Supplementary Materials

New Anionic Rhodium Complexes as Efficient Hydroboration and Hydrosilylation Catalysts

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1. *NMR Spectra of complexes*

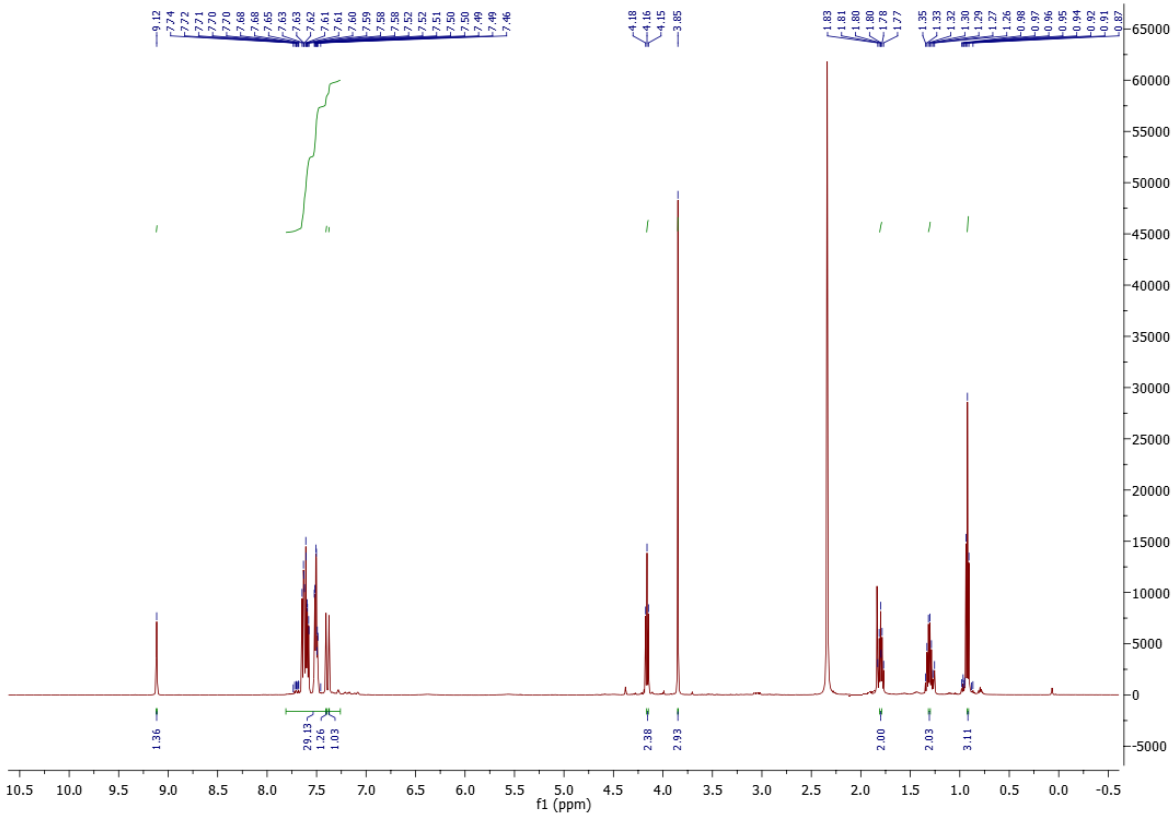


Figure S1. ^{1}H NMR spectrum of 1-Butyl-3-methylimidazolium Dichlorobis(triphenylphosphine)rhodate(I) [BMIM][$RhCl_2(PPh_3)_2$].

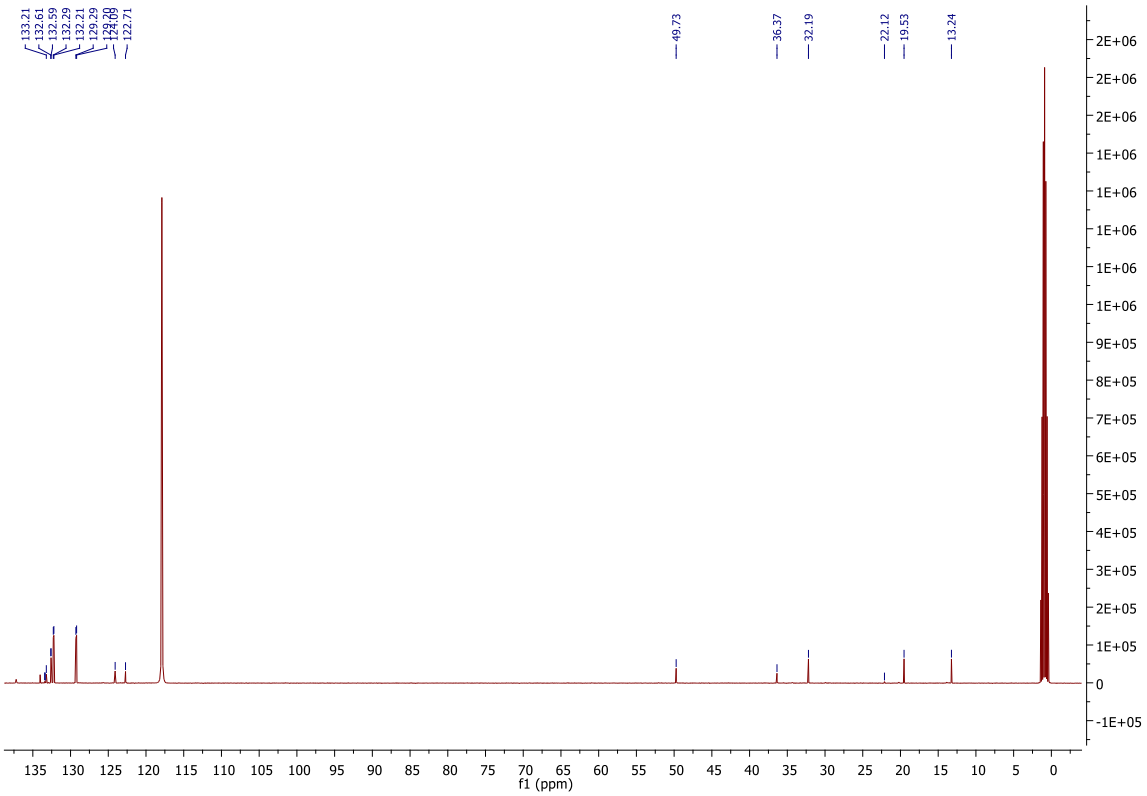


Figure S2. ^{13}C NMR spectrum of 1-Butyl-3-methylimidazolium Dichlorobis(triphenylphosphine)rhodate(I) [BMIM][$RhCl_2(PPh_3)_2$].

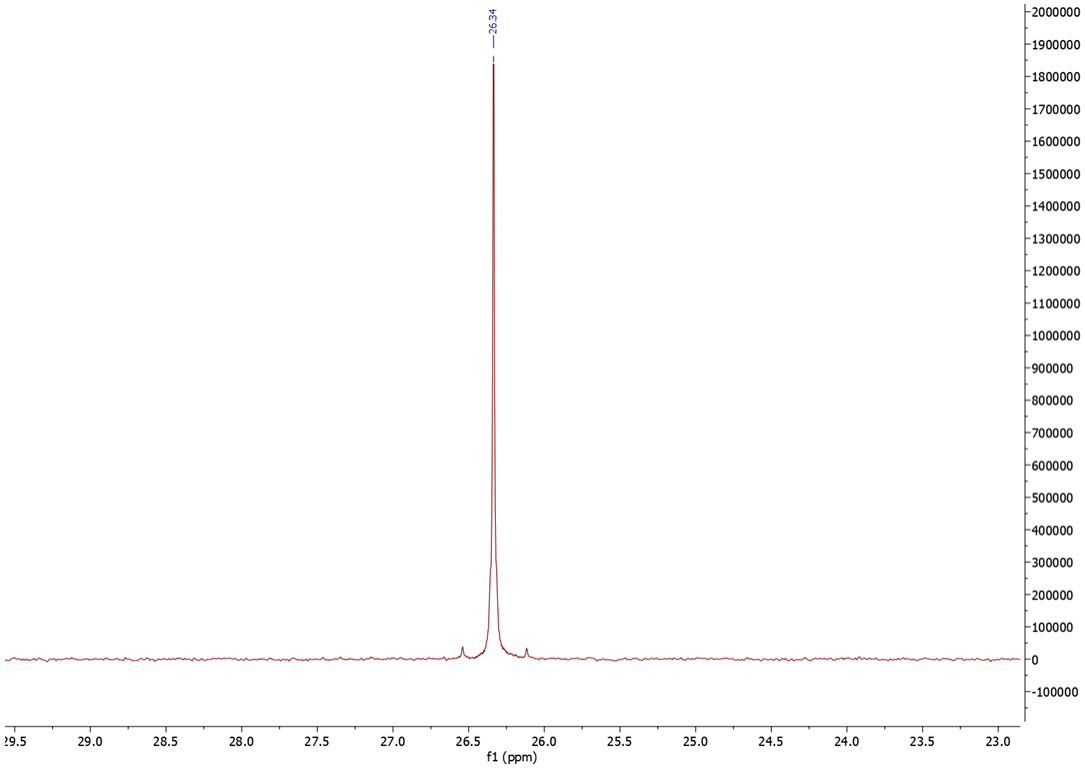


Figure S3. ^{31}P NMR spectrum of 1-Butyl-3-methylimidazolium Dichlorobis(triphenylphosphine)rhodate(I) [BMIM][$RhCl_2(PPh_3)_2$].

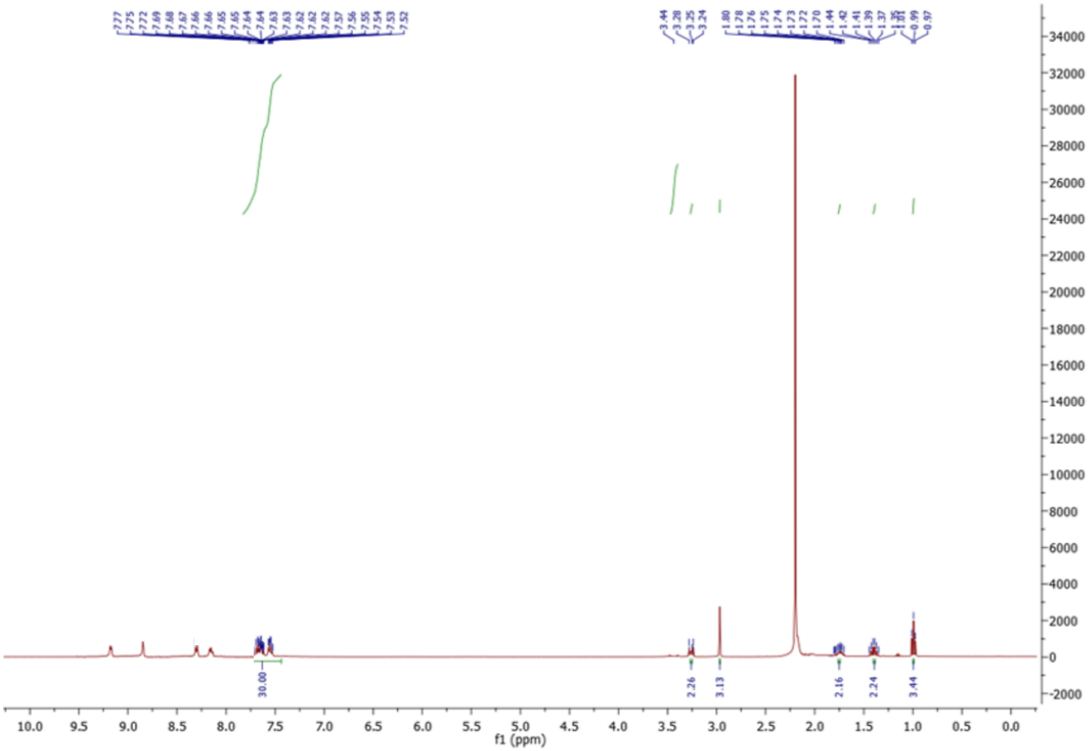


Figure S4. ^{1}H NMR spectrum of 1-Butyl-4-methylpyridinium Dichlorobis(triphenylphosphine)rhodate(I) [BMPy][$RhCl_2(PPh_3)_2$].

