Supporting Information

Alkyl derivatives of bis (perfluoroalkylsulfonylimino)trifluoromethanesulfonic acid

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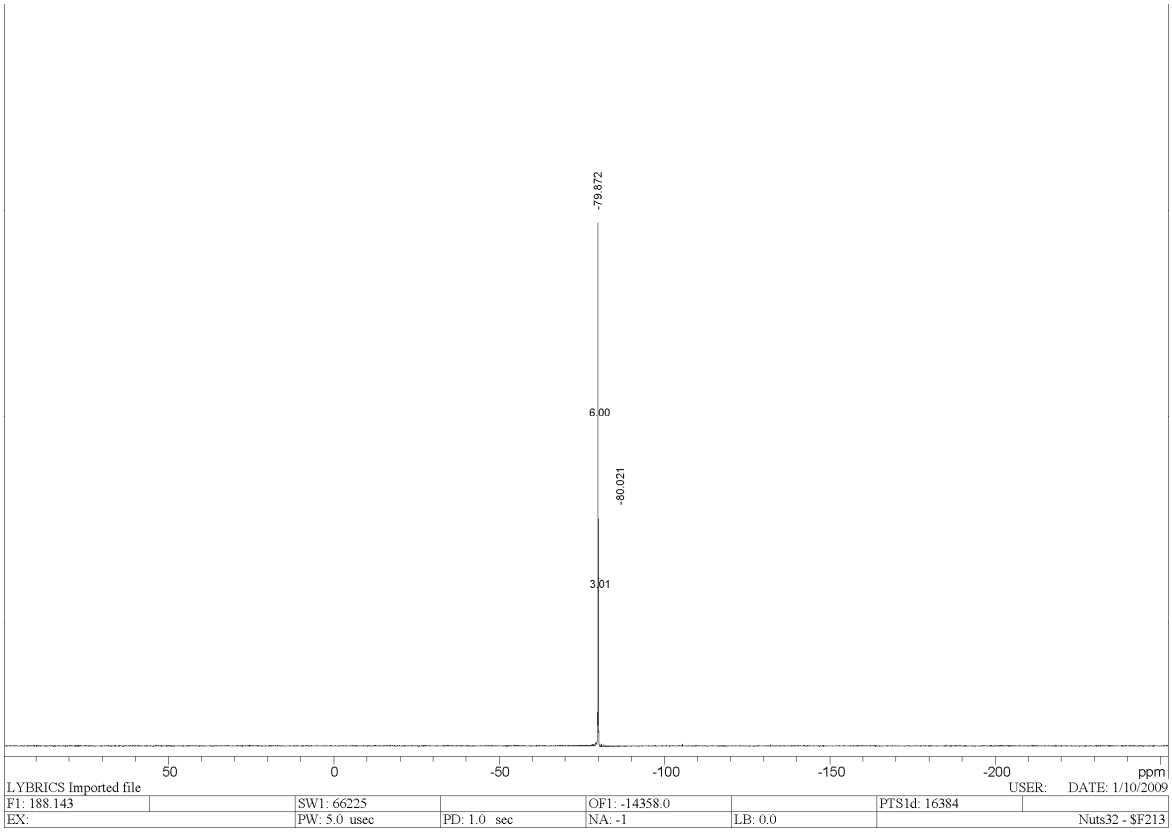
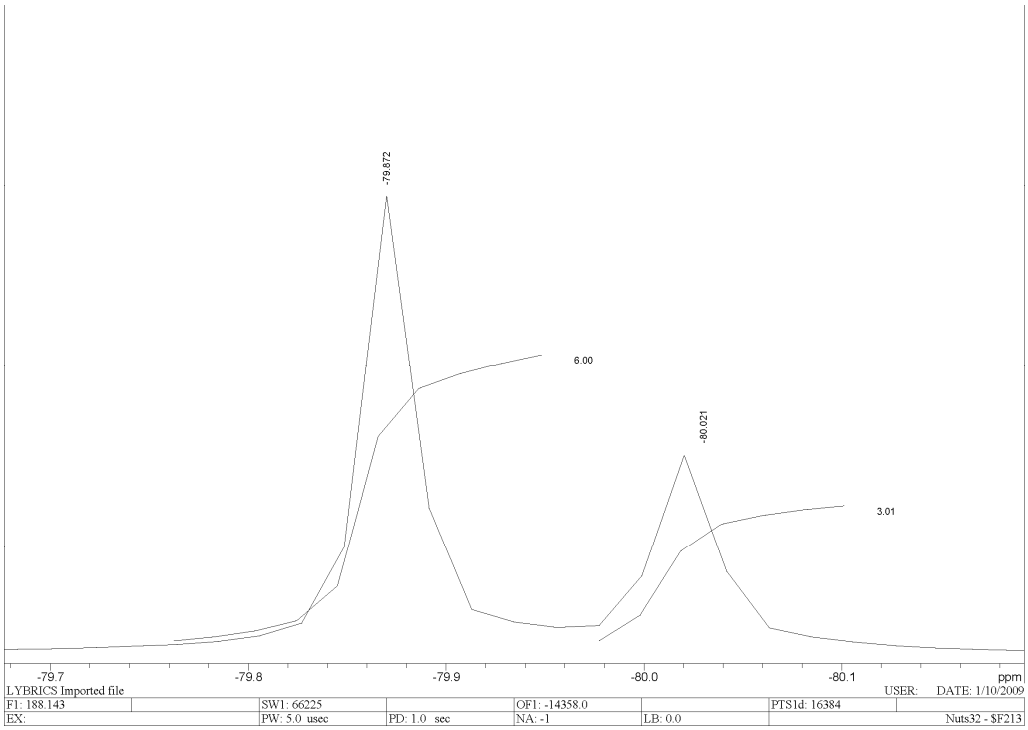
Silver salt of bis (trifluoromethylsulfonylimino) trifluoromethanesulfonic acid **1a**

Chart 1. ^{19}F NMR Spectrum of **1a** in Et_2O



Part of the ^{19}F NMR Spectrum of **1a** in Et_2O



N-Methyl, N-(trifluoromethylsulfonyl)-[N'-(trifluoromethylsufonyl)trifluoromethyl-sulfoximidoyl] imide **(2a)**

Slightly brownish liquid; bp 75°C/0.07 mmHg (76% yield); ^1H NMR (300MHz, $CDCl_3$): δ 3.76(3H, s, CH_3); ^{13}C NMR (125.76 MHz, $CDCl_3$):δ 118.9 (q, CF_3, J_{CF} = 326 Hz), 118.6 (q, CF_3, J_{CF} = 324 Hz), 118.2 (q, CF_3, J_{CF} = 321 Hz), 40.5(CH_3)**;** ^{19}F NMR (200 MHz, $CDCl_3$): δ -72.7(3F, s, 3F, CF_3), -73.3 (3F, s, CF_3), -78.36 (3F, s, CF_3); Anal. Calcd for $C_4H_3F_9N_20_5S_3$: C, 11.27; H, 0.7; F, 40.14; N, 6.57; S 22.54. Found: C, 11.23; H, 0.8; F, 40.24; N, 6.6; S 22.7.

