Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information for

Efficient Passerini reactions in an aqueous vesicle system

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Synthesis of *N*-(4-methoxybenzyl)formamide:

Reaction conditions: 4-methoxybenzylamine (30 mmol; 3.8 ml) and ethyl formate (12.5 ml) were heated under reflux overnight. After cooling the reaction mixture to room temperature, 5 ml hexane were added. The precipitate was filtered and washed with hexane. Yield 78 % (3.86 g).

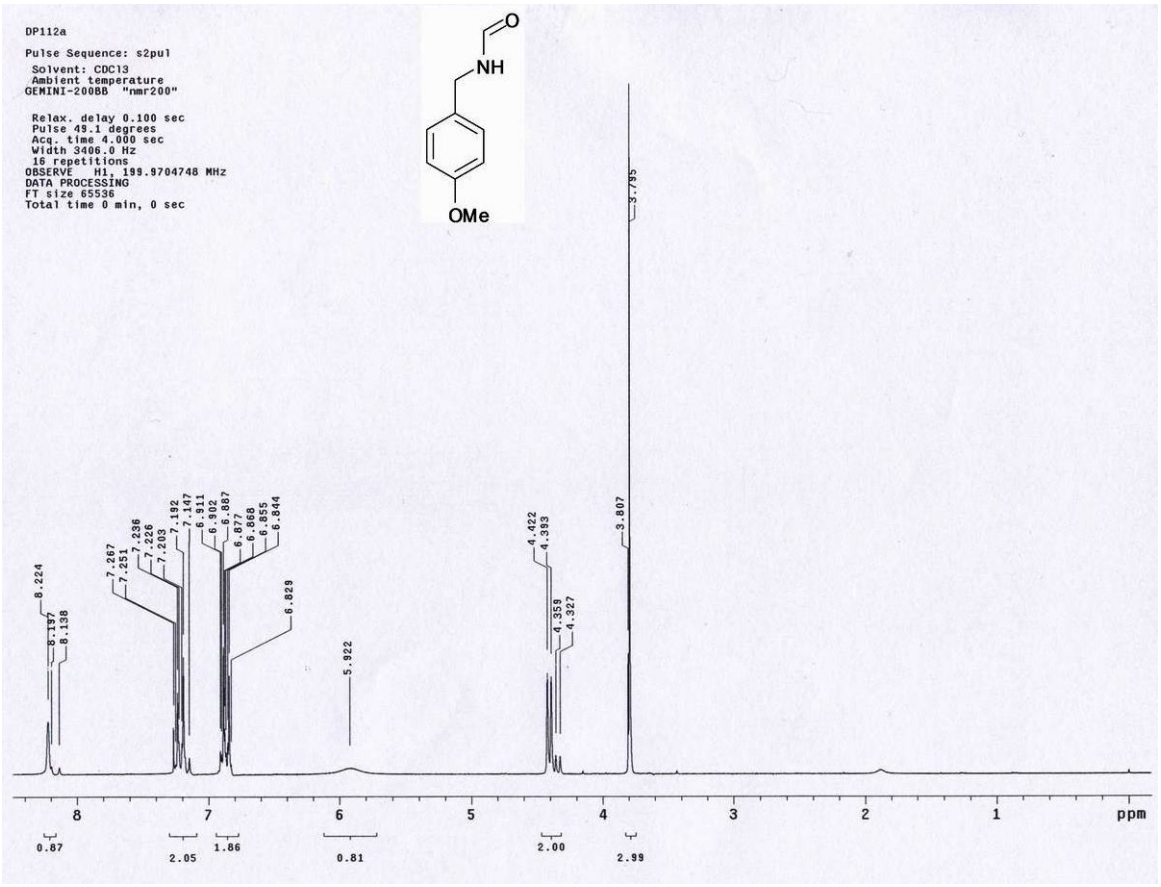


Figure 1 ^{1}H NMR spectrum of *N*-(4-methoxybenzyl)formamide (200 MHz, $CDCl_3$).

Synthesis of *p*-methoxybenzylisocyanide (3a):

Reaction conditions: To a solution of *N*-(4-methoxybenzyl)formamide (16 mmol; 2.64 g) and triethylamine (48 mmol; 6.7 ml) in dry dichloromethane (20 ml) at -78°C phosphoryl oxychloride (20 mmol; 1.85 ml) was added dropwise. After 1 h of stirring at room temperature, the reaction mixture was quenched by adding a saturated solution of $NaHCO_3$ (20 mL), then extracted with dichloromethane (2×20 mL). The combined organic layers were dried with $MgSO_4$ and residuals of solvent were distilled under reduced pressure. The crude product was purified by column chromatography on silica gel using hexane/AcOEt as an eluent. Yield 80 % (1.88 g).

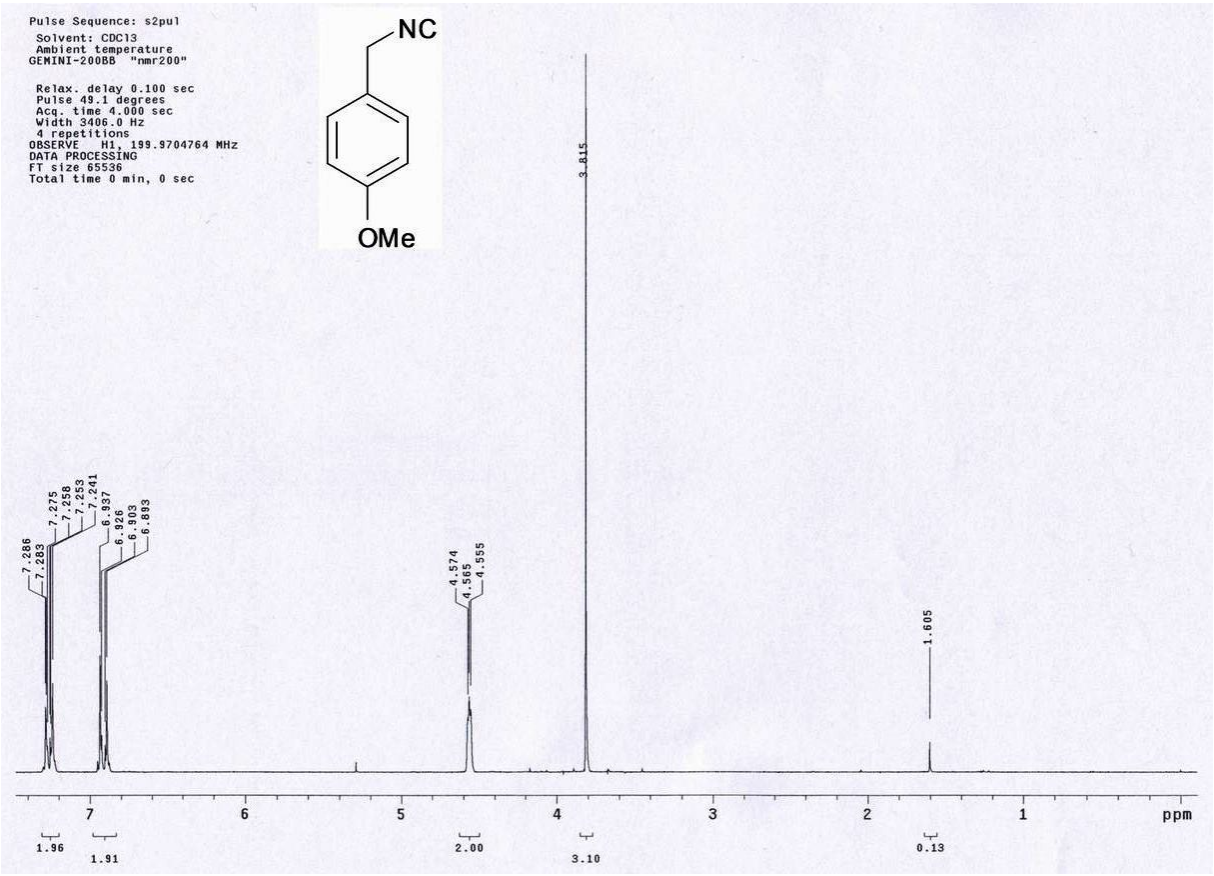
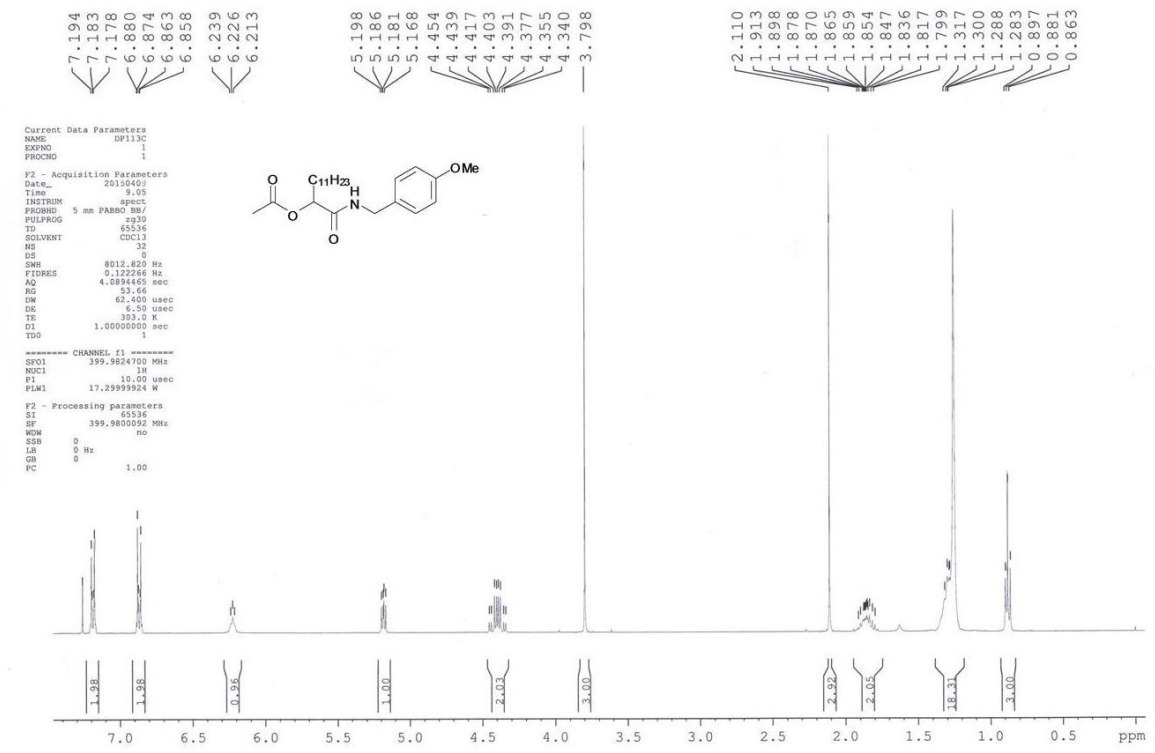


Figure 2 ^{1}H NMR spectrum of compound **3a** (200 MHz, $CDCl_3$).

