

## Supplementary Information

### **Monoallylation and Benzylation of Dicarboxyl Compounds with Alcohols Catalysed by a Cationic Cobalt(III) Compound**

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2. NMR and HRMS spectra of the compounds.....	S3

### In situ $^1\text{H}$ NMR spectra for mechanistic investigation:

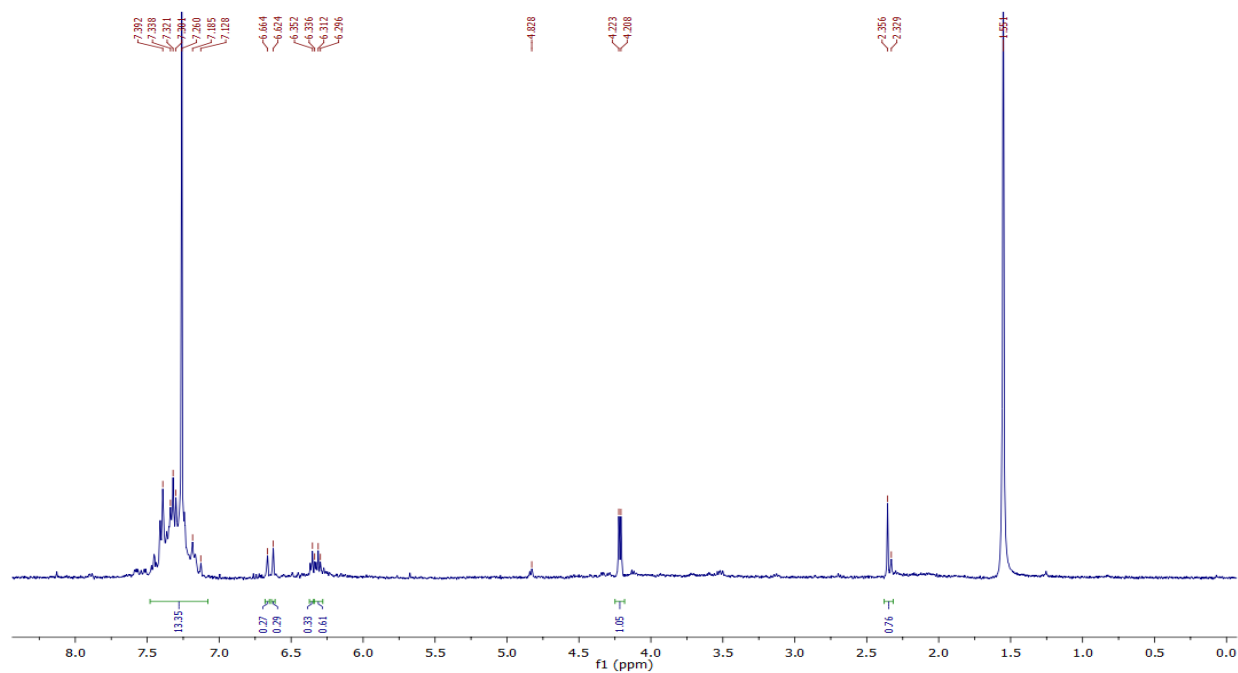


Figure S1  $^1\text{H}$  NMR spectrum of the reaction mixture of cinnamyl alcohol and catalyst (1 mol%) was heated at 60 °C for 18 h in toluene (2 ml)

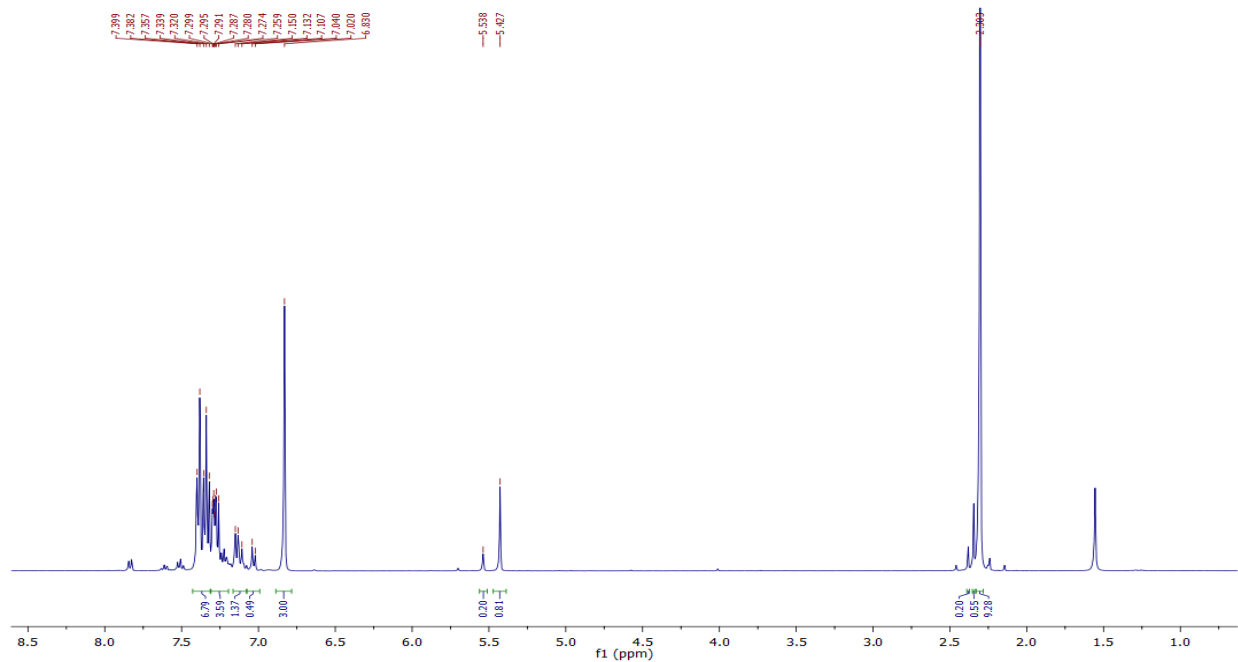


Figure S2  $^1\text{H}$  NMR spectrum of the crude reaction mixture of diphenylmethanol (0.4 mmol) and catalyst (1mol%) at 110°C after 4hrs

