

Supporting Information-II

NMR Spectral Data

Multi-catalysis cascade reactions based on the methoxycarbonylketene platform: diversity-oriented synthesis of functionalized non-symmetrical malonates for agrochemicals and pharmaceuticals

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Hyderabad 500 046, India

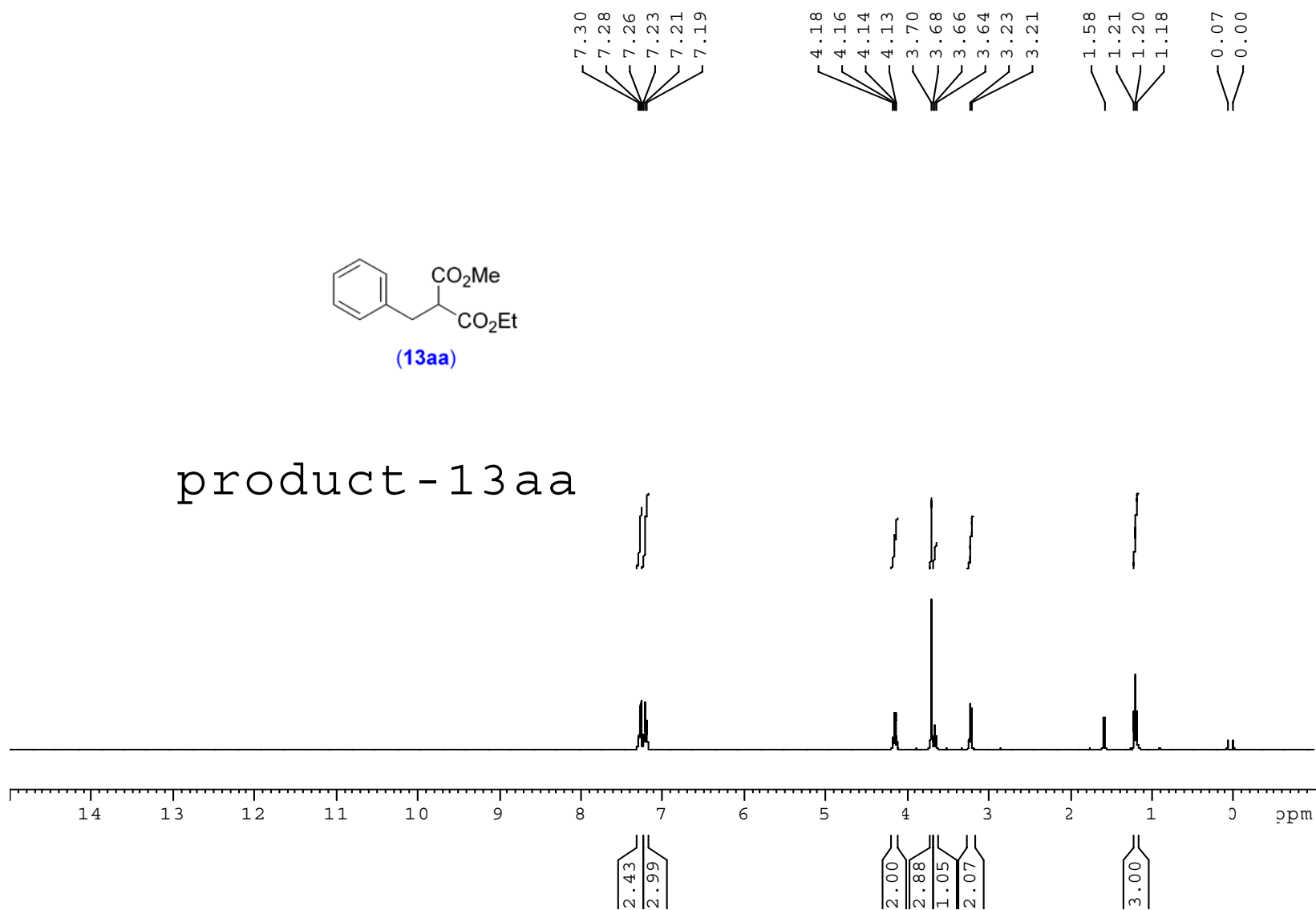
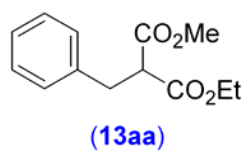
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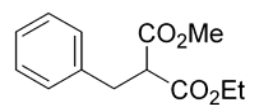
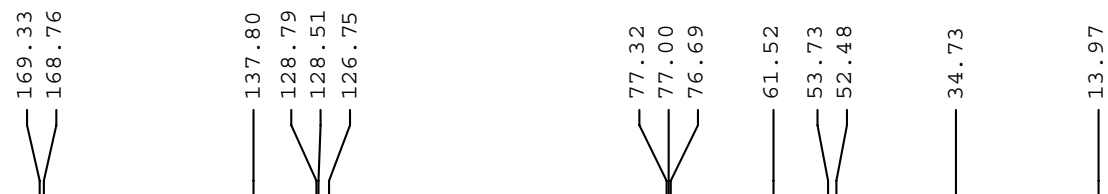
CONTENTS

	Page No.
1. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13aa	S5-7
2. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ab	S8-10
3. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ac	S11-13
4. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ad	S14-16
5. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ae	S17-19
6. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13af	S20-22
7. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ag	S23-25
8. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ah	S26-28
9. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ai	S29-31
10. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ba	S32-34
11. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ca	S35-37
12. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13da	S38-40
13. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ea	S41-43
14. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13fa	S44-46
15. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ga	S47-49
16. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13gb	S50-52
17. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13gi	S53-55
18. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ha	S56-58
19. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13hb	S59-61
20. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ia	S62-64
21. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ja	S65-67
22. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ka	S68-70

23. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13la	S71-73
24. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ma	S74-76
25. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13na	S77-79
26. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ni	S80-82
27. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13oa	S83-85
28. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13pa	S86-88
29. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13qa	S89-91
30. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ra	S92-94
31. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13sa	S95-97
32. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ta	S98-100
33. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ua	S101-103
34. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13va	S104-106
35. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13wa	S107-109
36. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13xa	S110-112
37. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13ya	S113-115
38. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13za	S116-118
39. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13a'a	S119-121
40. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13a'i	S122-124
41. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13b'a	S125-127
42. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13b'i	S128-130
43. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13c'a	S131-133
44. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13d'a	S134-136
45. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13e'b	S137-139

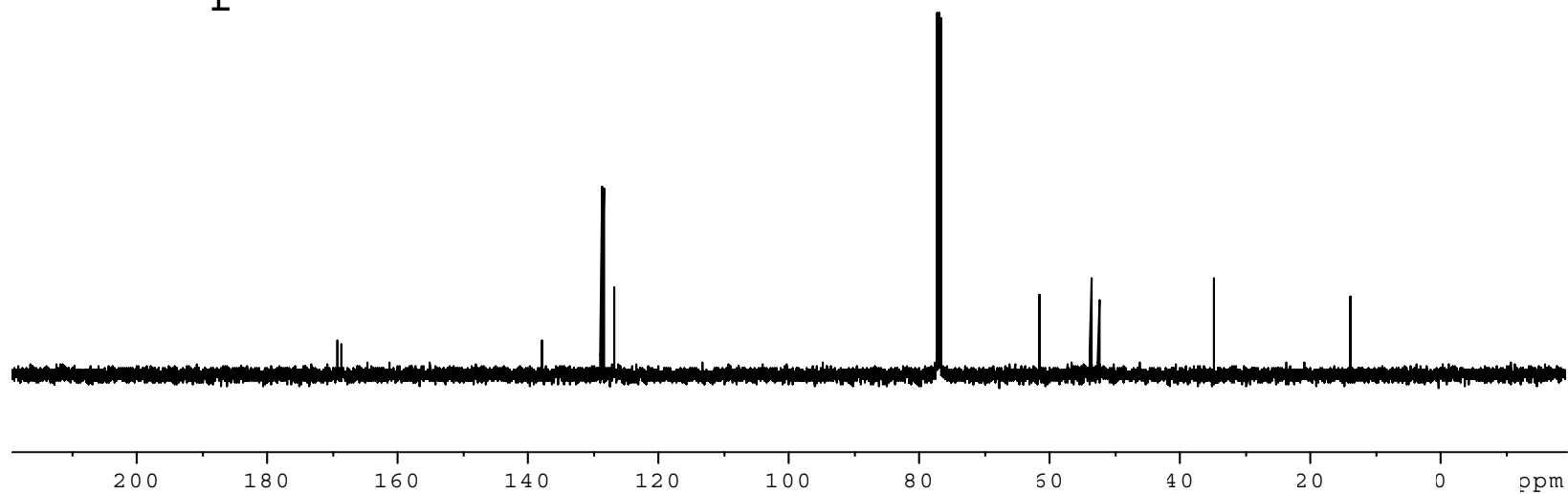
46. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13f'b	S140-142
47. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13g'i	S143-145
48. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13h'a	S146-148
49. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13h'i	S149-151
50. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13i'a	S152-154
51. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13j'a	S155-157
52. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13j'i	S158-160
53. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13k'a	S161-163
54. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 13l'b	S164-166
55. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 16aaa	S167-169
56. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 16aab	S170-172
57. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 16aac	S173-175
58. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 16aad	S176-178
59. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 16aae	S179-181
60. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 17a	S182-184
61. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 18da	S185-187
62. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 18ea	S188-190
63. ^1H NMR, ^{13}C NMR and DEPT Spectrums of Compound 22ha	S191-193

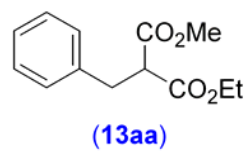




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product - 13aa





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61.53

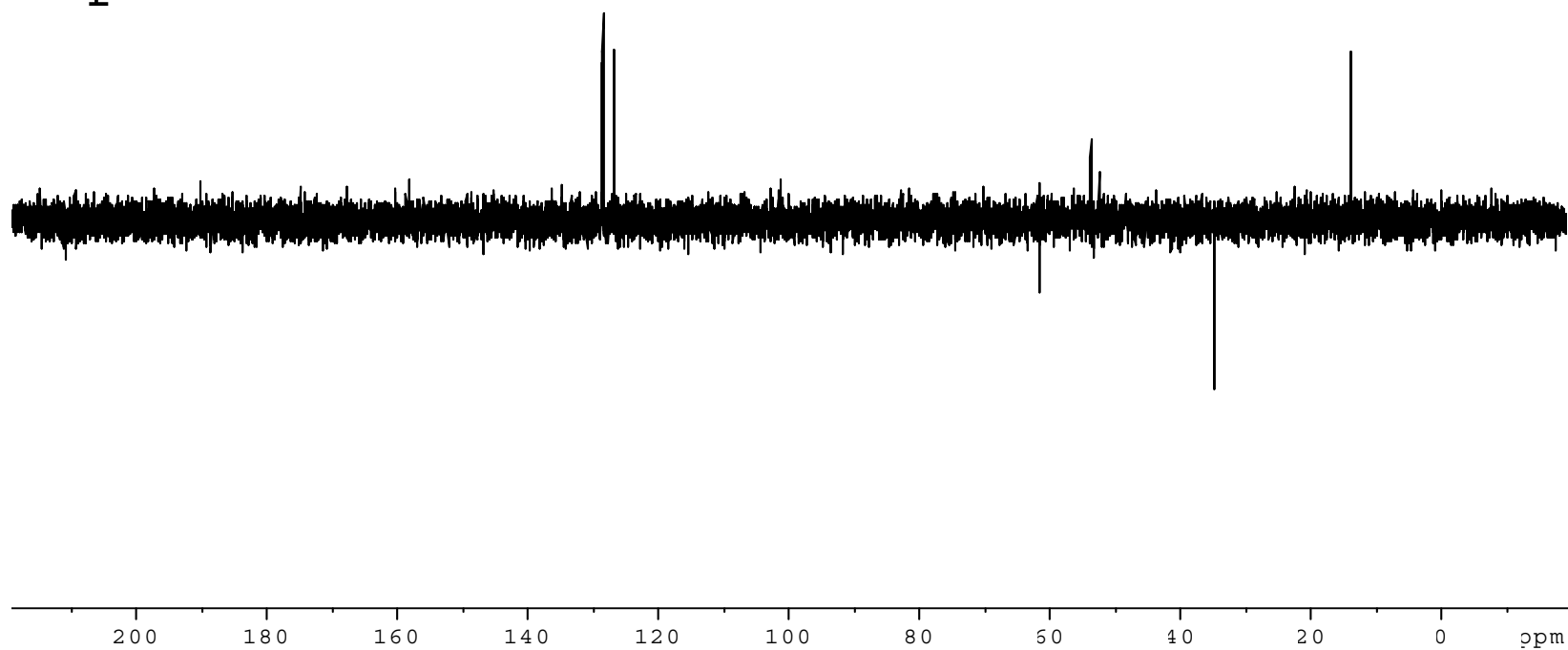
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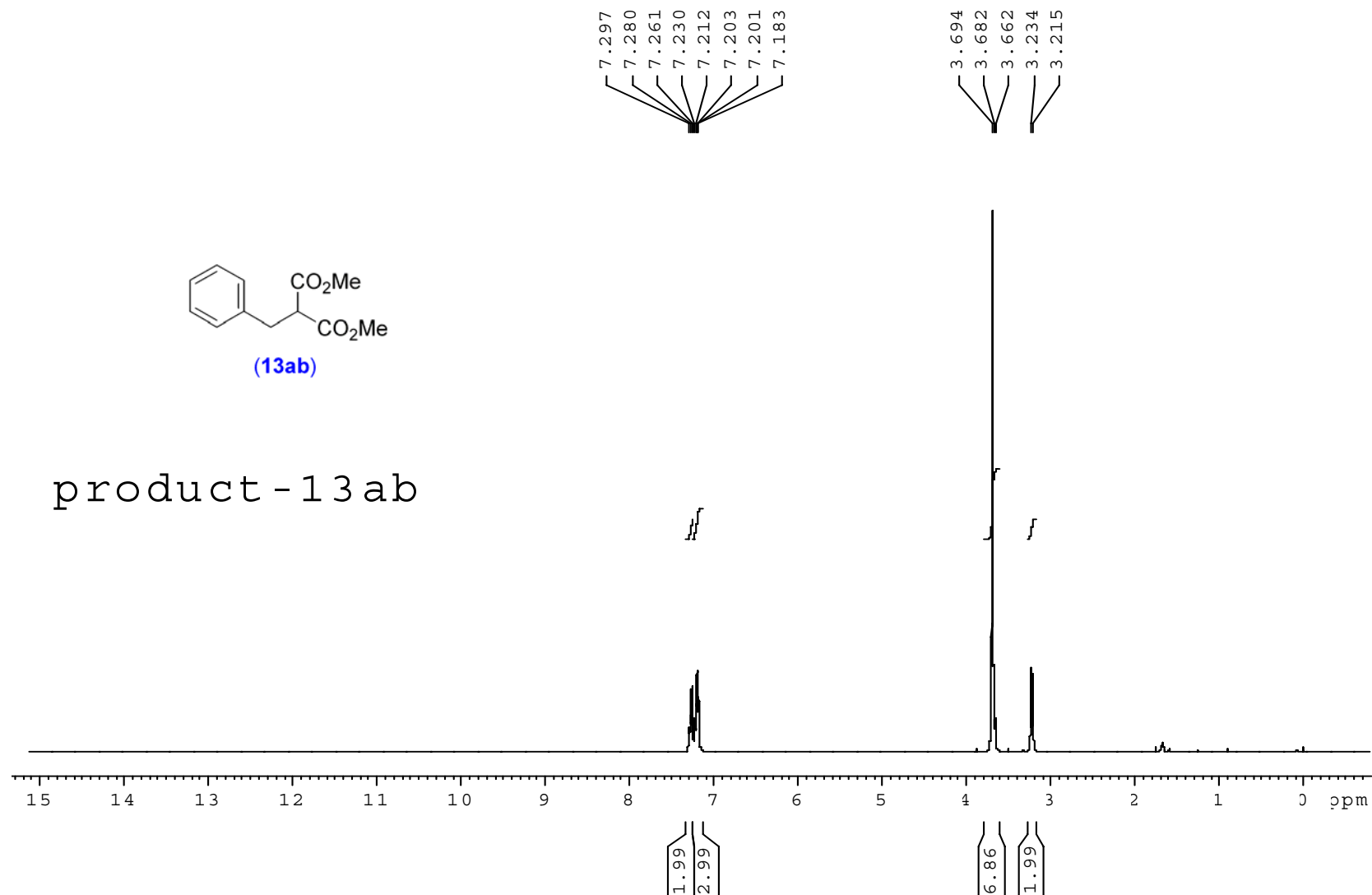
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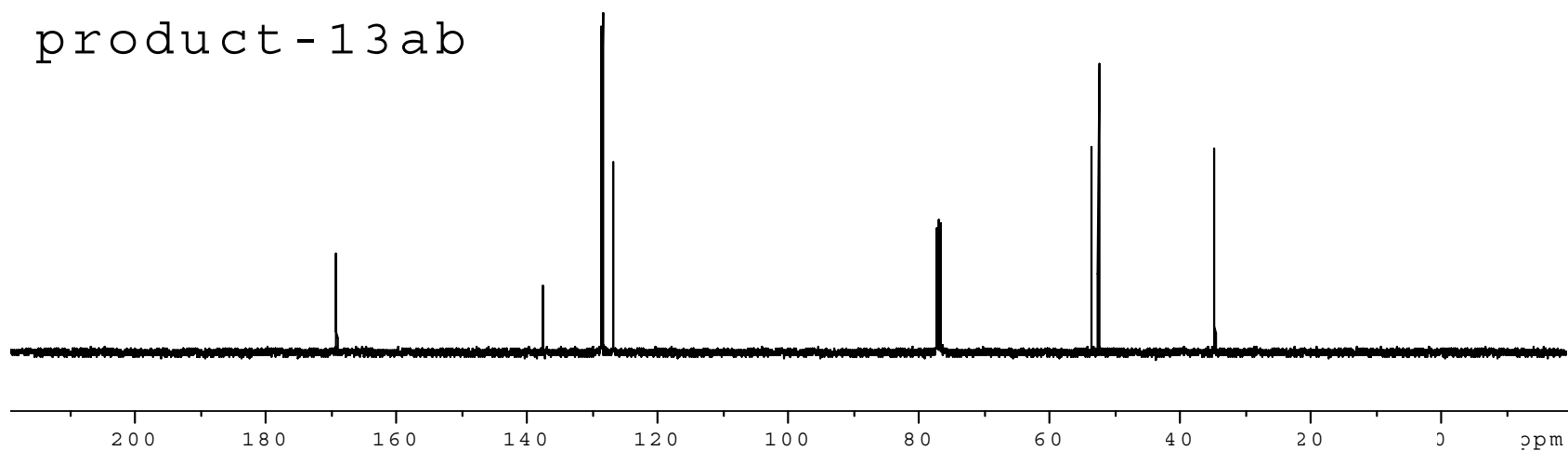
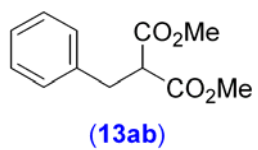
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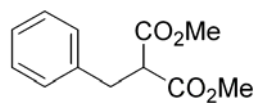
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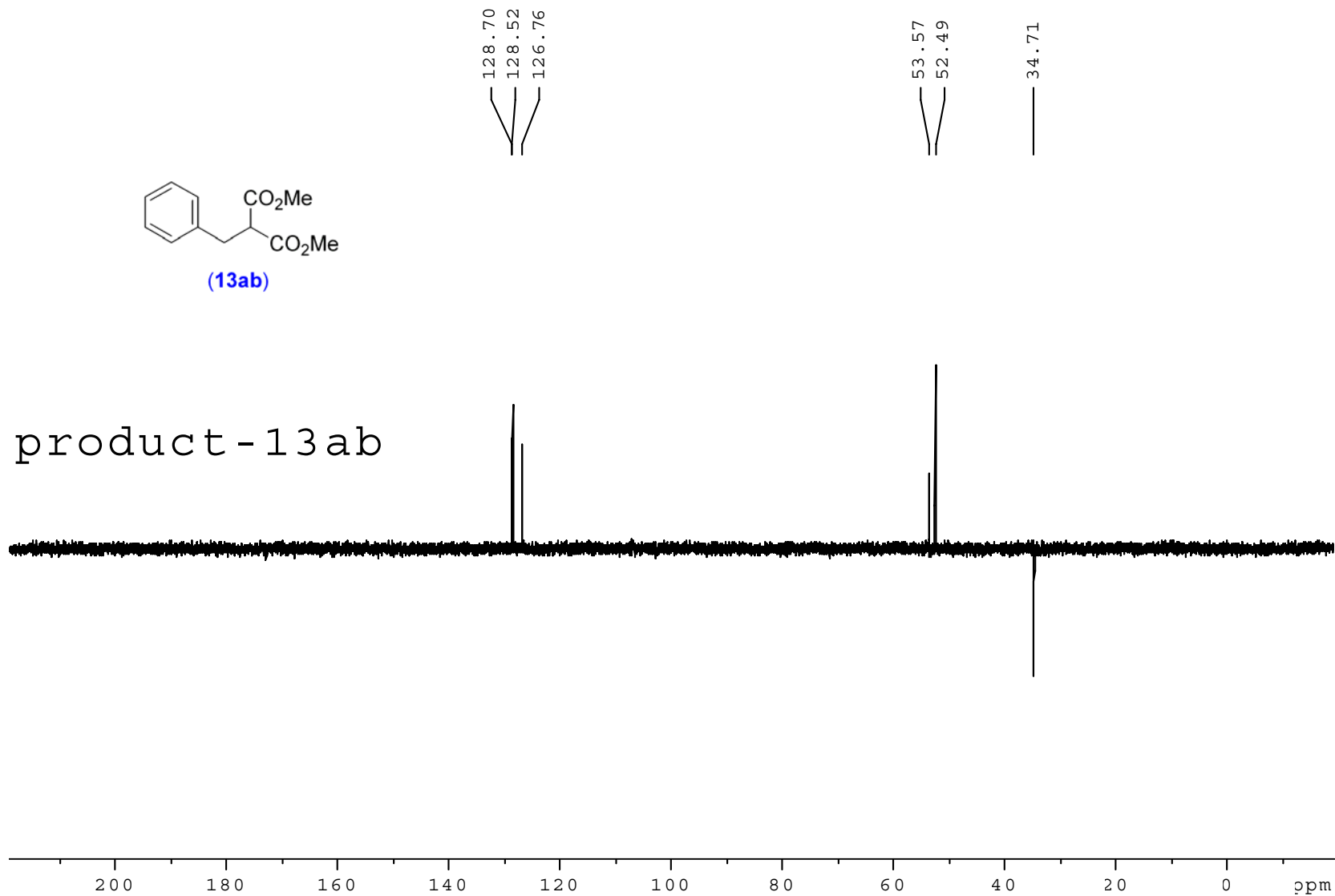


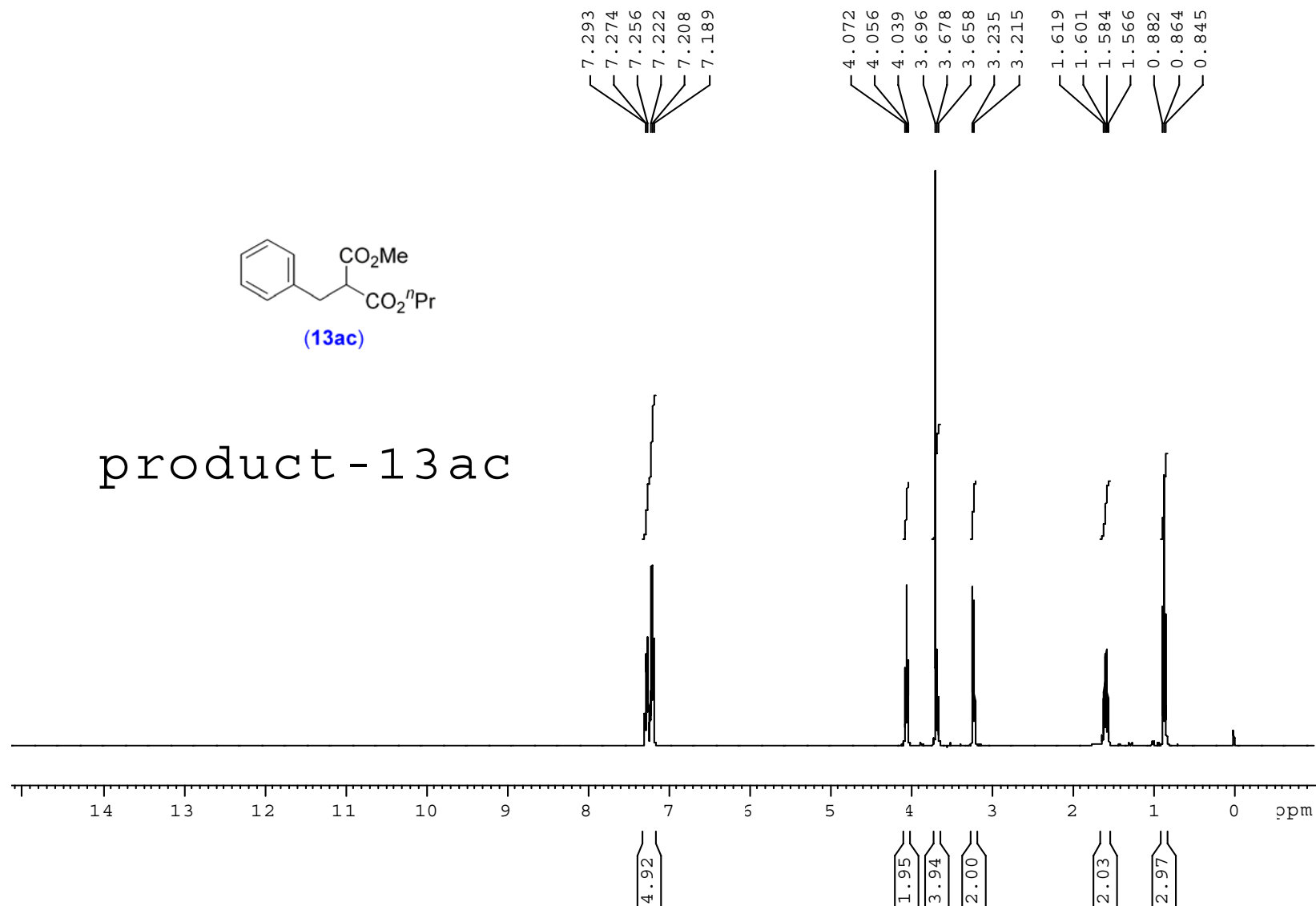


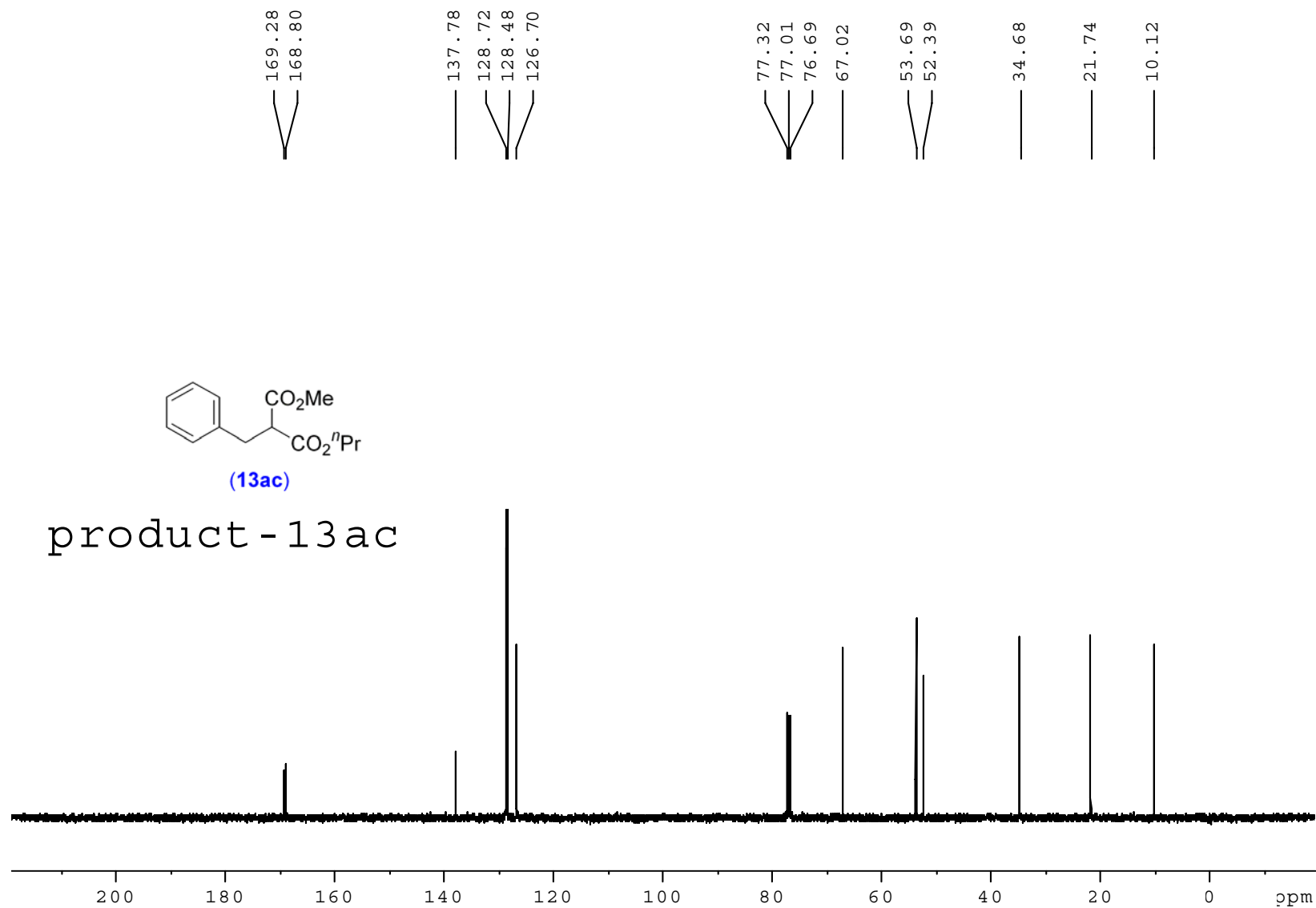


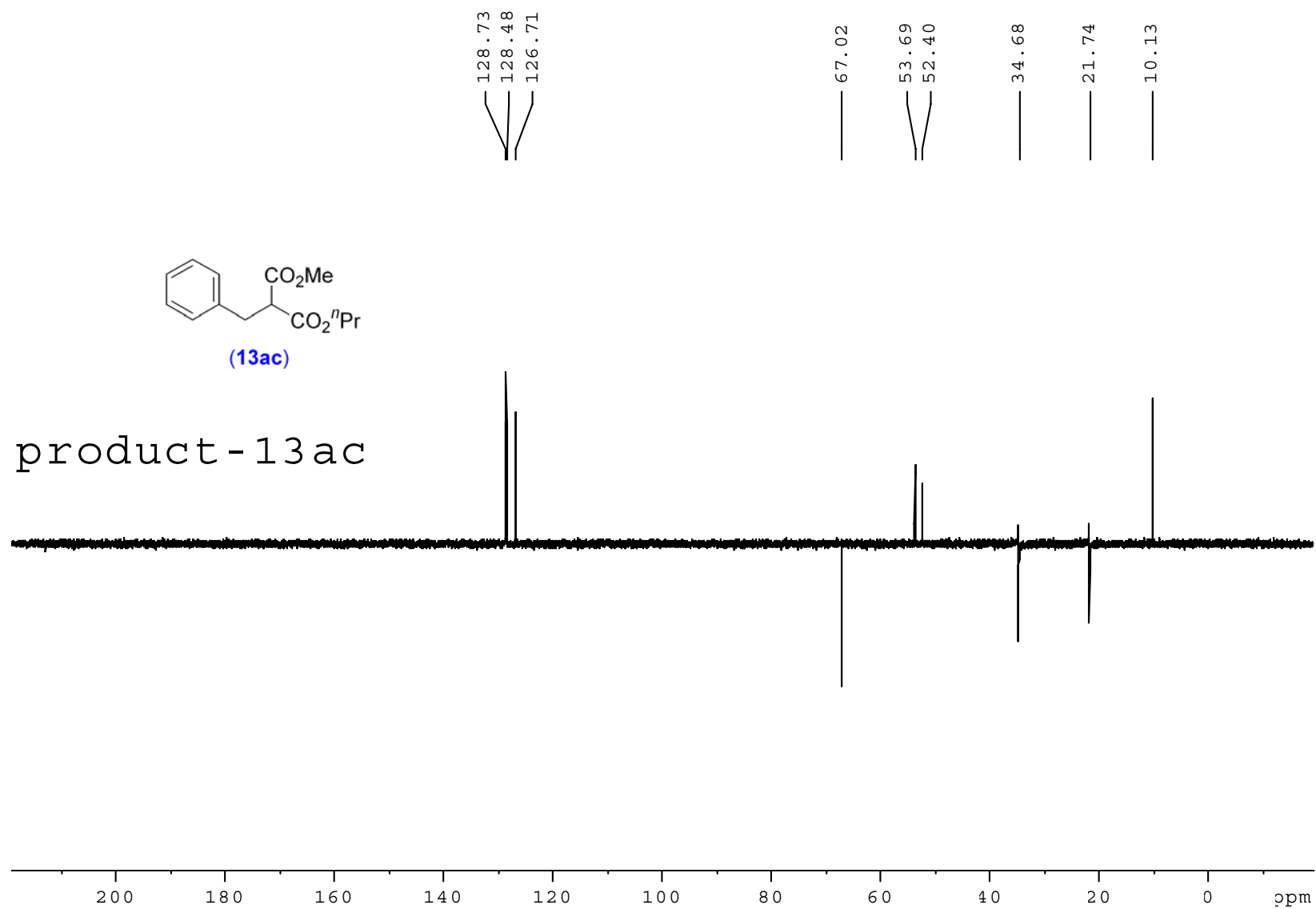


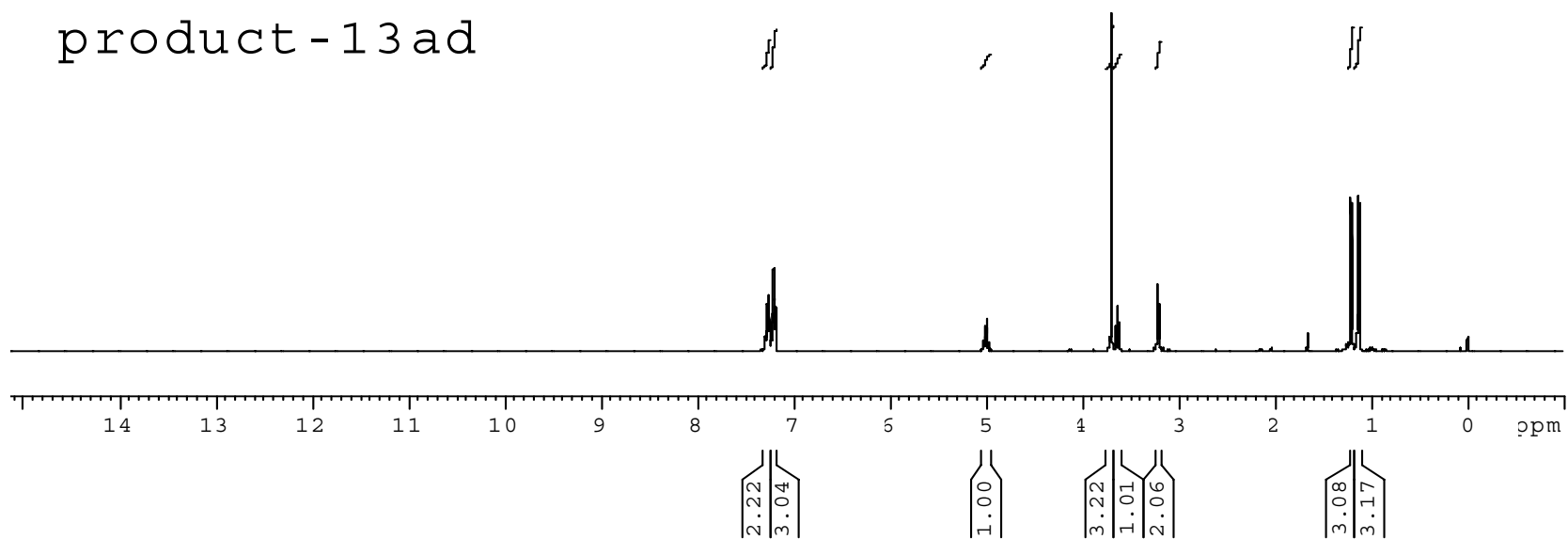
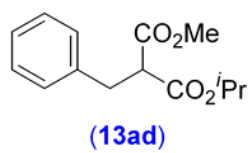
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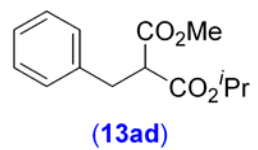
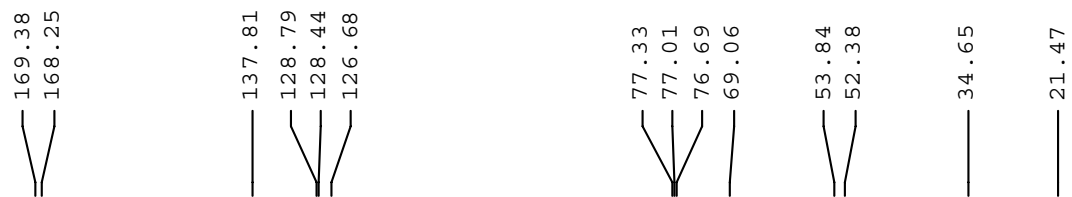




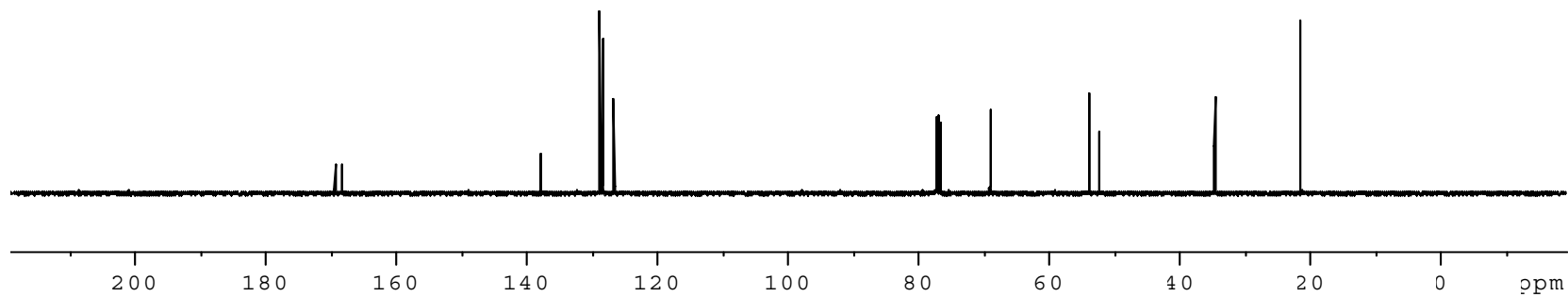


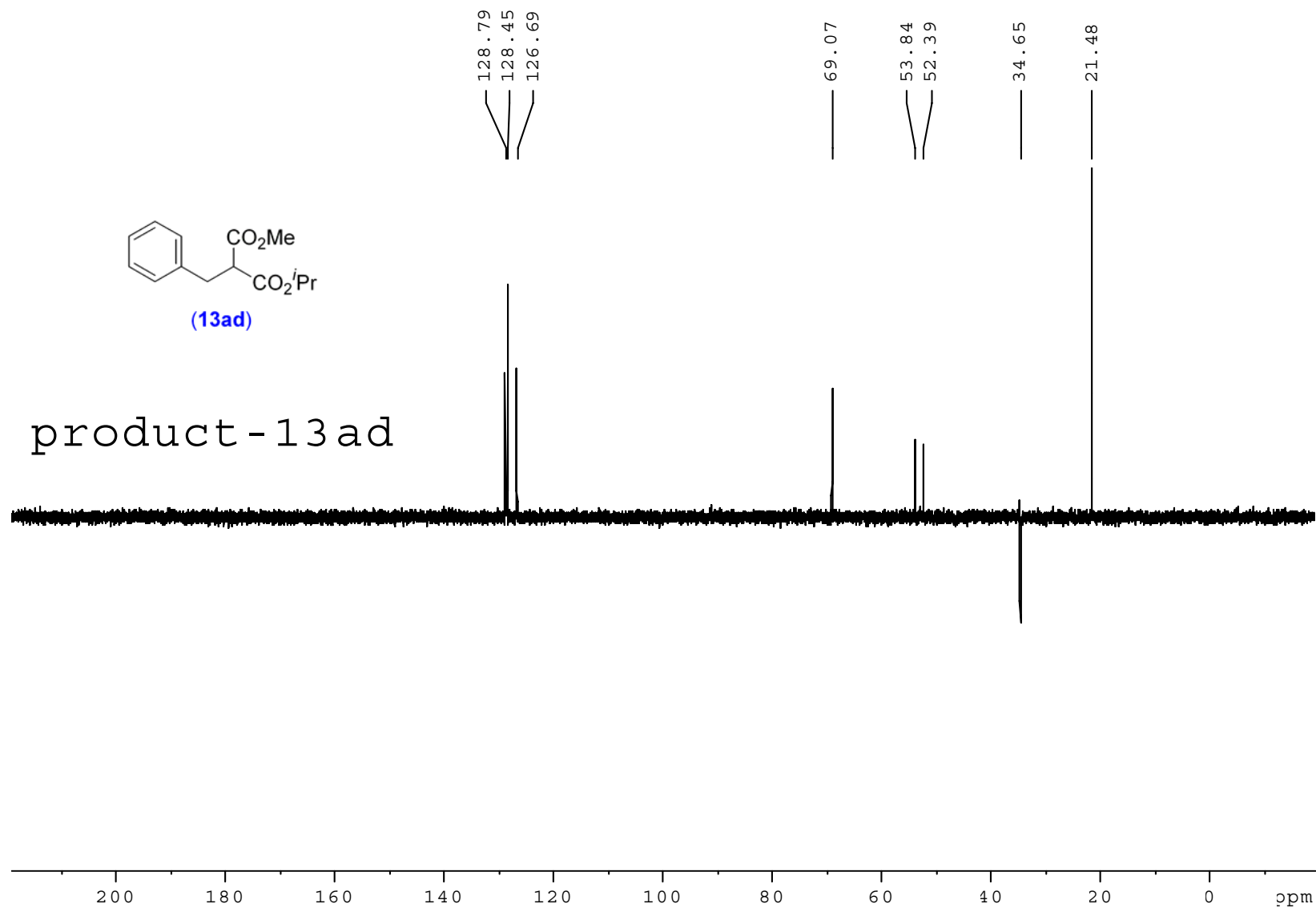


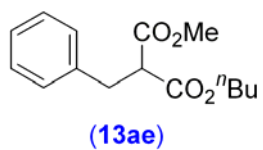




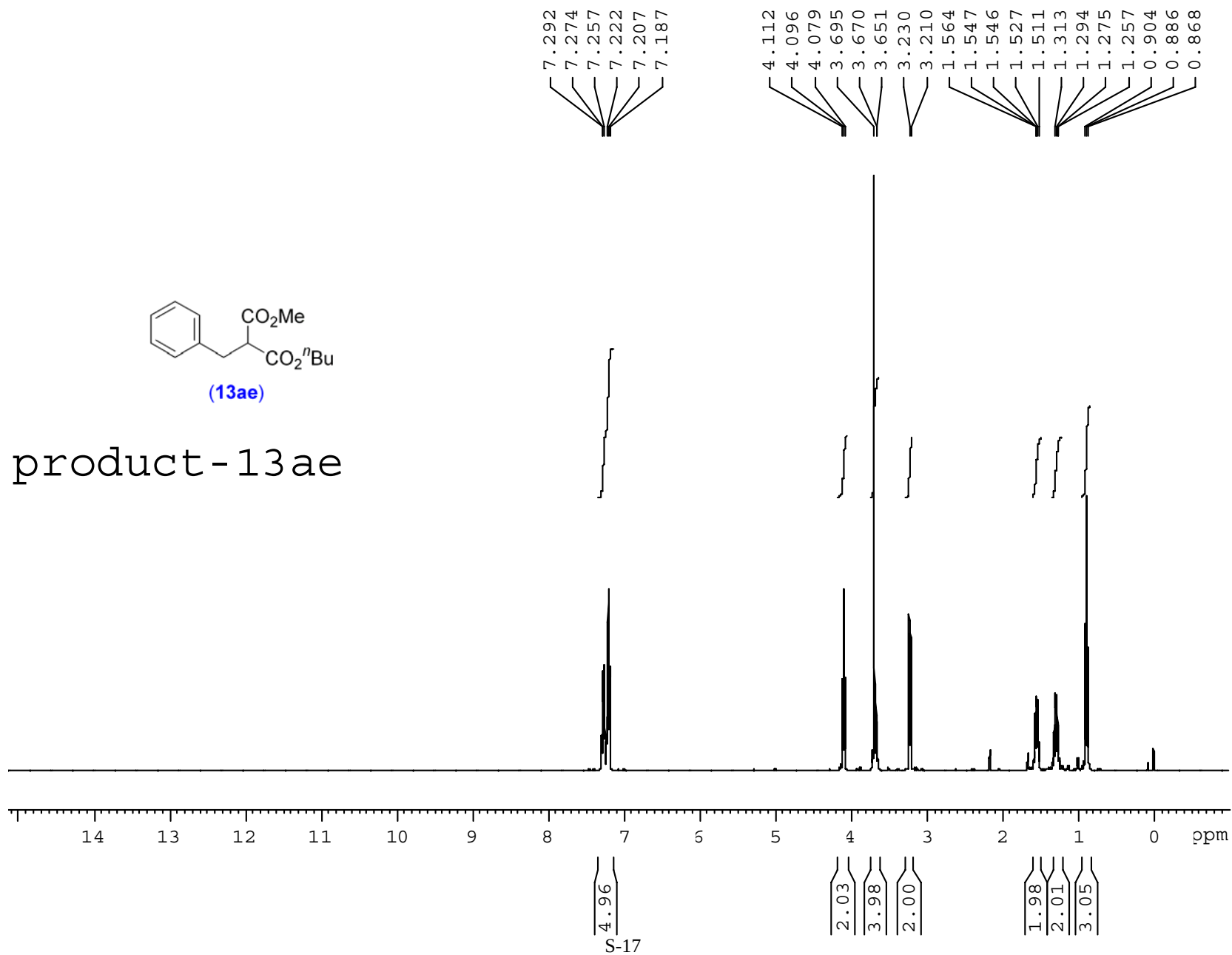
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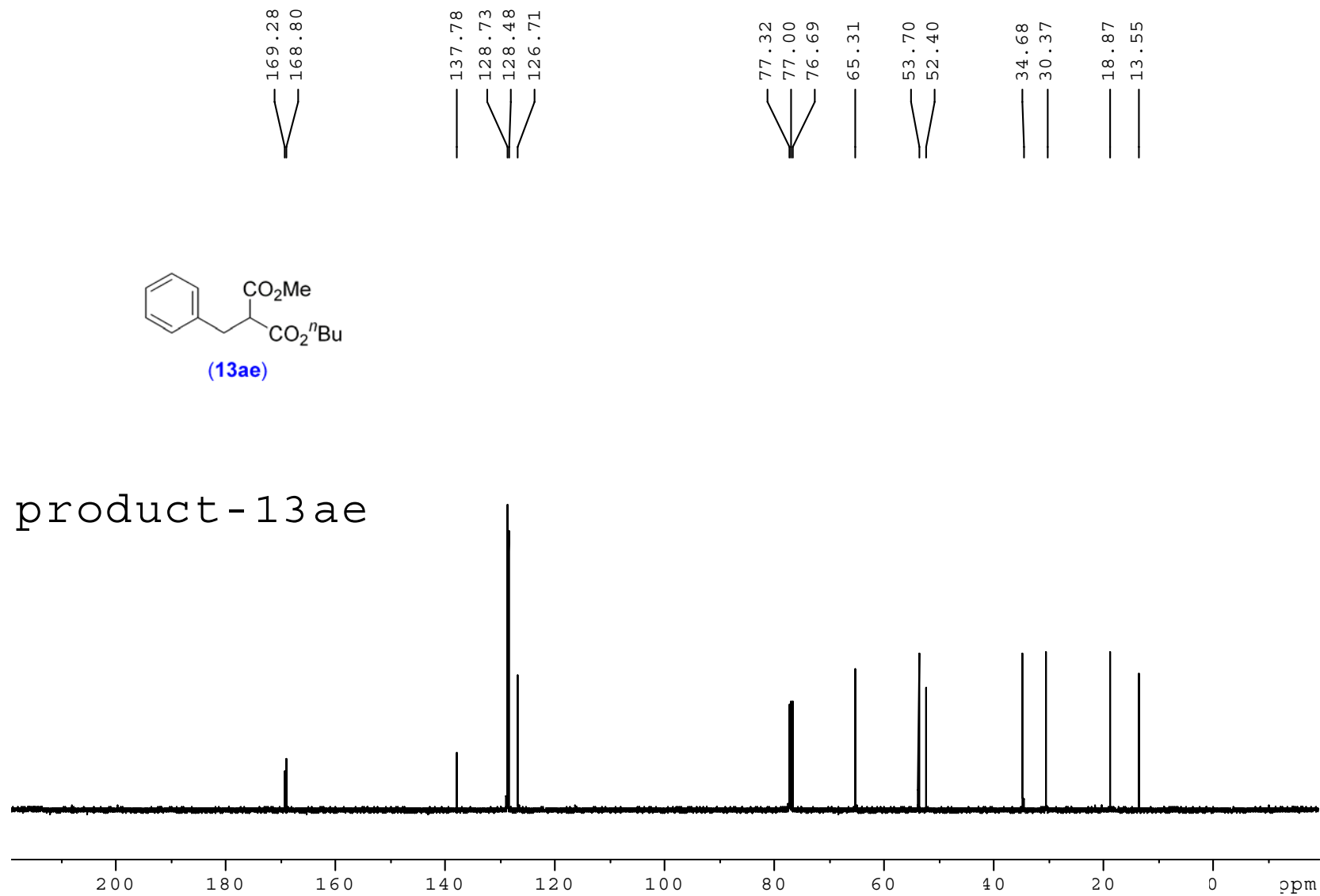
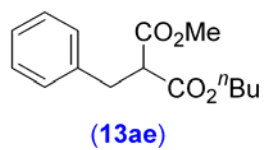


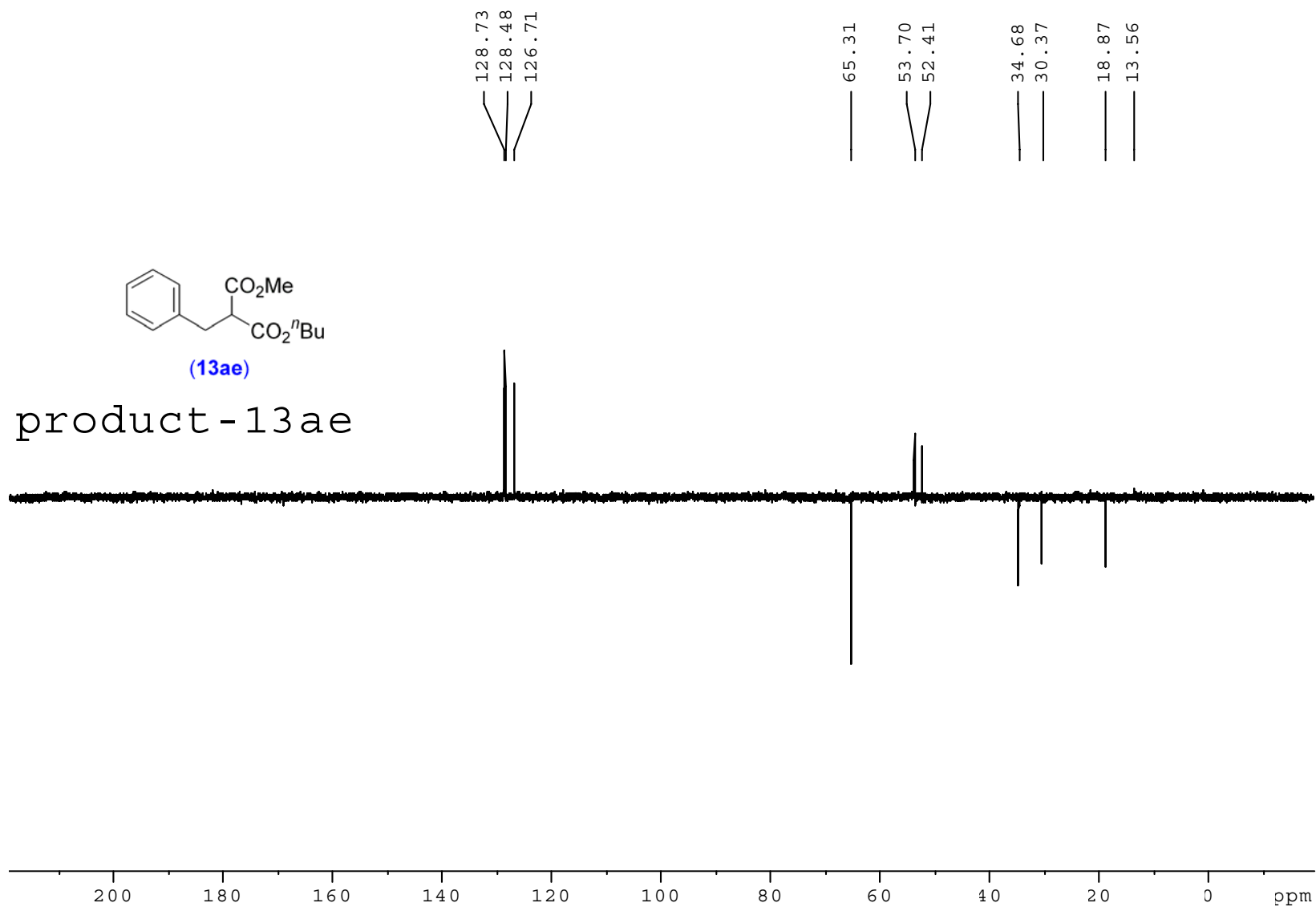


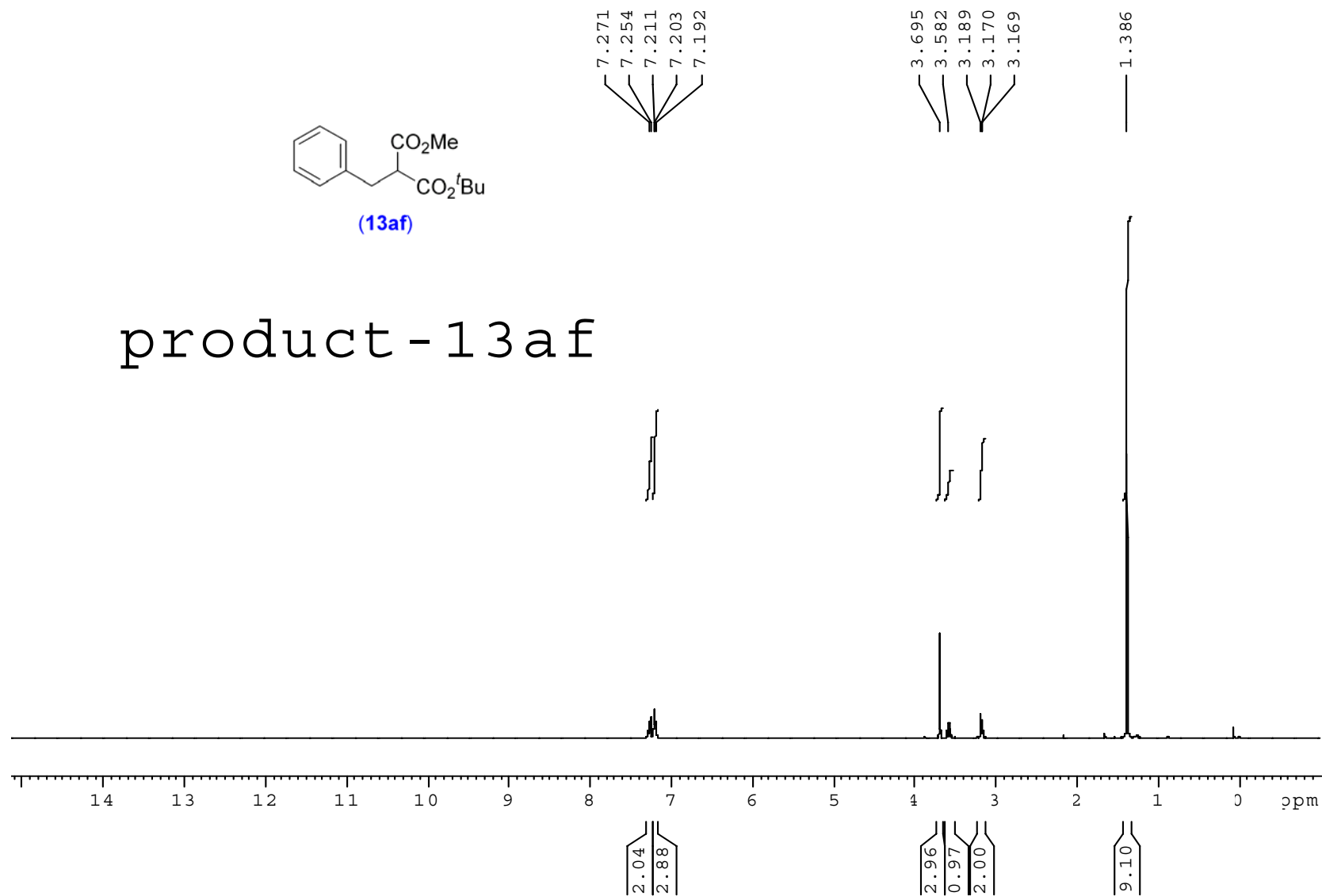
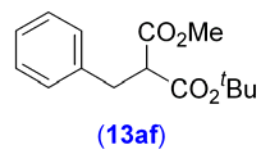


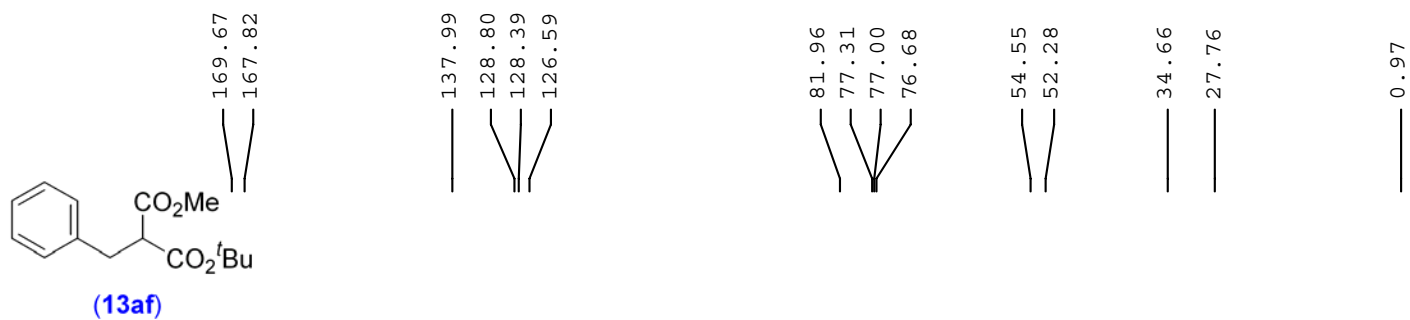
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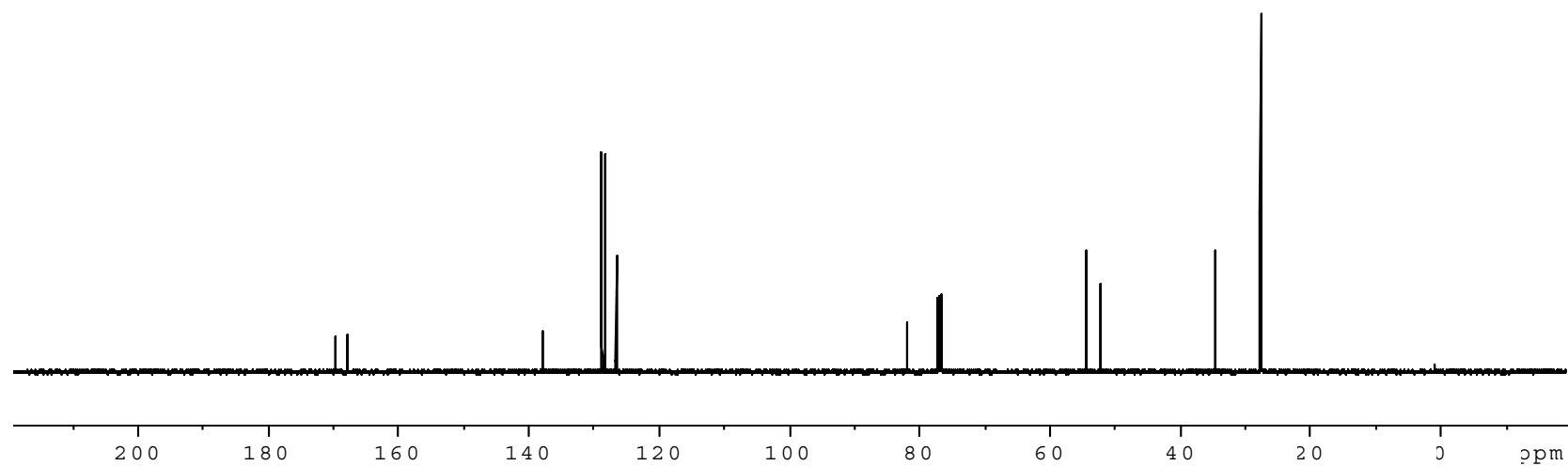


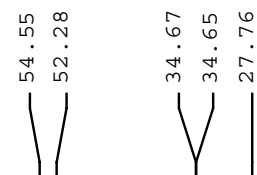
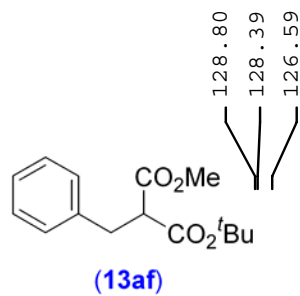




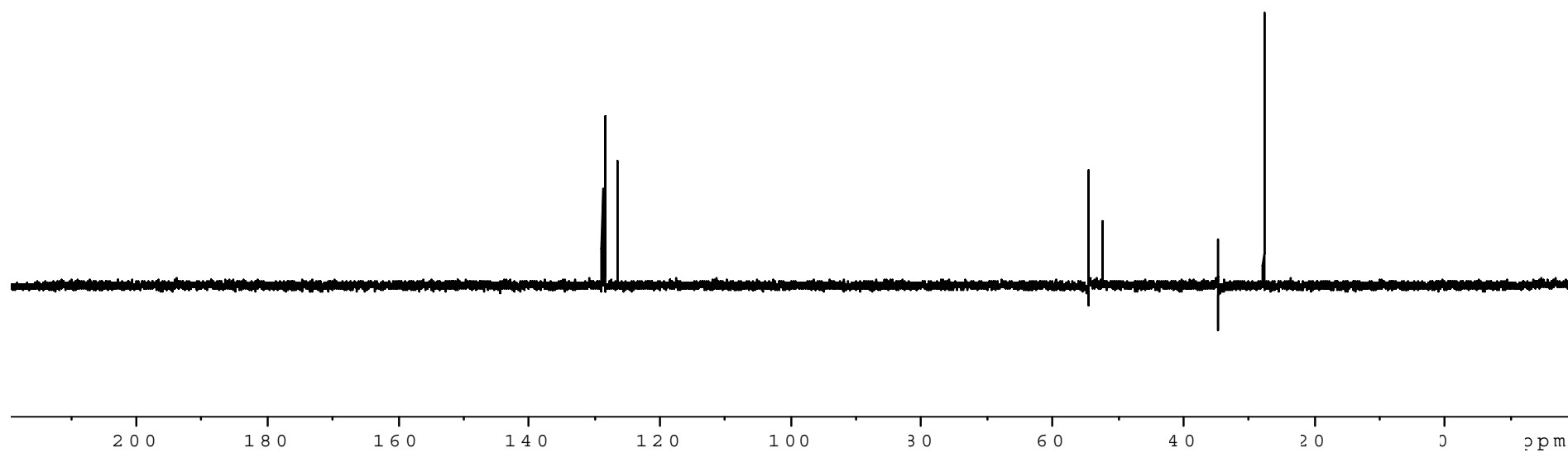


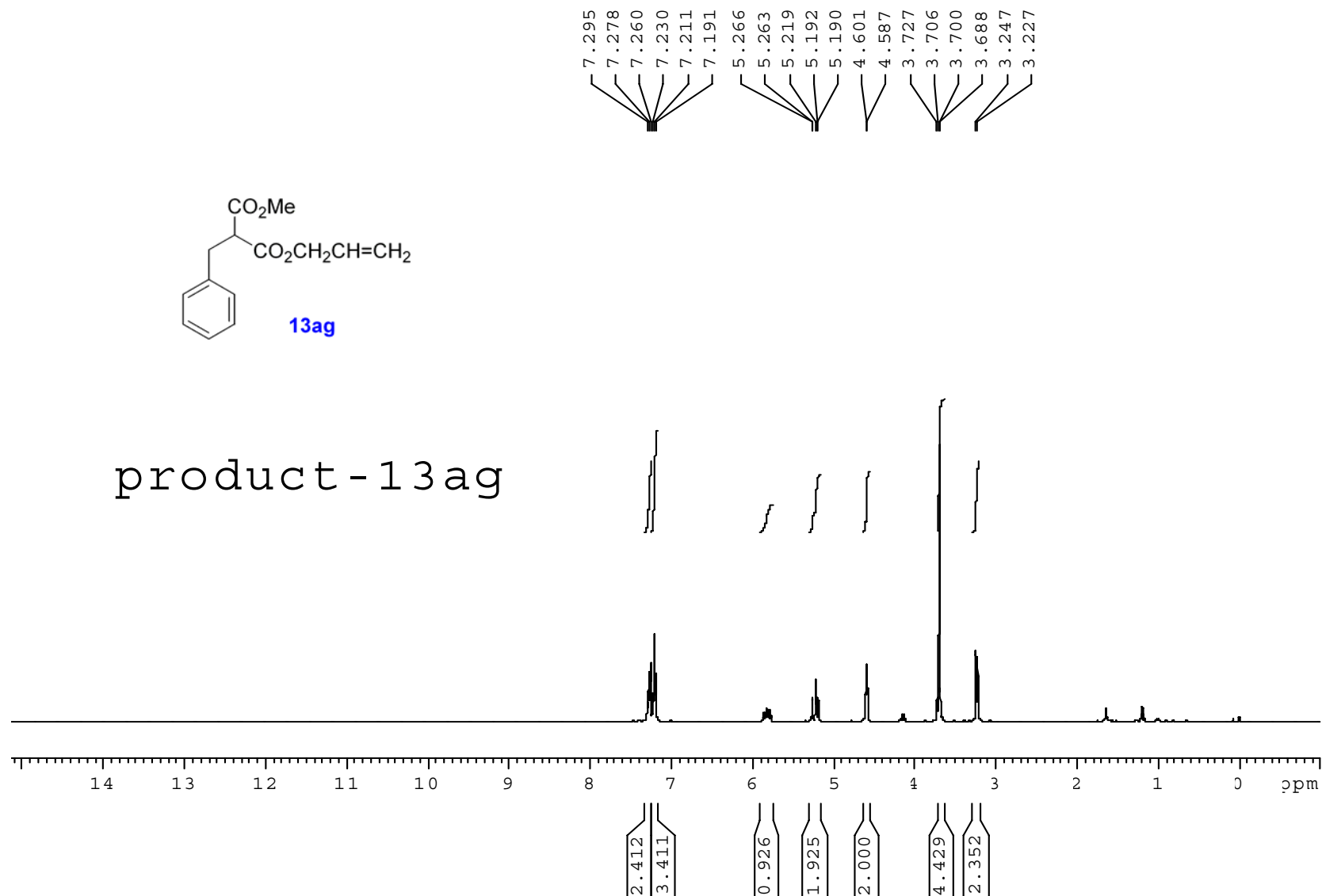
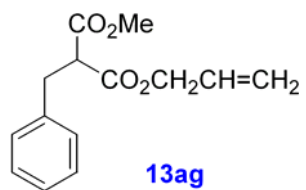
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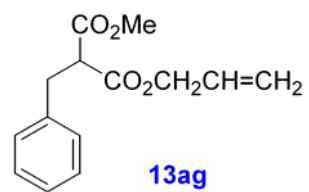




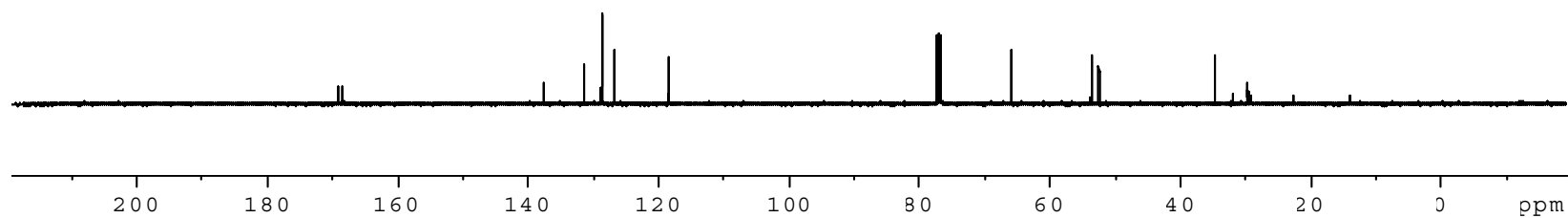
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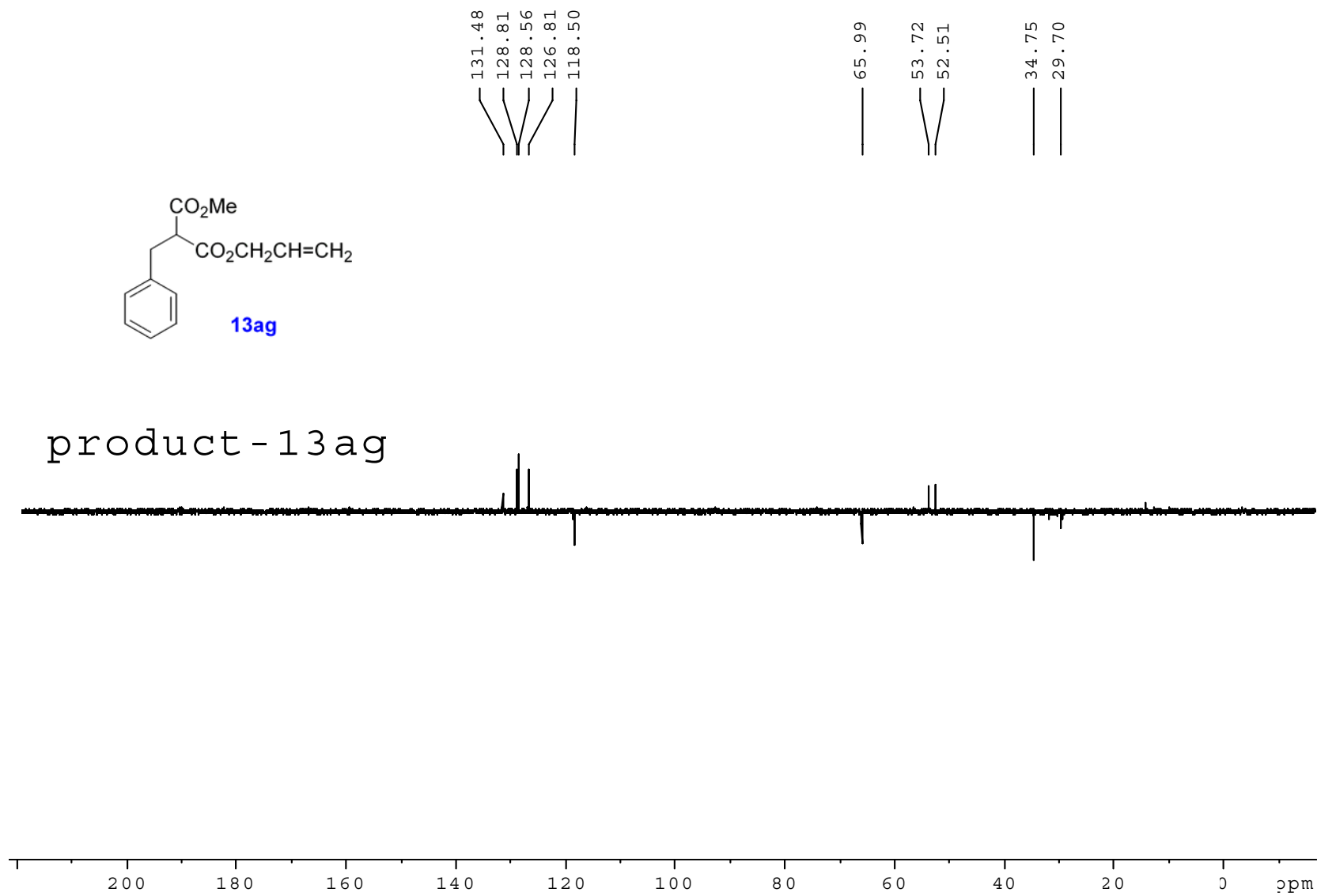
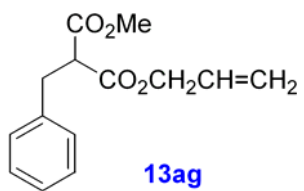


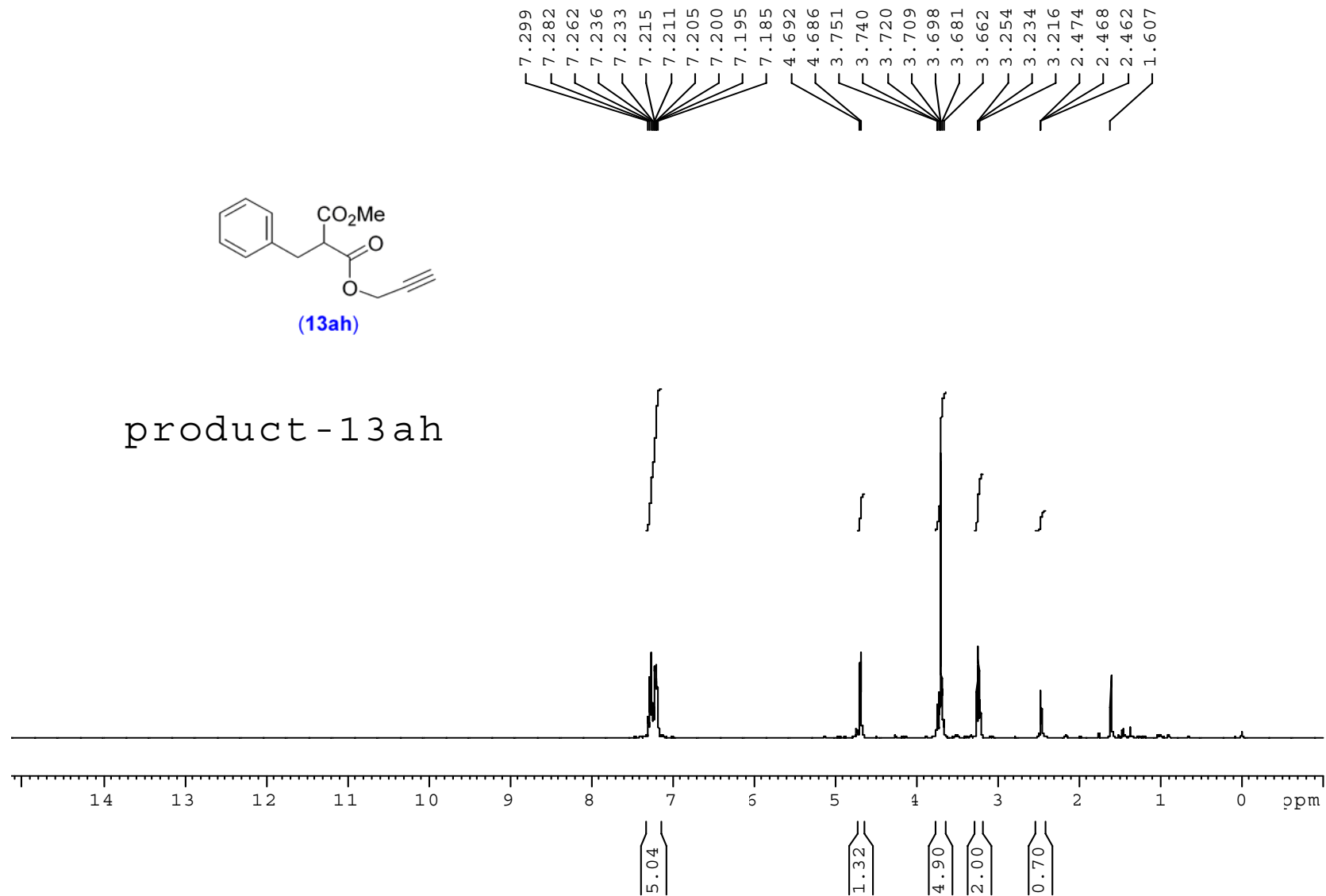
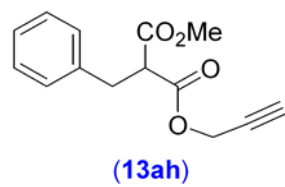


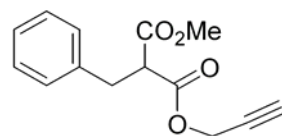


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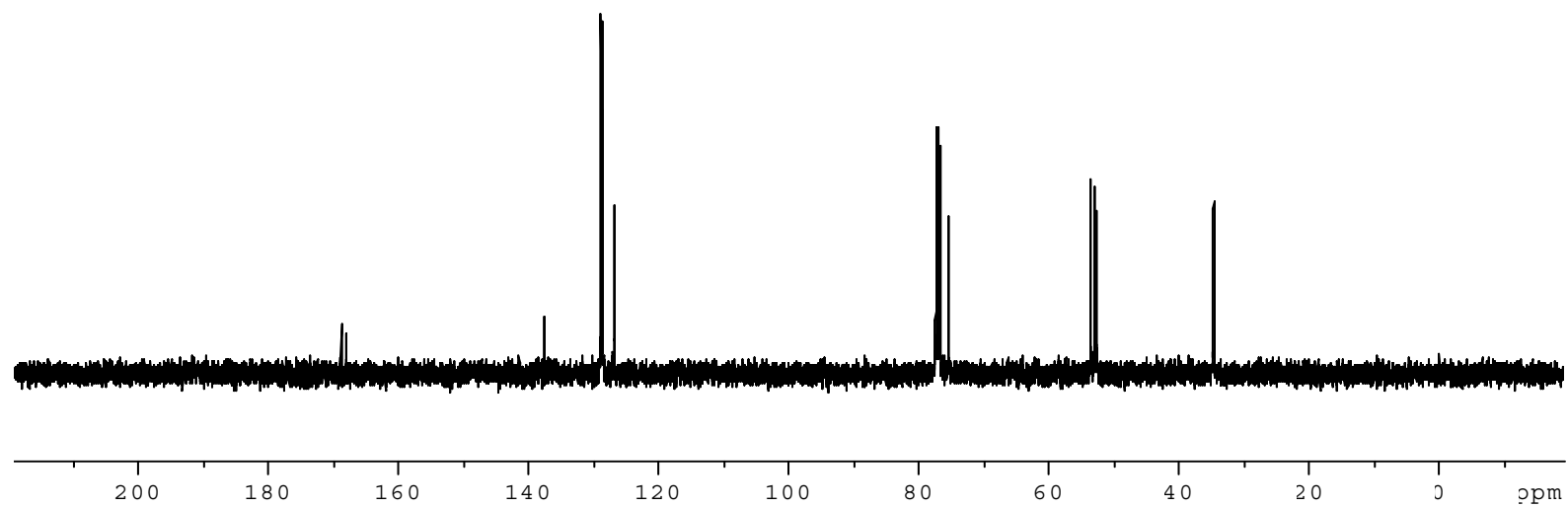