Appearance of the aqueous Passerini multicomponent reaction samples containing DODAB

Figure 3 Photographic images of the Passerini multicomponent reaction samples (reaction with benzoic acid **1b** (0.2 mmol), dodecyl aldehyde **2a** (0.2 mmol) and *p*-methoxybenzyl isocyanide **3a** (0.2 mmol)) in PBS (2 mL), with the addition of DODAB (0.04 mmol), 25 °C.
Left: milky suspension of DODAB in PBS after 10 minutes of stirring with a magnetic stirrer.
Middle: Reaction mixture 5 minutes after adding the starting materials.
Right: Reaction mixture after 24 h; product precipitation which occurs is not seen on the image.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7.178
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6.239
6.226
6.213
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5.181
5.168
4.454
4.439
4.417
4.403
4.391
4.377
4.355
4.340
3.798
2.110
1.913
1.898
1.878
1.870
1.865
1.859
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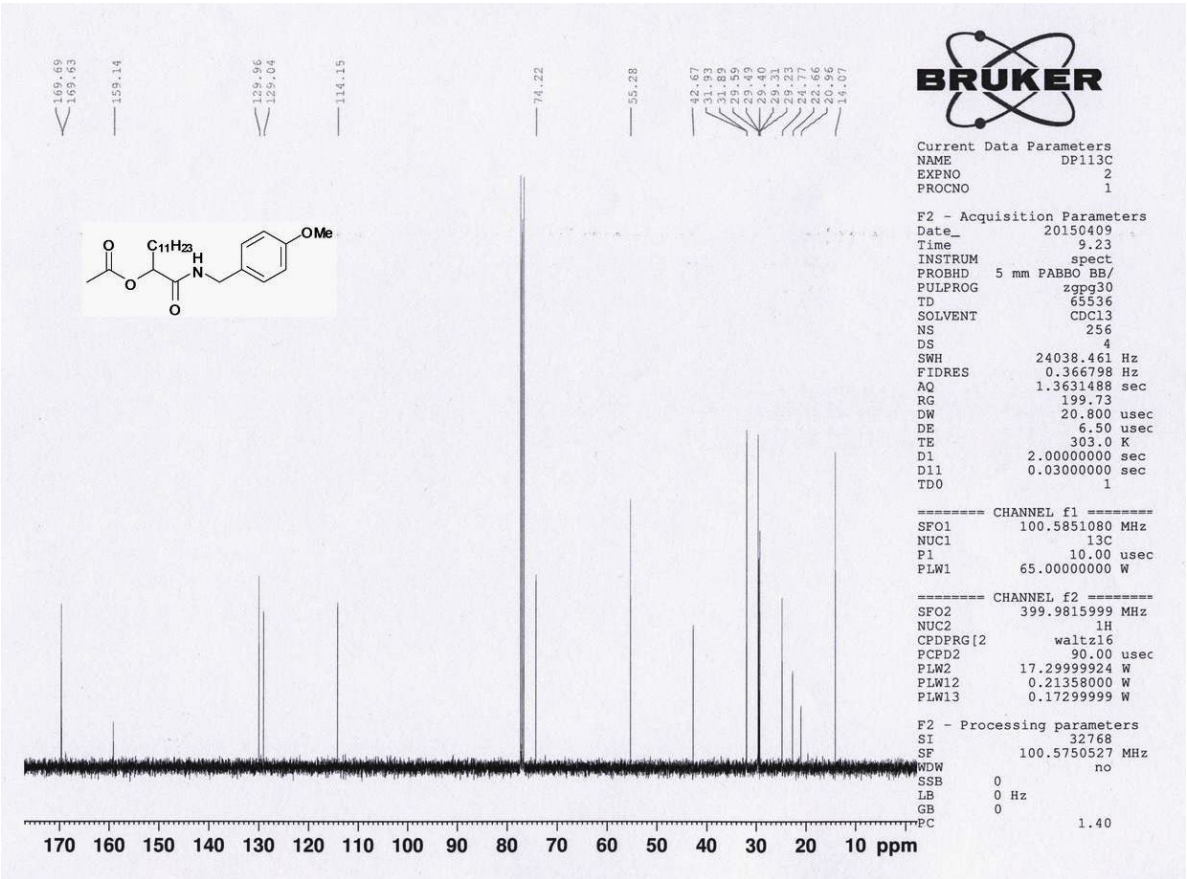
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D11 0.03000000 sec
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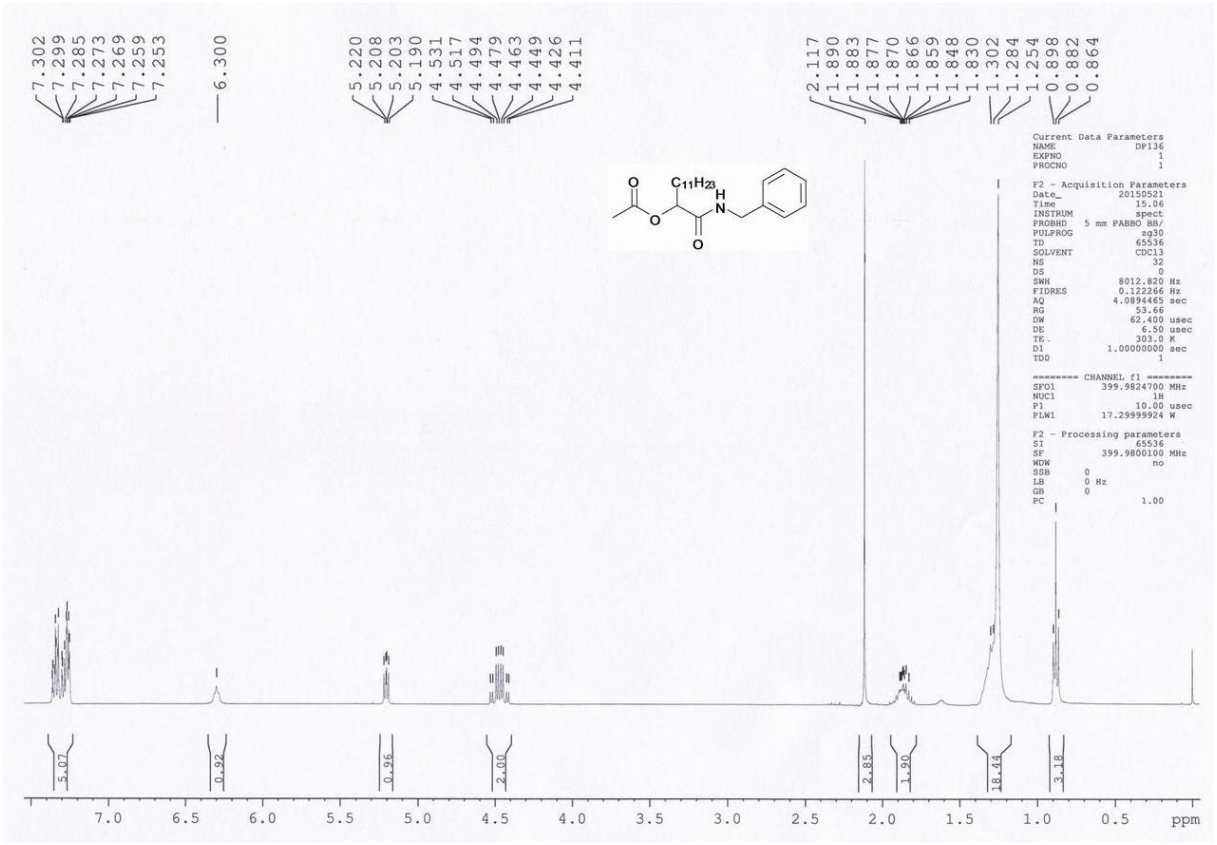
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10 ppm

Figure 4 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4a** (400 MHz, $CDCl_3$).



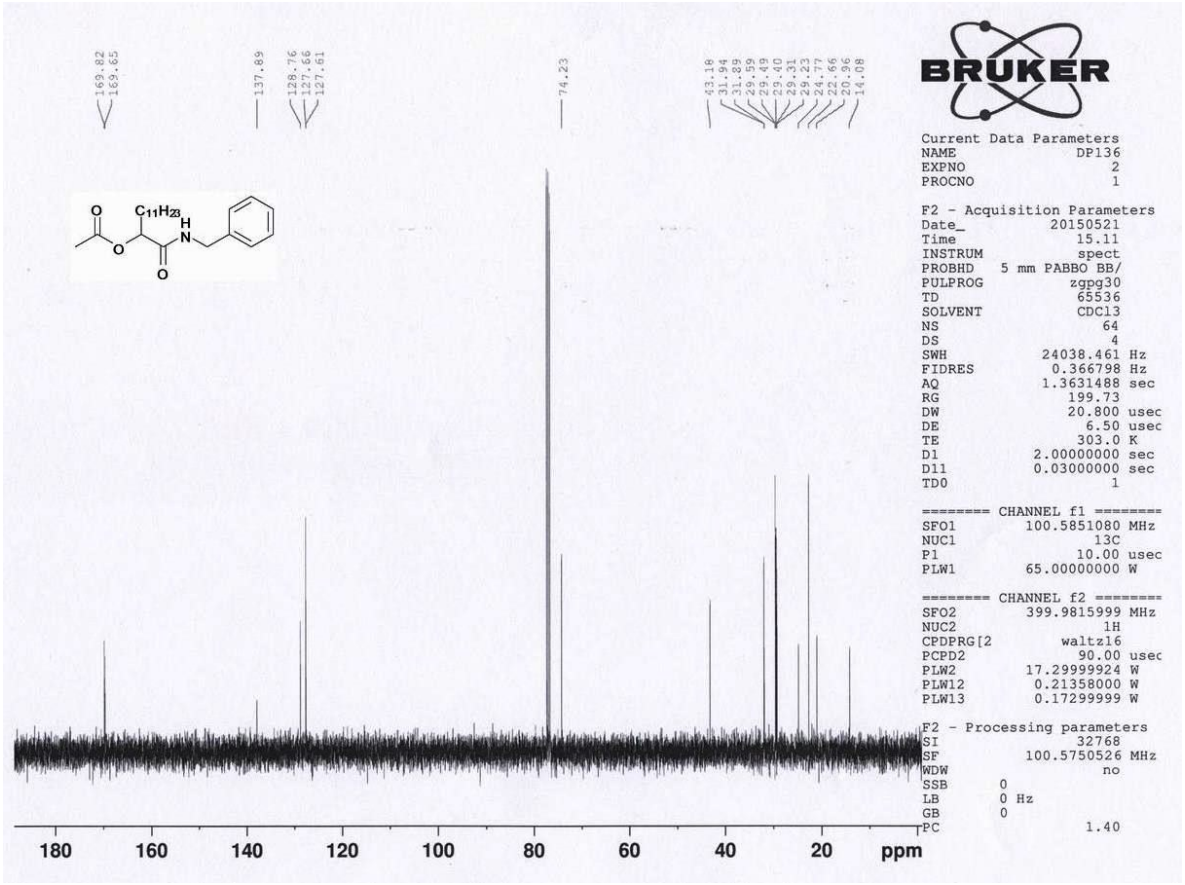
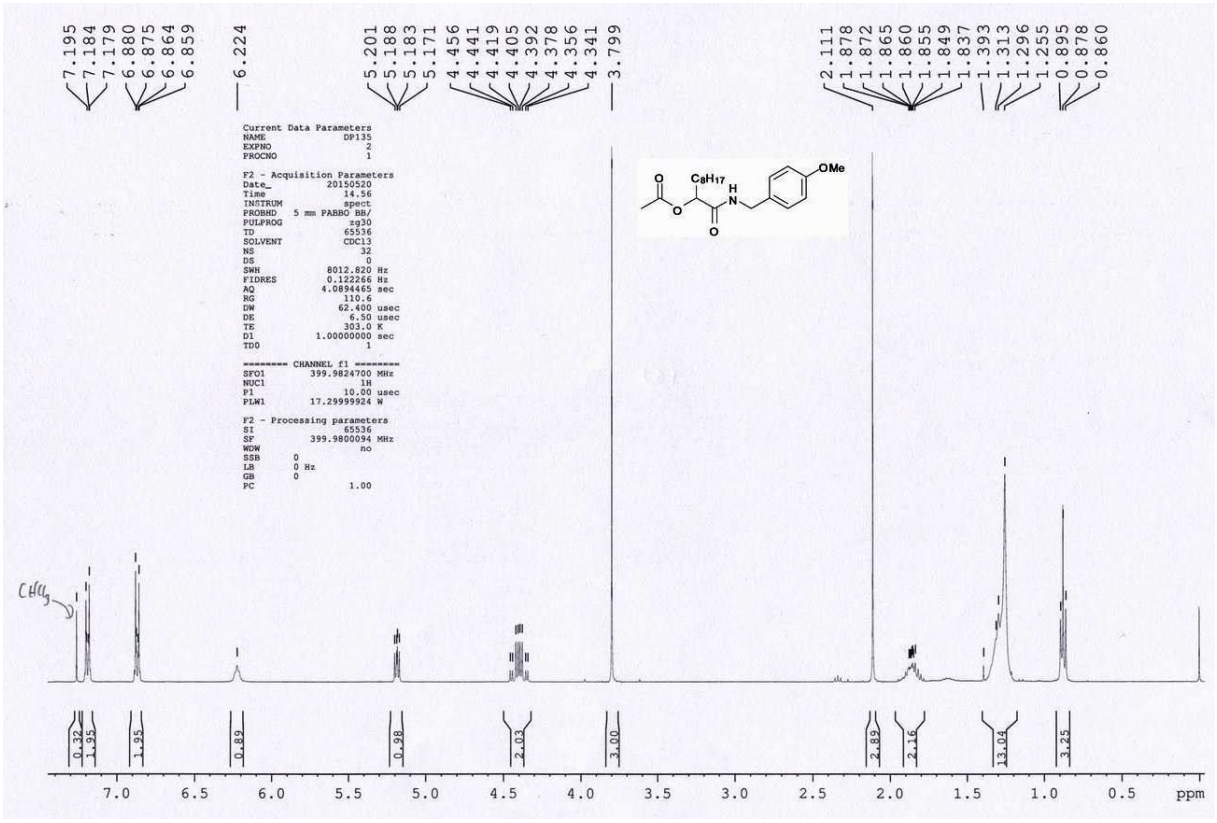


Figure 5 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4b** (400 MHz, $CDCl_3$).