# NMR and HRMS spectra of the products

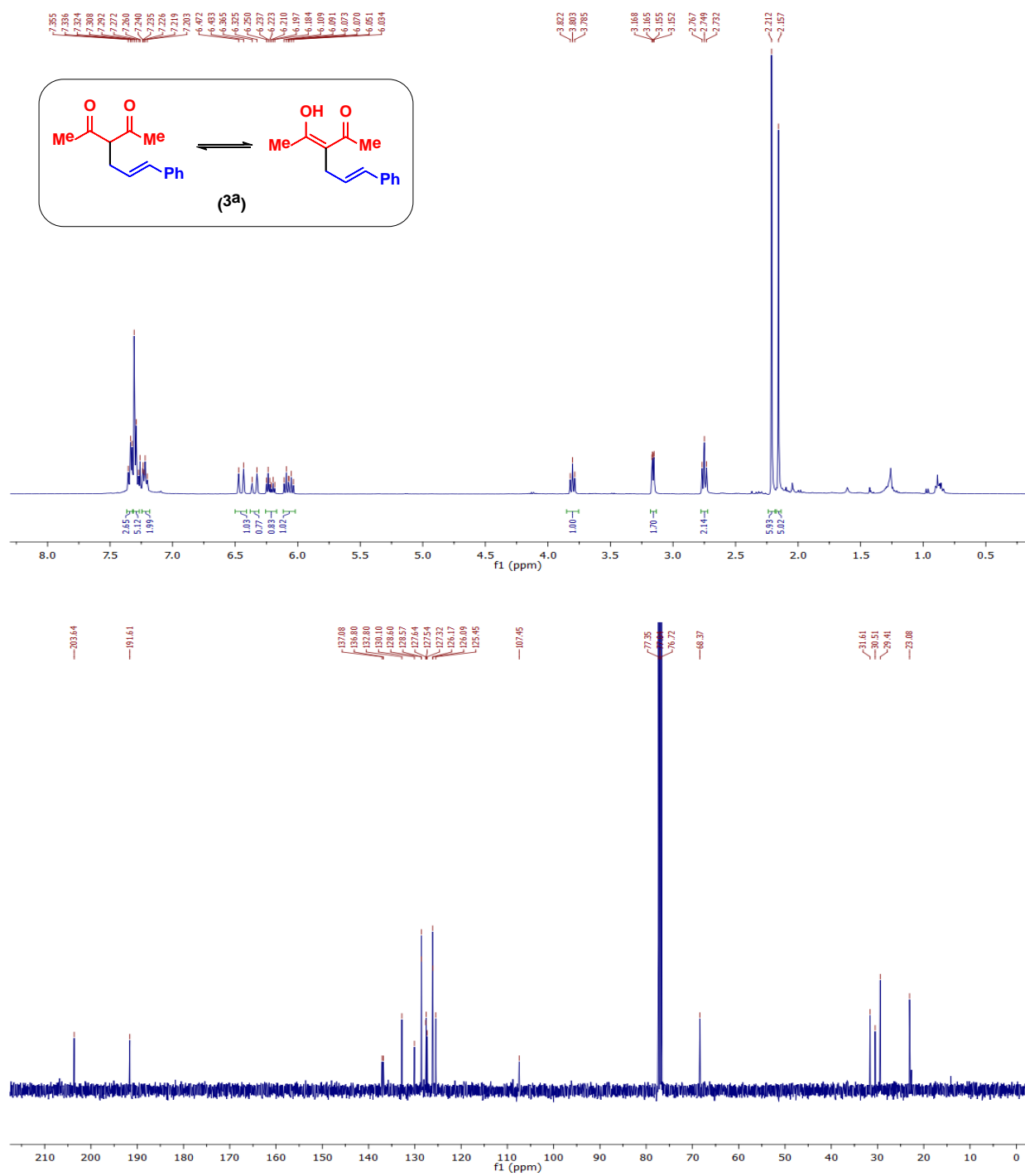


Figure S3 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3a**

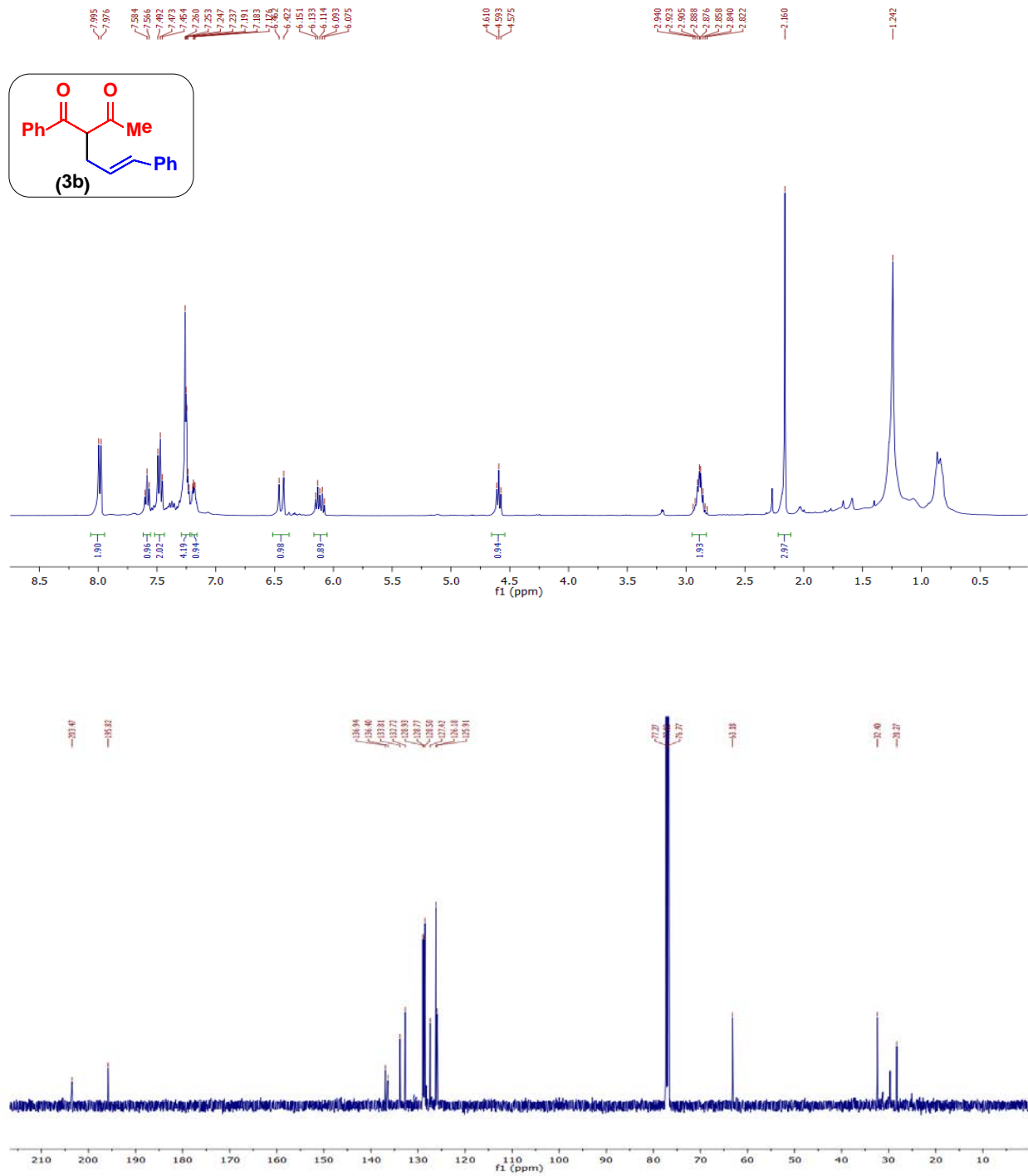


Figure S4 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3b**

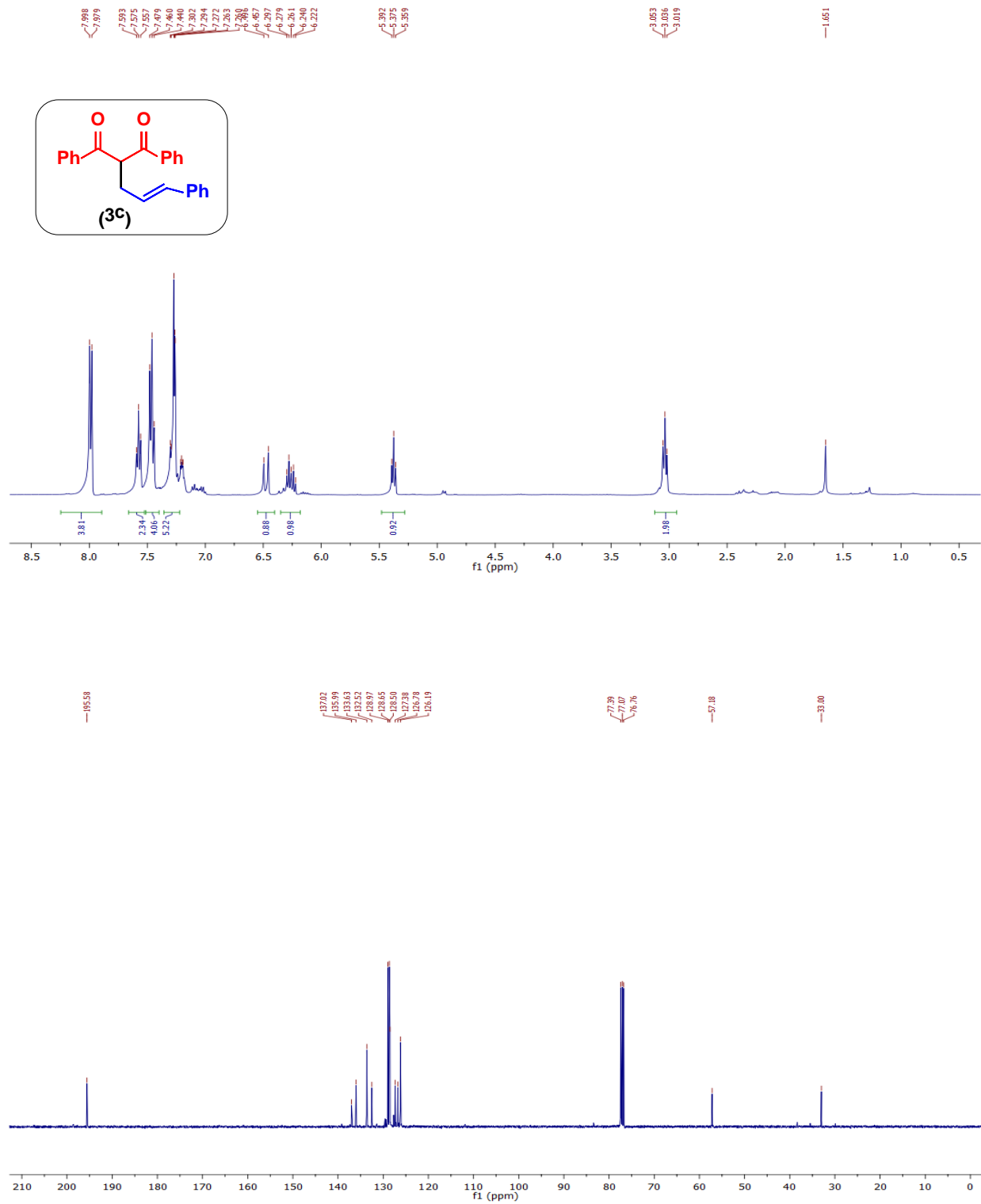


Figure S5 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3c**

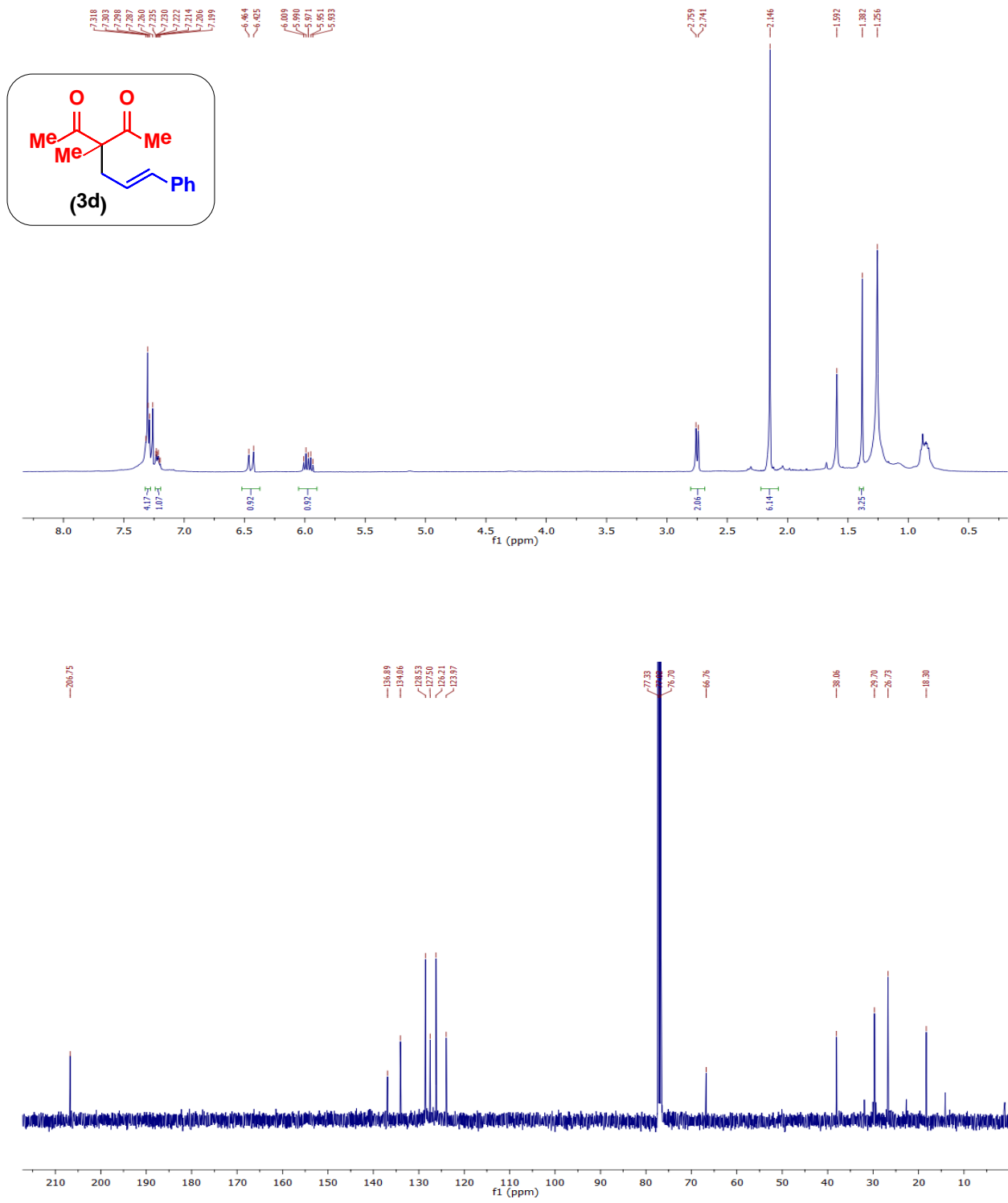


Figure S6 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3d**

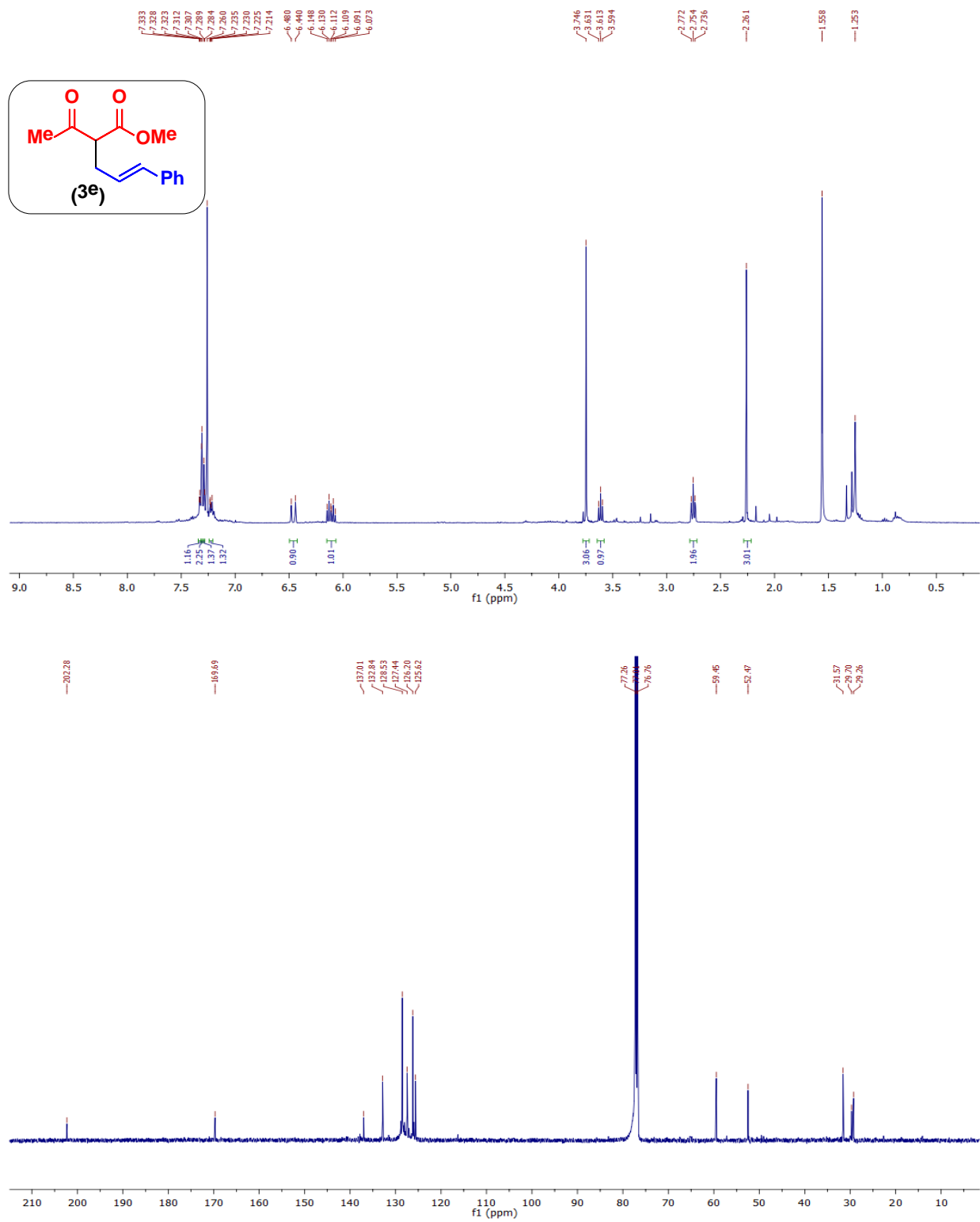


Figure S7 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3e**

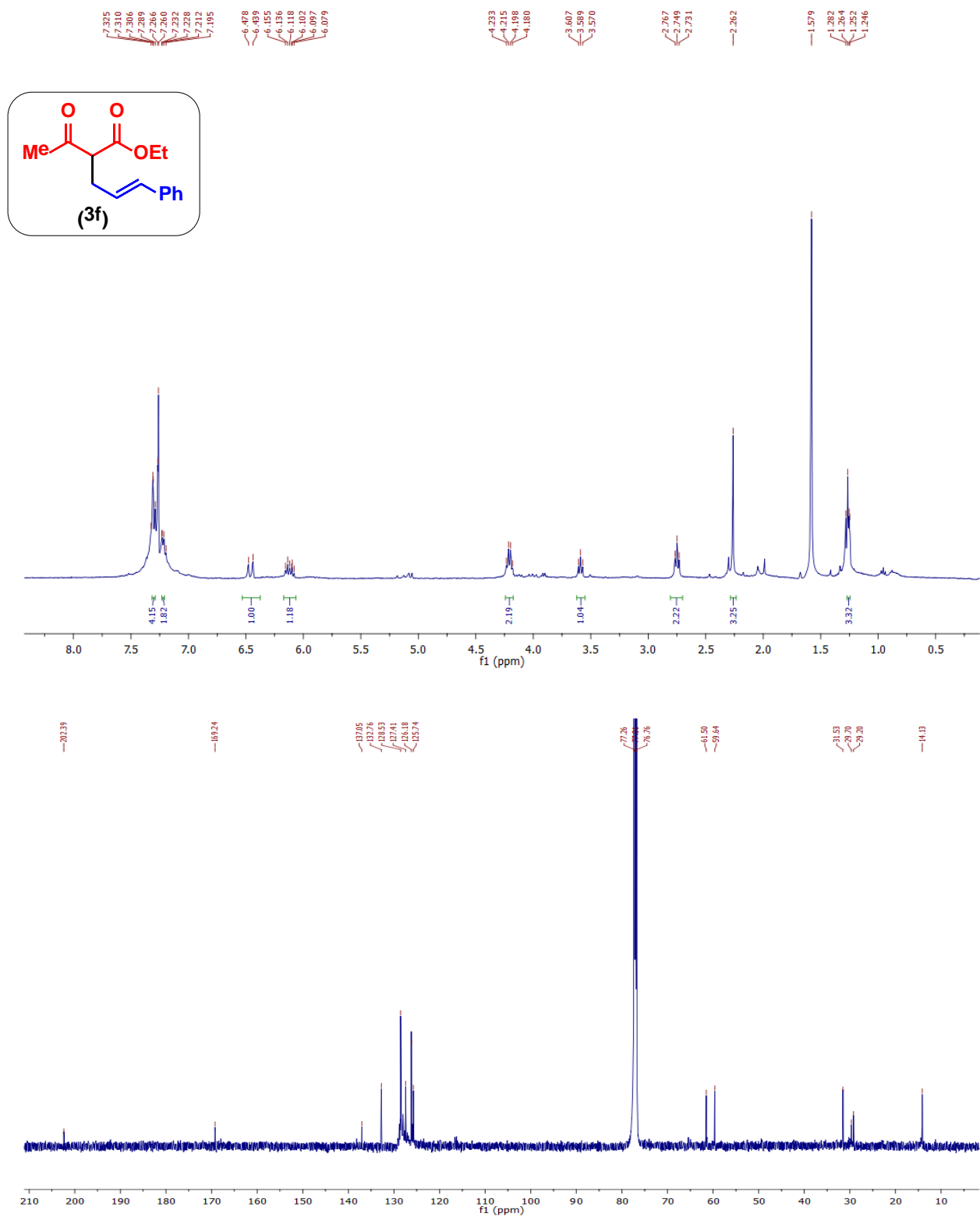


Figure S8 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3f**



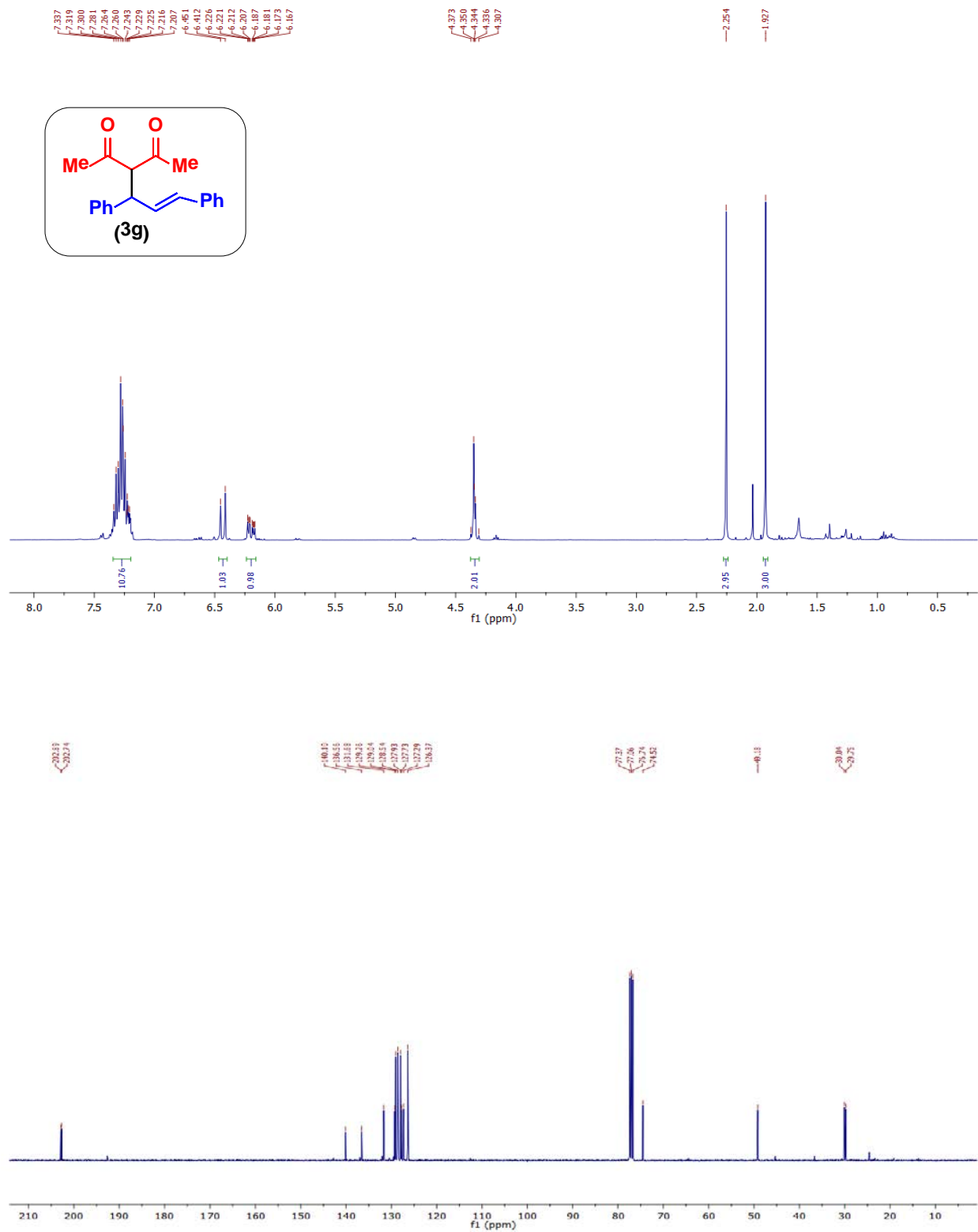


Figure S9 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3g**

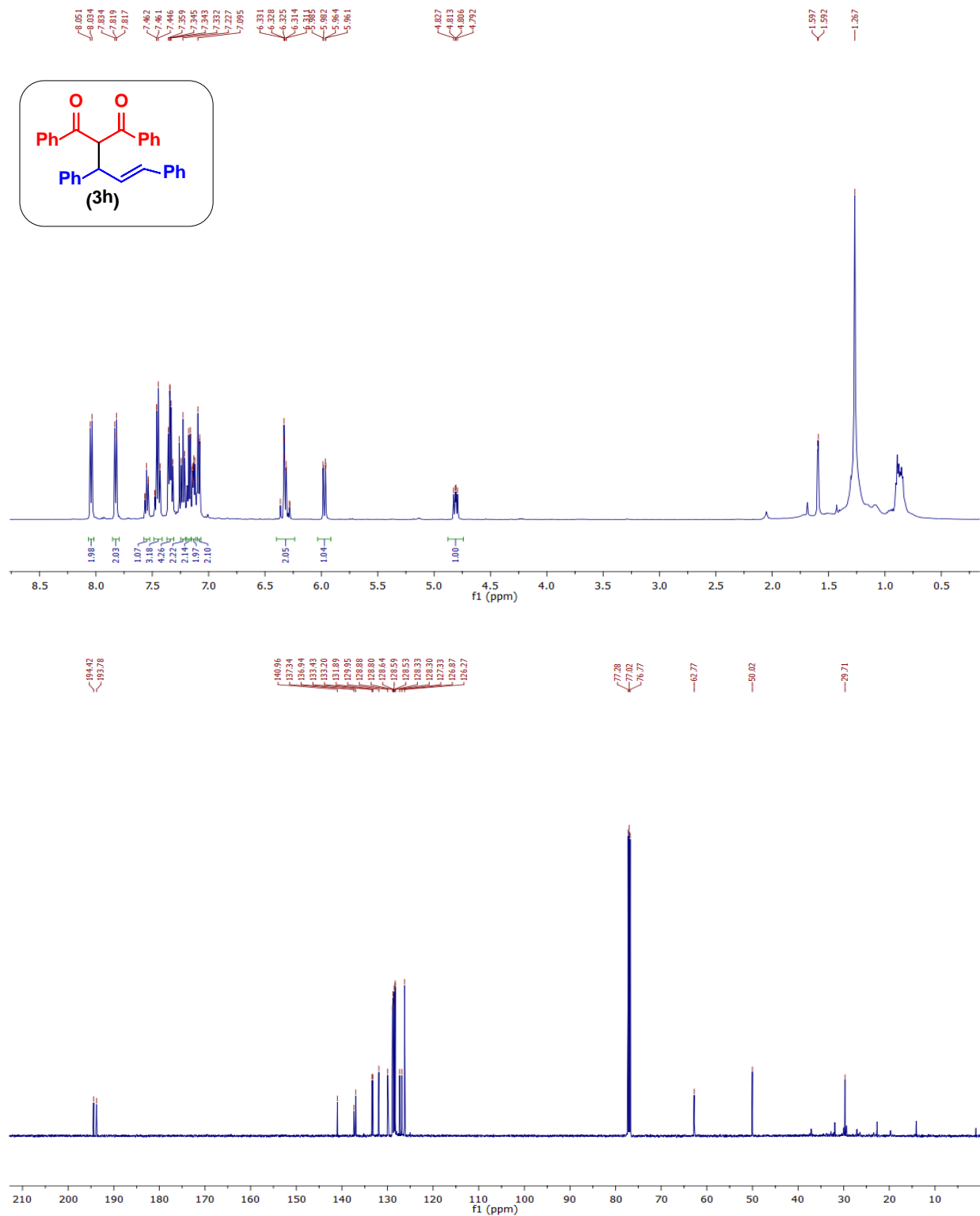


Figure S10 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3h**

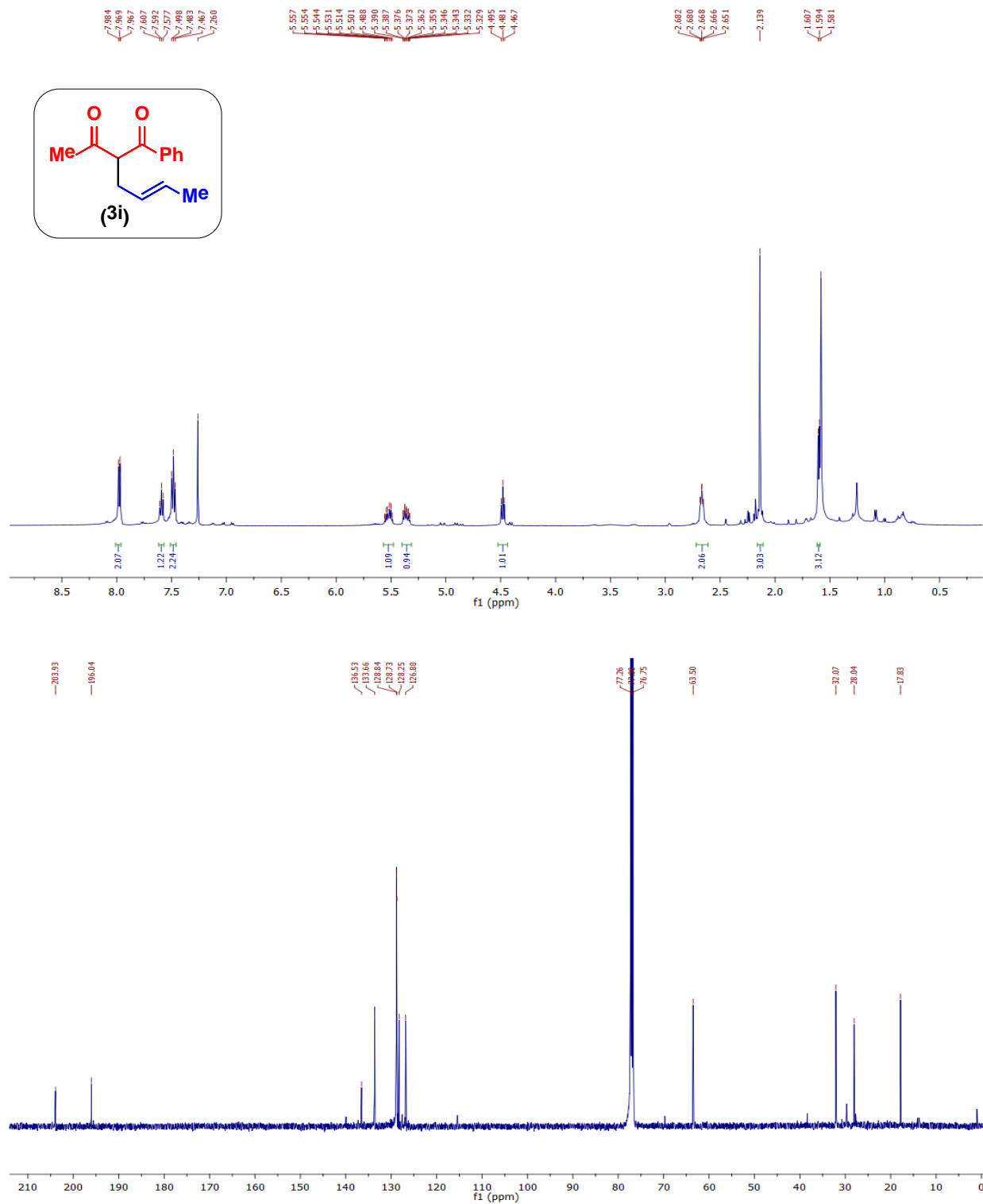


Figure S11 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3i**

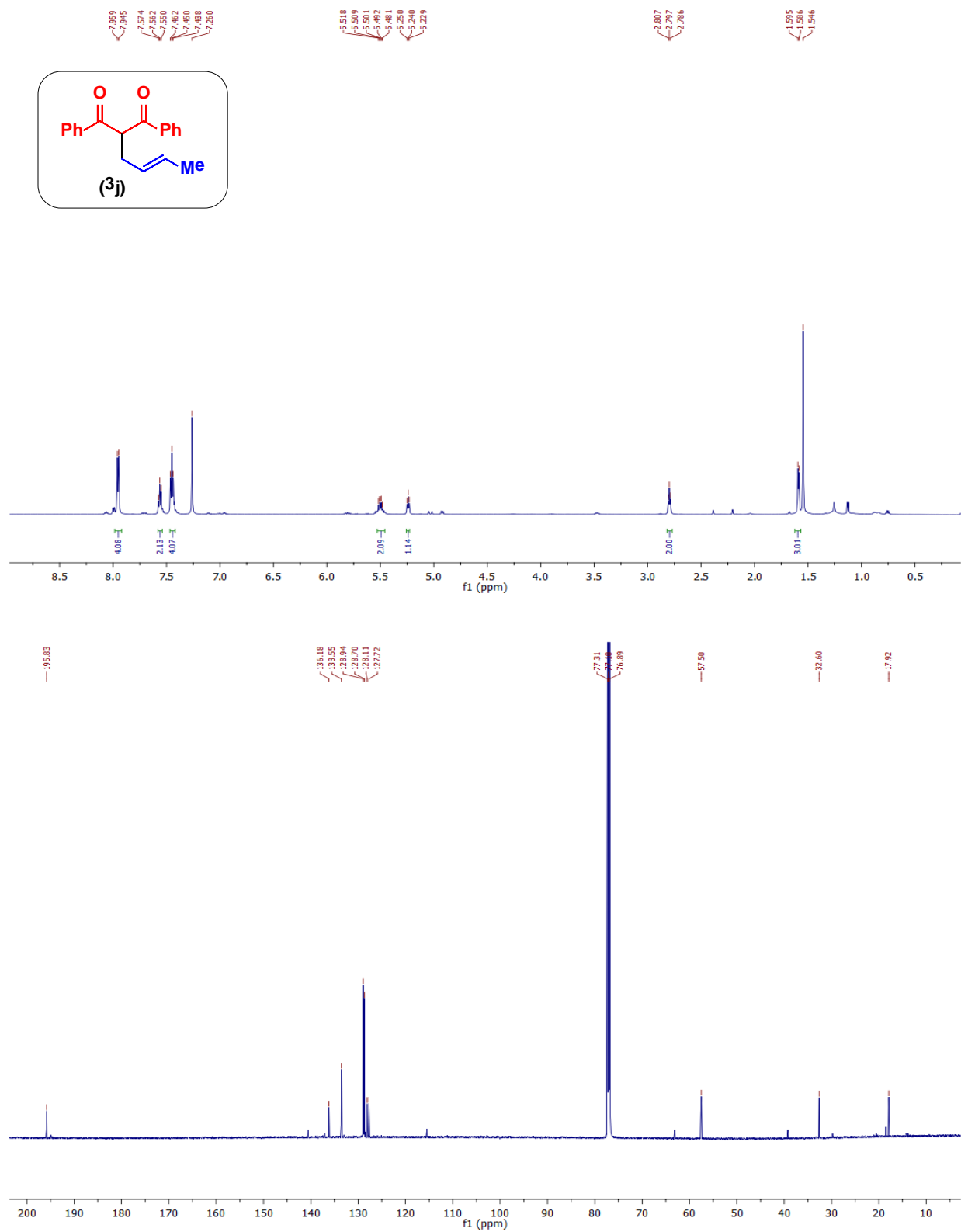


Figure S12 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3j**

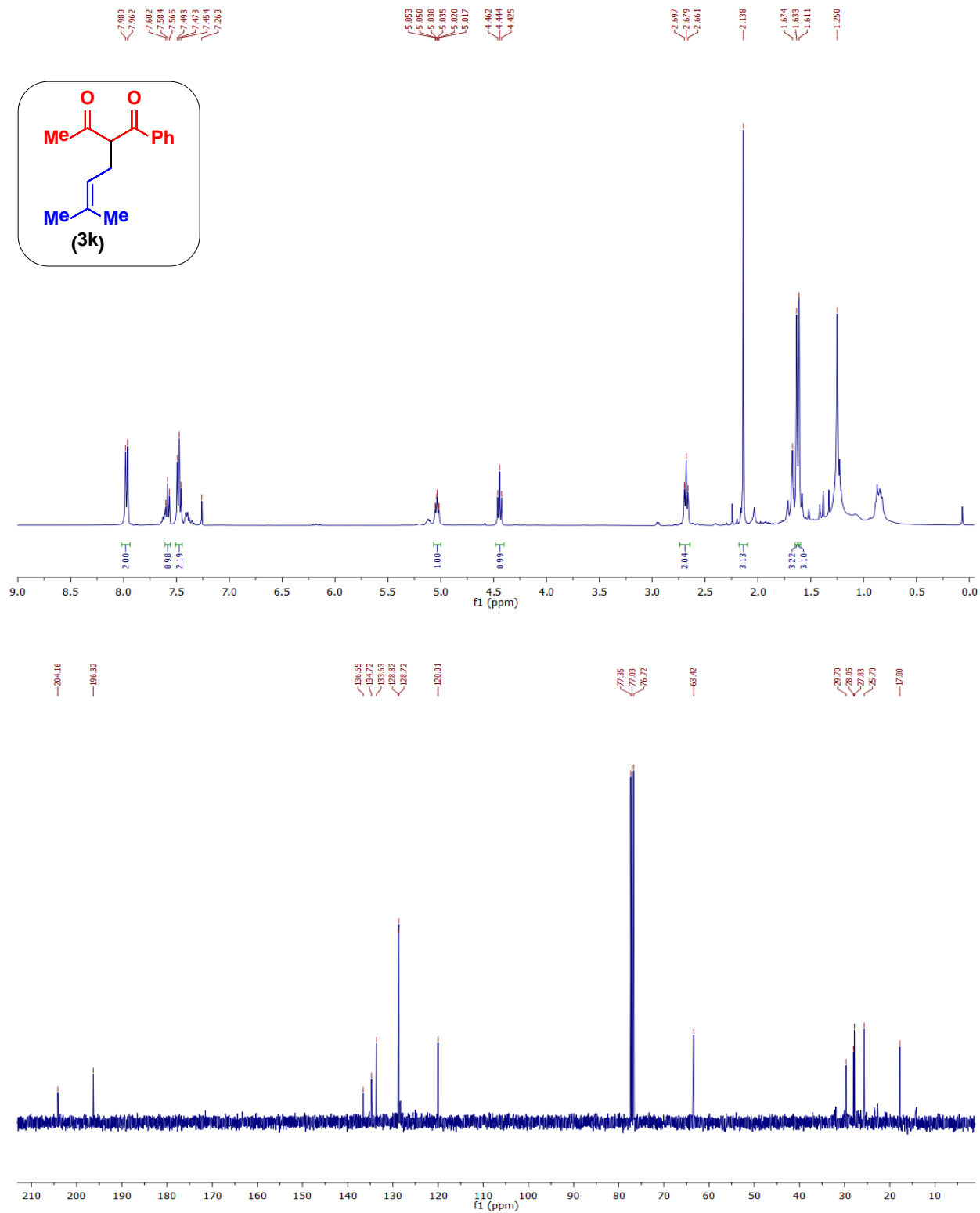


Figure S13 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3k**

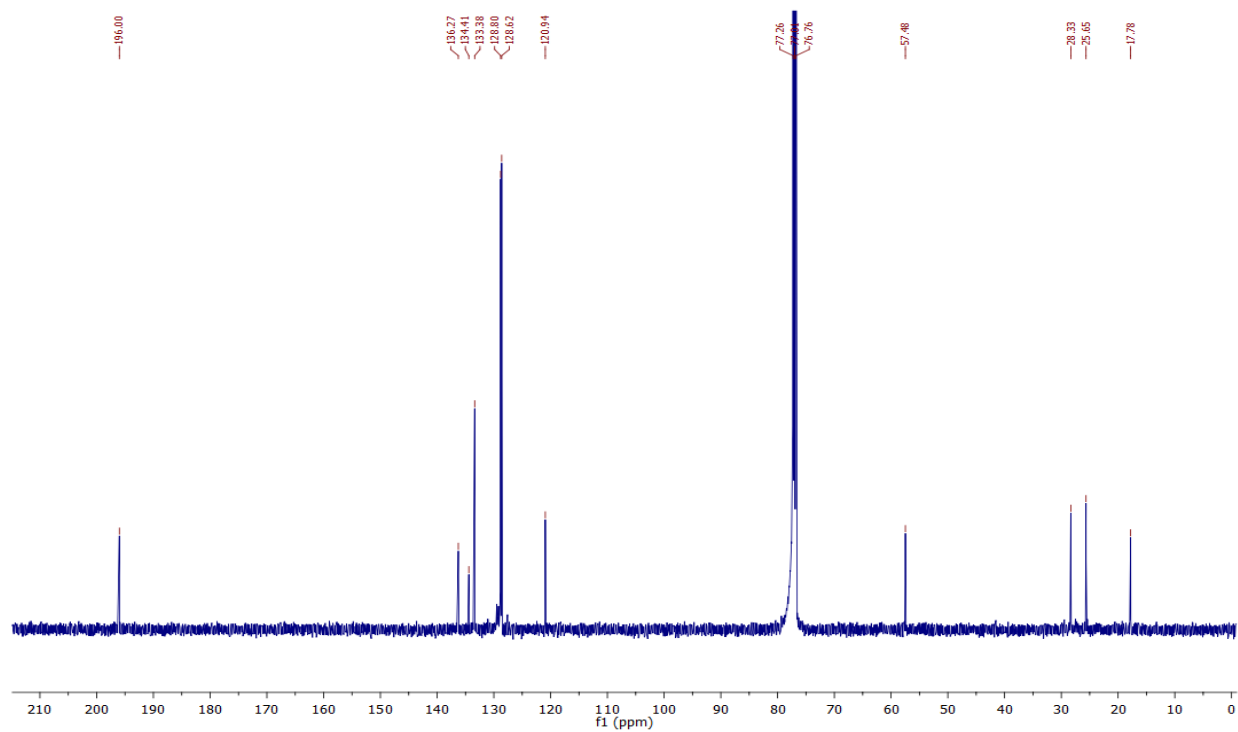
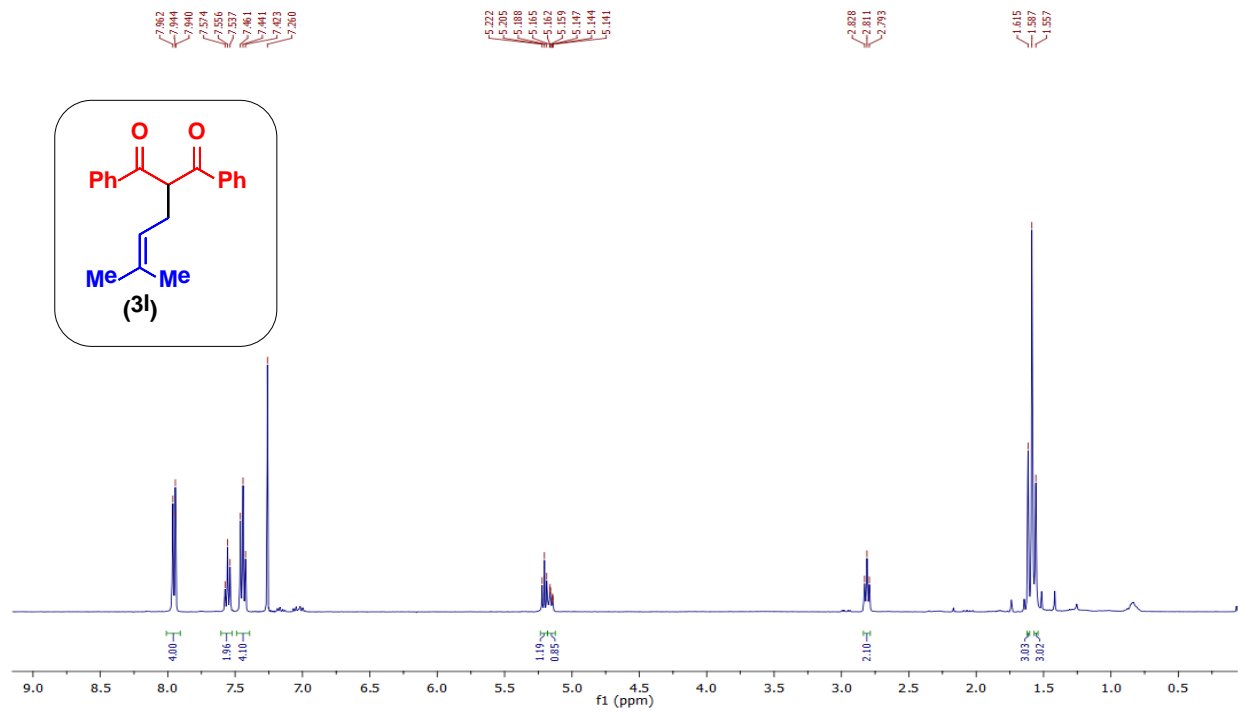


Figure S14 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3l**

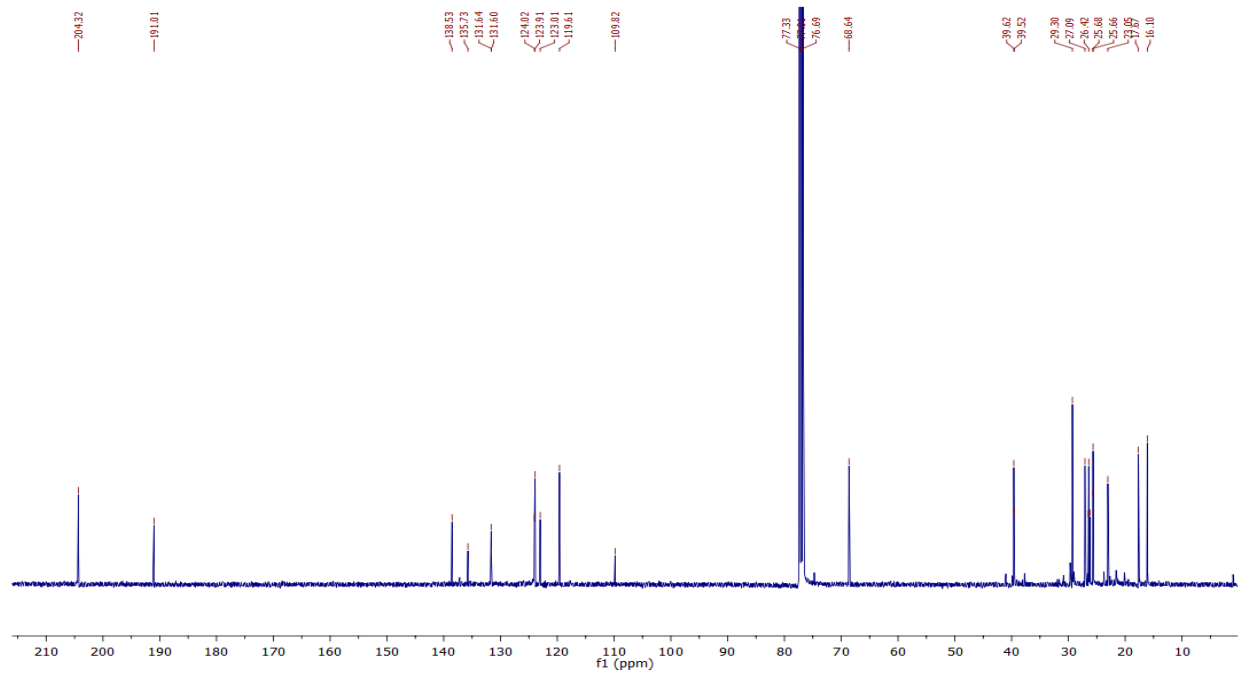
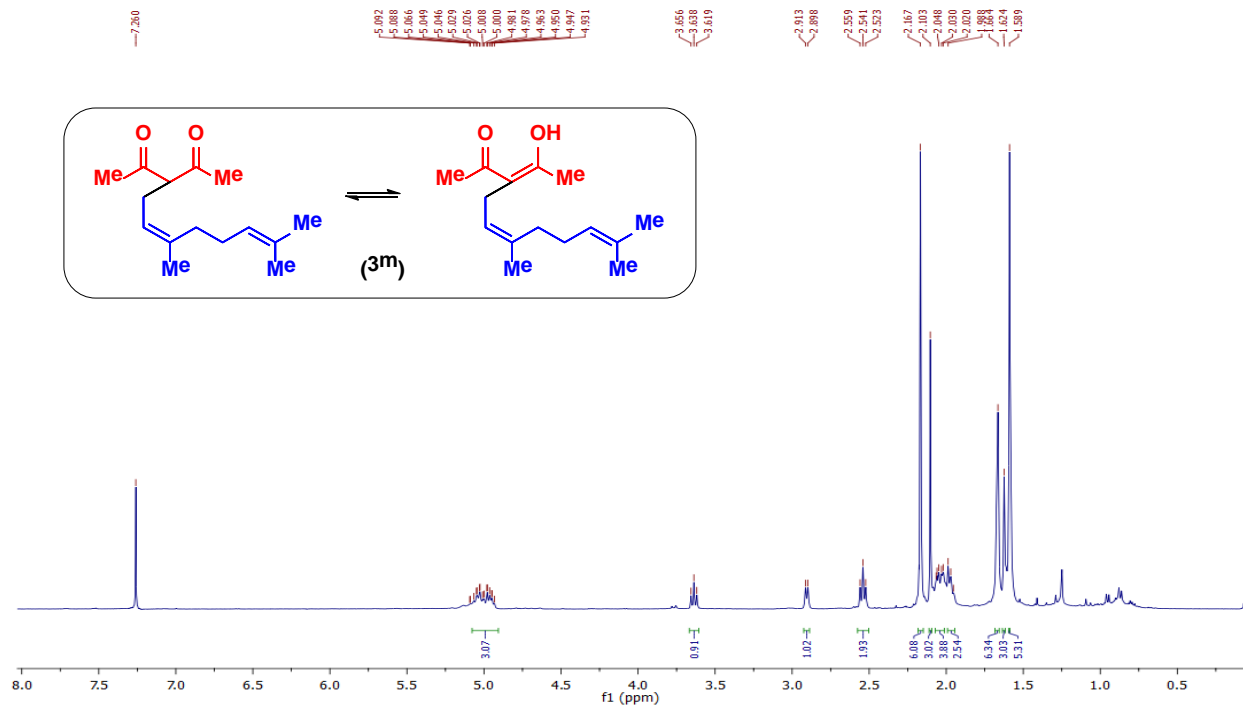


Figure S15 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3m**

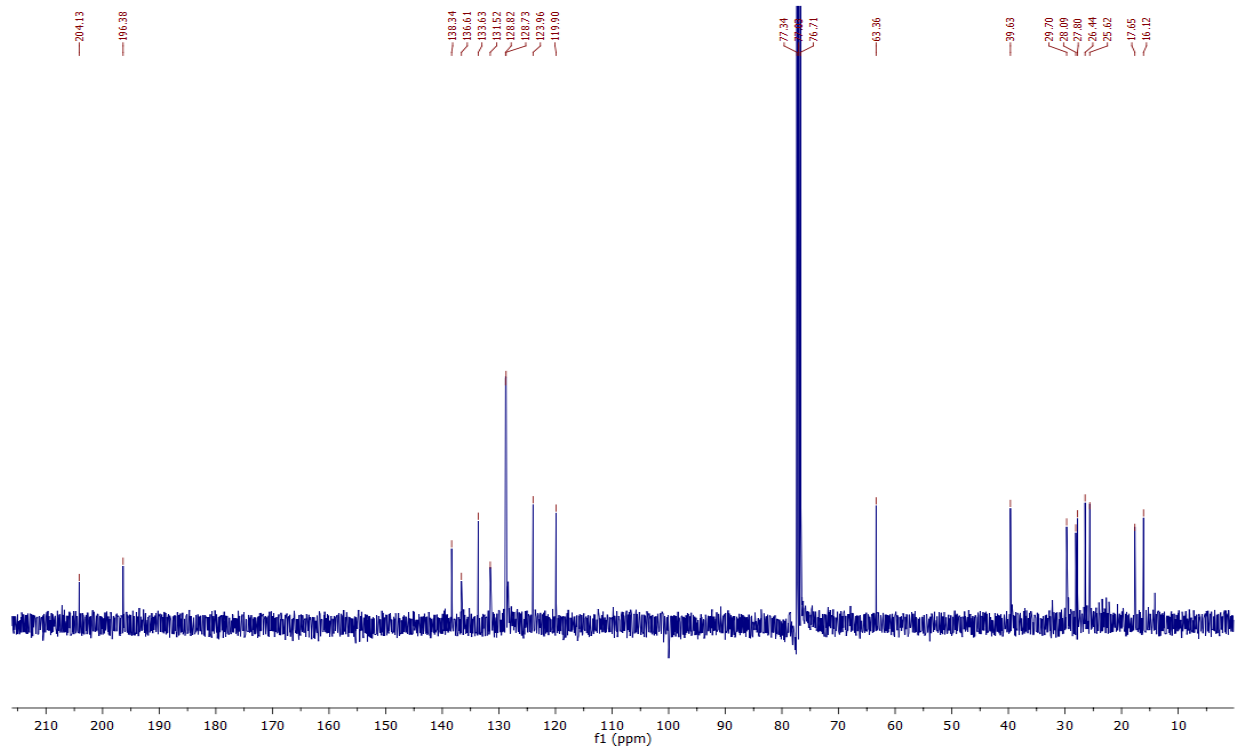
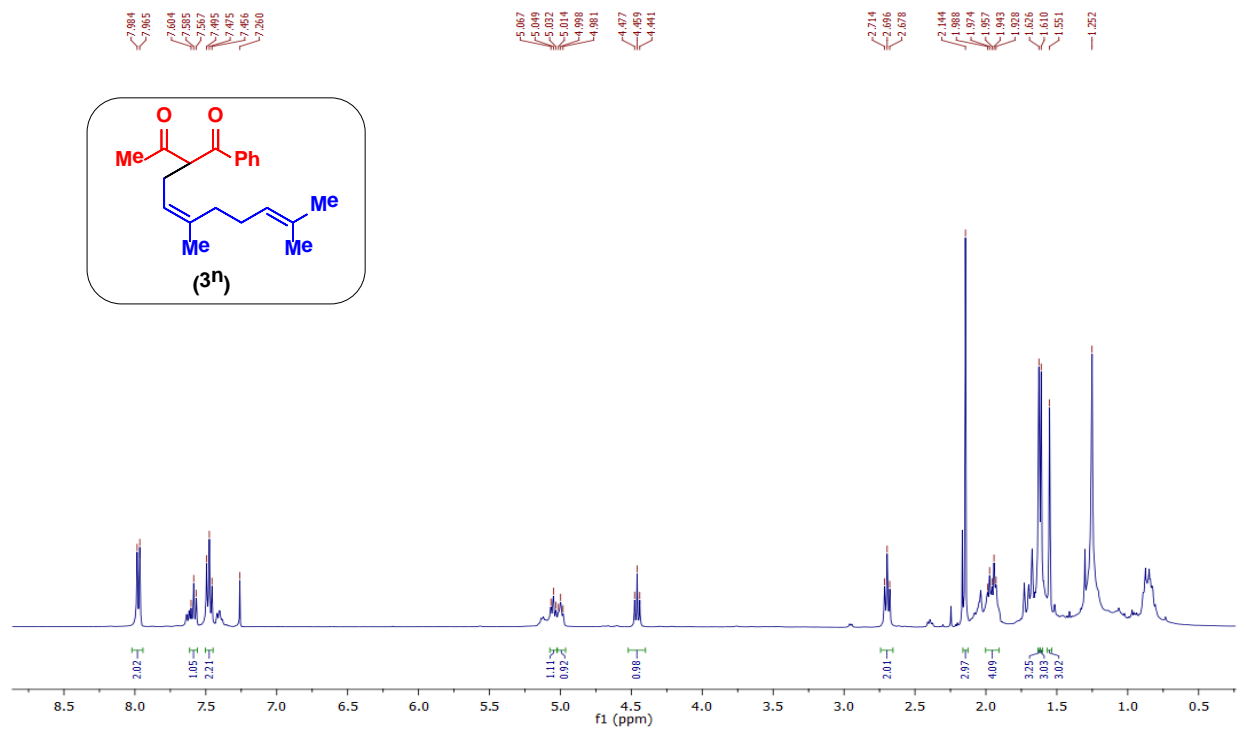


