

Direct Observation of Intermediates Involved in the Interruption of the Bischler-Napieralski Reaction.

Kolby L. White, Marius Mewald and Mohammad Movassaghi*

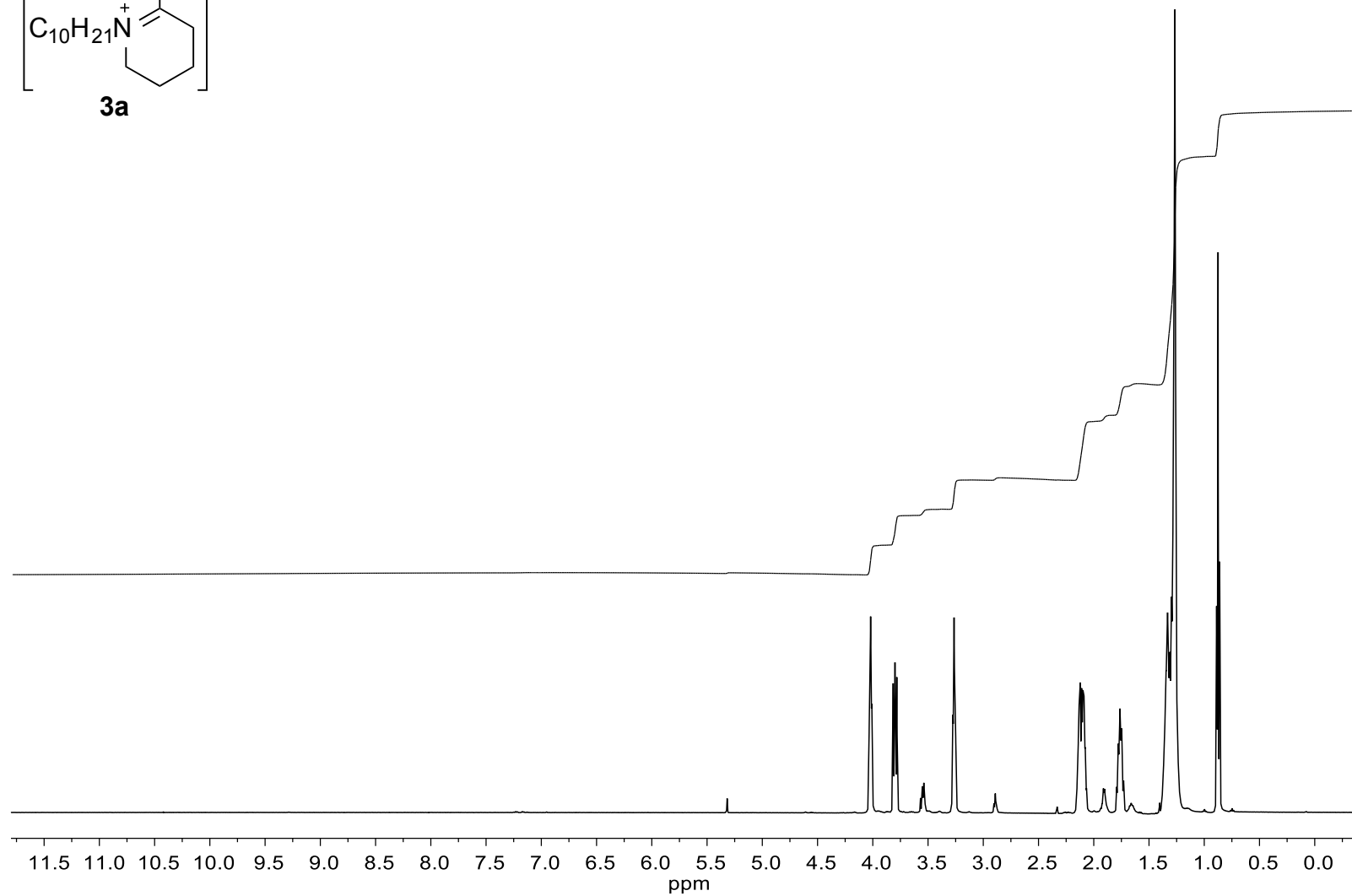
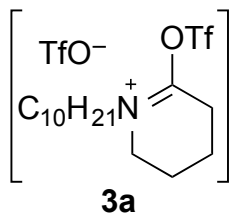
Massachusetts Institute of Technology, Department of Chemistry, Massachusetts 02139

Supporting Information

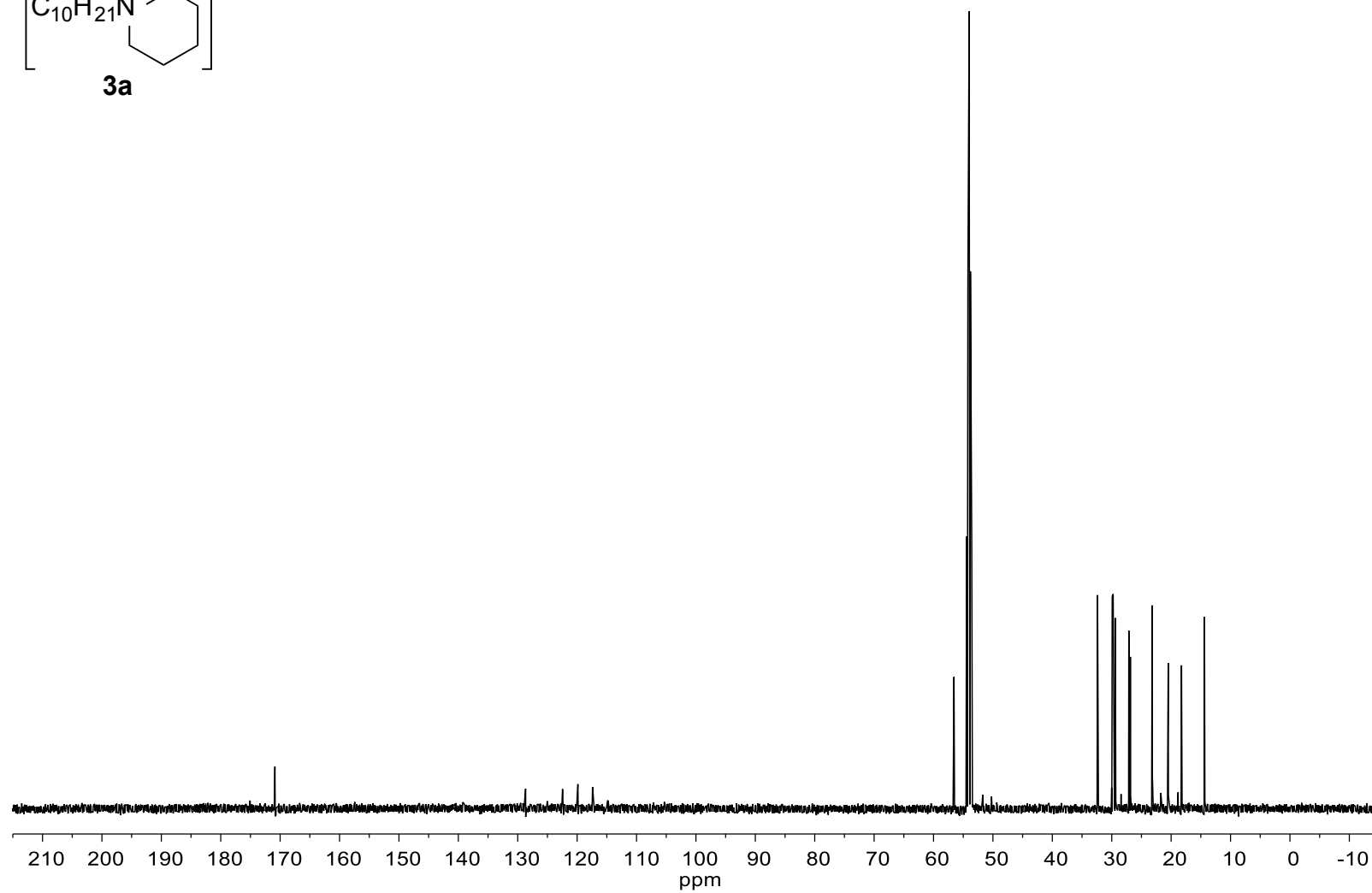
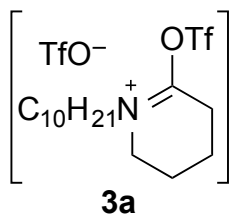
¹H and ¹³C NMR spectra

<i>O</i> -Trifluoromethanesulfonyliminium trifluoromethanesulfonate 3a	S2
<i>O</i> -Trifluoromethanesulfonyliminium trifluoromethanesulfonate 3b	S5
Diiminium ether 6a	S8
1-Pyridyliminium bistrifluoromethanesulfonate 4b	S11
<i>O</i> -Trifluoromethanesulfonyliminium trifluoromethanesulfonate 9	S14
Spirocyclic diiminium ion (±)- 11	S17
Spiroindoline iminium ion (±)- 13	S20
VT NMR Experiment: Reaction of amide 8 with Tf ₂ O	S23

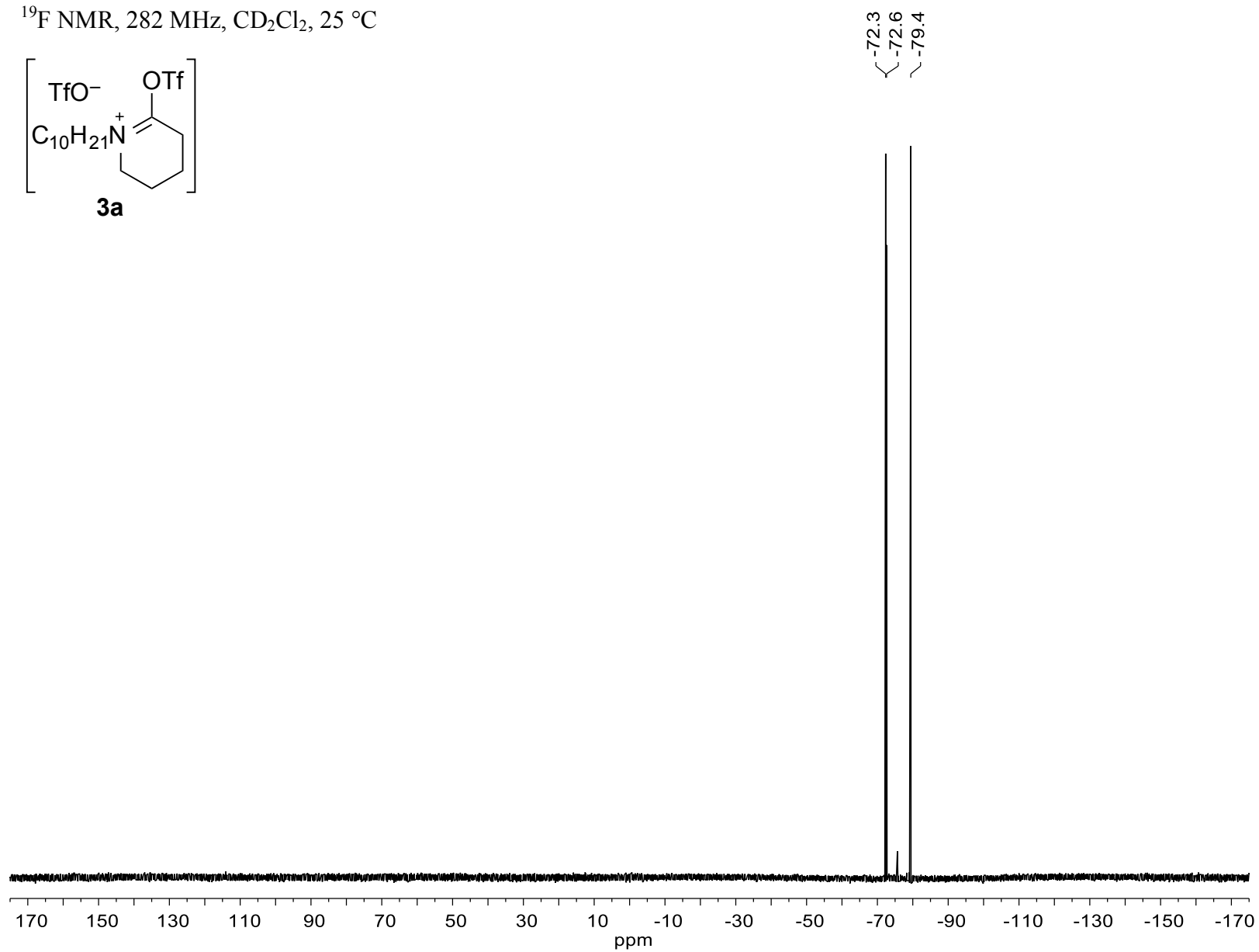
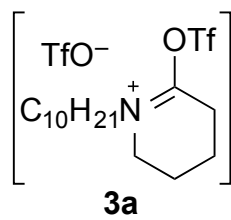
^1H NMR, 500 MHz, CD_2Cl_2 , 25 °C