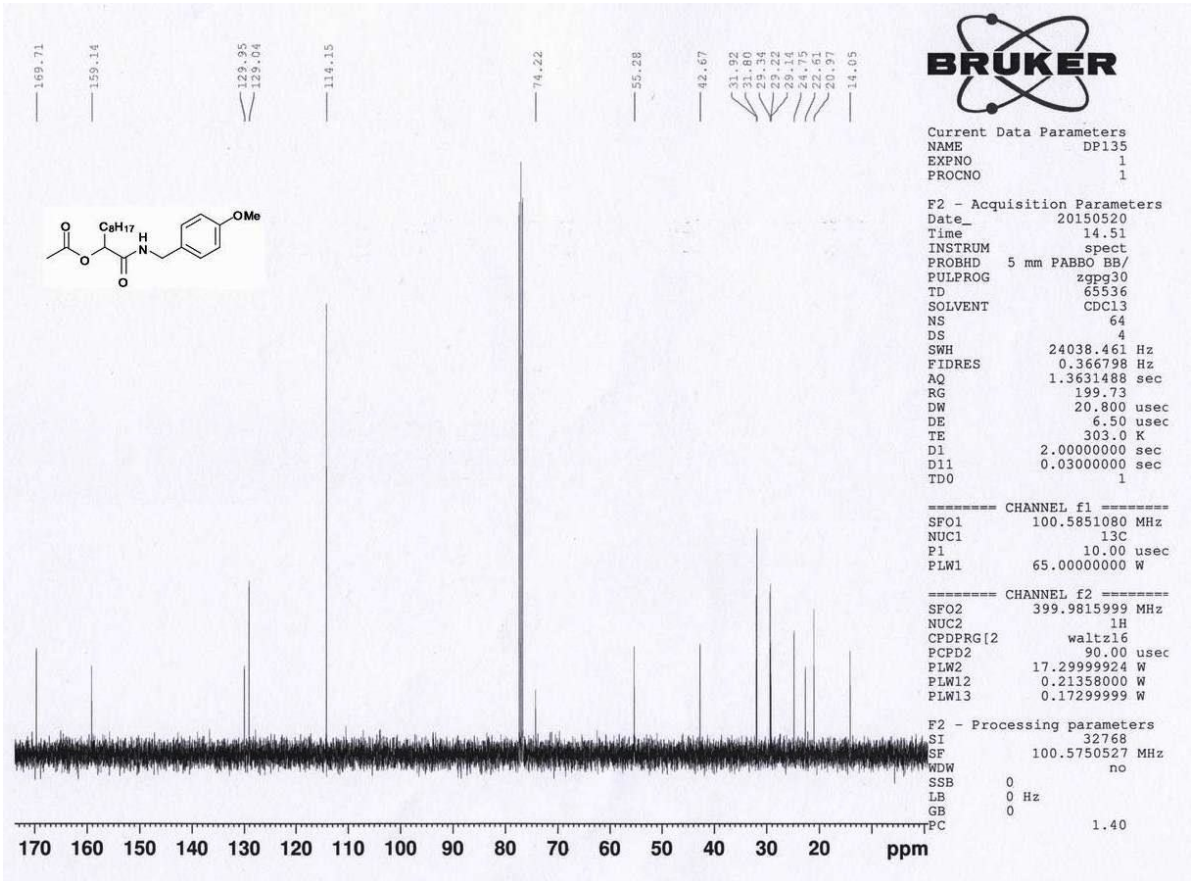
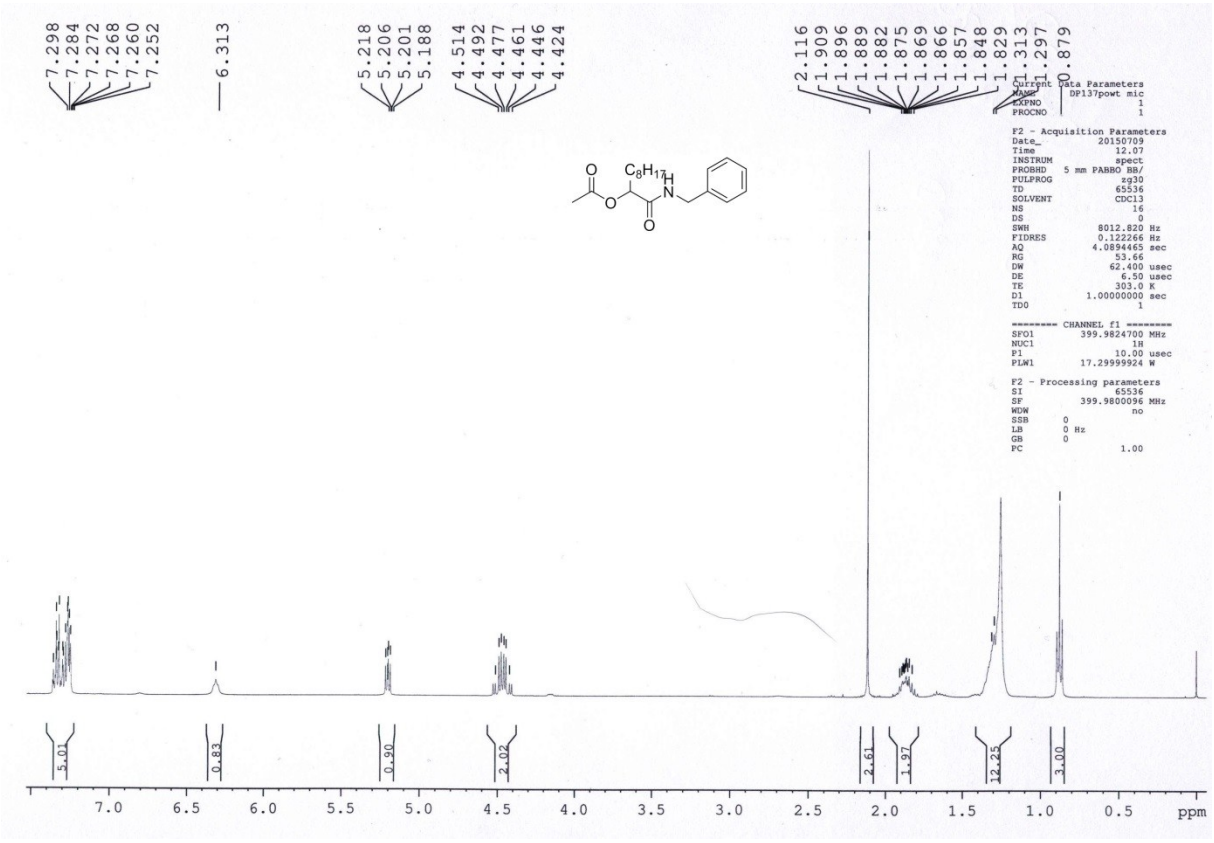


Figure 6 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4c** (400 MHz, $CDCl_3$).



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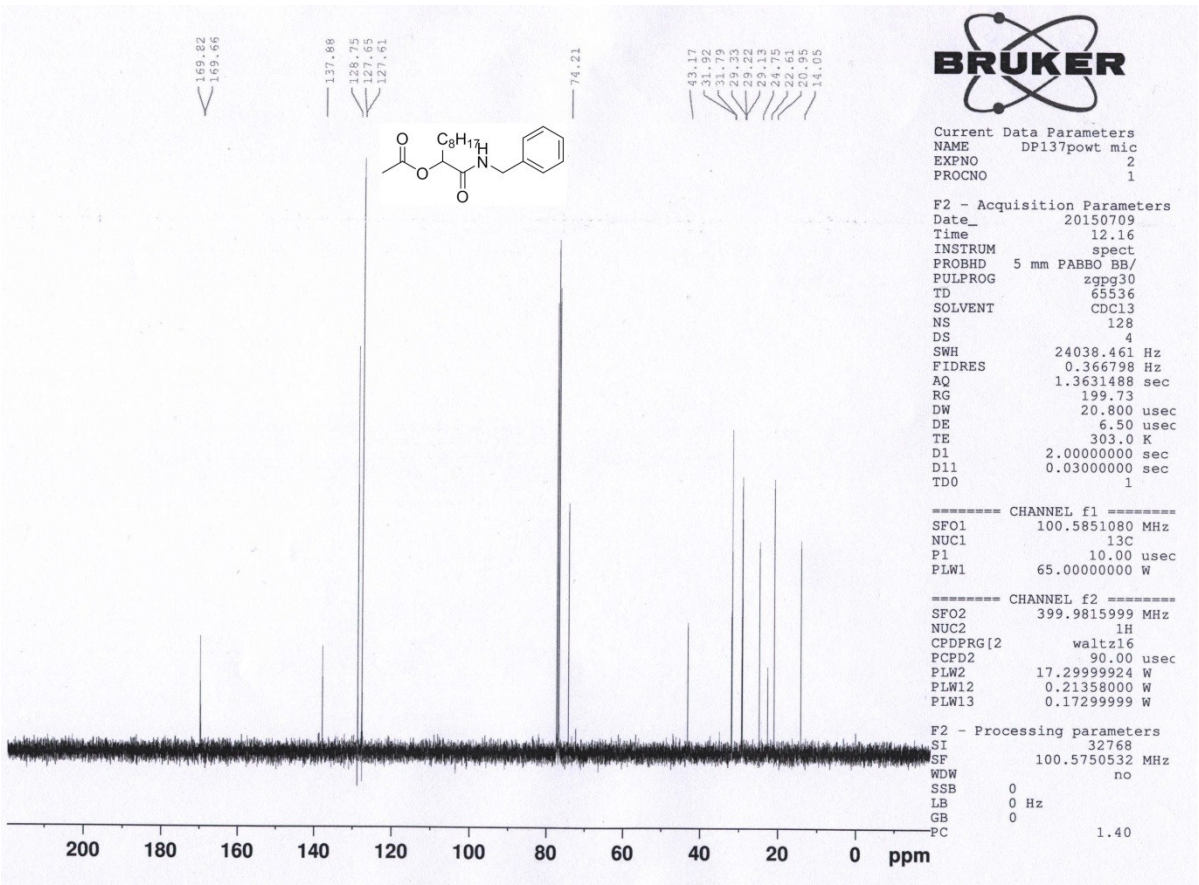

BRUKER

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TE 303.0 K
D1 2.00000000 sec
D11 0.03000000 sec
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NUC1 13C
P1 10.00 usec
PLW1 65.00000000 W

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SFO2 399.9815999 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 17.29999924 W
PLW12 0.21358000 W
PLW13 0.17299999 W

F2 - Processing parameters
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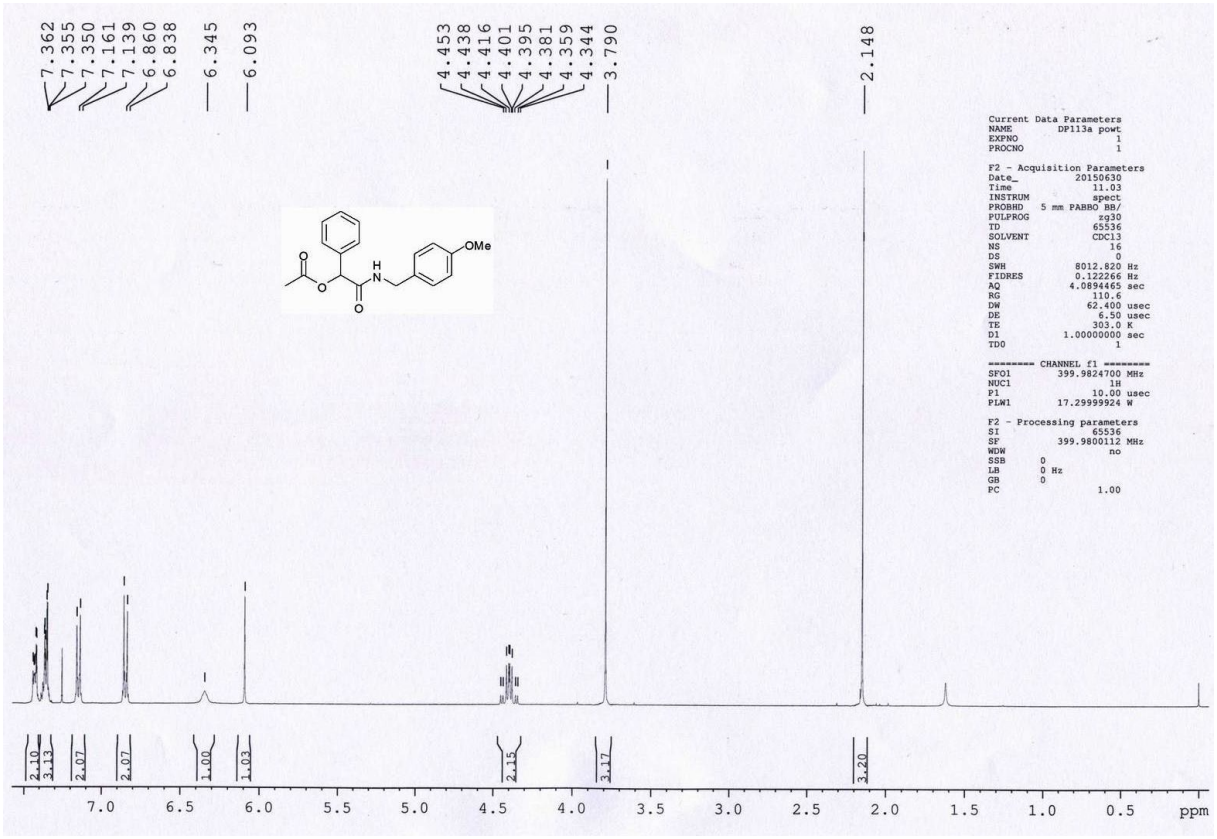
Figure 7 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4d** (400 MHz, $CDCl_3$).