Figure S16 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3n**



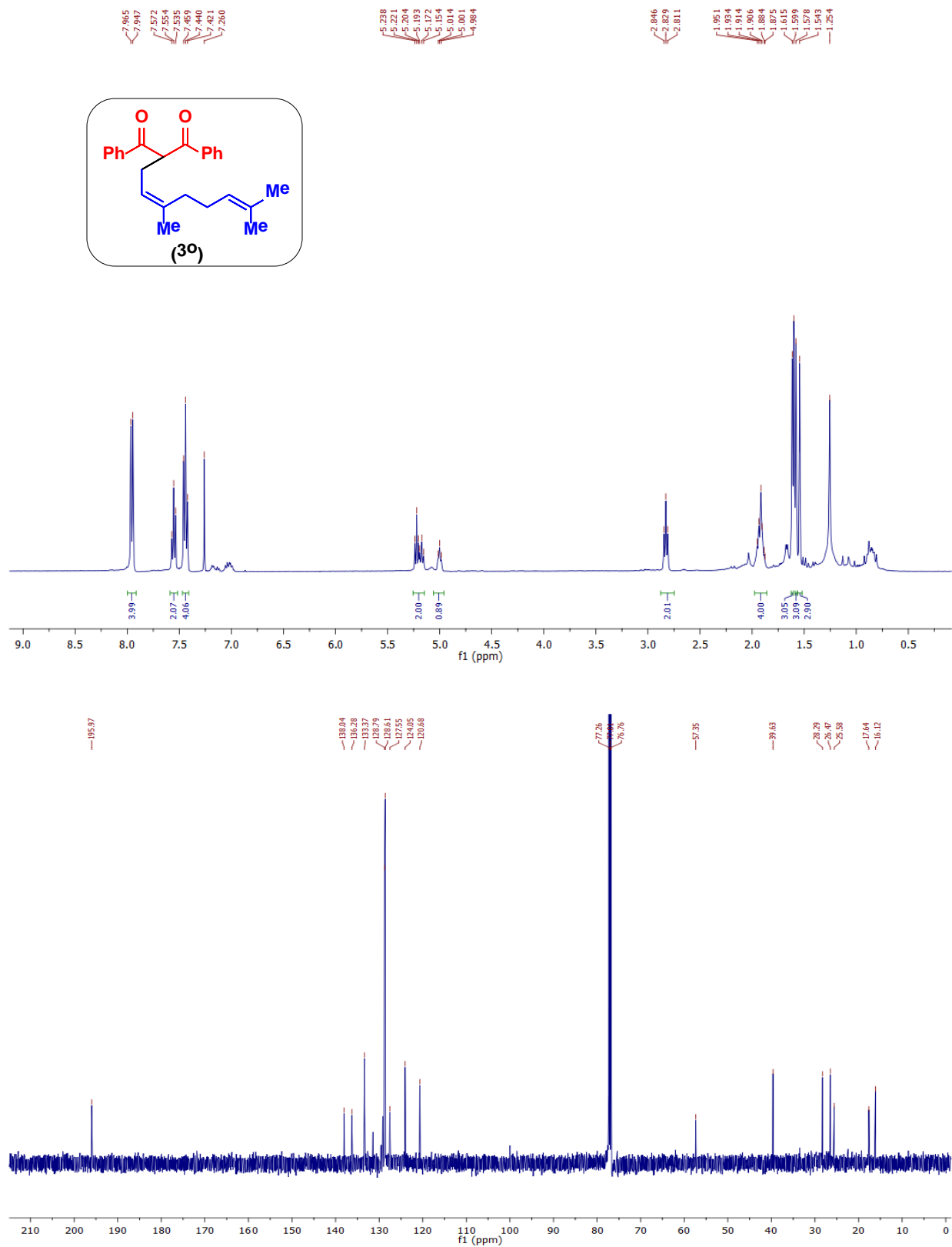


Figure S17 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **30**

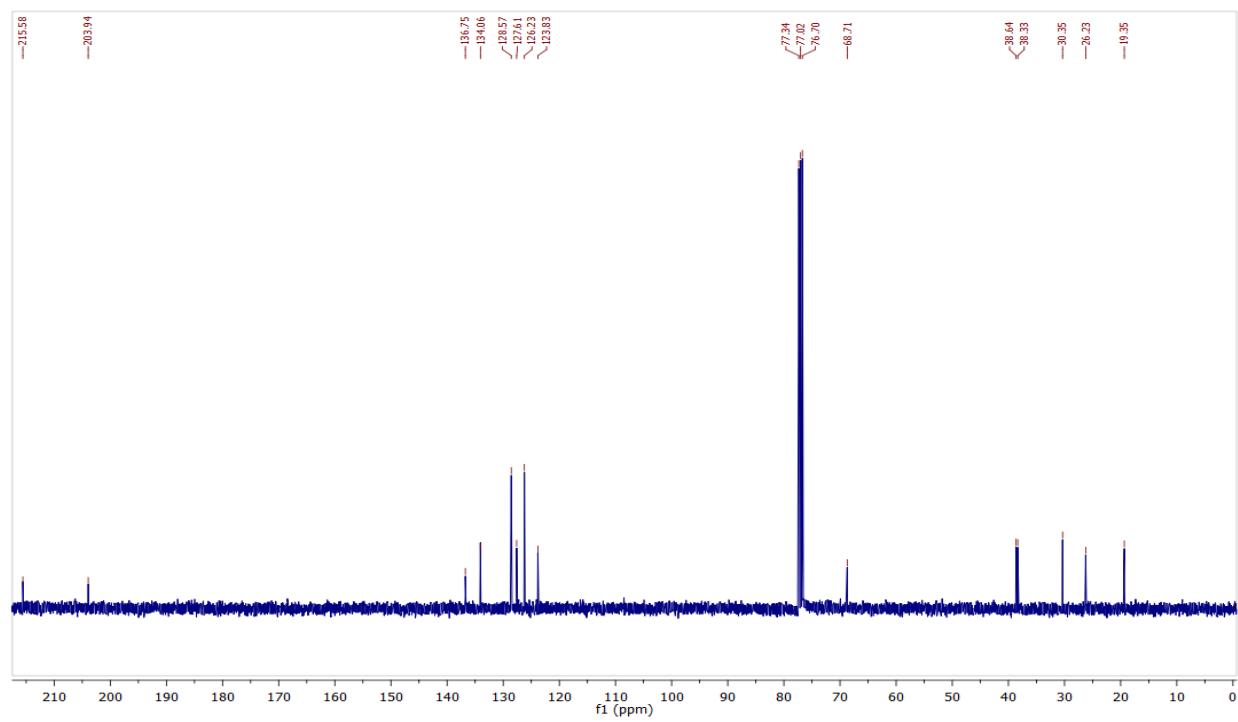
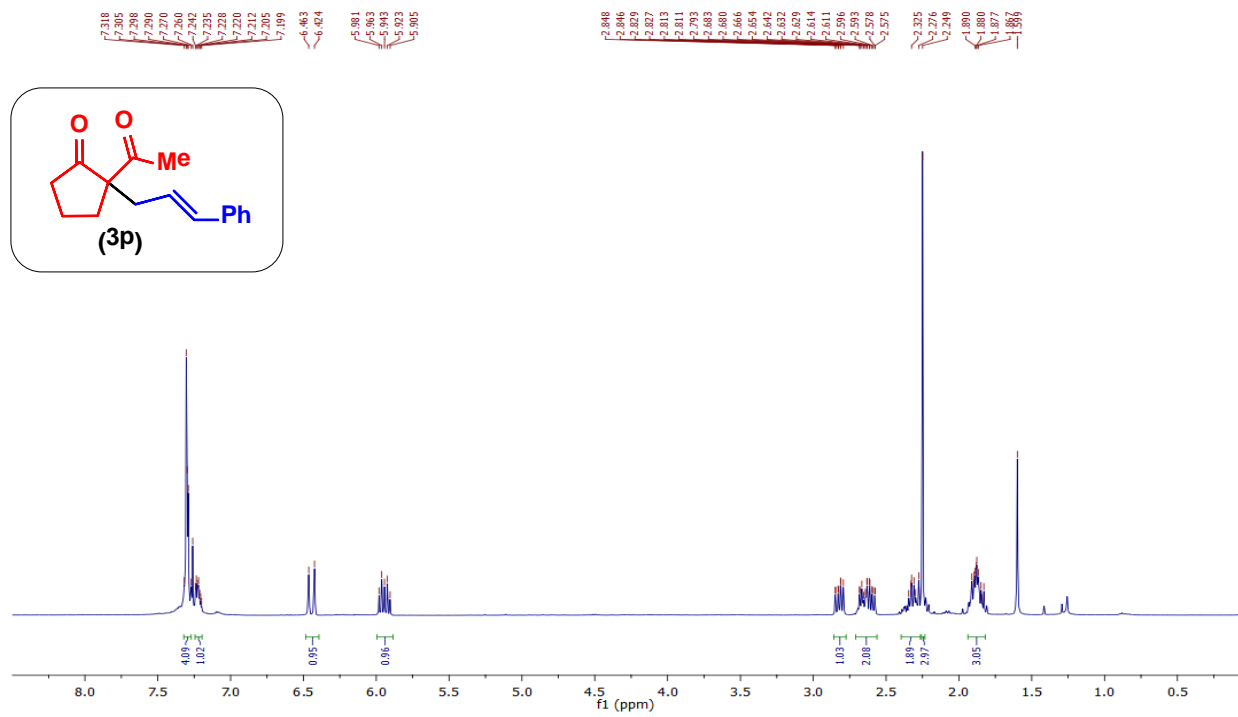


Figure S18 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3p**

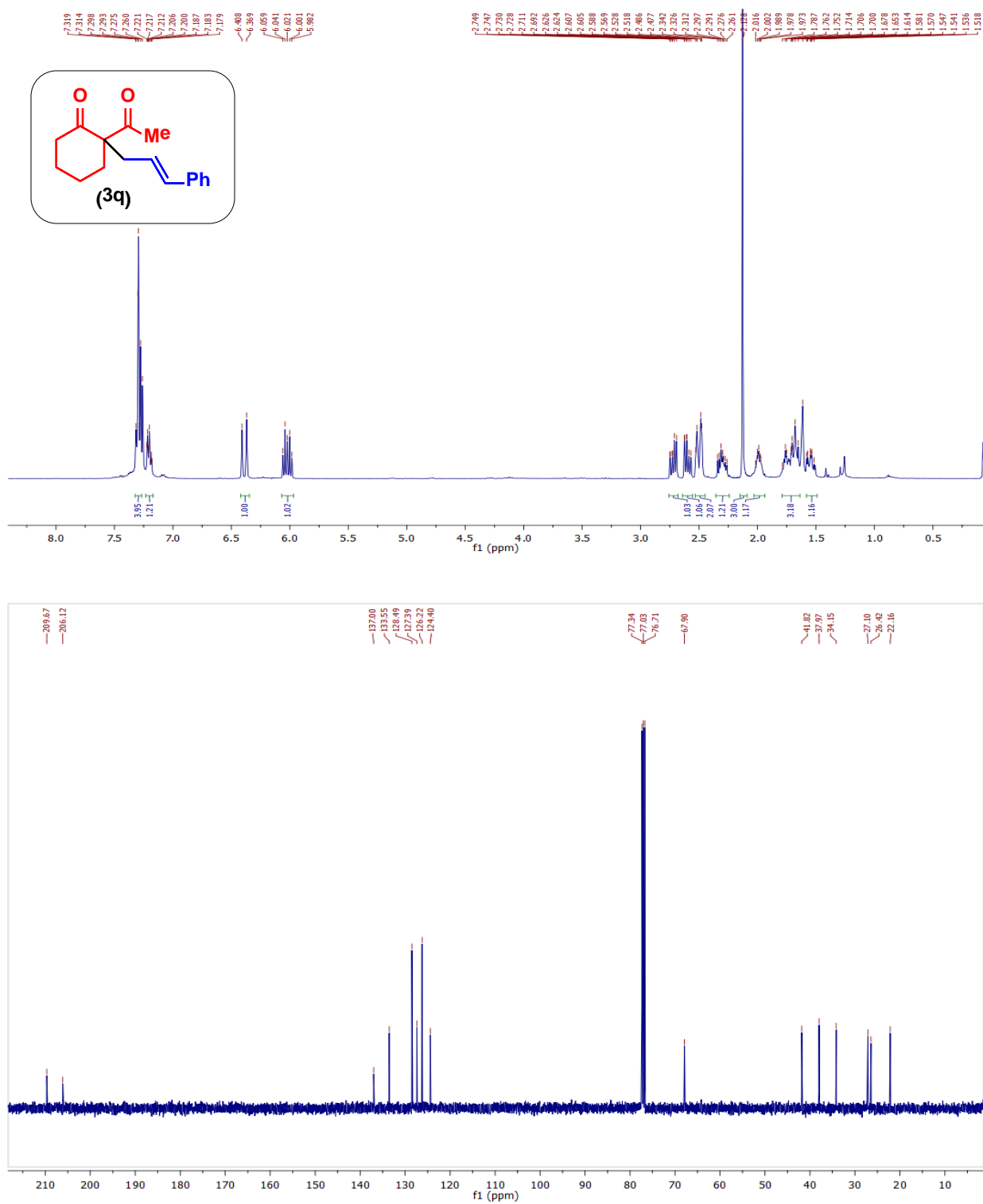


Figure S19 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **3q**

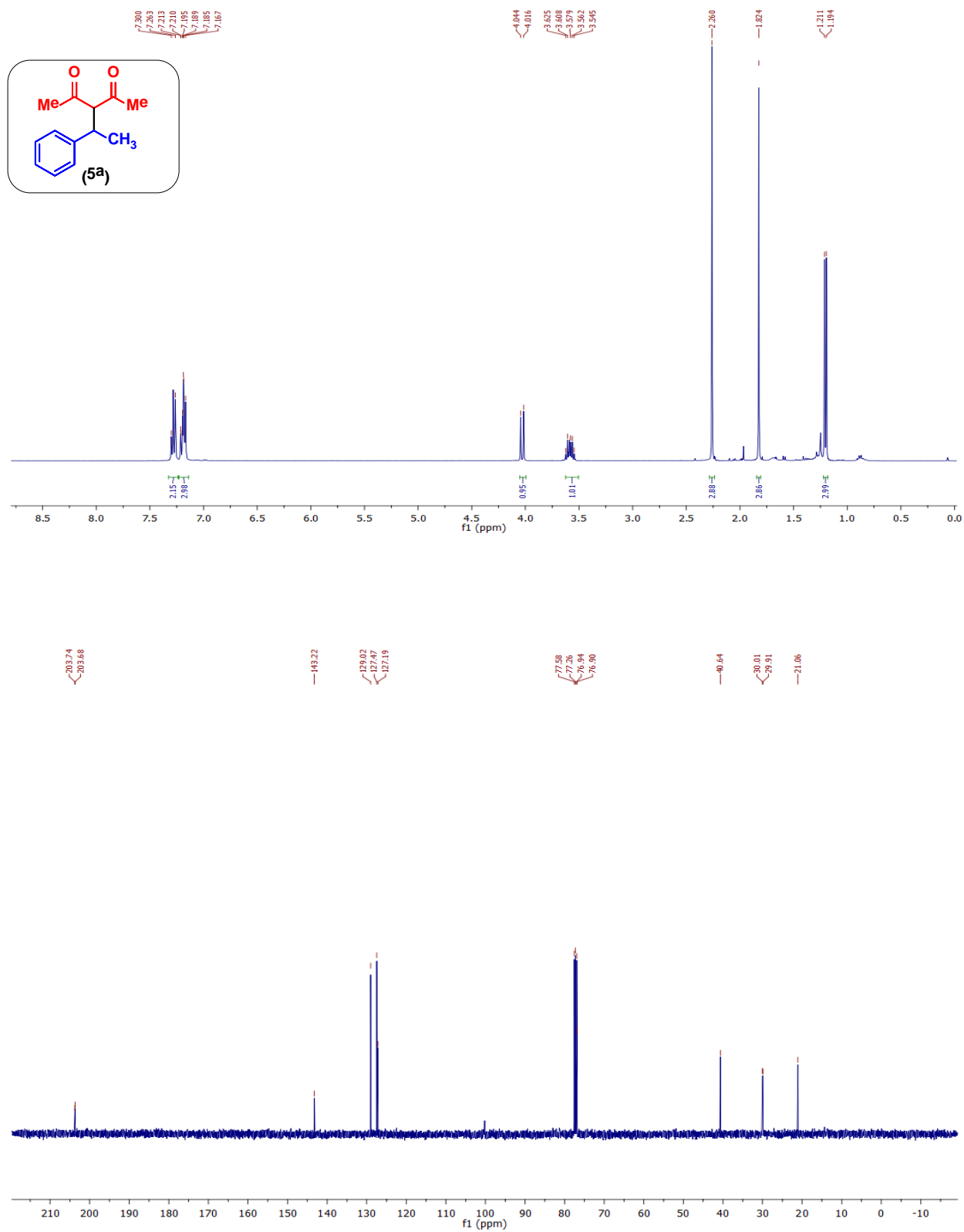


Figure S20 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5a**

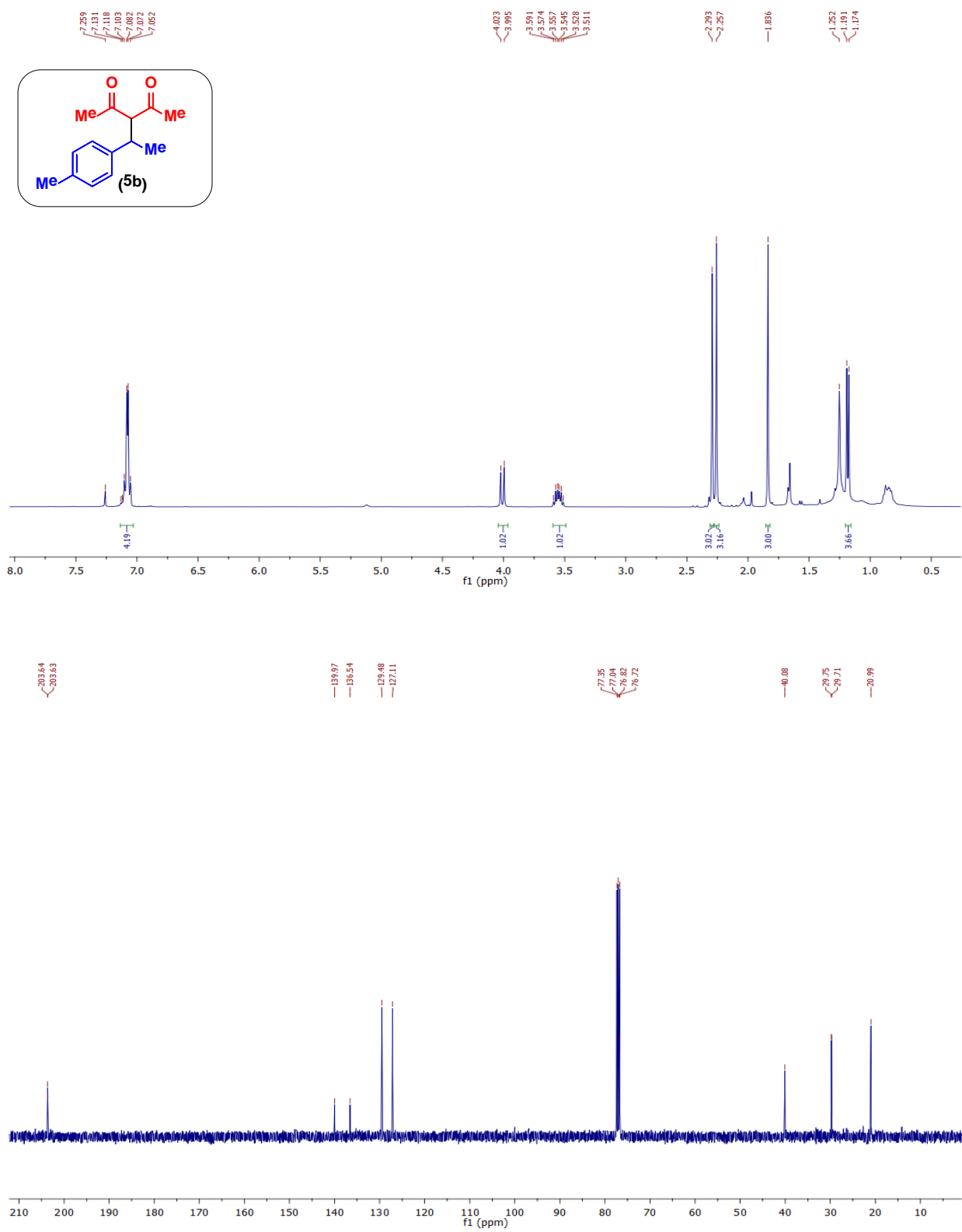


Figure S21 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5b**

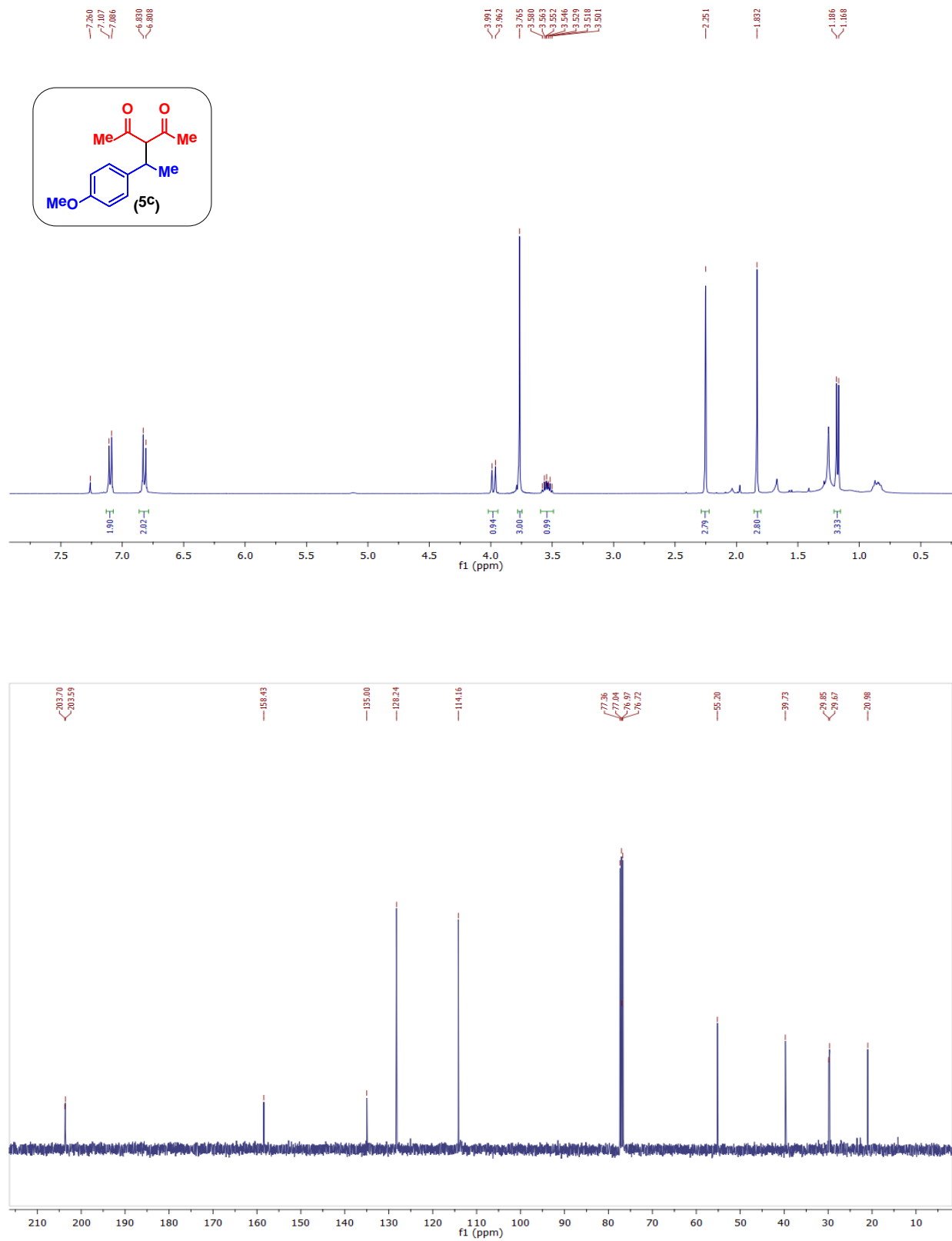


Figure S22 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5c**

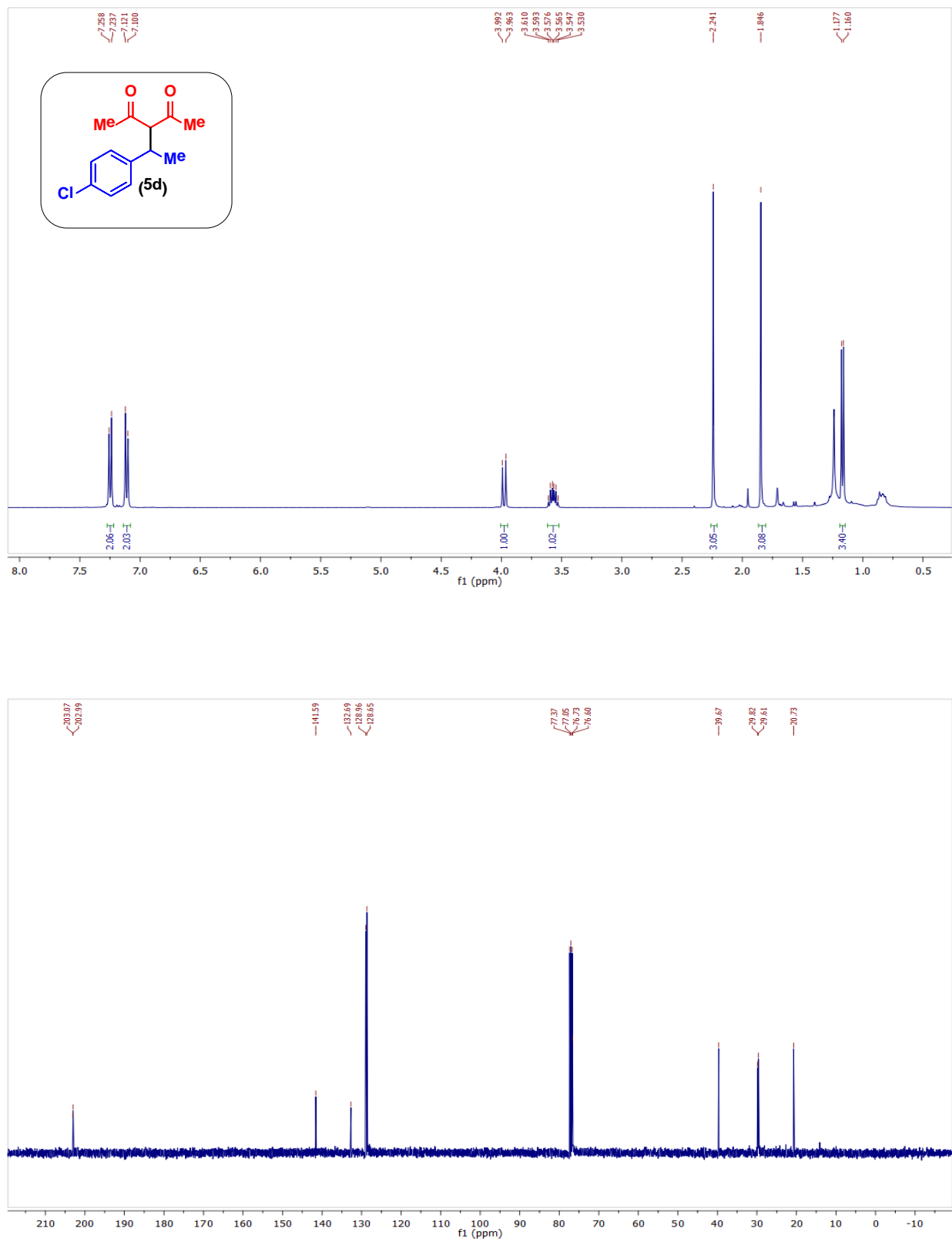


Figure S23 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5d**

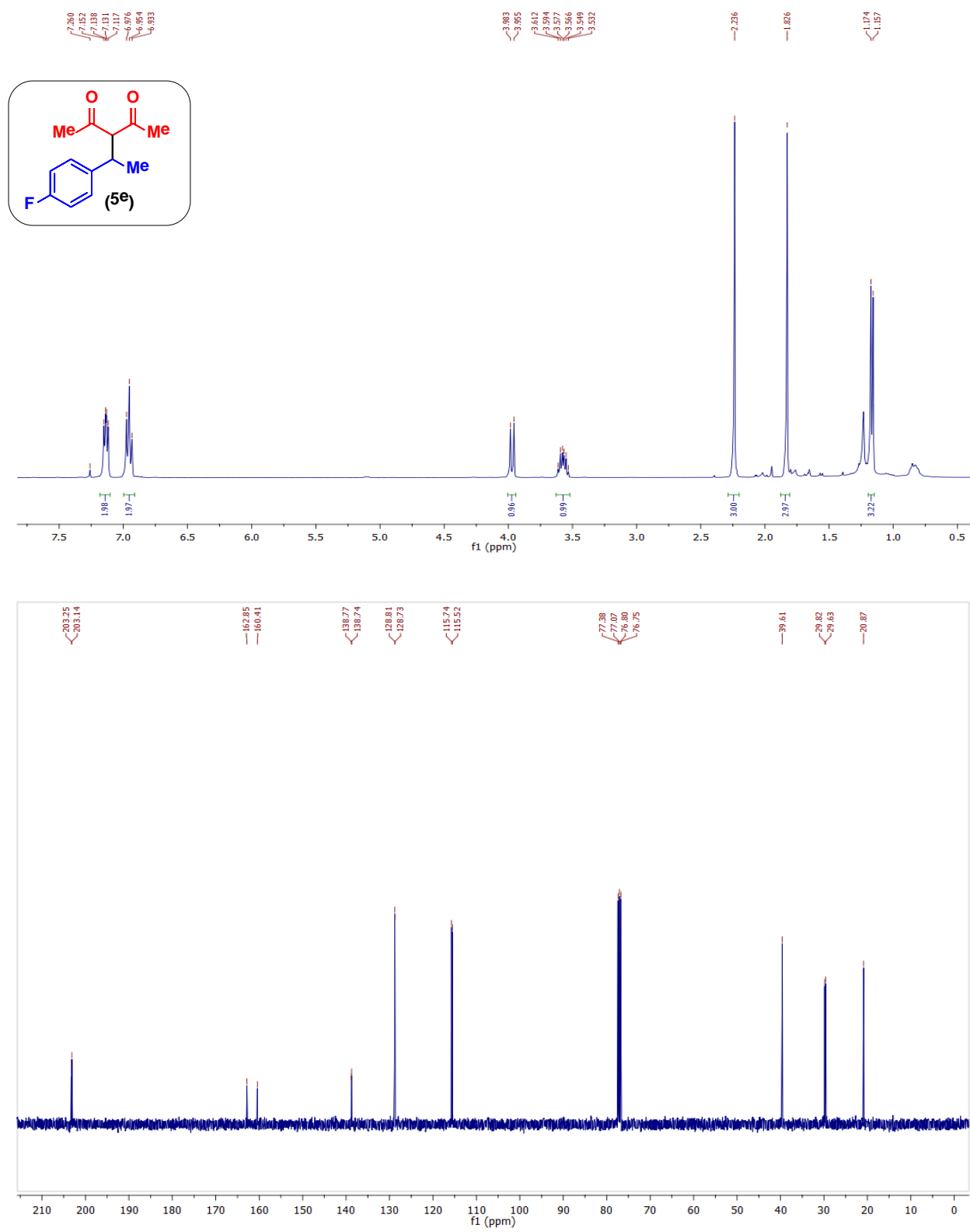


Figure S24 <sup>1</sup>H and <sup>13</sup>C NMR spectra of 5e



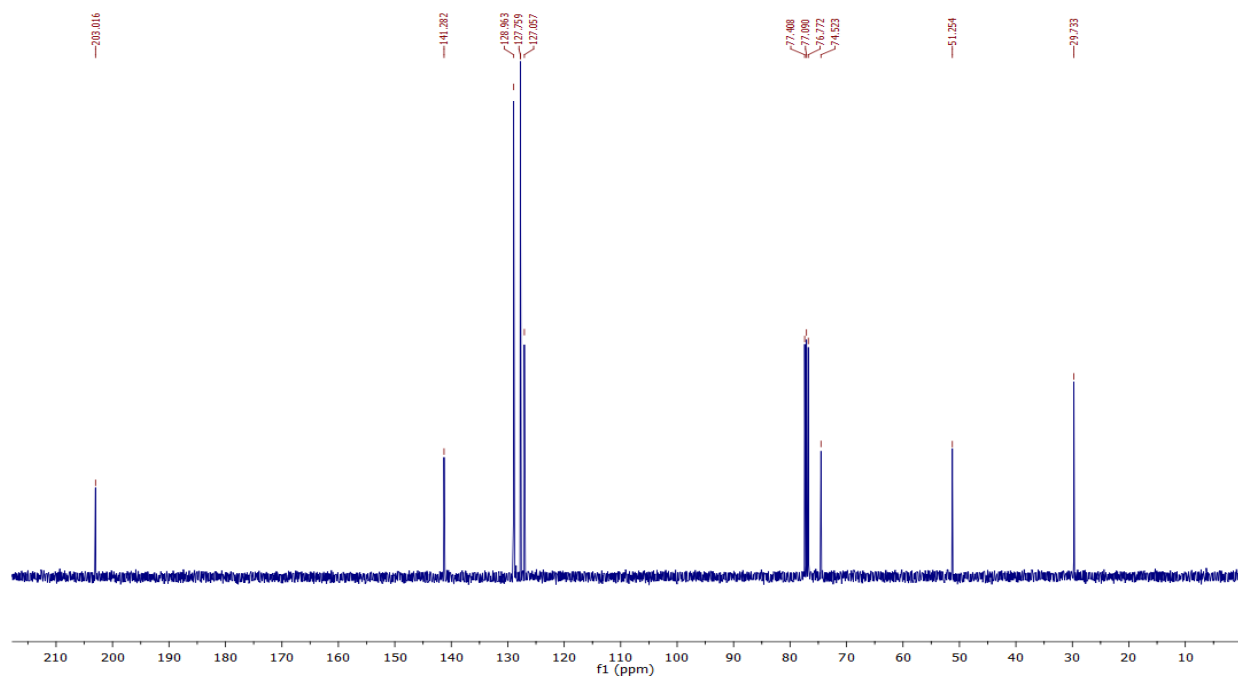
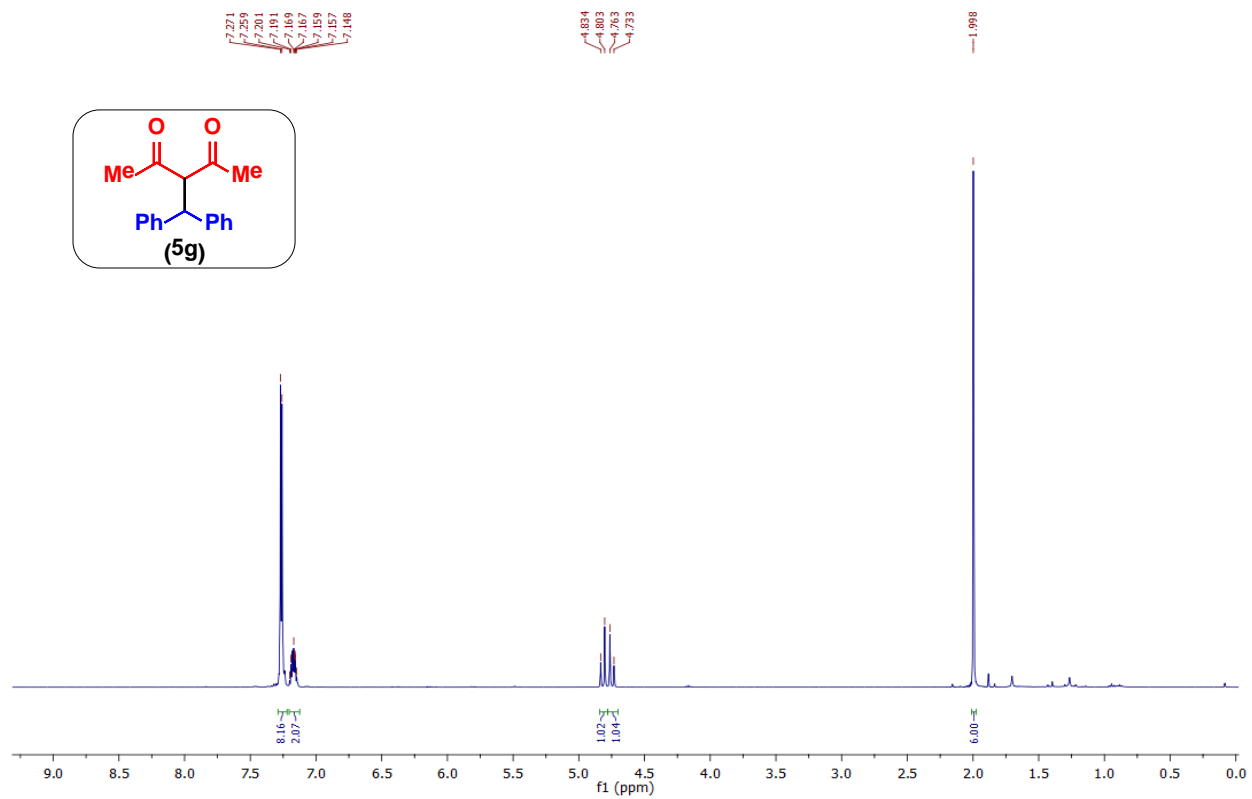


