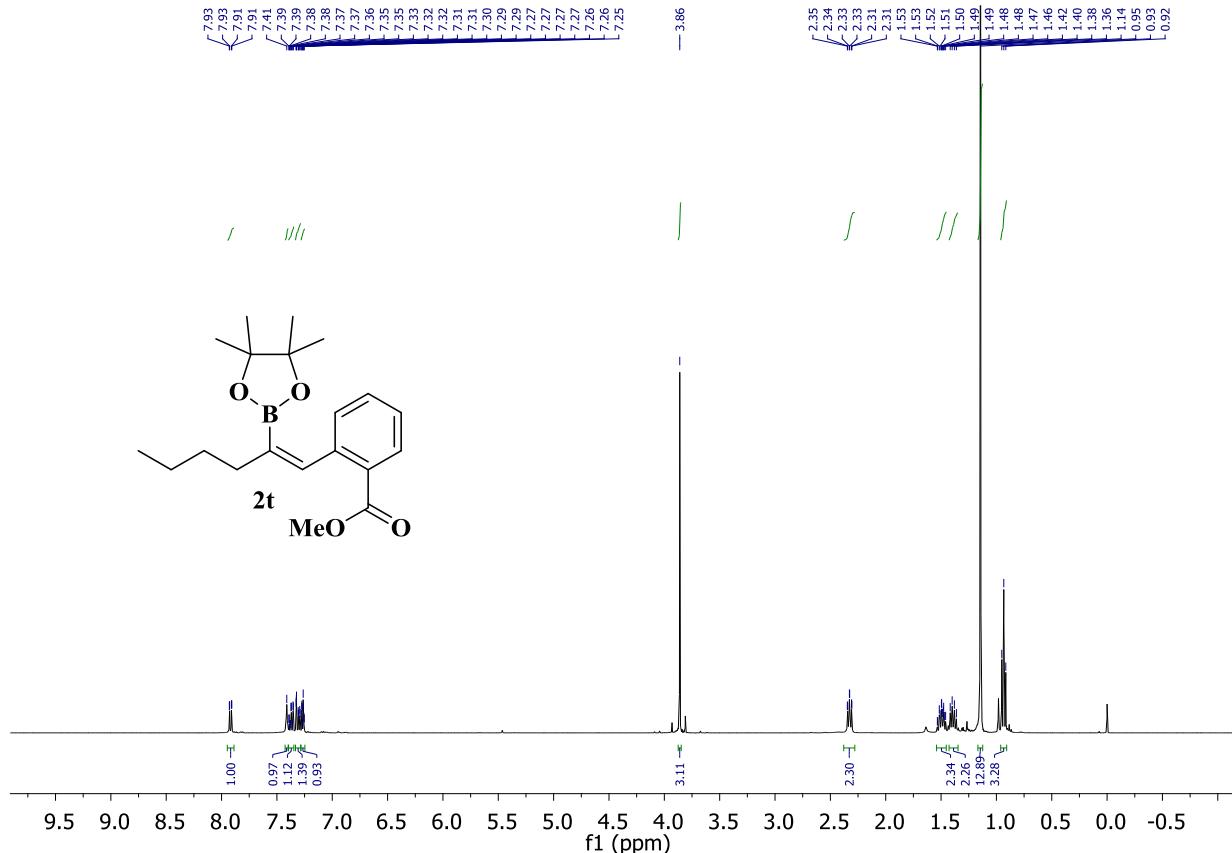


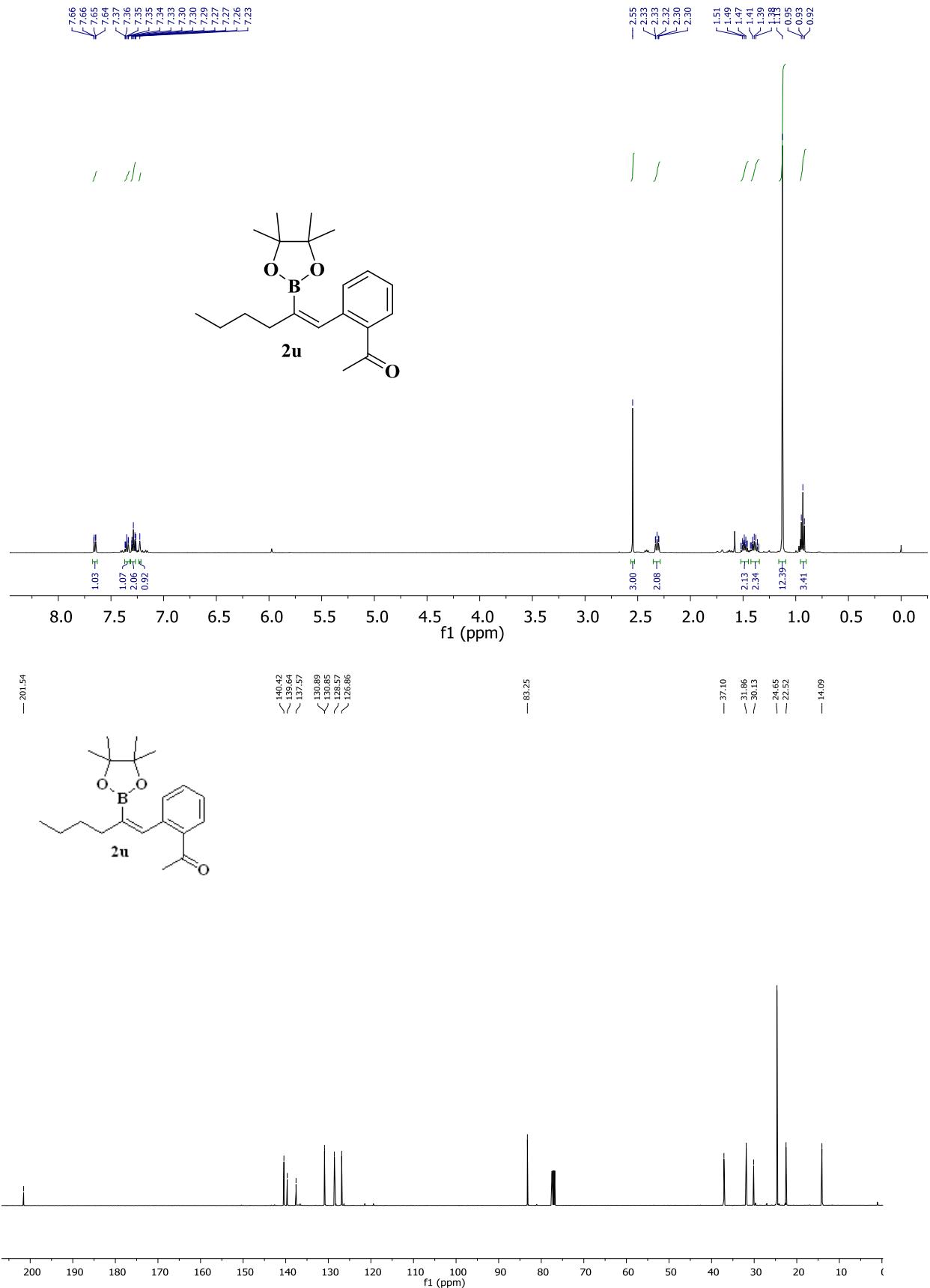


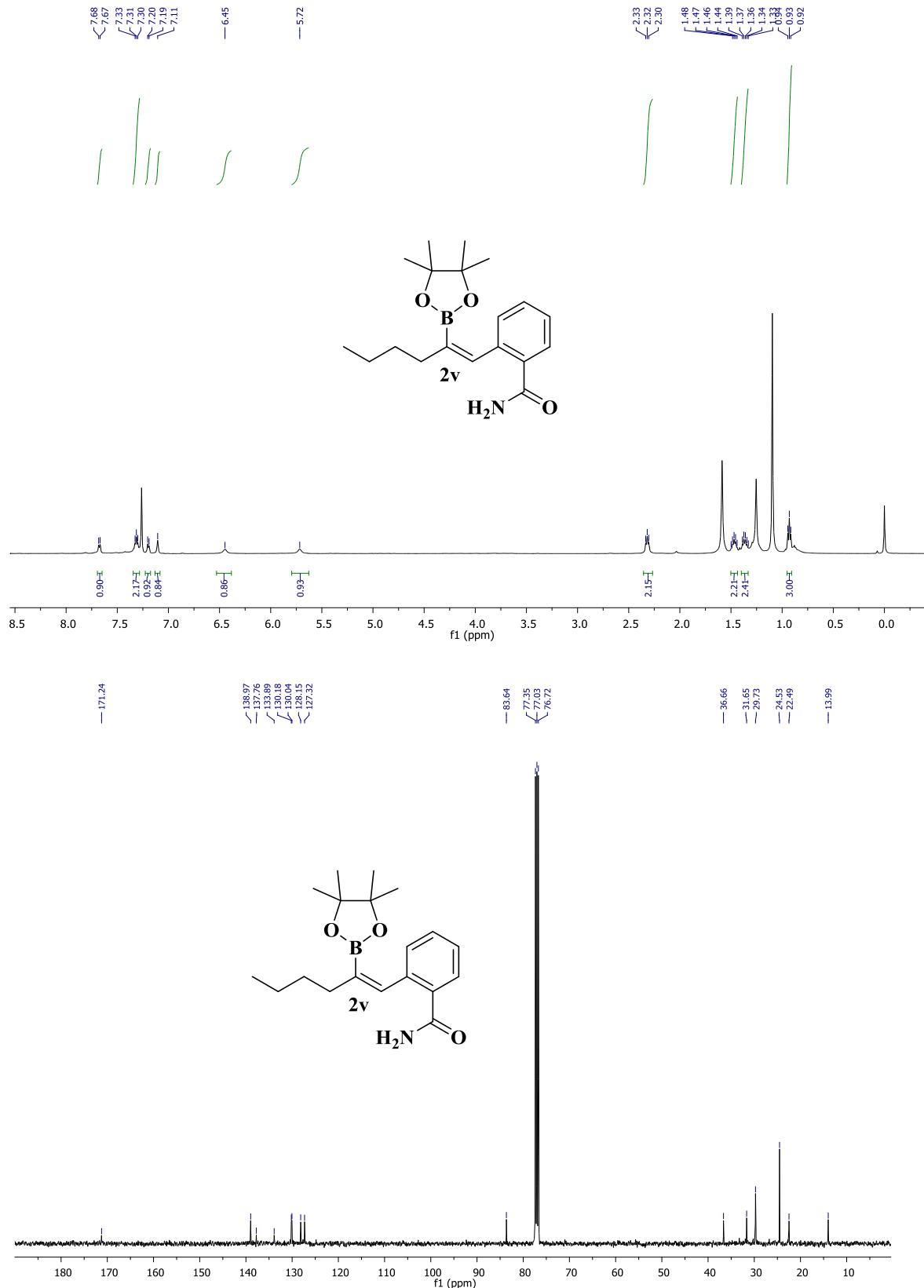


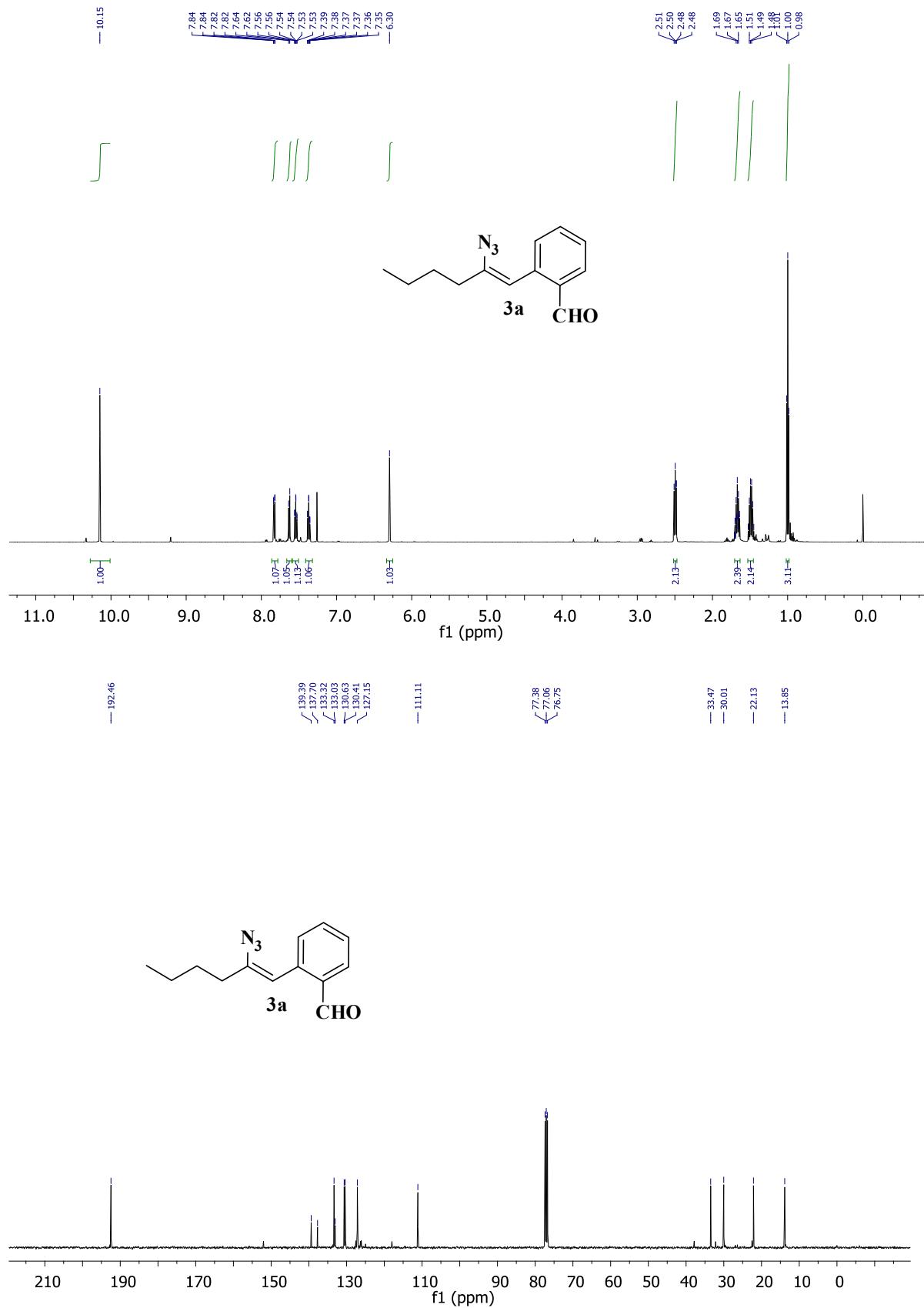


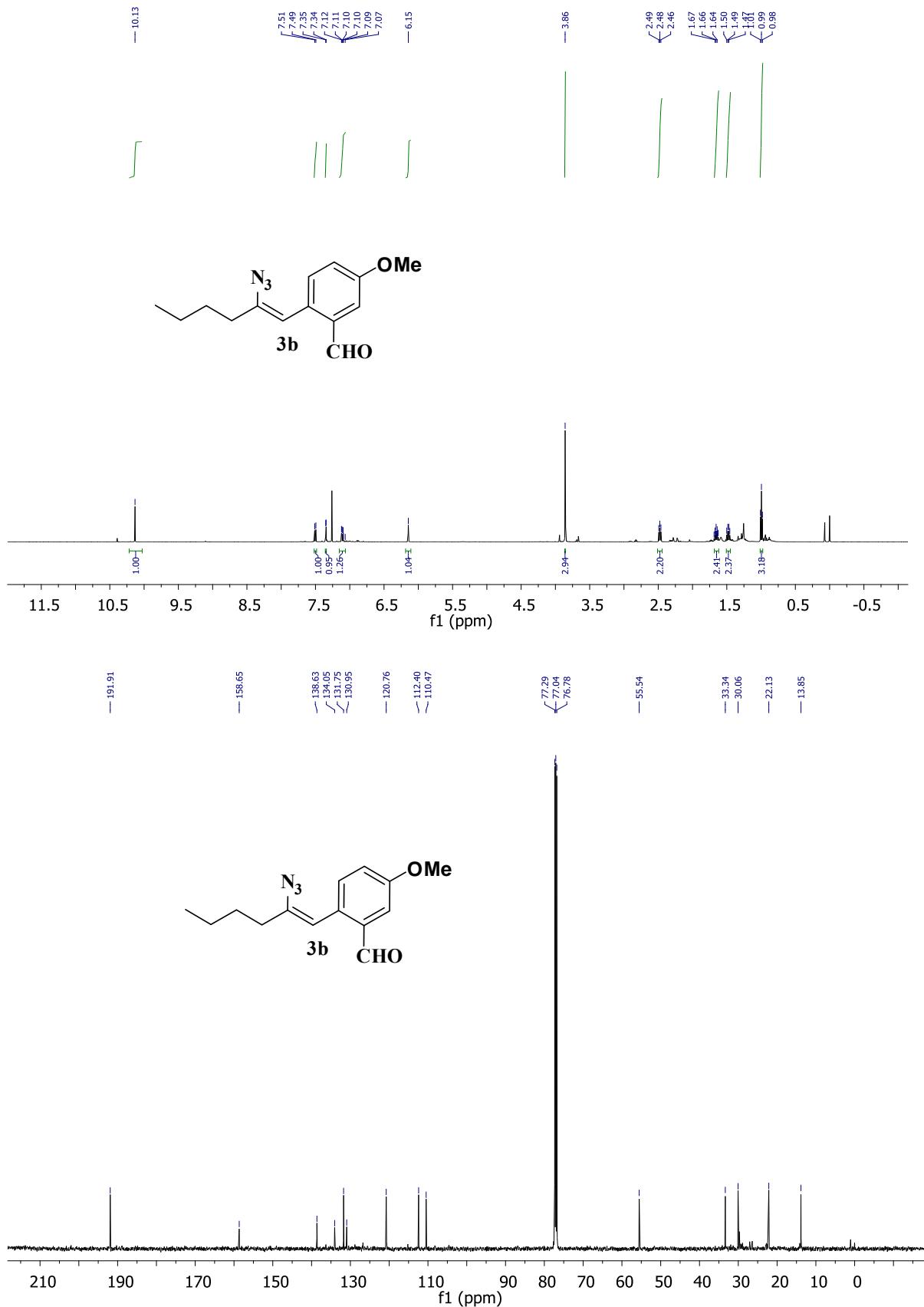


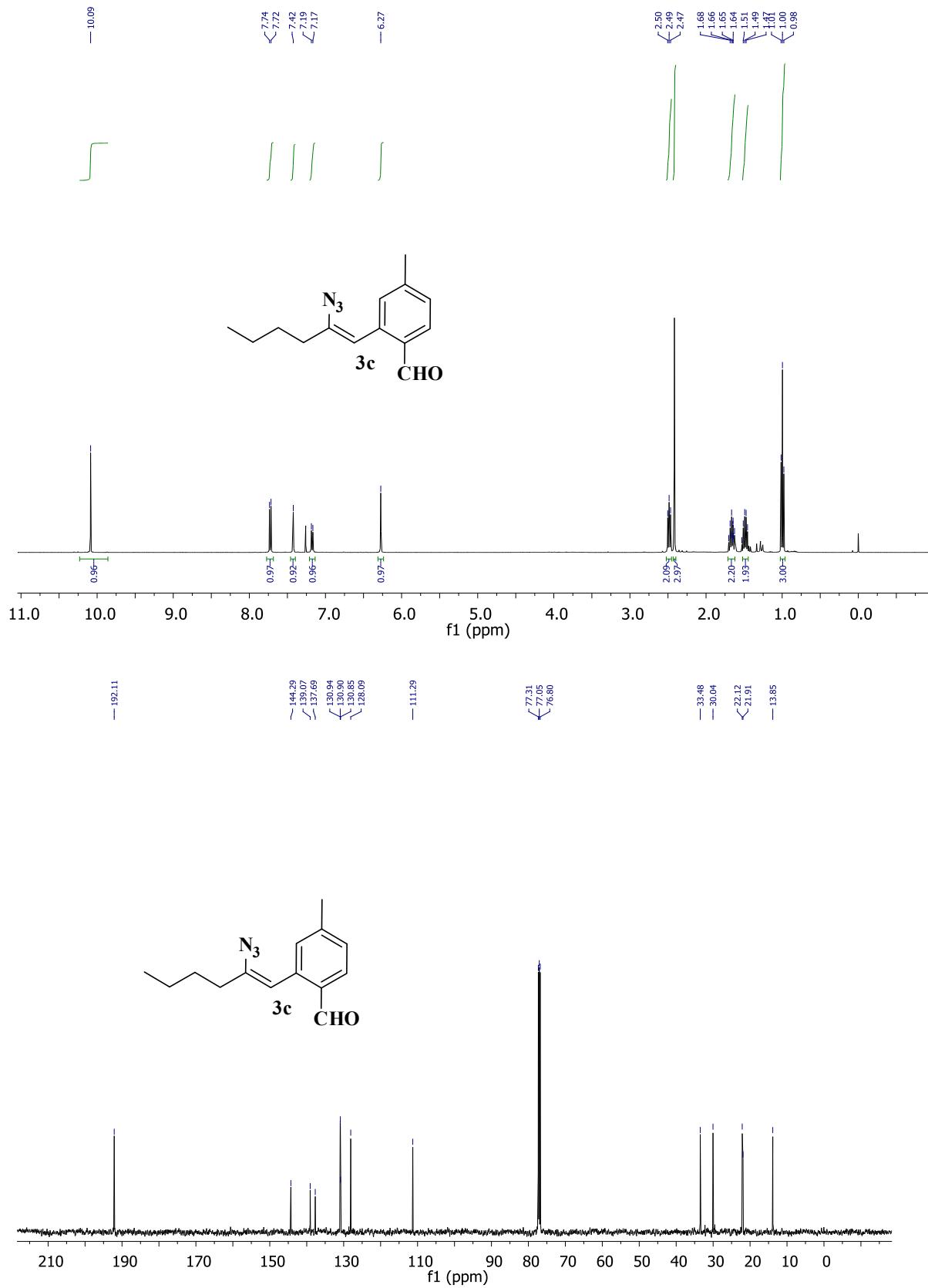


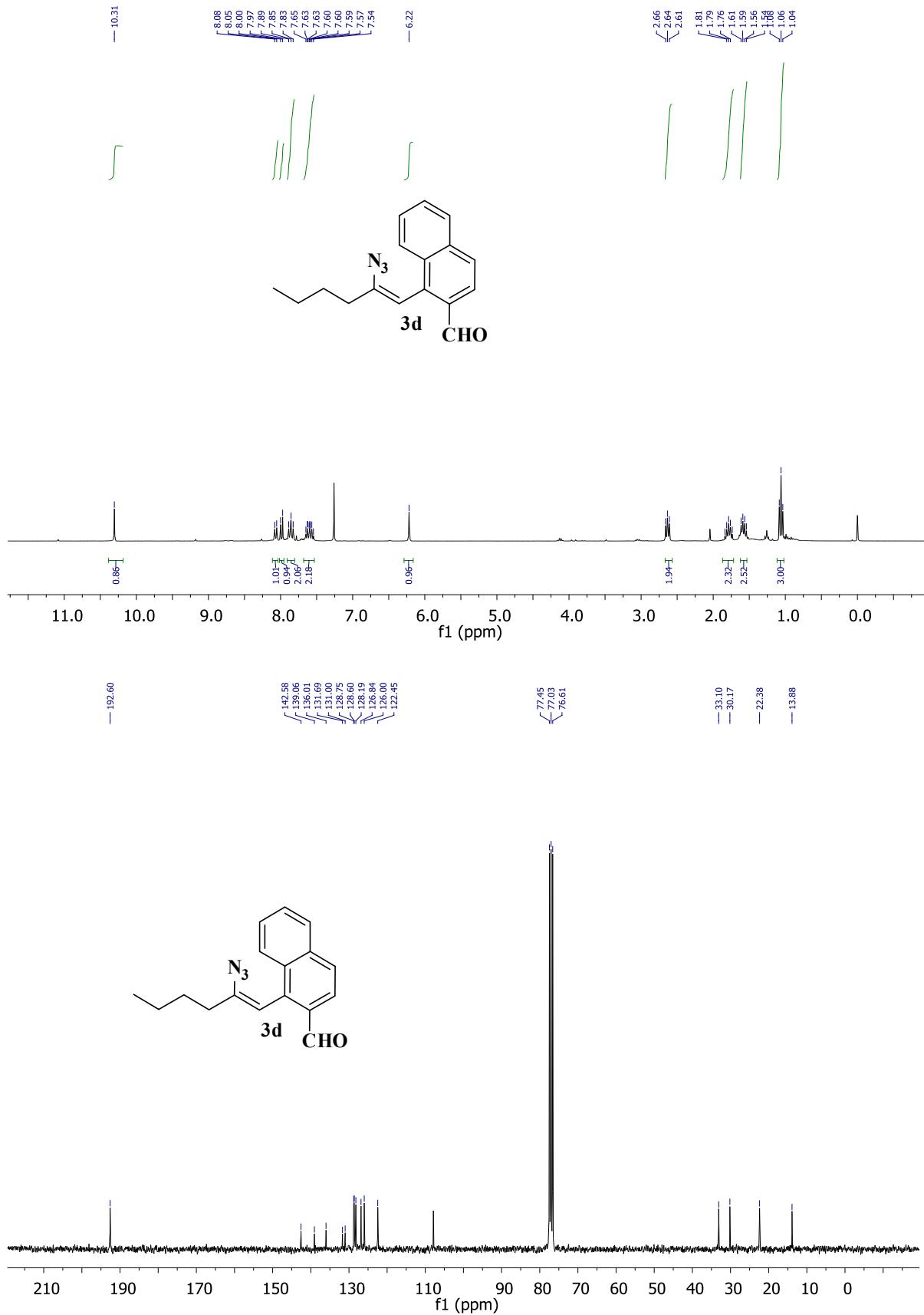


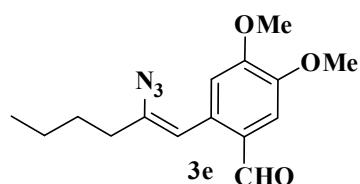
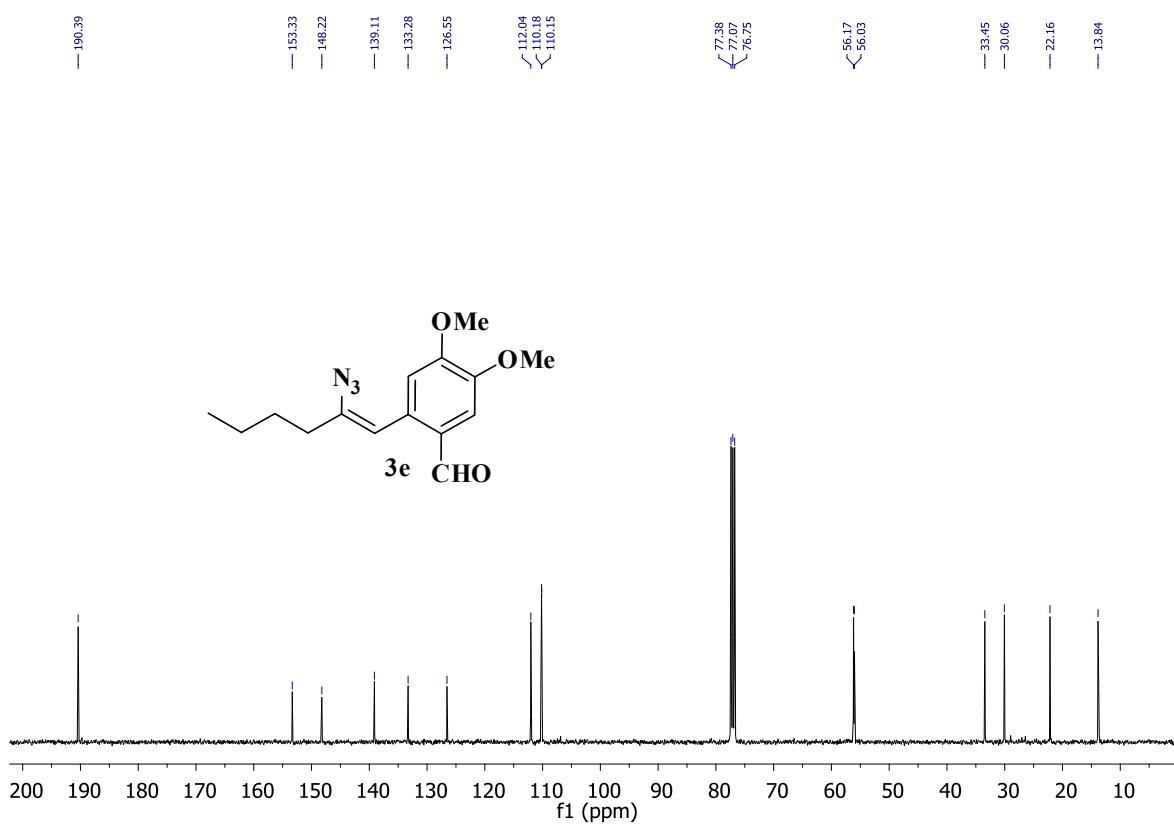
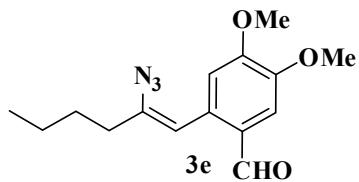