Chart 2. ^{1}H NMR Spectrum of **2a** in$CDCl_3$

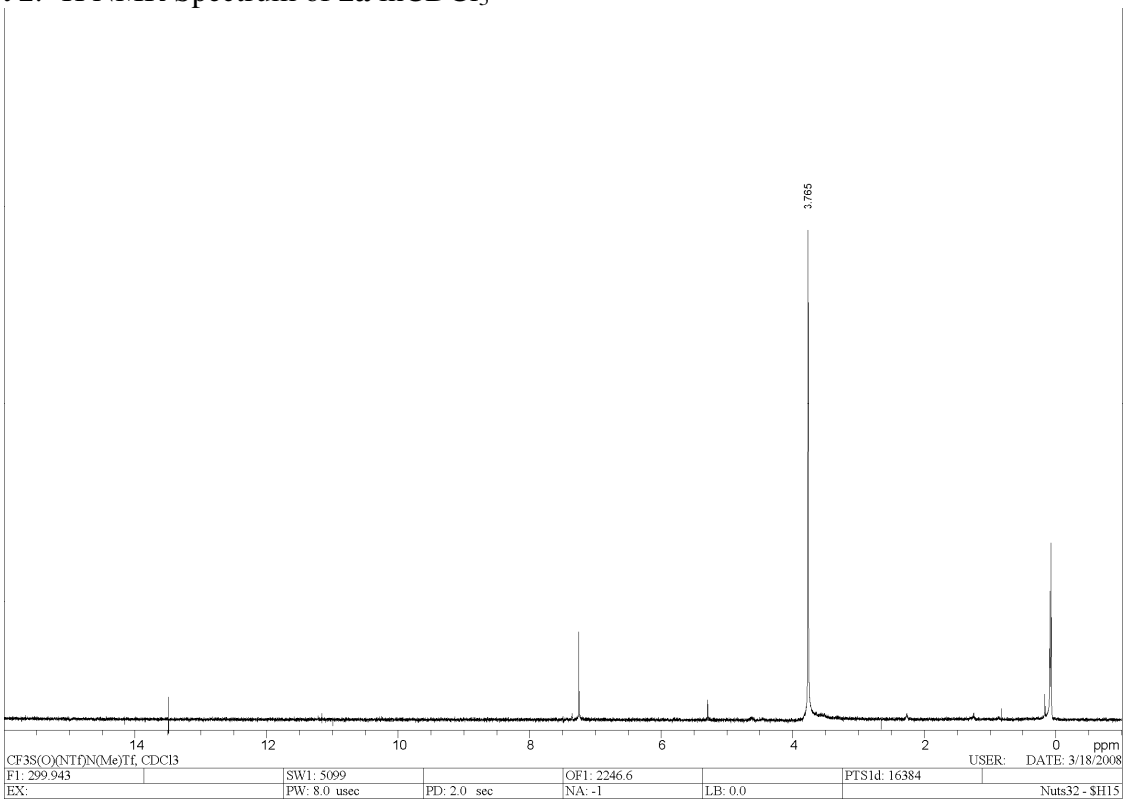


Chart 3. ^{13}C NMR Spectrum of **2a** inCH_2Cl_2

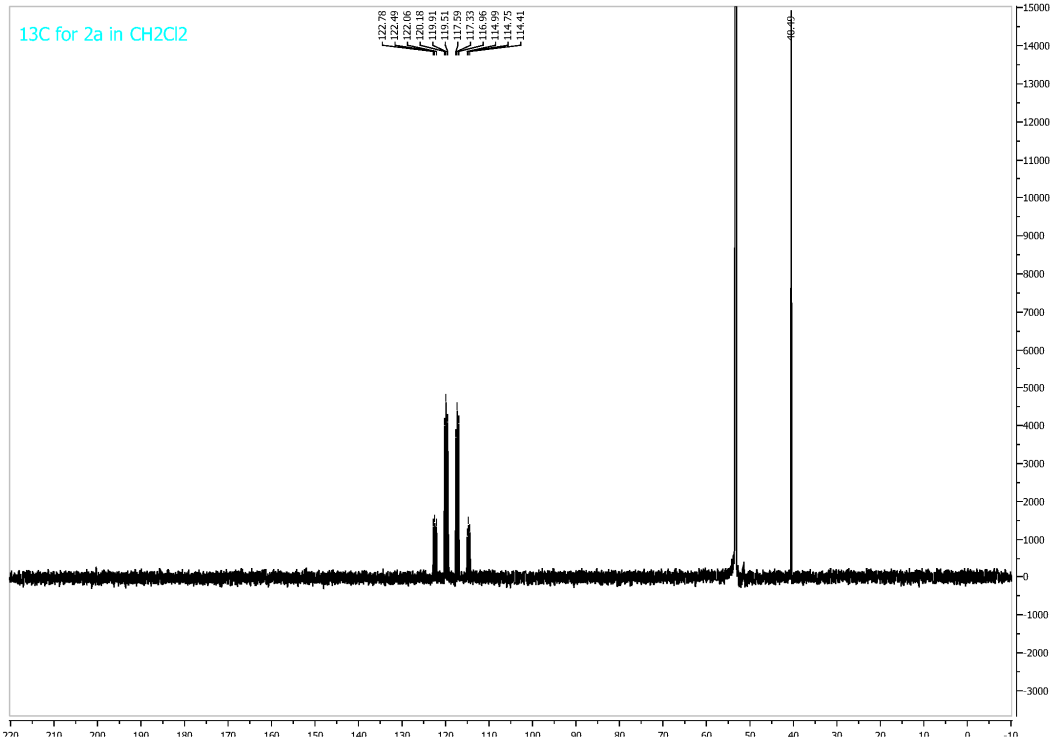
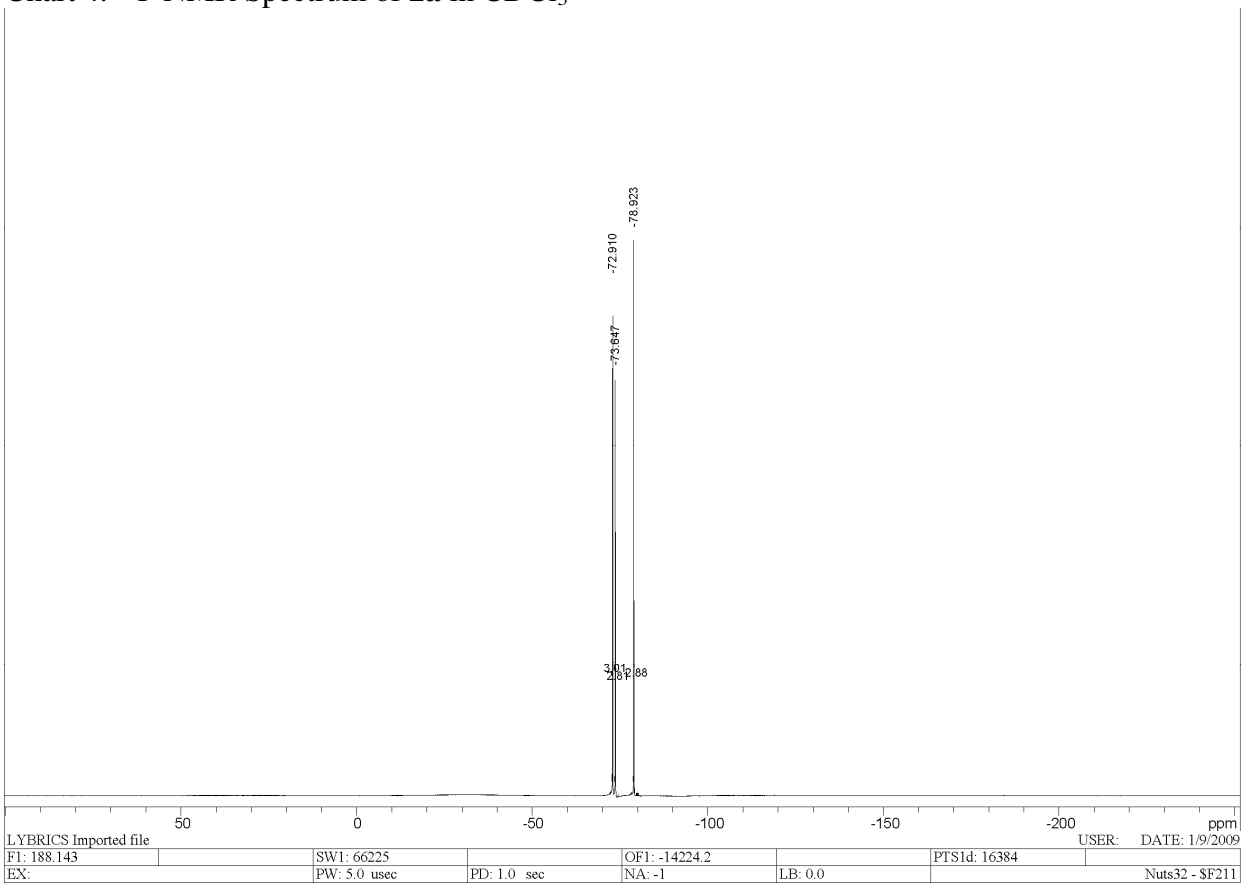