Figure S25  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra of **5g**

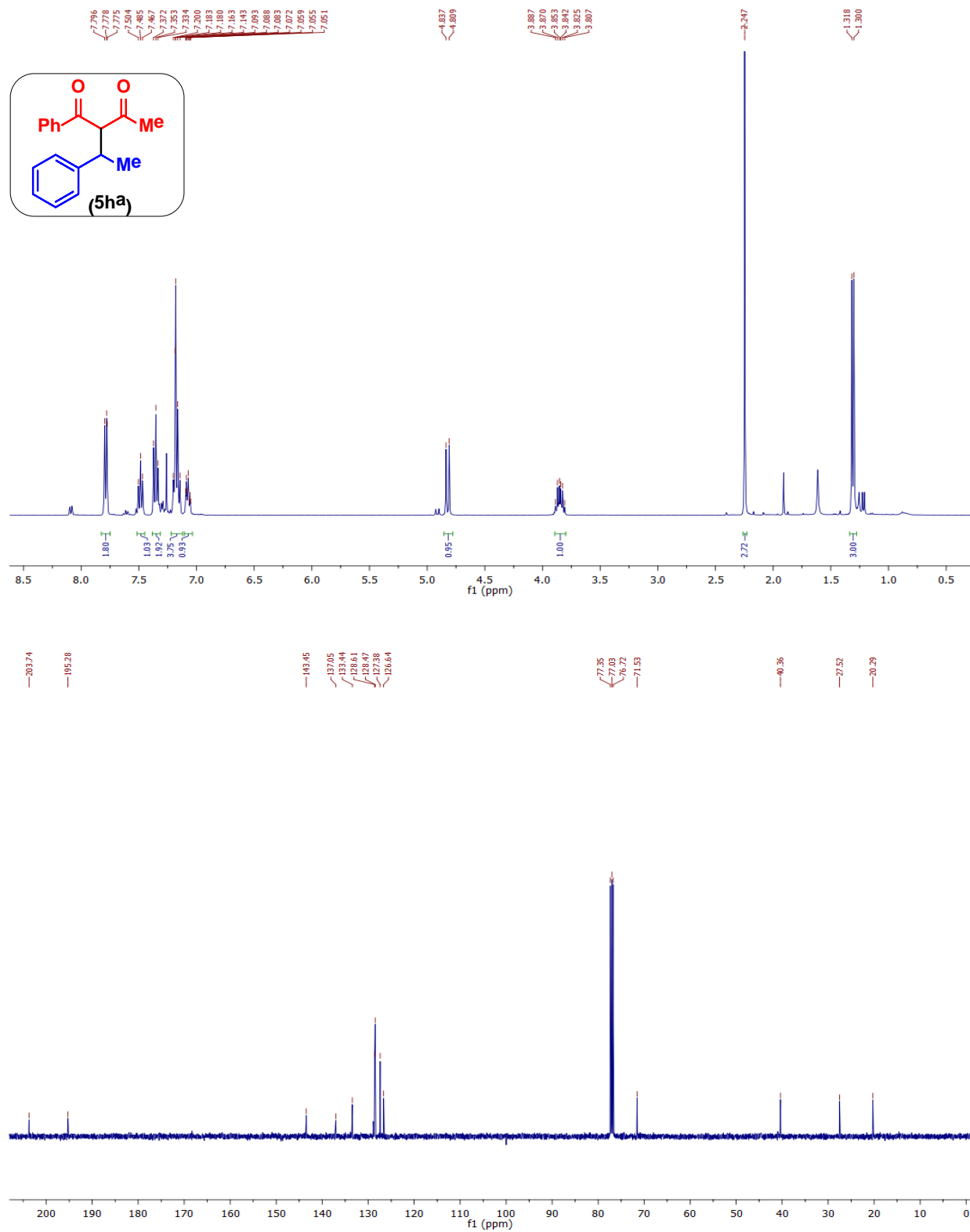


Figure S26 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5ha**

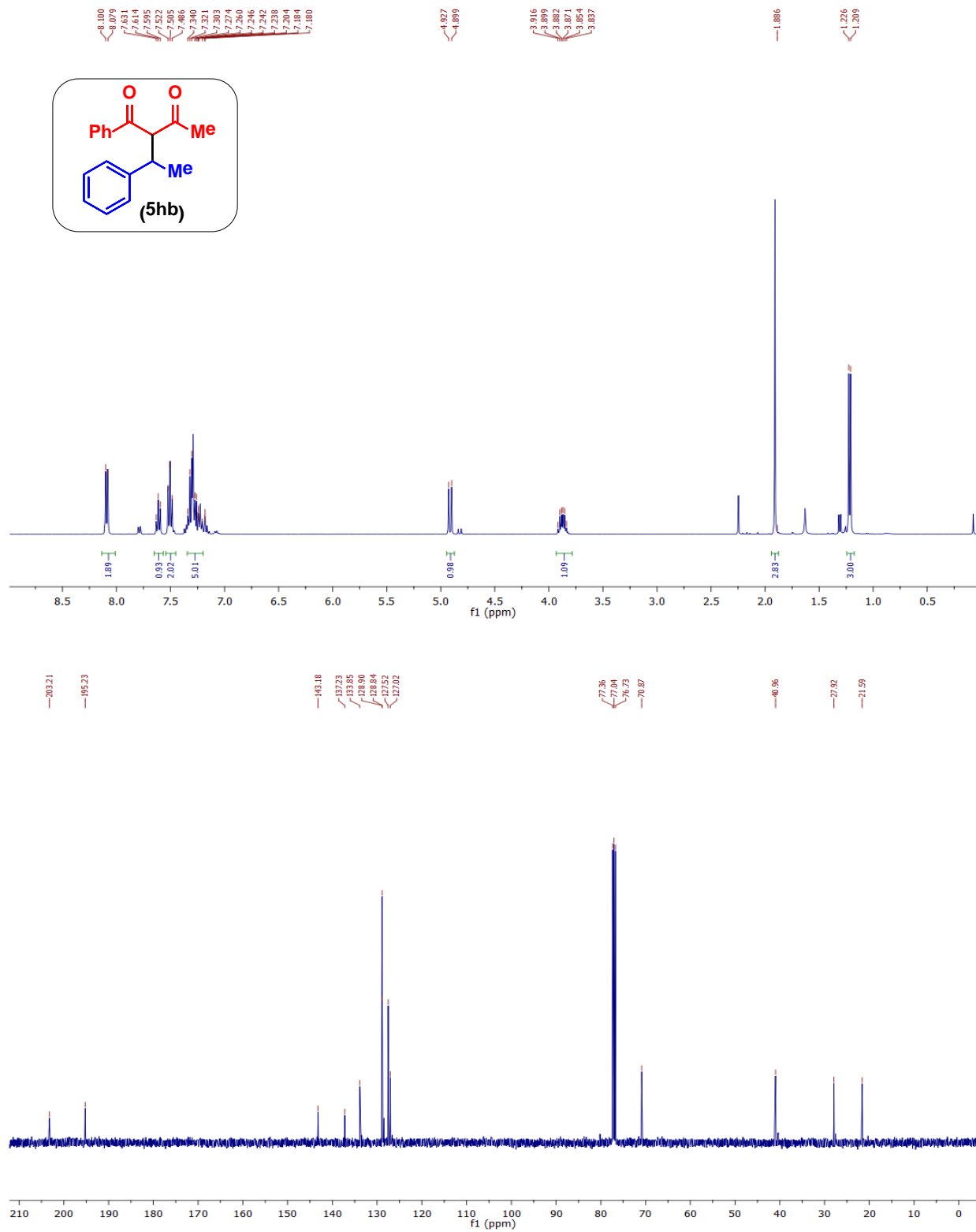


Figure S27 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5hb**

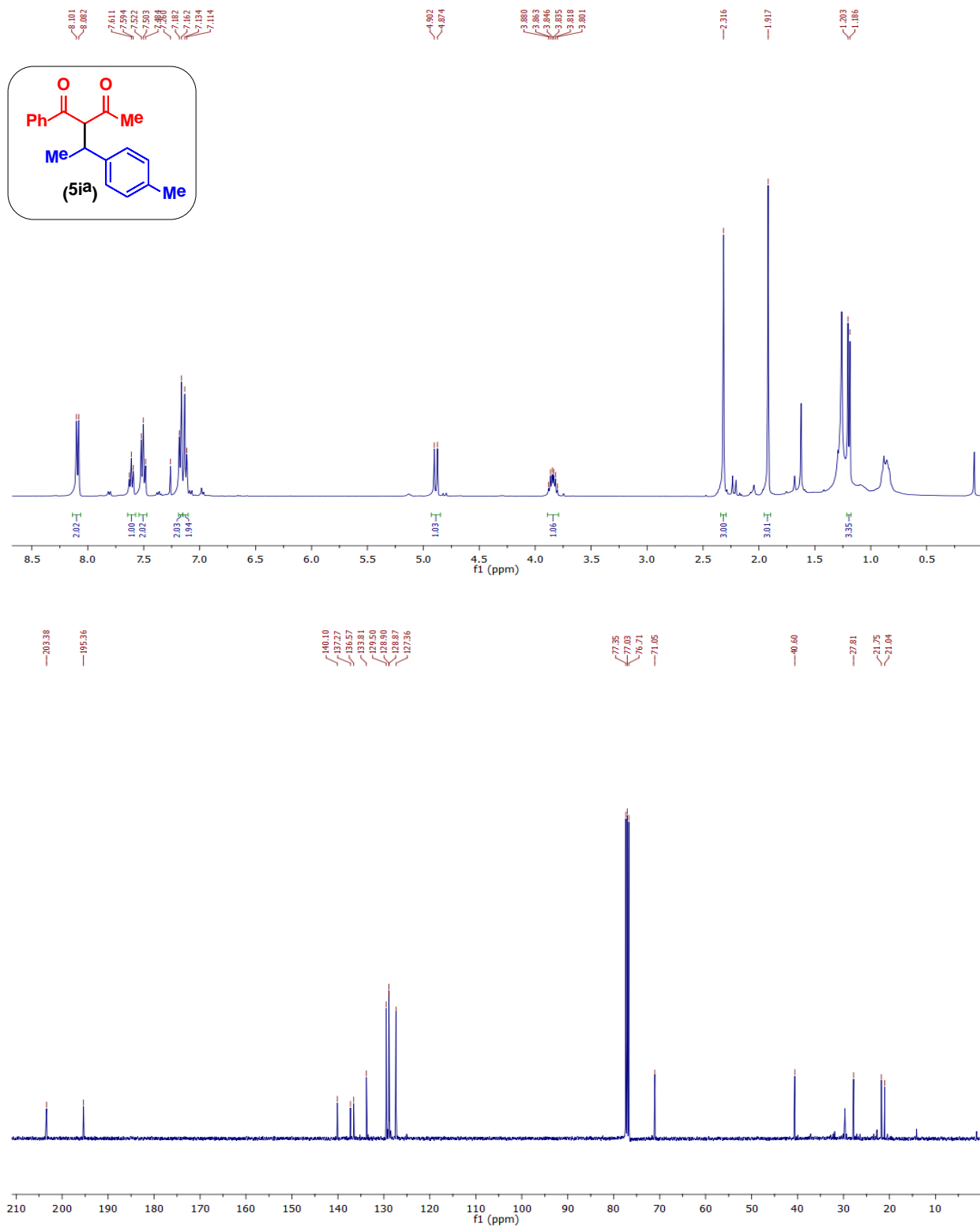


Figure S28 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5ia**

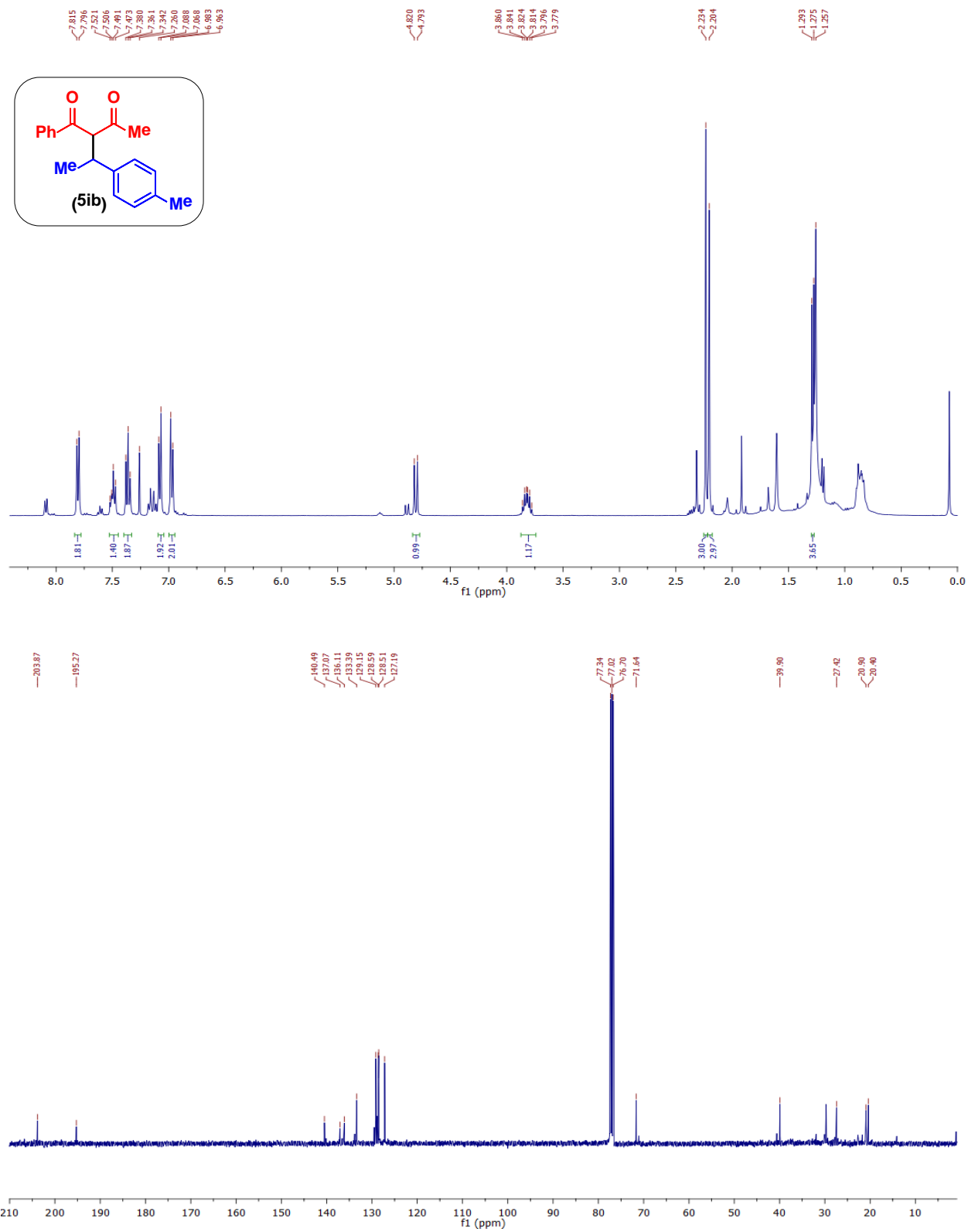


Figure S29 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5ib**

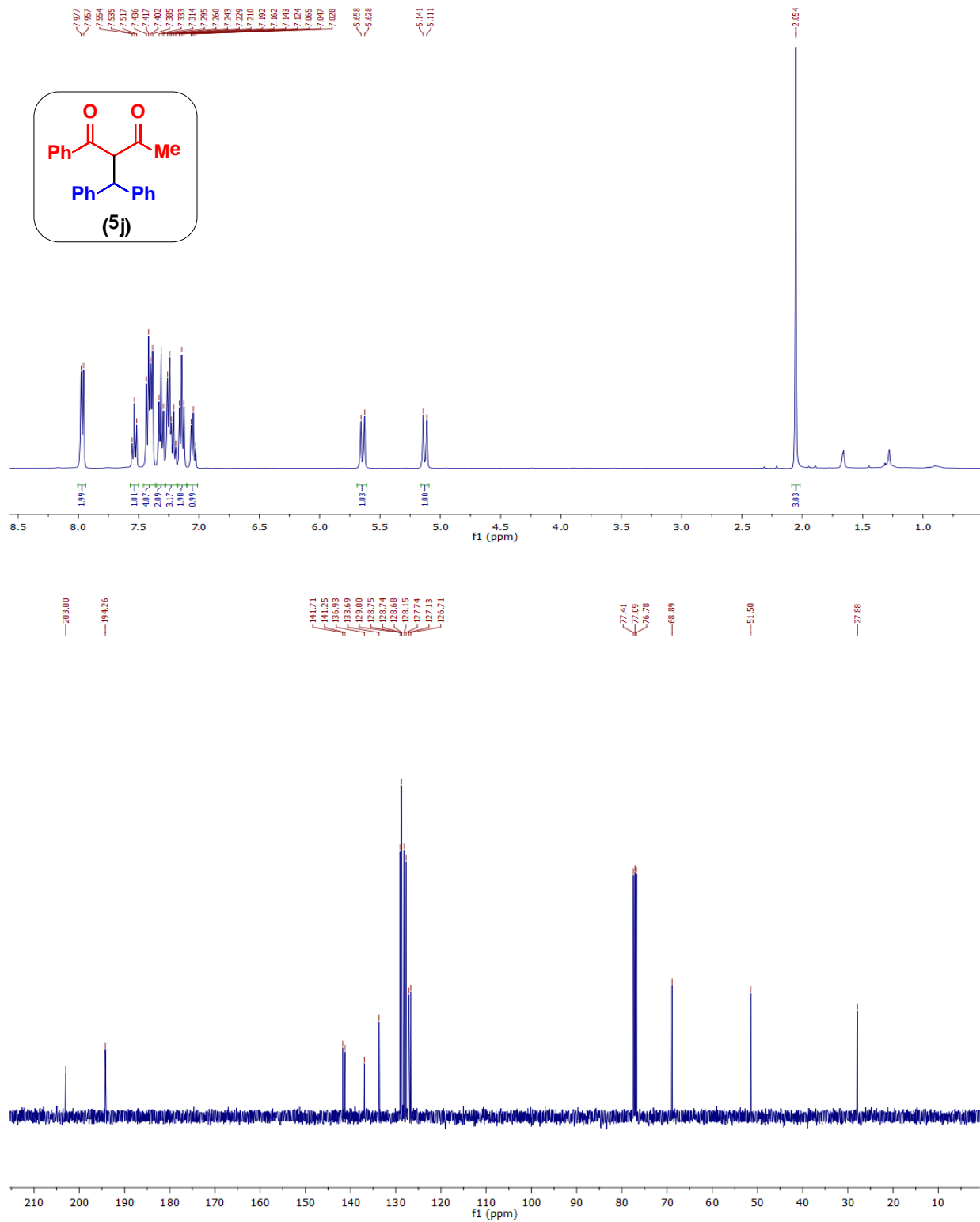


Figure S30 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5j**

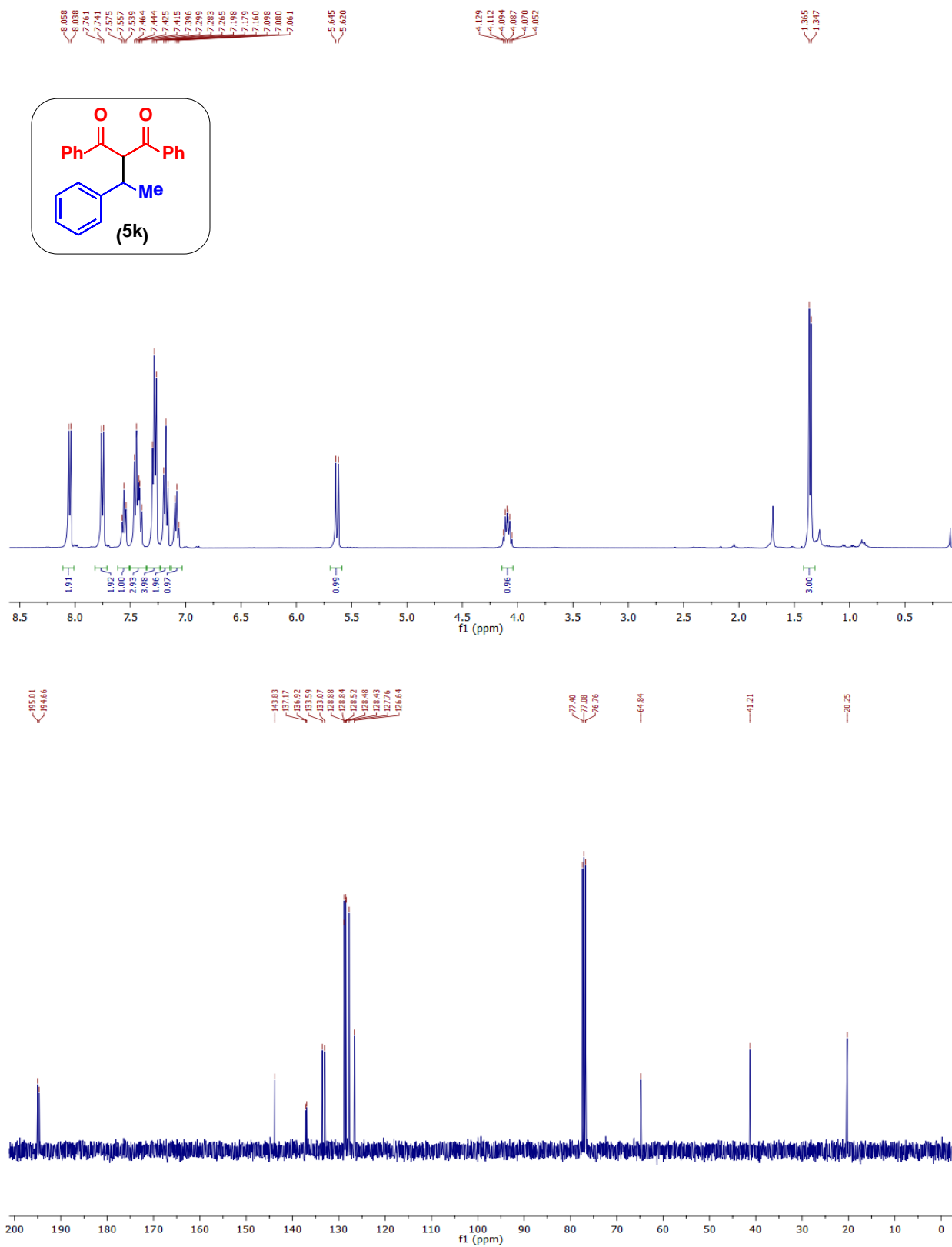


Figure S31 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5k**

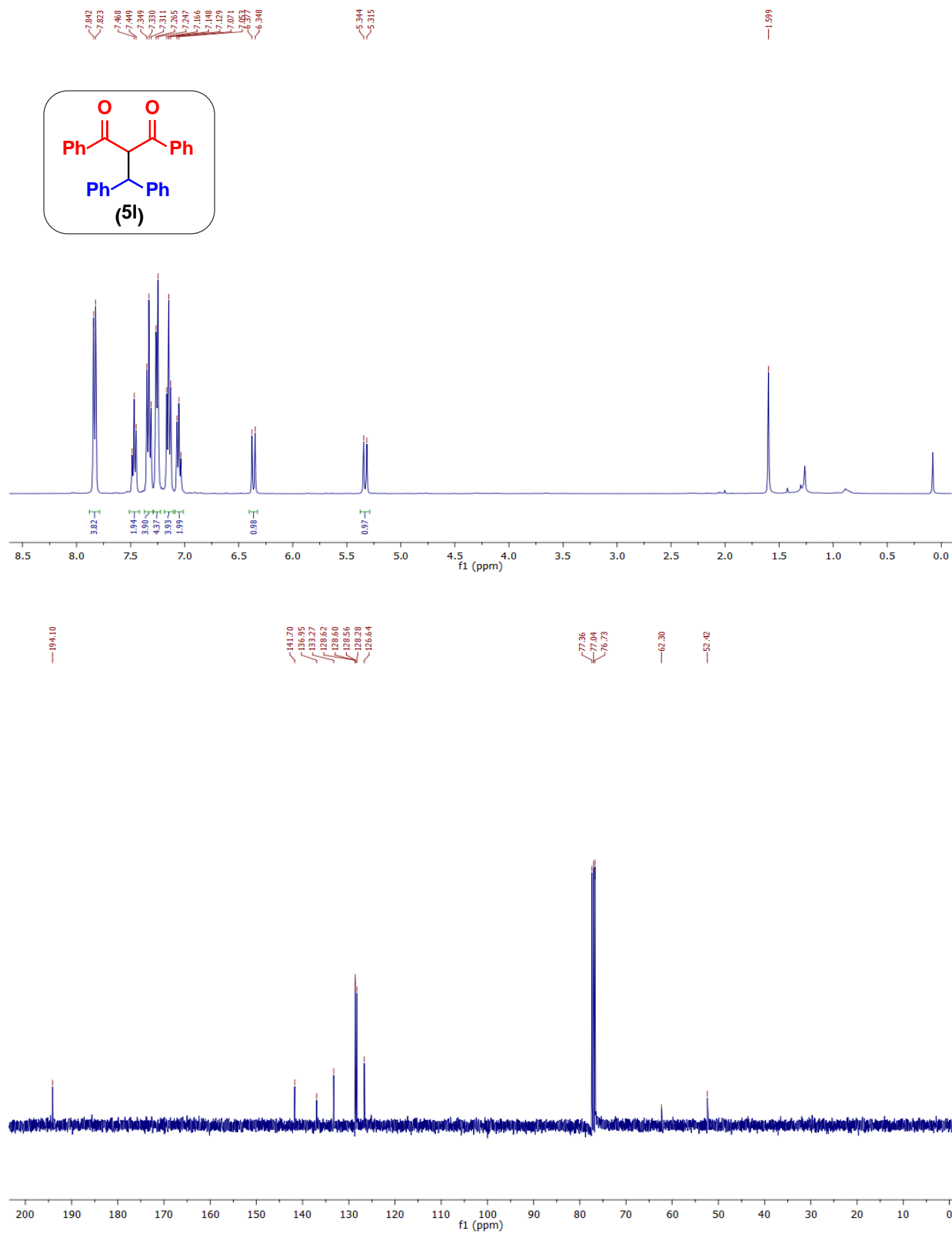


Figure S32 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **51**



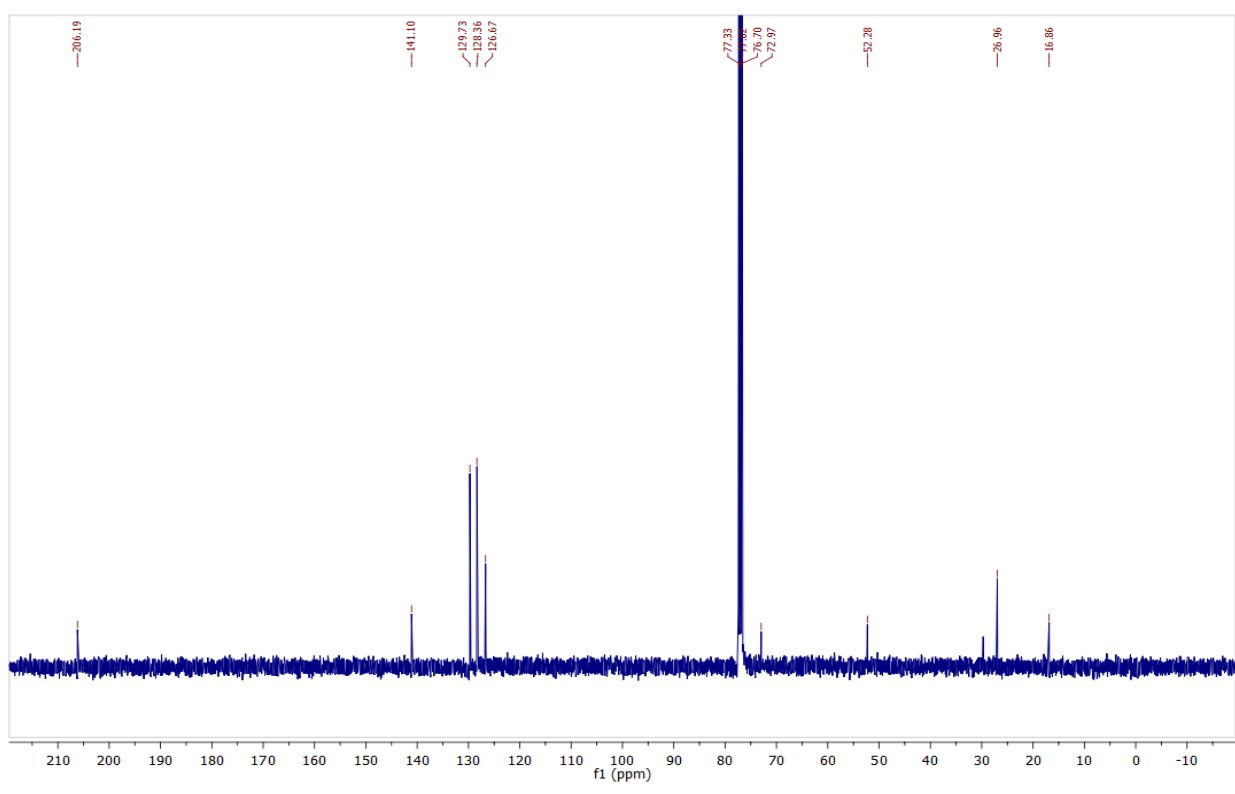
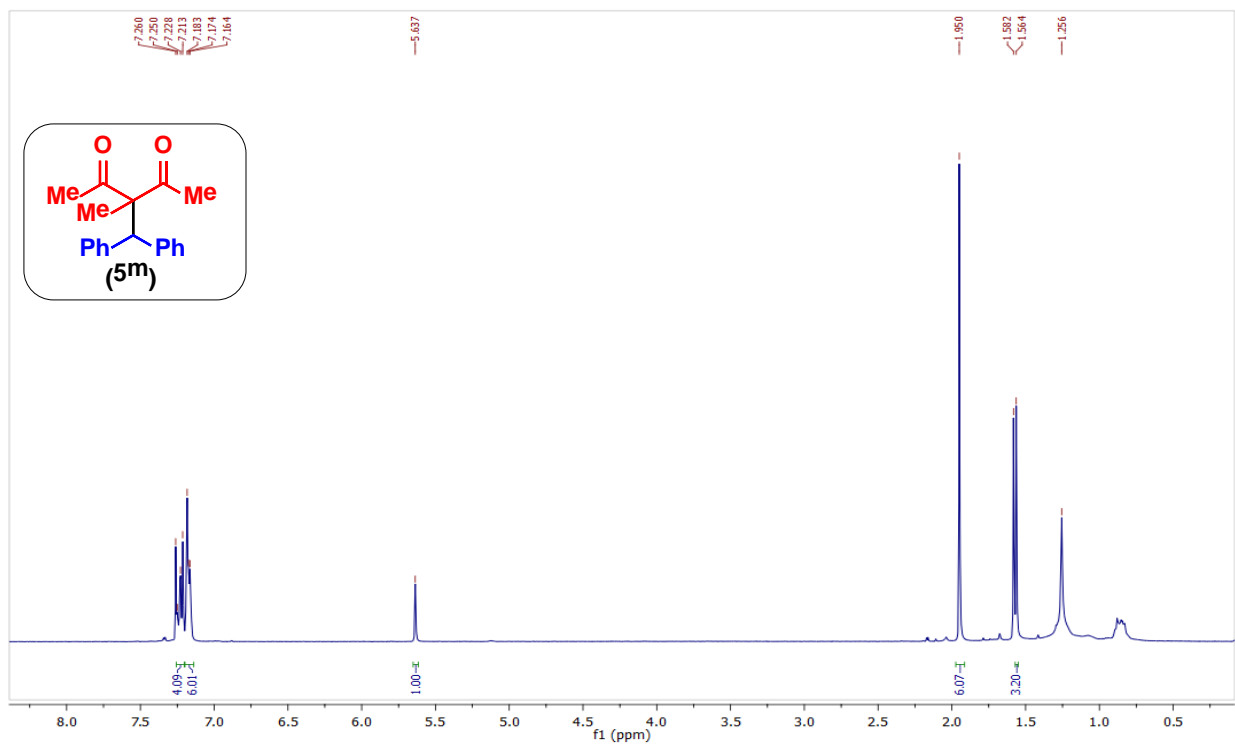