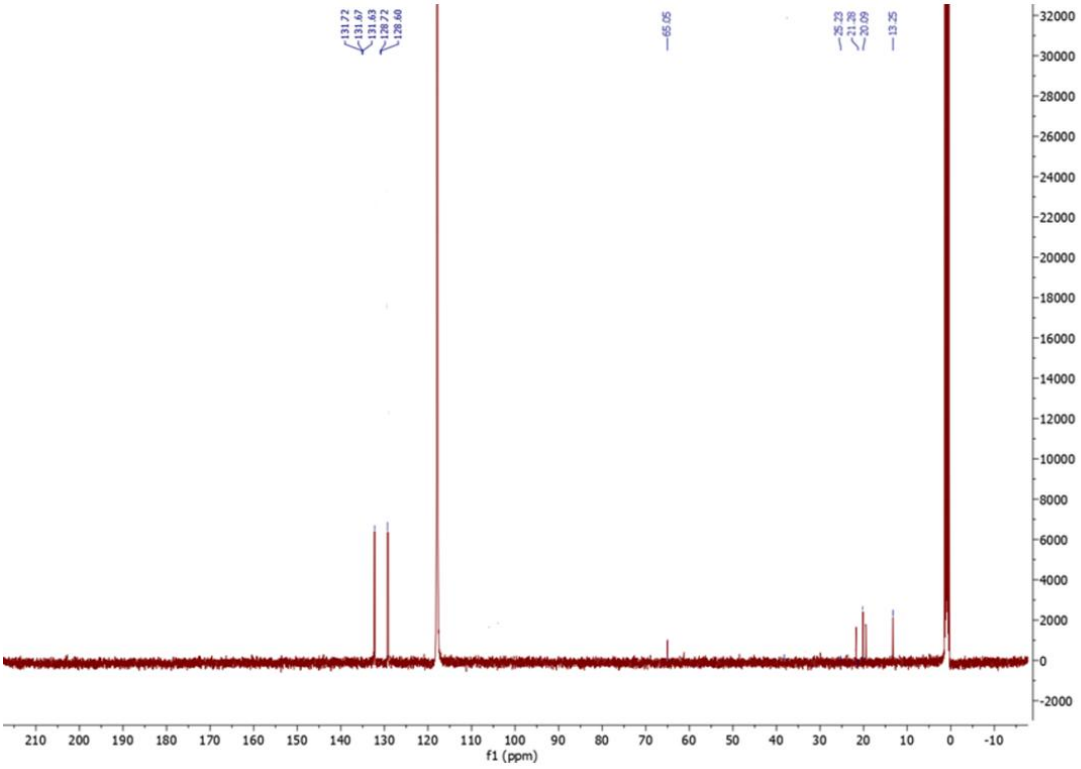


Figure S5. ^{13}C NMR spectrum of 1-Butyl-4-methylpyridinium Dichlorobis(triphenylphosphine)rhodate(I) [BMPy][$RhCl_2(PPh_3)_2$].

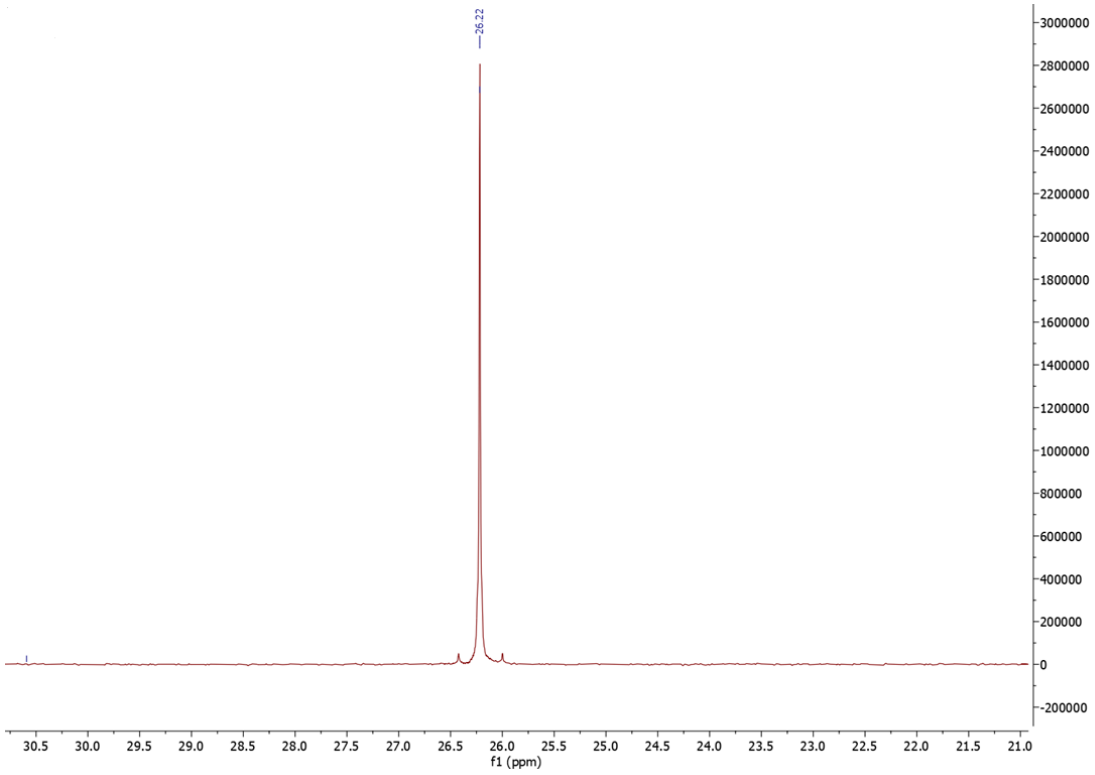


Figure S6. ^{31}P NMR spectrum of 1-Butyl-4-methylpyridinium Dichlorobis(triphenylphosphine)rhodate(I) [BMPy][$RhCl_2(PPh_3)_2$].

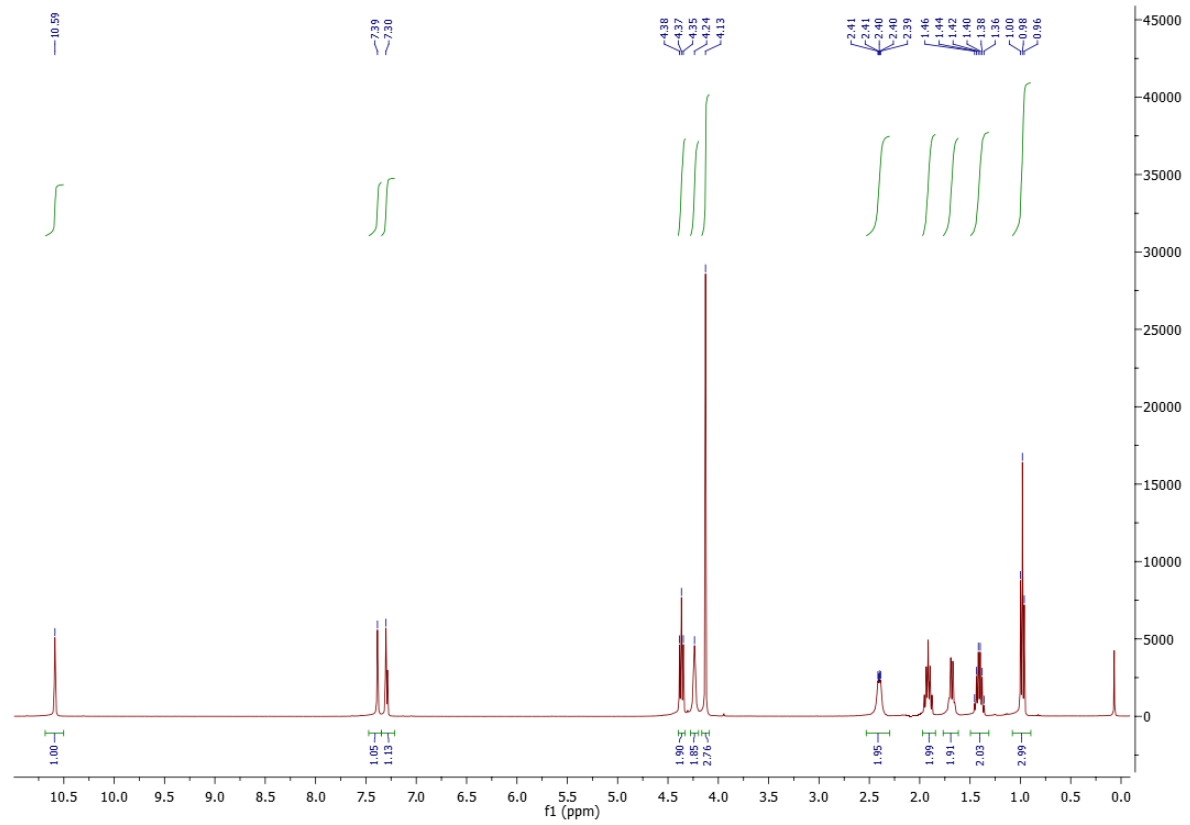


Figure S7. ^{1}H NMR spectrum of 1-Butyl-3-methylimidazolium Dichloro(1,5-cyclooctadiene)rhodate(I) [BMIM][$Rh(Cl_2)(cod)$].

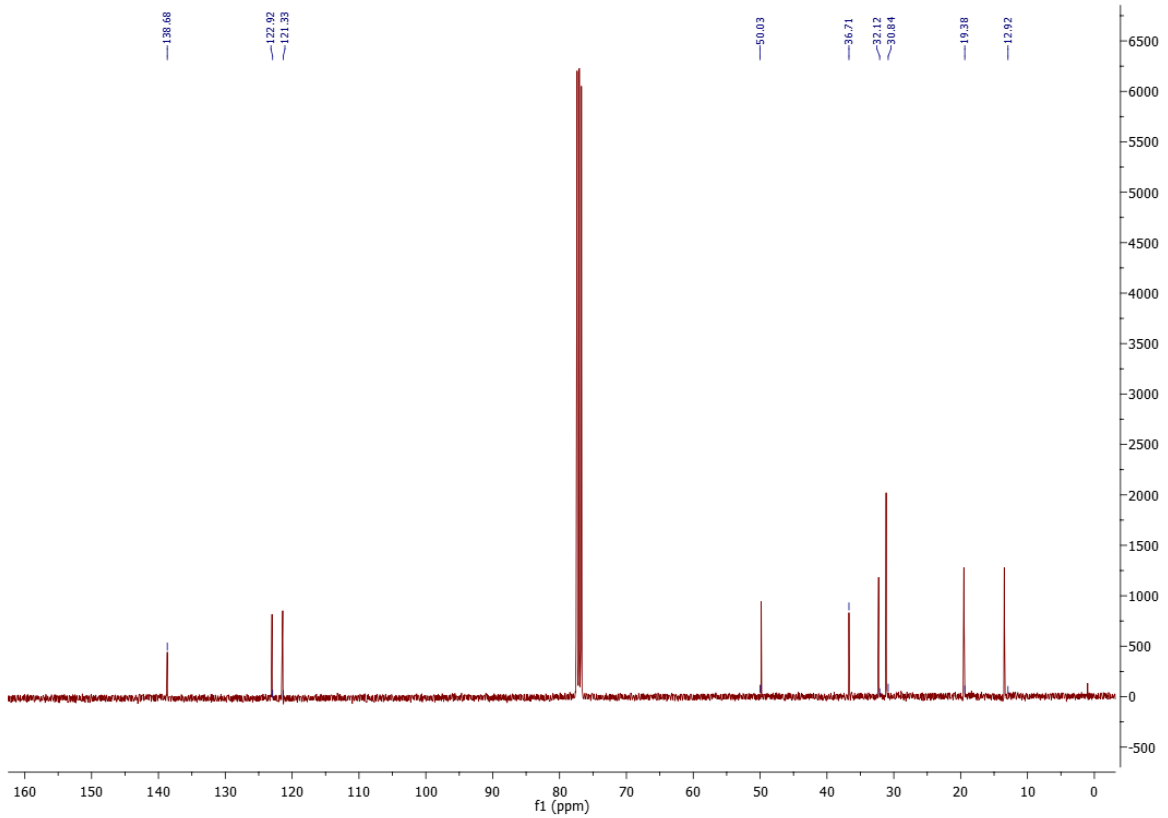


Figure S8. ^{13}C NMR spectrum of 1-Butyl-3-methylimidazolium Dichloro(1,5-cyclooctadiene)rhodate(I) [BMIM][Rh(Cl_2)(cod)].

