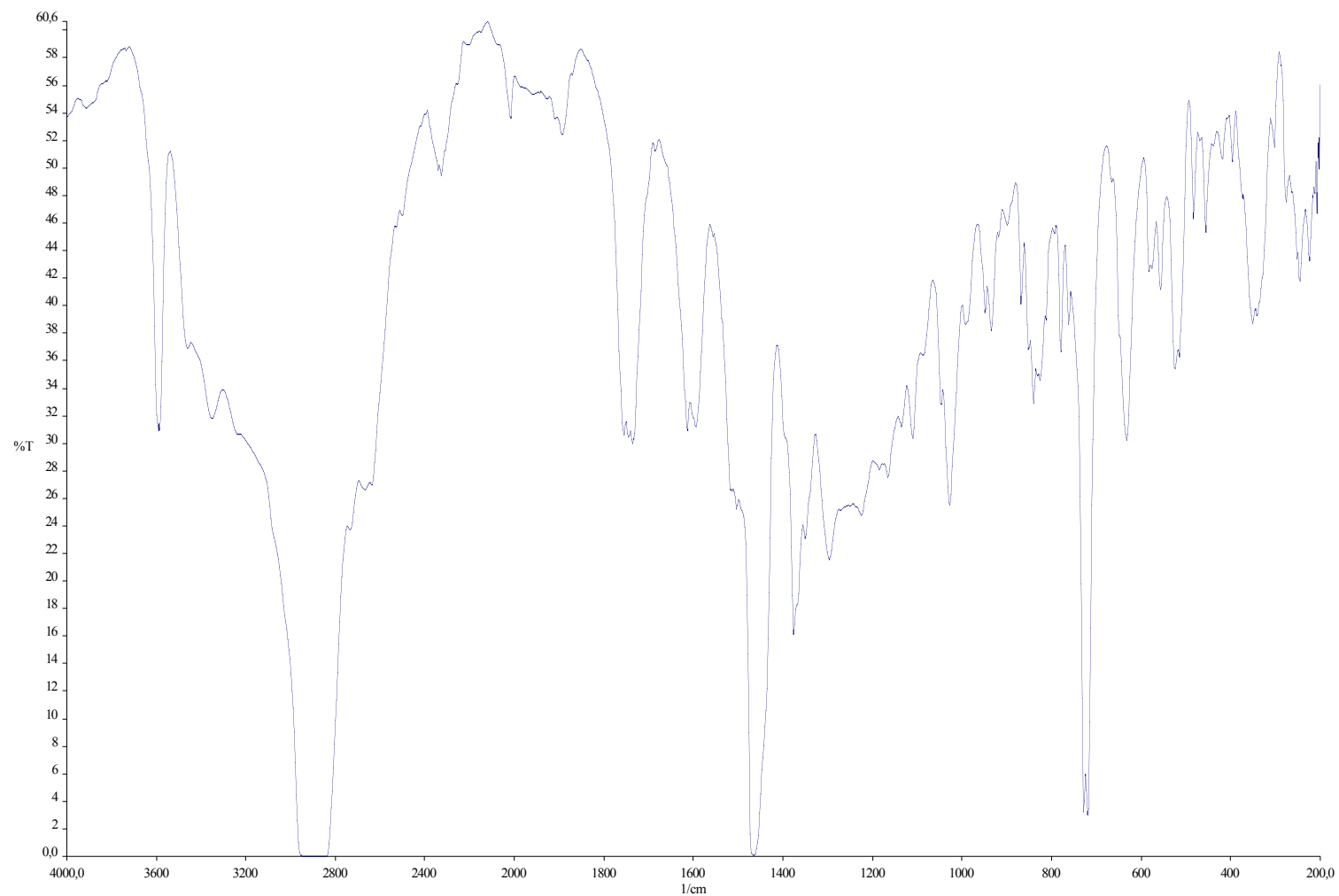
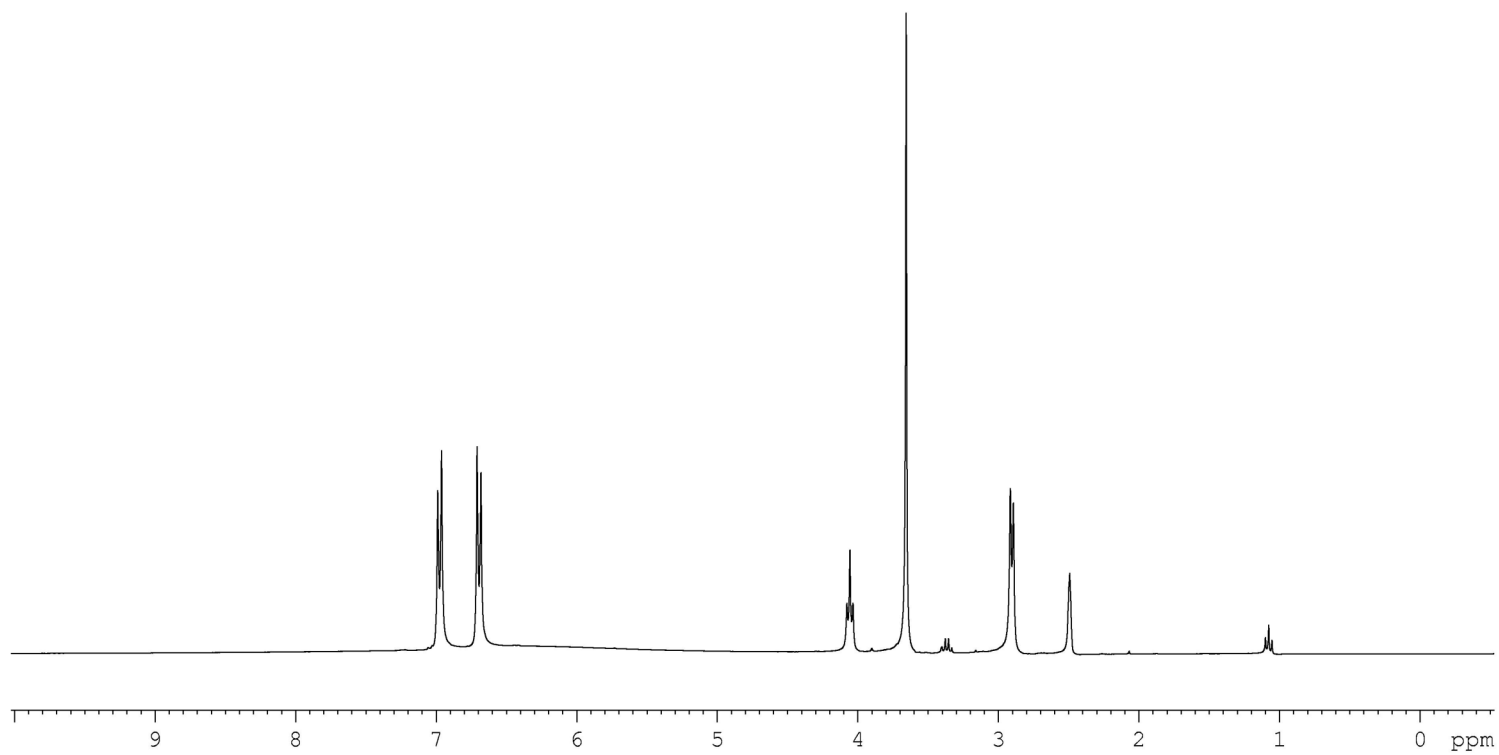


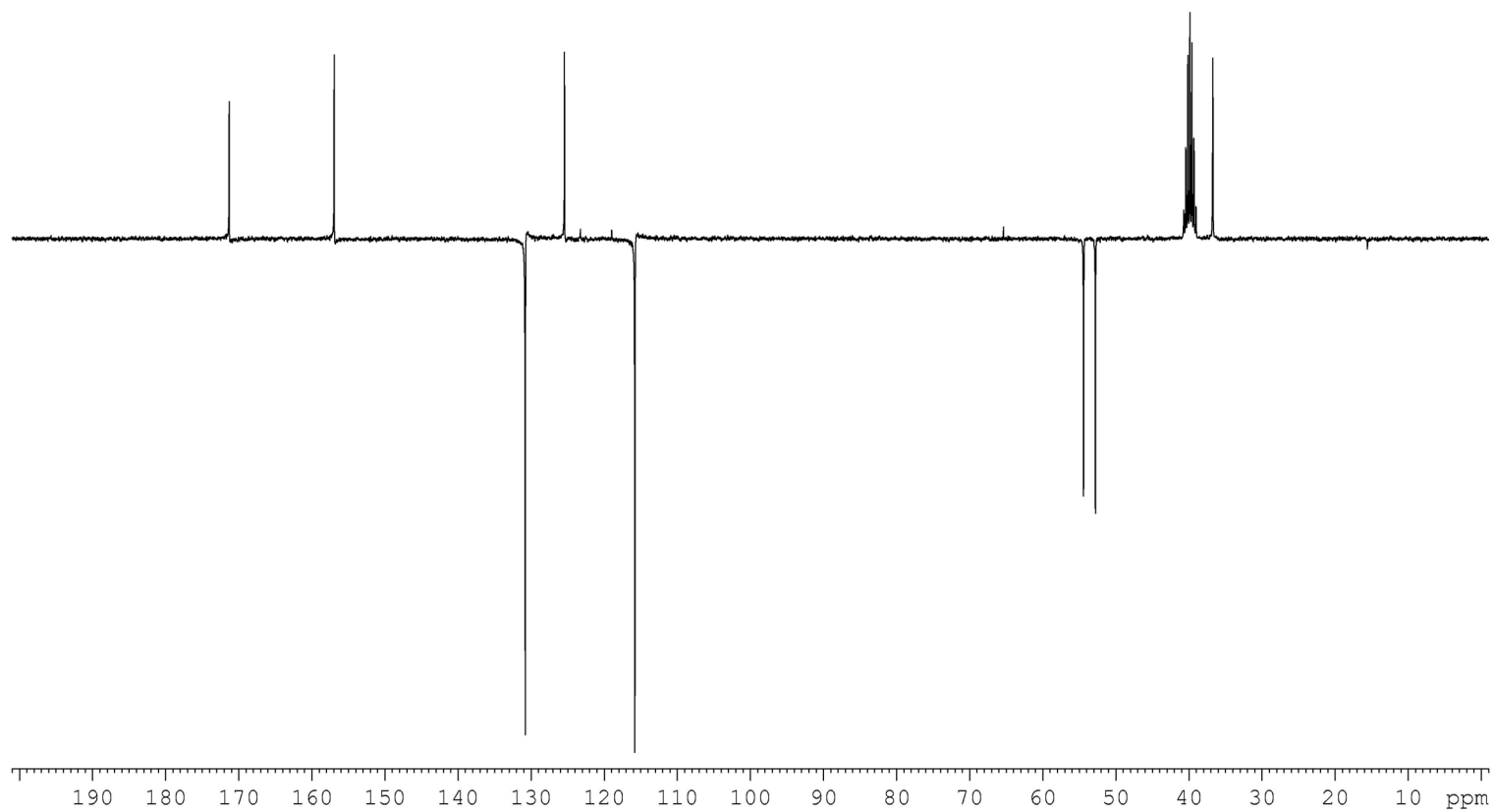
A



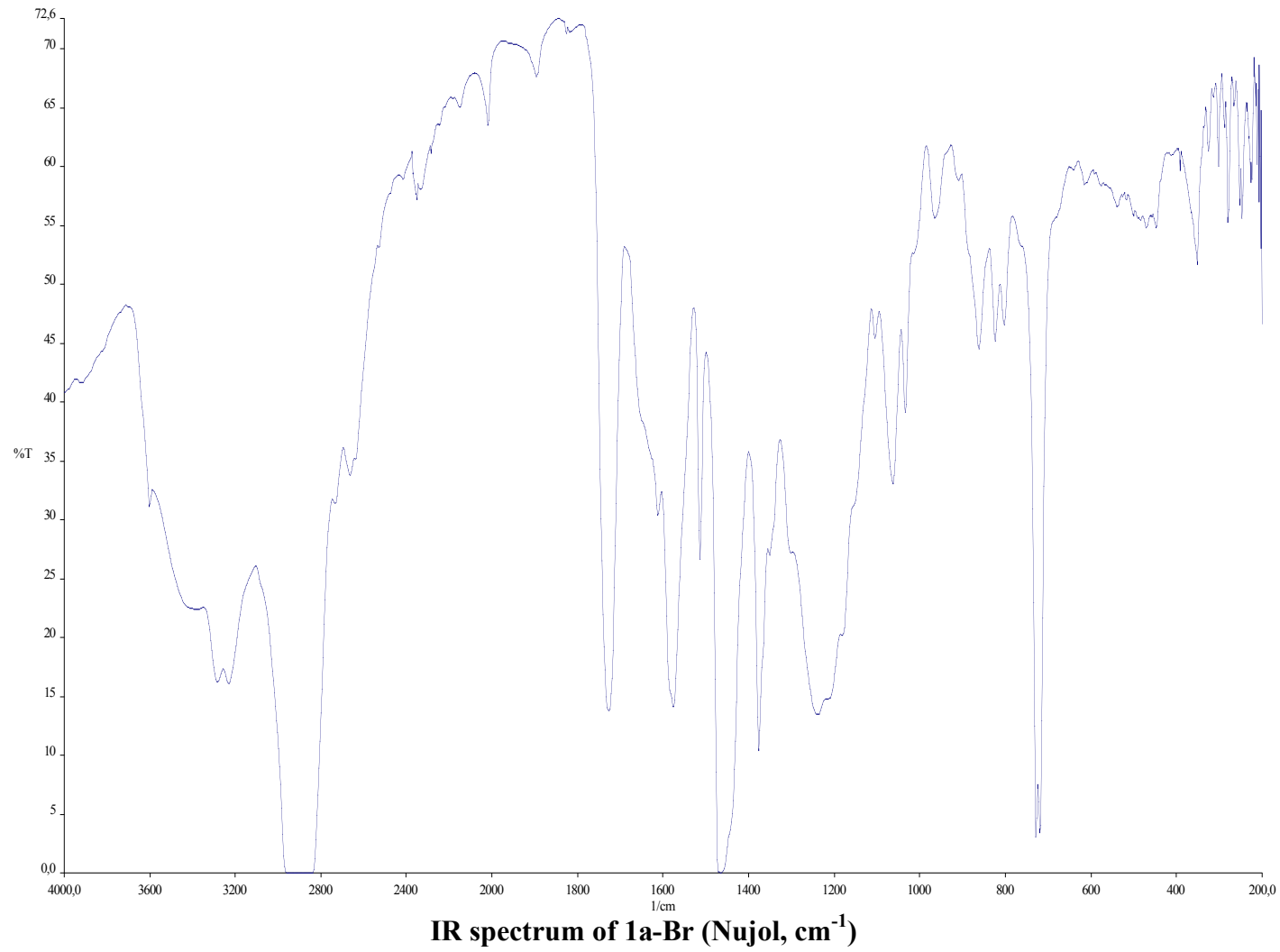
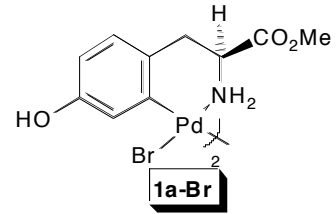
IR spectrum of A (Nujol, cm⁻¹)

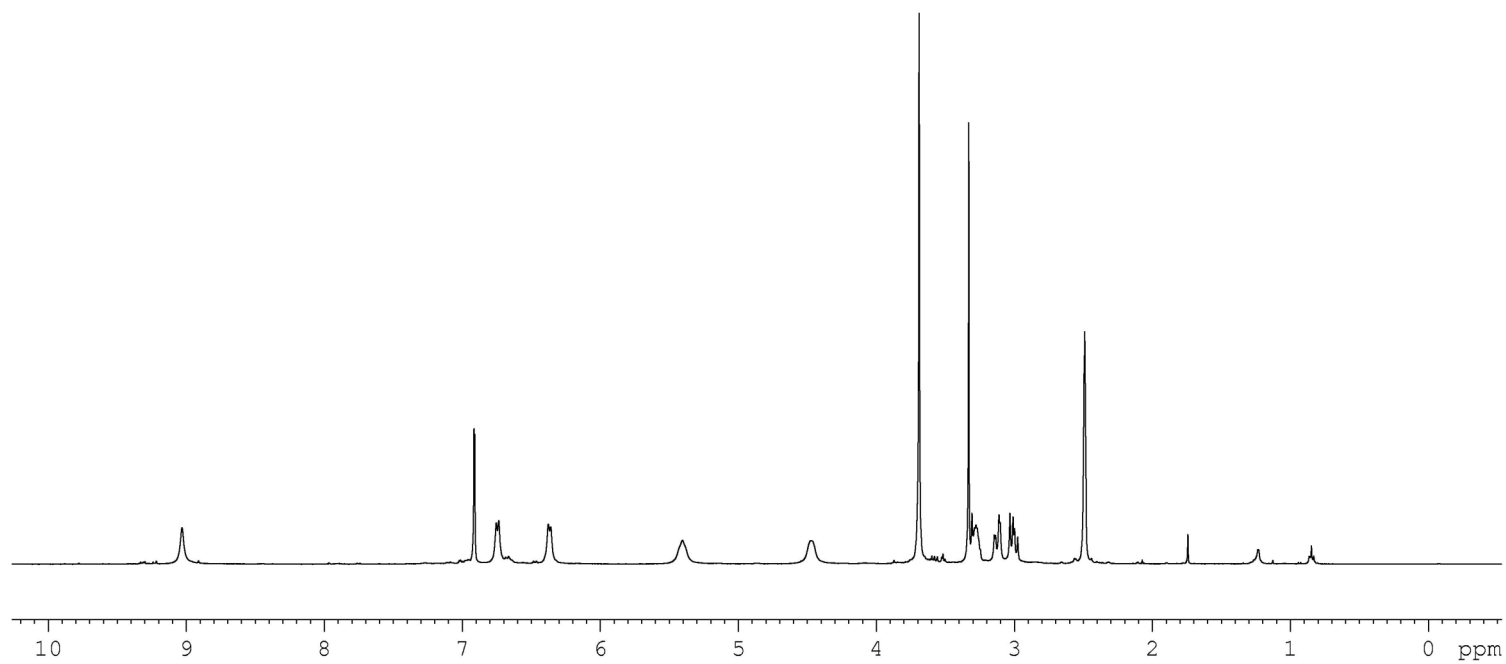


^1H NMR spectrum of A (DMSO- d_6 , 25 °C)

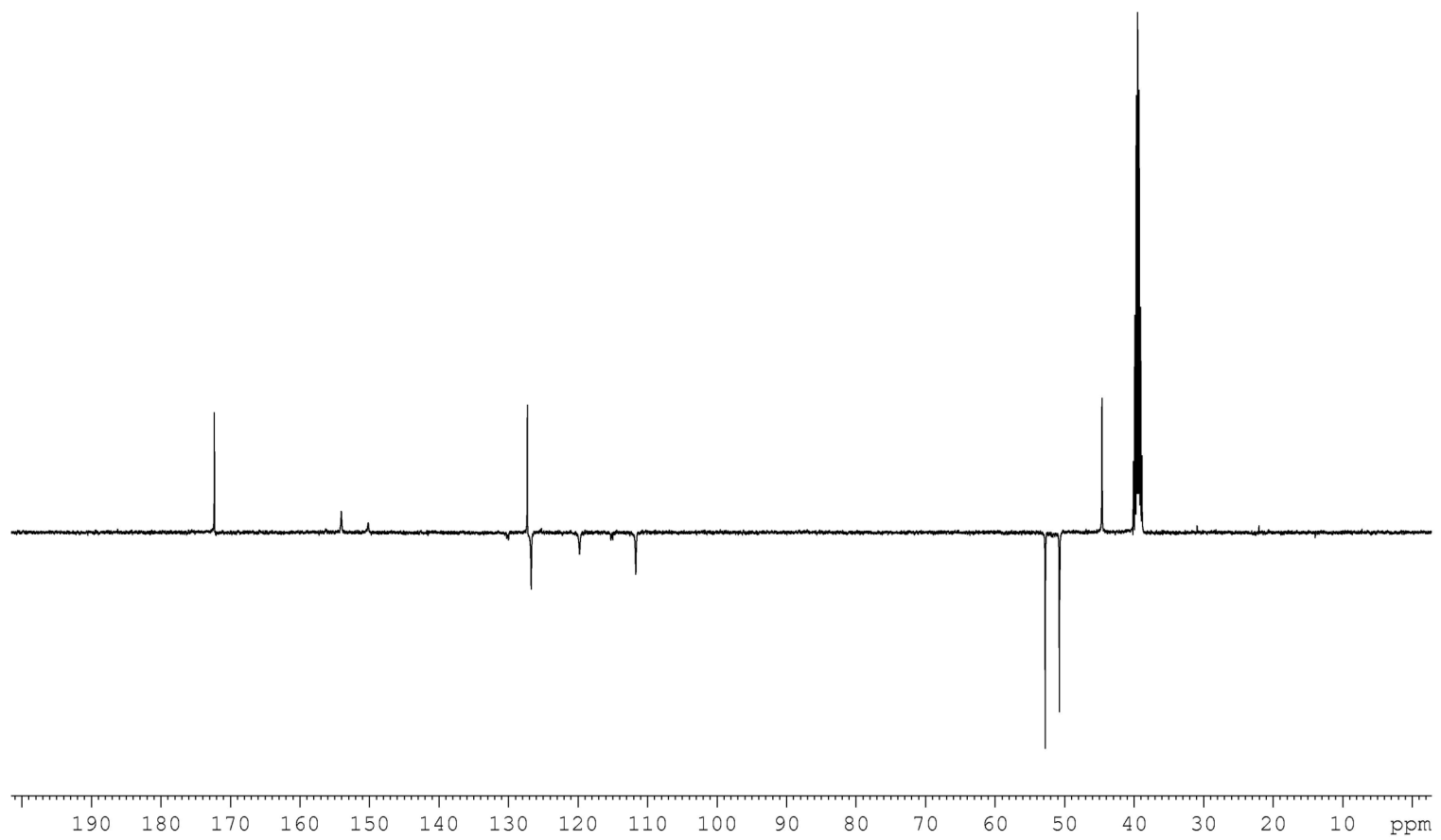


^{13}C APT NMR spectrum of A (DMSO- d_6 , 25 °C)

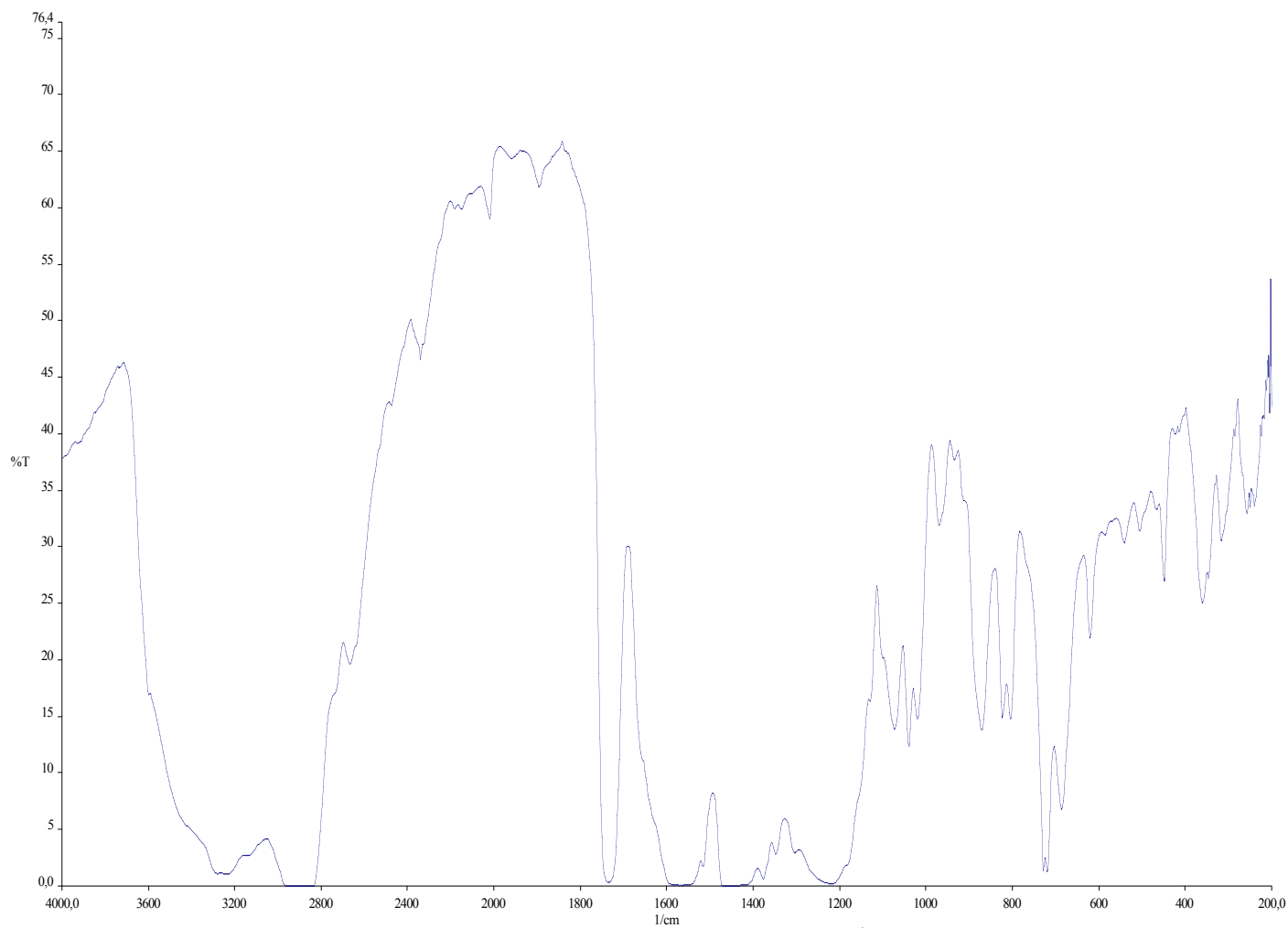
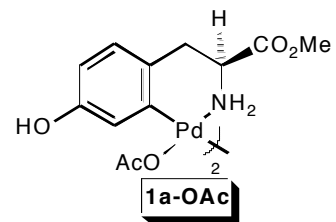




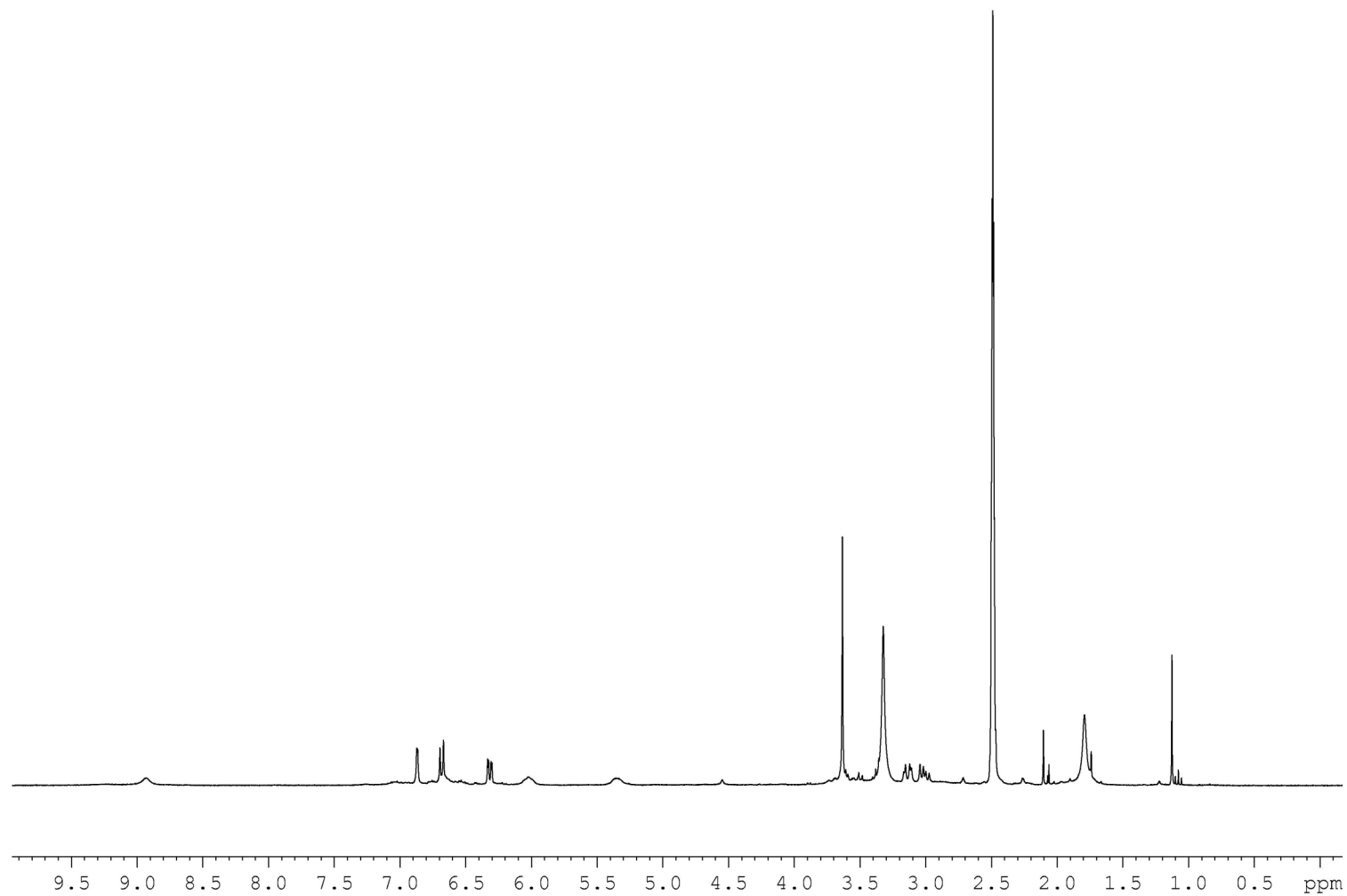
^1H NMR spectrum of 1a-Br (DMSO- d_6 , 25 °C)



