Supplementary Material

Addition of Heteroatom Nucleophiles to Ketene Dimers

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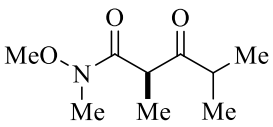
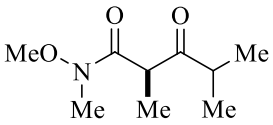
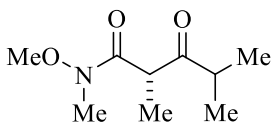


(*R*)-**3a**
^{1}H NMR



(*R*)-**3a**
^{13}C NMR



(*S*)-**3a**
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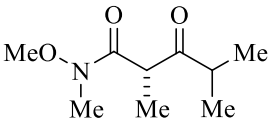
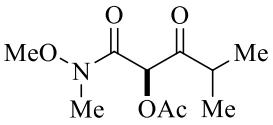


(*S*)-**3a**
^{13}C NMR



(*R*)-**3b**
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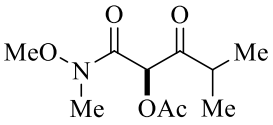

(*R*)-**3b**
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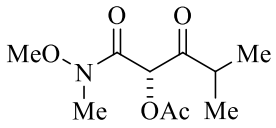
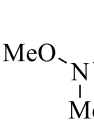
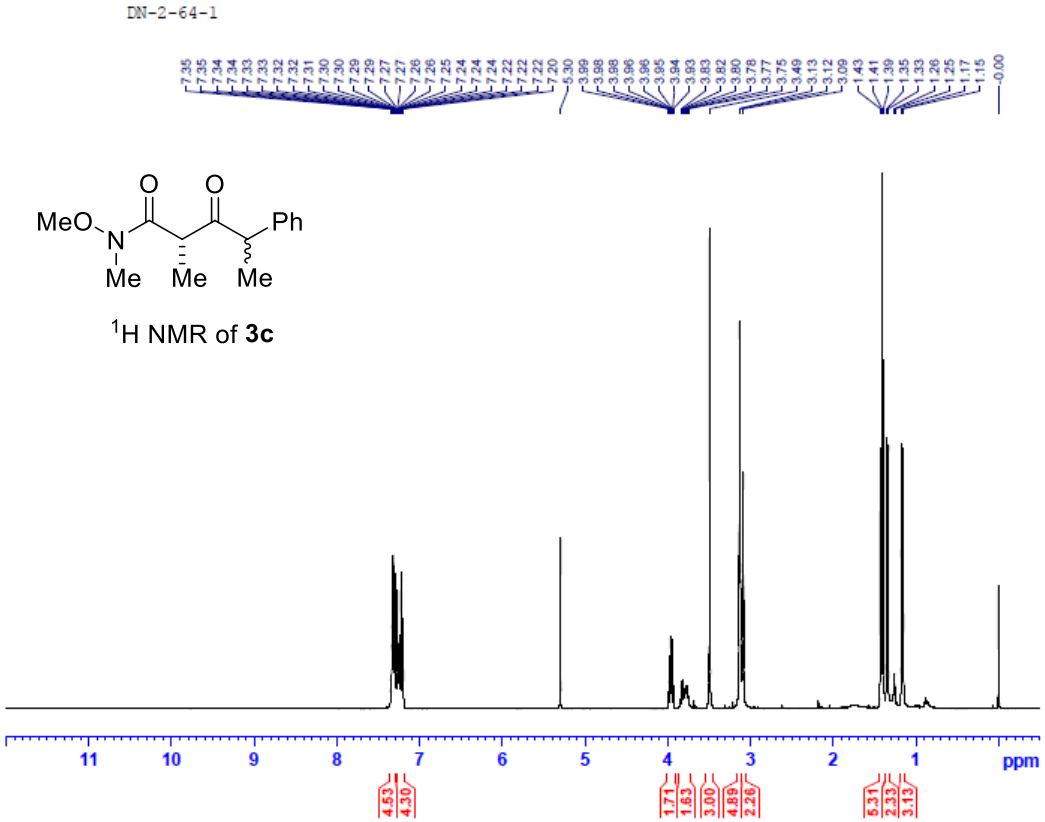