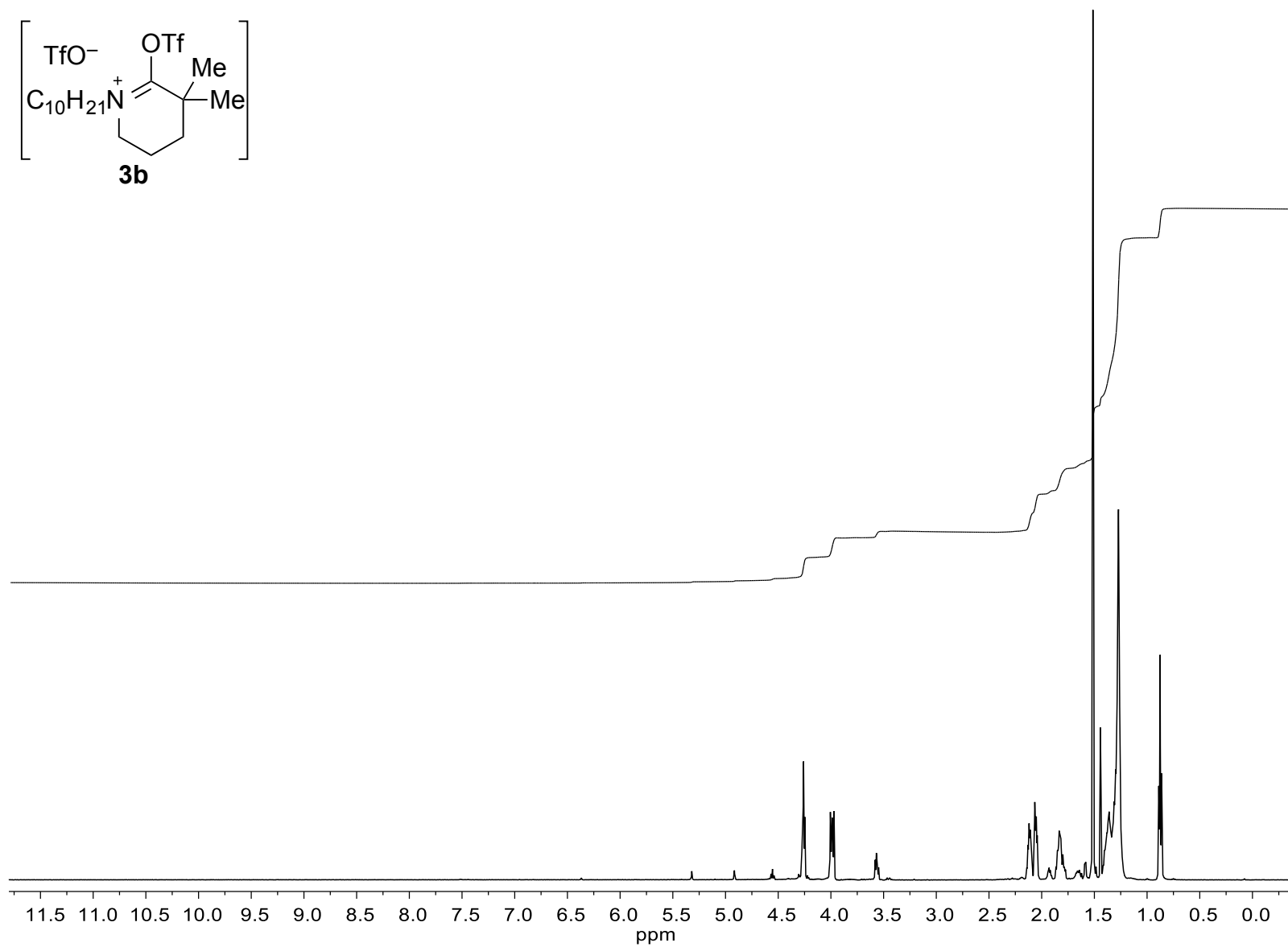
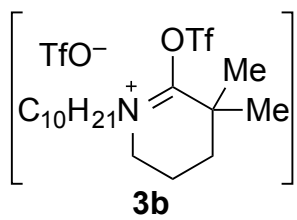
^{13}C NMR, 125 MHz, CD_2Cl_2 , 25 °C



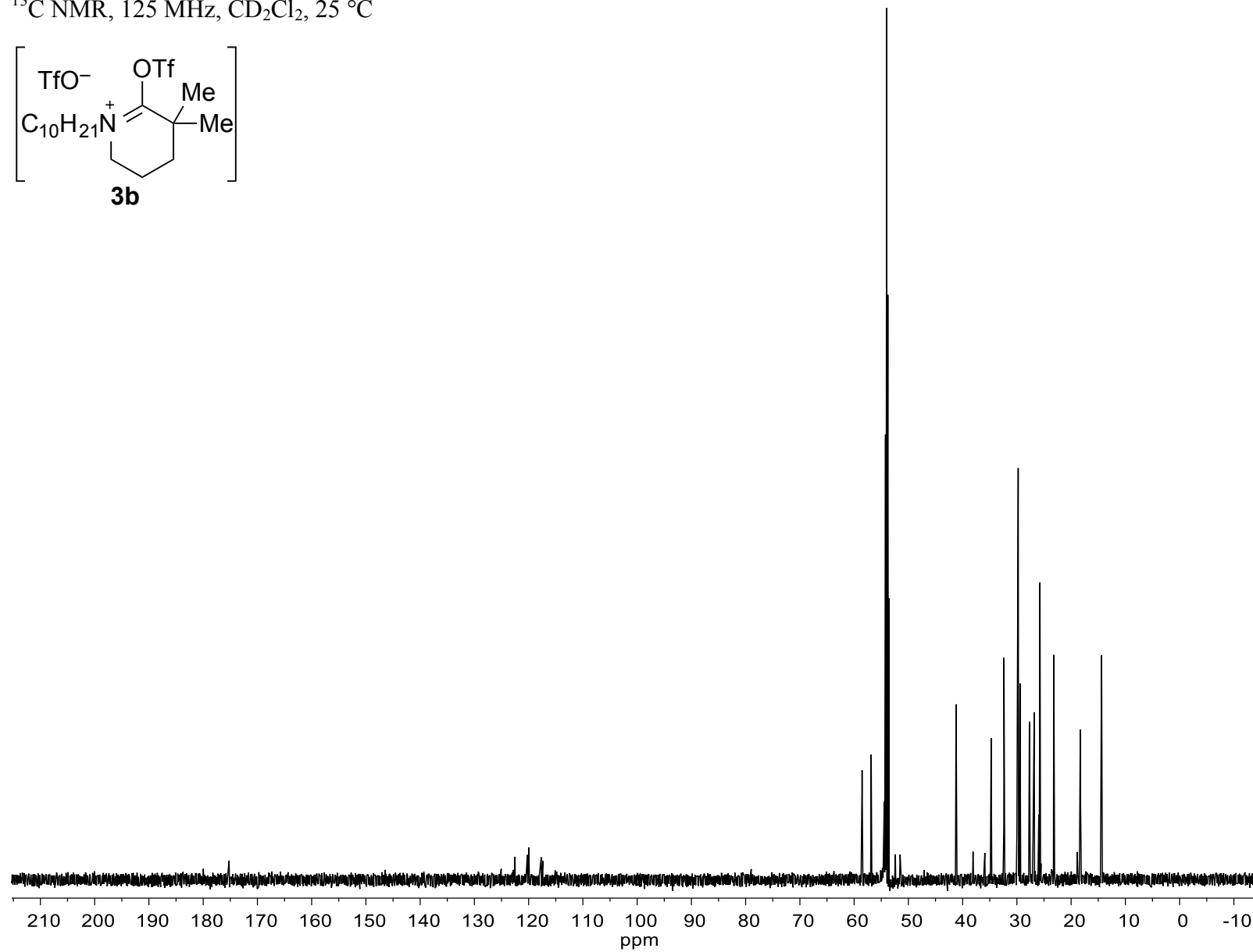
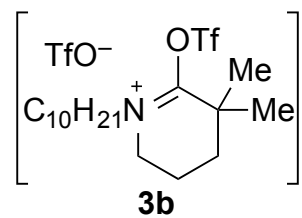
^{19}F NMR, 282 MHz, CD_2Cl_2 , 25 °C