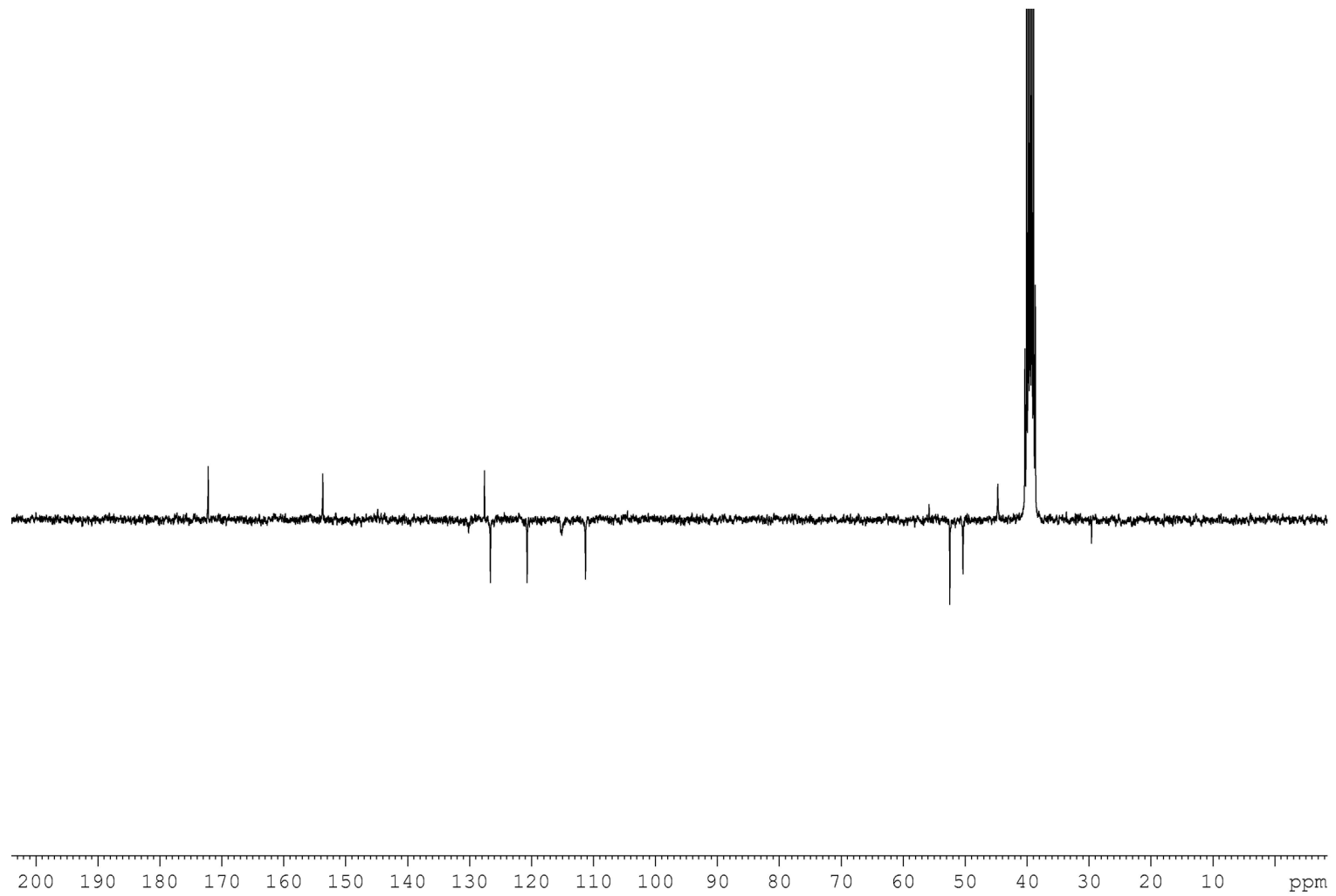
^{13}C APT NMR spectrum of 1a-Br (DMSO- d_6 , 25 °C)



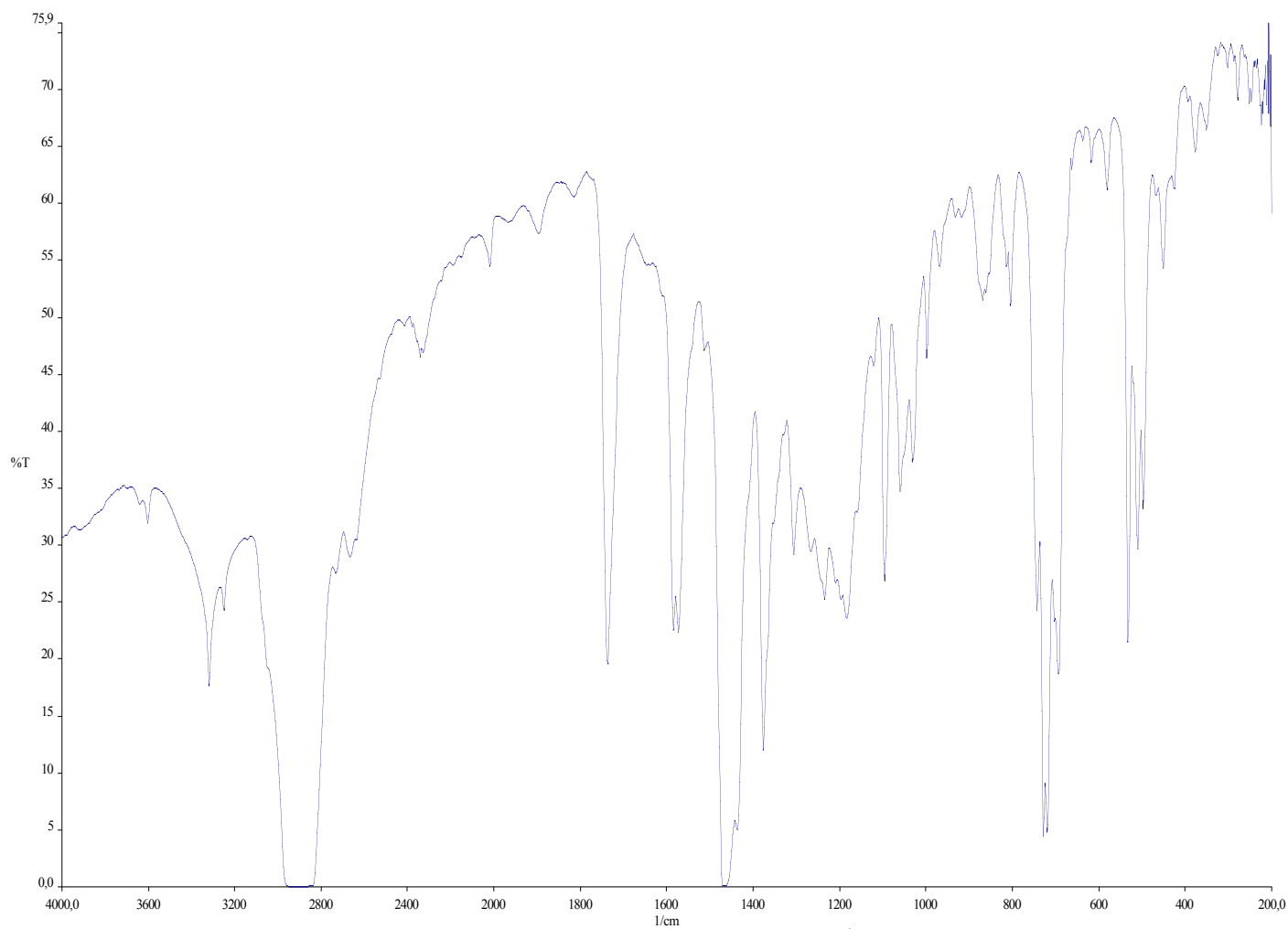
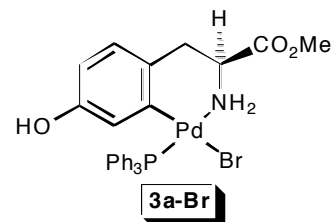
IR spectrum of 1a-OAc (Nujol, cm⁻¹)



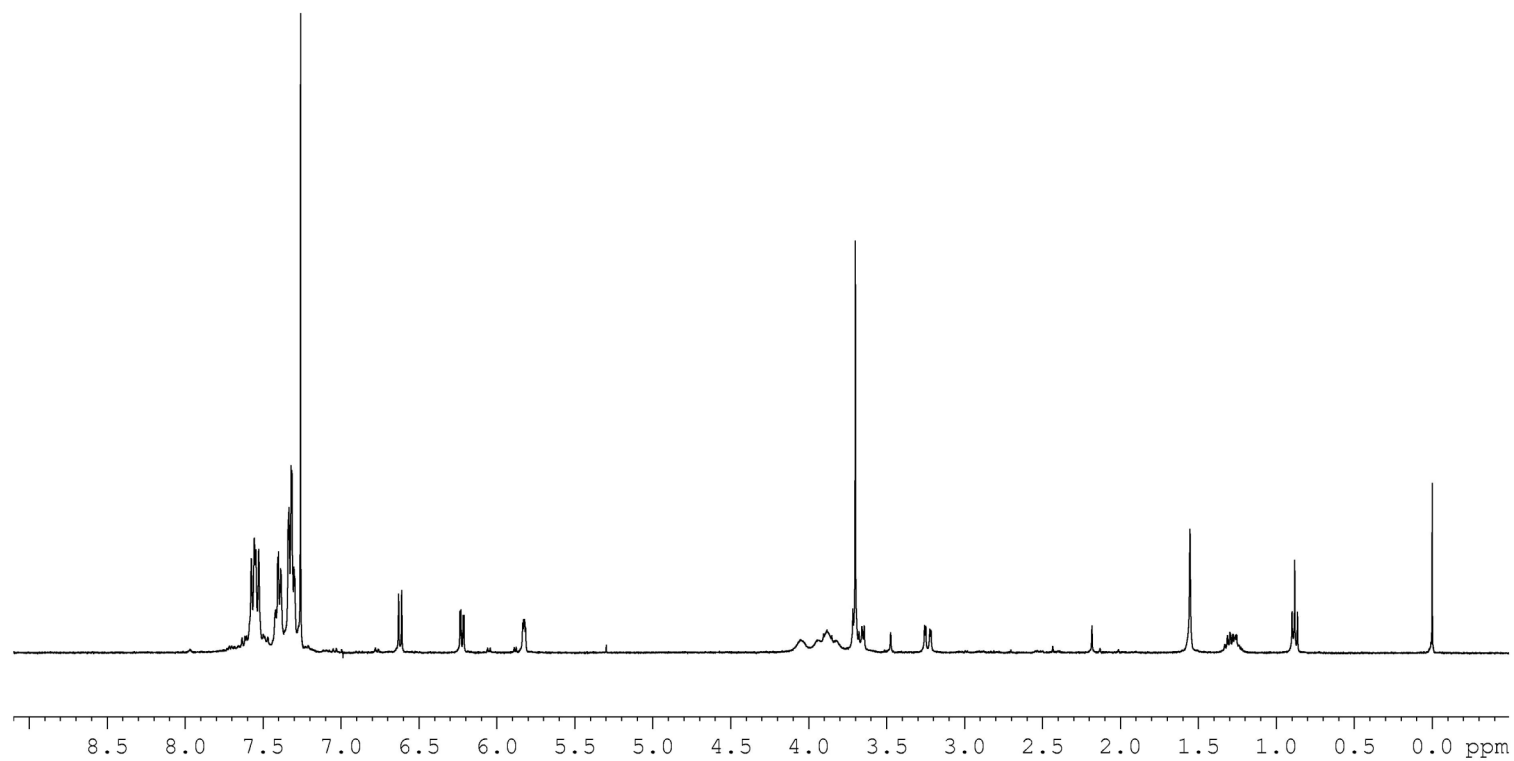
^1H NMR spectrum of 1a-OAc (DMSO- d_6 , 25 °C)



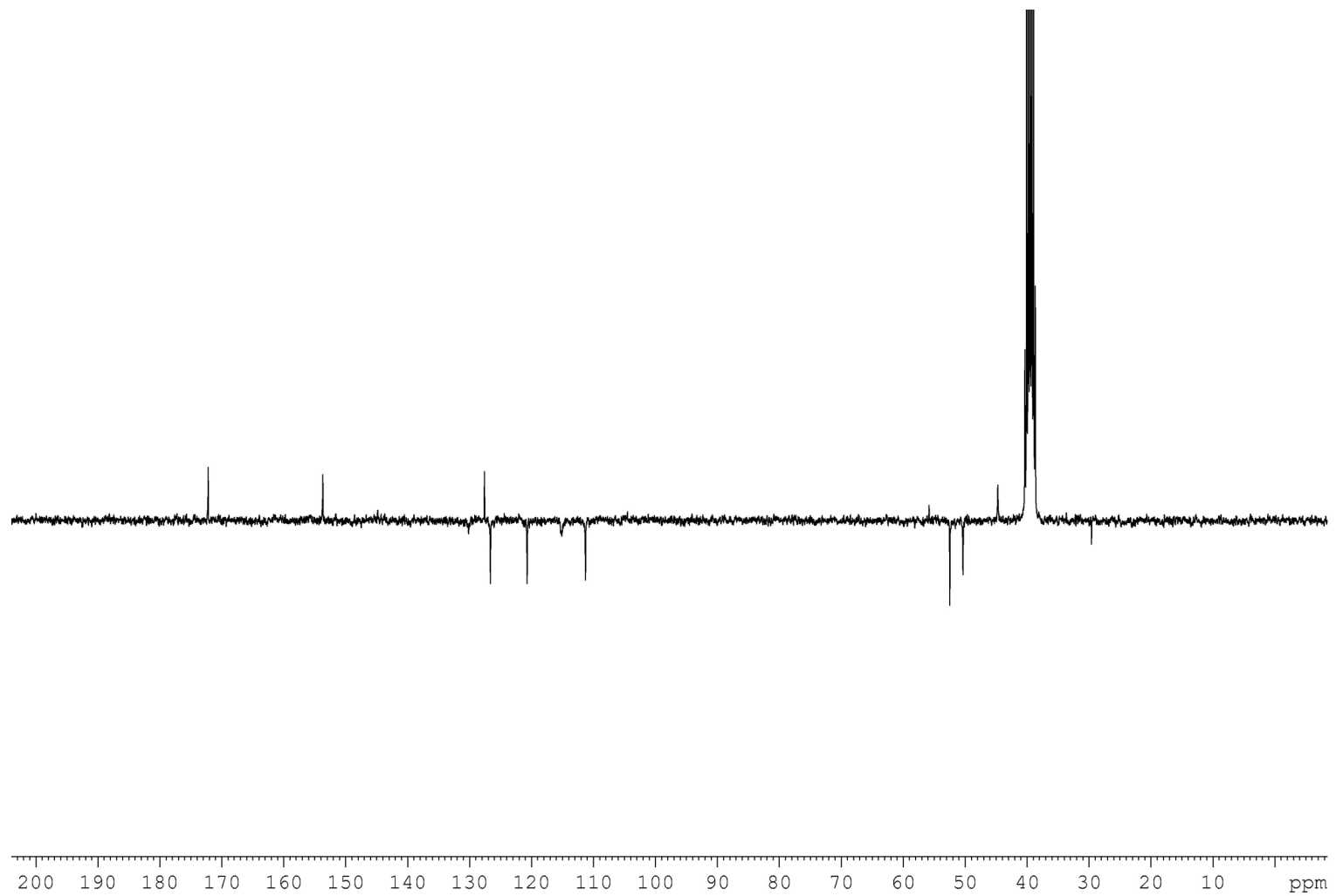
^{13}C APT NMR spectrum of 1a-OAc (DMSO- d_6 , 25 °C)



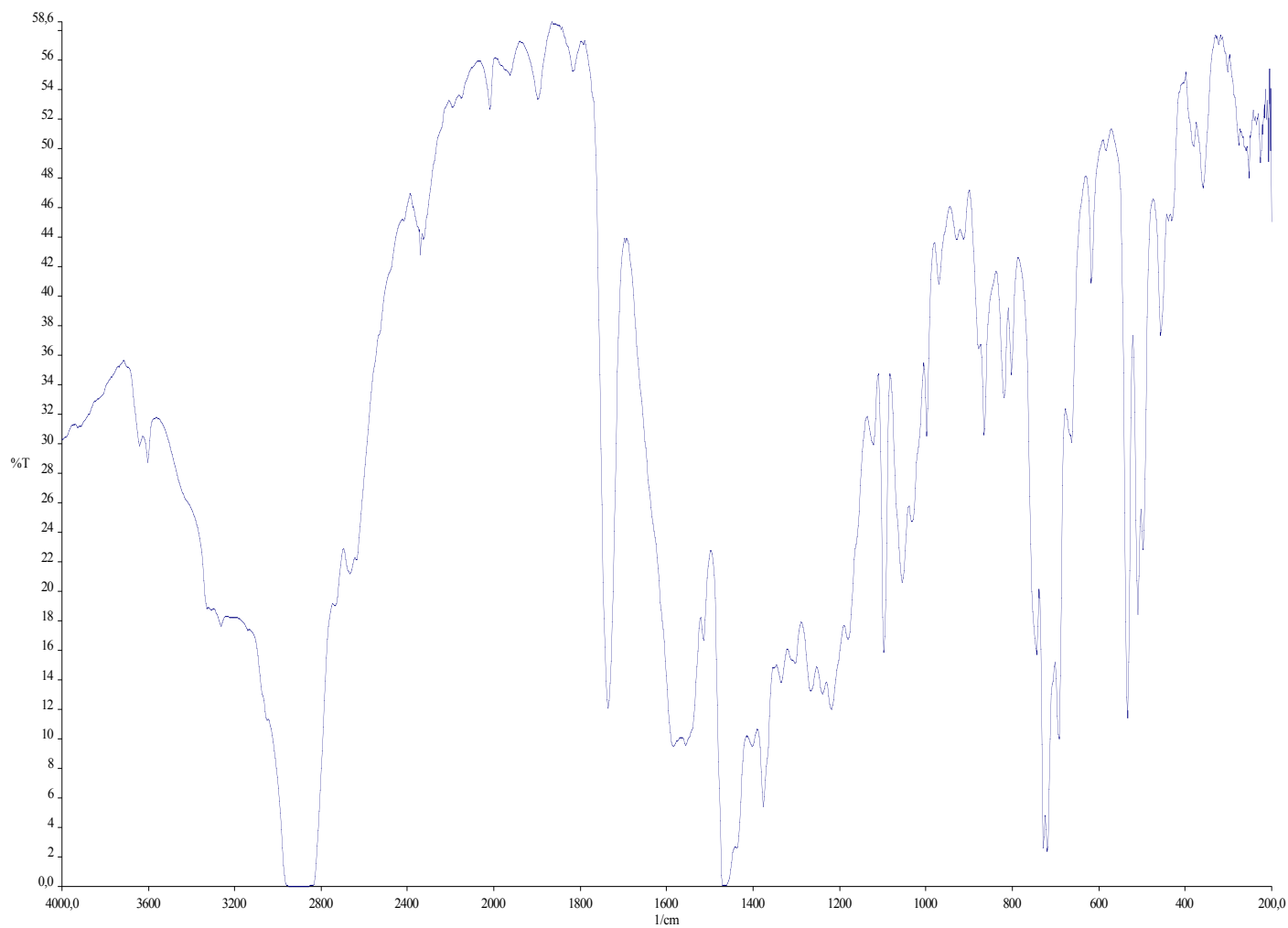
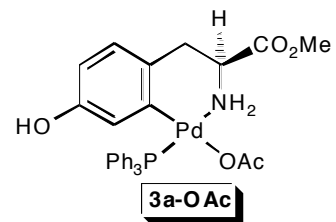
IR spectrum of 3a-Br (Nujol, cm^{-1})



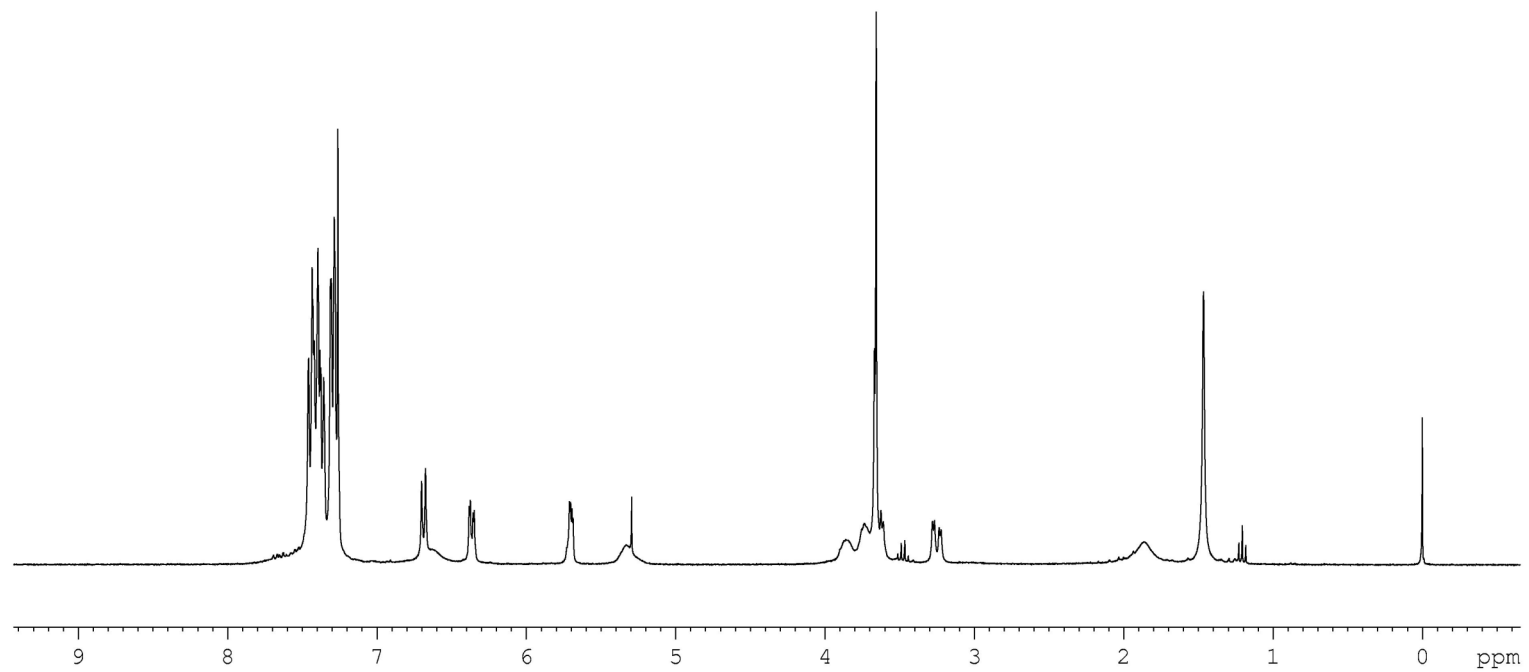
^1H NMR spectrum of 3a-Br



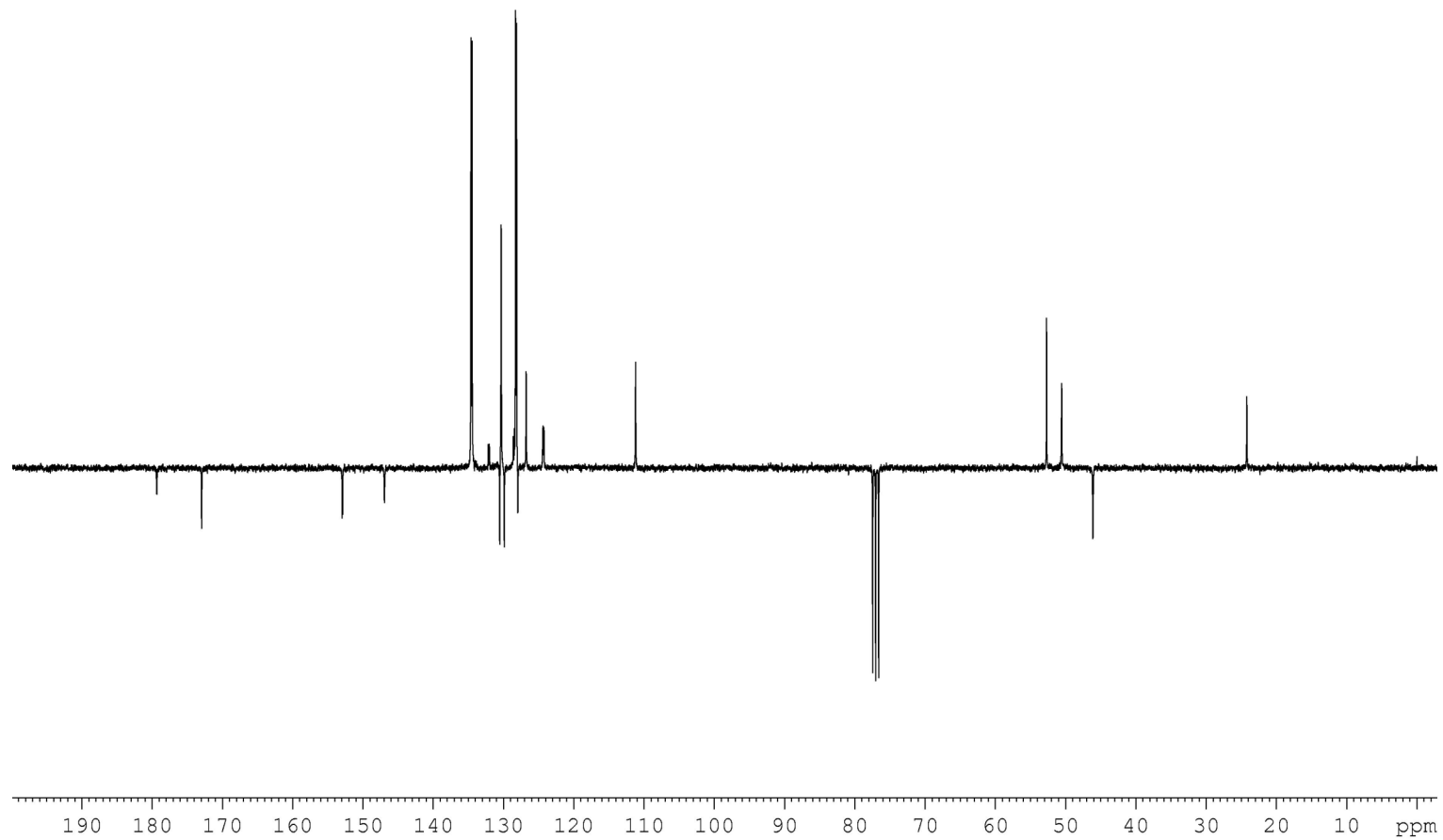
^{13}C APT NMR spectrum of 3a-Br (DMSO- d_6 , 25 °C)



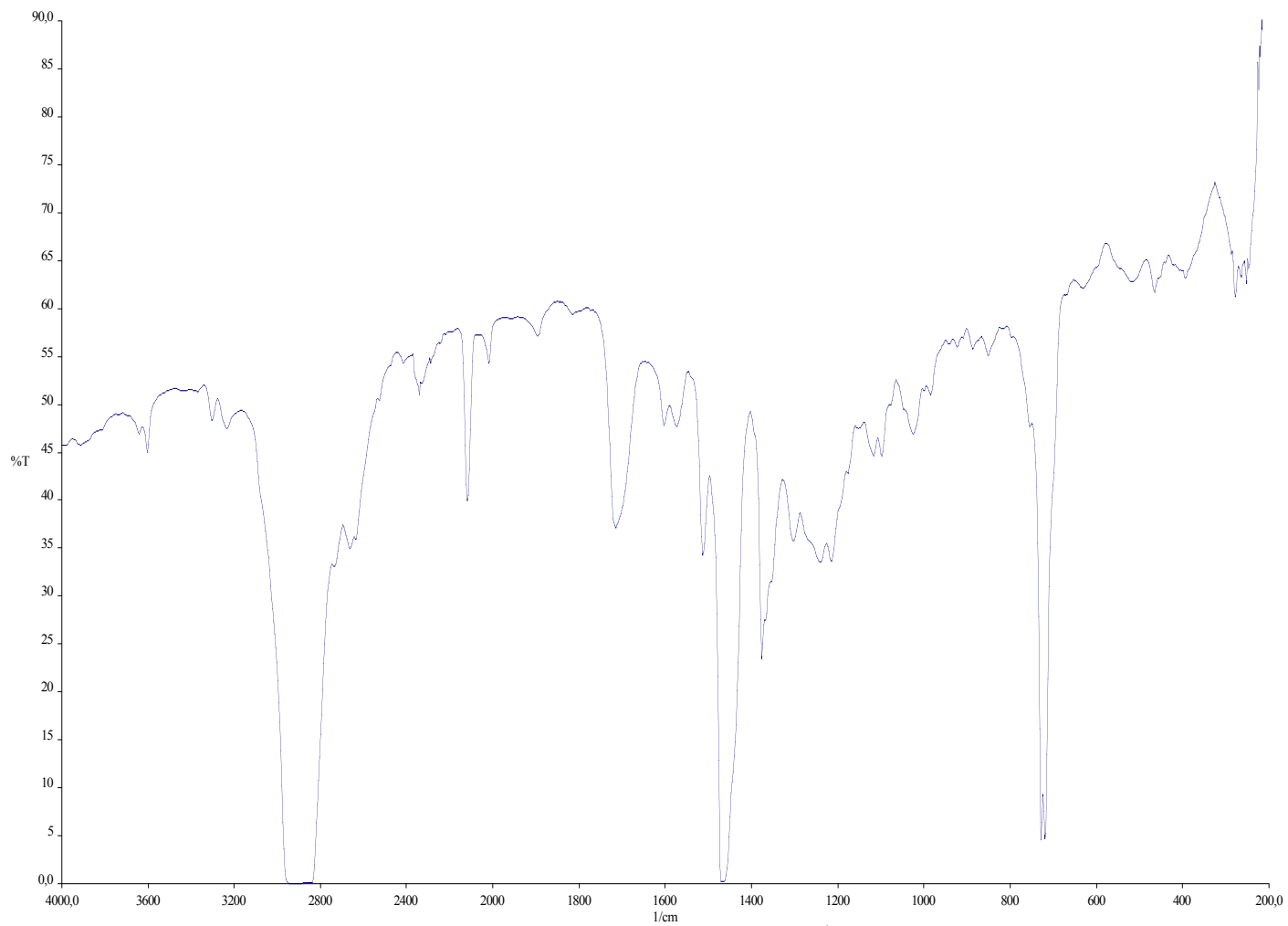
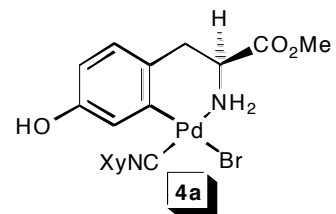
IR spectrum of 3a-OAc (Nujol, cm⁻¹)