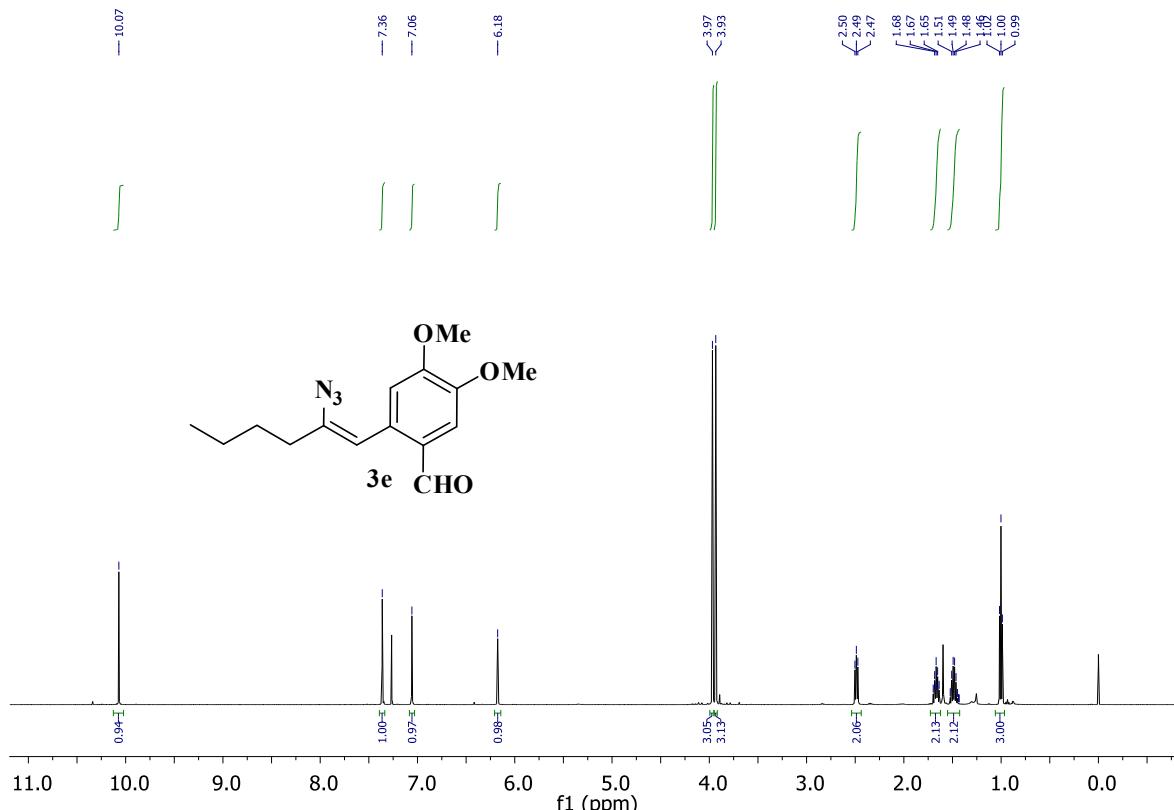


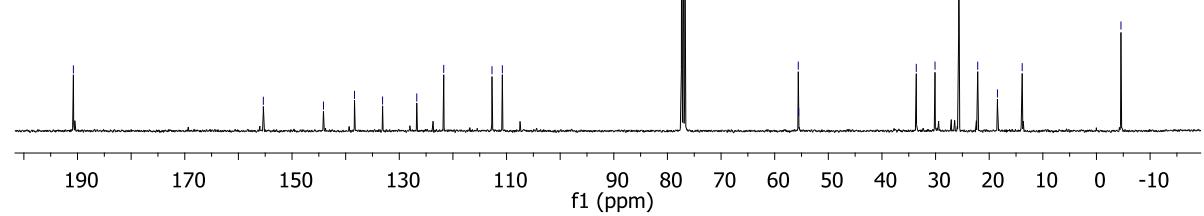
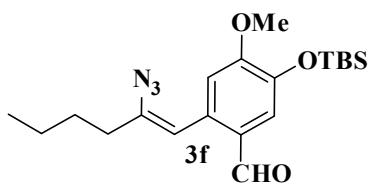
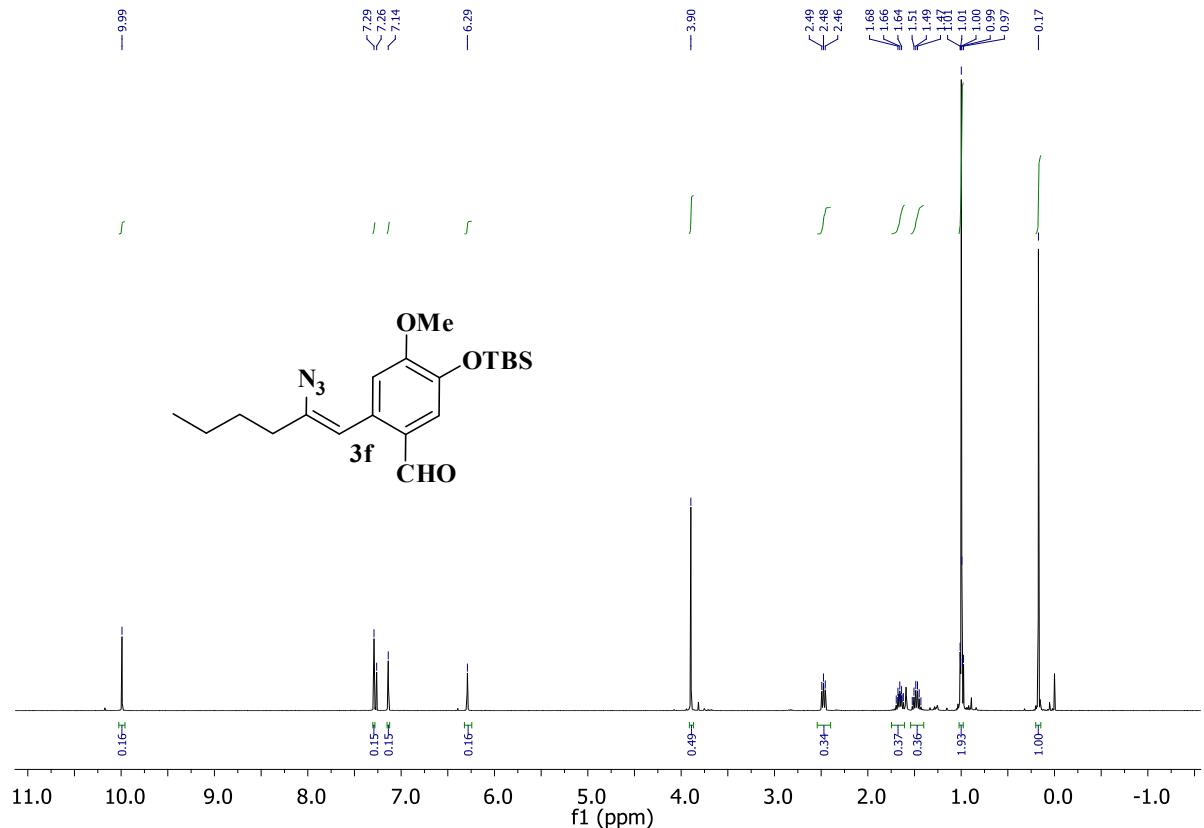


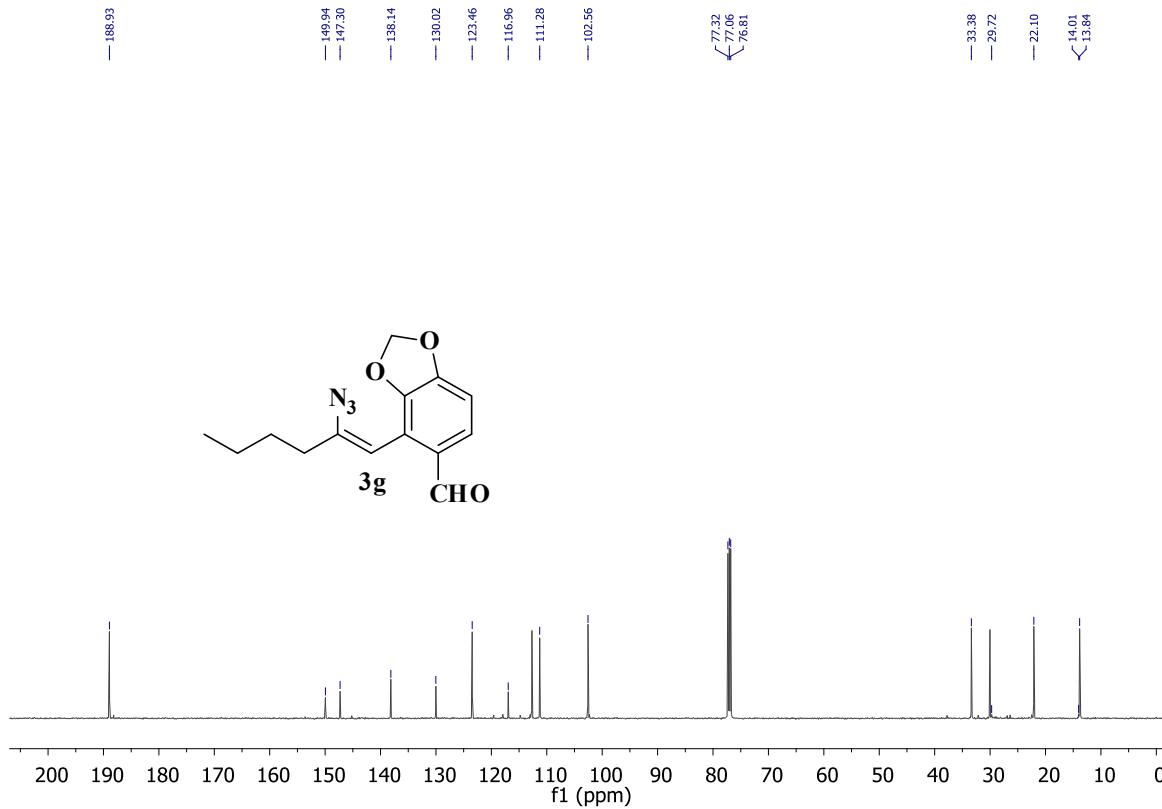
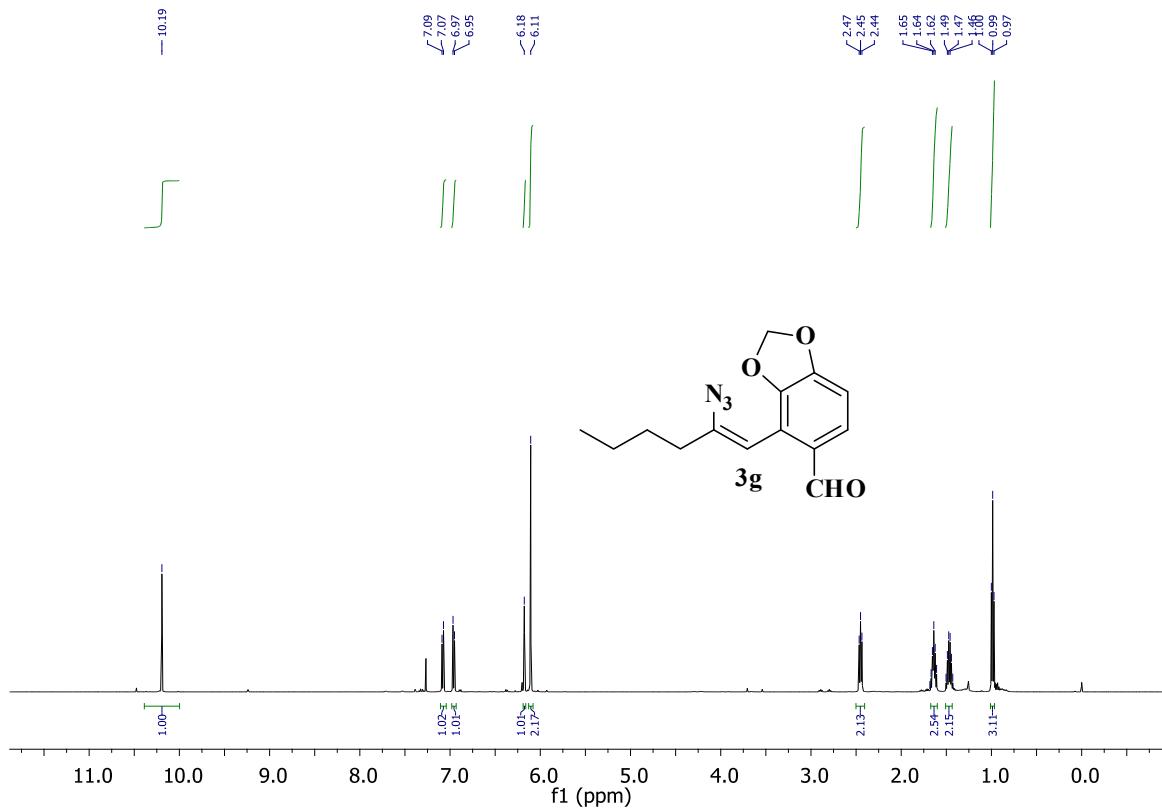


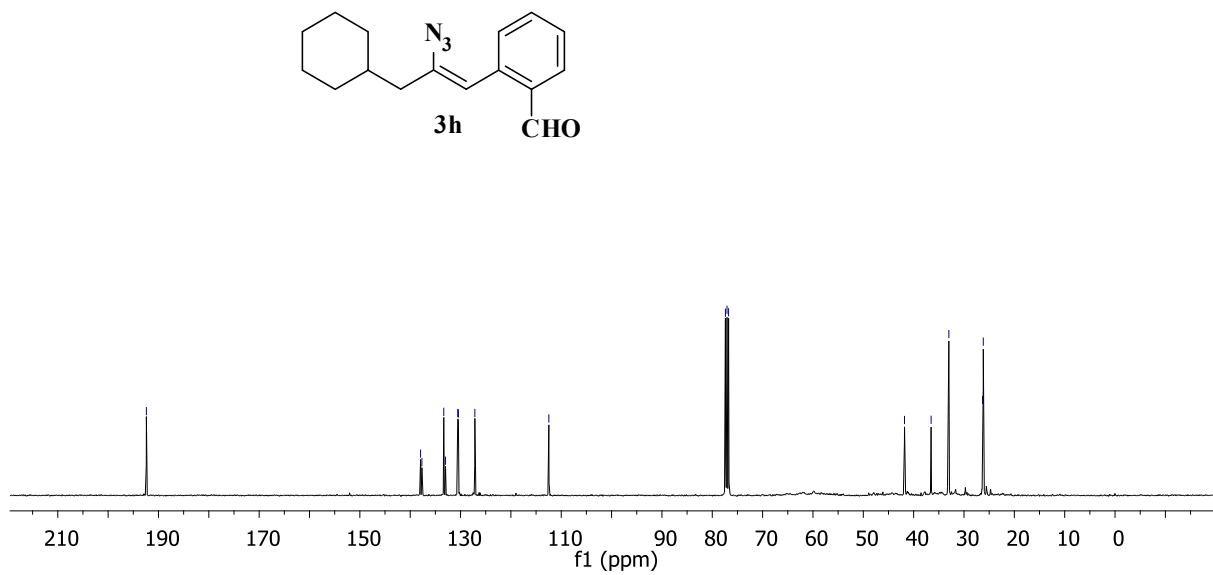
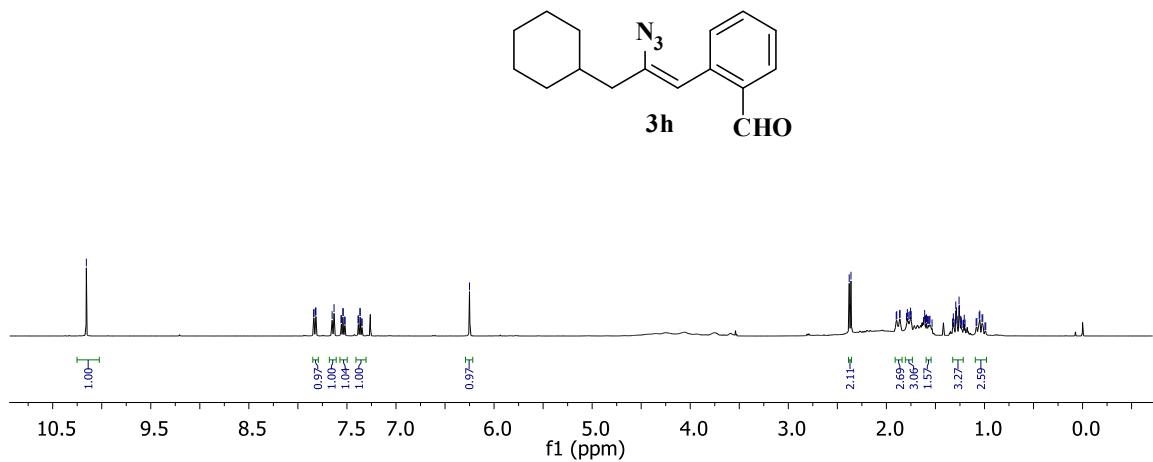


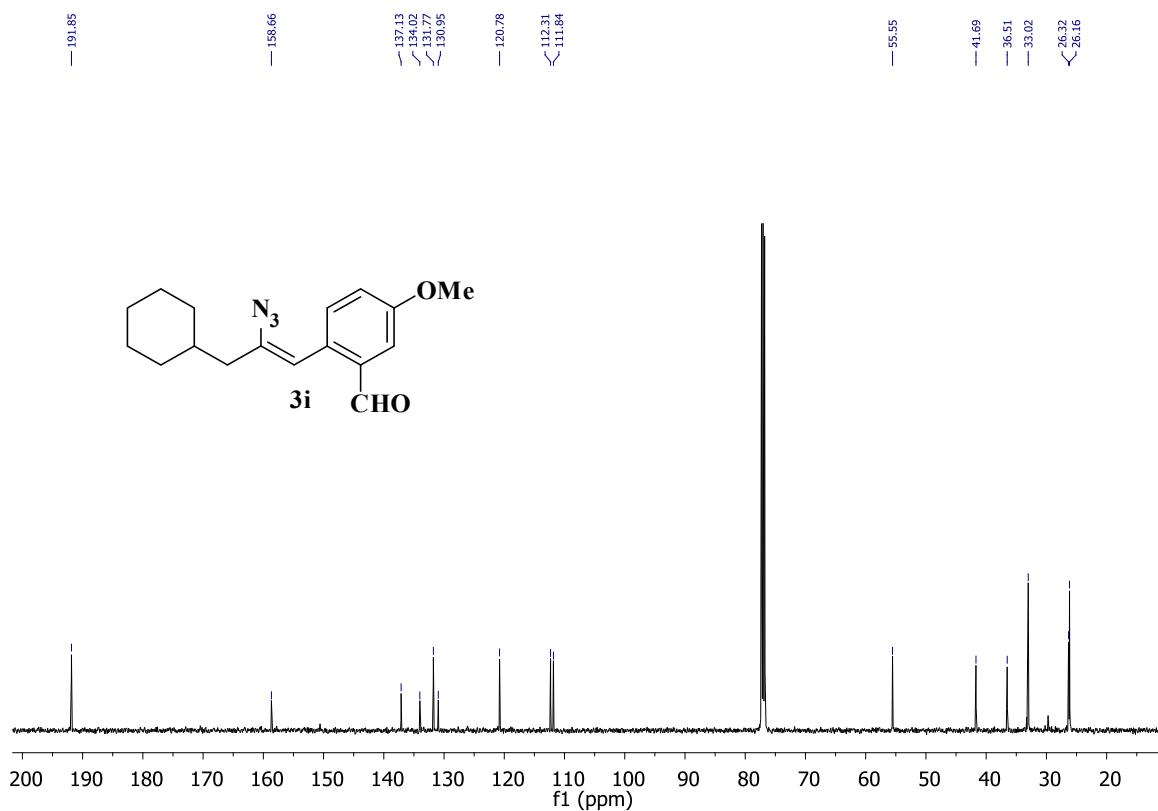
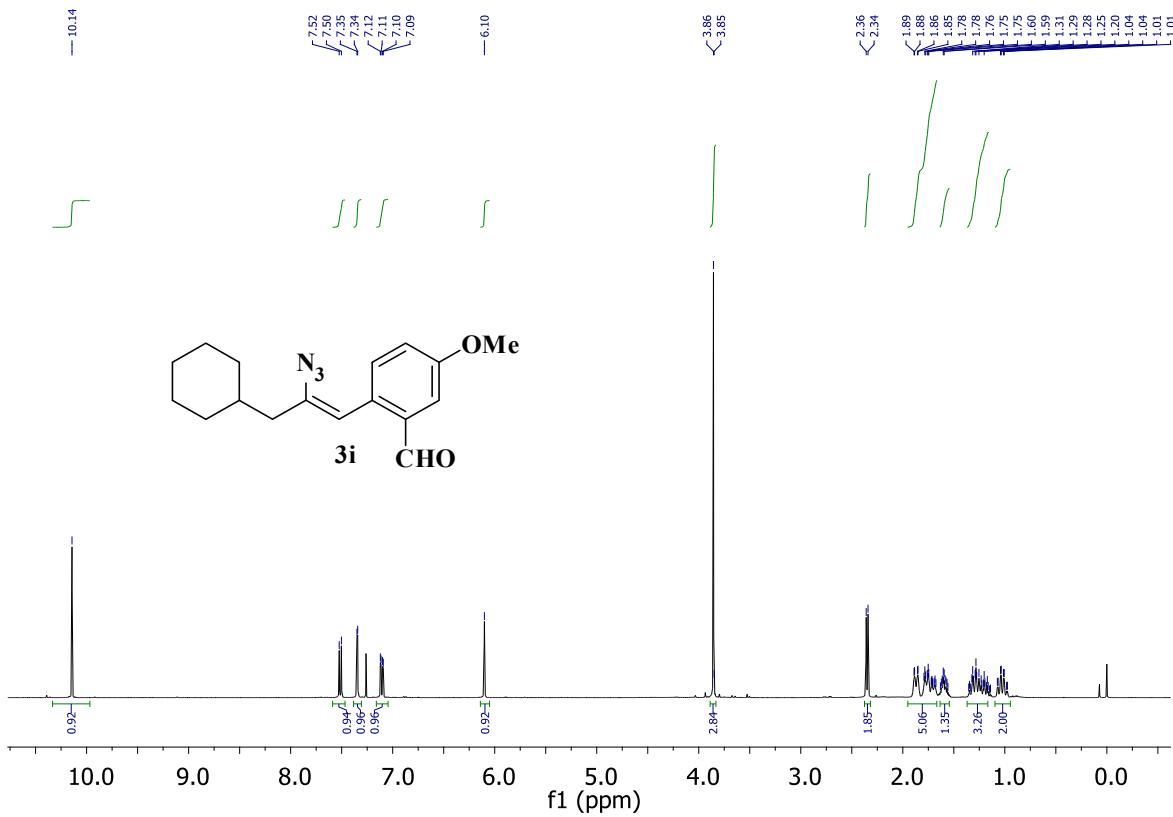