Figure S33 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5m**

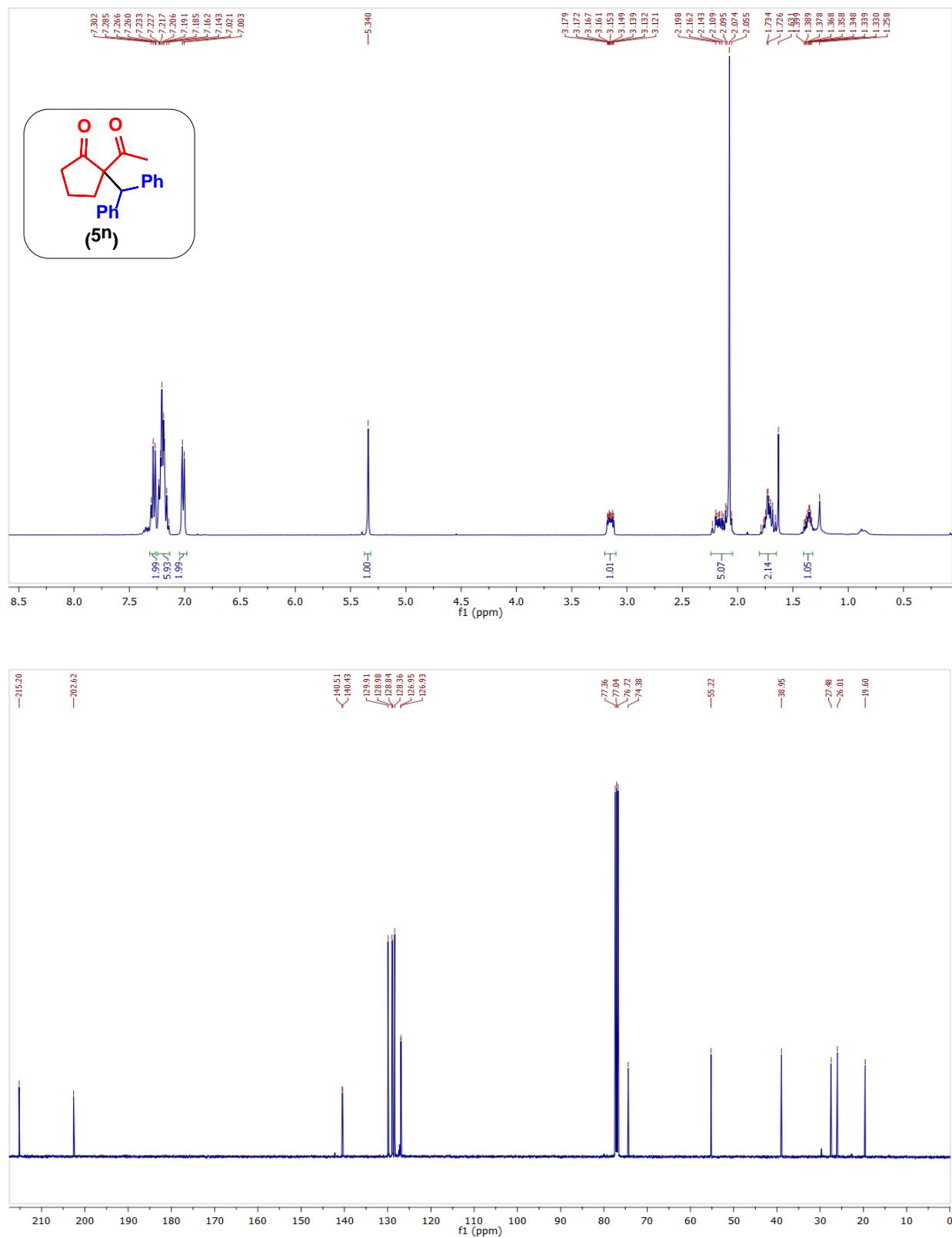


Figure S34 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5n**

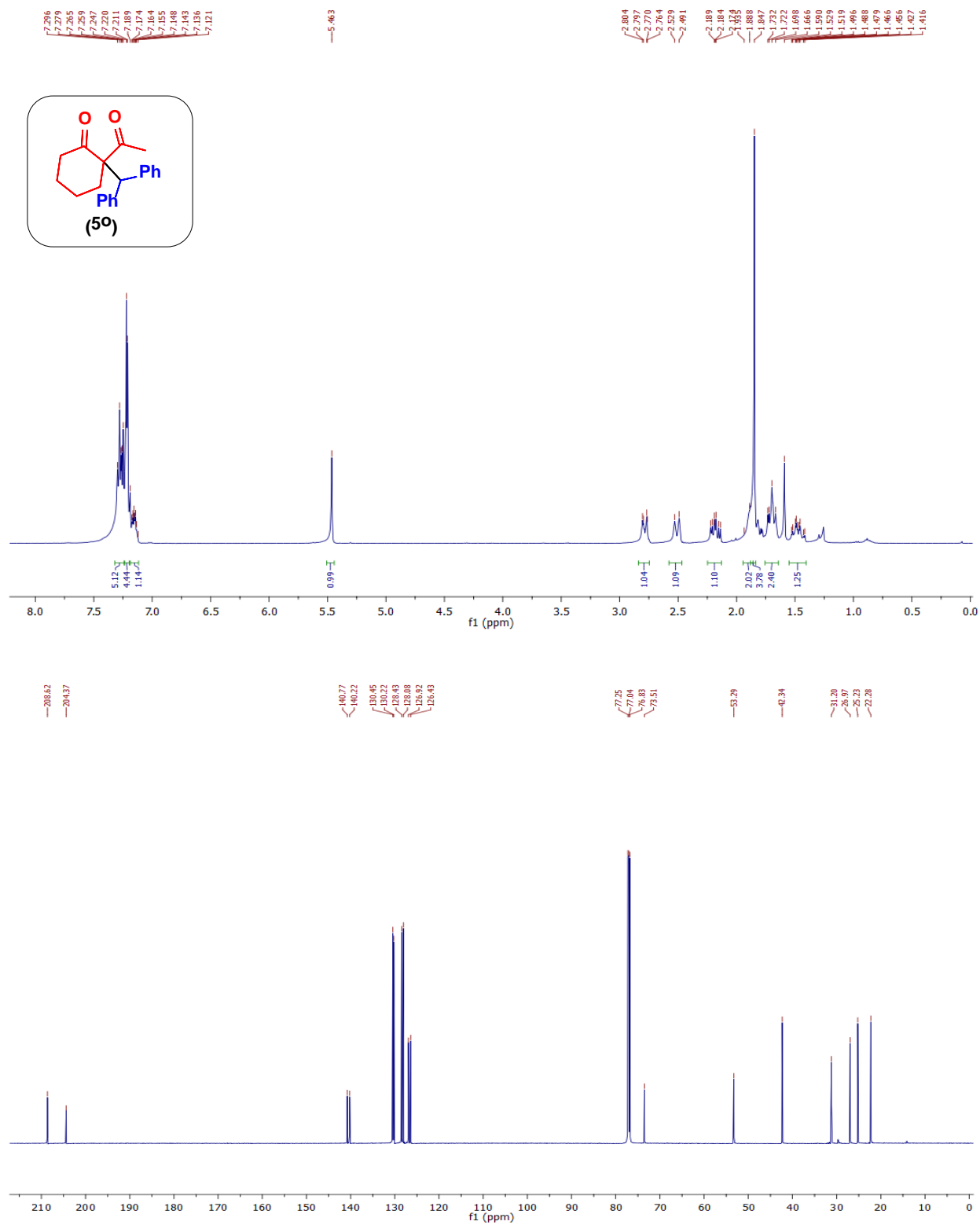


Figure S35 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5o**

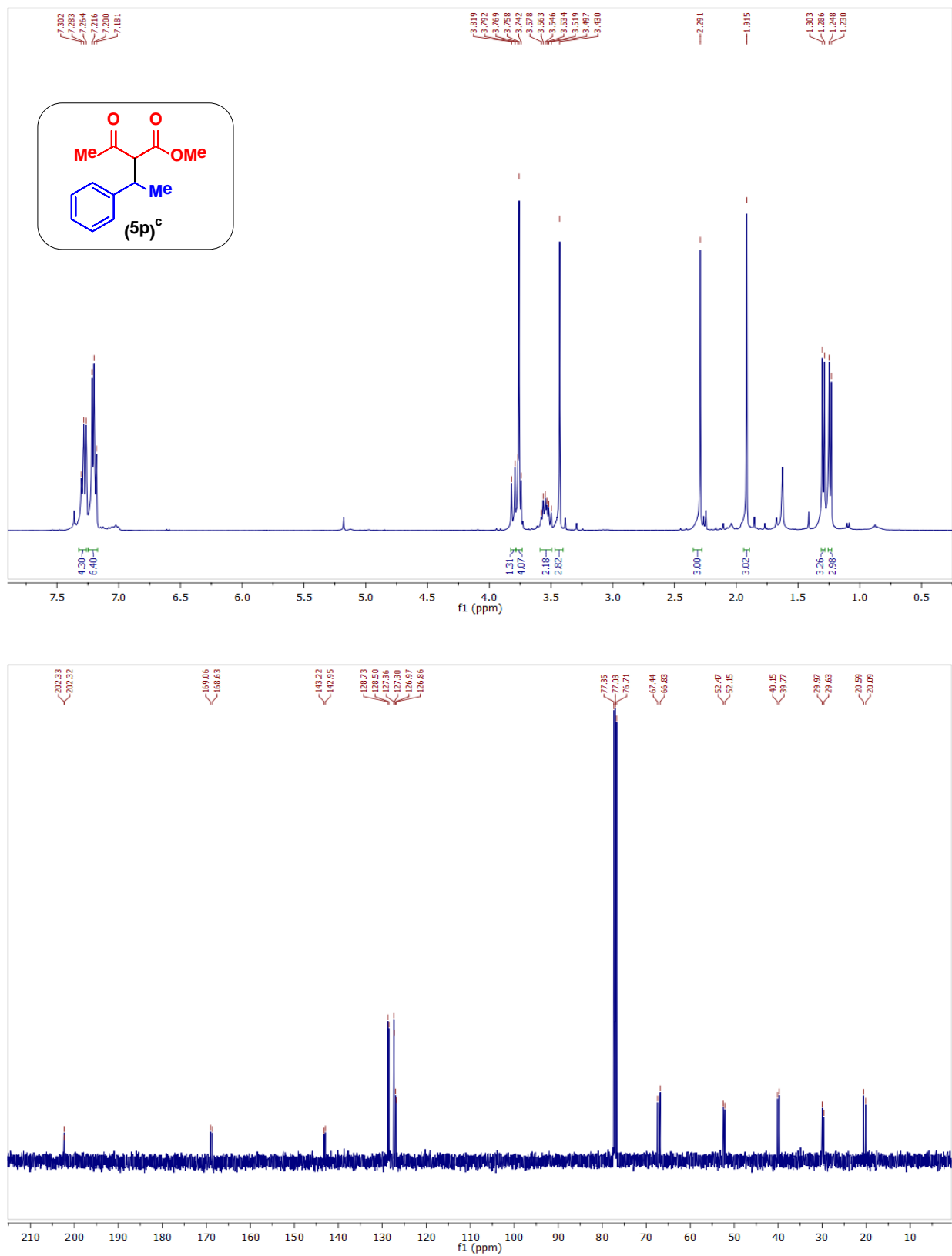


Figure S36 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5p** (1:1 diastereomers)

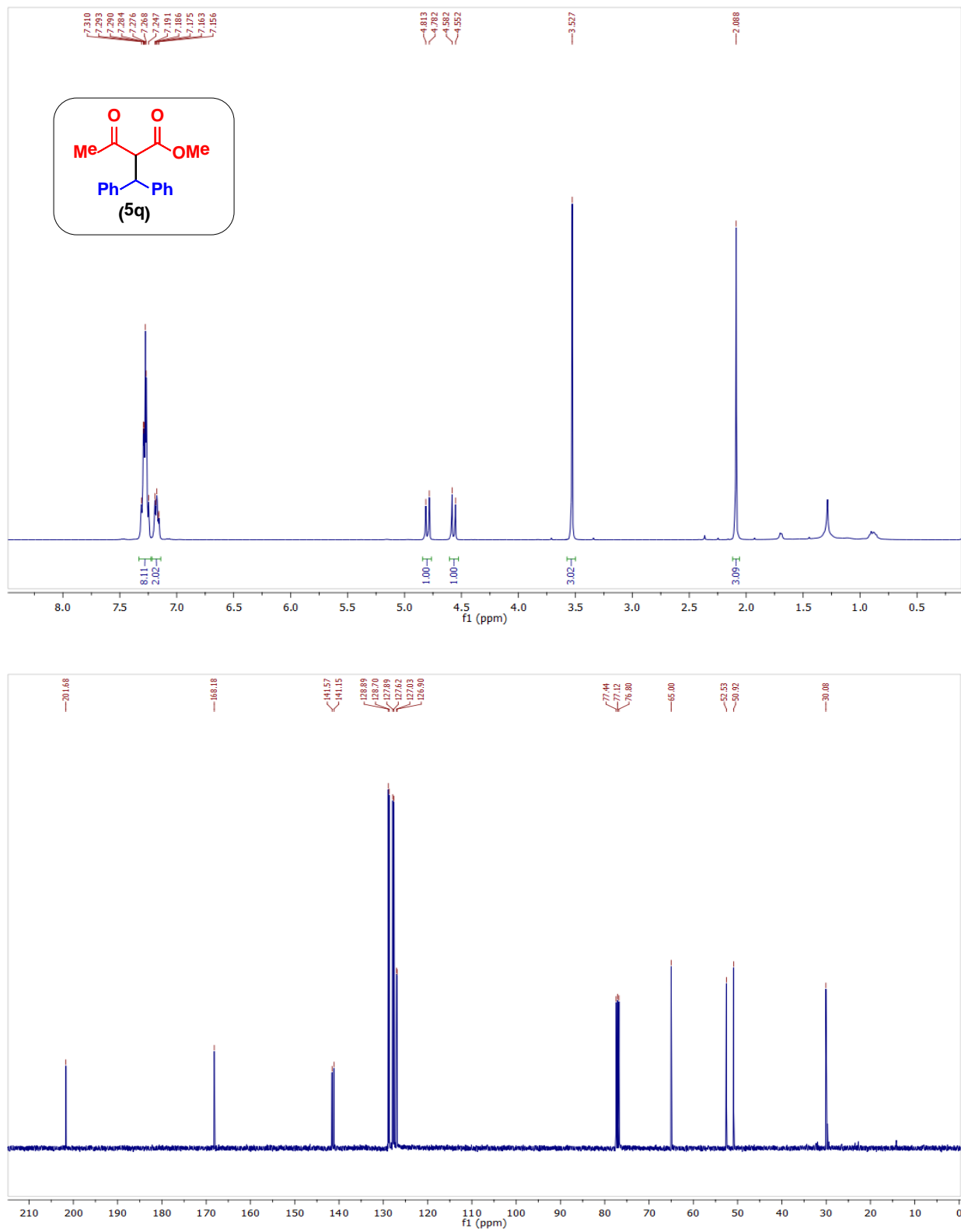


Figure S37 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5q**

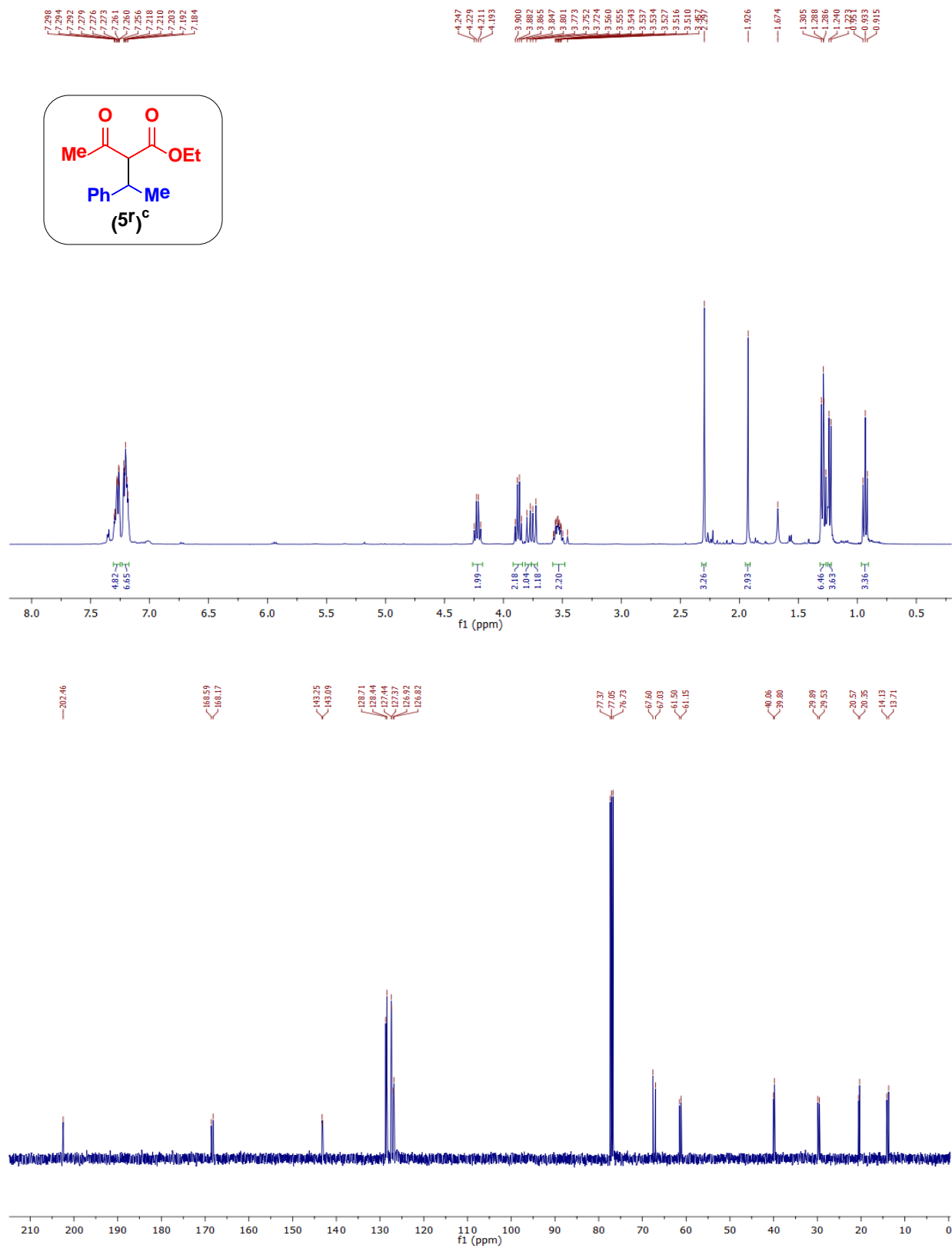


Figure S38 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5r** (1:1 distereomer)