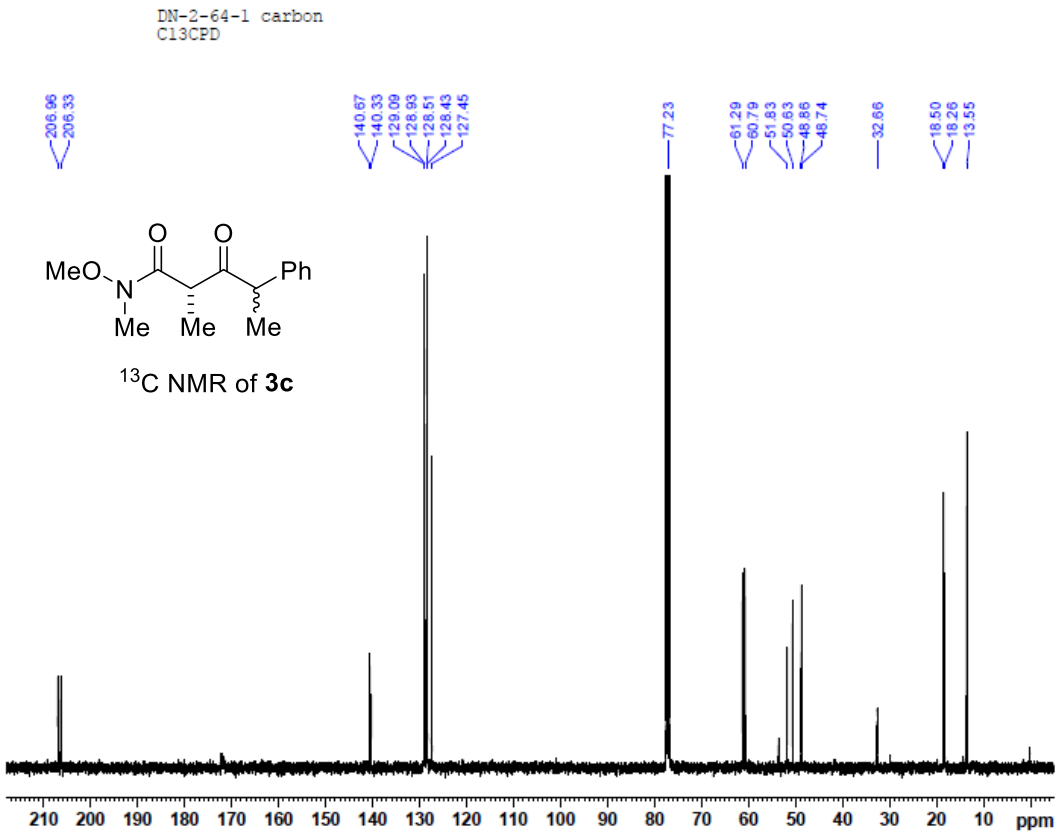
(*S*)-**3b**
^{1}H NMR



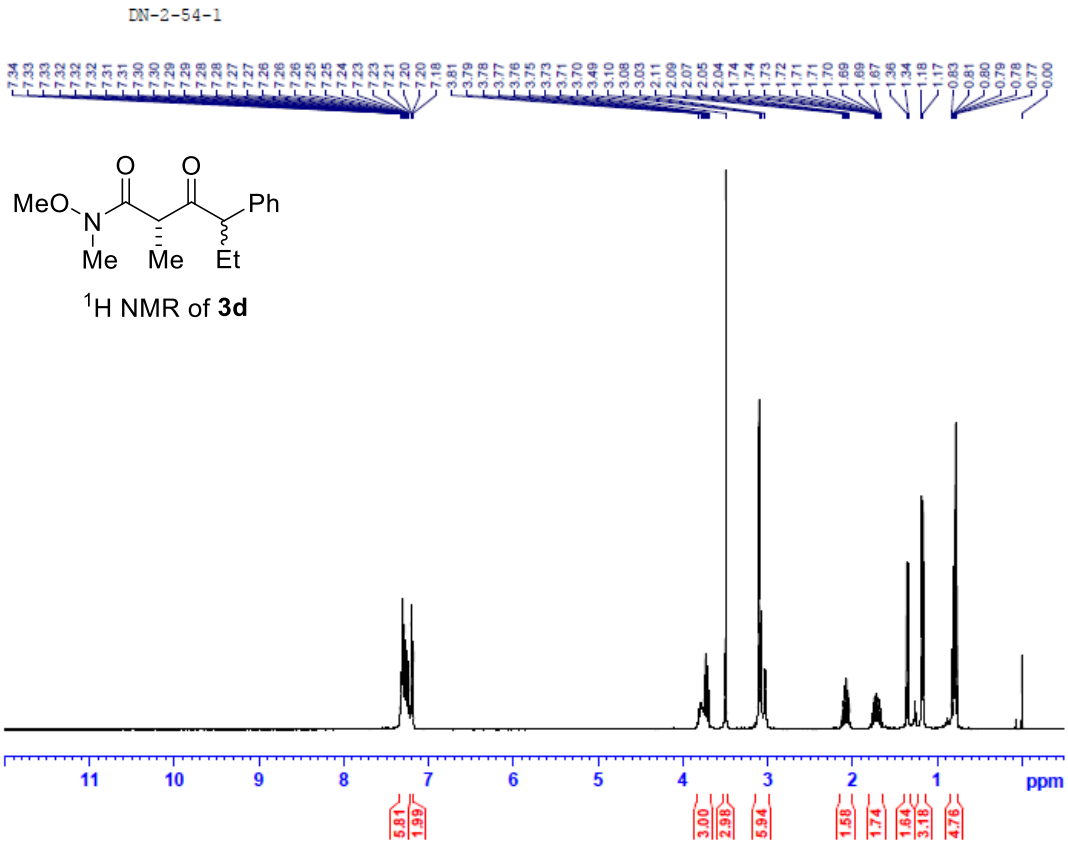
(*S*)-**3b**
^{13}C NMR



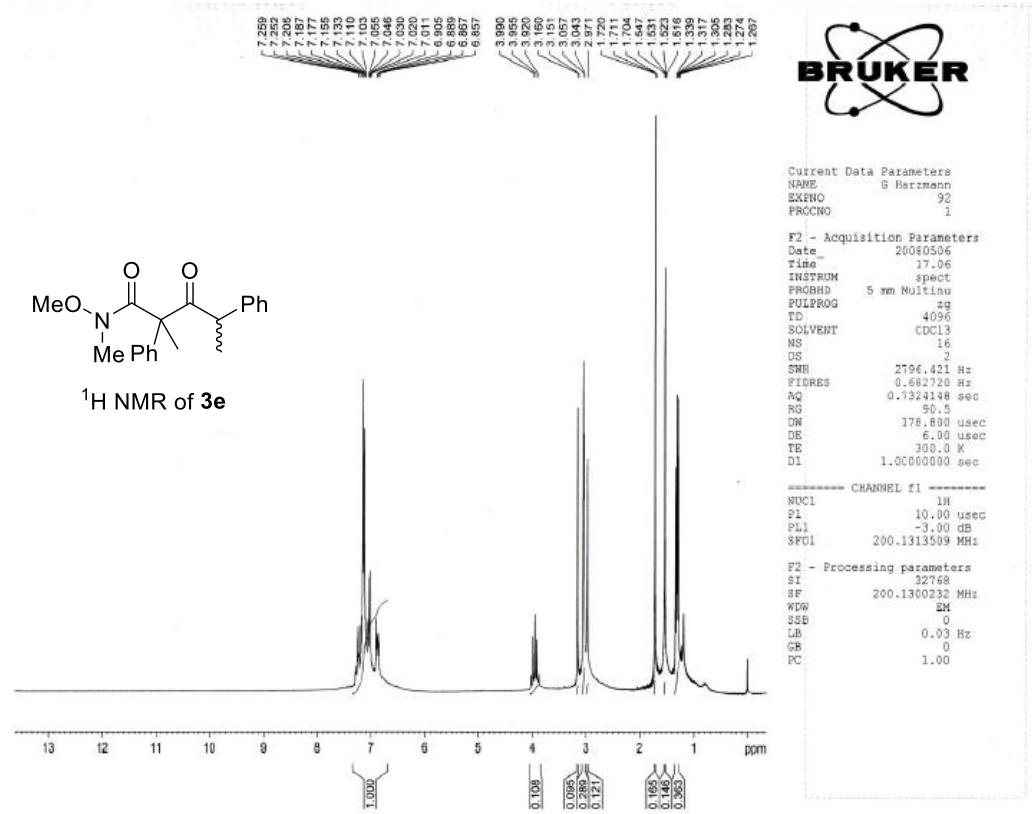
^{1}H NMR of **3c**



^{13}C NMR of **3c**



^{1}H NMR of **3d**



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