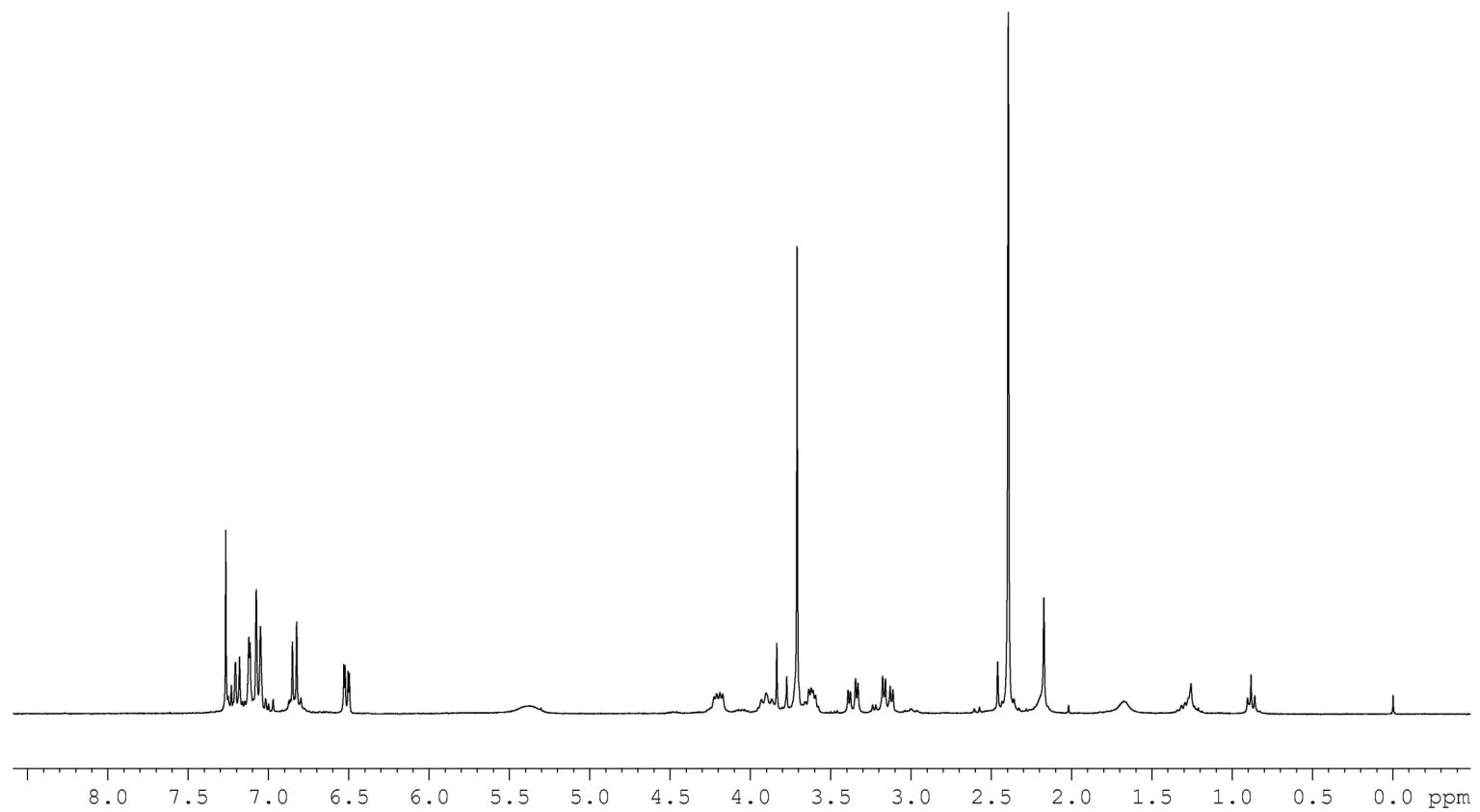
^1H NMR spectrum of 3a-OAc ($\text{CDCl}_3 + \text{TMS}$, 25 °C)



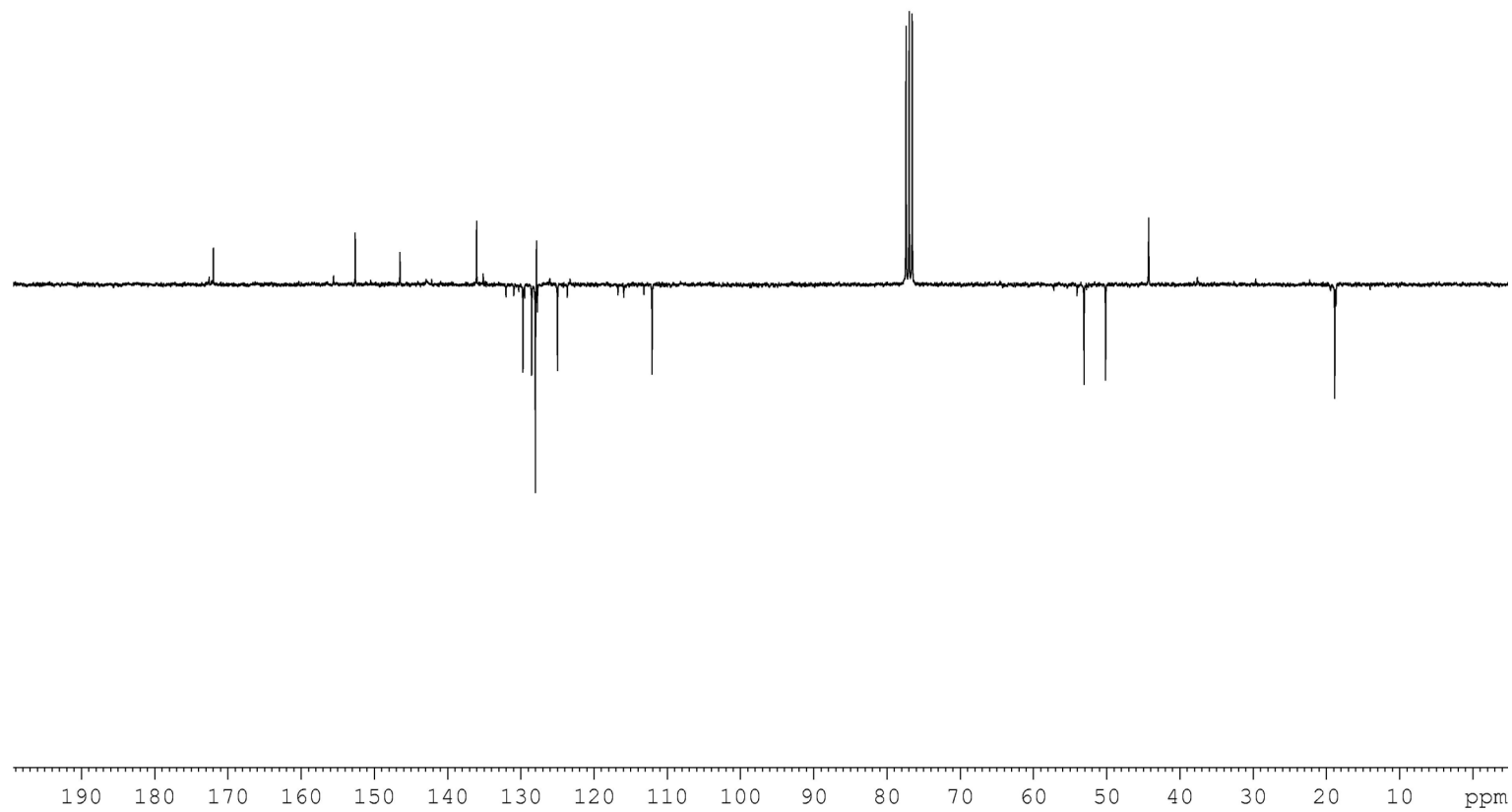
^{13}C APT NMR spectrum of 3a-OAc (CDCl₃ + TMS, 25 °C)



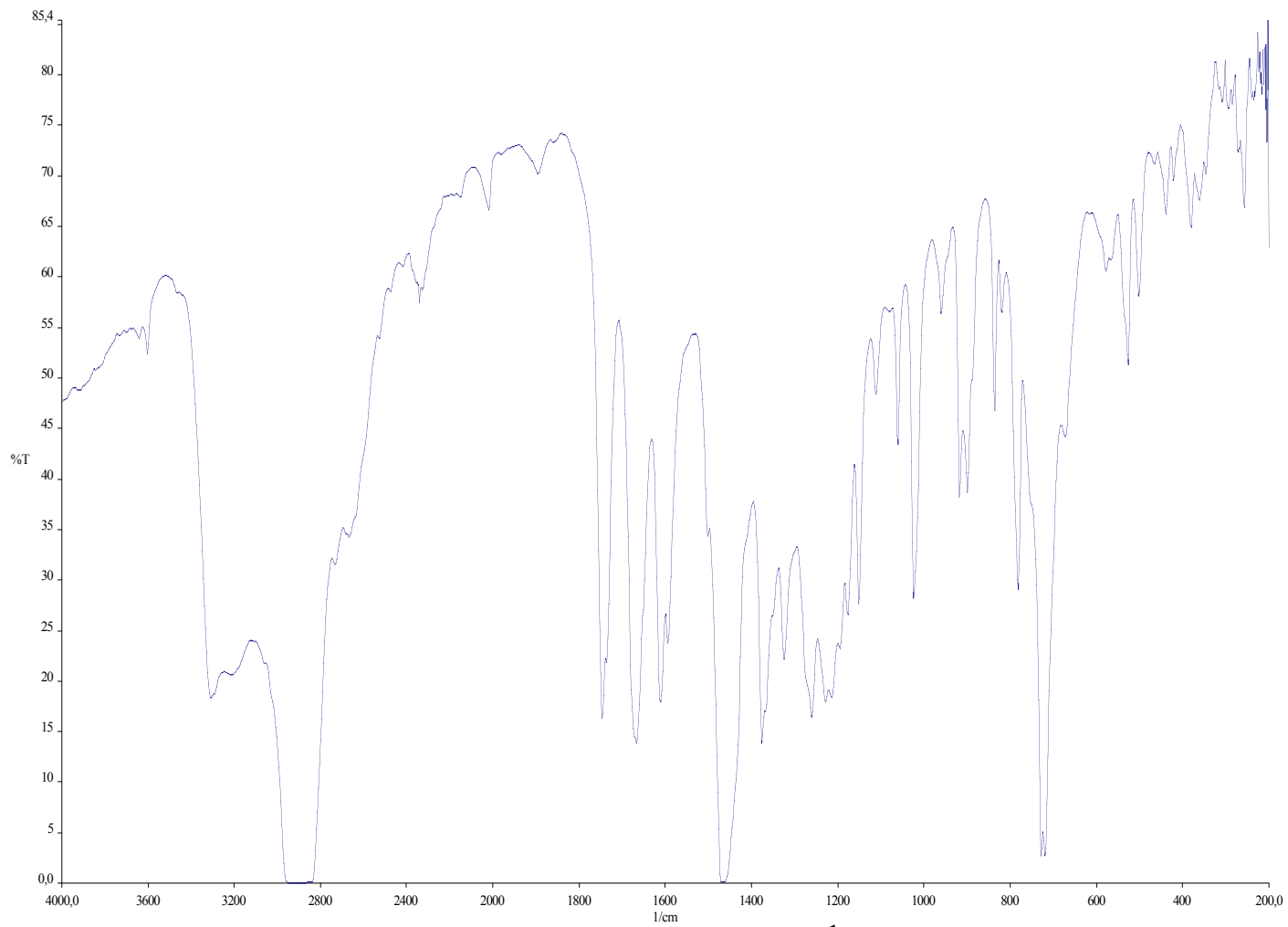
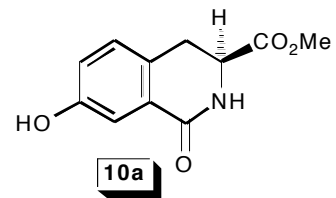
IR spectrum of **4a** (Nujol, cm⁻¹)

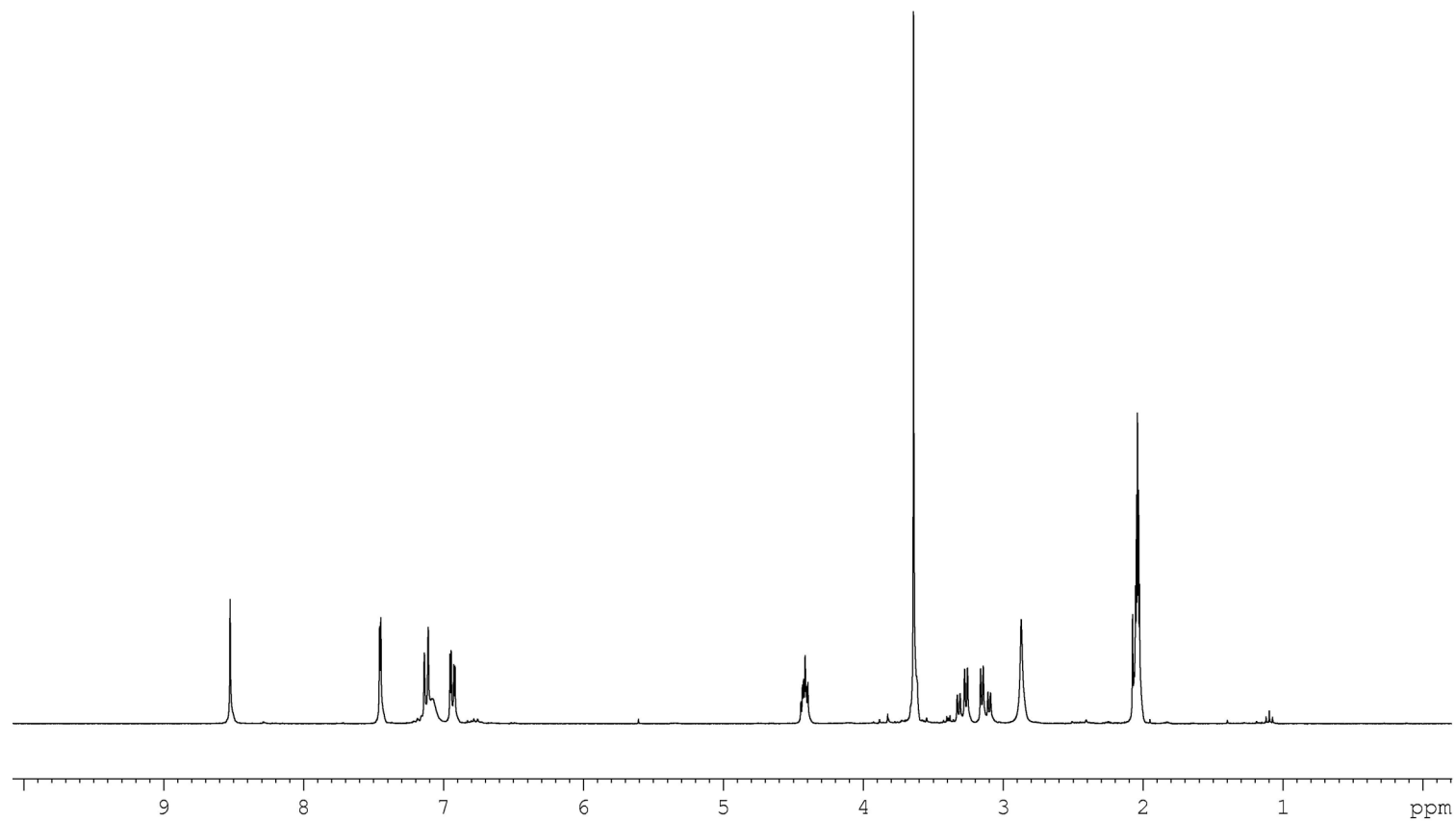


^1H NMR spectrum of 4a ($\text{CDCl}_3 + \text{TMS}$, 25 °C)

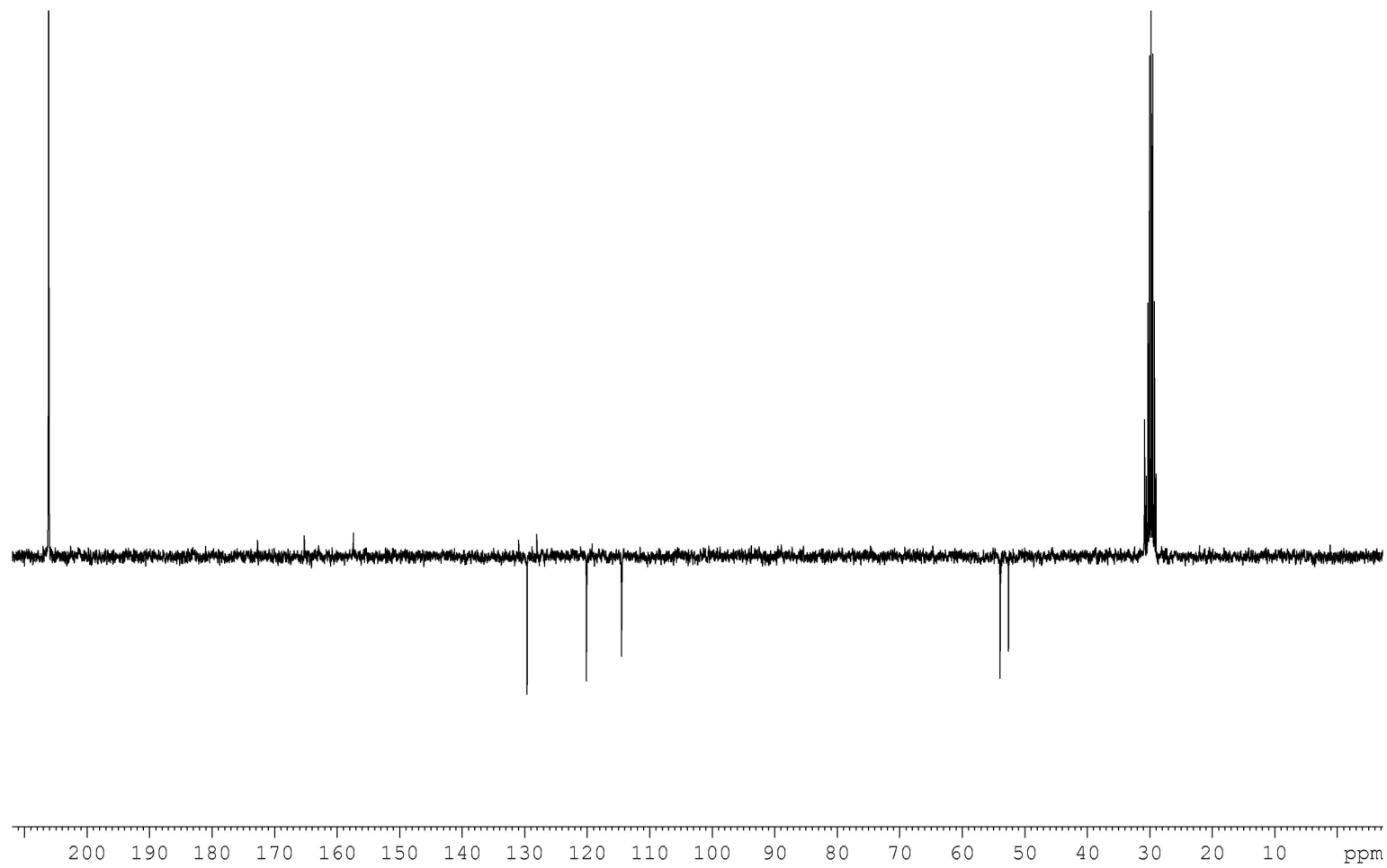


^{13}C APT NMR spectrum of 4a (CDCl_3 + TMS, 25 °C)

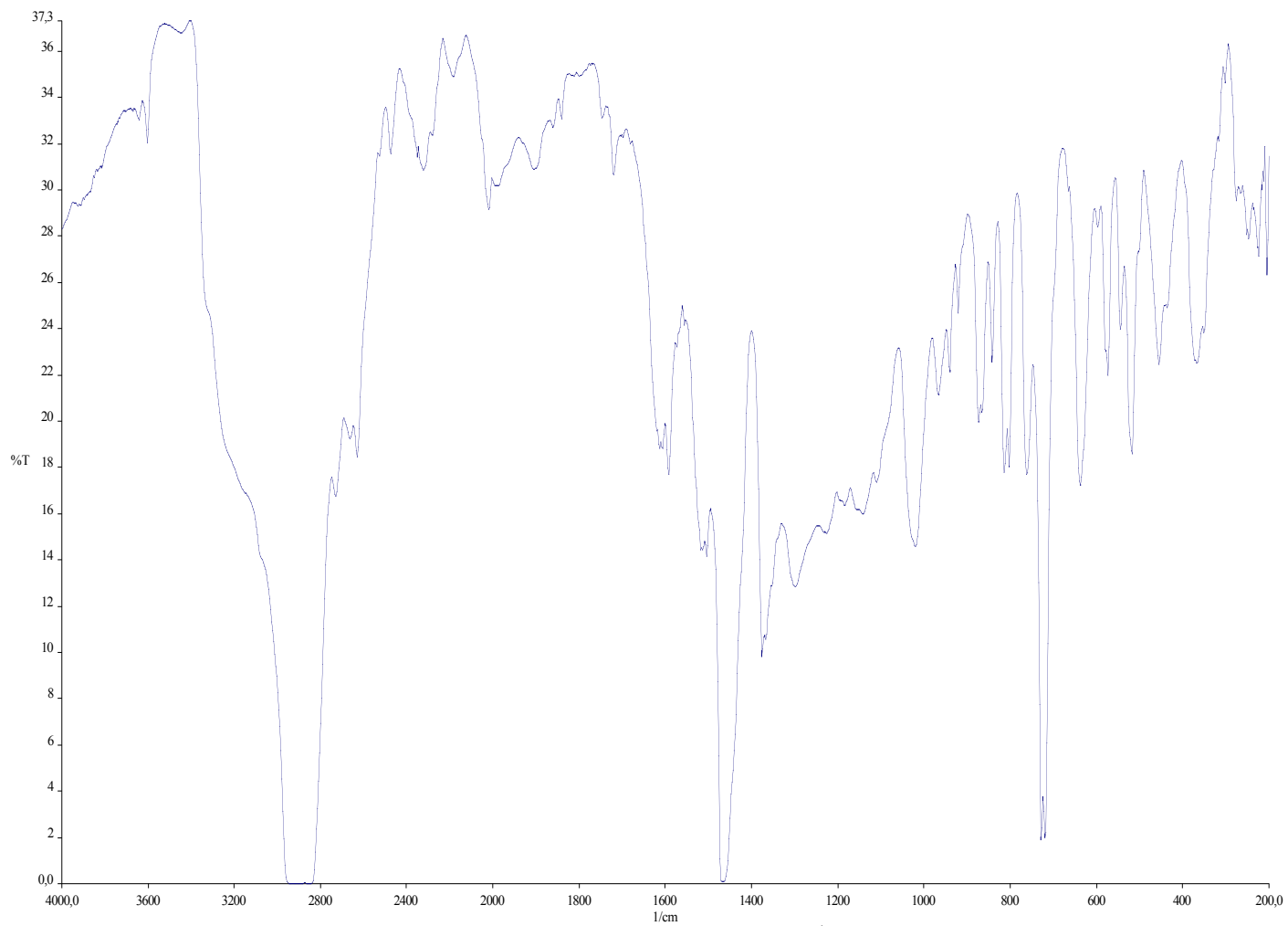
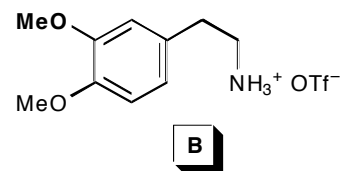




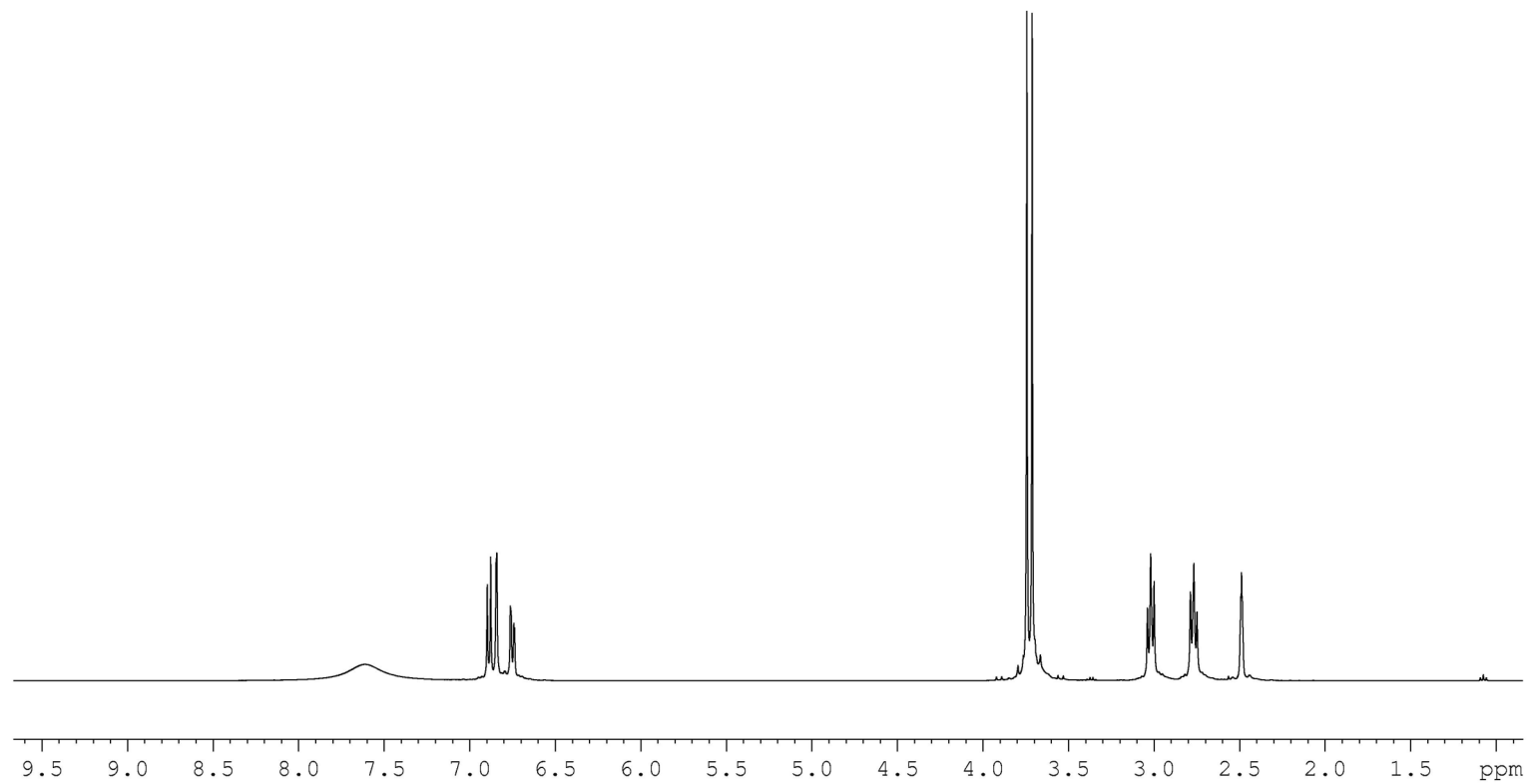
^1H NMR spectrum of 10a (acetone- d_6 , 25 °C)



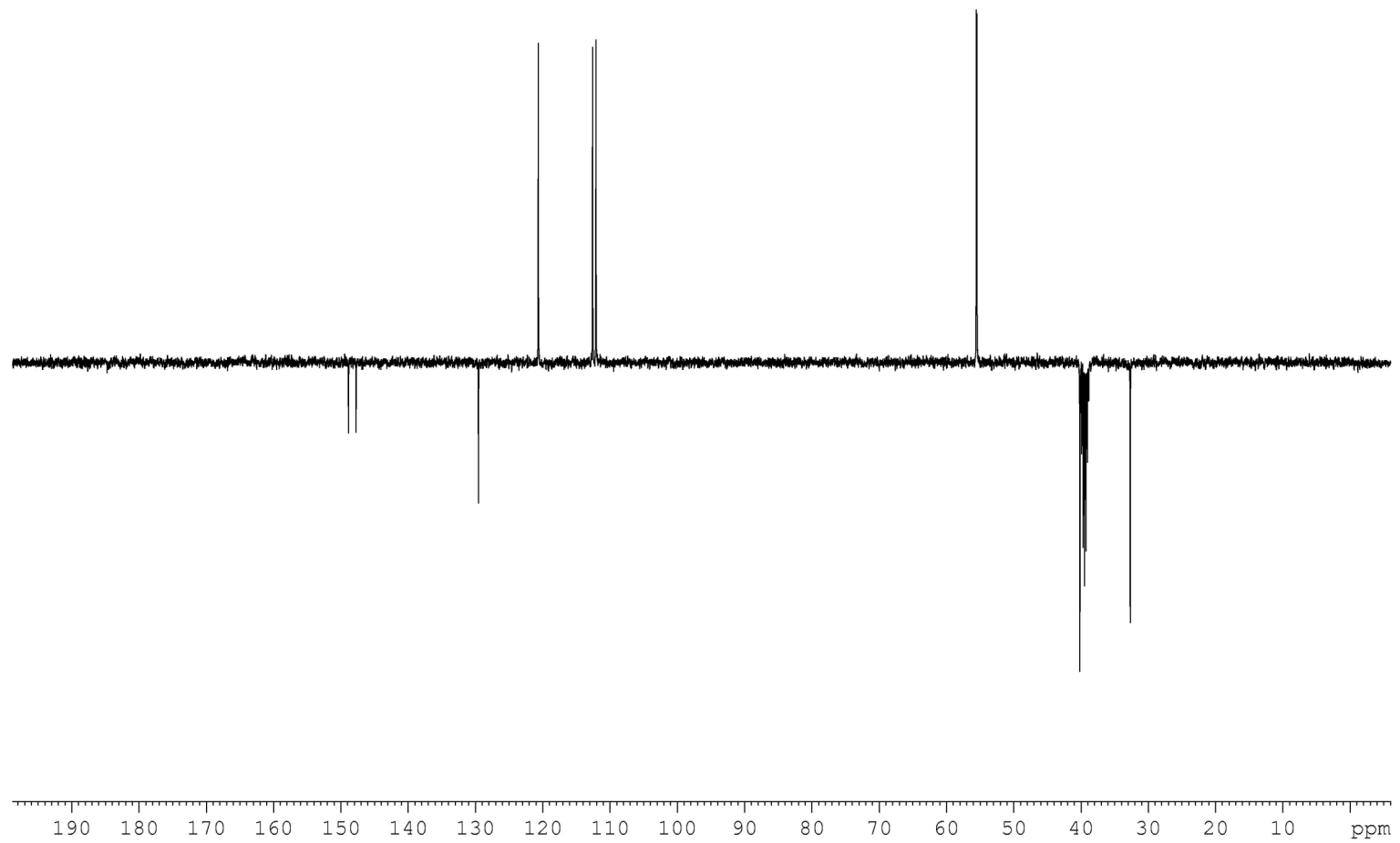
^{13}C APT NMR spectrum of 10a (acetone- d_6 , 25 °C)