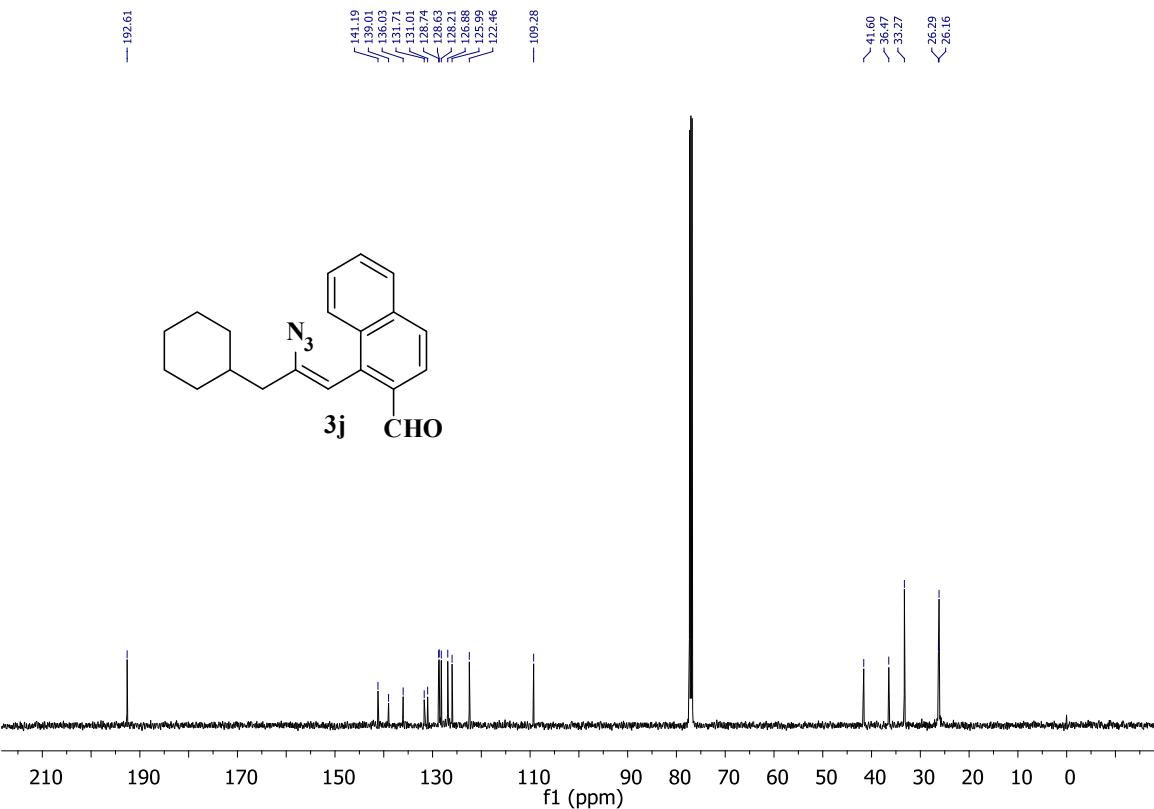
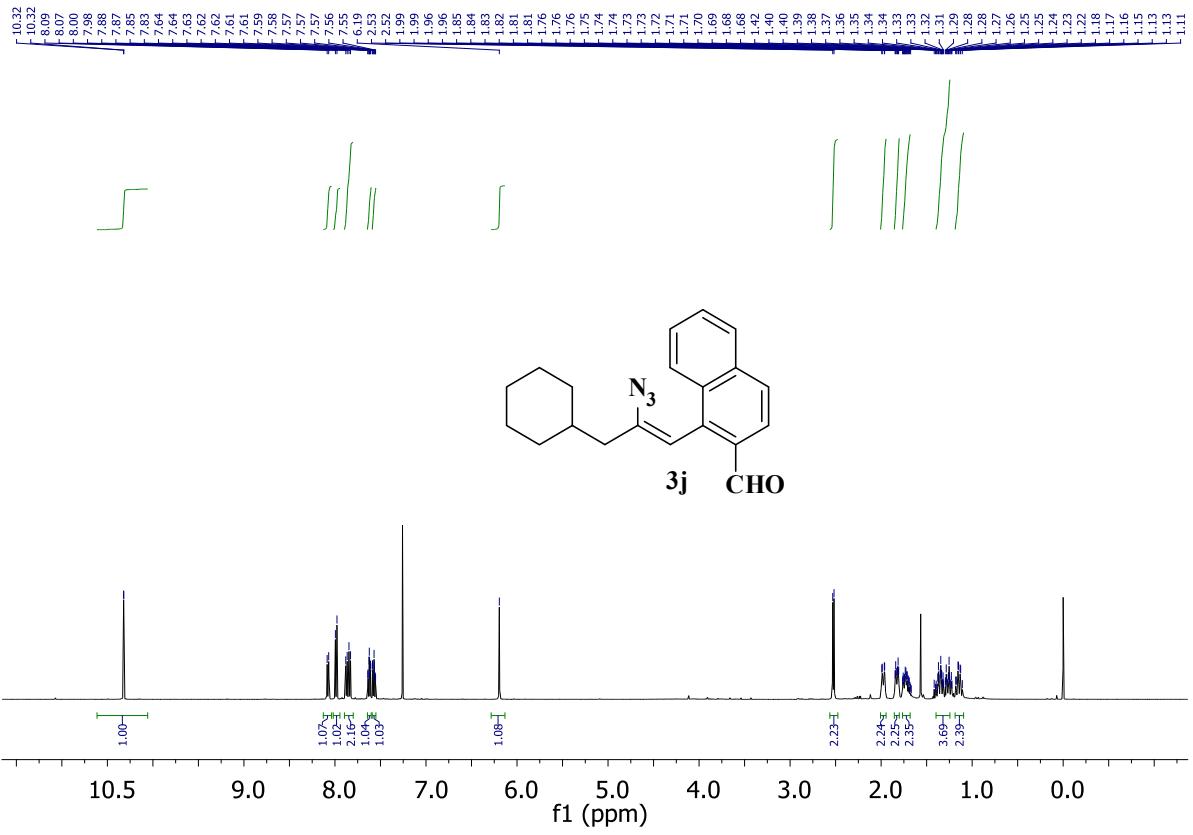


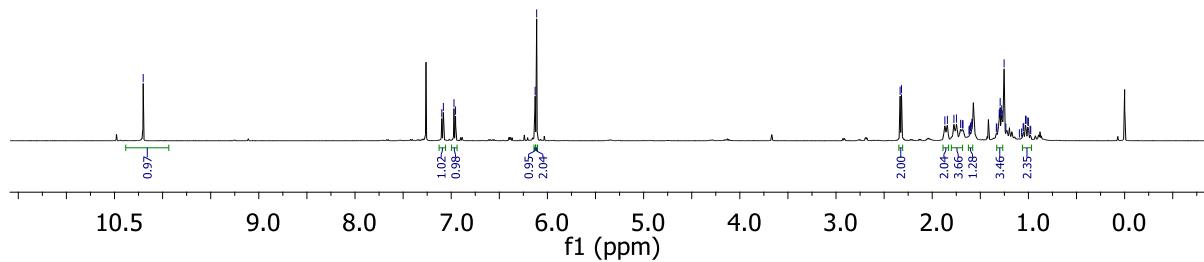
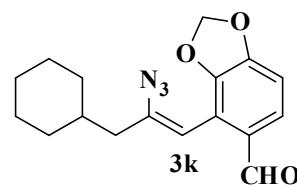






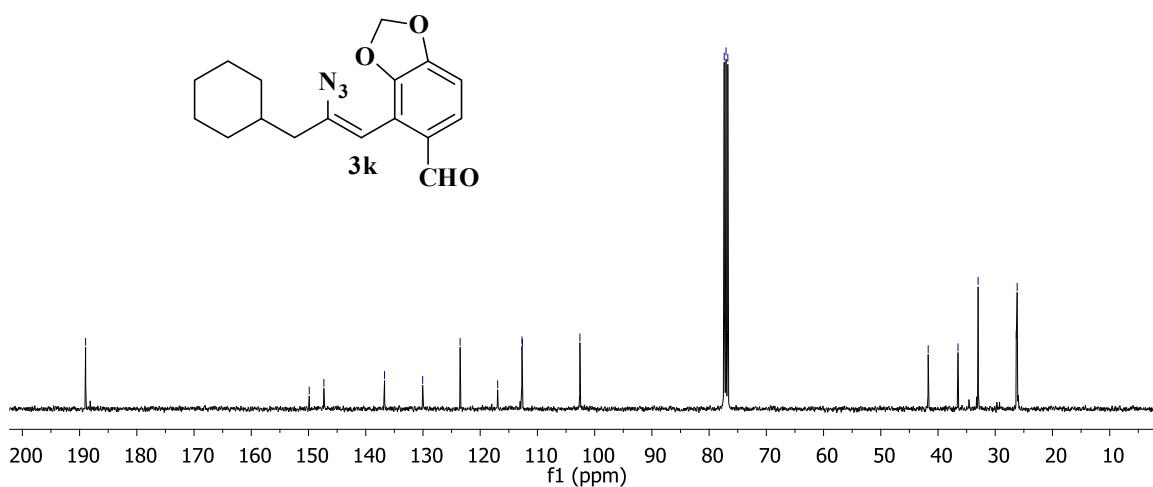


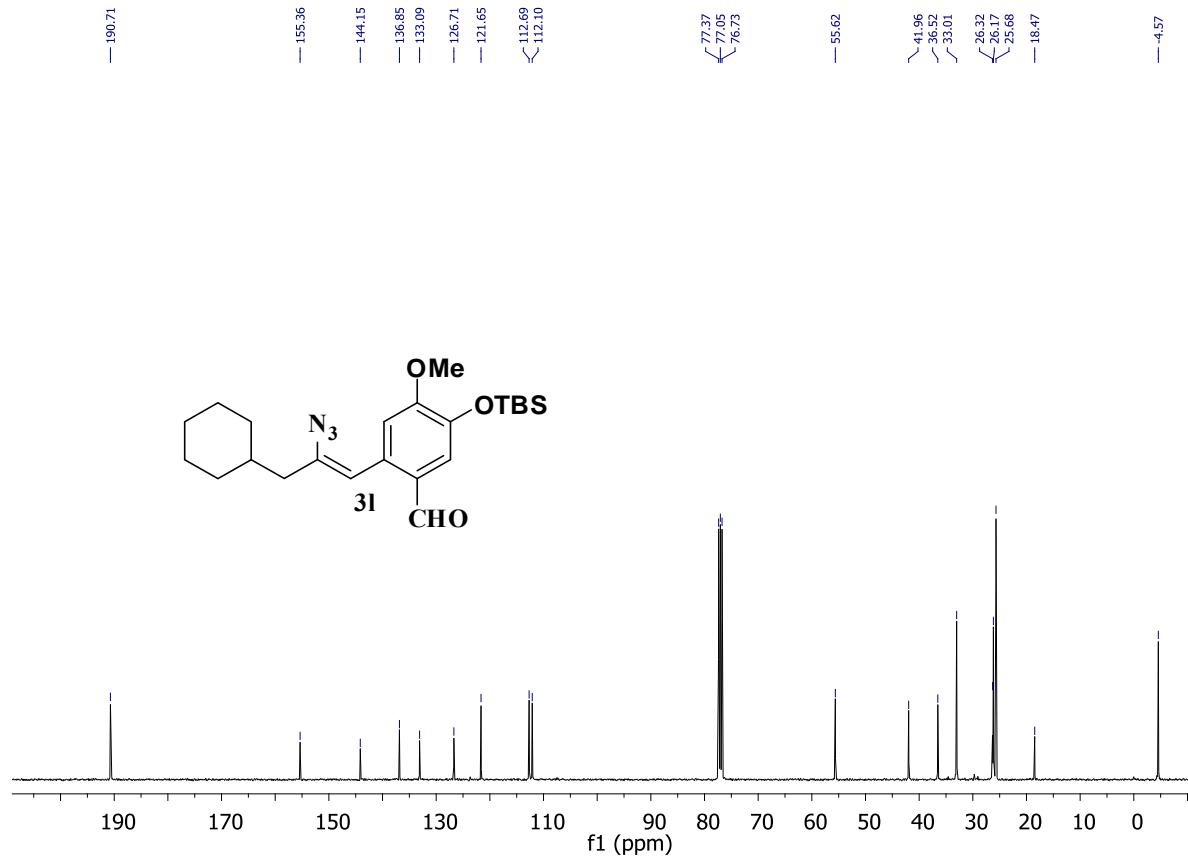
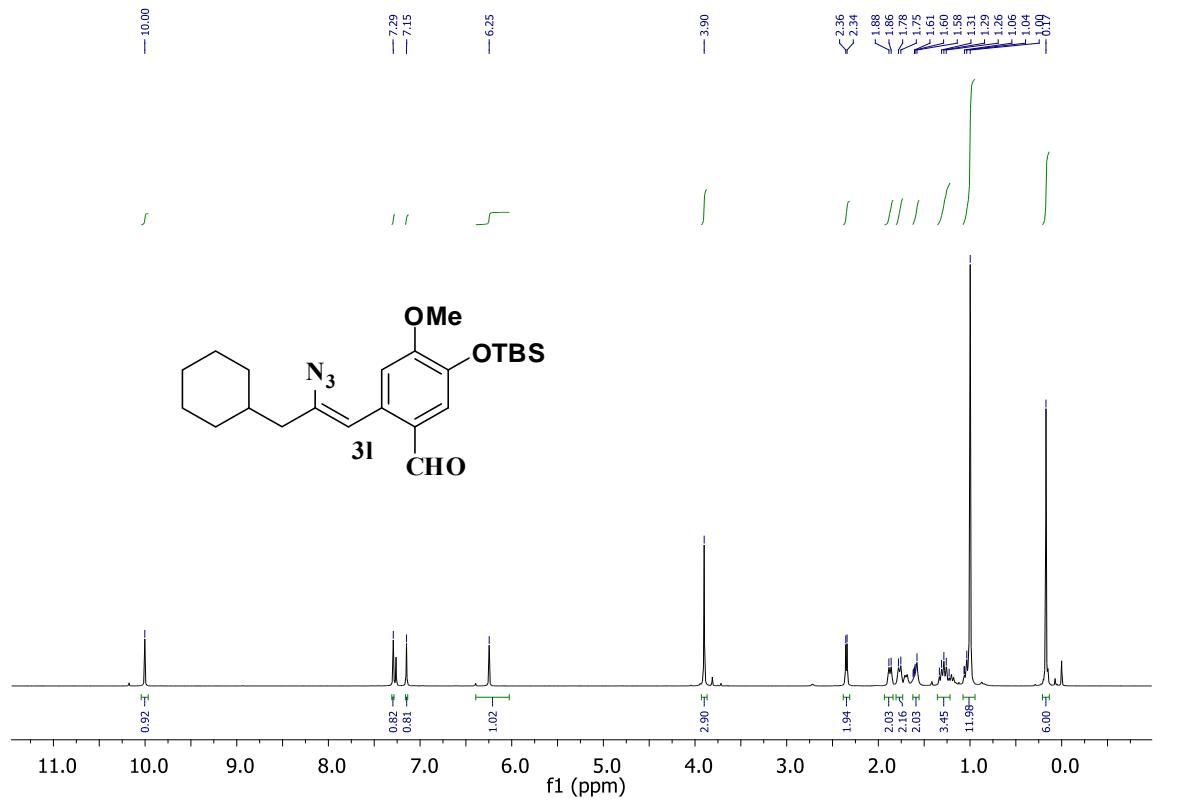


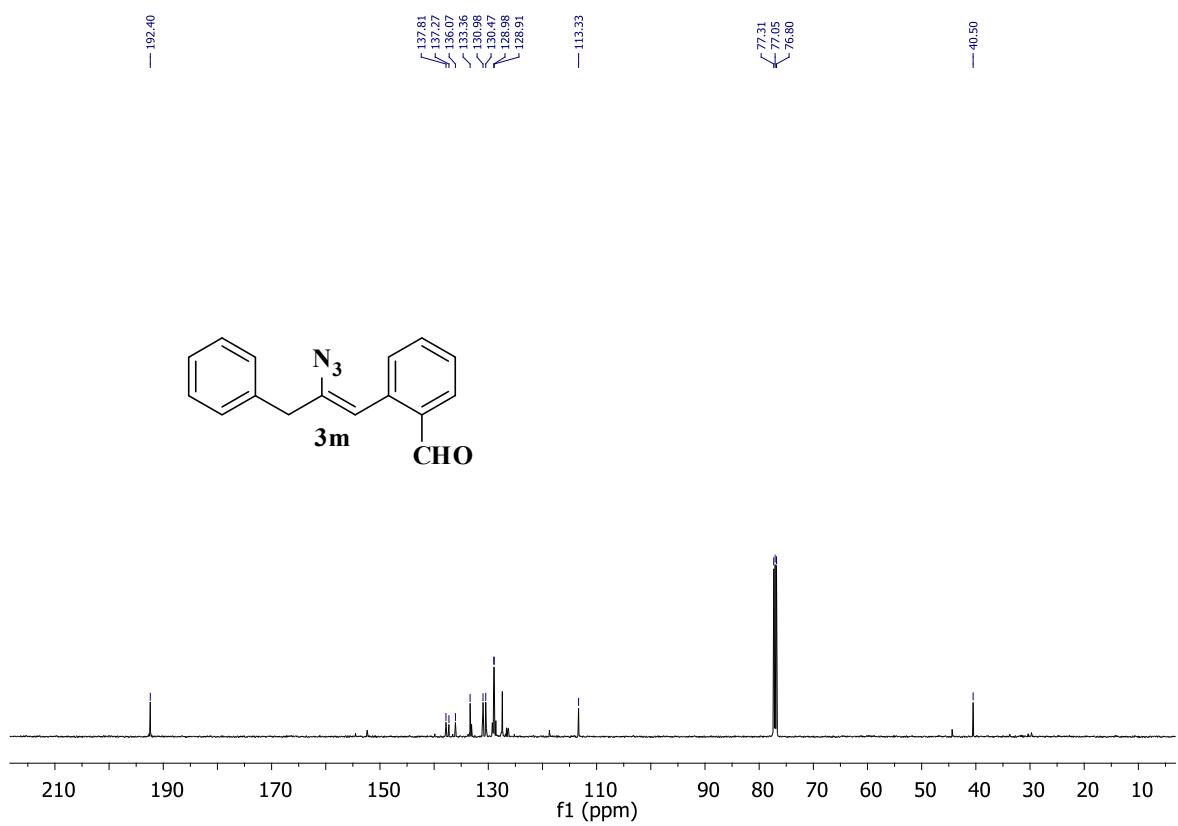
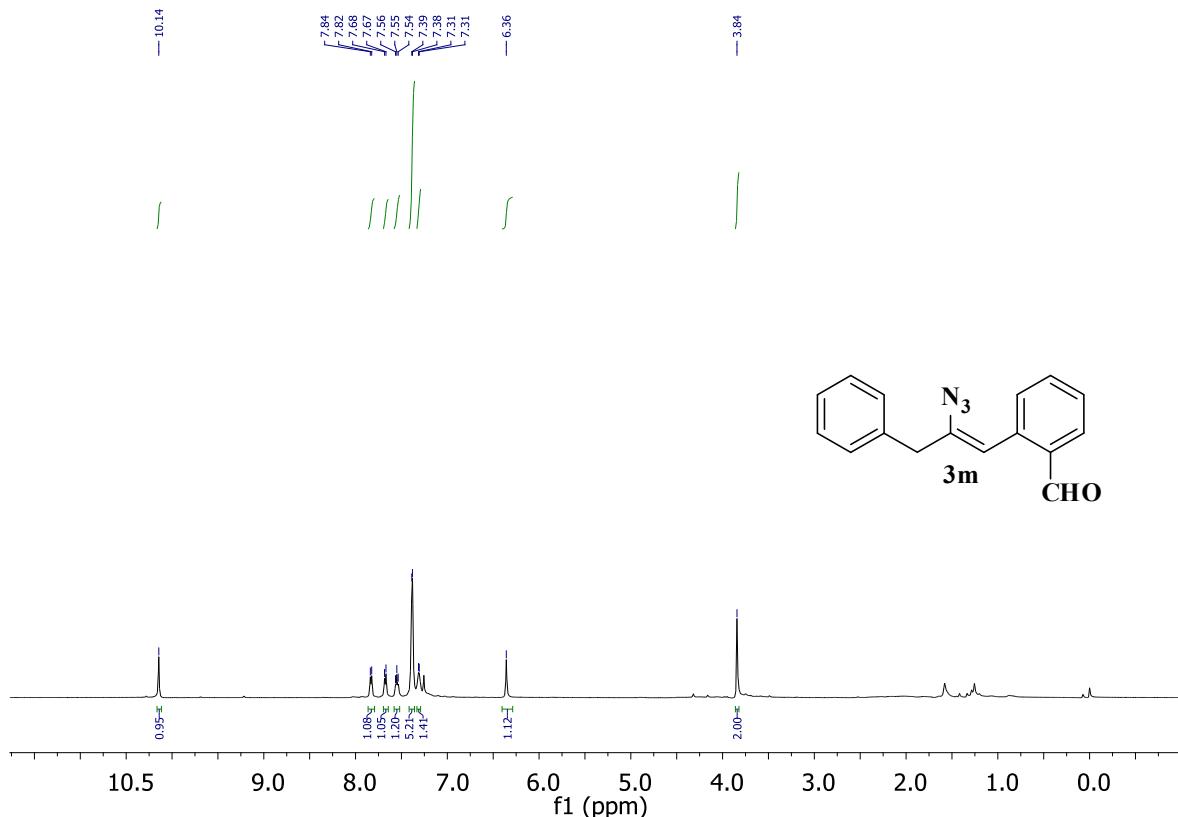


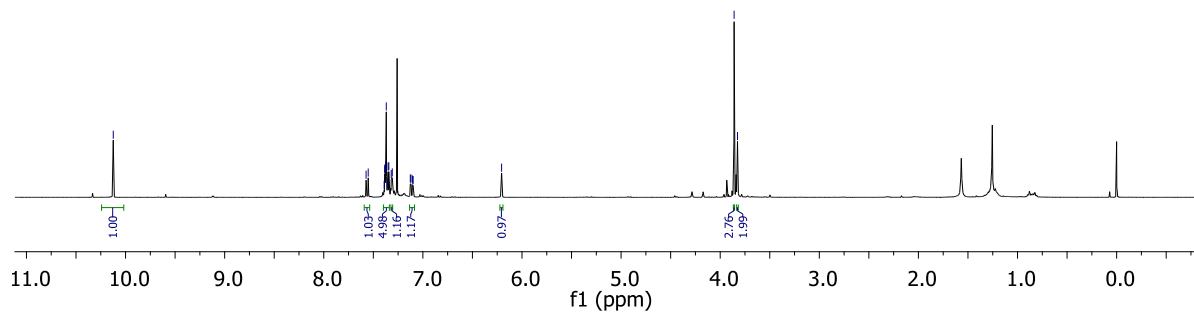
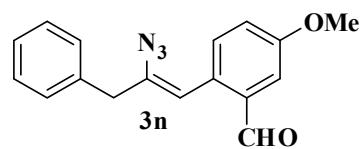
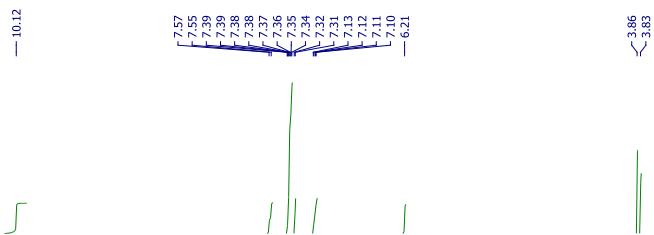
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— 147.32
— 136.72
— 130.05
— 123.50
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— 112.70
— 112.62
— 102.57

— 41.72
— 36.51
— 32.99
— 26.33
— 26.17

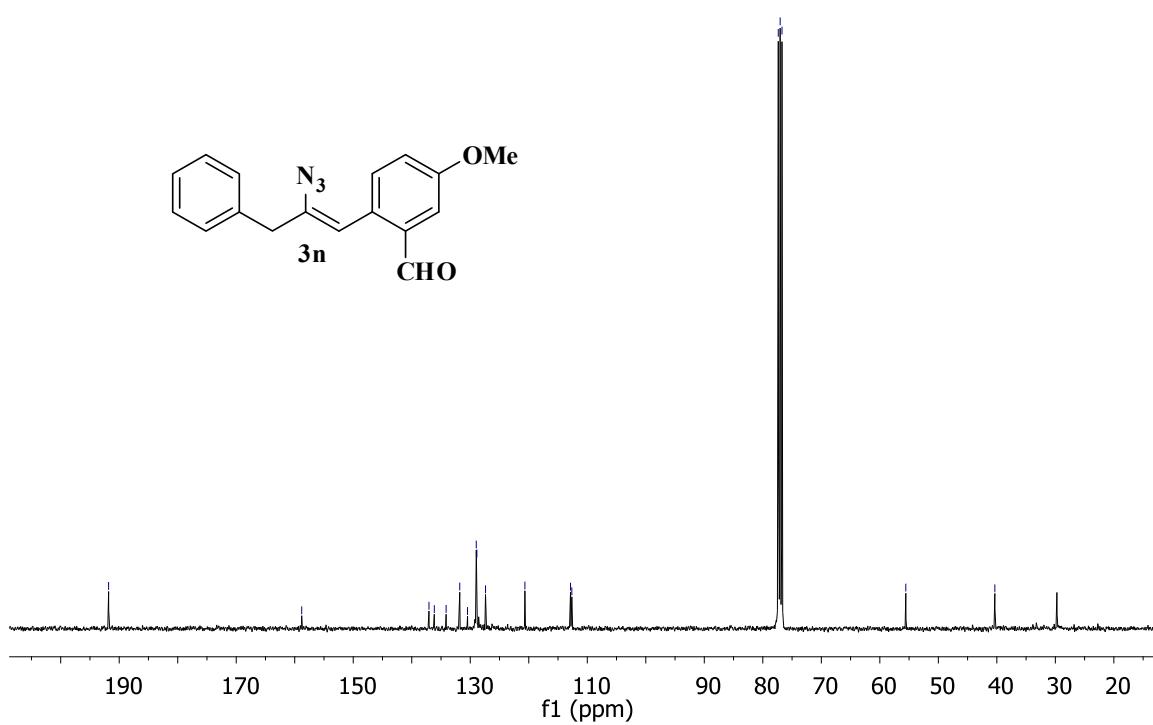
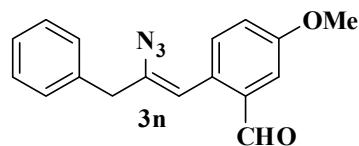