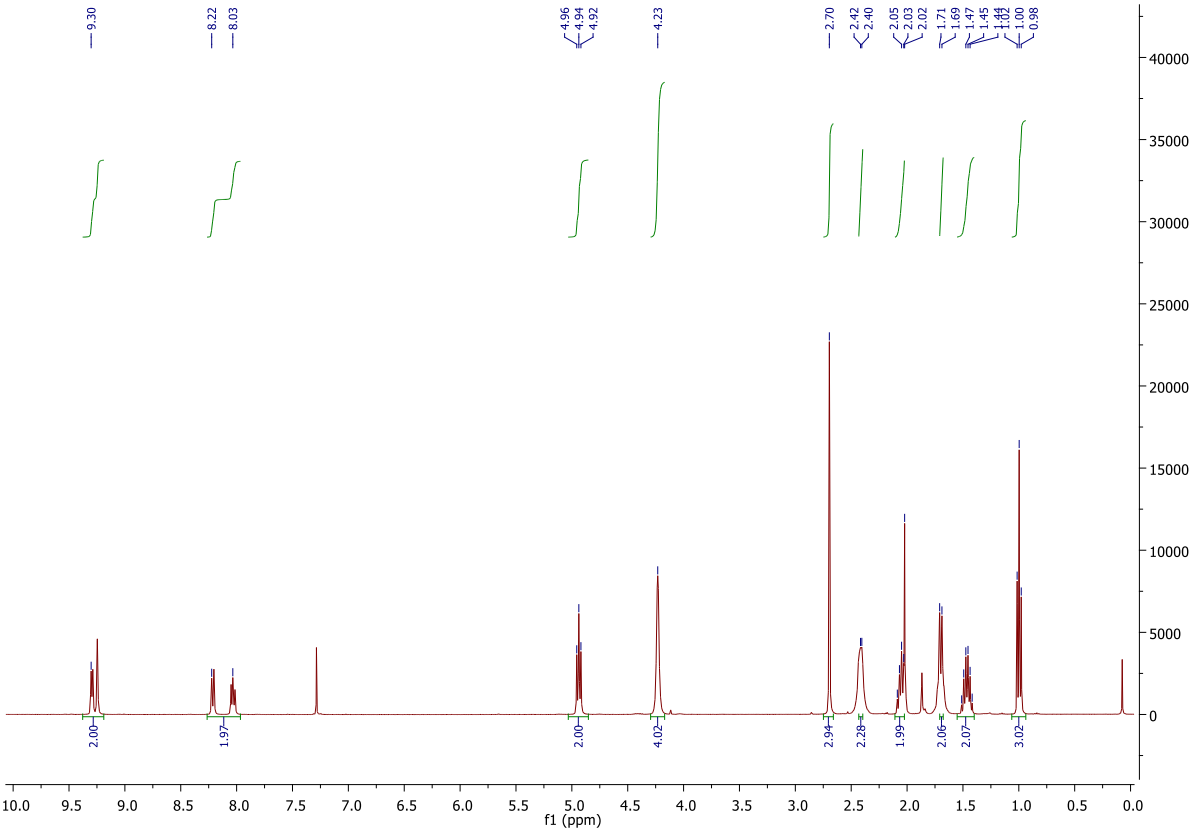


Figure S9. ^{1}H NMR spectrum of 1-Butyl-4-methylpyridinium Dichloro(1,5-cyclooctadiene)rhodate(I) [BMPy][Rh(Cl_2)(cod)].

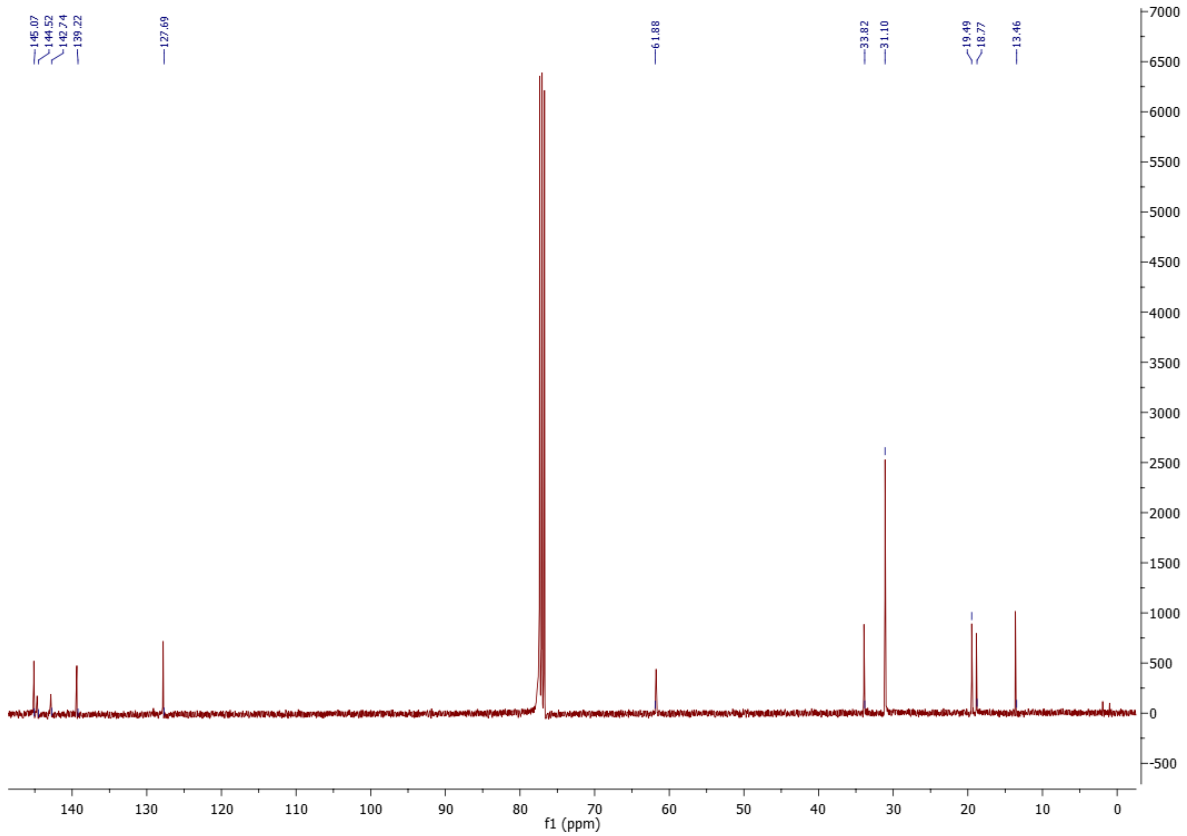


Figure S10. ^{13}C NMR spectrum of 1-Butyl-4-methylpyridinium Dichloro(1,5-cyclooctadiene)rhodate(I) [BMPy][Rh(Cl_2)(cod).

2. ESI-MS spectra of complexes

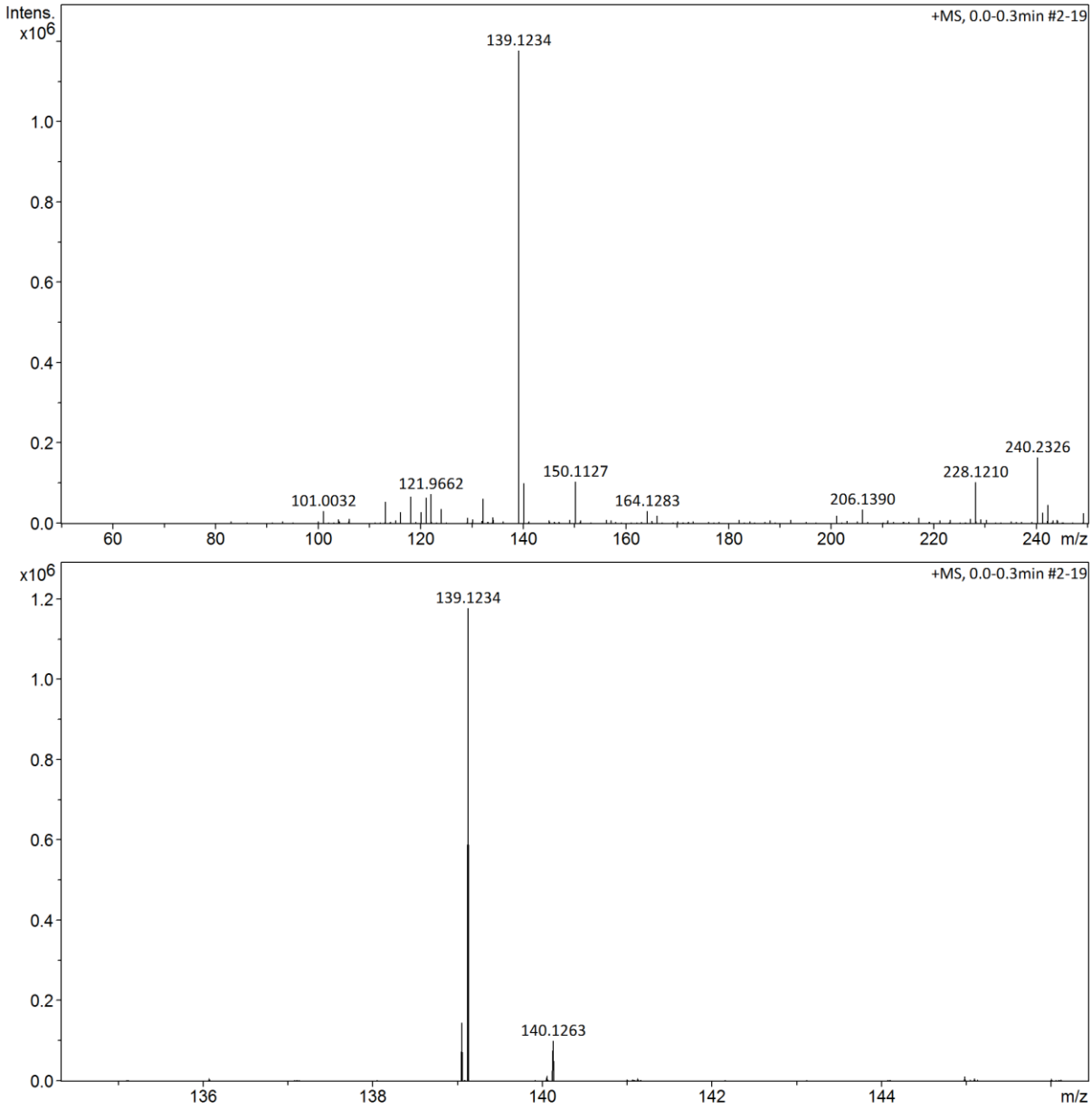


Figure S11. ESI-MS(+) of [BMIM][$RhCl_2(PPh_3)_2$].