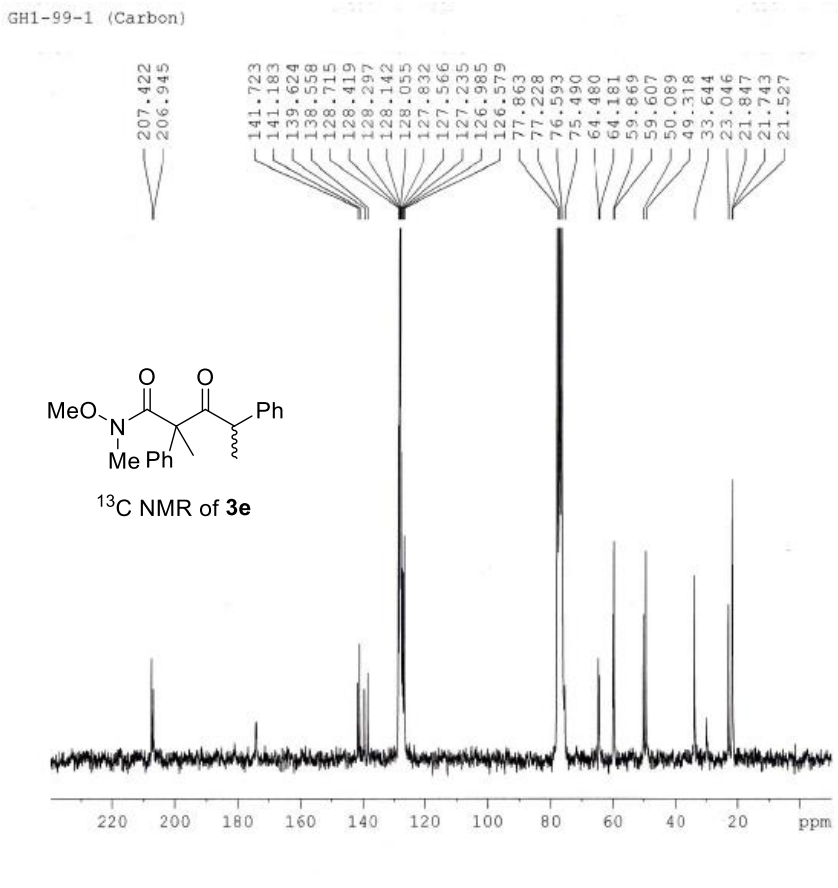

^{13}C NMR of **3e**

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PROCNO                 1

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TE                300.0 K
D1            4.00000000 sec
d11           0.03000000 sec