Chart 4. ^{19}F NMR Spectrum of **2a** in $CDCl_3$



*N-Ethyl, N-(trifluoromethylsulfonyl)-[N'-(trifluoromethylsufonyl)trifluoromethylsulfox-imidoyl] imide***2b**

Slightly brownish liquid; bp 95°C/0.05 mmHg (76% yield); ^1H NMR (300MHz, $CDCl_3$): δ 1.5 (3H, t, CH_3, J_{HH} = 7 Hz), 4.21 (2H, q, CH_2, J_{HH} = 7 Hz); ^{13}C NMR (125.76 MHz, $CDCl_3$):δ 118.8 (q, CF_3, J_{CF} = 327 Hz), 118.4 (q, CF_3, J_{CF} = 324Hz), 118.2 (q, CF_3, J_{CF} = 320 Hz), 51.9 (CH_2), 14.1 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ -72.2 (s, 3F, CF_3), -72.9 (s, 3F, CF_3), -78.96 (s, 3F, CF_3). Anal. Calcd for $C_5H_5F_9N_20_5S_3$: C, 13.64; H, 1.14; F, 38.86; N, 6.36; S 18.18. Found: C, 13.6; H, 1.3; F, 38.9; N, 6.1; S 18.4.

Chart 5. ^{1}H NMR Spectrum of **2b** in$CDCl_3$

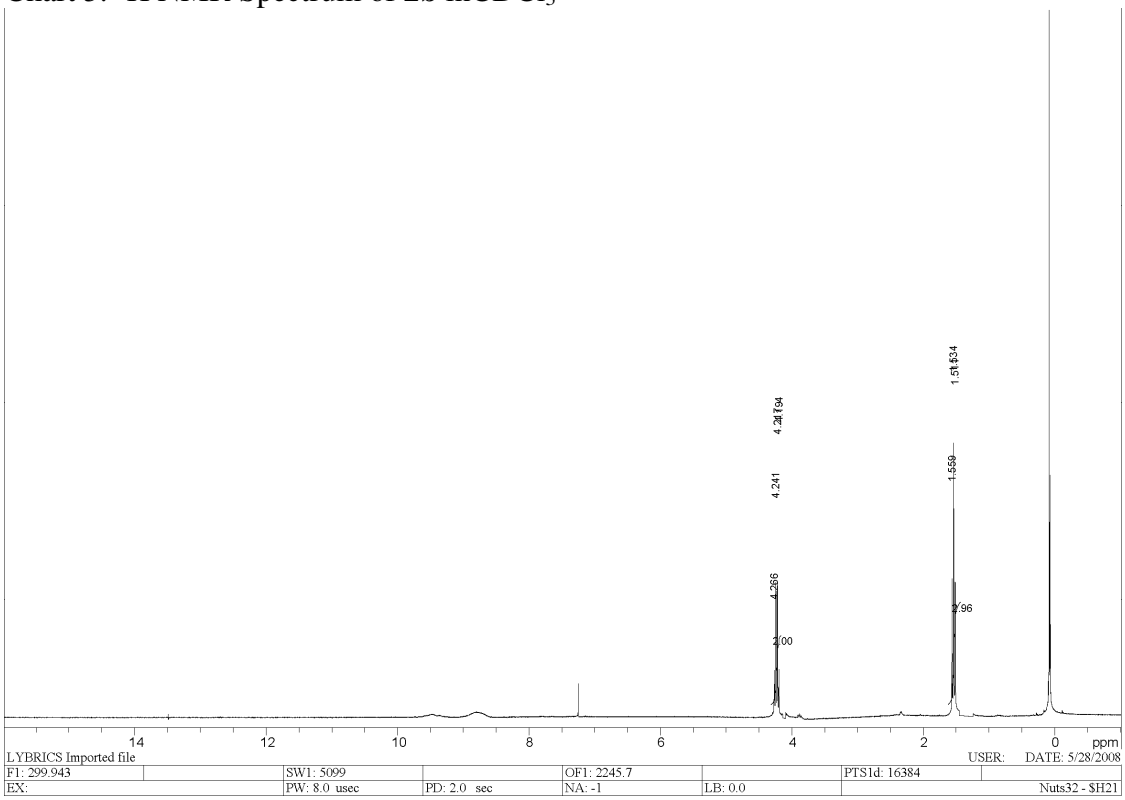