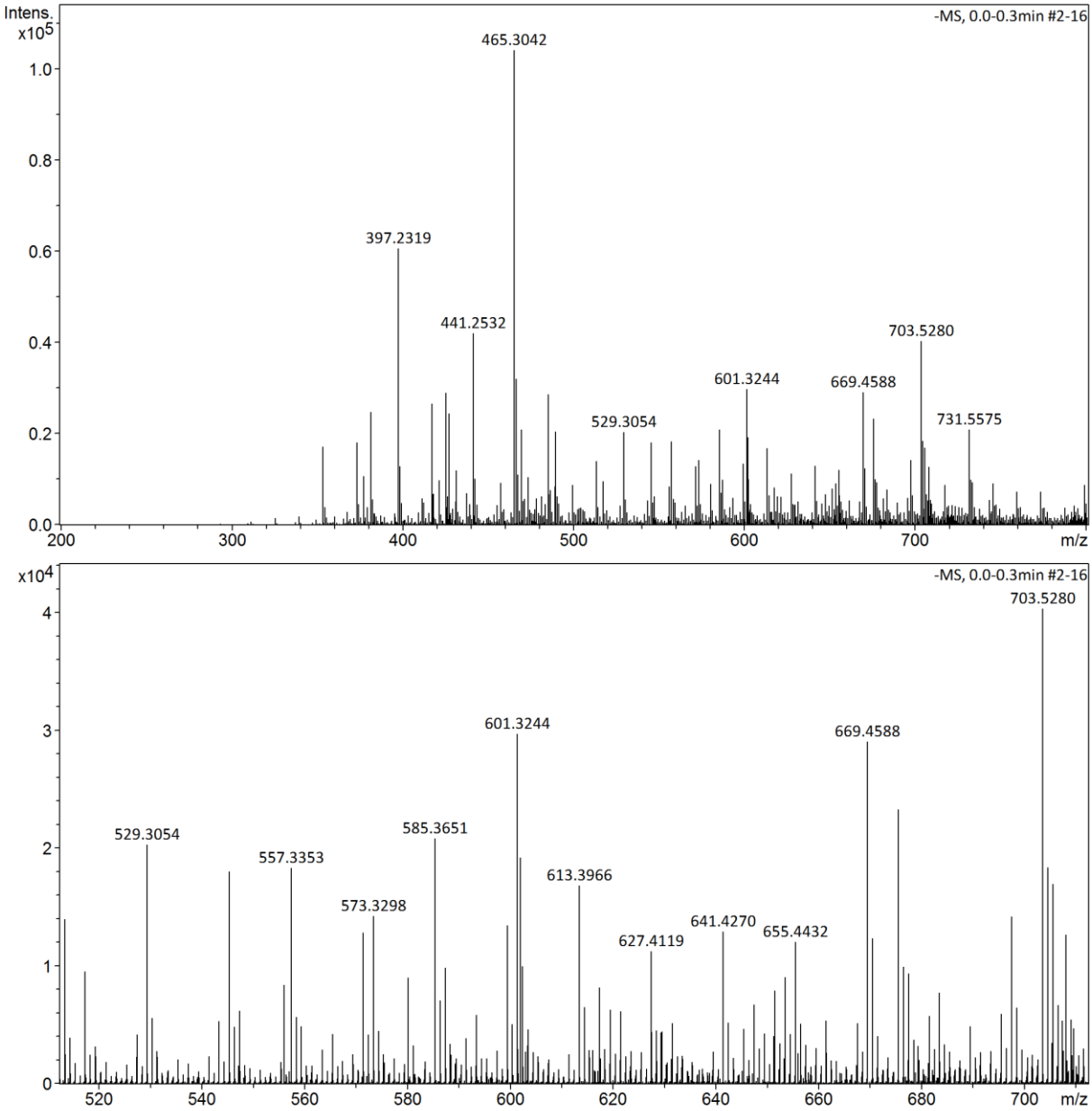


Figure S12. ESI-MS(-) of [BMIM][$RhCl_2(PPh_3)_2$].

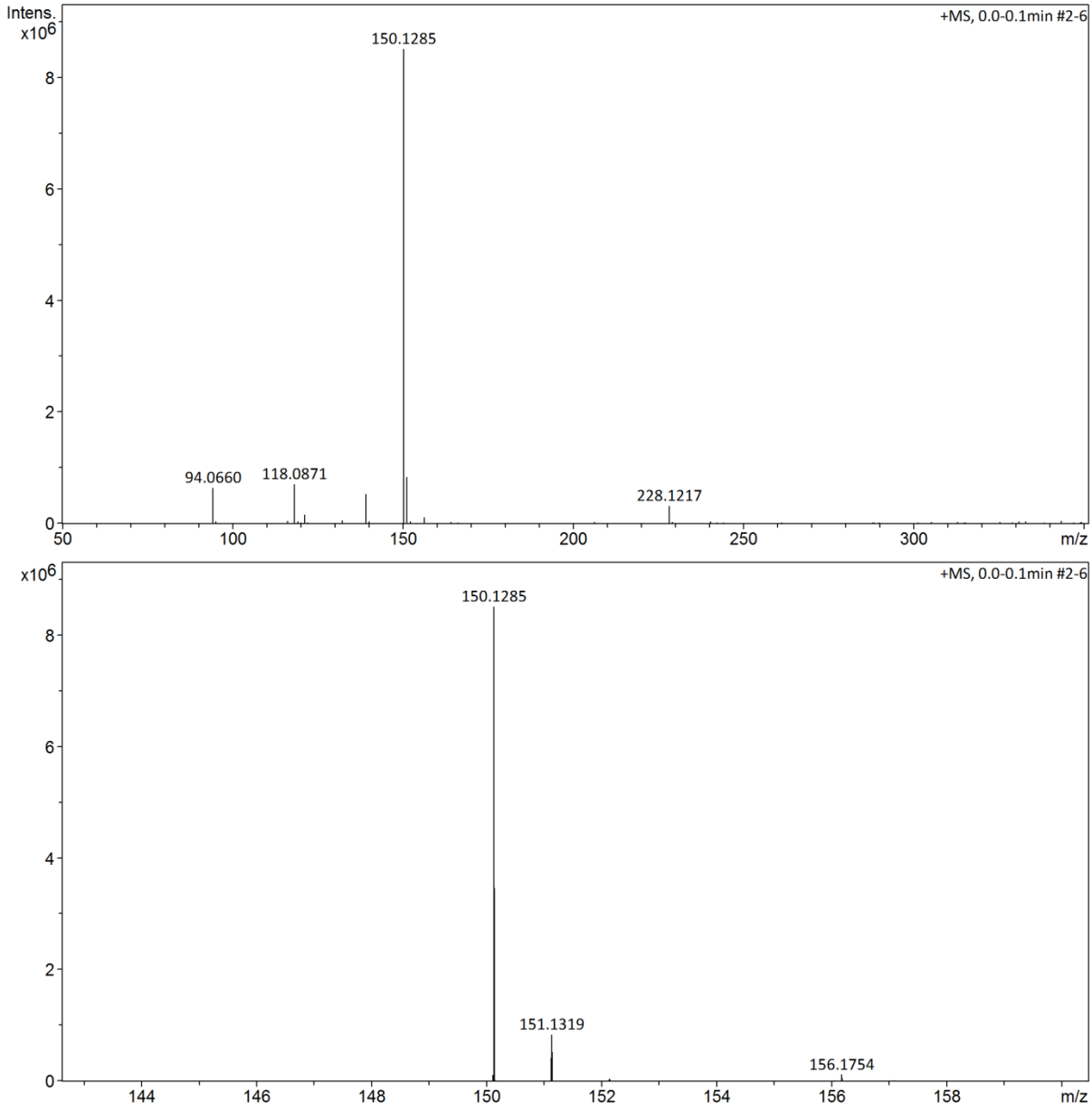


Figure S13. ESI-MS(+) of [BMPy][$RhCl_2(PPh_3)_2$].

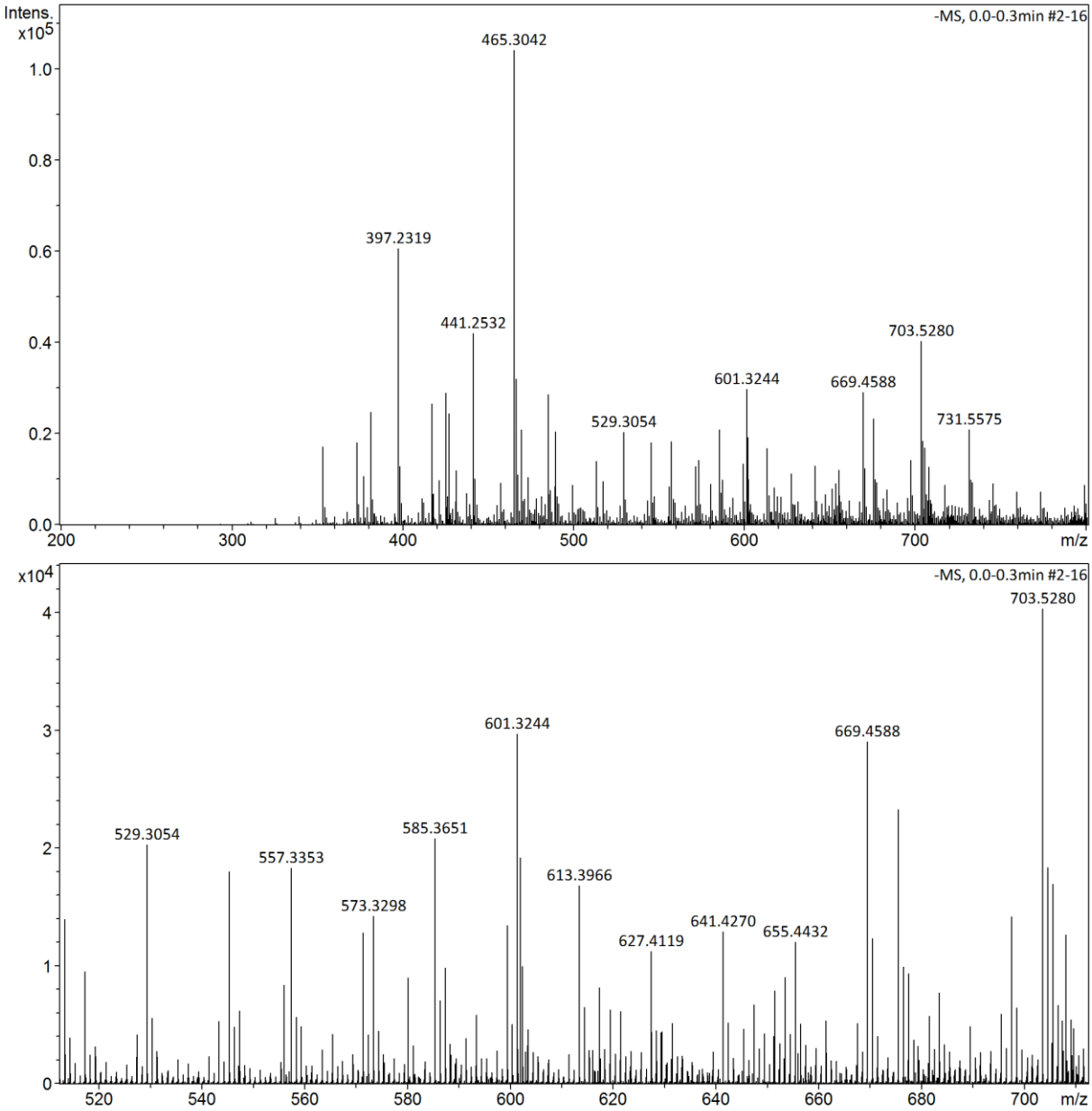


Figure S14. ESI-MS(-) of [BMPy][$RhCl_2(PPh_3)_2$].

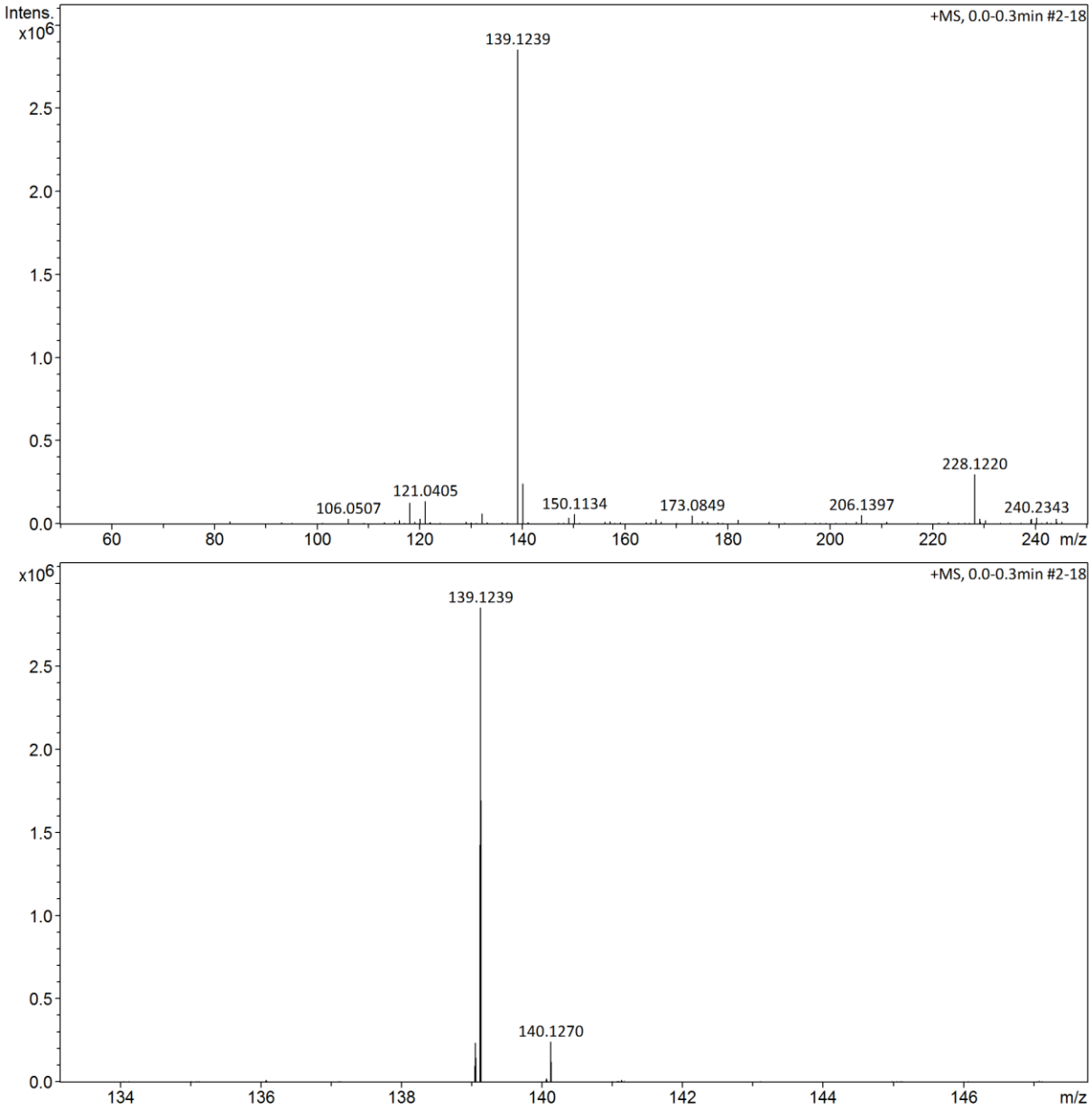


Figure S15. ESI-MS(+) of [BMIM][$RhCl_2$(cod)].