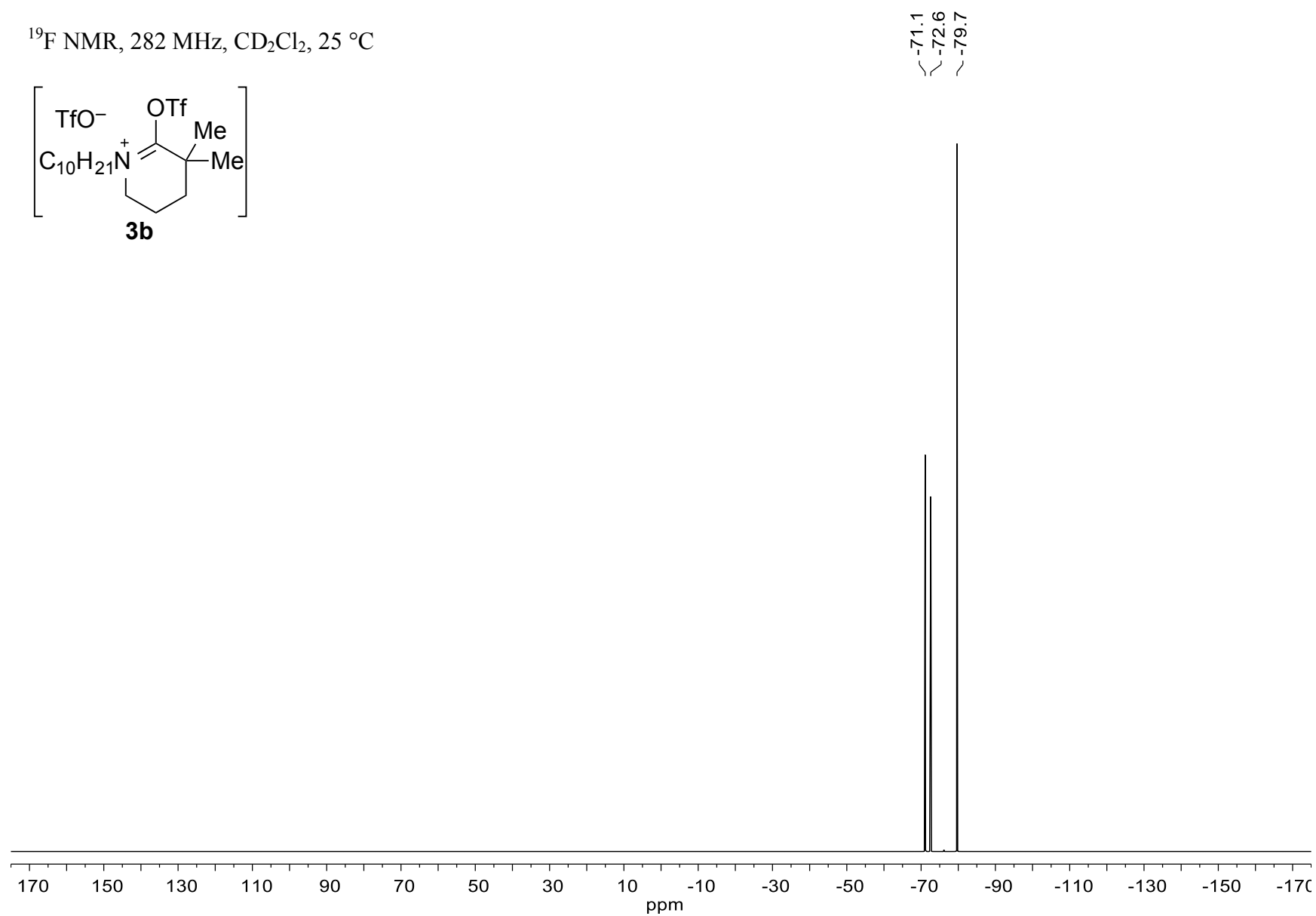
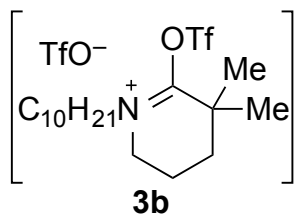
^1H NMR, 500 MHz, CD_2Cl_2 , 25 $^\circ\text{C}$



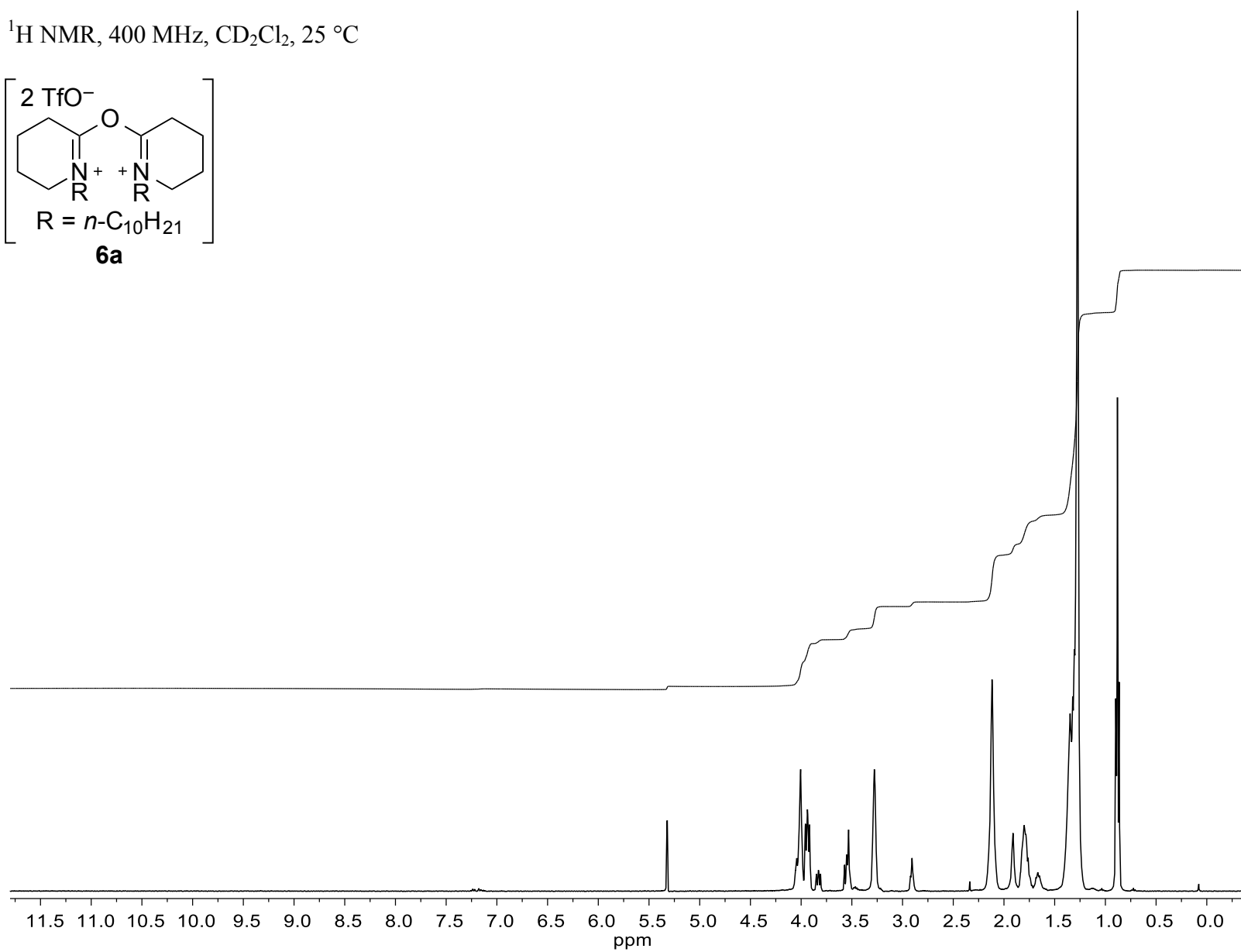
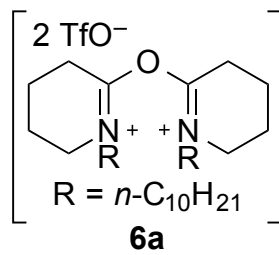
^{13}C NMR, 125 MHz, CD_2Cl_2 , 25 °C



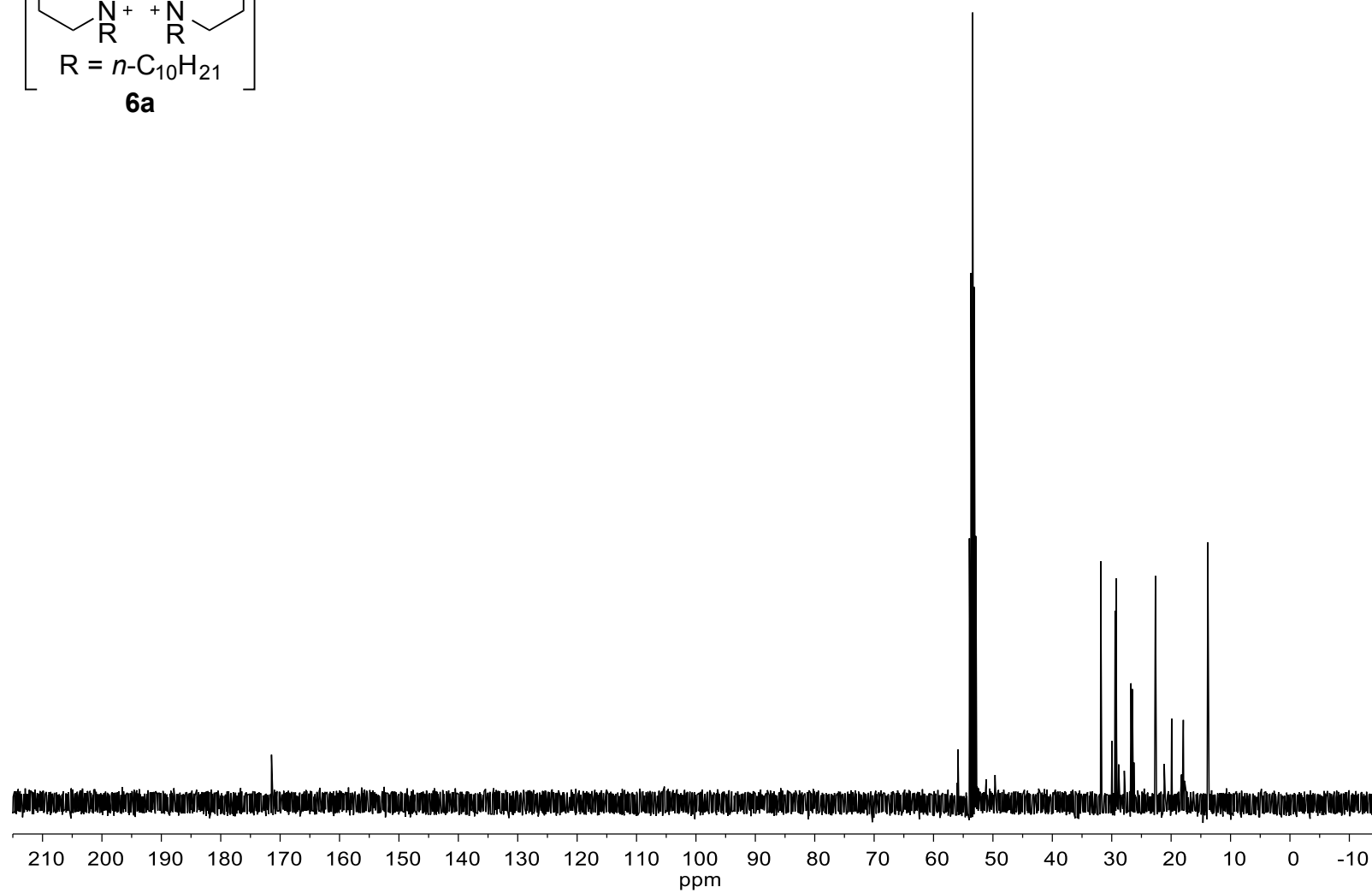
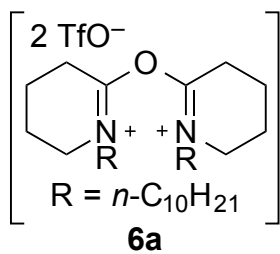
^{19}F NMR, 282 MHz, CD_2Cl_2 , 25 °C