Chart 6. ^{13}C NMR Spectrum of **2b** inCH_2Cl_2

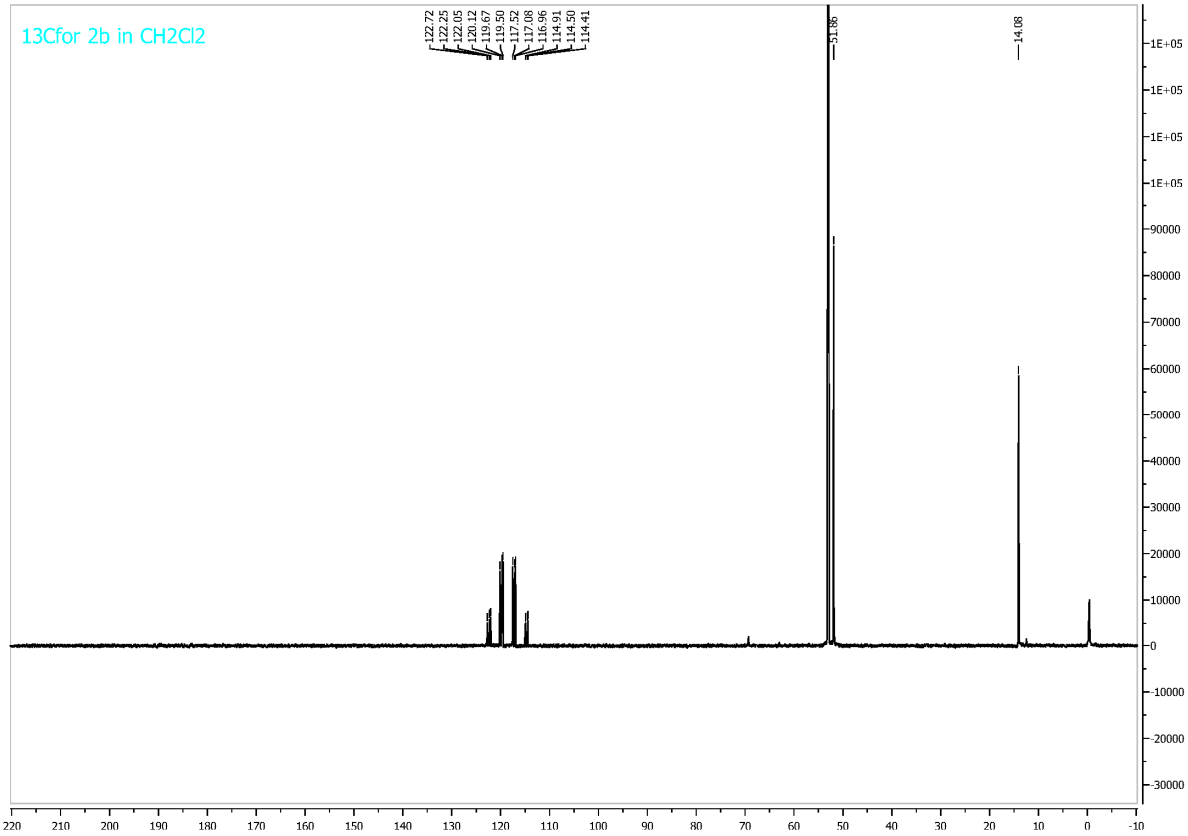
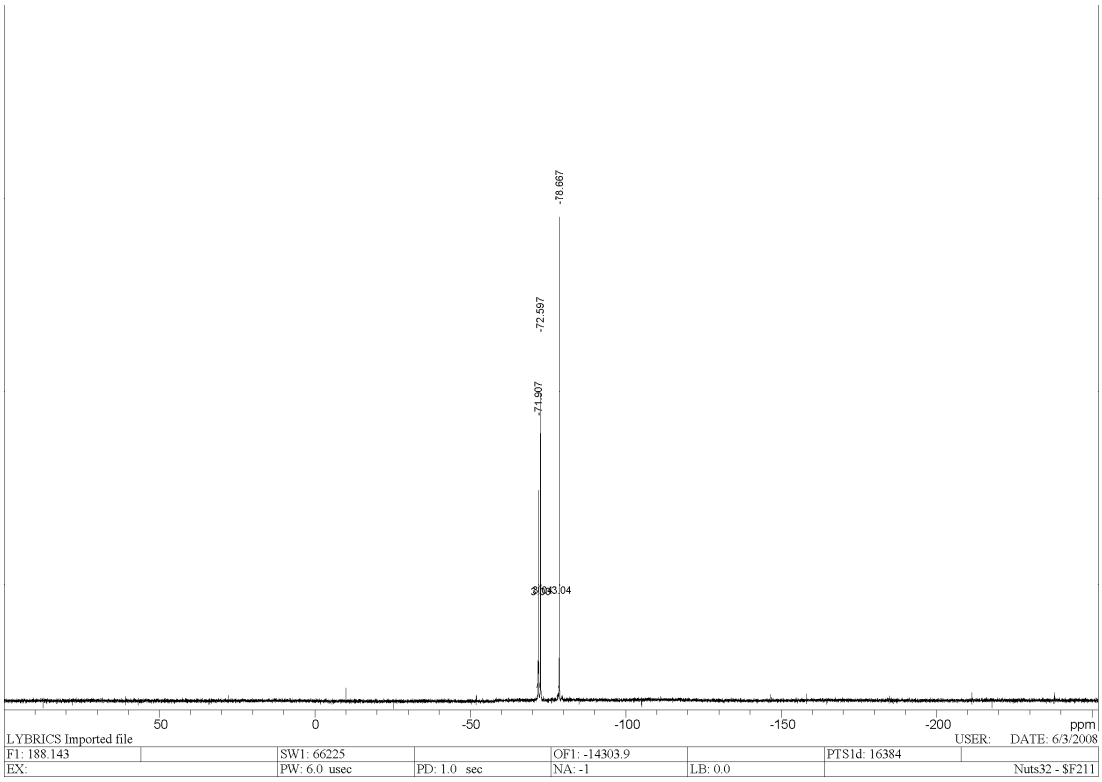


Chart 7. ^{19}F NMR Spectrum of **2b** inCH_2Cl_2



Methyl-diphenylsulfonium bis(trifluoromethylsulfonylimino) trifluoromethane sulfonat $[Ph_2S(CH_3)]^+$ $[CF_3S(NTf)_2O]^-$ **3a**

Orangey viscous oil; ^1H NMR (300MHz, $CDCl_3$): δ 3.54 (3H, s, CH_3), 7.68 (m, 6H, Ar), 7.77 (m, 4H, Ar); ^{13}C NMR (125.76 MHz, $CDCl_3$): δ 133.9(ipso), 130.7(meta), 128.6(orto), 124.1(para), 118.46 (q, CF_3, J_{CF} = 321 Hz), 118.5 (q, CF_3, J_{CF} = 323Hz), 52.6 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ -79.31 (s, 6F, CF_3), -79.7 (s, 3F, CF_3). Anal. Calcd for $C_{16}H_{13}F_9N_20_5S_4$: C, 31.37; H, 2.12; F, 27.94; N, 4.56; S 20.92. Found: C, 31.5; H, 2.4; F, 27.8; N, 4.4; S 20.85.