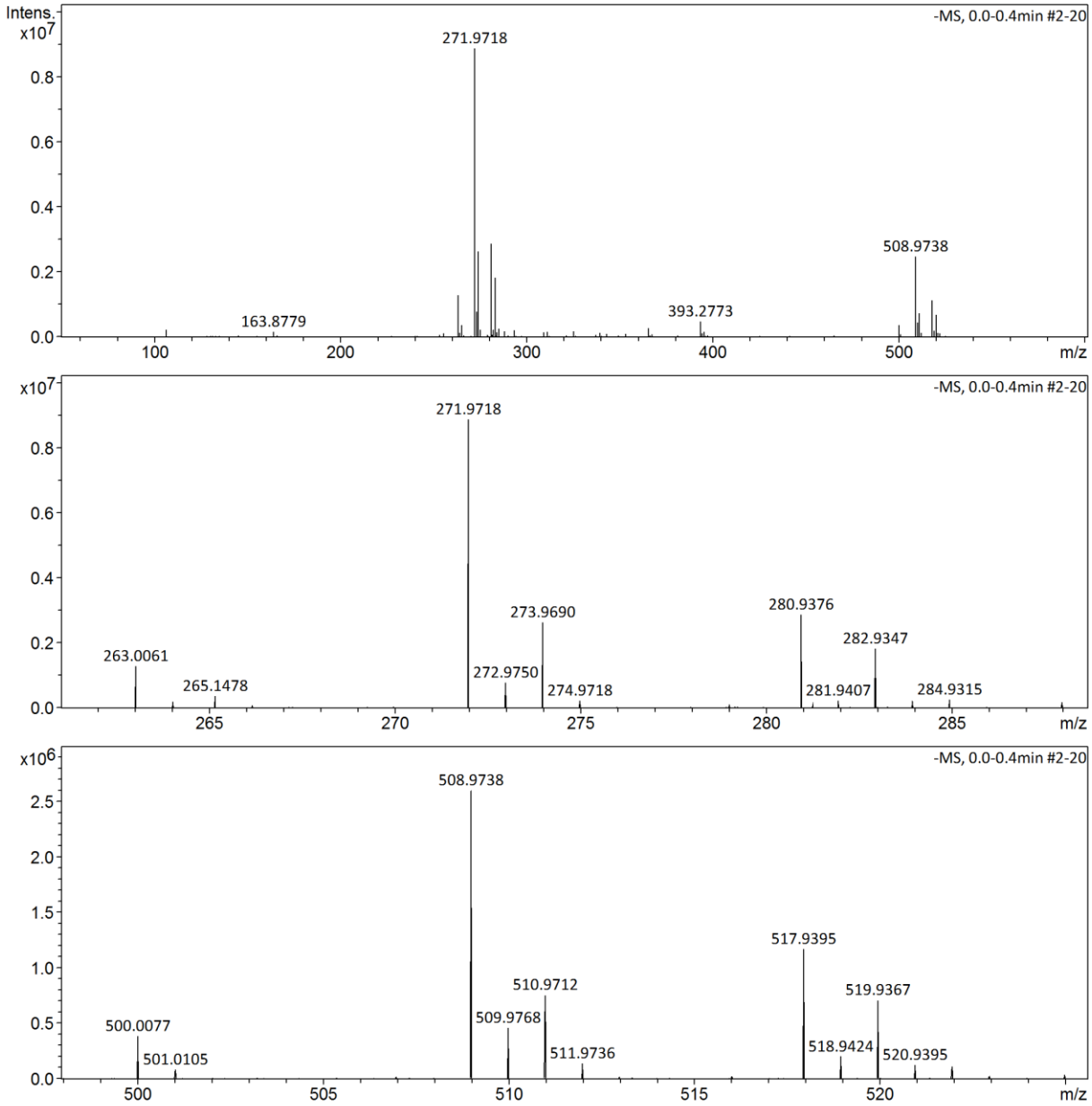


Figure S16. ESI-MS(-) of [BMIM][RhCl$_2$(cod)].

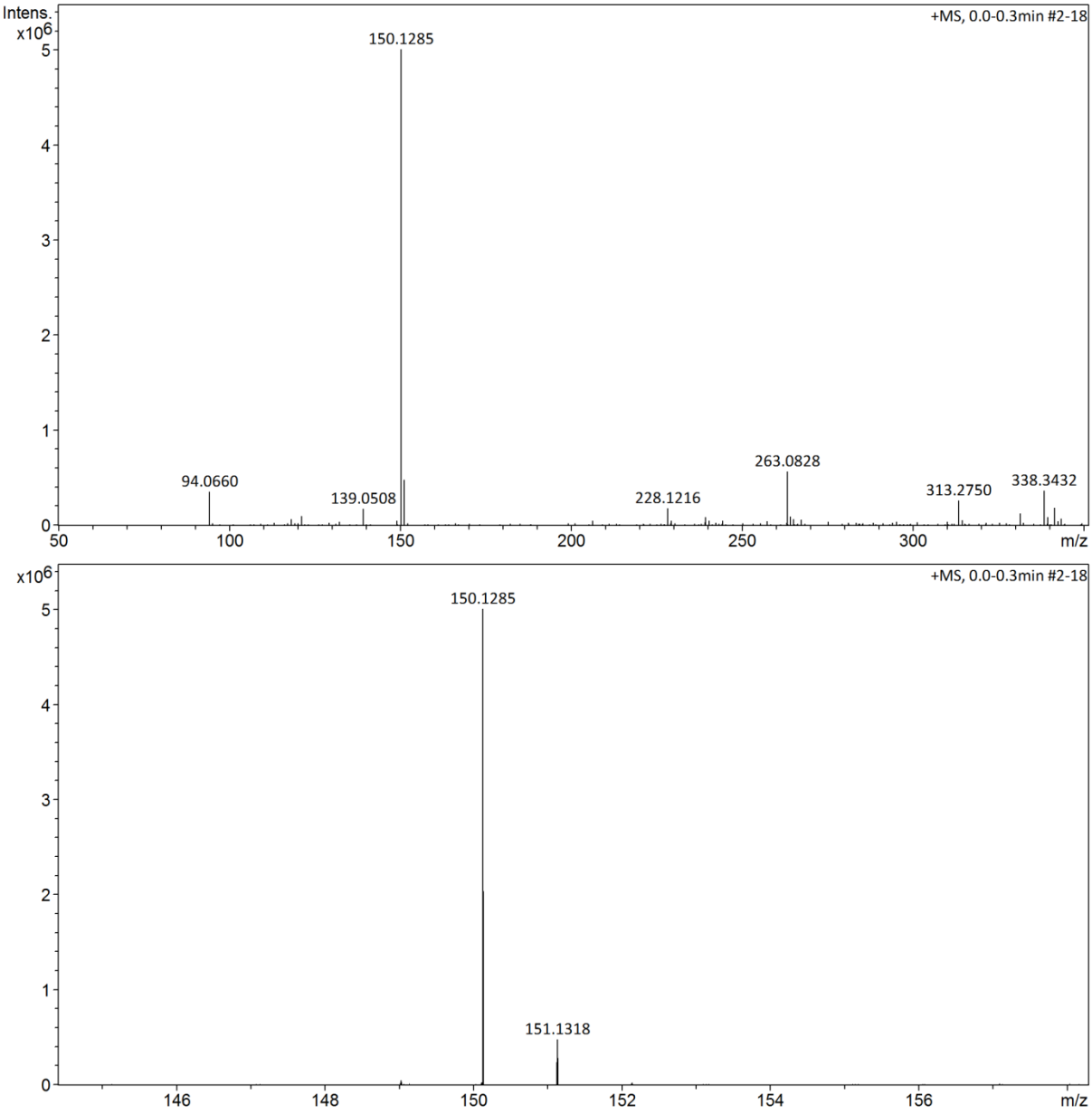


Figure S17. ESI-MS(+) of [BMPy][$RhCl_2$(cod)].

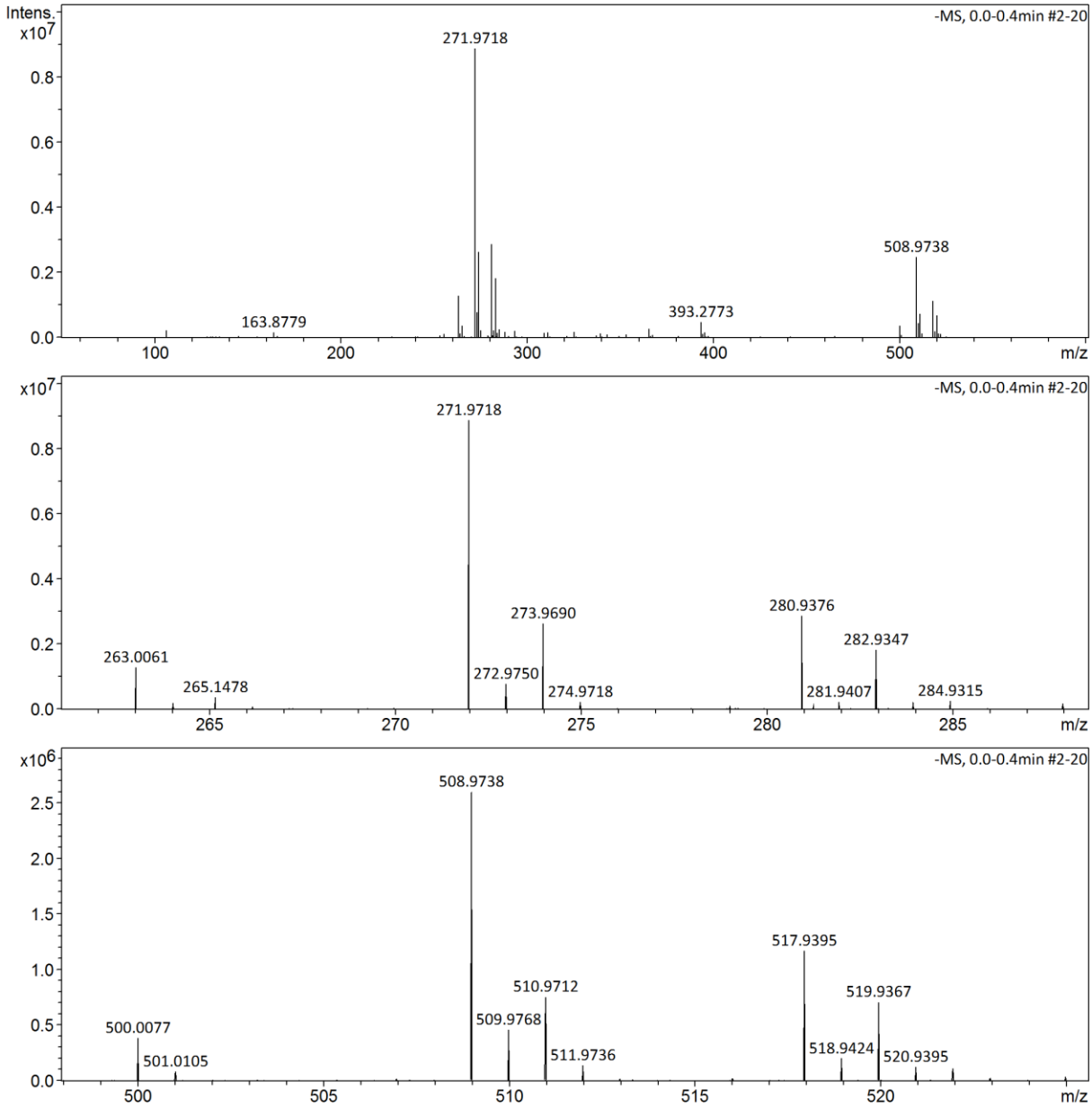


Figure S18. ESI-MS(-) of [BMPy][RhCl2(cod)].