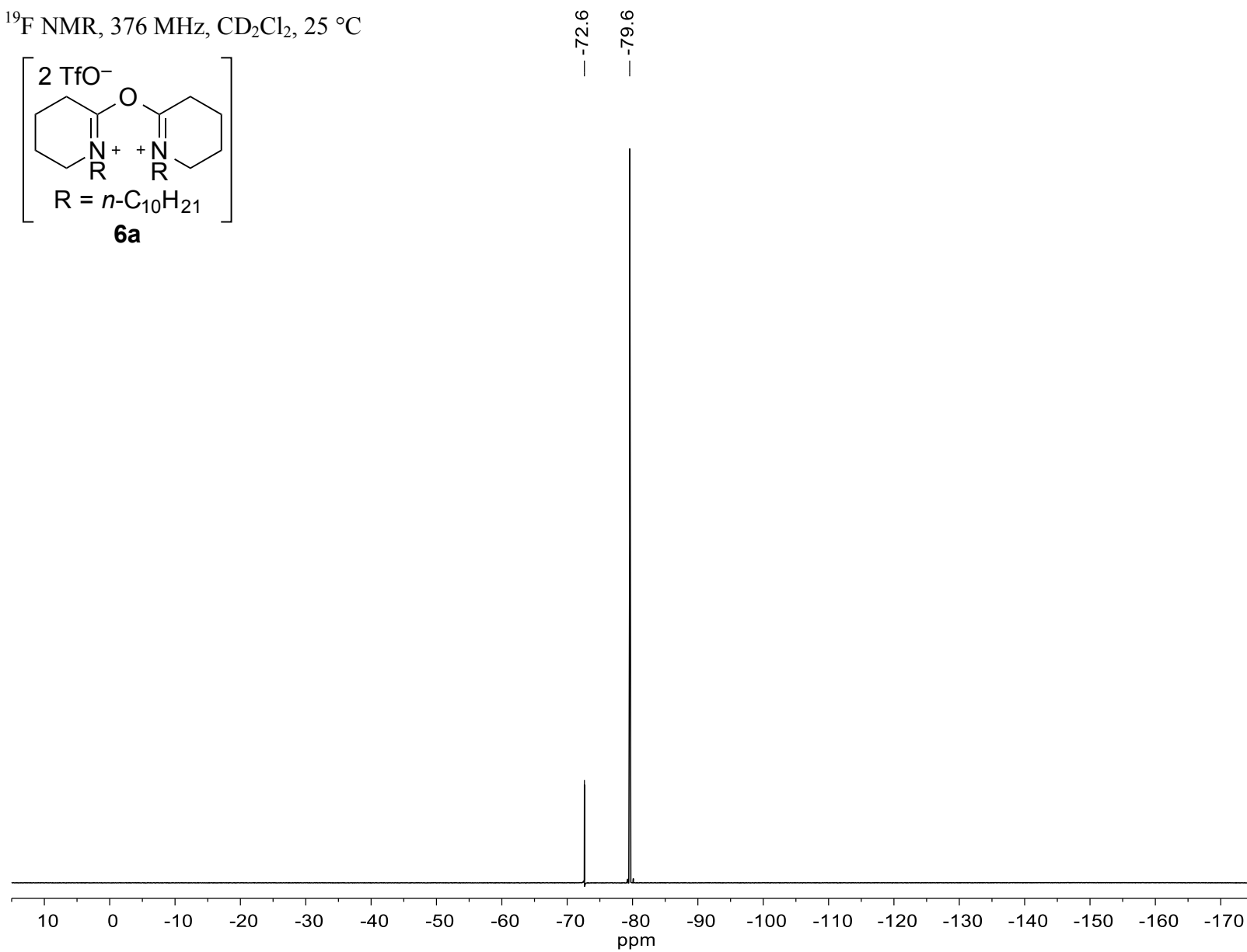
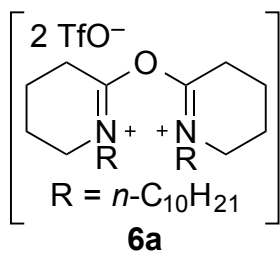
^1H NMR, 400 MHz, CD_2Cl_2 , 25 °C



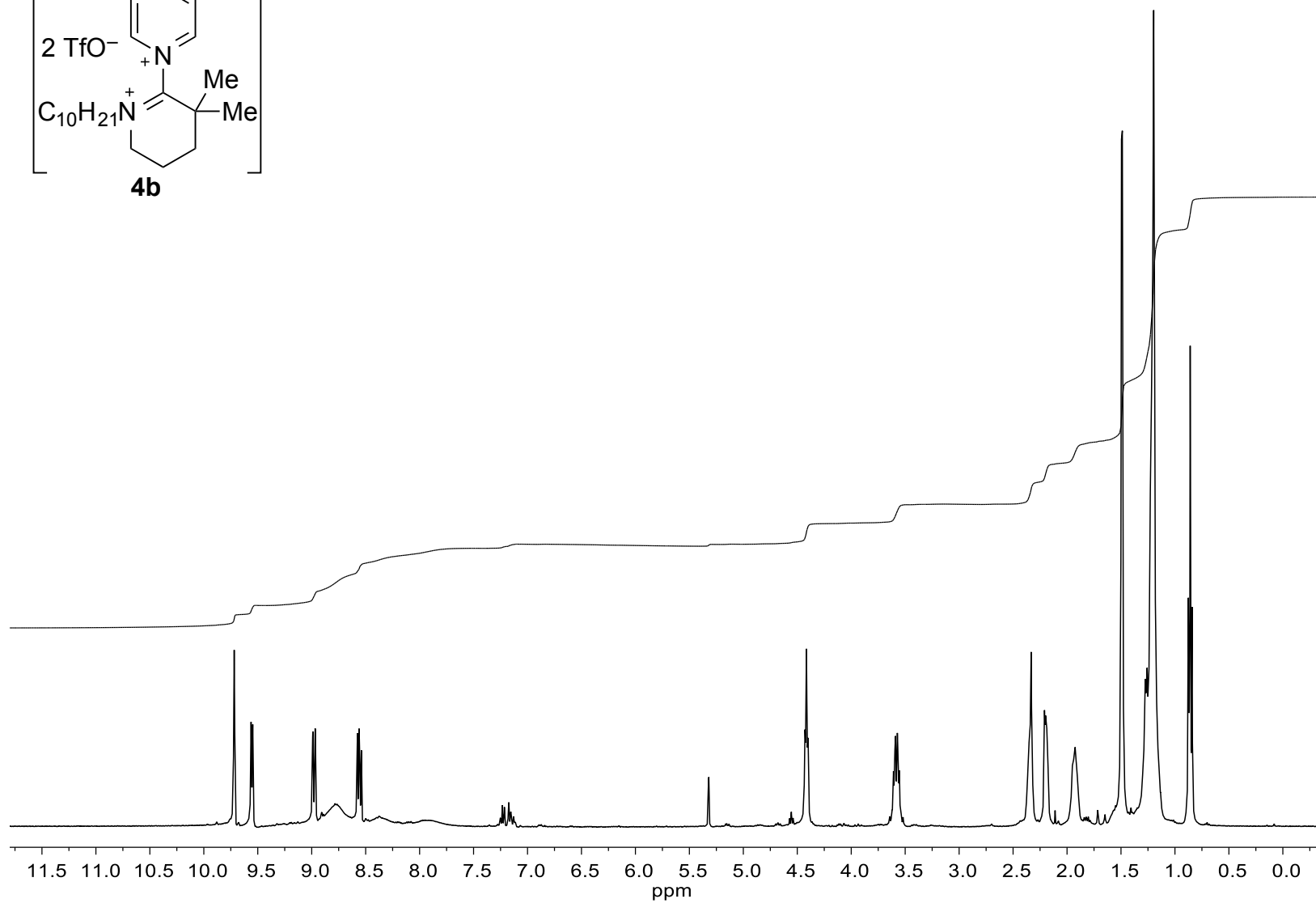
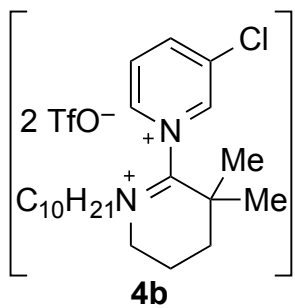
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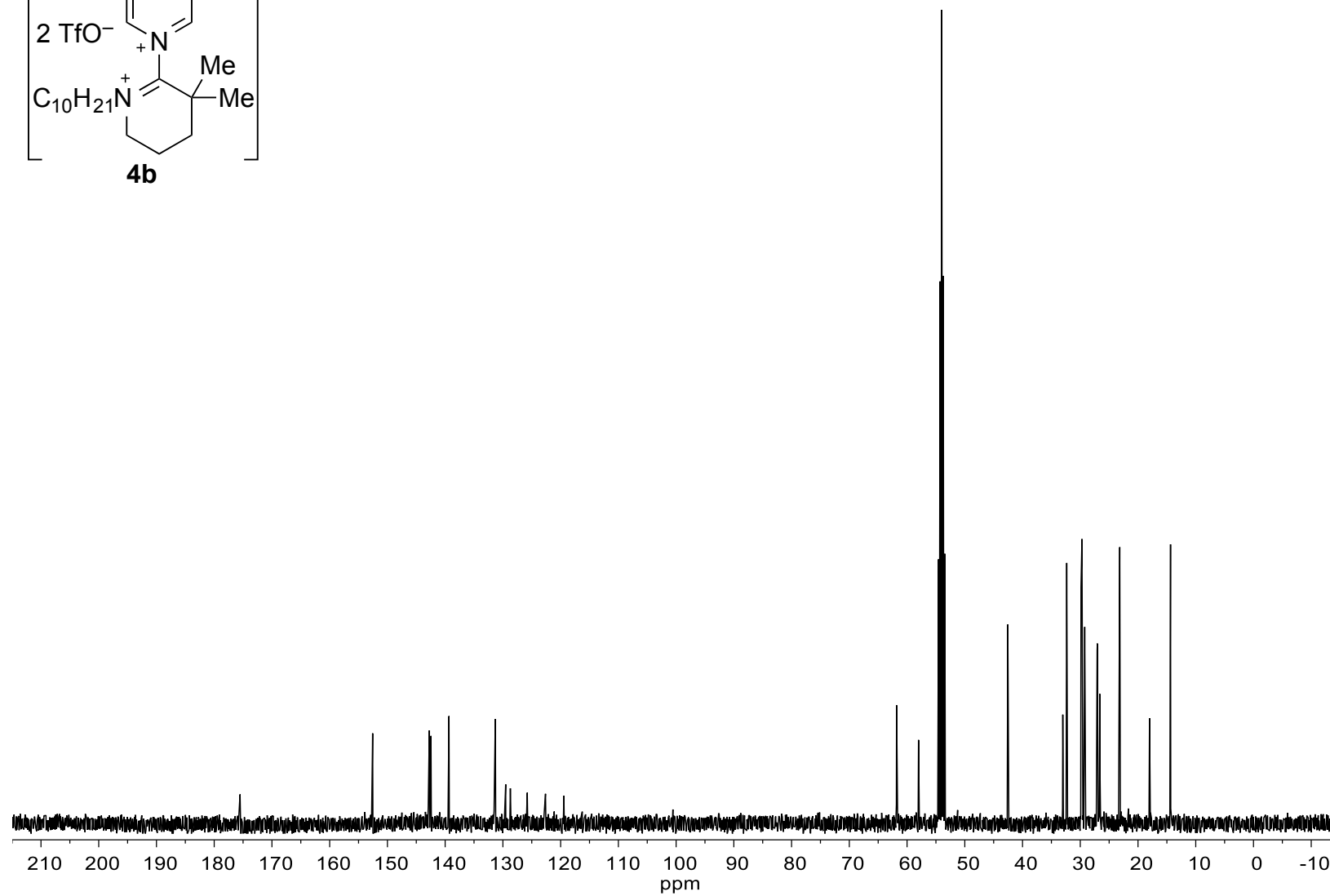
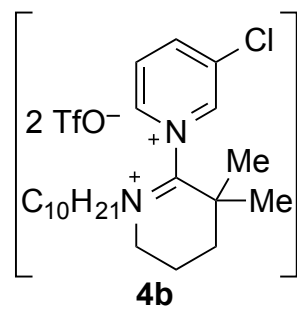
^{19}F NMR, 376 MHz, CD_2Cl_2 , 25 °C