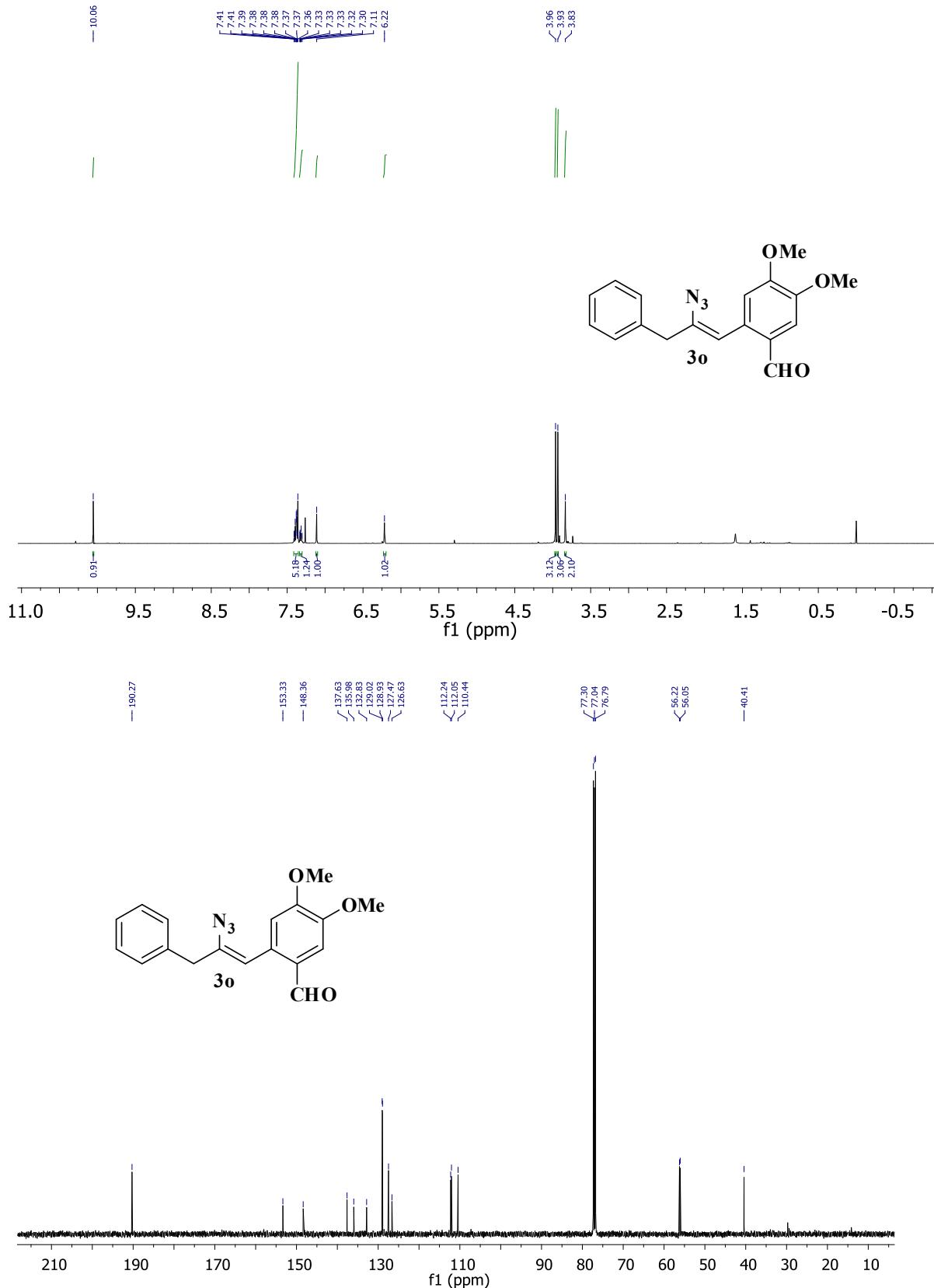


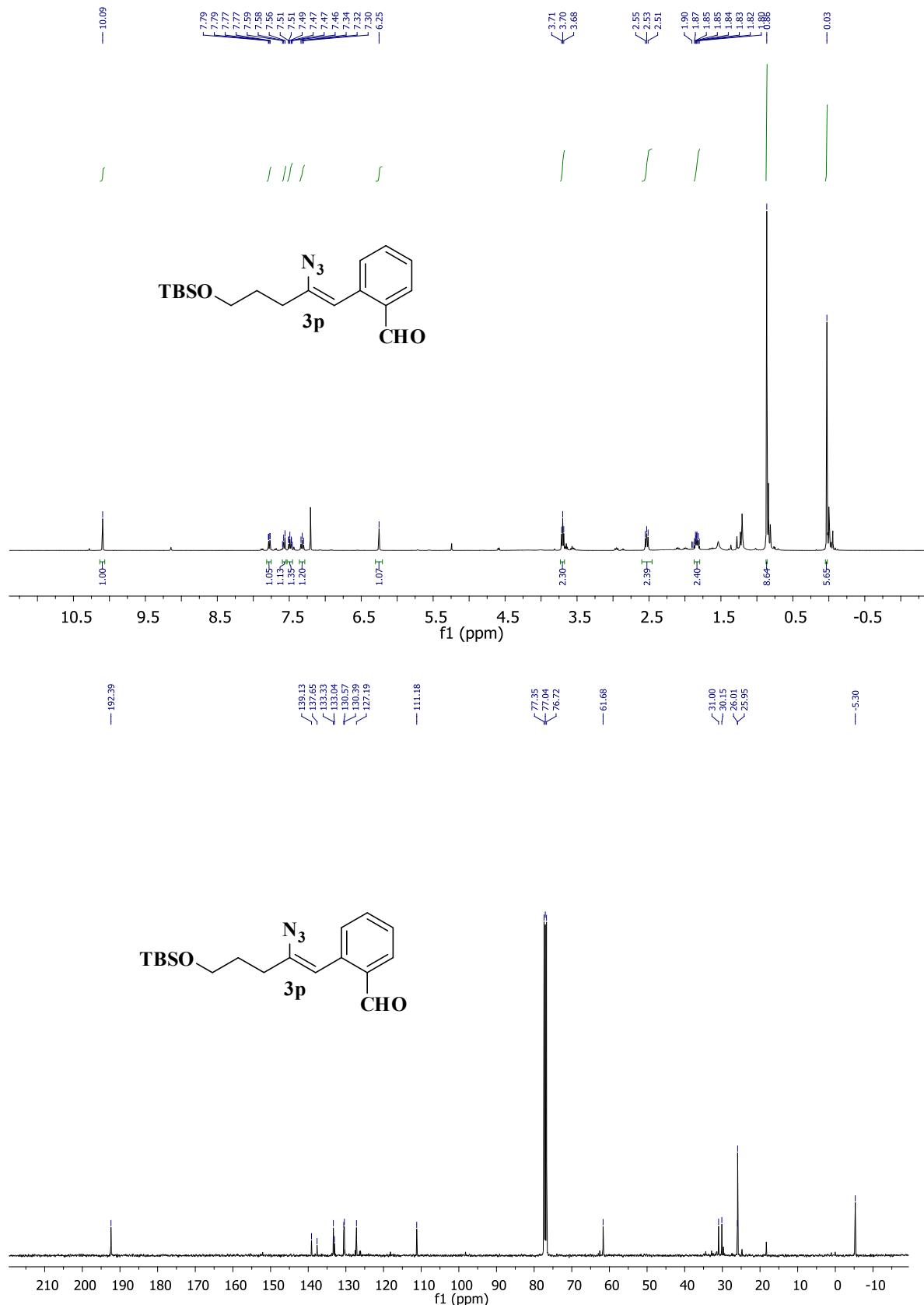


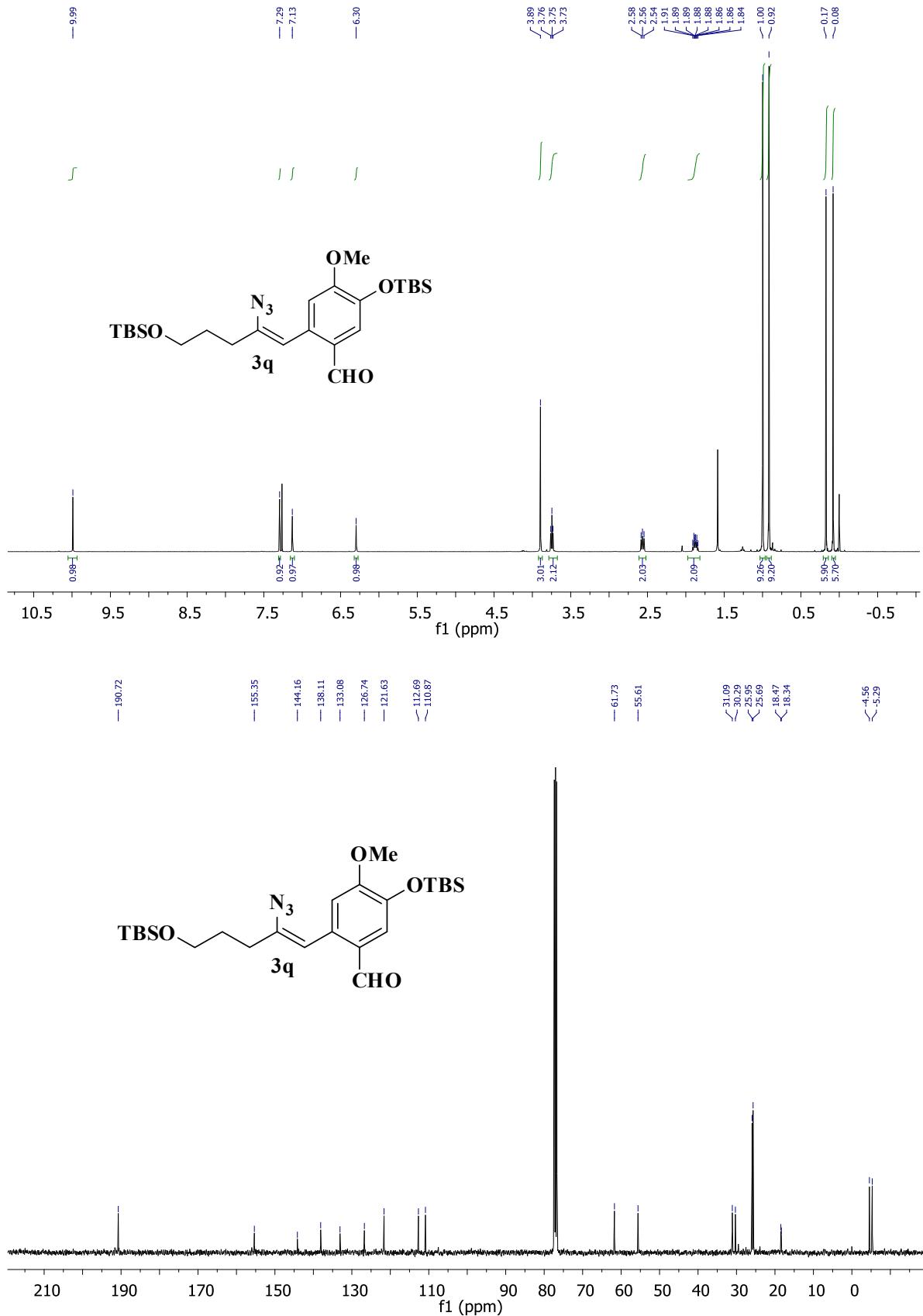


— 191.81
— 158.81
— 137.06
— 136.15
— 135.12
— 131.80
— 130.87
— 128.87
— 127.39
— 120.66
— 112.86
— 112.64
— 77.35
— 77.04
— 76.72
— 55.56
— 40.34









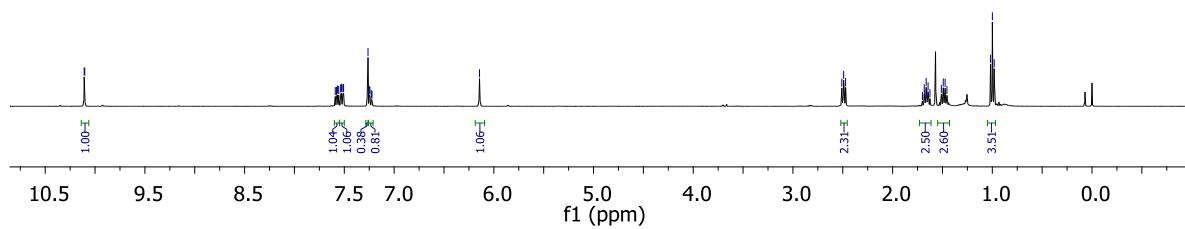
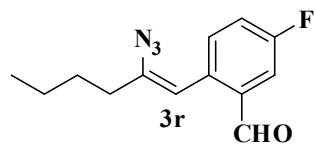
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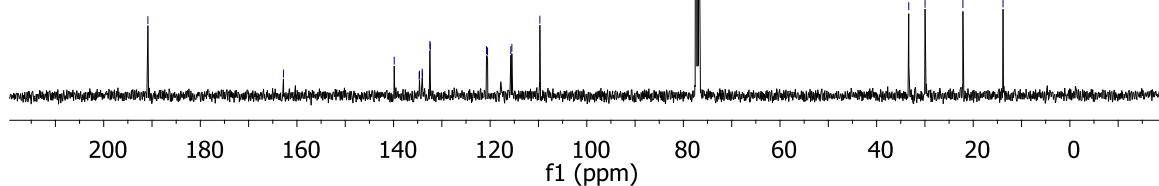
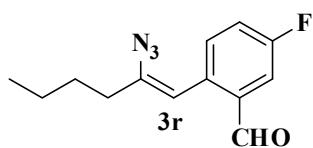


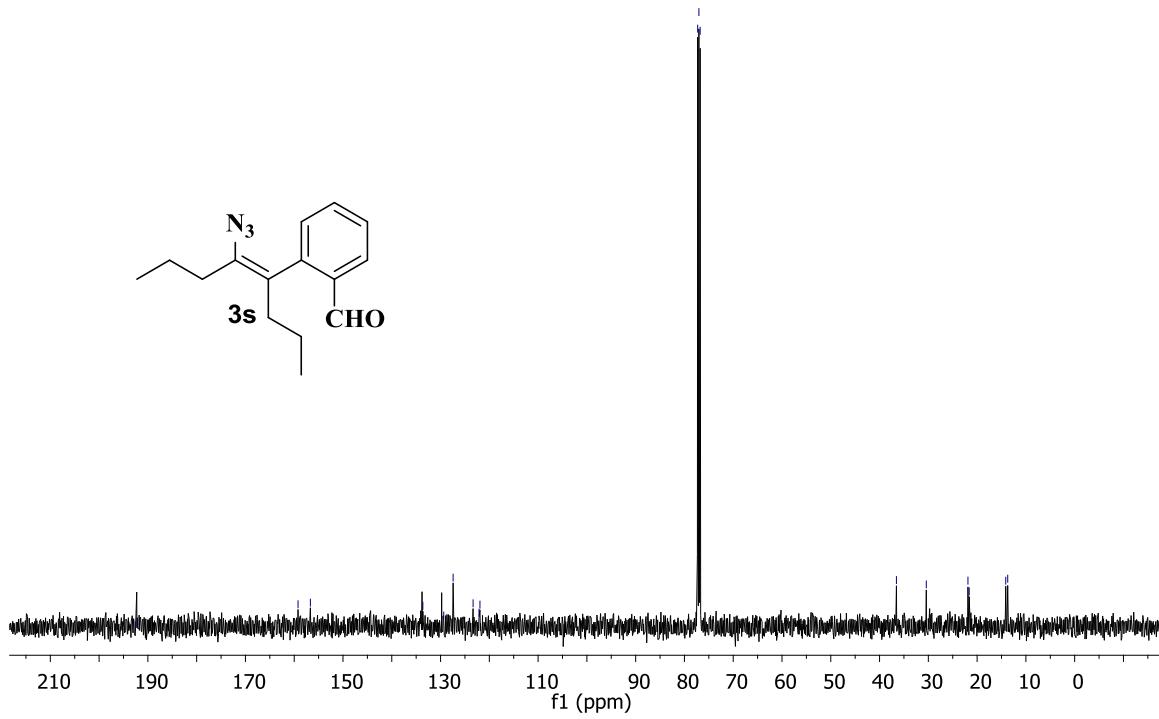
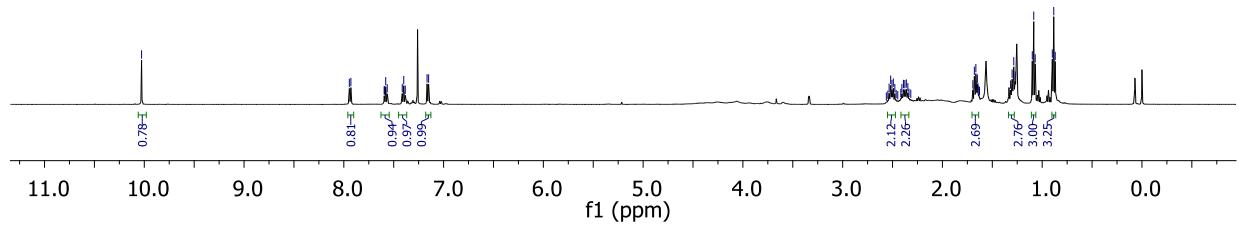
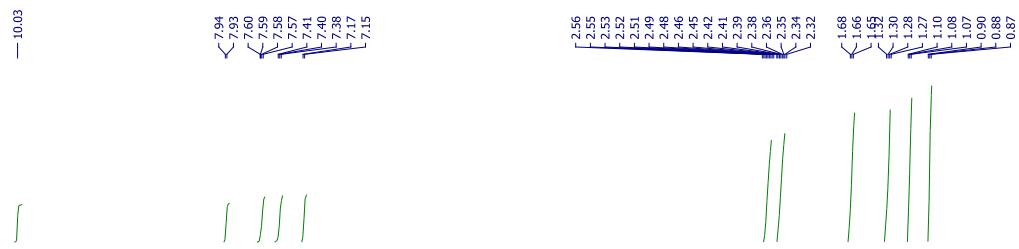
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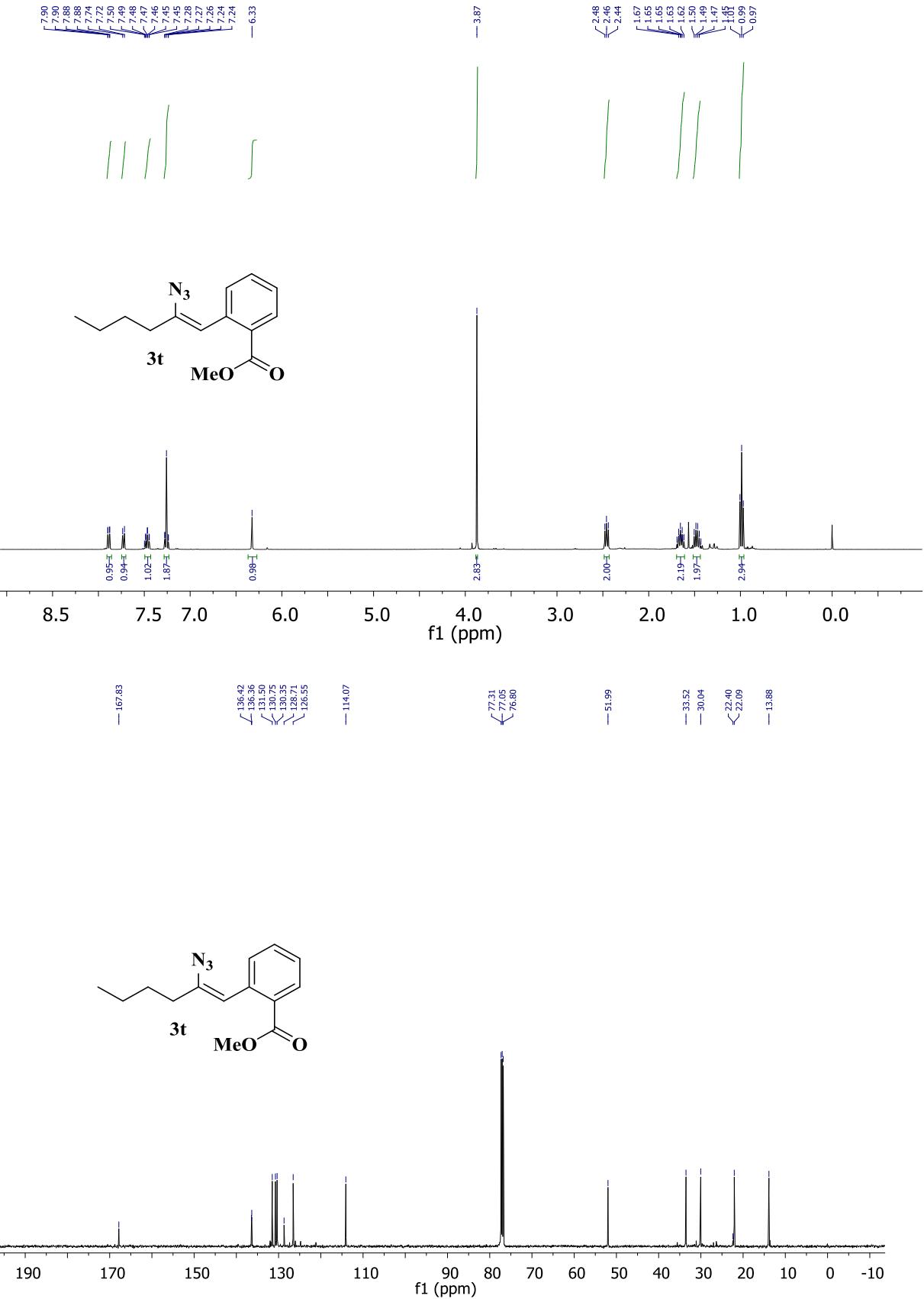
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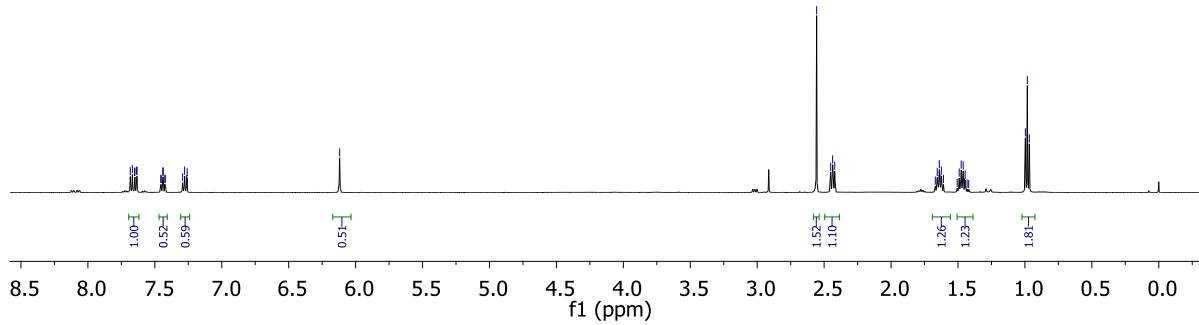
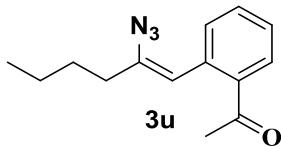
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134.03
132.47
132.40
130.76
130.54
115.72
115.56
— 109.71

77.36
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29.97
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- 201.89