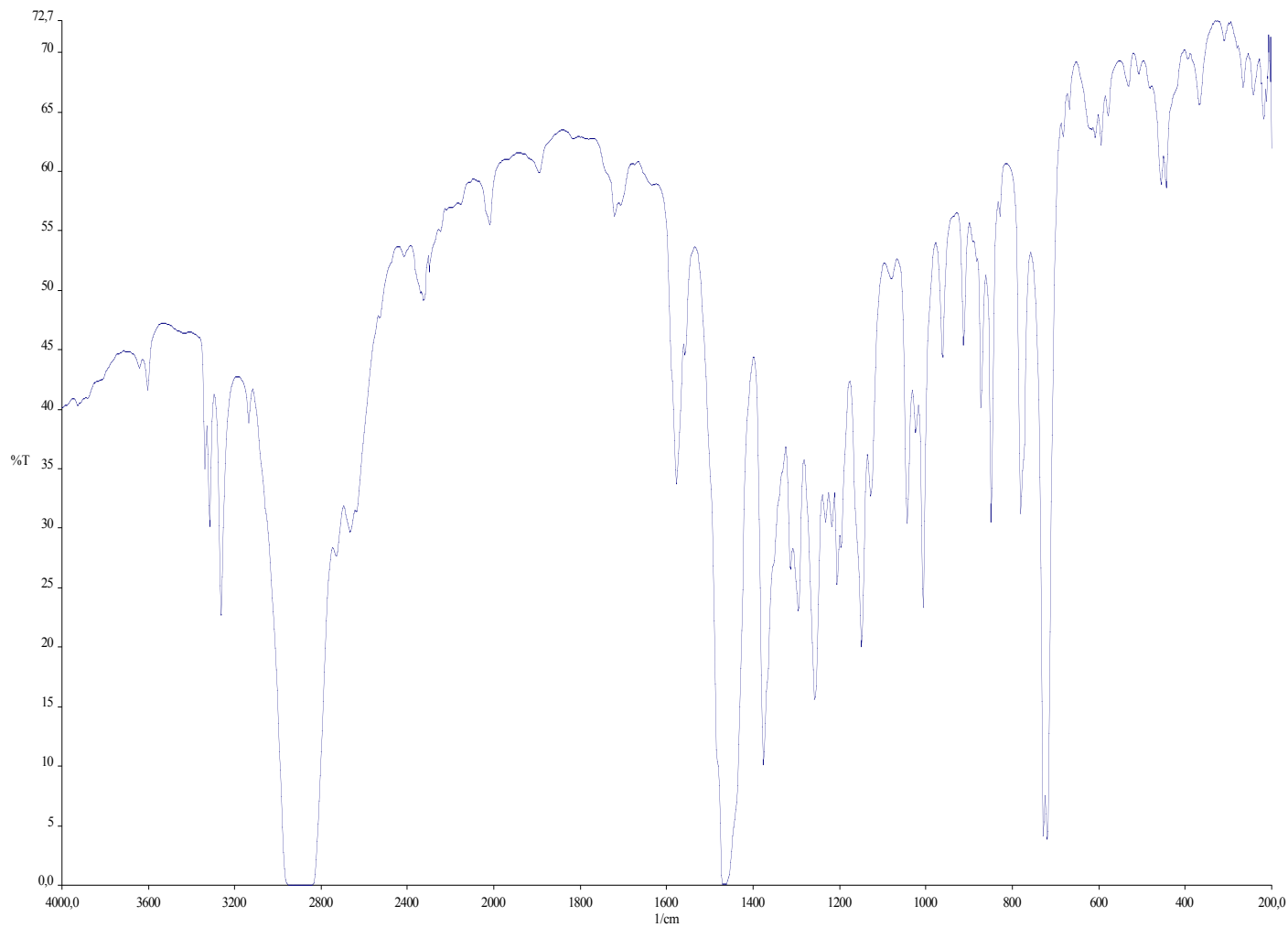
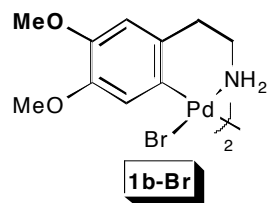
IR spectrum of B (Nujol, cm⁻¹)



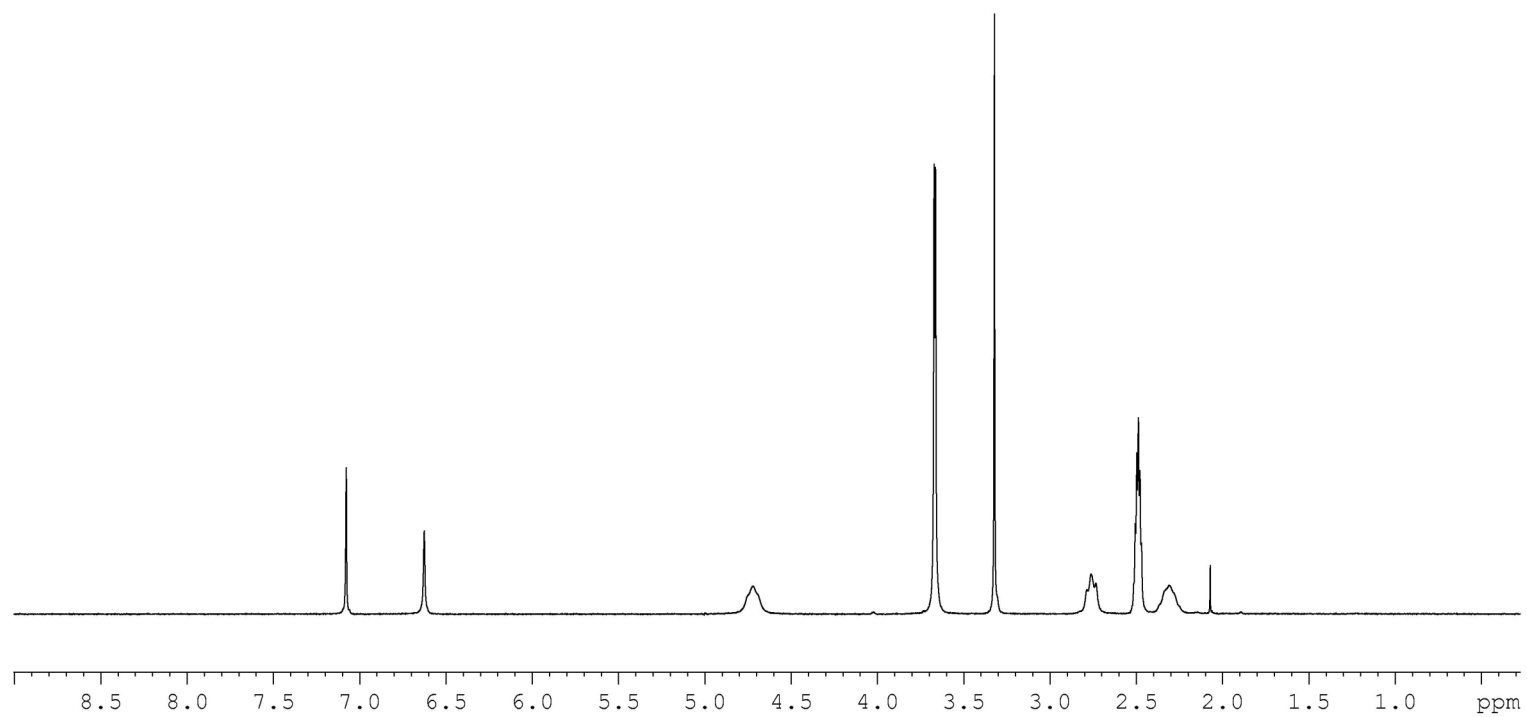
^1H NMR spectrum of B (DMSO- d_6 , 25 °C)



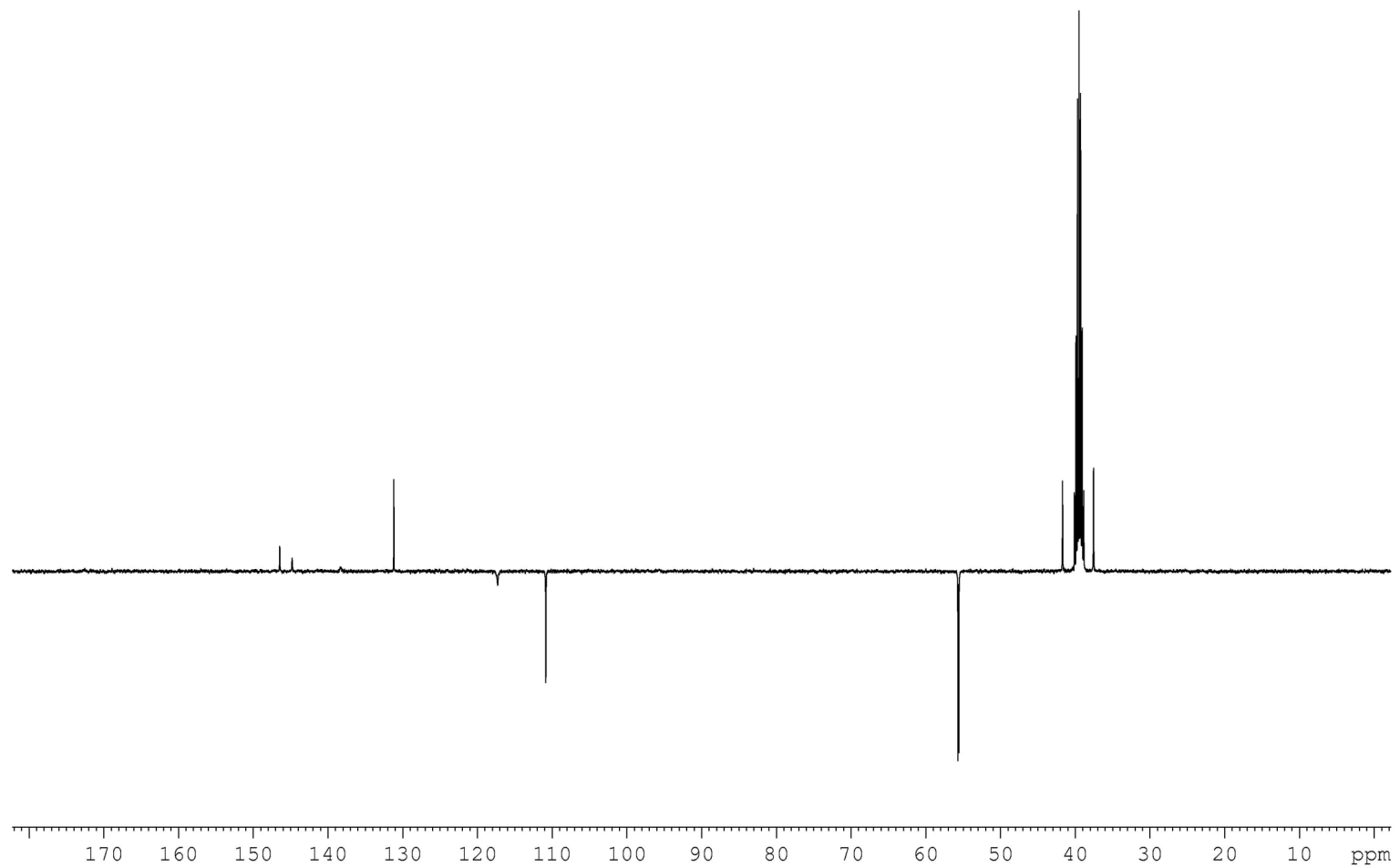
^{13}C APT NMR spectrum of B ($\text{DMSO-}d_6$, $25\text{ }^\circ\text{C}$)



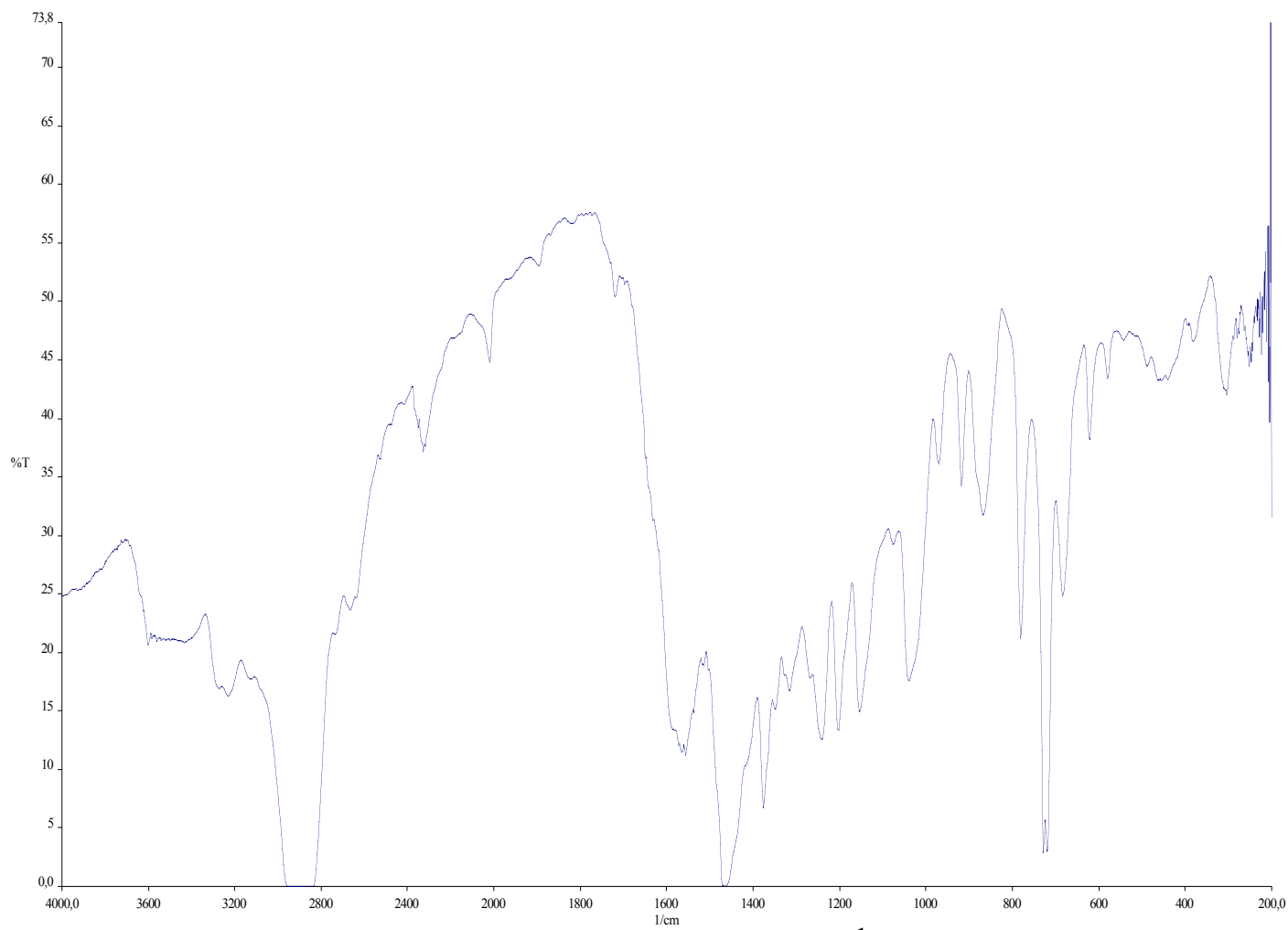
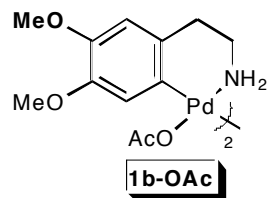
IR spectrum of 1b-Br (Nujol, cm⁻¹)



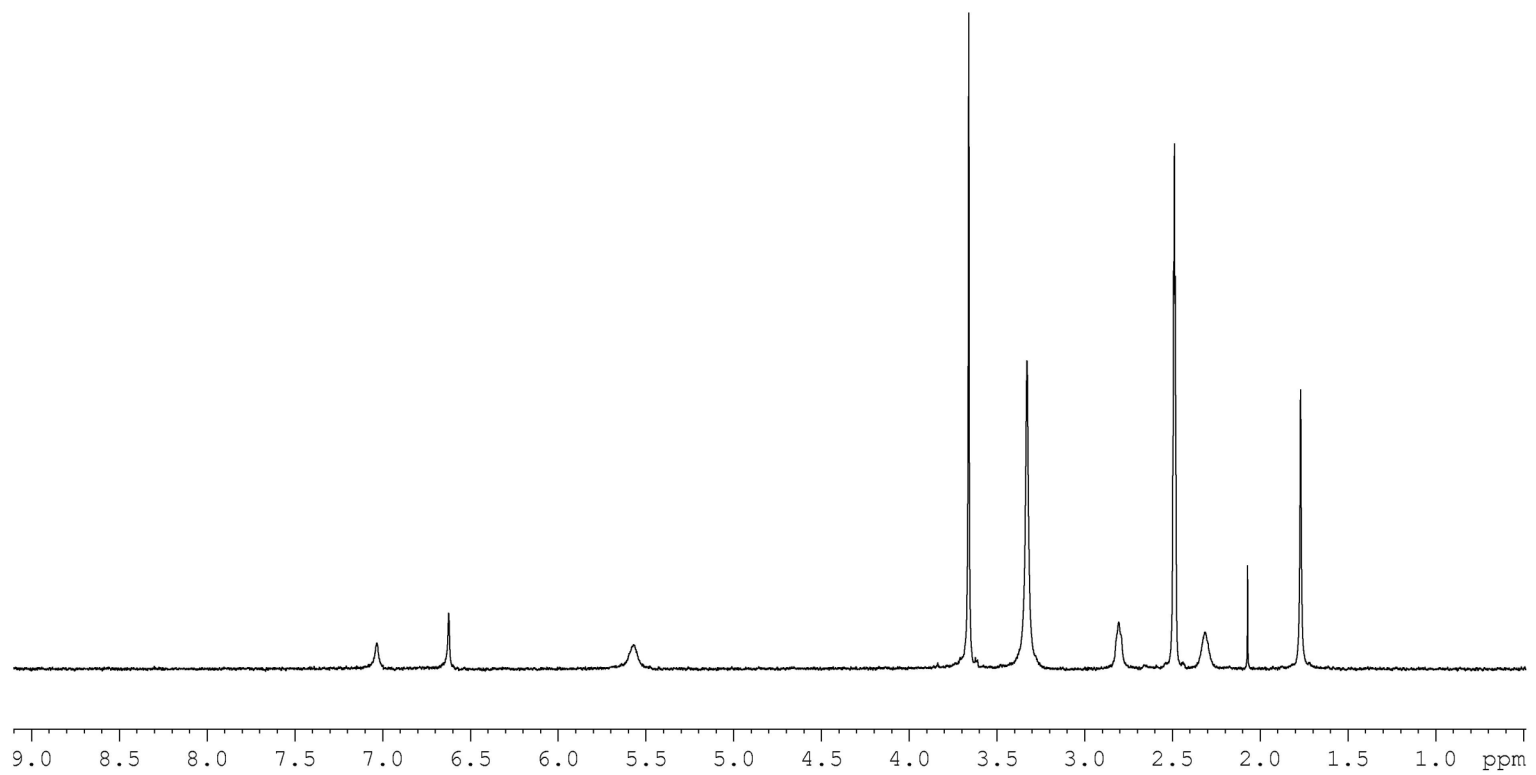
^1H NMR spectrum of **1b-Br** ($\text{DMSO-}d_6$, $25\text{ }^\circ\text{C}$)



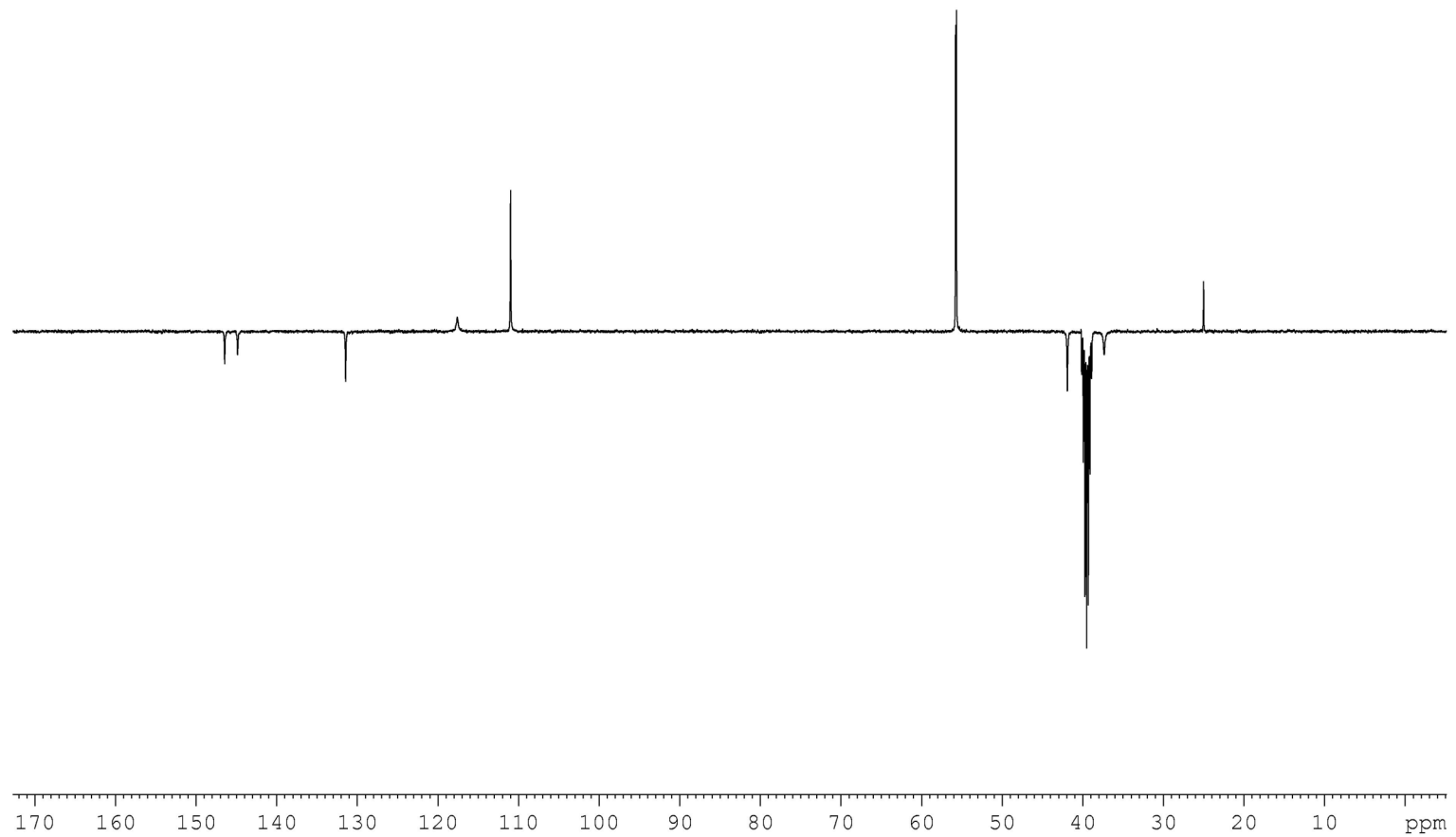
^{13}C APT NMR spectrum of **1b-Br** (DMSO- d_6 , 25 °C)



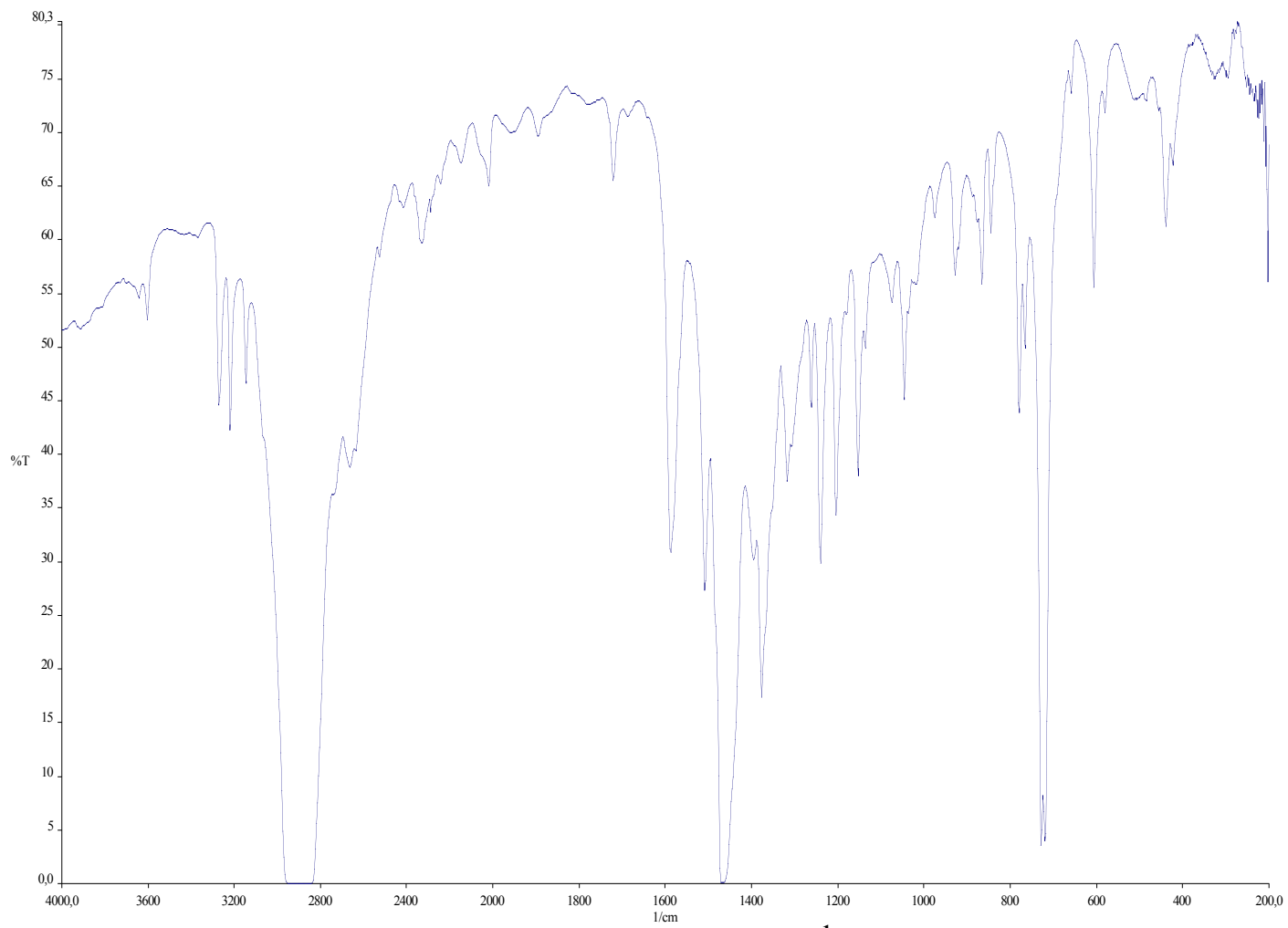
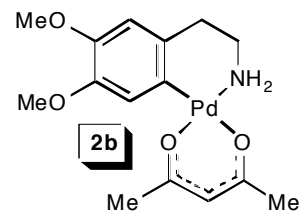
IR spectrum of 1b-OAc (Nujol, cm⁻¹)



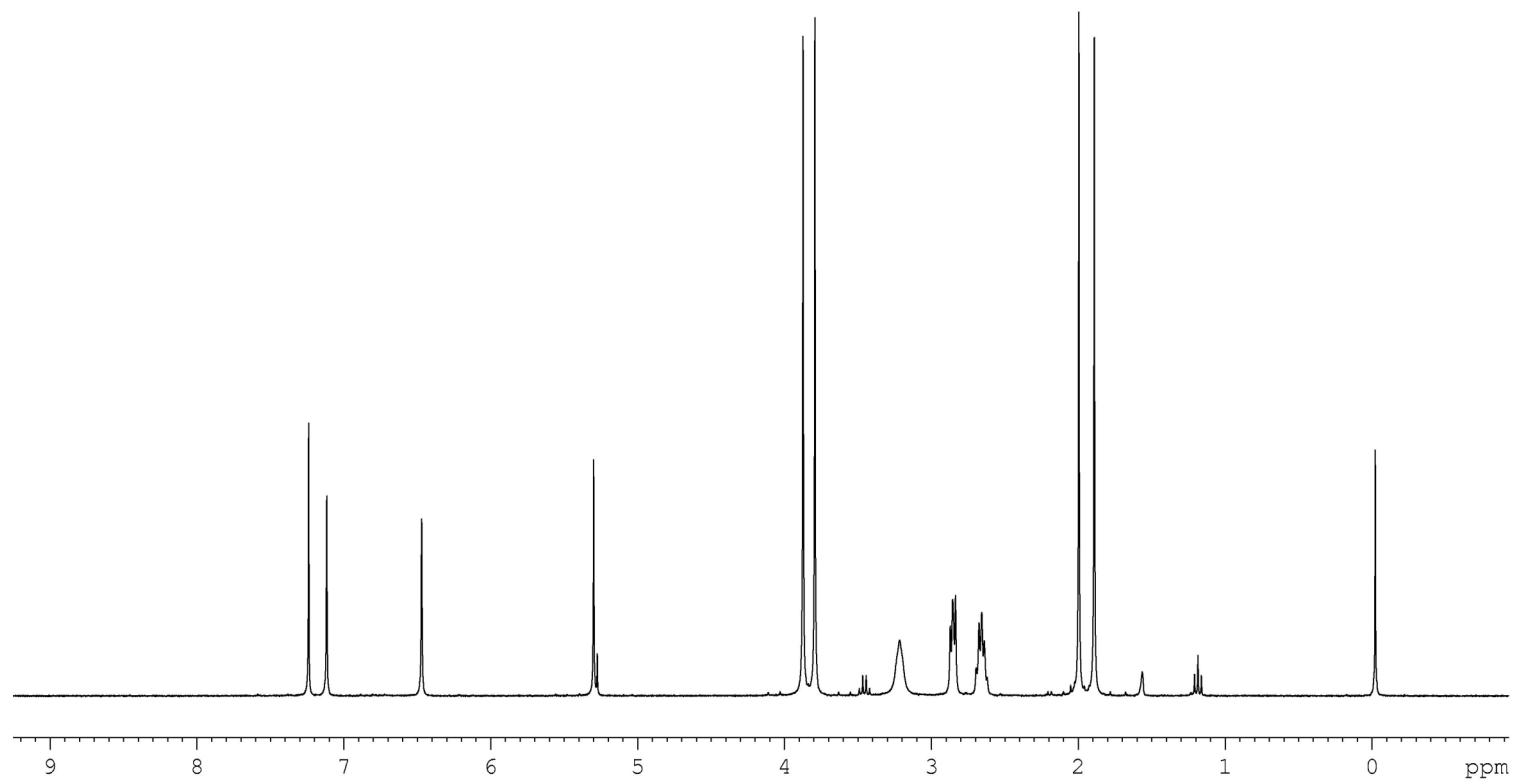
^1H NMR spectrum of 1b-OAc (DMSO- d_6 , 25 °C)