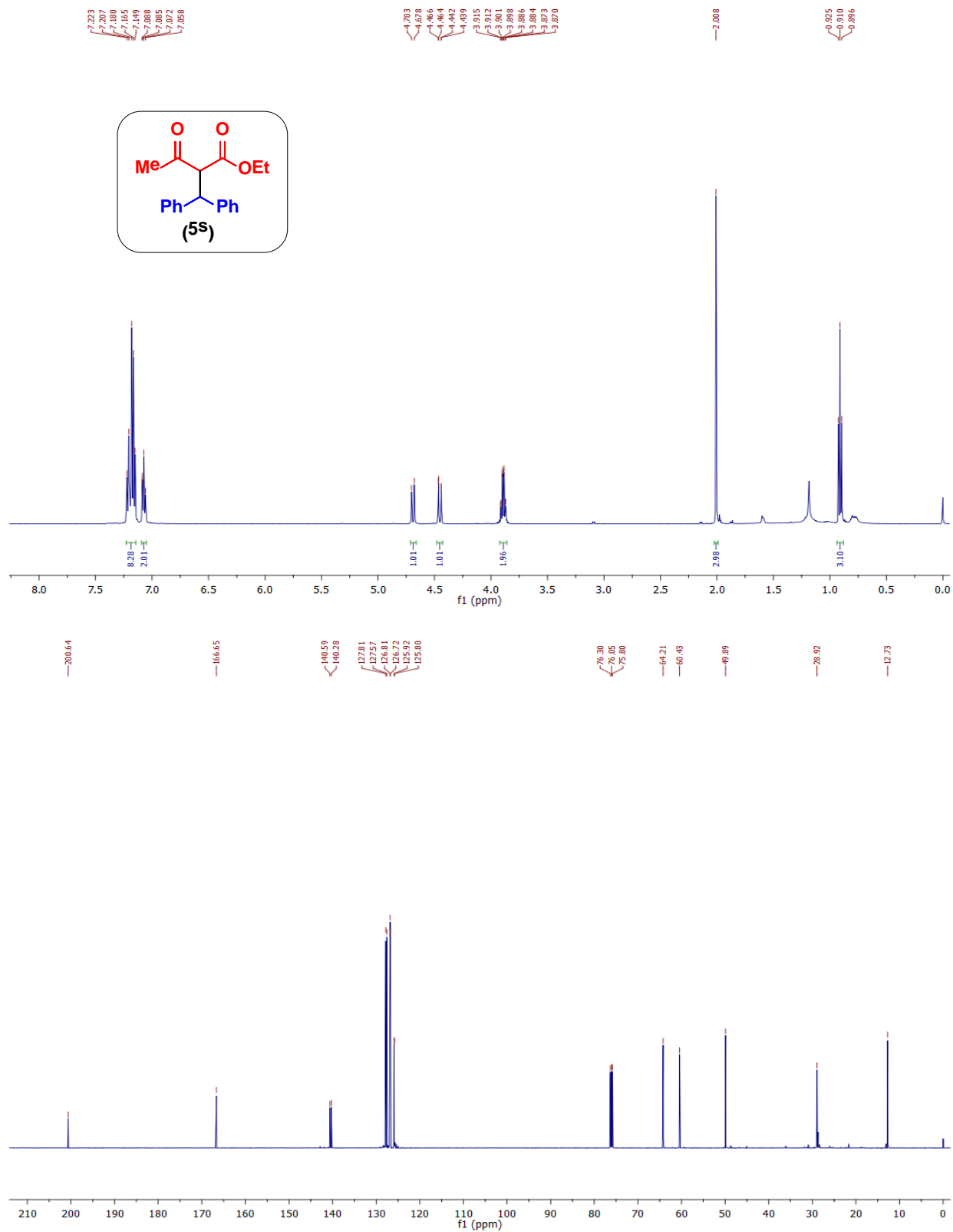


Figure S39 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **5s**

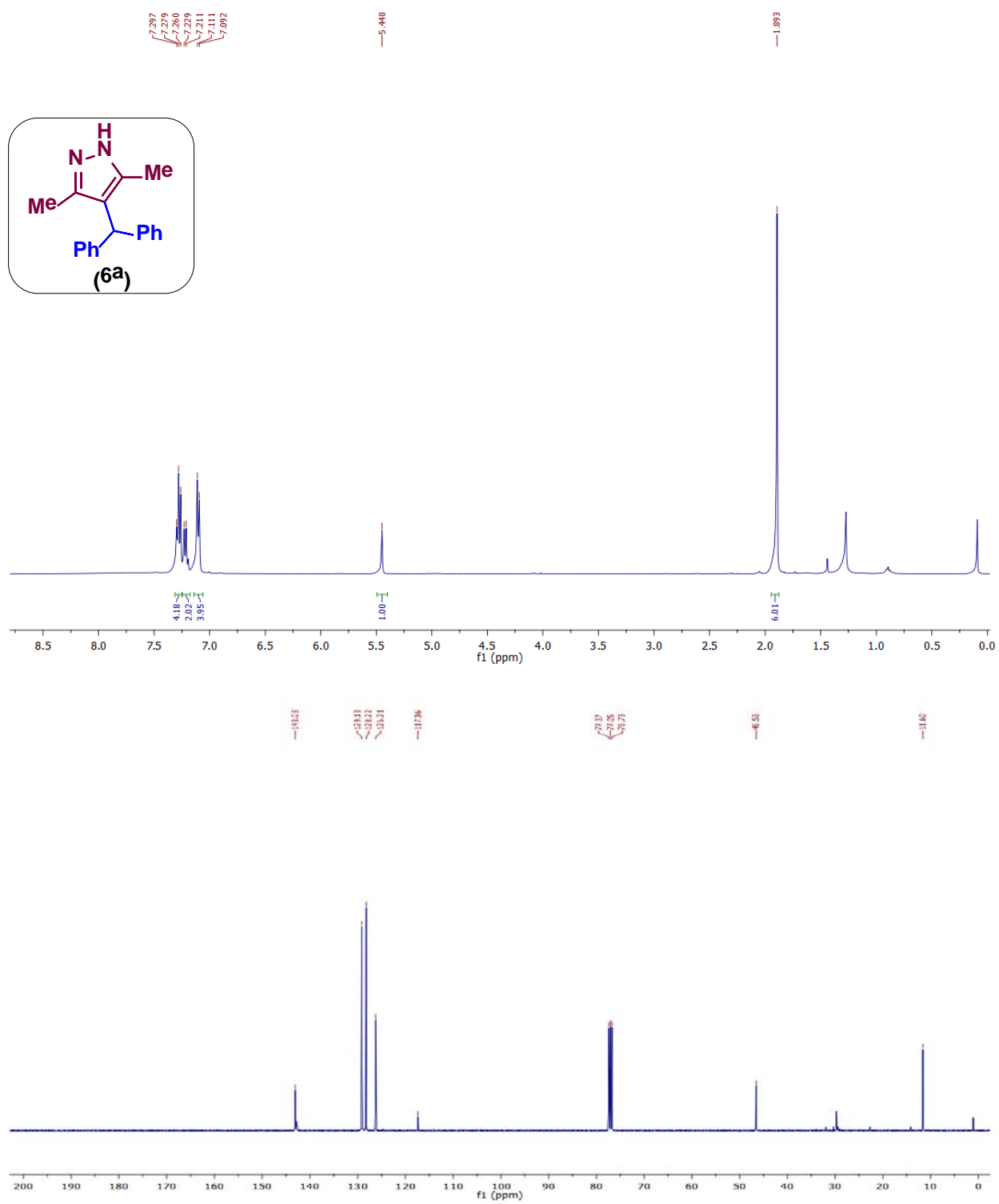


Figure S40  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra of **6a**



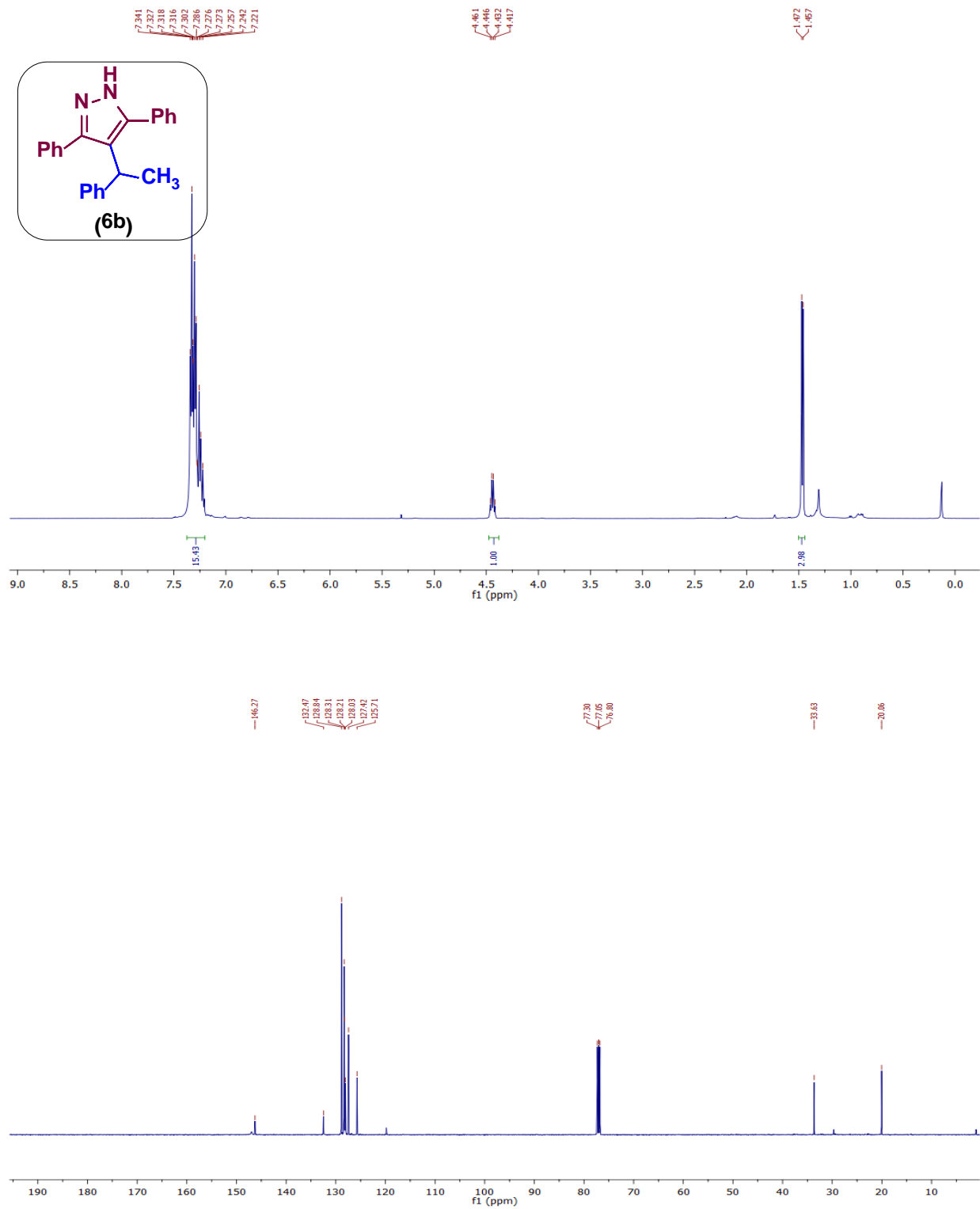


Figure S41 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **6b**

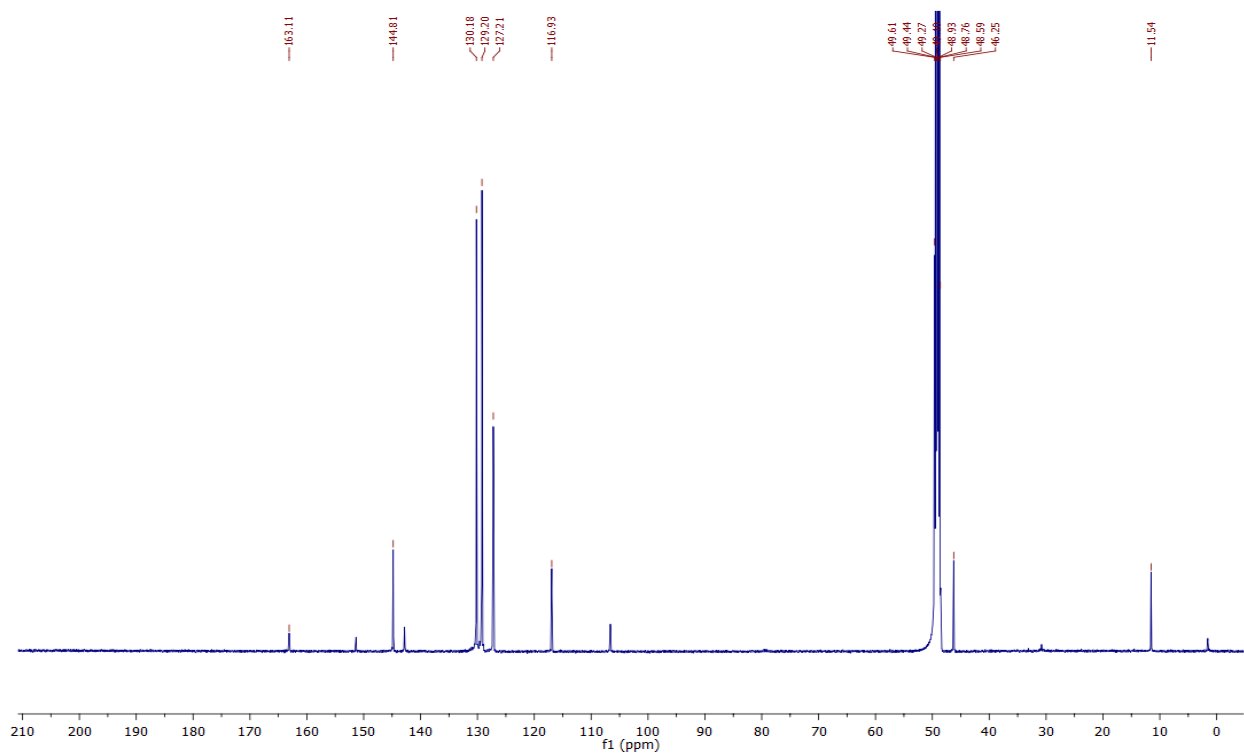
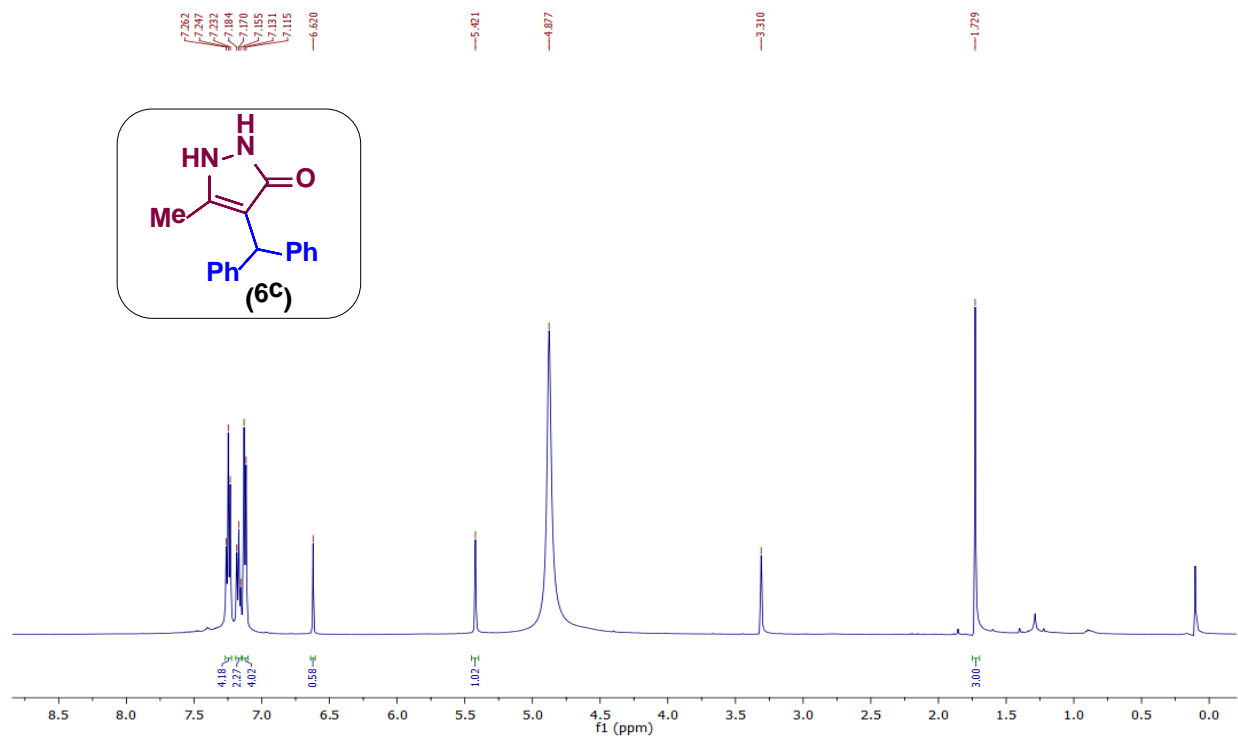


Figure S42  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra of **6c**

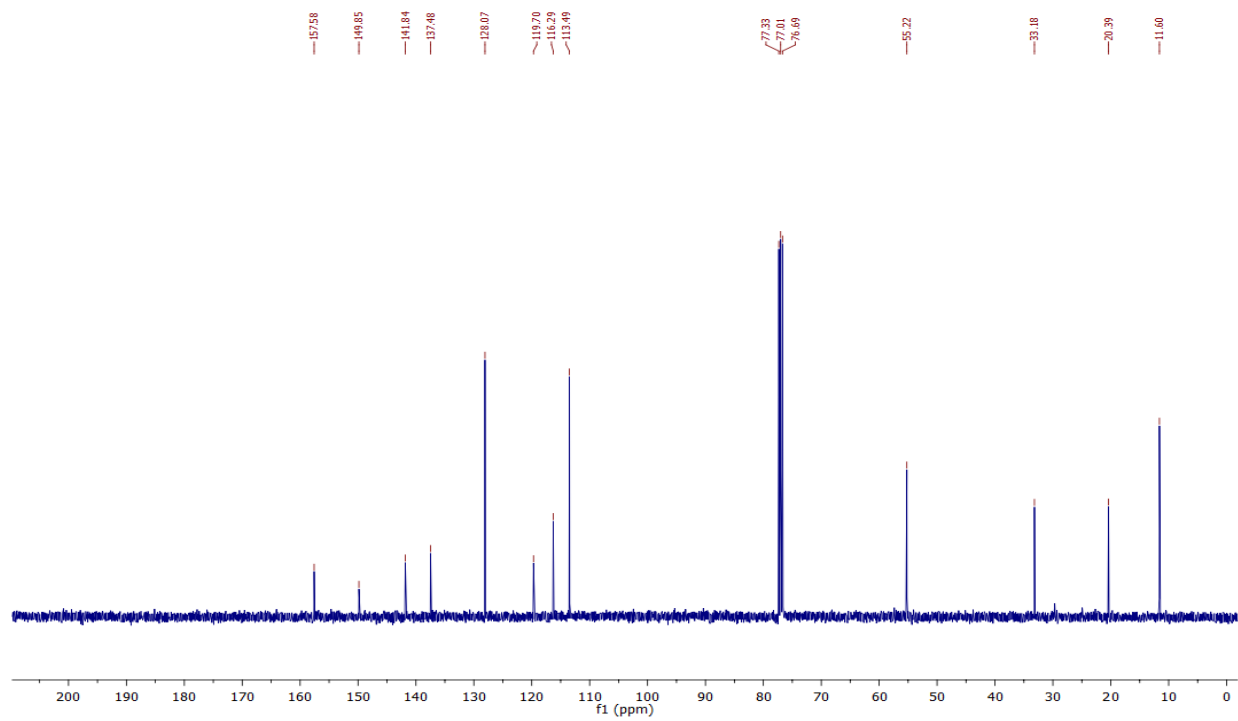
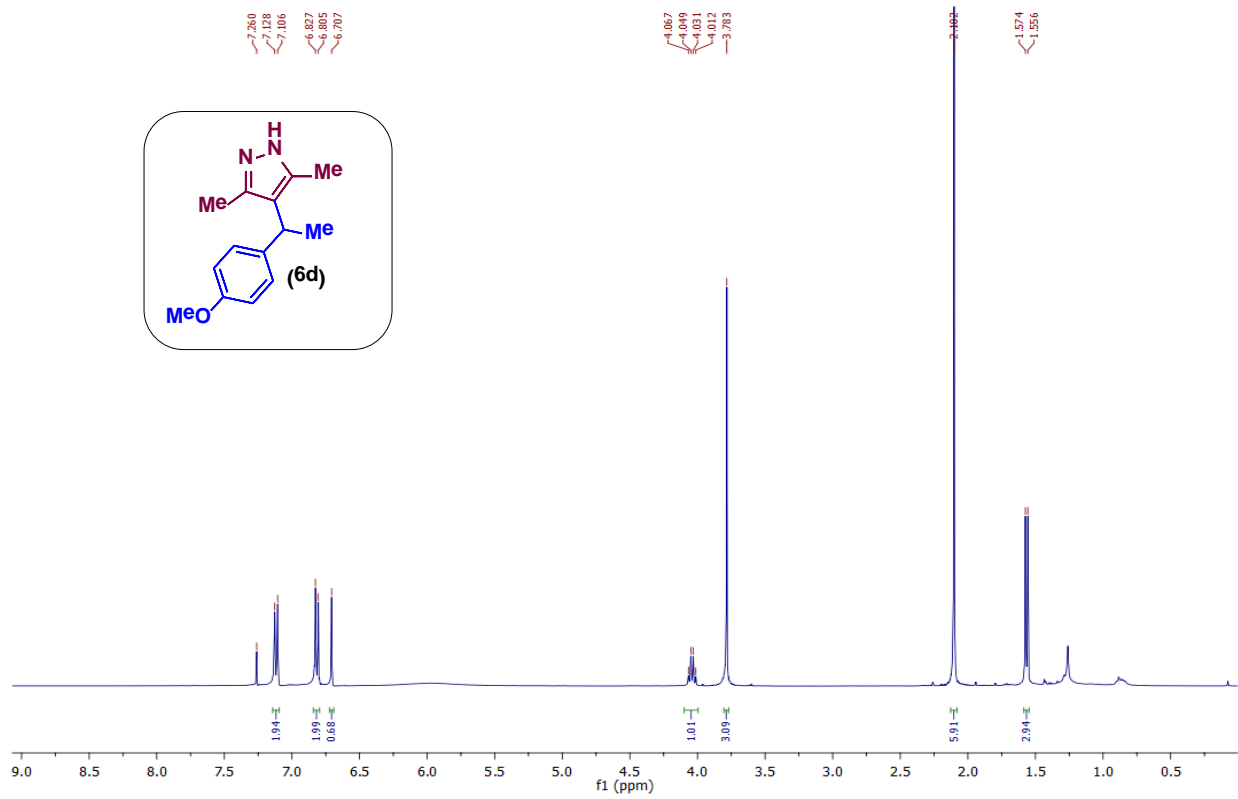


Figure S43 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **6d**

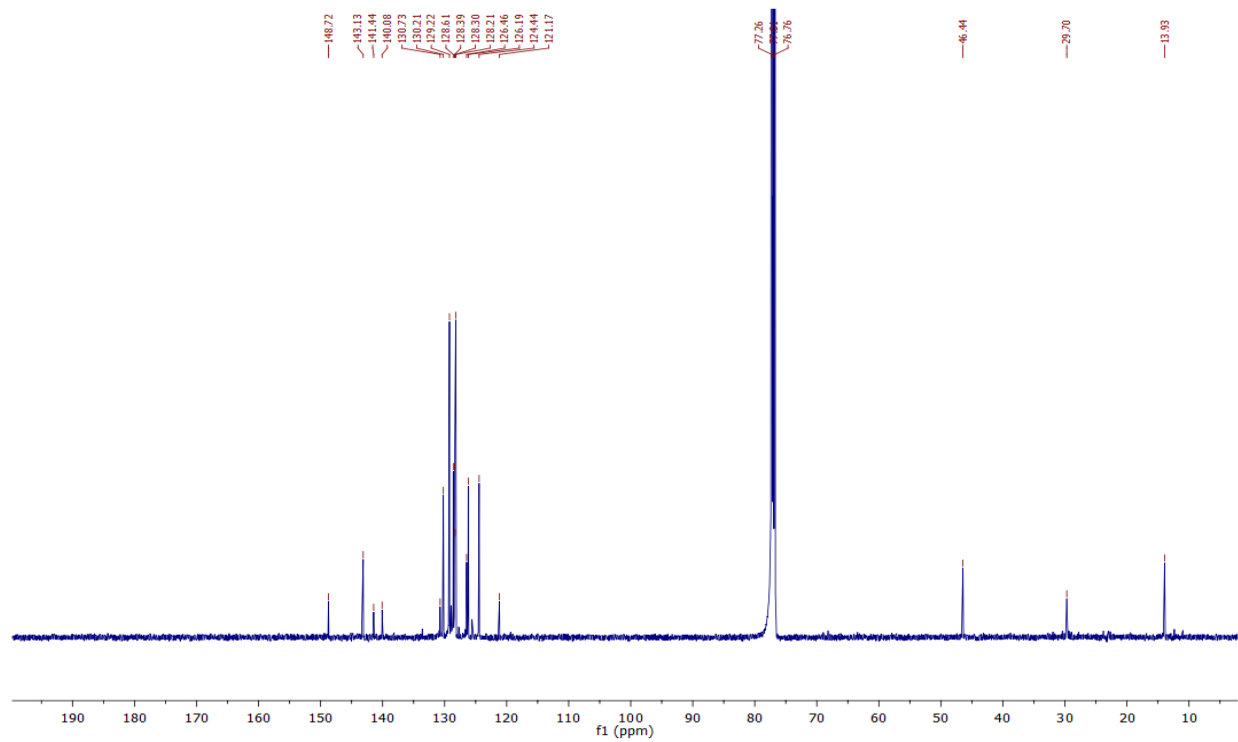
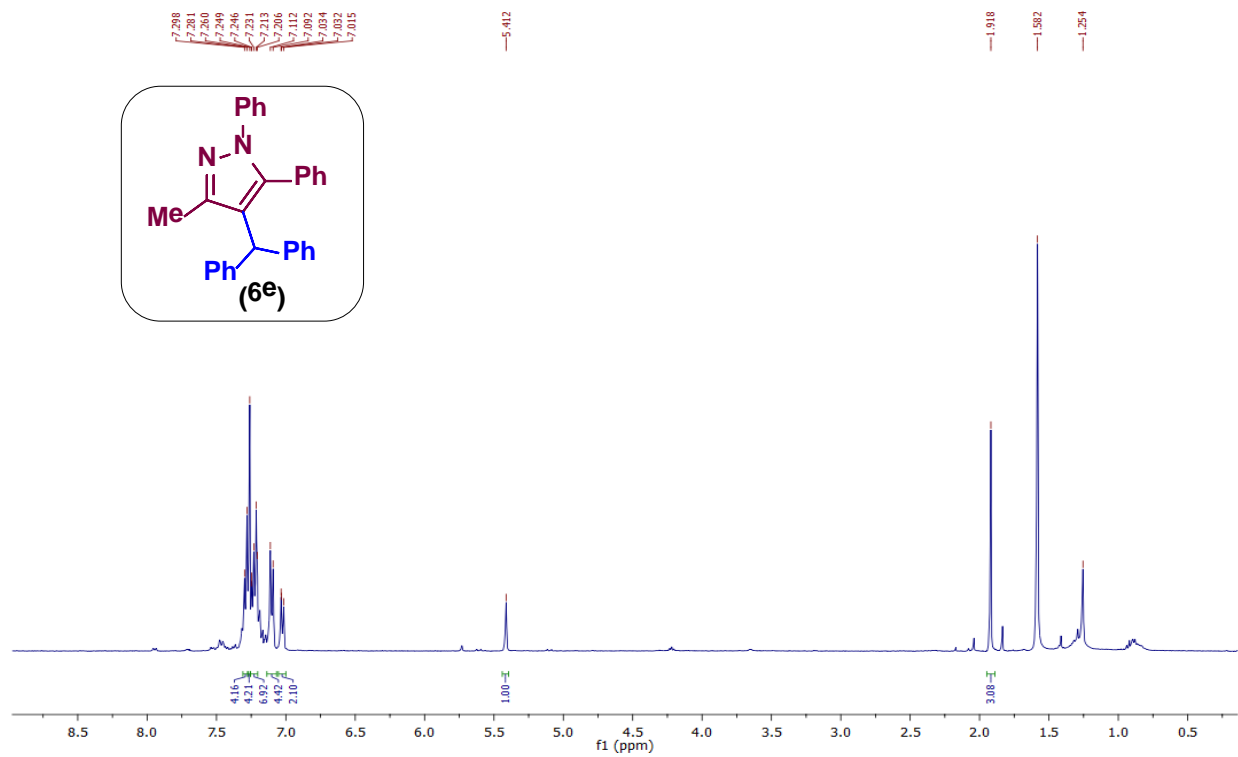


Figure S44 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **6e**

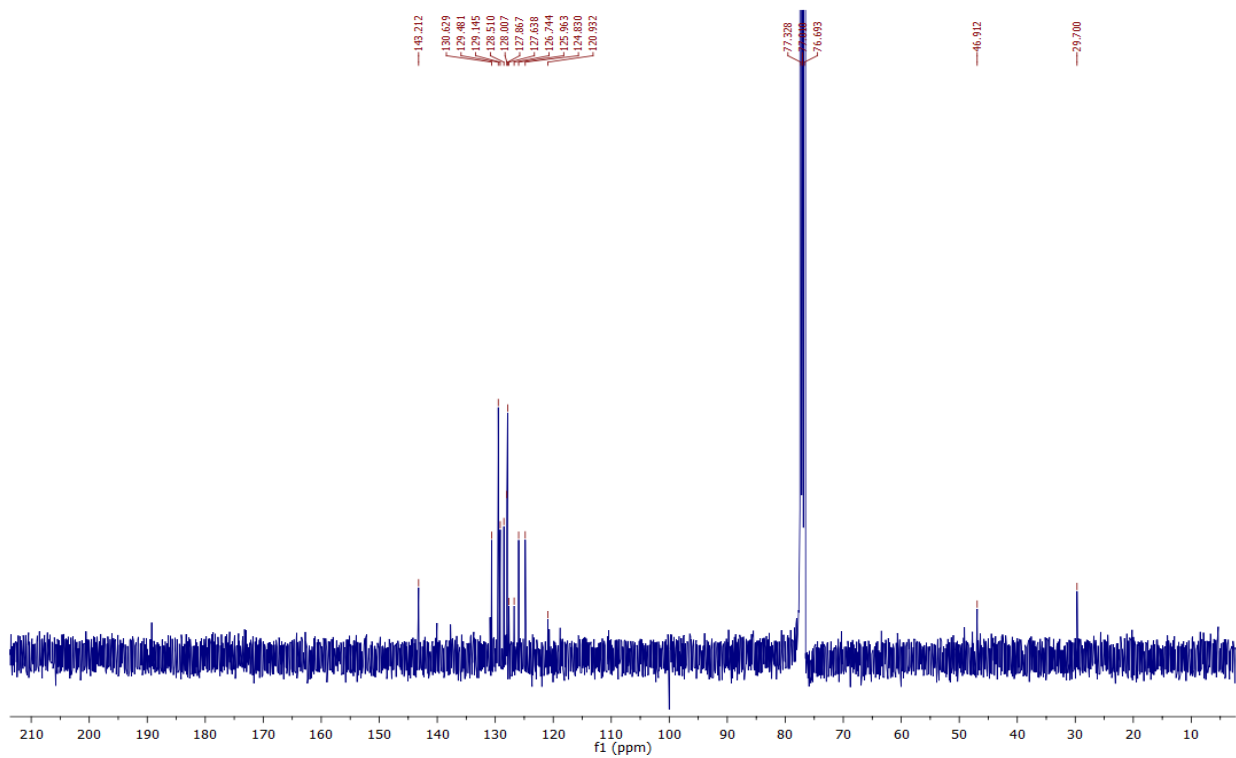
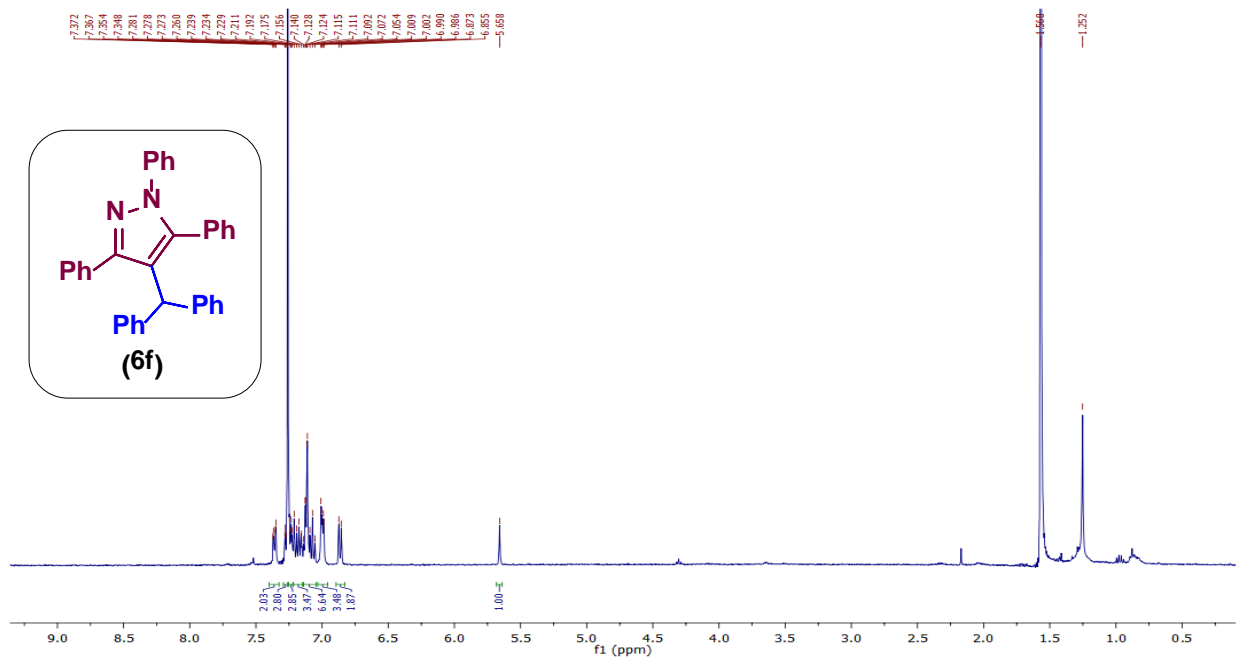


Figure S45 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **6f**

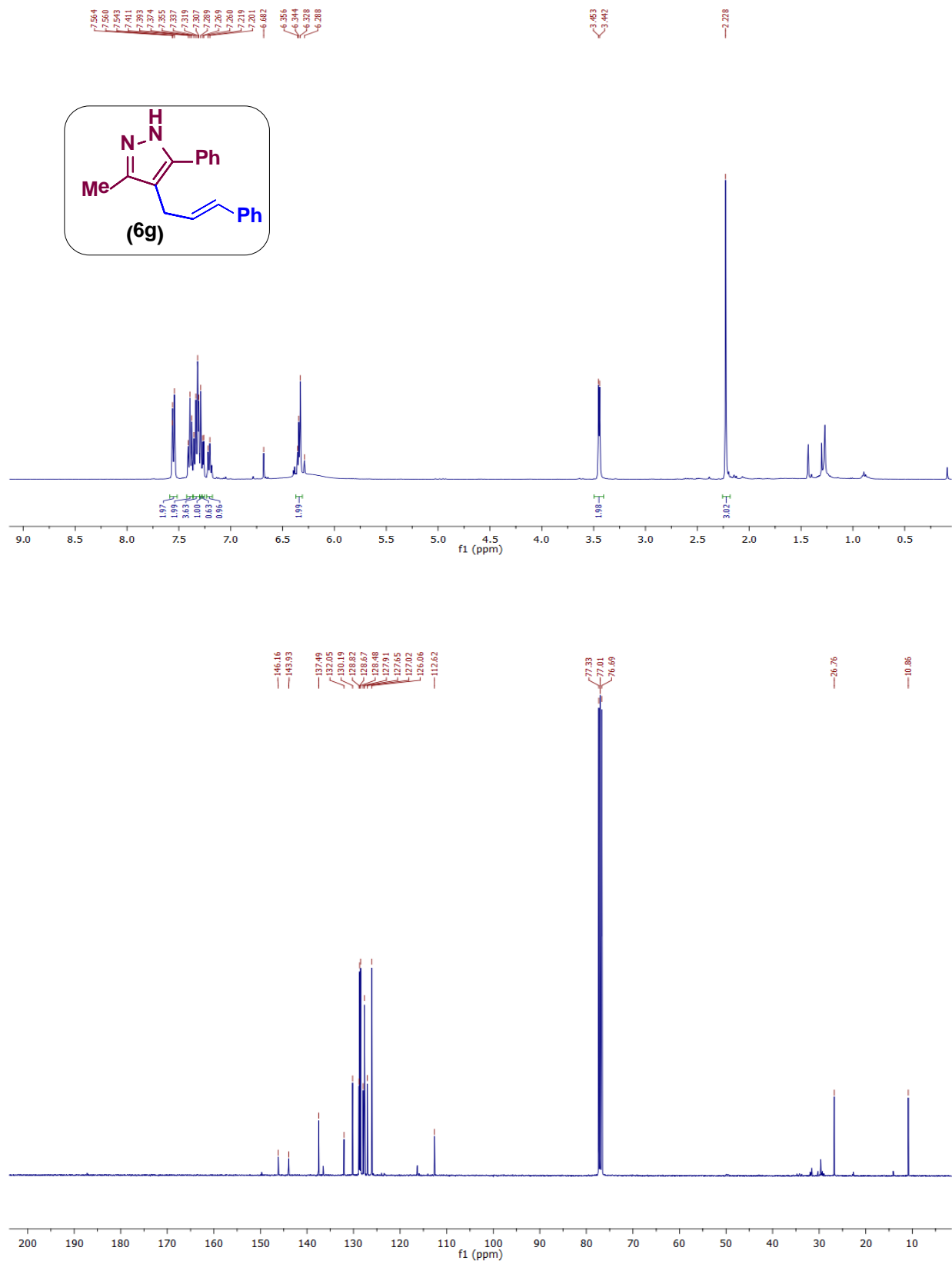


Figure S46 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **6g**

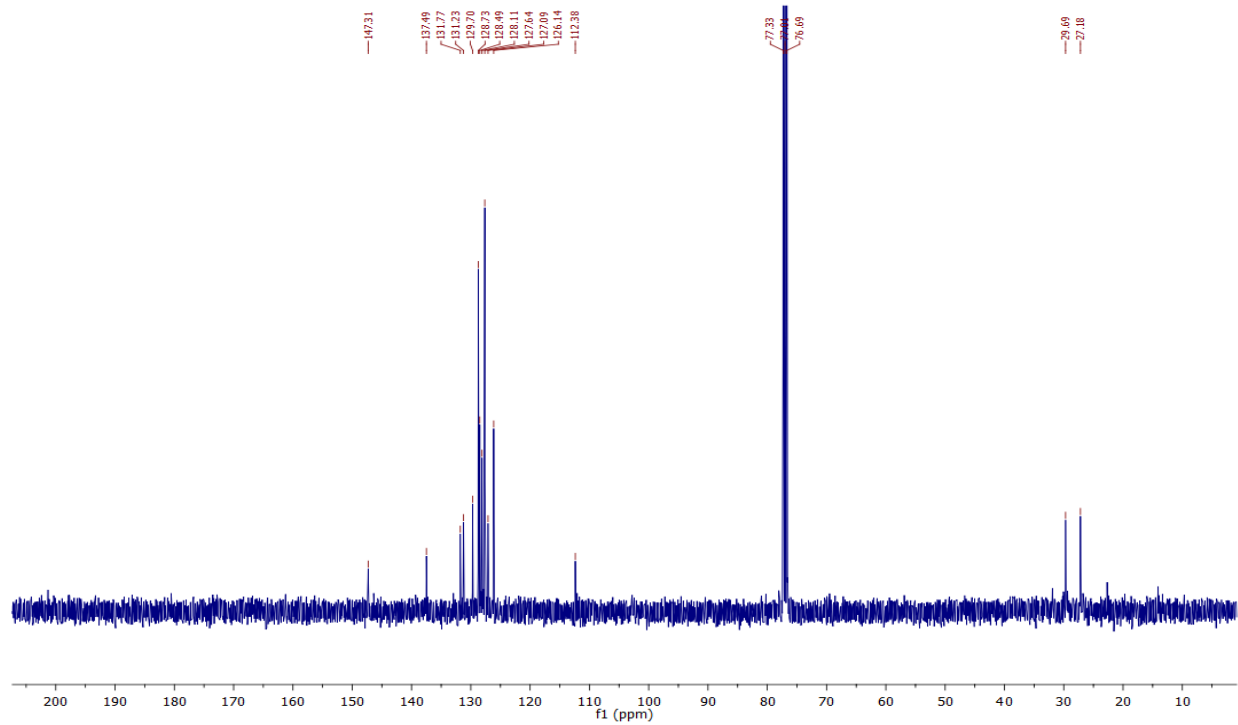
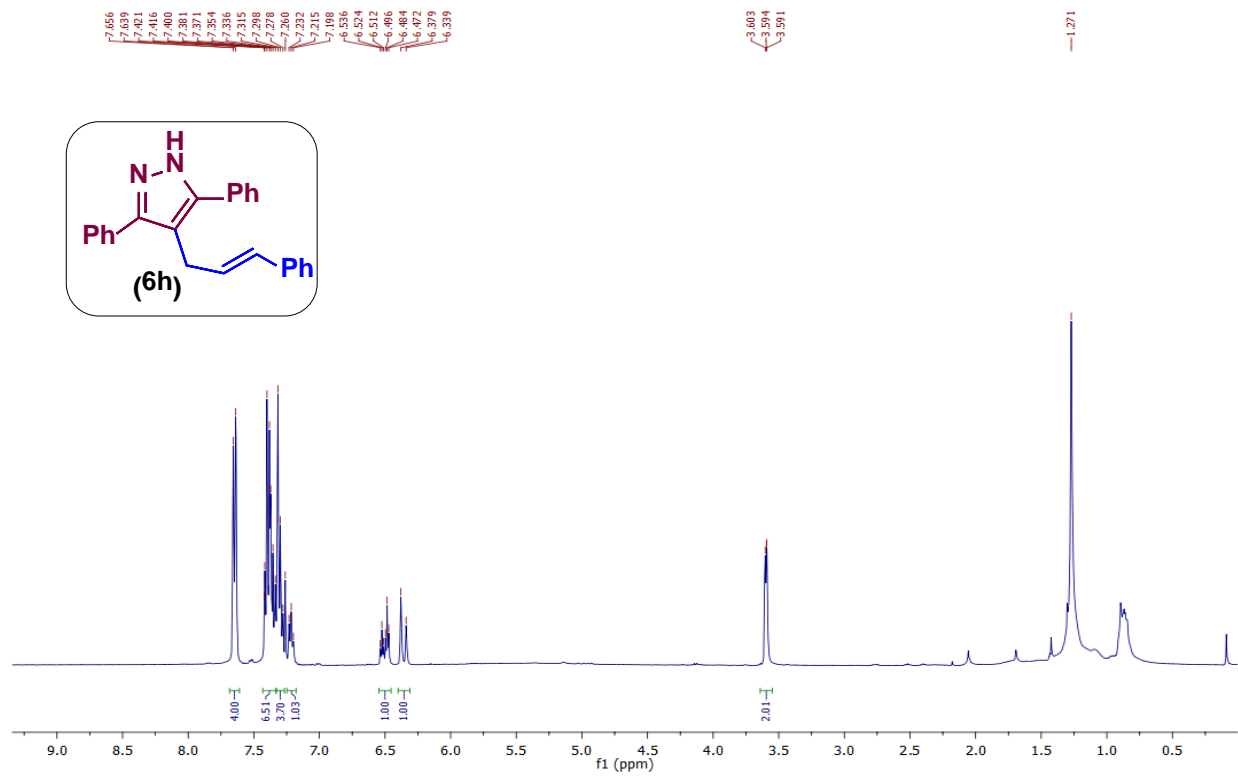