3. Products characterization

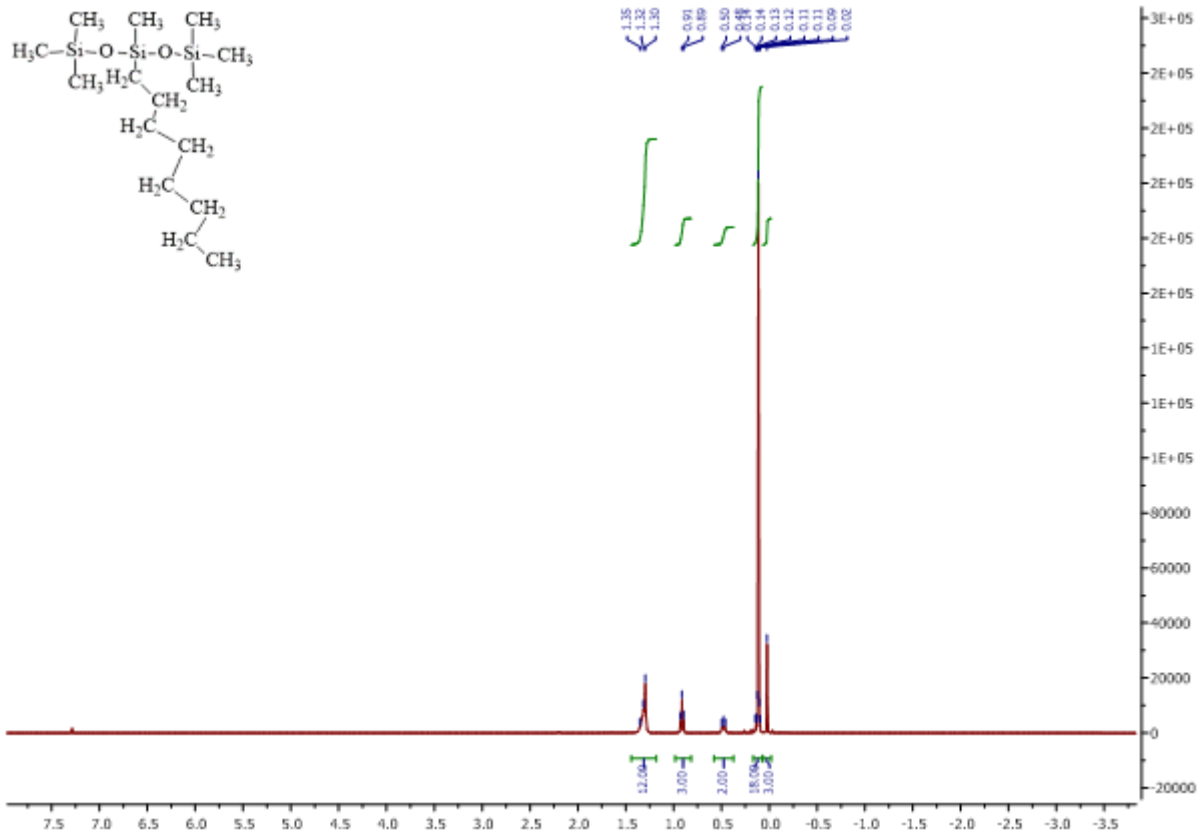


Figure S19. ^{1}H NMR spectrum of 3-octyl-1,1,1,3,5,5,5-heptamethyltrisiloxane.

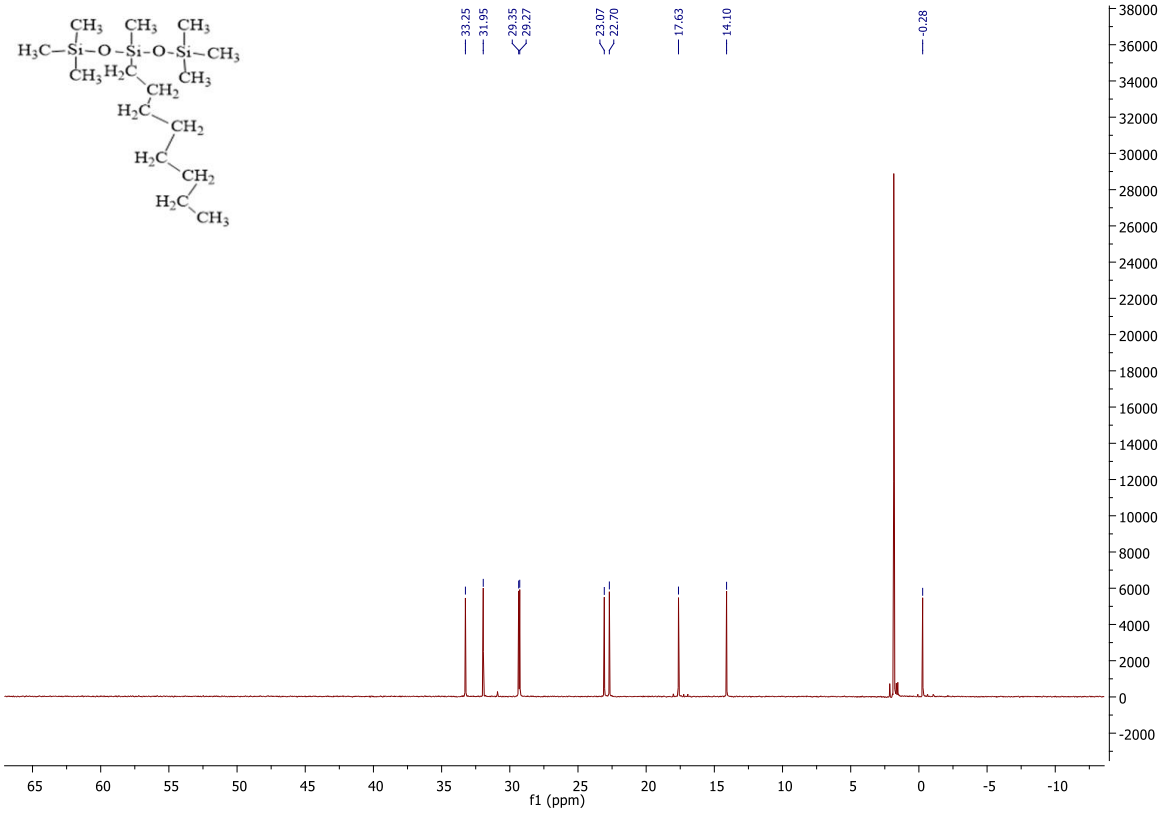


Figure S20. ^{13}C NMR spectrum of 3-octyl-1,1,1,3,5,5,5-heptamethyltrisiloxane.

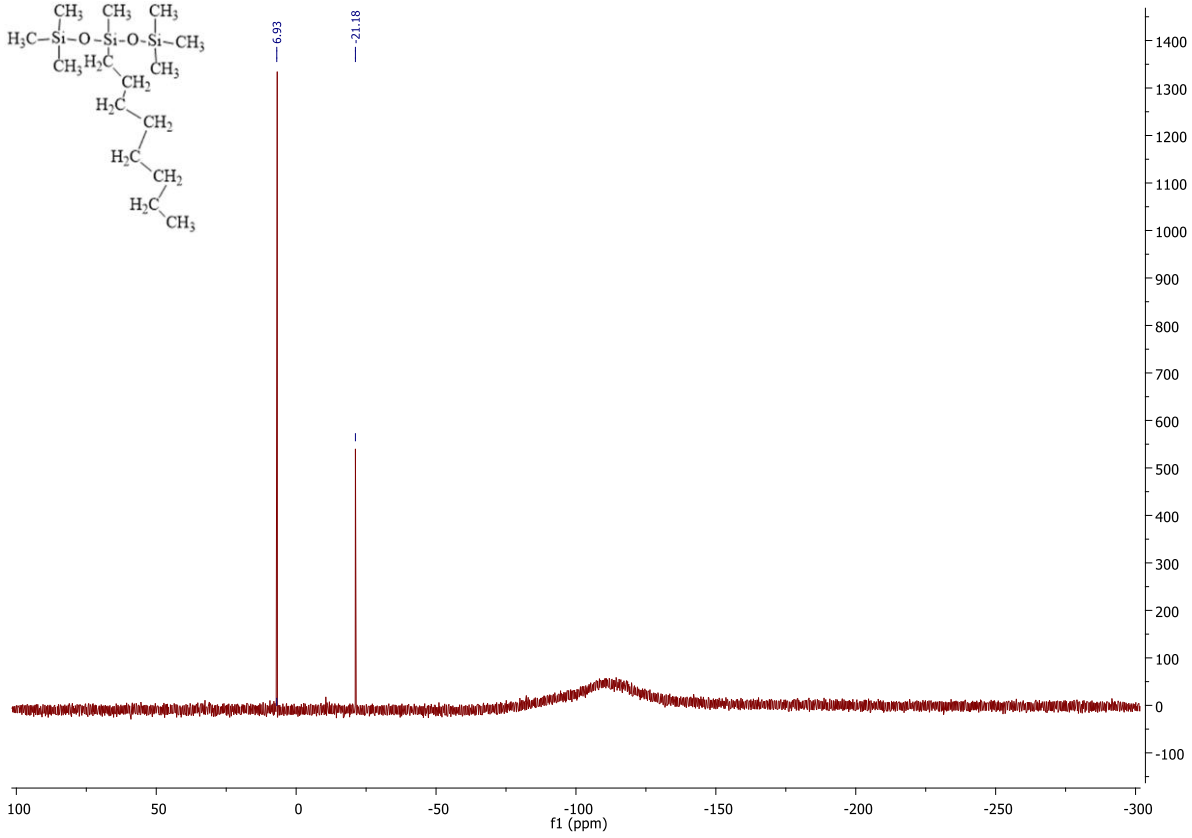


Figure S21. ^{29}Si NMR spectrum of 3-octyl-1,1,1,3,5,5,5-heptamethyltrisiloxane.

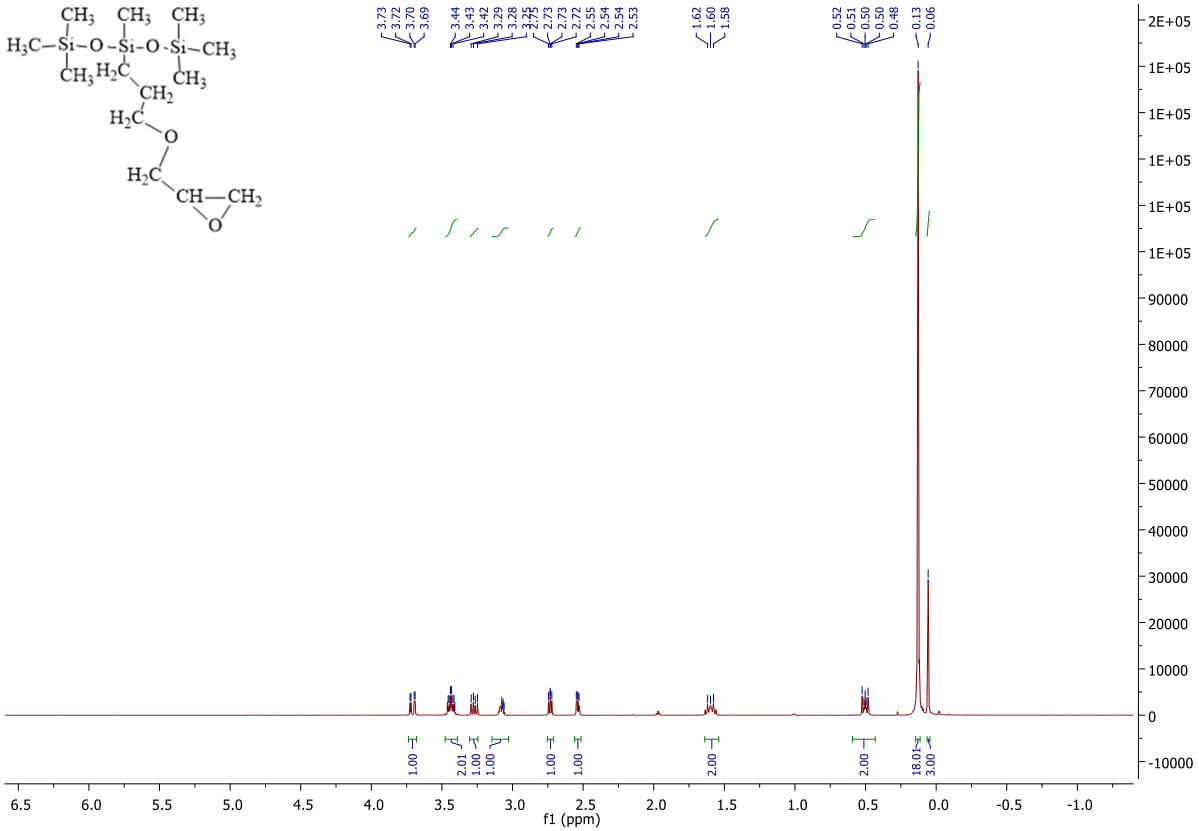


Figure S22. ^{1}H NMR spectrum of 3-(3-glycidyloxypropyl)-1,1,1,3,5,5,5-heptamethyltrisiloxane.