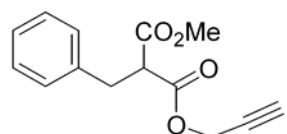




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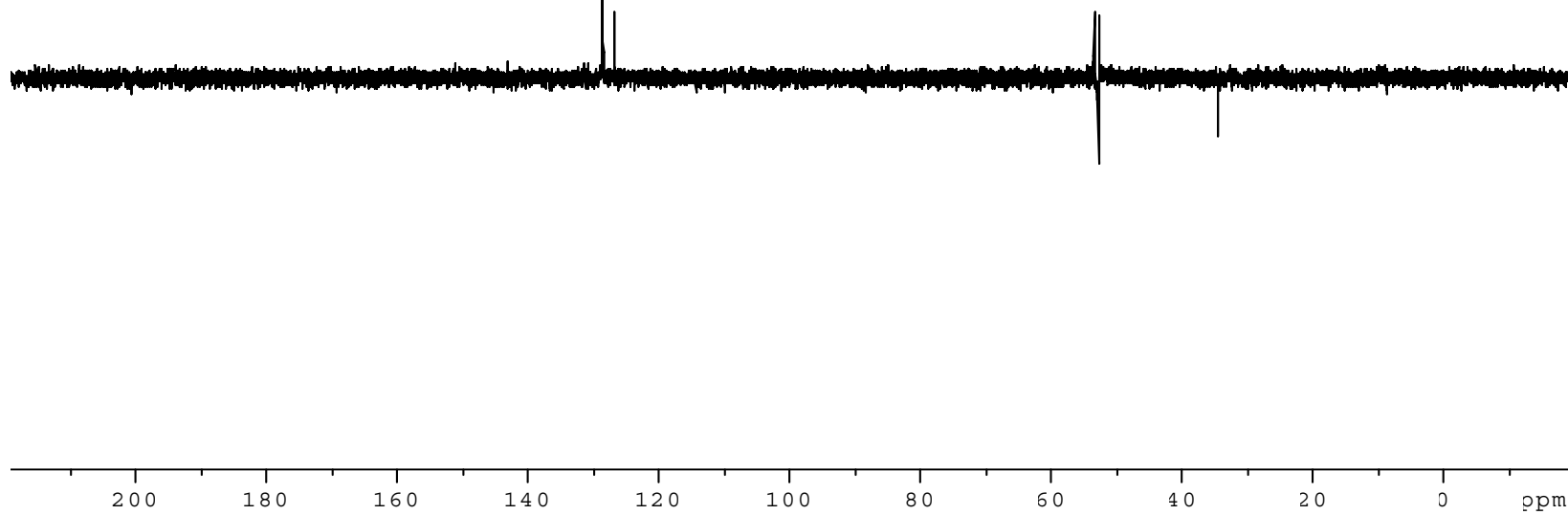
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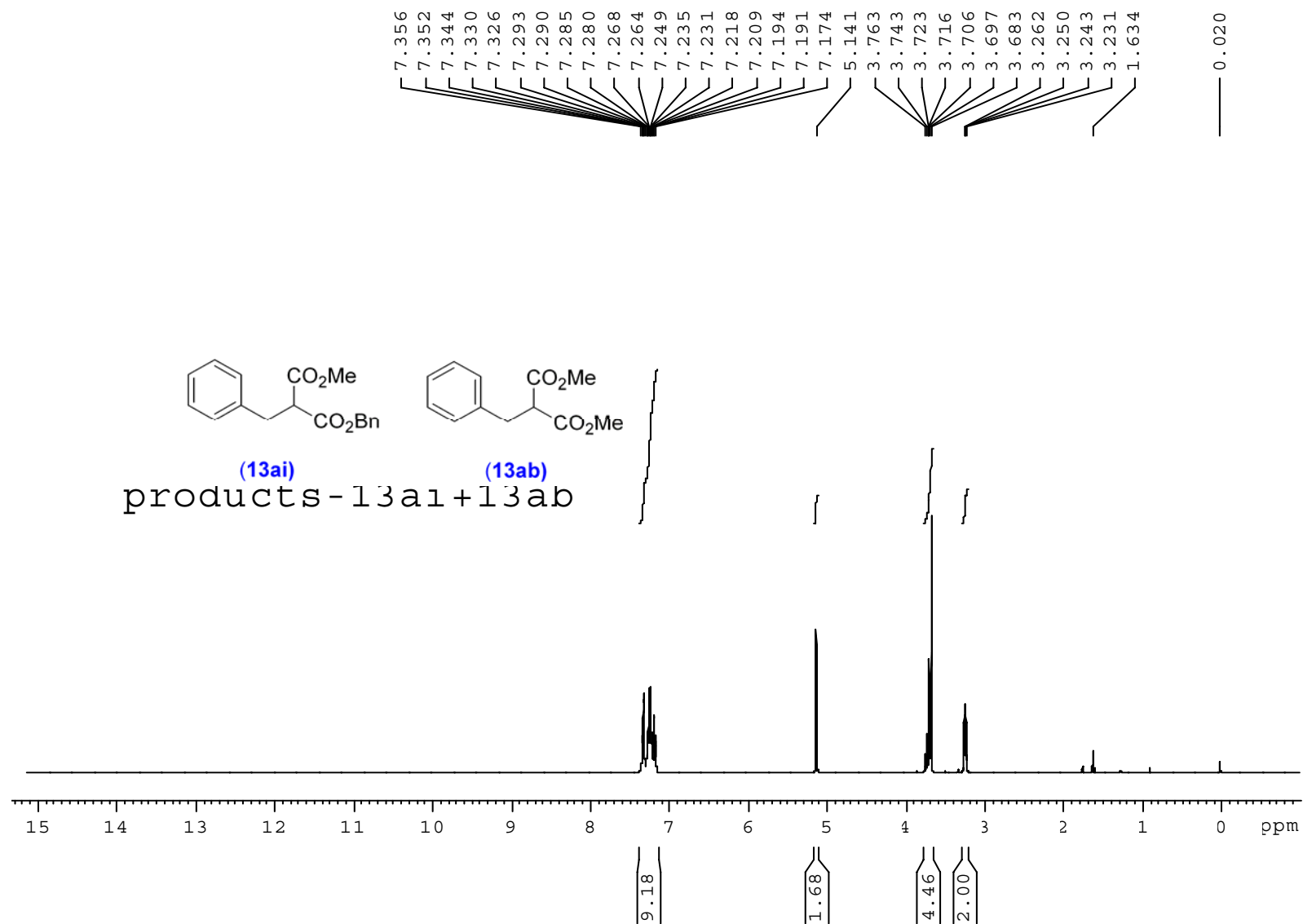
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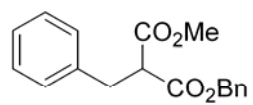
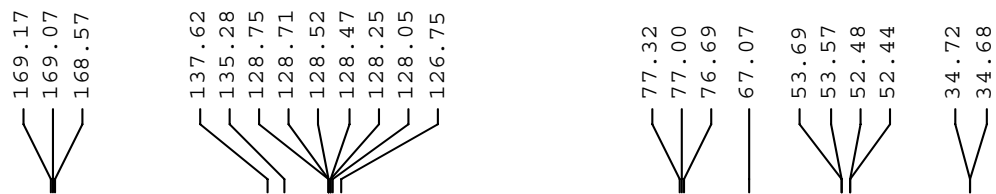
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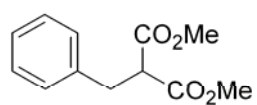
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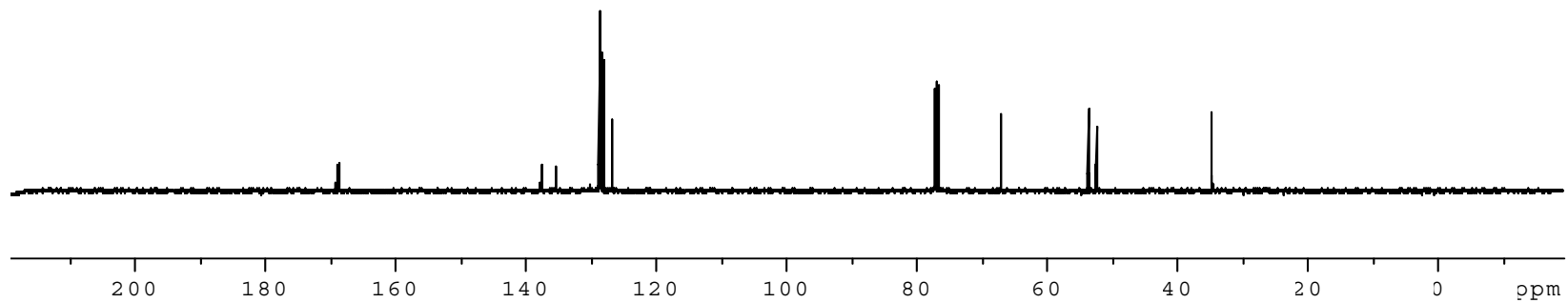


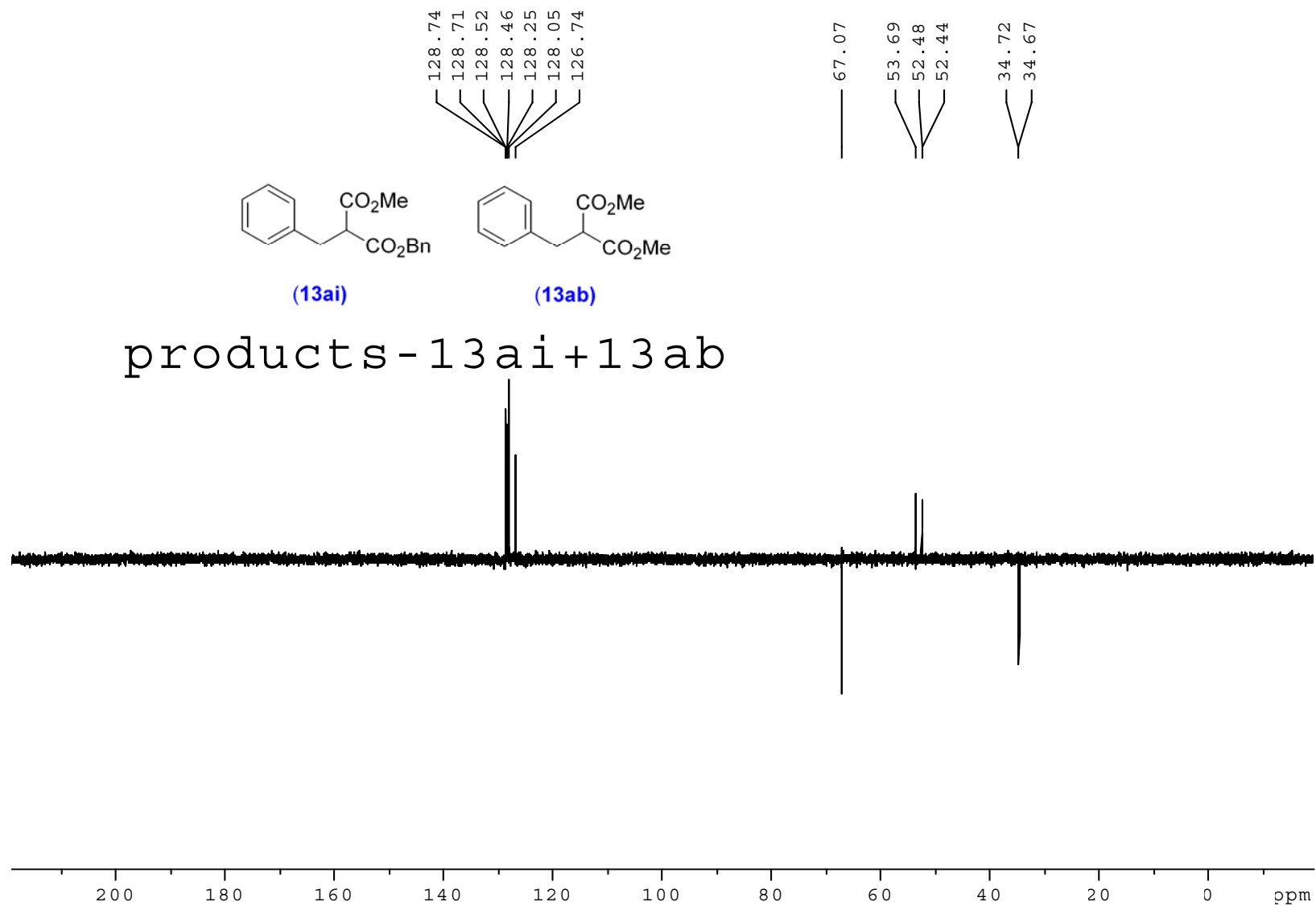
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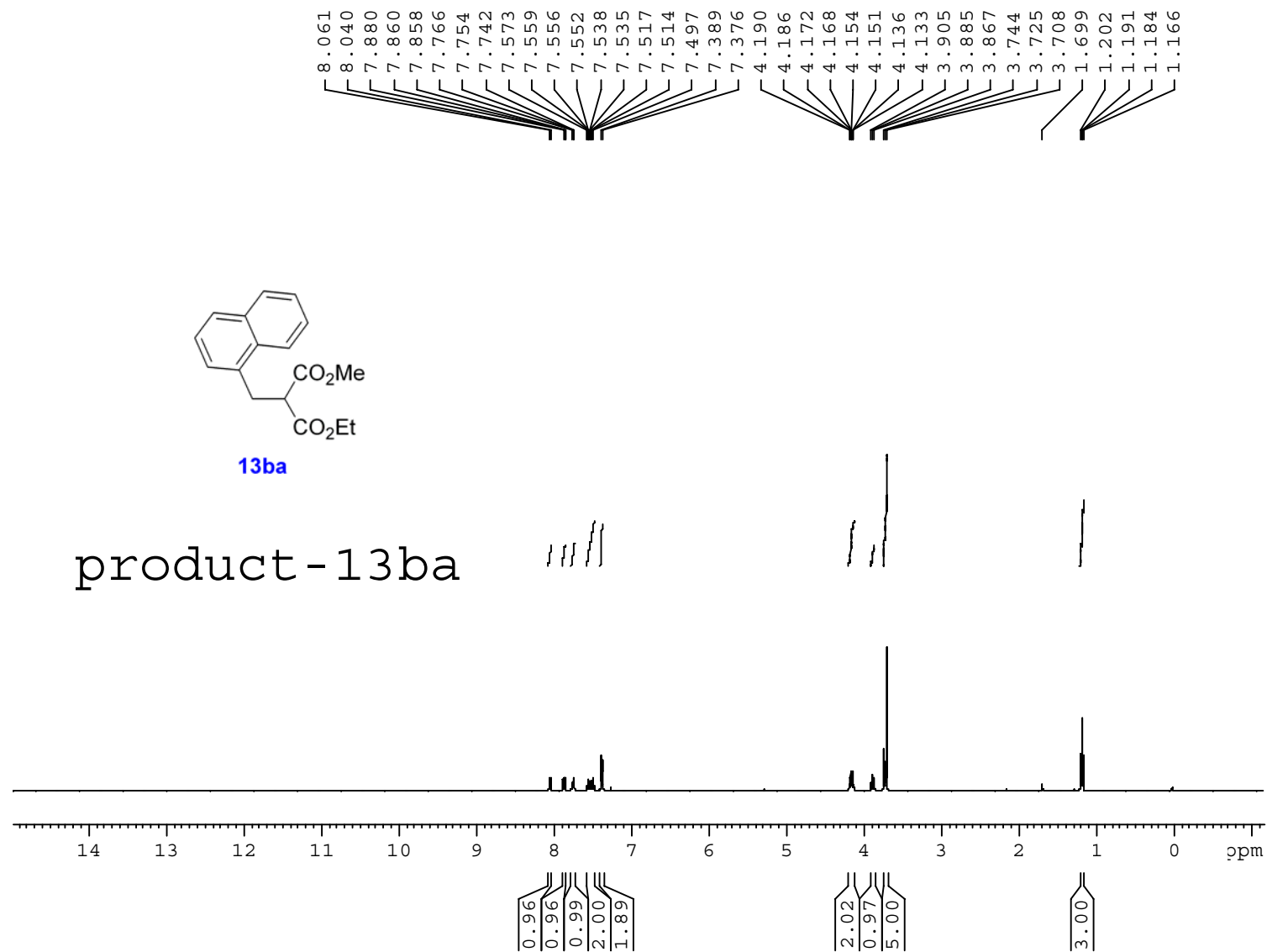


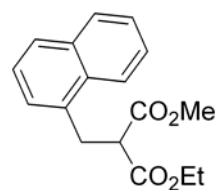
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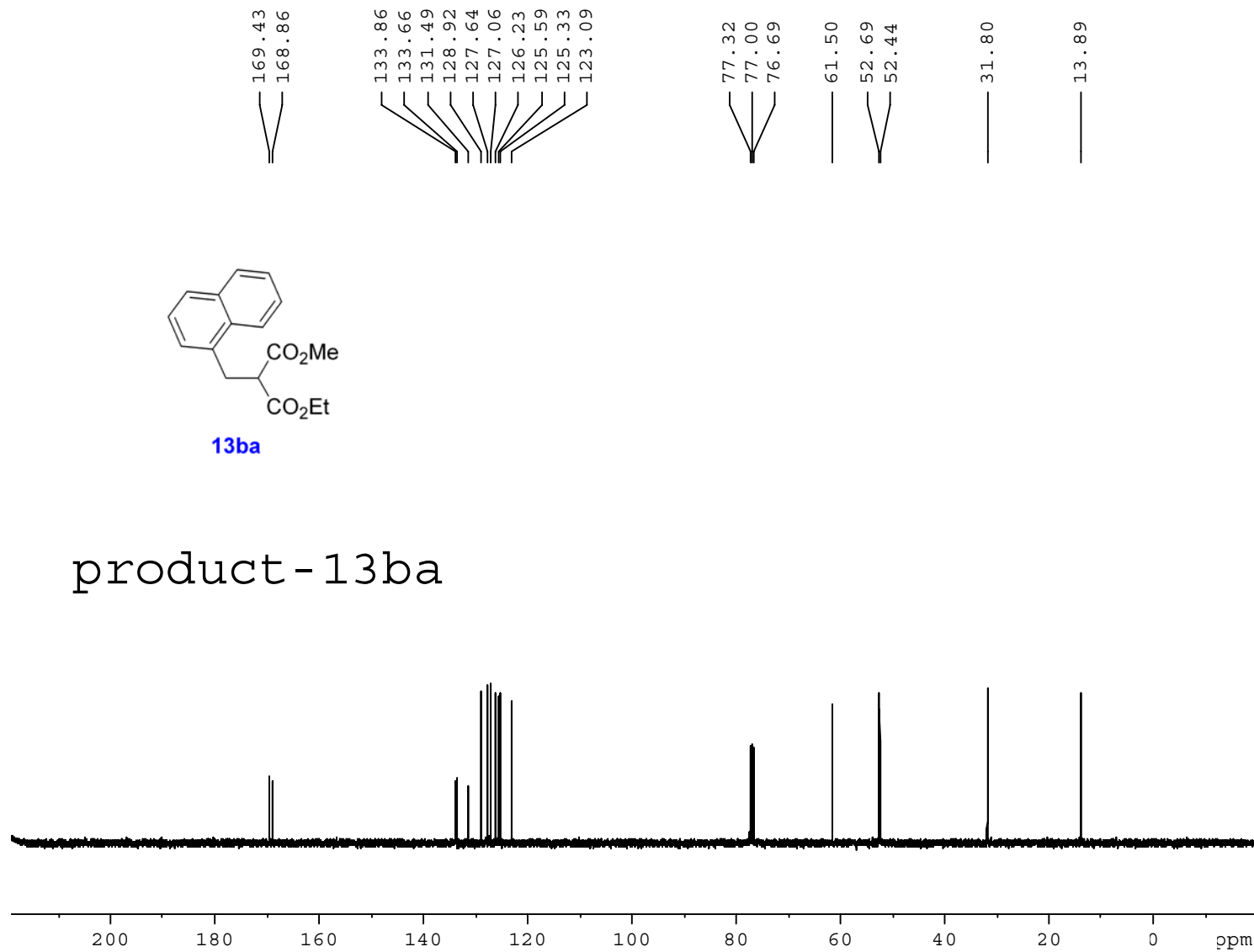




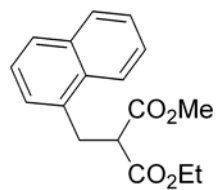




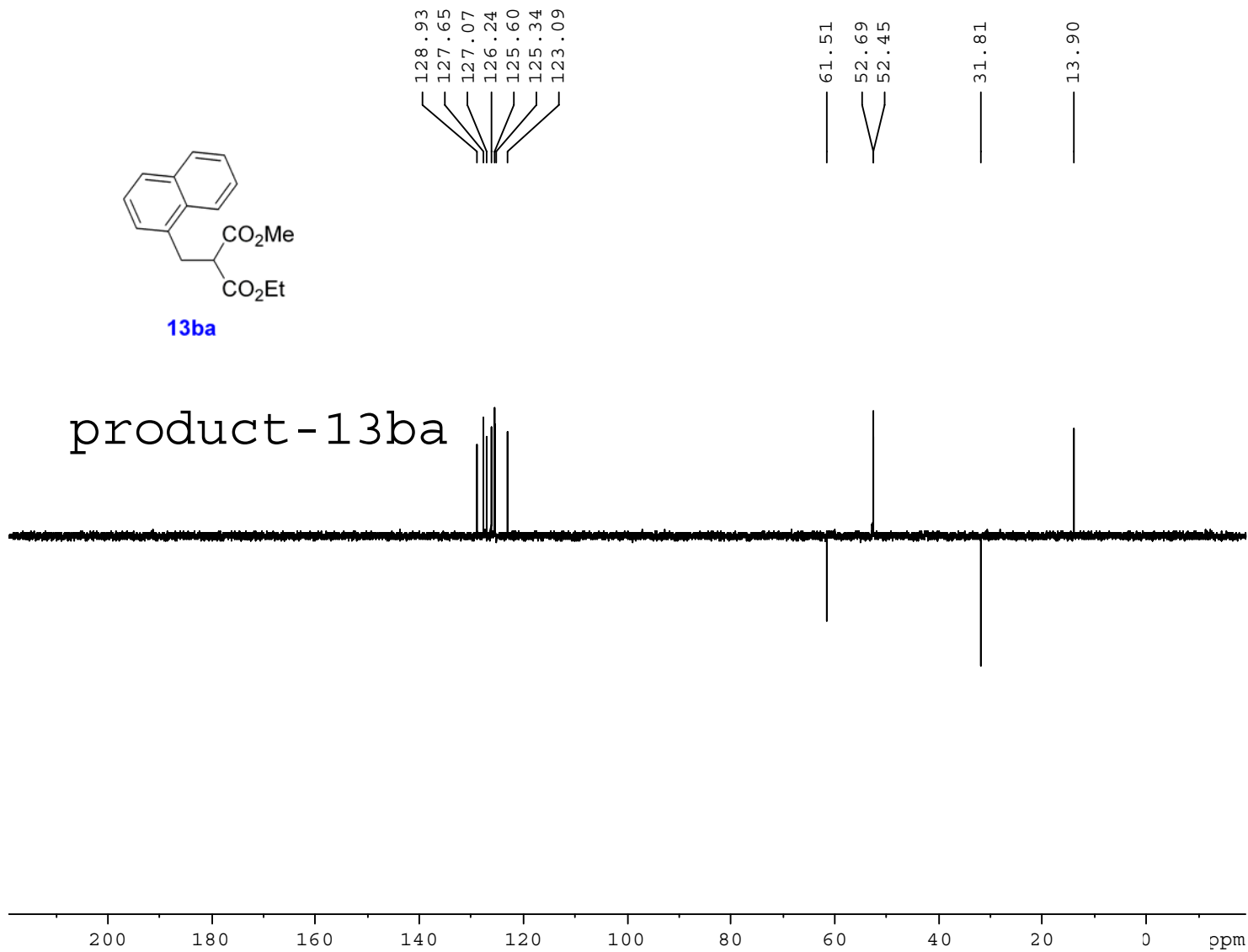
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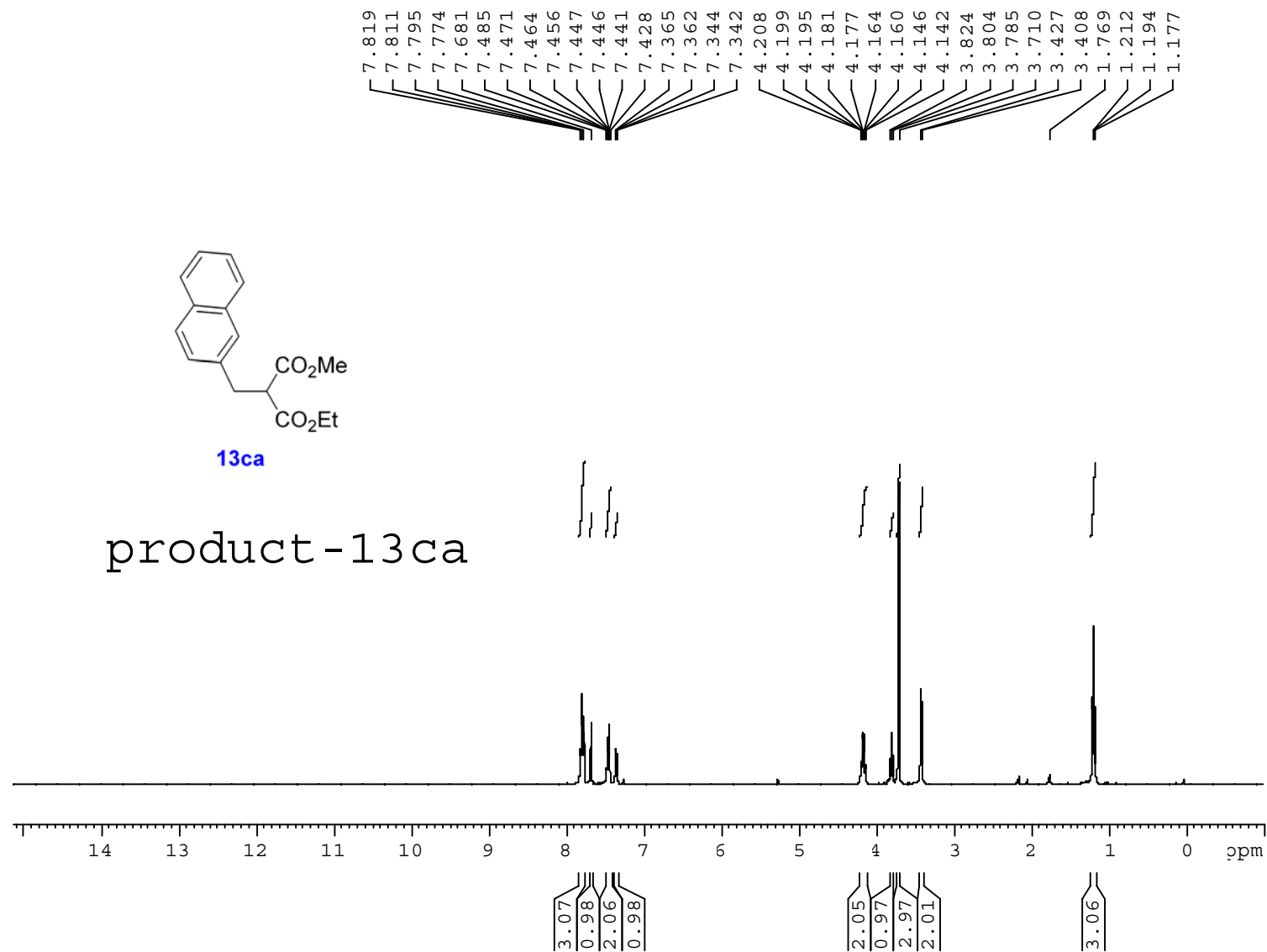


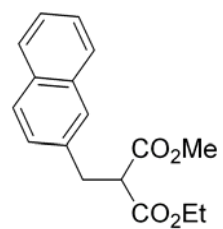
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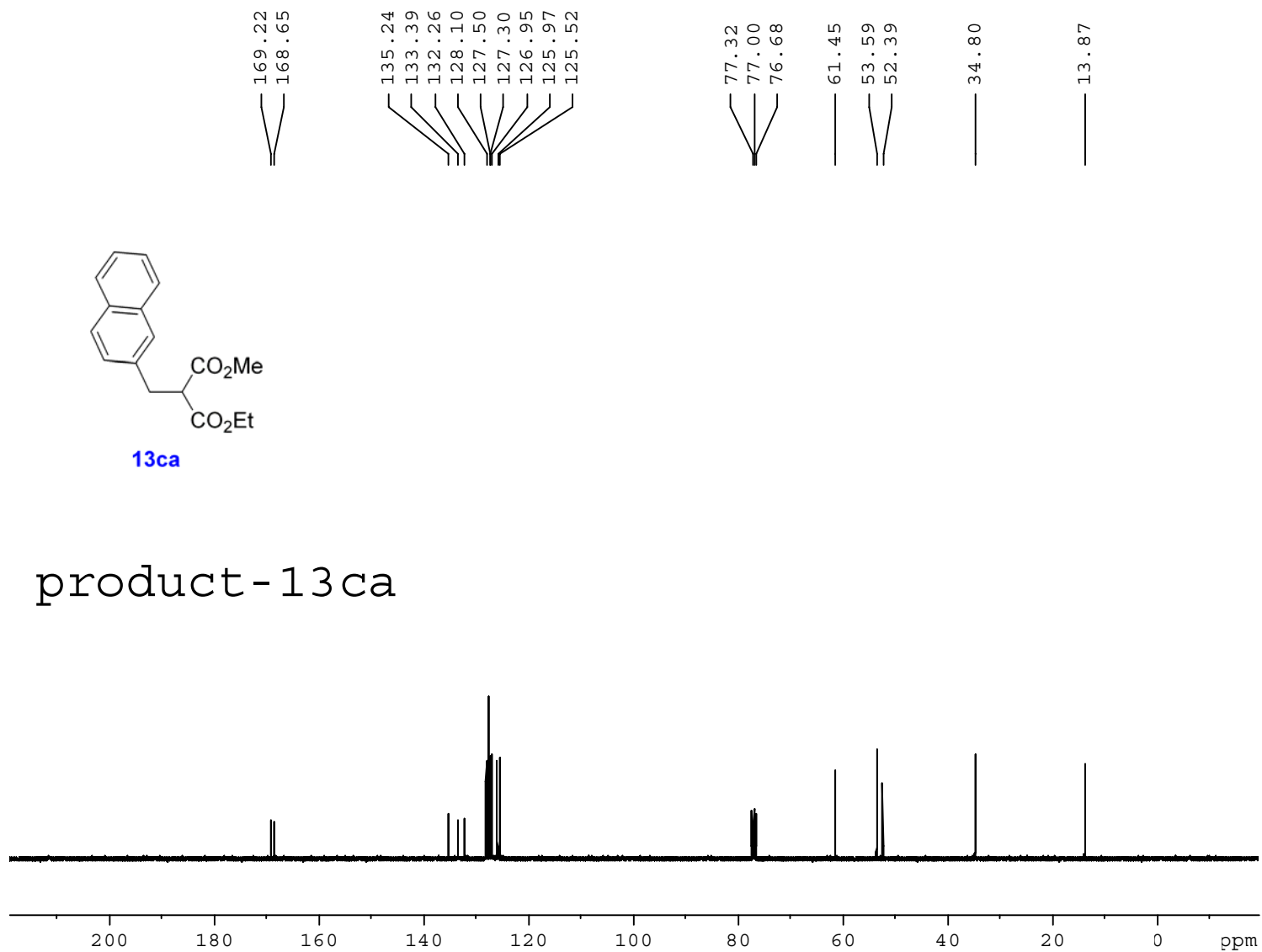
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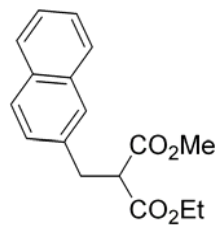




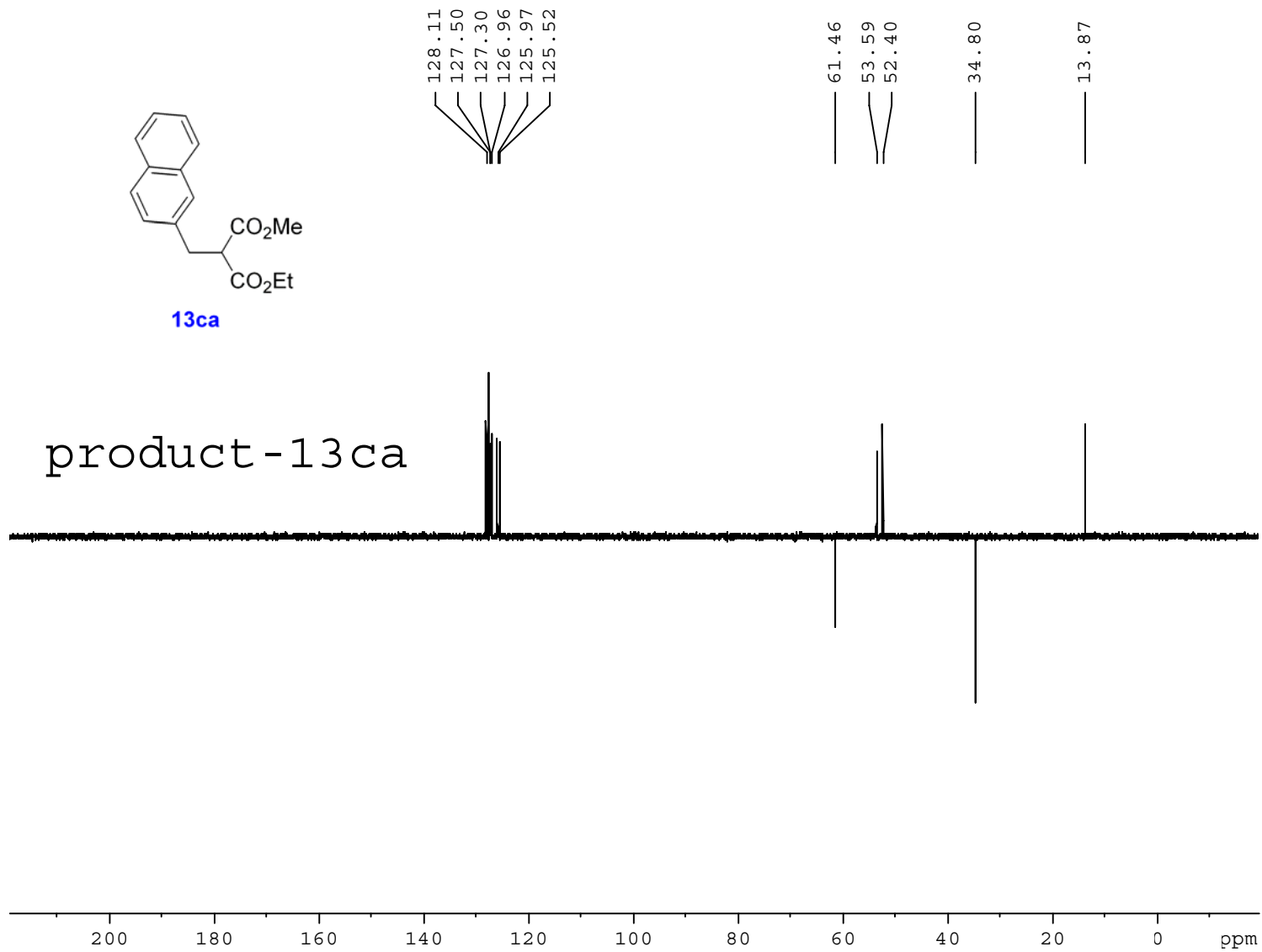
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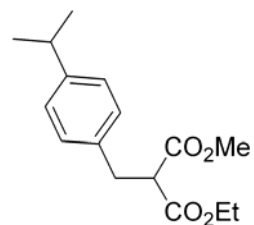


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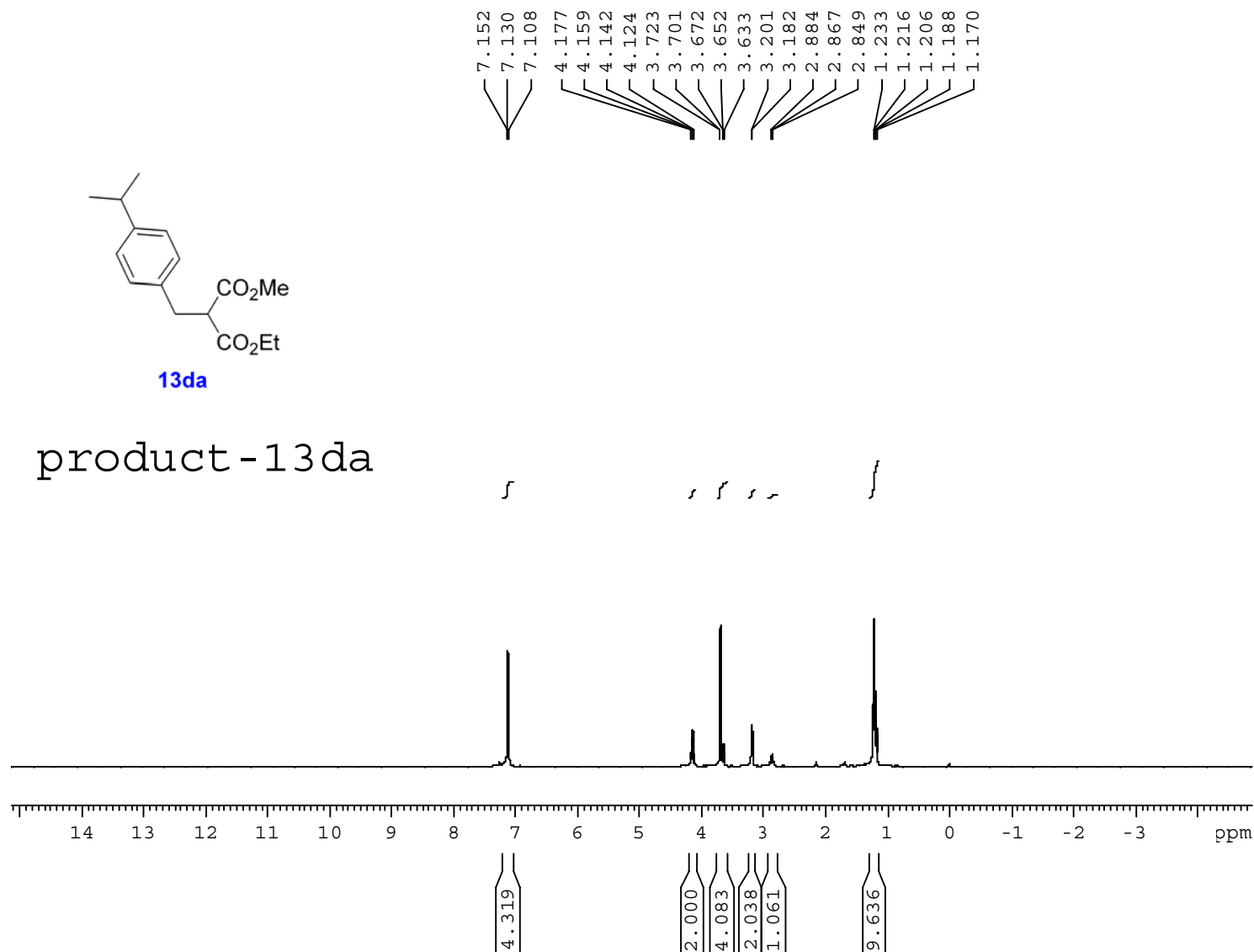


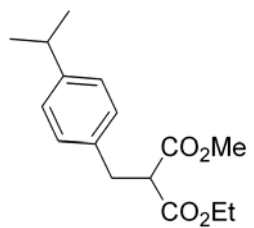
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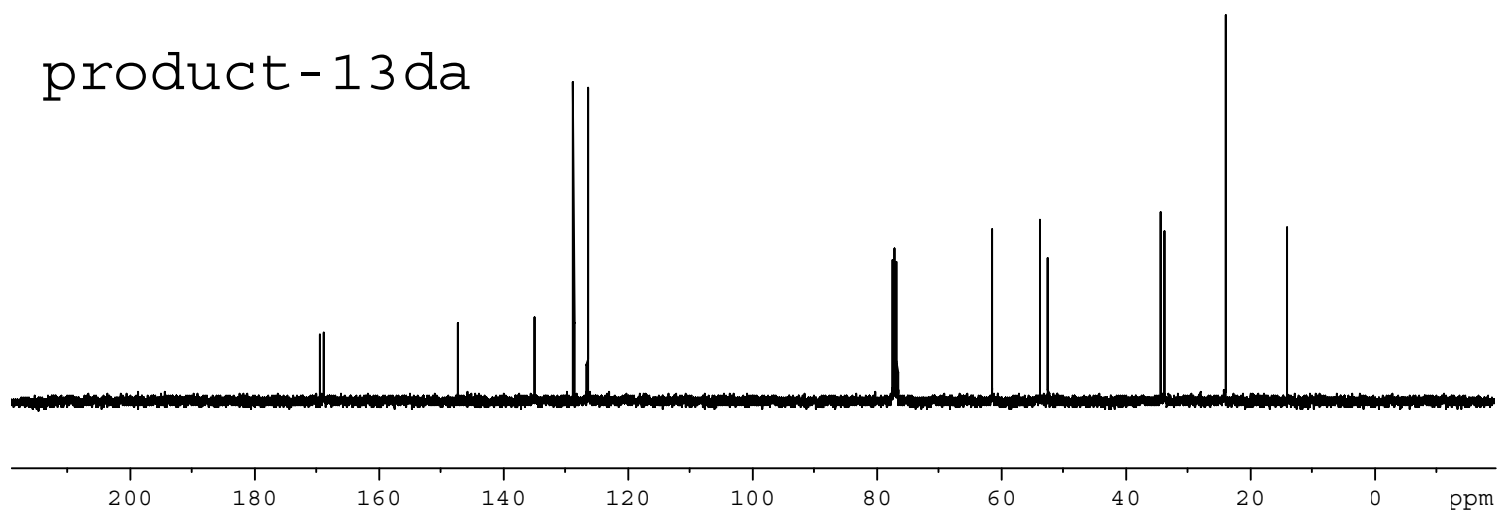


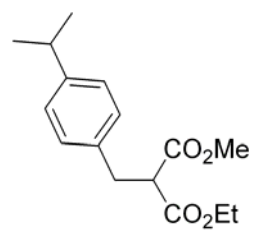
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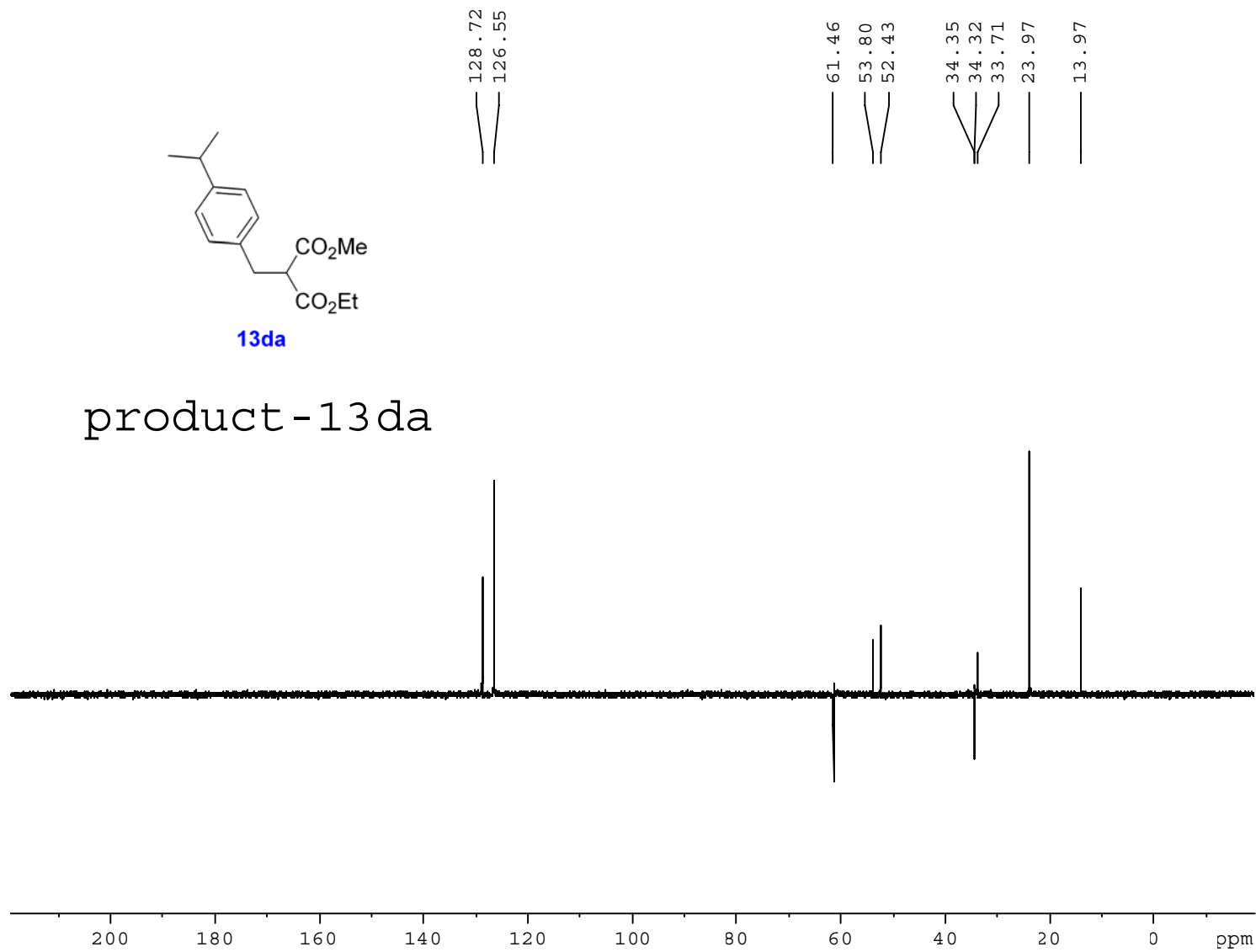
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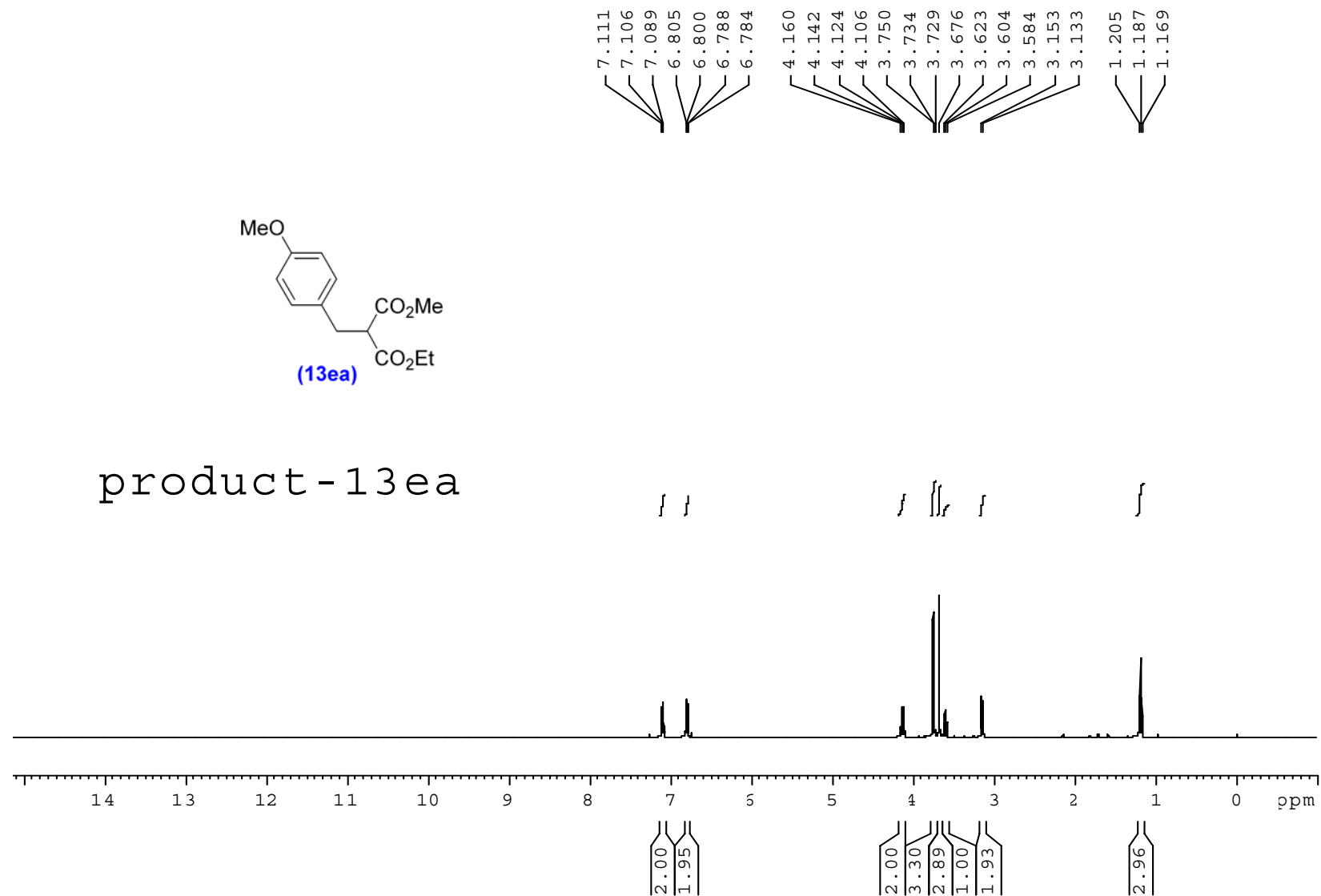
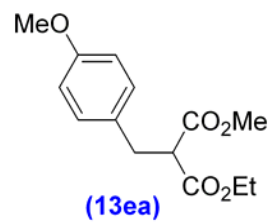


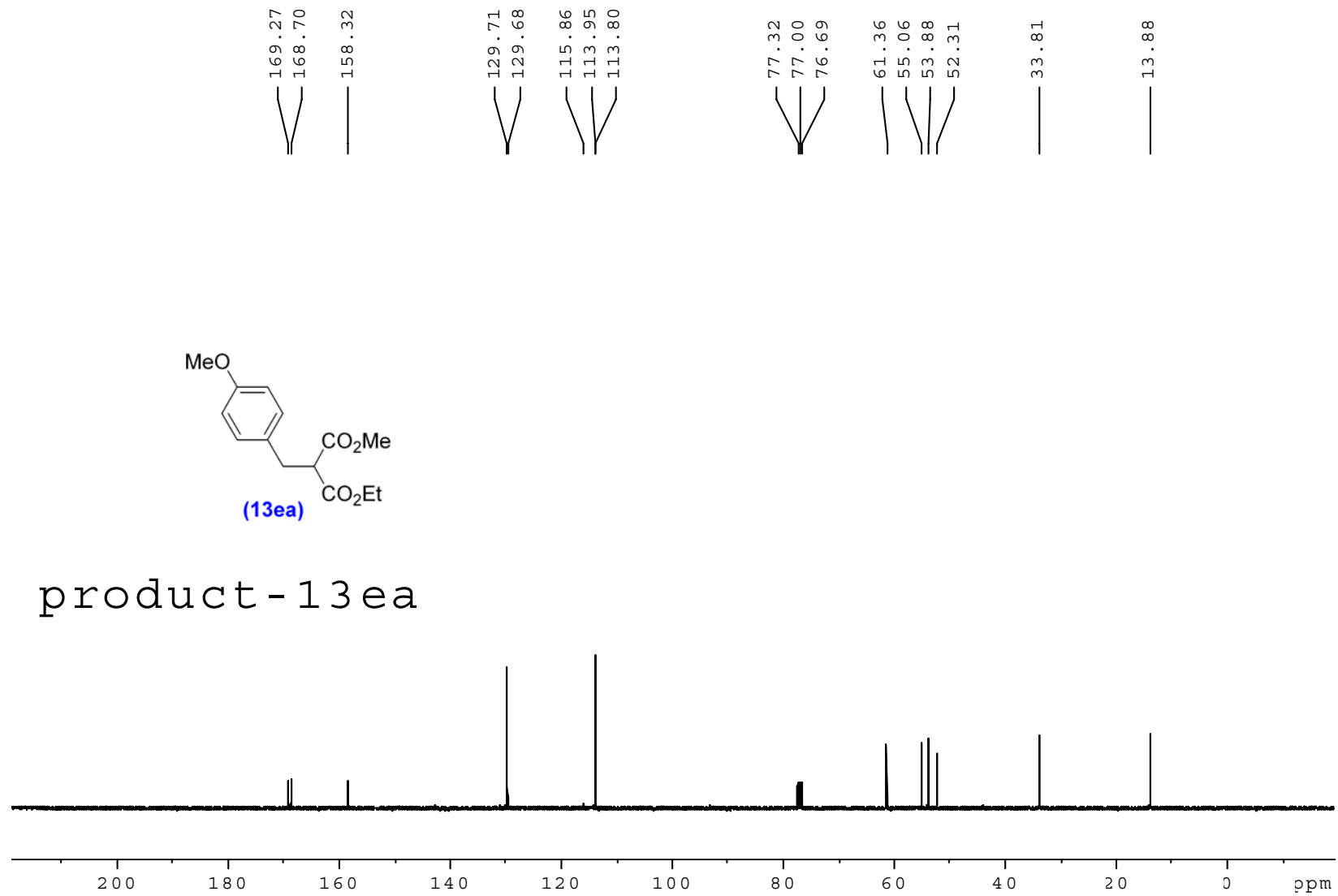
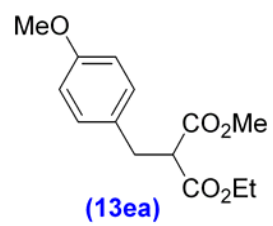


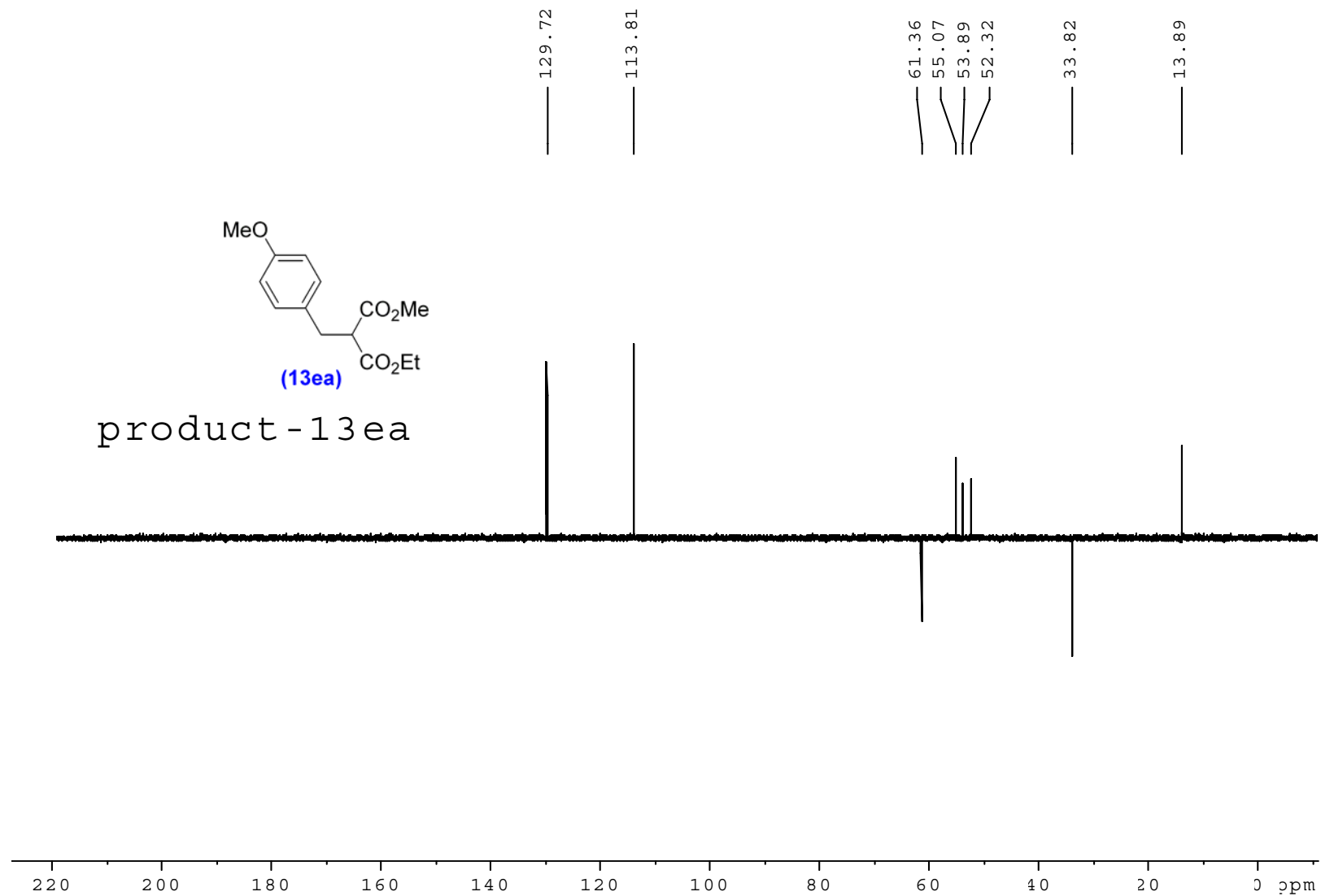
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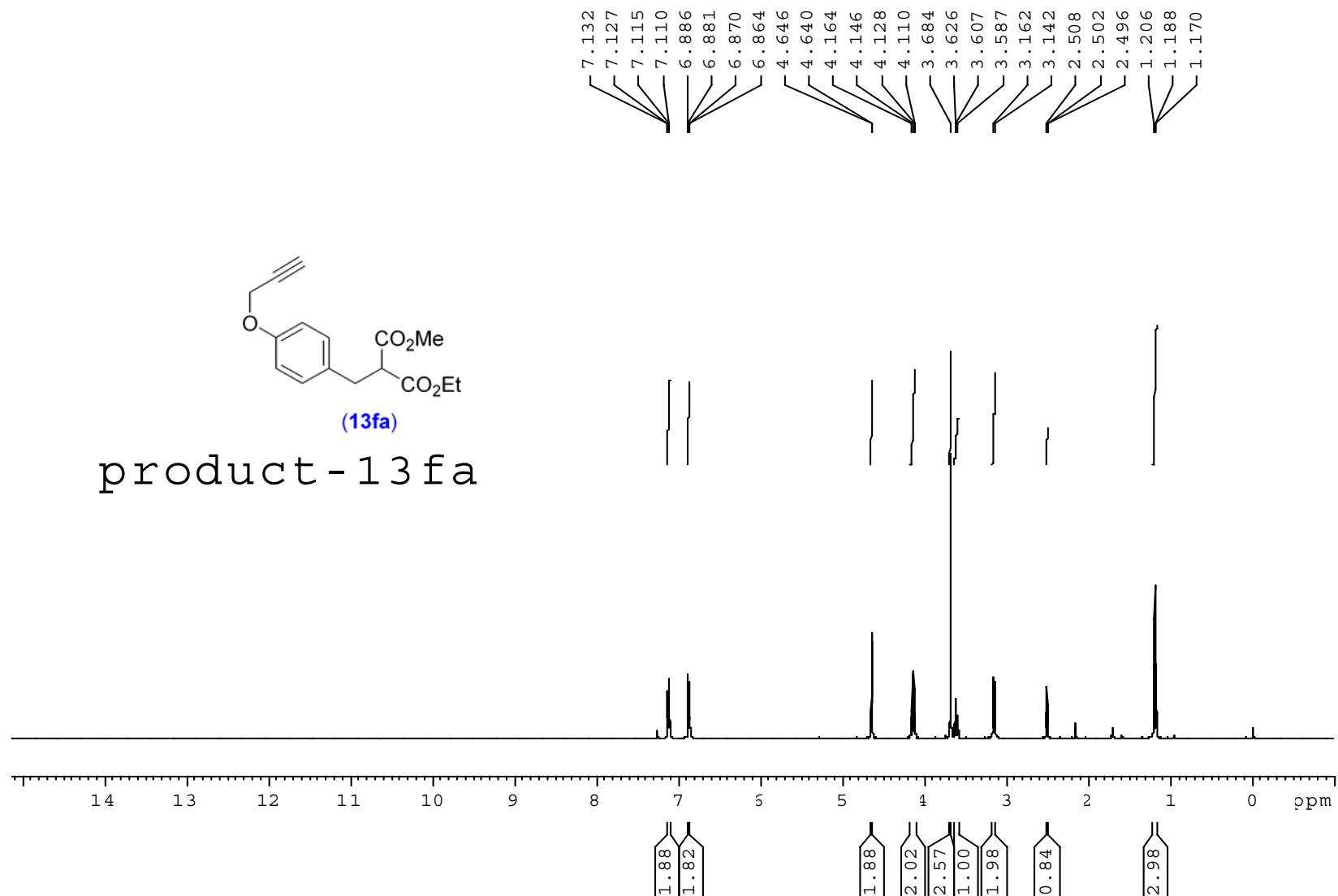
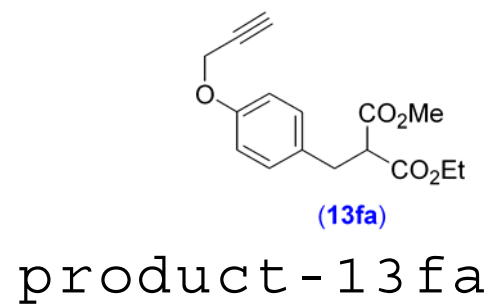
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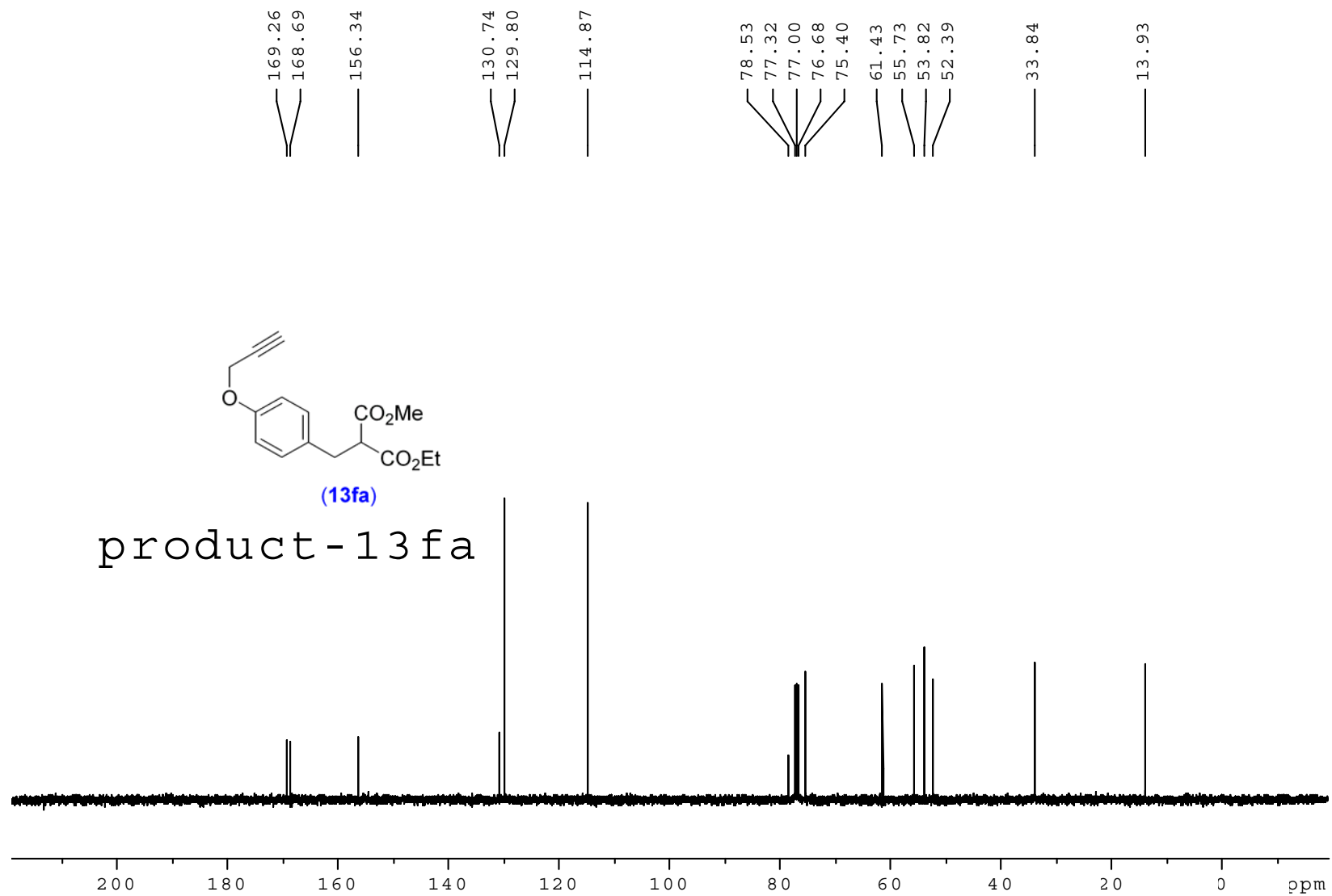


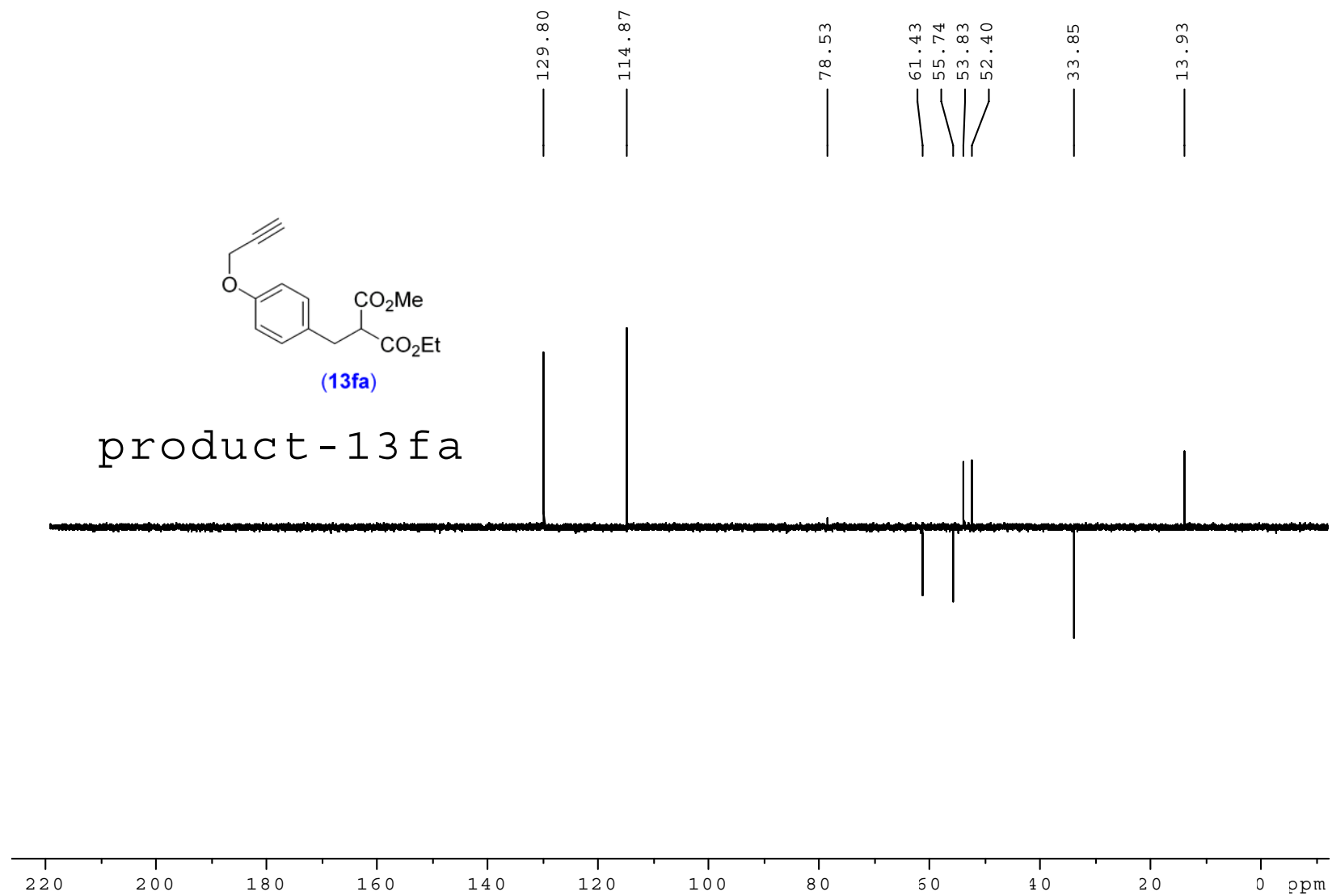


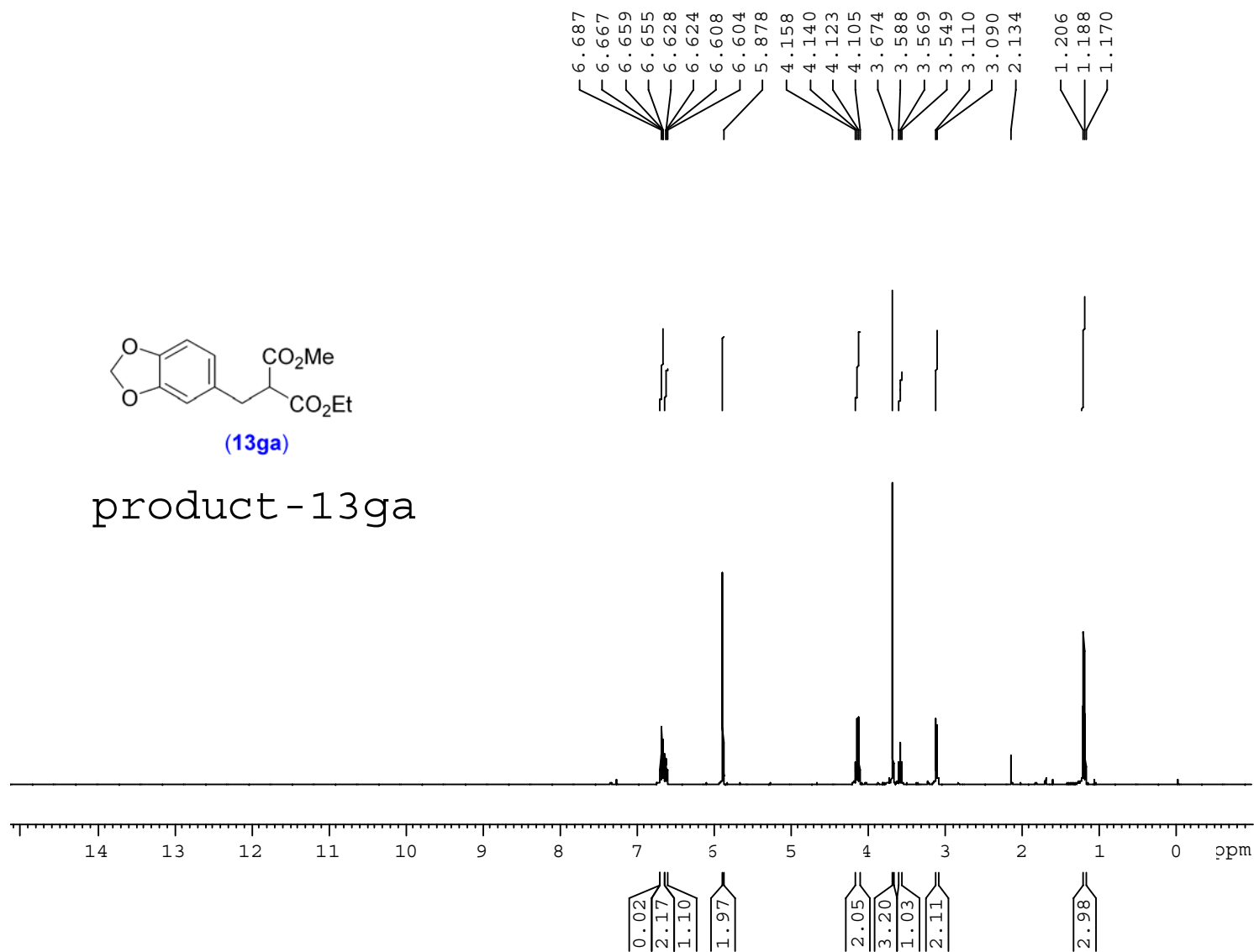


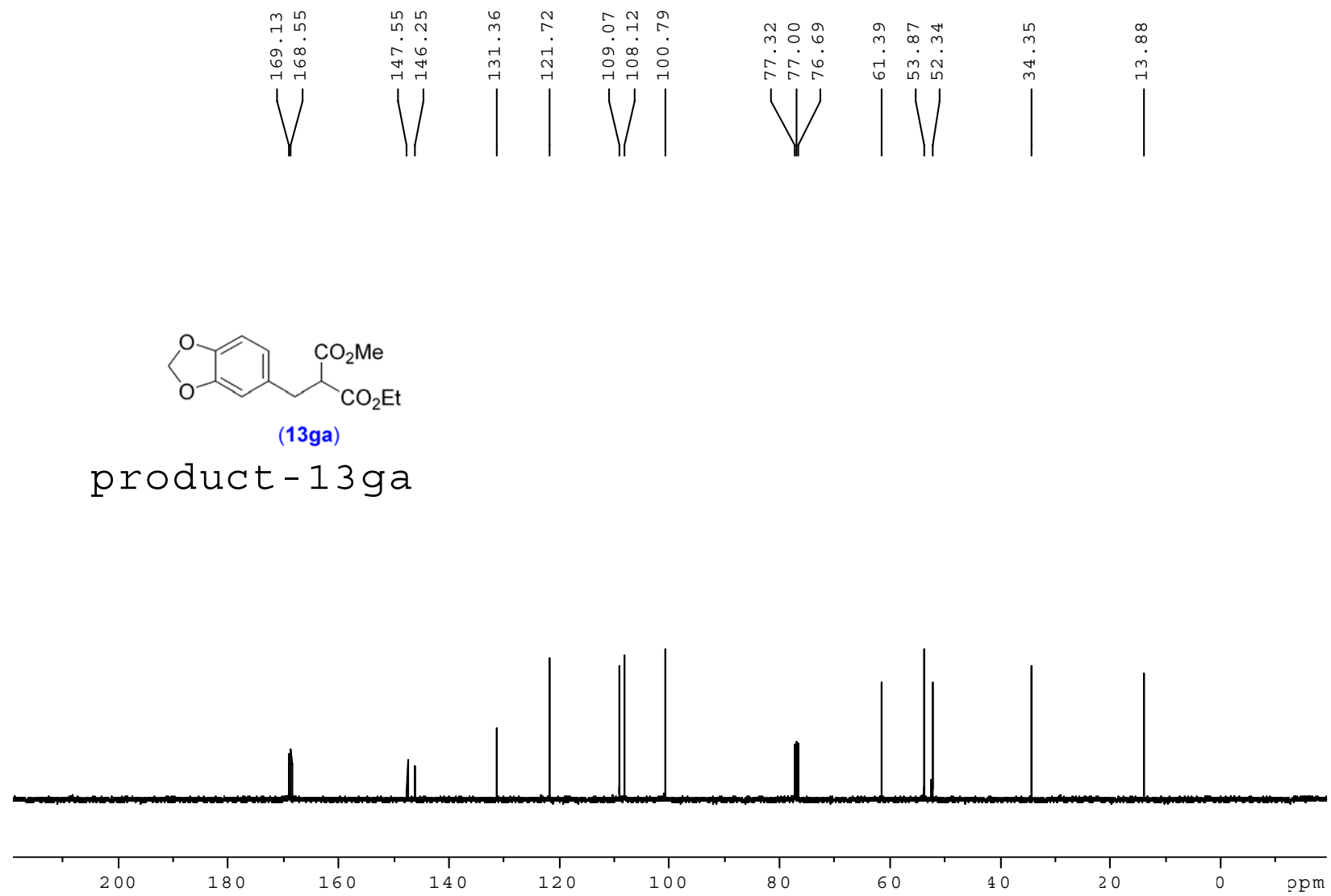


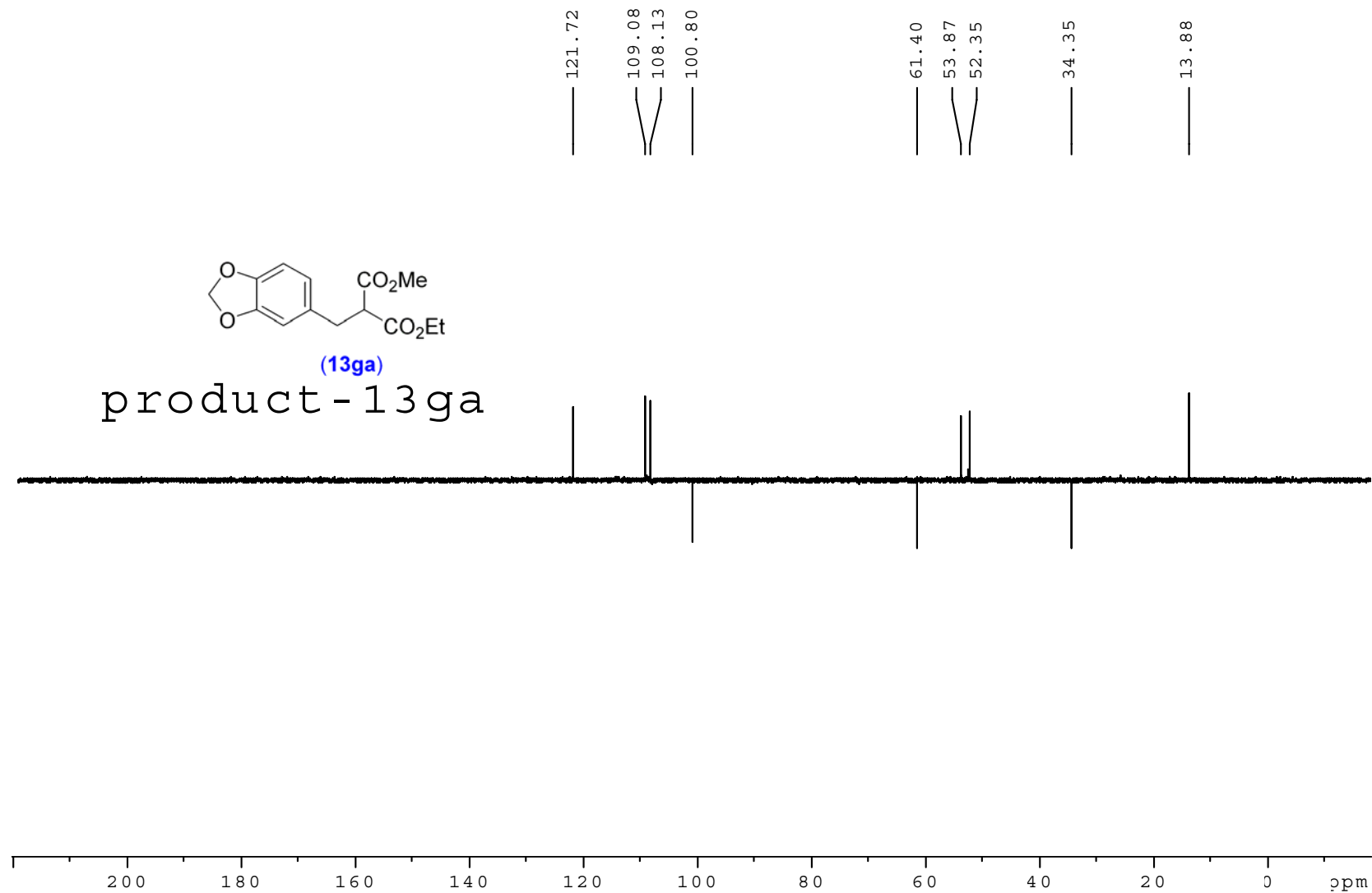


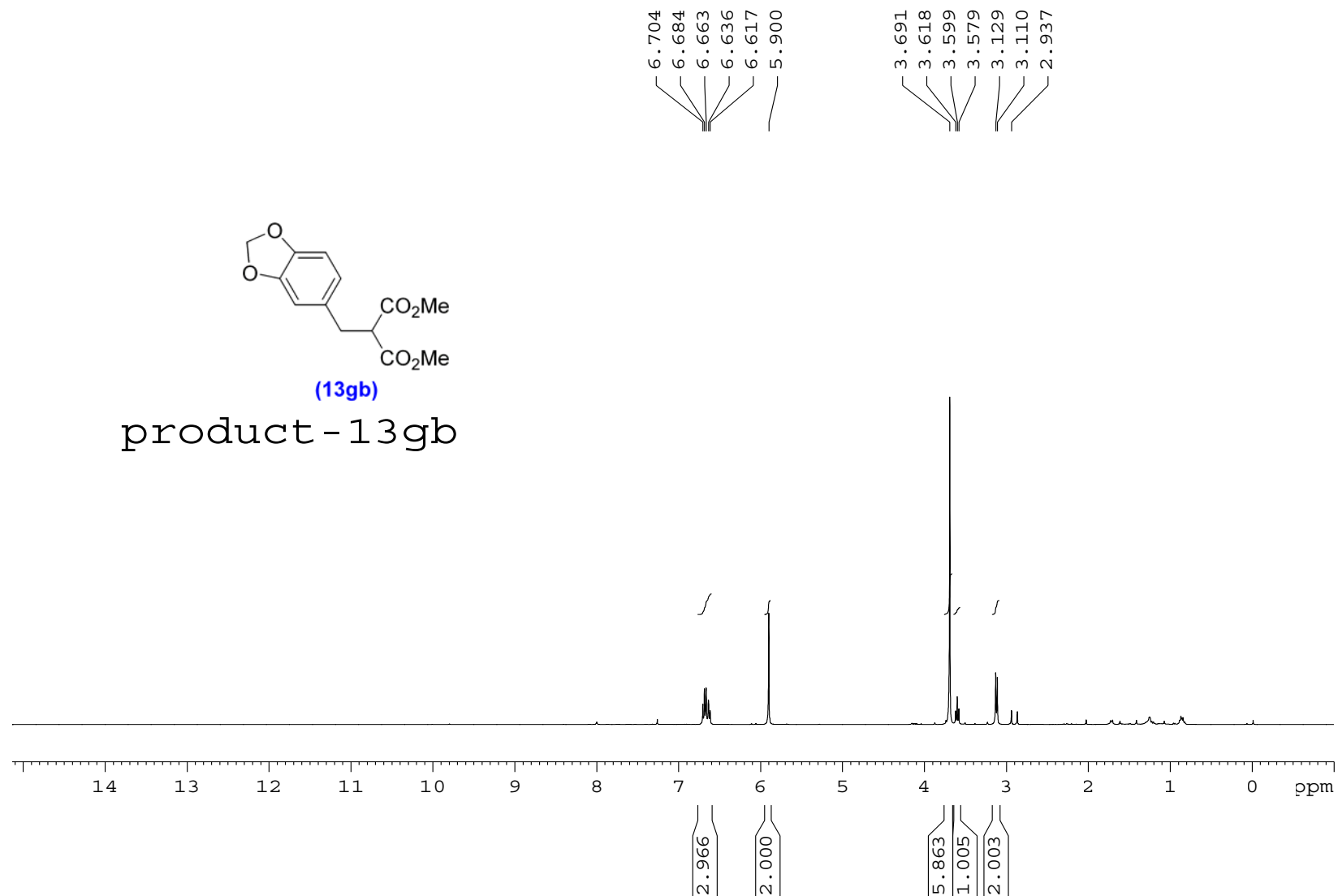


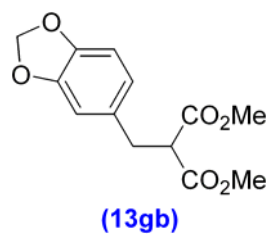
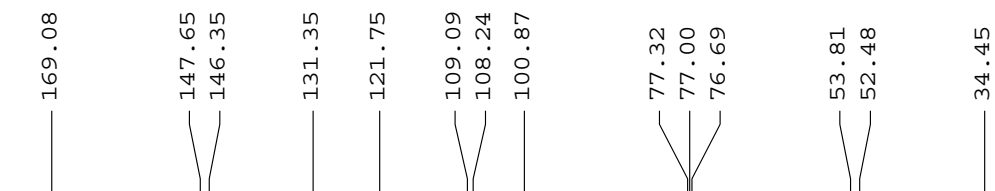