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PL1                1.00 dB
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NUC2                1H
PCPD2             100.00 use
PL2               -4.00 dB
PL12              16.72 dB
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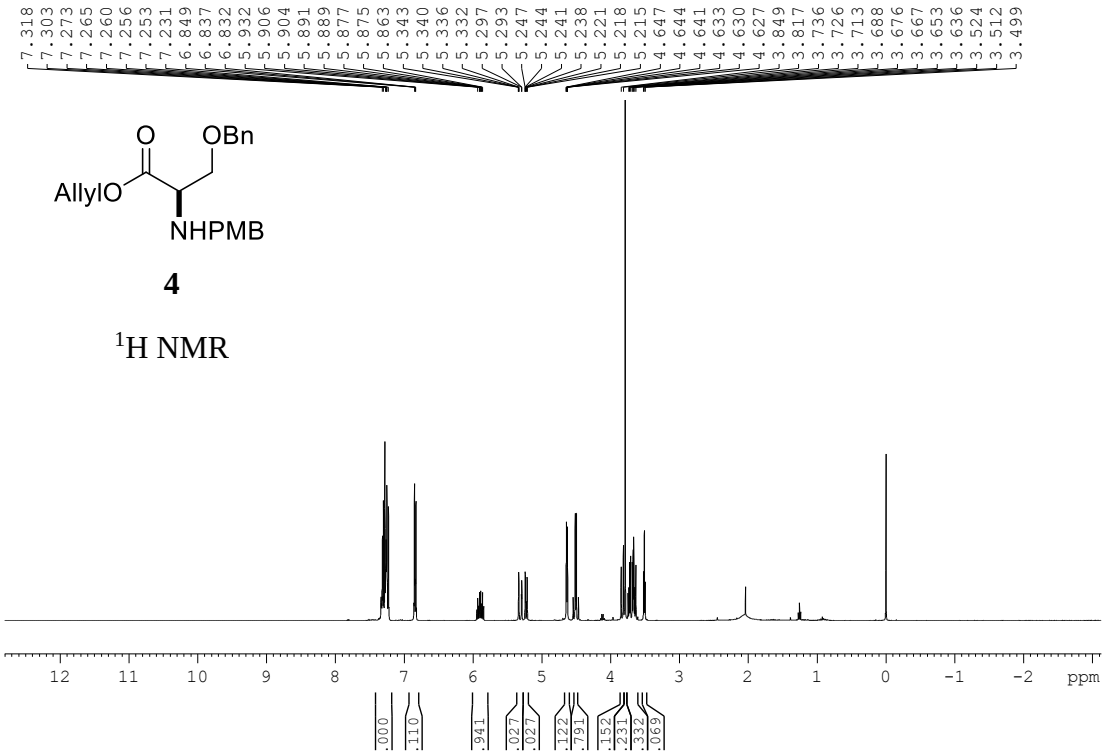
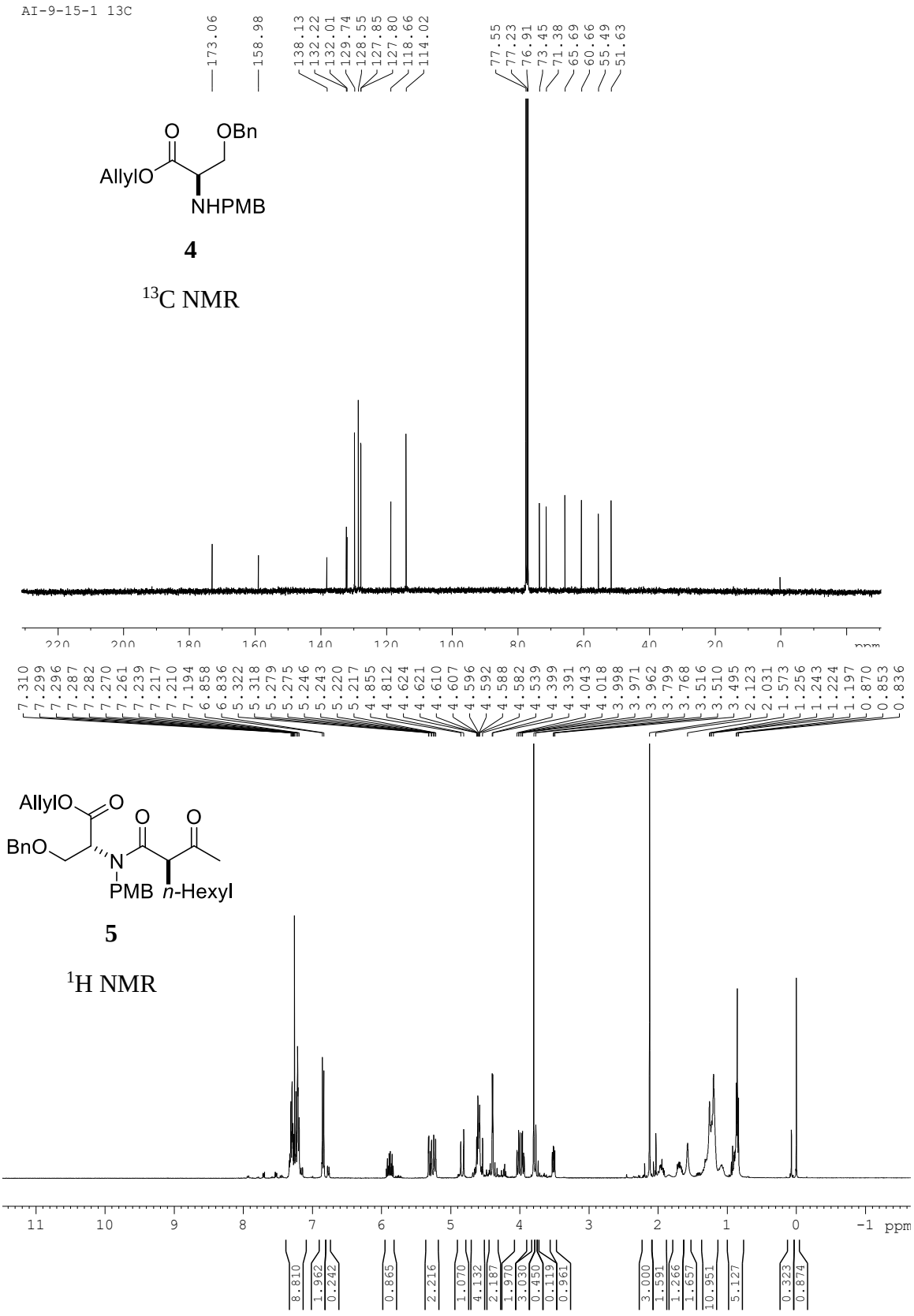