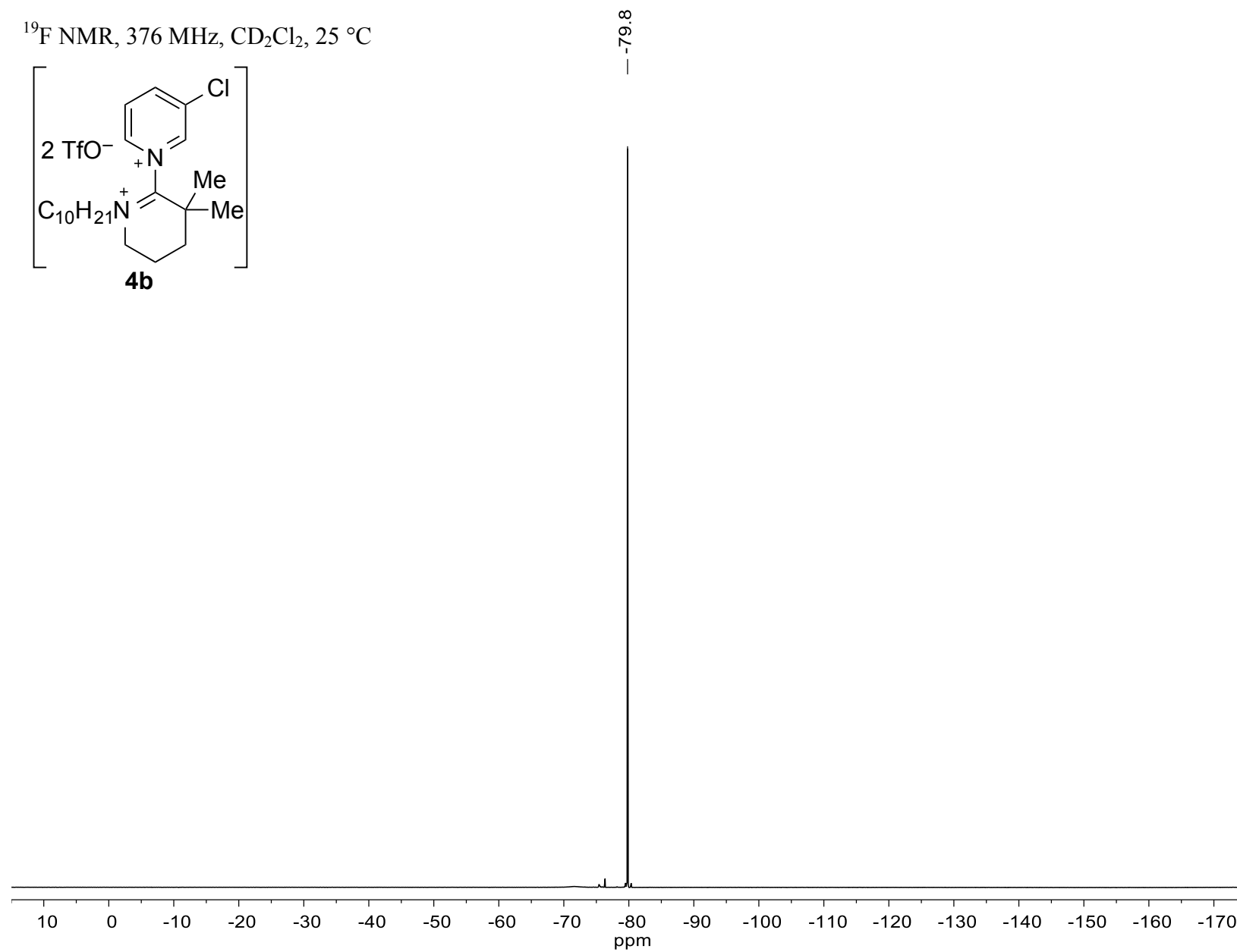
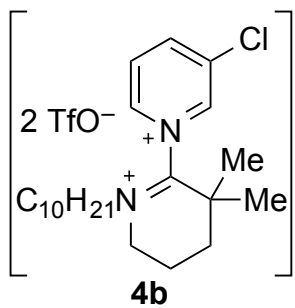
^1H NMR, 400 MHz, CD_2Cl_2 , 25 °C



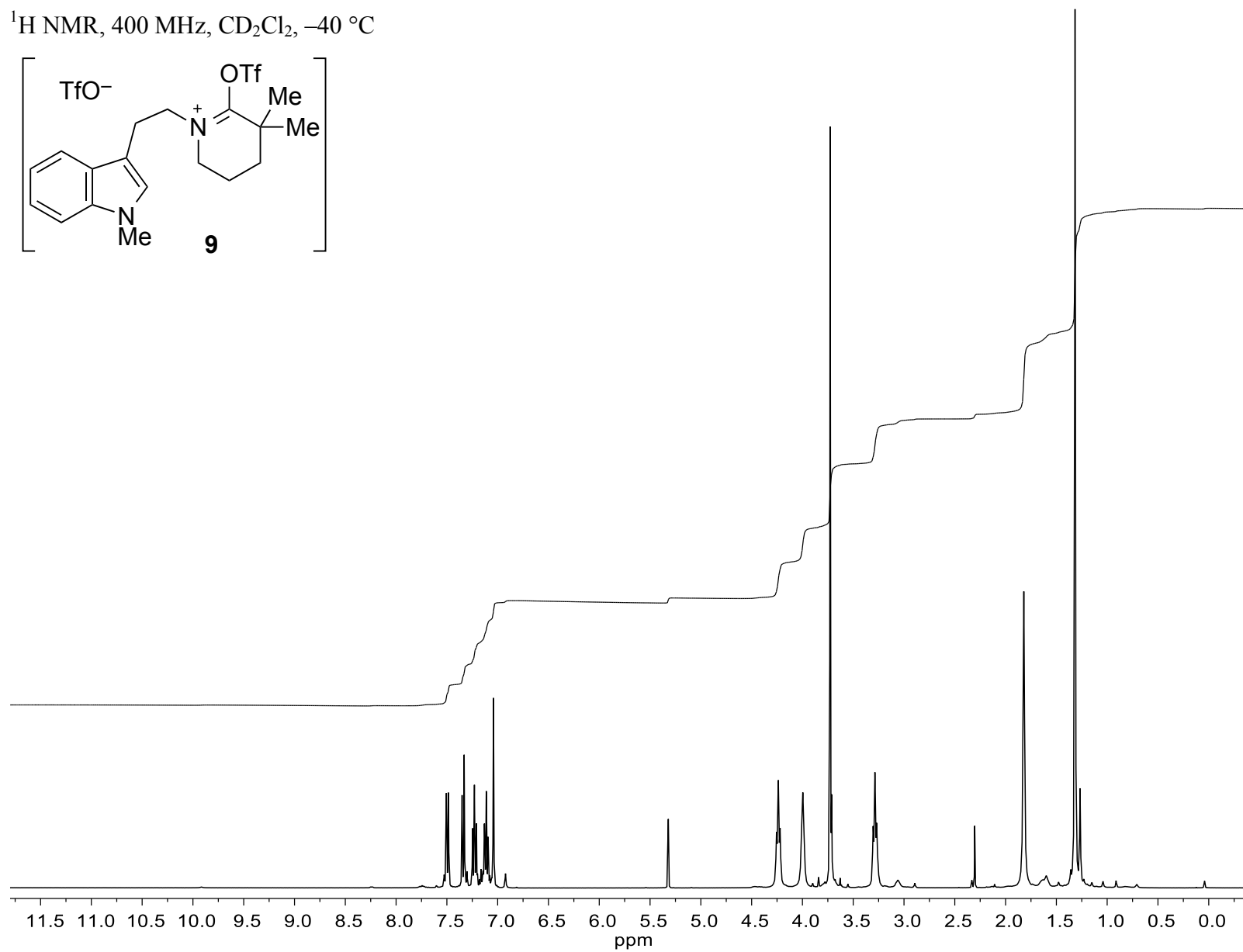
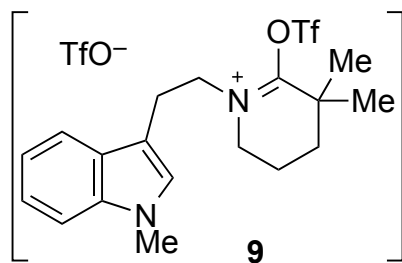
^{13}C NMR, 100 MHz, CD_2Cl_2 , 25 °C



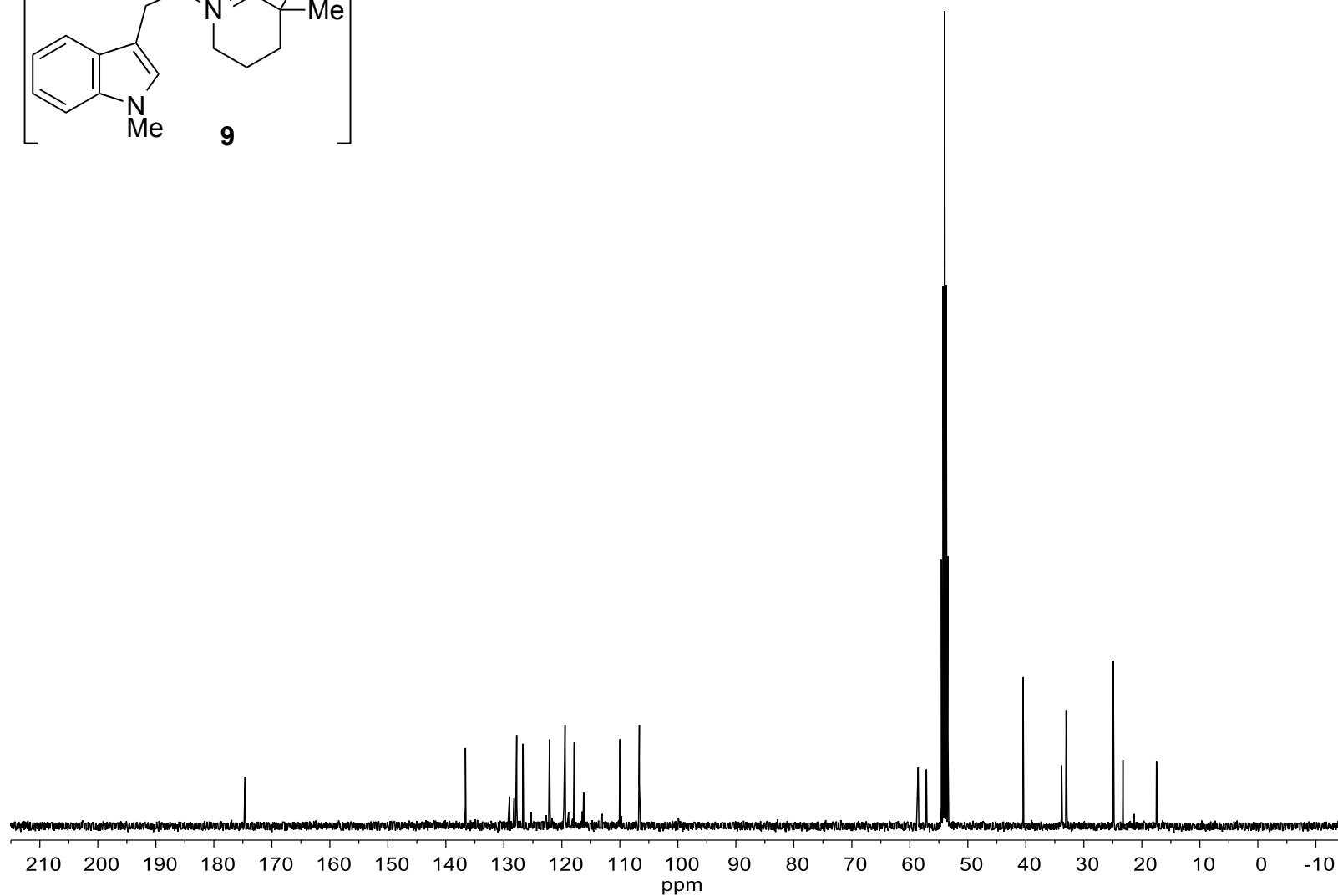
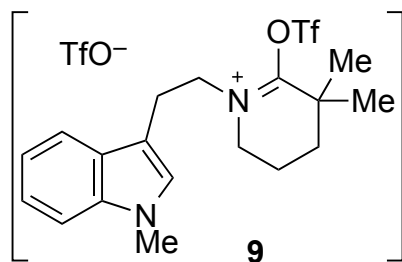
^{19}F NMR, 376 MHz, CD_2Cl_2 , 25 °C