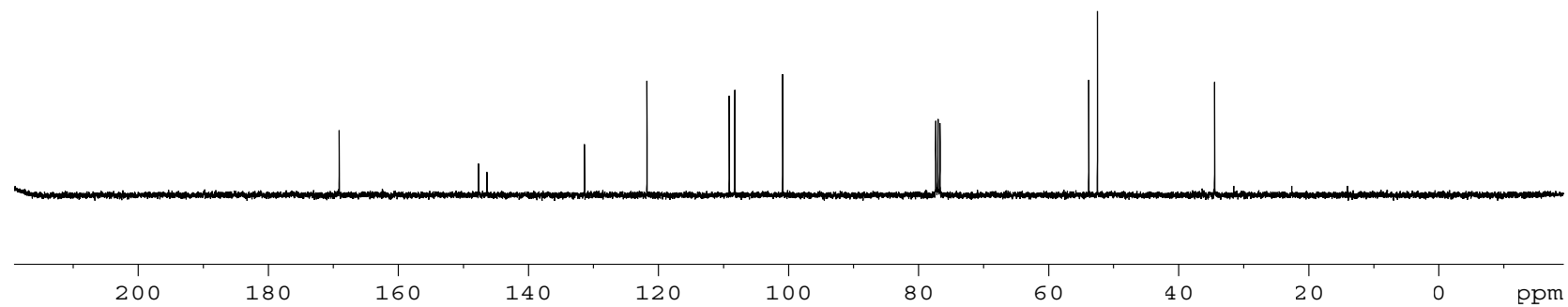


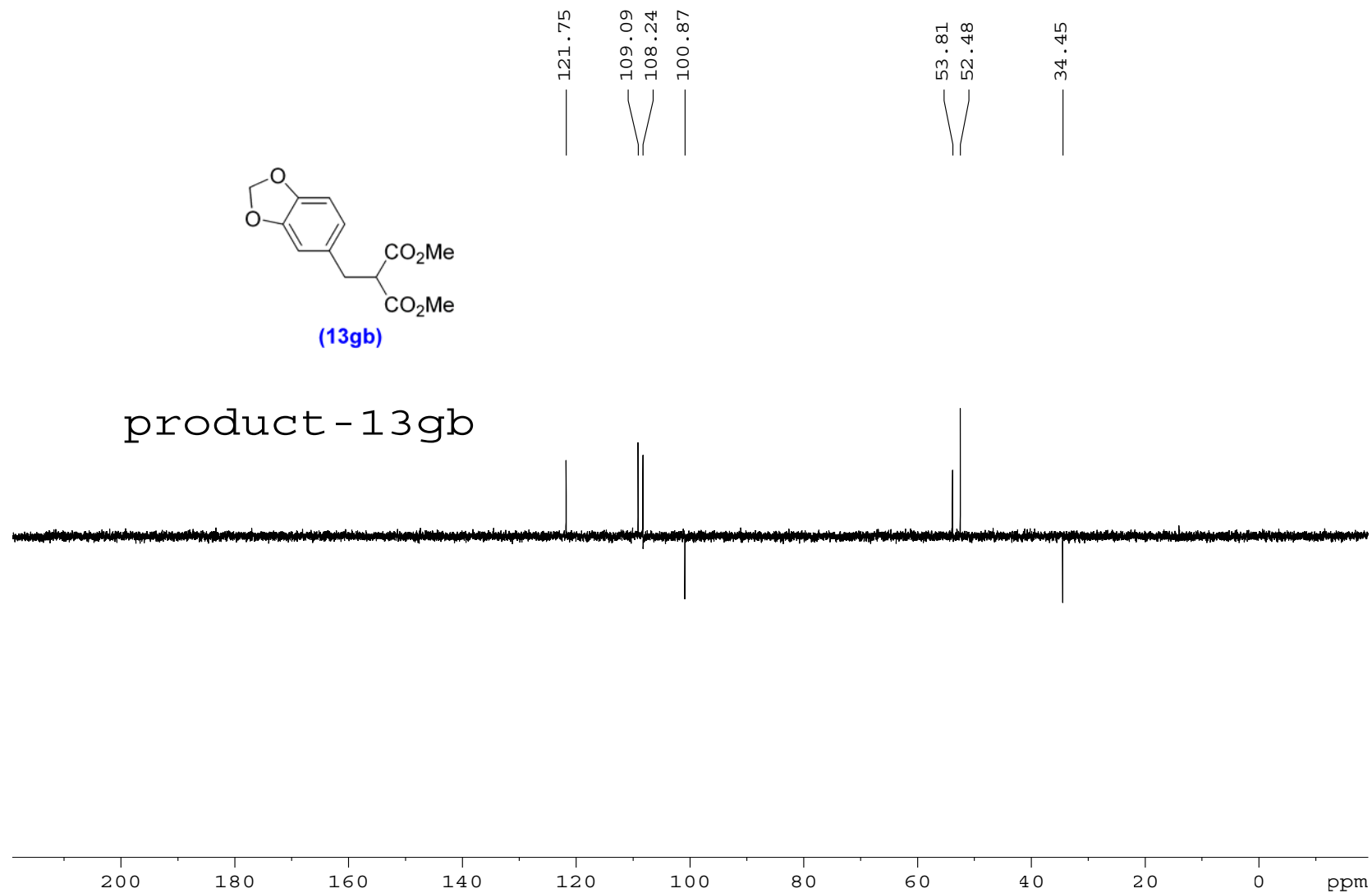
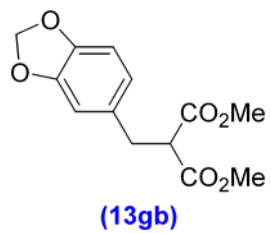


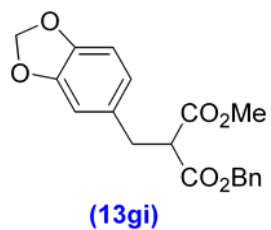




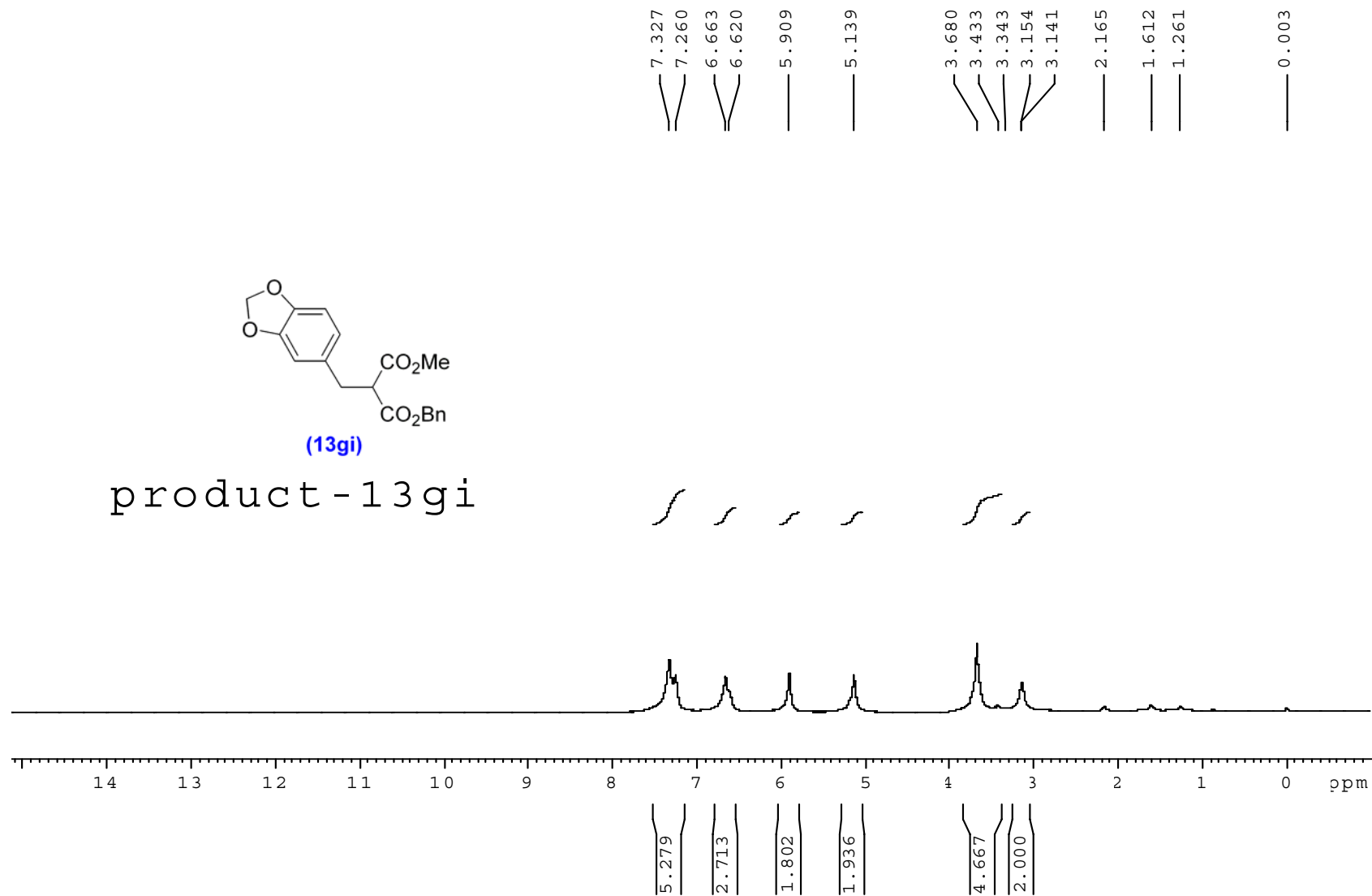
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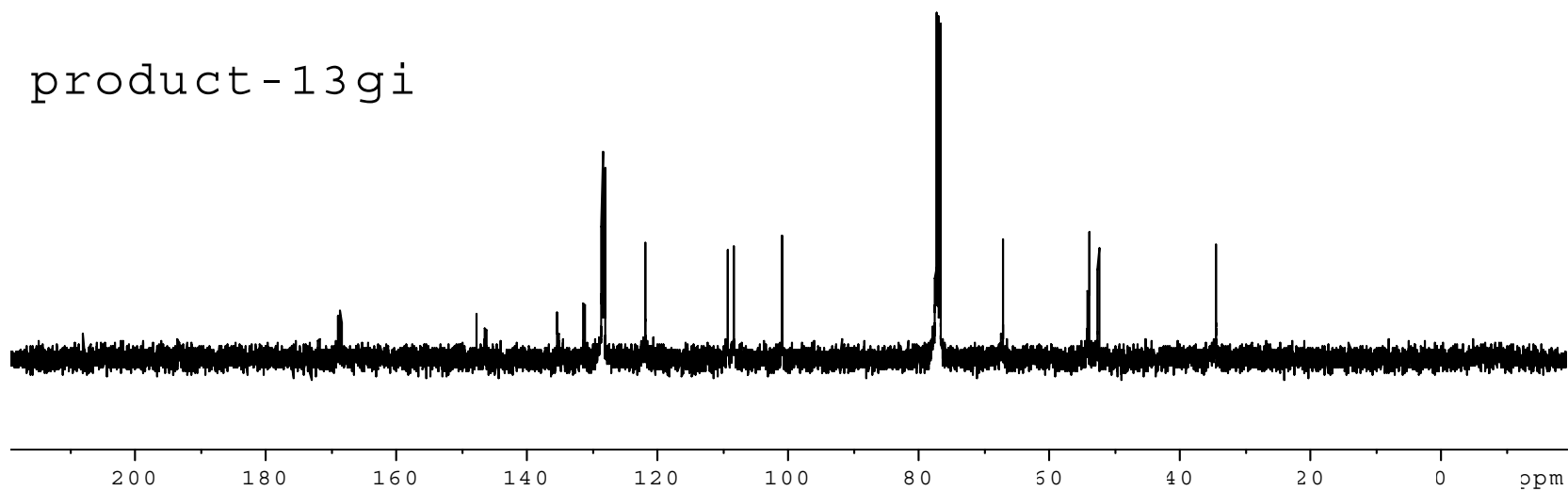
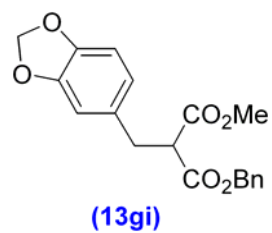


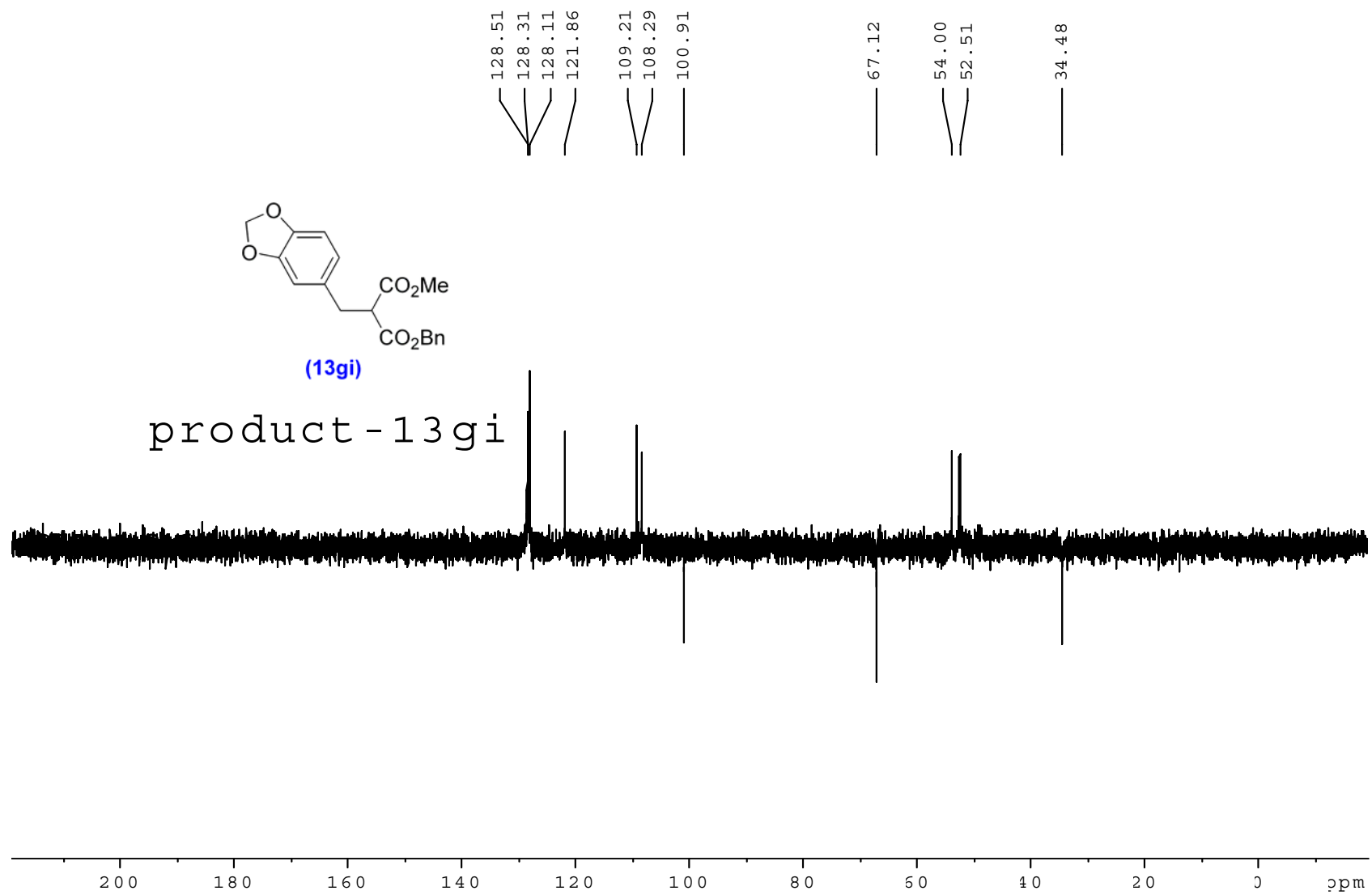


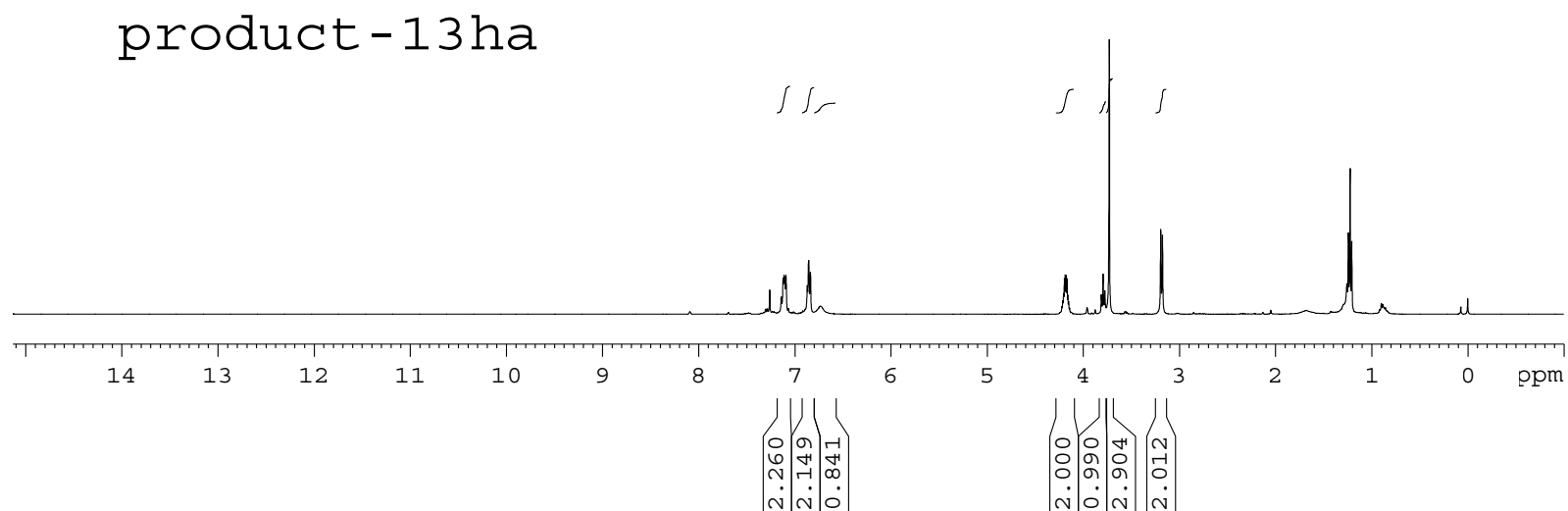
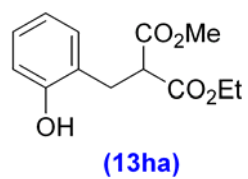


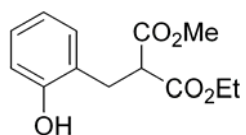
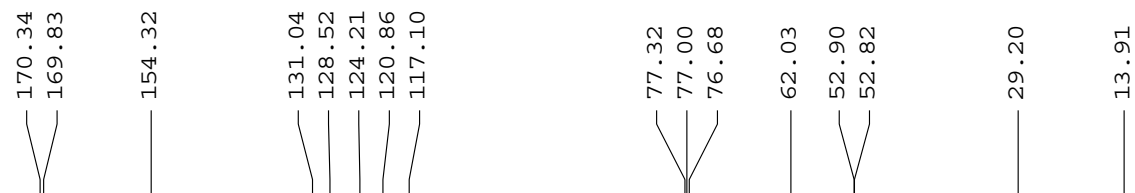
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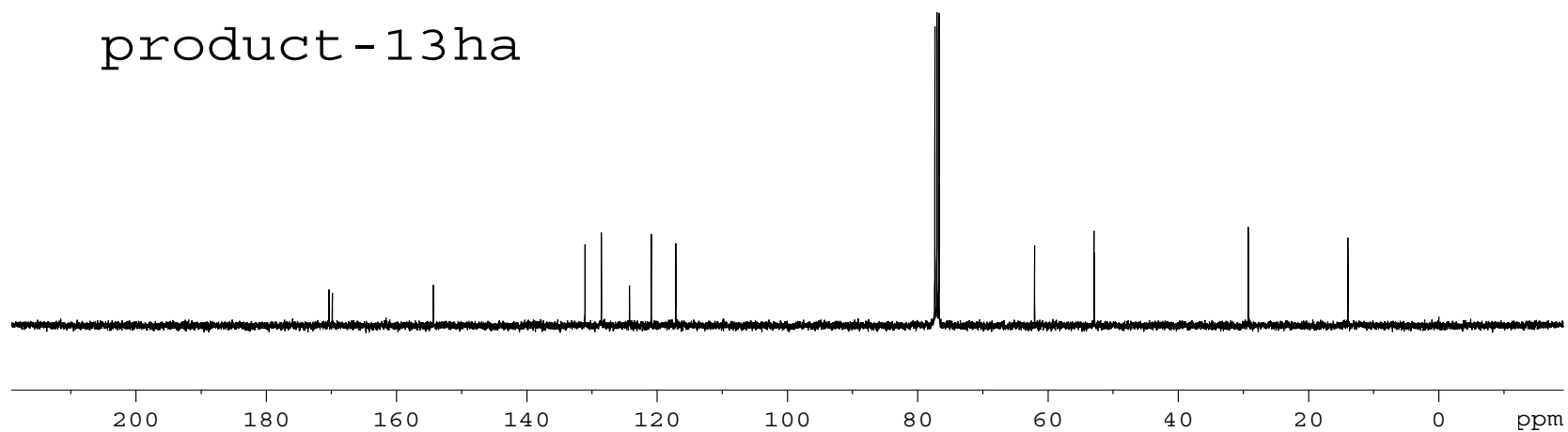


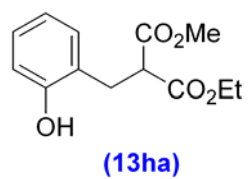




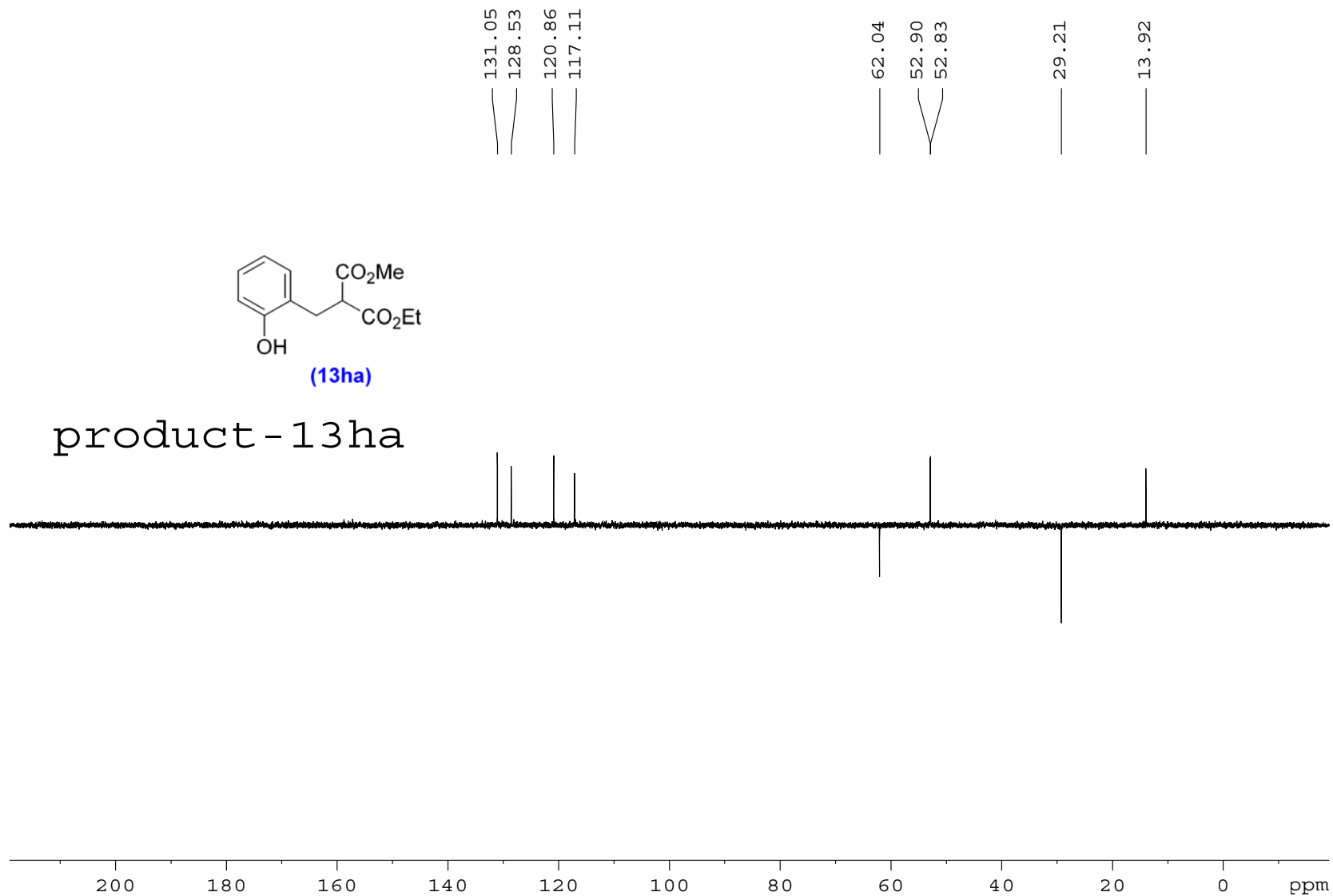
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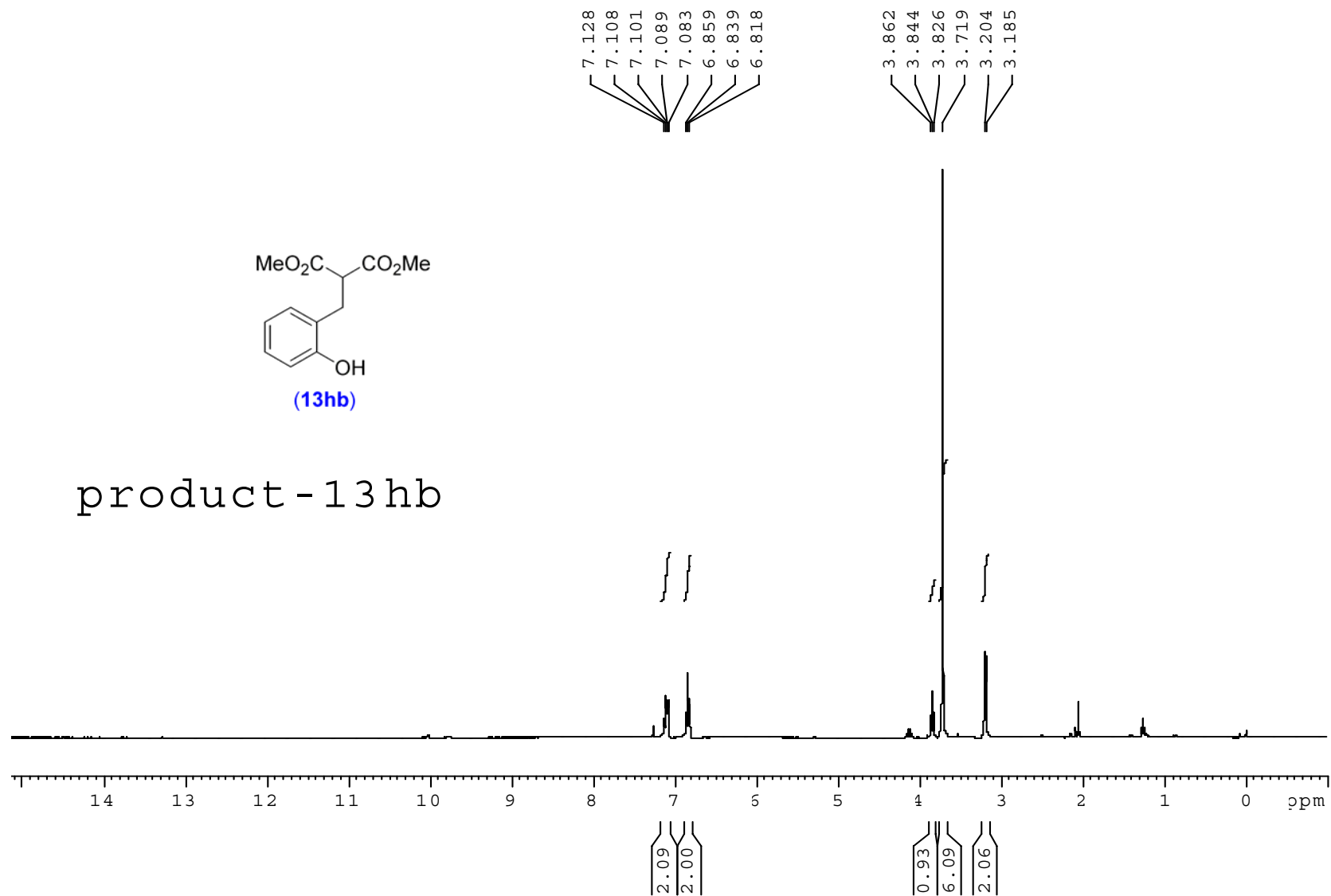
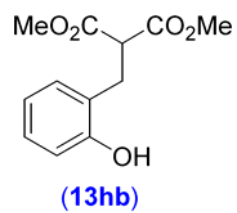
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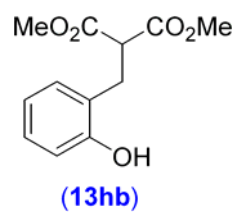
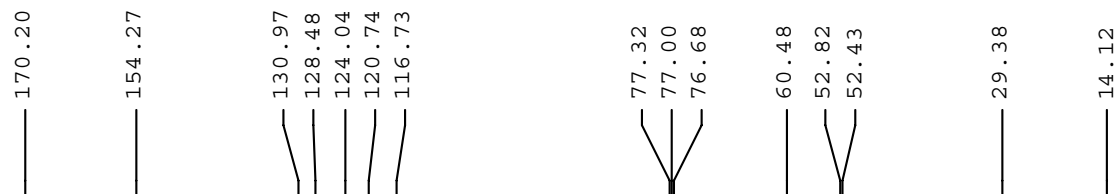




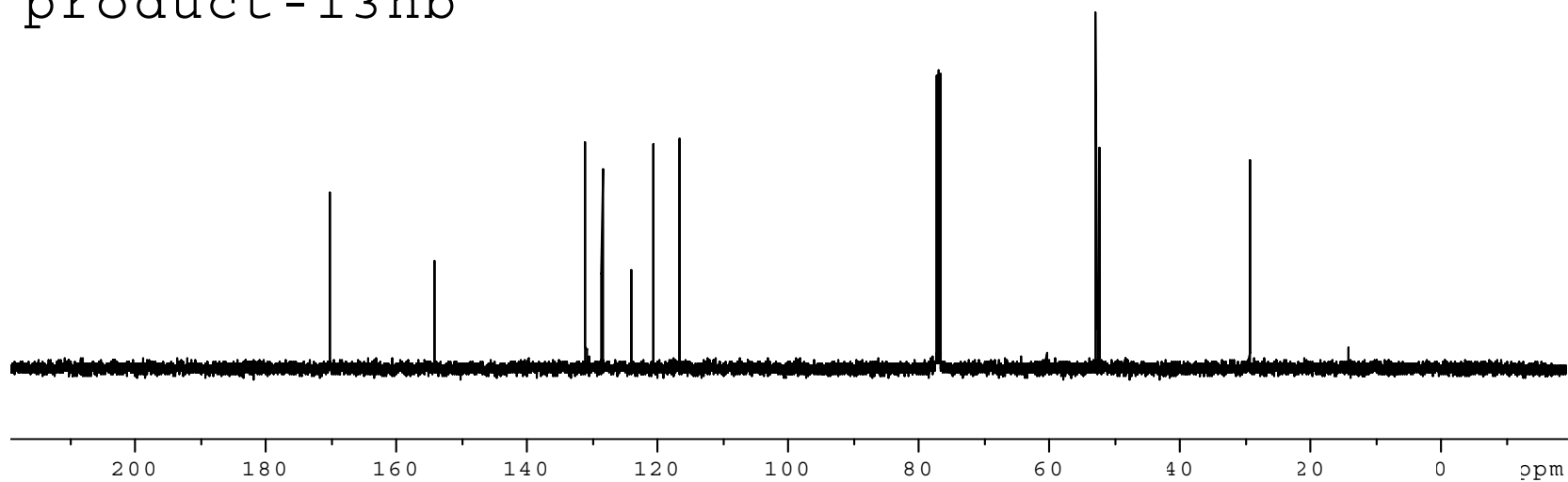
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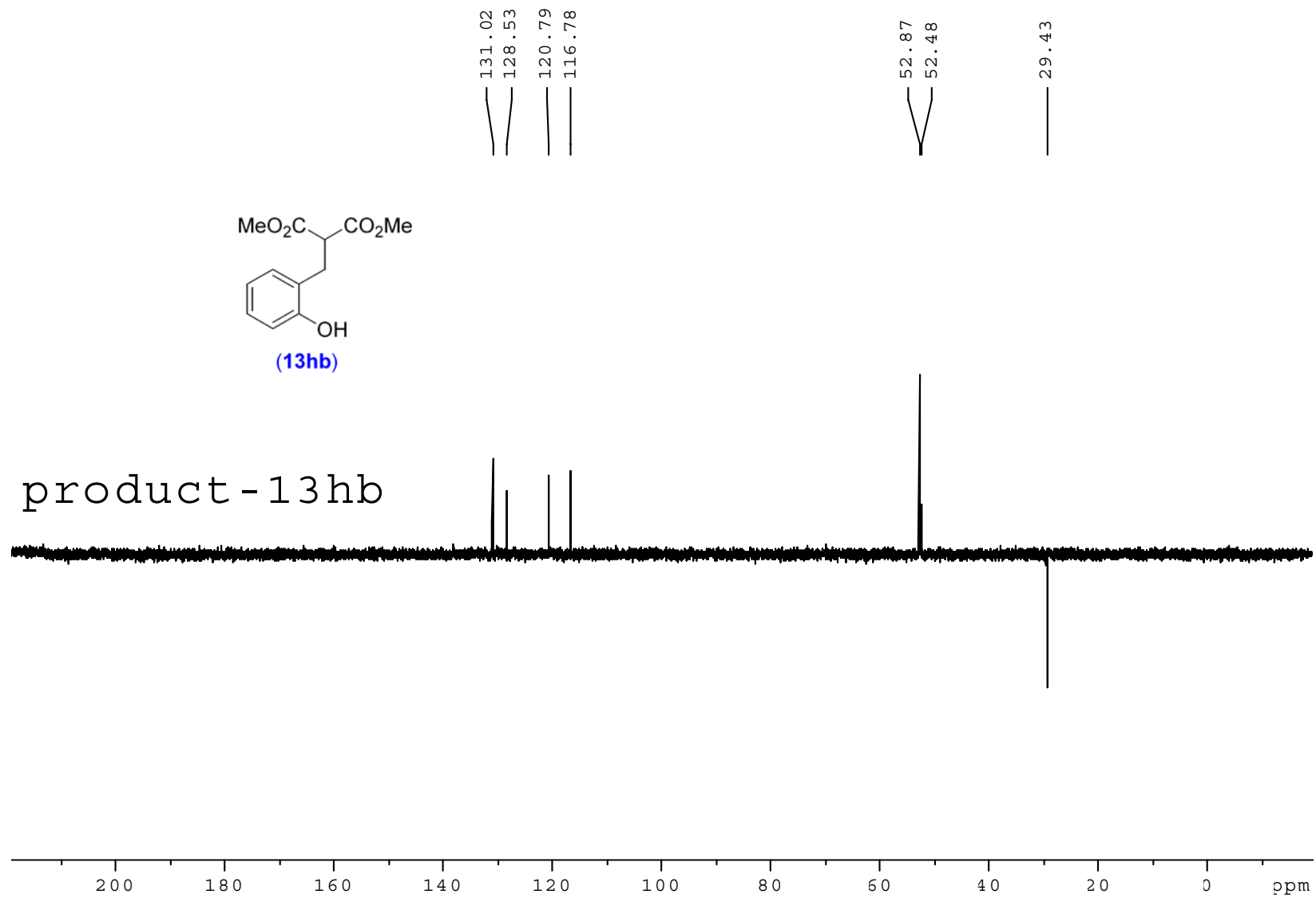


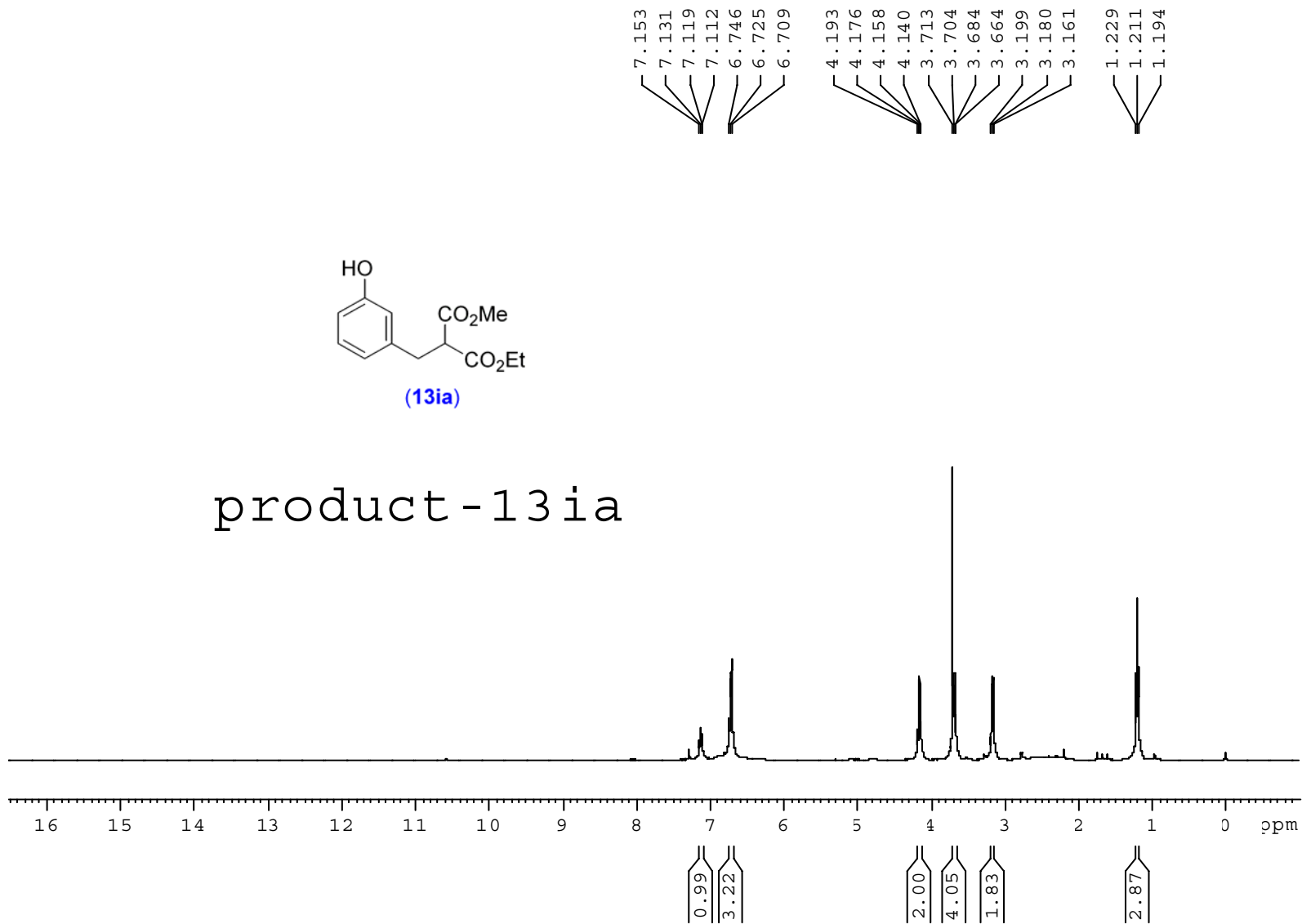
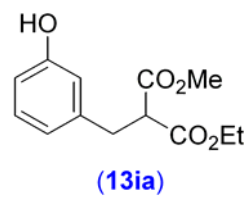


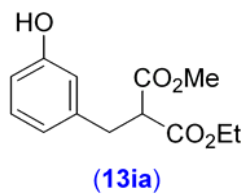


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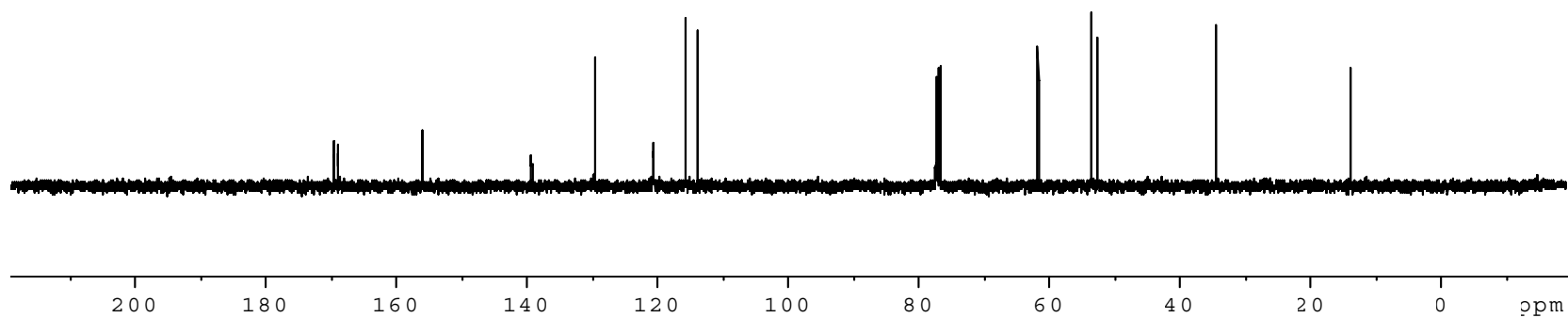


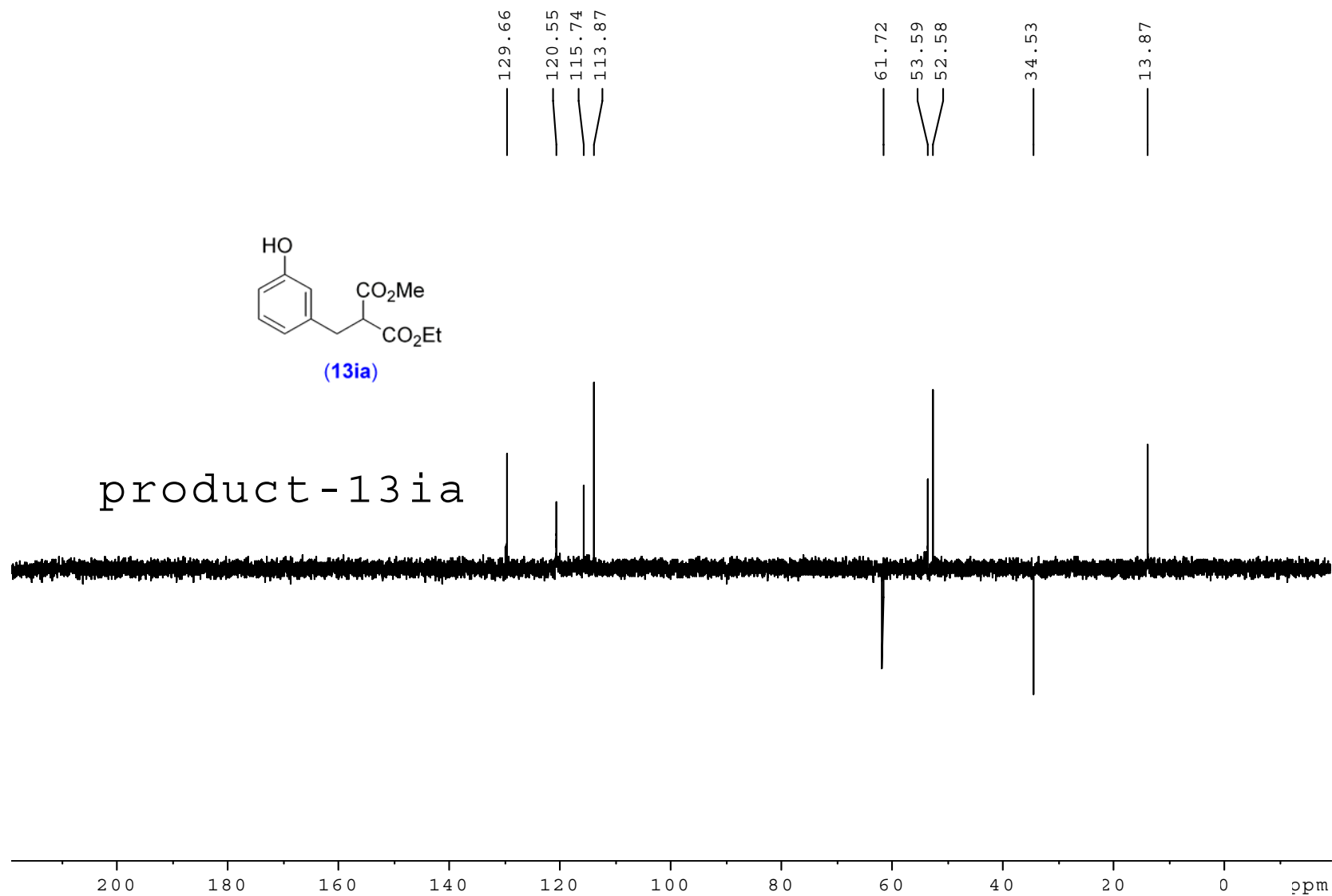


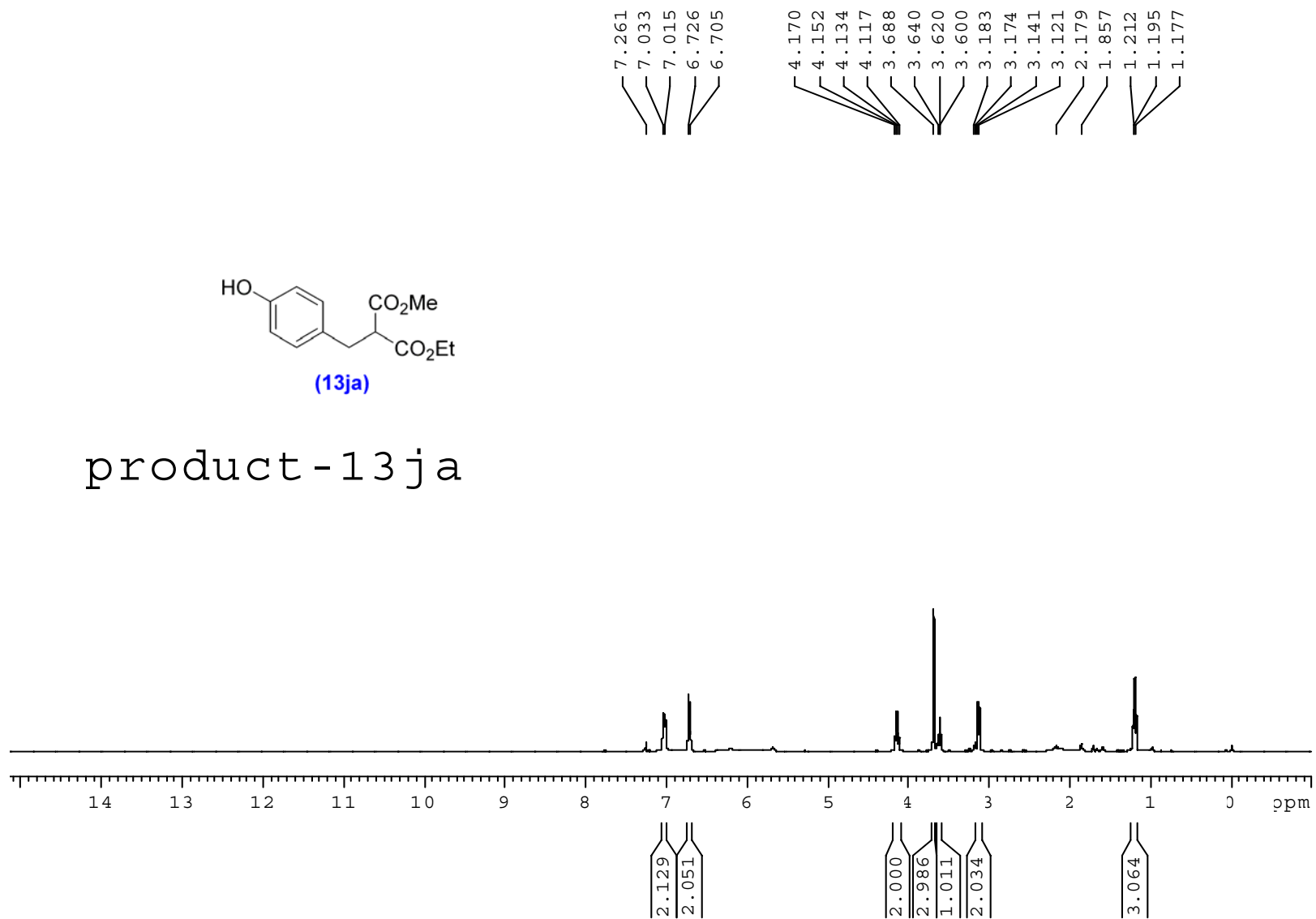
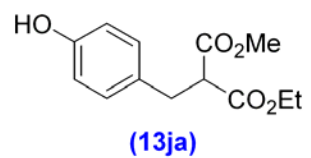


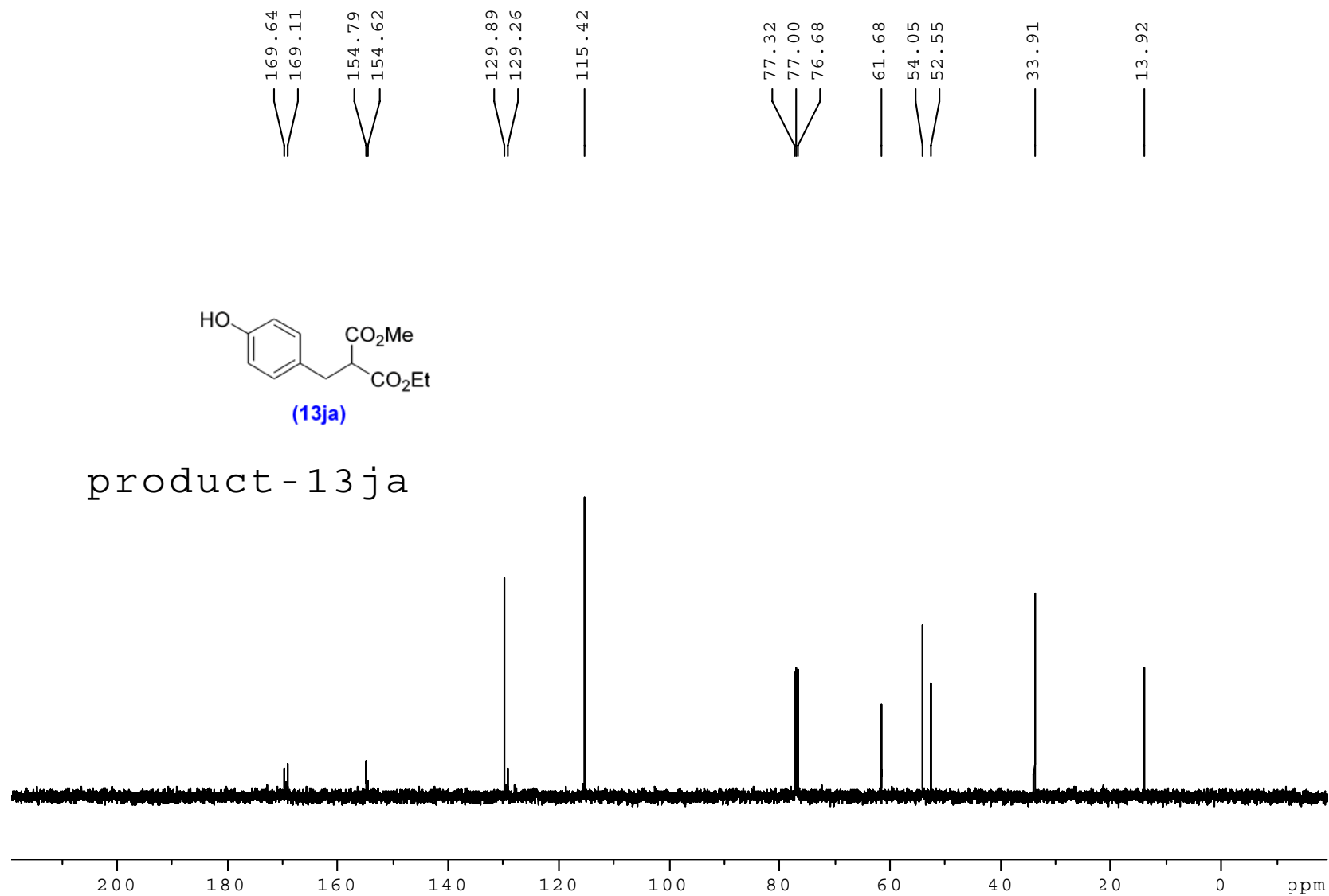


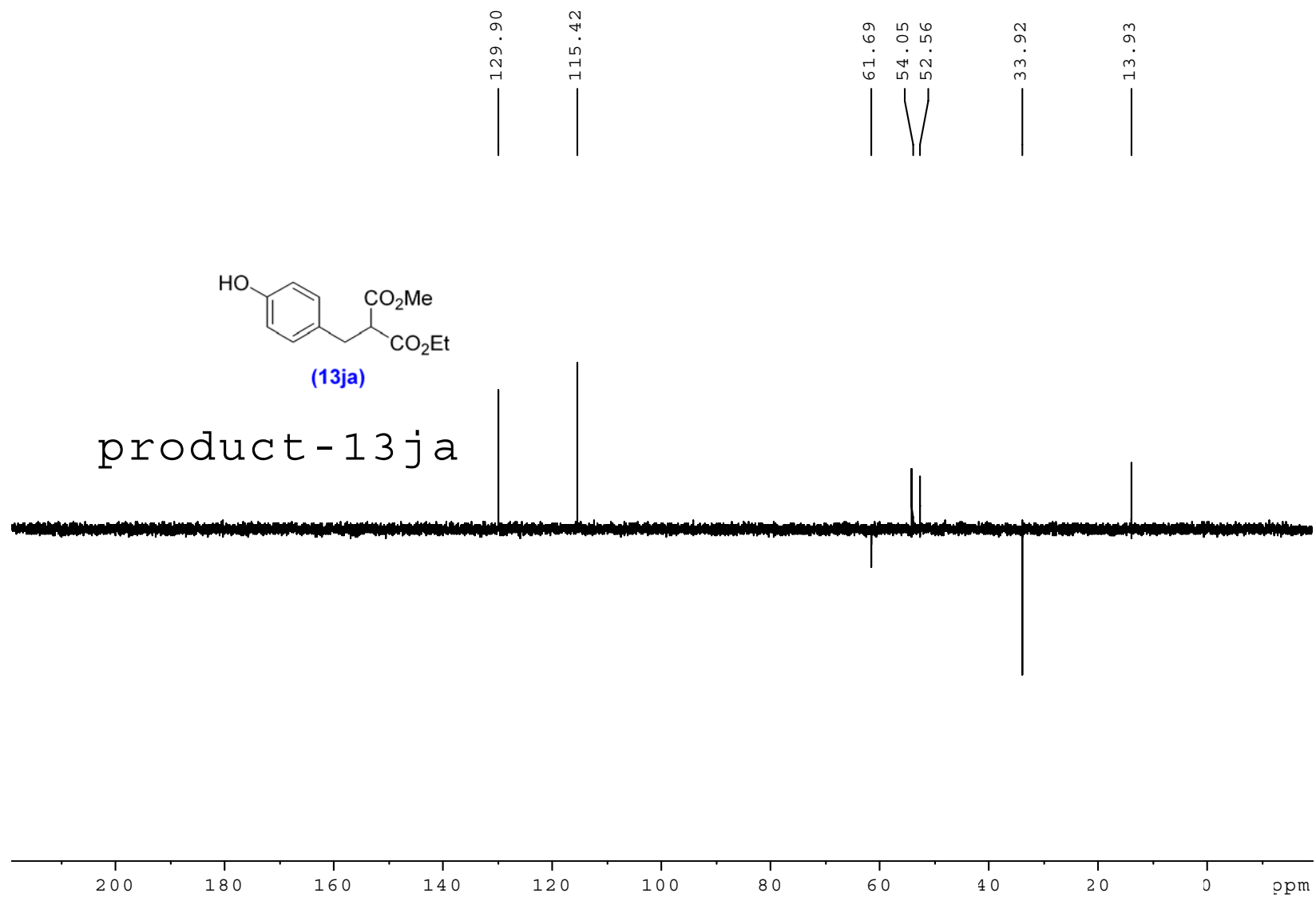
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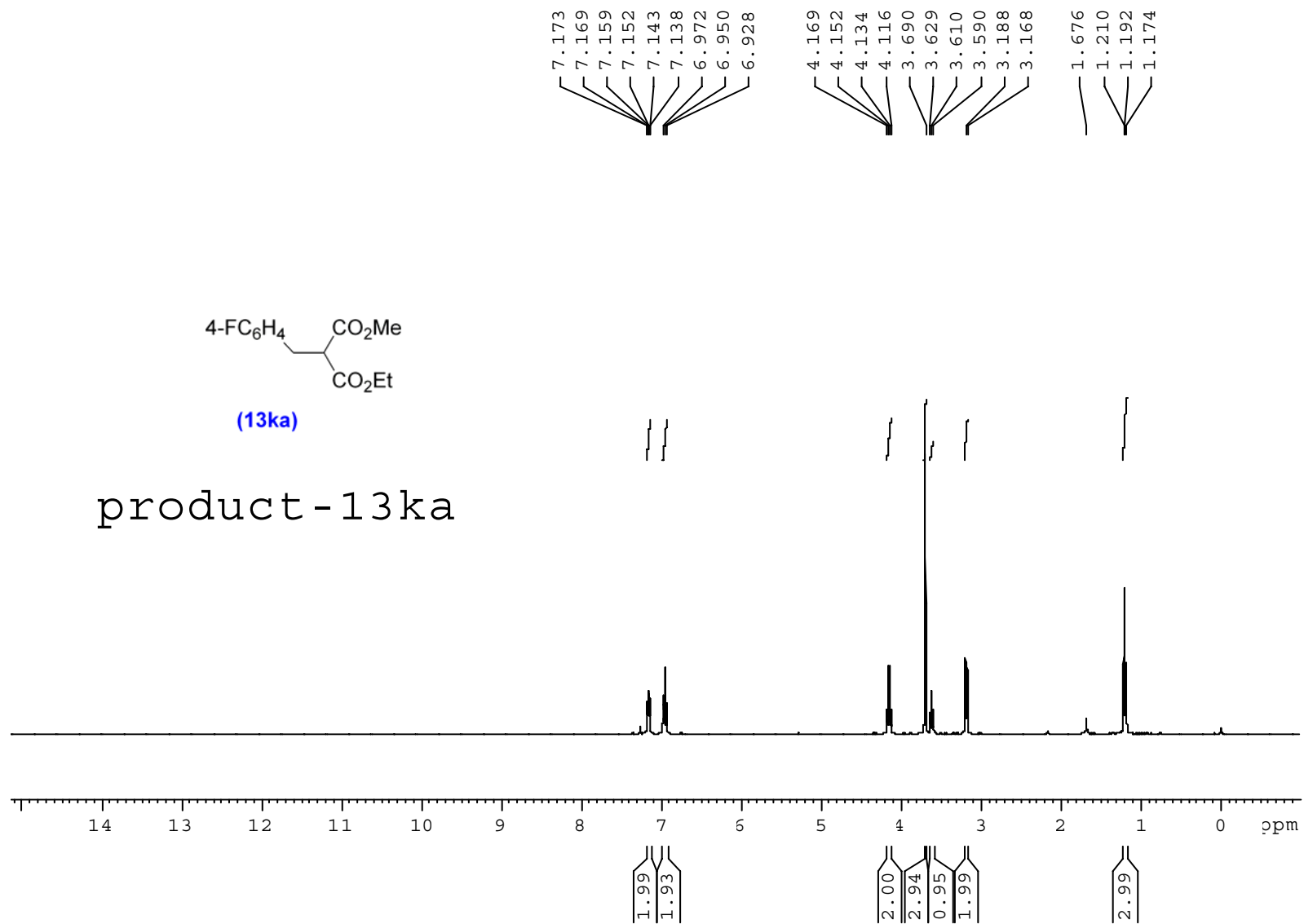


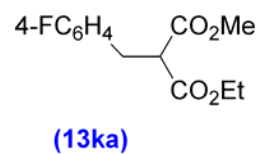
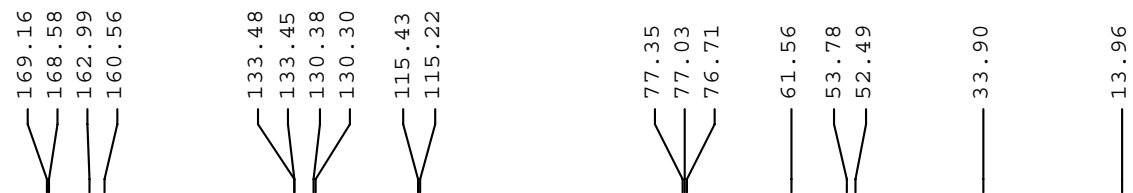




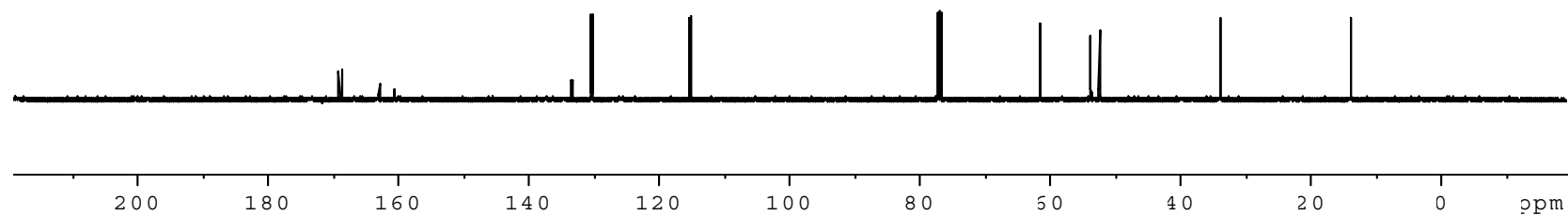


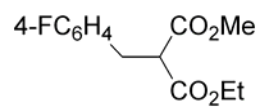






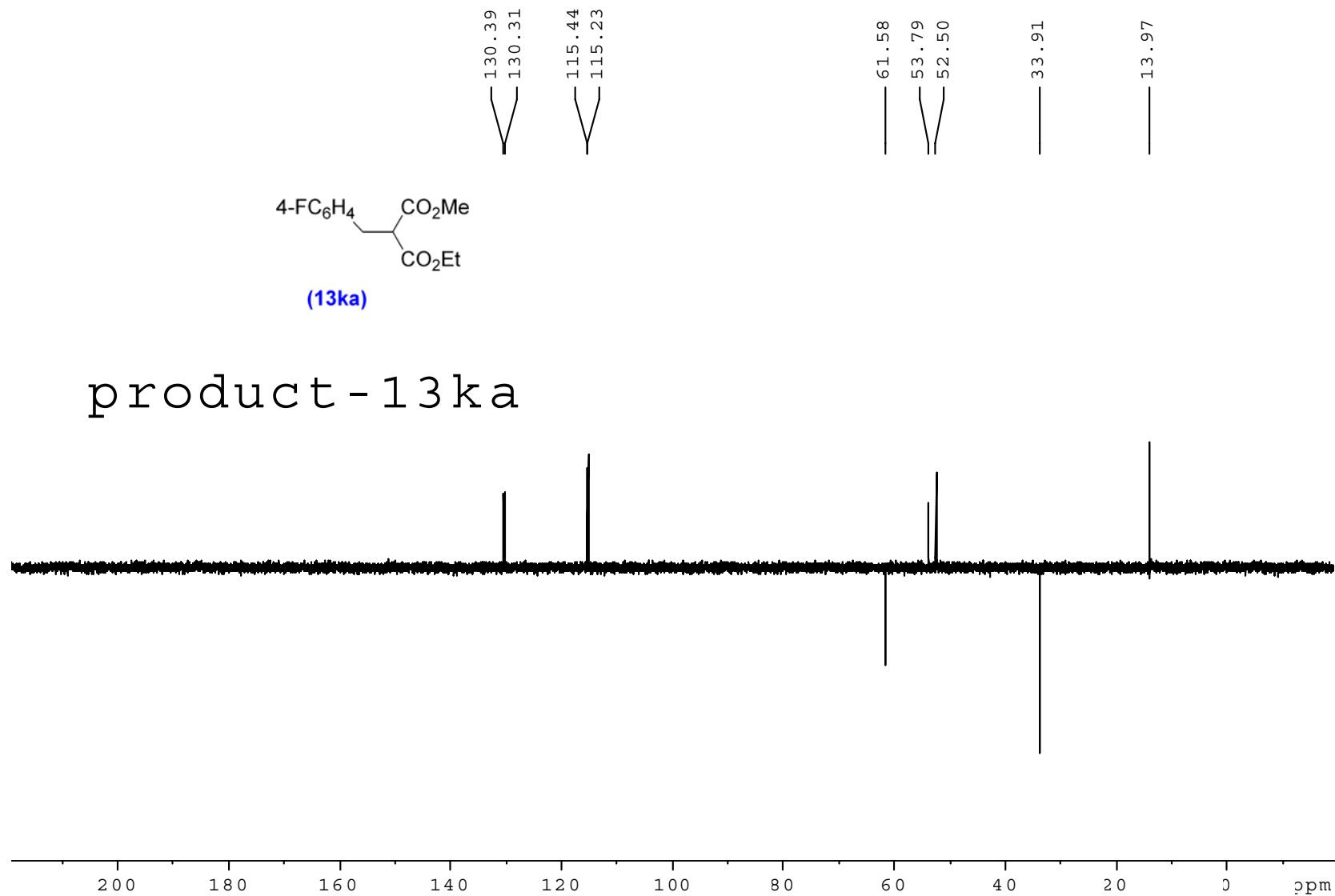
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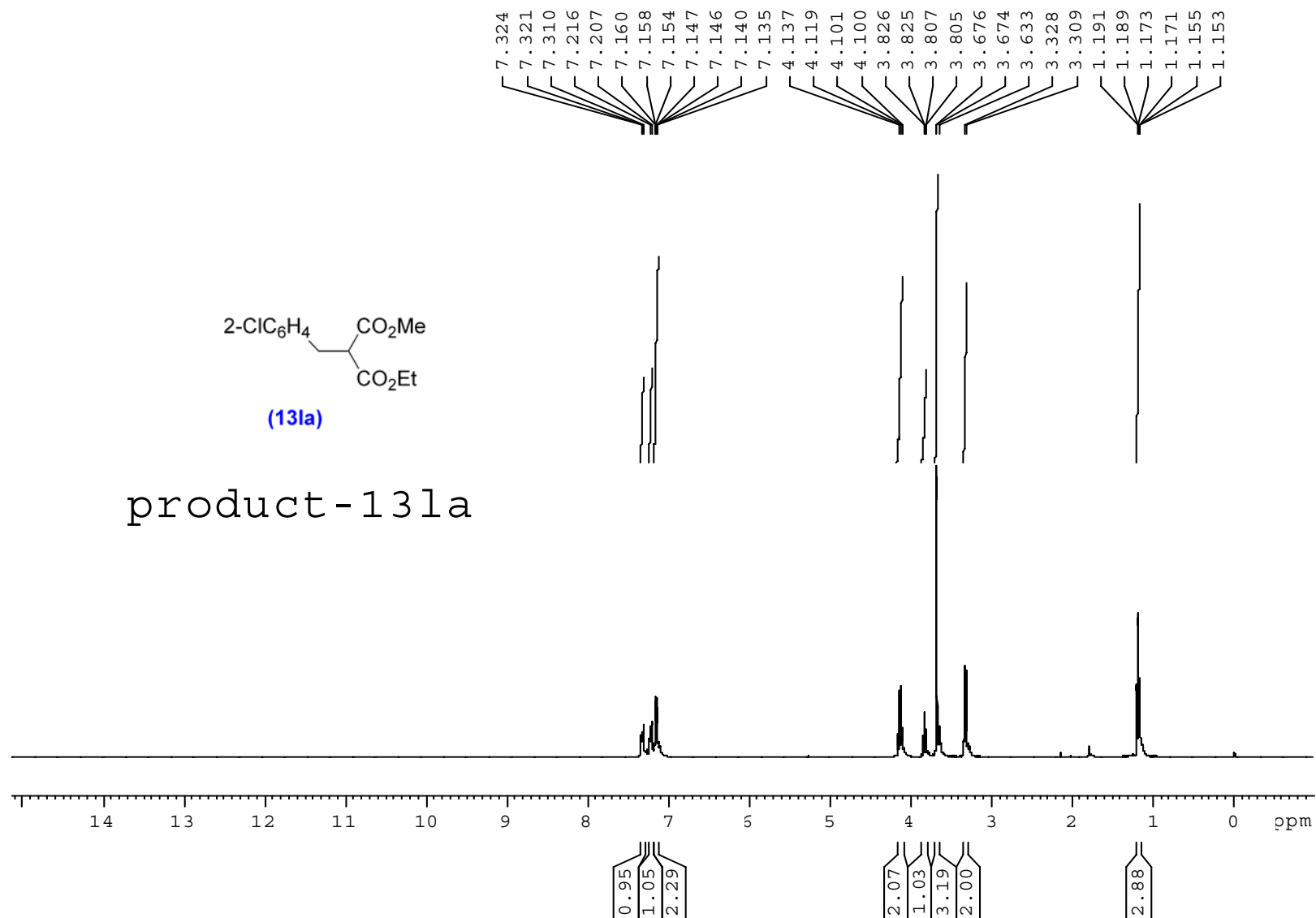


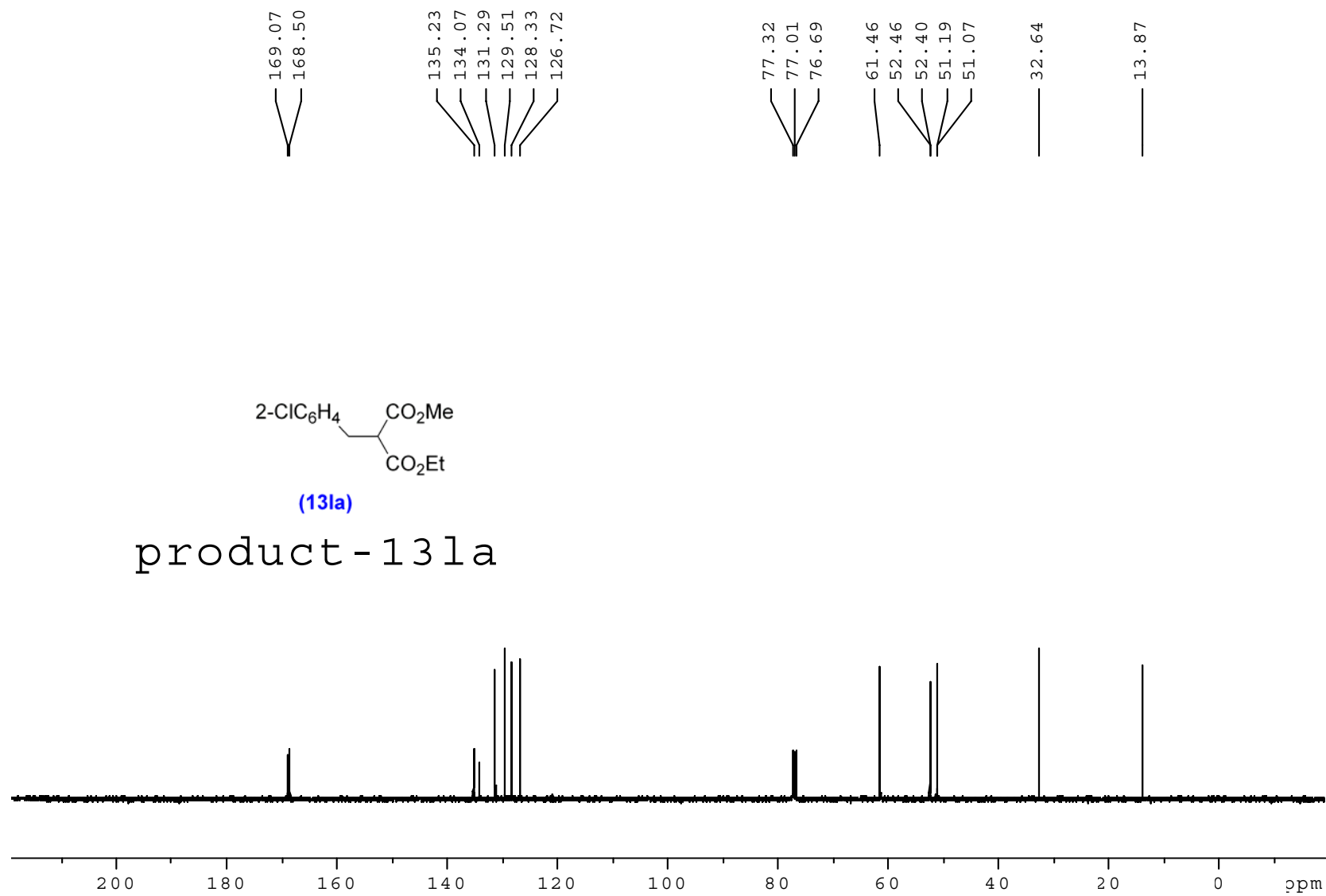


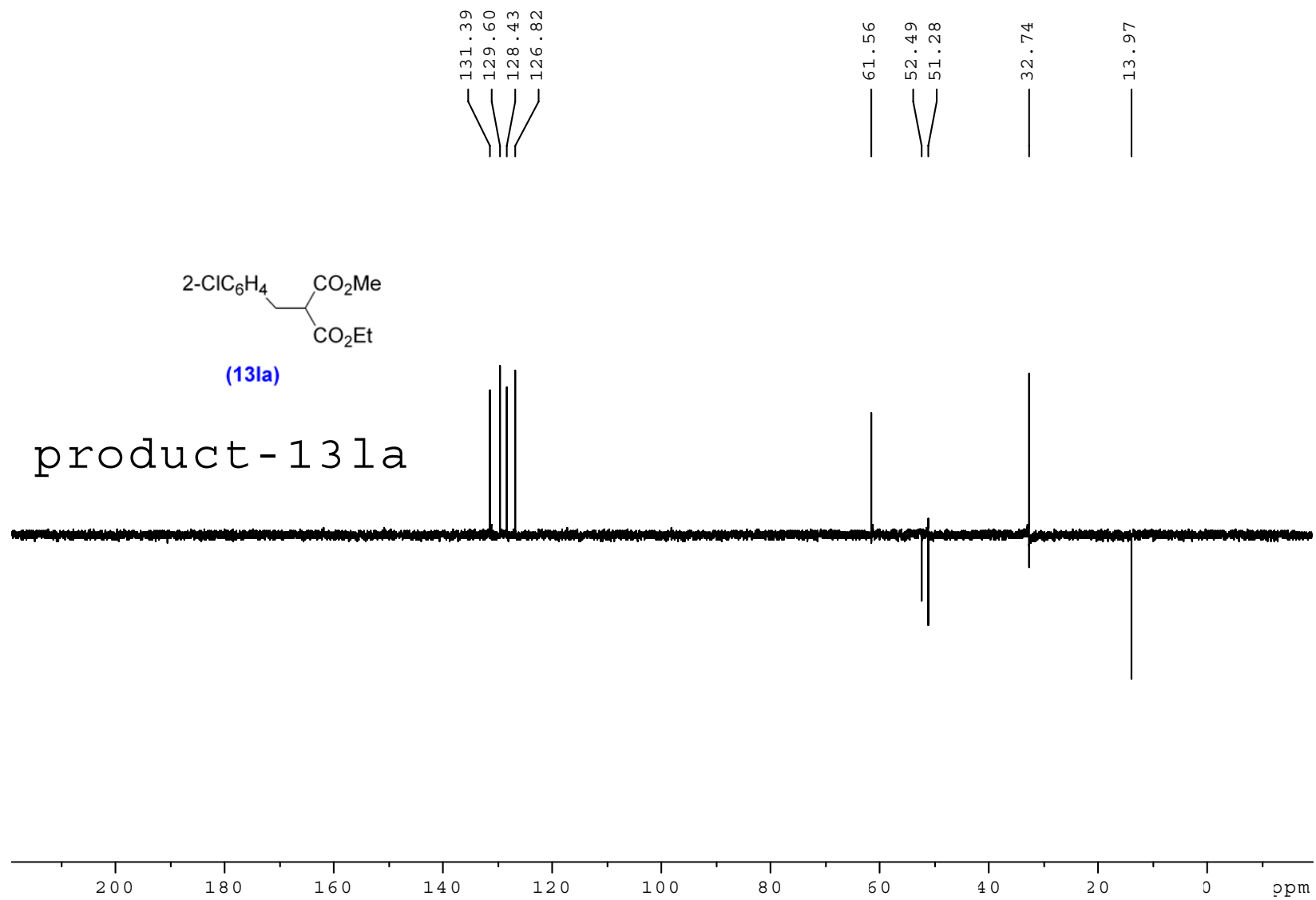
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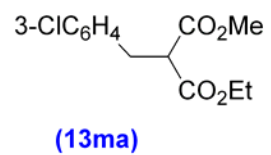
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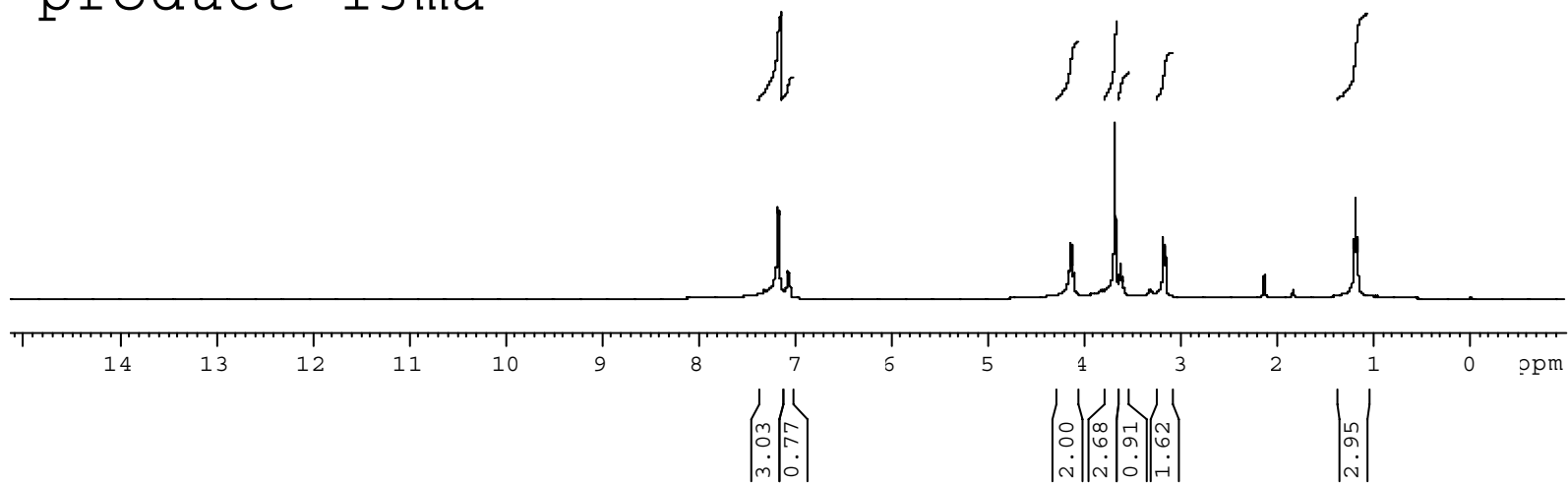