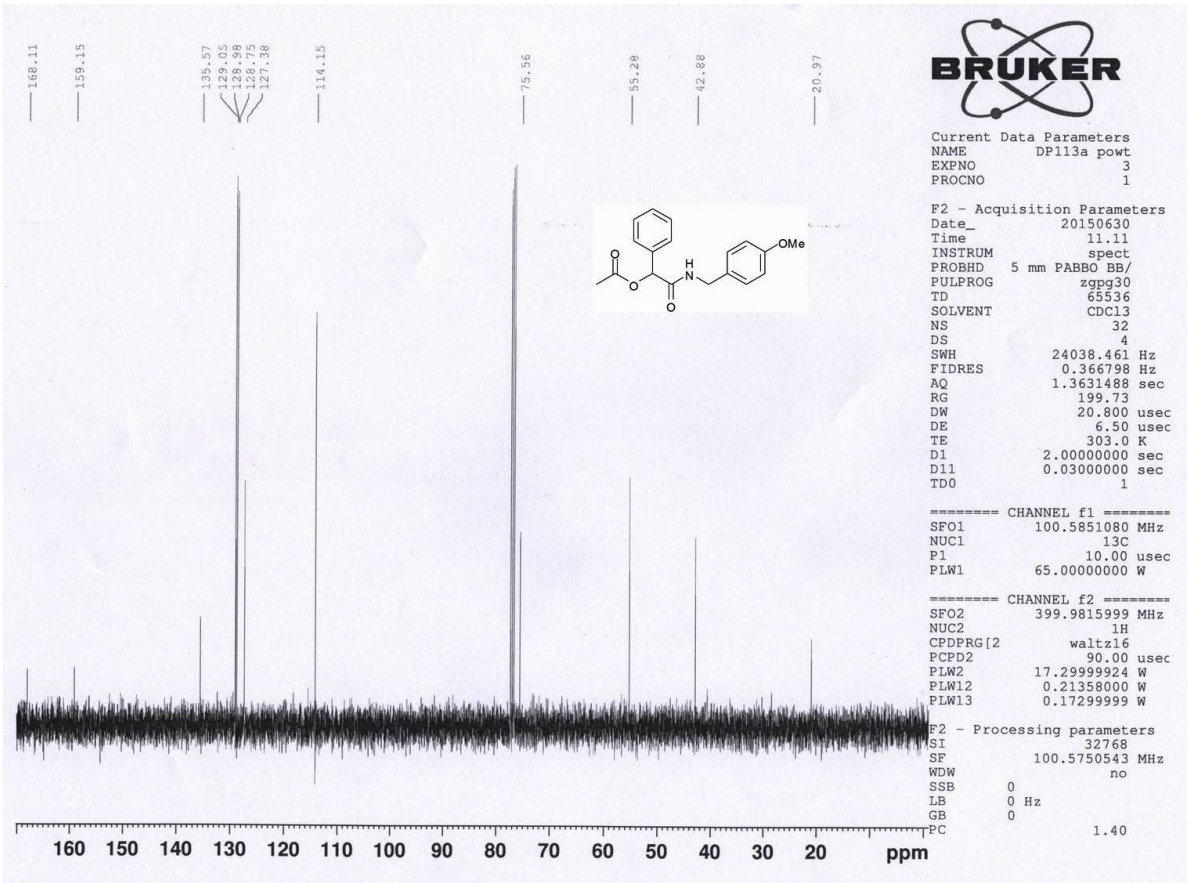
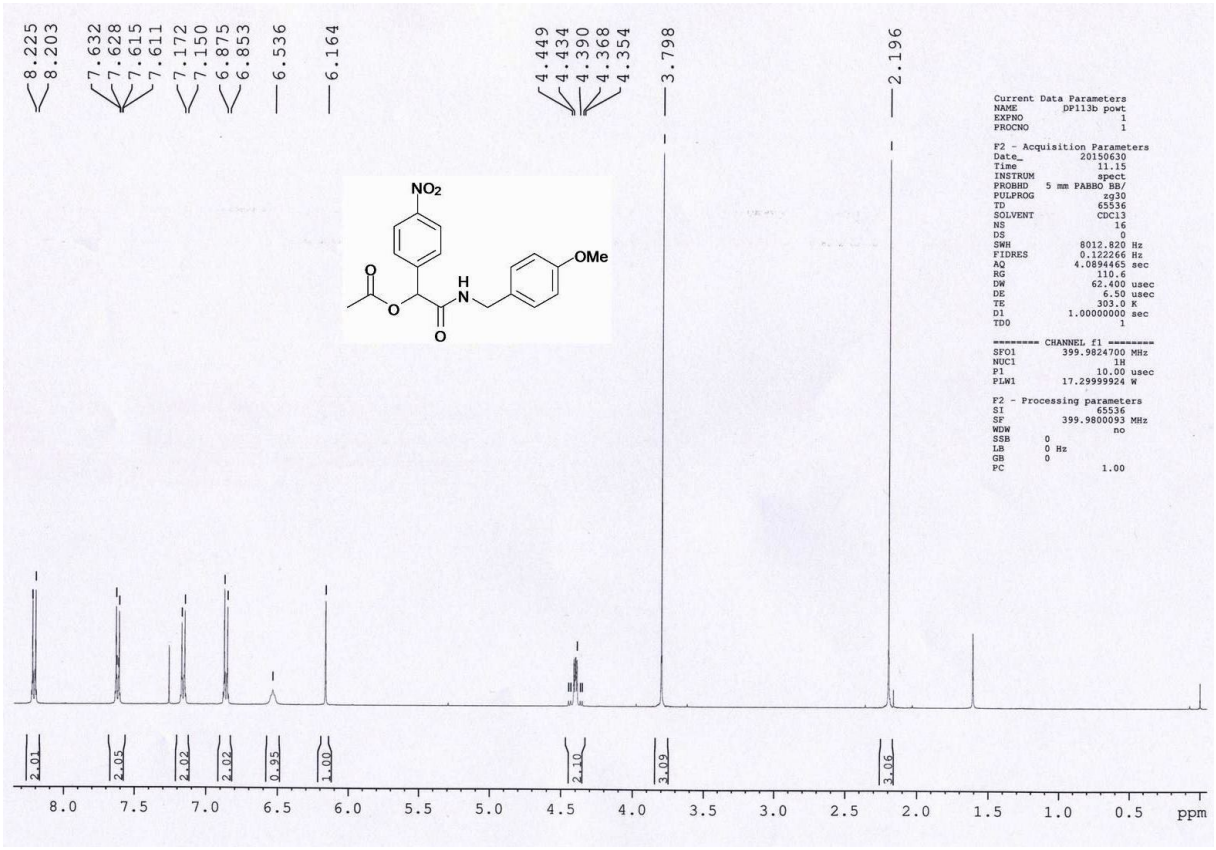


Figure 8 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4e** (400 MHz, $CDCl_3$).



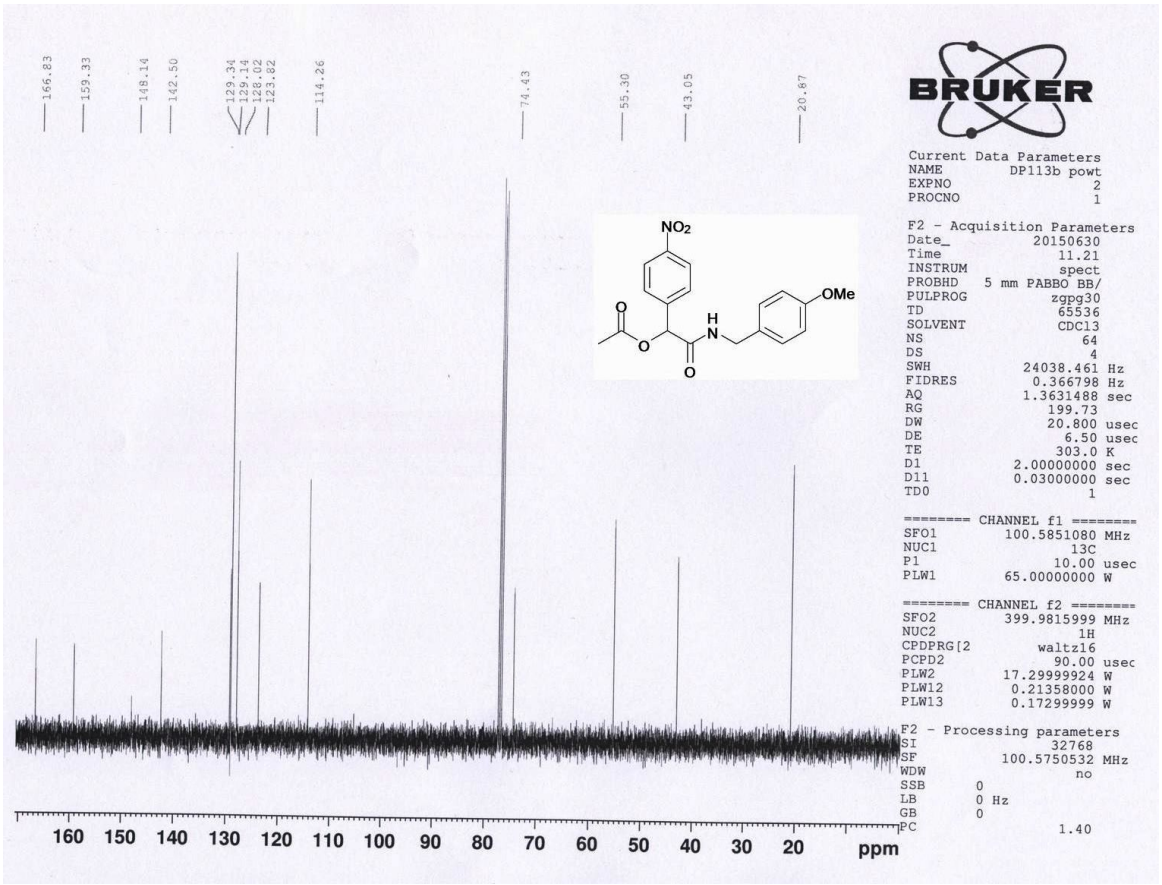
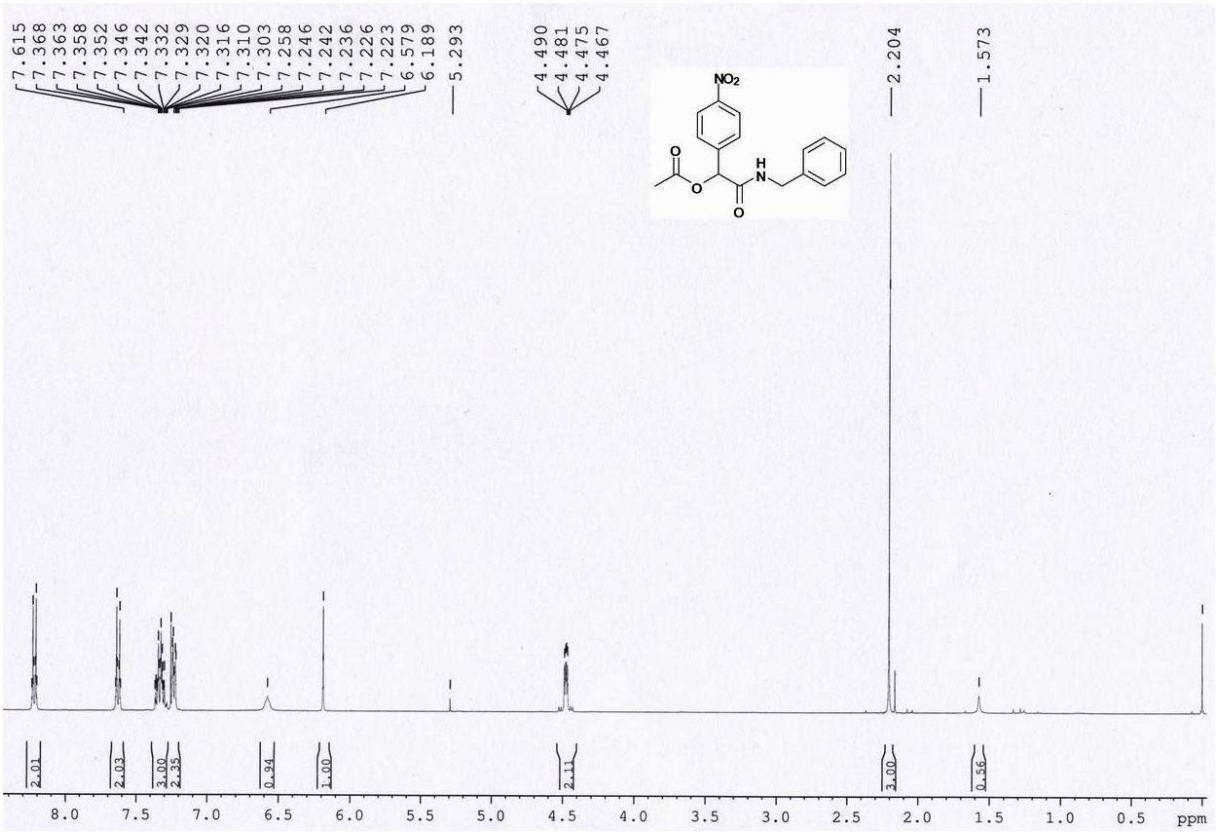