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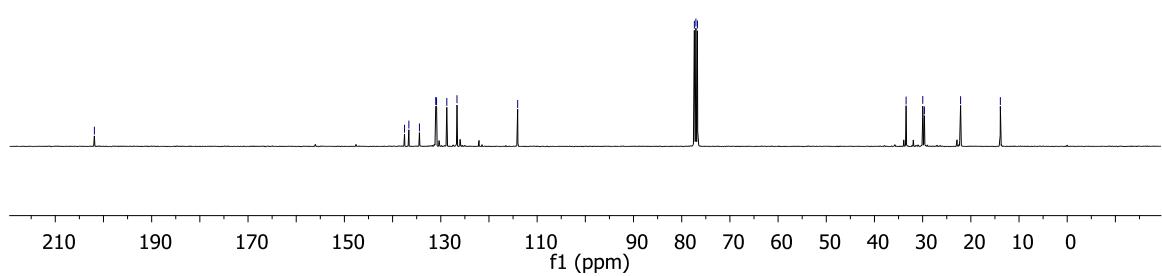
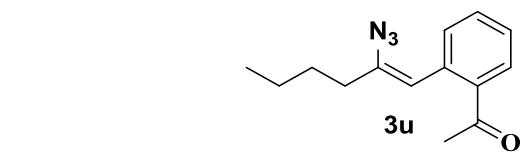
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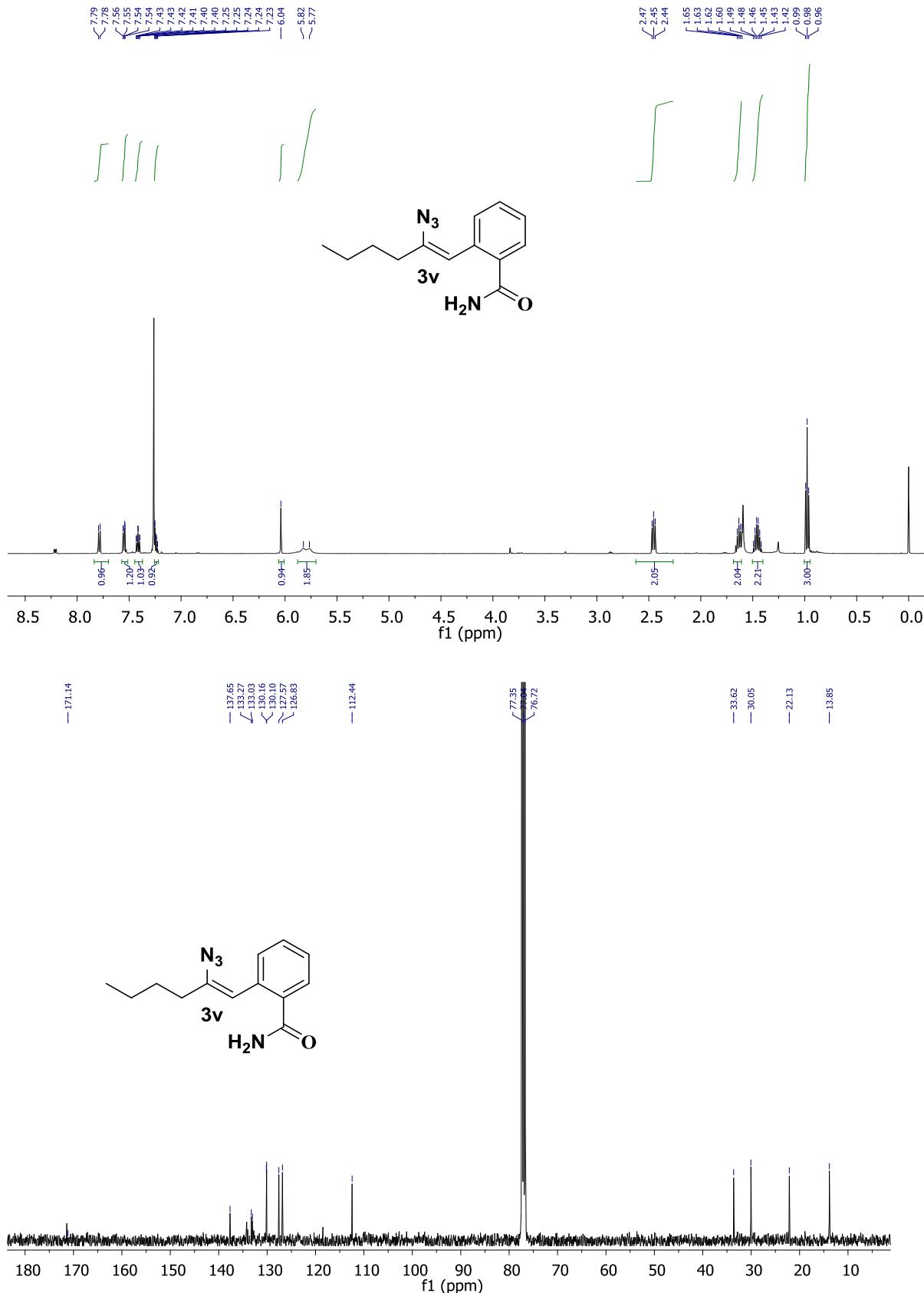
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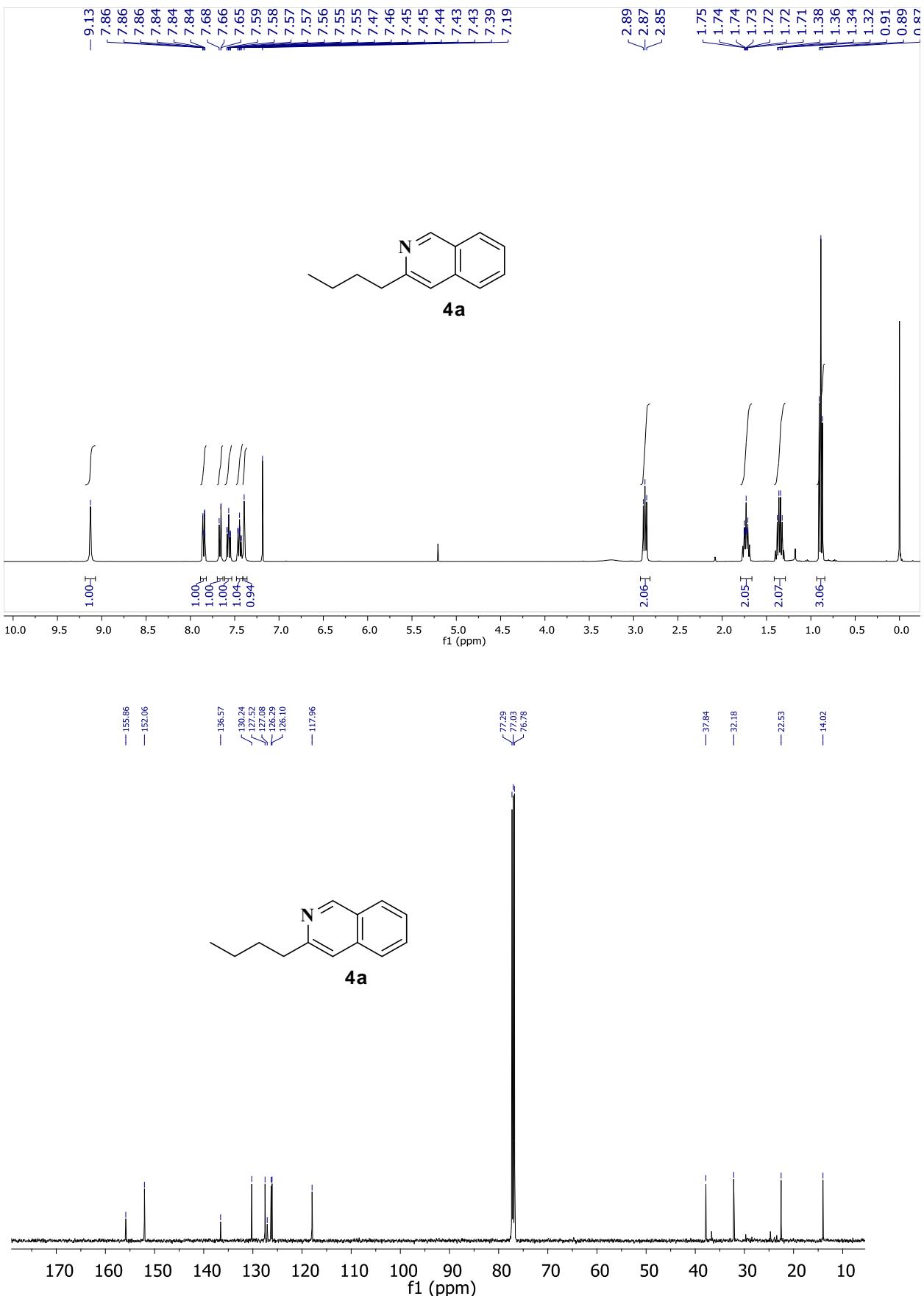
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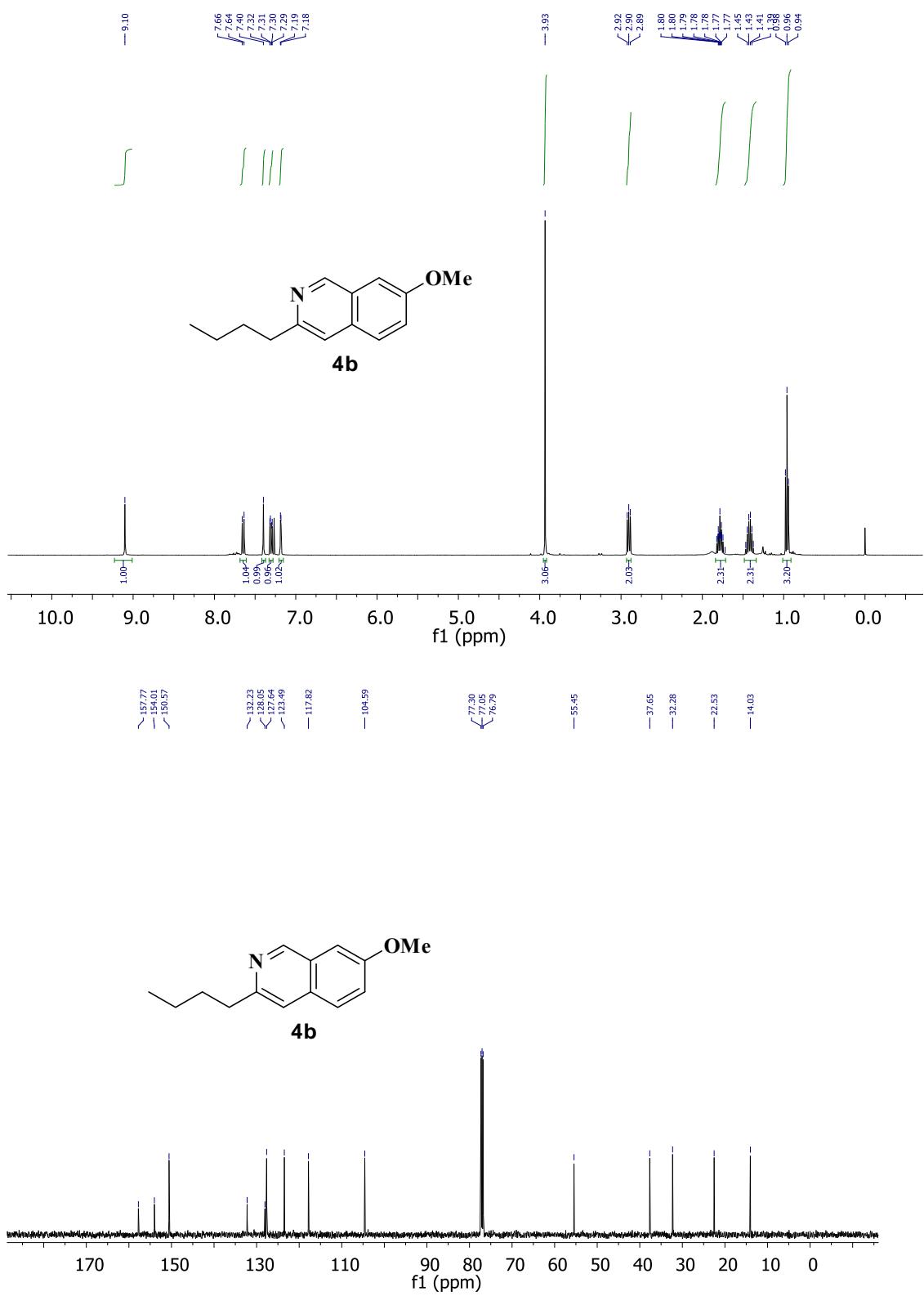
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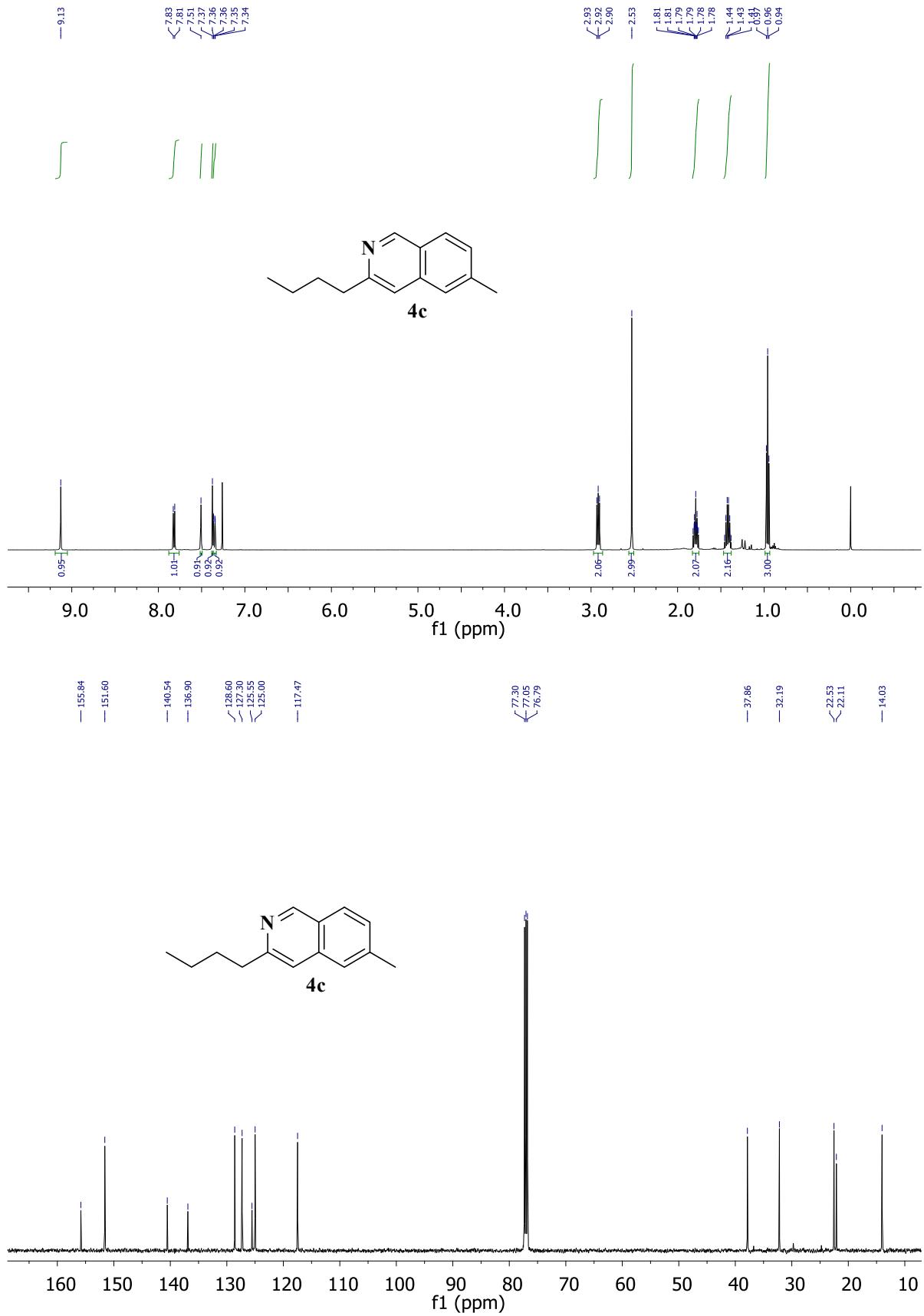
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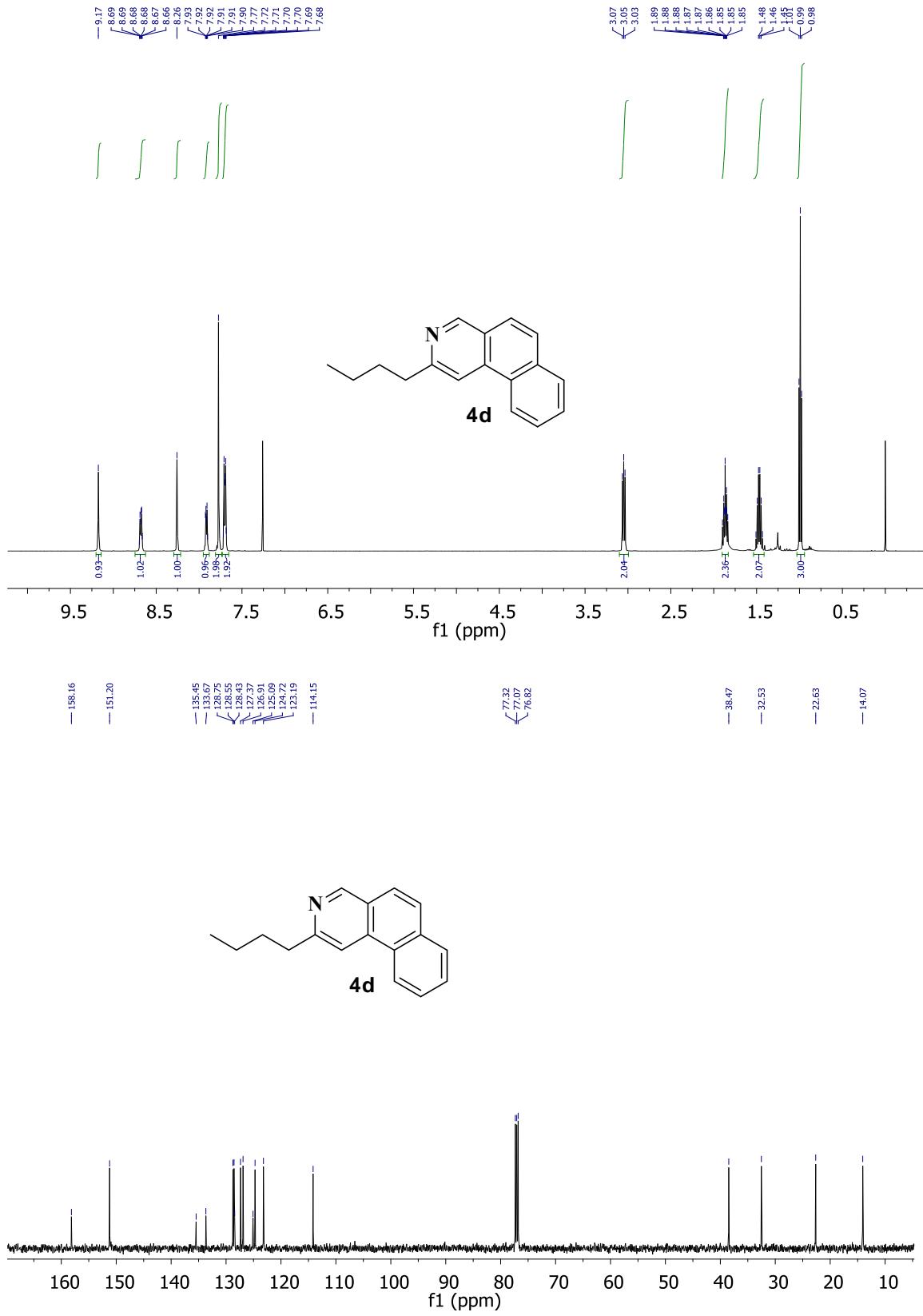


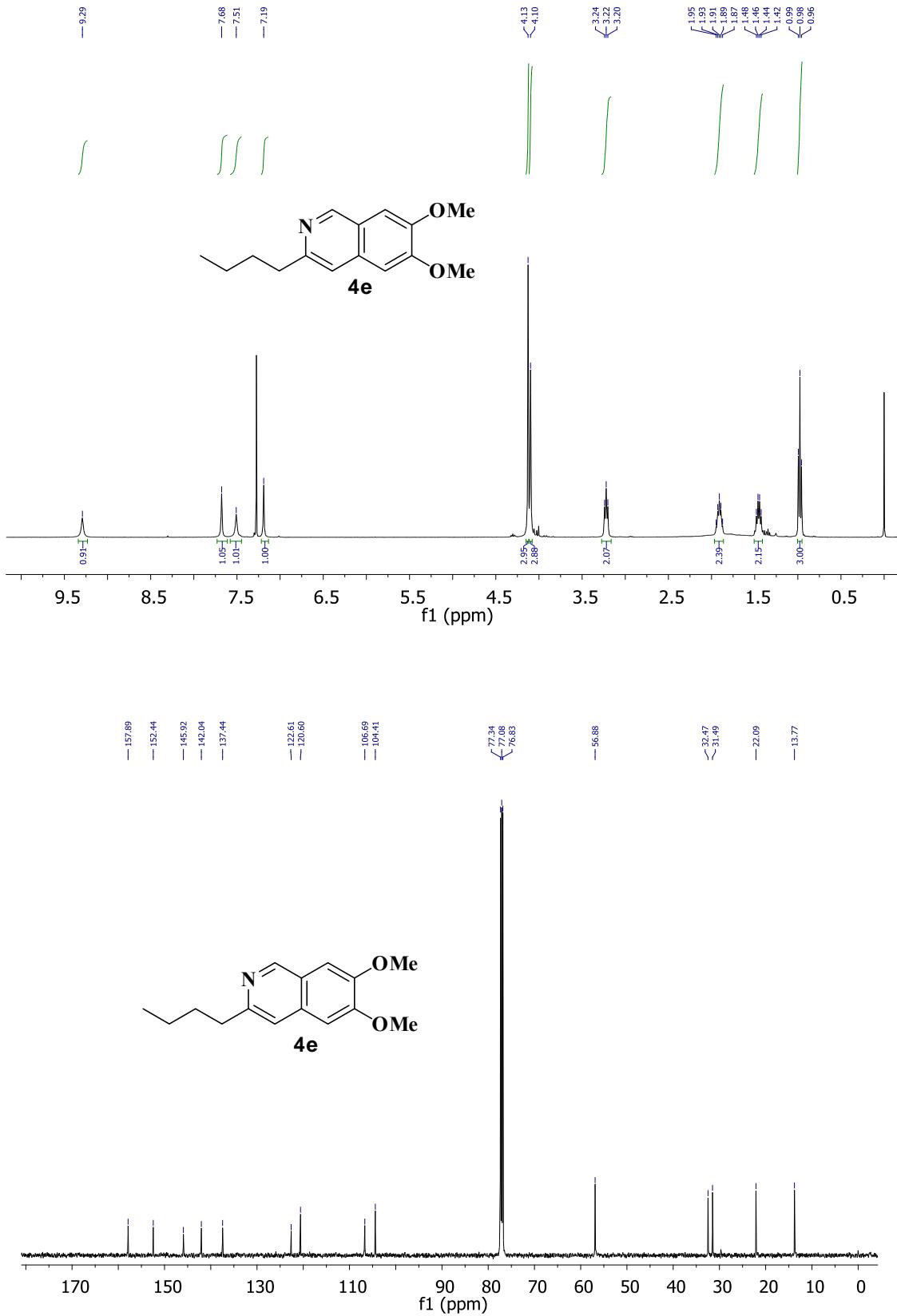


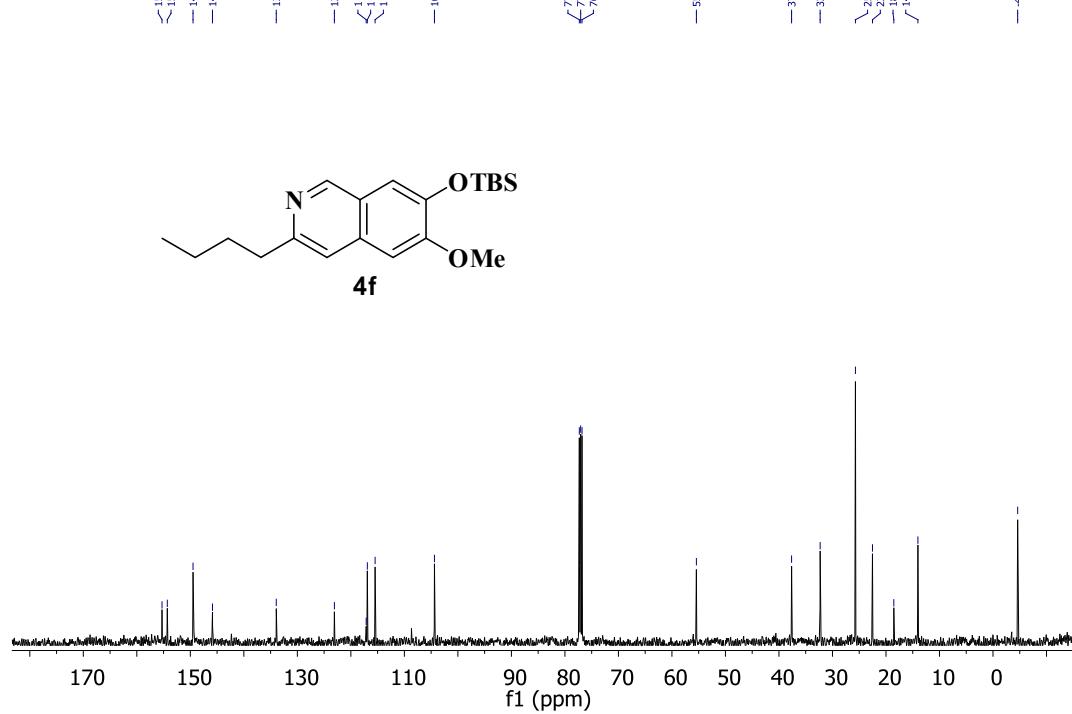
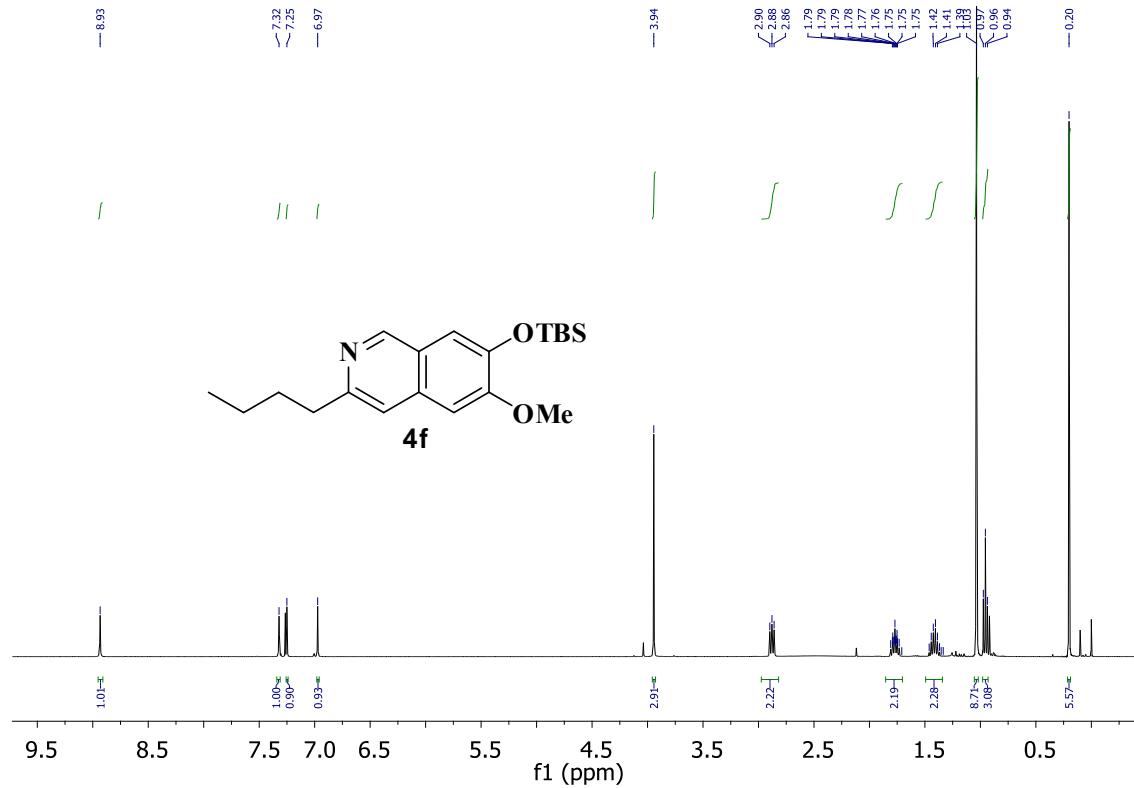


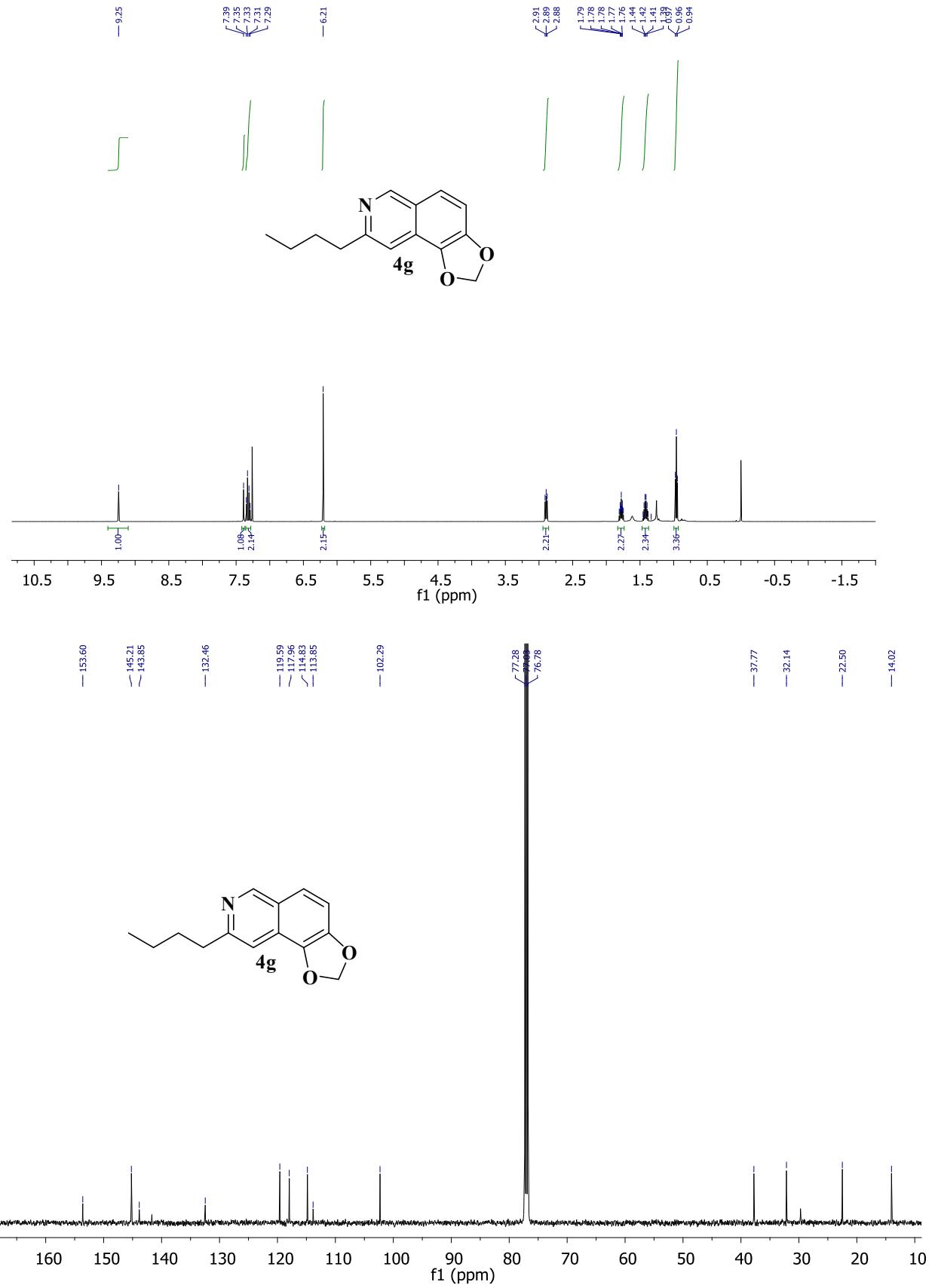


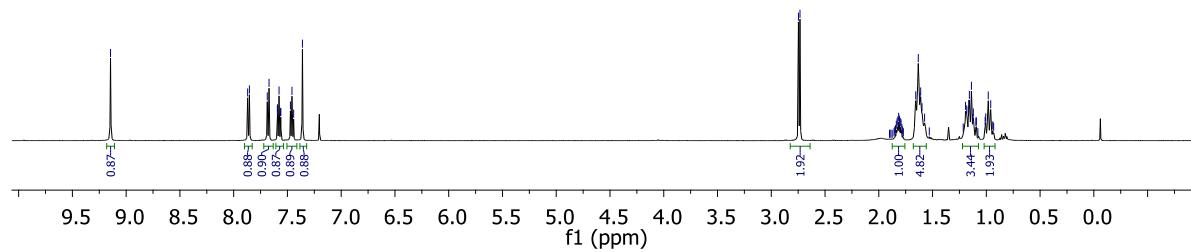
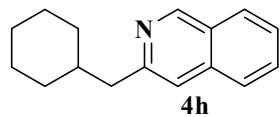
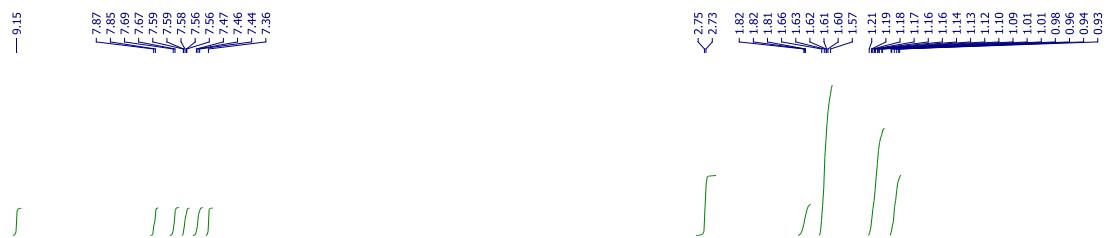