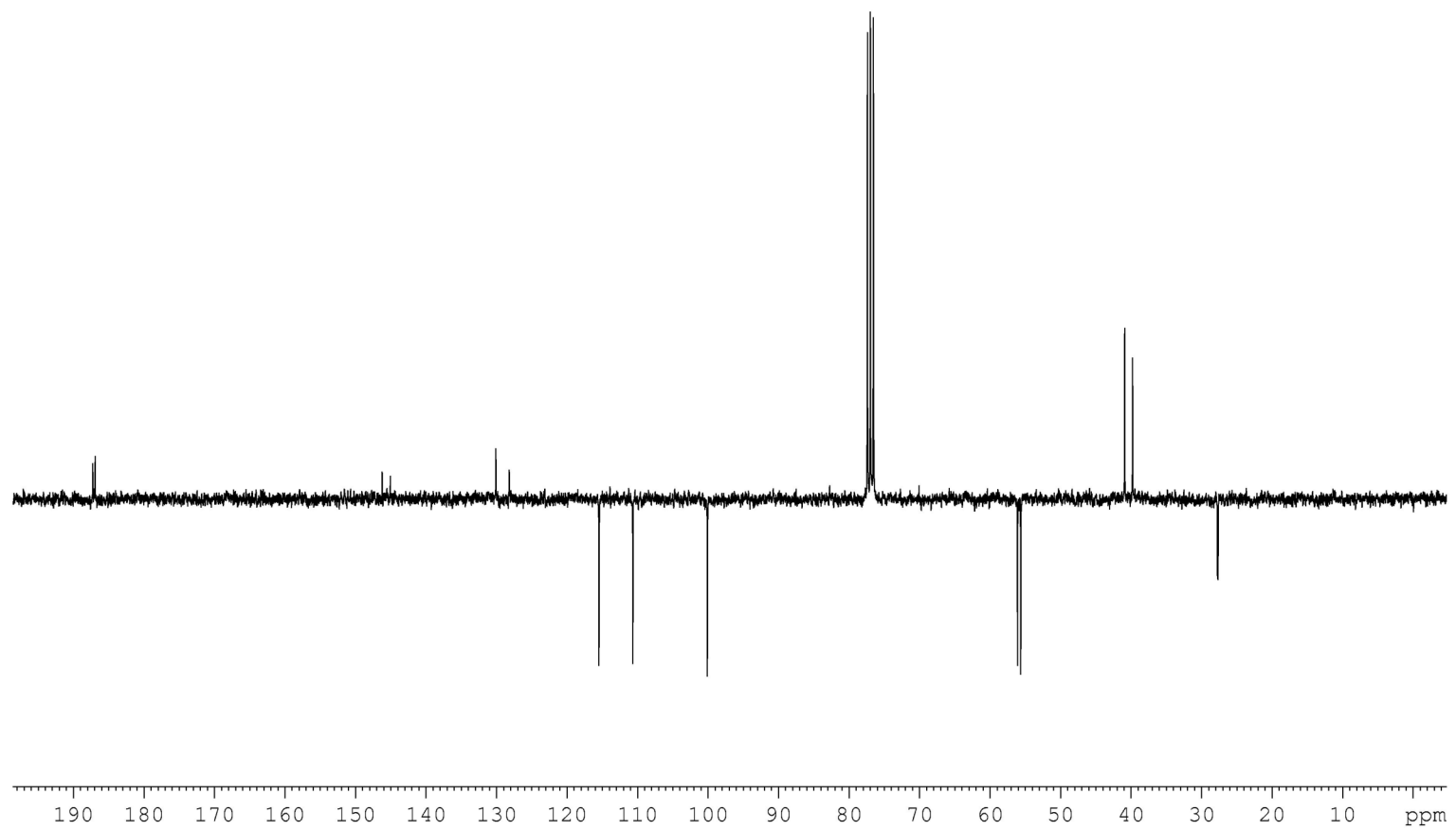
^{13}C APT NMR spectrum of 1b-OAc ($\text{DMSO-}d_6$, $25\text{ }^\circ\text{C}$)



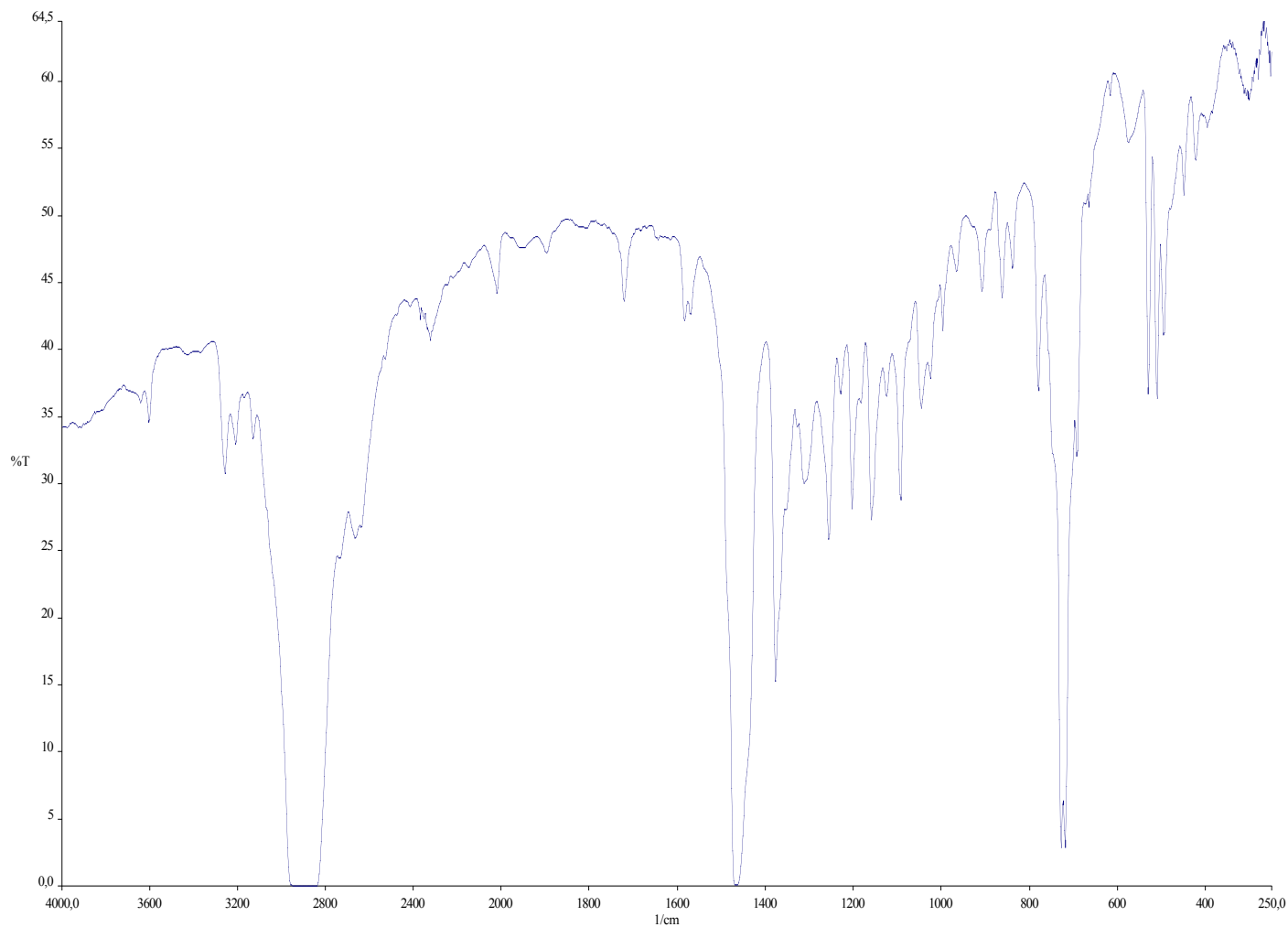
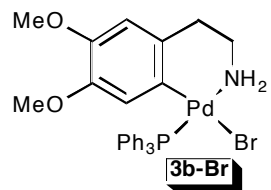
IR spectrum of 2b (Nujol, cm⁻¹)



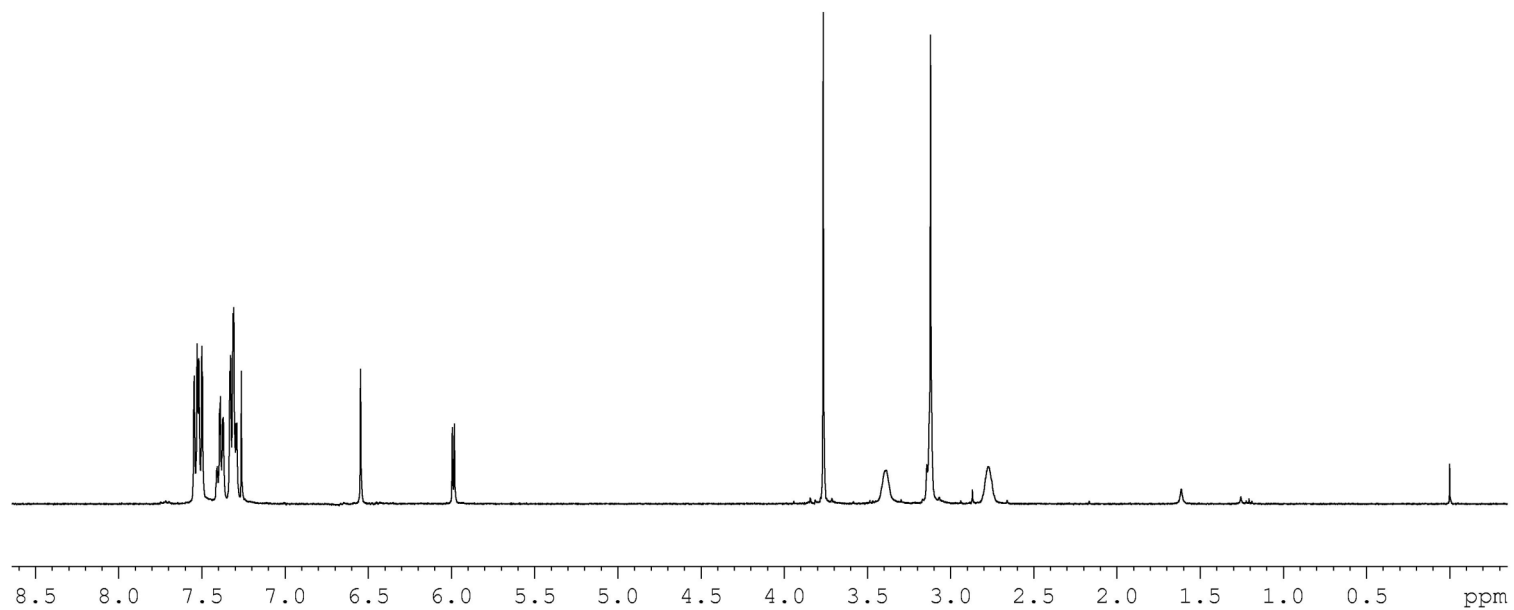
^1H NMR spectrum of **2b** ($\text{CDCl}_3 + \text{TMS}$, $25\text{ }^\circ\text{C}$)



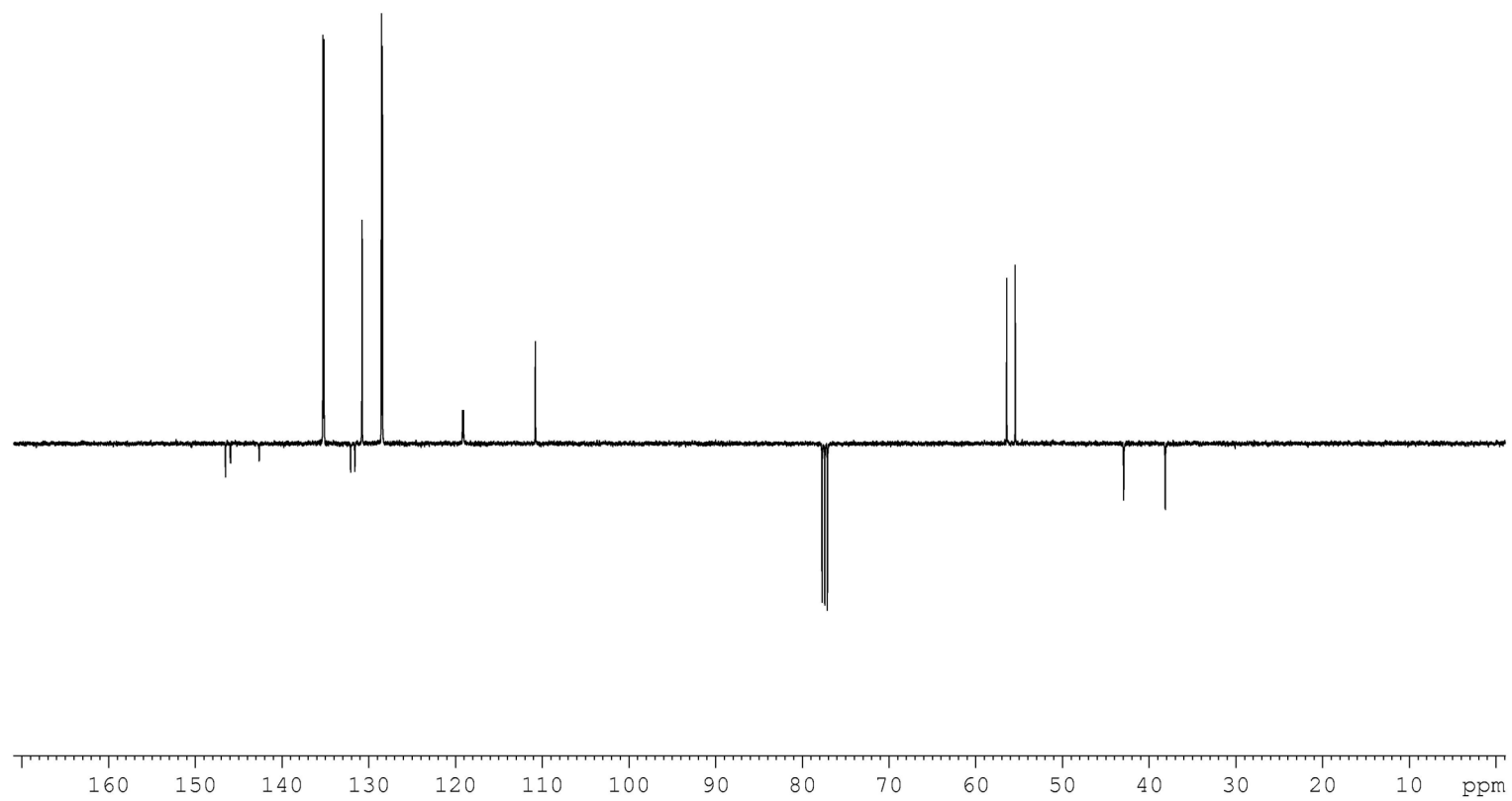
APT NMR spectrum of 2b (CDCl₃ + TMS, 25 °C)



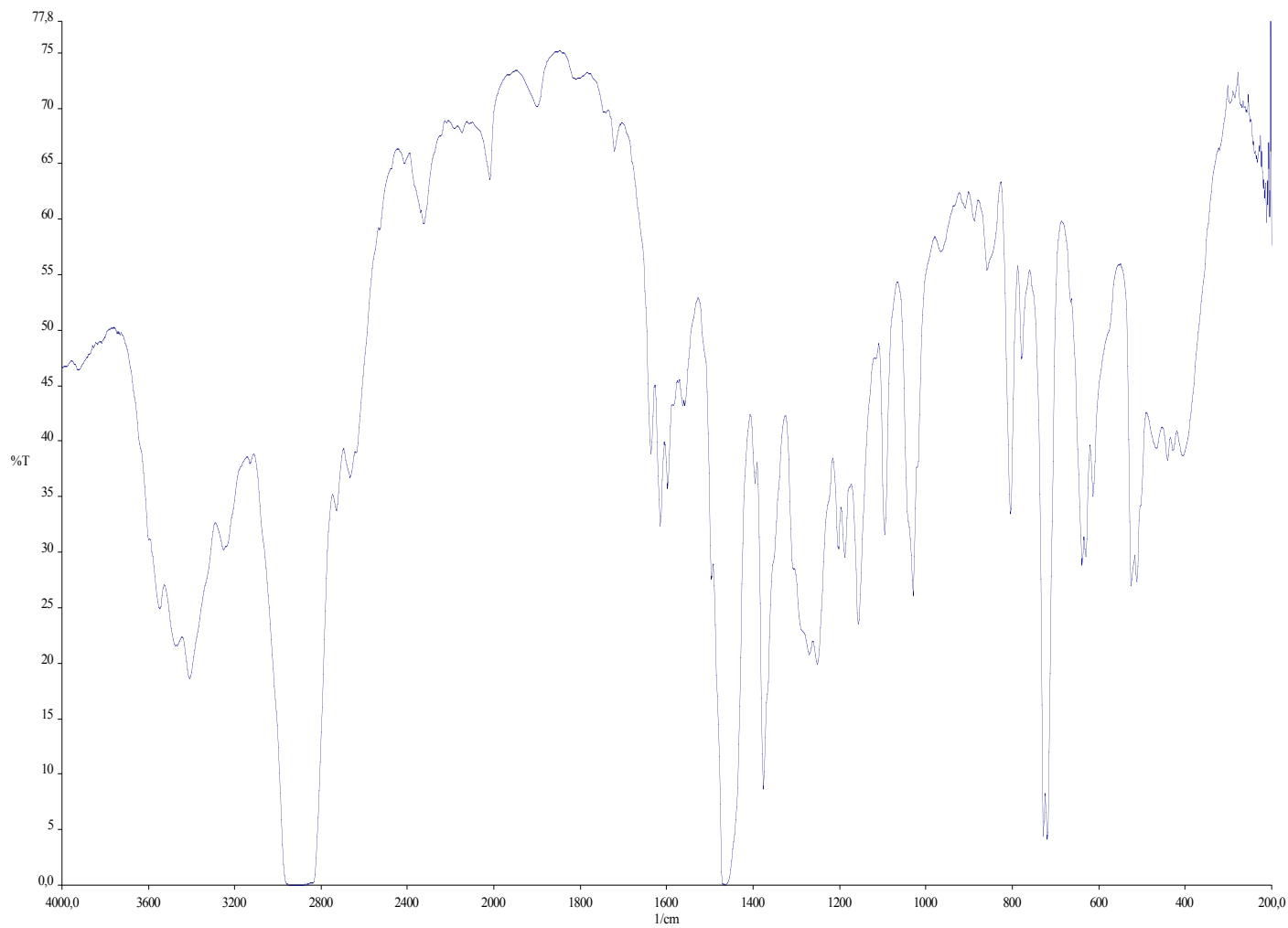
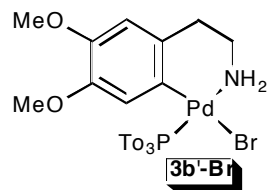
IR spectrum of 3b-Br (Nujol, cm⁻¹)



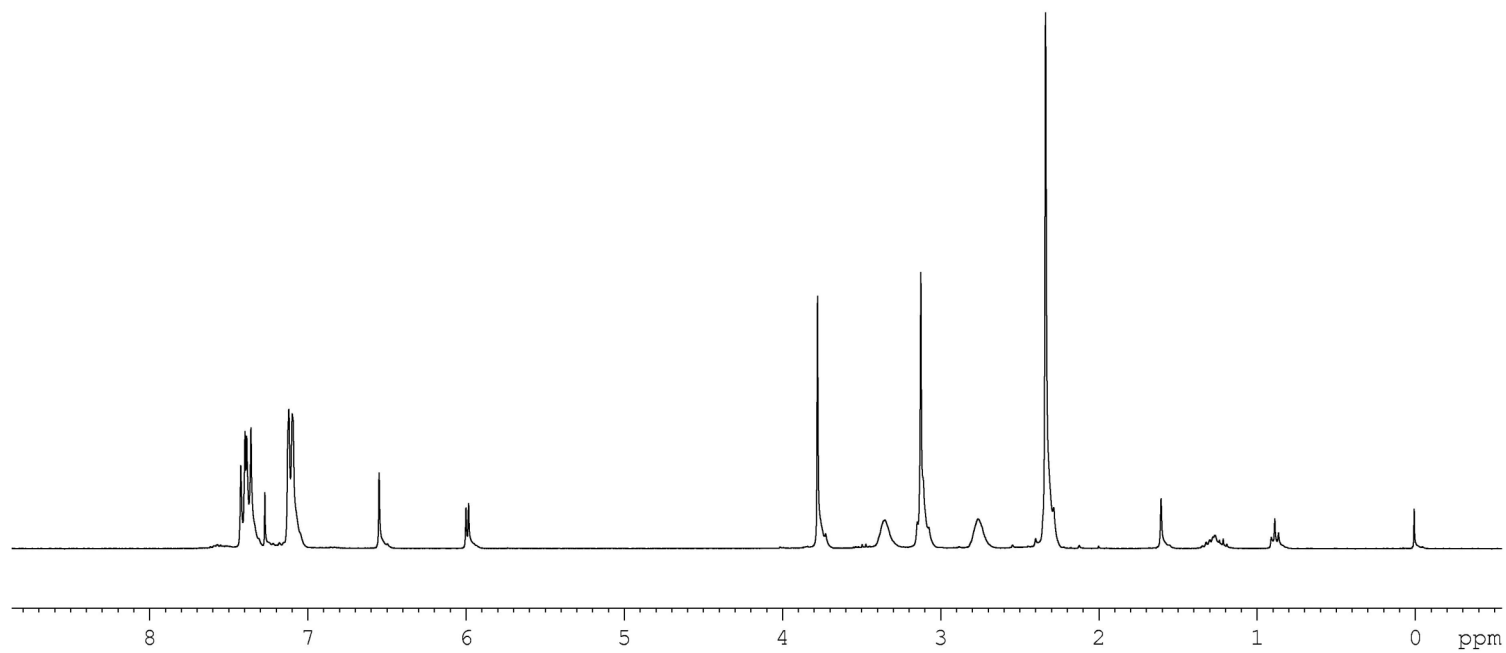
^1H NMR spectrum of **3b-Br** (CDCl_3 + TMS, 25 °C)



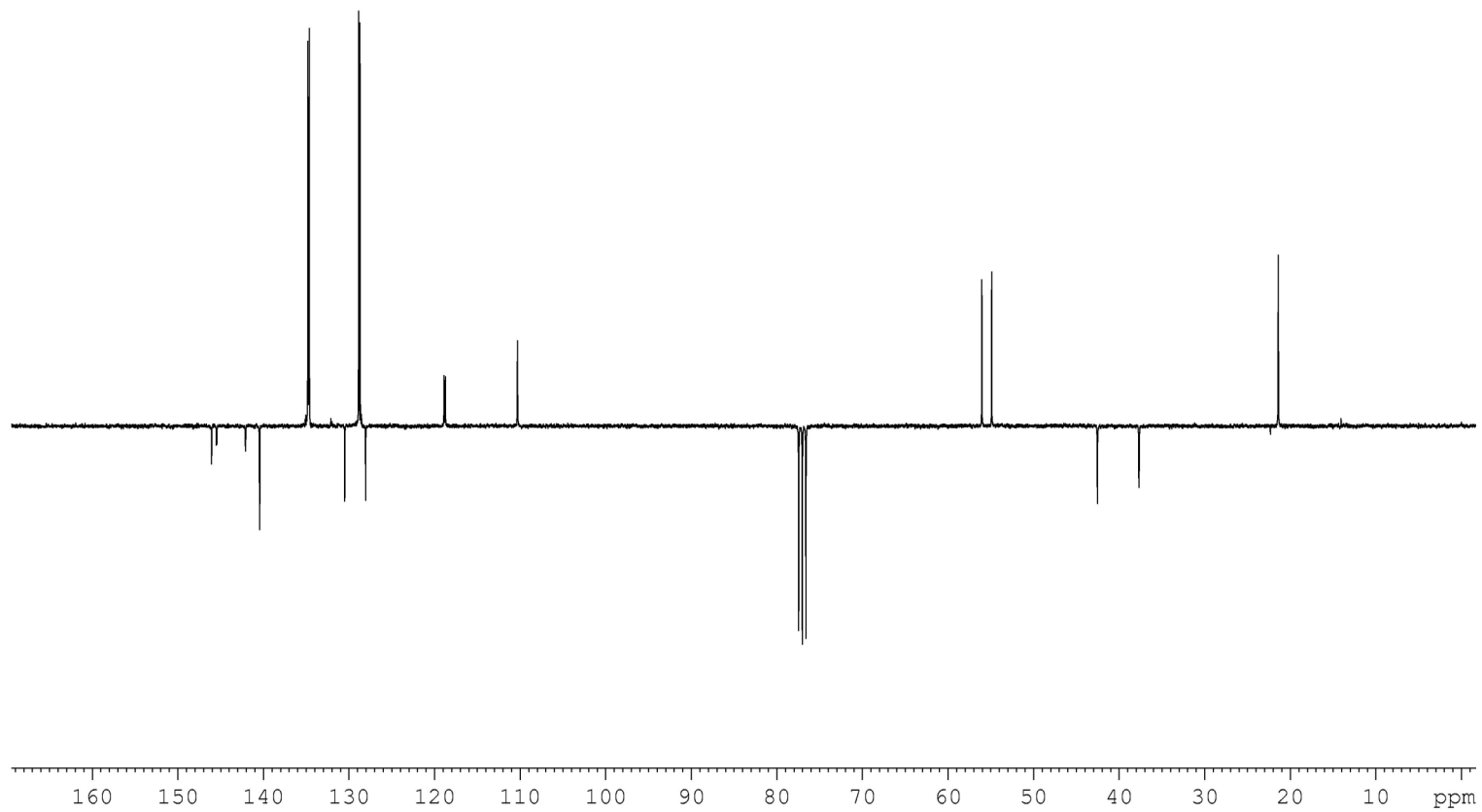
APT NMR spectrum of 3b-Br (CDCl₃ + TMS, 25 °C)



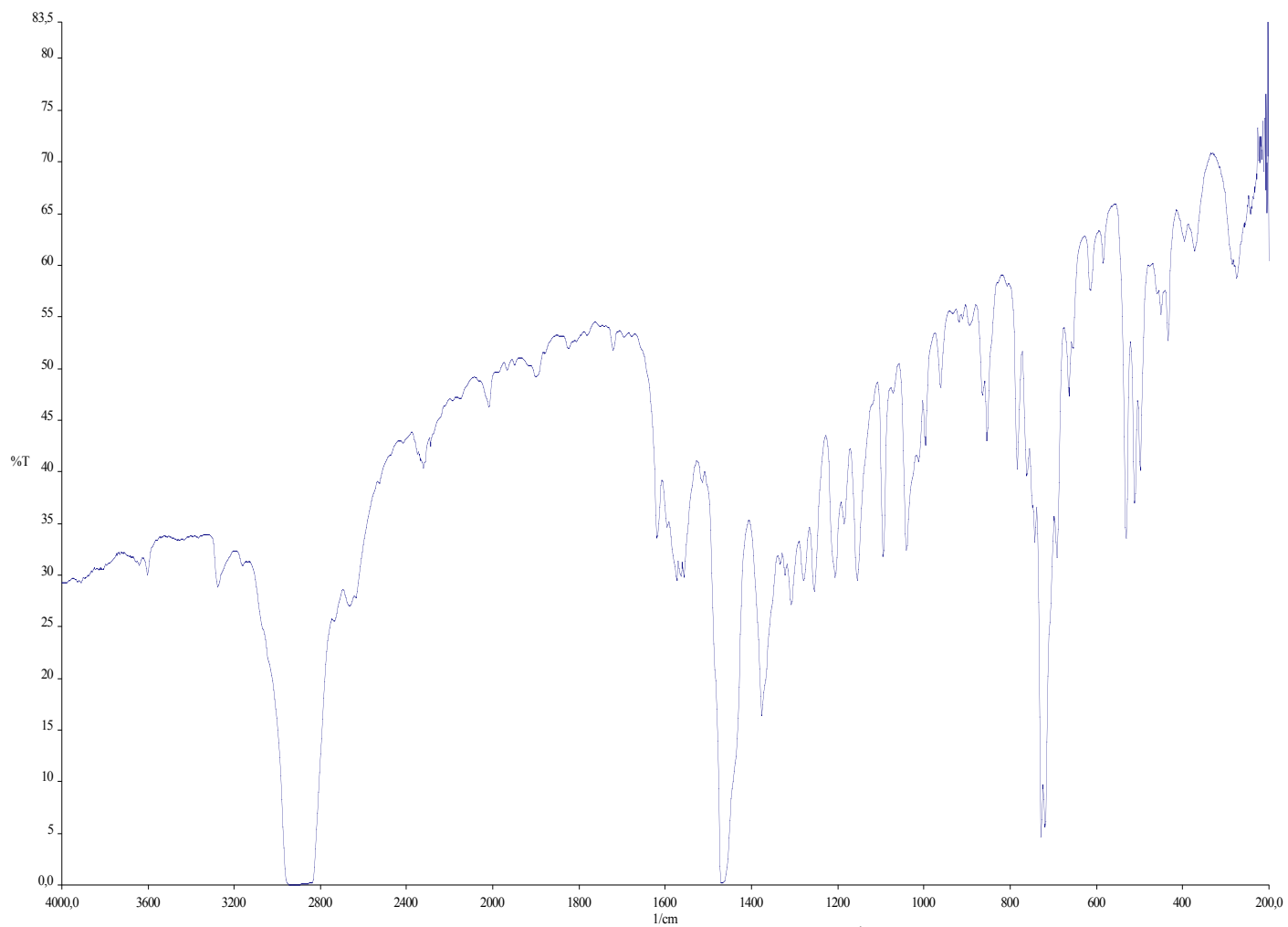
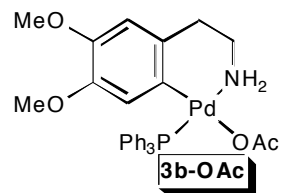
IR spectrum of 3b'-Br (Nujol, cm⁻¹)



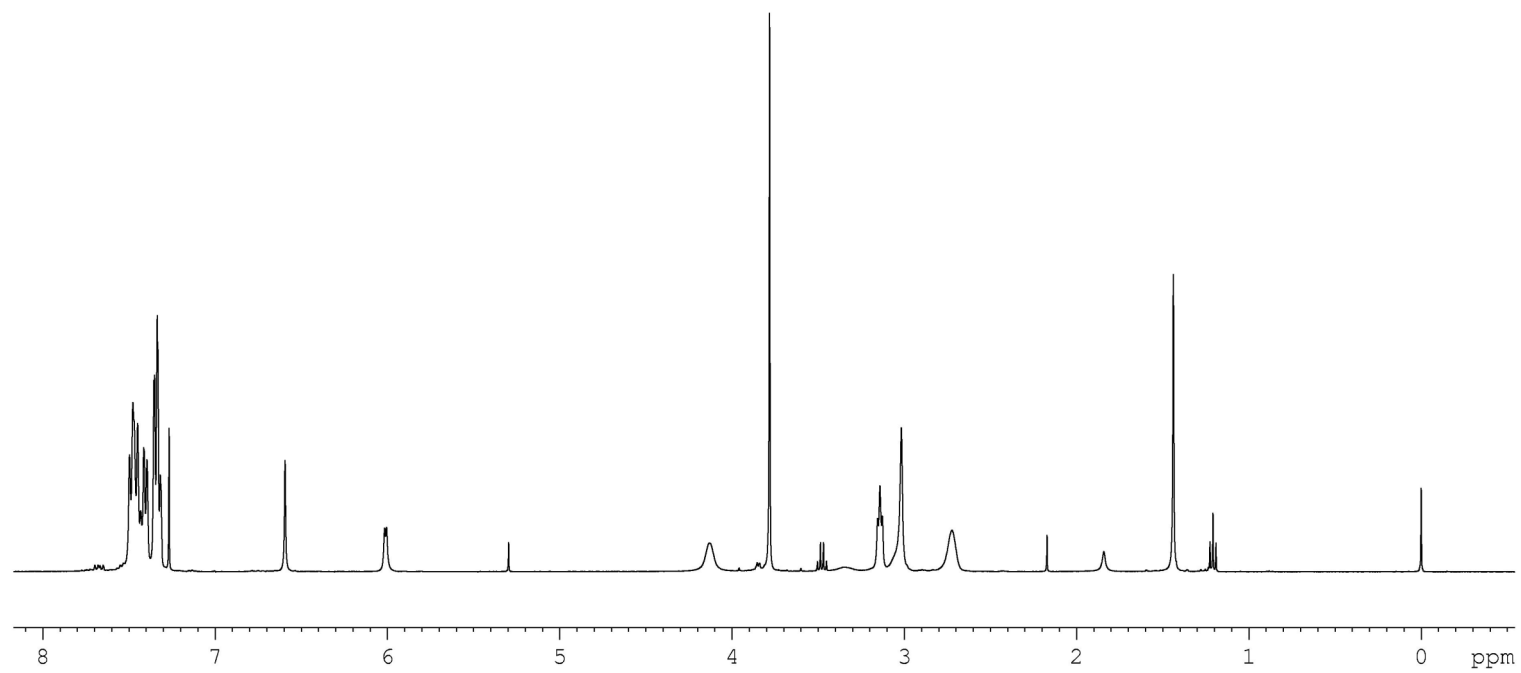
^1H NMR spectrum of 3'b-Br (CDCl₃ + TMS, 25 °C)