Figure 9 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4f** (400 MHz, $CDCl_3$).



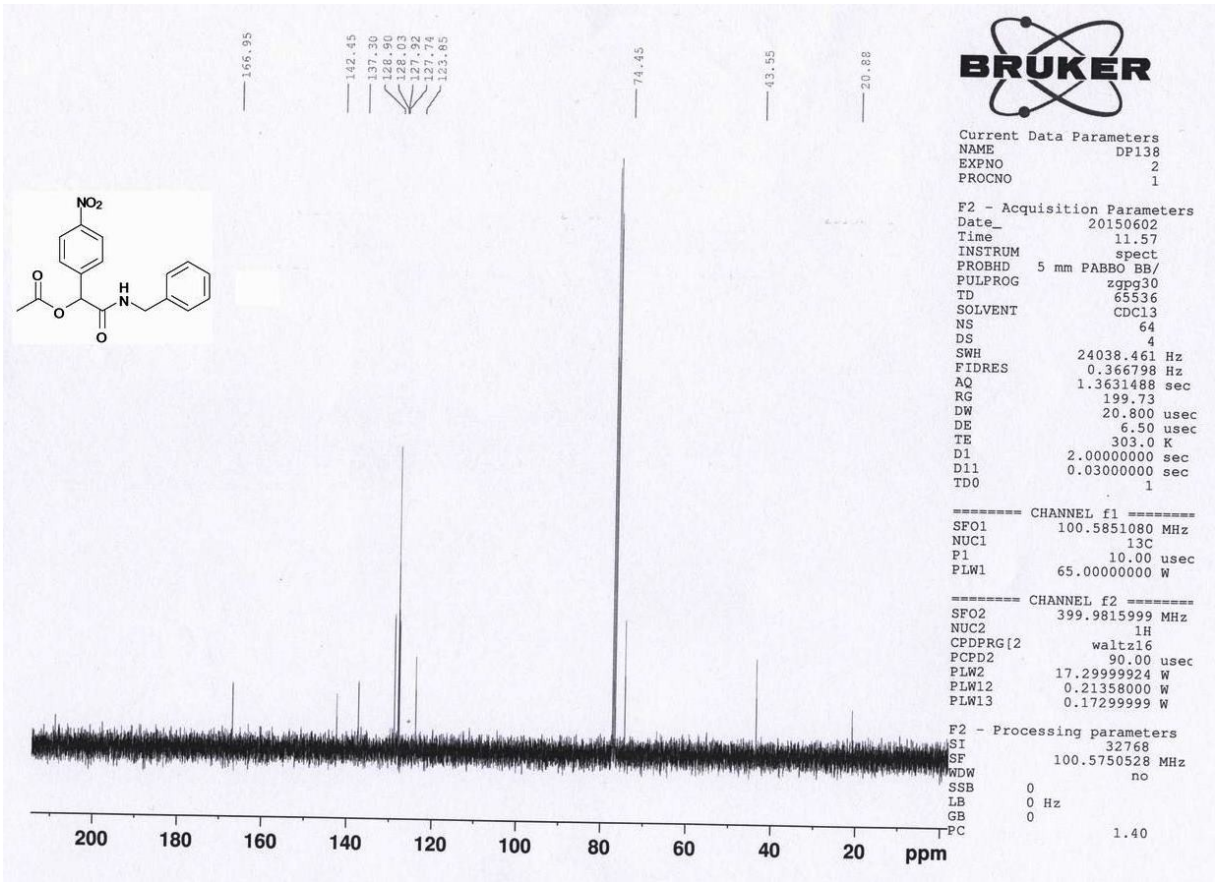
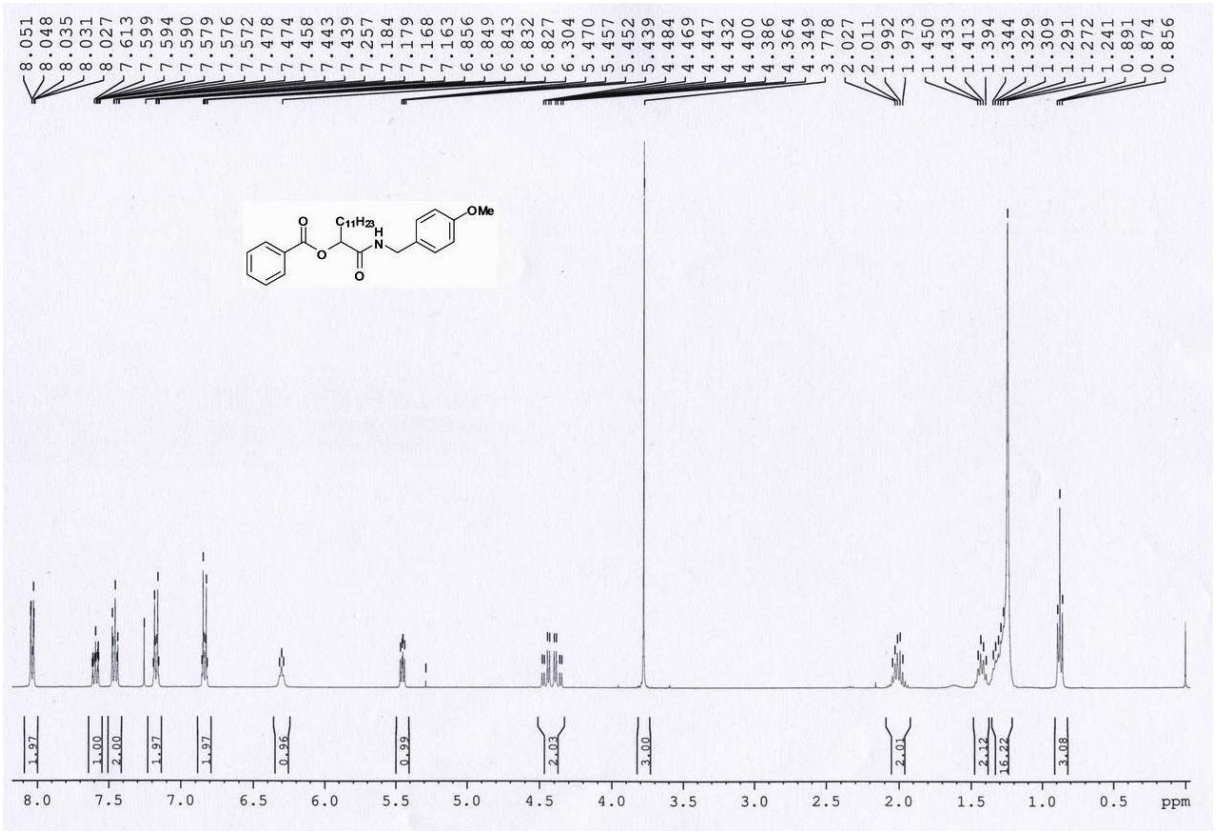


Figure 10 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4g** (400 MHz, $CDCl_3$).