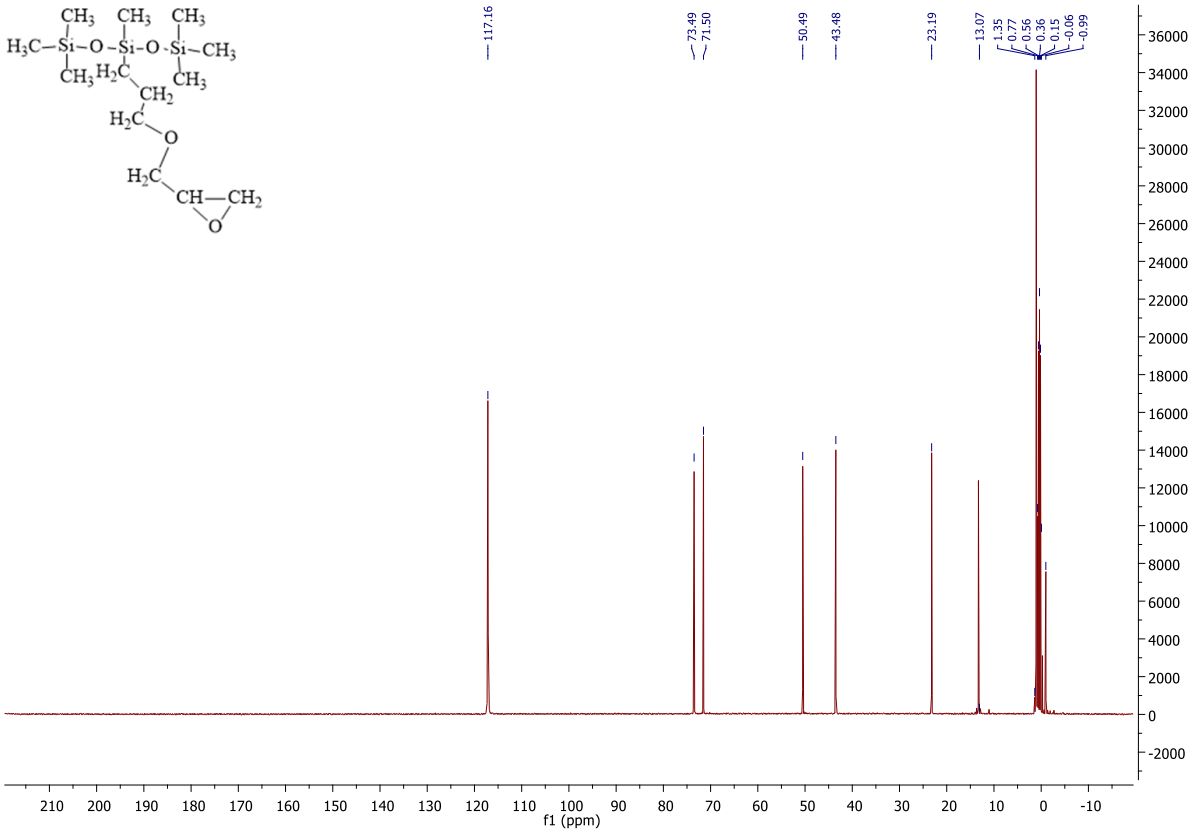


Figure S23. ^{13}C NMR spectrum of 3-(3-glycidyloxypropyl)-1,1,1,3,5,5,5-heptamethyltrisiloxane.

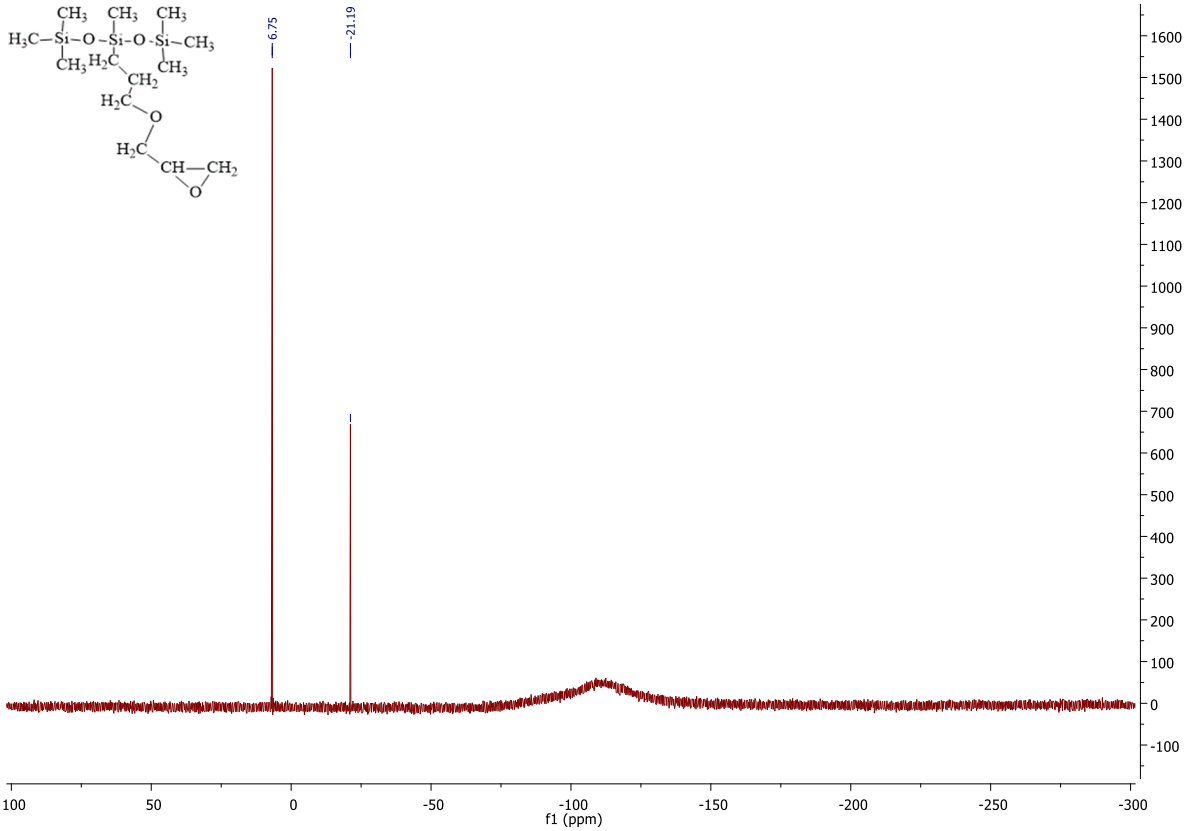


Figure S24. ^{29}Si NMR spectrum of 3-(3-glycidyloxypropyl)-1,1,1,3,5,5,5-heptamethyltrisiloxane.

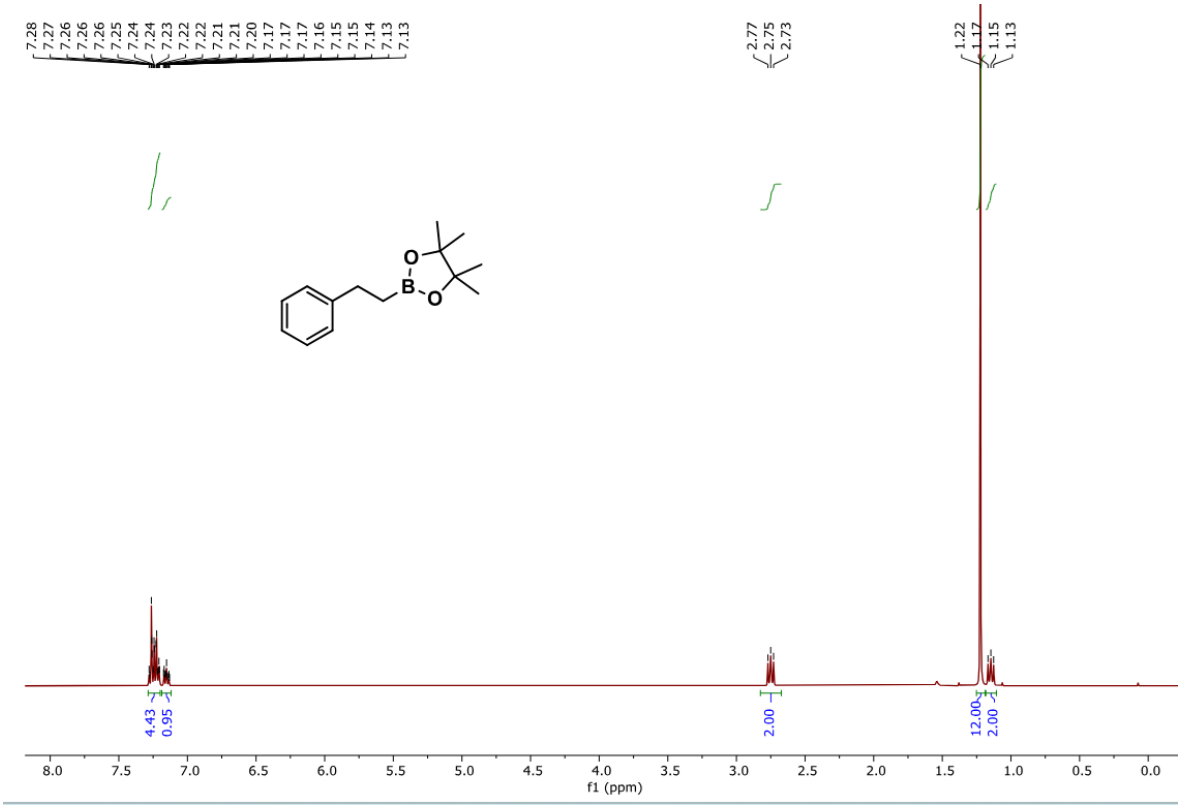


Figure S25. ^{1}H NMR spectrum of 4,4,5,5-Tetramethyl-2-phenethyl-1,3,2-dioxaborolane.