Figure S47 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **6h**

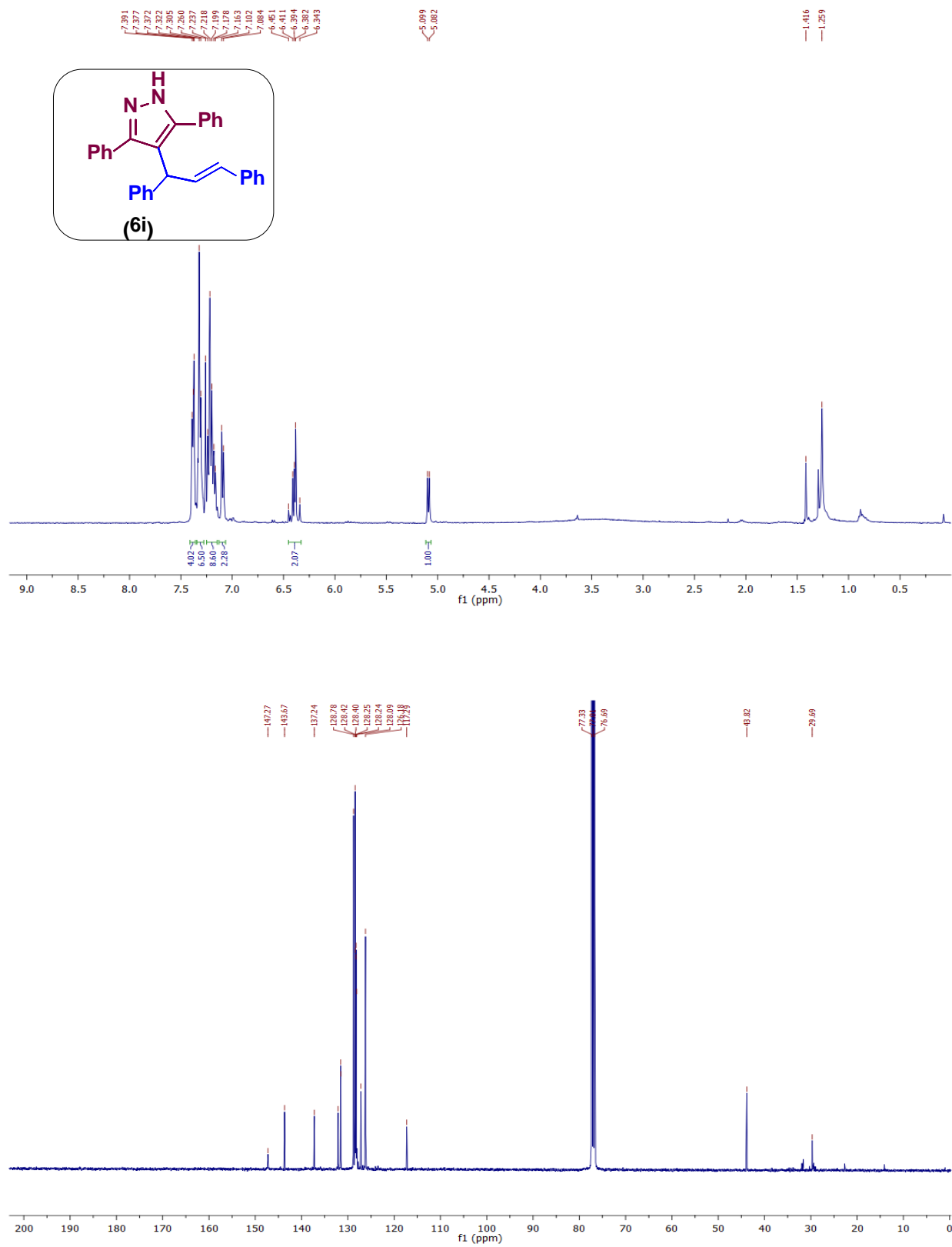


Figure S48 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **6i**



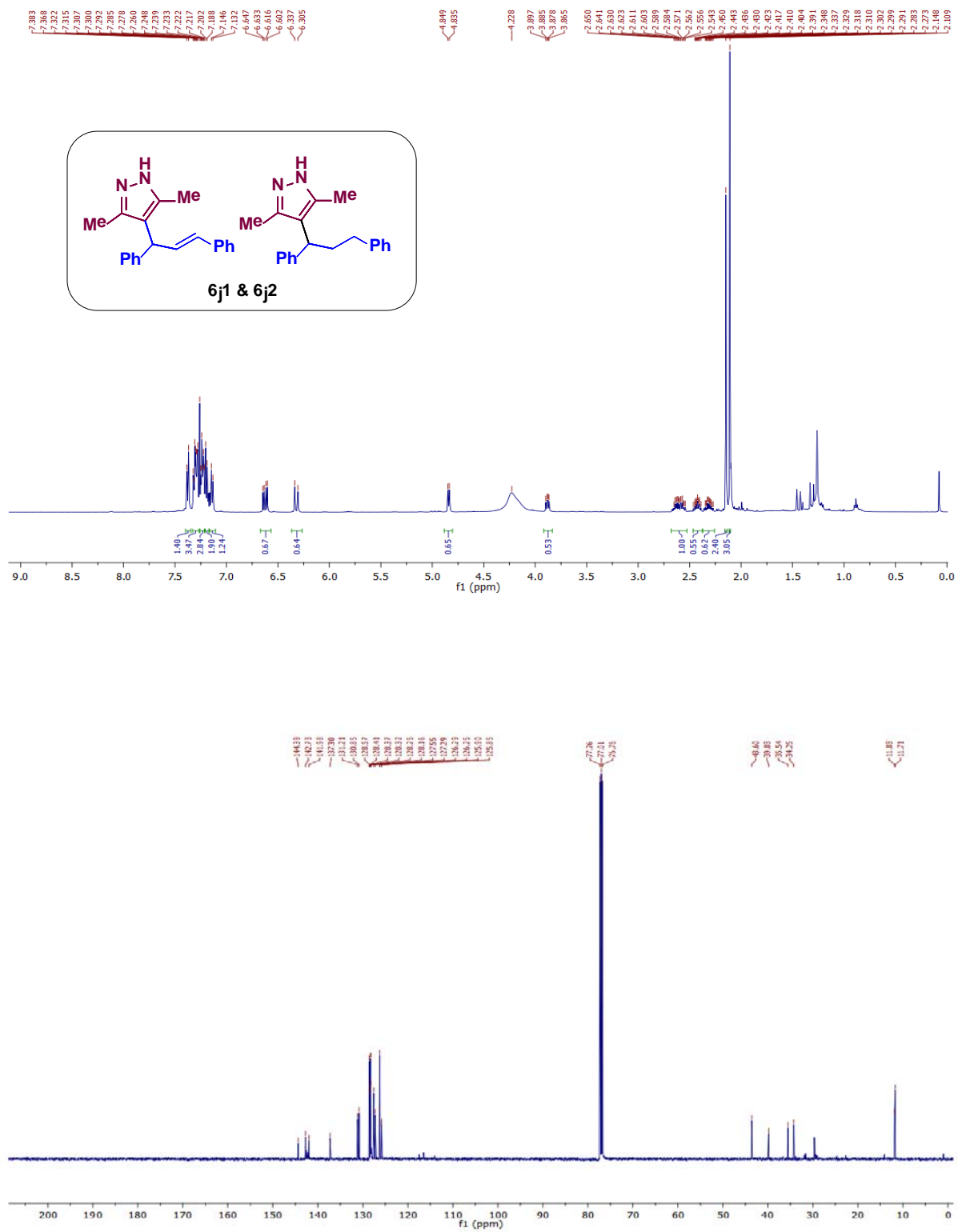


Figure S49  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra of **6j**

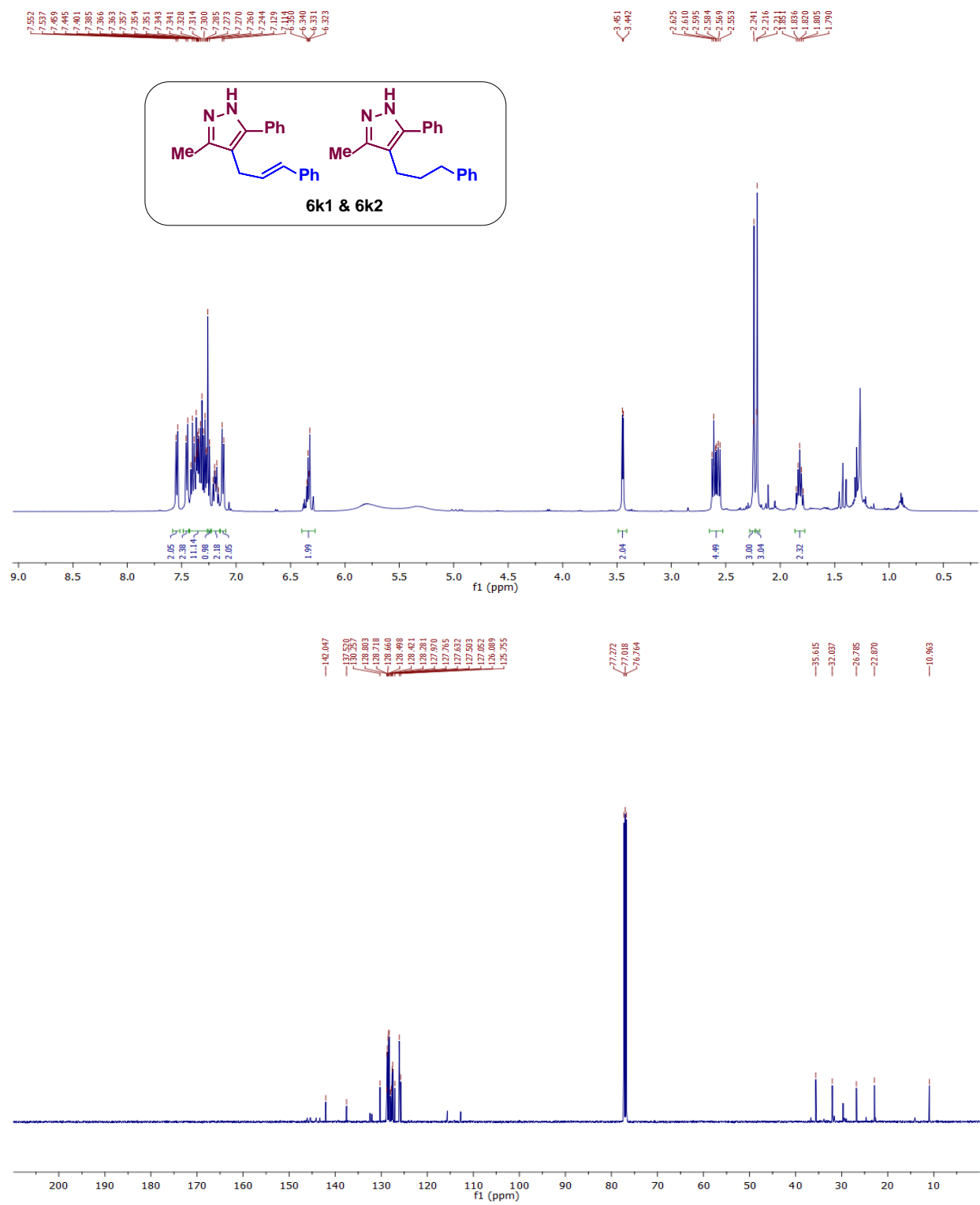


Figure S50 <sup>1</sup>H and <sup>13</sup>C NMR spectra of **6k**



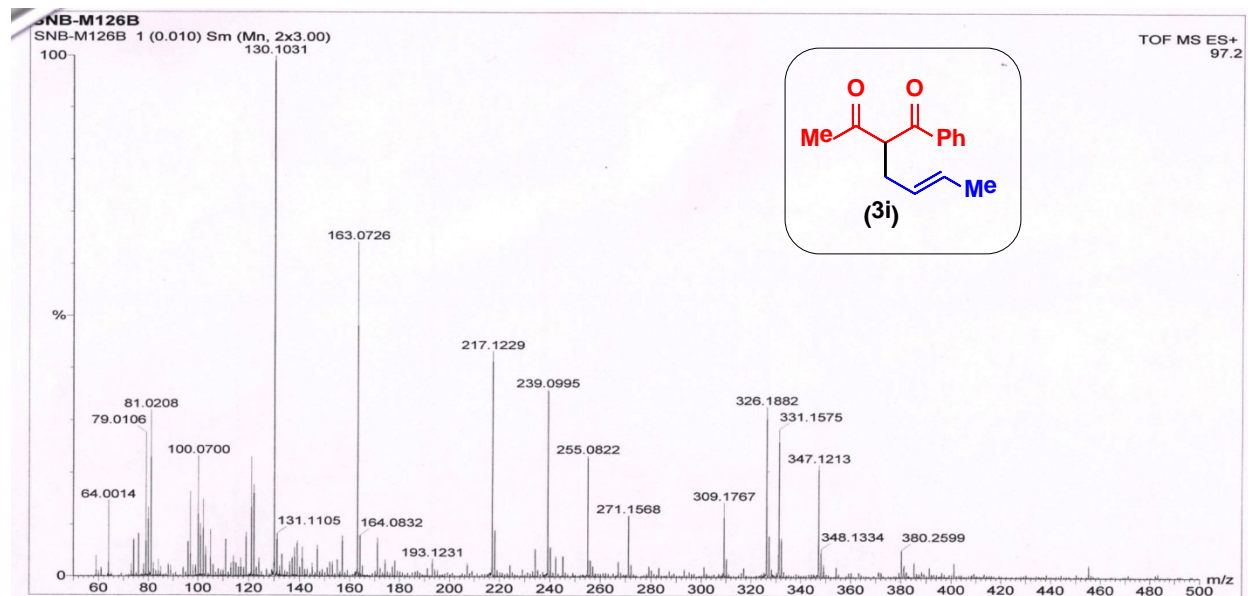


Figure S52 HRMS of **3i**

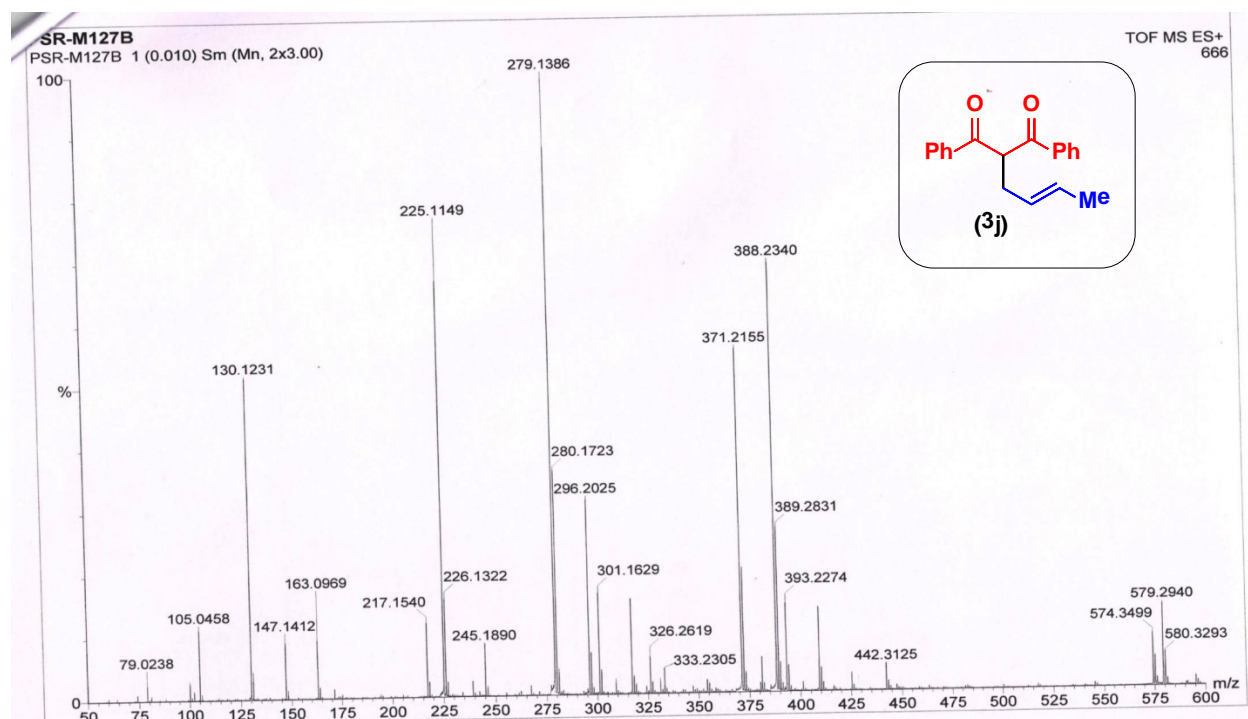


Figure S53 HRMS of **3j**

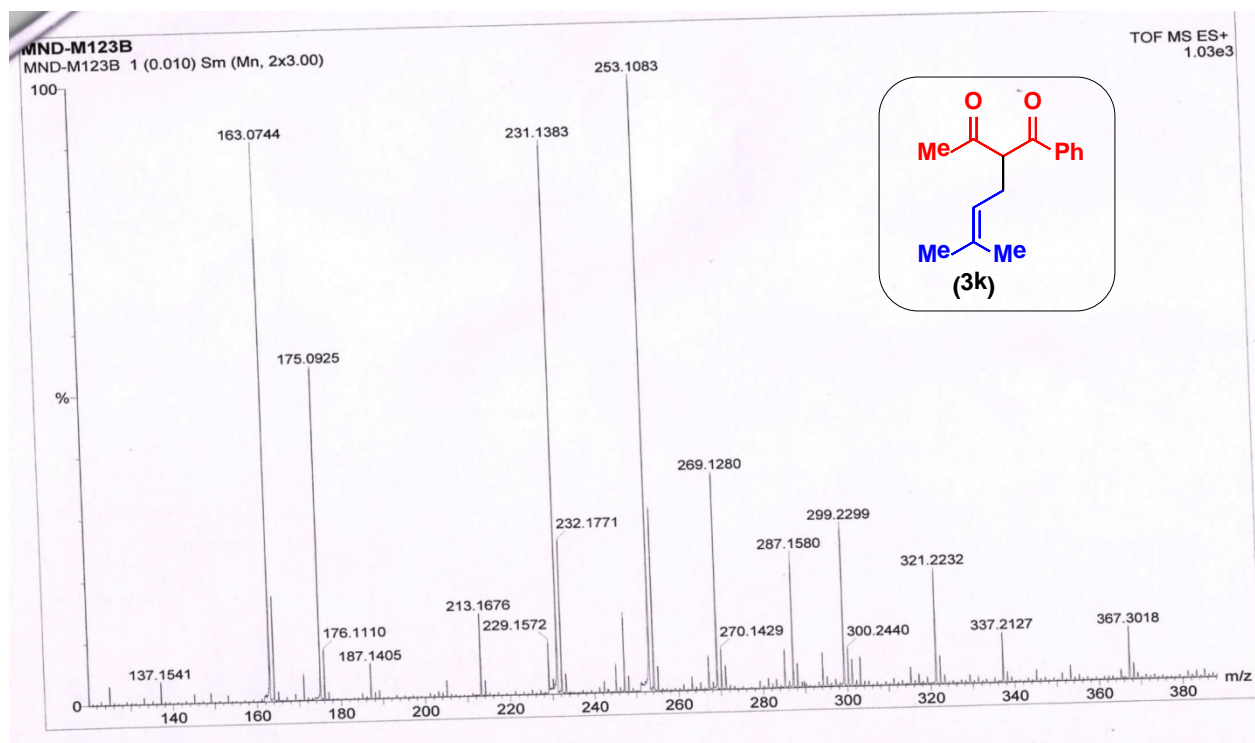


Figure S54 HRMS of **3k**

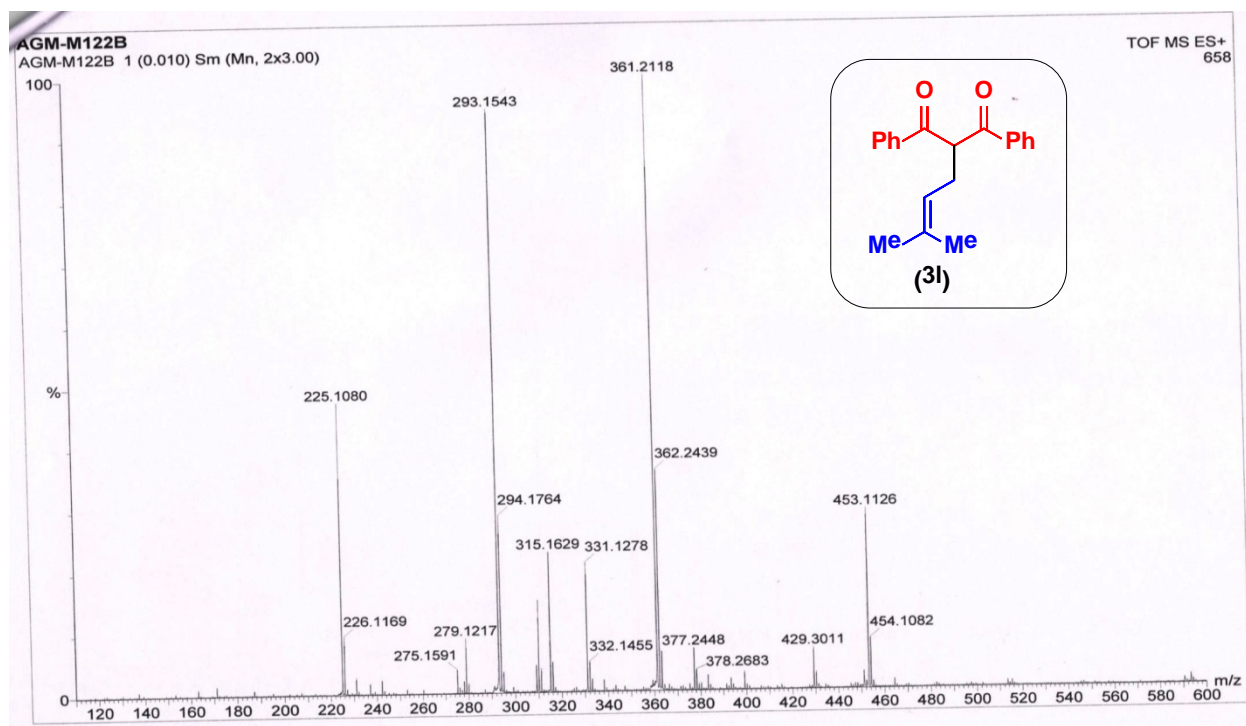


Figure S55 HRMS of **3l**

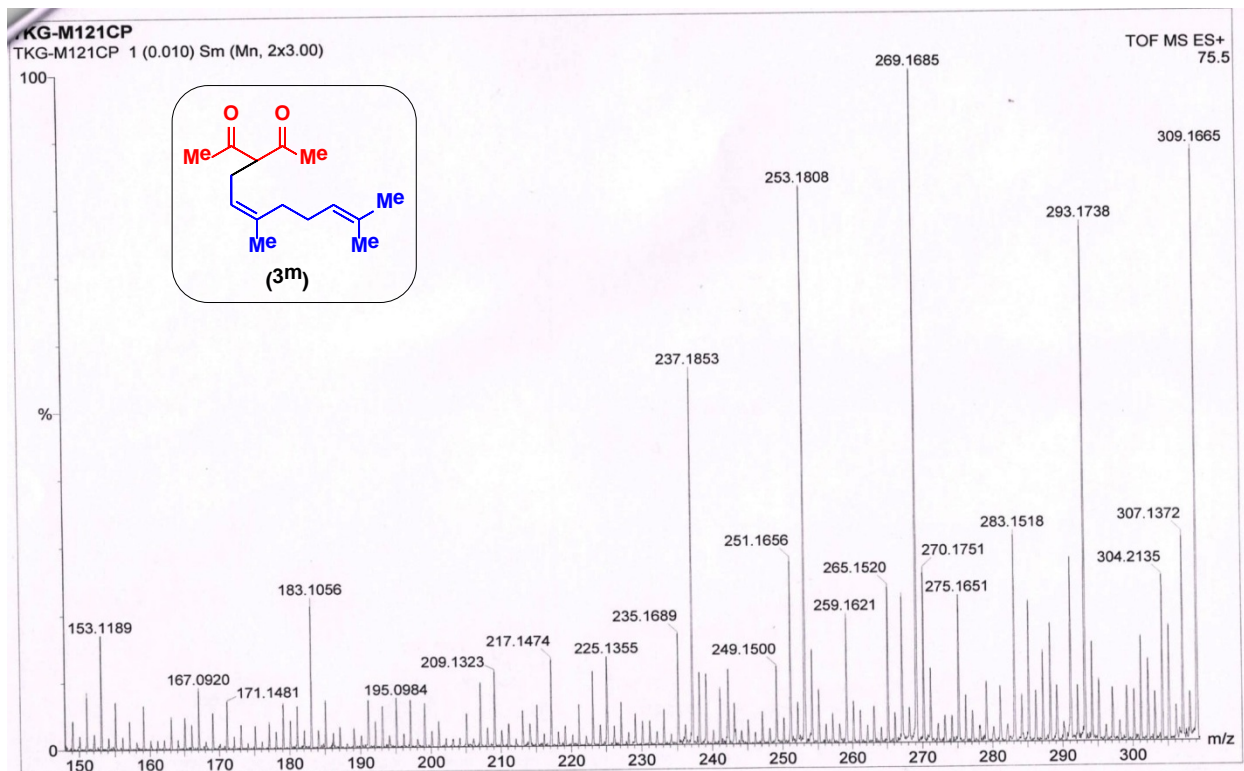


Figure S56 HRMS of **3m**

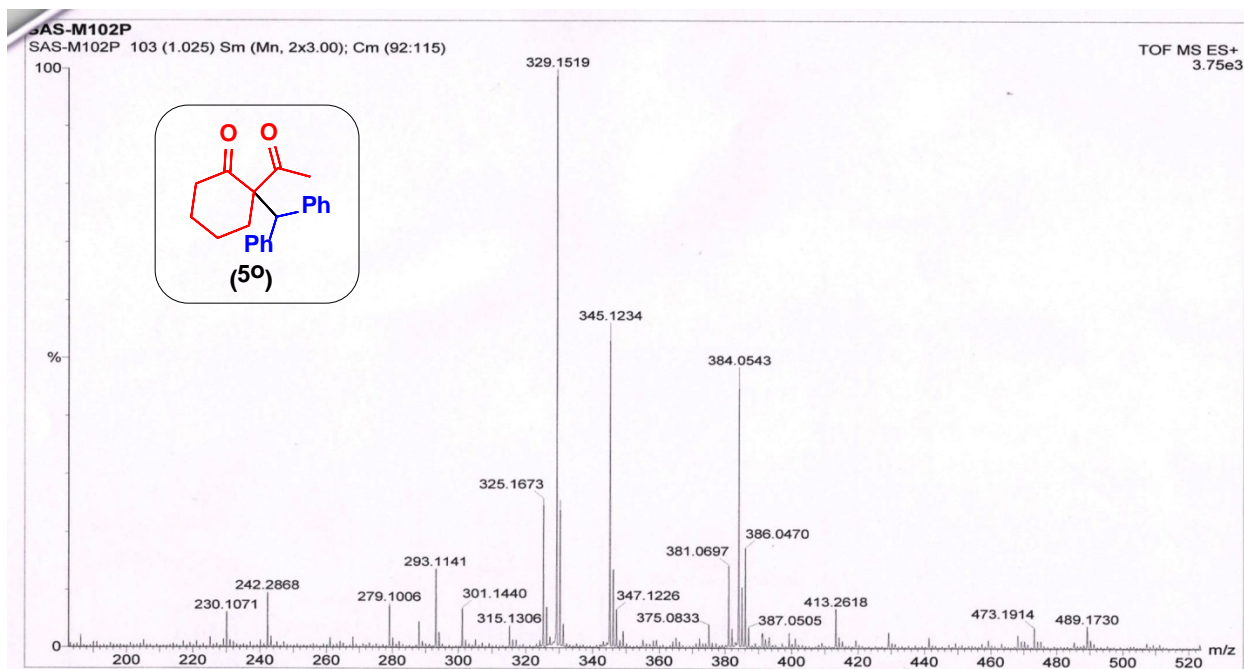


Figure S57 HRMS of **5o**