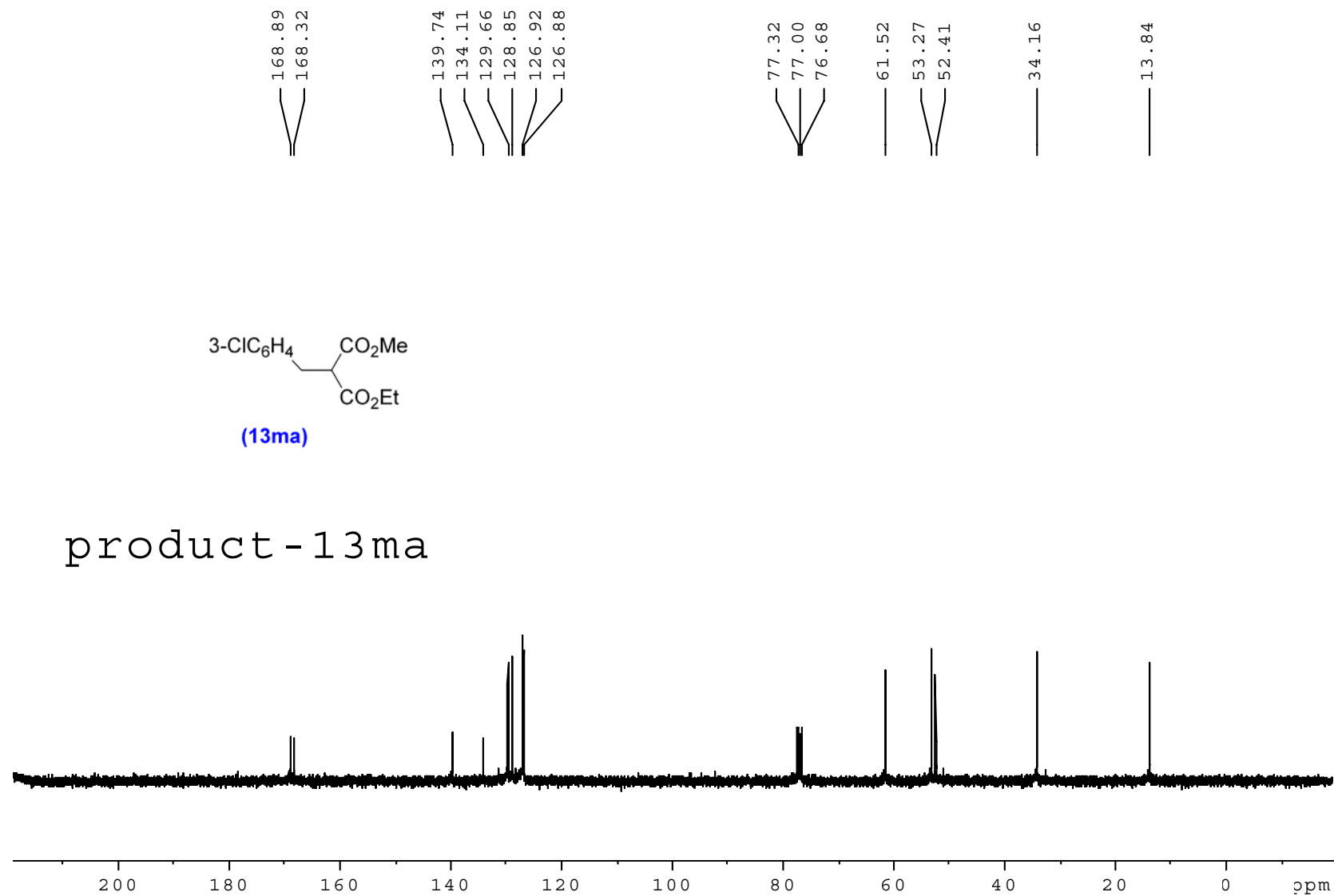
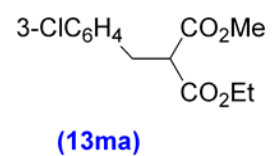




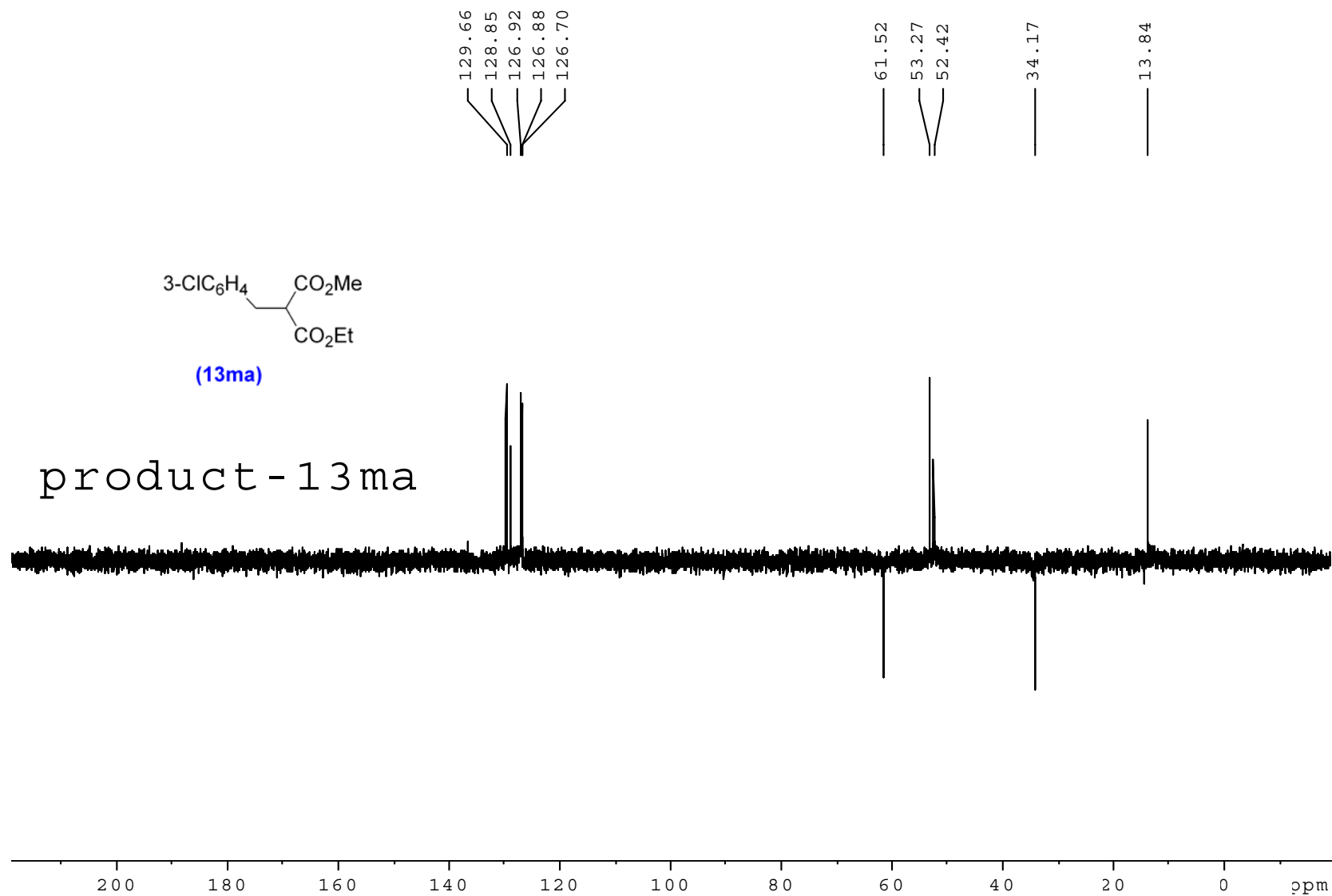


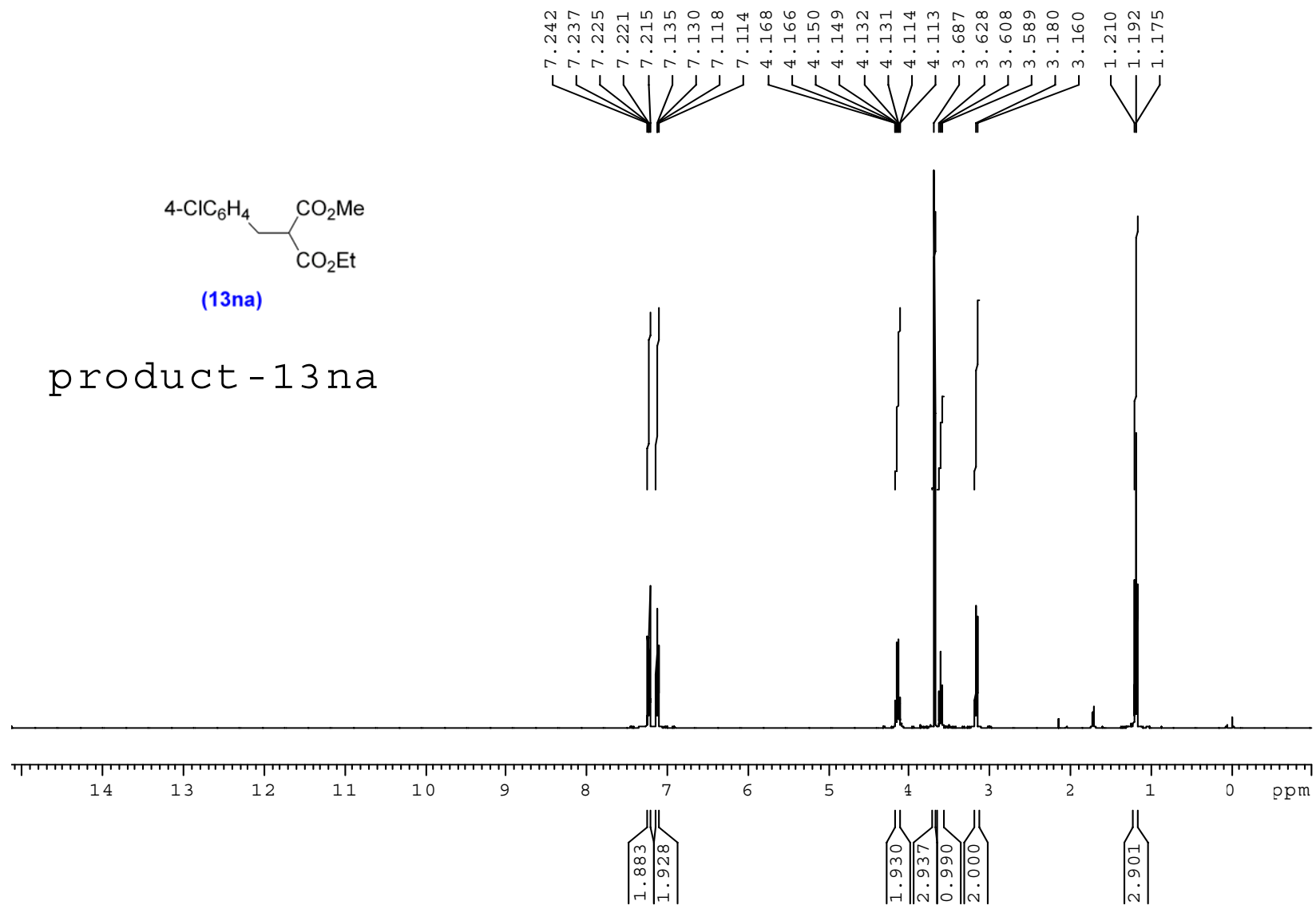
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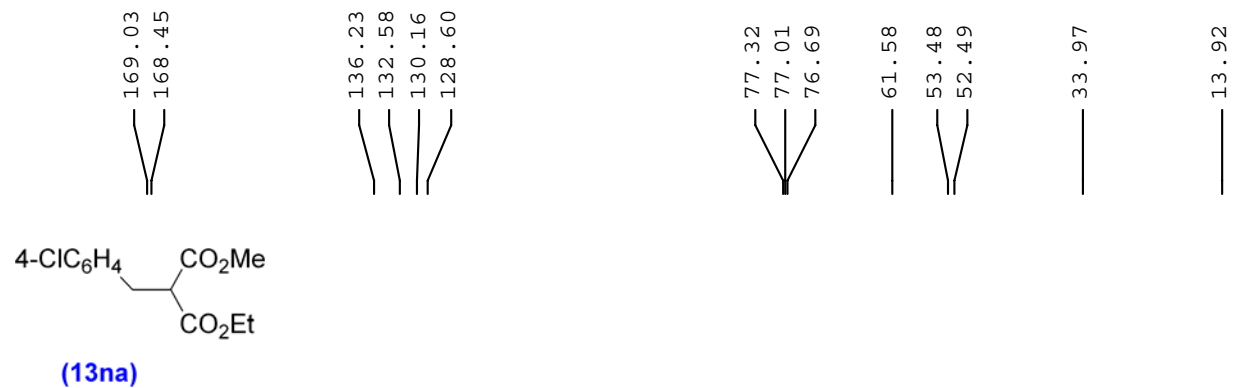




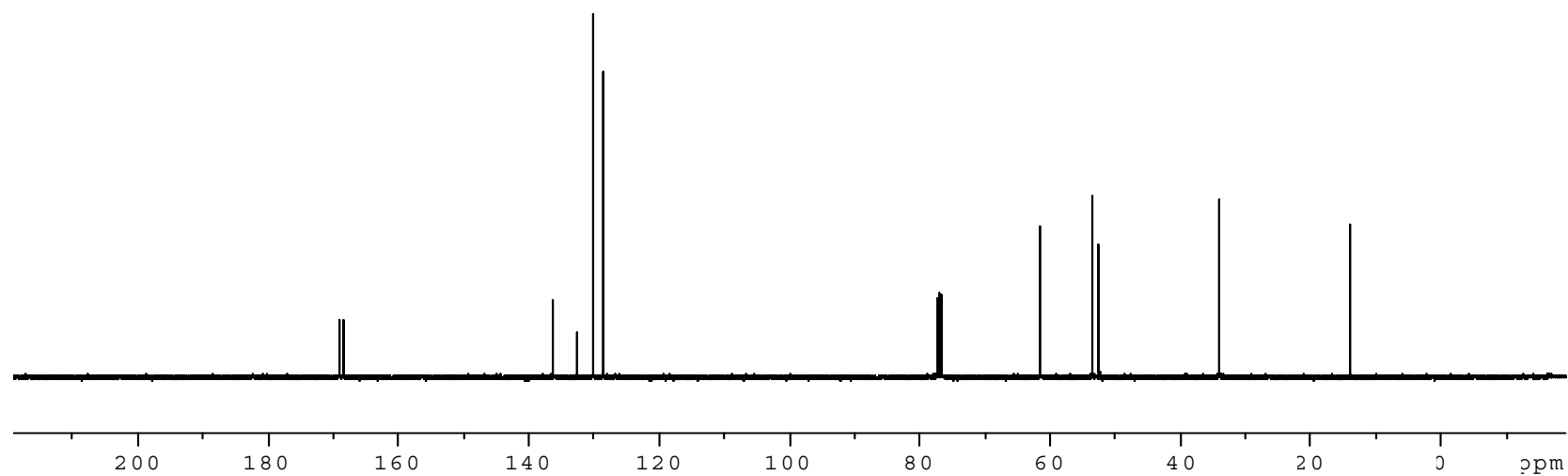
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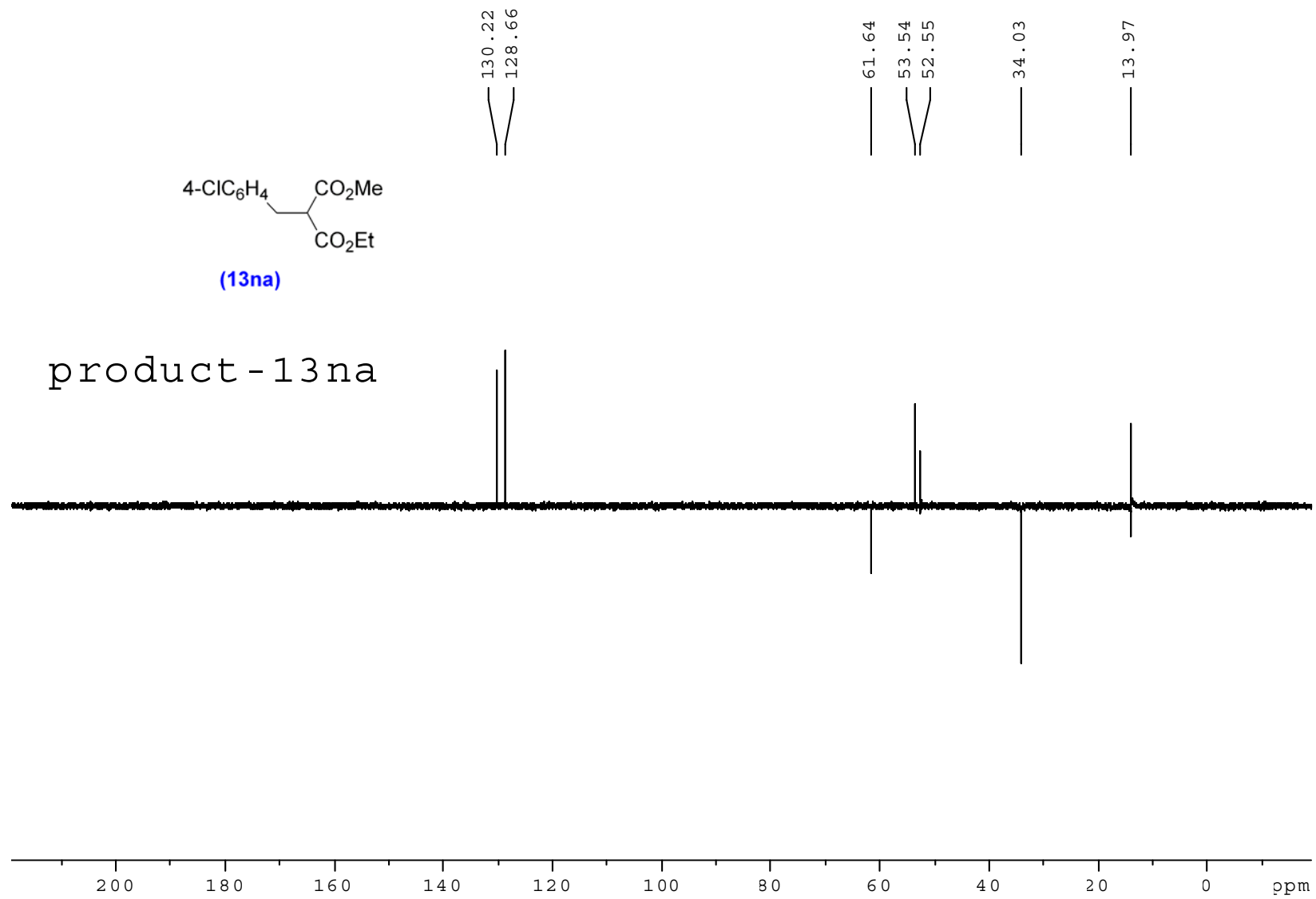


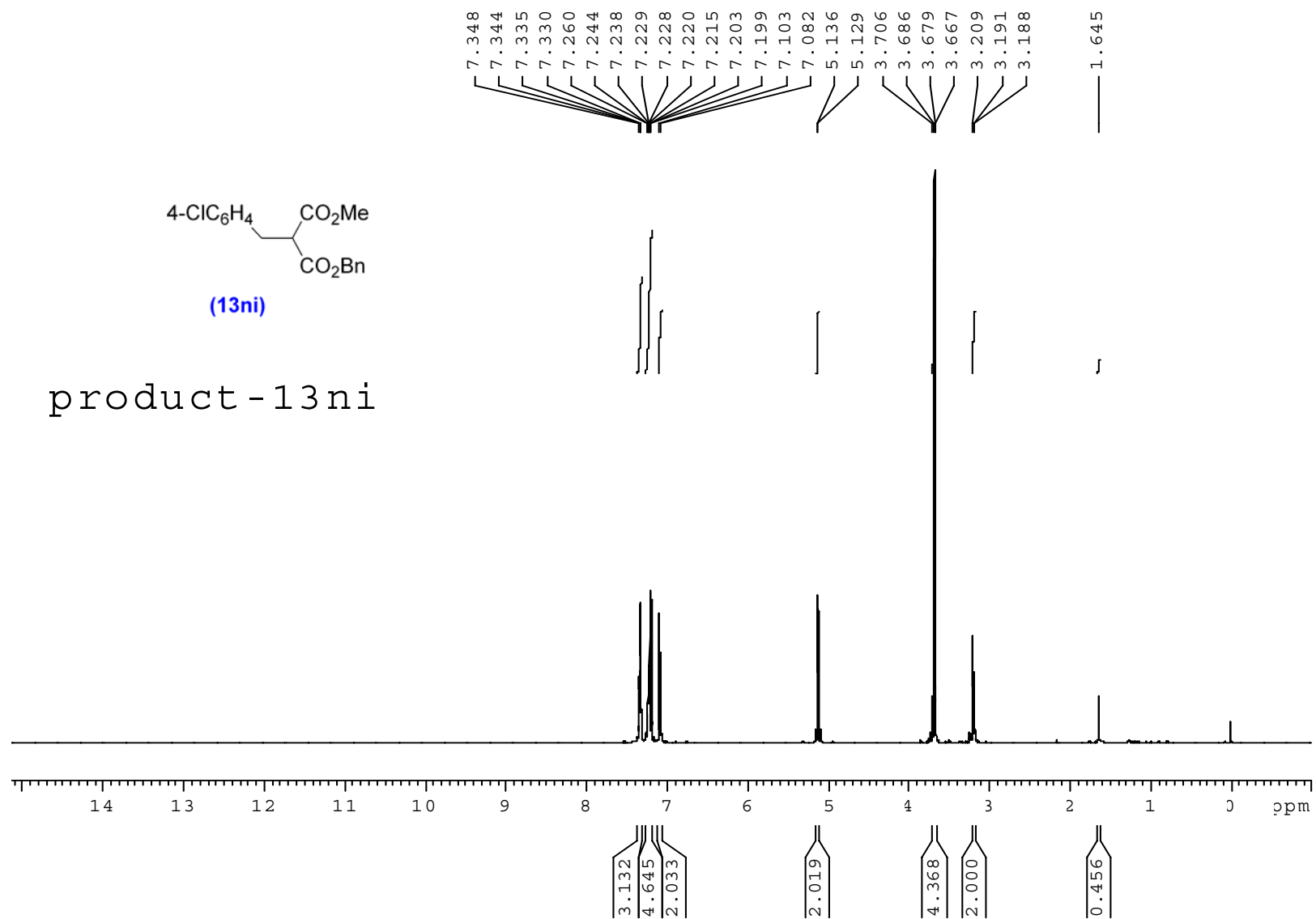


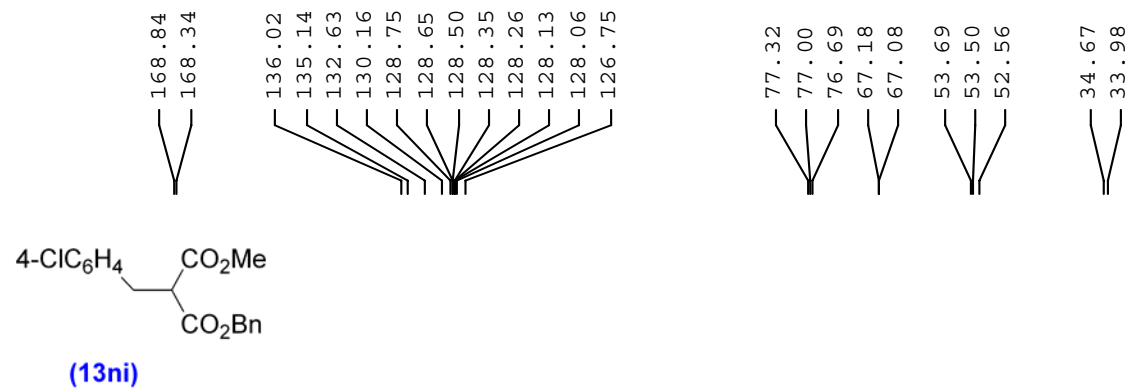


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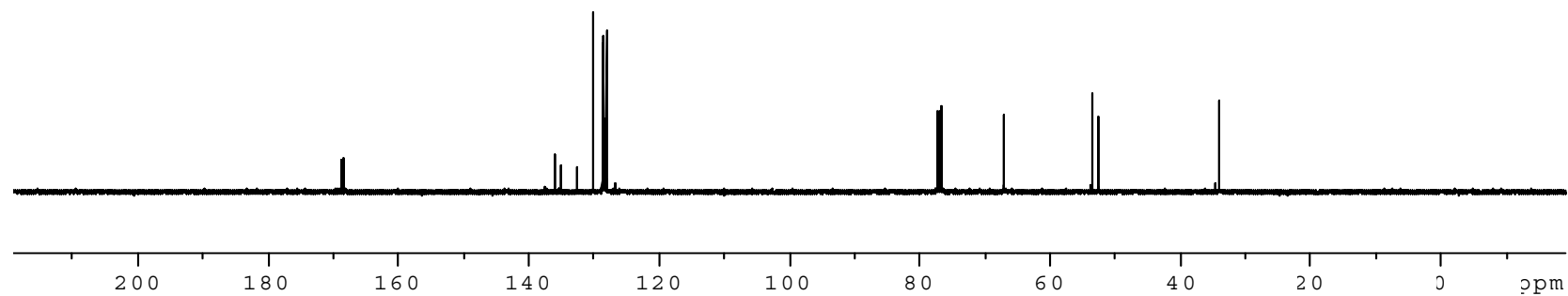


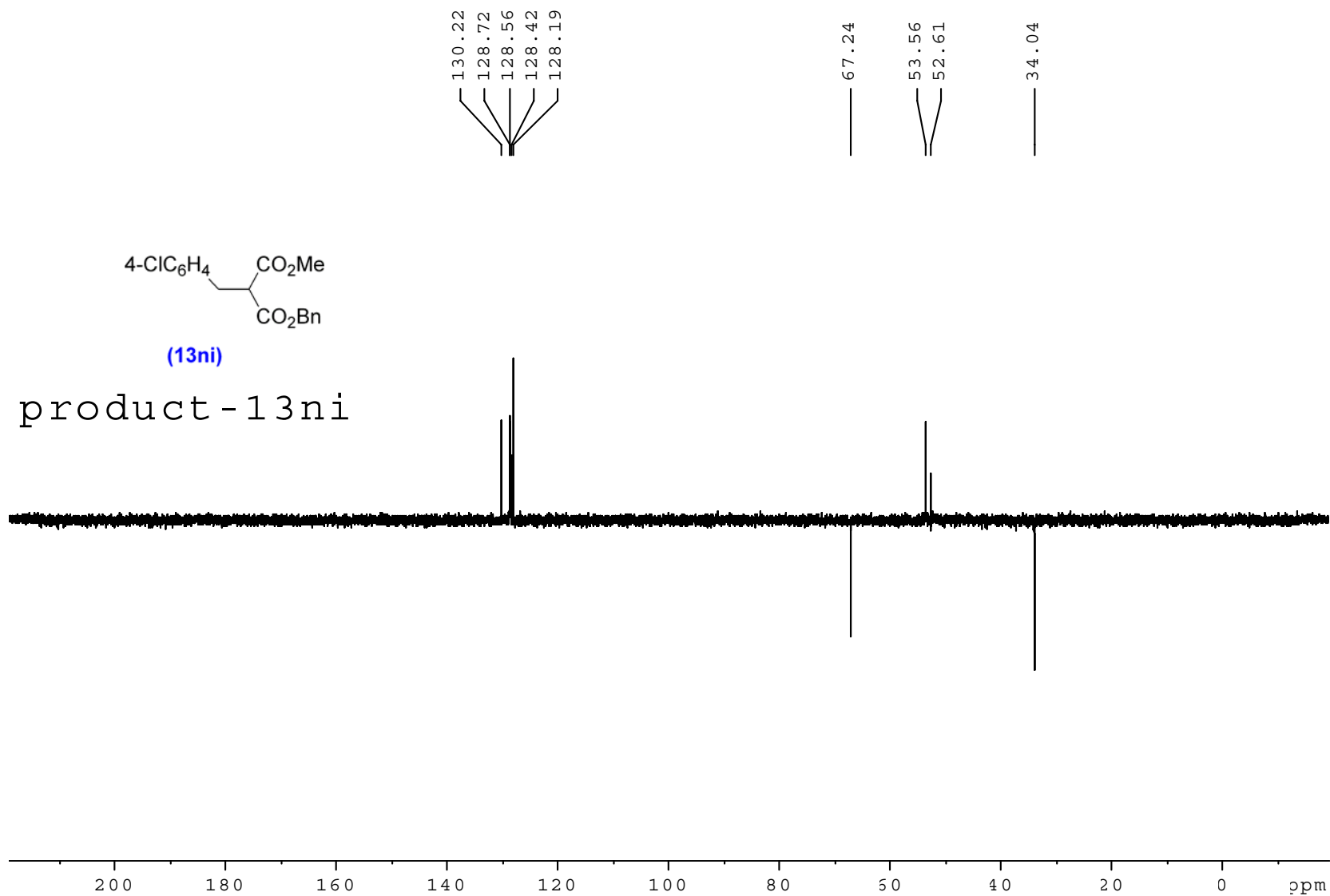


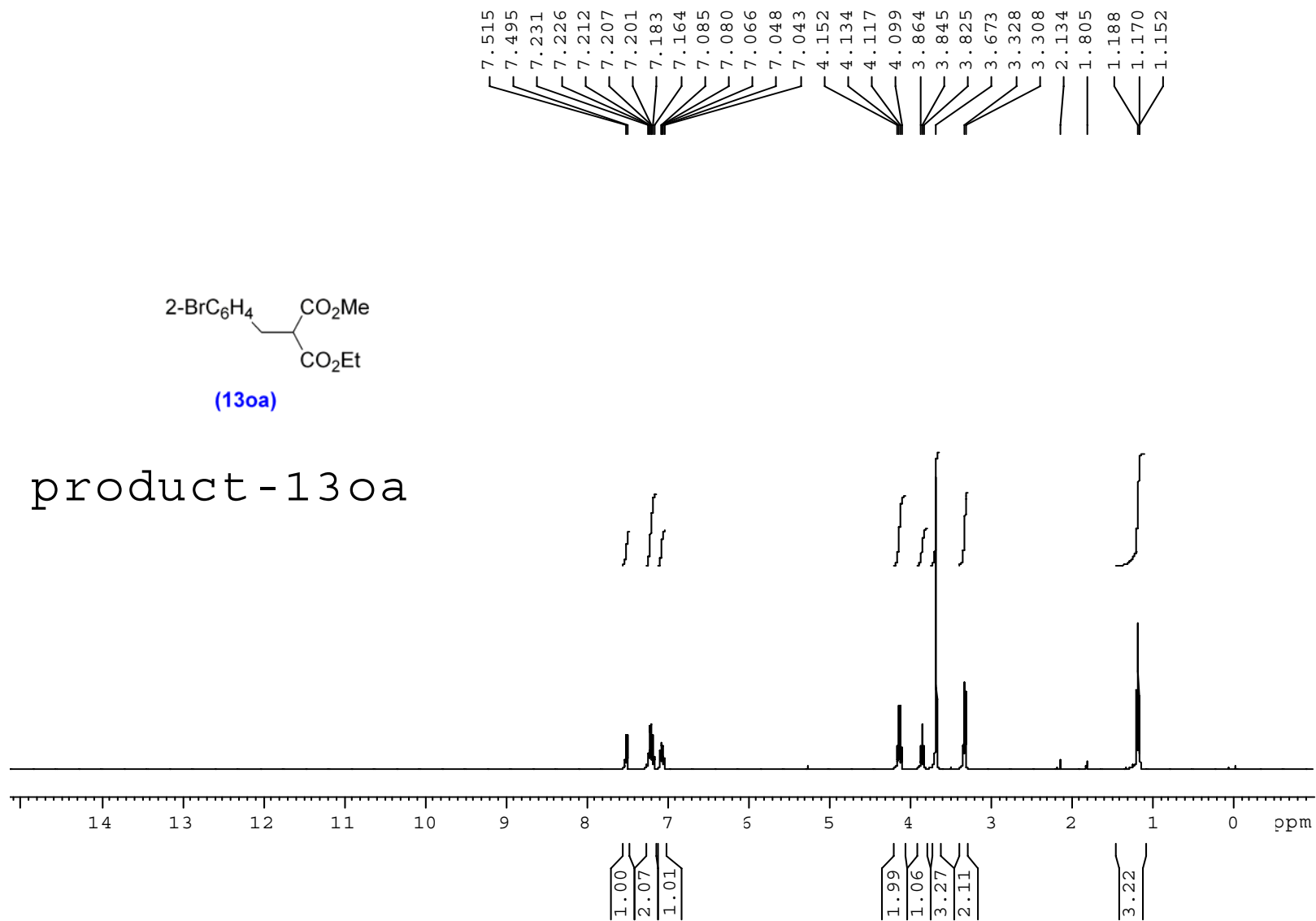


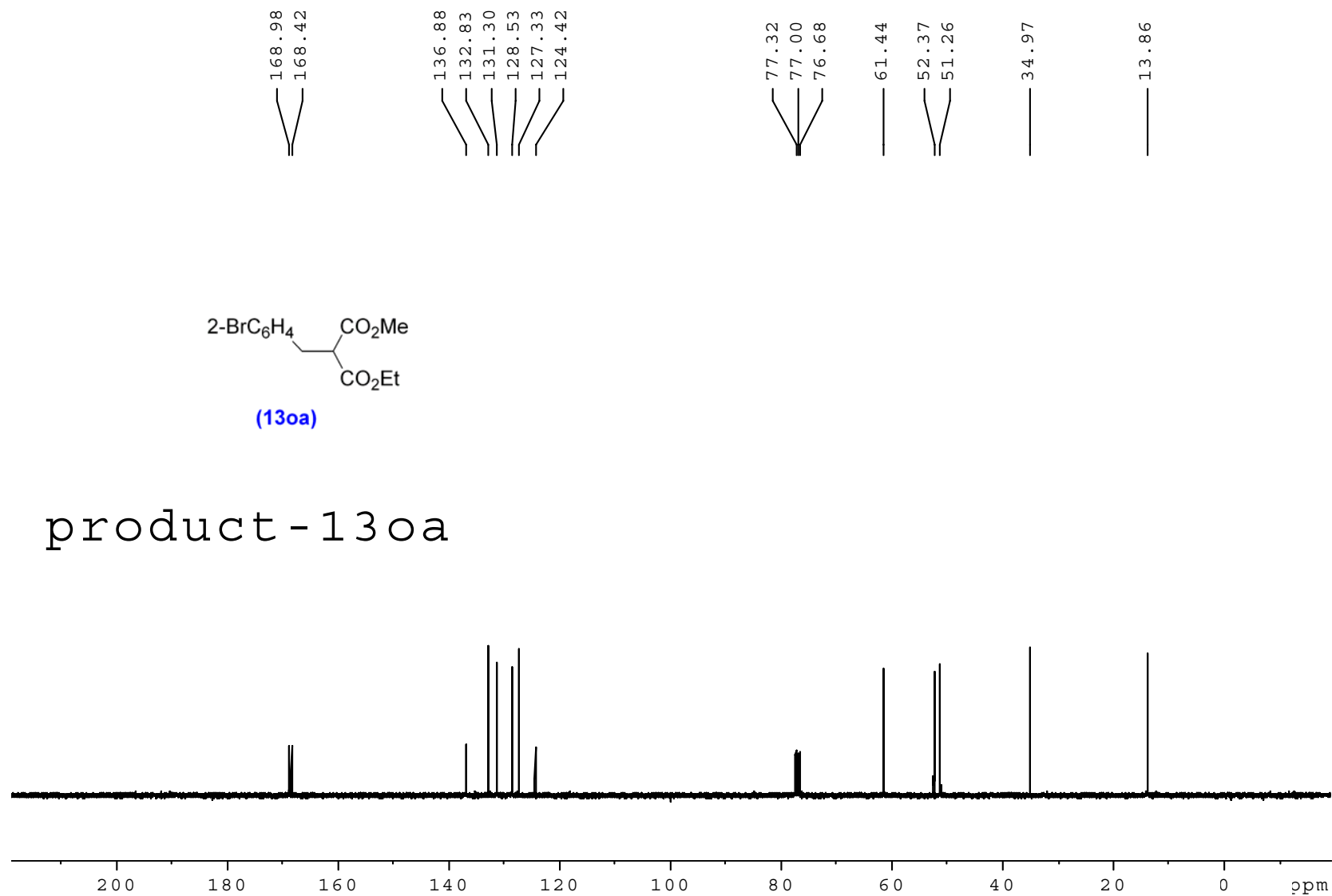
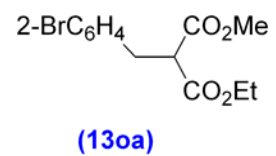


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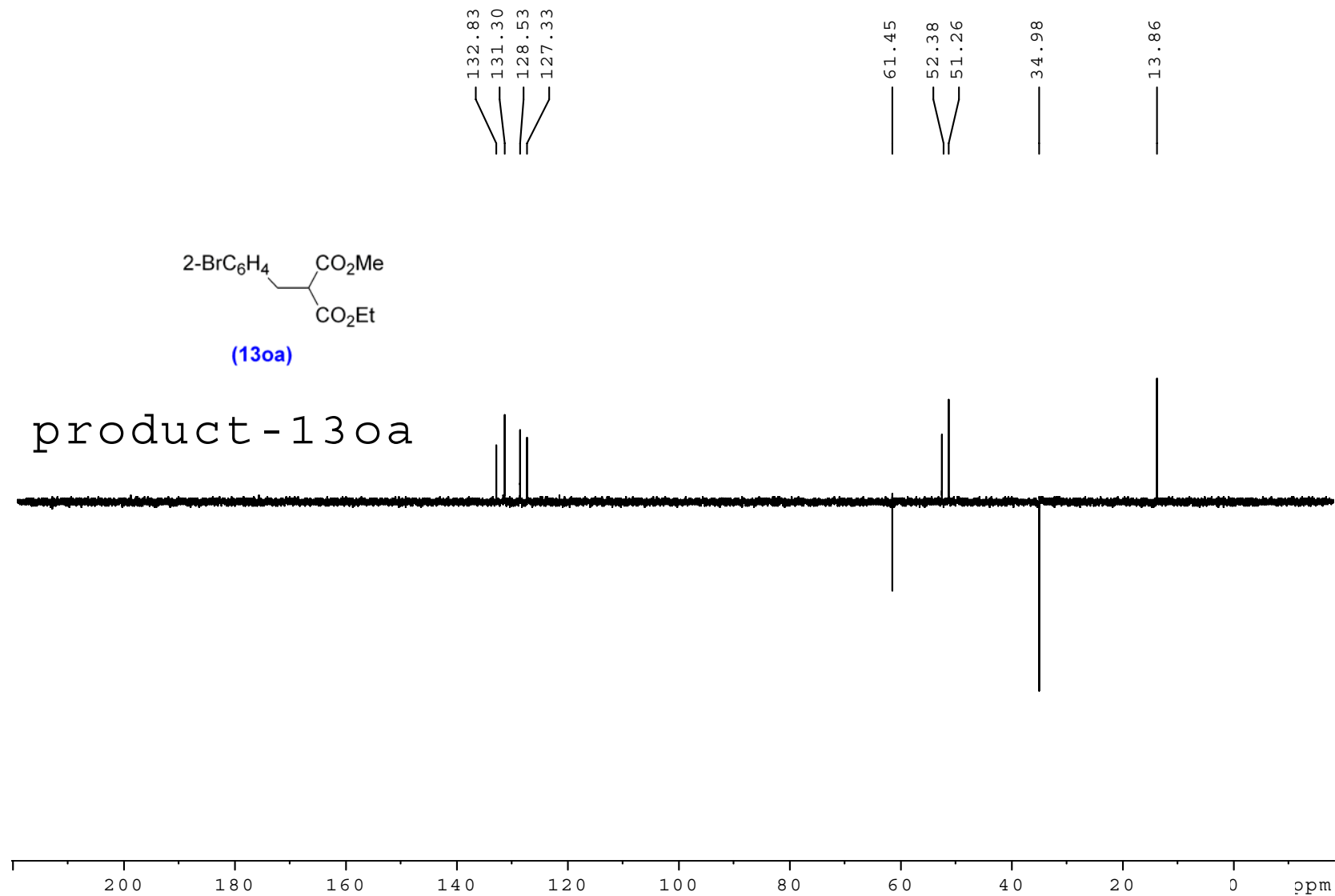


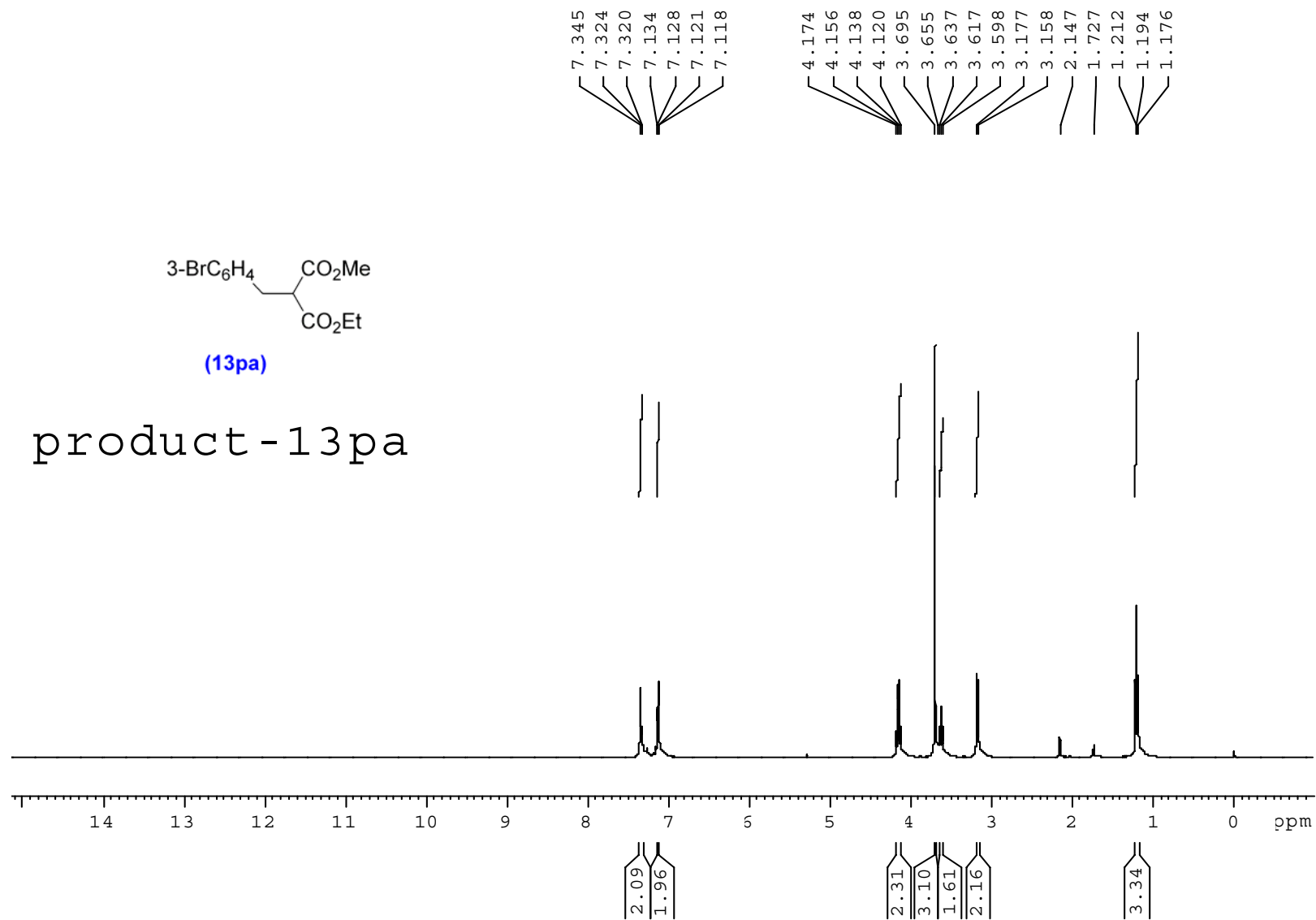


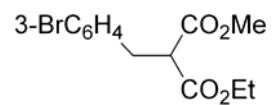




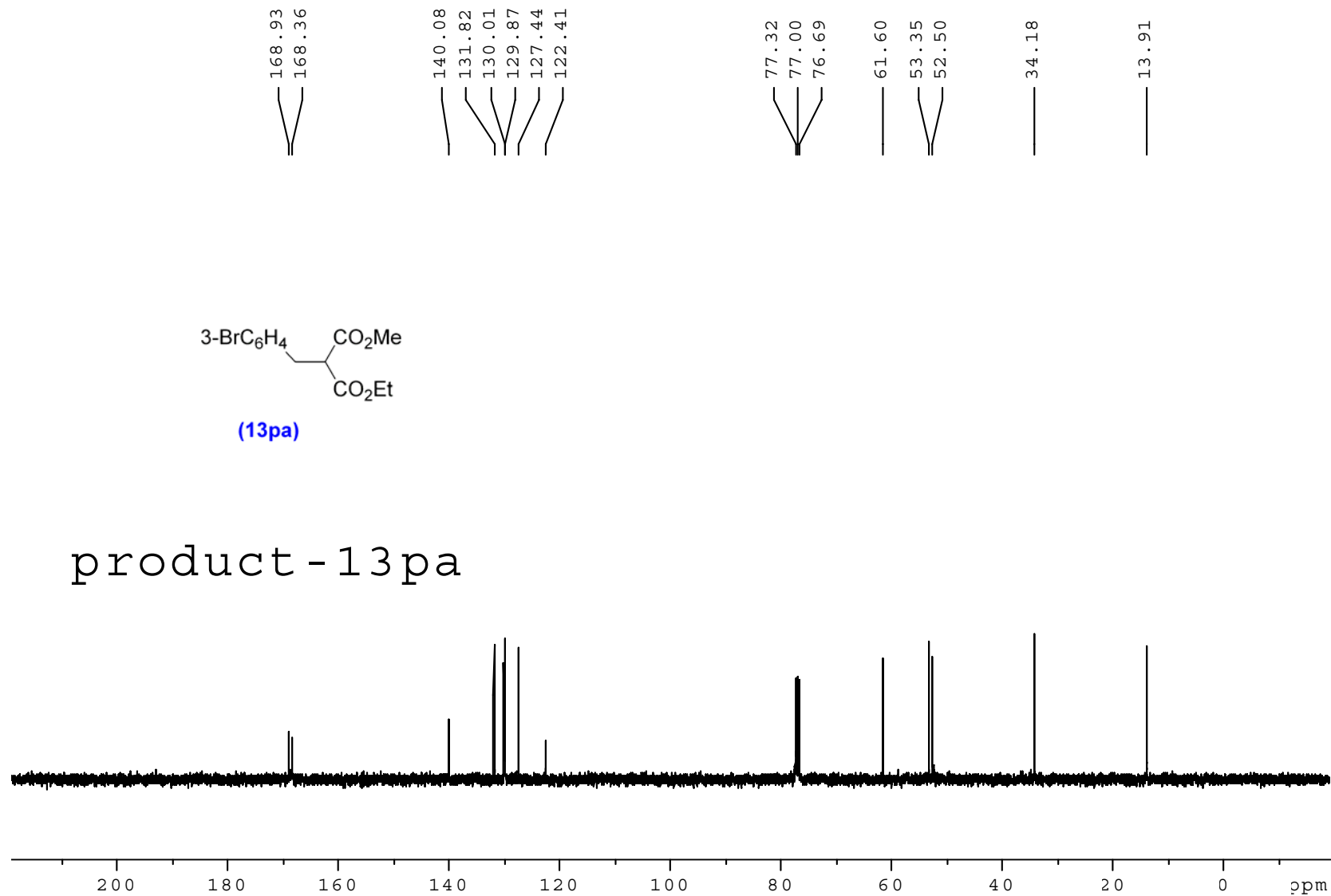
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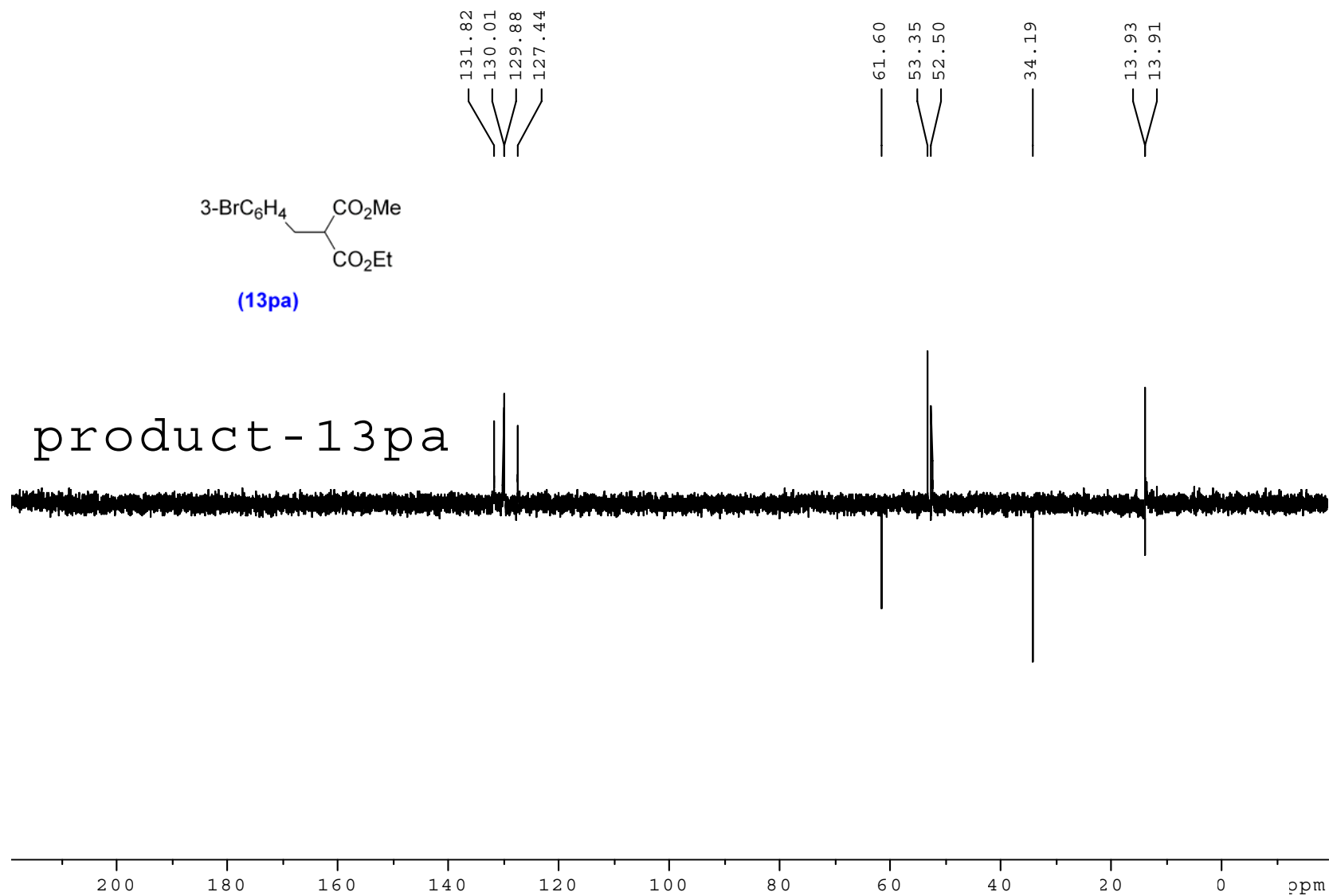


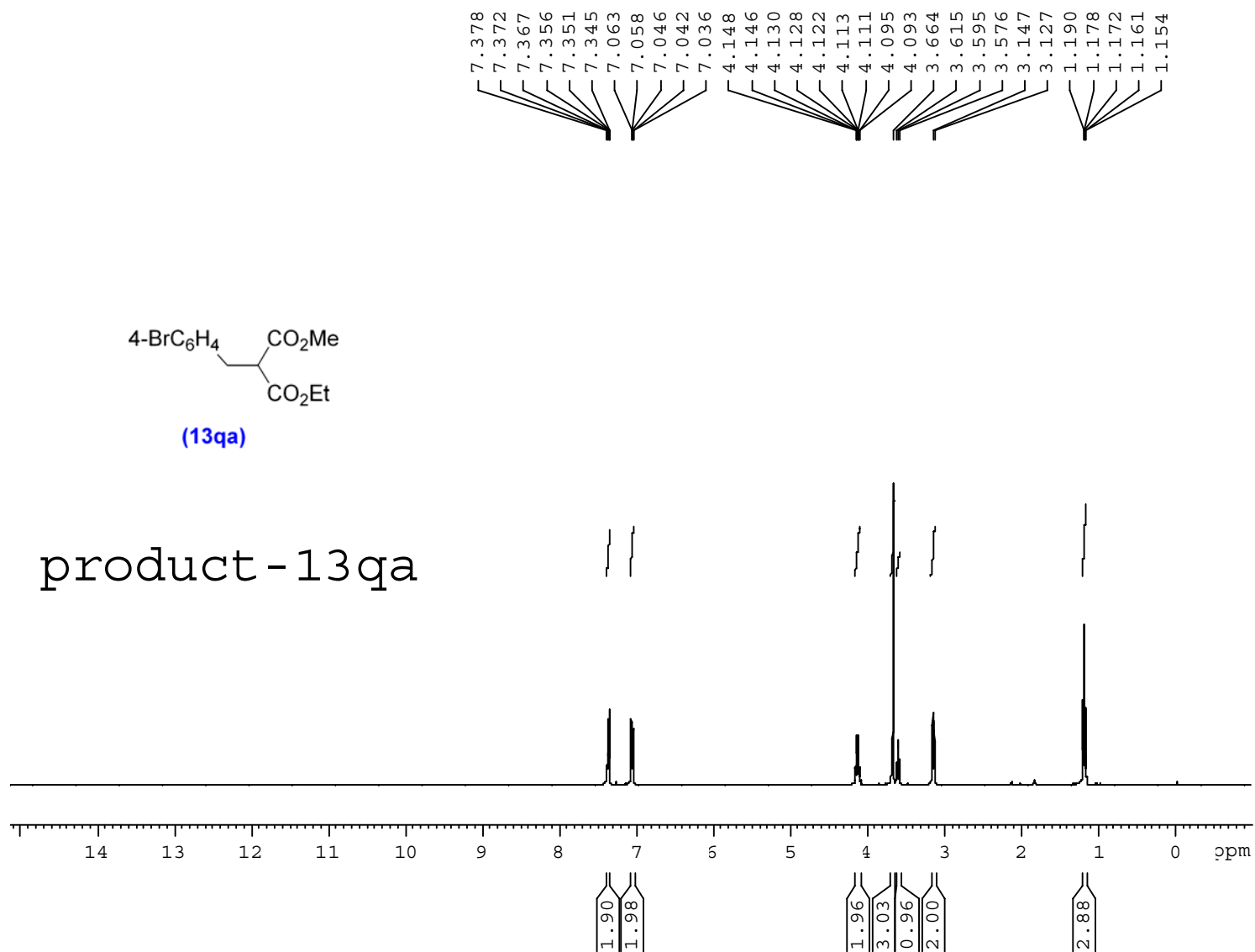


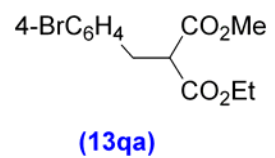
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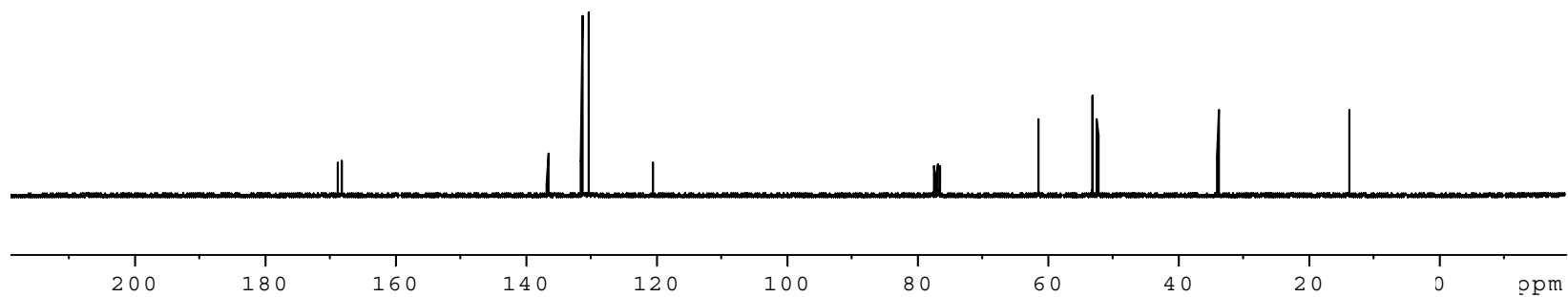
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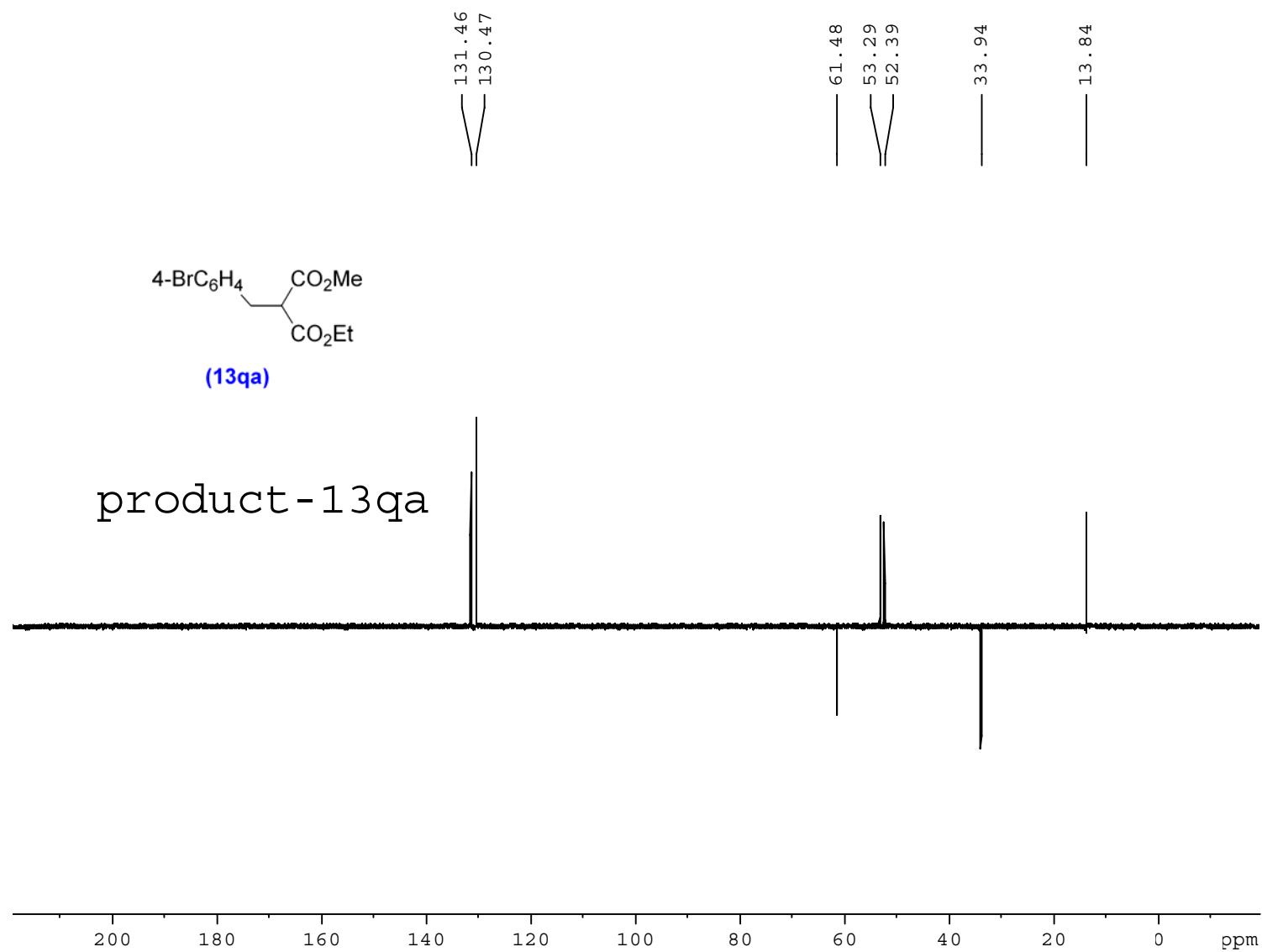


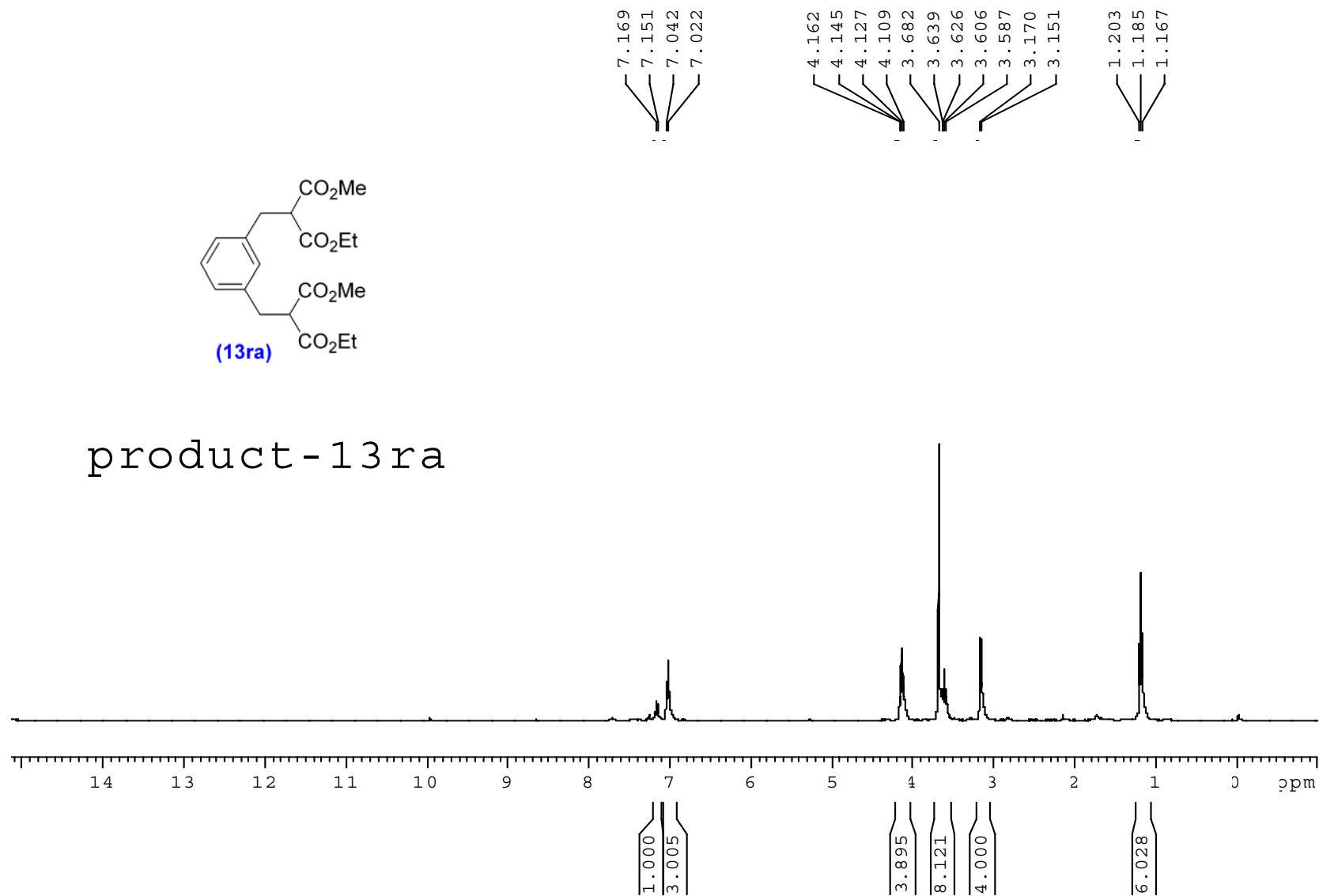
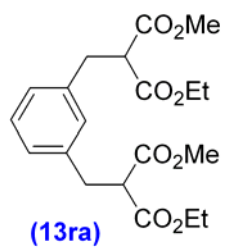


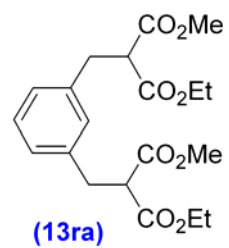


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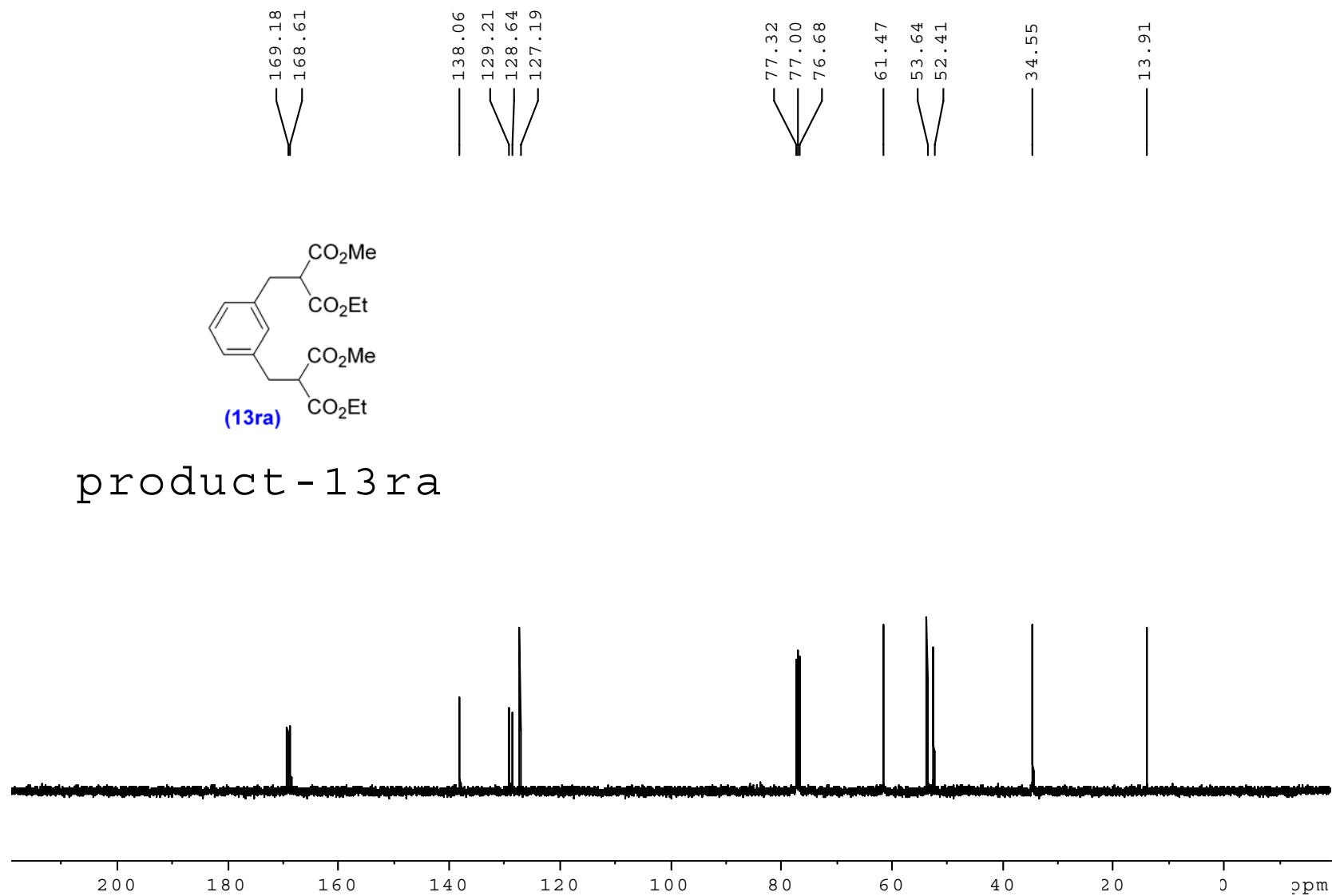


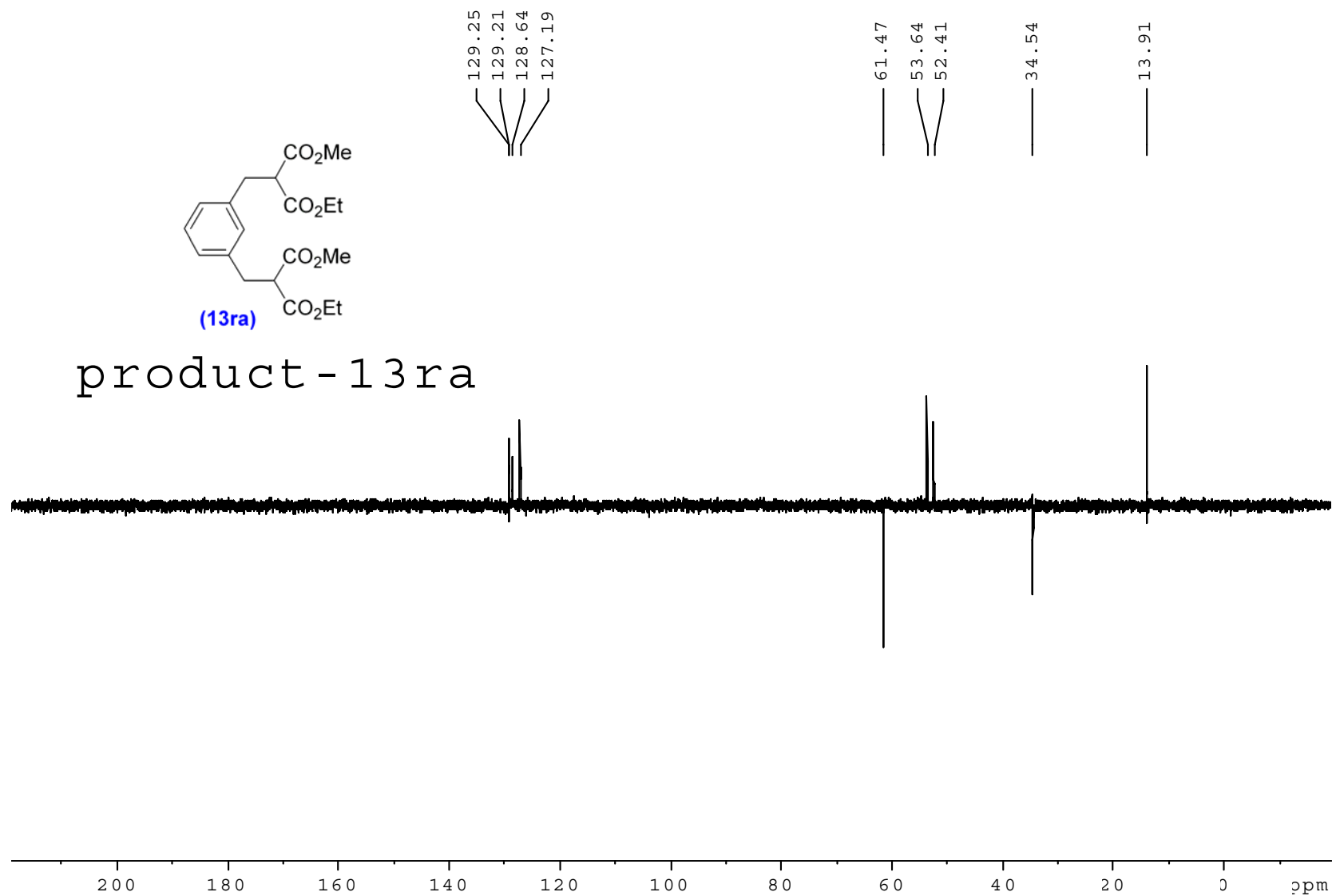
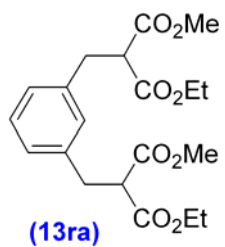


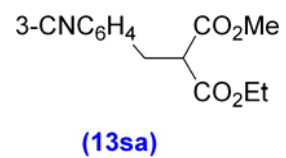




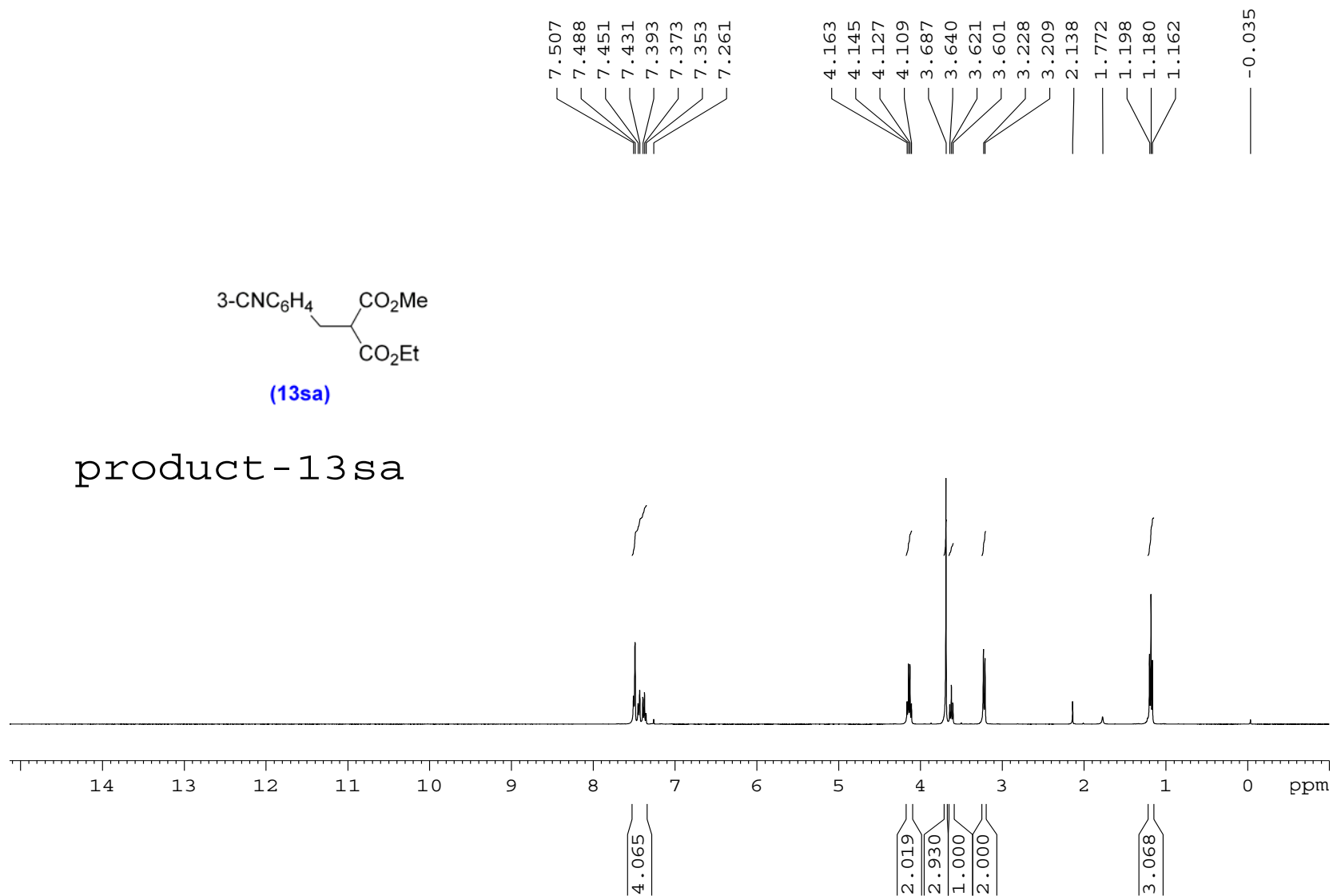
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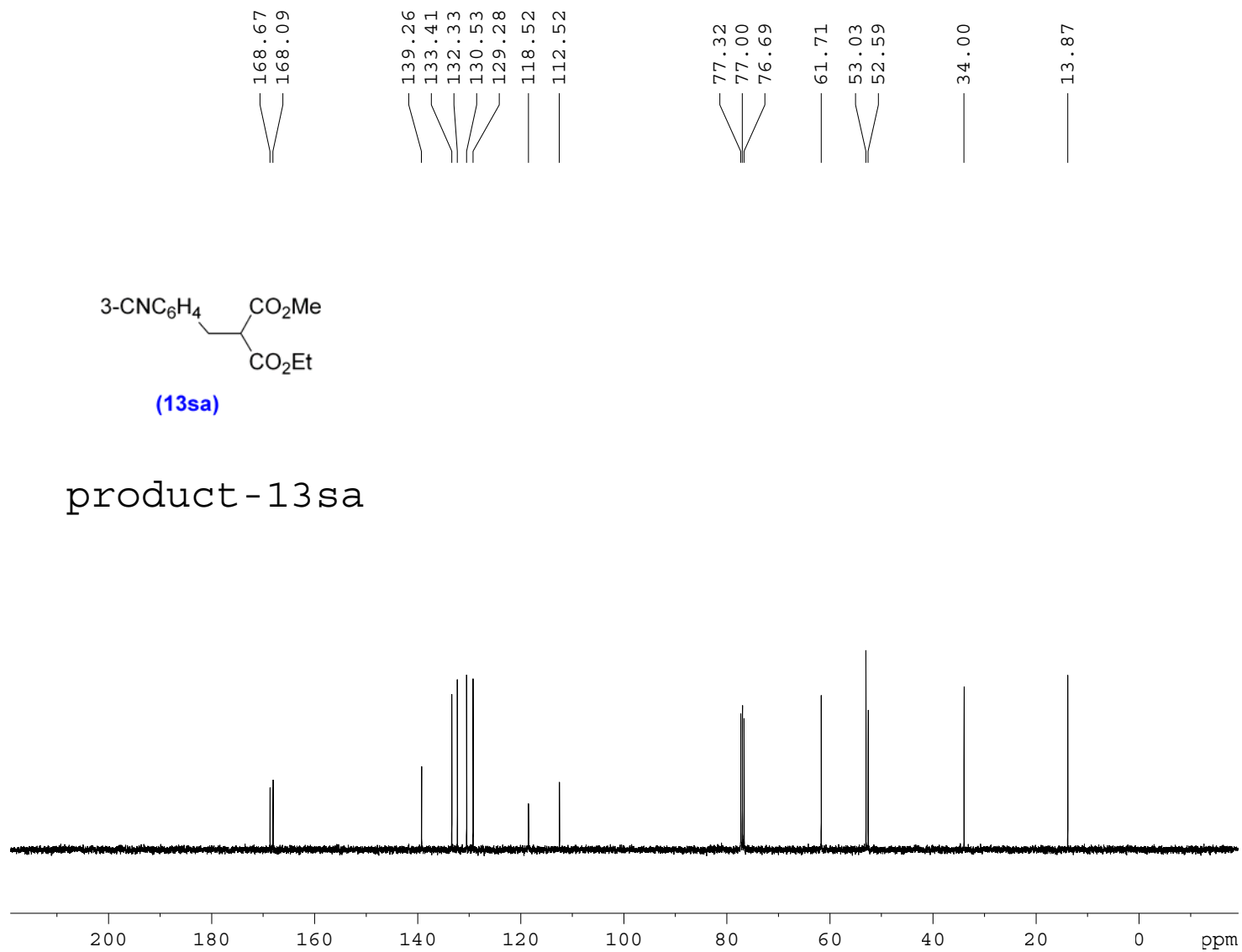
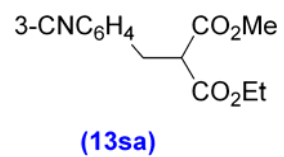