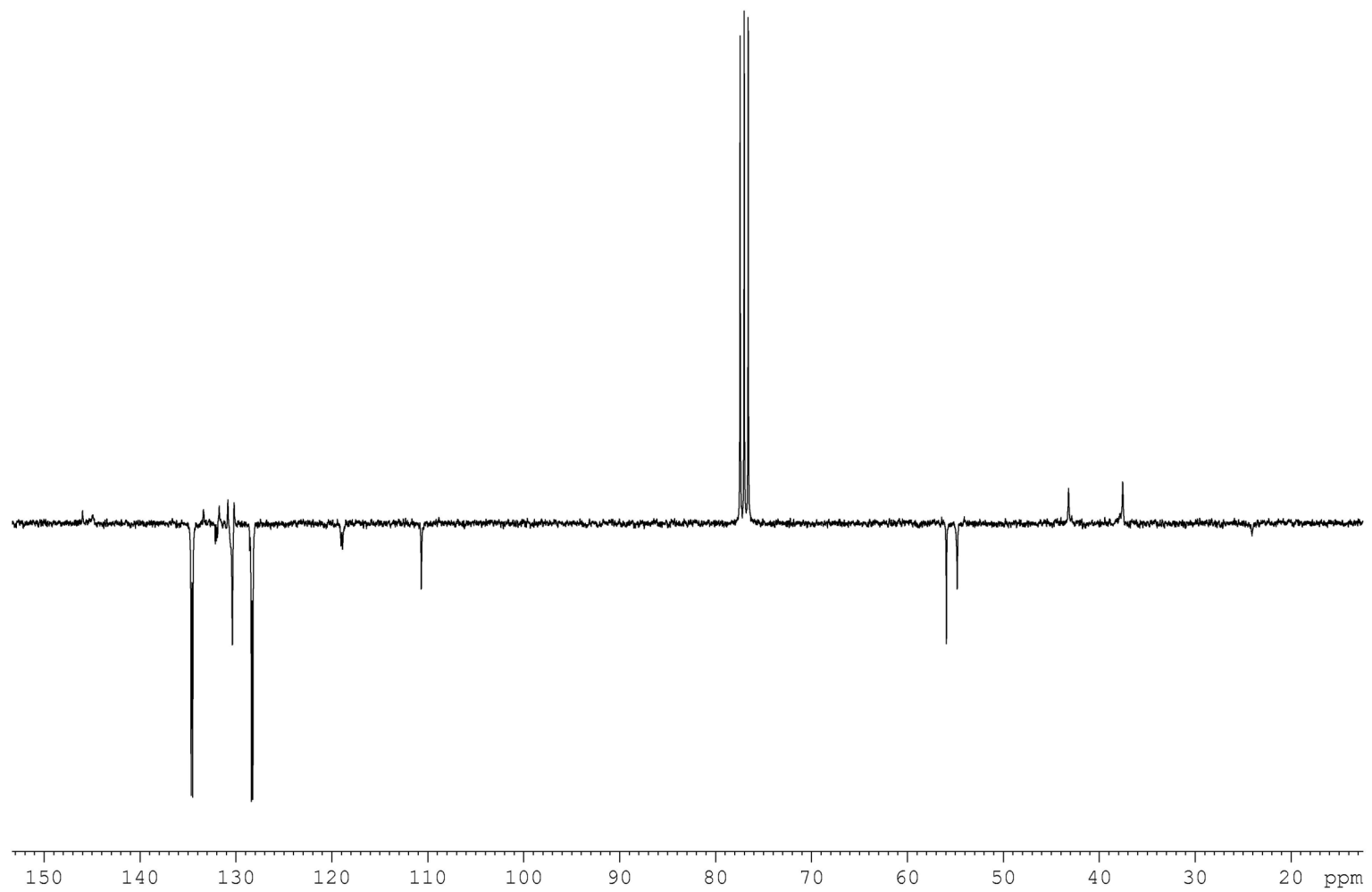
APT NMR spectrum of 3'b-Br (CDCl₃ + TMS, 25 °C)



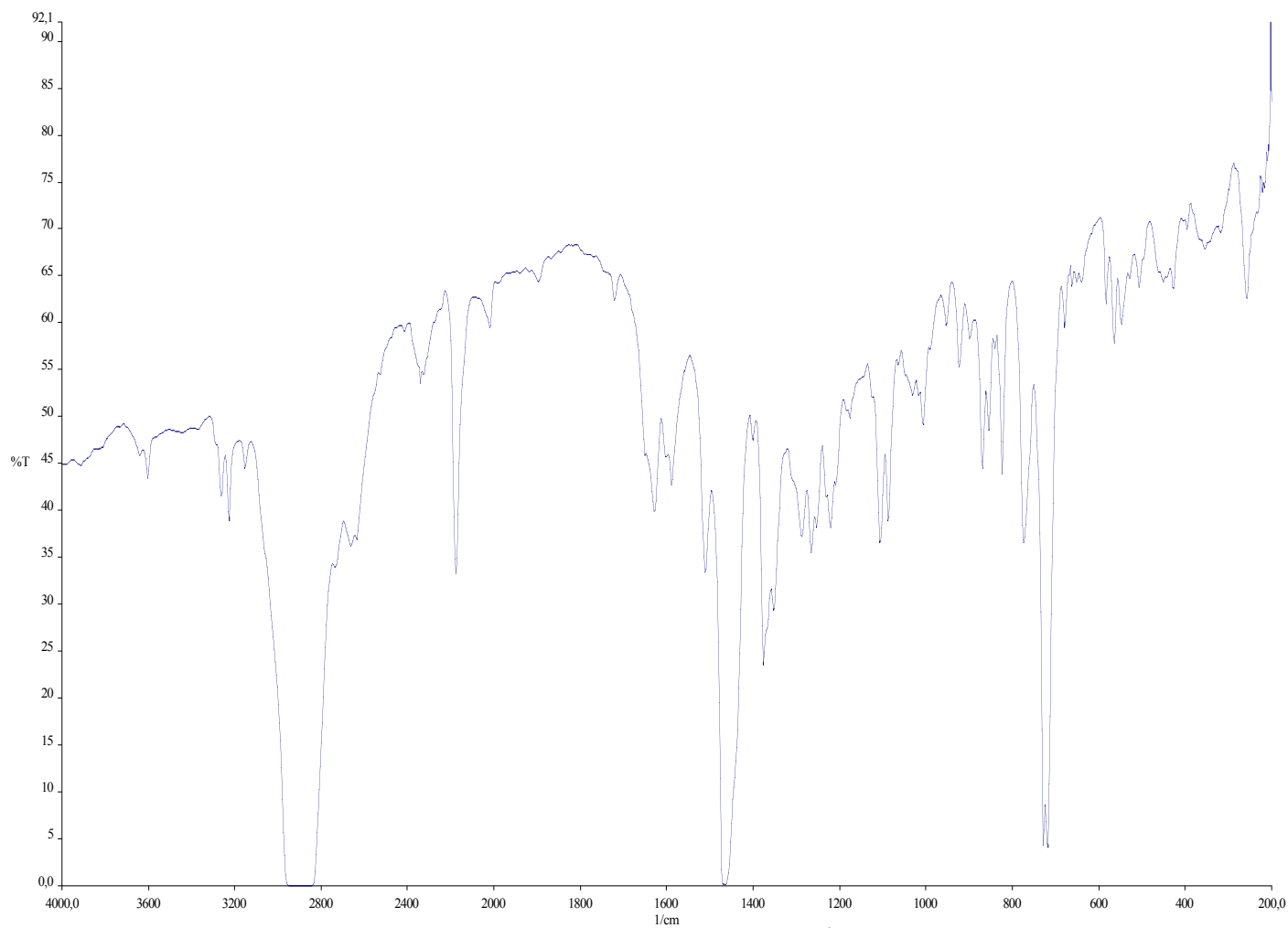
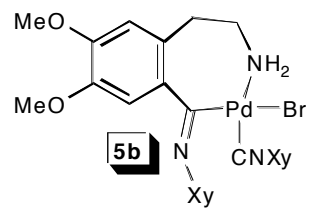
IR spectrum of 3b-OAc (Nujol, cm⁻¹)



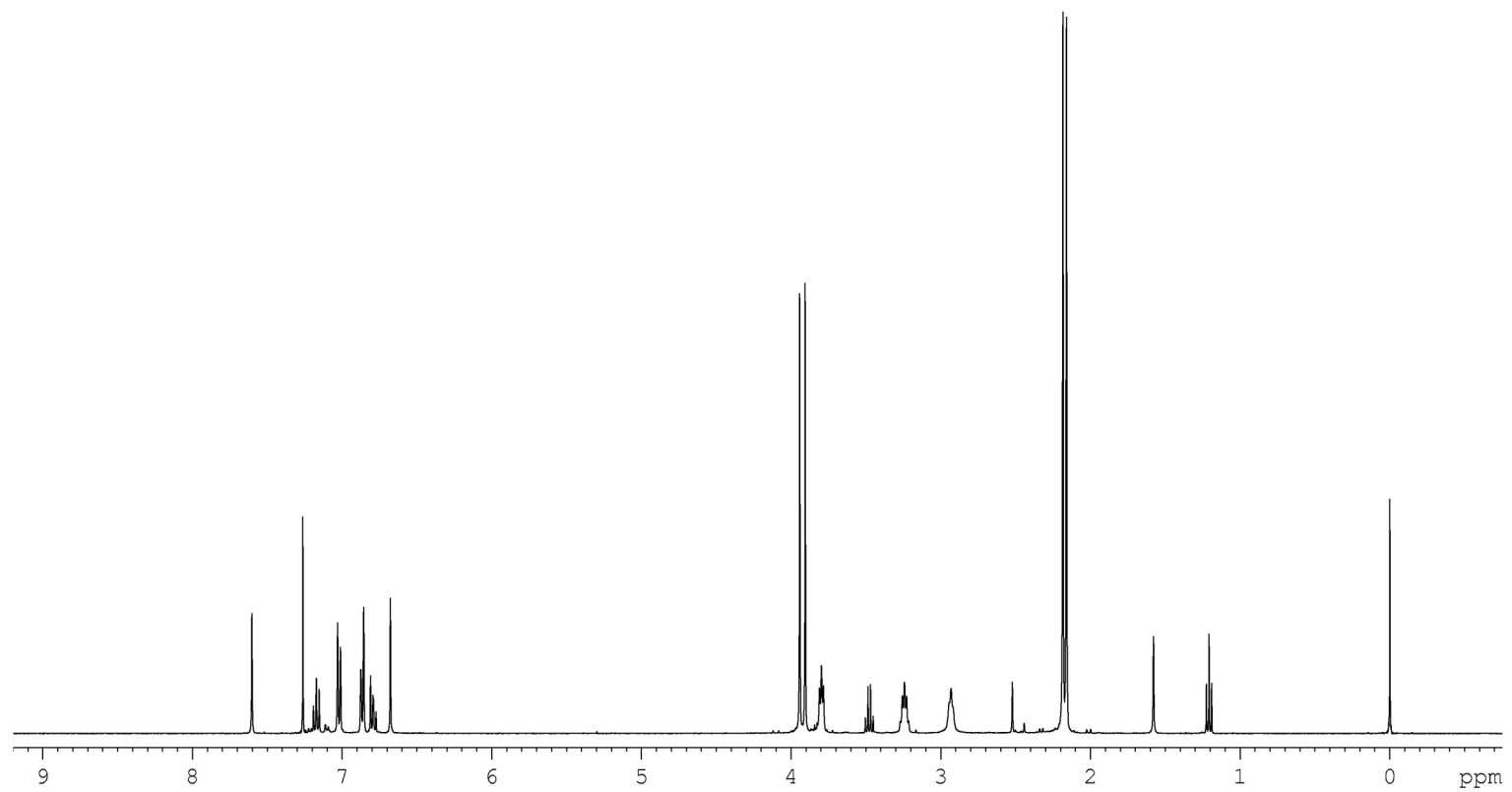
^1H NMR spectrum of 3b-OAc (CDCl_3 + TMS, 25 °C)



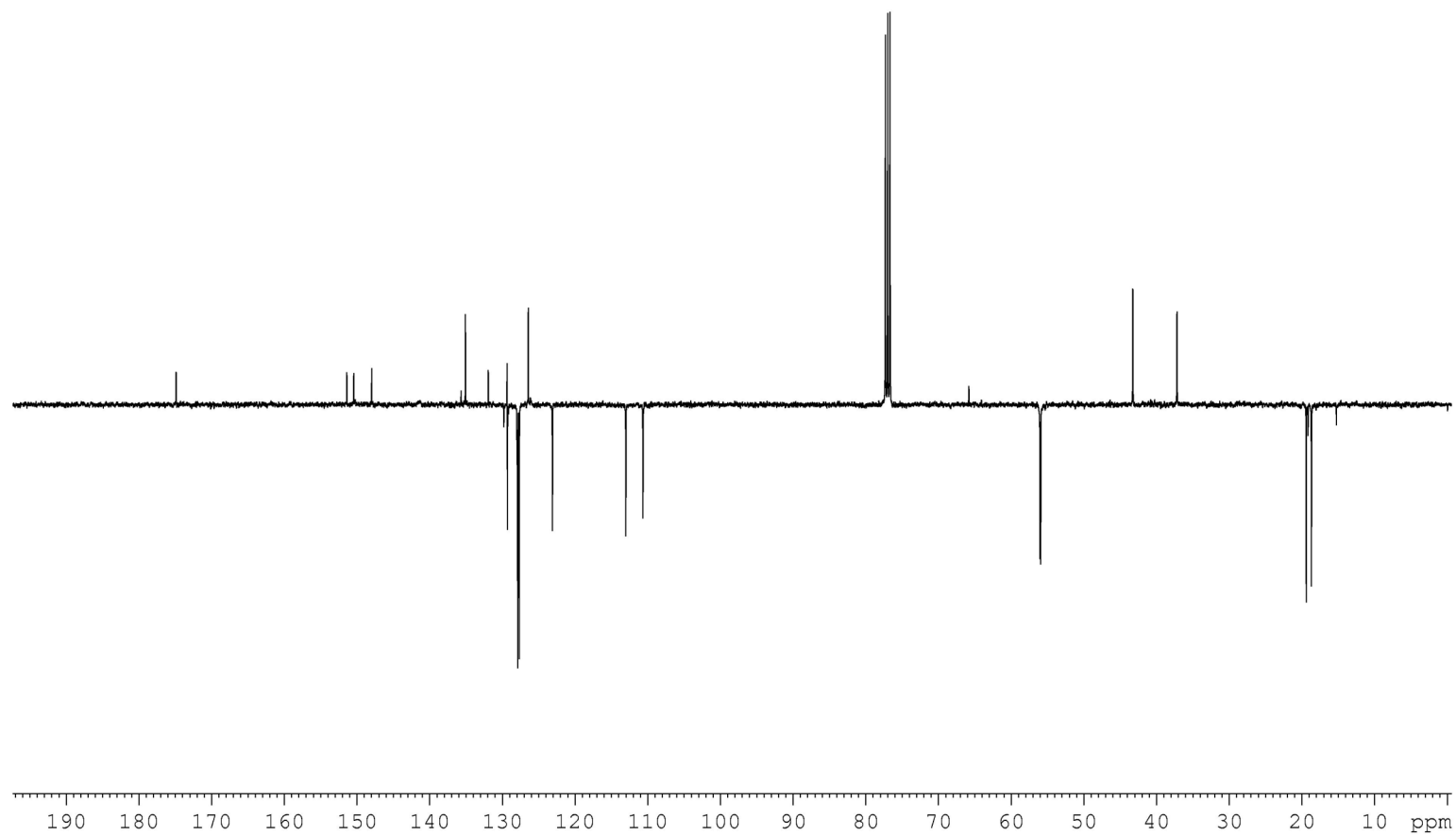
APT NMR spectrum of 3b-OAc (CDCl₃ + TMS, 25 °C)



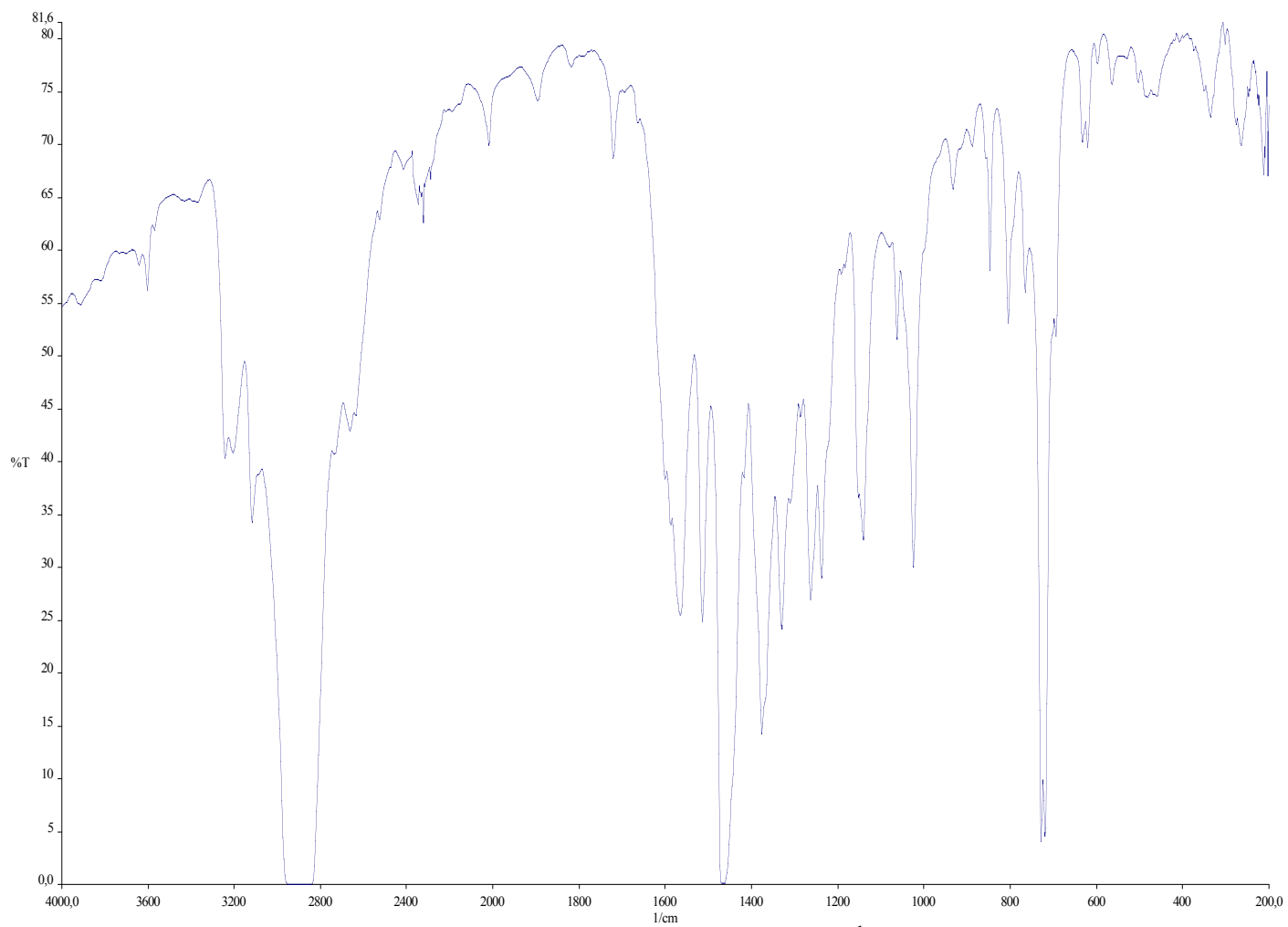
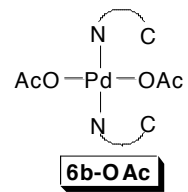
IR spectrum of 5b (Nujol, cm⁻¹)



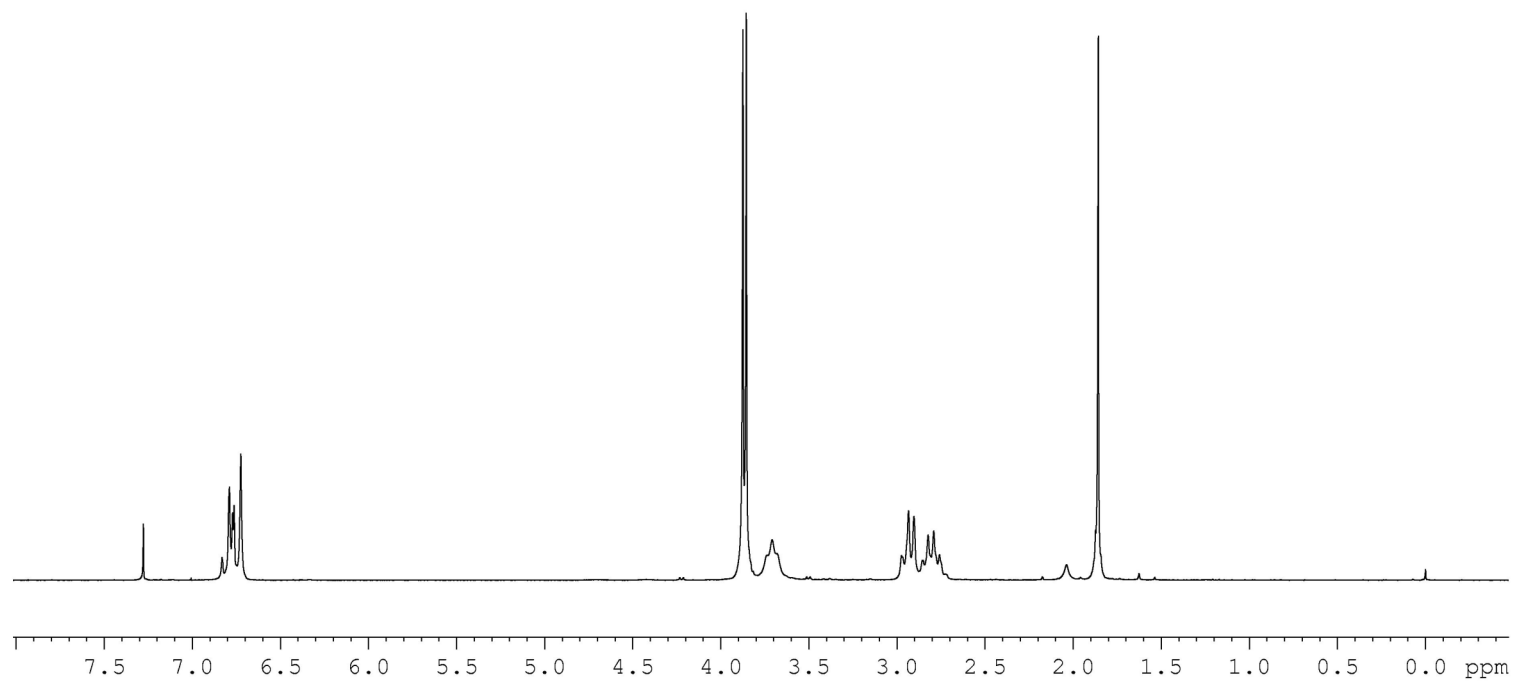
^1H NMR spectrum of **5b ($\text{CDCl}_3 + \text{TMS}$, $25\text{ }^\circ\text{C}$)**



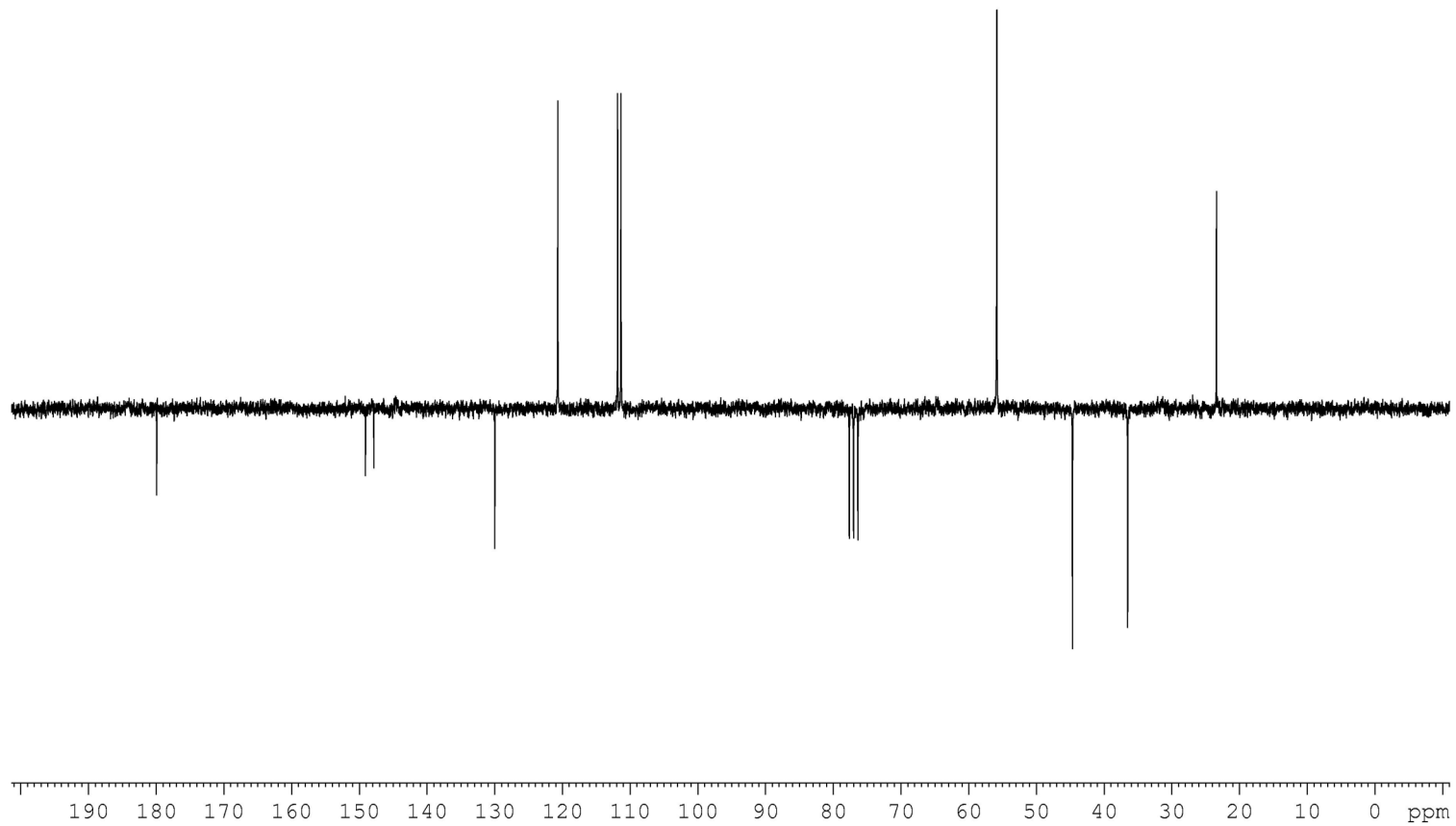
APT NMR spectrum of 5b (CDCl₃ + TMS, 25 °C)



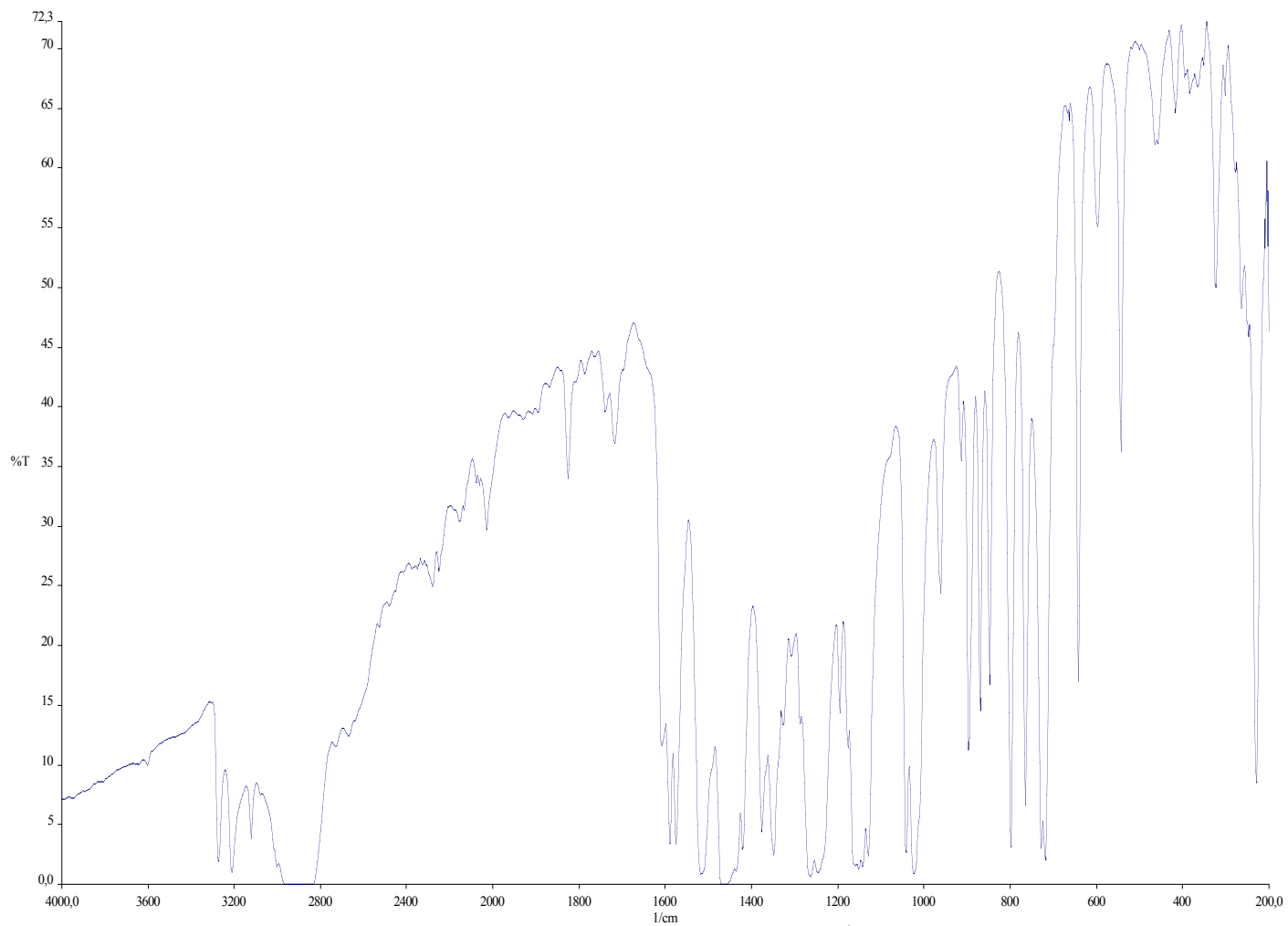
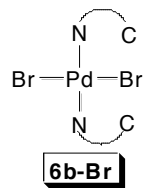
IR spectrum of 6b-OAc (Nujol, cm⁻¹)