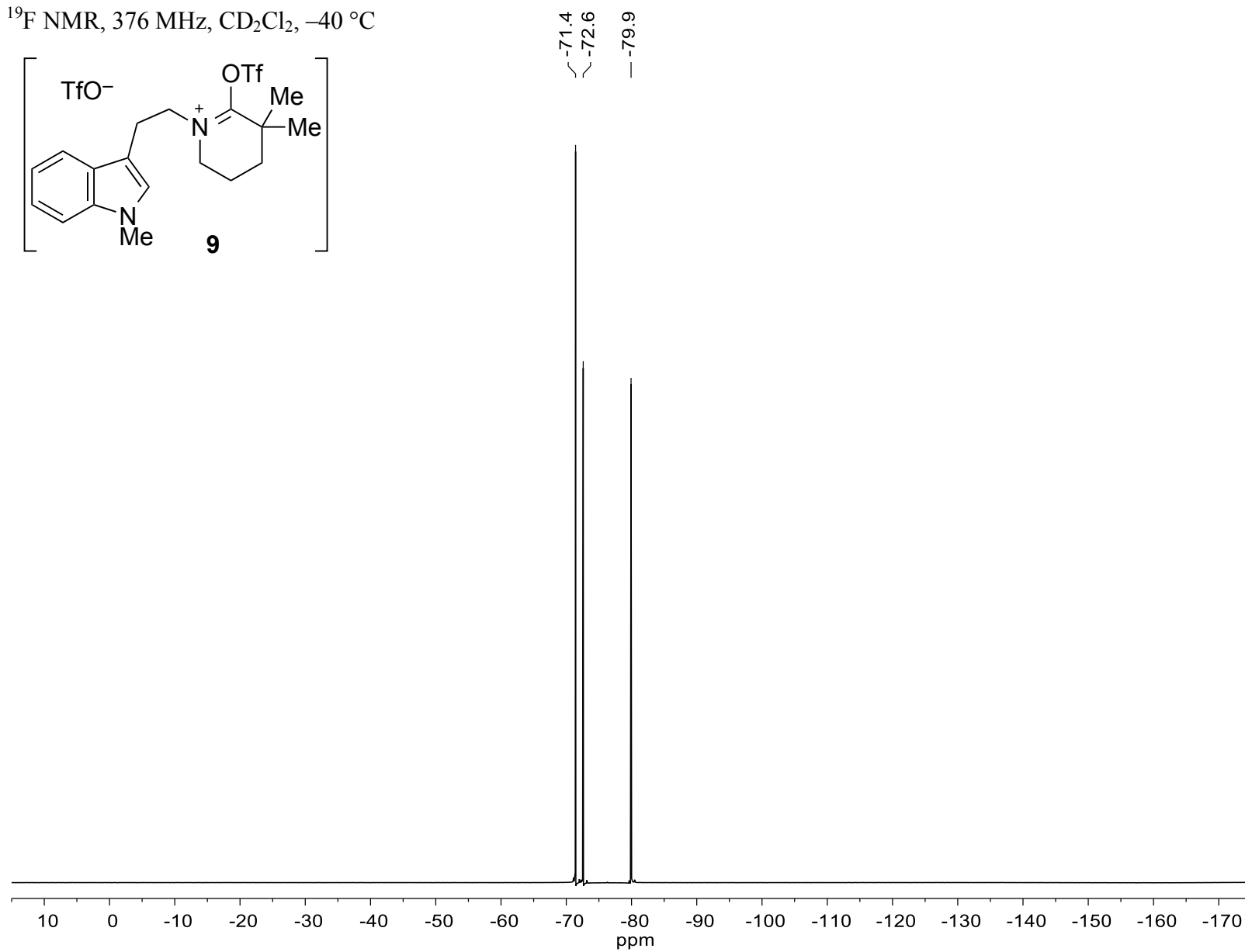
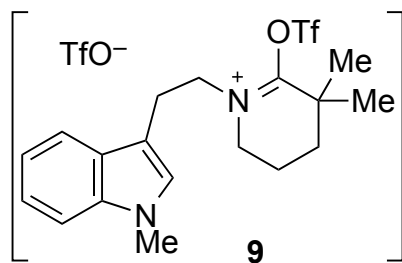
^1H NMR, 400 MHz, CD_2Cl_2 , -40°C



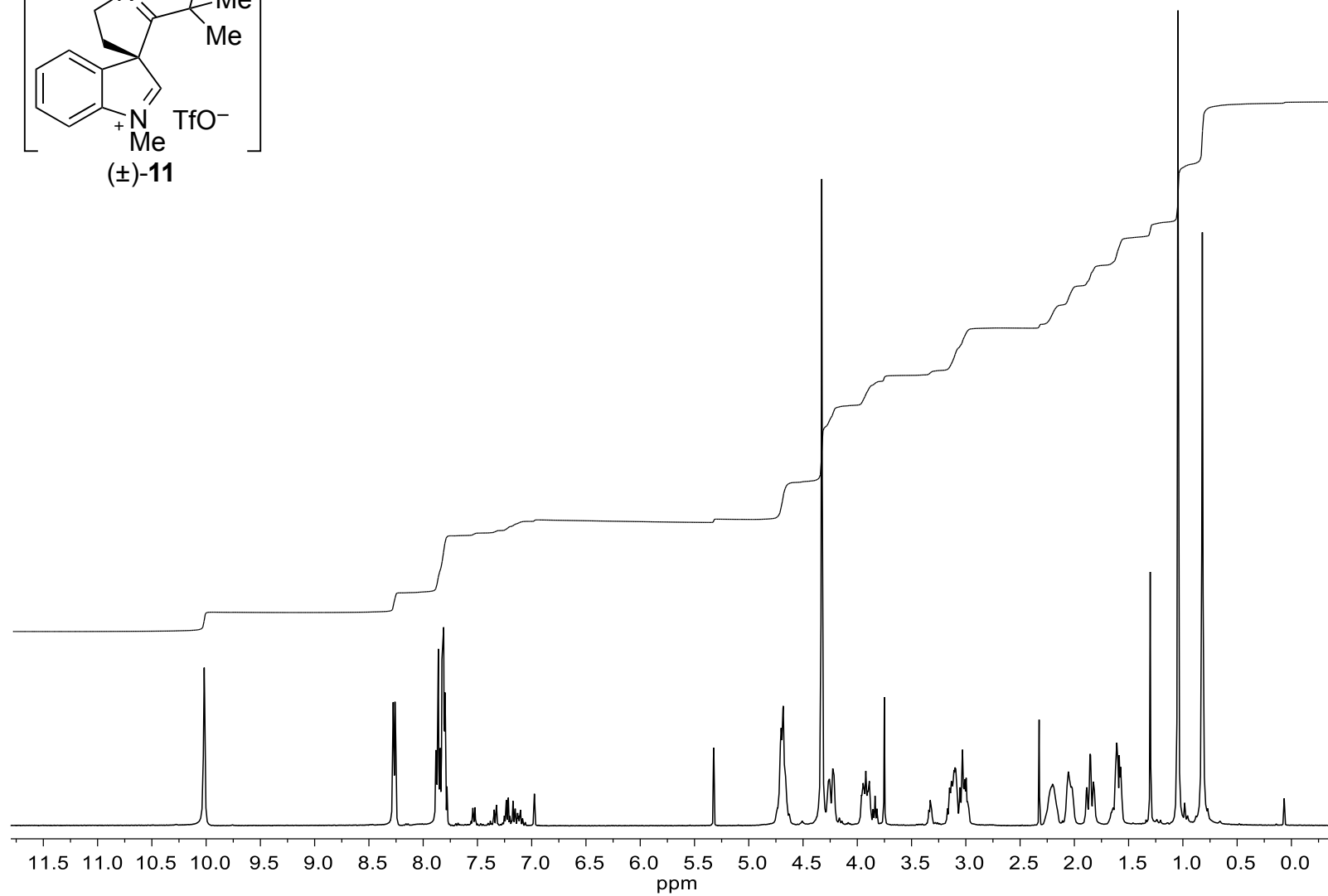
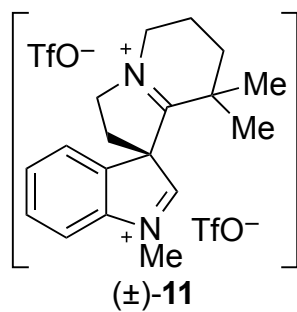
^{13}C NMR, 100 MHz, CD_2Cl_2 , $-40\text{ }^\circ\text{C}$