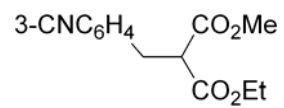




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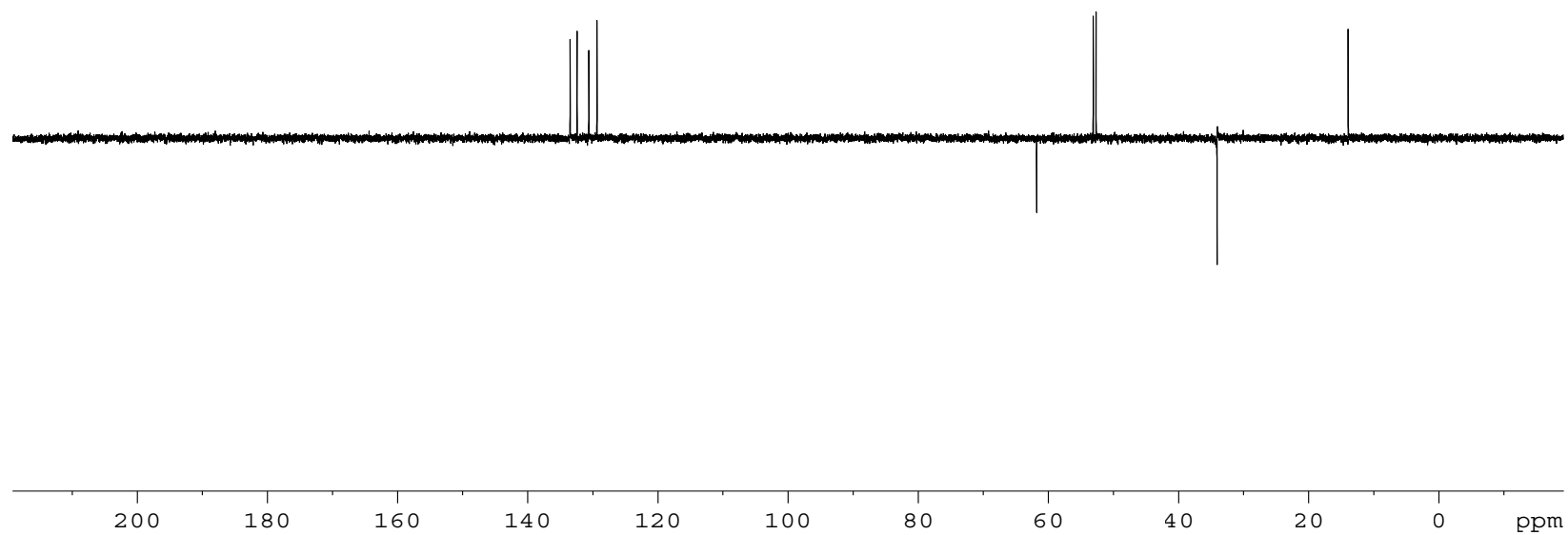
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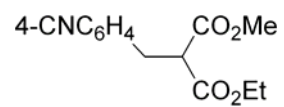
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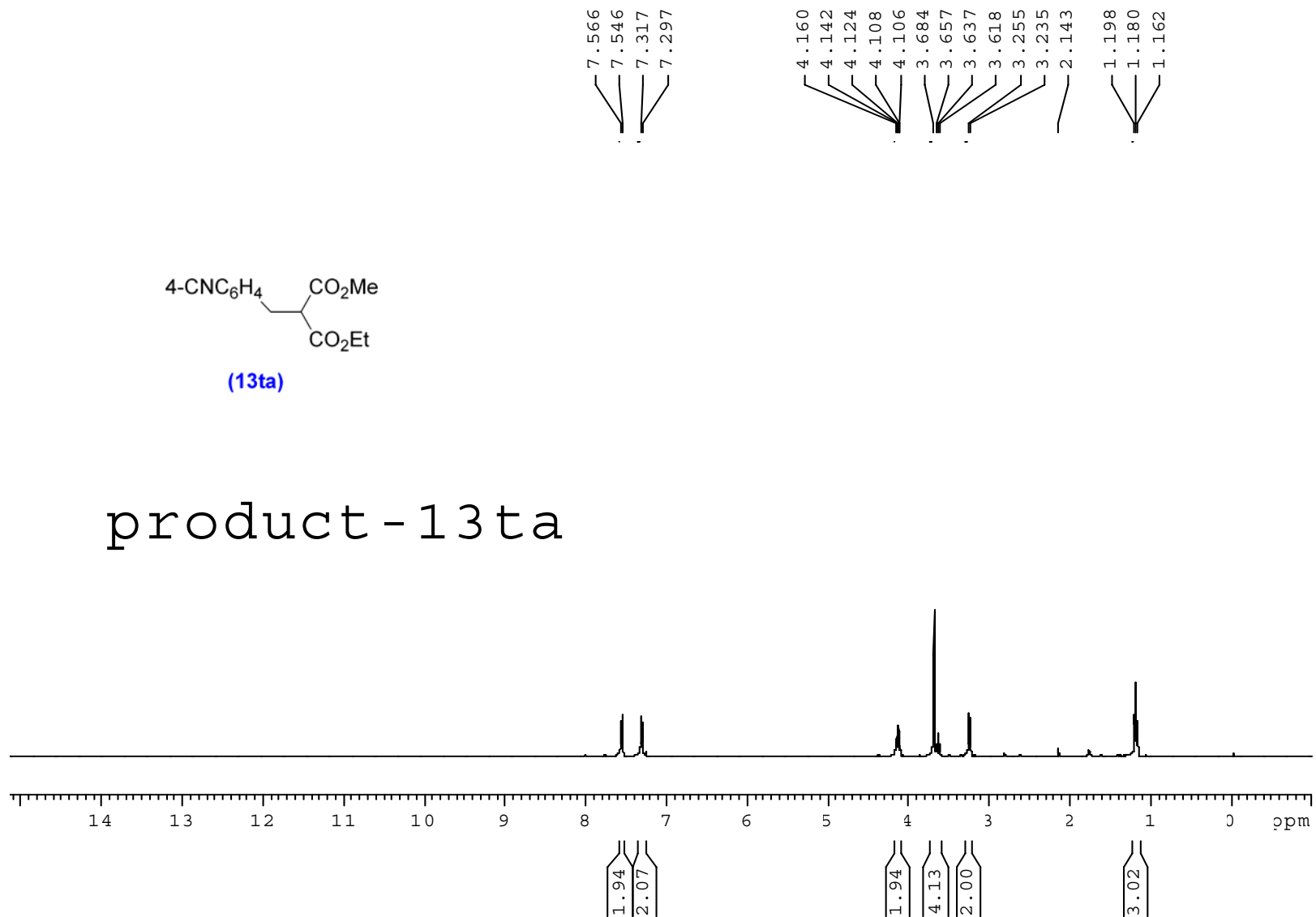
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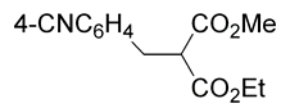
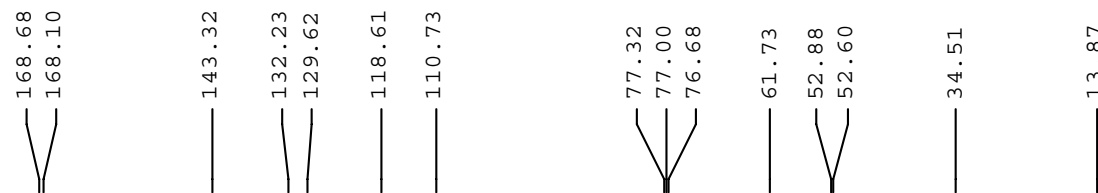




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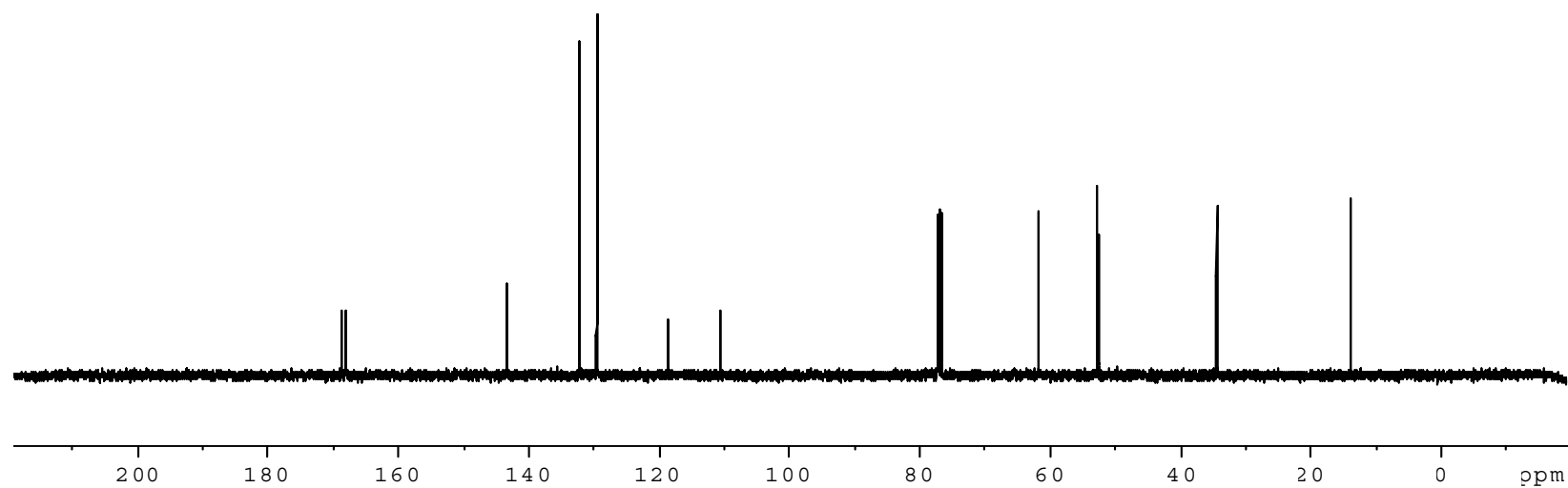


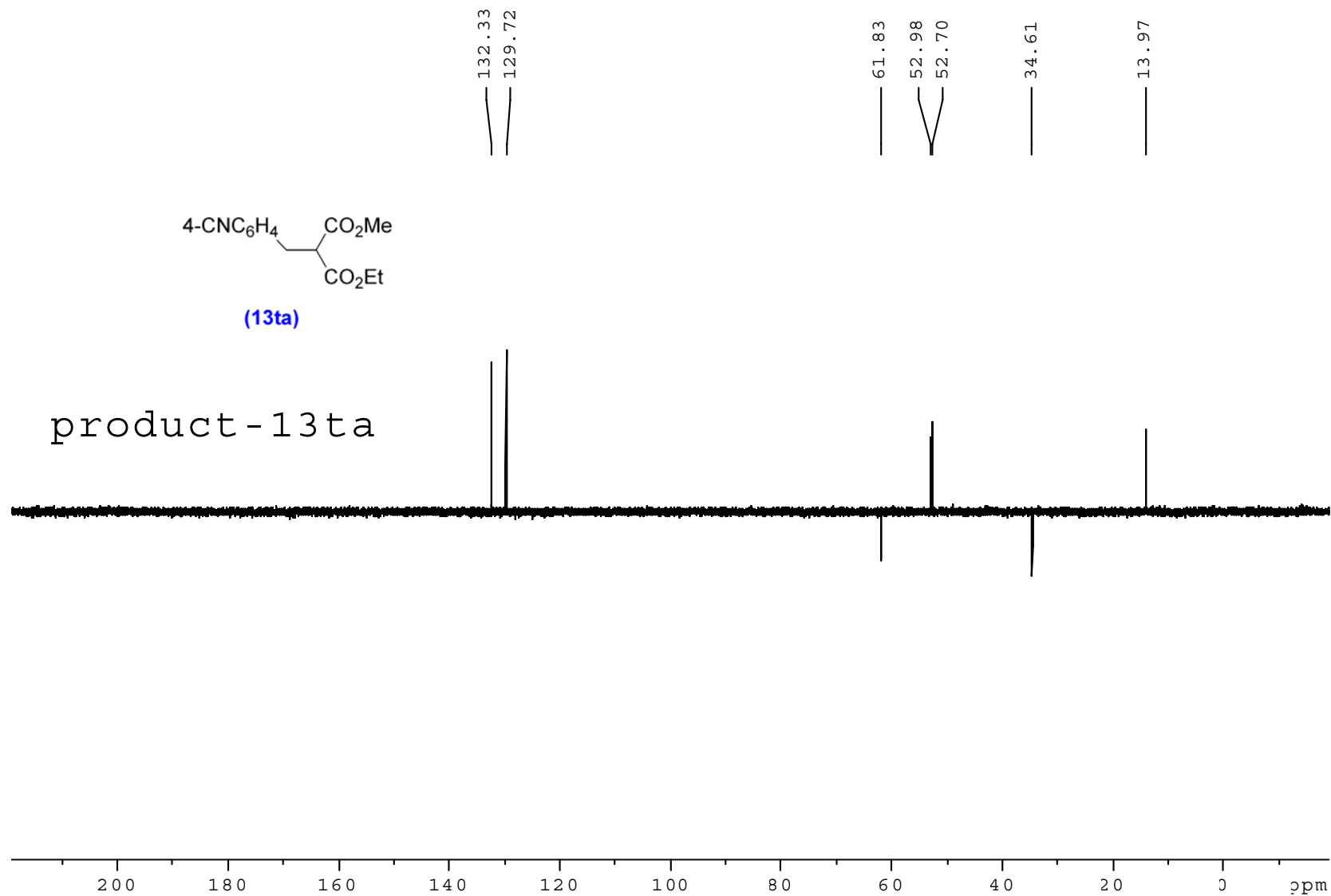
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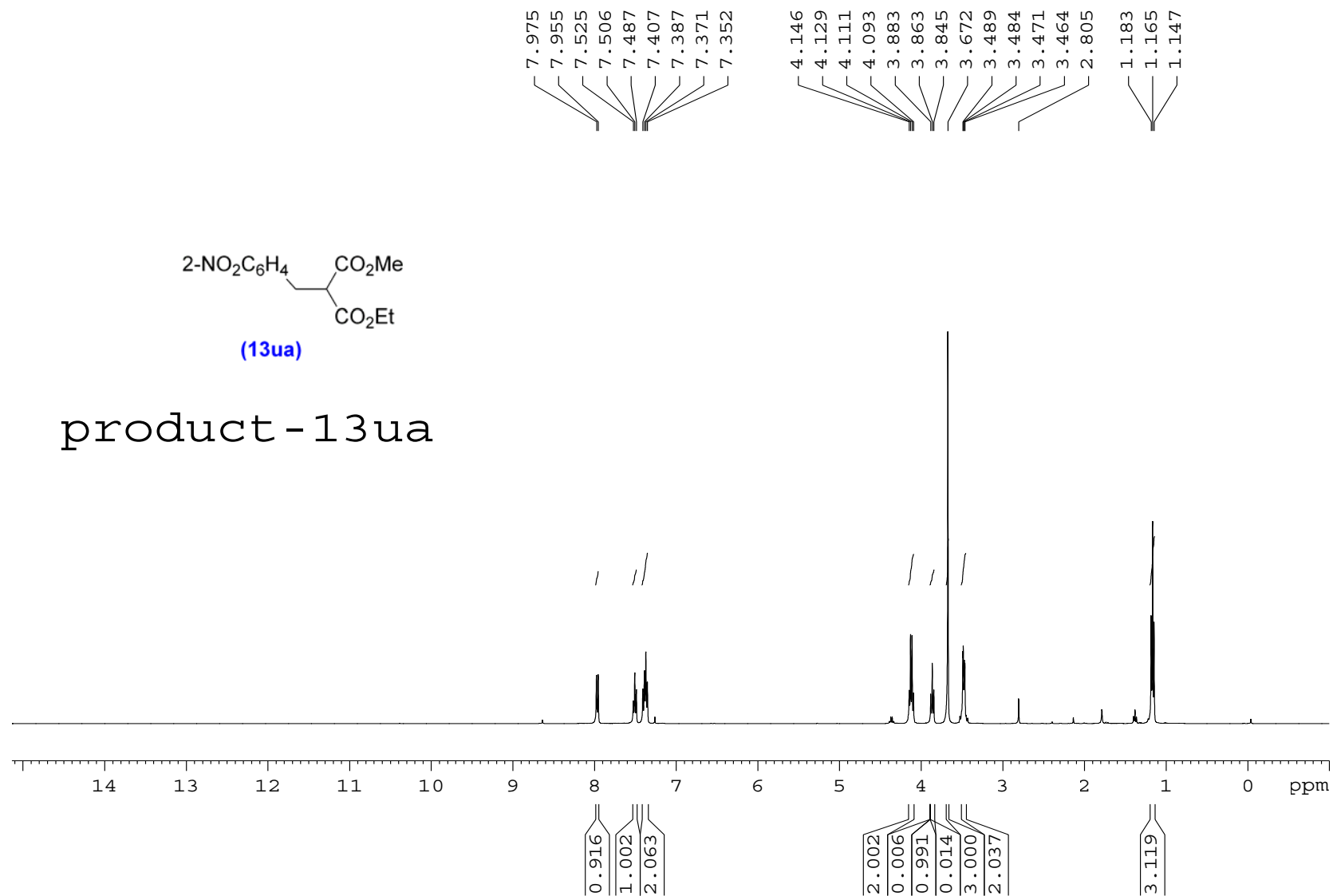


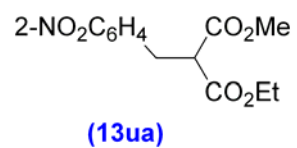
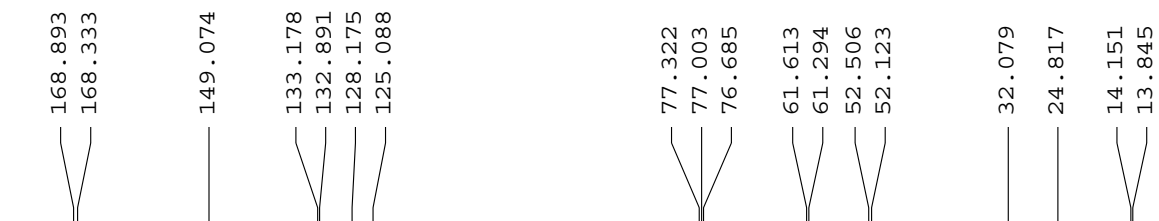
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product-13ta

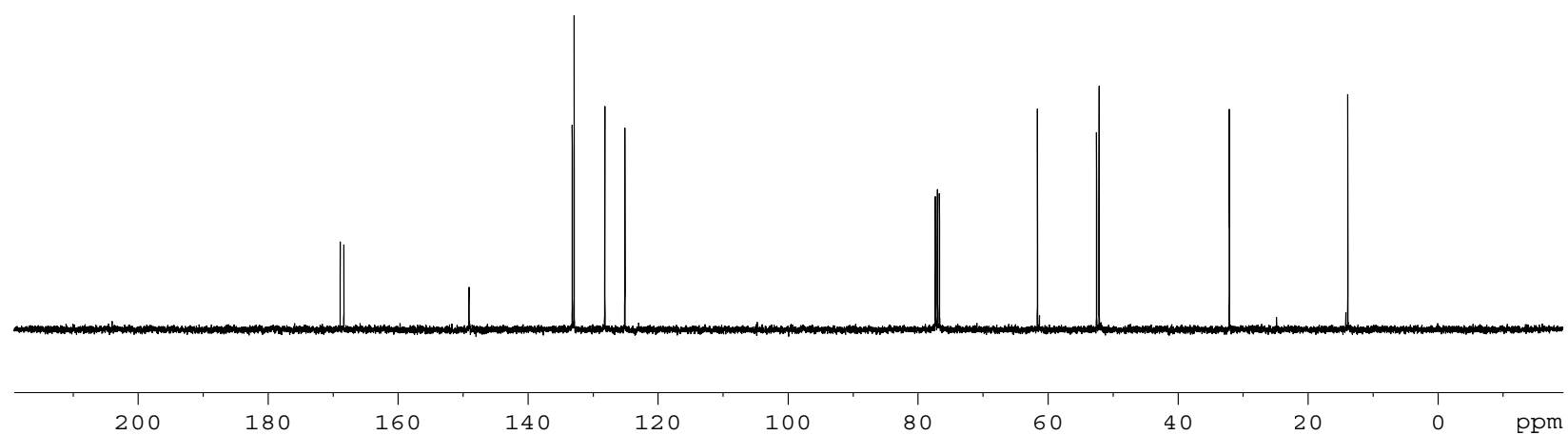


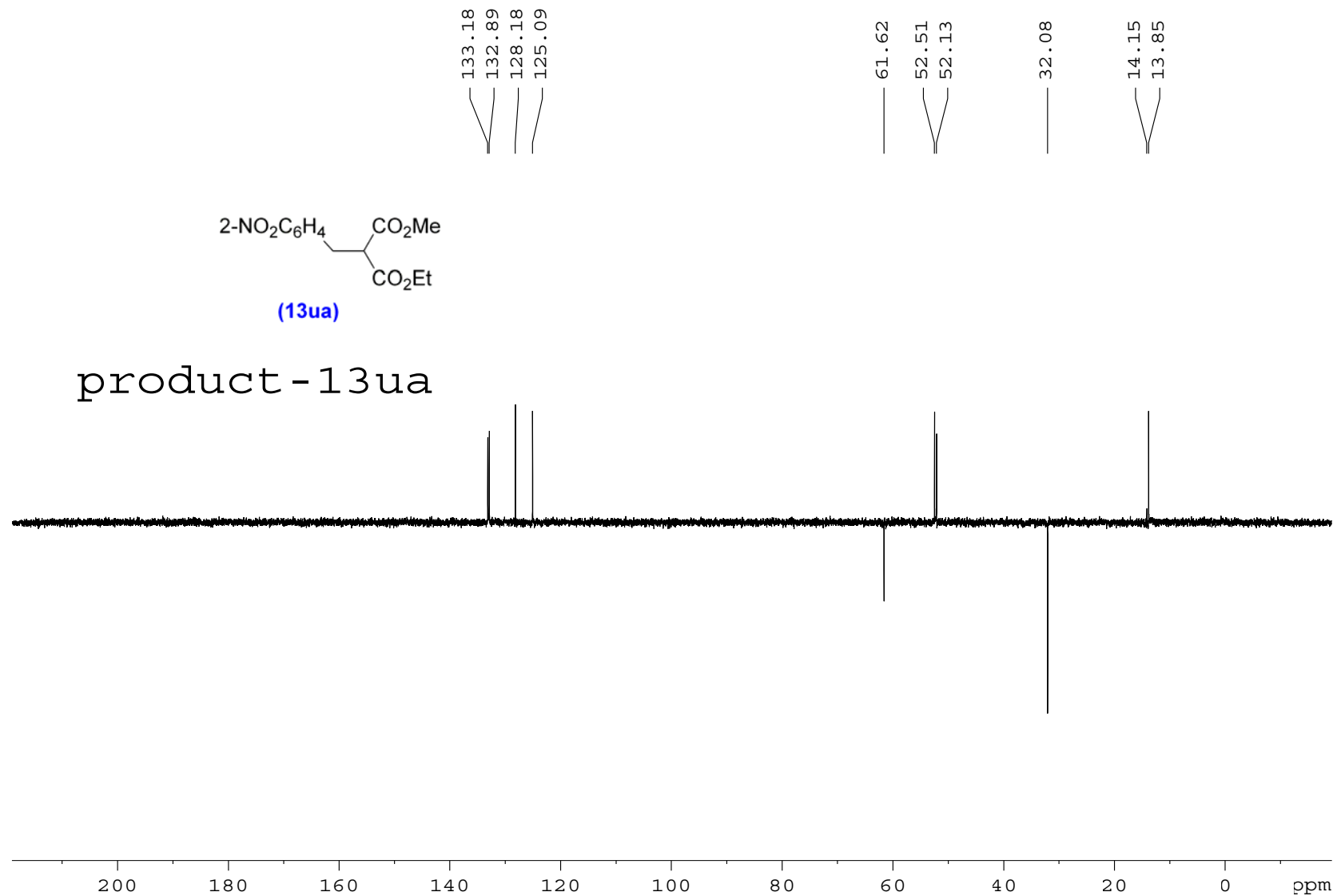


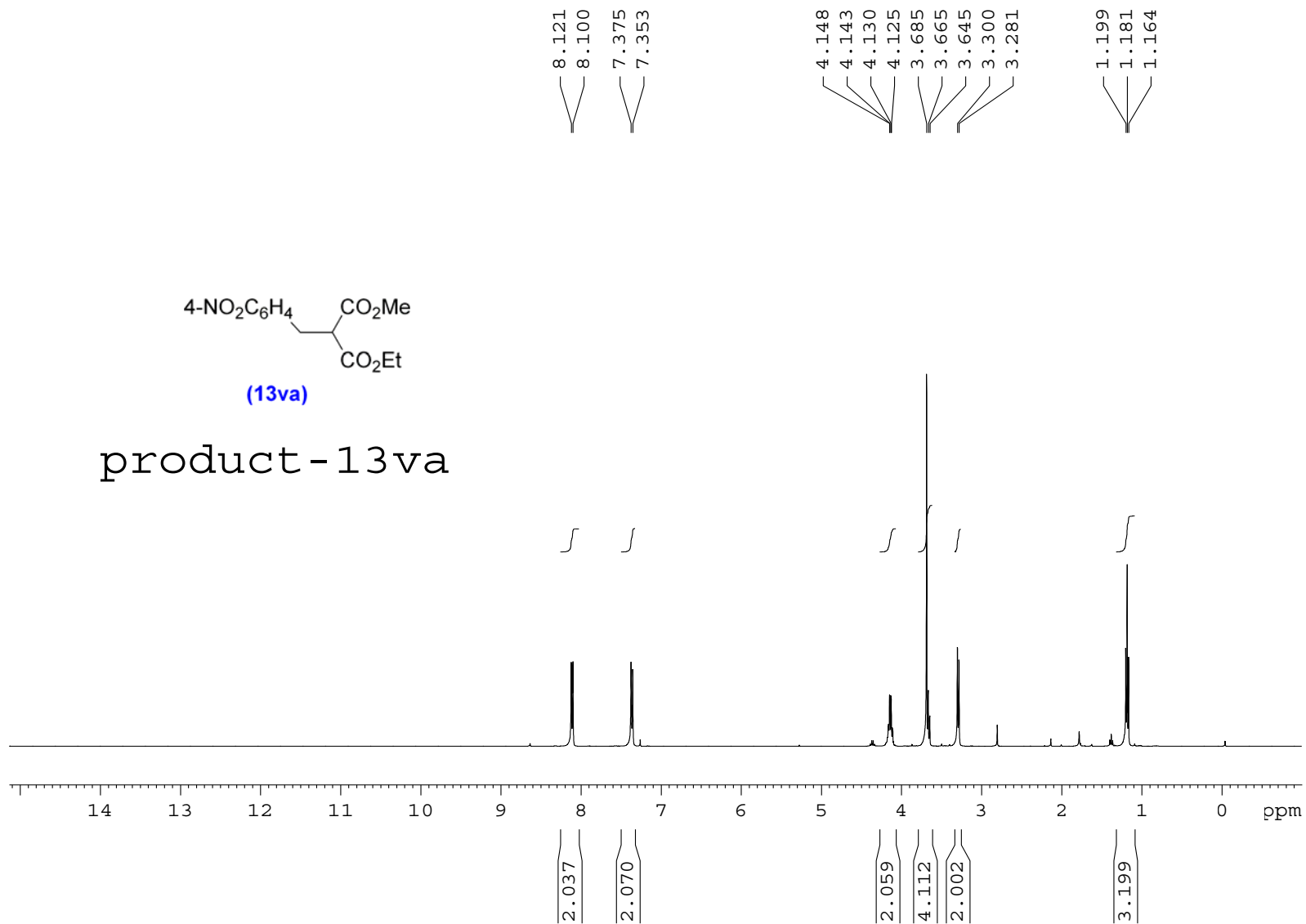


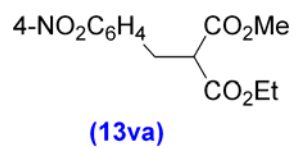
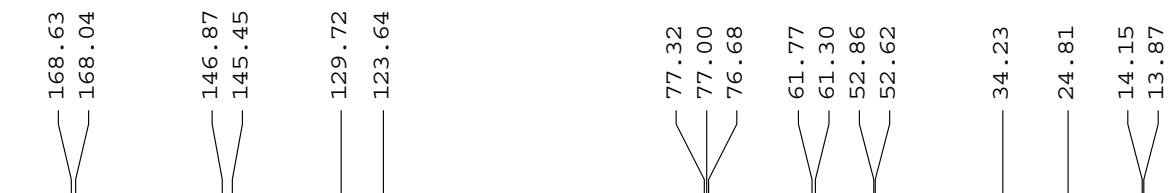


product-13ua

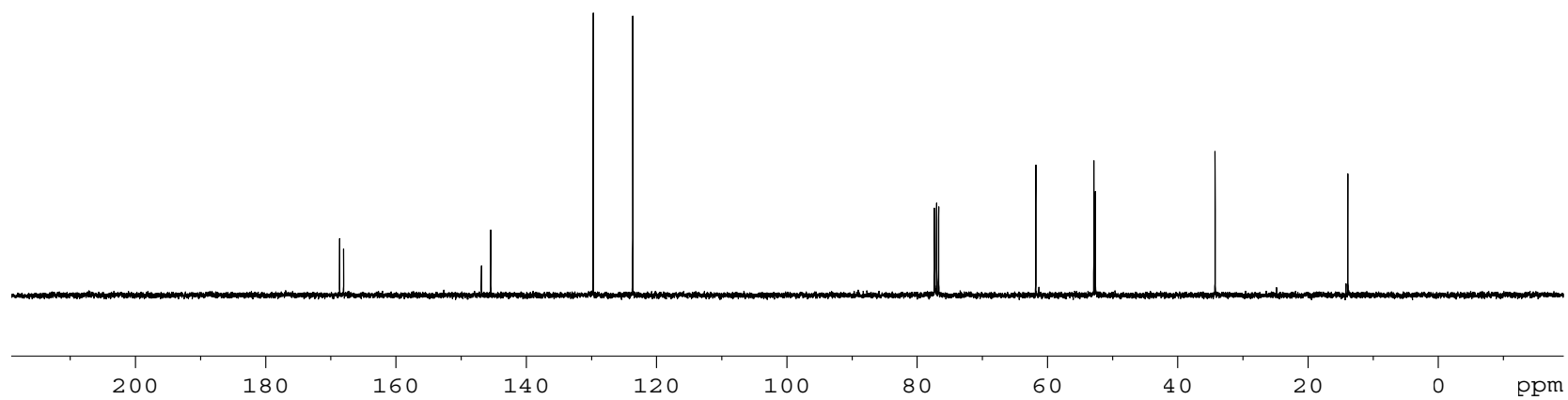


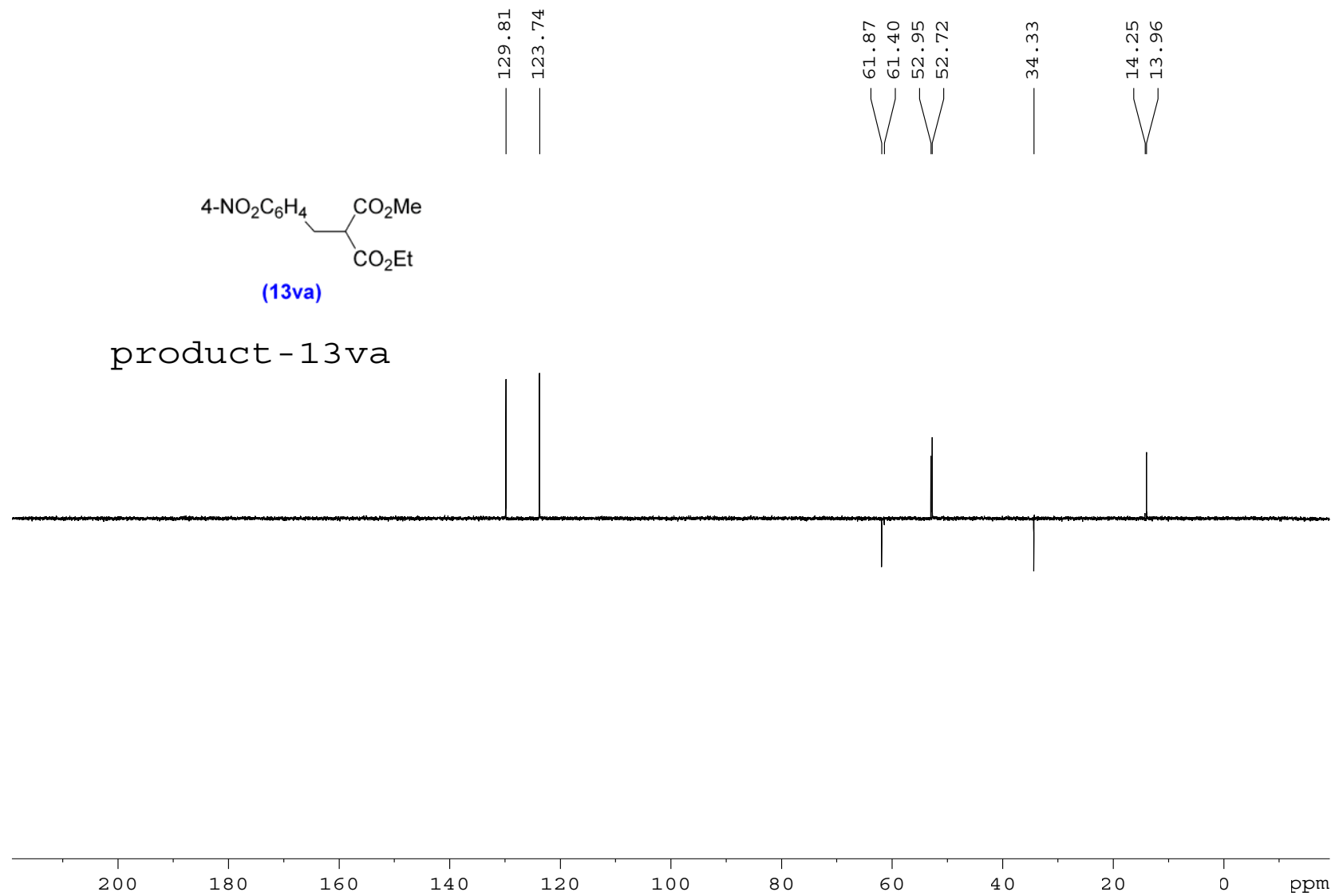


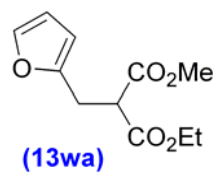




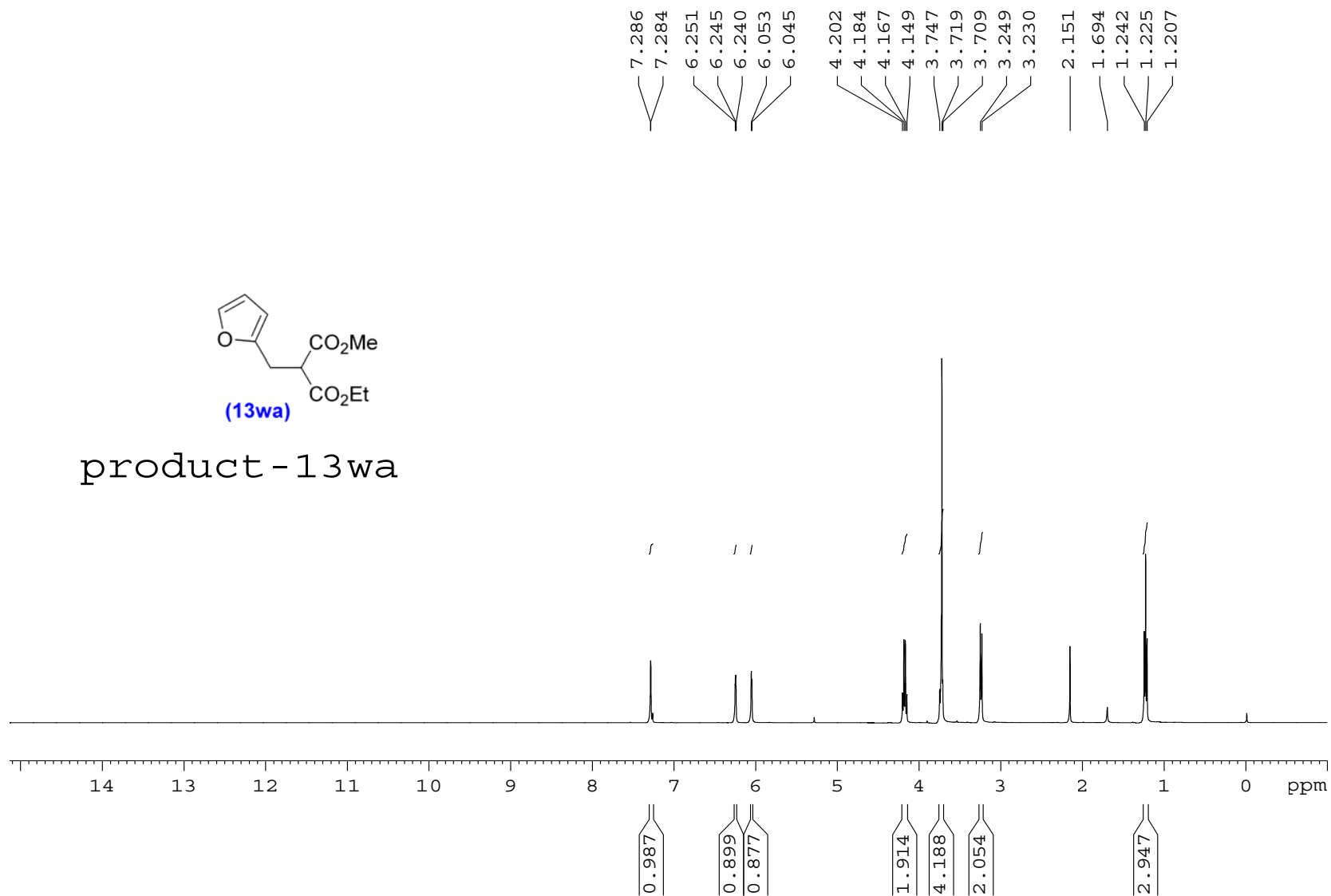
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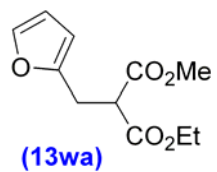




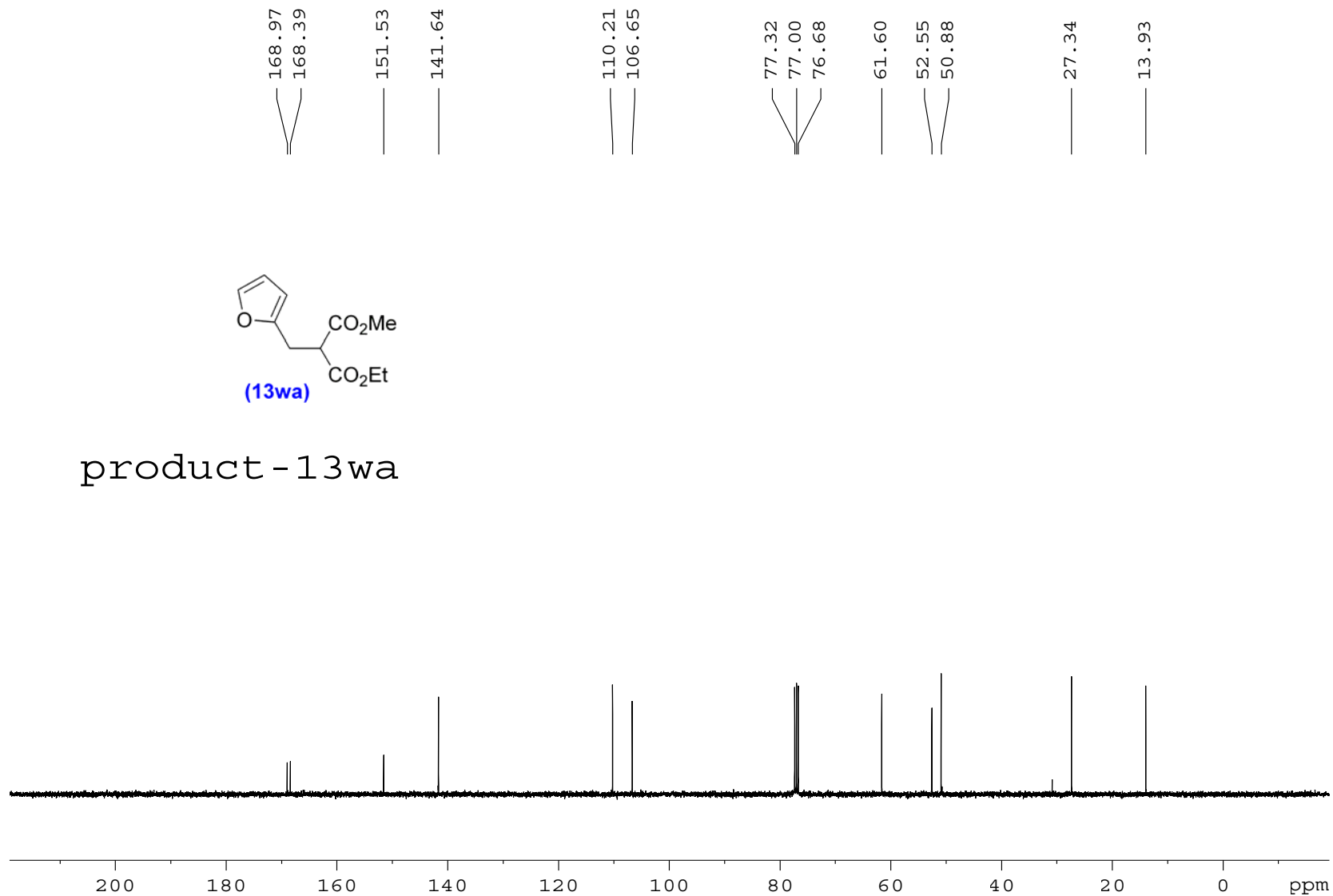


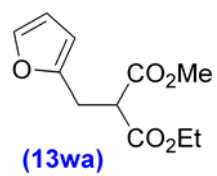
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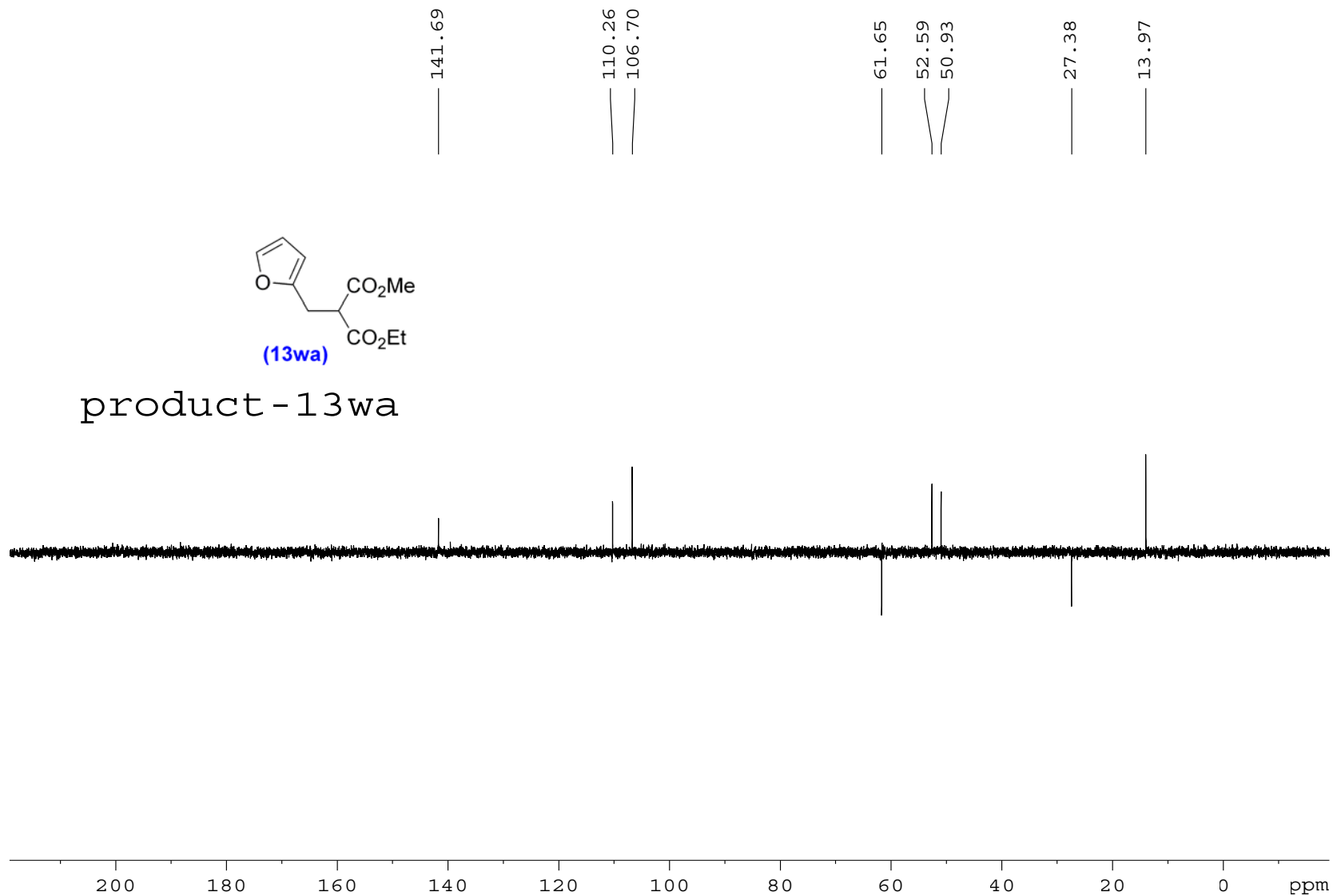


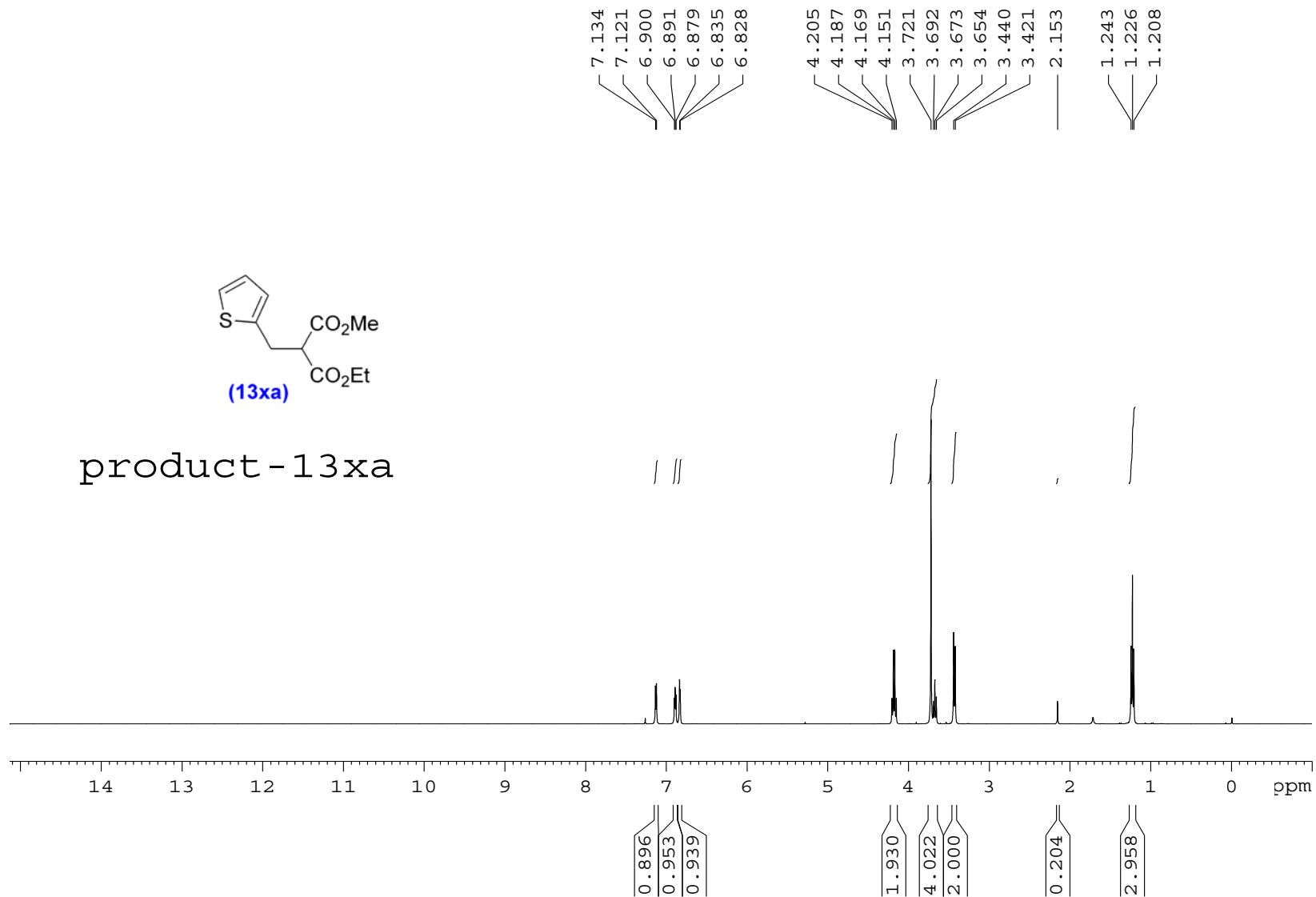
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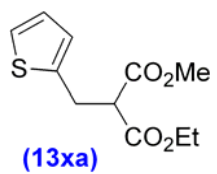




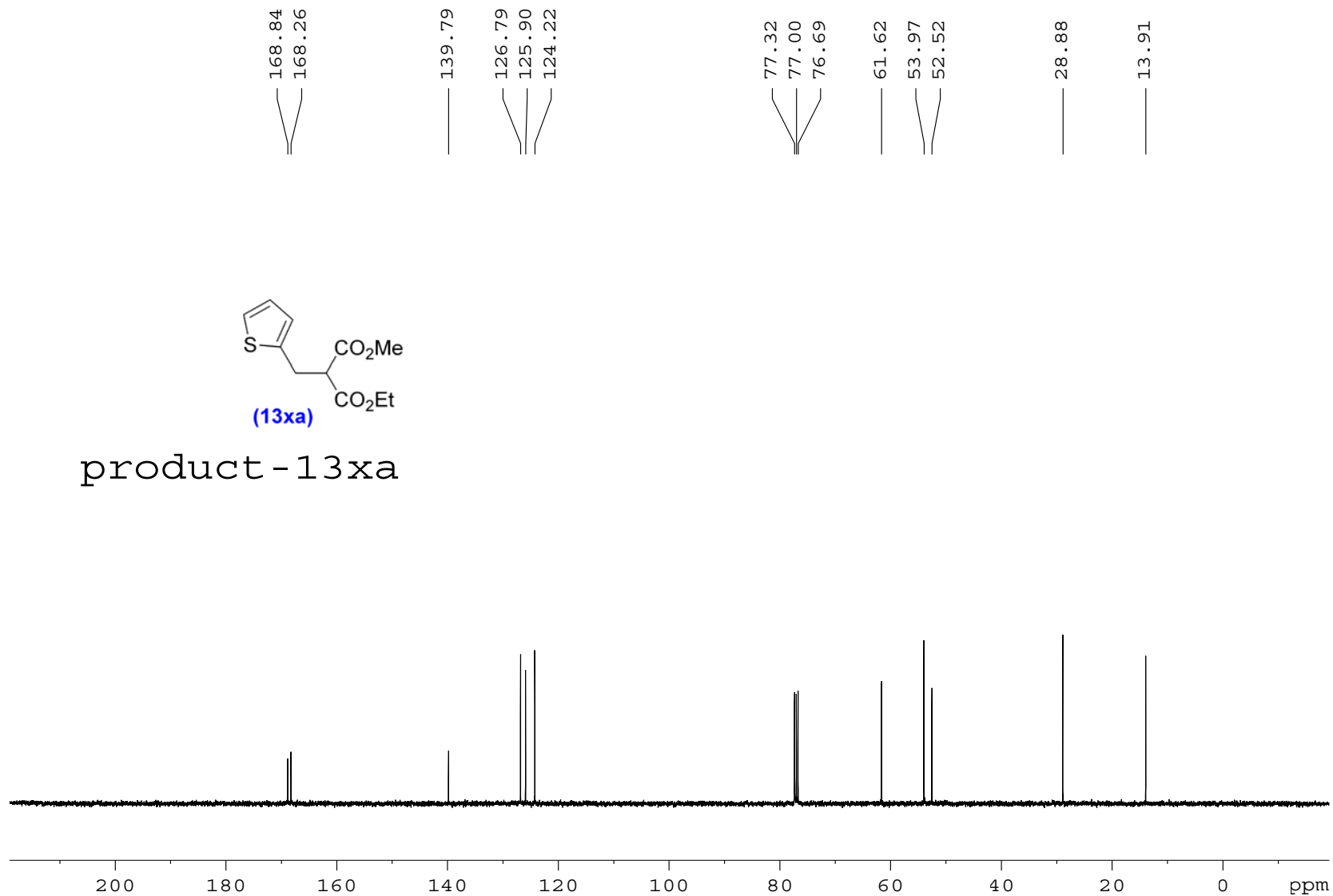
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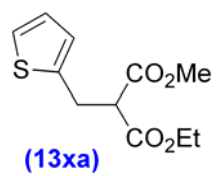




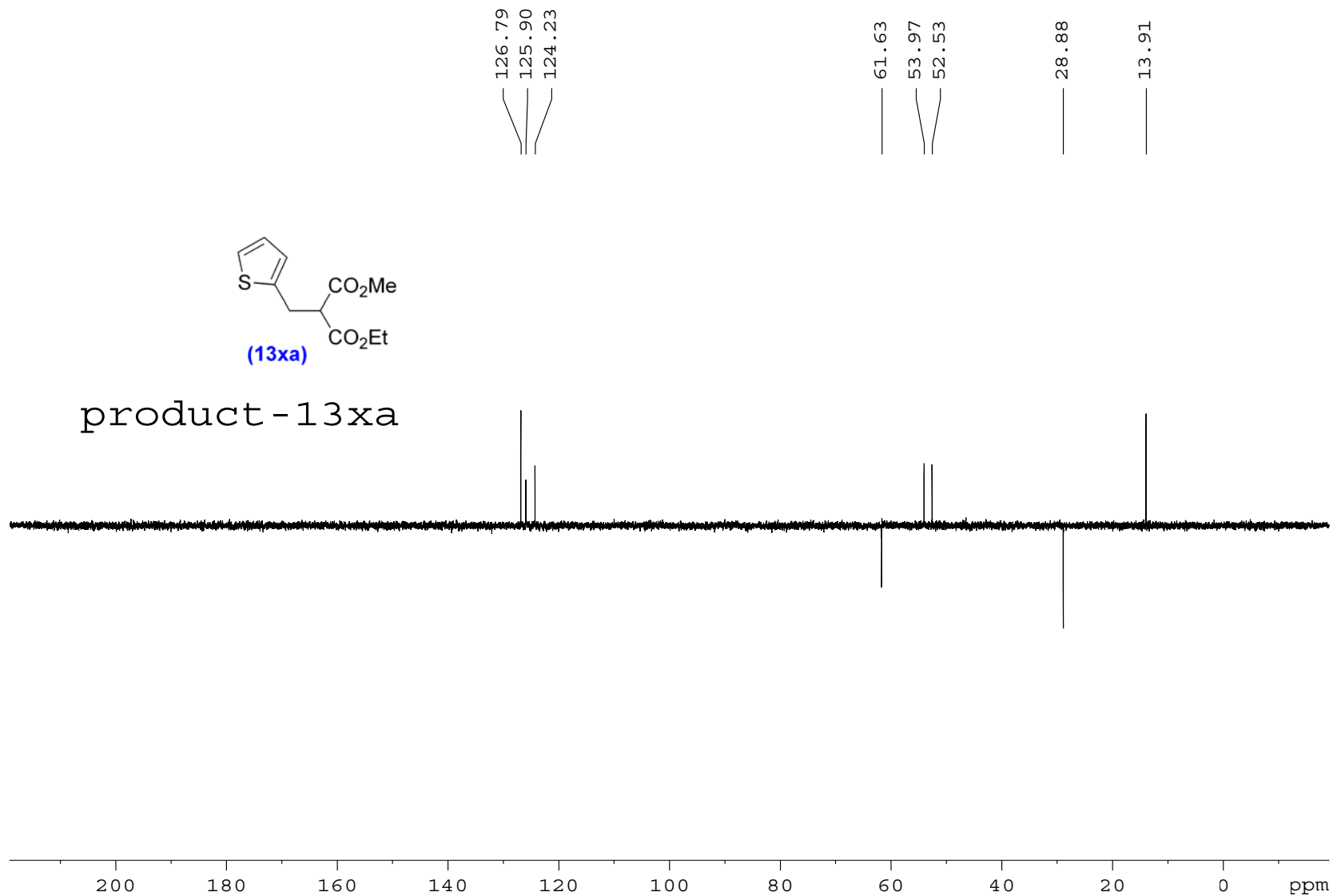


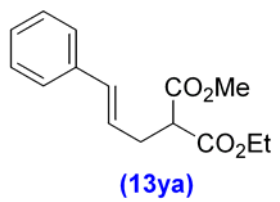
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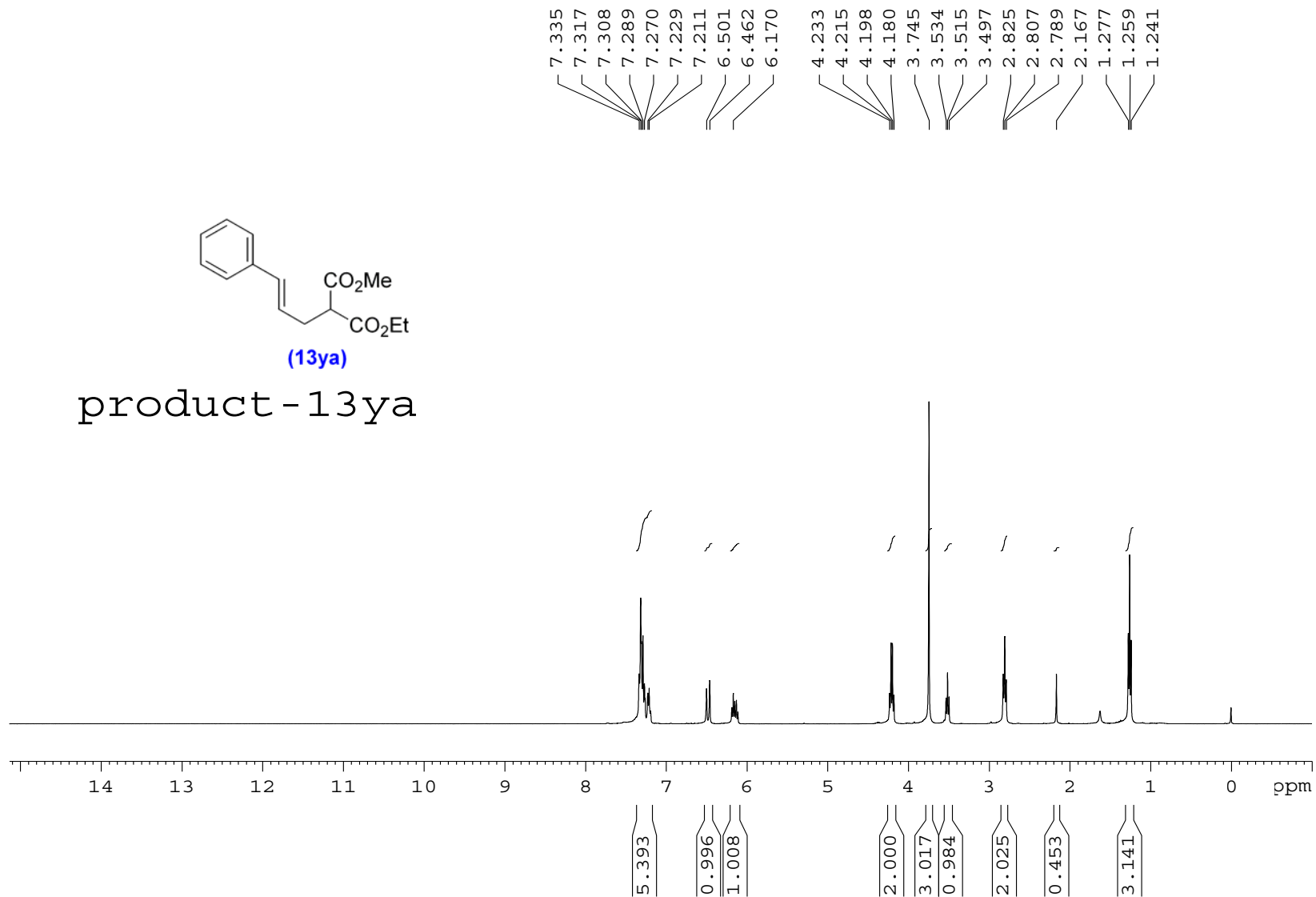


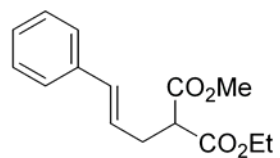
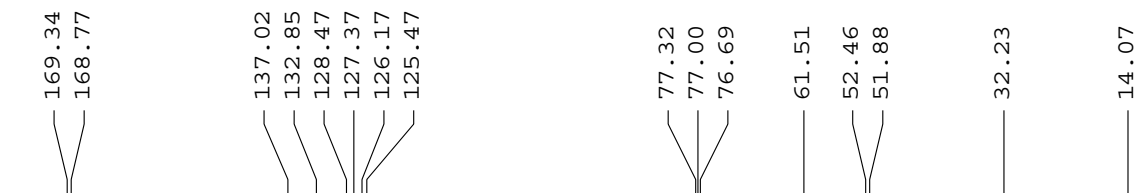
product - 13xa





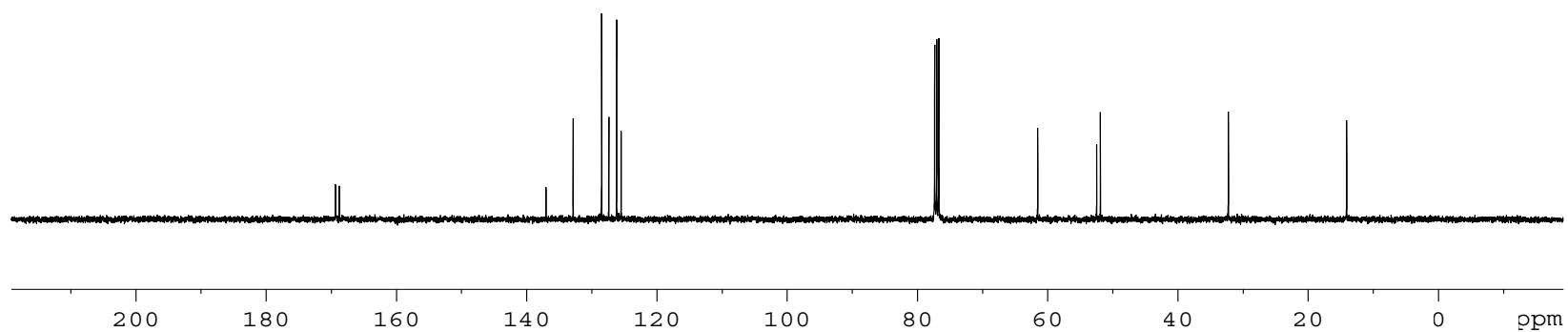
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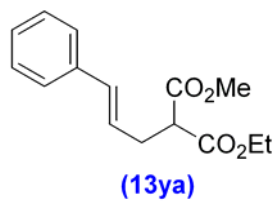




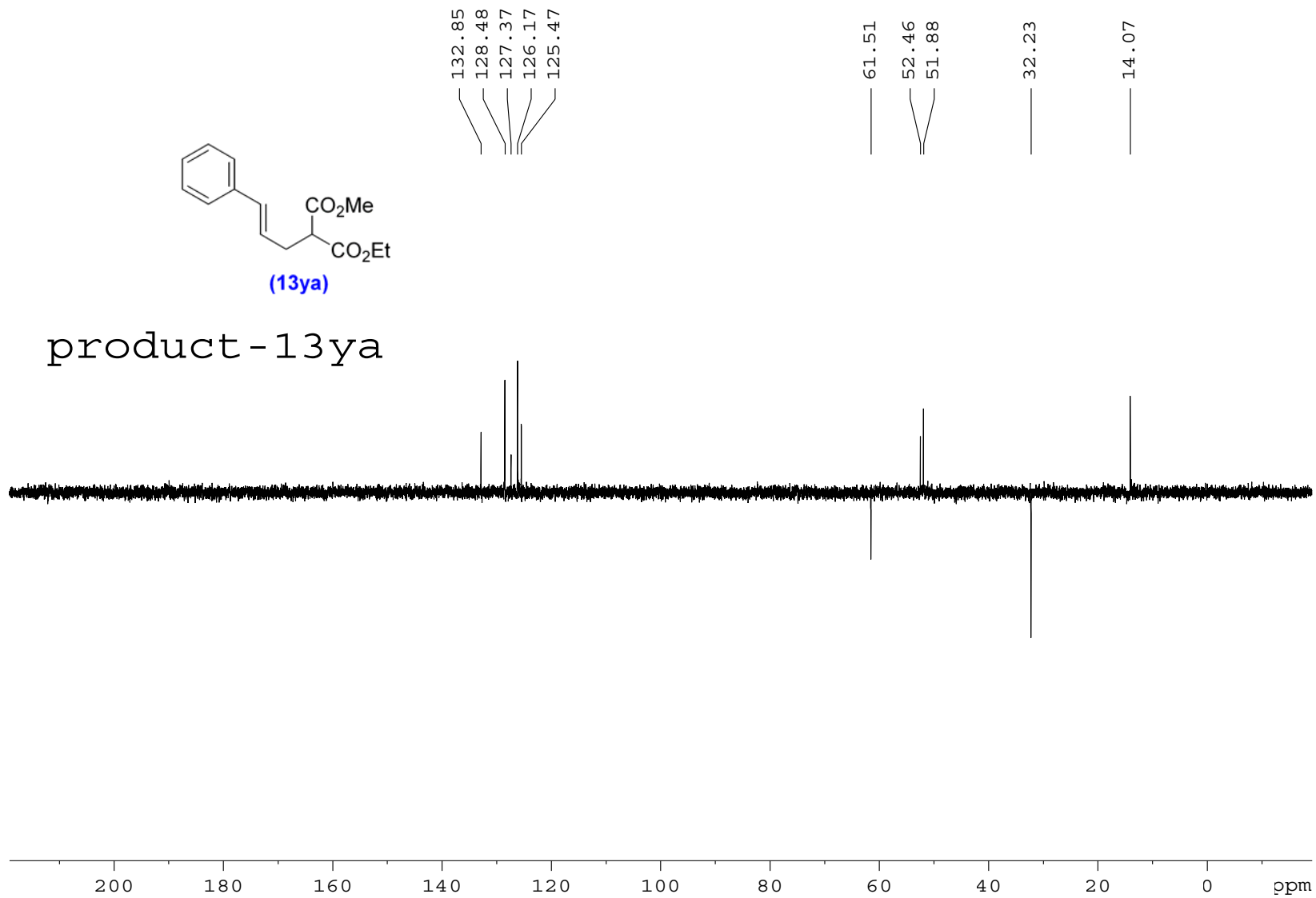
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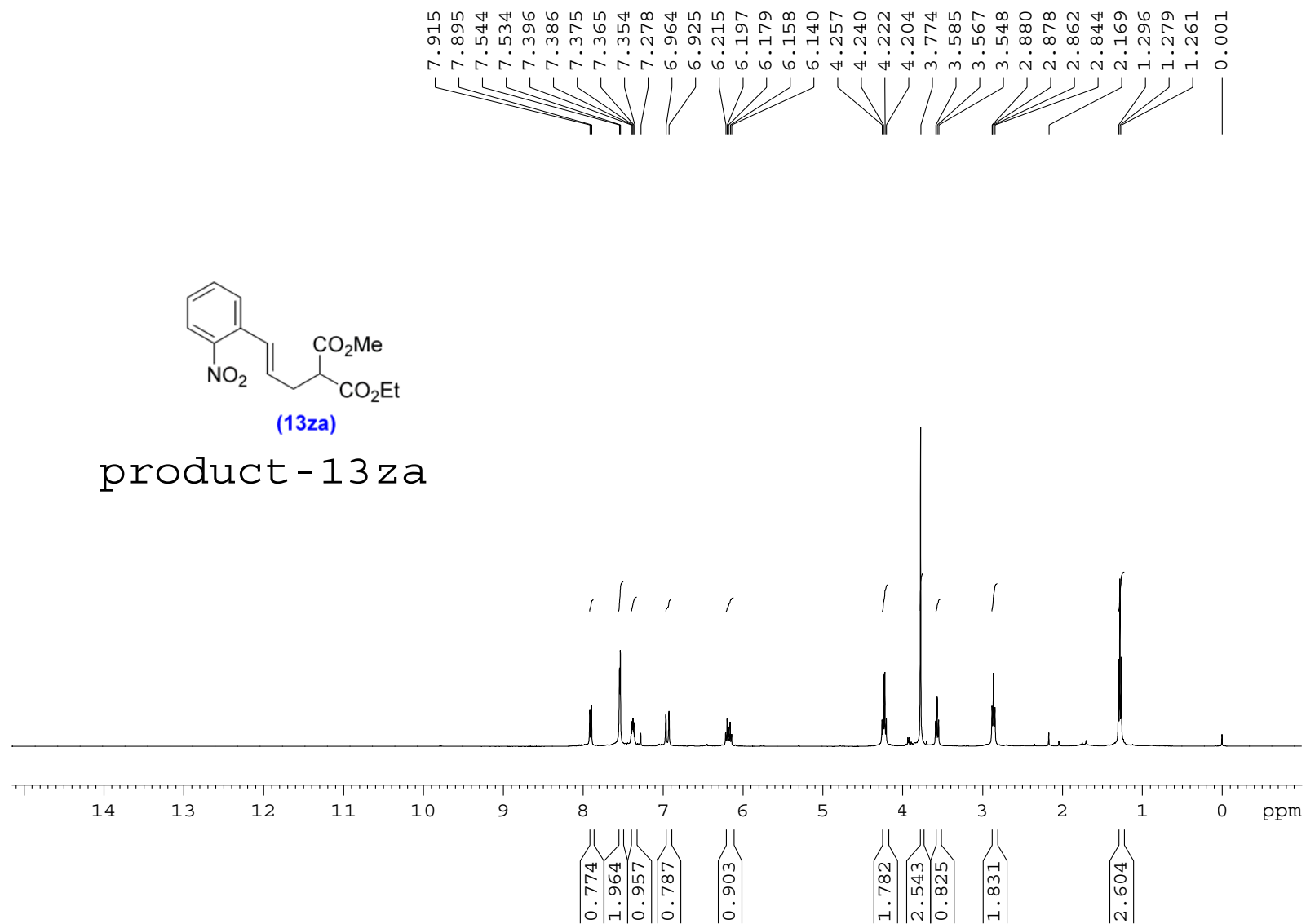
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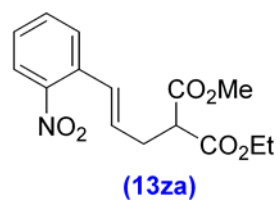




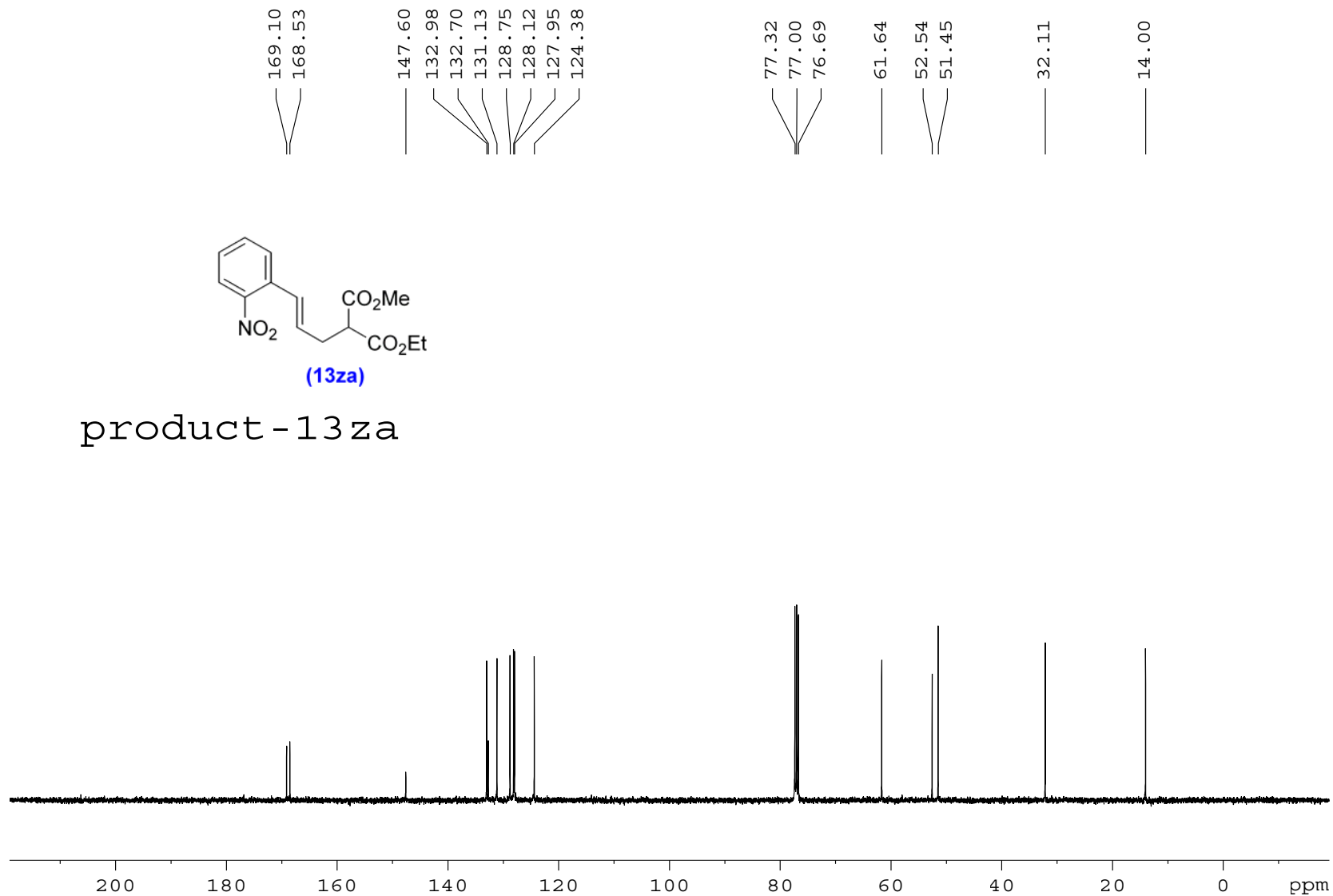
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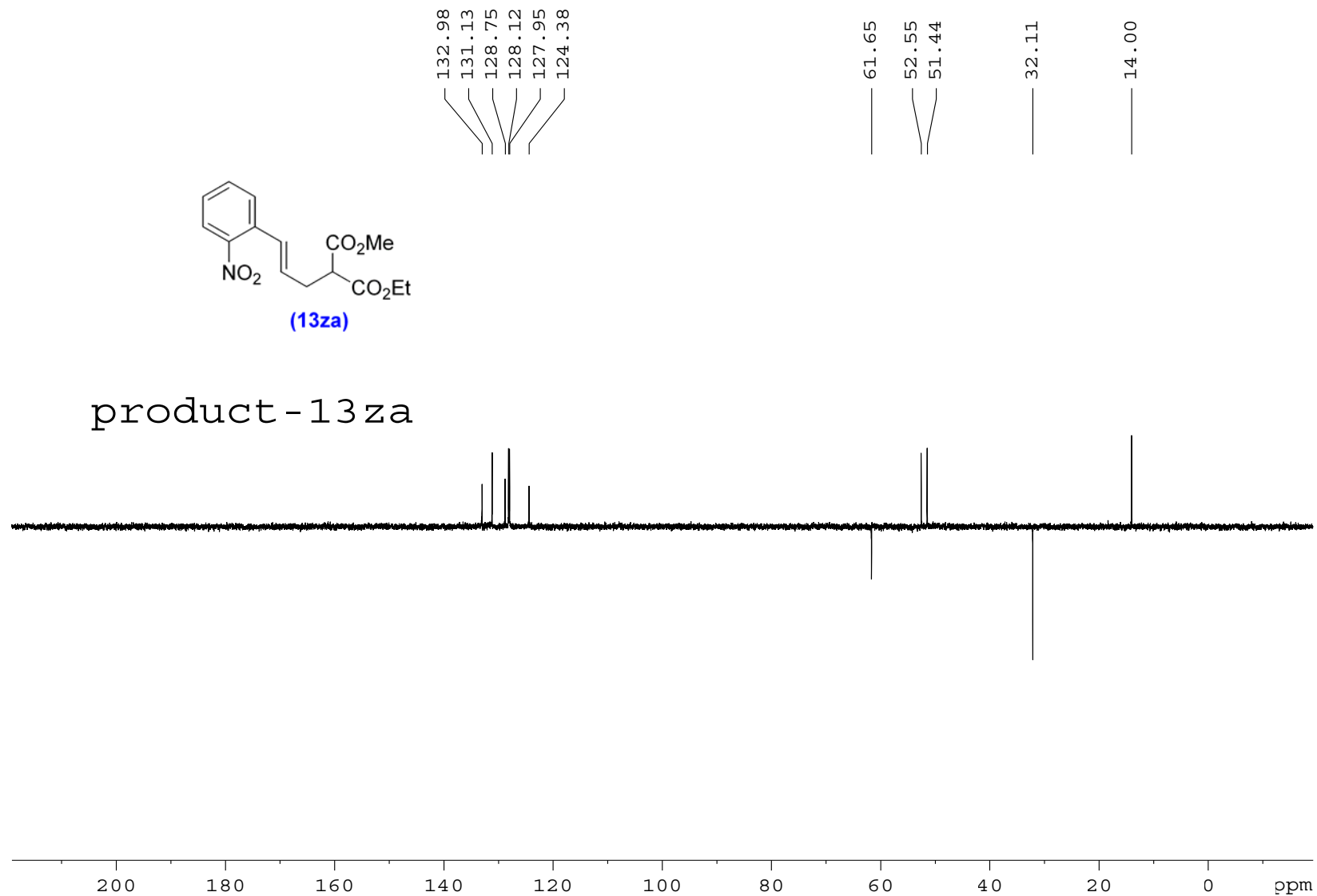
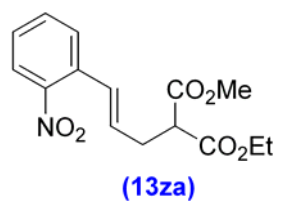