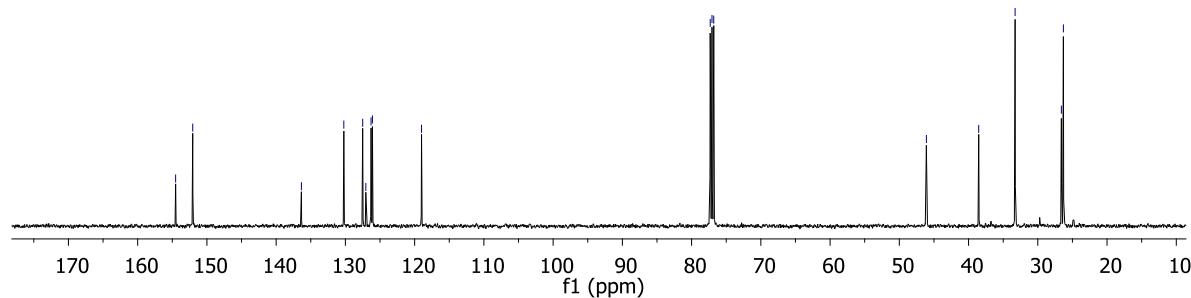
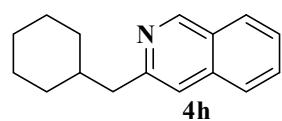


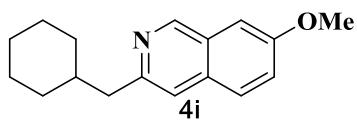
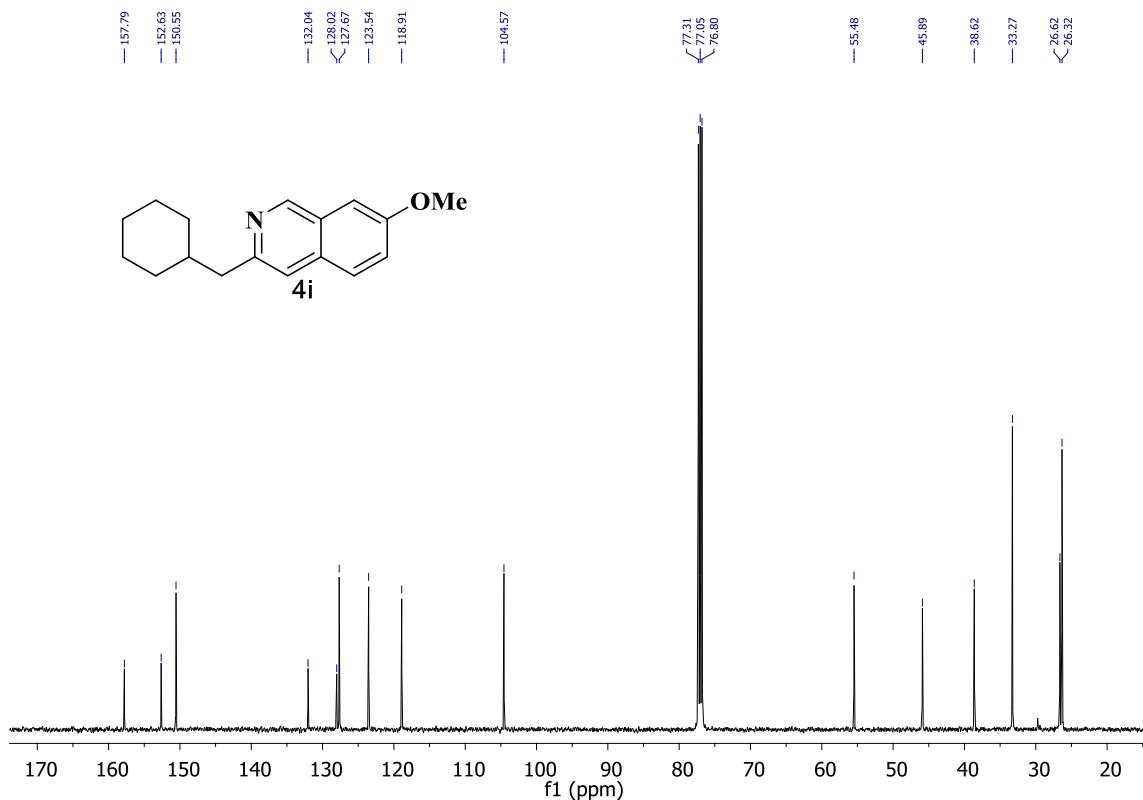
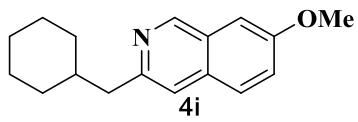
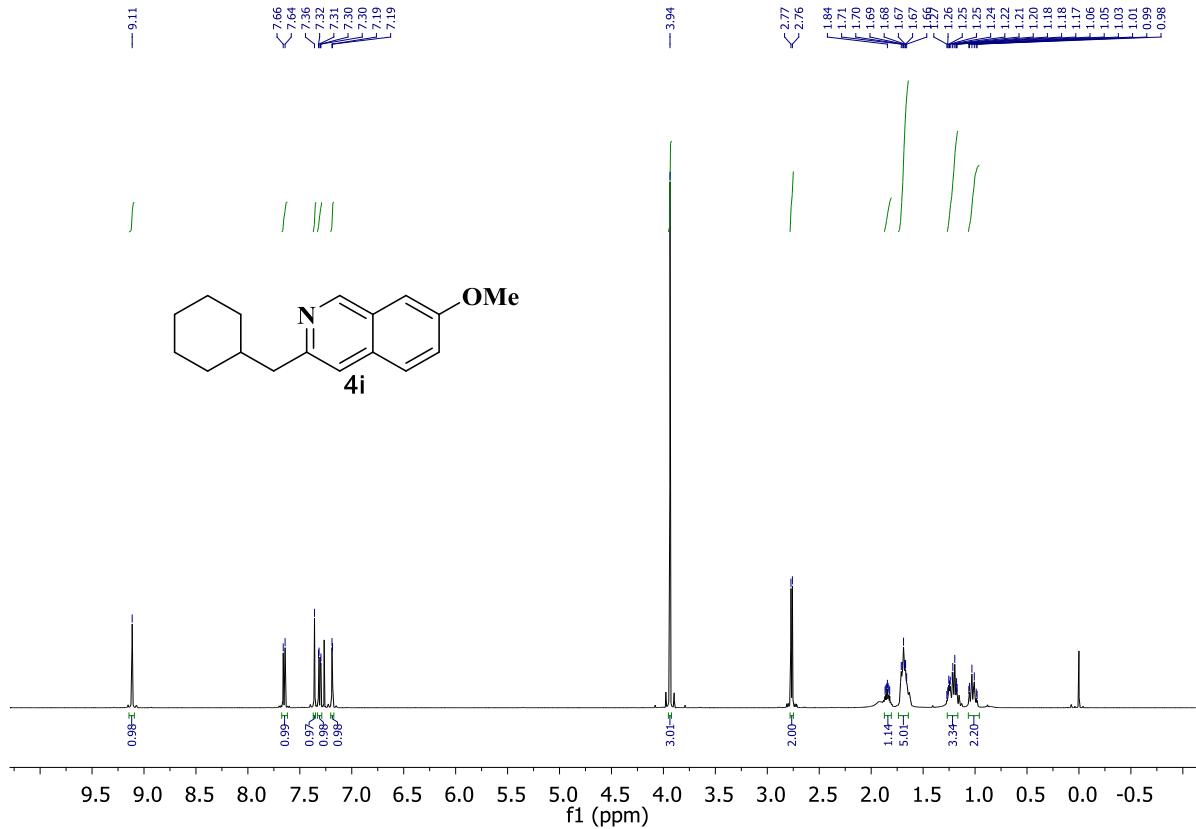


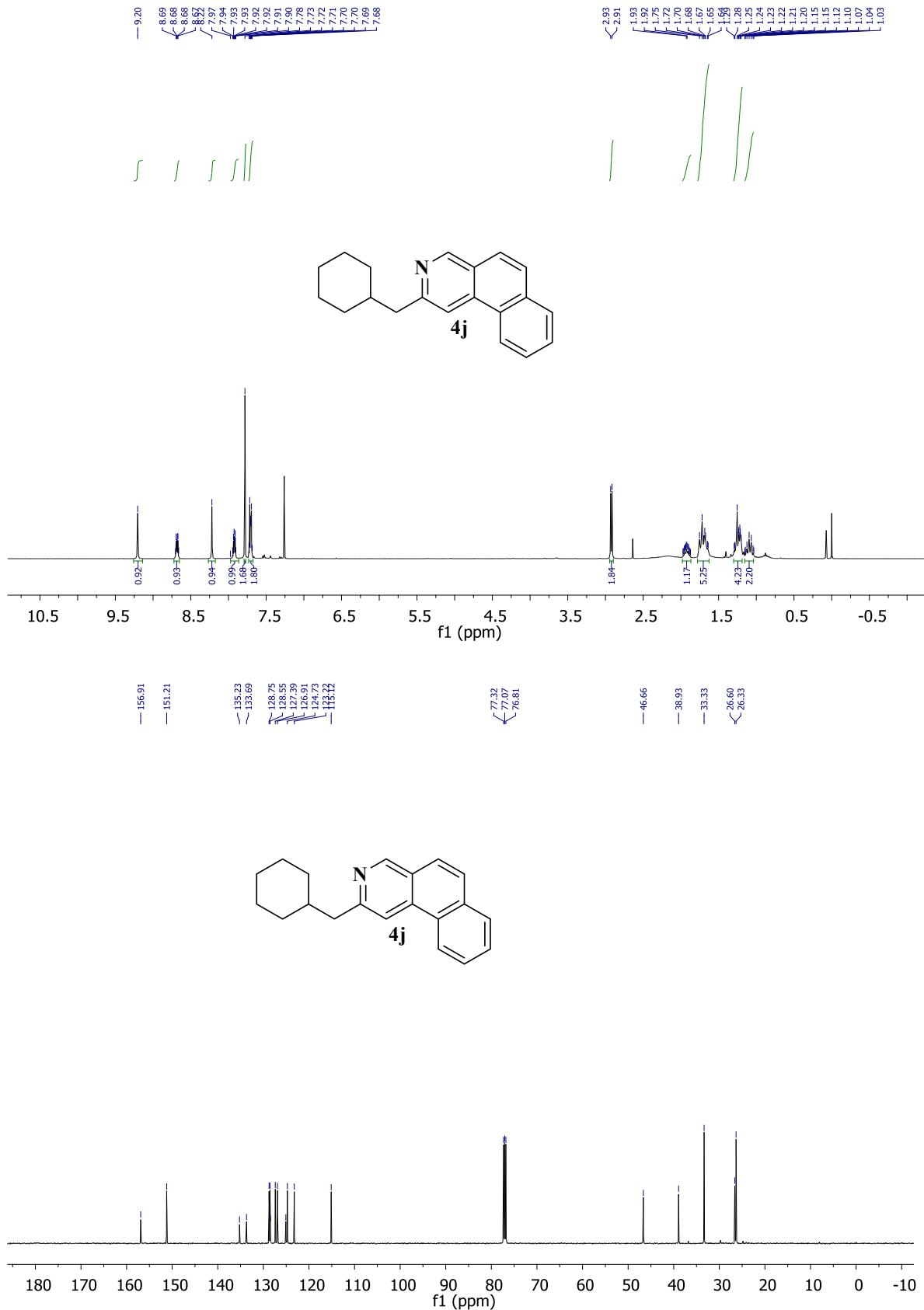


— 154.52
— 152.05
— 136.36
— 130.23
— 127.50
— 127.05
— 126.30
— 126.09
— 119.00

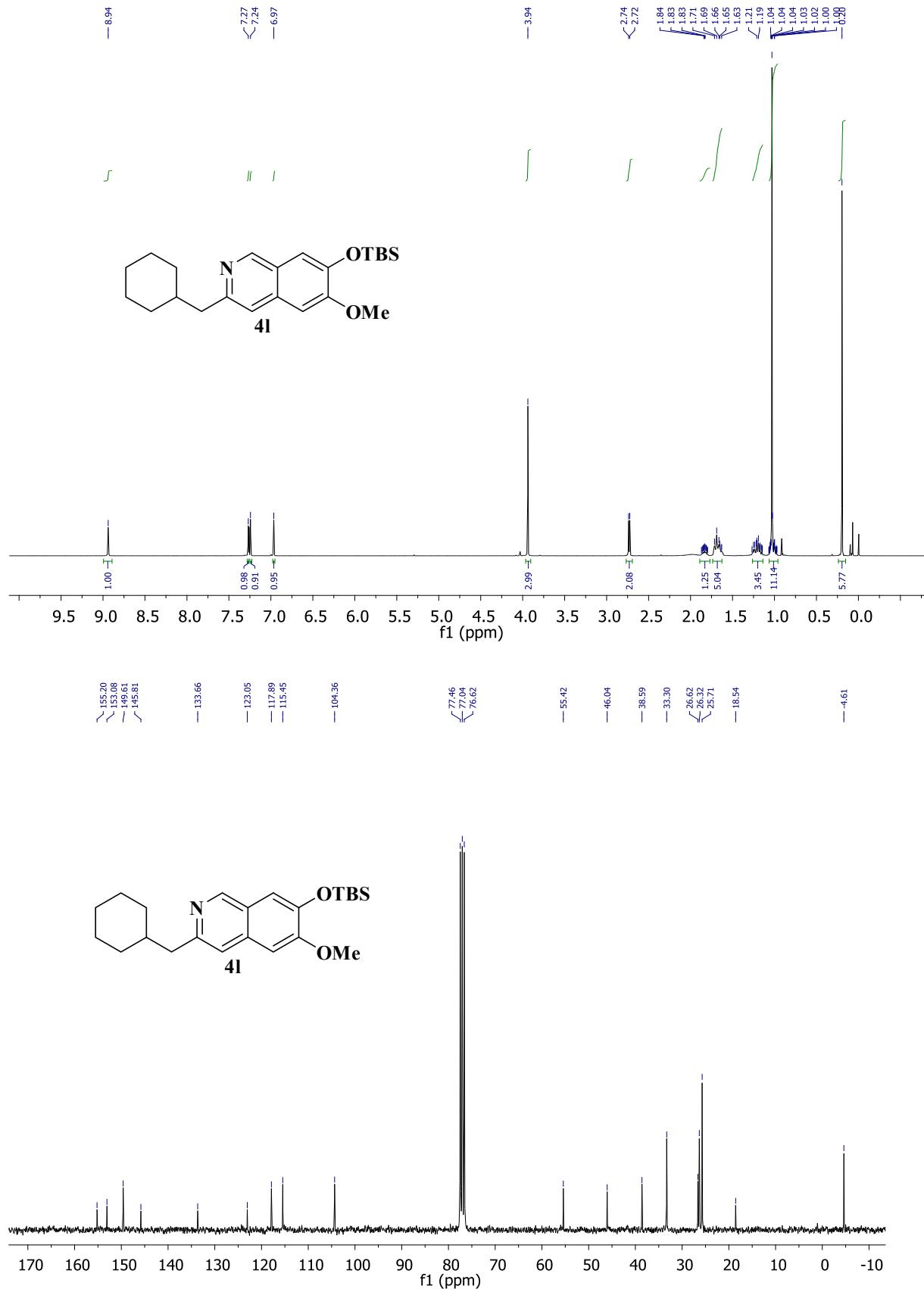
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— 77.06
— 76.80
— 46.09
— 38.53
— 33.28
— 26.60
— 26.30



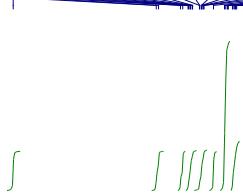




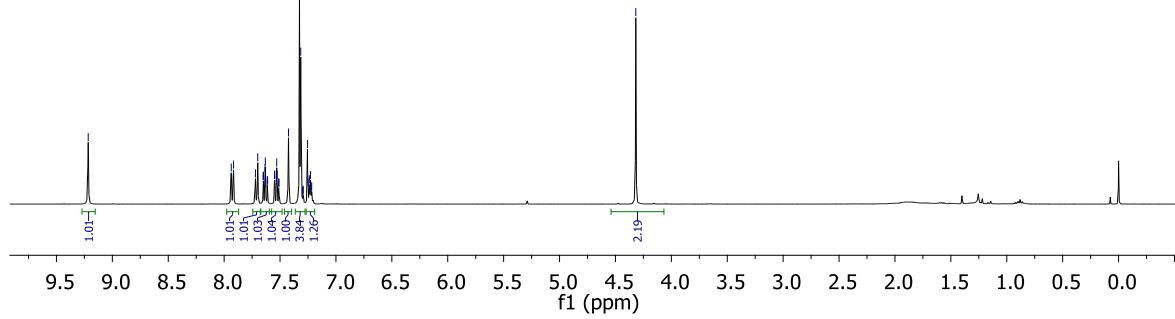
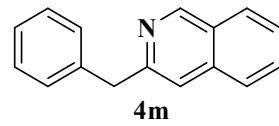




— 9.22
— 7.64
— 7.62
— 7.70
— 7.65
— 7.66
— 7.65
— 7.63
— 7.63
— 7.63
— 7.61



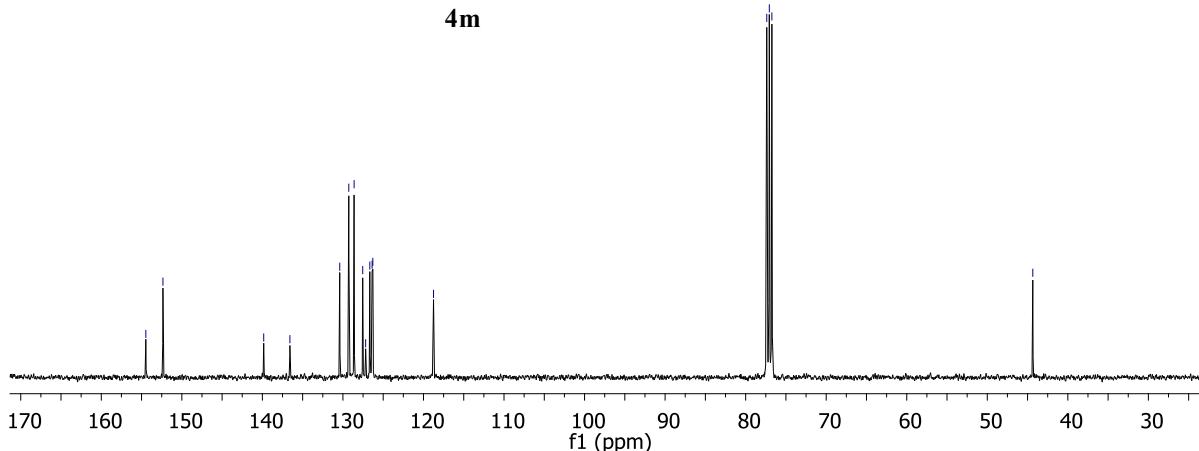
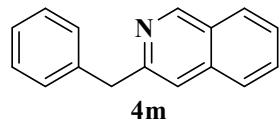
— 4.32

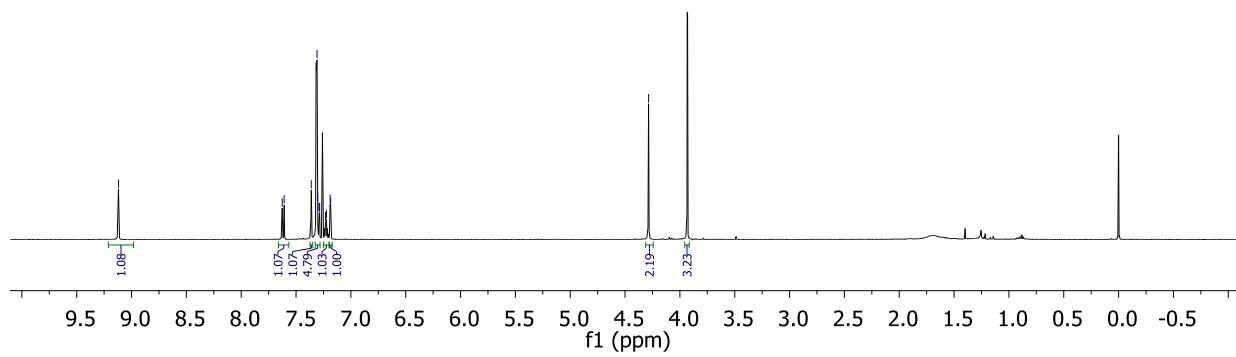
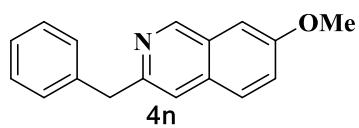
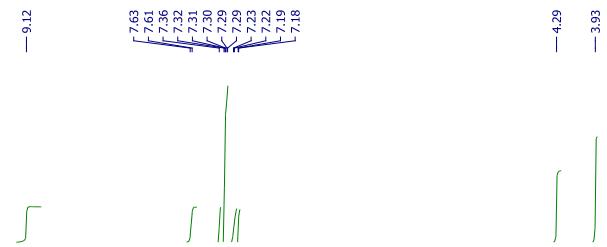


— 139.83
— 136.58
— 130.40
— 129.27
— 128.61
— 127.54
— 127.18
— 126.66
— 126.38
— 126.29
— 118.75

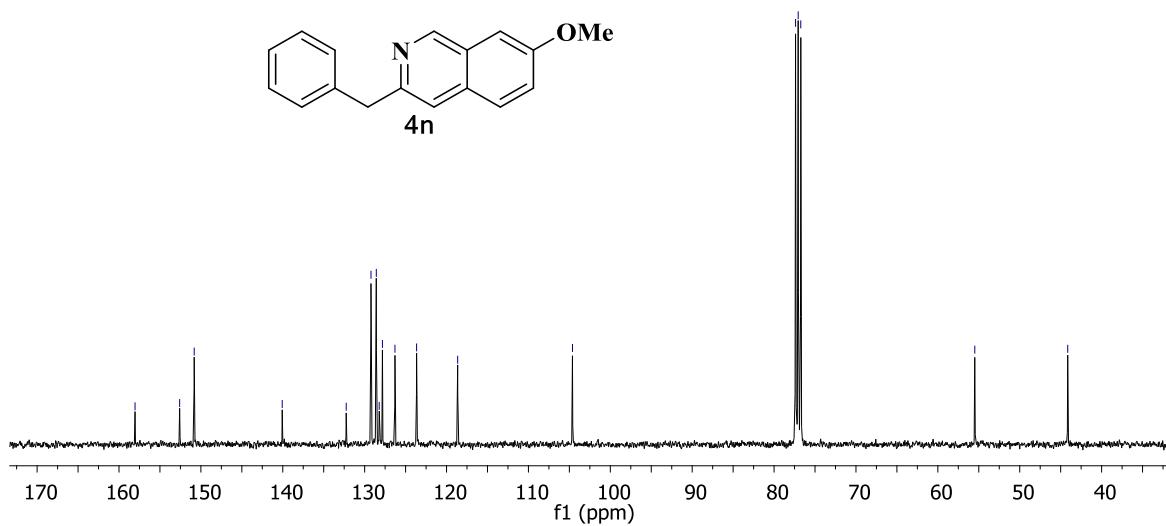
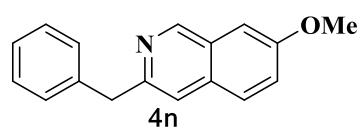
— 77.38
— 77.06
— 76.75