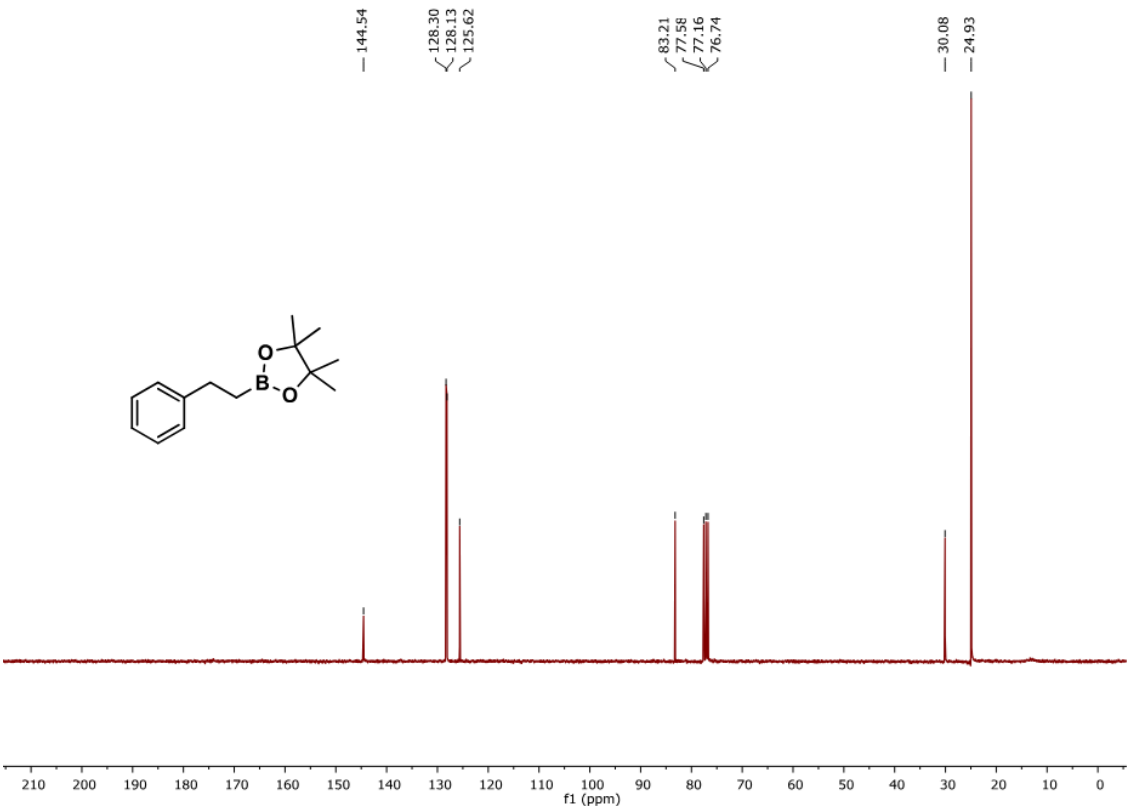


Figure S26. ^{13}C NMR spectrum of 4,4,5,5-Tetramethyl-2-phenethyl-1,3,2-dioxaborolane.

GC spectra

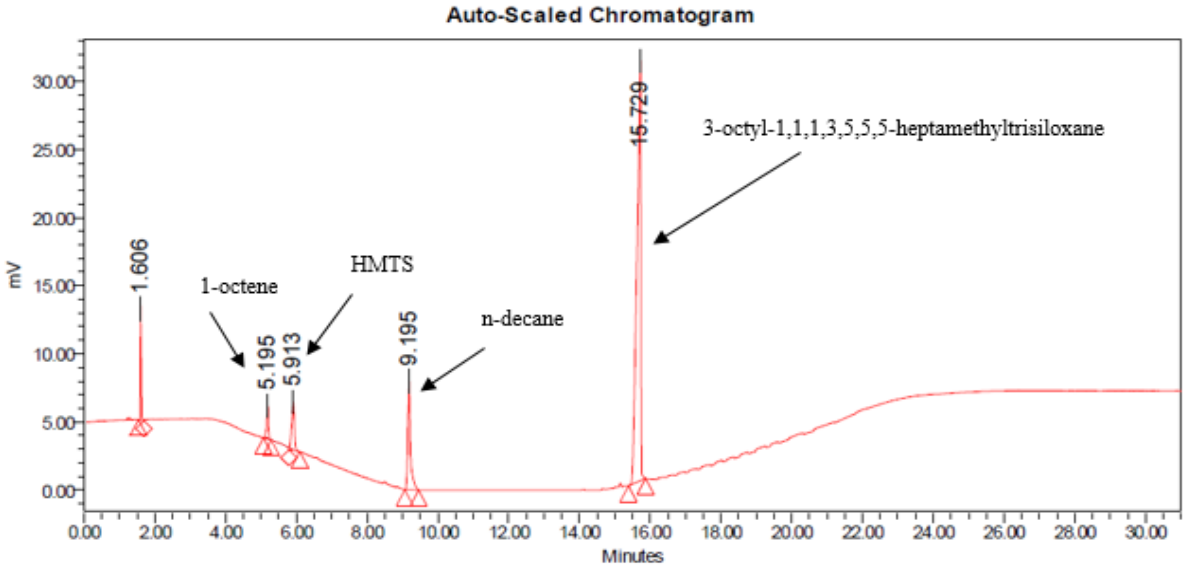


Figure S27. Exemplary chromatogram after the reaction of hydrosilylation 1-octene with HMTS.

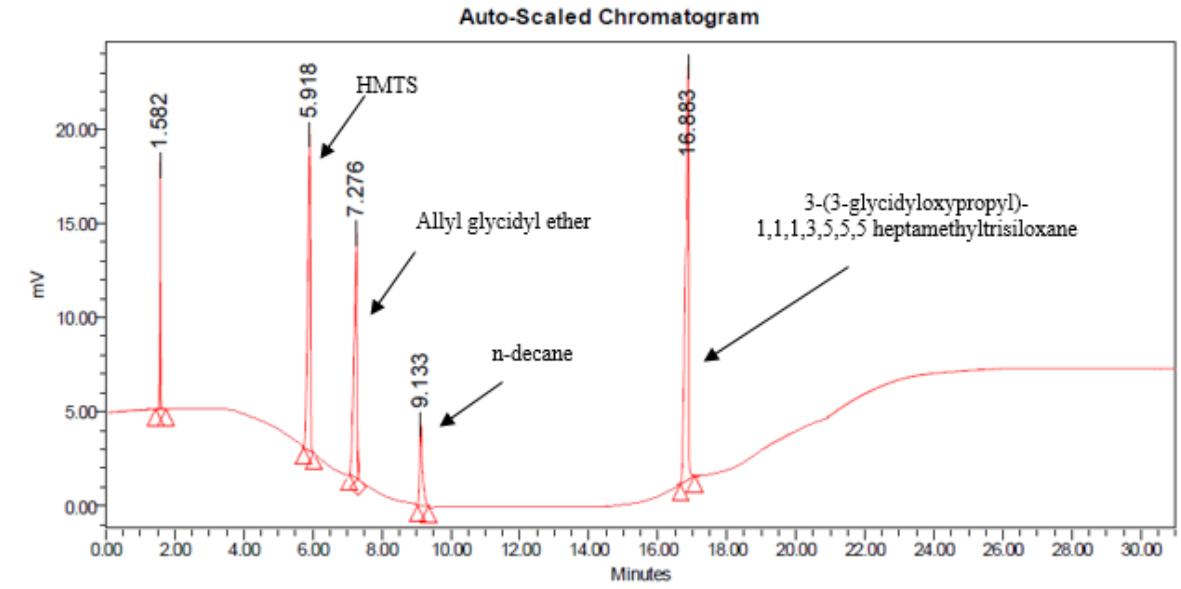


Figure S28. Exemplary chromatogram after the reaction of hydrosilylation allyl glycidyl ether with HMTS.

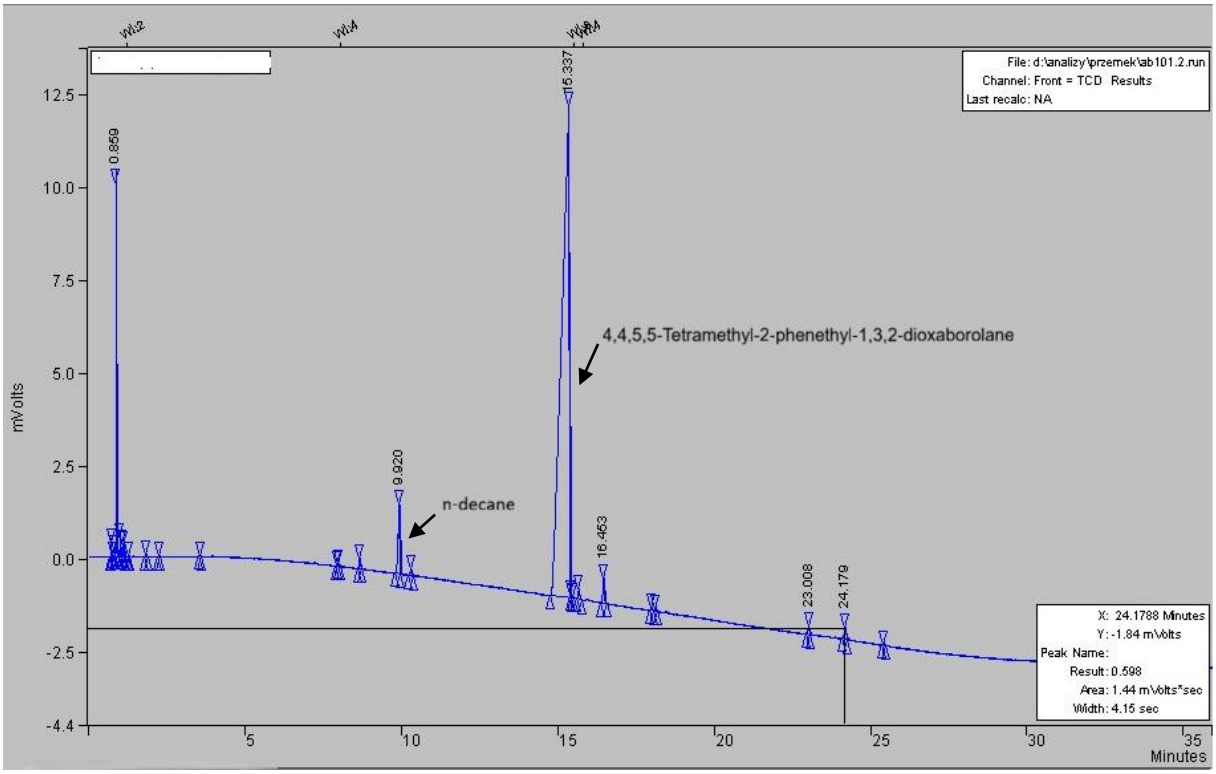


Figure S29. Exemplary chromatogram after the reaction of hydroboration of pinacoloborane with styrene.

FT-IR spectra

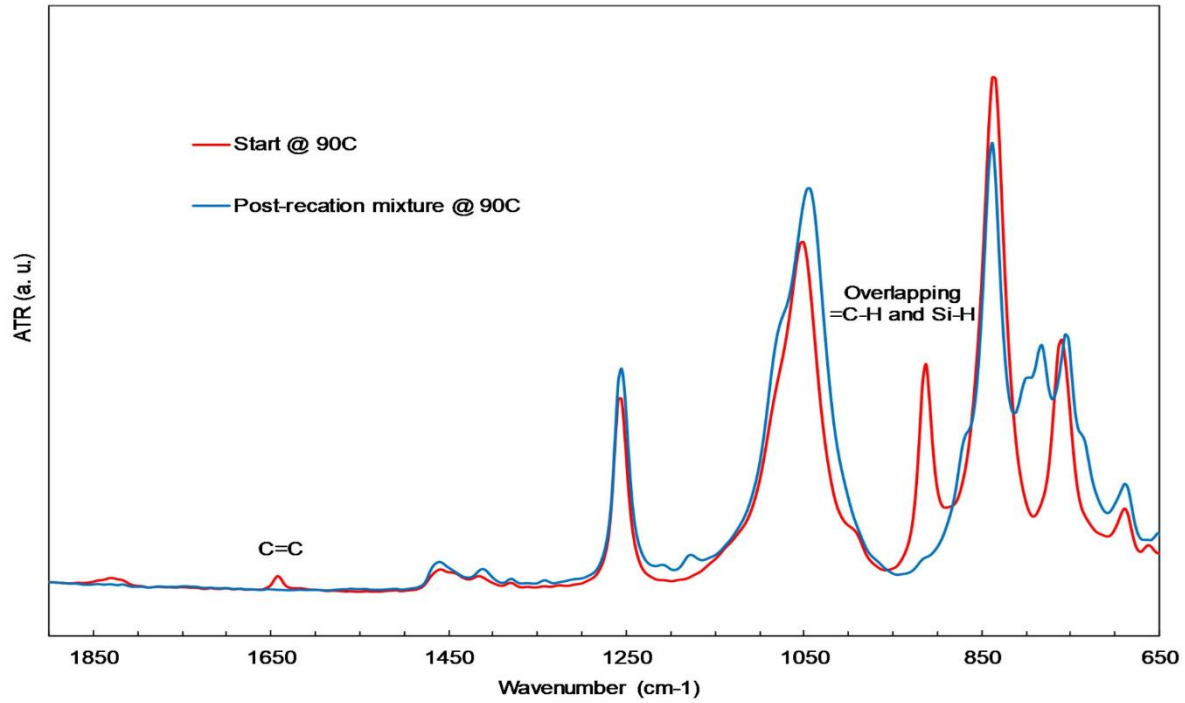


Figure S30. Exemplary FT-IR spectra of the hydrosilylation of octene with HMTS.