4

^{1}H NMR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132.01
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128.55
127.85
127.80
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114.02
77.55
77.23
76.91
73.45
71.38
65.69
60.66
55.49
51.63
O
OBn
AllylO
NHPMB
4
13C NMR
7.310
7.299
7.296
7.287
7.282
7.270
7.261
7.239
7.217
7.210
7.194
6.858
6.836
5.322
5.318
5.279
5.275
5.246
5.243
5.220
5.217
4.855
4.812
4.624
4.621
4.610
4.607
4.596
4.592
4.588
4.582
4.539
4.399
4.391
4.043
4.018
3.998
3.971
3.962
3.799
3.768
3.516
3.510
3.495
2.123
2.031
1.573
1.256
1.243
1.224
1.197
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0.853
0.836
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BnO
PMB
n-Hexyl
5
1H NMR
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0.242
0.865
2.216
1.070
4.132
2.187
1.970
3.030
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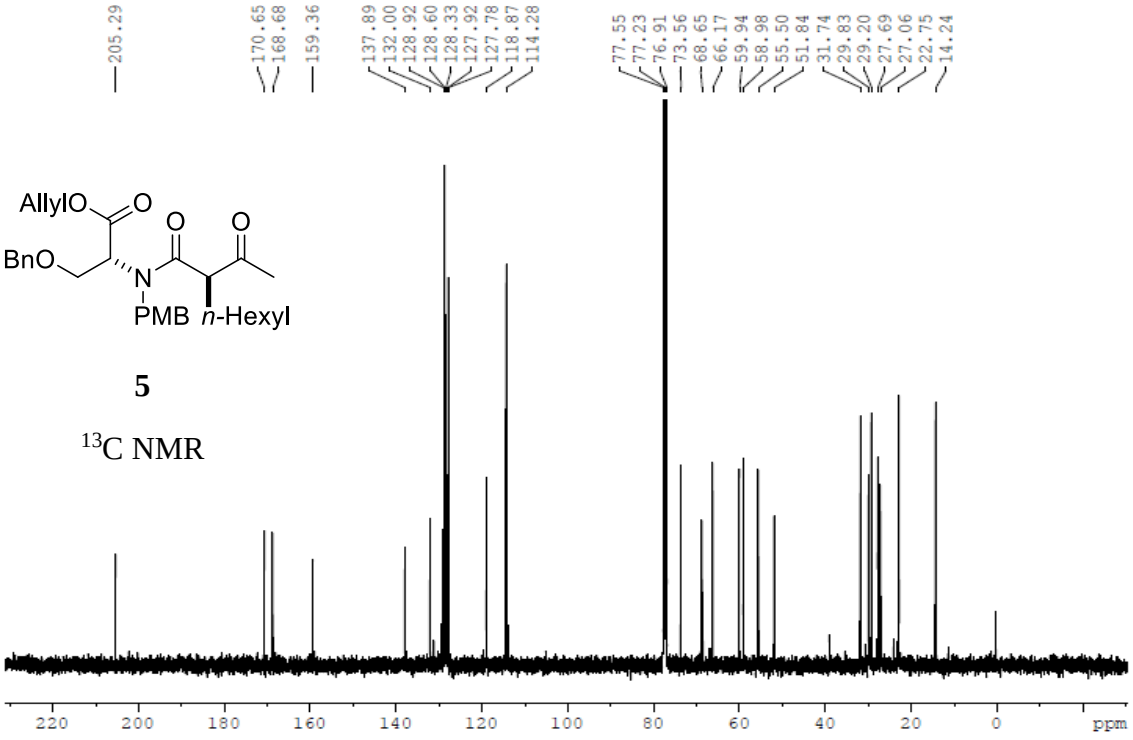
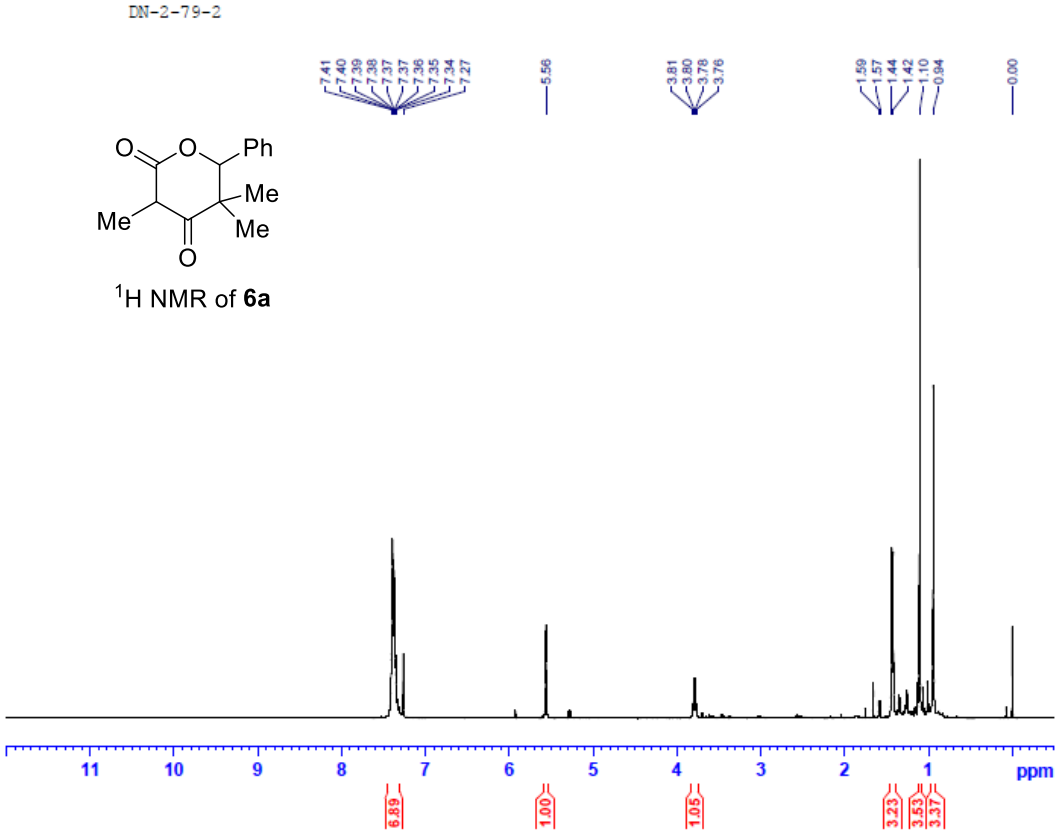
0.874