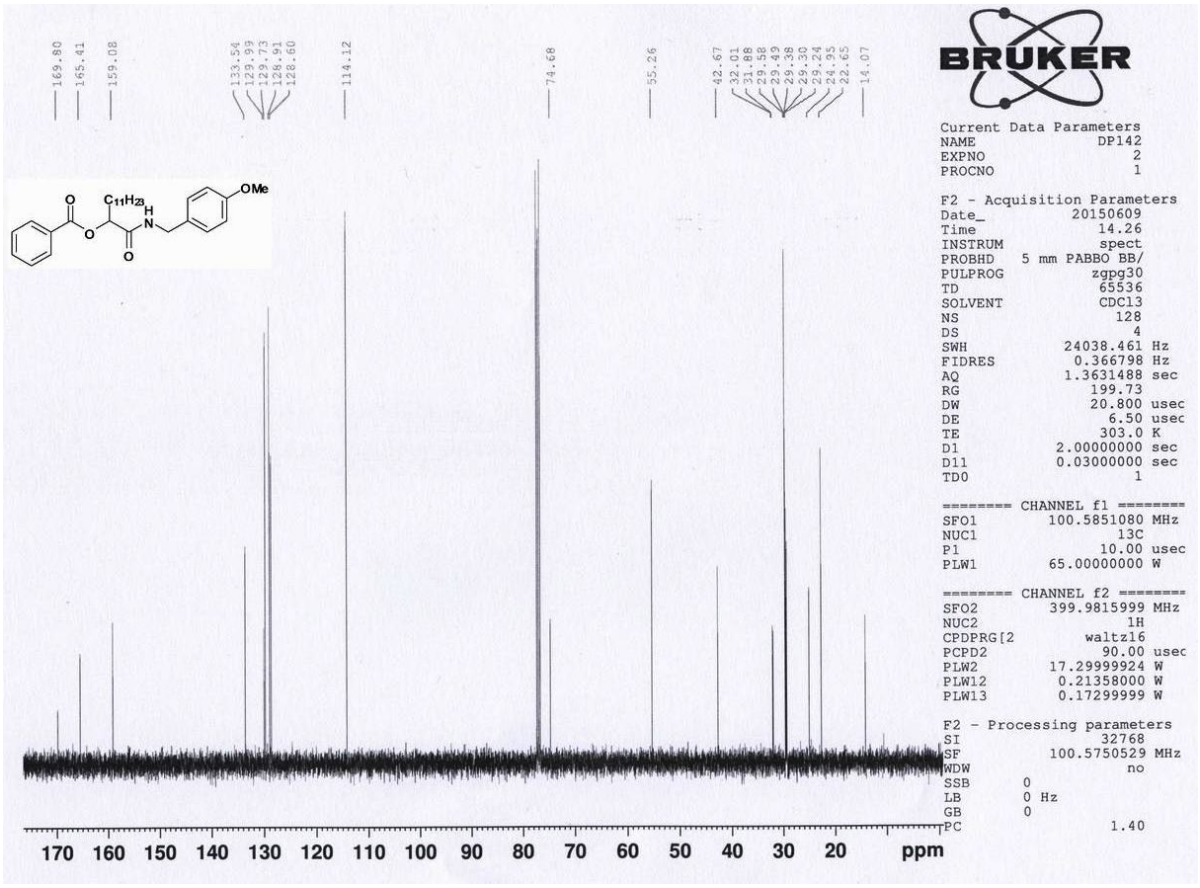
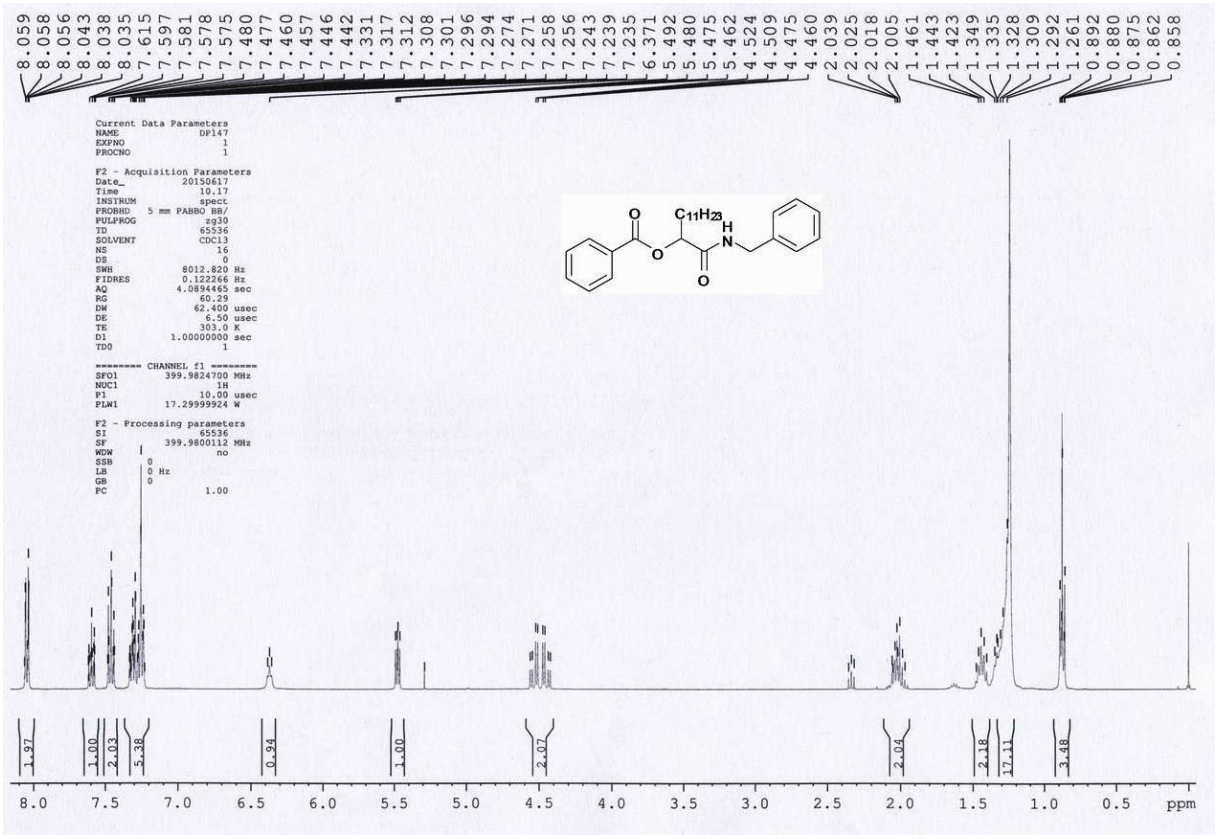


Figure 11 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4h** (400 MHz, $CDCl_3$).



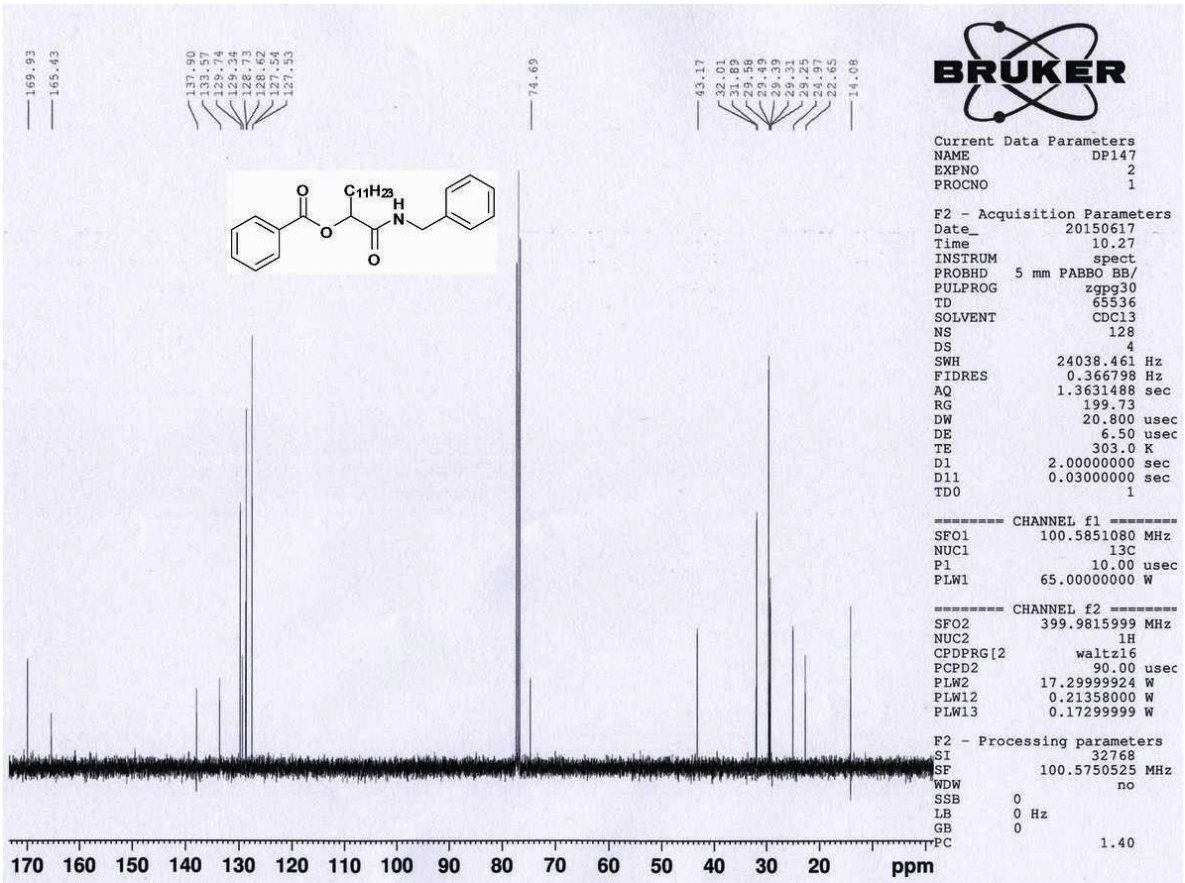
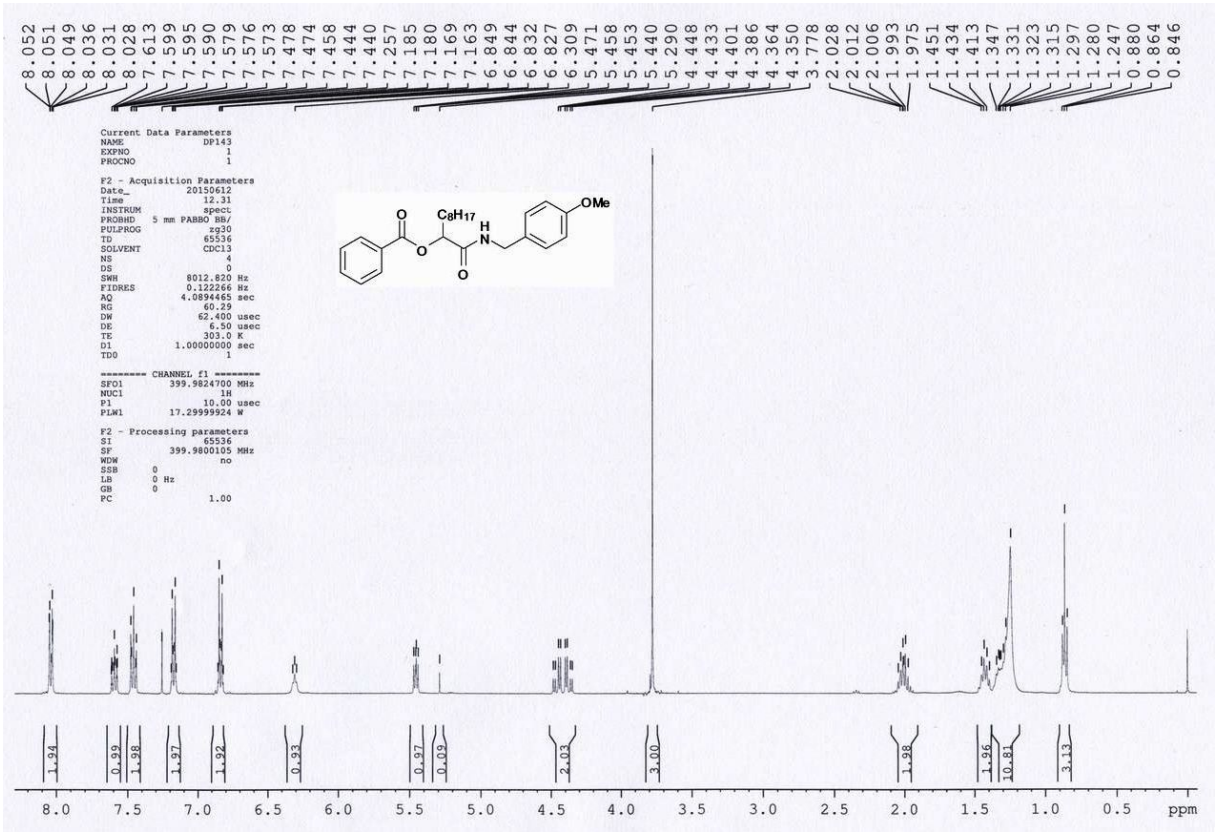


Figure 12 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4i** (400 MHz, $CDCl_3$).



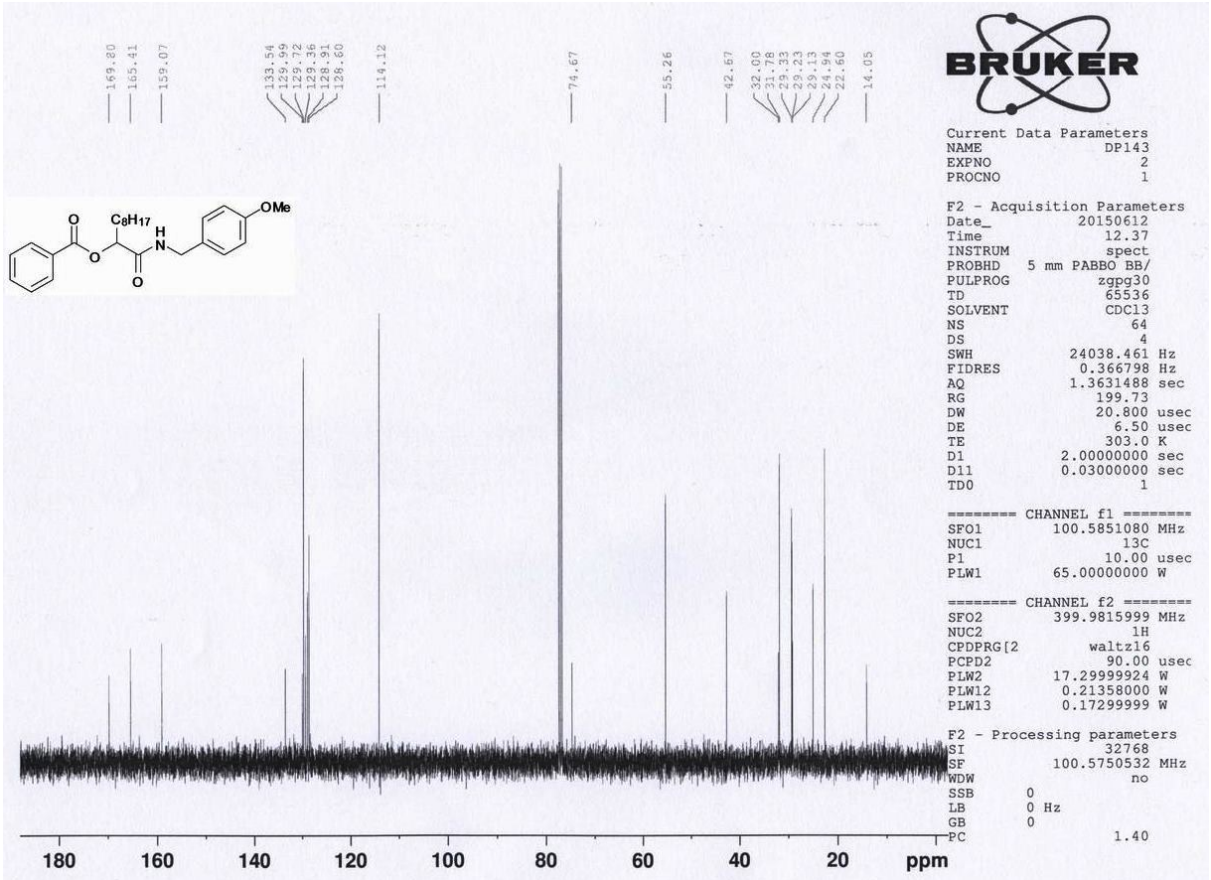


Figure 13 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4j** (400 MHz, $CDCl_3$).