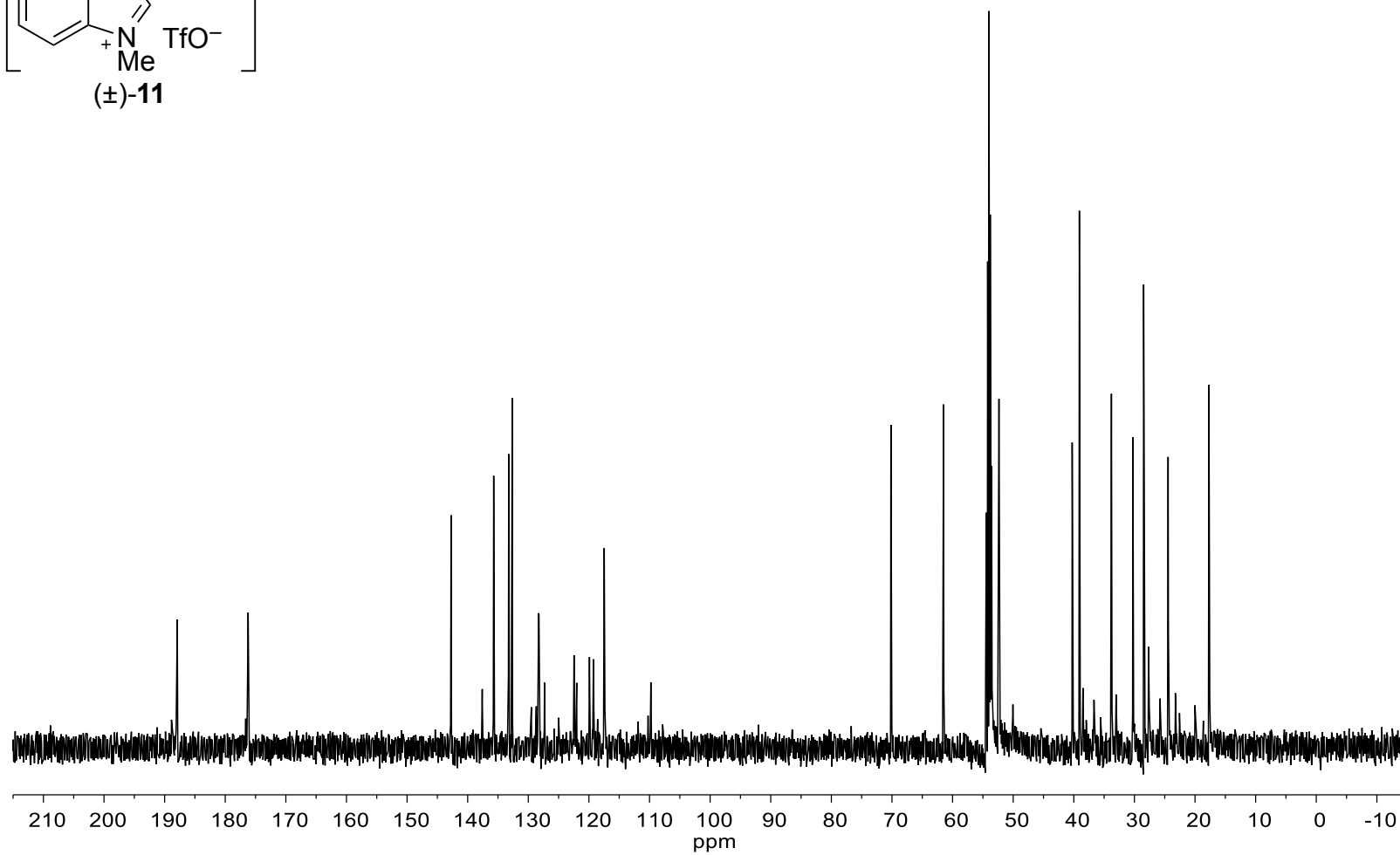
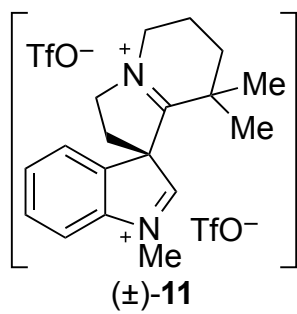
^{19}F NMR, 376 MHz, CD_2Cl_2 , $-40\text{ }^\circ\text{C}$



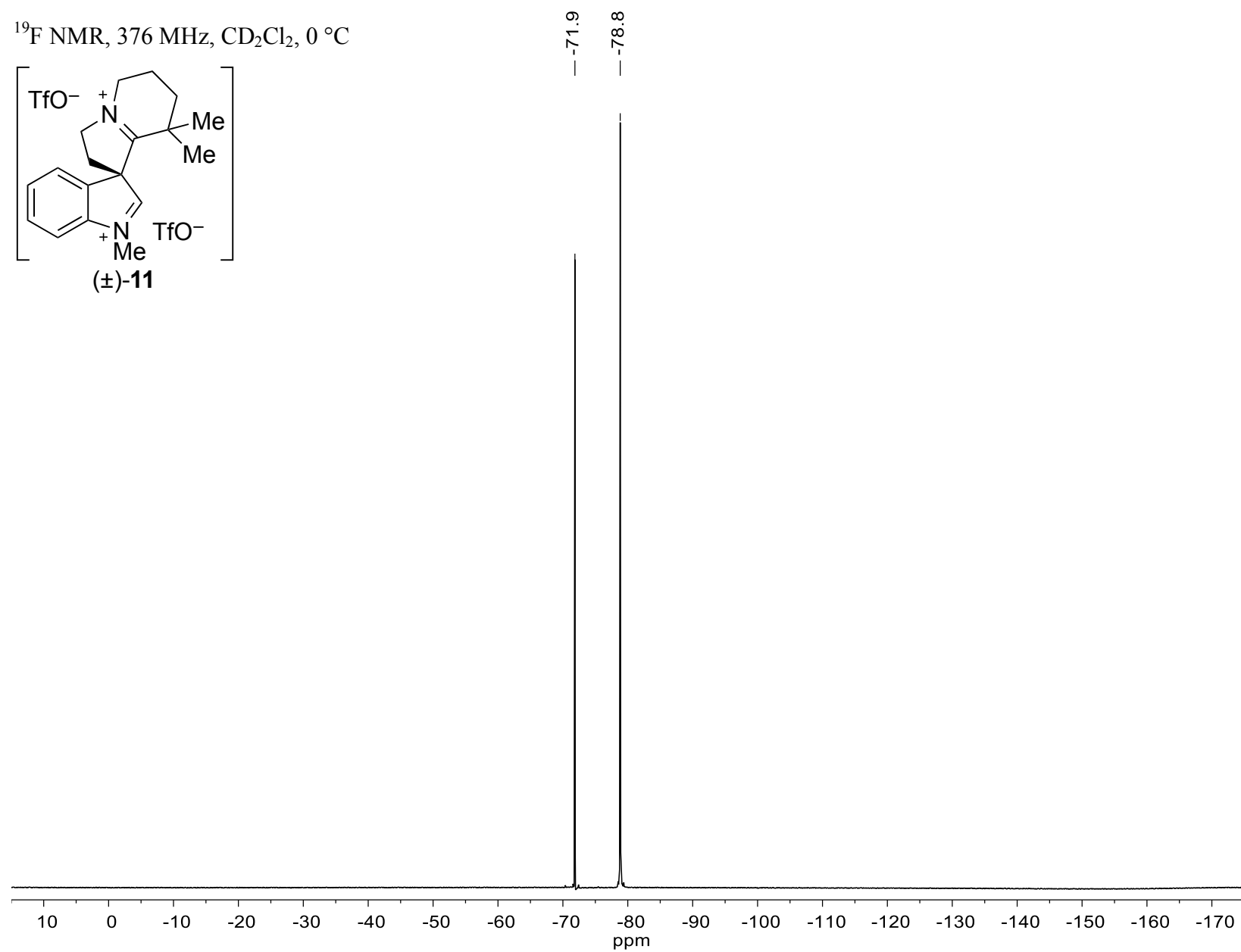
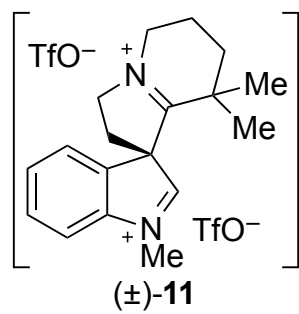
^1H NMR, 400 MHz, CD_2Cl_2 , 0 °C



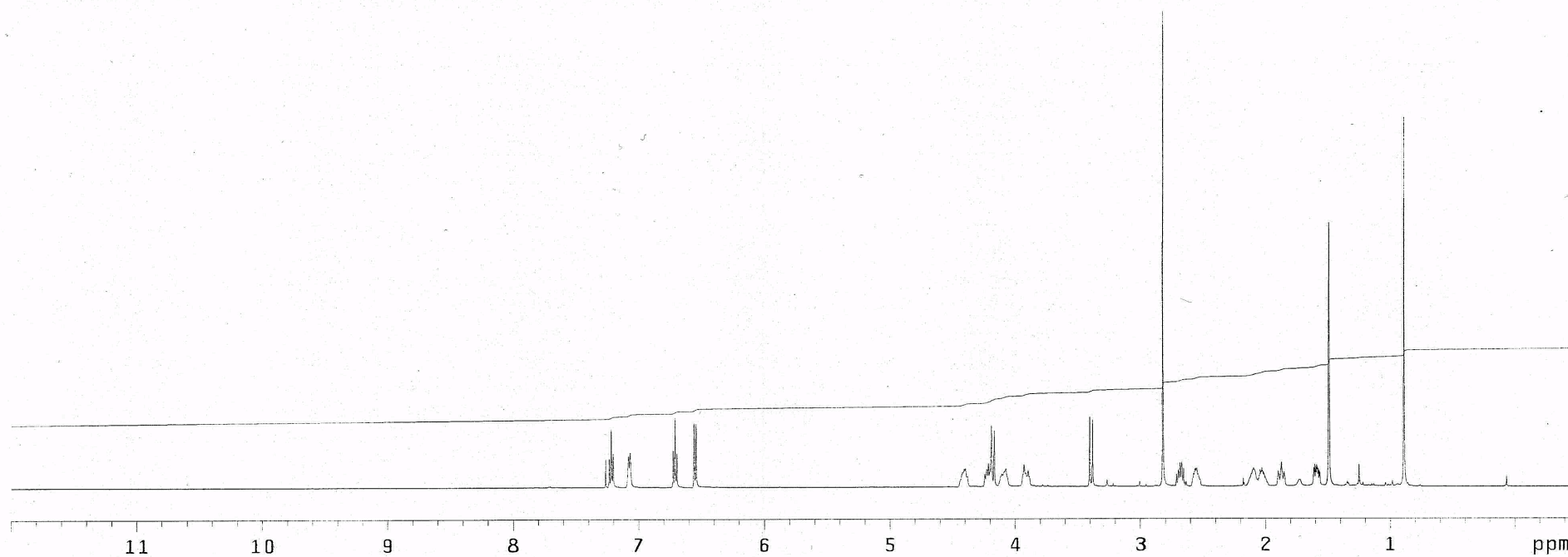
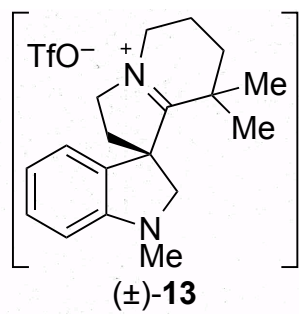
^{13}C NMR, 100 MHz, CD_2Cl_2 , 0 °C