Chart 8. ^{1}H NMR Spectrum of **3a** in$CDCl_3$

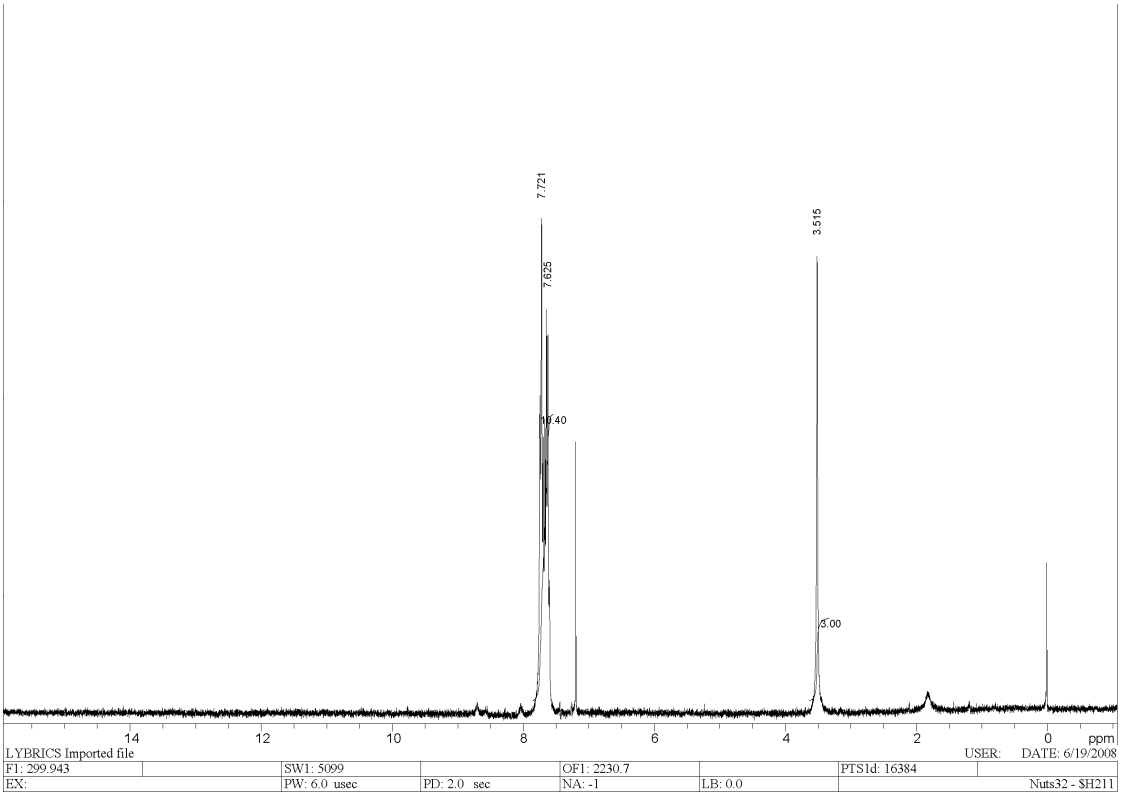


Chart 9. ^{13}C NMR Spectrum of **3a** in$CDCl_3$ and CH_2Cl_2

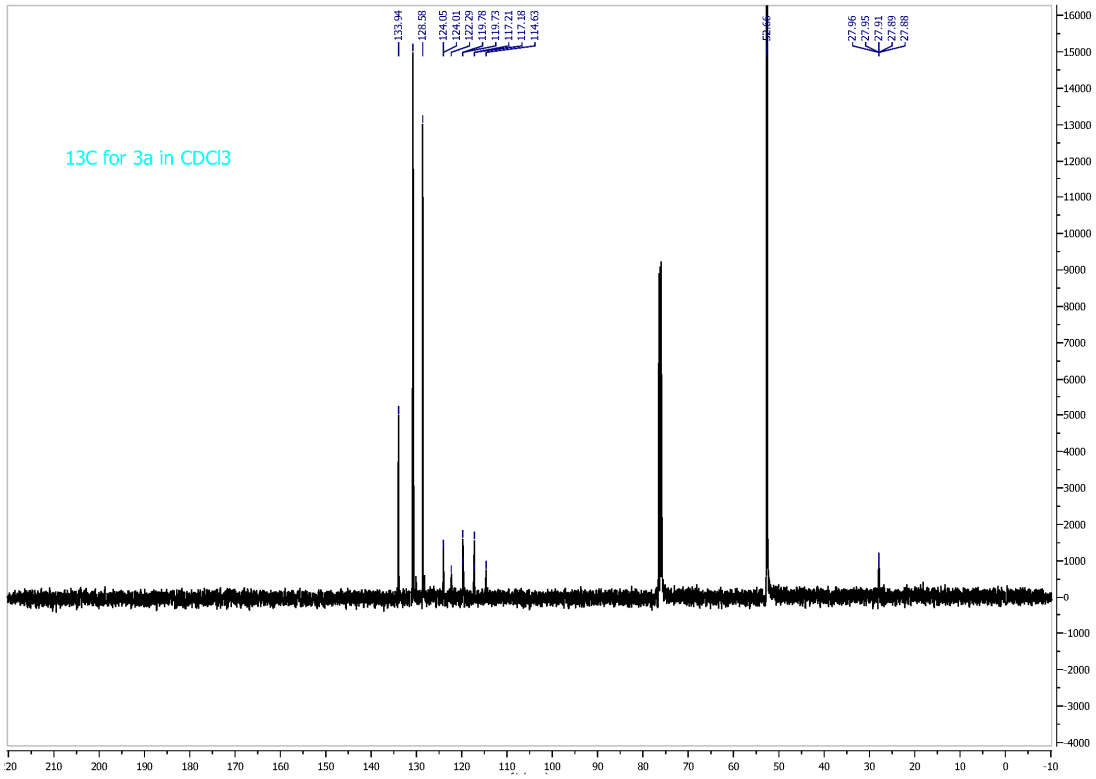
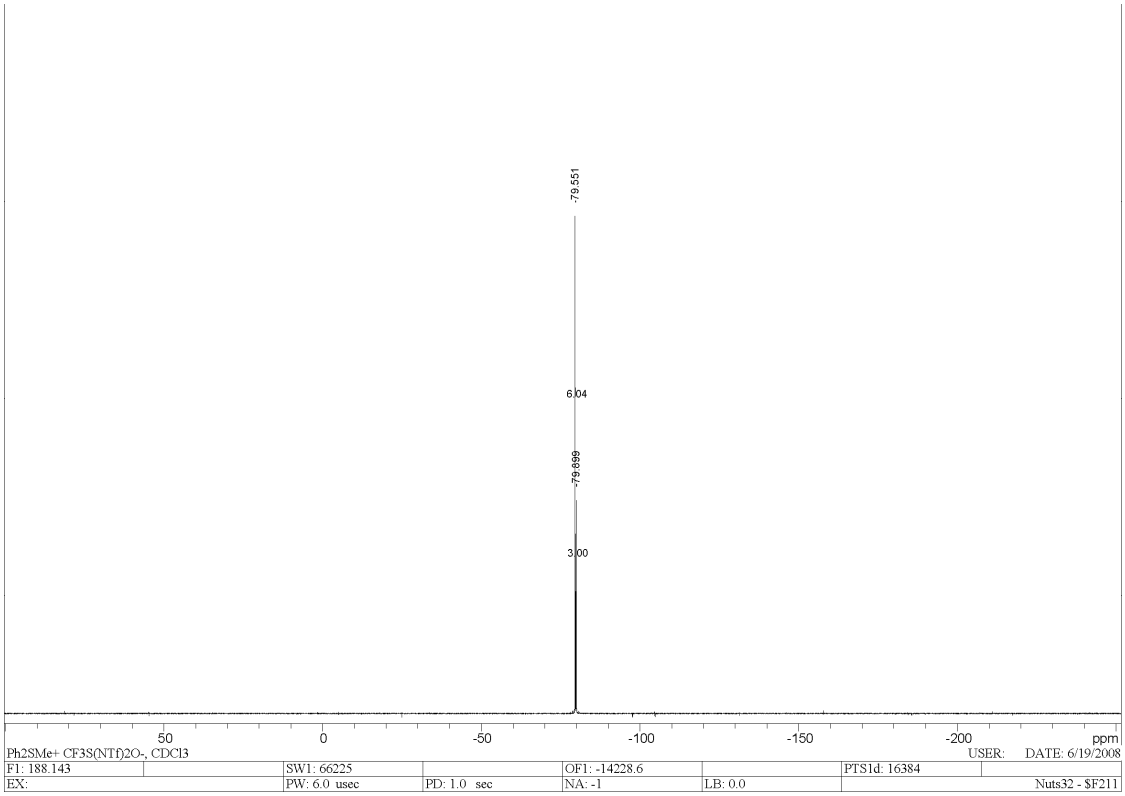
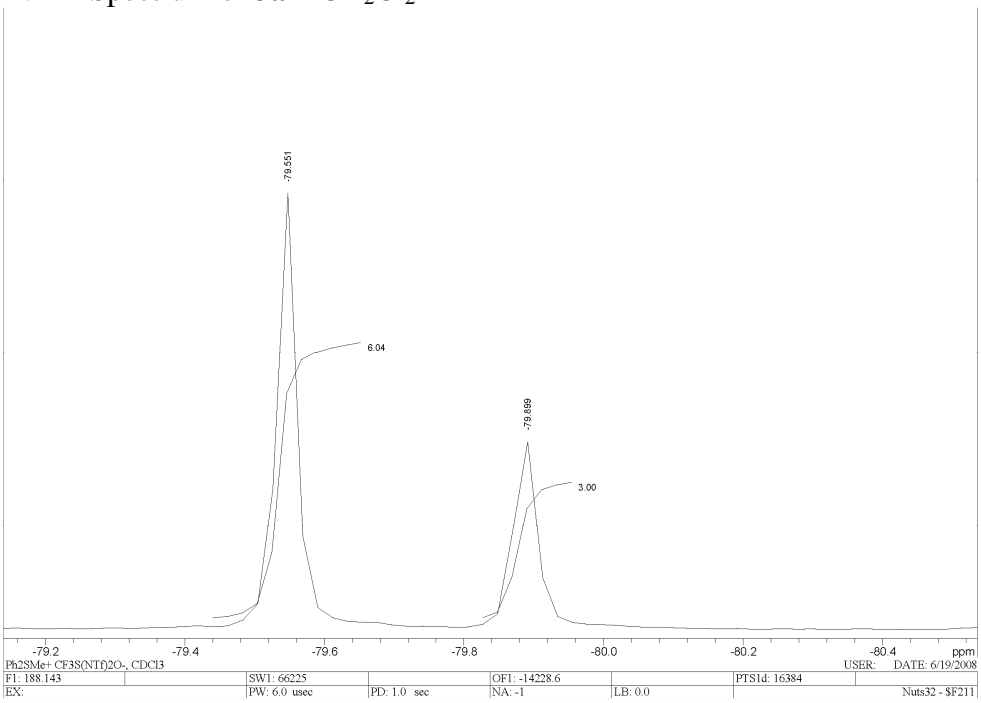


Chart 10. ^{19}F NMR Spectrum of **3a** inCH_2Cl_2



Part of ^{19}F NMR Spectrum of **3a** inCH_2Cl_2



. Ethyl-diphenylsulfonium bis(trifluoromethylsulfonylimino) trifluoromethane sulfonat $[Ph_2S(C_2H_5)]^+$ $[CF_3S(NTf)_2O]^-$ (**3b**)

Orange oil; ^{1}H NMR (300MHz, $CDCl_3$): δ 1.48 (3H, t, CH_3, J_{HH} = 7 Hz), 3.98 (2H, q, CH_2, J_{HH} = 7 Hz), 7.67 (m, 6H, Ar), 7.8 (m, 4H, Ar); ^{13}C NMR (125.76 MHz, $CDCl_3$):δ 133.9 5(ipso), 130.6 (meta), 129.2 (orto), 122.4 (para), 118.46 (q, CF_3, J_{CF} = 316 Hz), 118.5 (q, CF_3, J_{CF} = 323Hz), 39.5 (CH_2), 8.1 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ -79.04 (s, 6F, CF_3), -79.47 (s, 3F, CF_3). Anal. Calcd for $C_{17}H_{15}F_9N_20_5S_4$: C, 32.59; H, 2.4; F, 27.32; N, 4.47; S 20.45. Found: C, 32.7; H, 2.6; F, 27.28; N, 4.24; S 20.58.