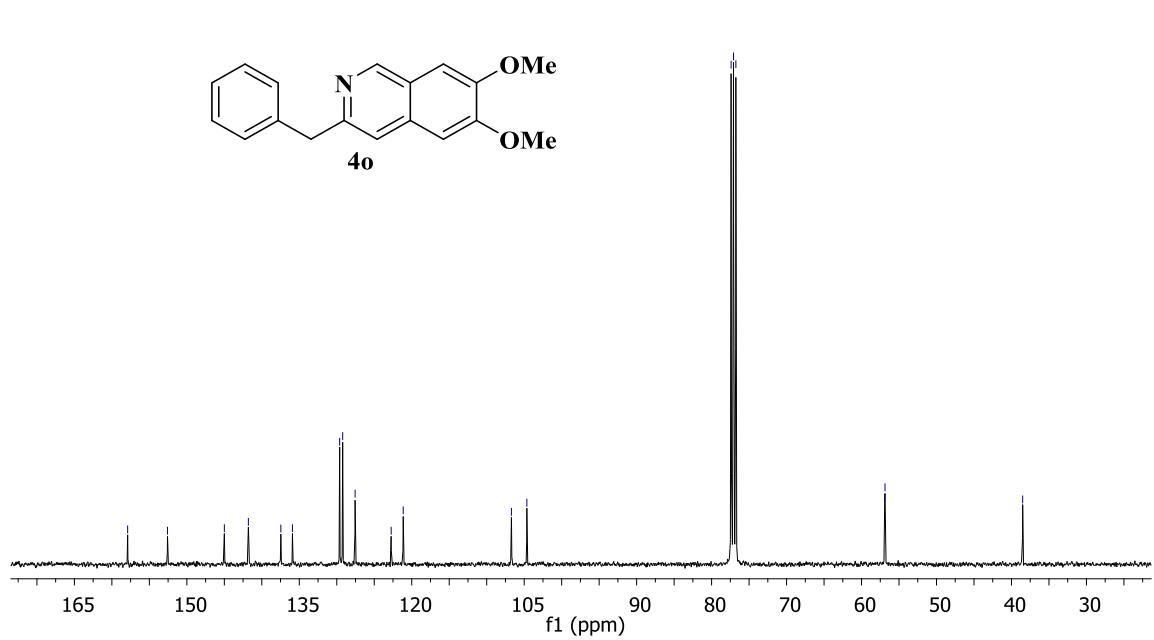
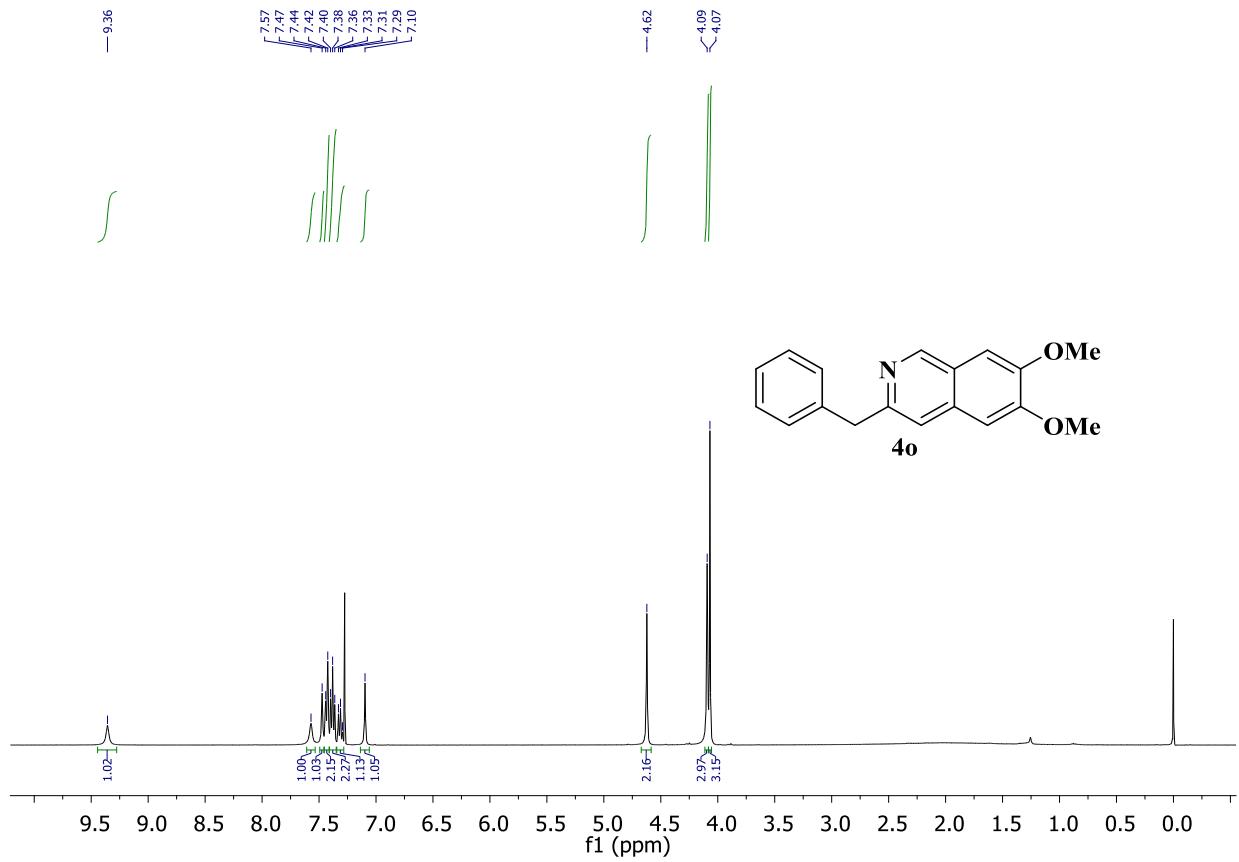
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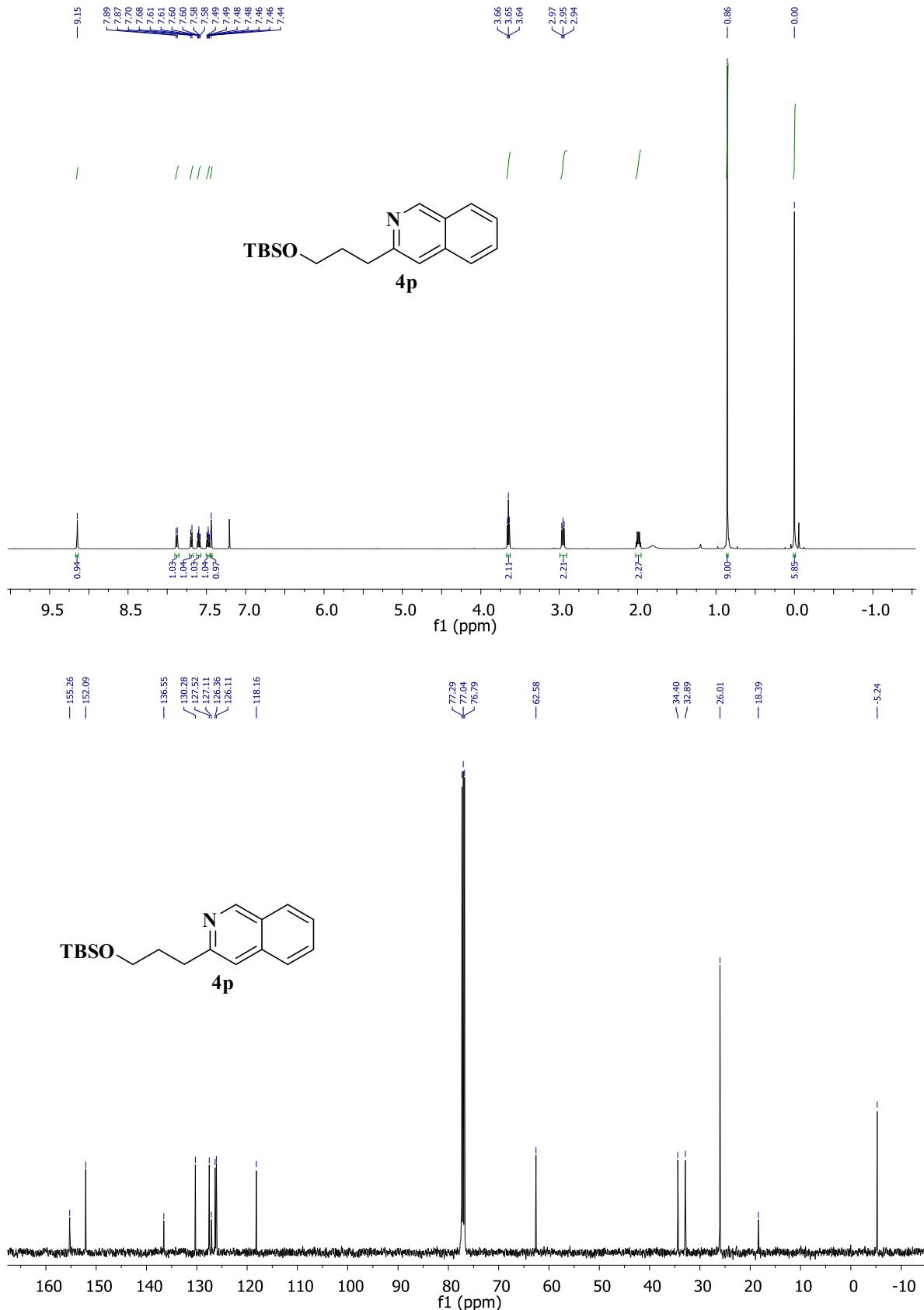


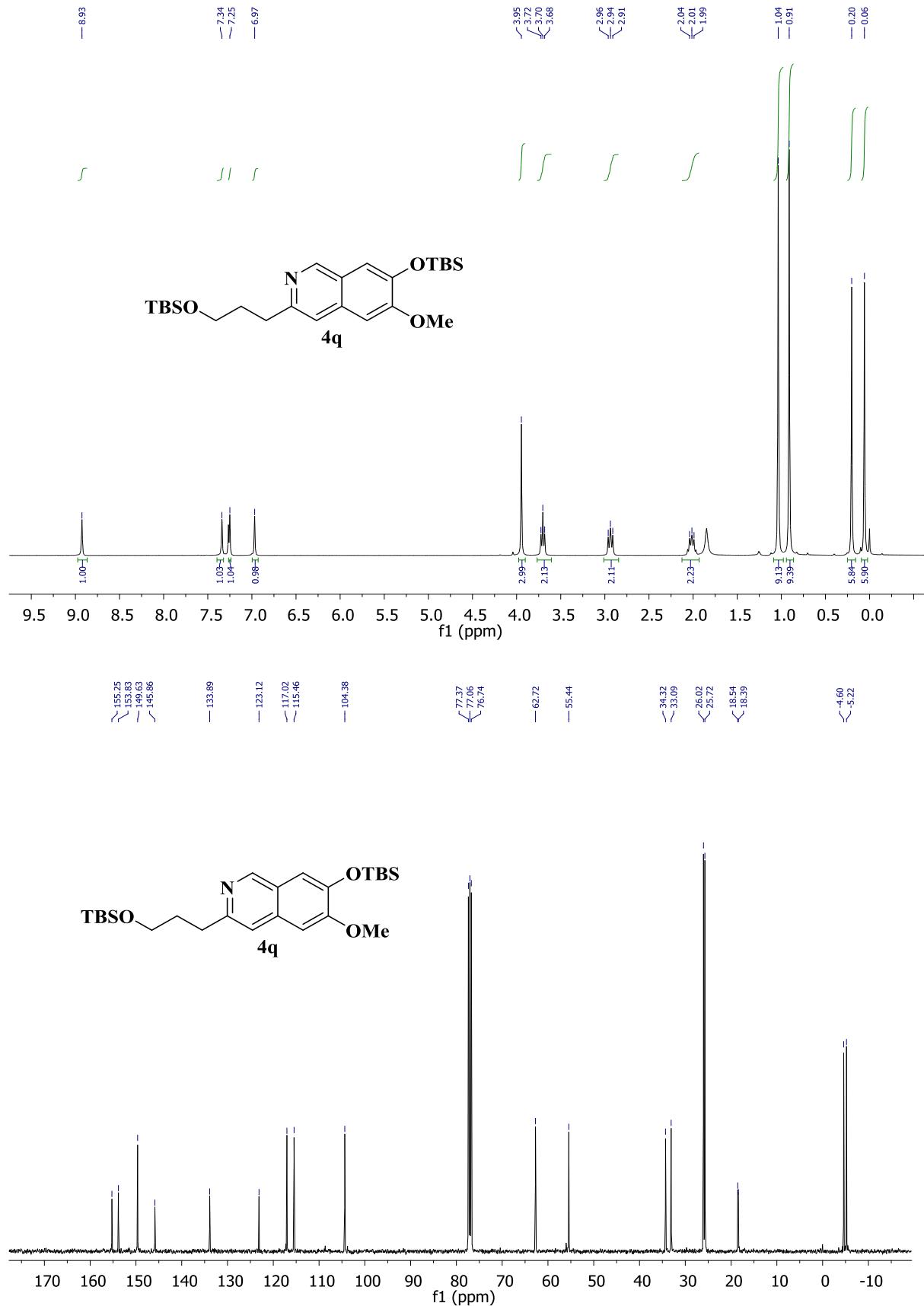


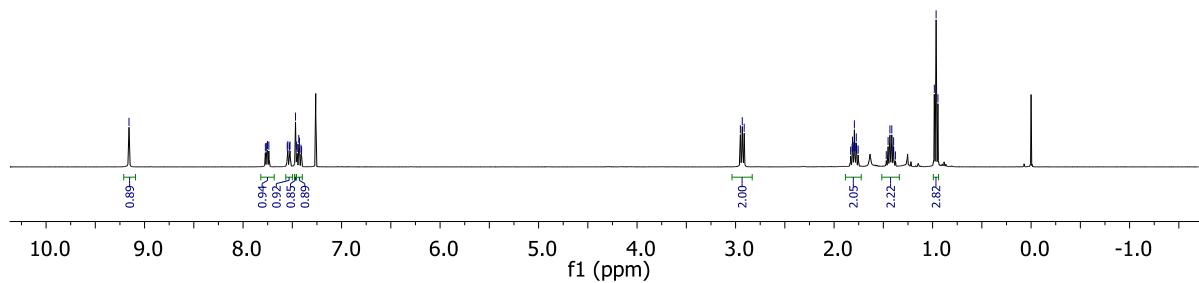
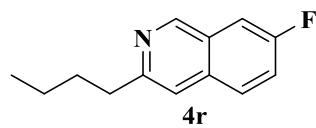
— 158.04
— 152.59
— 150.82
— 140.07
— 132.25
— 129.22
— 125.58
— 125.52
— 125.53
— 125.50
— 125.06
— 118.64
— 104.62
— 55.49
— 44.14







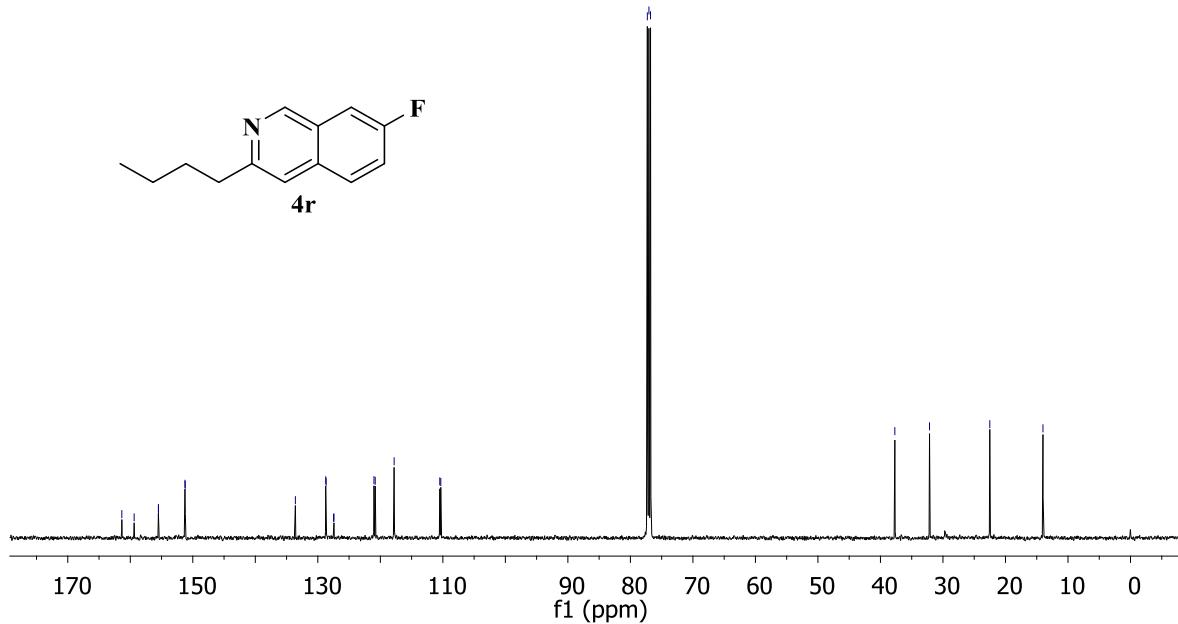
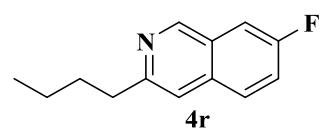




— 165.35
 — 155.38
 < 155.50
 < 155.49
 < 155.25
 < 151.21

— 133.59
 — 128.74
 — 128.67
 < 127.48
 < 127.42
 < 121.02
 ~ 120.82
 ~ 117.79
 < 110.49
 < 110.33

< 77.29
 < 77.04
 < 76.78
 — 37.70
 — 32.15
 — 22.51
 — 14.00

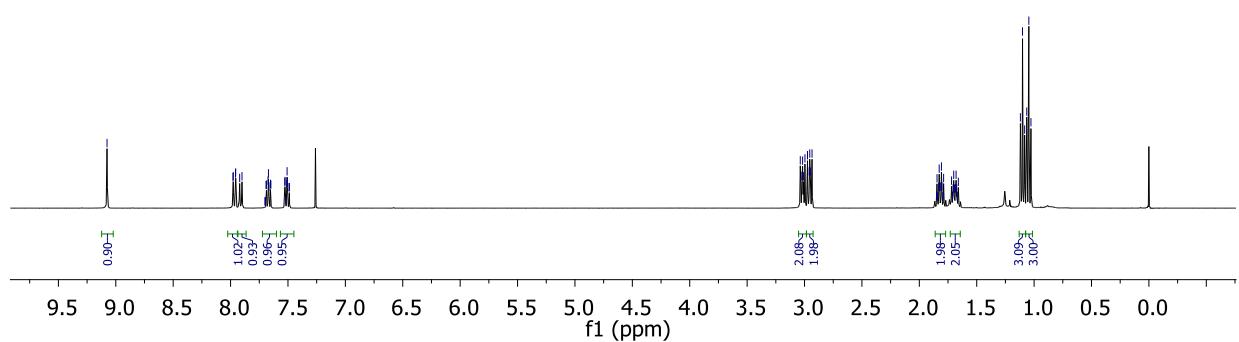
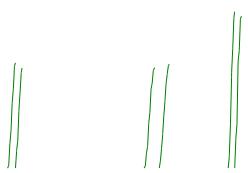
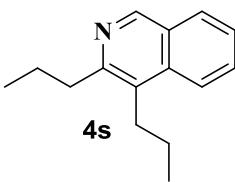




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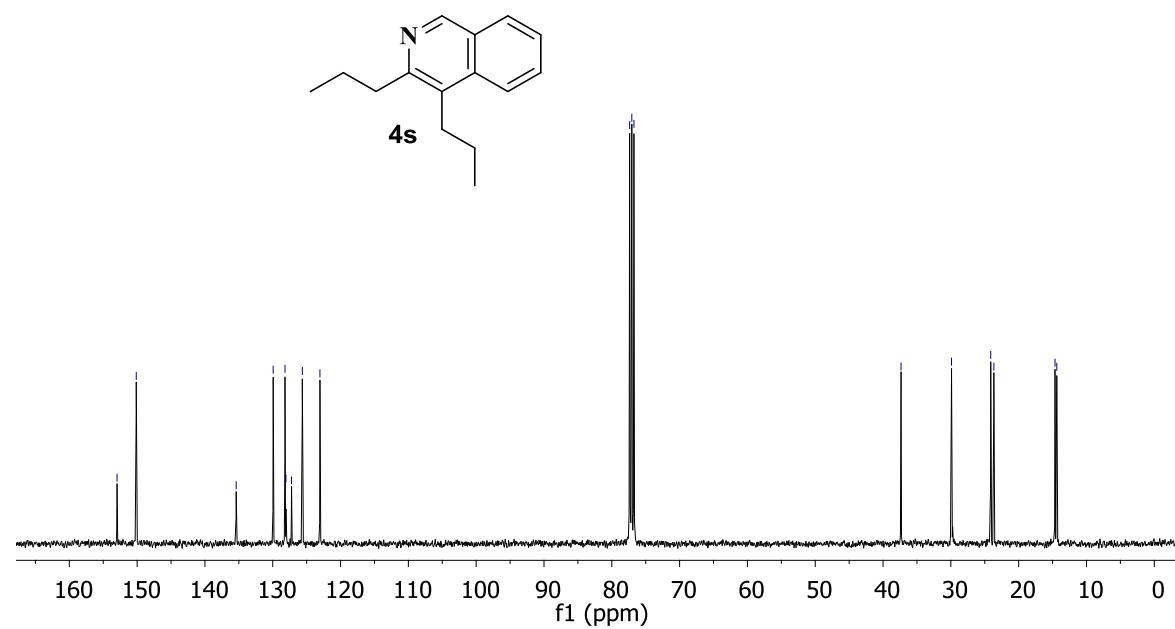


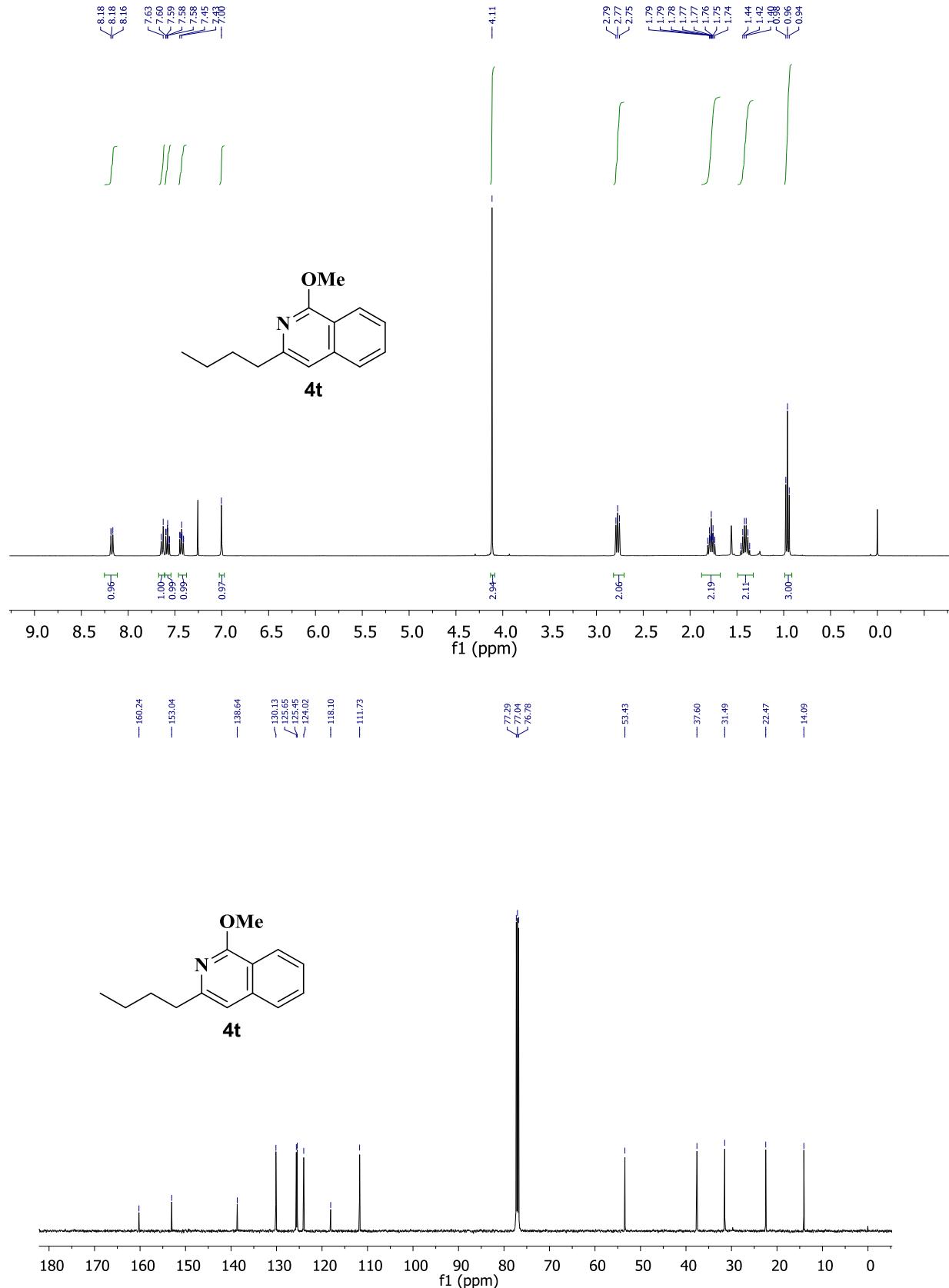
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— 150.13

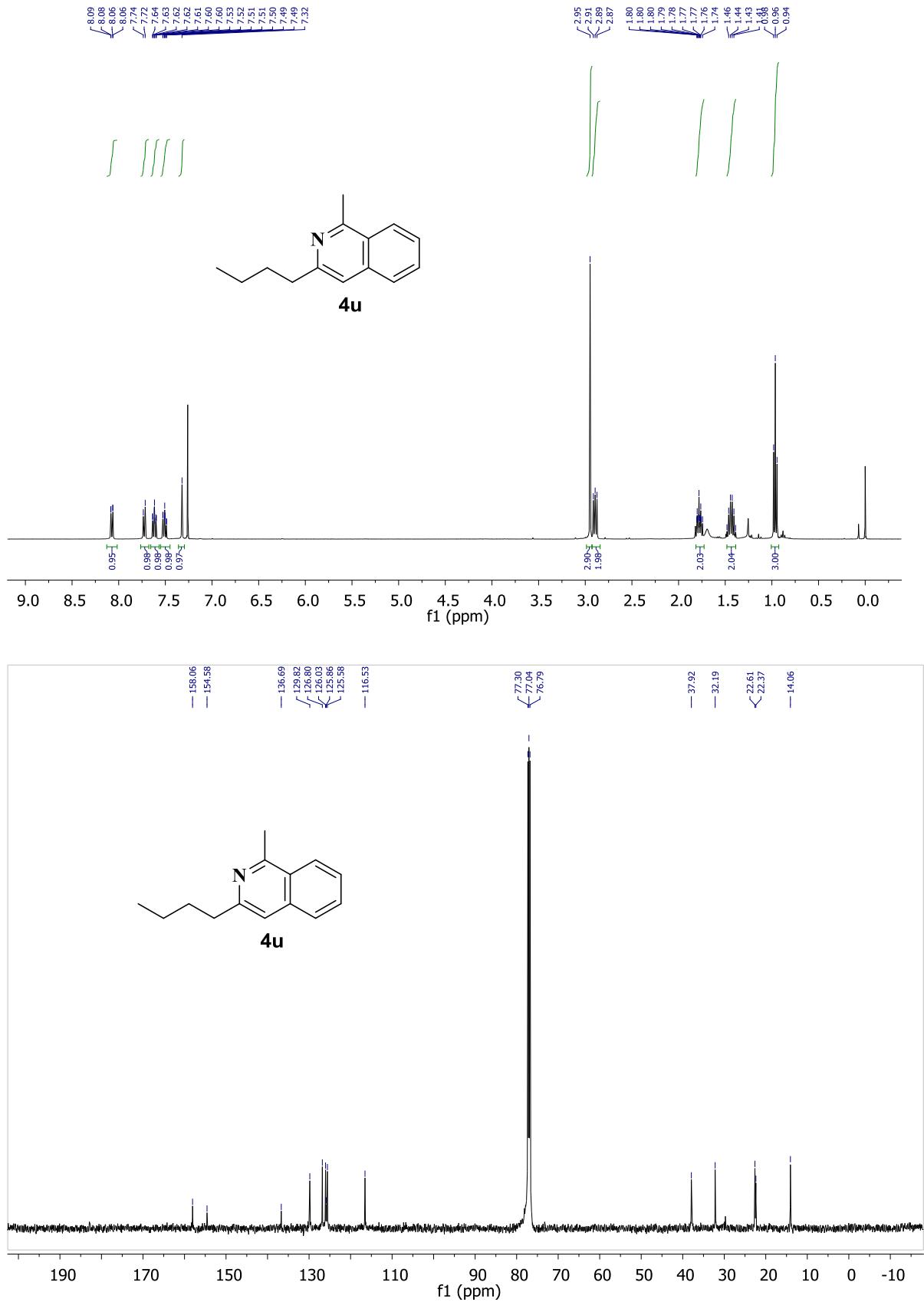
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— 129.94
— 128.19
— 128.05
— 127.23
— 126.64
— 123.04