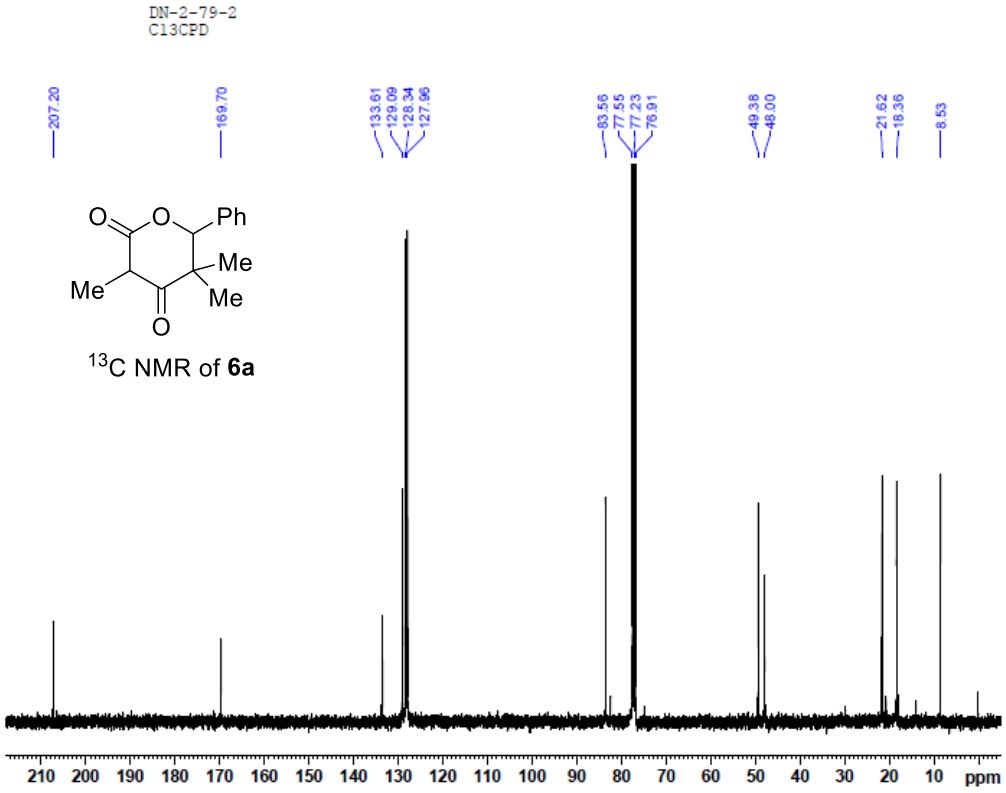


5

^{13}C NMR

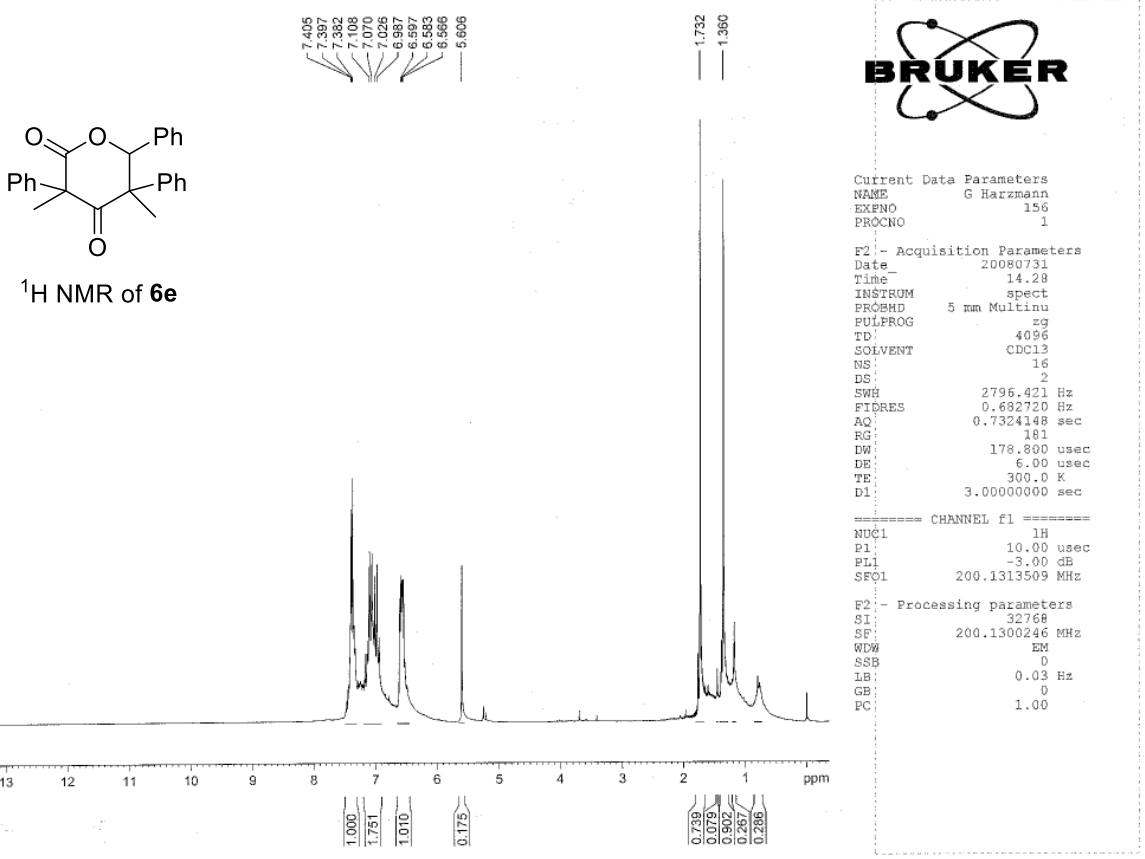


^{1}H NMR of **6a**



^{13}C NMR of **6a**

GH2-69-1



^{1}H NMR of **6e**

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RG                  181