Chart 11. ^{1}H NMR Spectrum of **3b** in$CDCl_3$

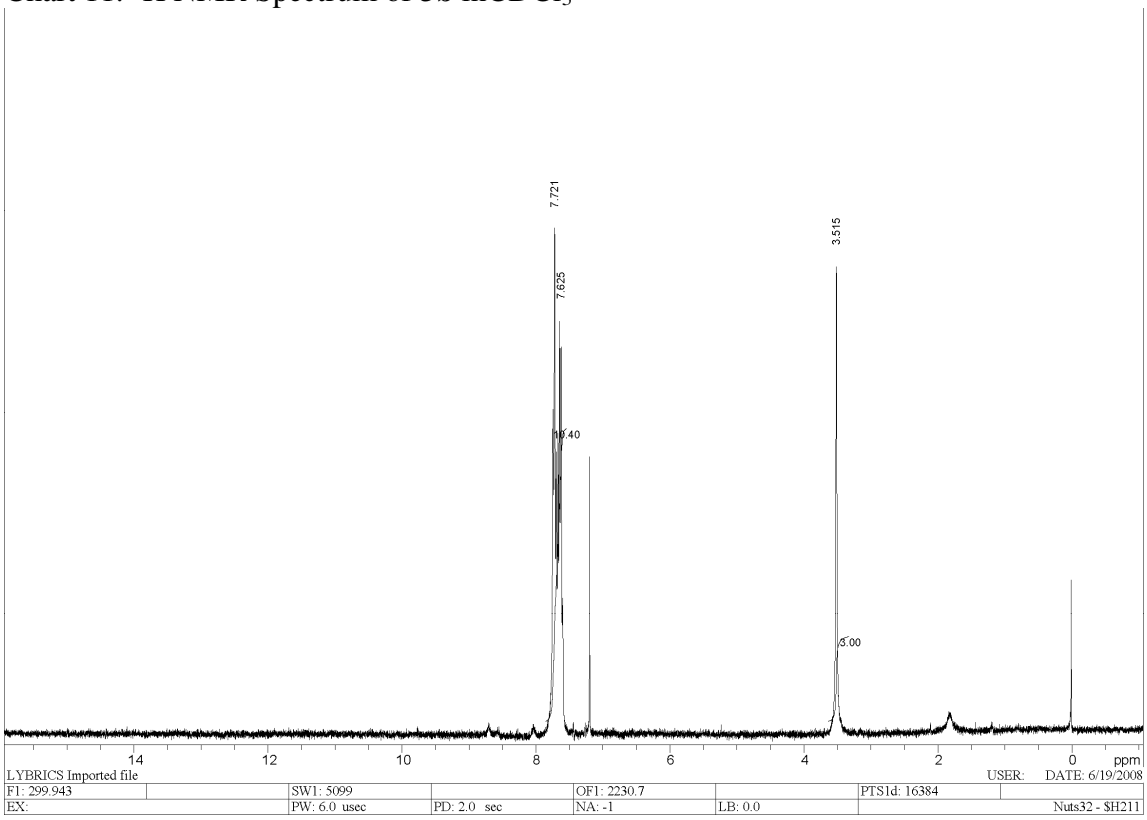


Chart 12. ^{13}C NMR Spectrum of **3b** in CH_2Cl_2

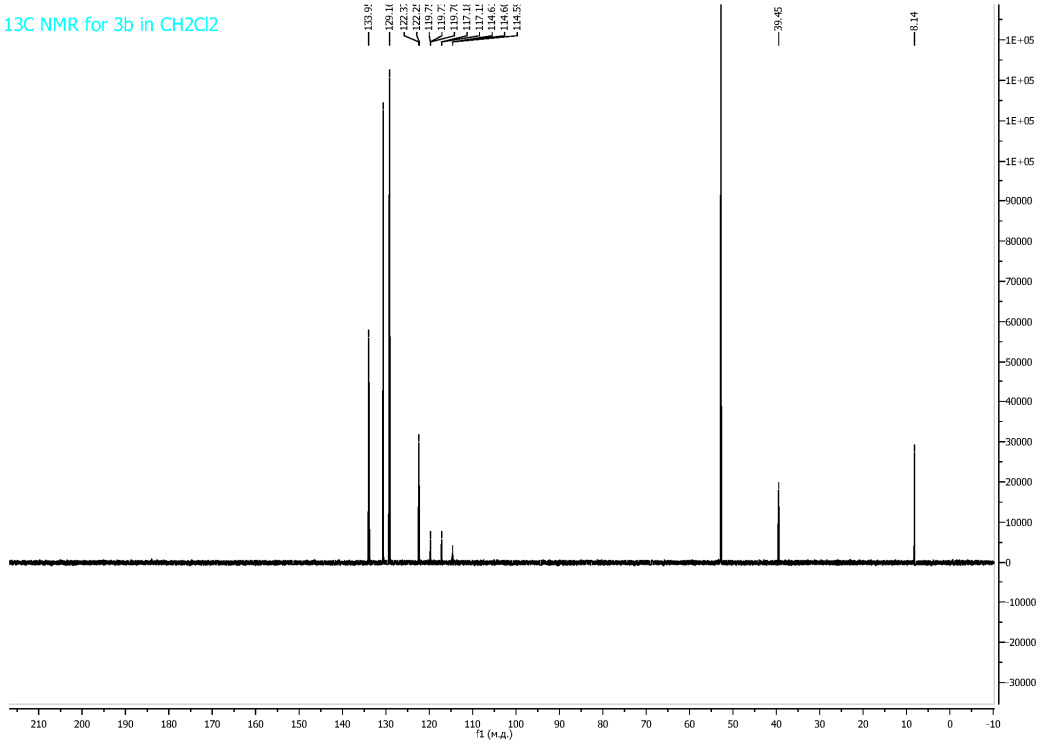
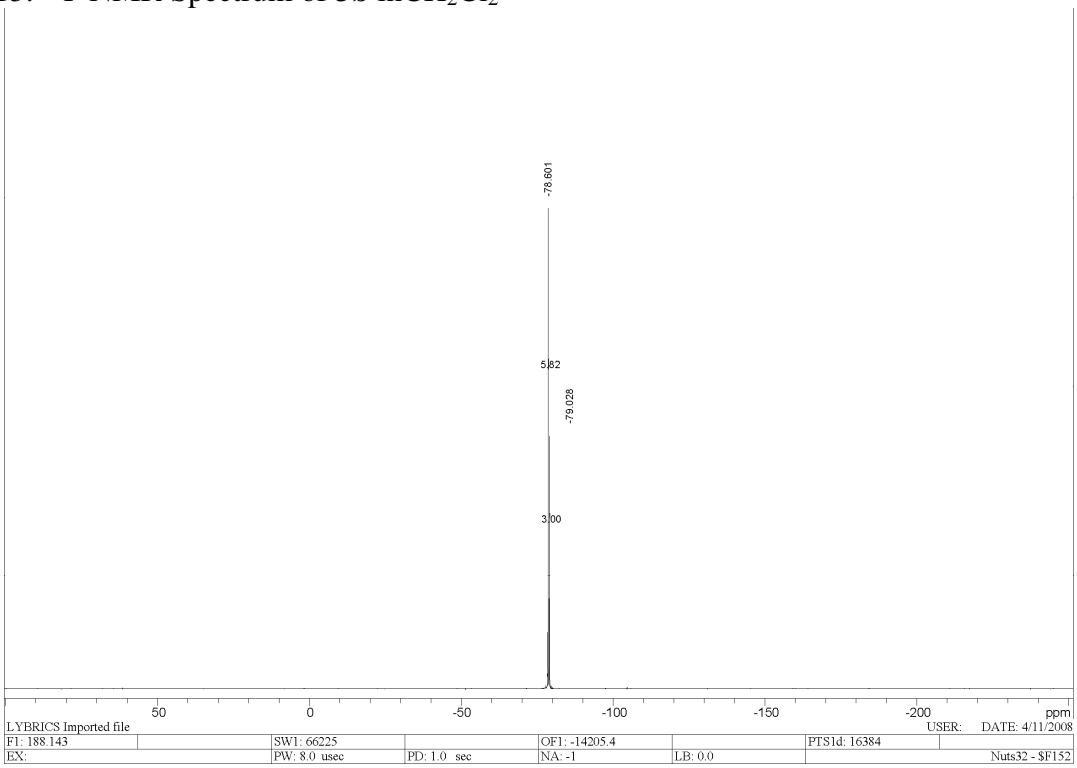