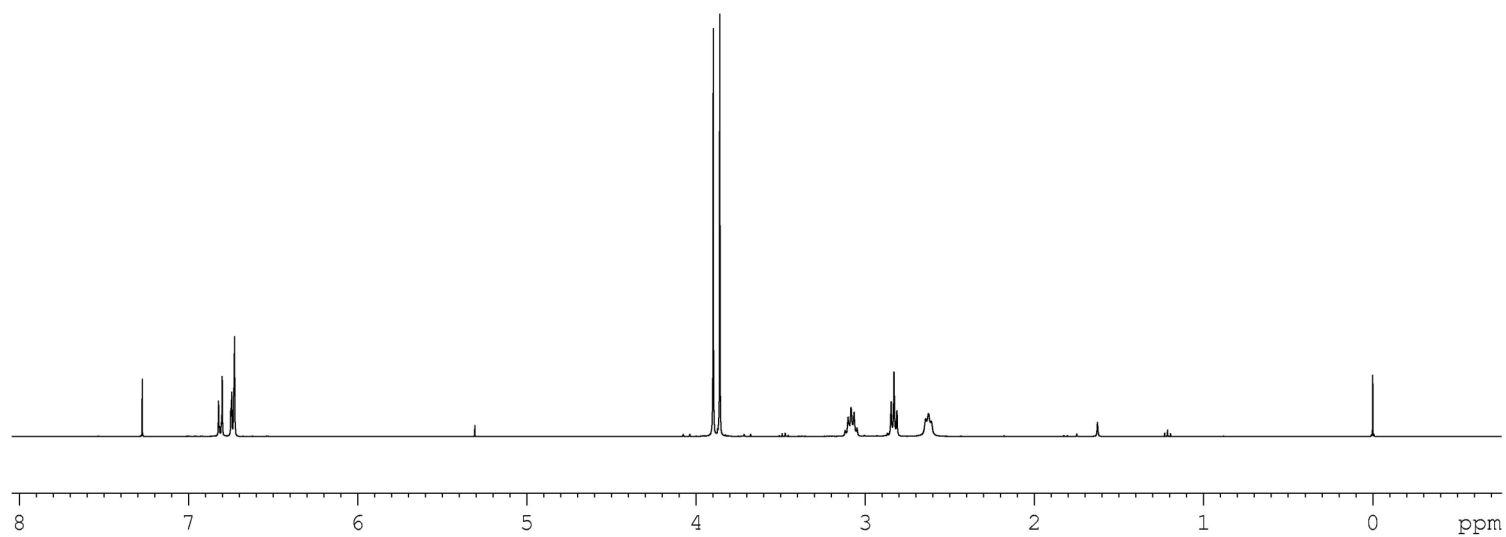
^1H NMR spectrum of 6b-OAc (CDCl₃ + TMS, 25 °C)



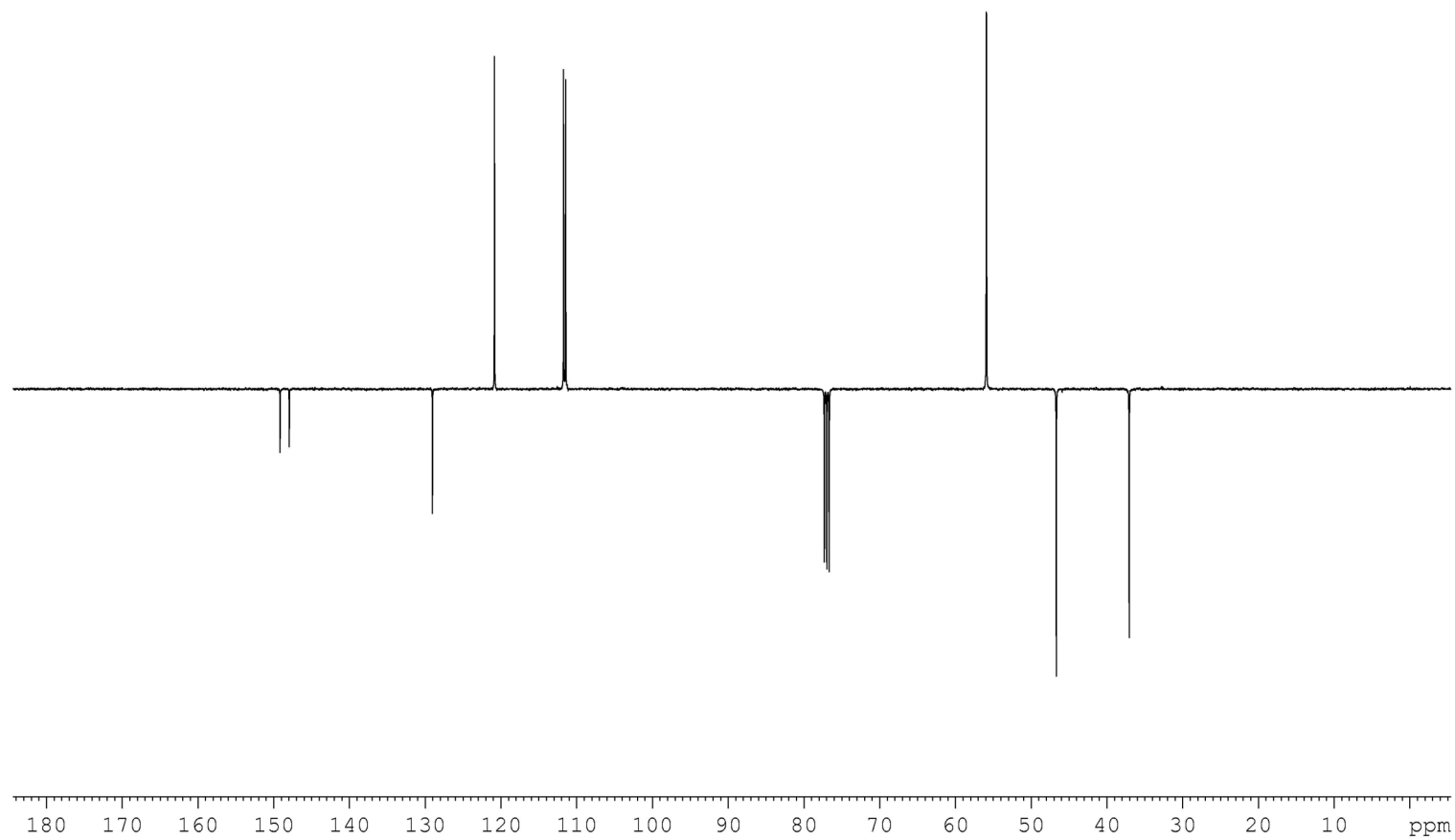
APT NMR spectrum of 6b-OAc (CDCl₃ + TMS, 25 °C)



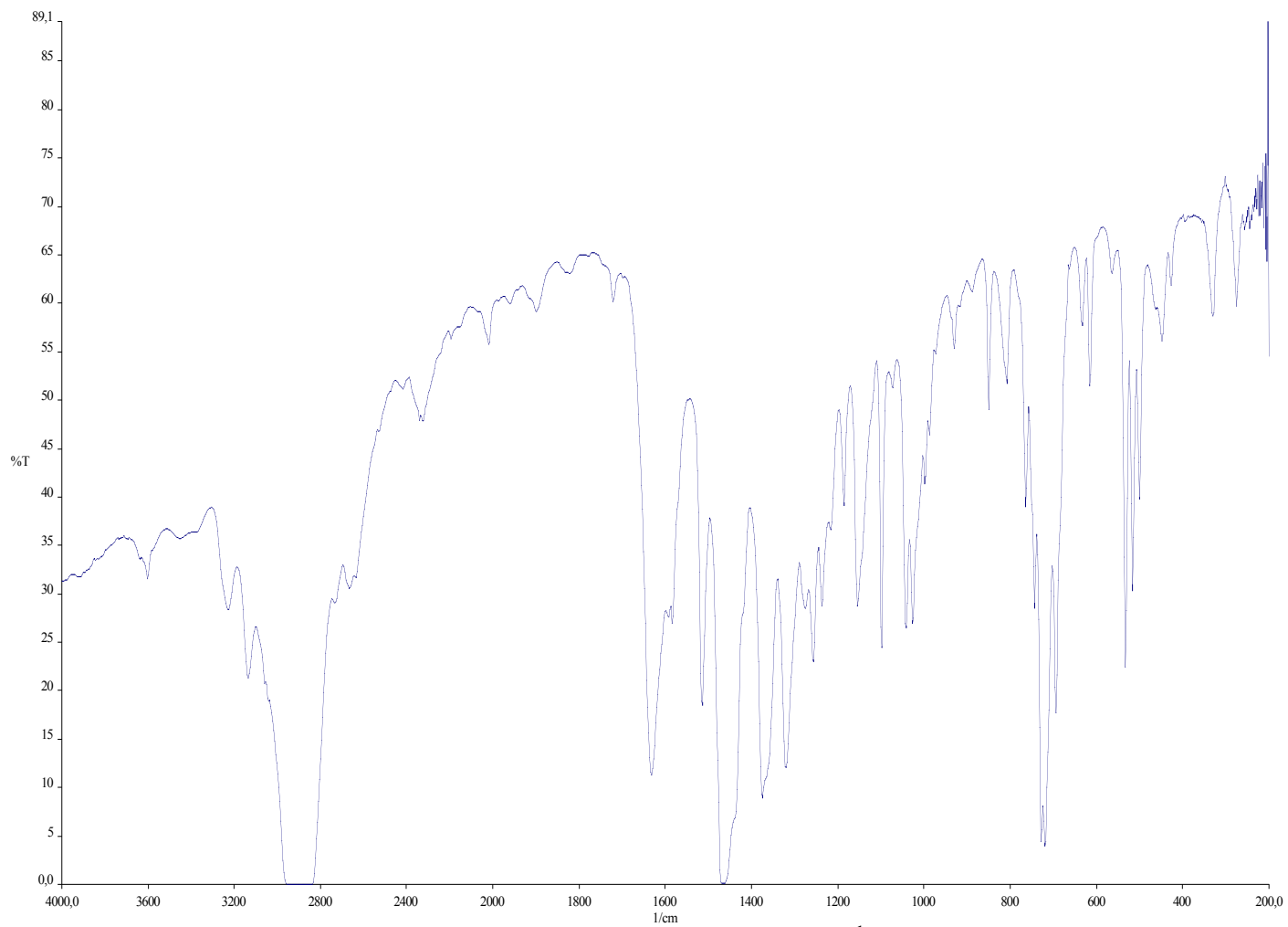
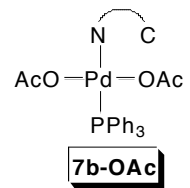
IR spectrum of 6b-Br (Nujol, cm⁻¹)



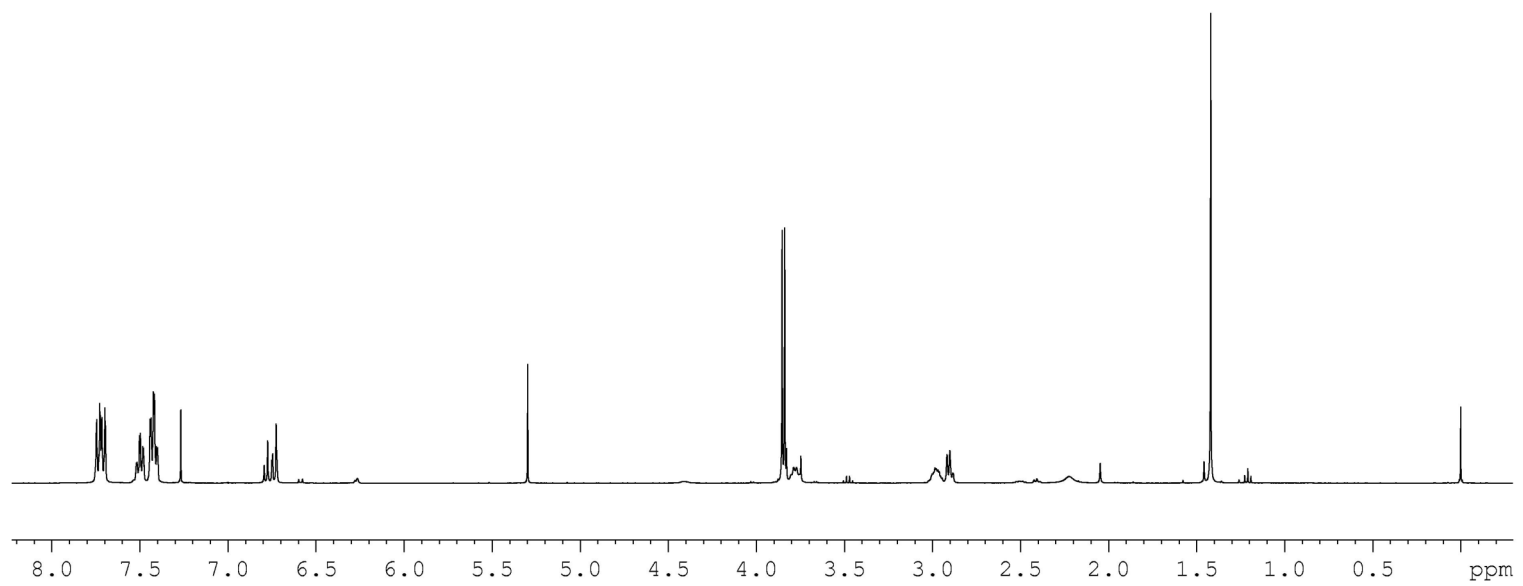
^1H NMR spectrum of **6b-Br** (CDCl_3 + TMS, 25 °C)



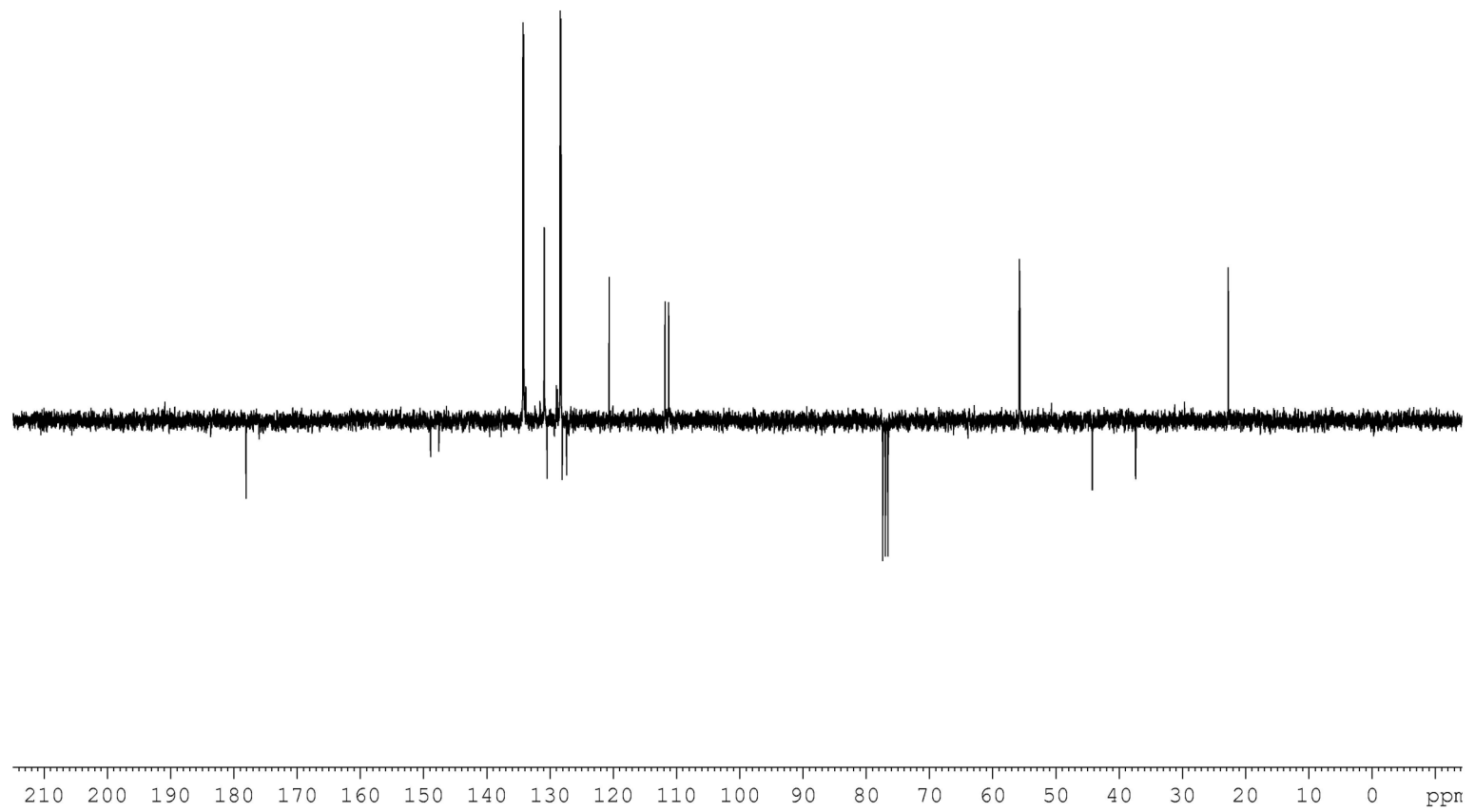
APT NMR spectrum of 6b-Br (CDCl₃ + TMS, 25 °C)



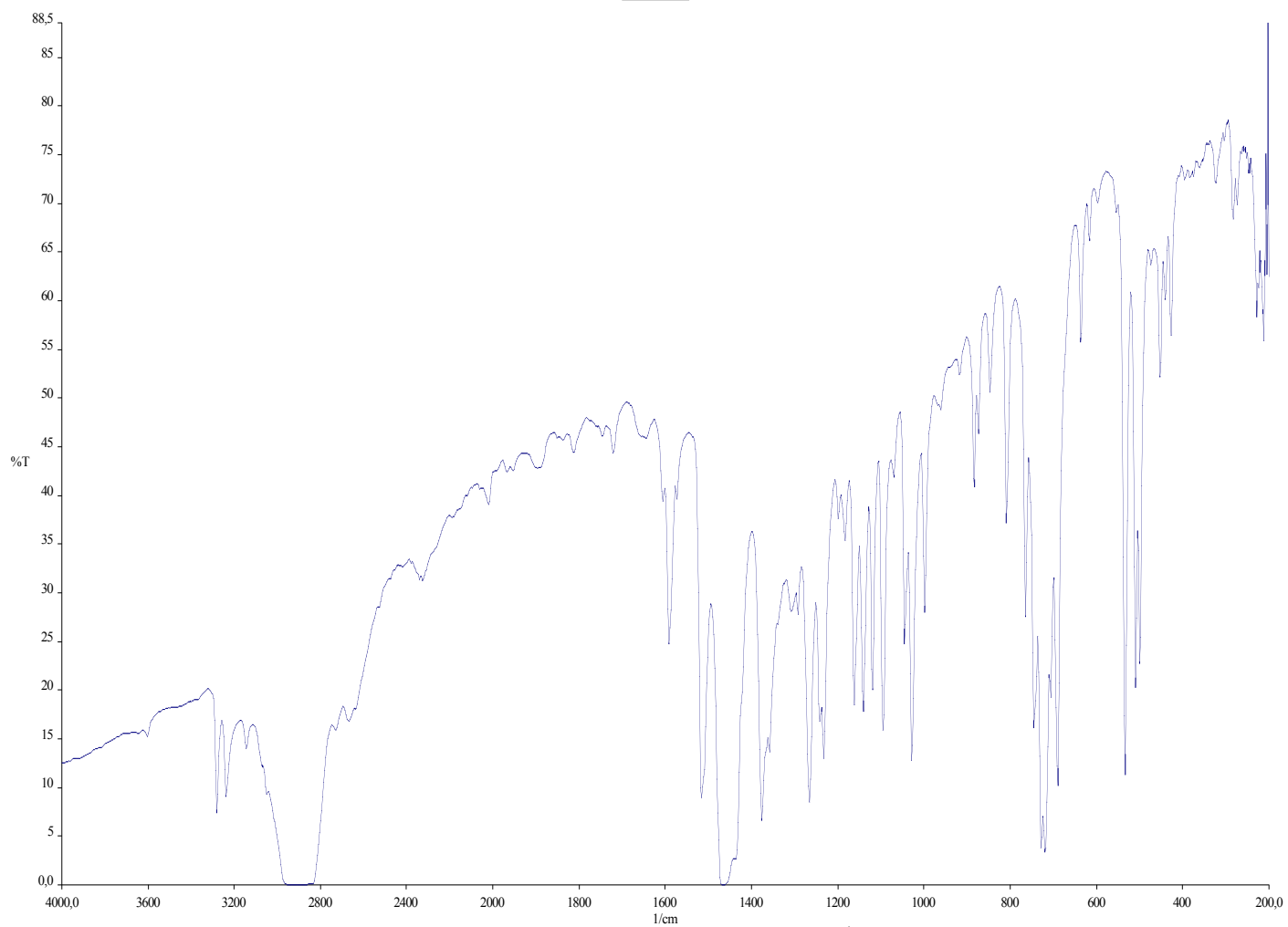
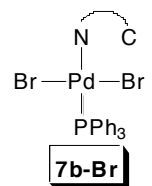
IR spectrum of 7b-OAc (Nujol, cm^{-1})



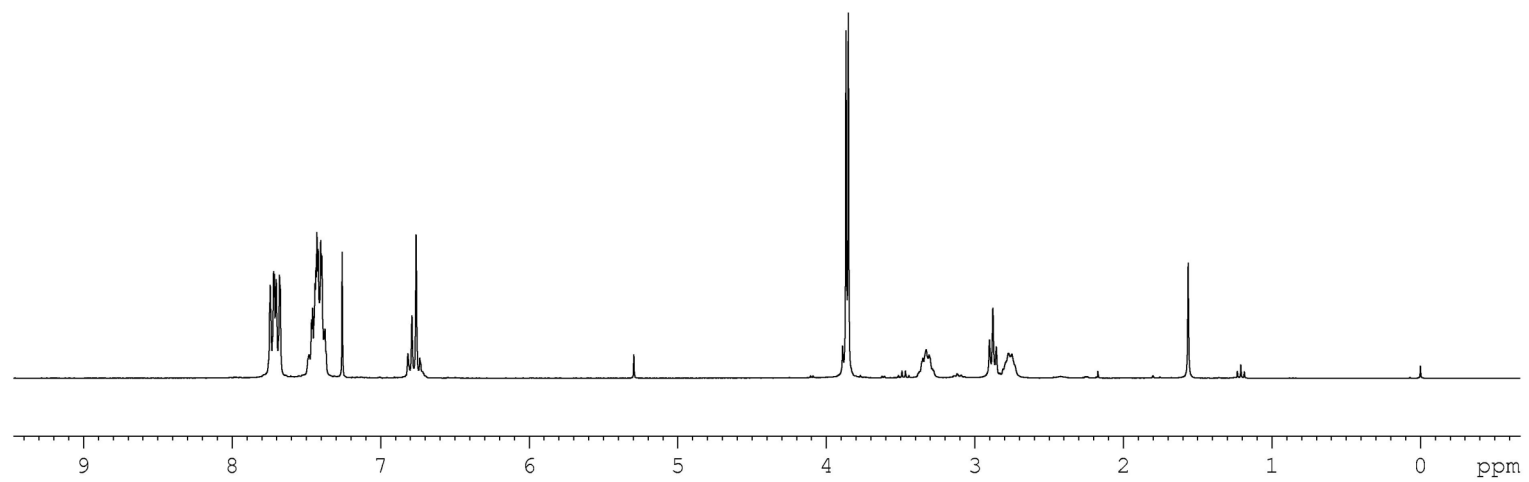
^1H NMR spectrum of 7b-OAc (CDCl_3 + TMS, 25 °C)



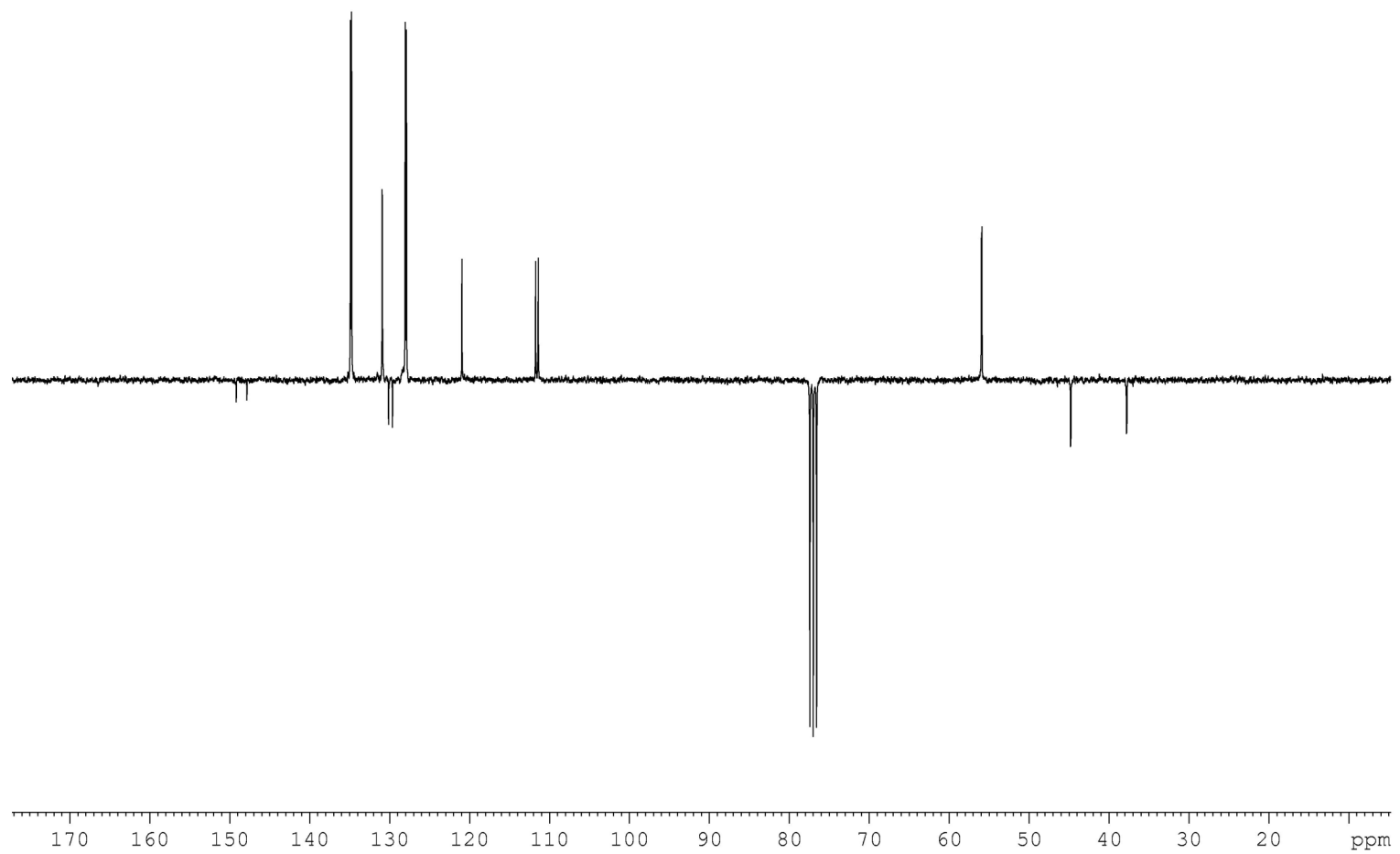
APT NMR spectrum of 7b-OAc (CDCl₃ + TMS, 25 °C)



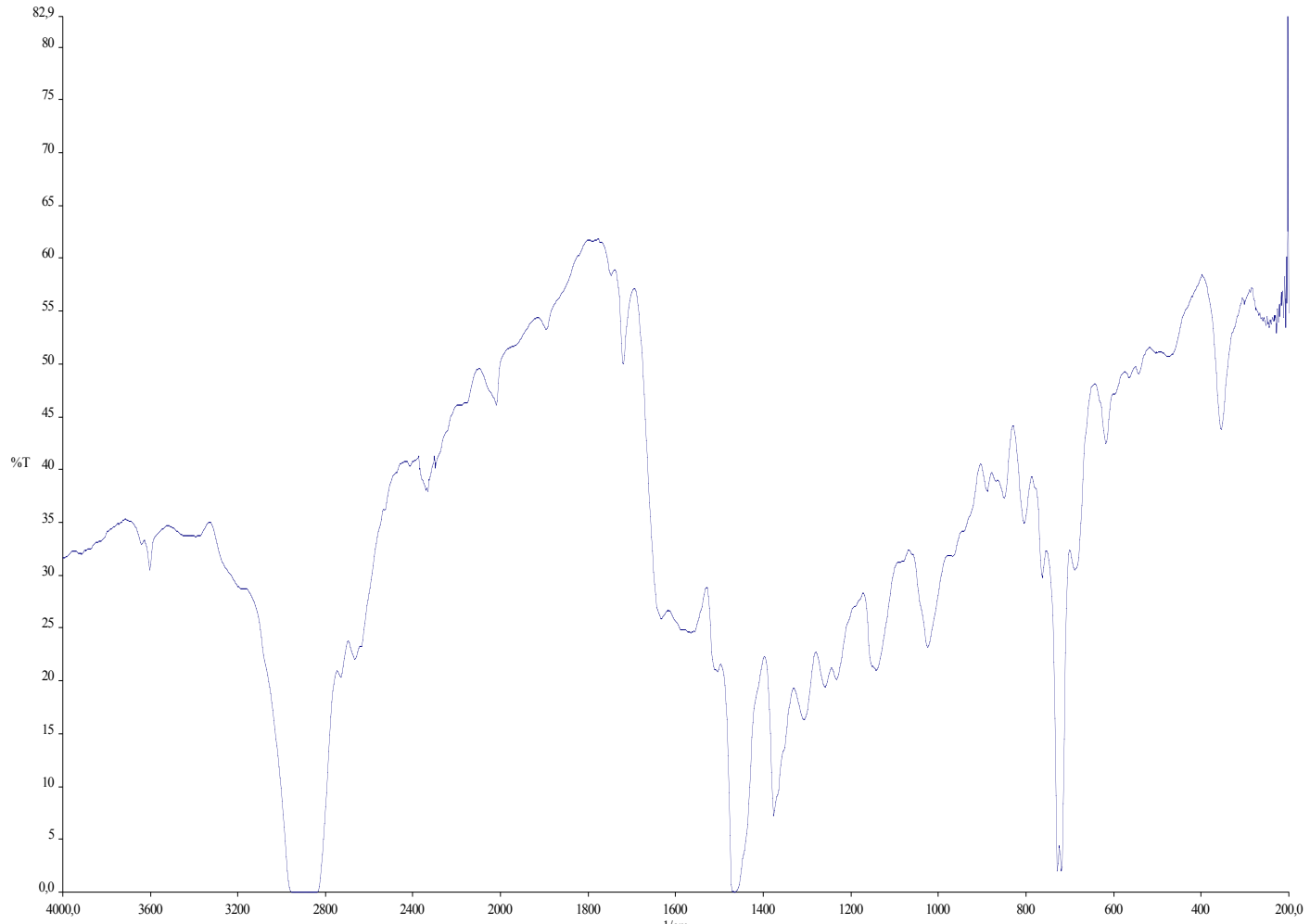
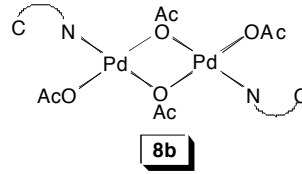
IR spectrum of 7b-Br (Nujol, cm⁻¹)