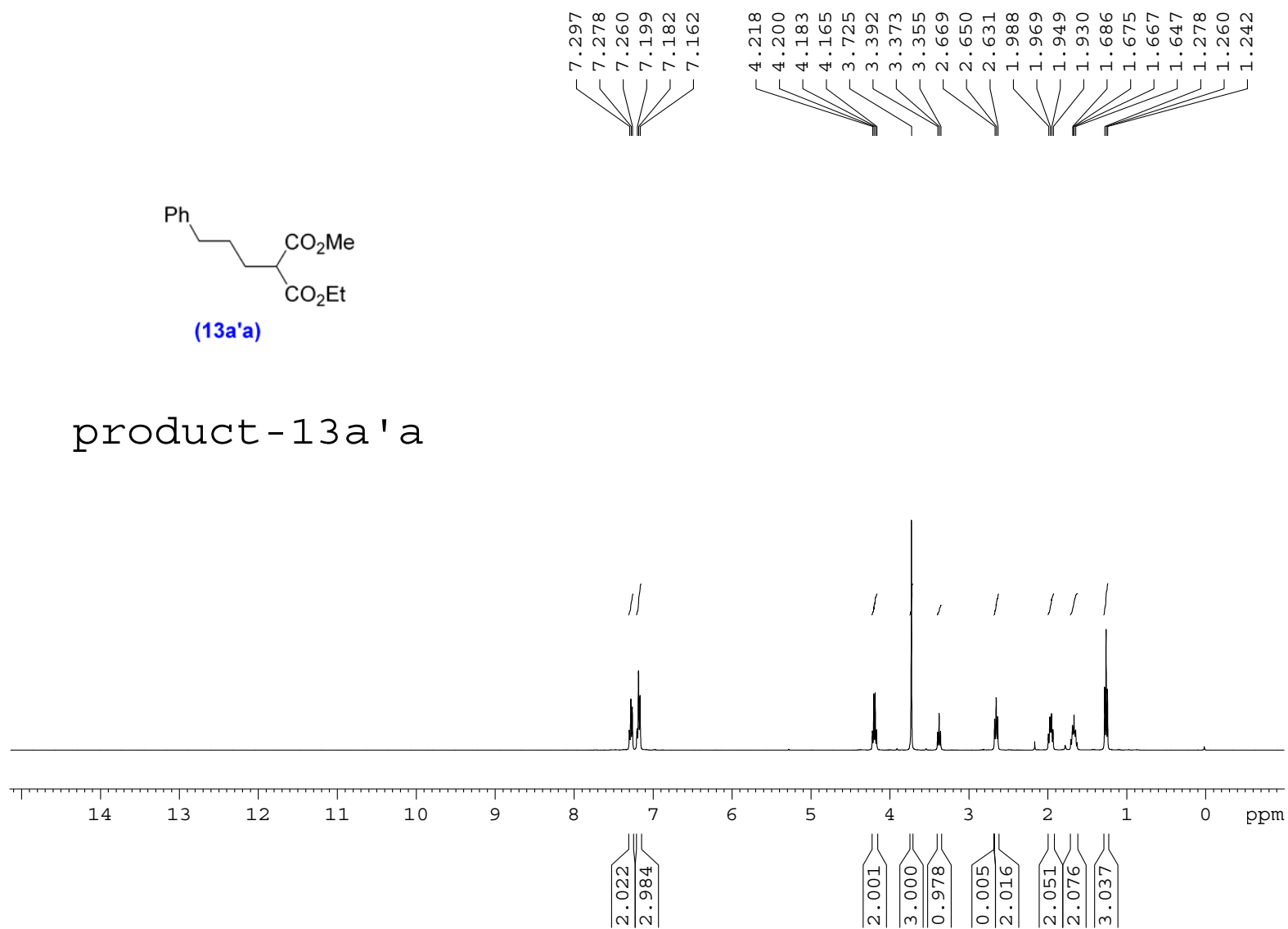
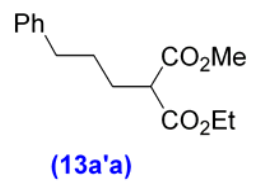


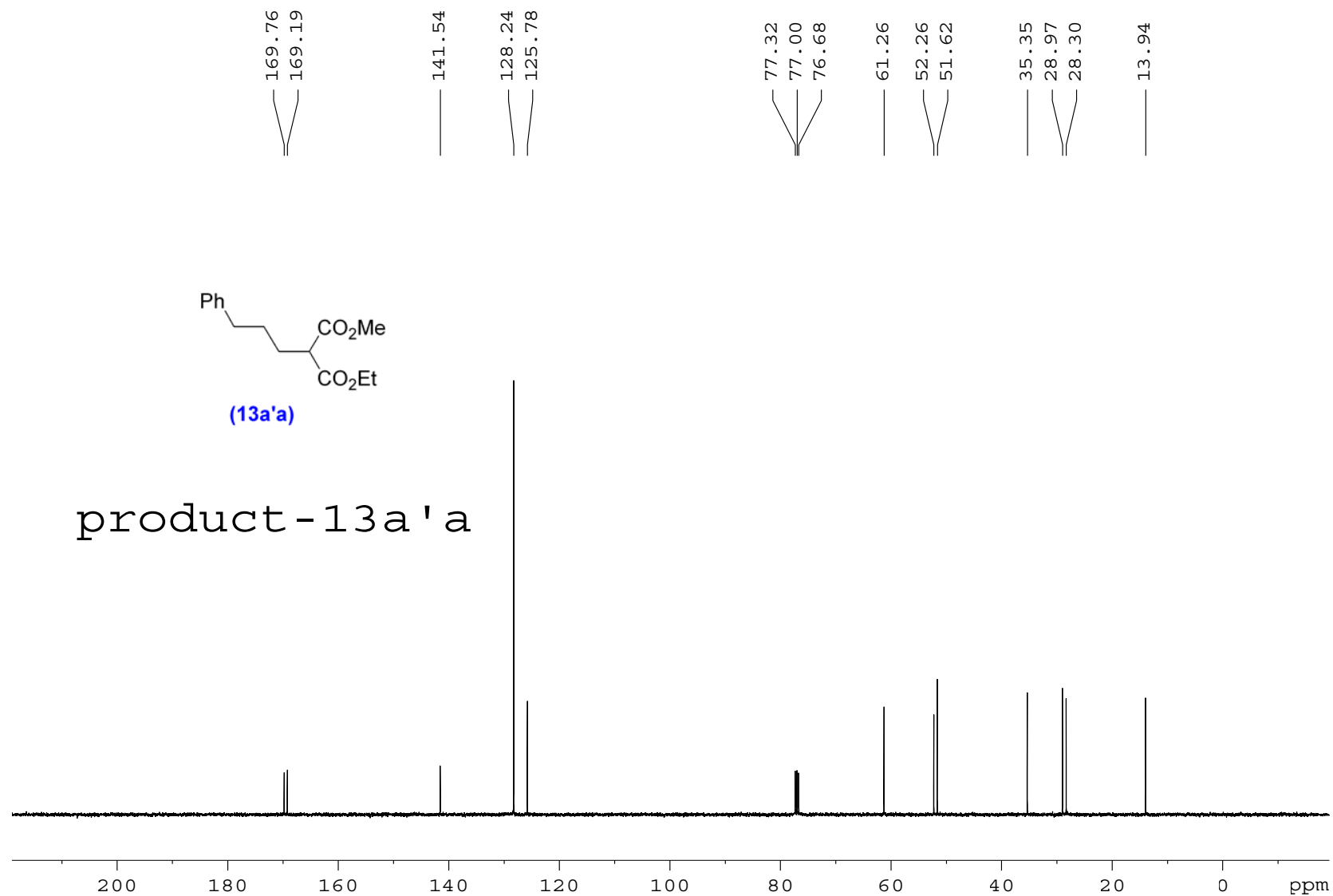


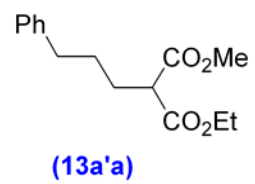
product-13za











128.25
125.78

61.27

52.26

51.63

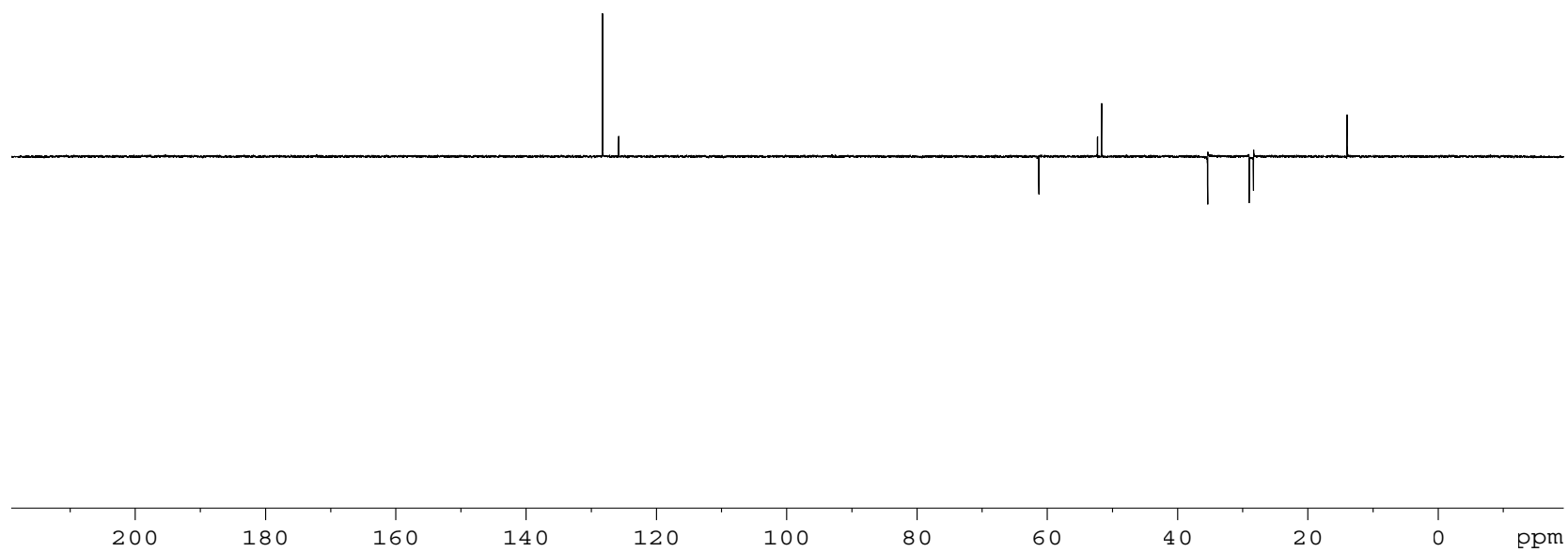
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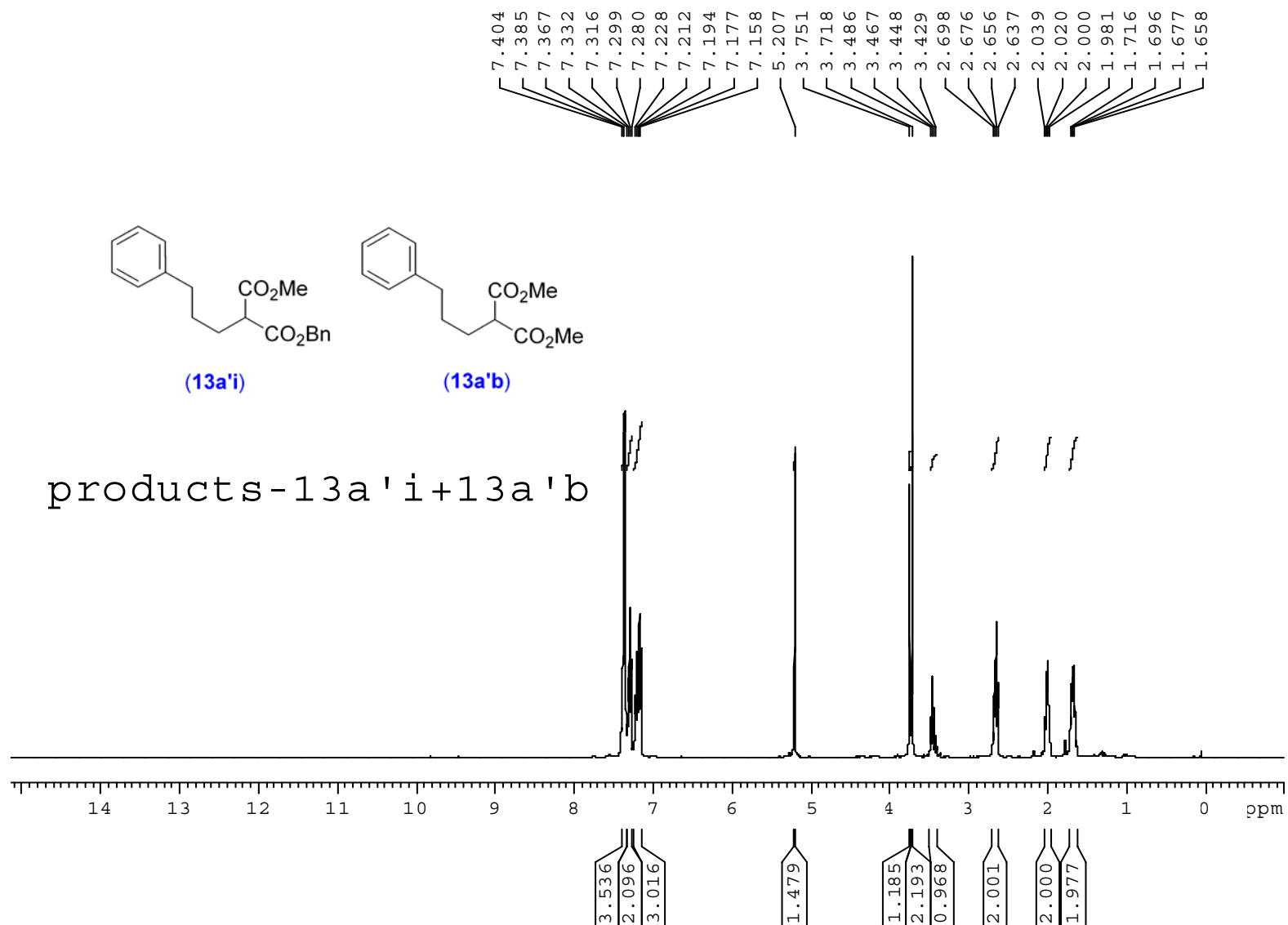
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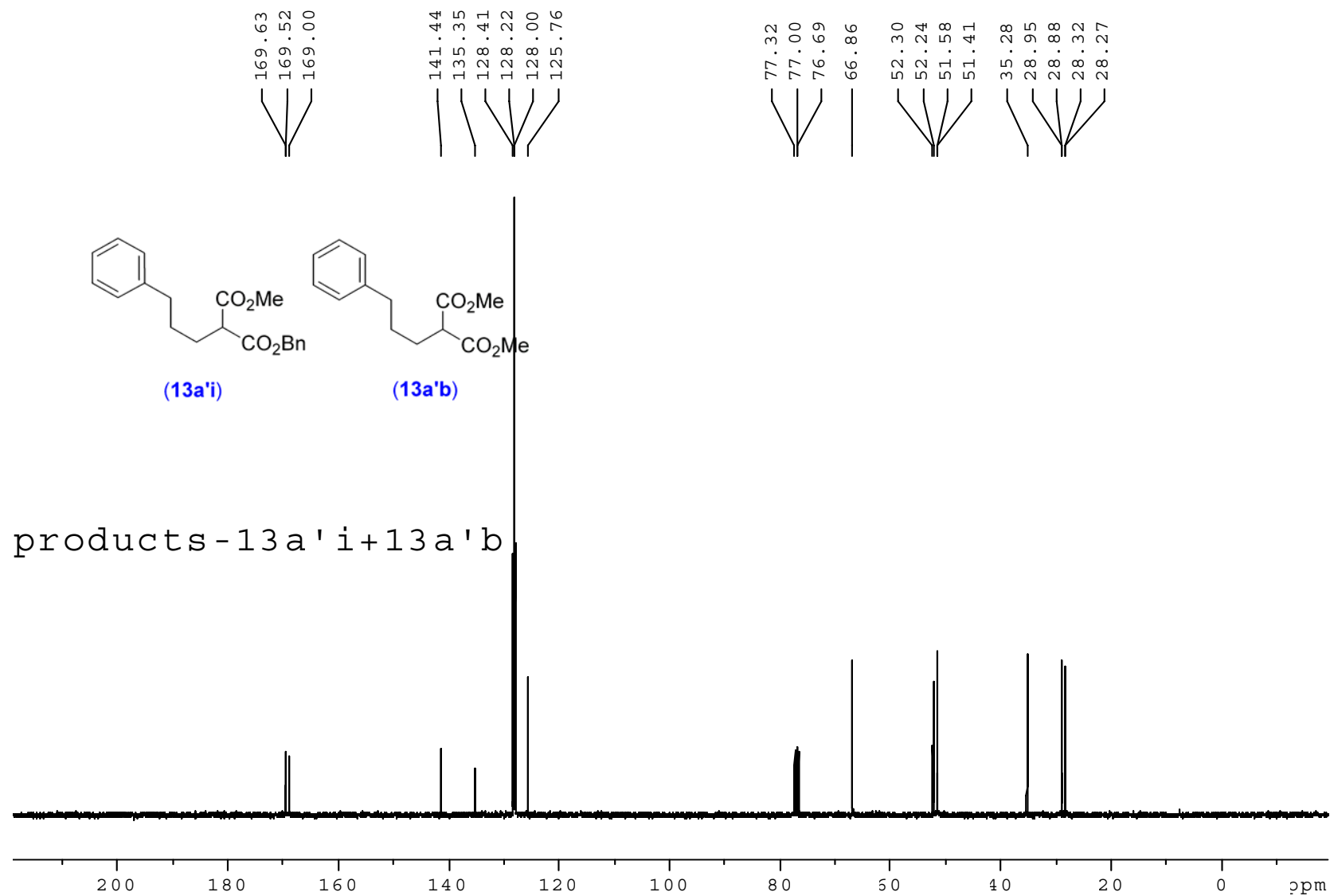
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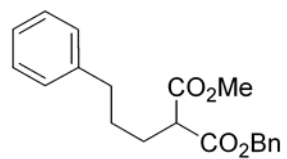
13.95

product - 13a'a

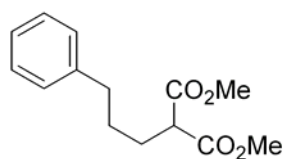








(13a'i)



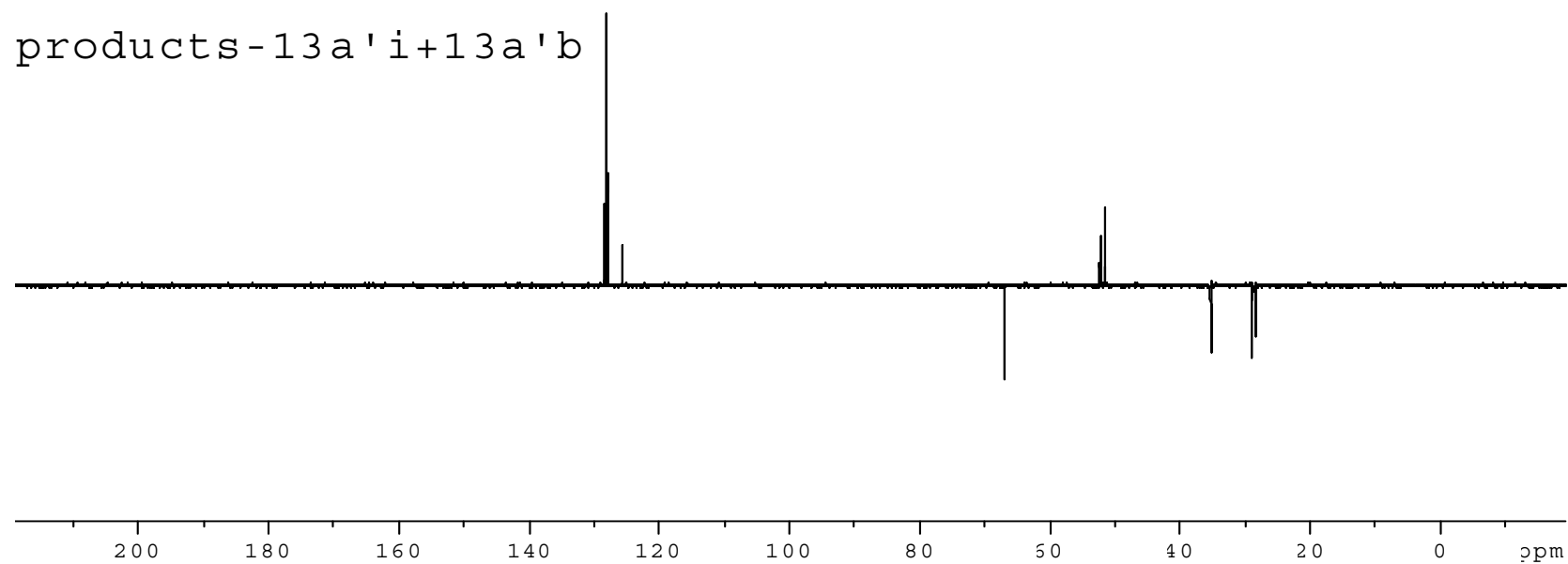
(13a'b)

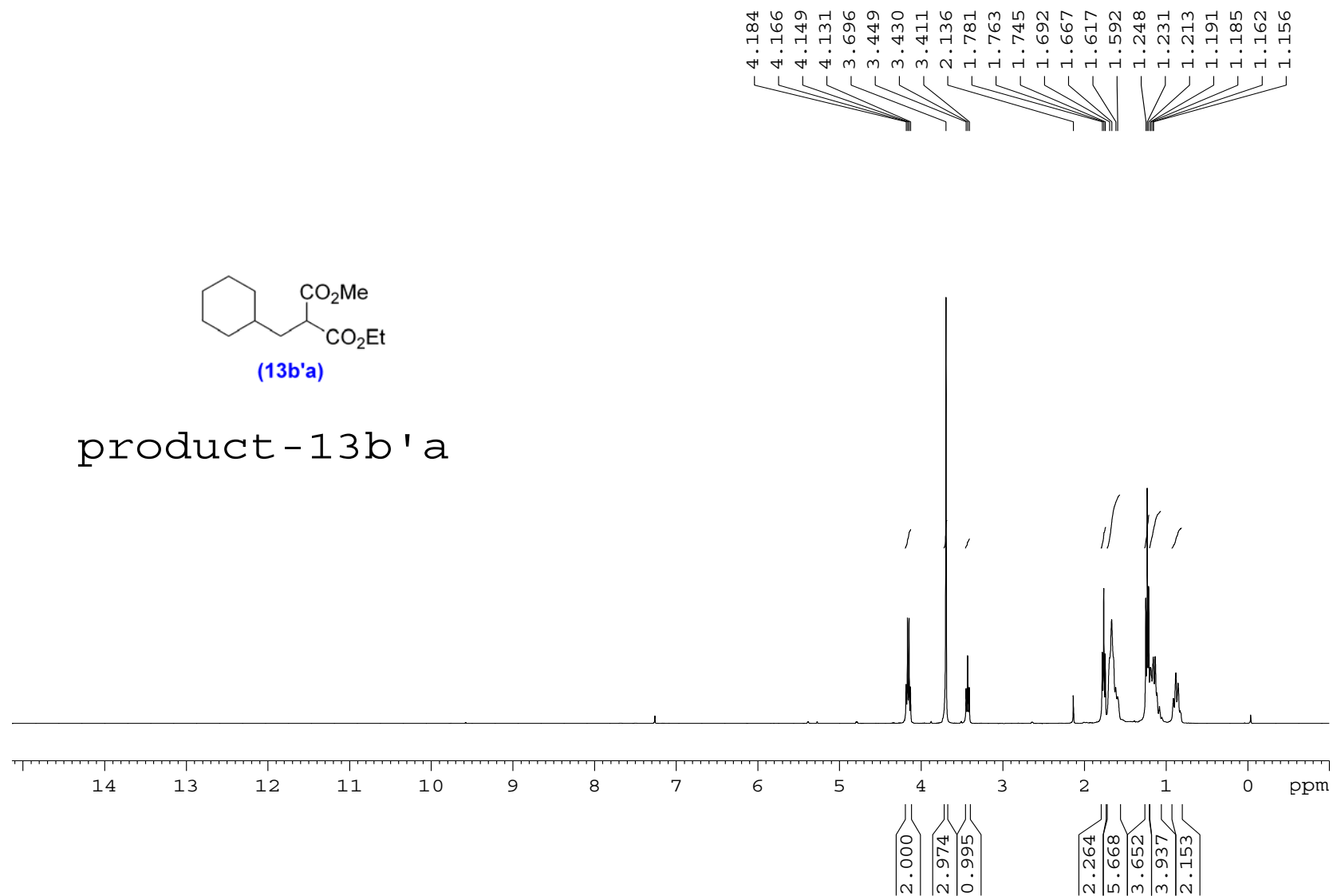
128.42
128.23
128.01
125.77

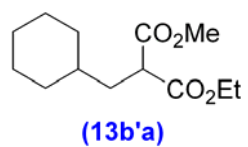
66.87

52.31
52.25
51.58
51.42

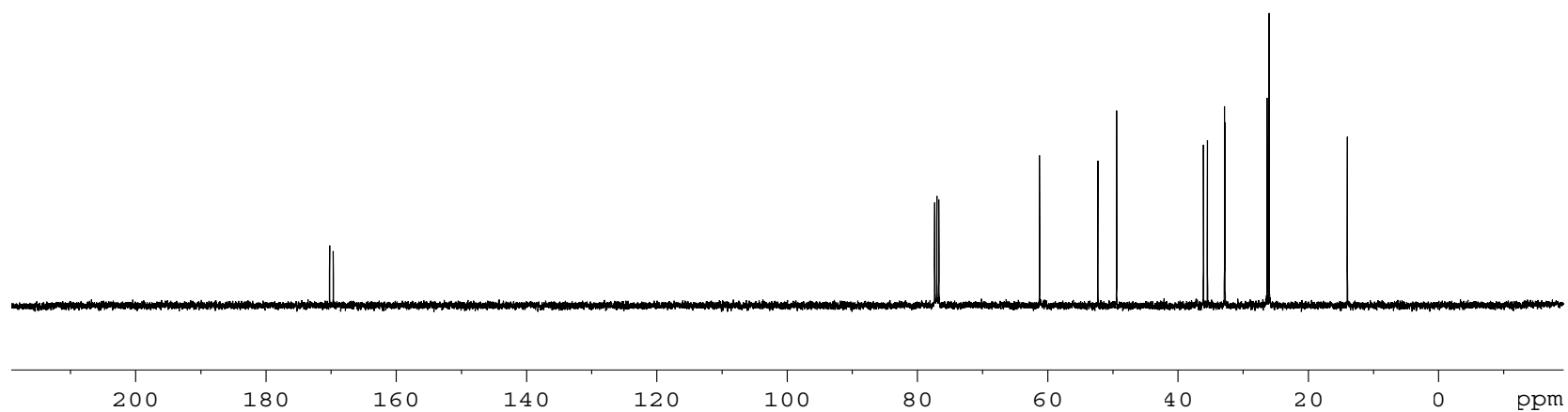
35.29
28.96
28.89
28.33
28.28

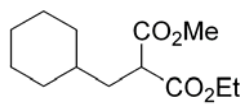






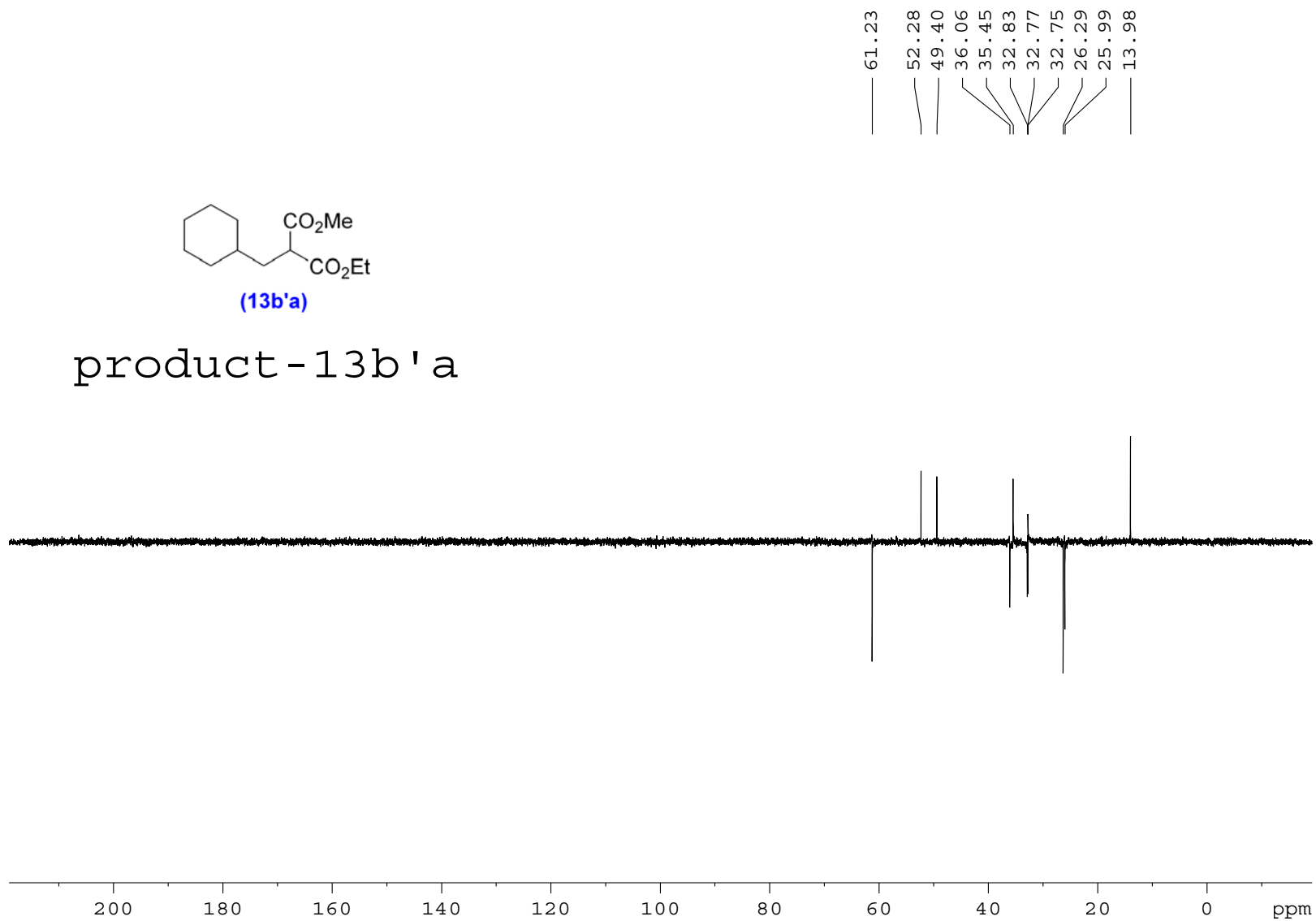
product-13b'a

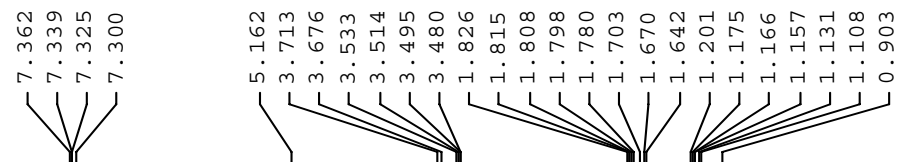
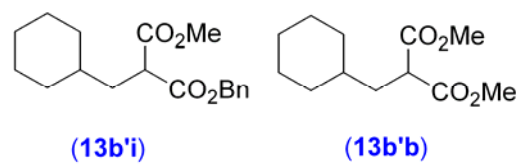




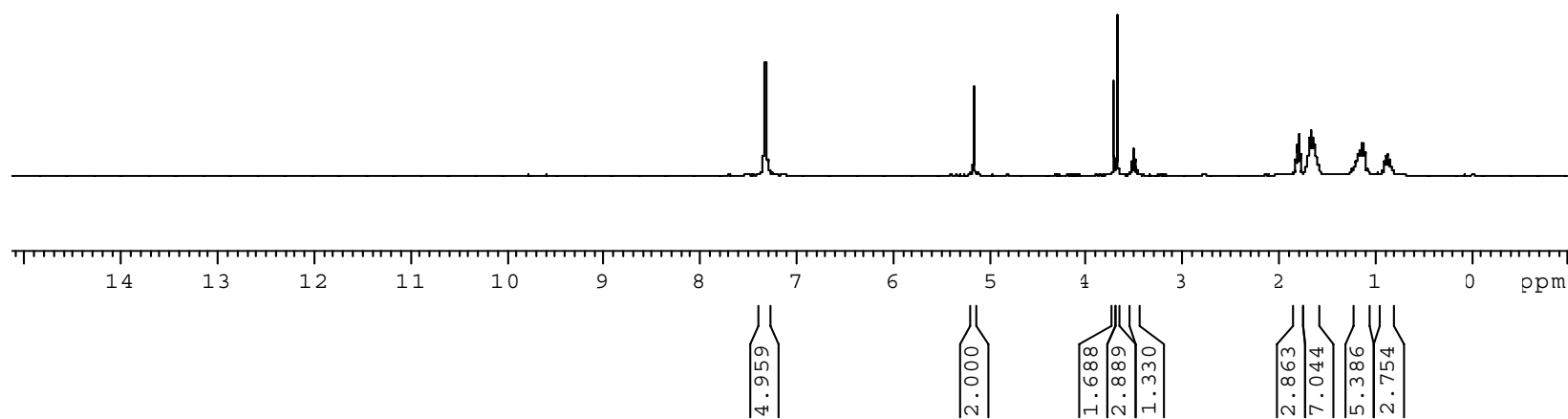
(13b'a)

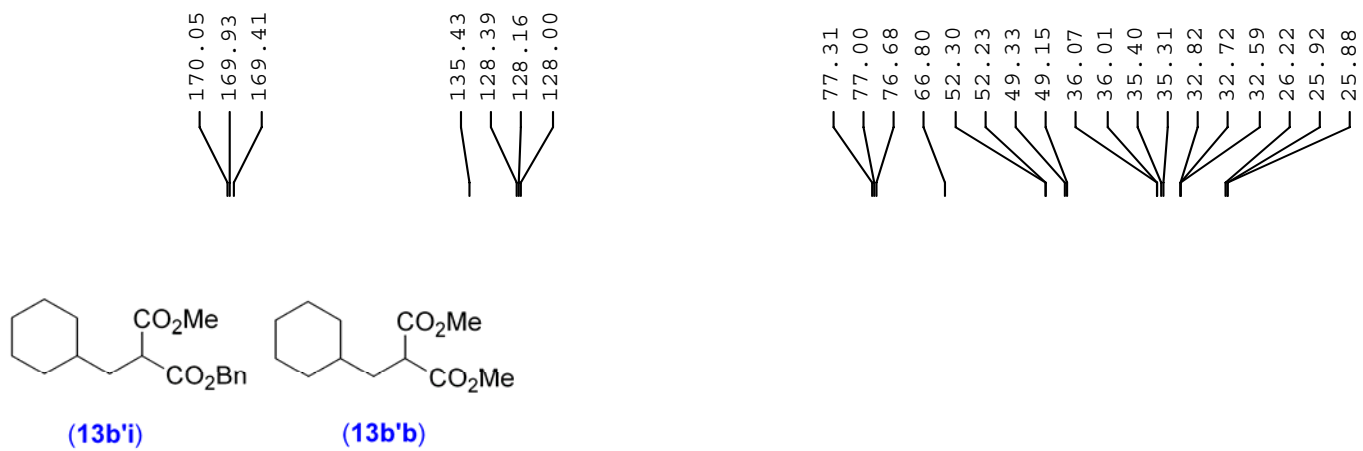
product - 13b ' a



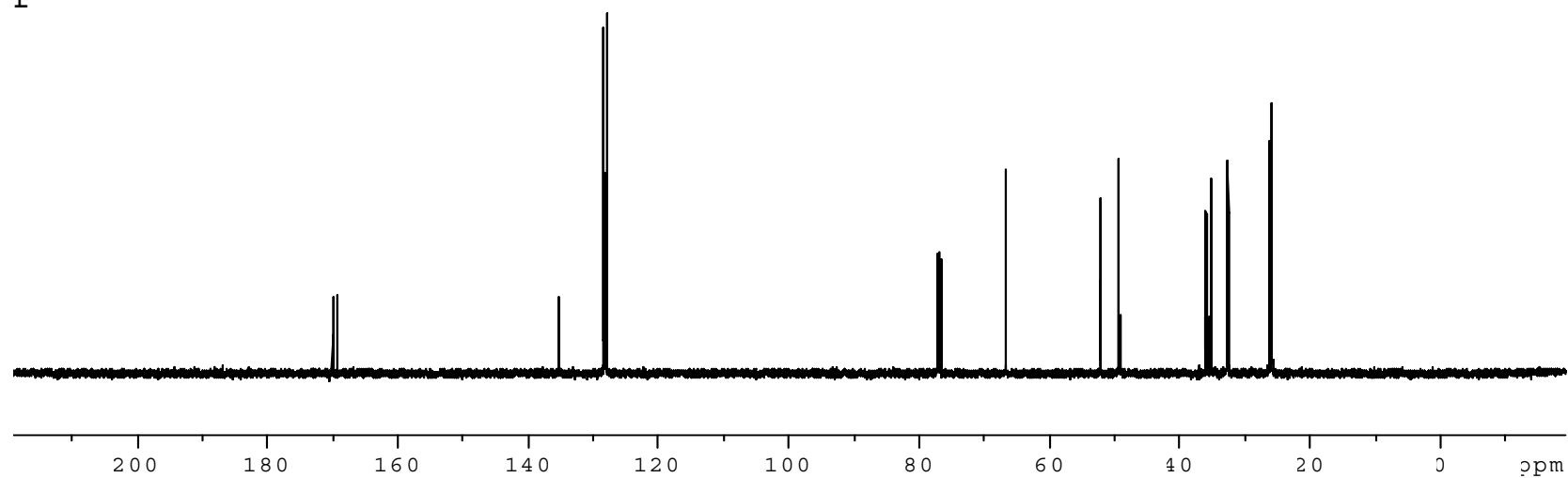


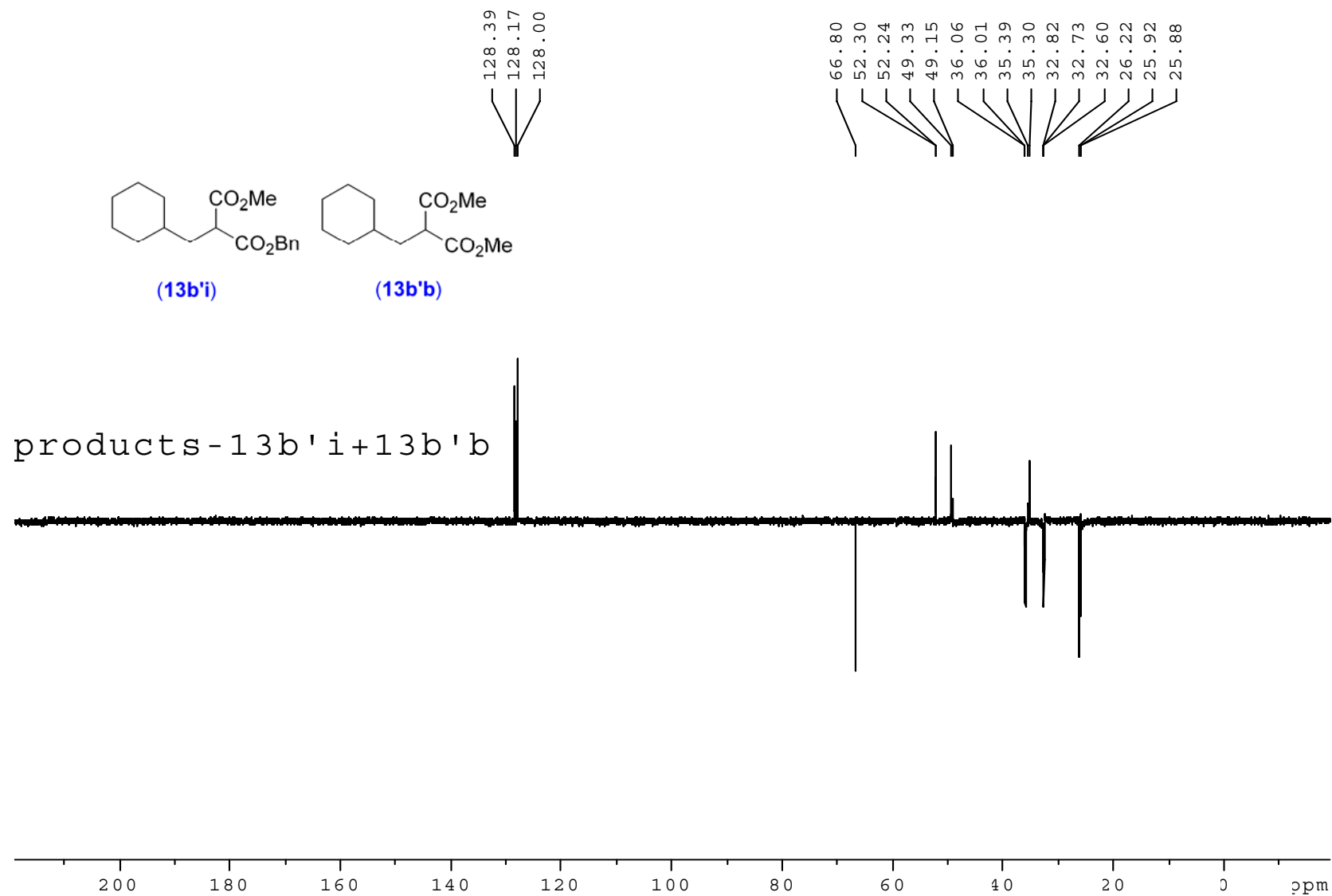
products-13b'i+13b'b

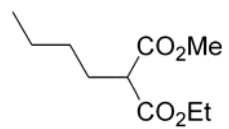




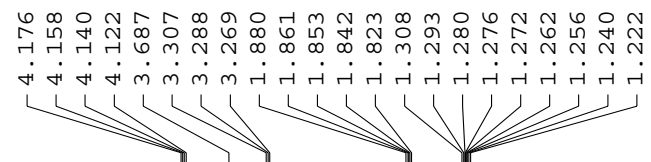
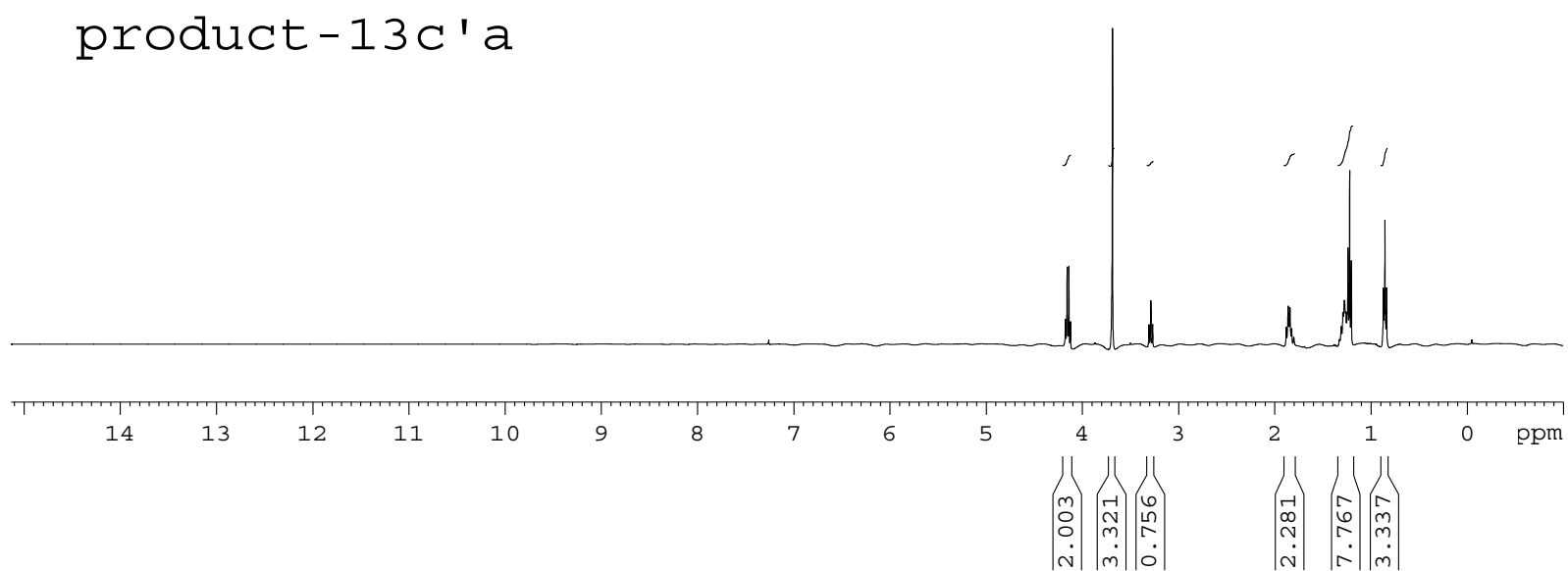
products-13b'i+13b'b

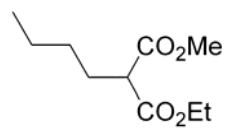






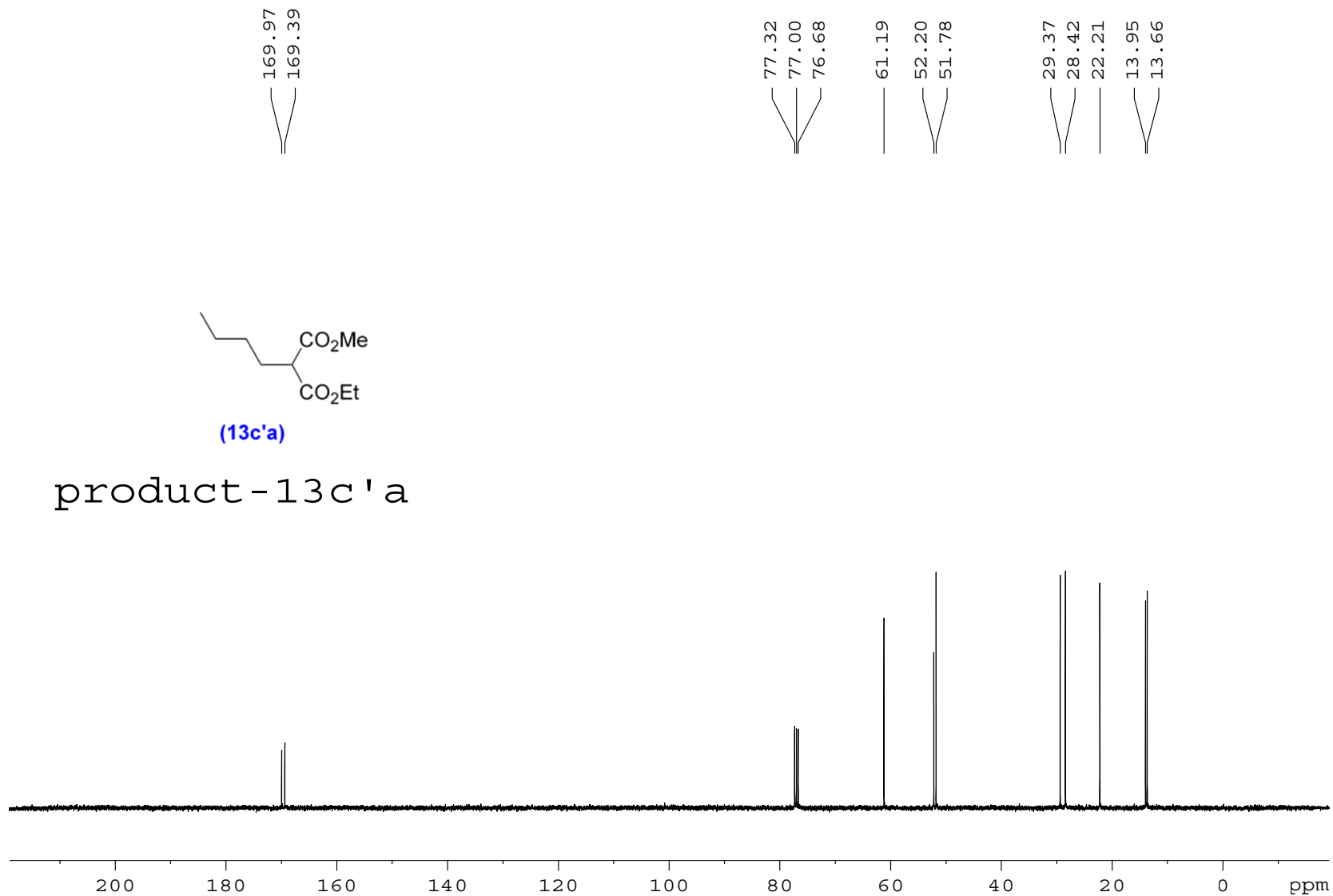
(13c'a)

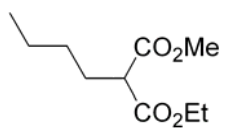




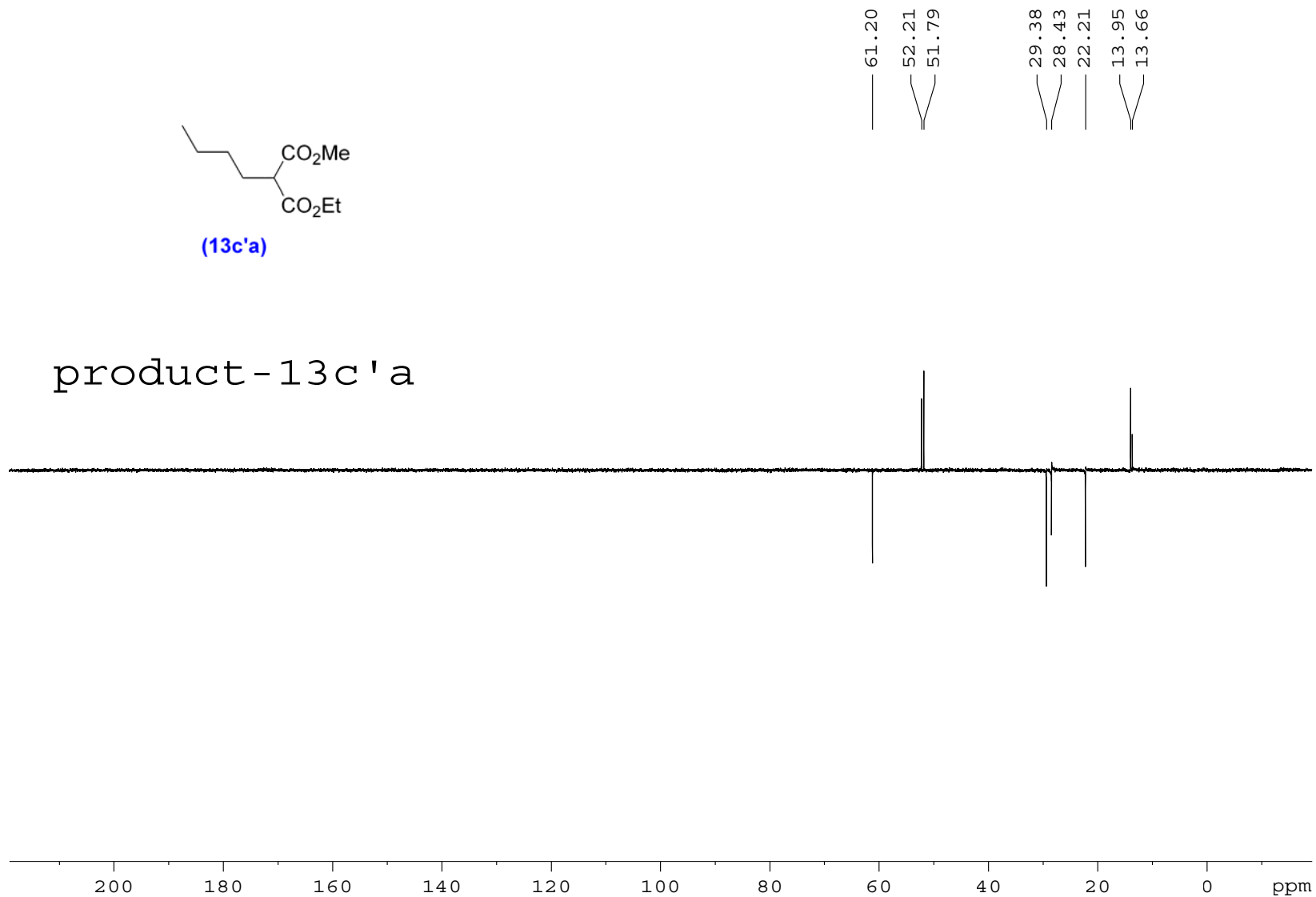
(13c'a)

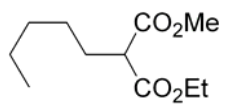
product-13c'a





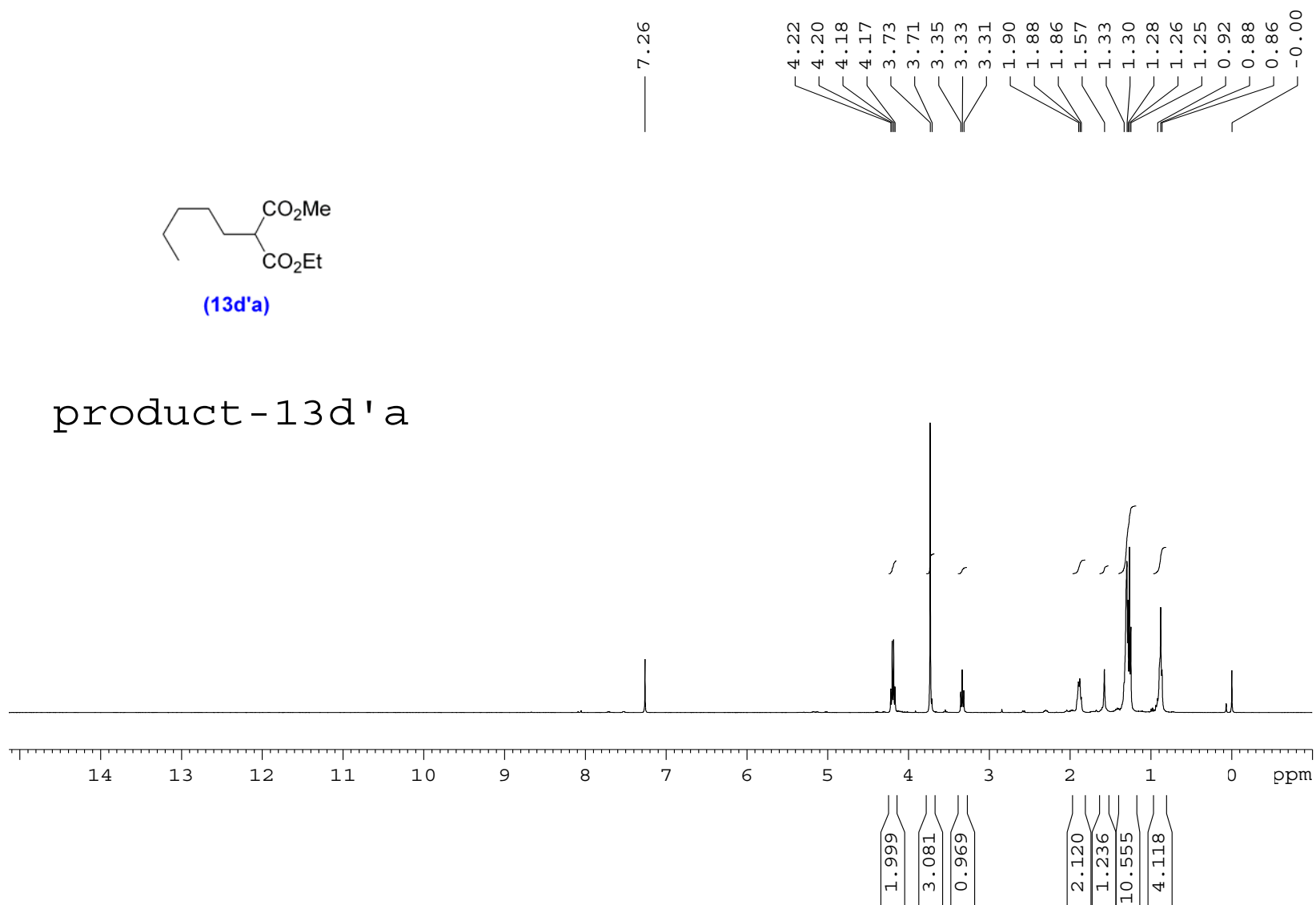
(13c'a)

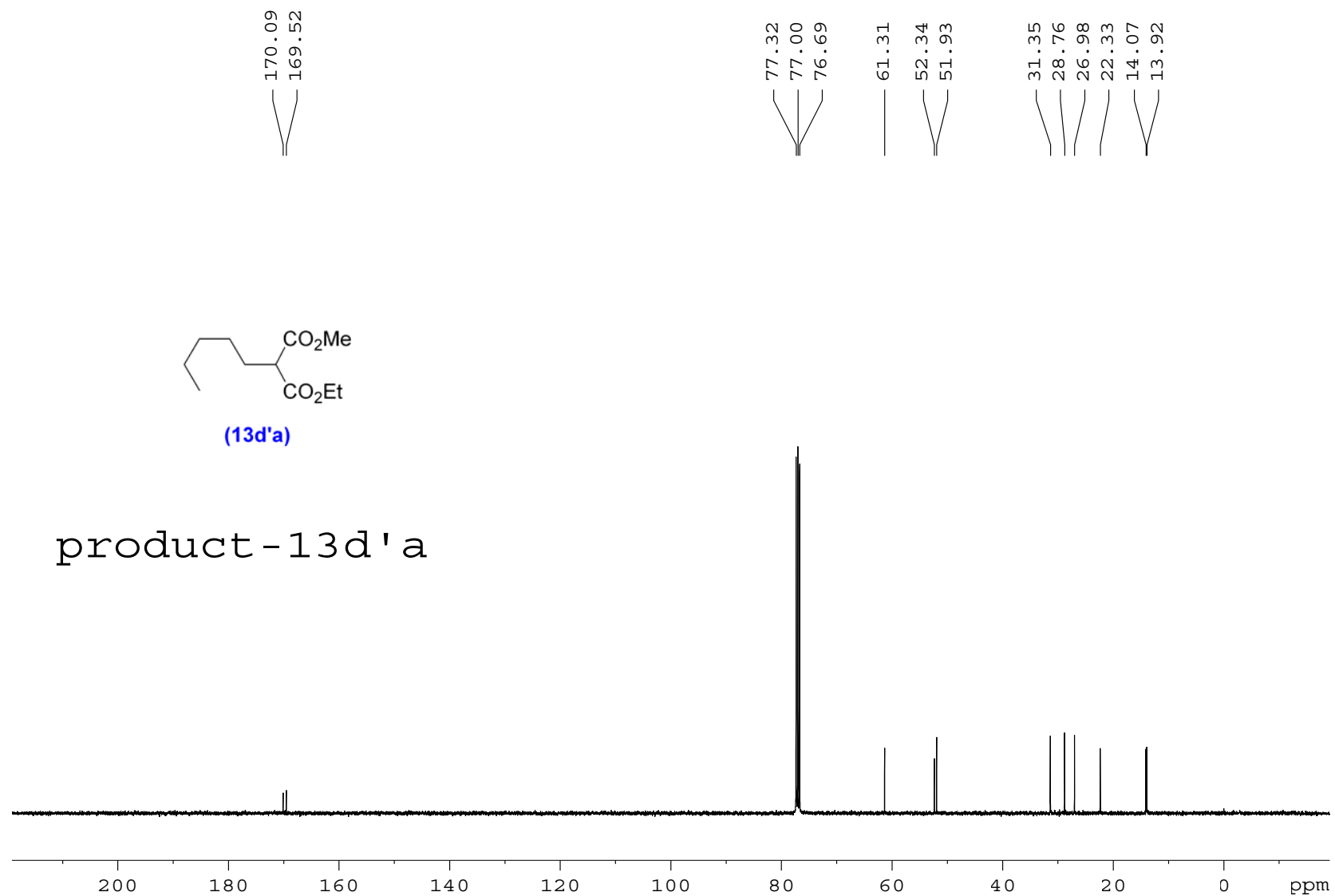


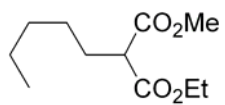


(13d'a)

product-13d'a

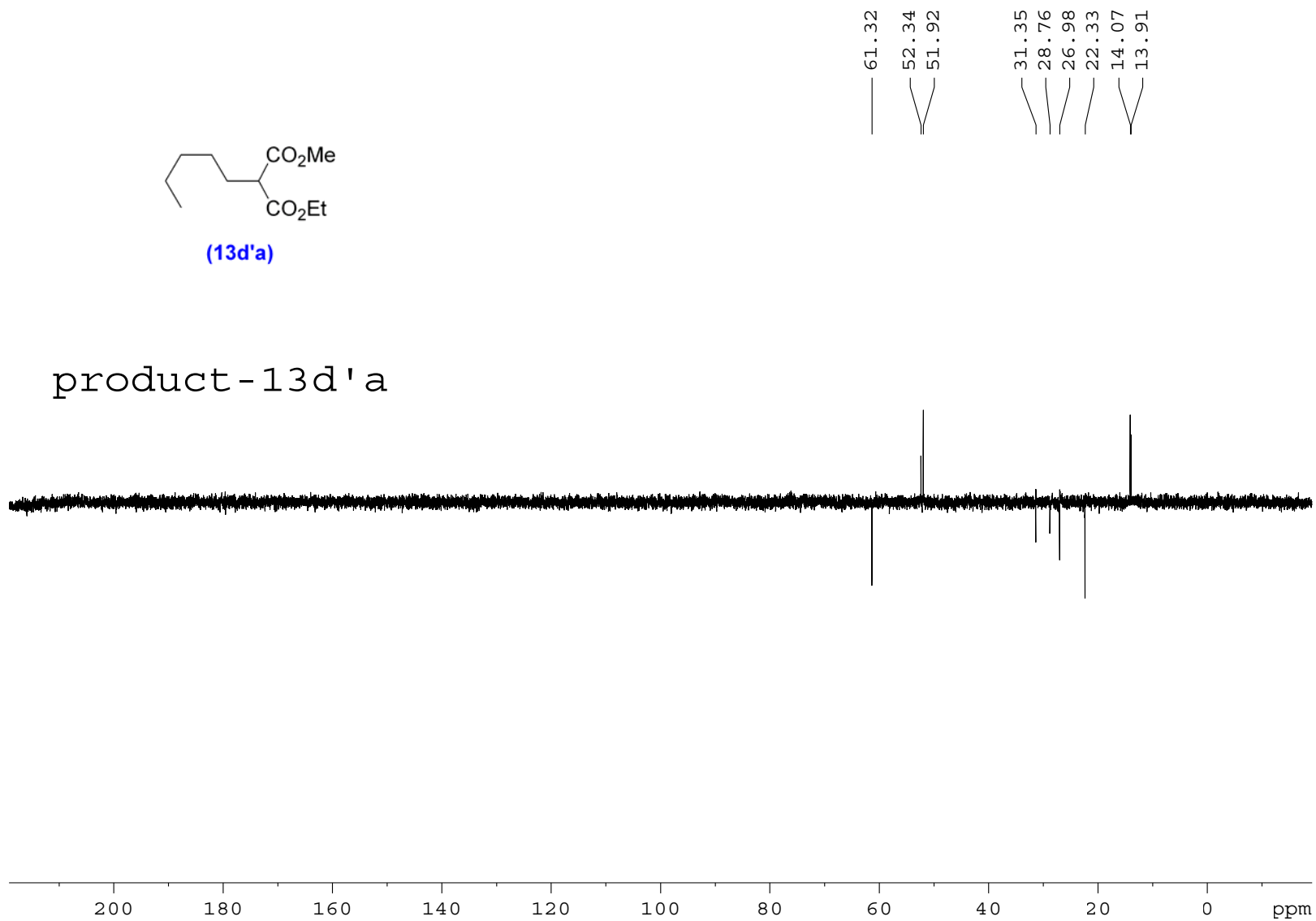


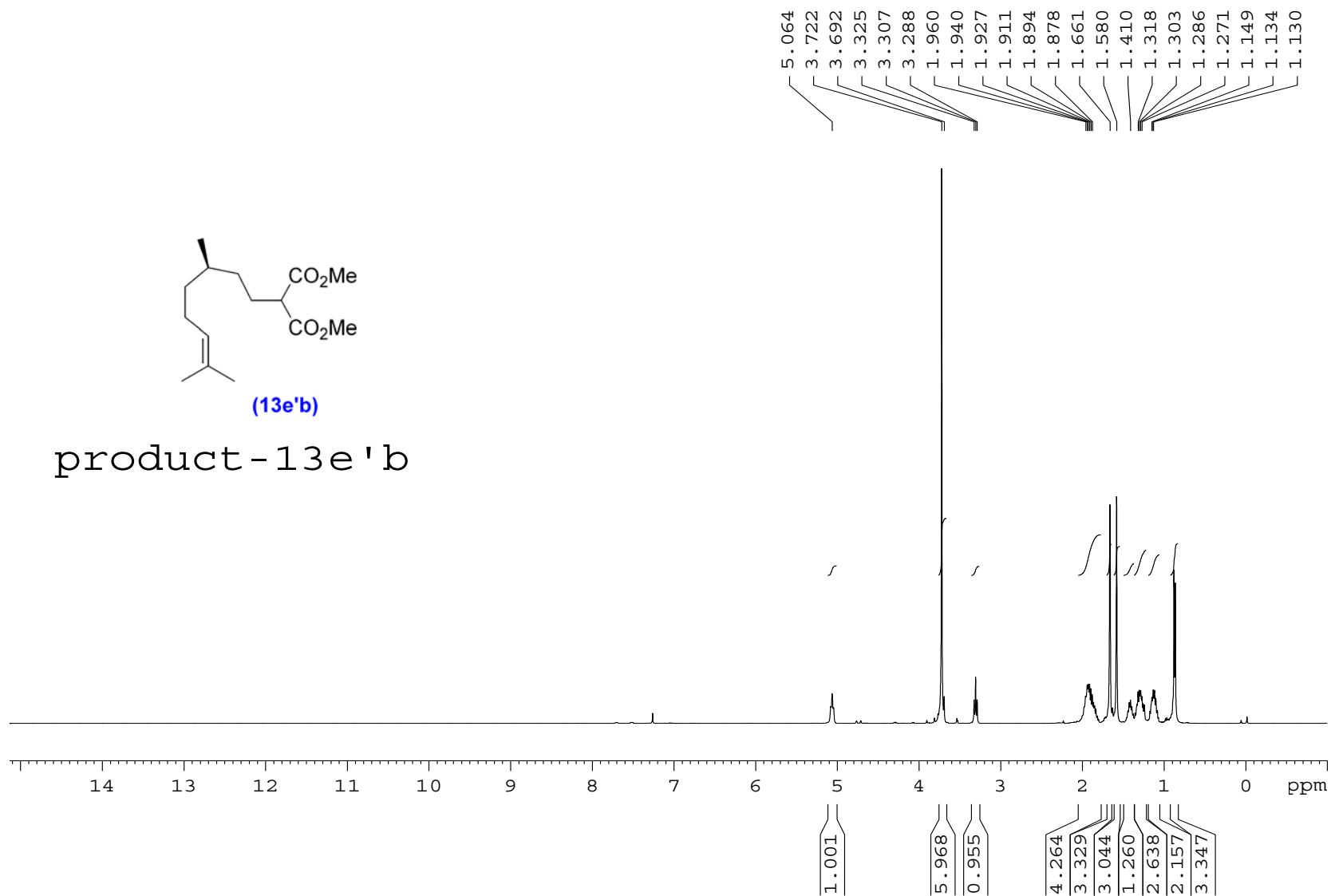


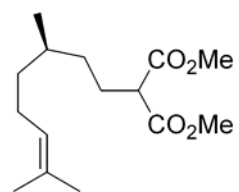


(13d'a)

product-13d'a

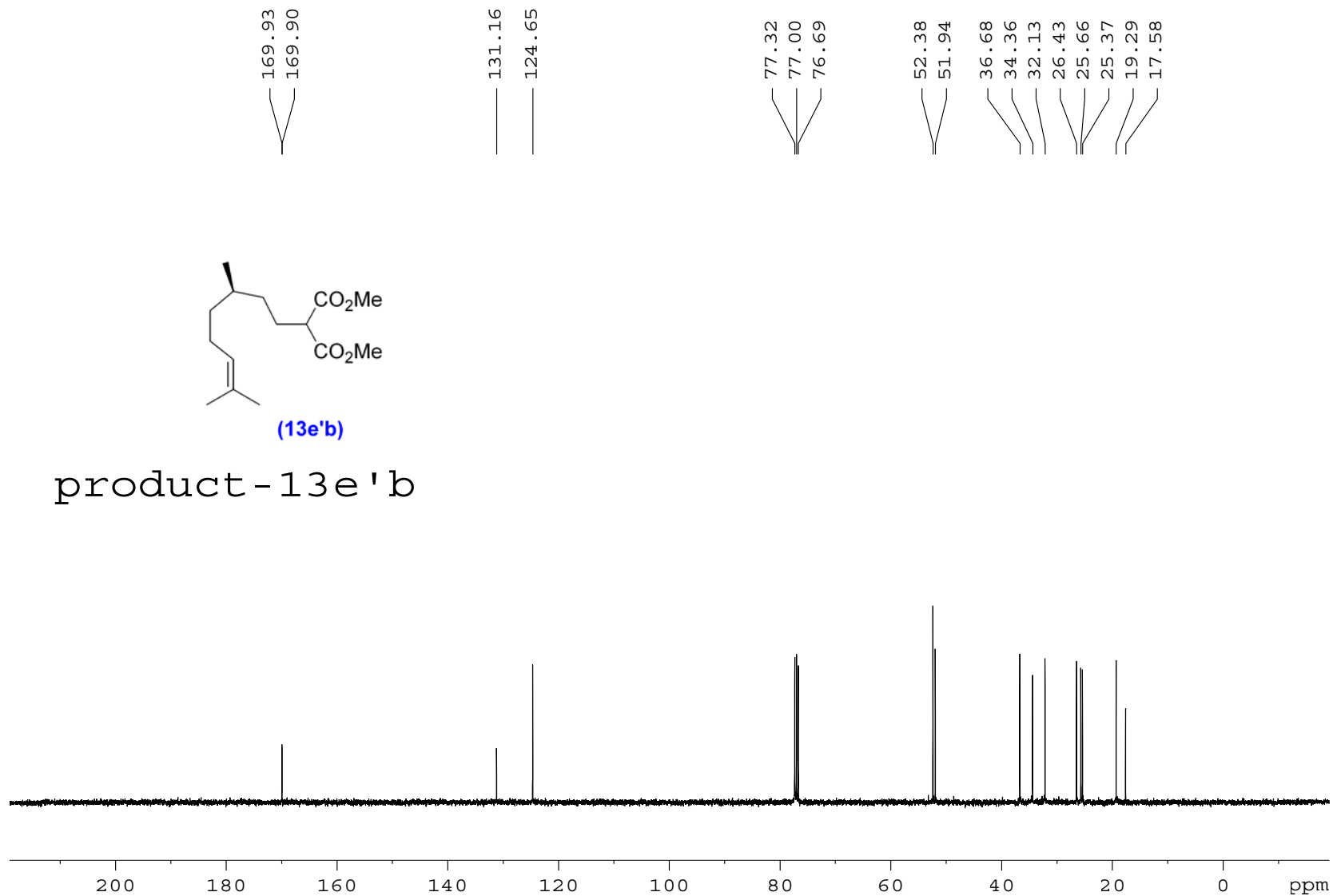


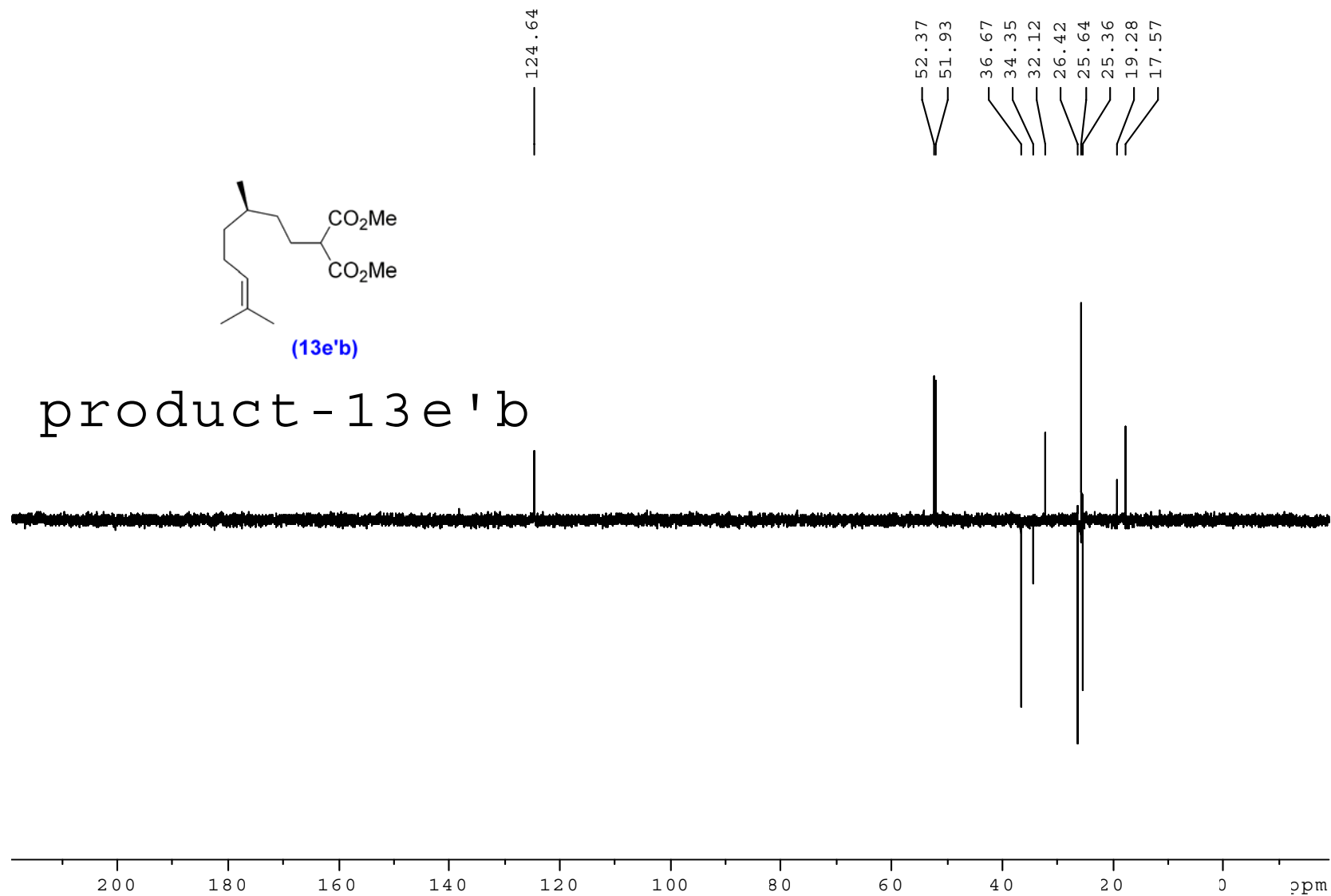


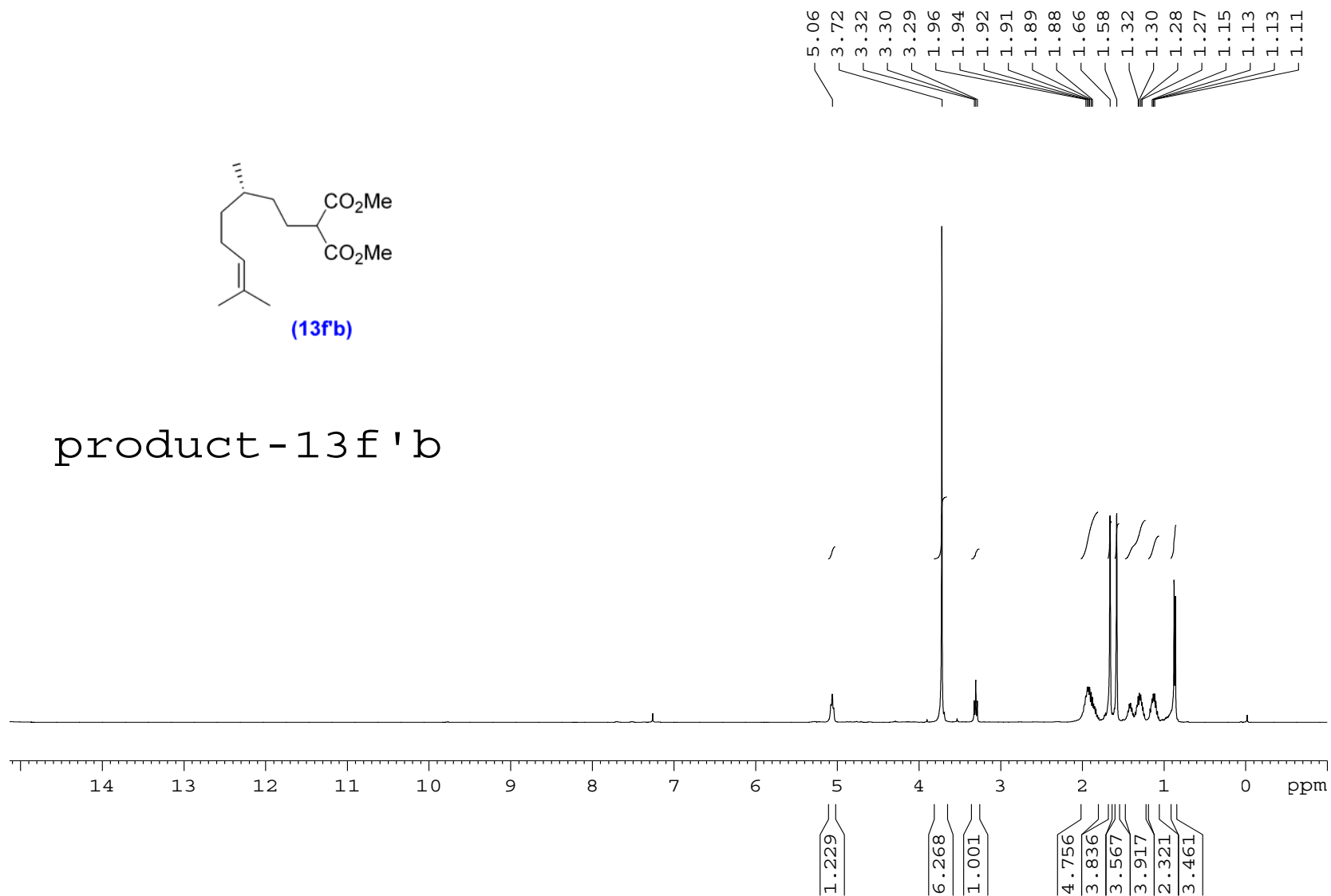


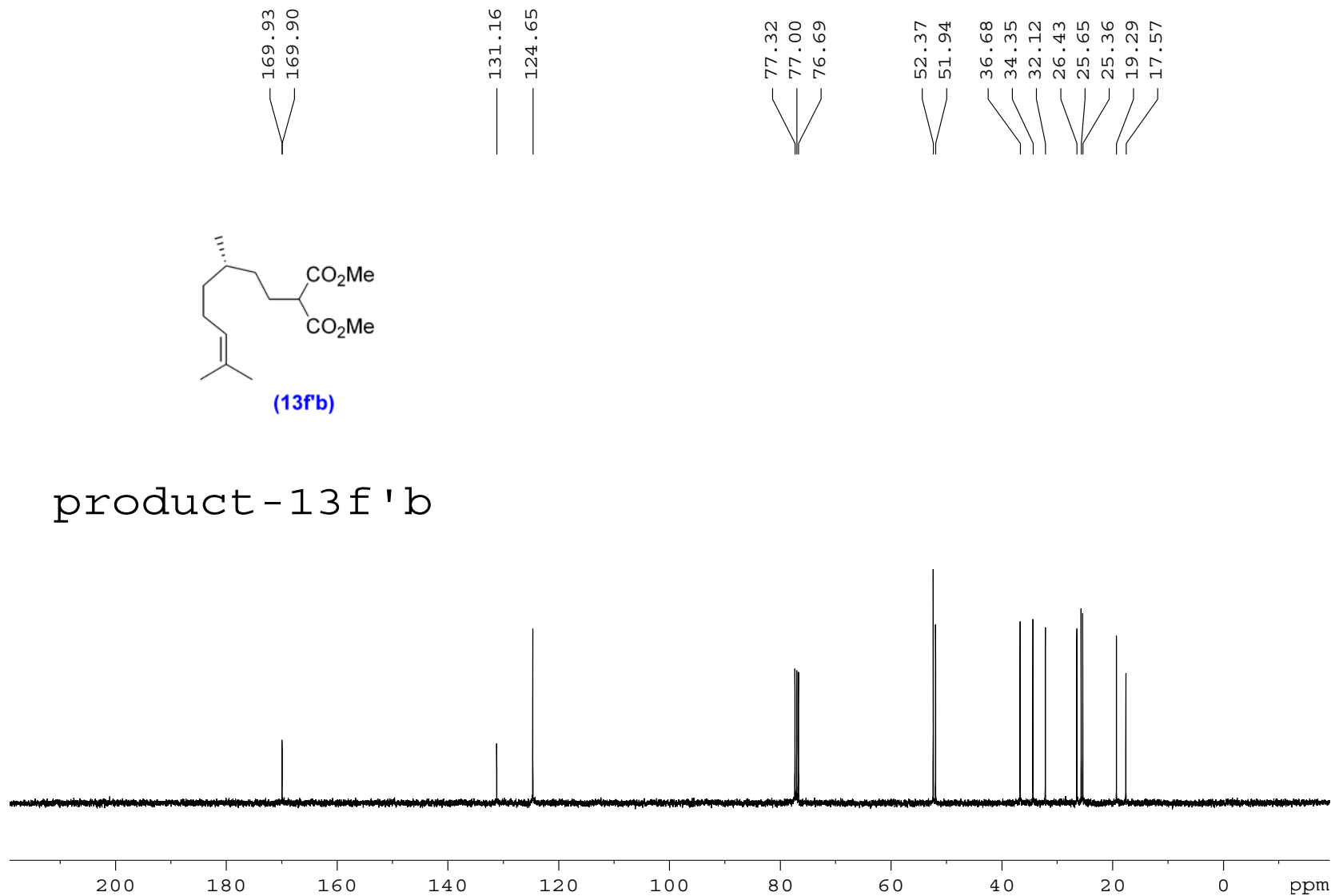
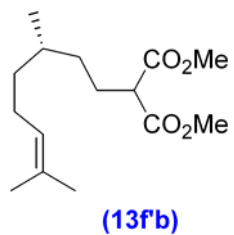
(13e'b)

product-13e'b

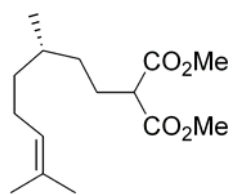




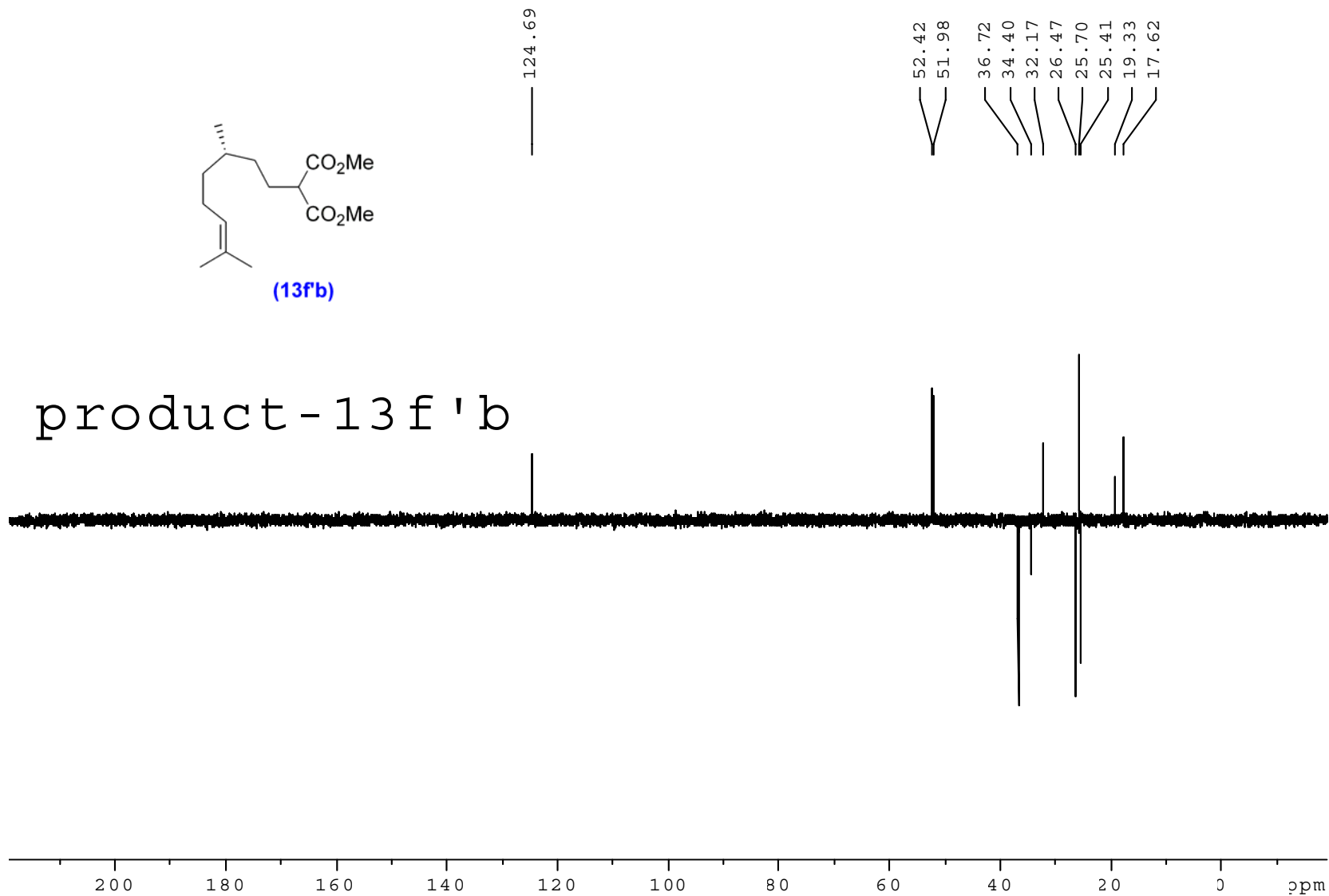


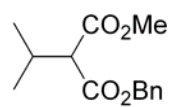


product-13f'b



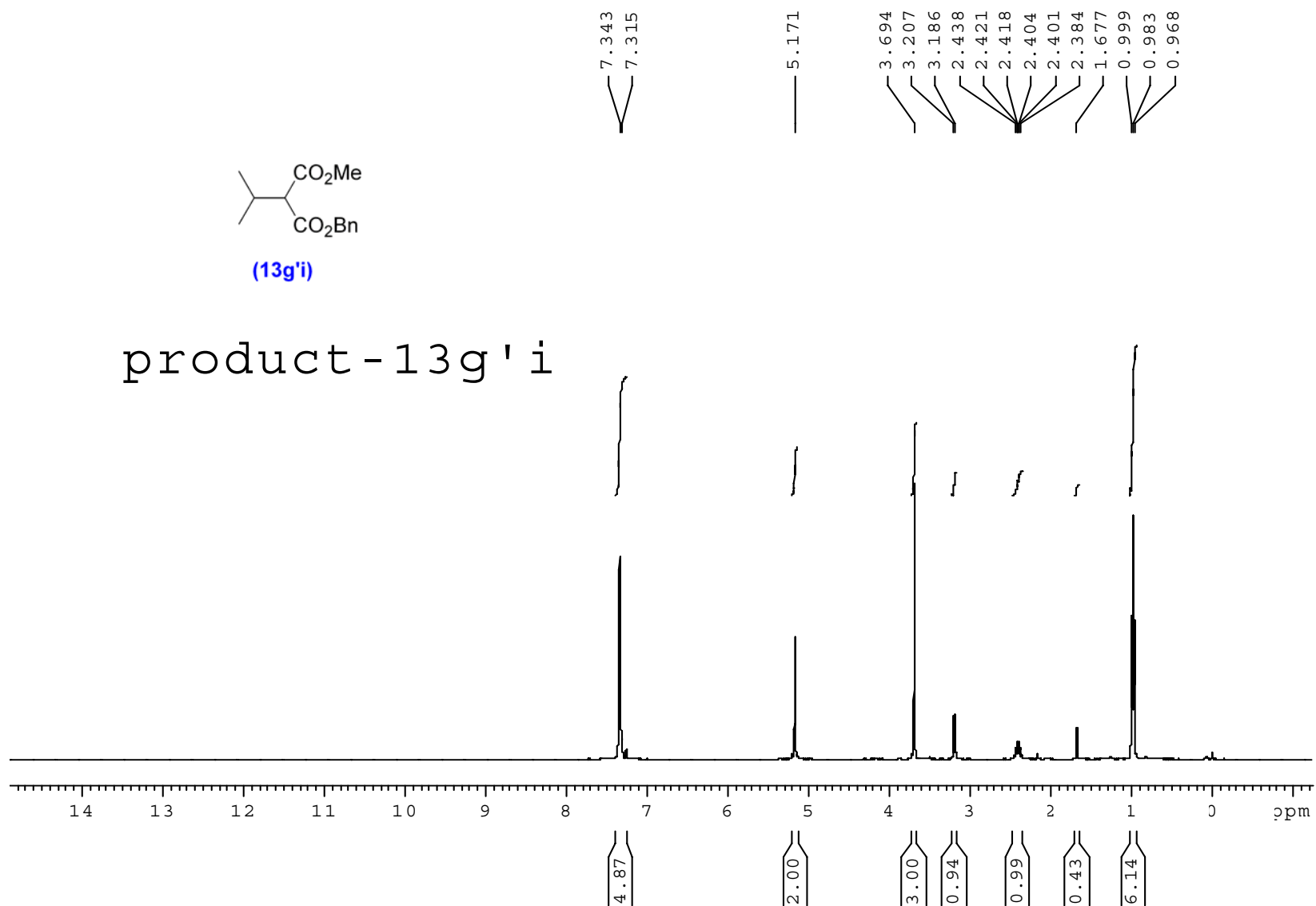
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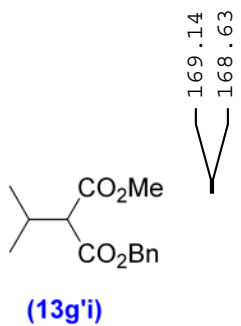