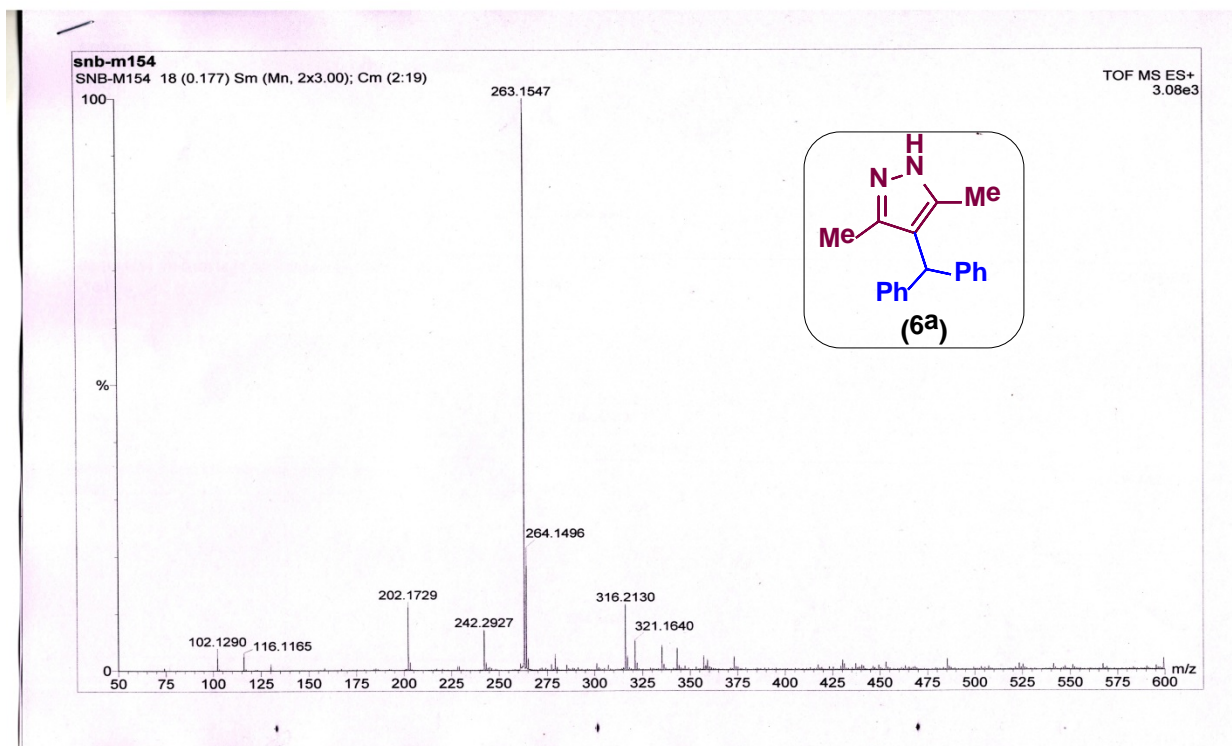


Figure S58 HRMS of **6a**

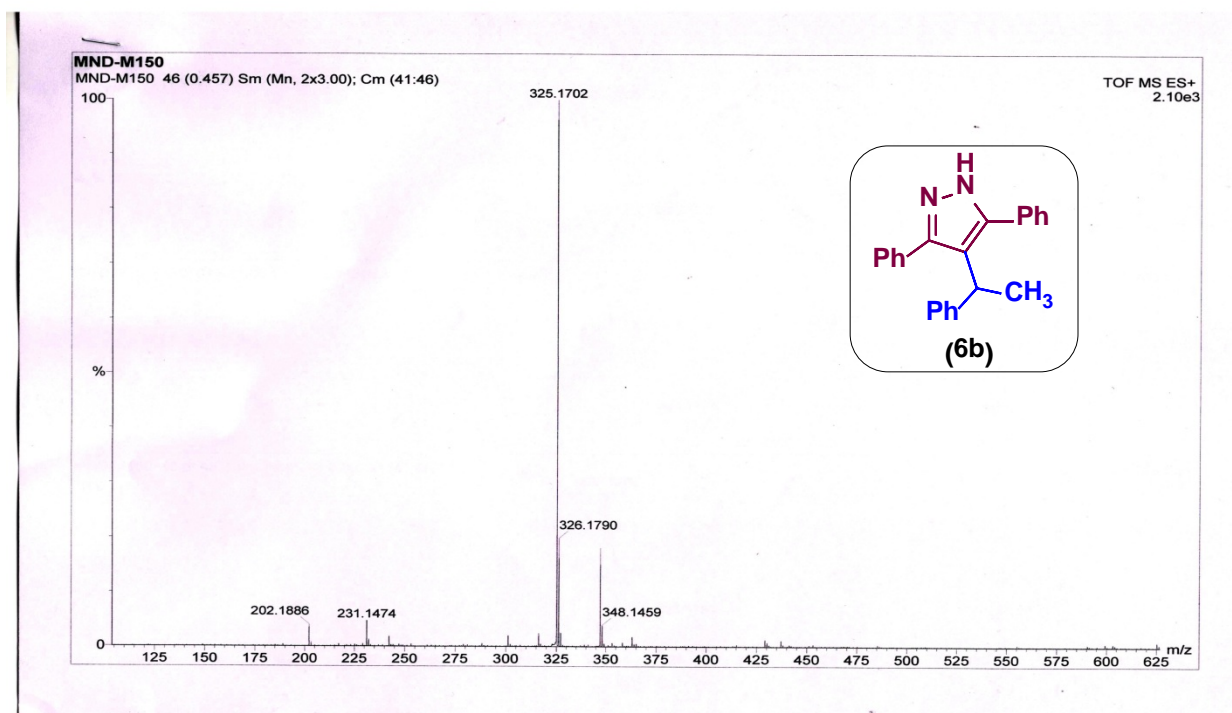


Figure S59 HRMS of **6b**

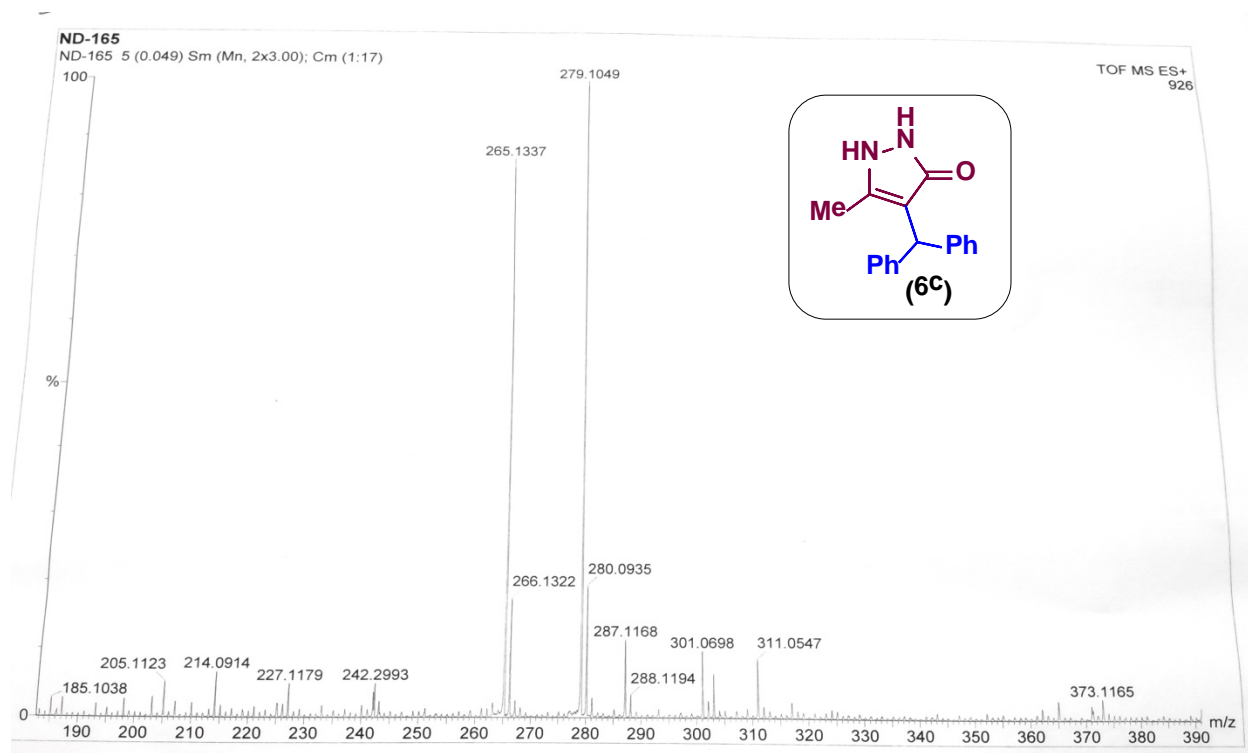


Figure S60 HRMS of **6c**

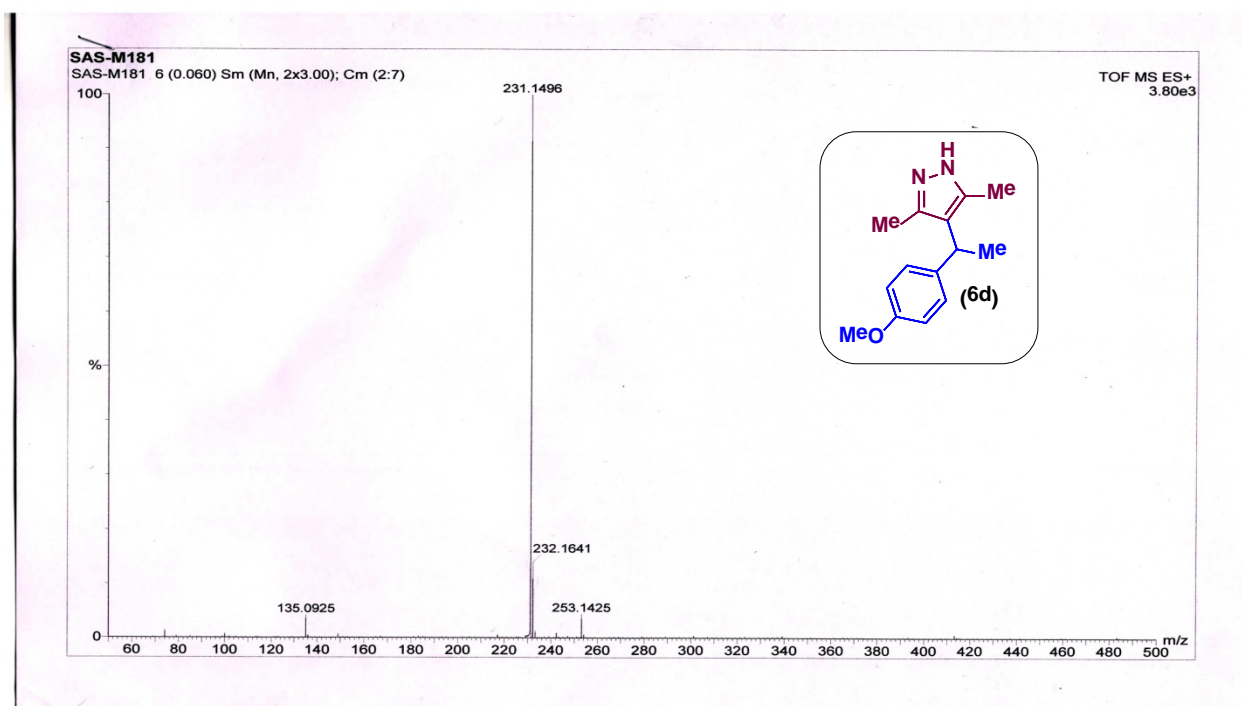


Figure S61 HRMS of **6d**



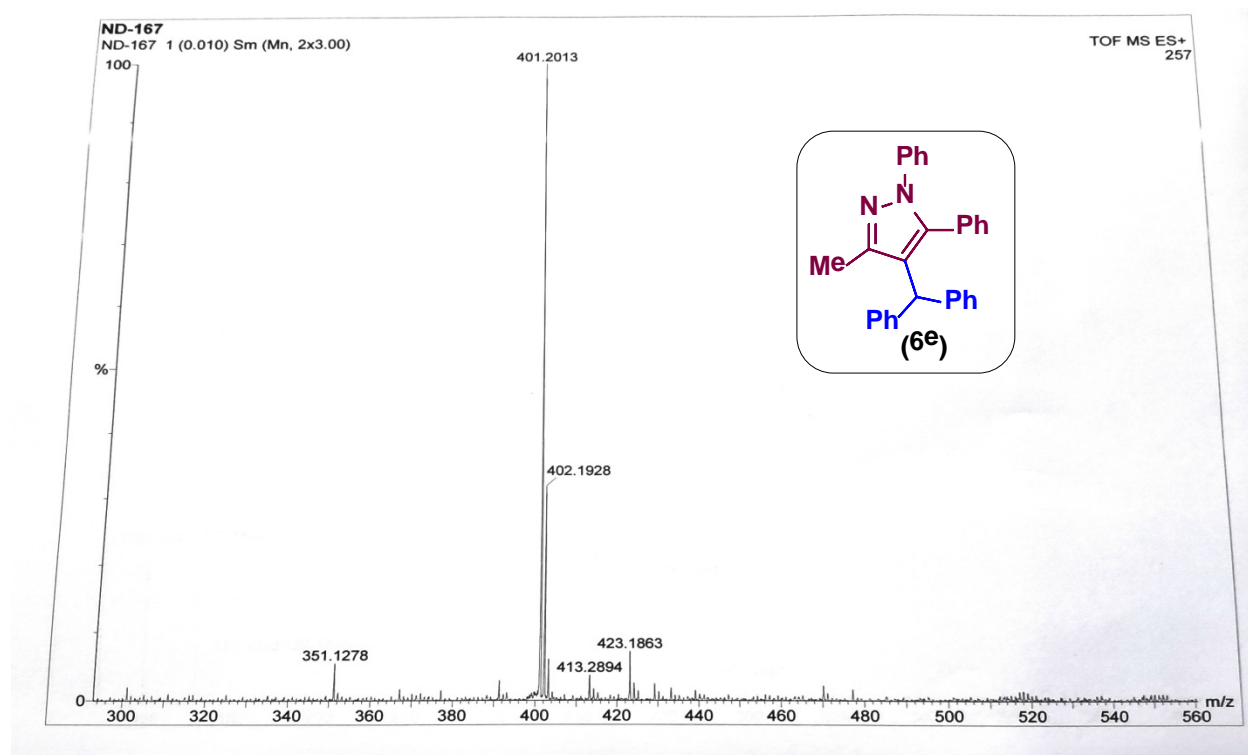


Figure S62 HRMS of **6e**

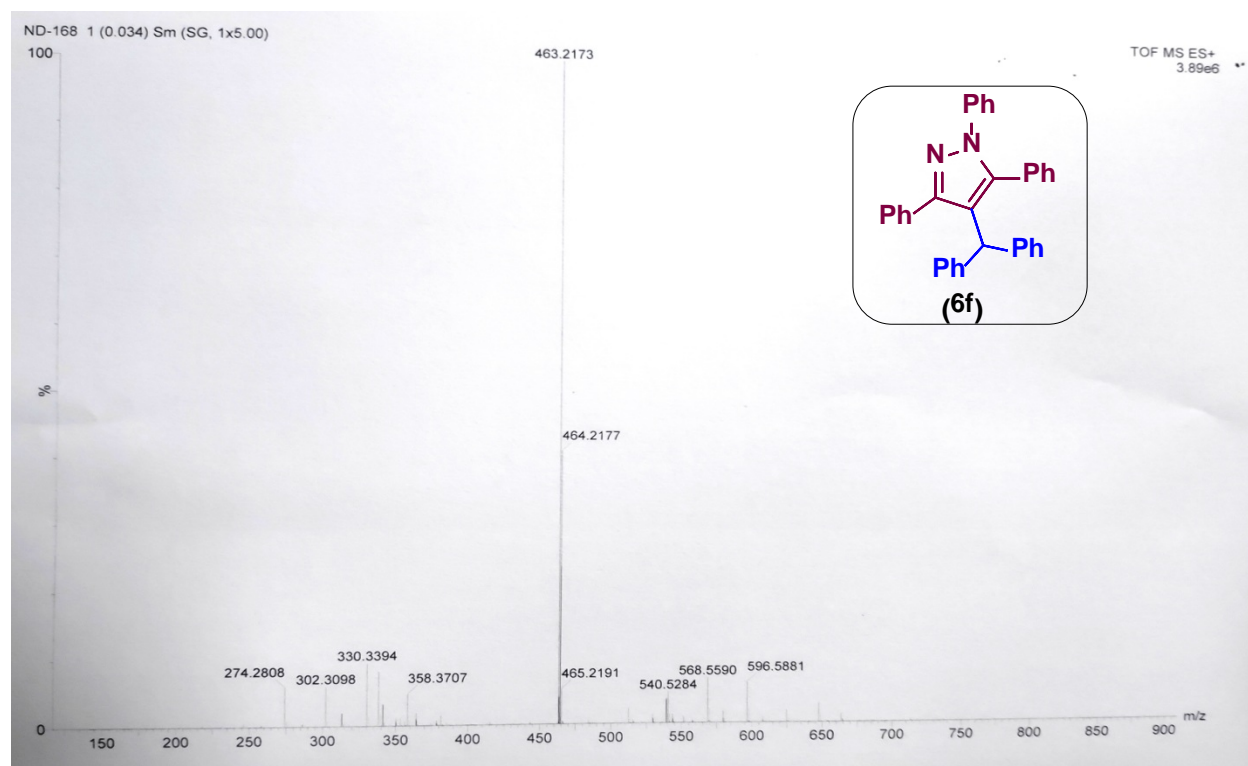


Figure S63 HRMS of **6f**

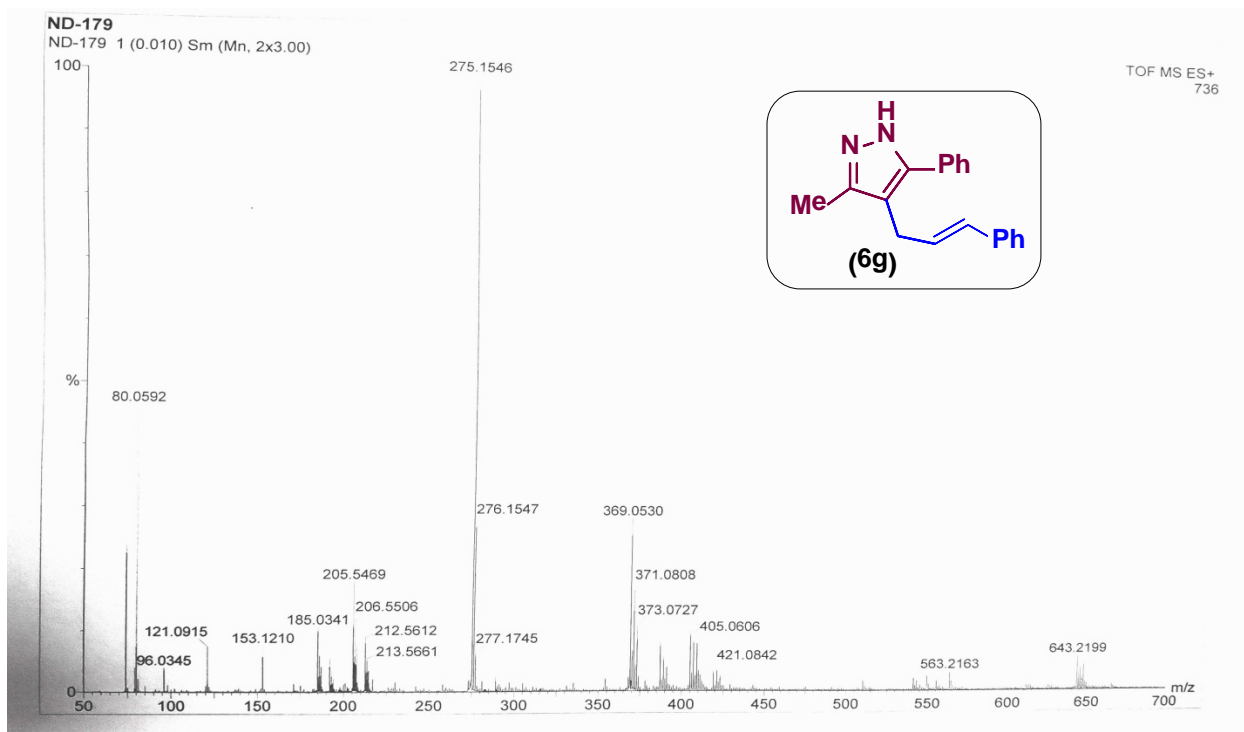


Figure S64 HRMS of **6g**

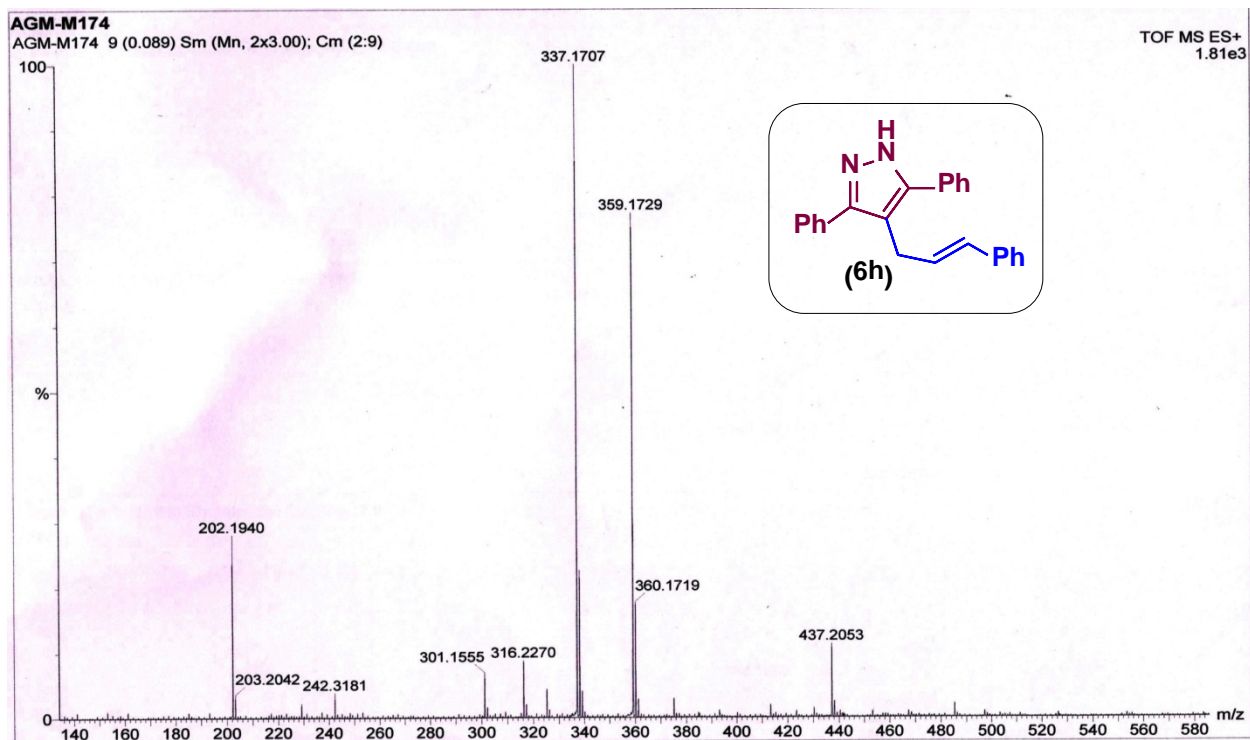


Figure S65 HRMS of **6h**

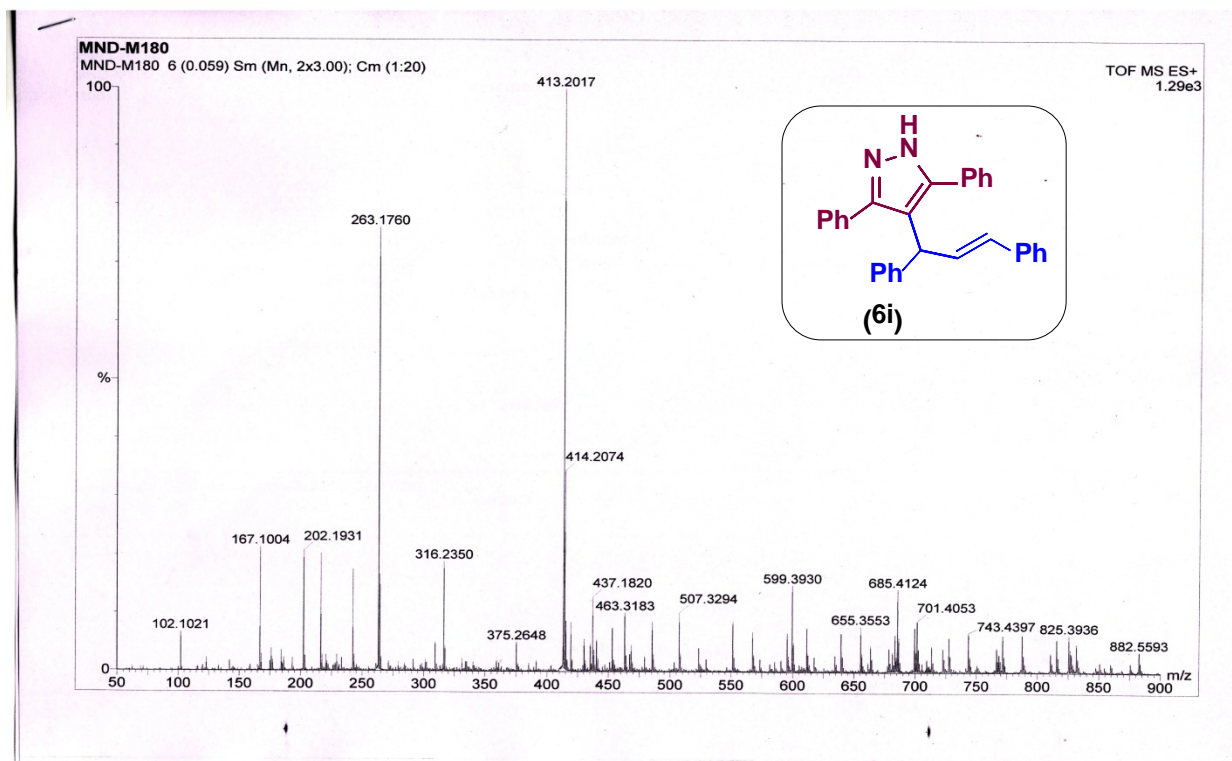


Figure S66 HRMS of **6i**

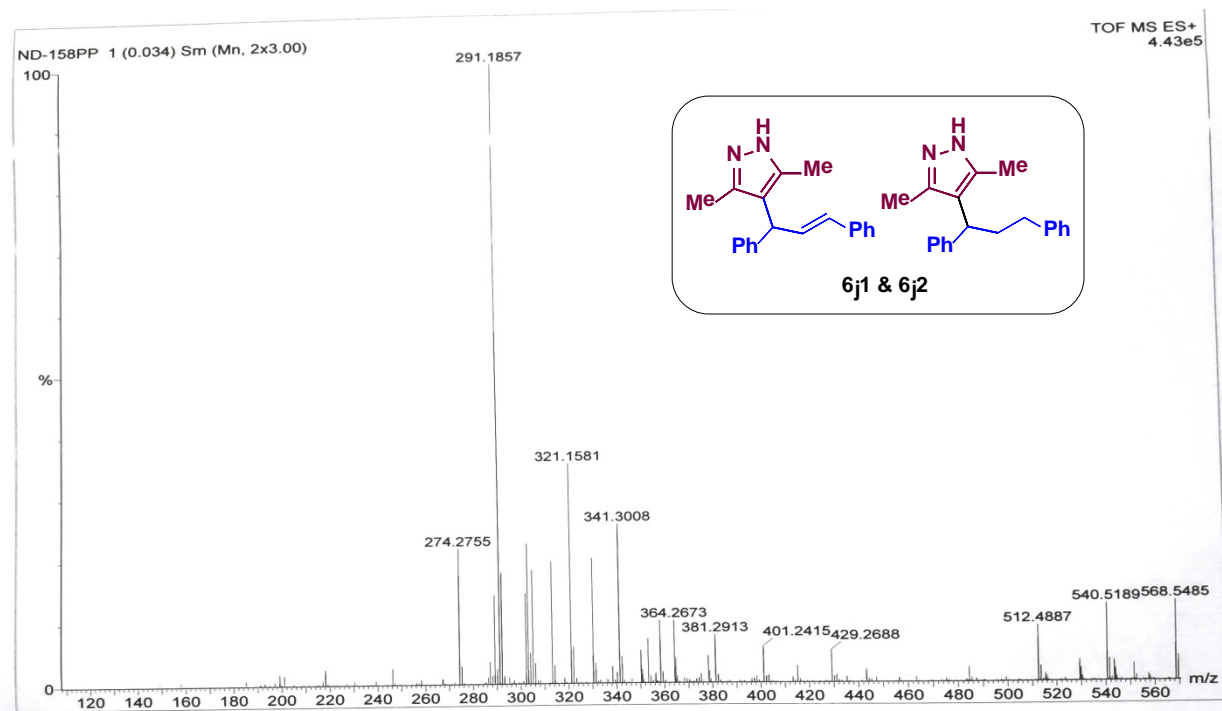


Figure S67 HRMS of **6j**

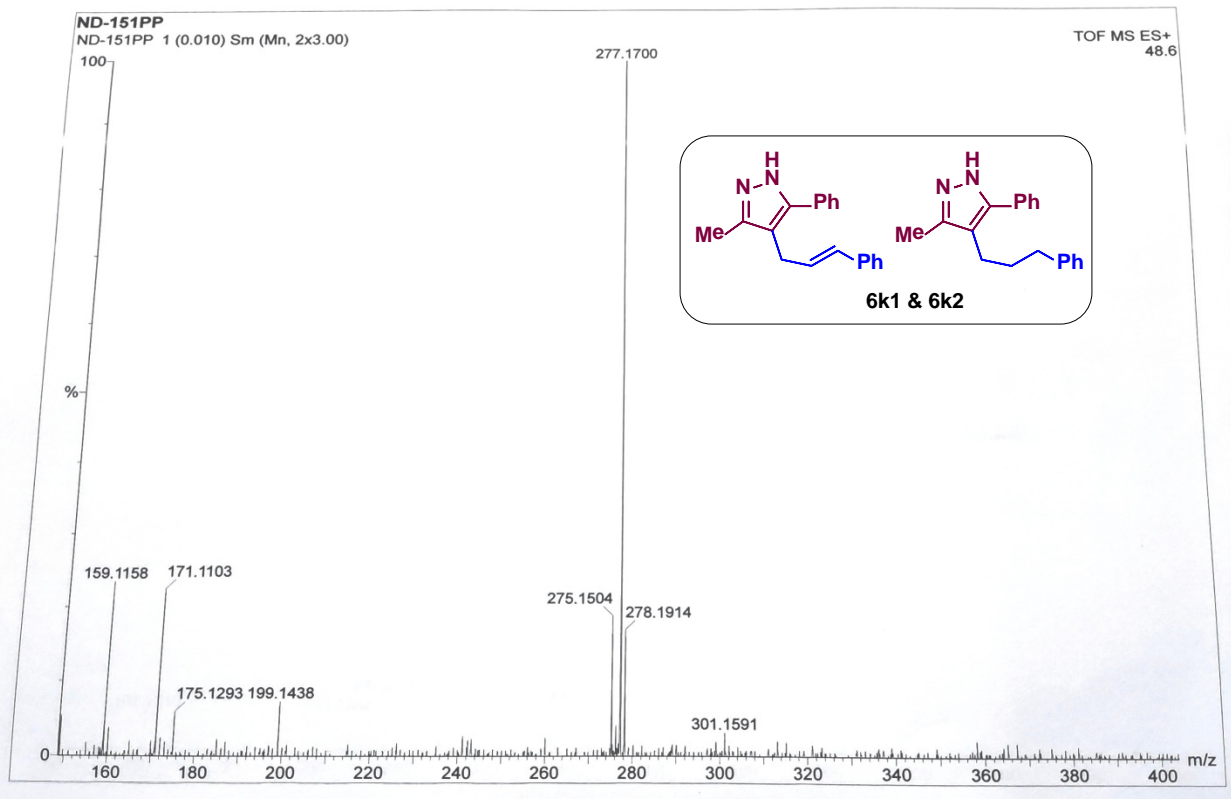


Figure S68 HRMS of **6k**

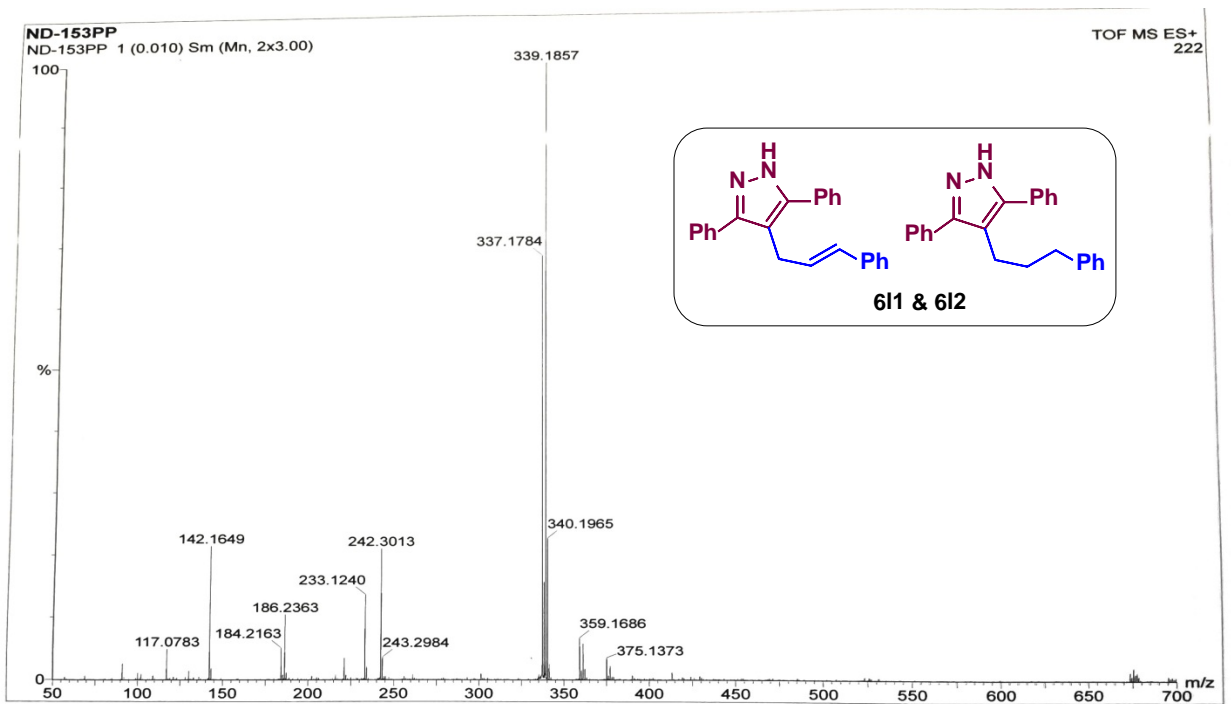


Figure S69 HRMS of **6l**