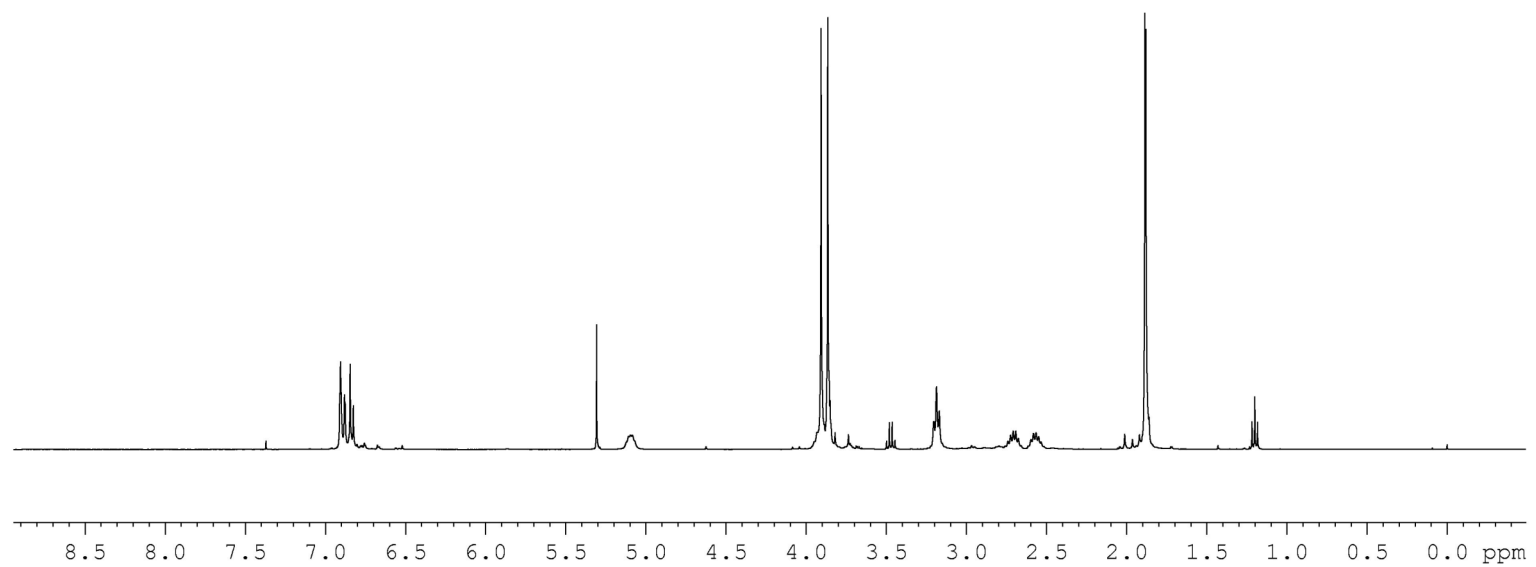
^1H NMR spectrum of 7b-Br (CDCl_3 + TMS, 25 °C)



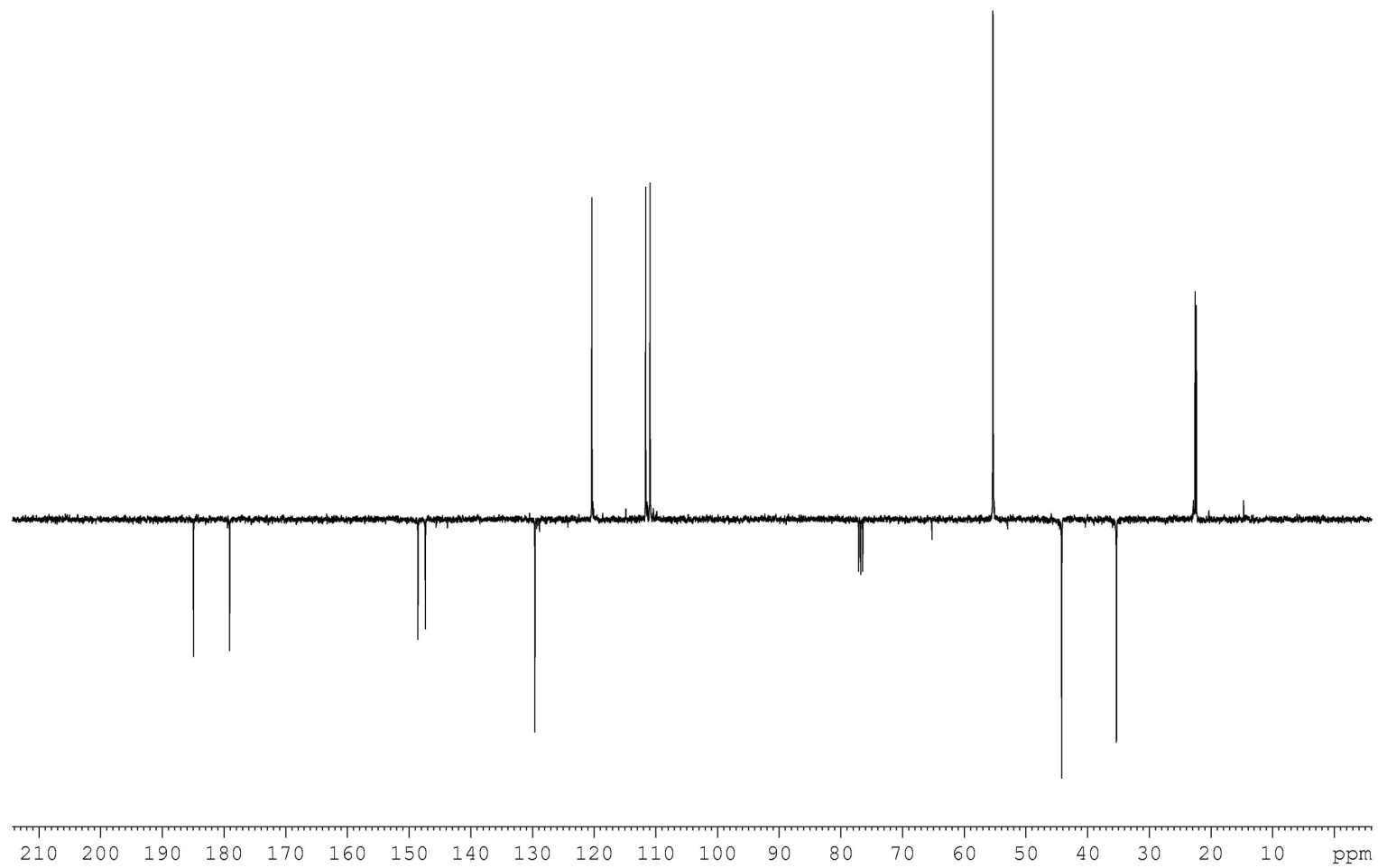
APT NMR spectrum of 7b-Br (CDCl₃ + TMS, 25 °C)



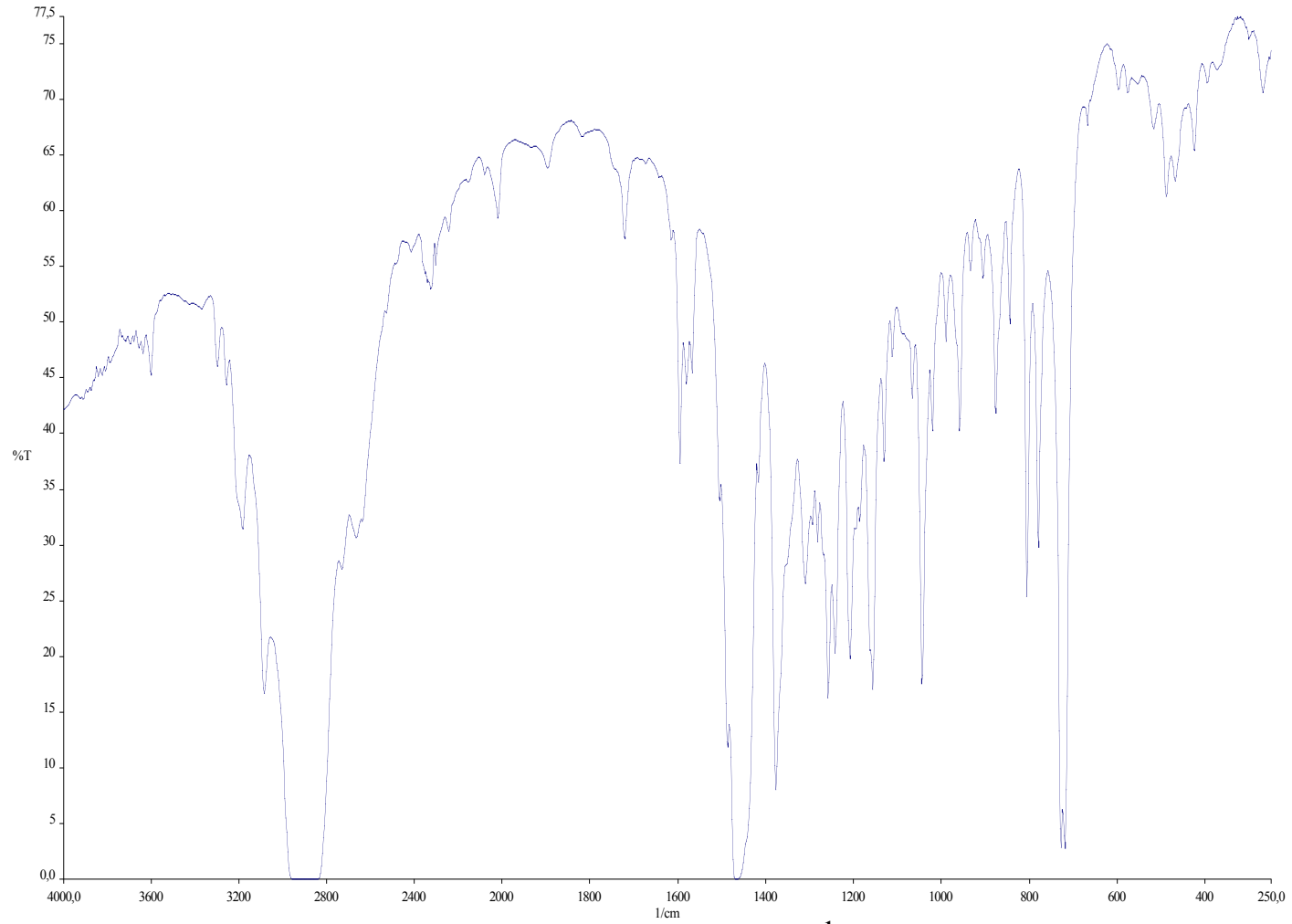
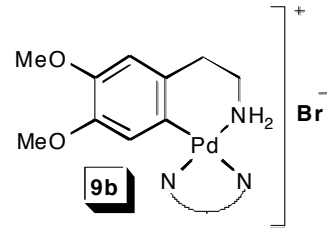
IR spectrum of 8b (Nujol, cm⁻¹)



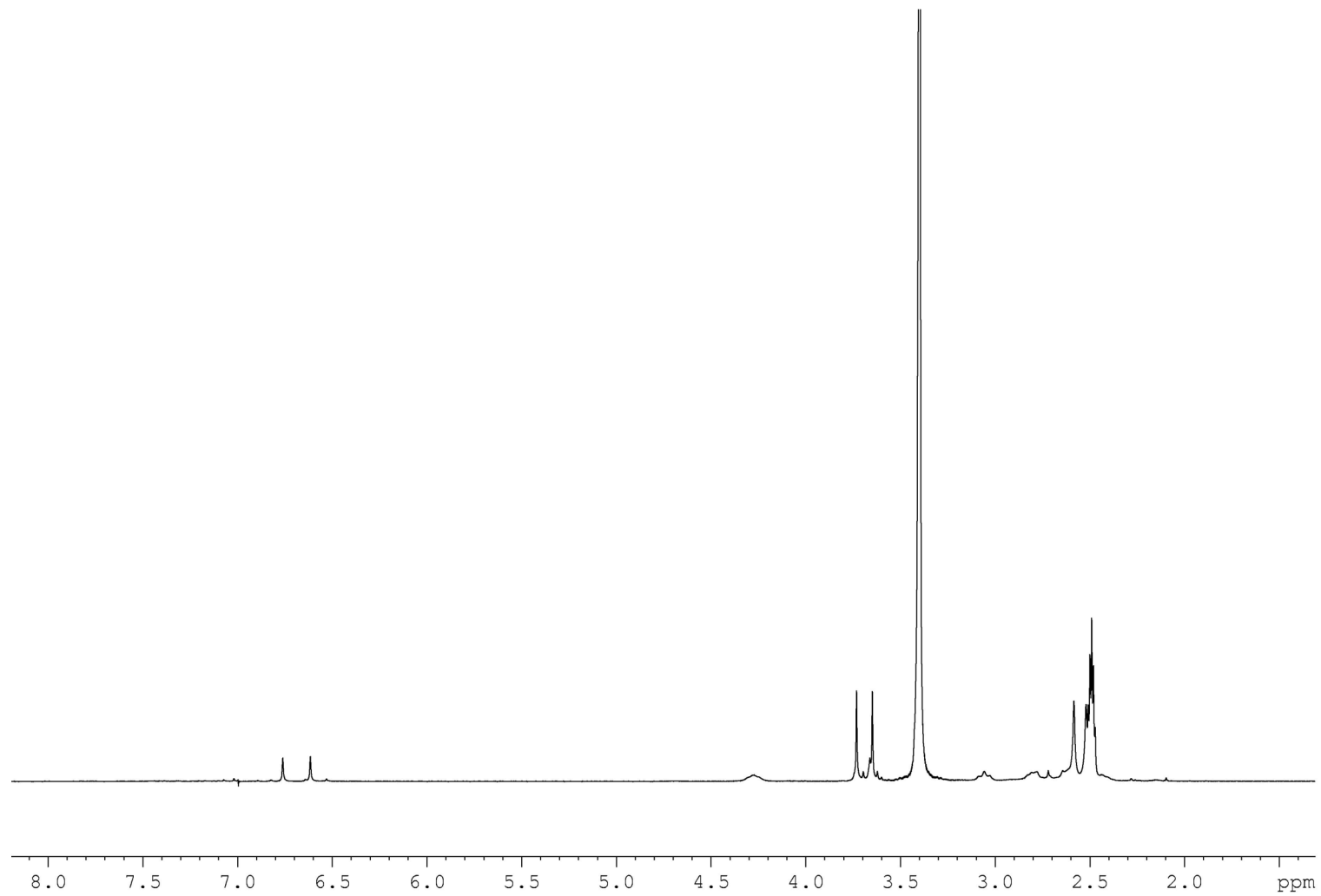
^1H NMR spectrum of **8b ($\text{CDCl}_3 + \text{TMS}$, 25 °C)**



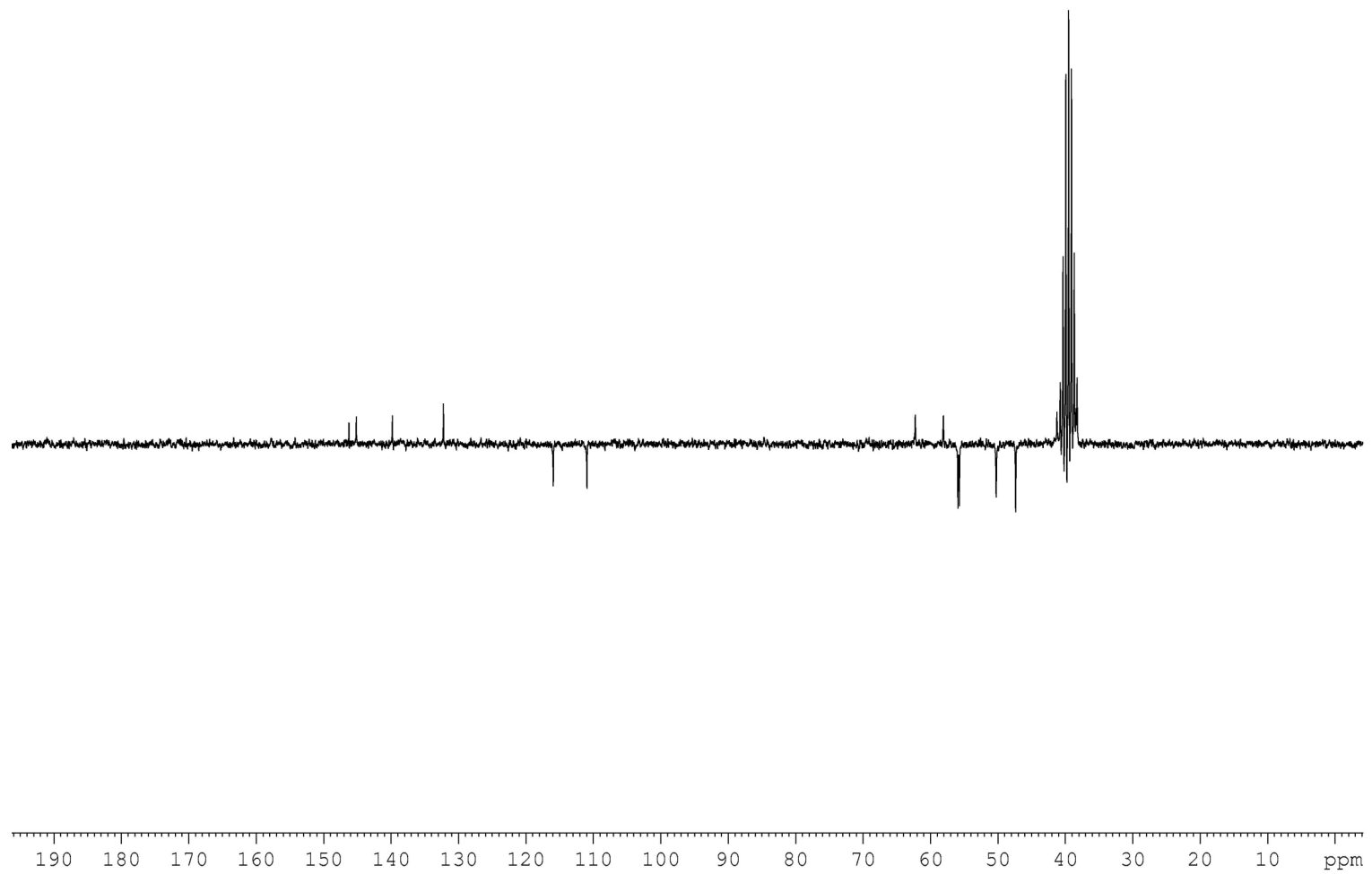
APT NMR spectrum of 8b (CDCl₃ + TMS, 25 °C)



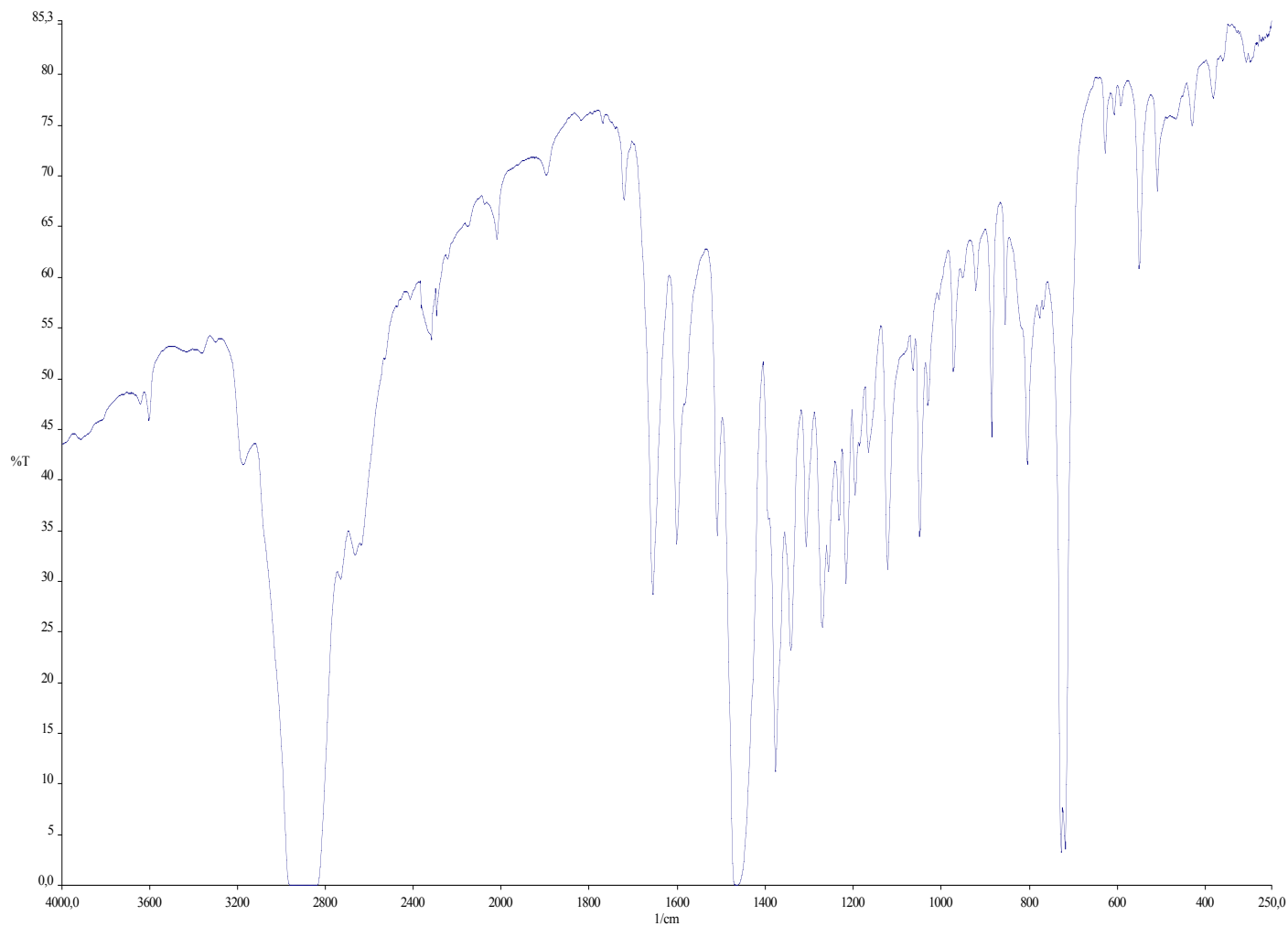
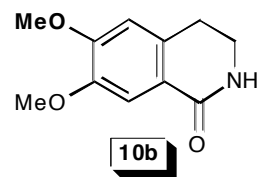
IR spectrum of **9b** (Nujol, cm⁻¹)



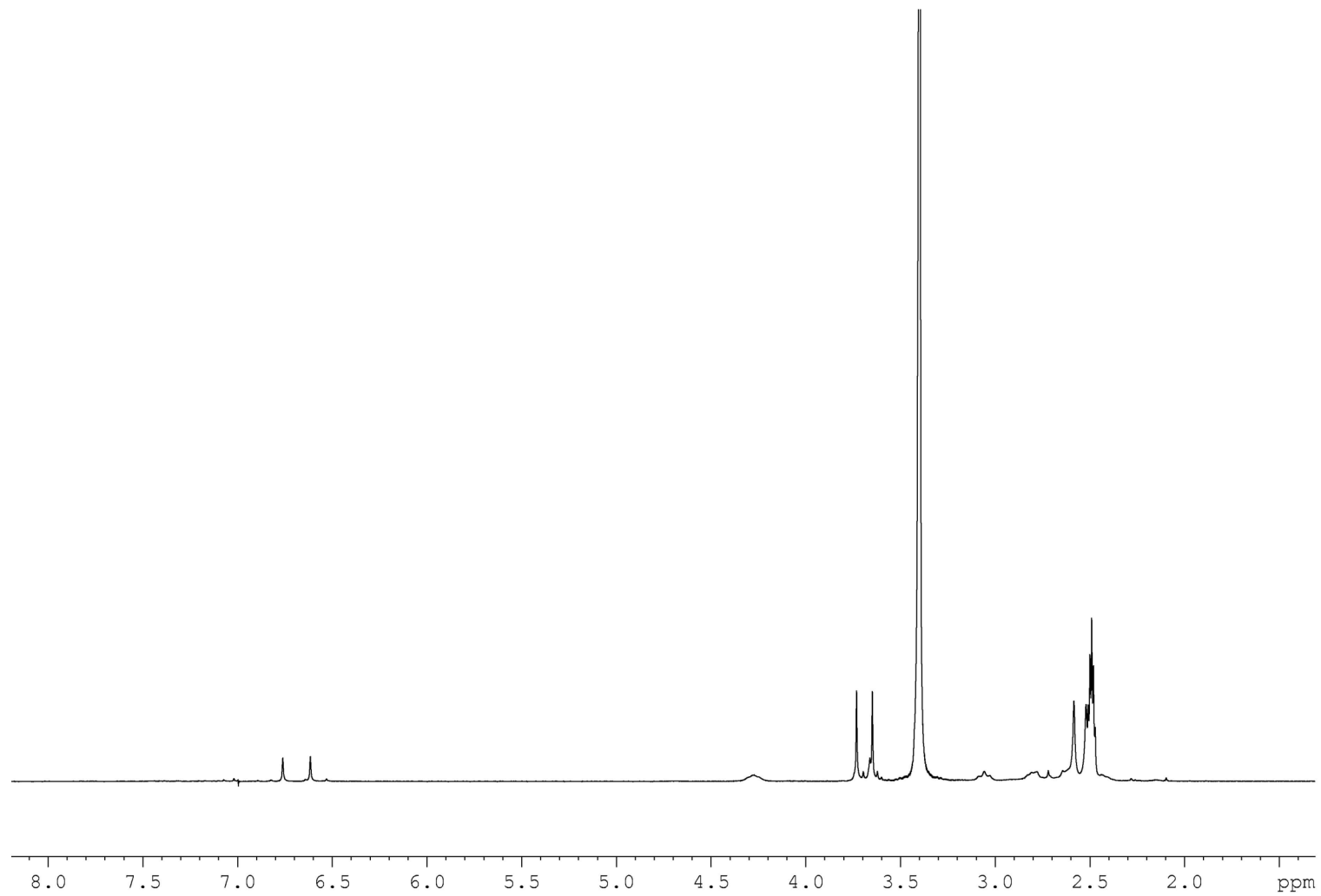
^1H NMR spectrum of 9b (DMSO- d_6 , 25 °C)



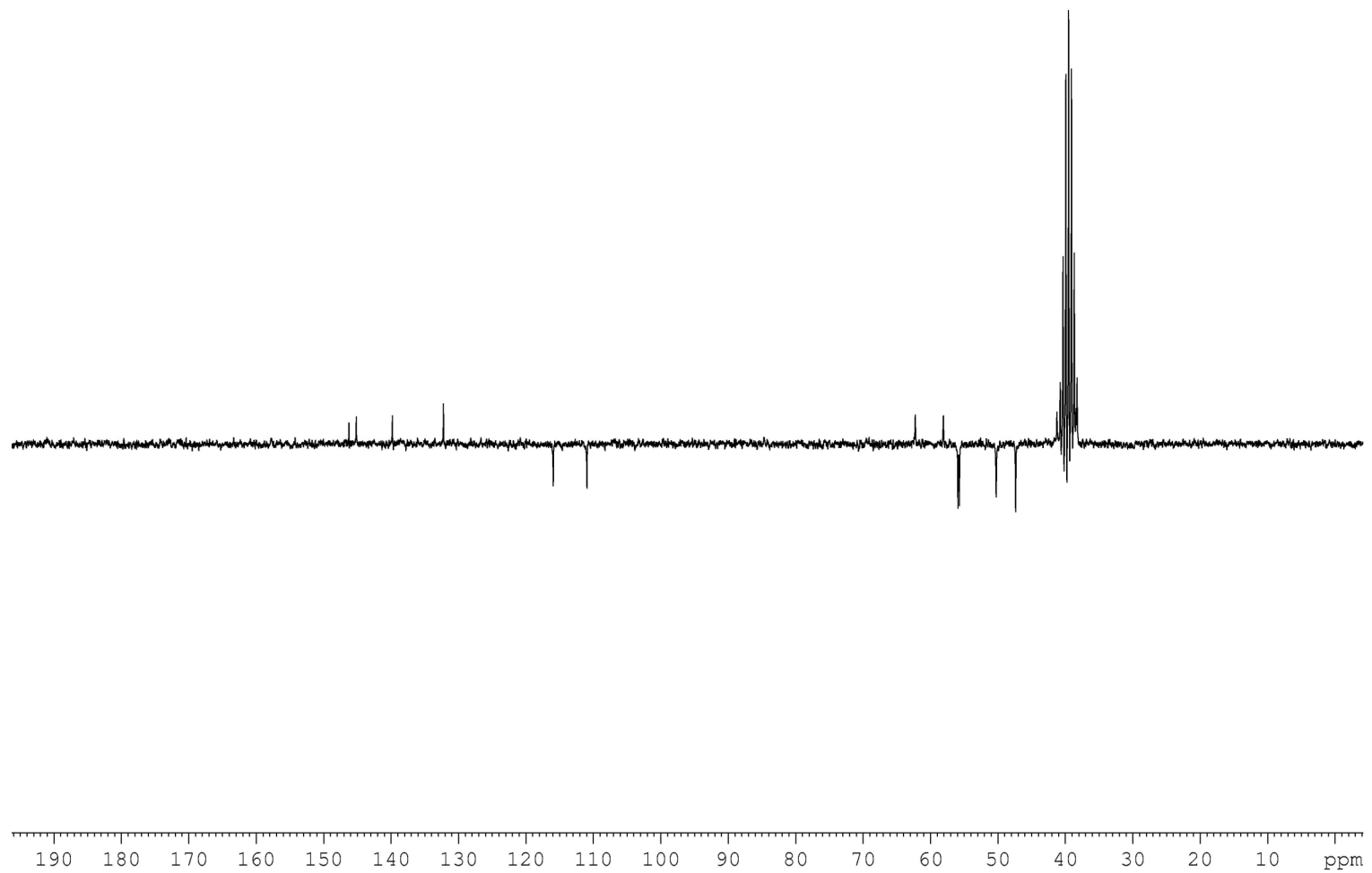
APT NMR spectrum of 9b (DMSO-*d*₆, 25 °C)



IR spectrum of 10b (Nujol, cm⁻¹)



^1H NMR spectrum of 10b (DMSO- d_6 , 25 °C)



APT NMR spectrum of 10b (DMSO- d_6 , 25 °C)