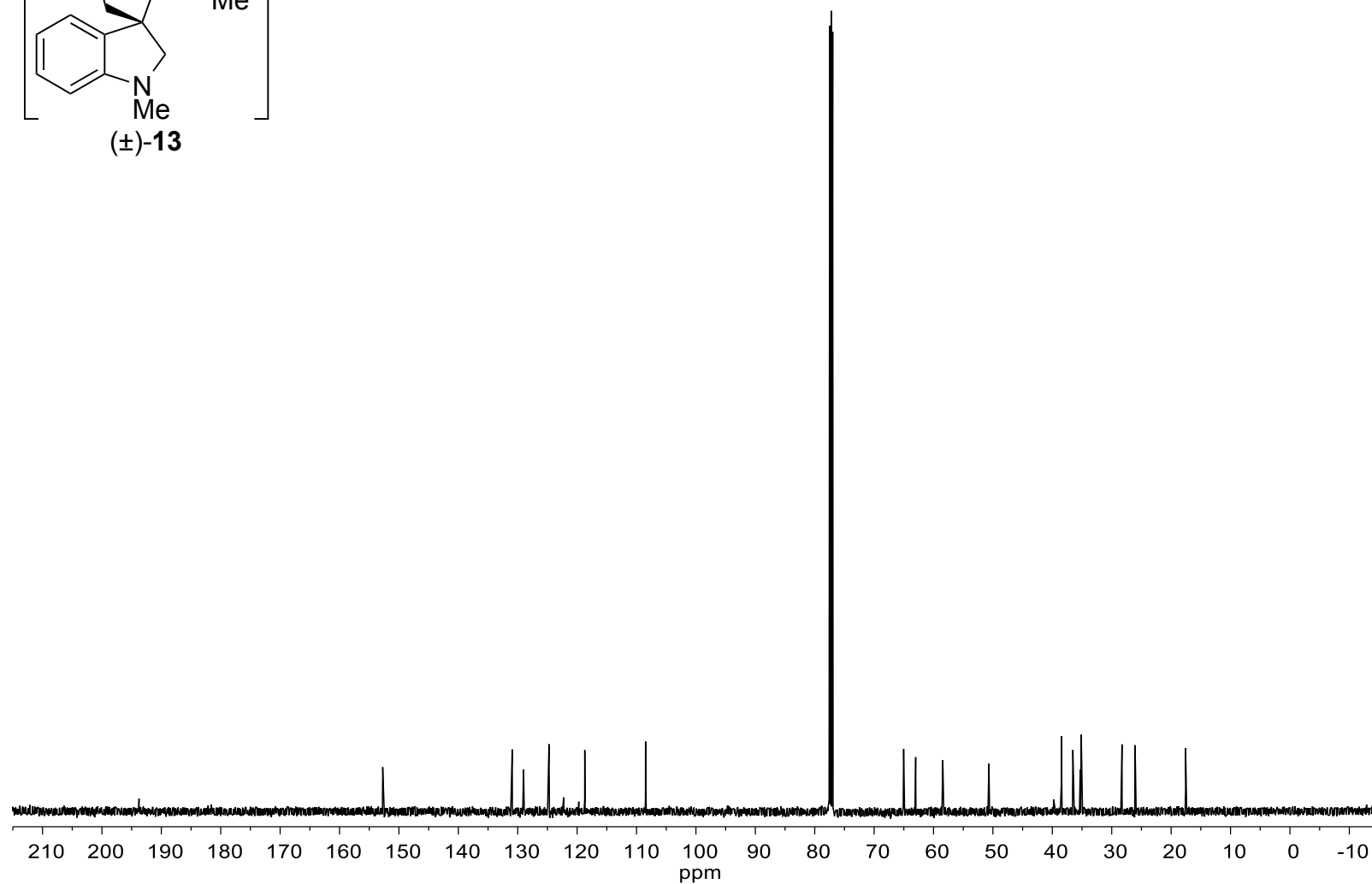
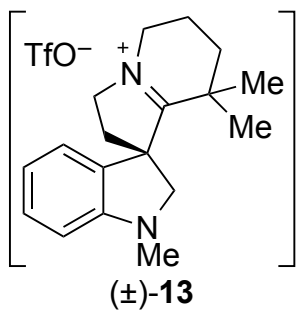
^{19}F NMR, 376 MHz, CD_2Cl_2 , 0 °C



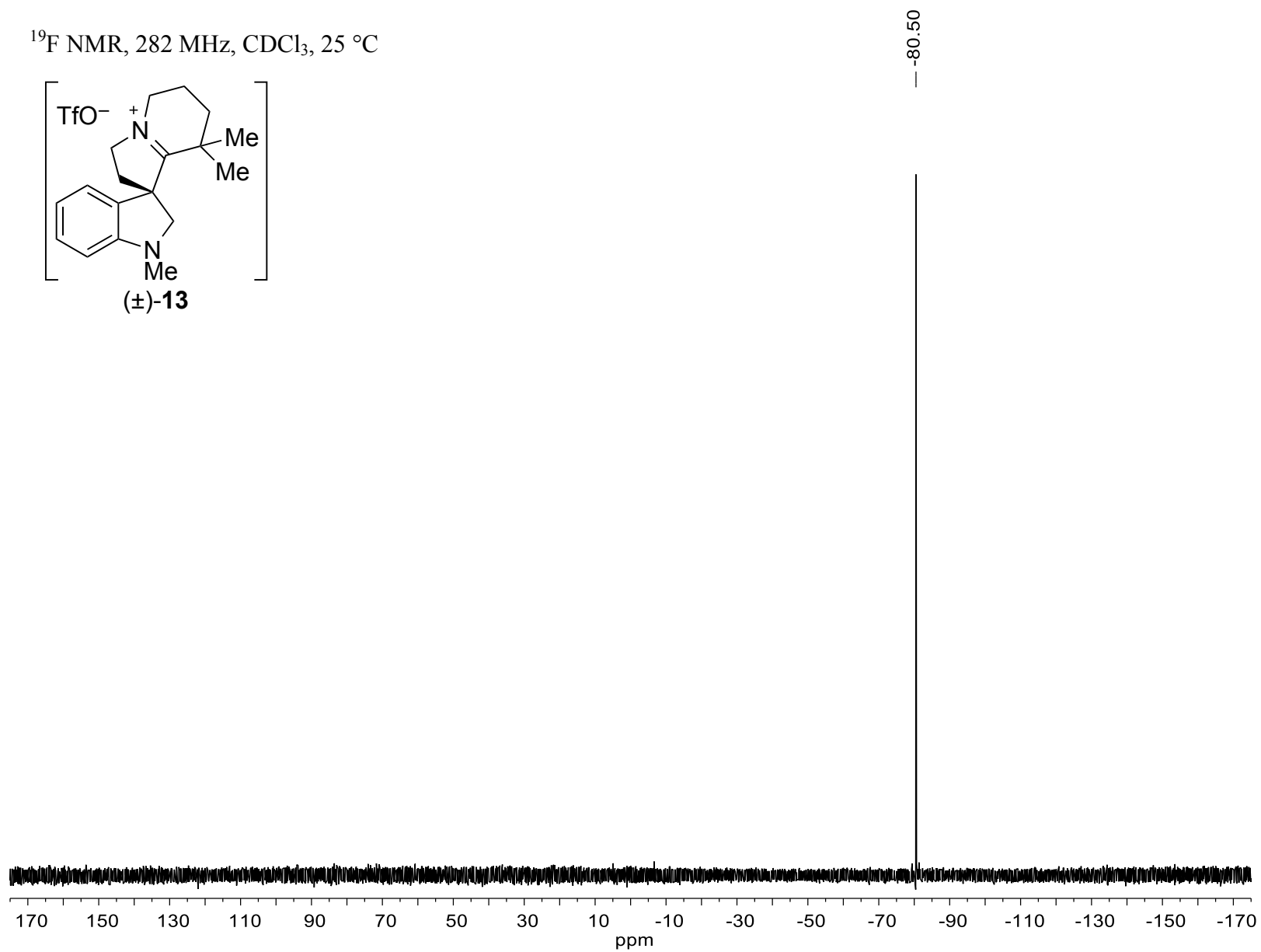
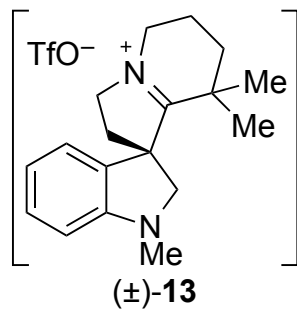
^1H NMR, 400 MHz, CD_2Cl_2 , 25 °C

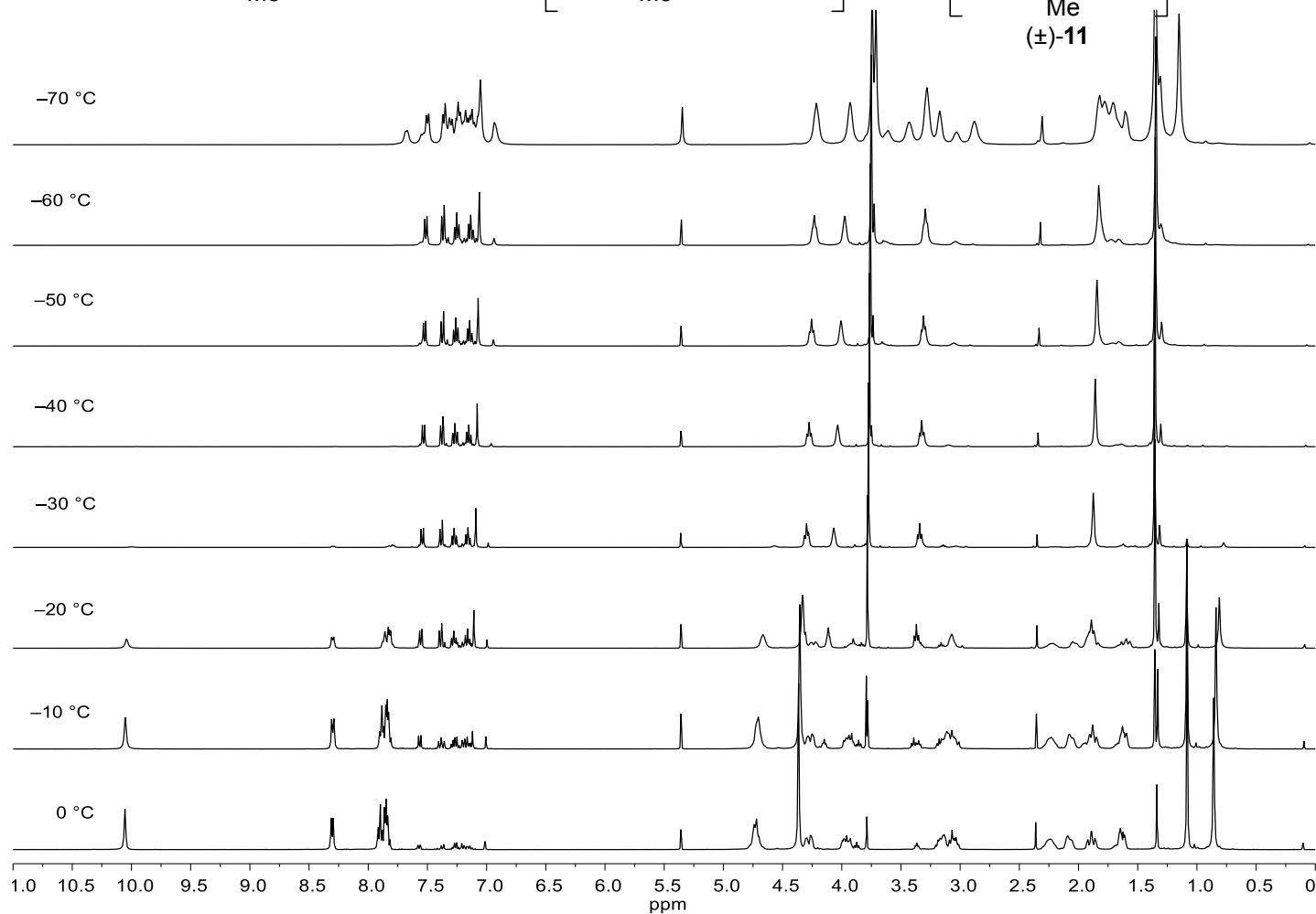
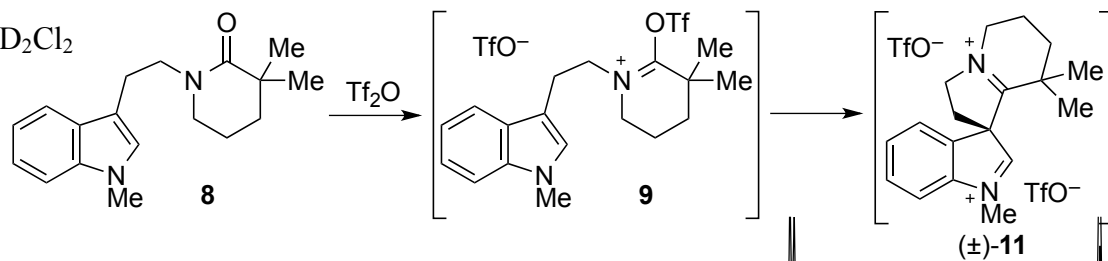


^{13}C NMR, 125 MHz, CDCl_3 , 25 °C



^{19}F NMR, 282 MHz, CDCl_3 , 25 °C



^1H NMR, 400 MHz, CD_2Cl_2 

^{19}F NMR, 376 MHz, CD_2Cl_2