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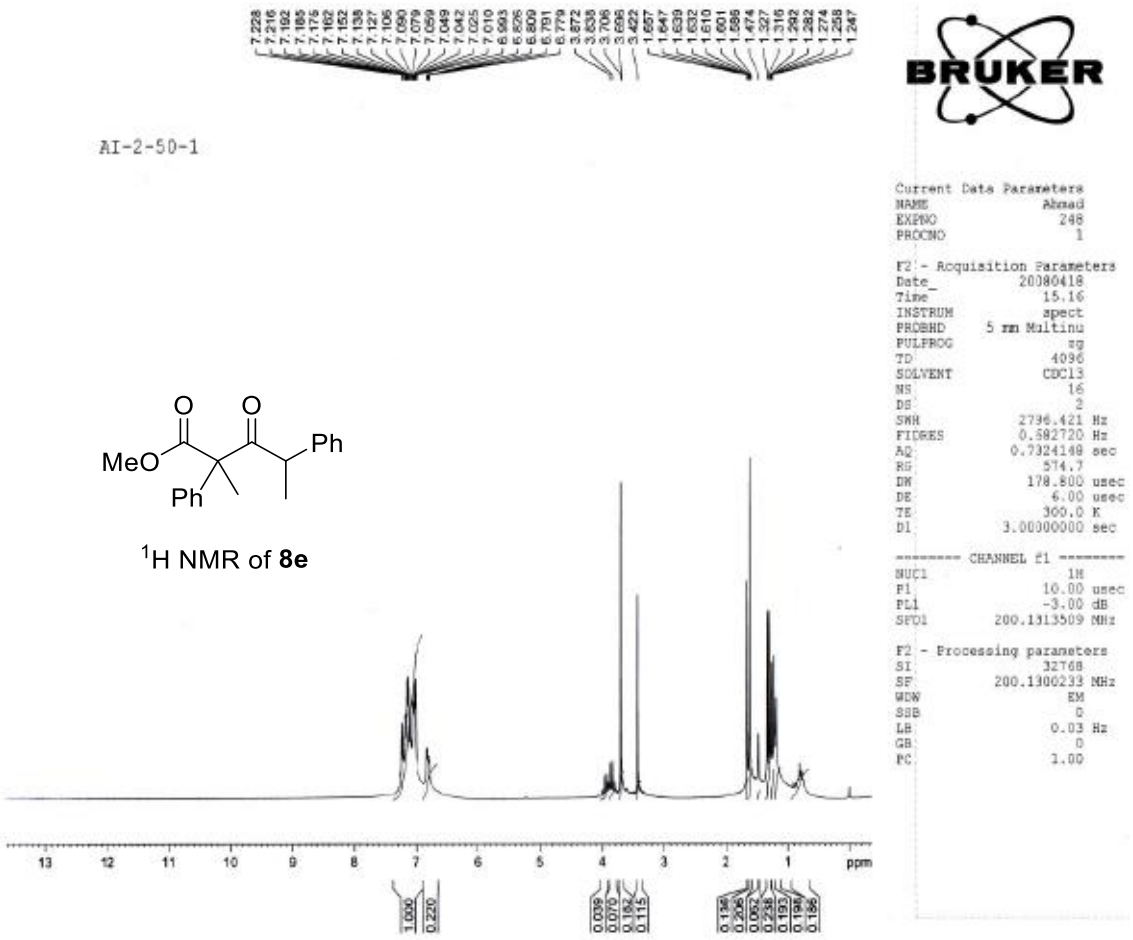
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Ph
Ph
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TE 300.0 K
D1 3.00000000 sec