(13g'i)

product - 13g' i





169.14
168.63

135.53
128.54
128.31
128.17

77.37
77.05
76.73

66.86

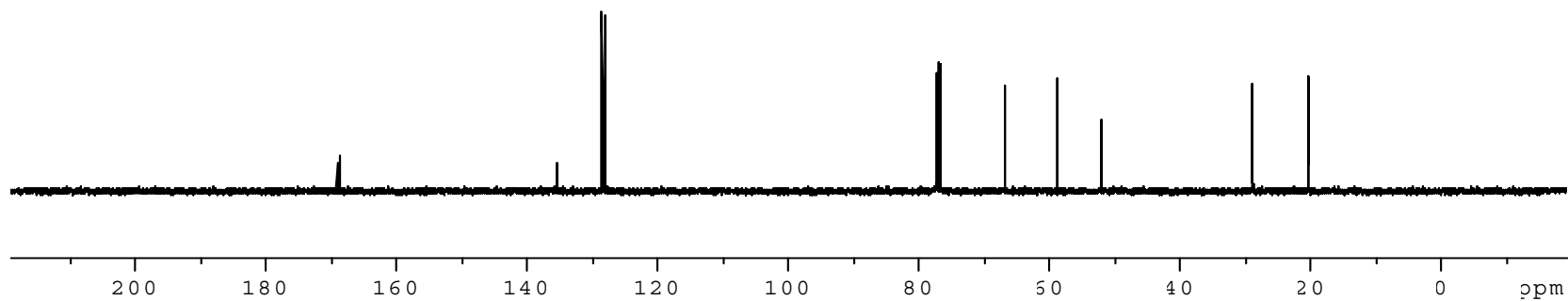
58.89

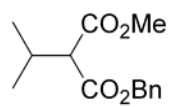
52.19

28.88

20.38
20.33

product - 13g' i





(13g'i)

128.54
128.31
128.18

66.86

58.89

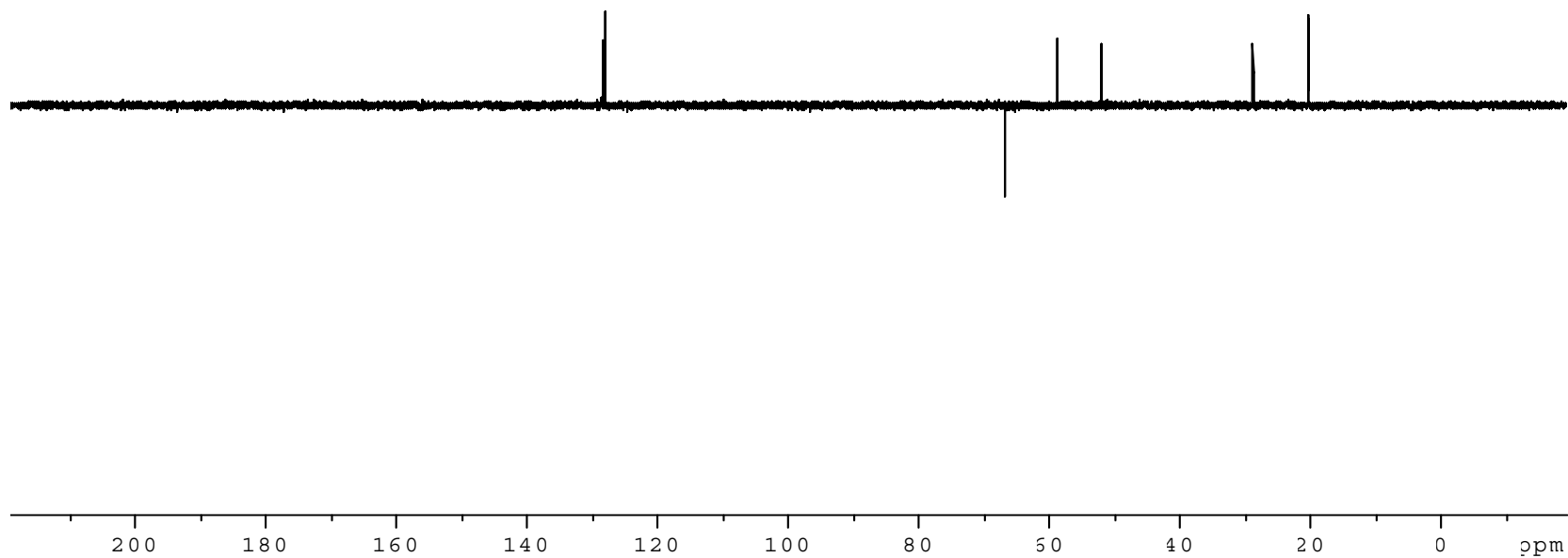
52.19

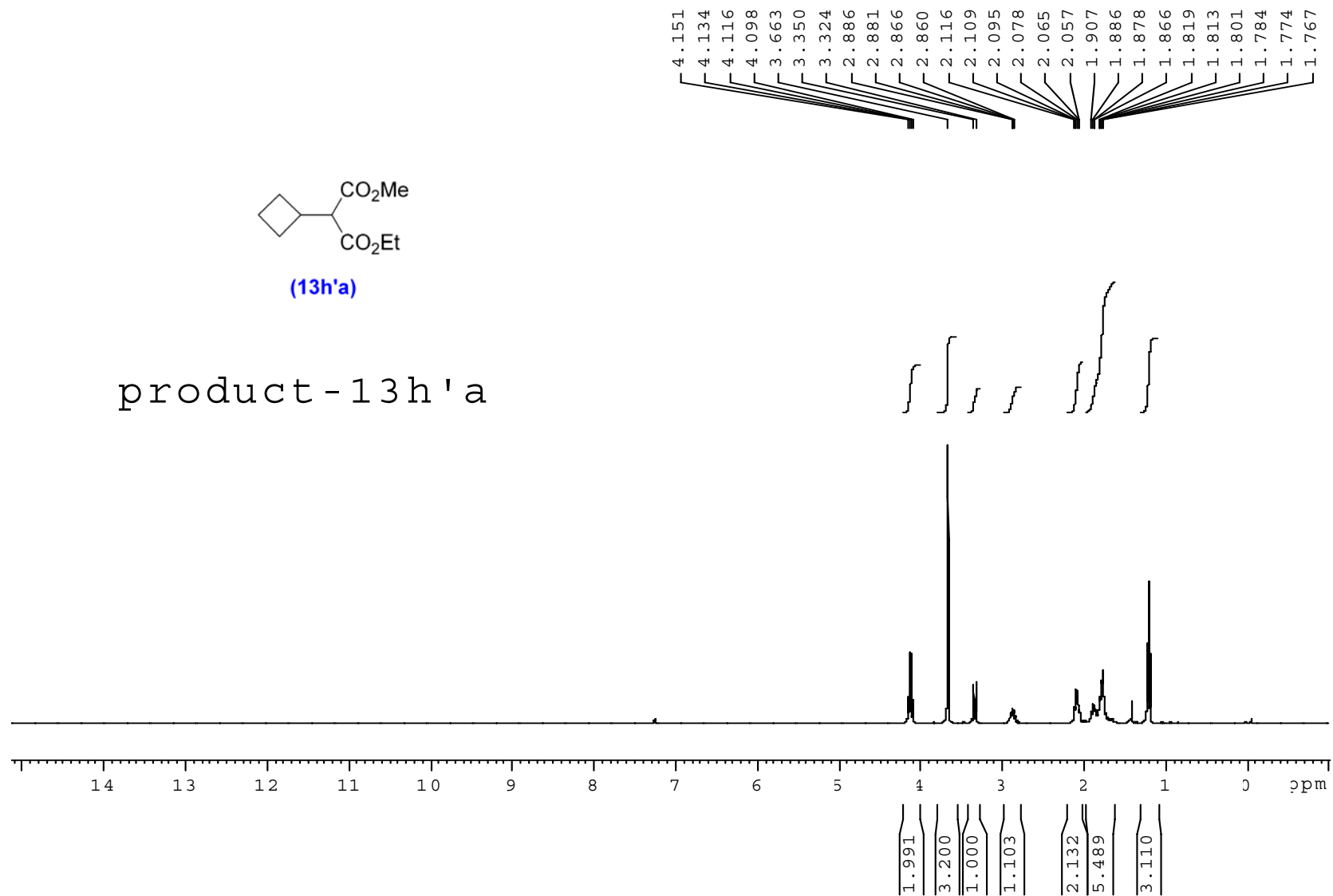
28.88

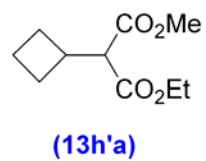
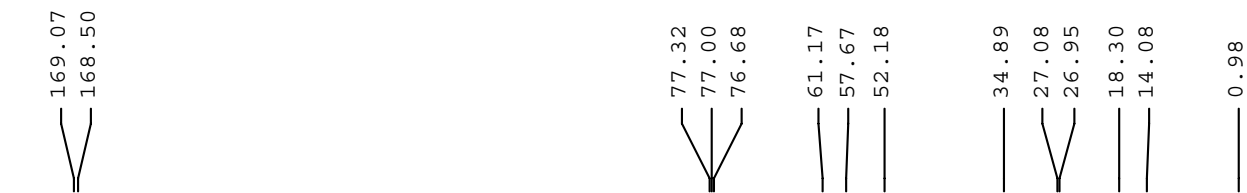
20.38

20.33

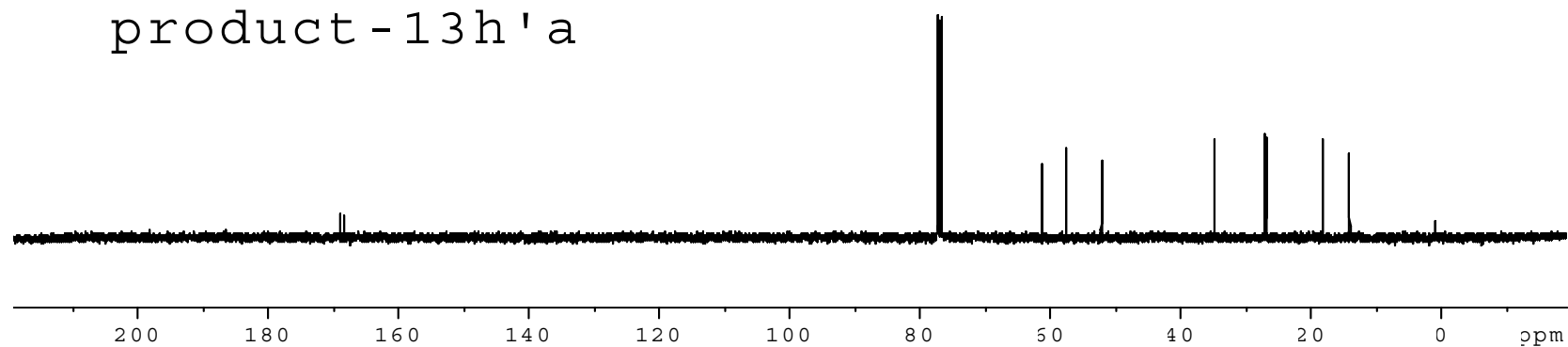
product - 13g' i

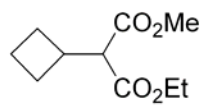




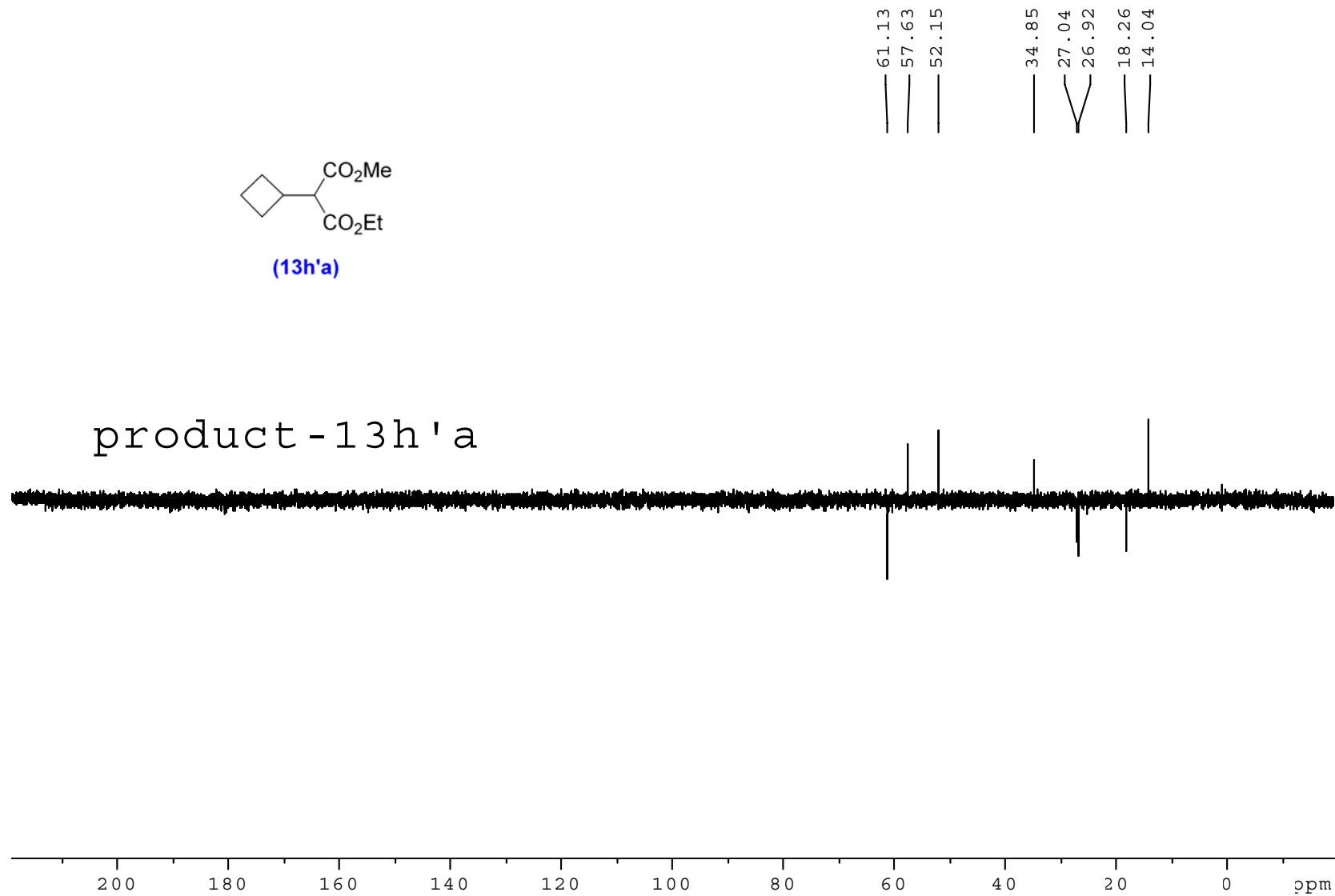


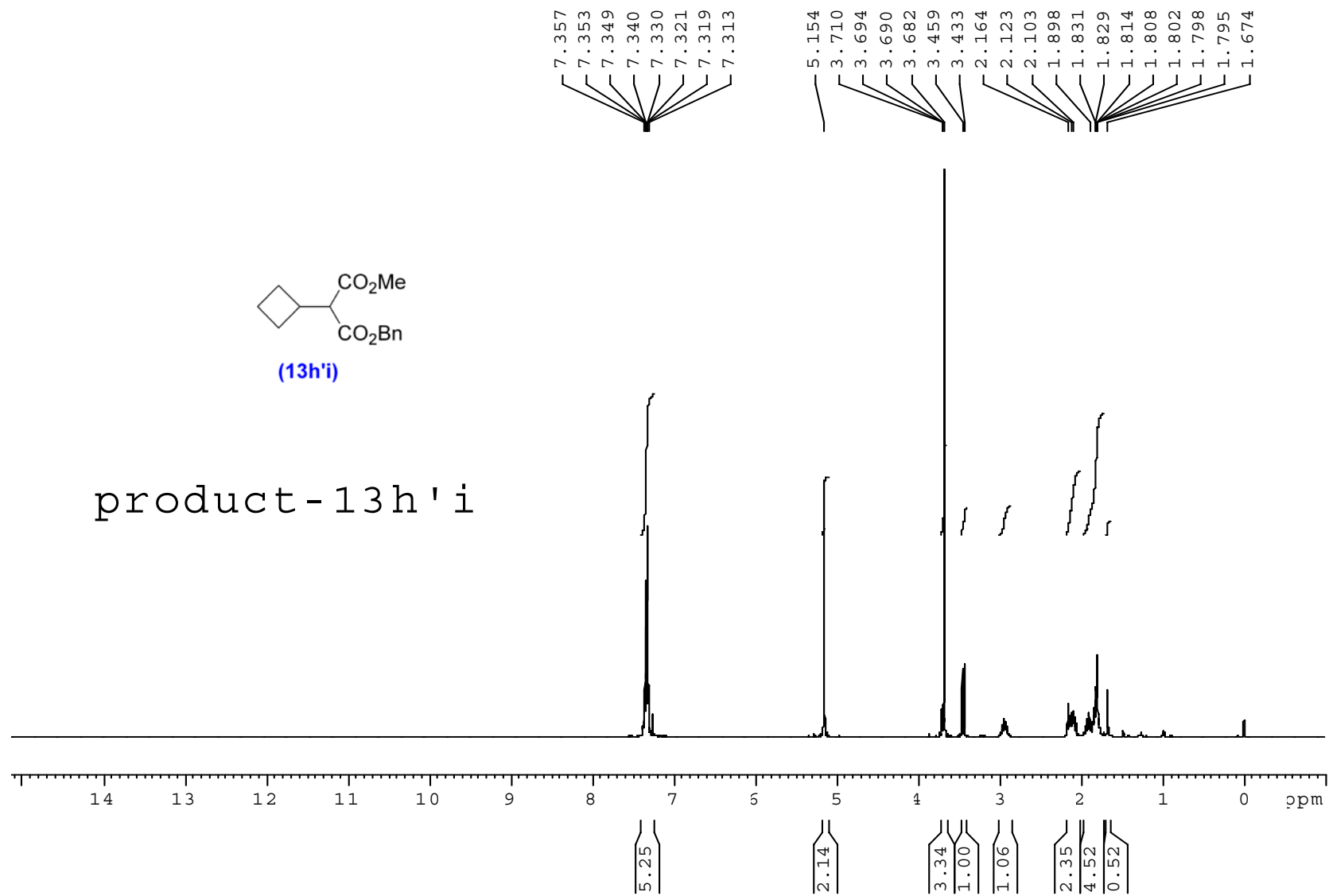
product-13h'a

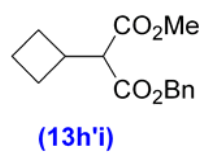
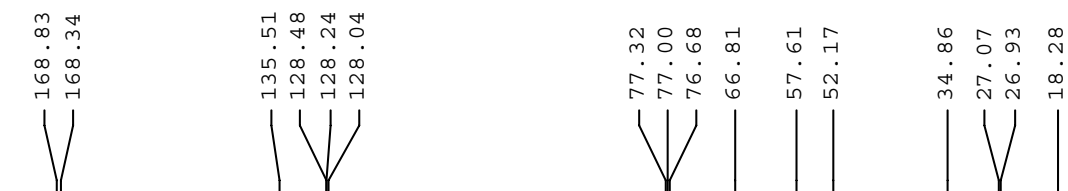




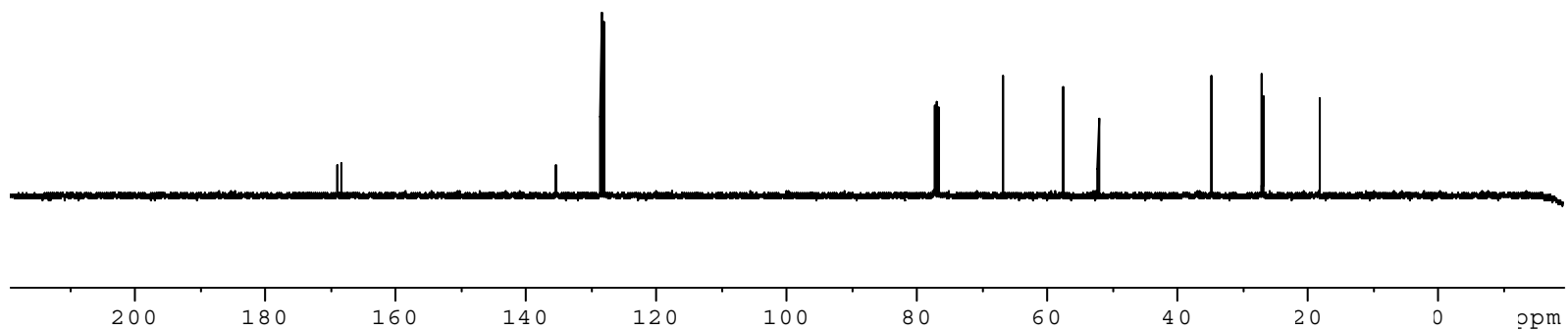
(13h'a)

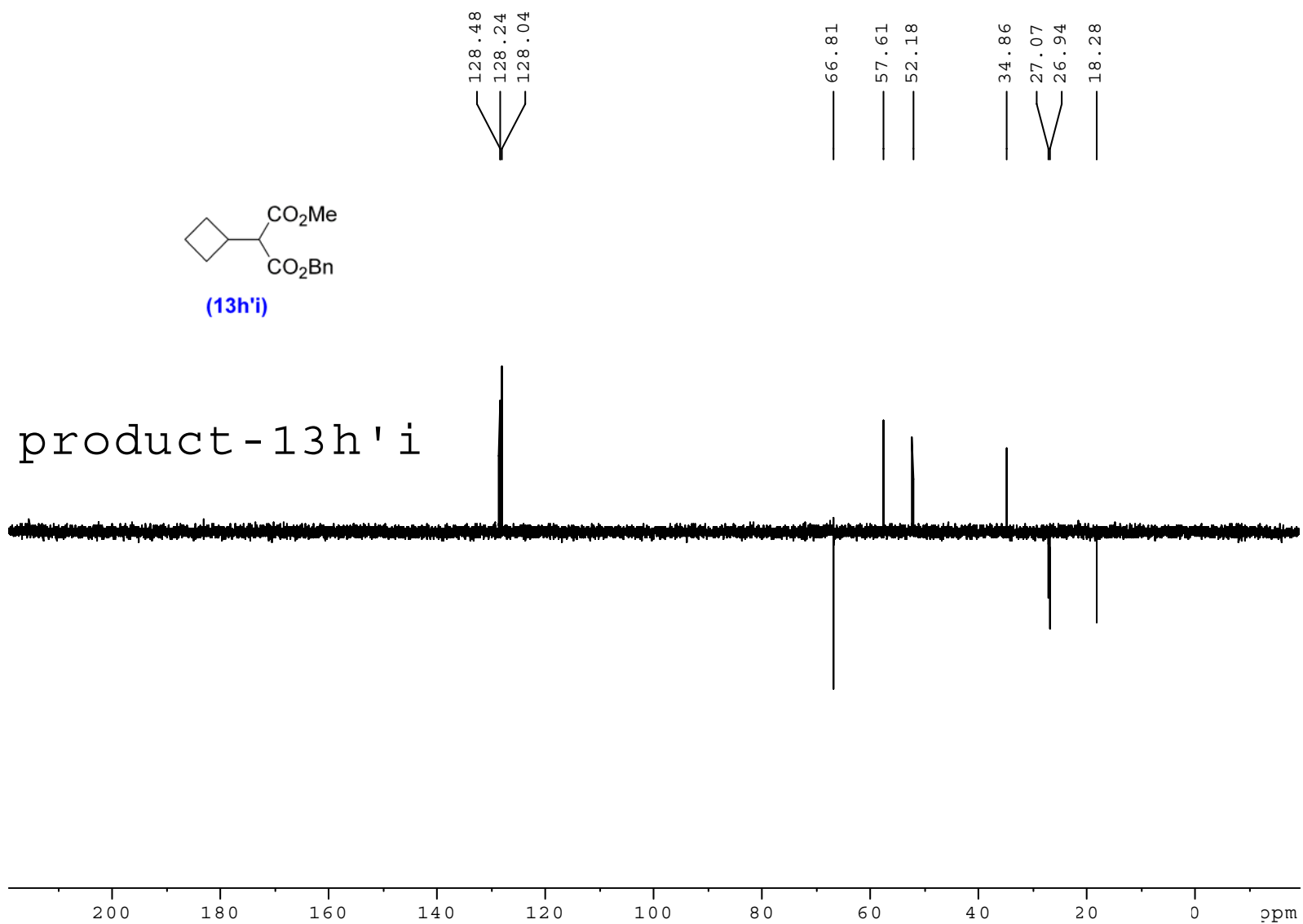


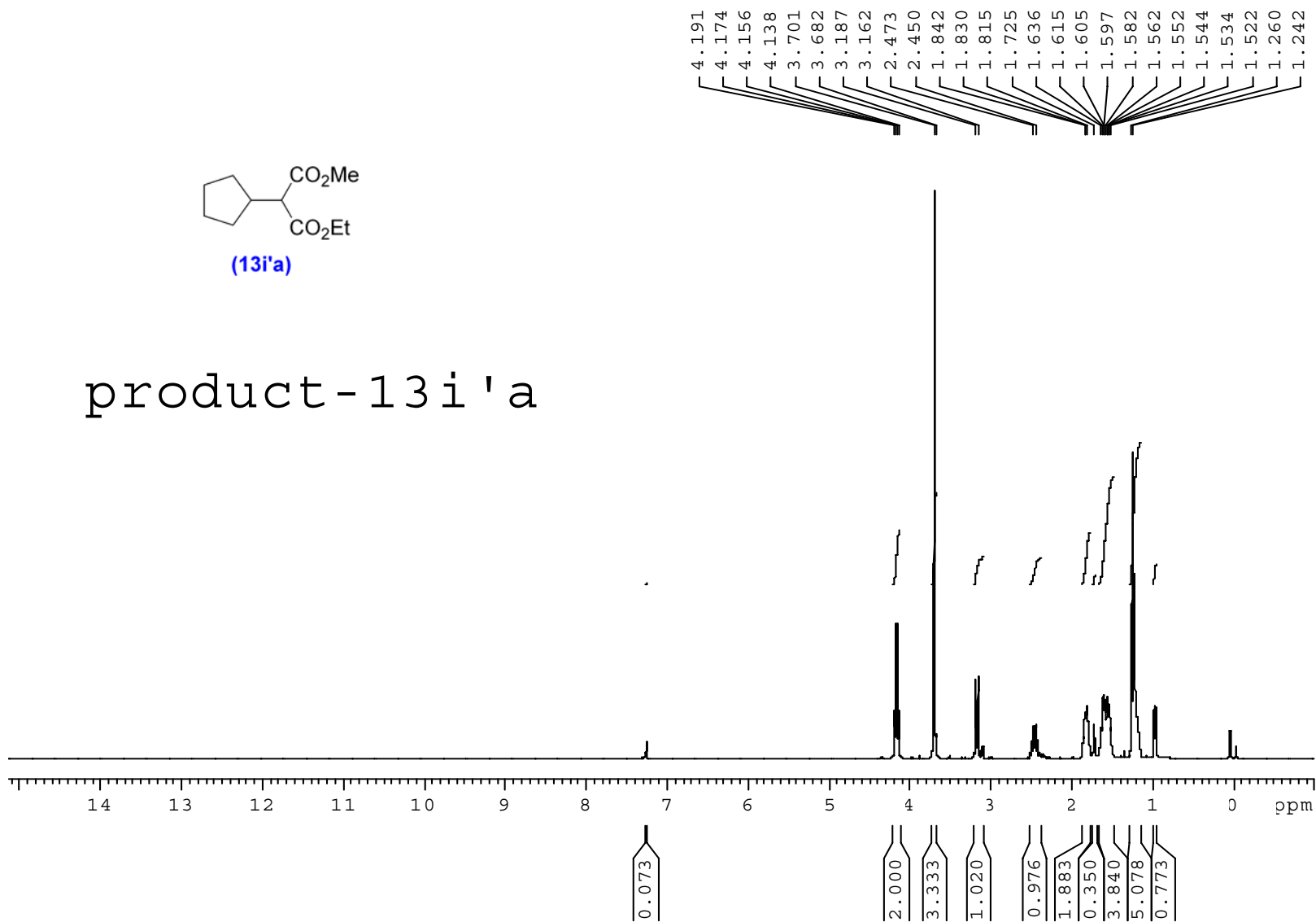
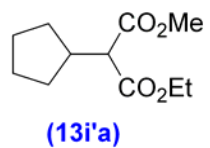


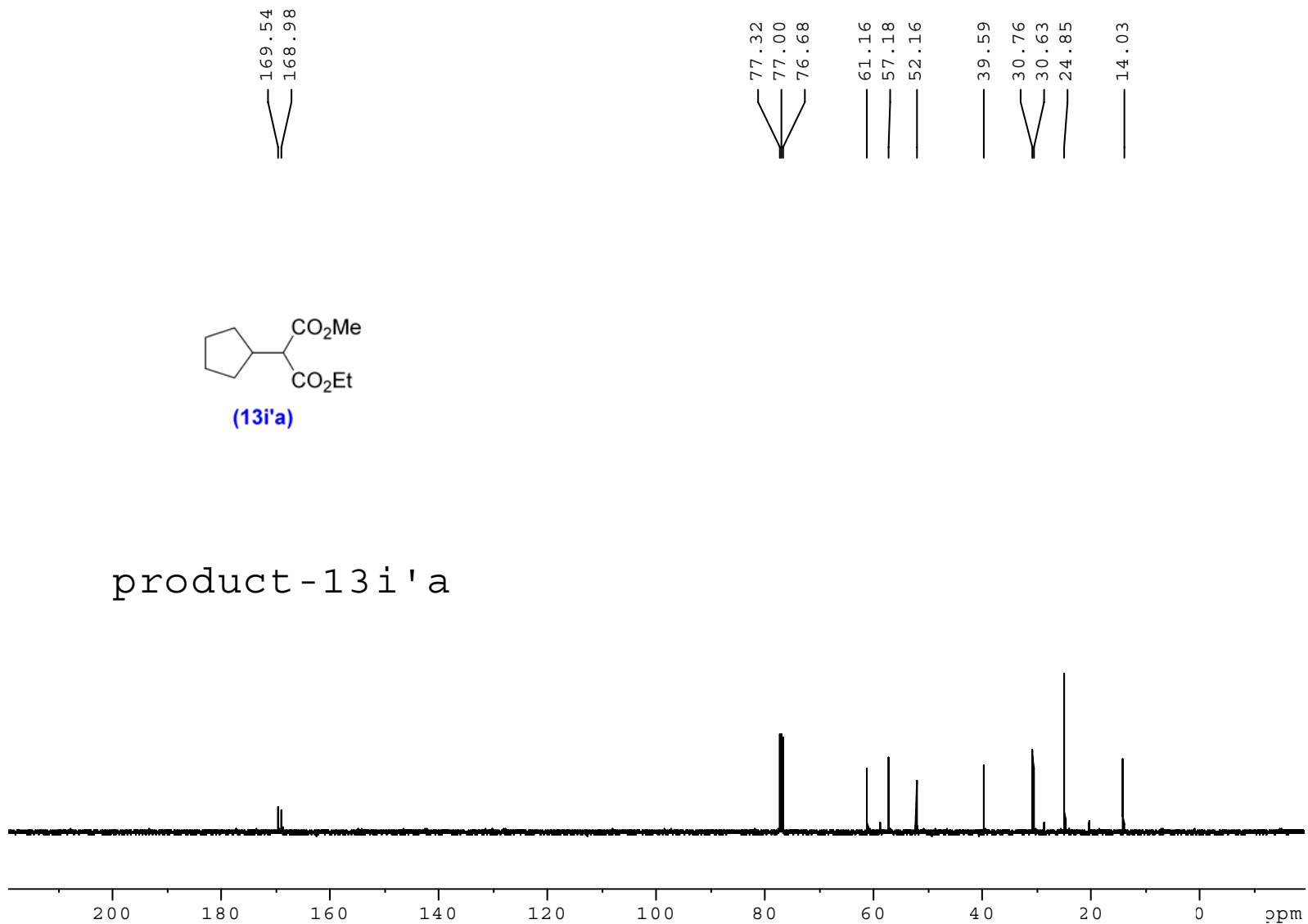
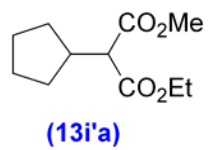


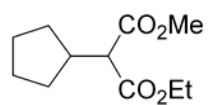
product-13h' i



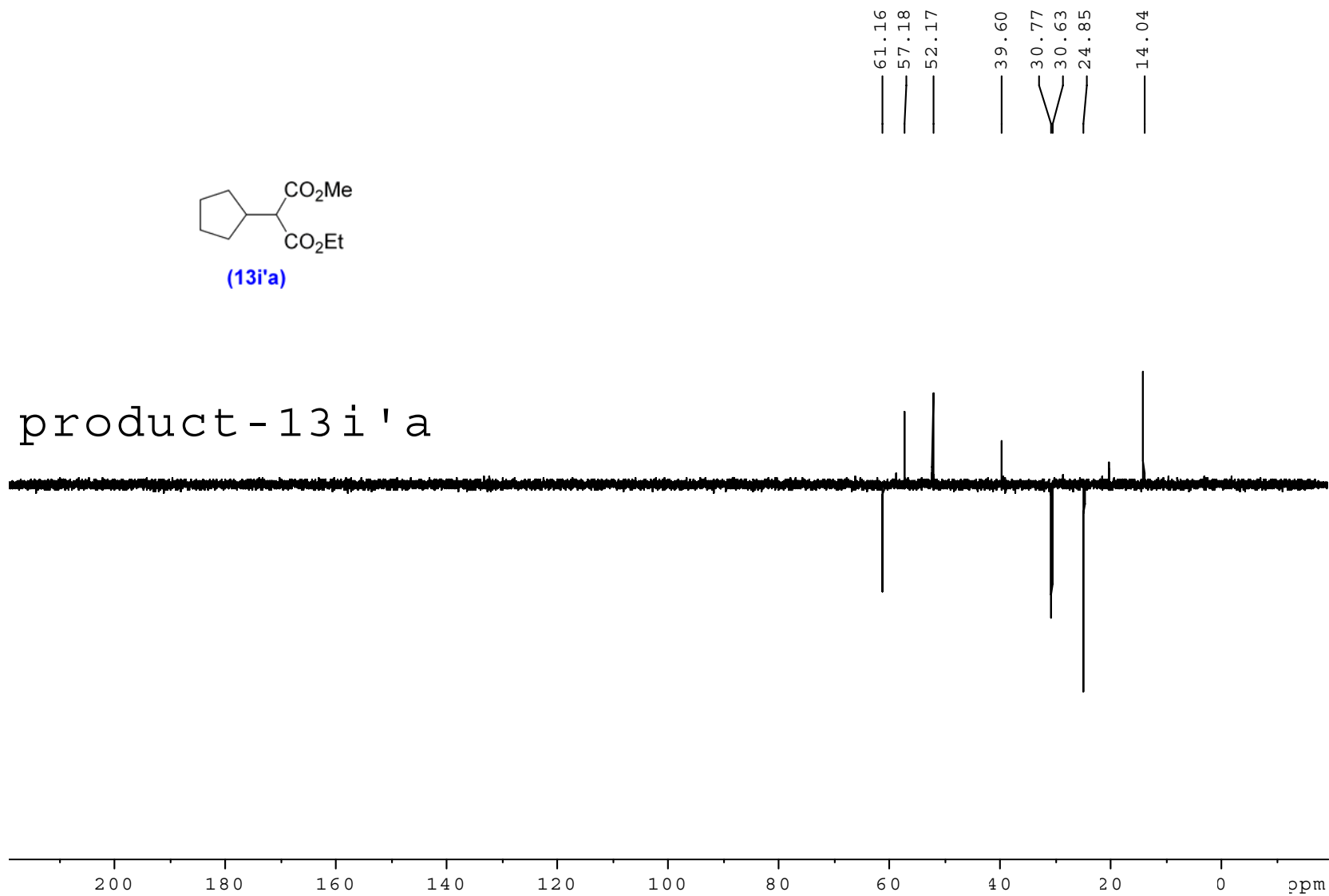


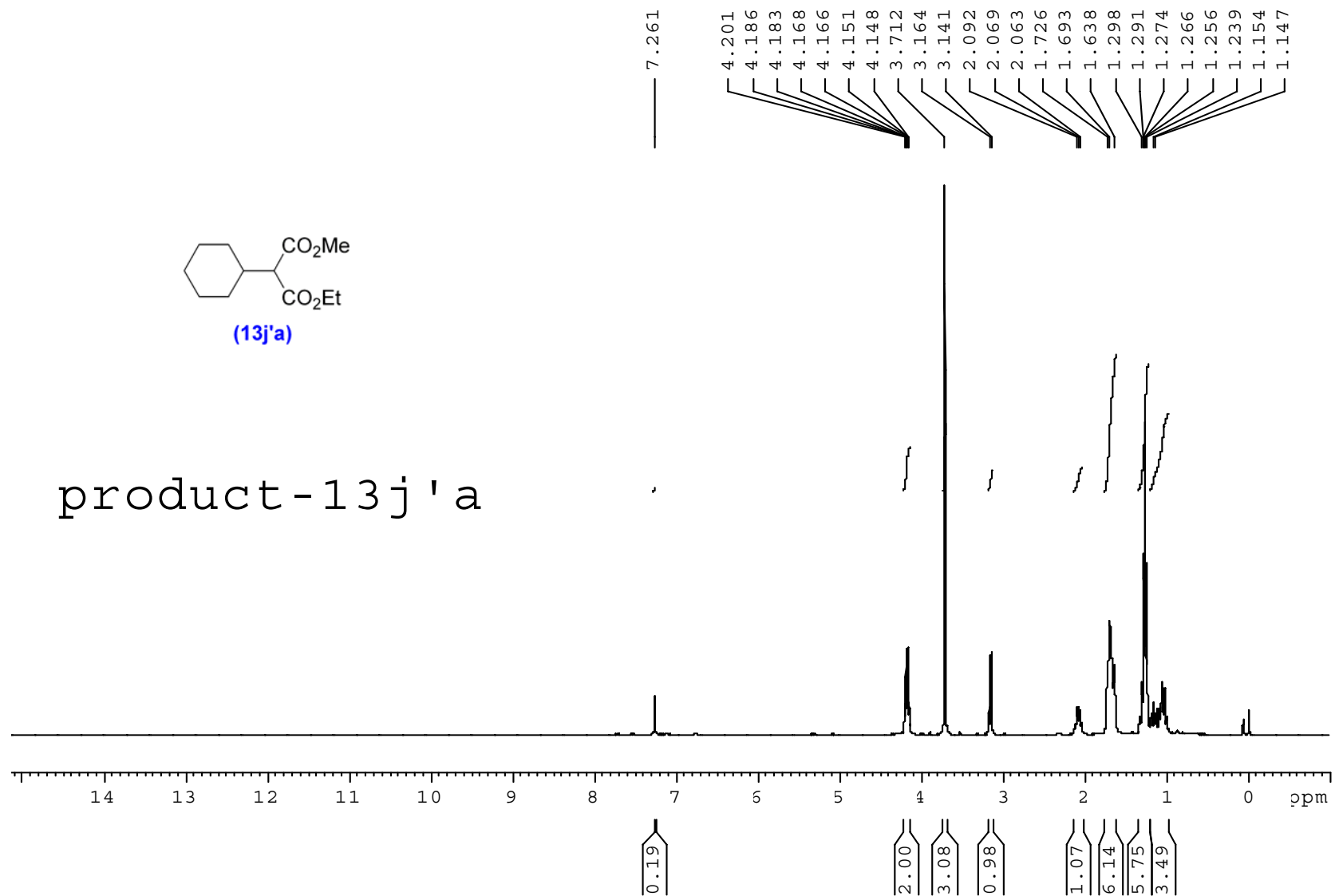


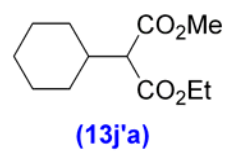




(13i'a)







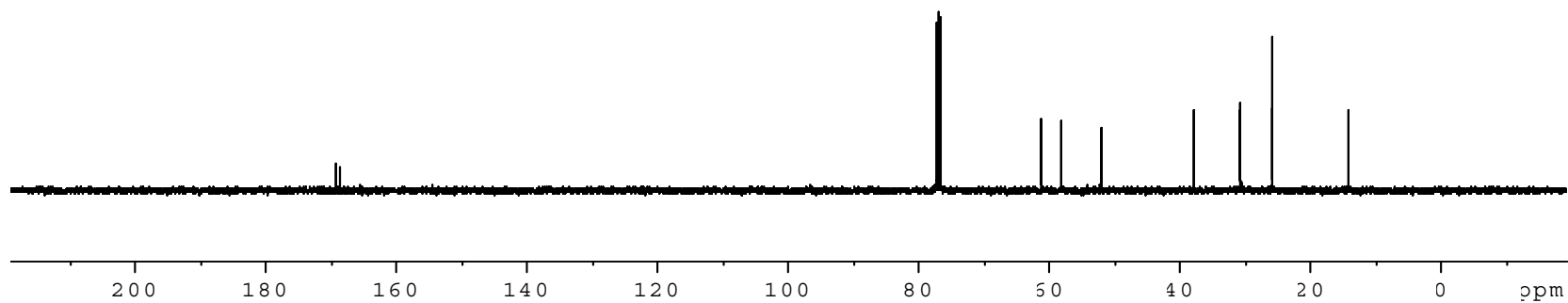
169.26
168.69

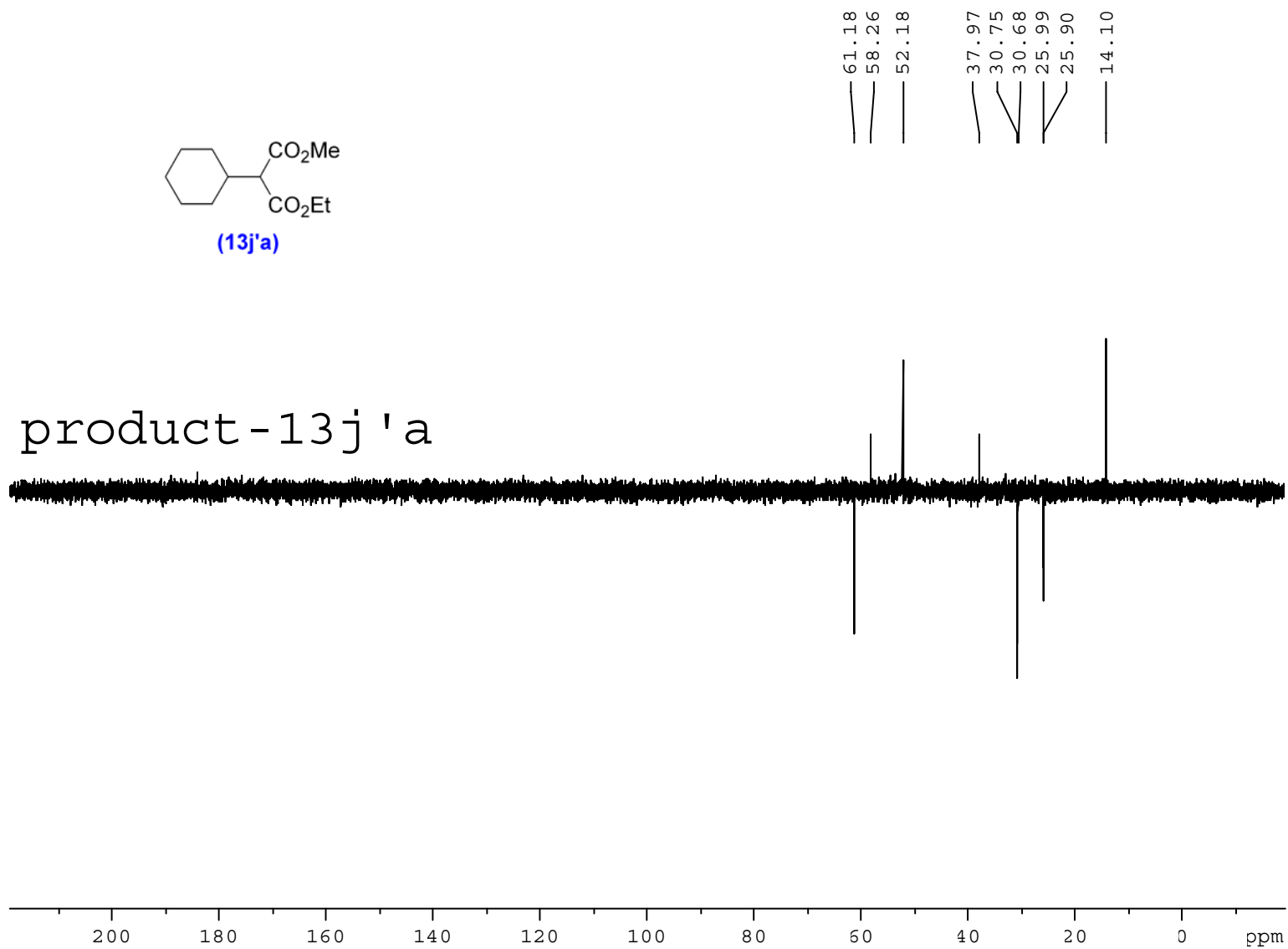
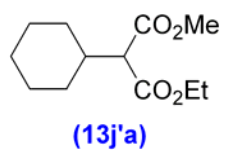
77.32
77.00
76.69

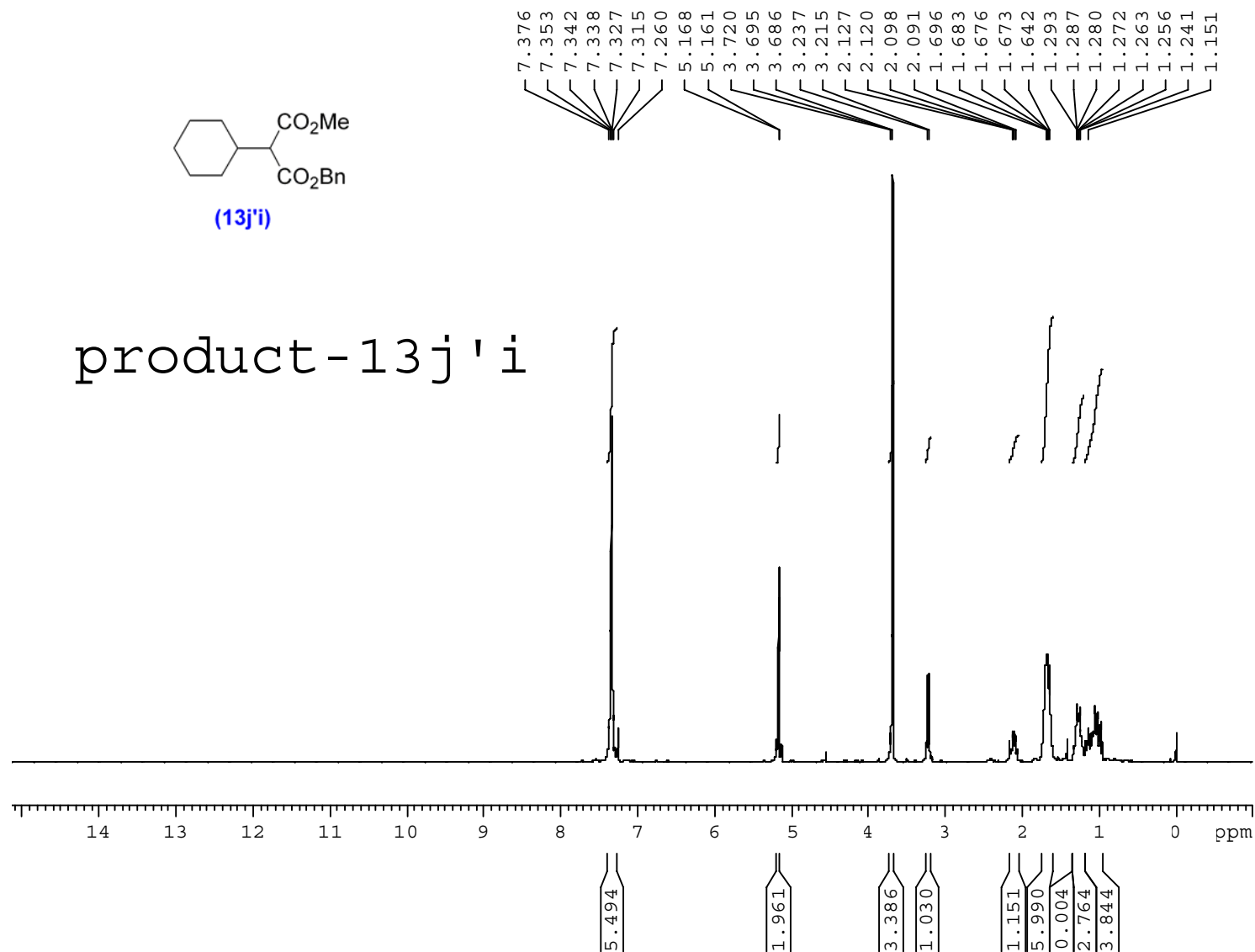
61.18
58.26
52.17

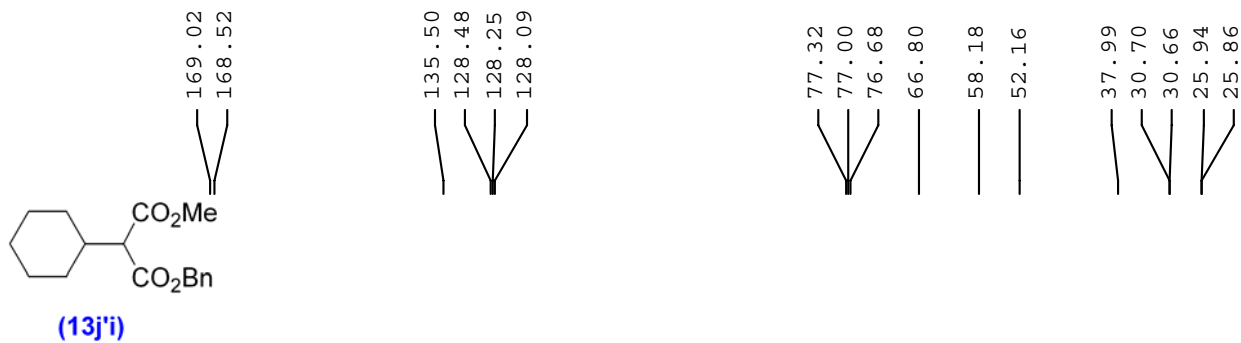
37.97
30.75
30.67
25.99
25.90
14.09

product-13j'a

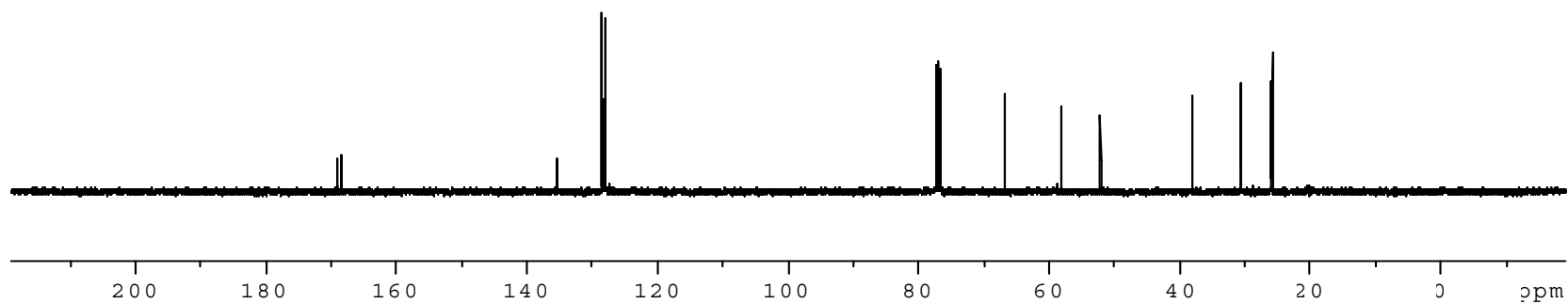


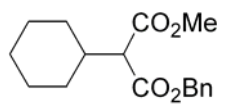






product - 13j ' i





(13j'i)

128.49
128.25
128.09

66.80

58.18

52.16

38.00

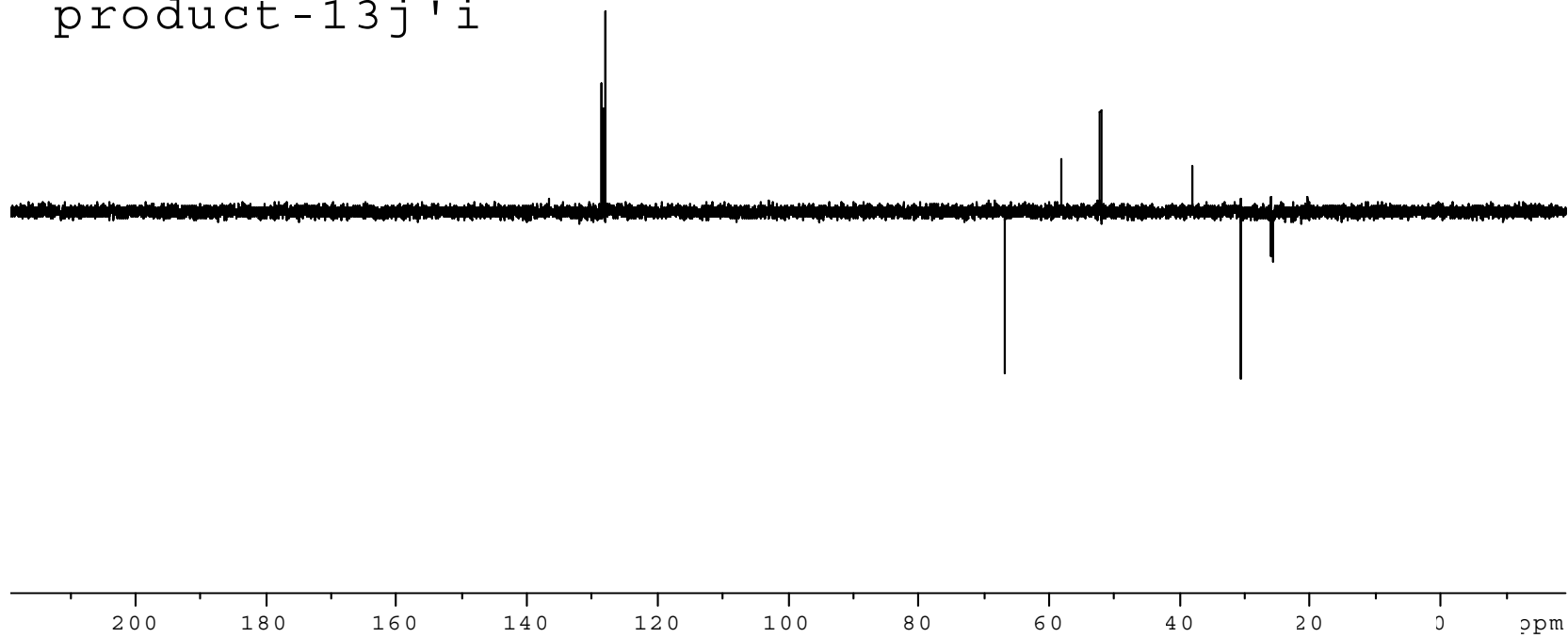
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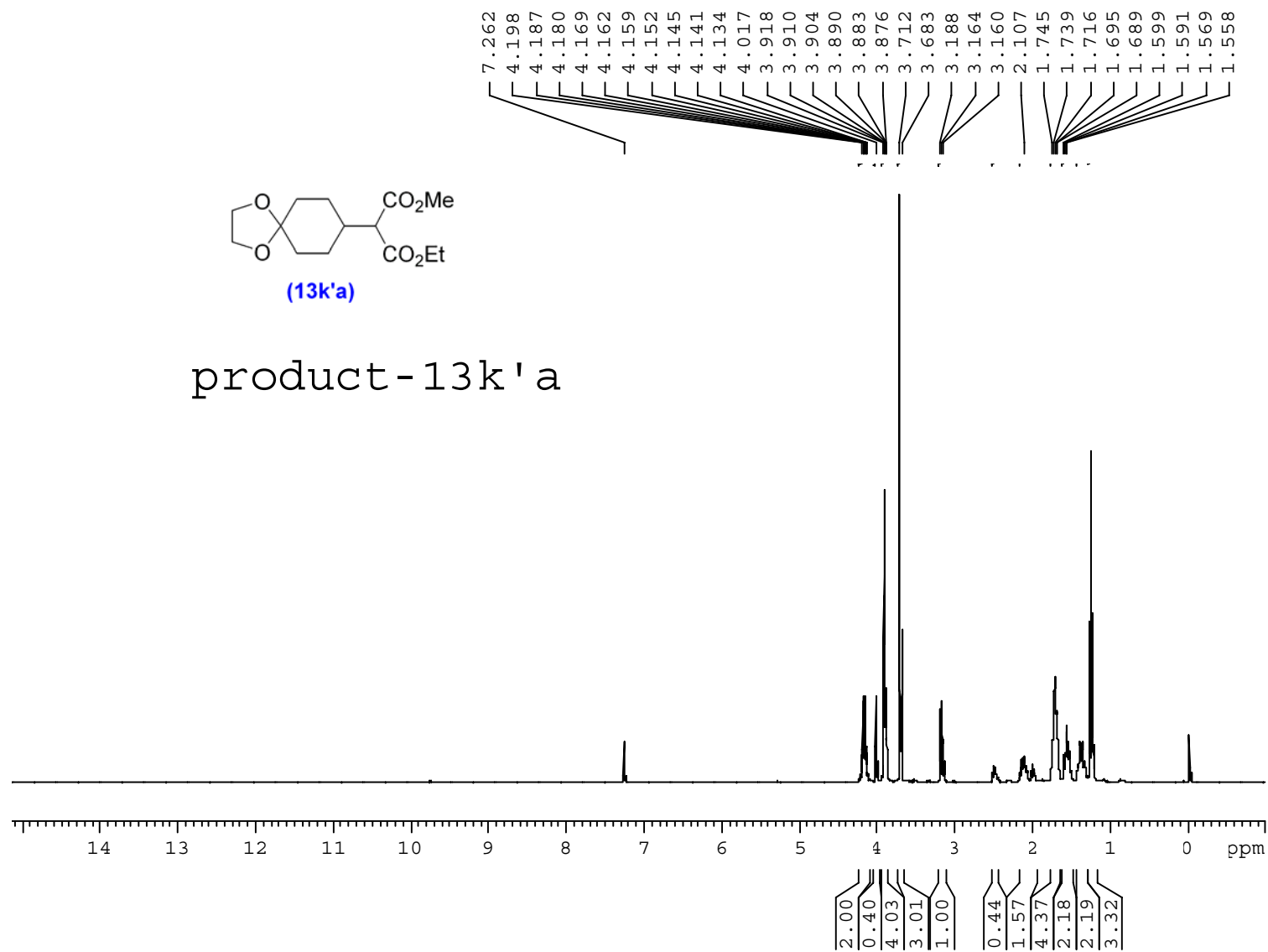
30.66

25.94

25.86

product - 13j ' i





169.07
168.51

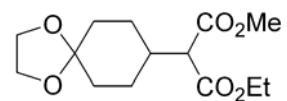
108.20

77.32
77.00
76.69

64.62
64.24
64.20
61.29
57.24
52.26

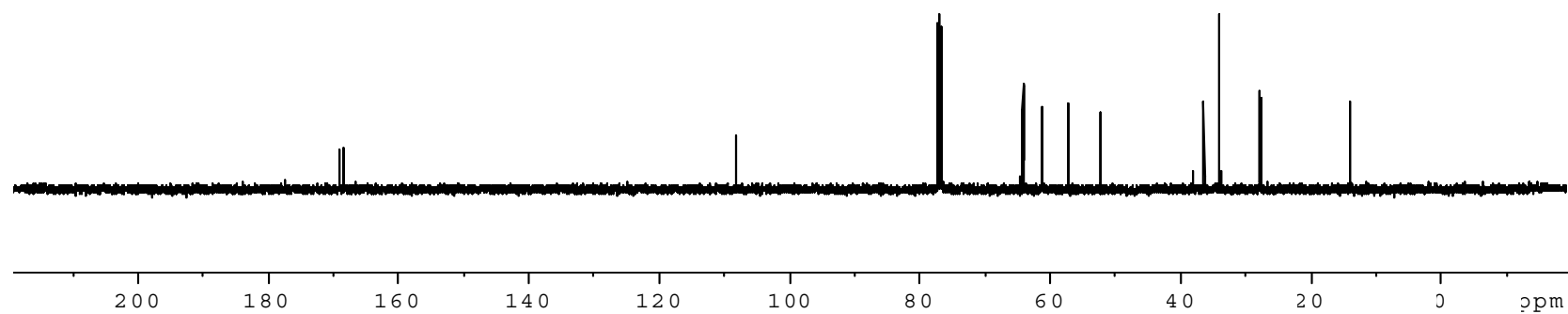
38.13
36.44
34.15
33.84
27.86
27.75

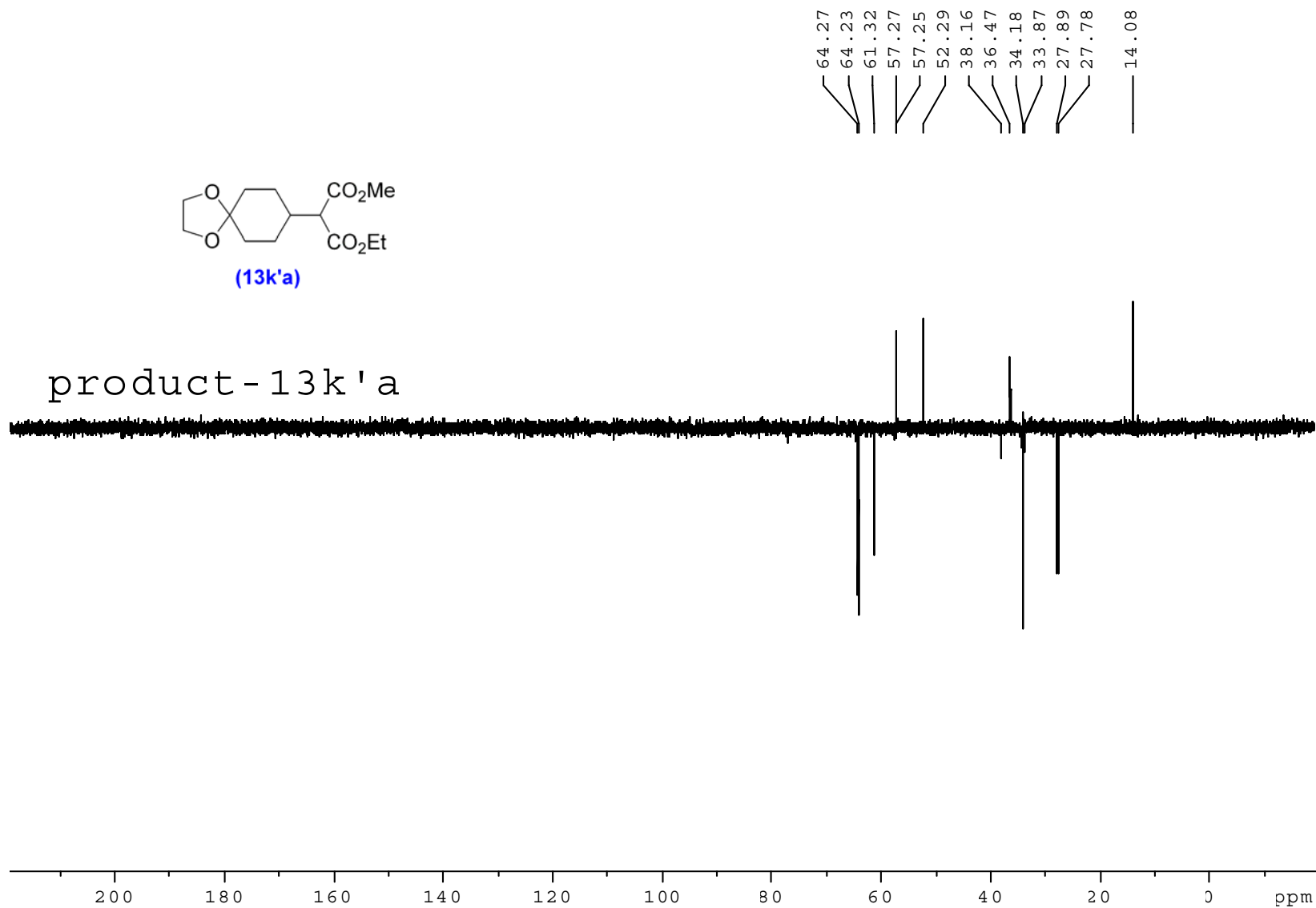
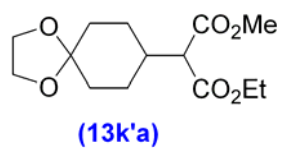
14.05

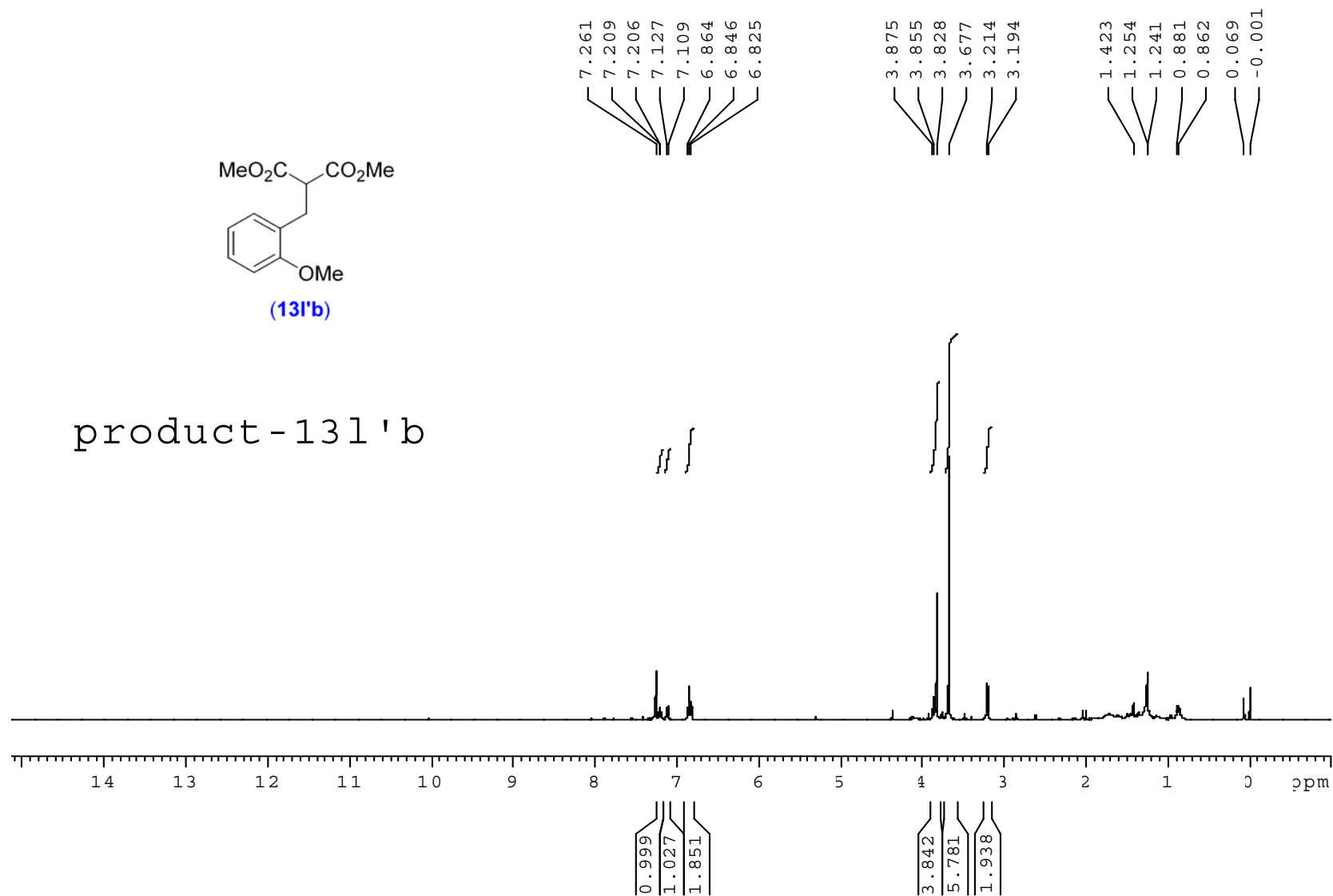


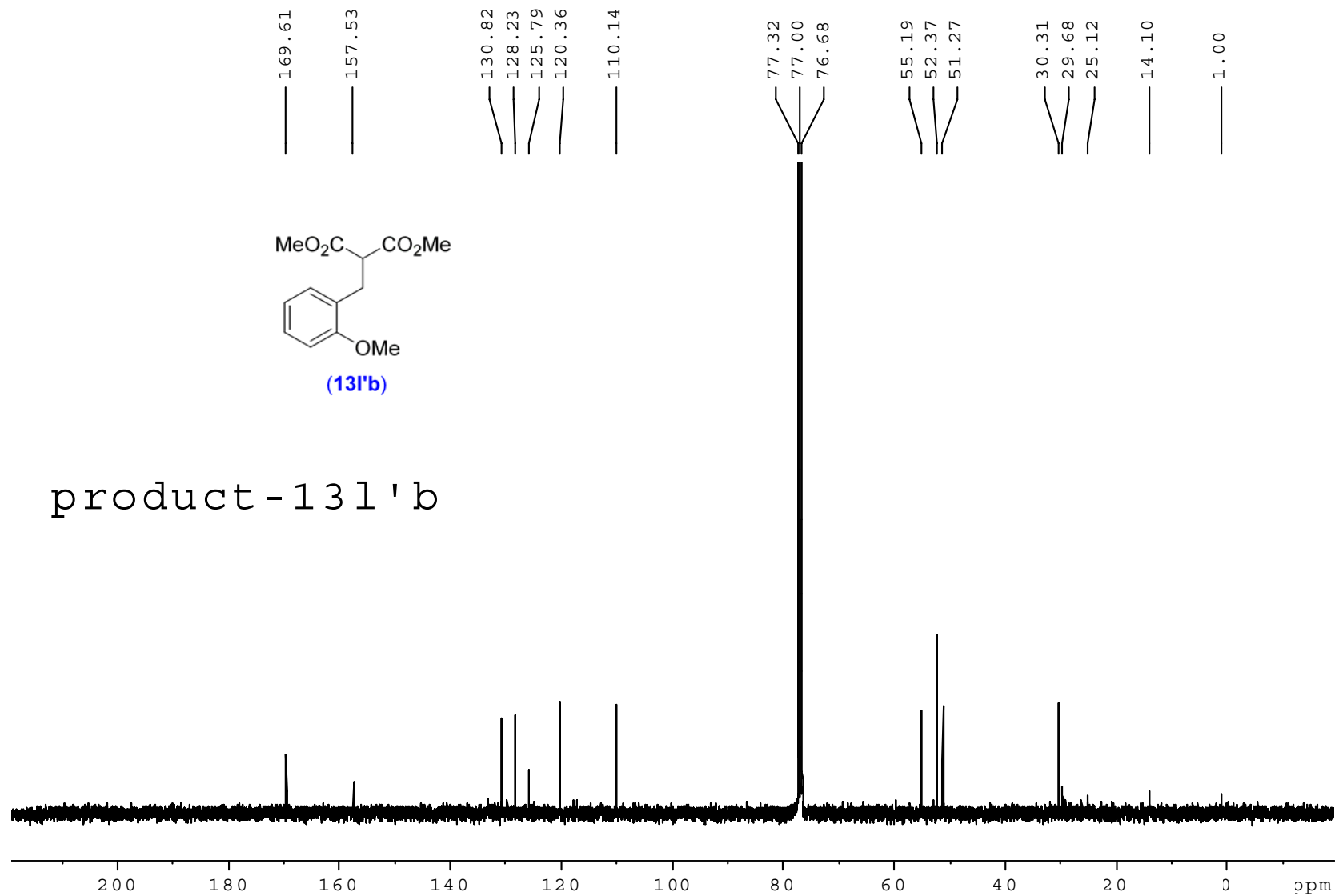
(13k'a)