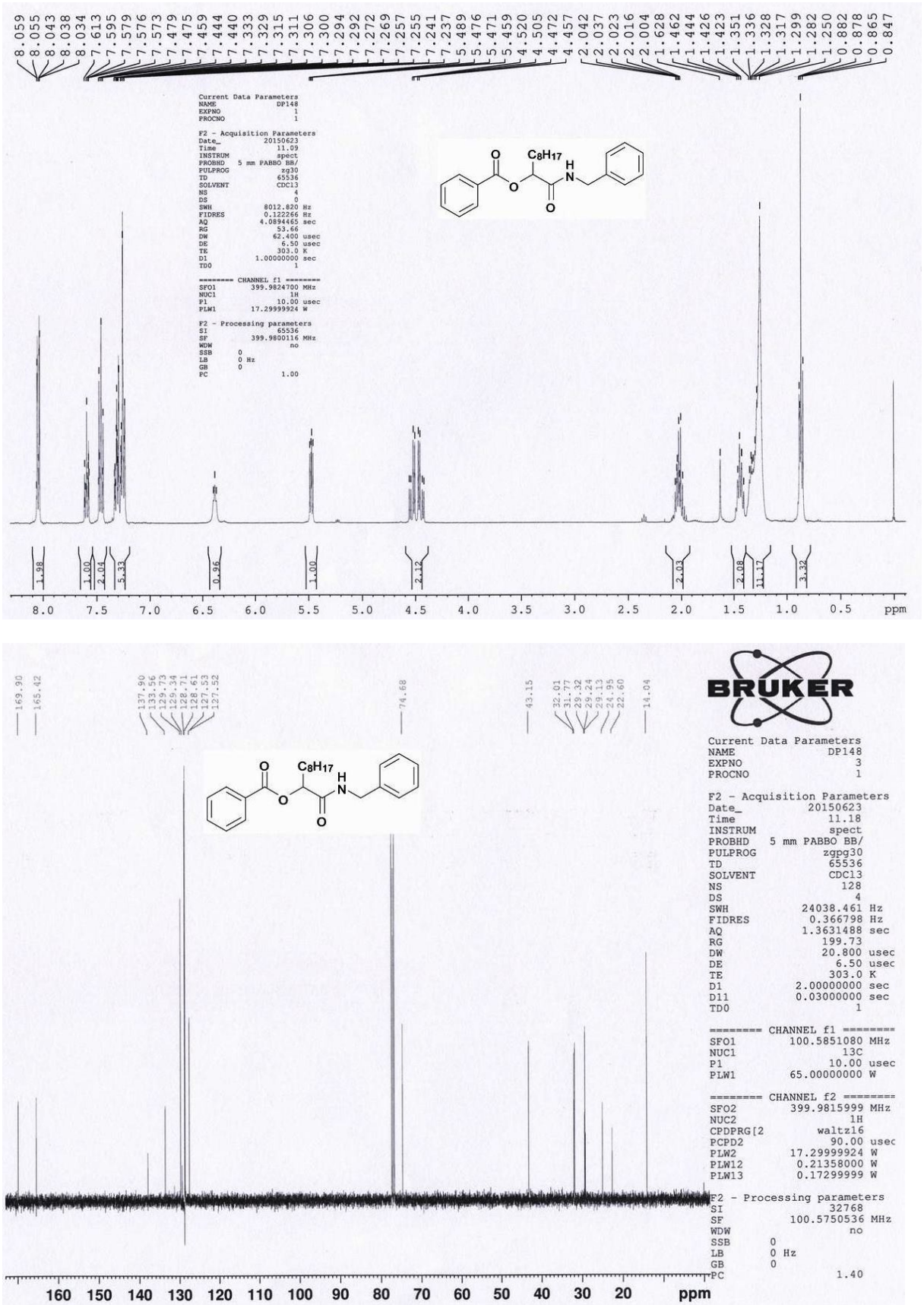


Figure 14 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4k** (400 MHz, $CDCl_3$).

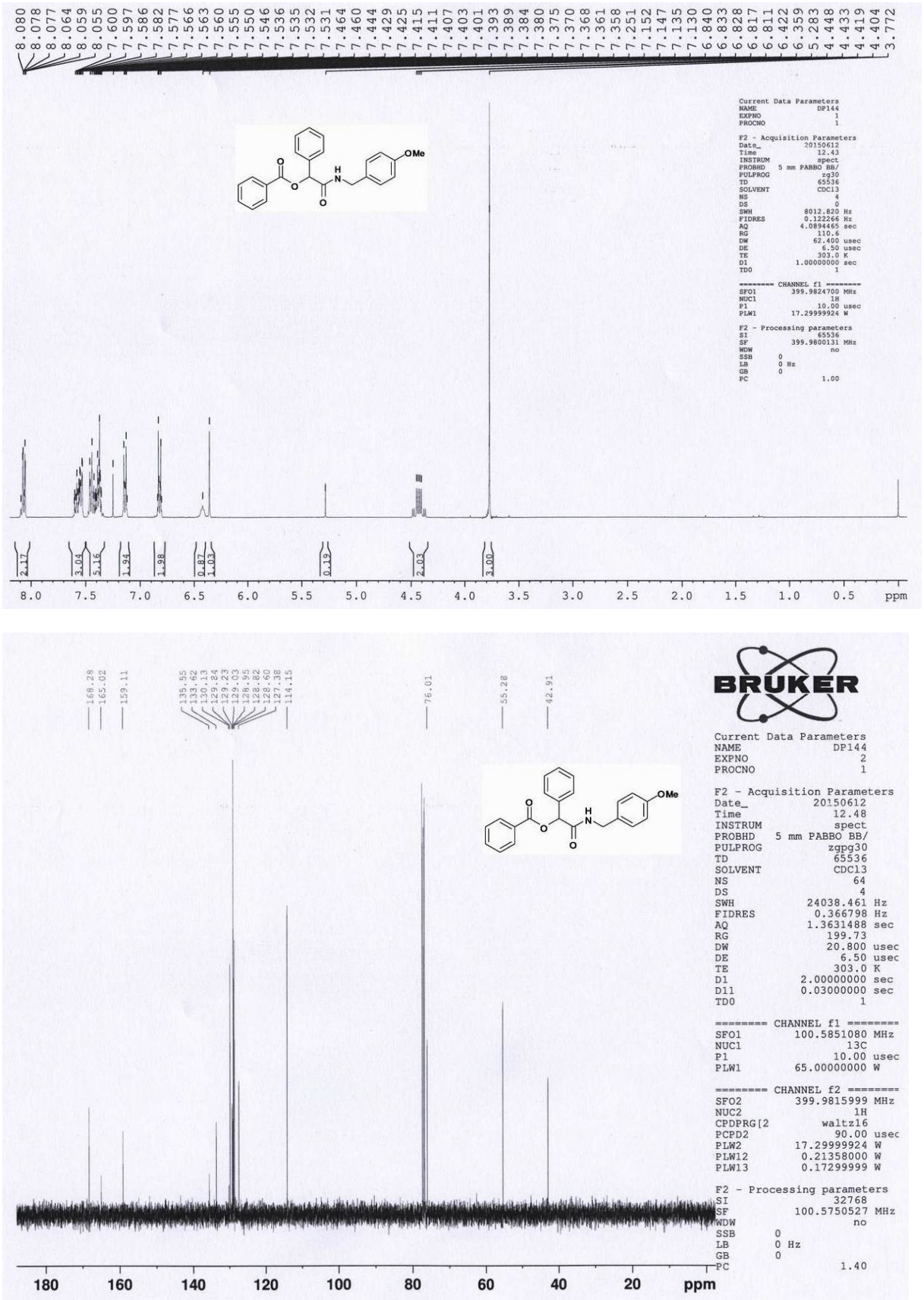


Figure 15 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4l** (400 MHz, $CDCl_3$).

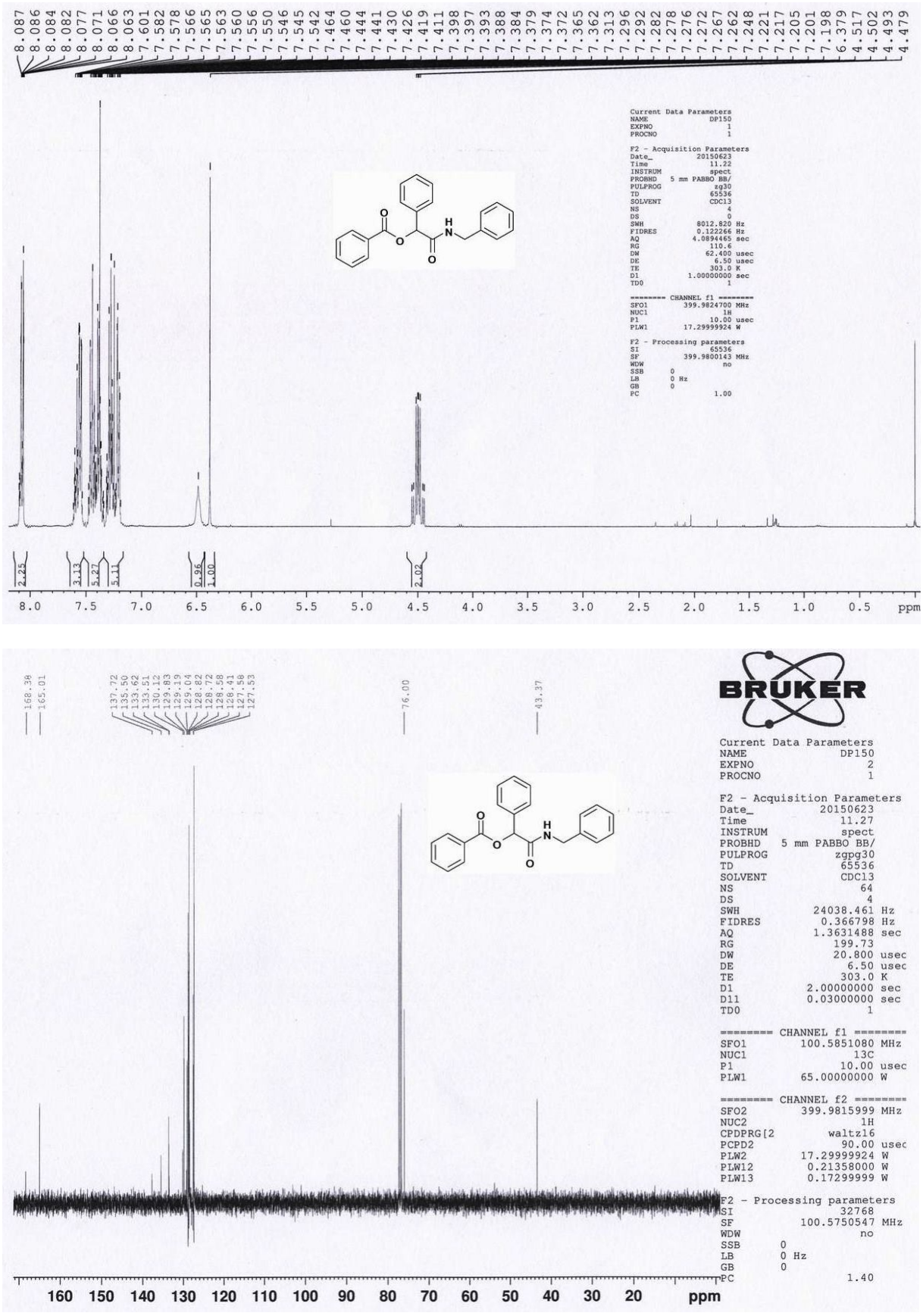


Figure 16 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4m** (400 MHz, $CDCl_3$).