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P1 10.00 usec
PL1 -3.00 dB
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F2 - Processing parameters
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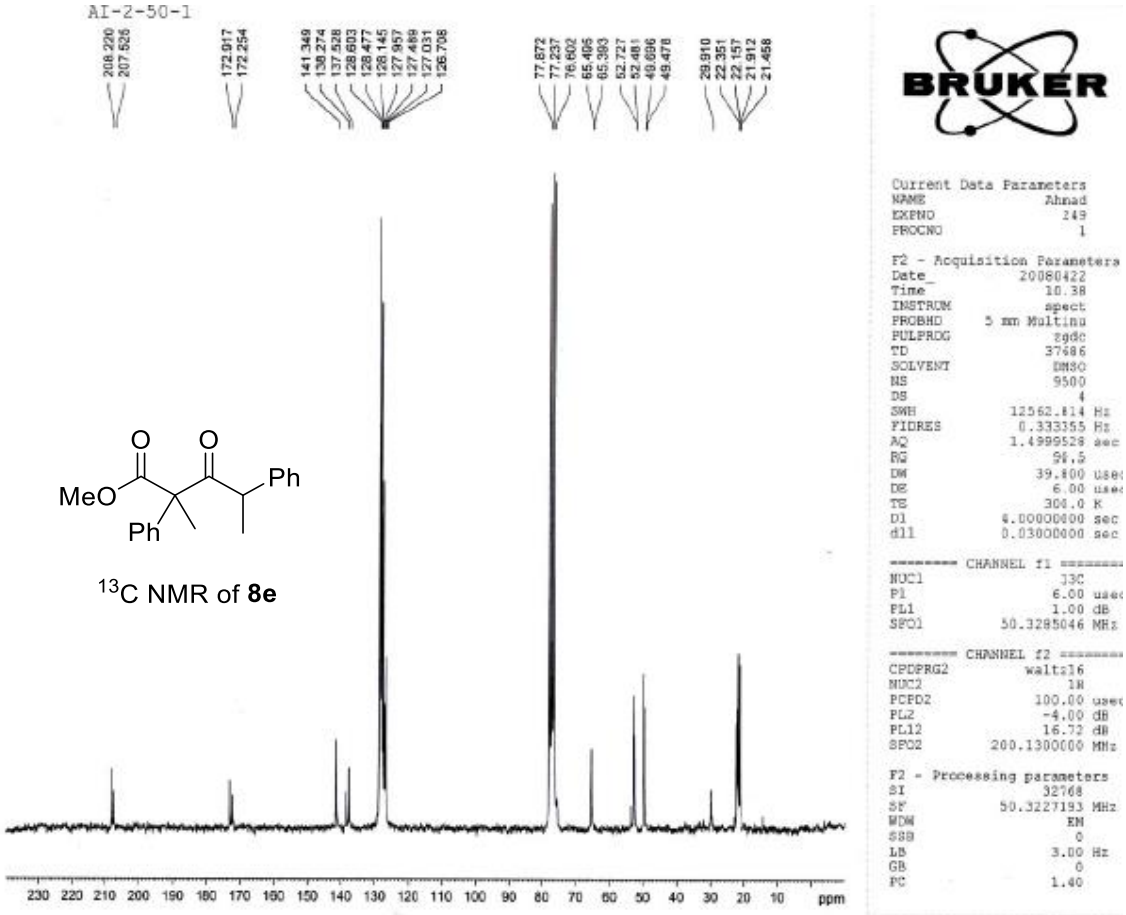

^{13}C NMR of **8e**