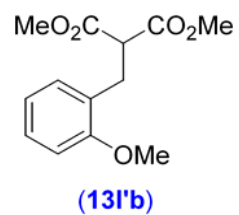
product-13k'a









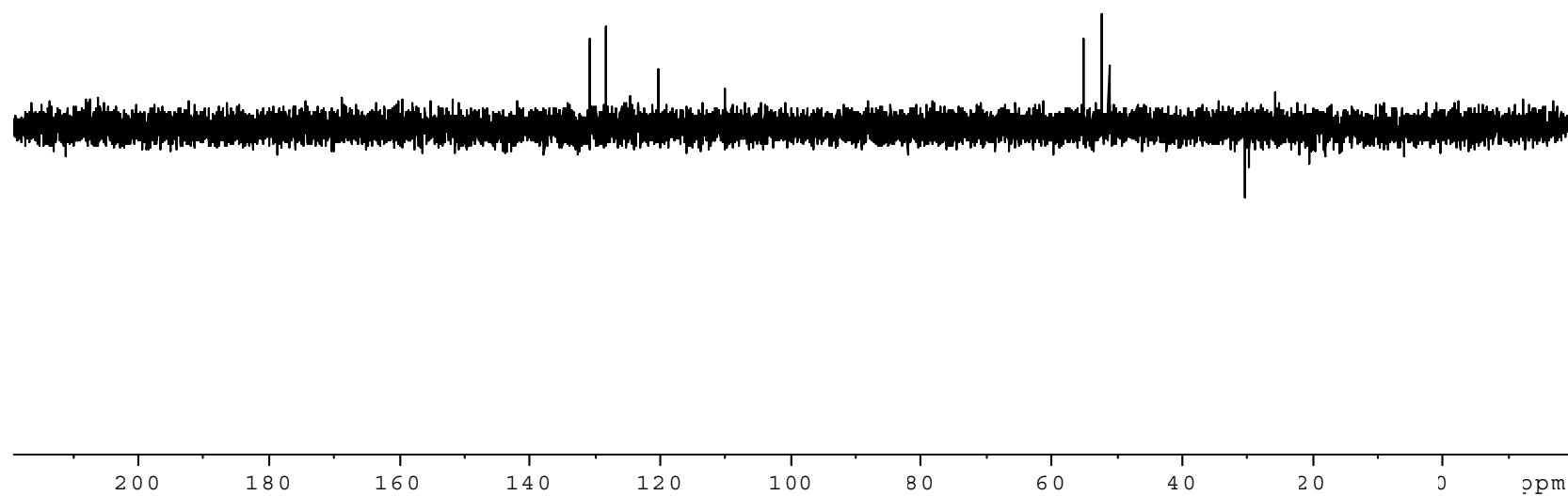


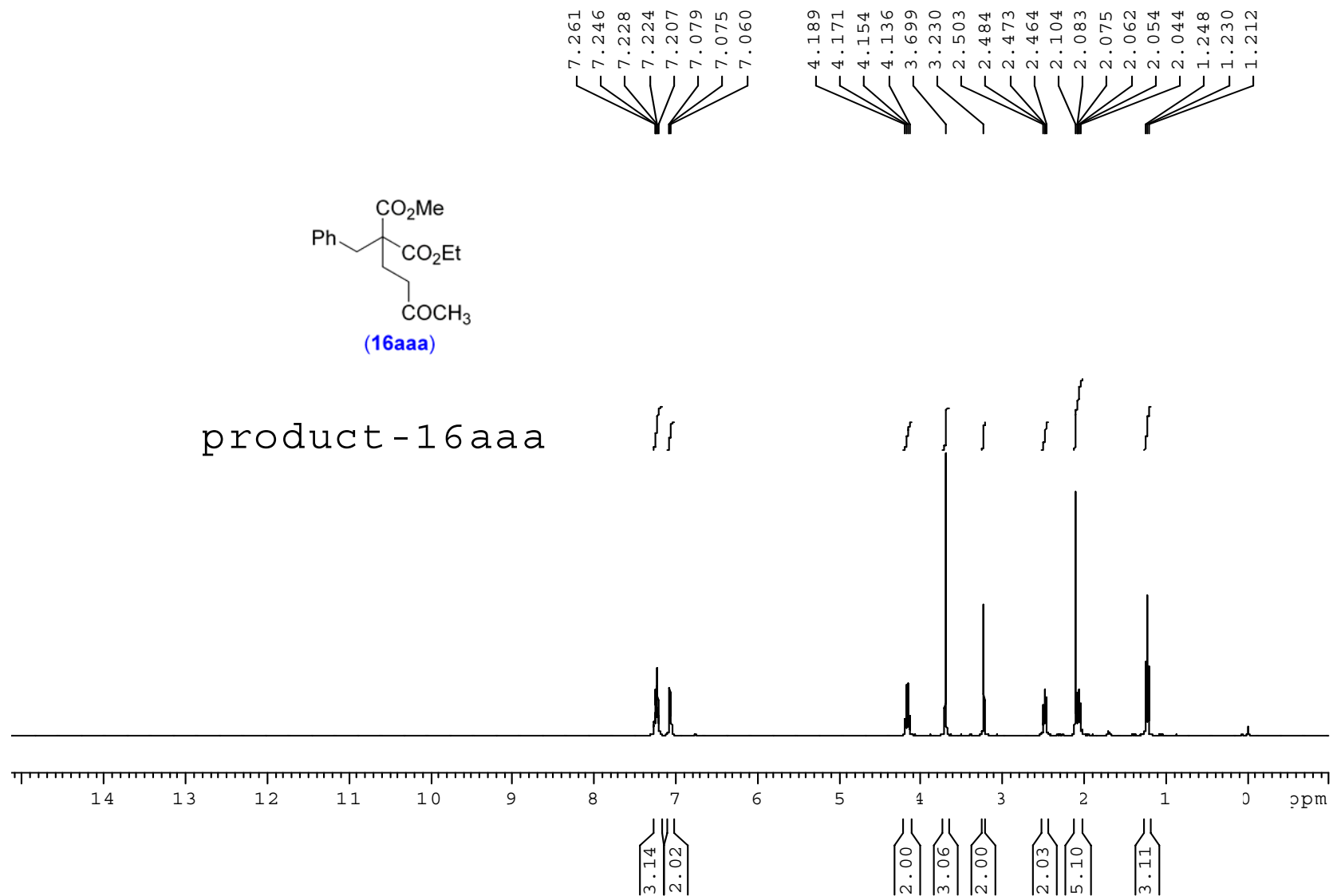
130.84
128.26
120.38

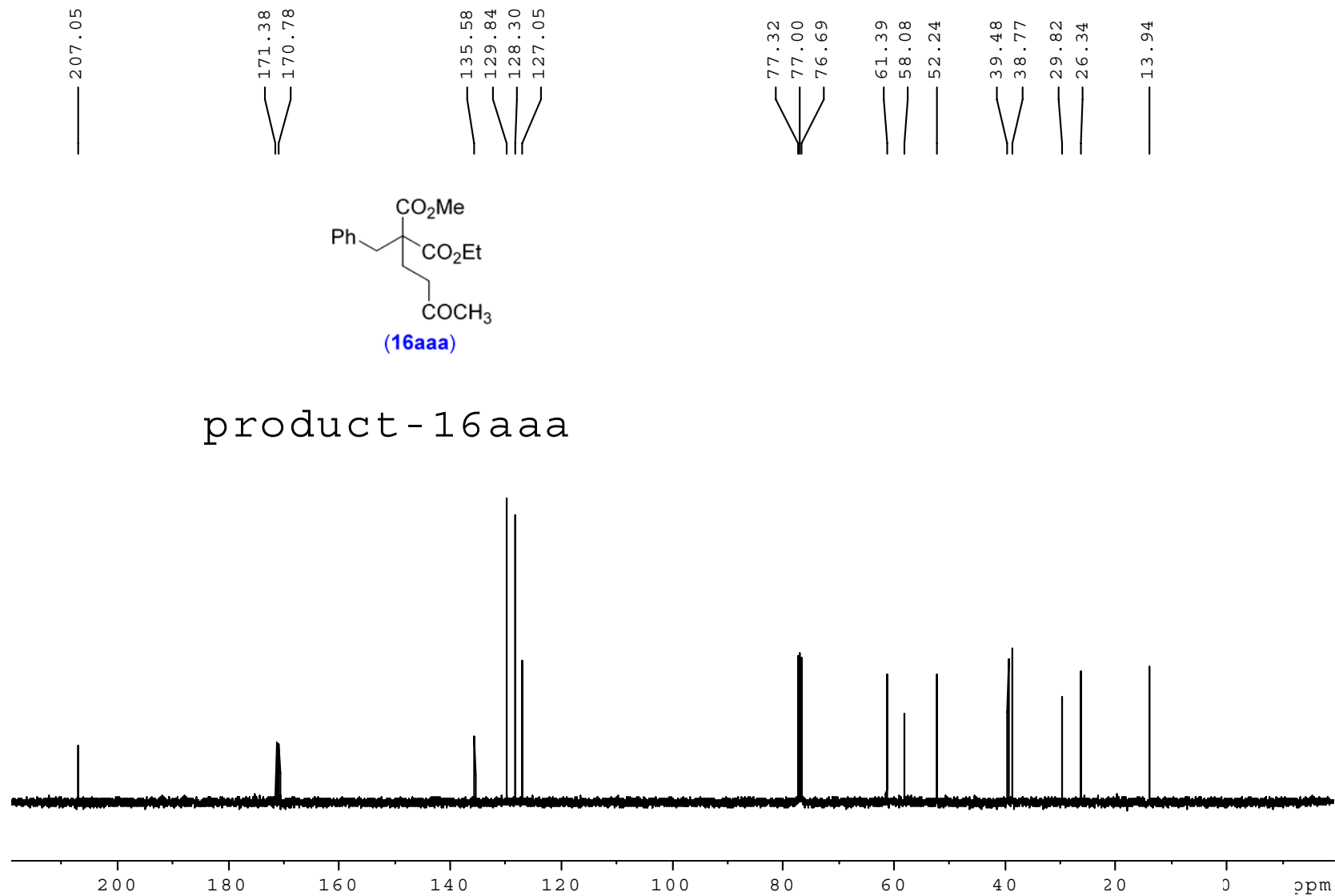
55.22
52.40
51.29

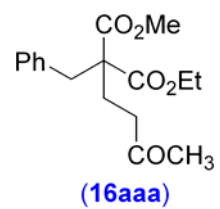
30.33

product-131'b









129.90
128.36
127.11

61.45

52.31

39.53

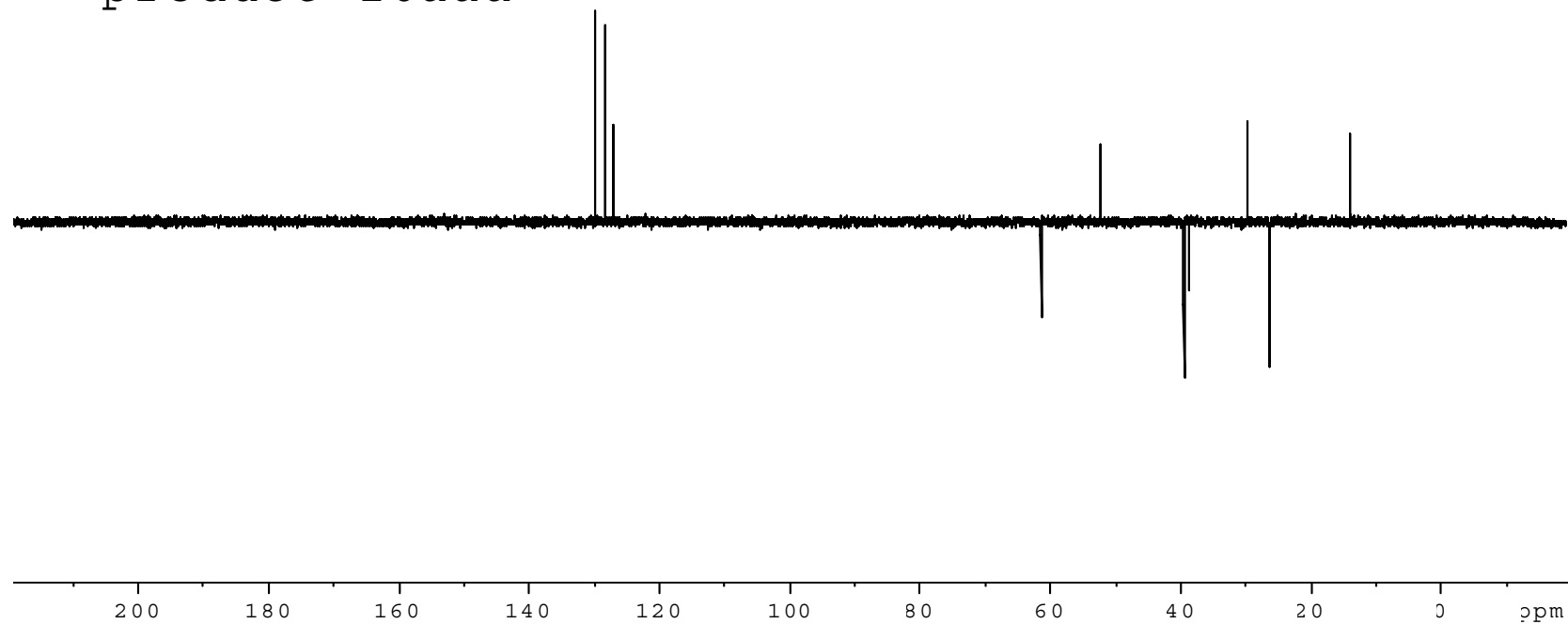
38.82

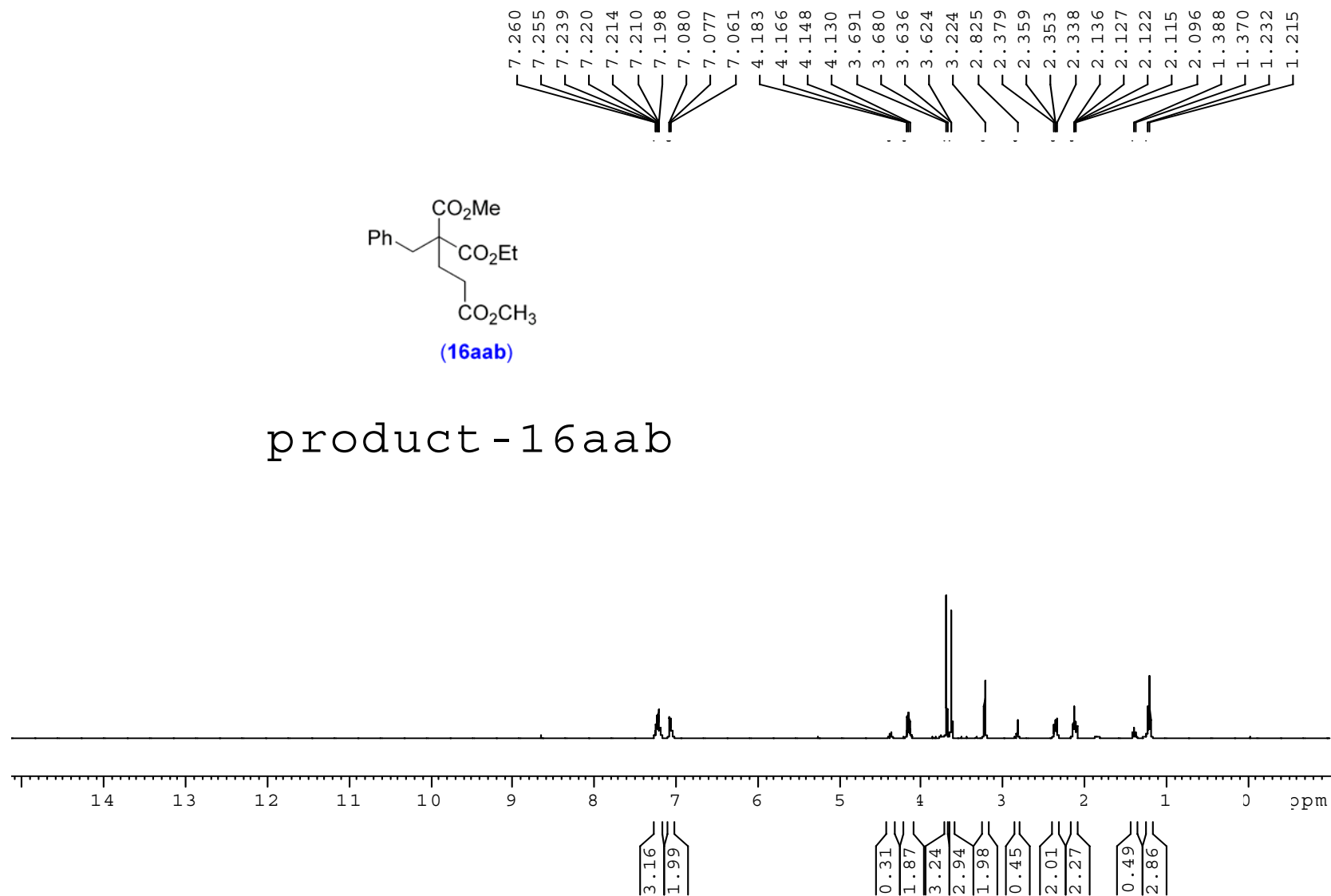
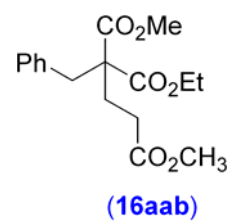
29.88

26.39

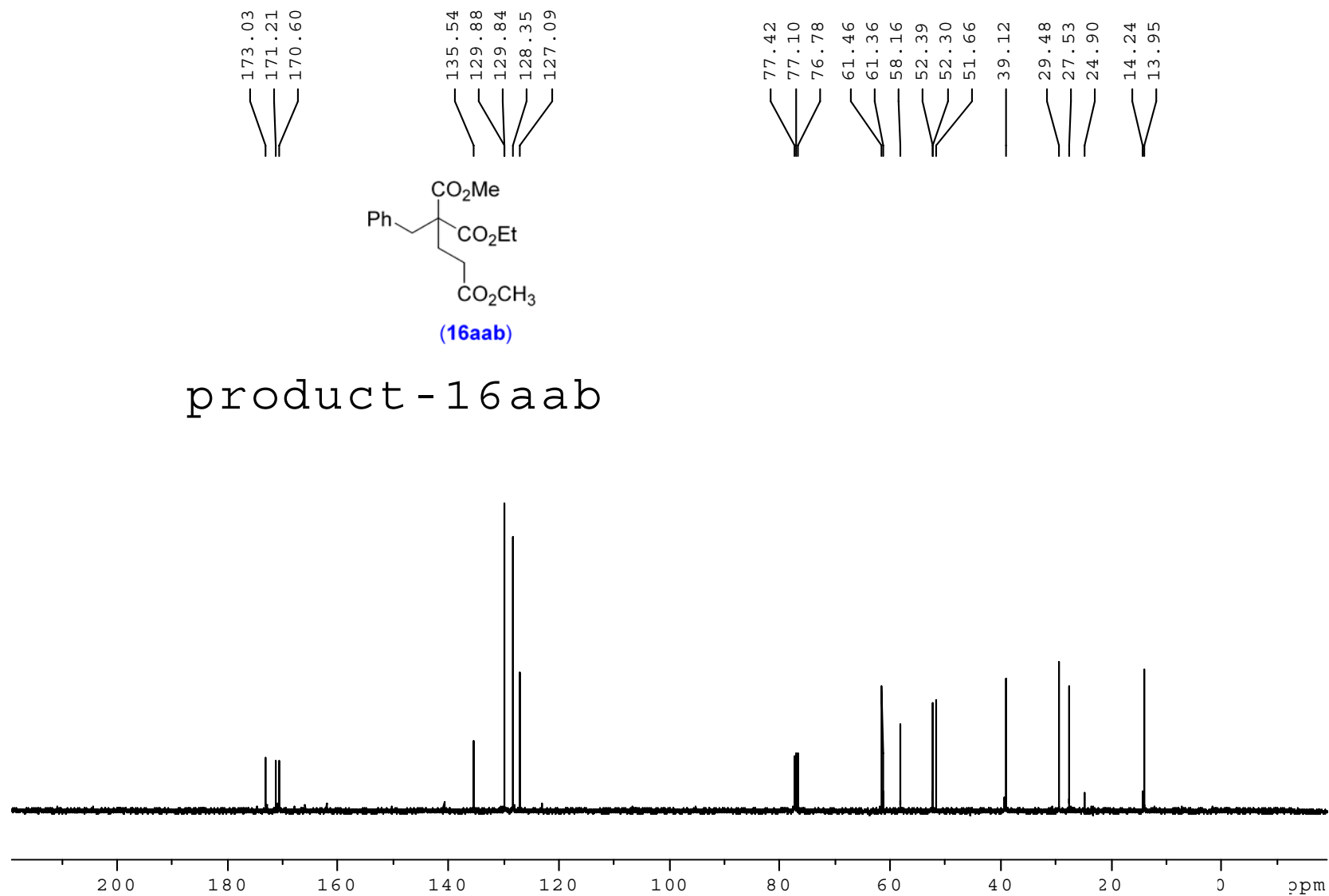
13.99

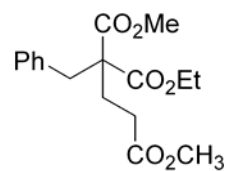
product - 16aaa





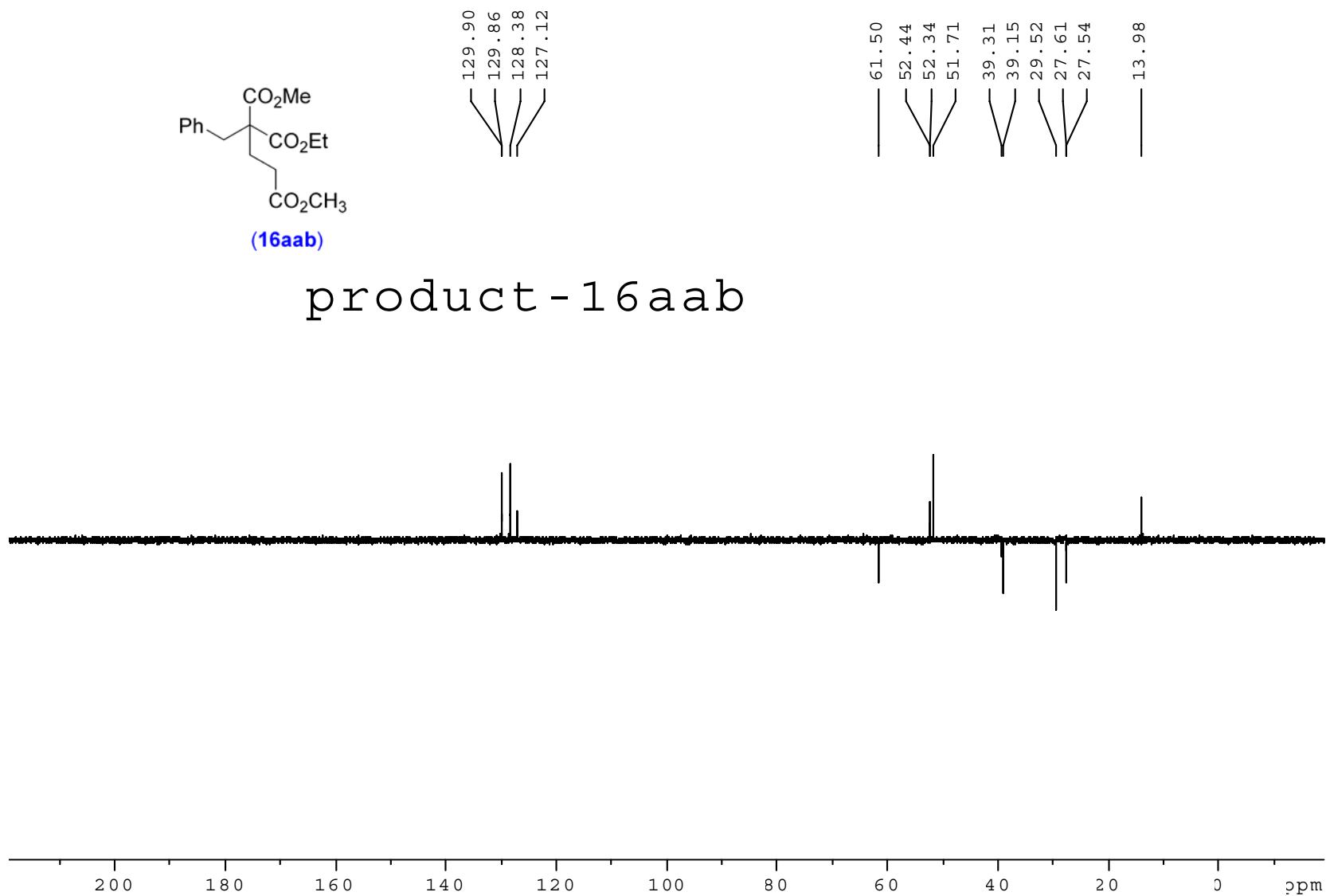
product - 16aab



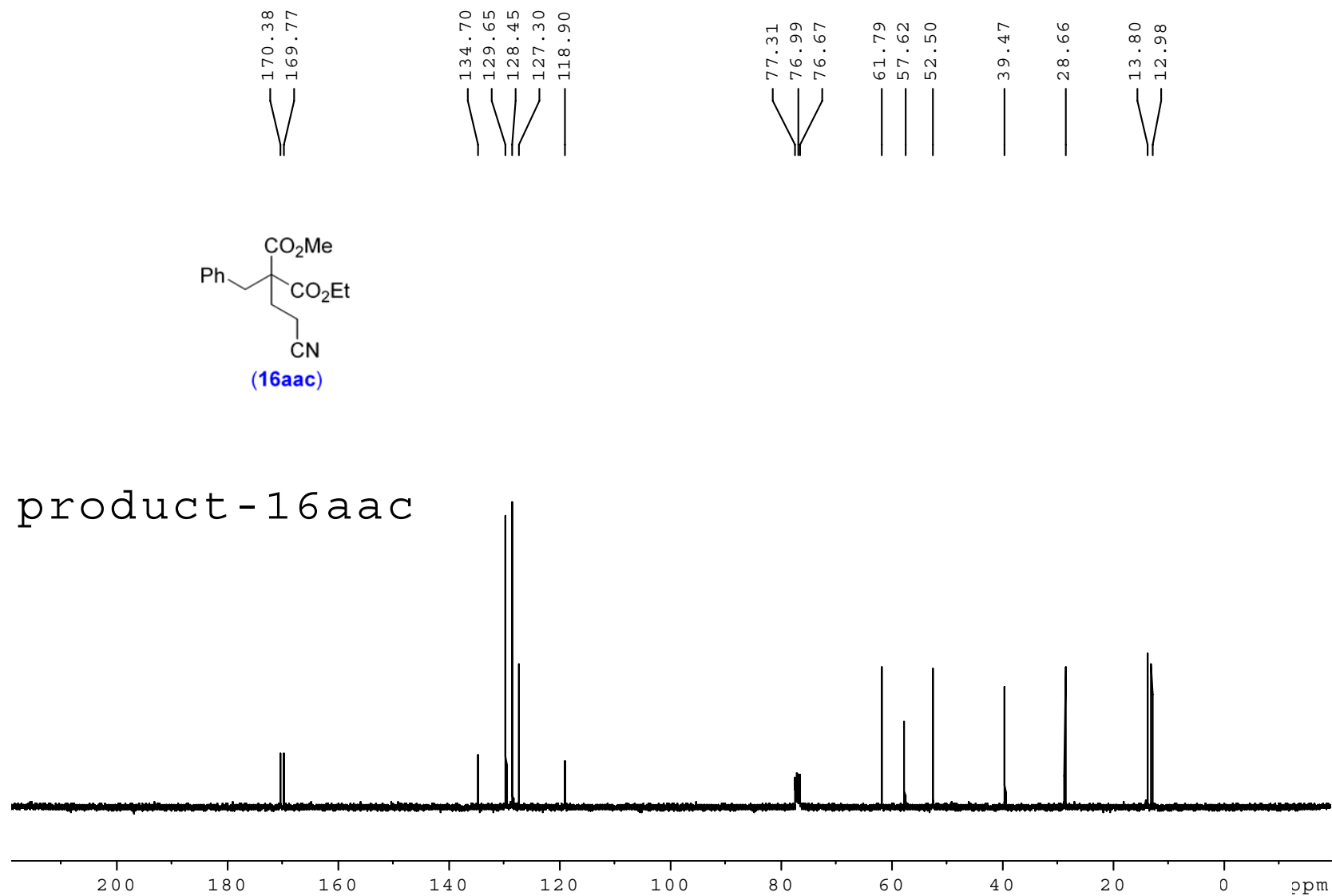
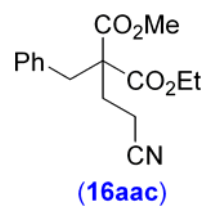


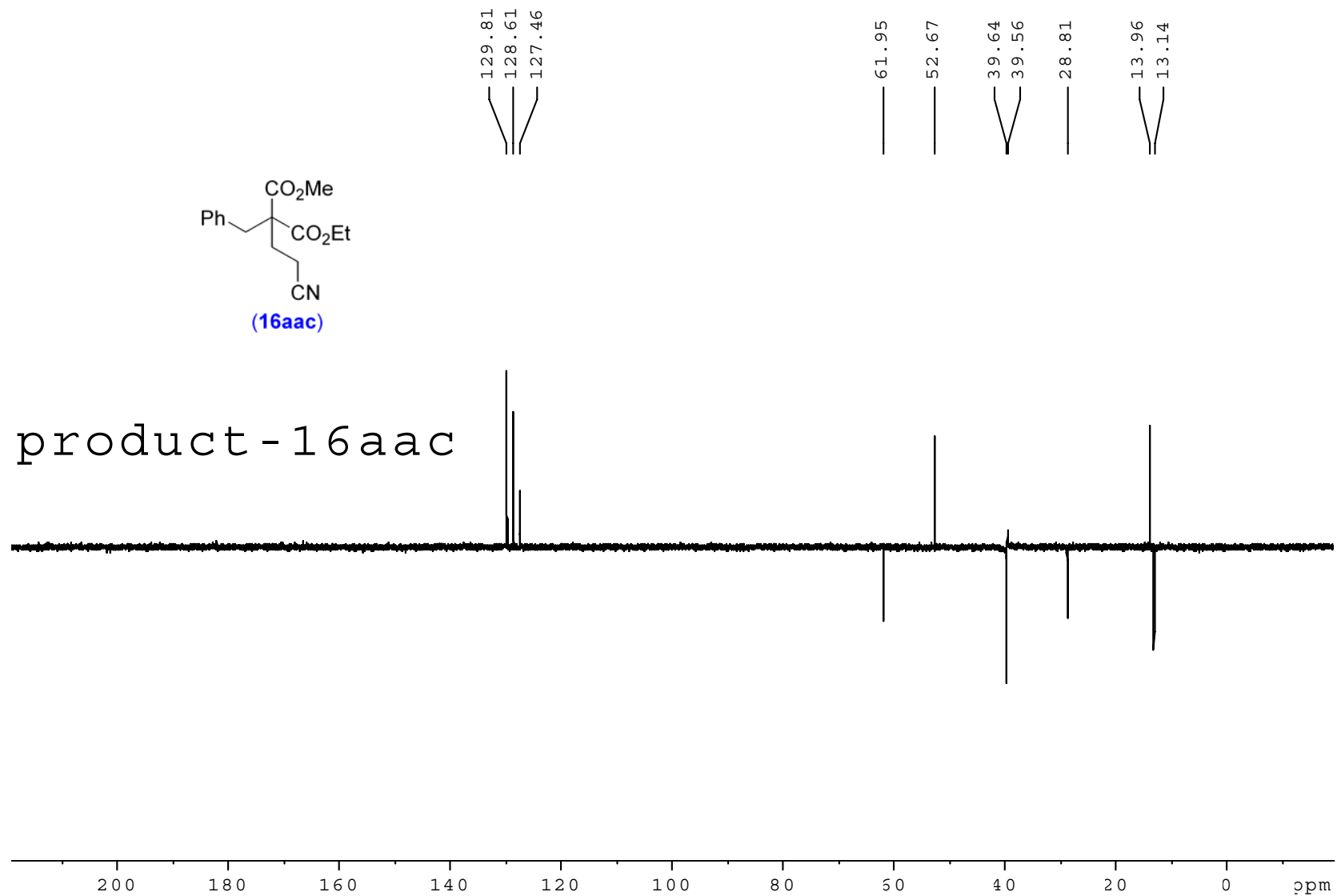
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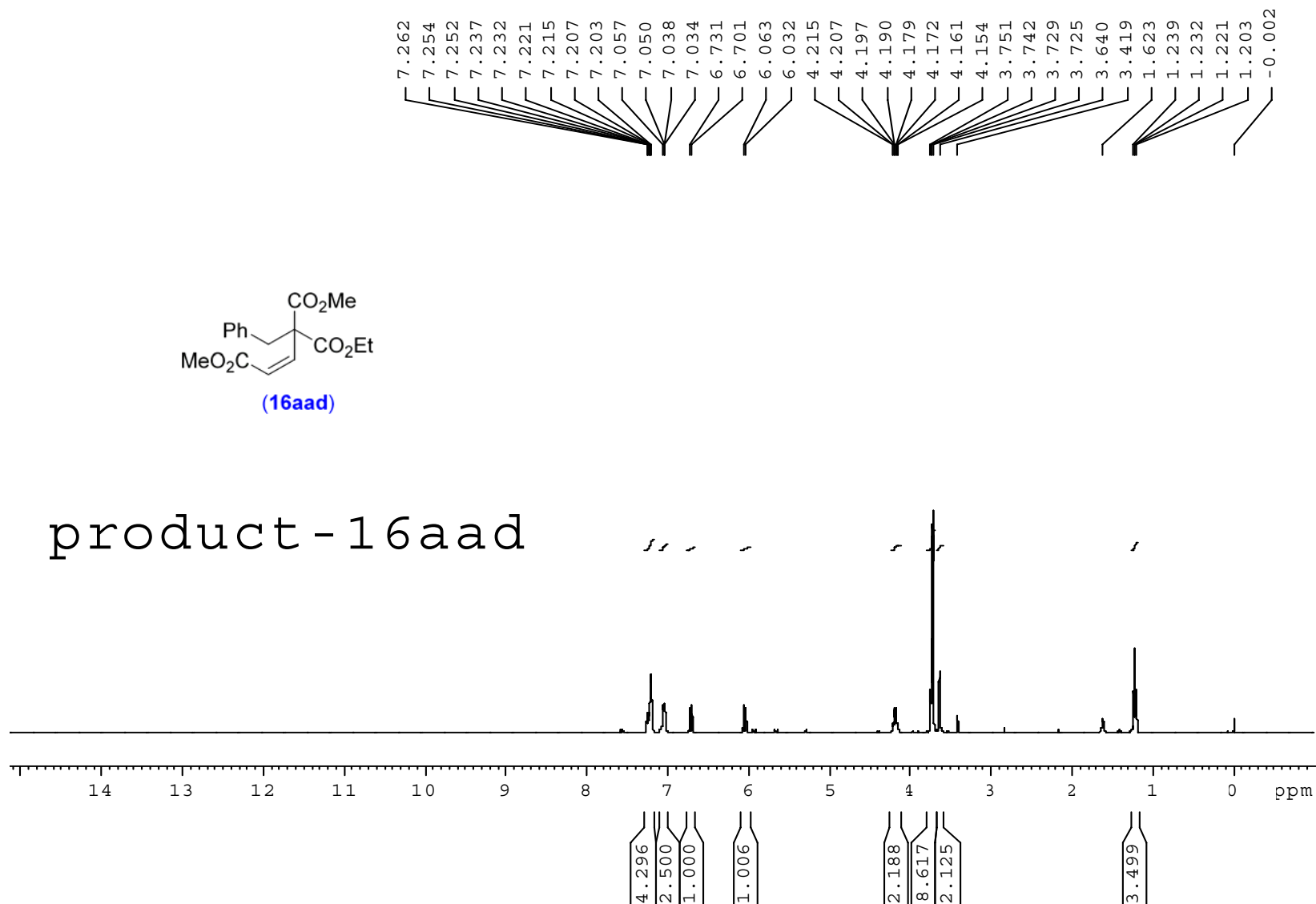
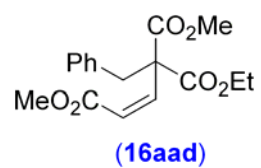
product-16aab



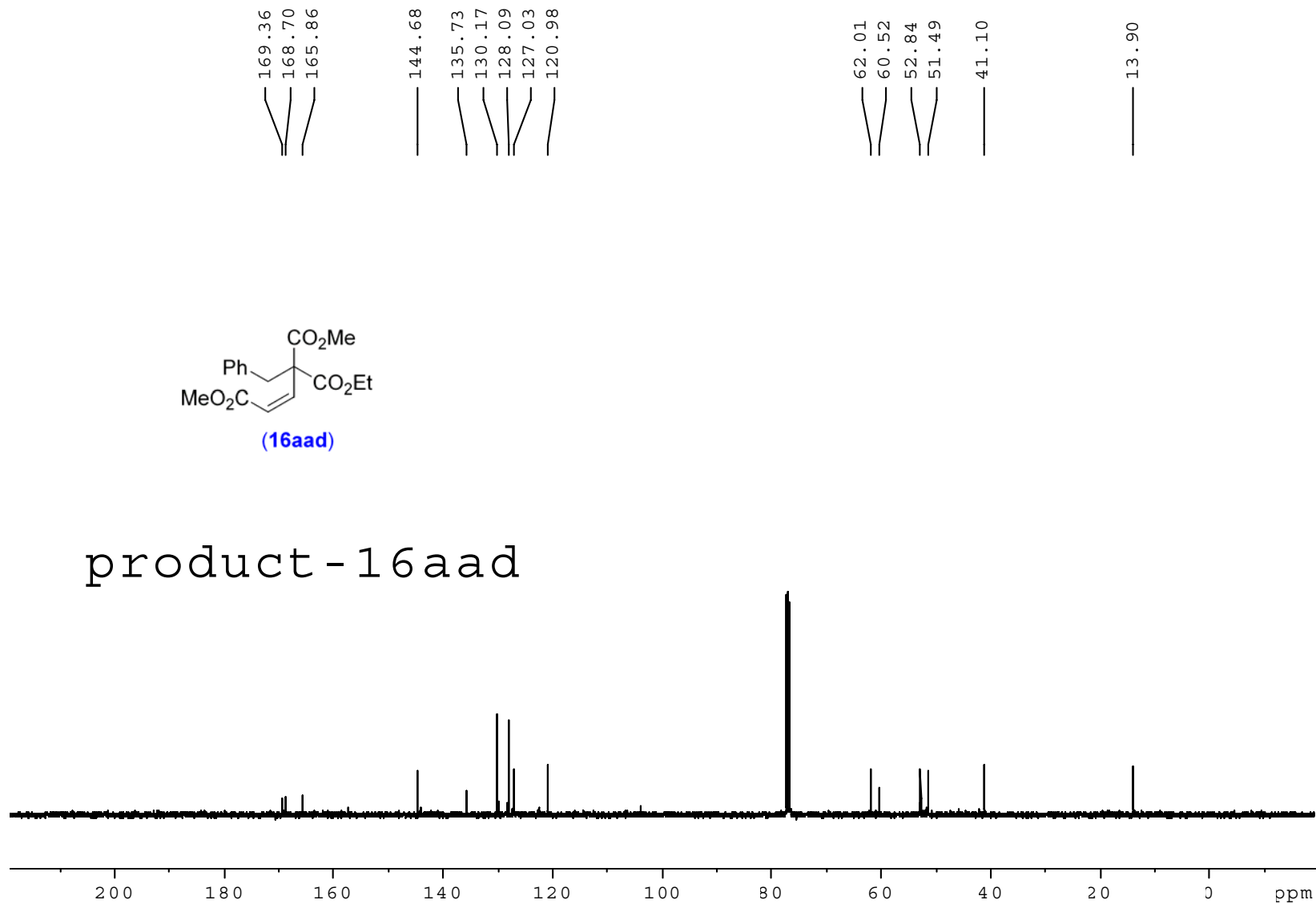
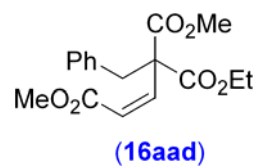


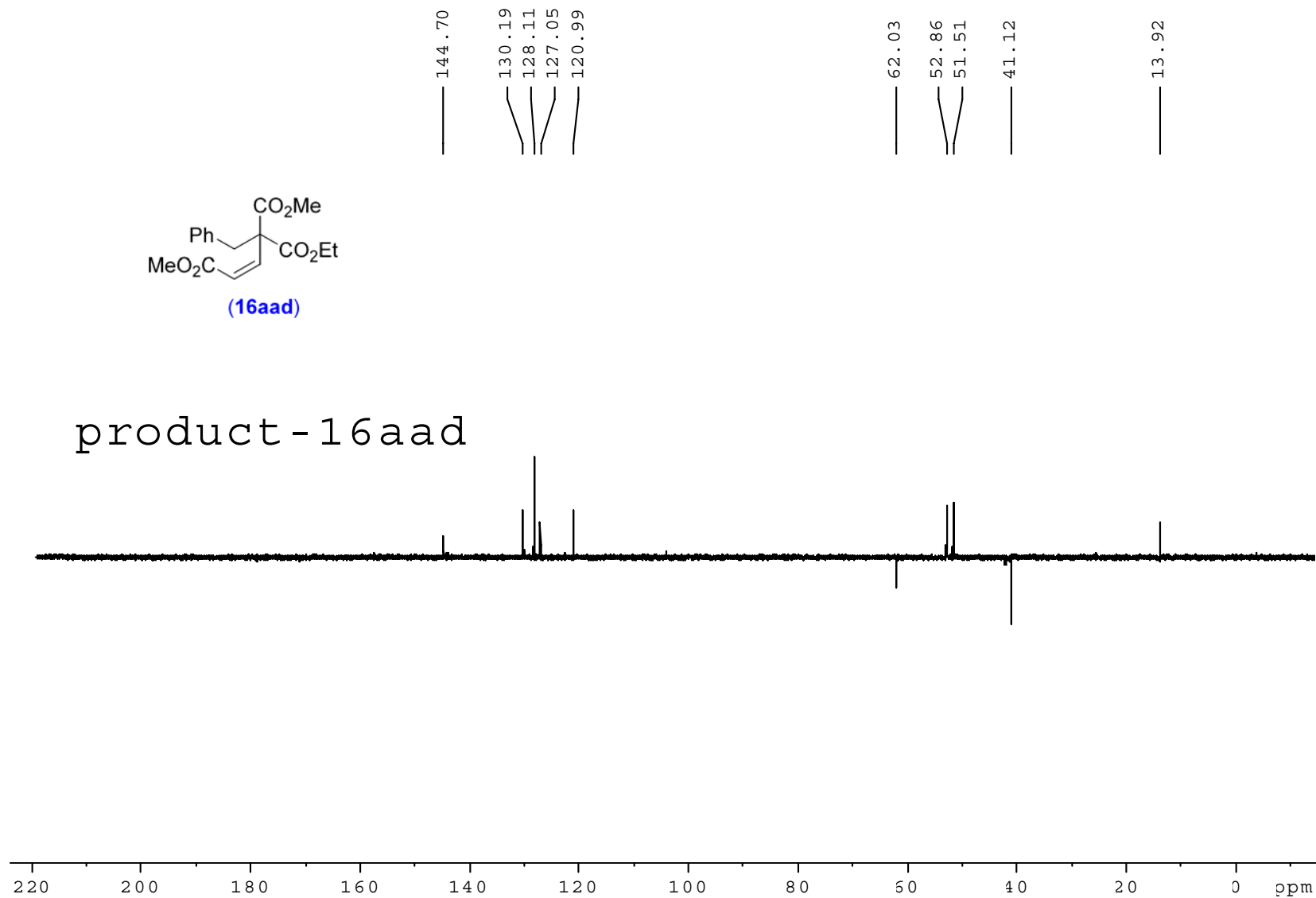
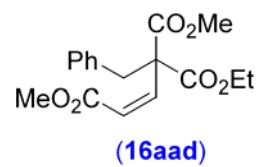


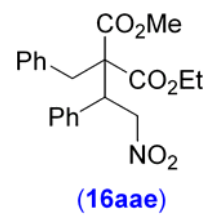
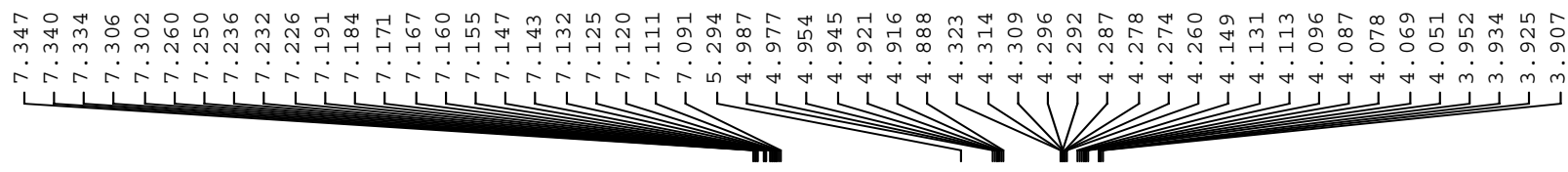




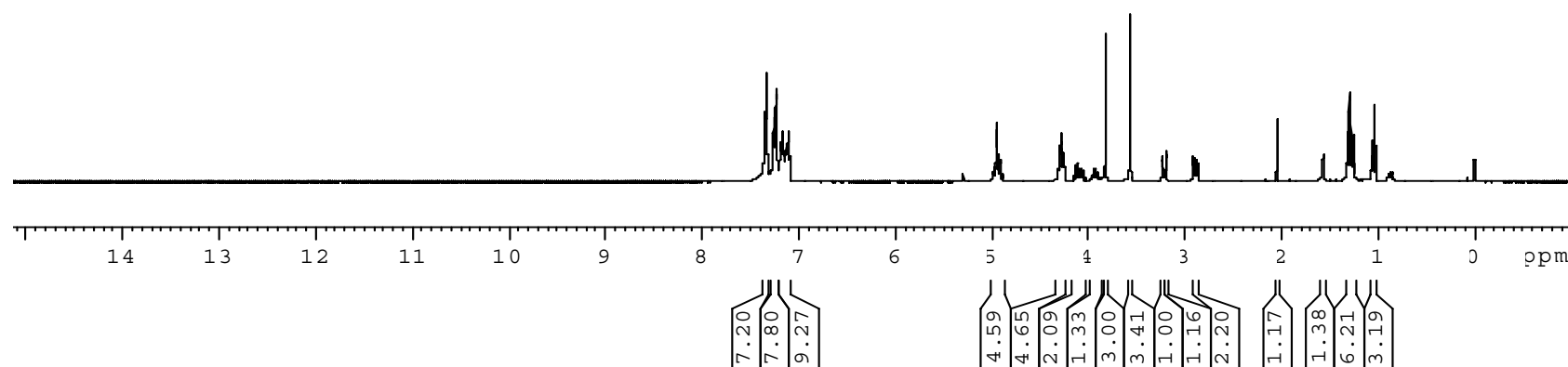
product - 16aad

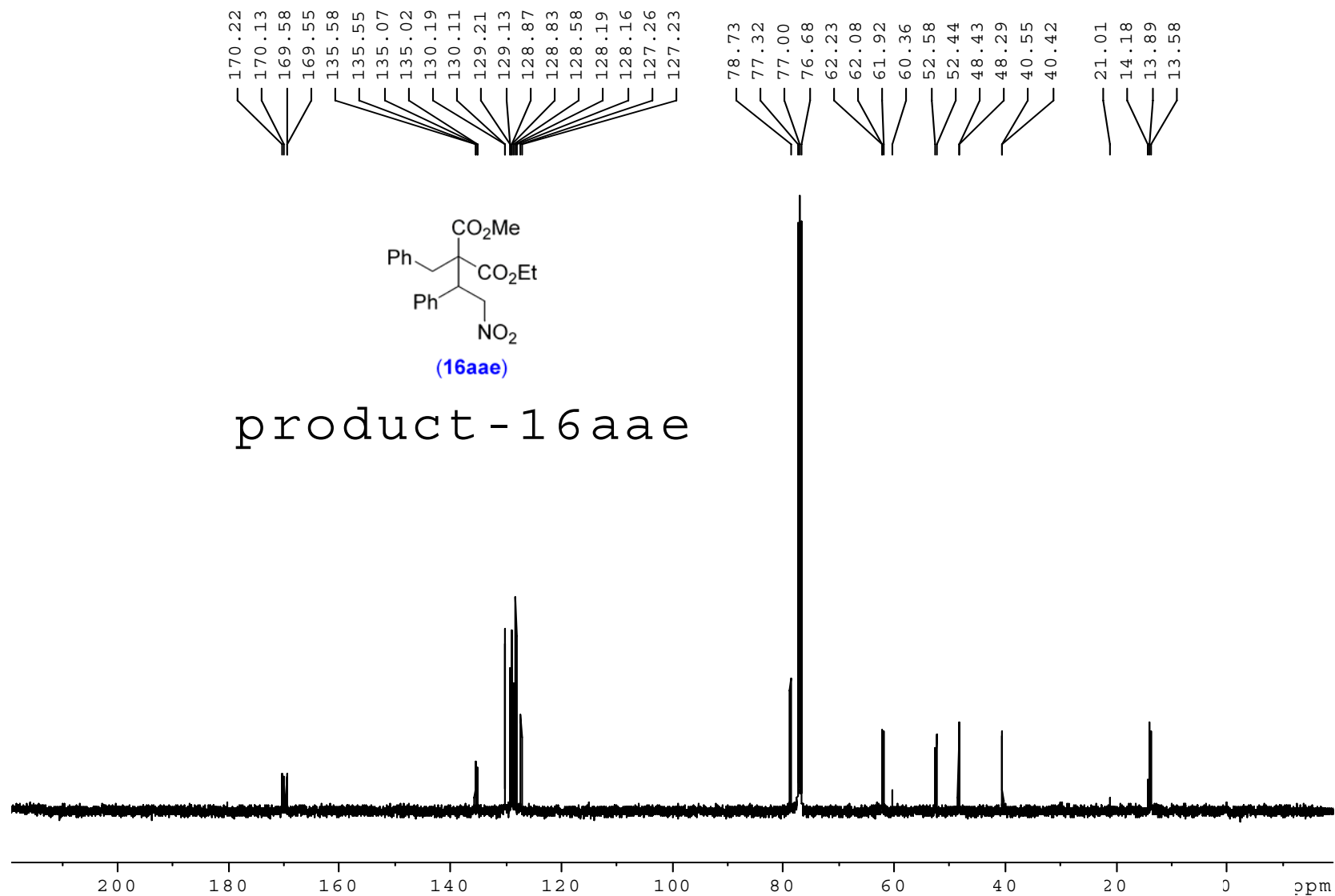


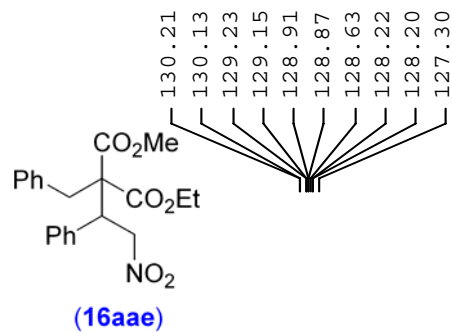




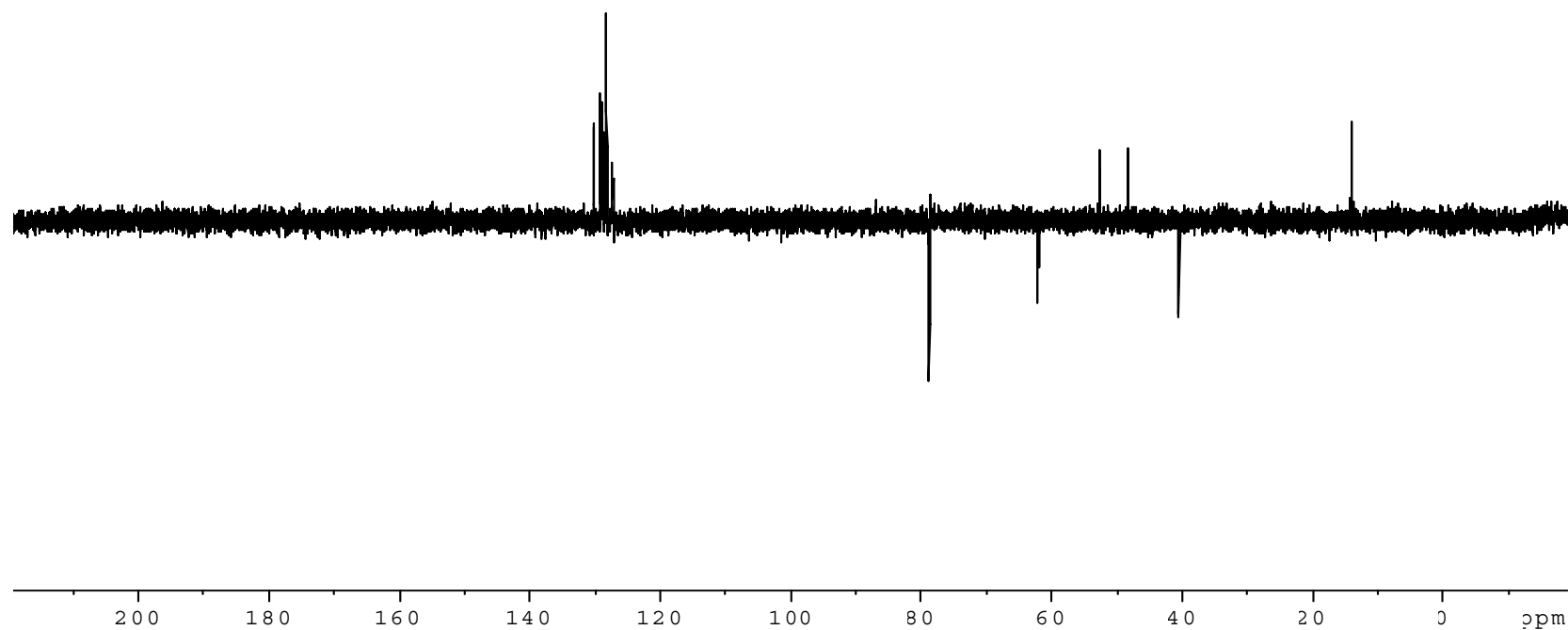
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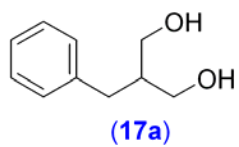




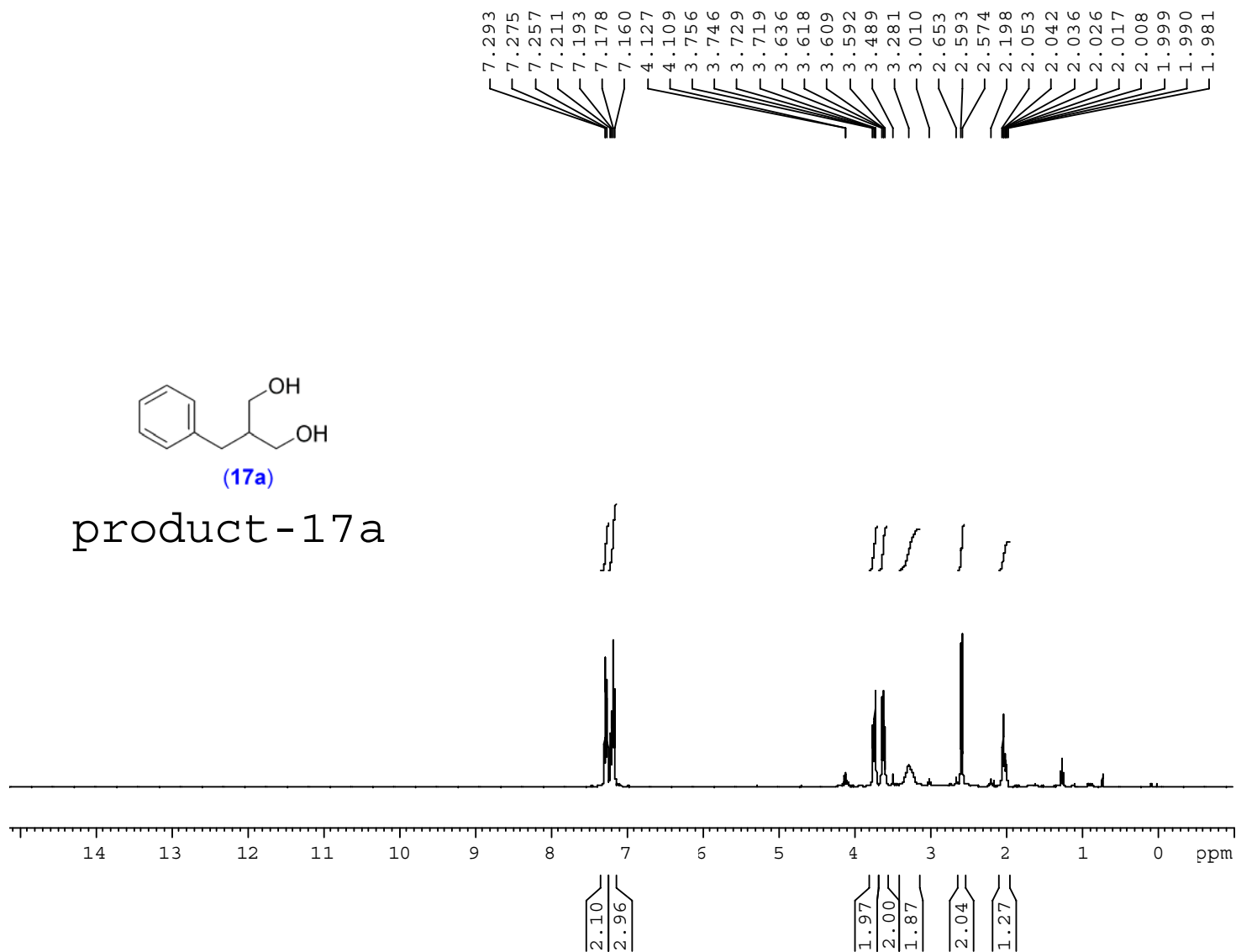


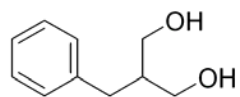
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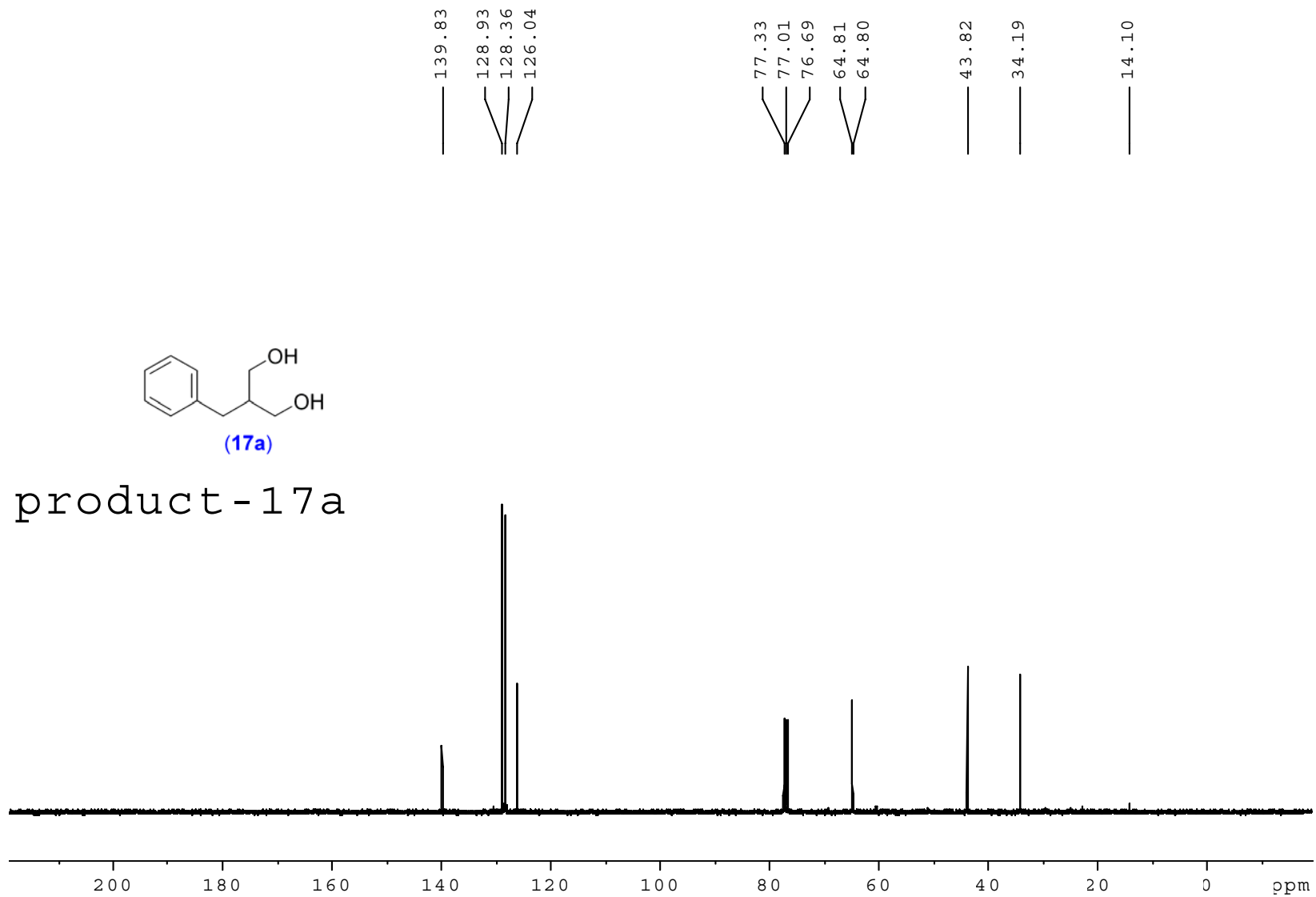
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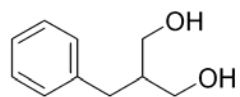




(17a)

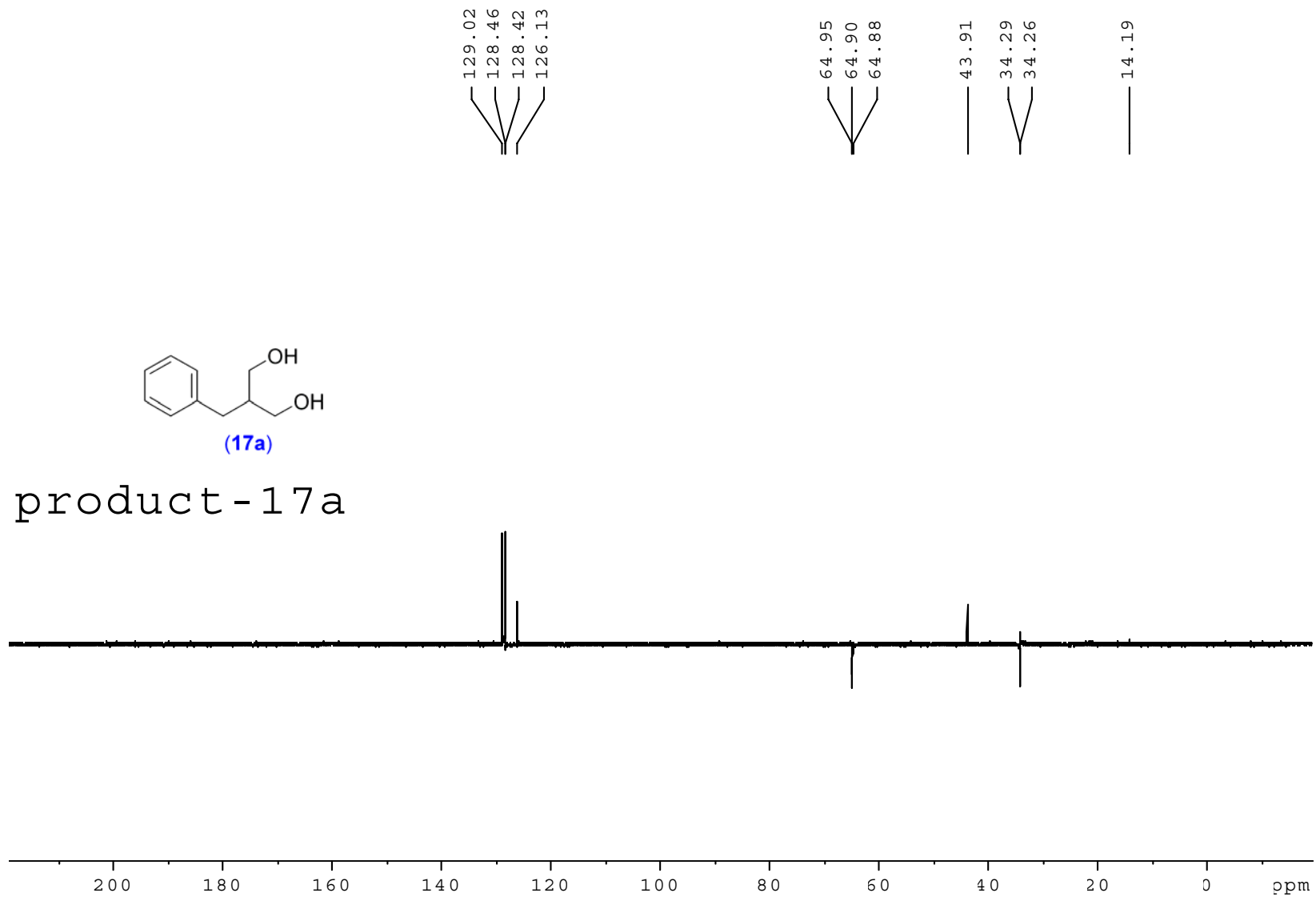
product - 17a

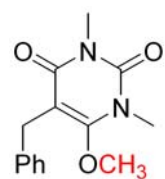




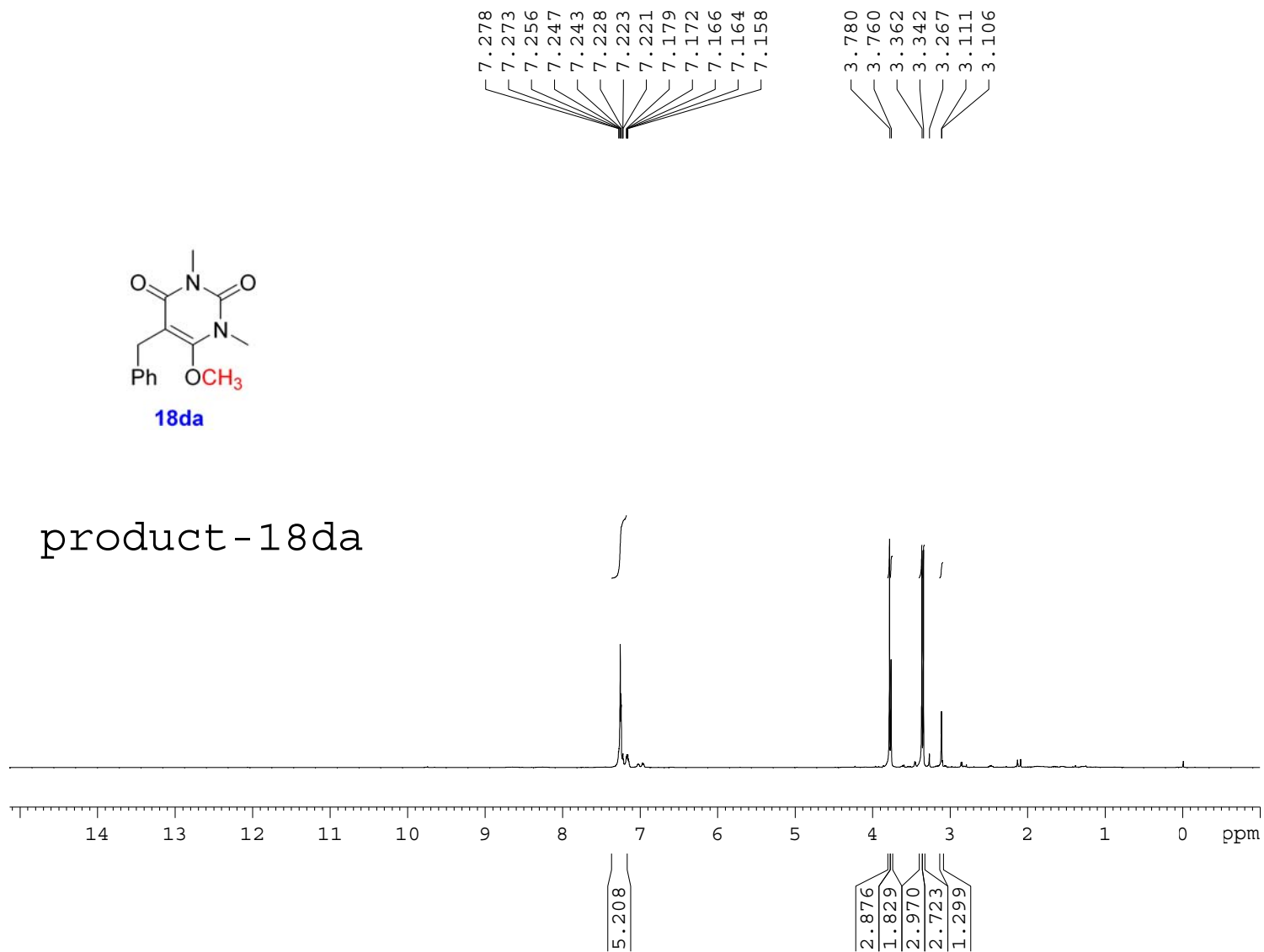
(17a)

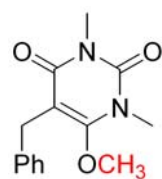
product - 17a



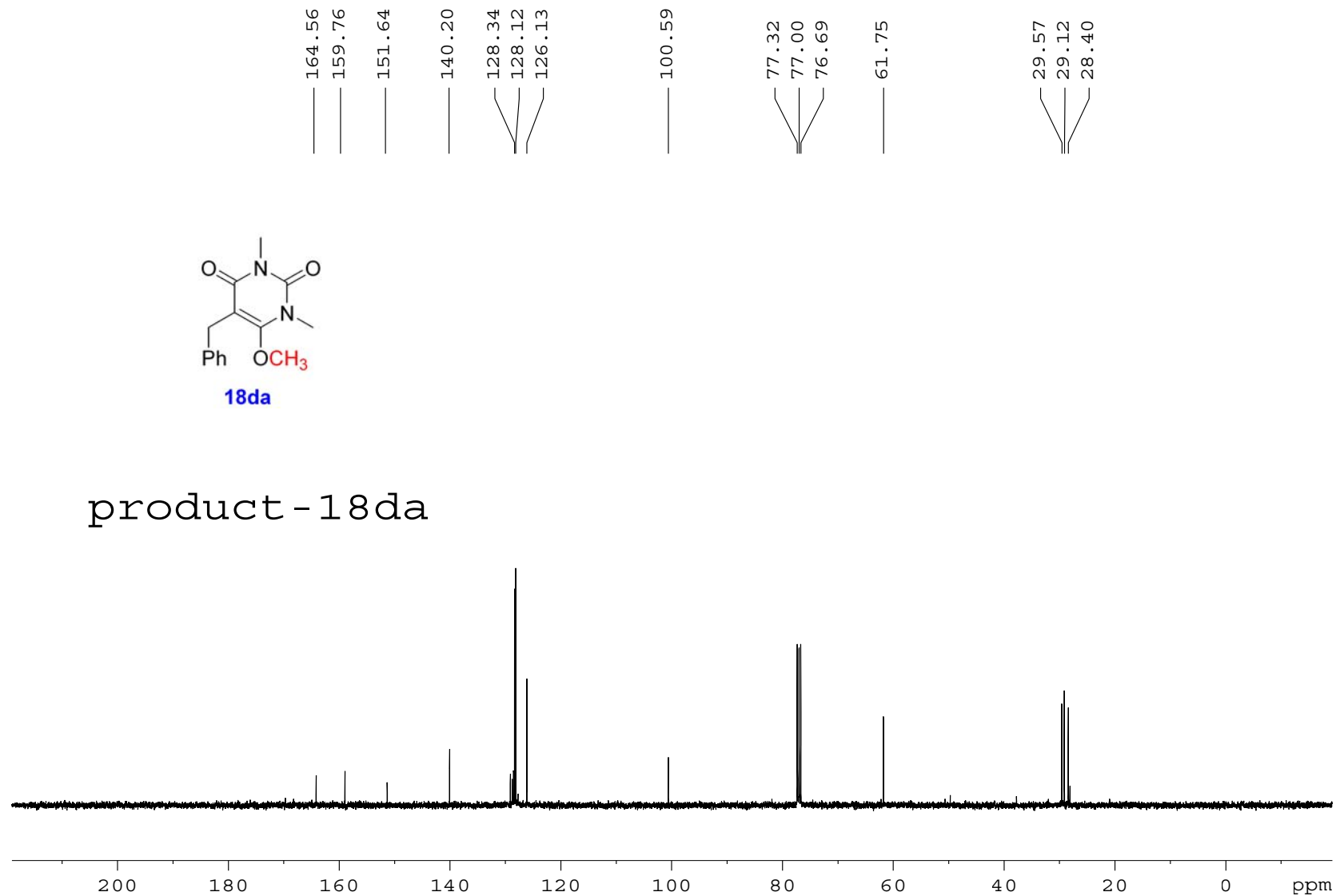


18da

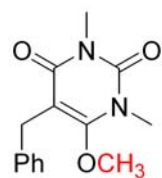




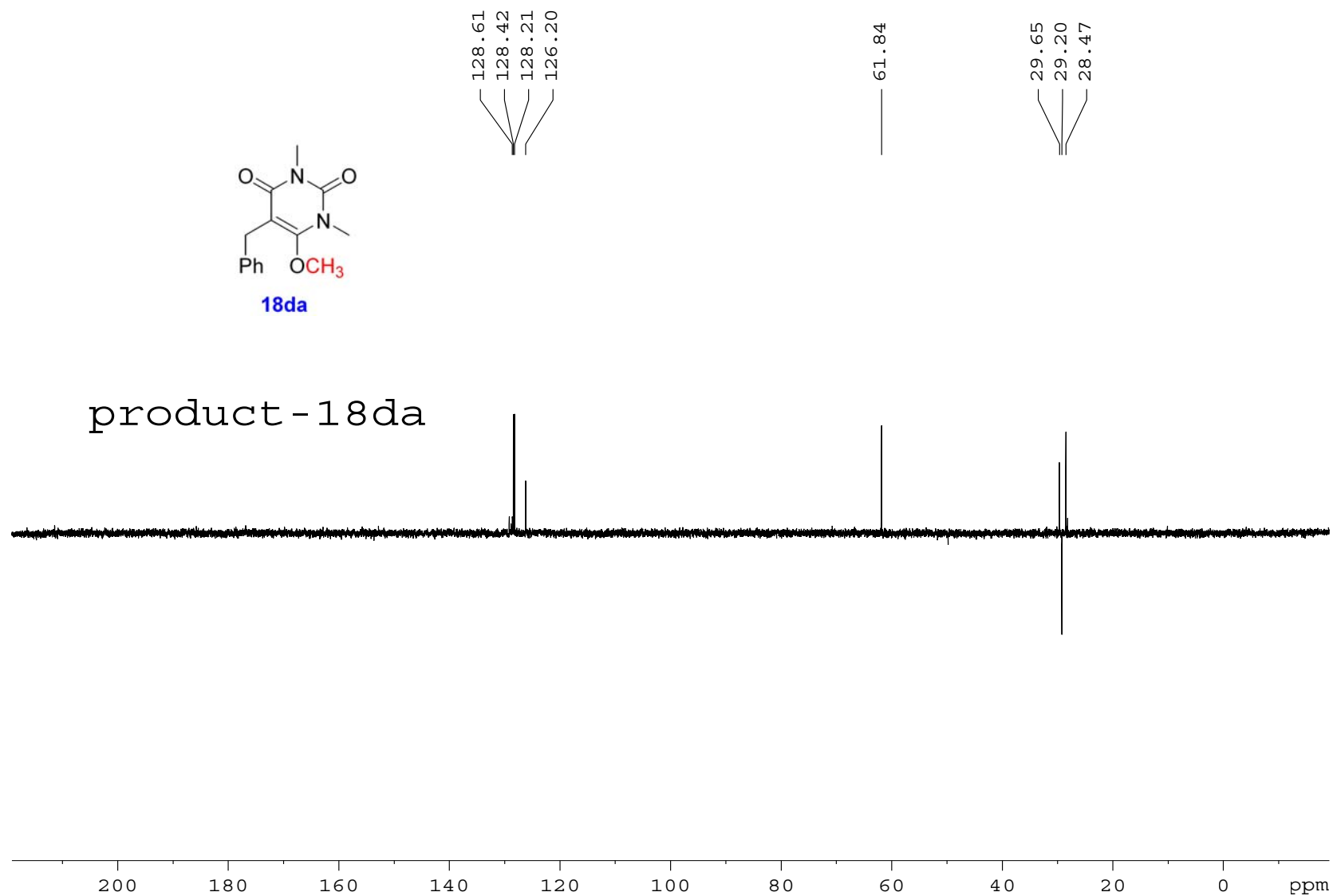
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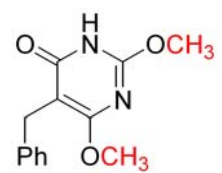


product-18da



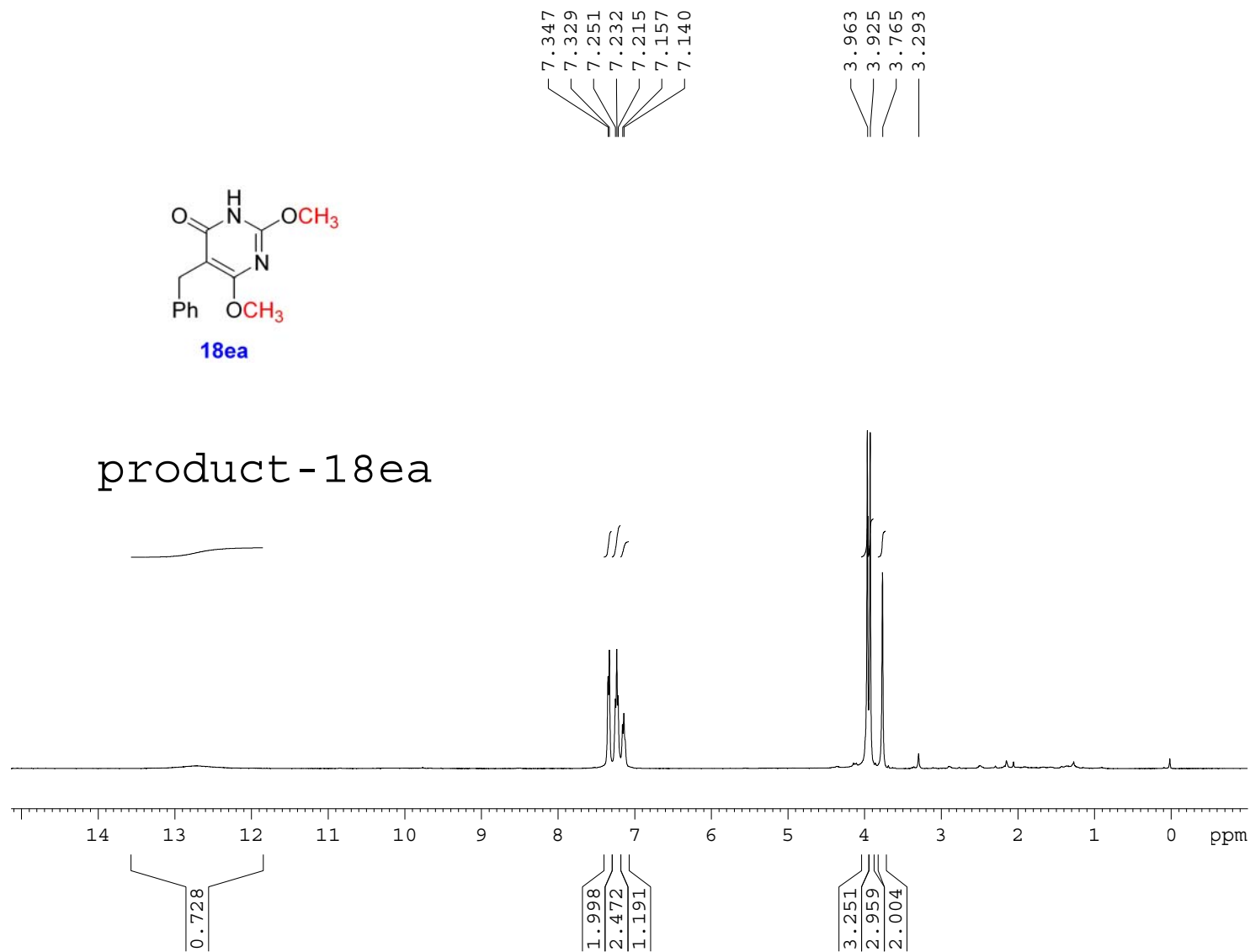
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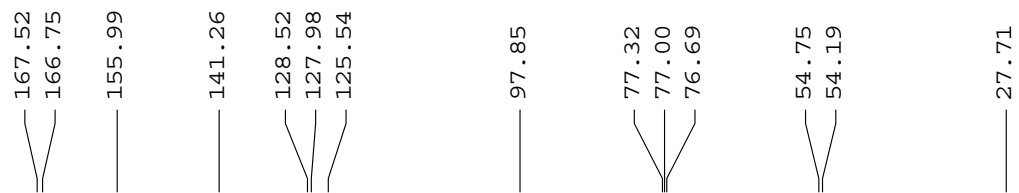
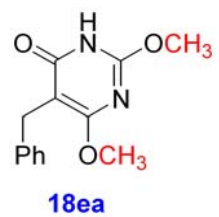




18ea

product-18ea





product - 18ea