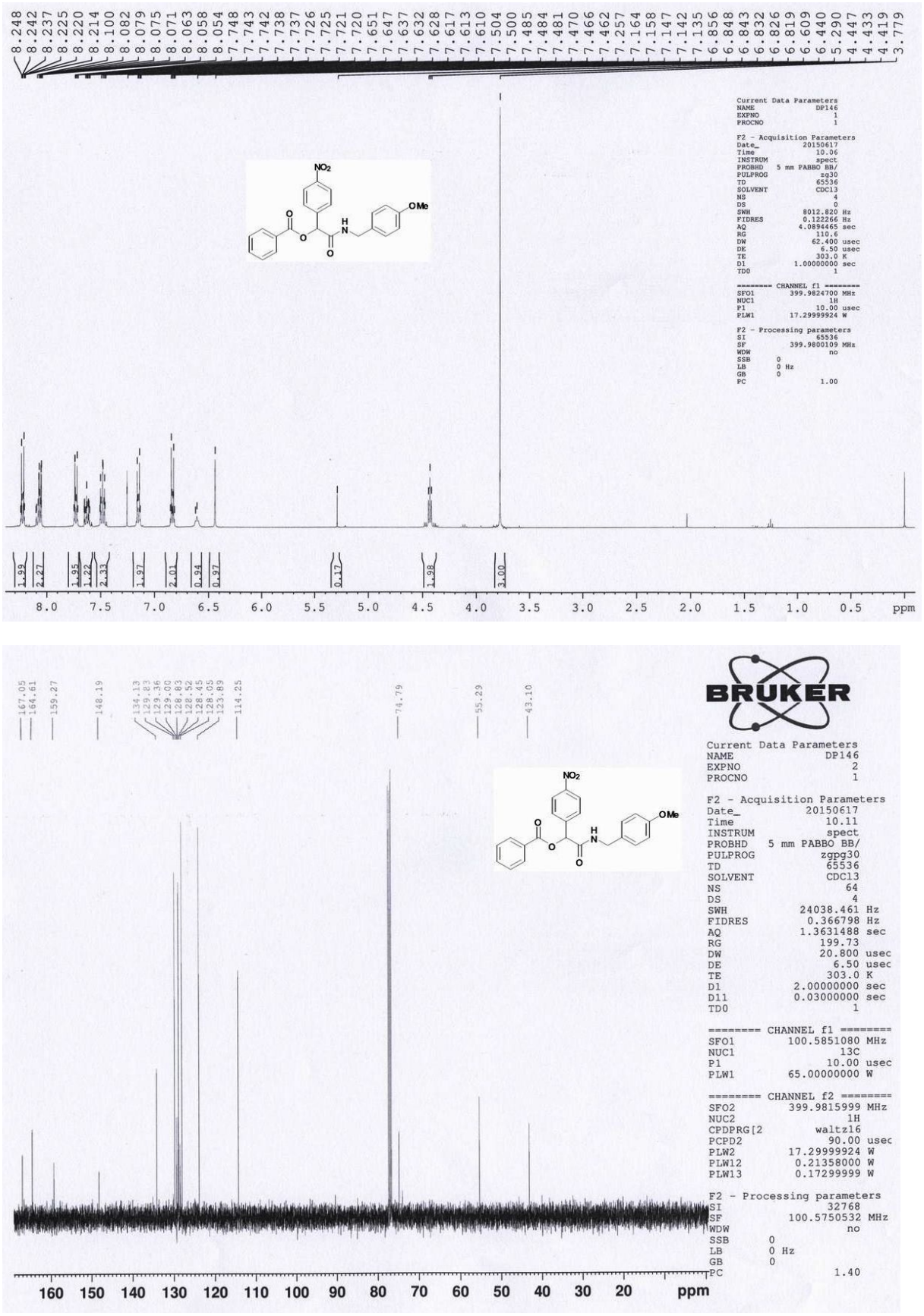


Figure 17 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4n** (400 MHz, $CDCl_3$).

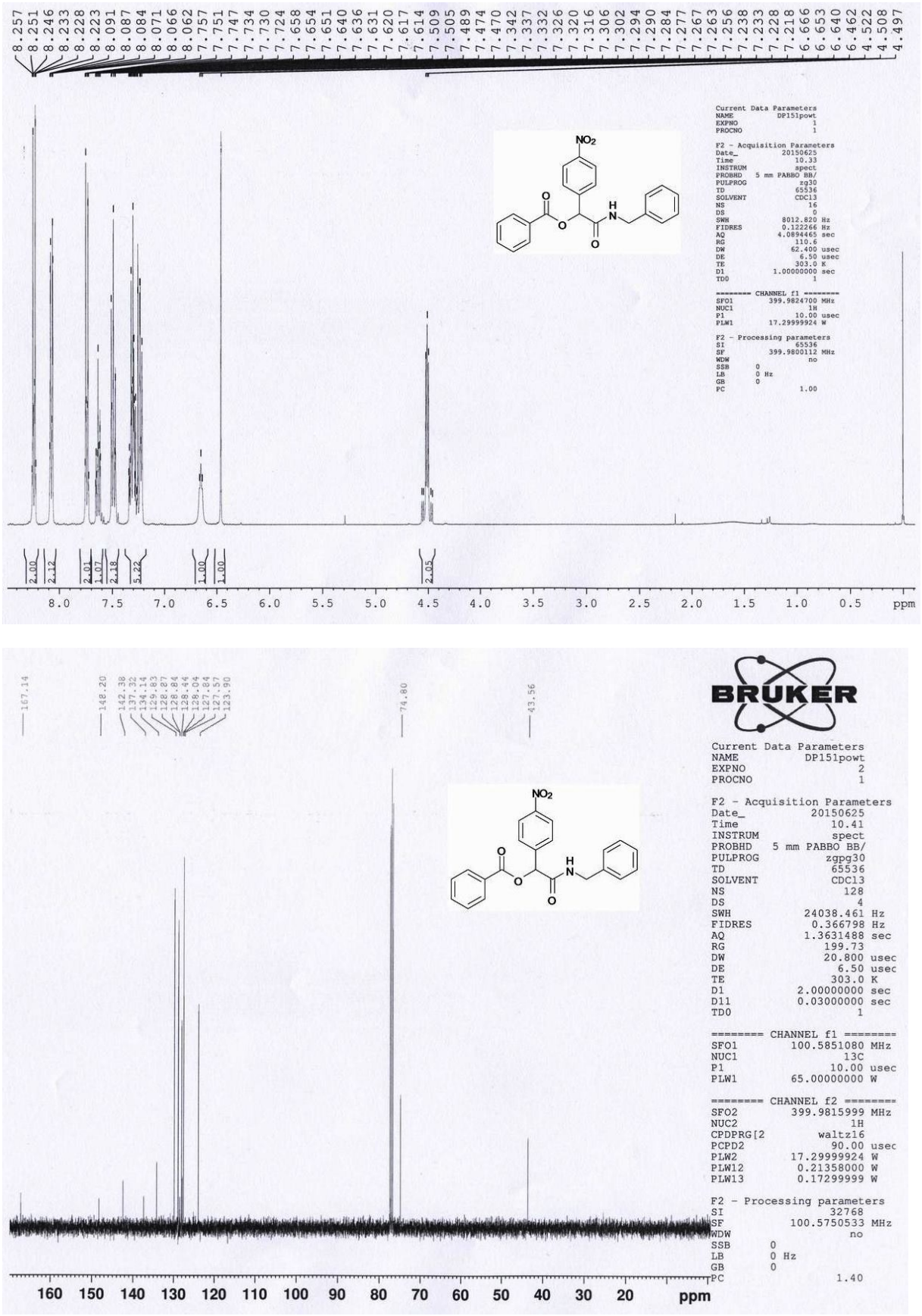


Figure 18 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4o** (400 MHz, $CDCl_3$).

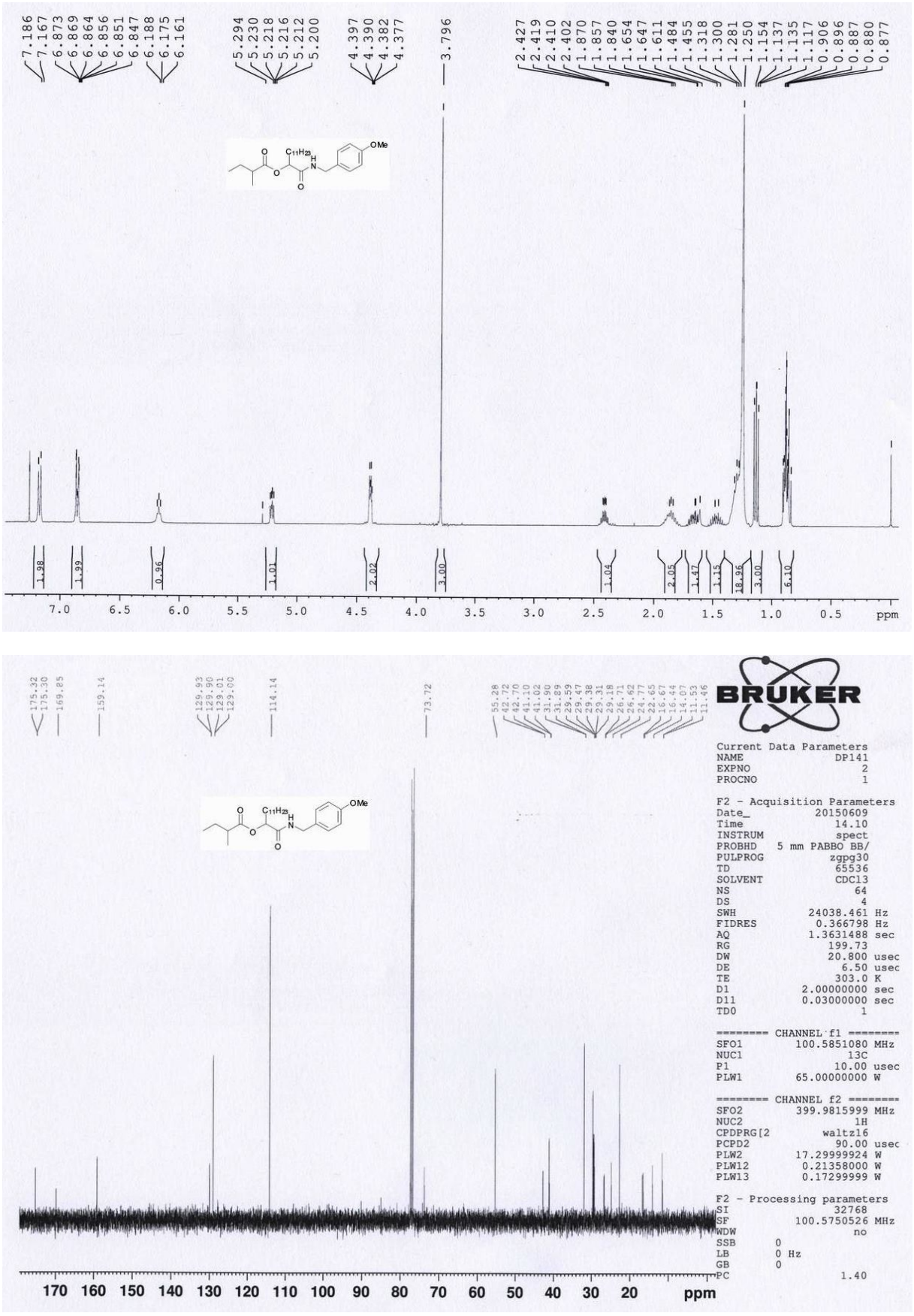


Figure 19 ^{1}H NMR (above) and ^{13}C NMR (below) spectra of compound **4p** (400 MHz, $CDCl_3$).