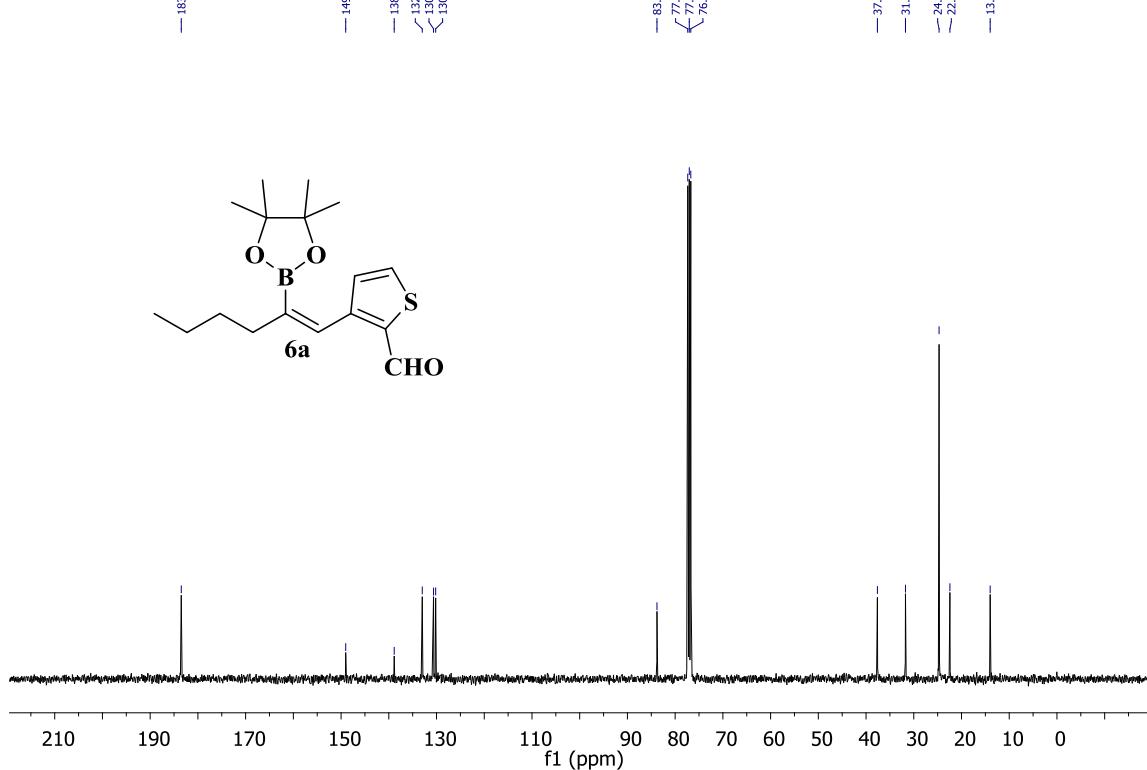
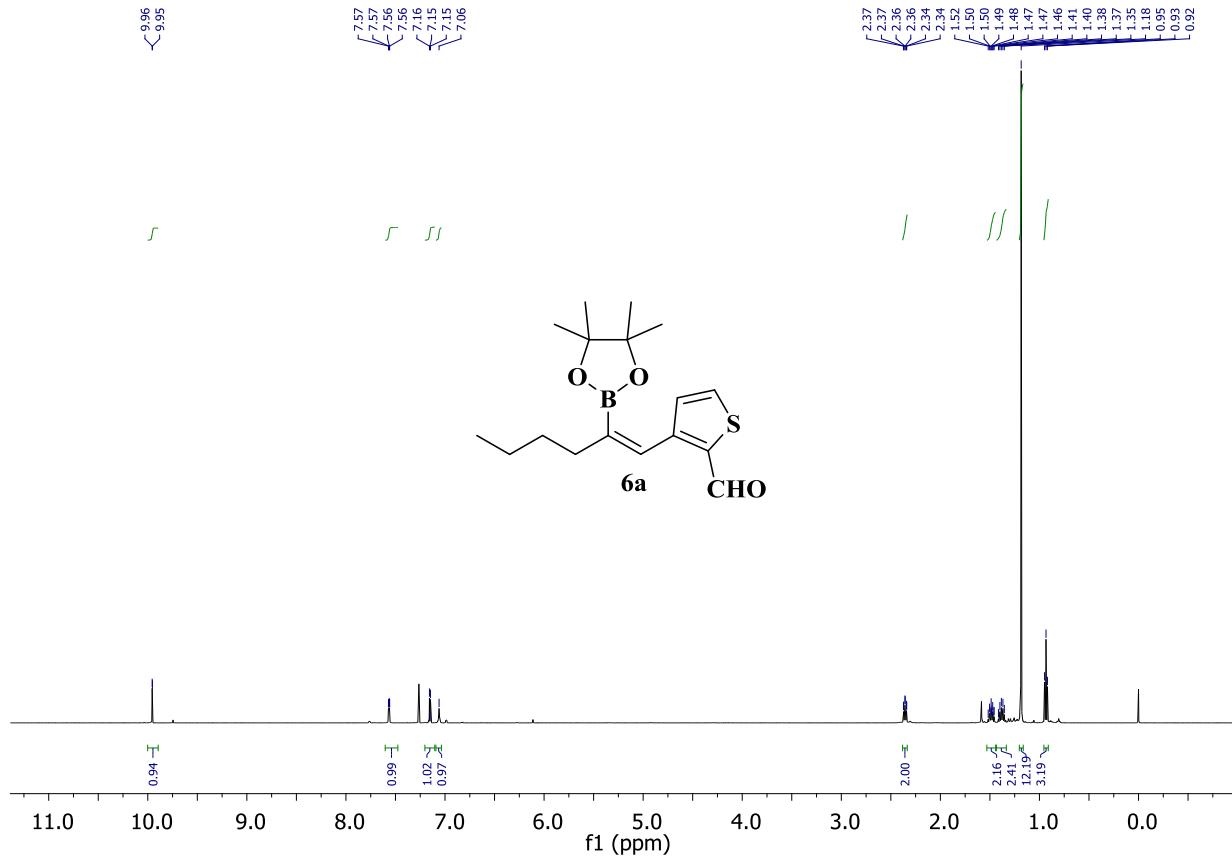
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— 77.05
— 76.73

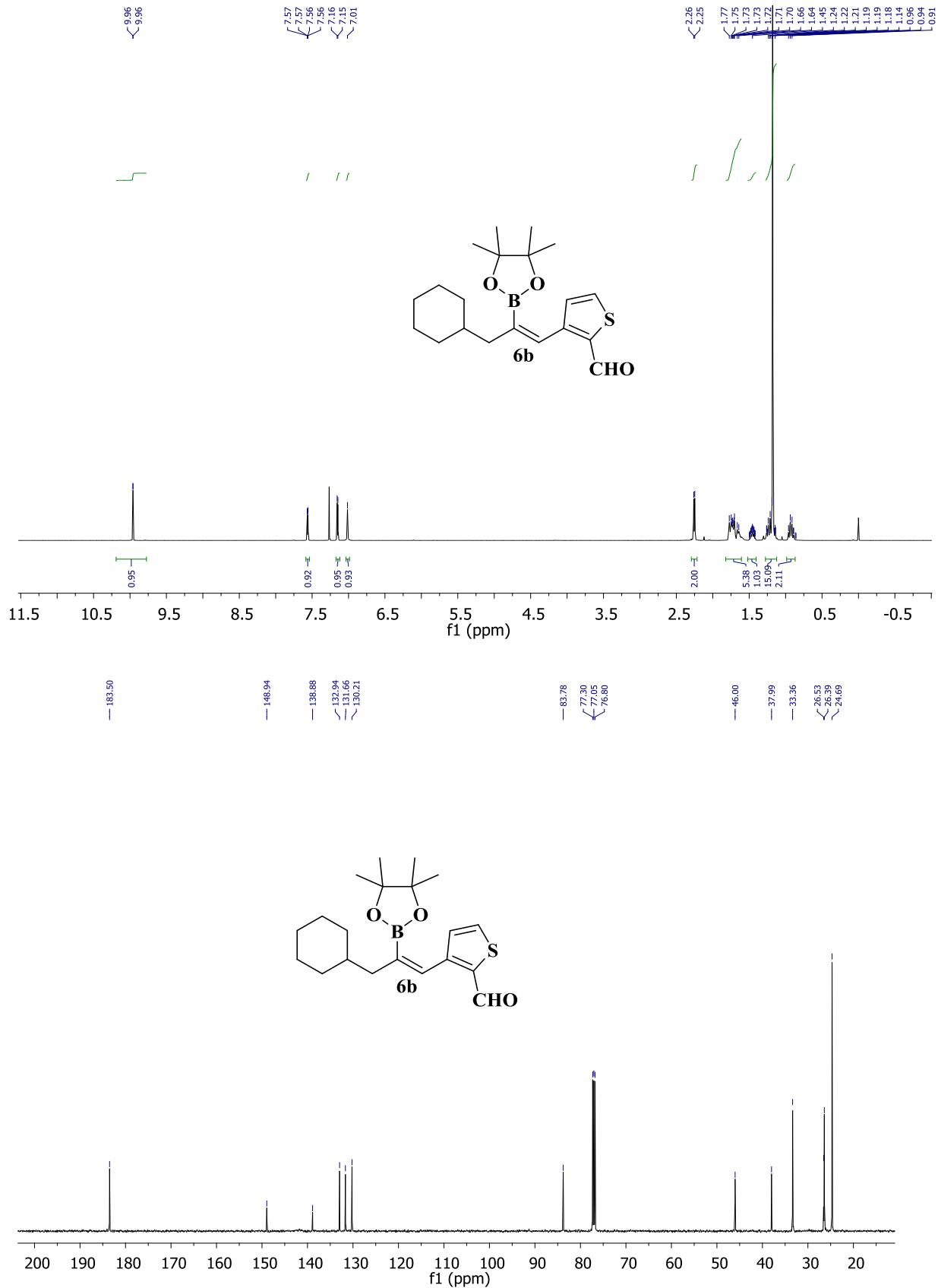
— 37.35
— 29.90
— 24.12
— 23.66

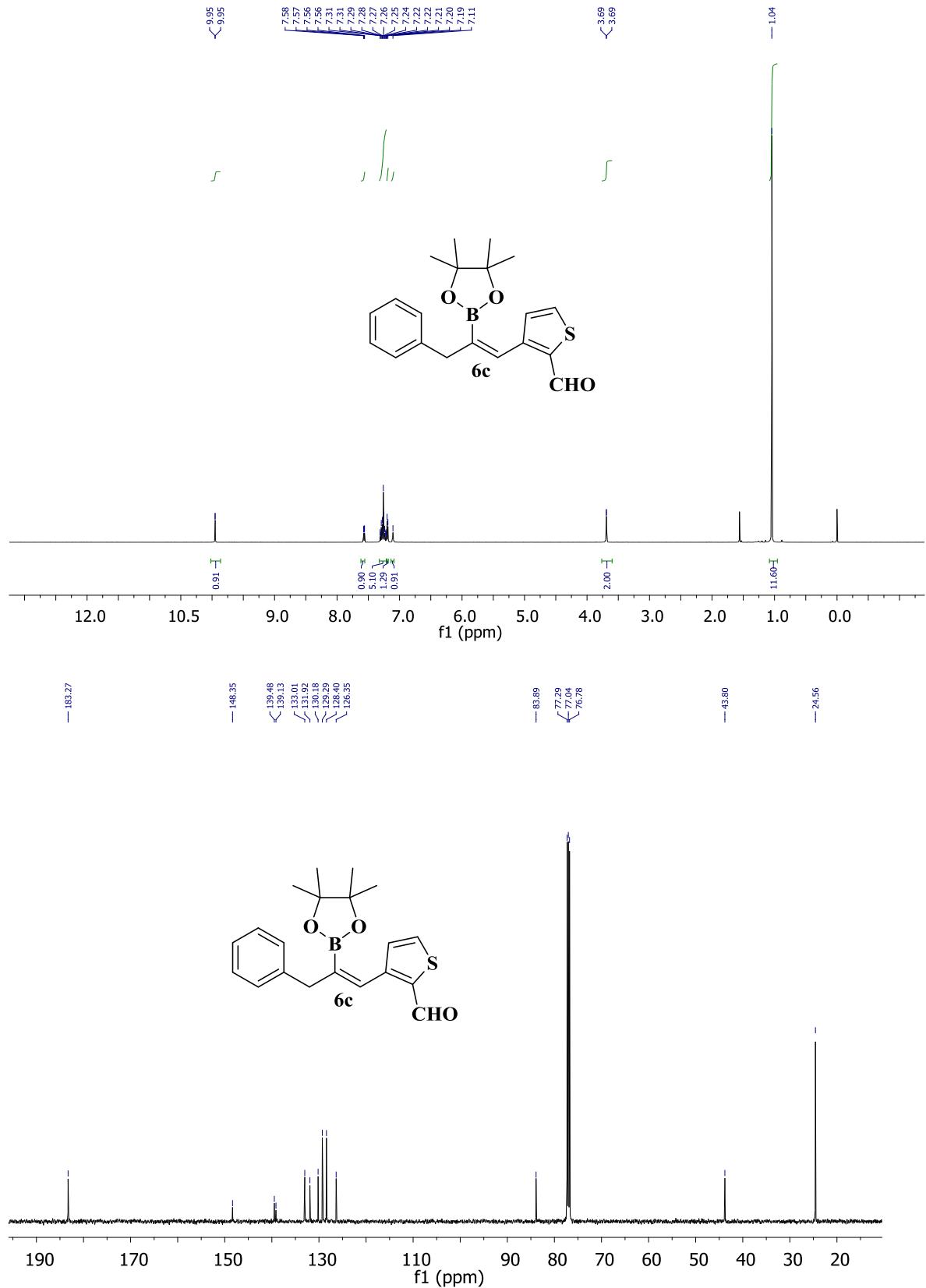












— 10.08

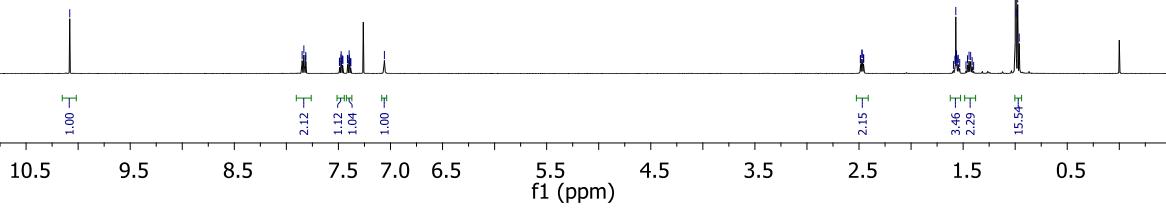
7.85
7.83
7.81
7.81
7.48
7.47
7.46

2.49
2.48
2.47
2.47
2.46
2.45
1.57
1.57
1.56
1.55
1.44
1.06
0.98
0.98
0.96

∫

∫ ∫ ∫

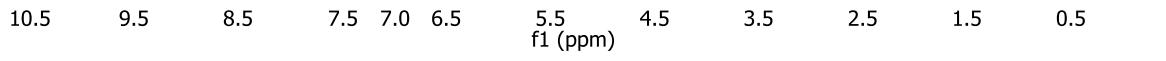
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— 105.92

— 145.58
— 141.37
— 139.74
— 139.12
— 2.12

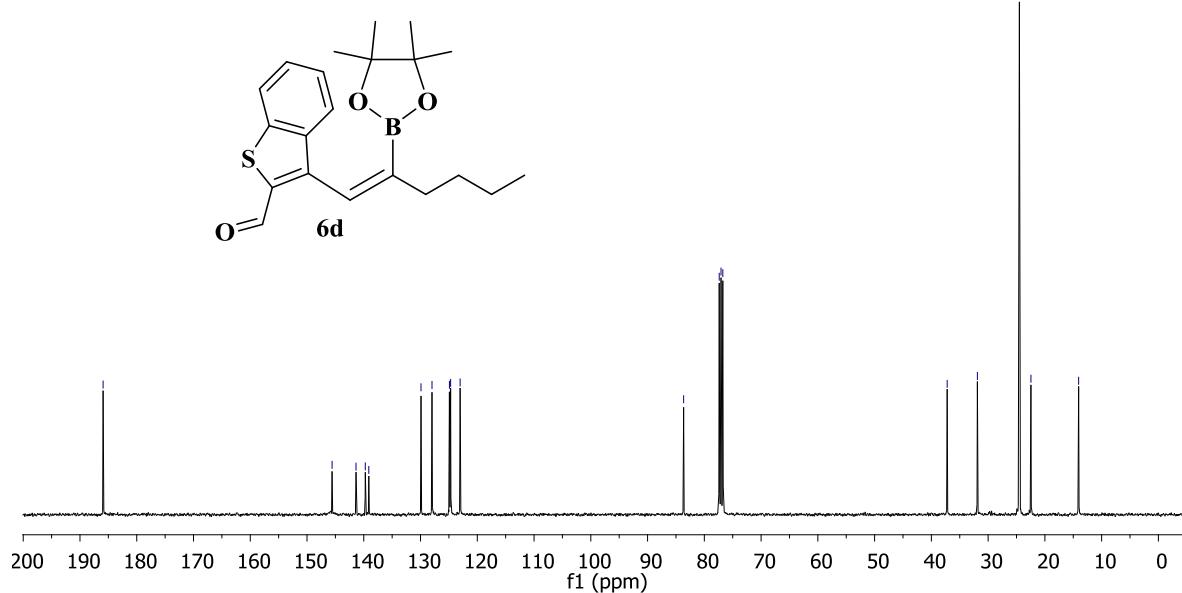
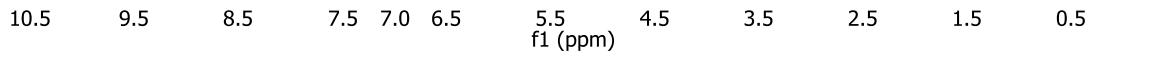
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— 77.38
— 77.06
— 76.74
— 37.21
— 31.89
— 24.49
— 22.46
— 14.05

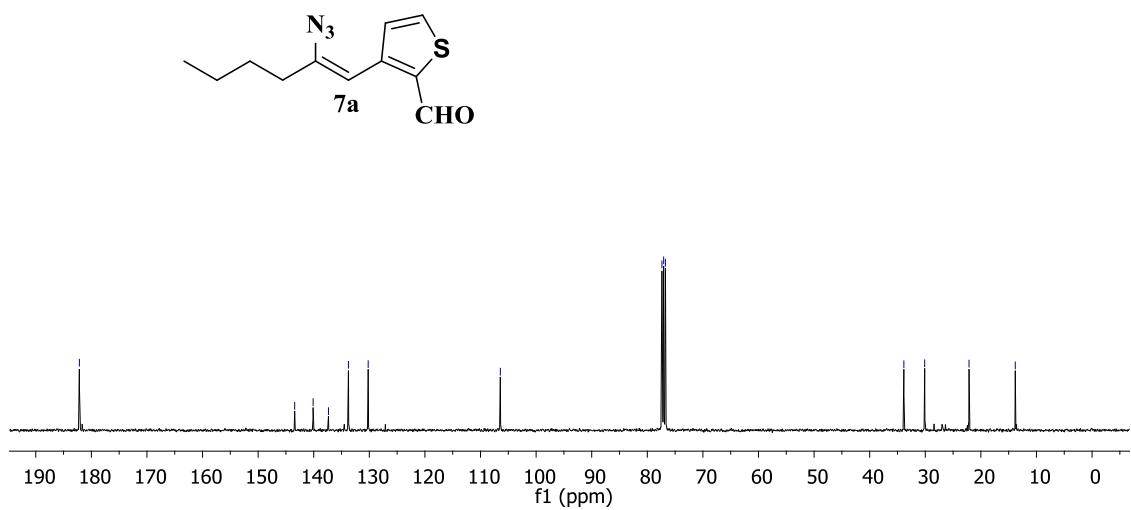
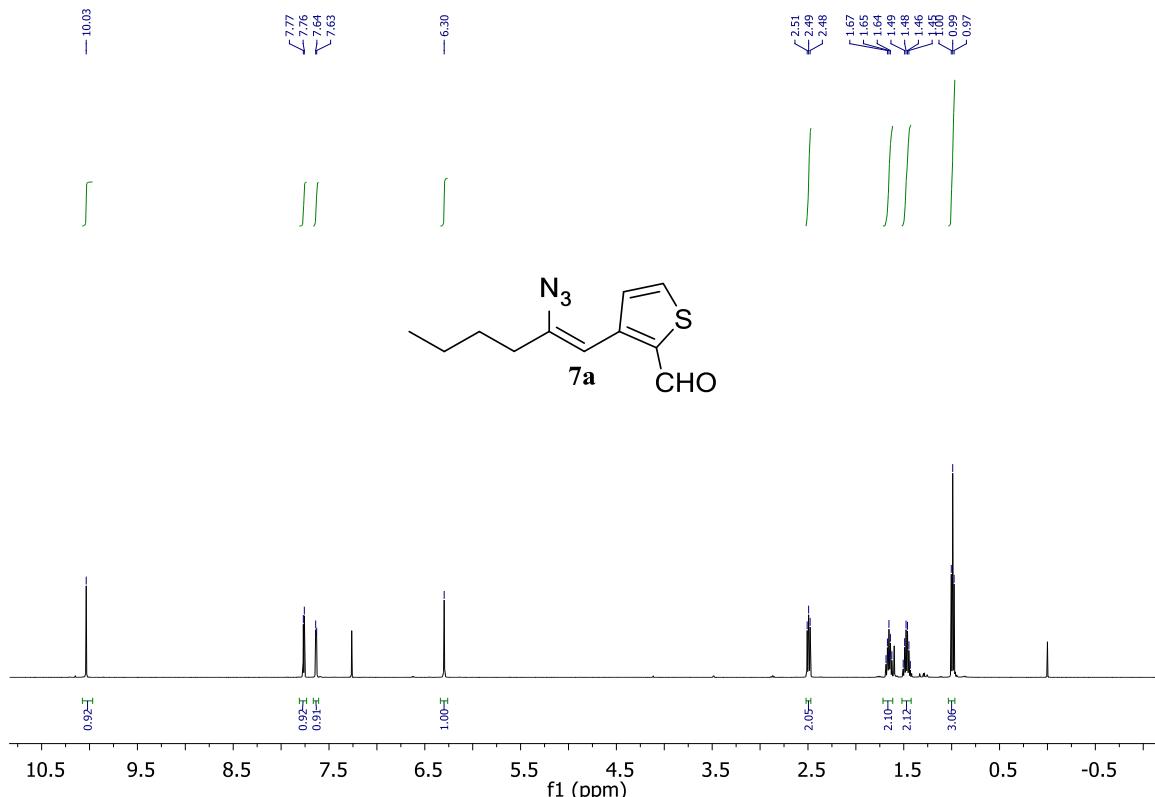


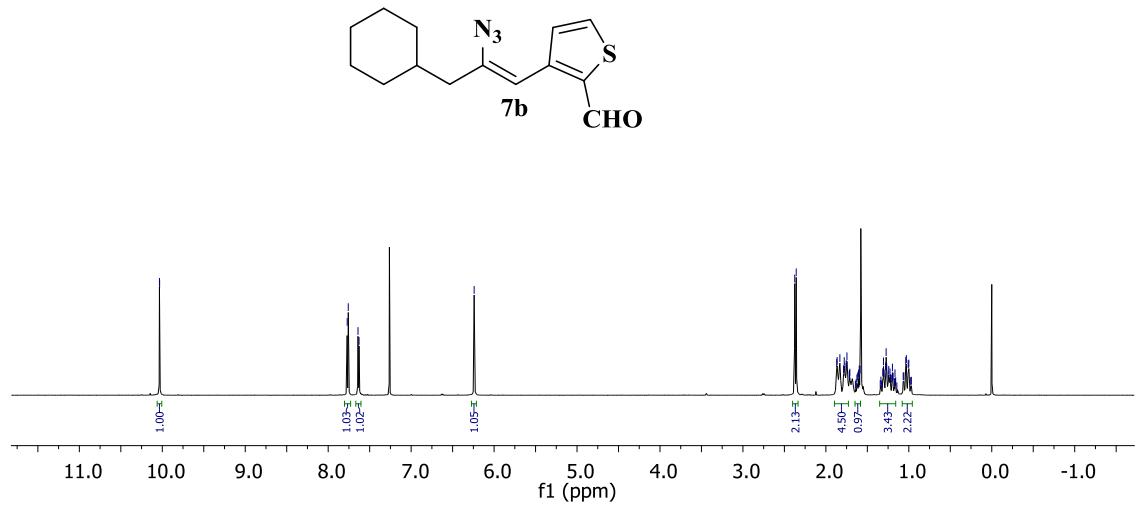
— 105.92

— 145.58
— 141.37
— 139.74
— 139.12
— 2.12

— 83.64
— 77.38
— 77.06
— 76.74
— 37.21
— 31.89
— 24.49
— 22.46
— 14.05







— 182.14
— 143.41
— 138.70
— 137.33
— 133.76
— 130.18
— 107.70
— 42.08
— 36.79
— 32.95
— 26.24
— 26.13