Chart 13. ^{19}F NMR Spectrum of **3b** inCH_2Cl_2



Mixture of isomers **3c** and **3d**:

Dark-orange oil; Anal. Calcd for $C_{18}H_{17}F_9N_20_5S_4$: C, 33.75; H, 2.66; F, 26.72; N, 4.38; S 20. Found: C, 33.9; H, 2.85; F, 26.67; N, 4.29; S 19.85.

n-Propyl-diphenylsulfonium bis(trifluoromethylsulfonylimino) trifluoromethane sulfonat $[Ph_2S(n\text{-}C_3H_7)]^+$ $[CF_3S(NTf)_2O]^-$ (**3c**)

^{1}H NMR (300MHz, $CDCl_3$): δ 1.03 (t, CH_3, J_{HH} = 7.3 Hz), 1.67 (tq, CH_2, J_{HH} = 7.3 Hz), 3.84 (t, CH_2, J_{HH} = 7.3 Hz), 7.6 (m, 6H, Ar), 7.73 (m, 4H, Ar); ^{13}C NMR (125.76 MHz, $CDCl_3$): δ 133.8 (ipso), 131.5 (meta), 130.6 (orto), 124.6 (para), 119.4 (q, CF_3, J_{CF} = 316 Hz), 119.5 (q, CF_3, J_{CF} = 323Hz), 46.3 (CH_2), 18.2 (CH_2), 11.9 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ -79.29 (s, 6F, CF_3), -79.68 (s, 3F, CF_3).

. *iso-Propyl-diphenylsulfonium bis(trifluoromethylsulfonylimino) trifluoromethane sulfonat* $[Ph_2SCH(CH_3)_2]^+$ $[CF_3S(NTf)_2O]^-$ (**3d**)

^{1}H NMR (300MHz, $CDCl_3$): δ 1.48 (d, CH_3, 6H, J_{HH} = 6.6 Hz), 4.7 (1H, sept., CH, J_{HH} = 6.6 Hz), 7.71 (m, 6H, Ar), 7.9 (m, 4H, Ar); ^{13}C NMR (125.76 MHz, $CDCl_3$):δ 135.2 (ipso), 131.7 (meta), 131.5 (orto), 123.5 (para), 118.6 (q, CF_3, J_{CF} = 316 Hz), 118.7 (q, CF_3, J_{CF} = 323Hz), 51.2 (CH), 17.9 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ -79.14 (s, 6F, CF_3), -79.6 (s, 3F, CF_3).

Chart 14. ^{1}H NMR Spectrum of **3c-d** in$CDCl_3$

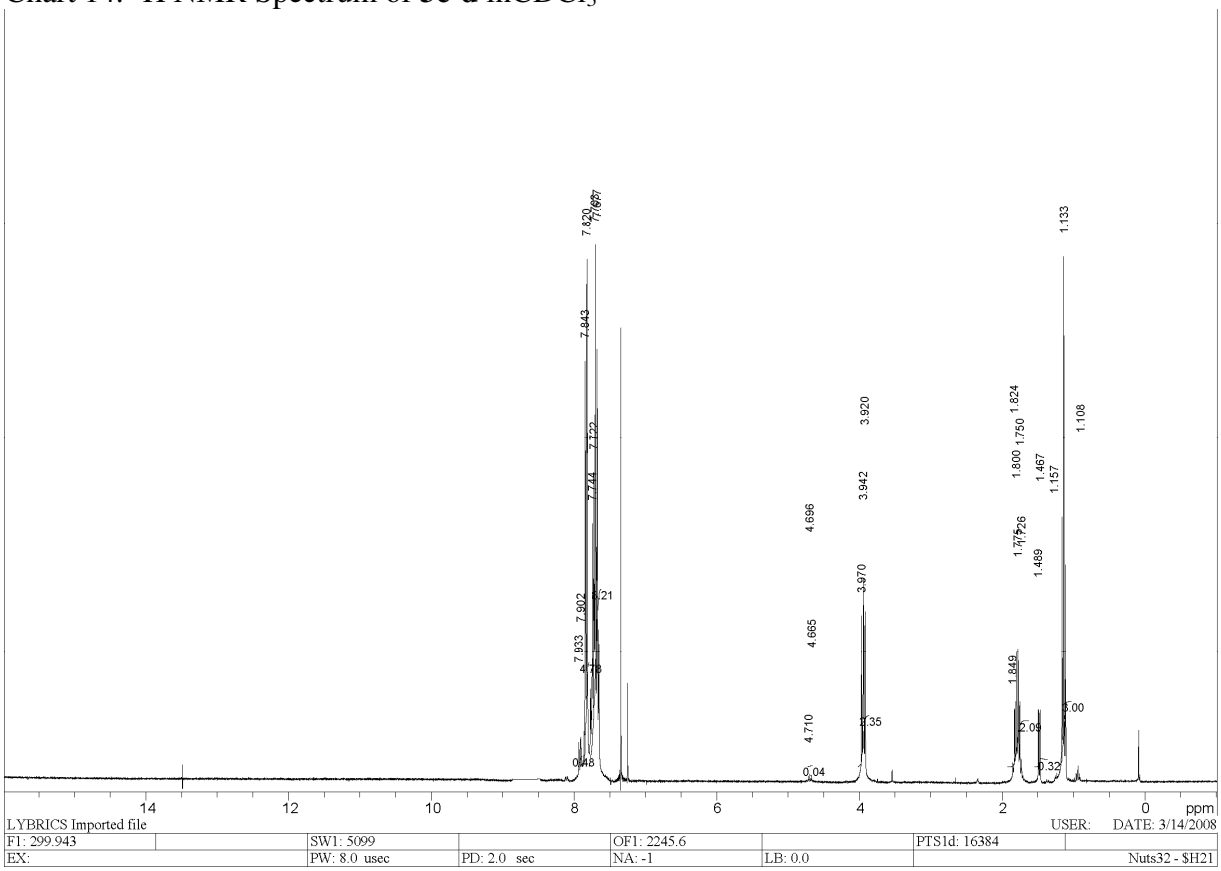


Chart 15. ^{13}C NMR Spectrum of **3c-d** in CH_3CN

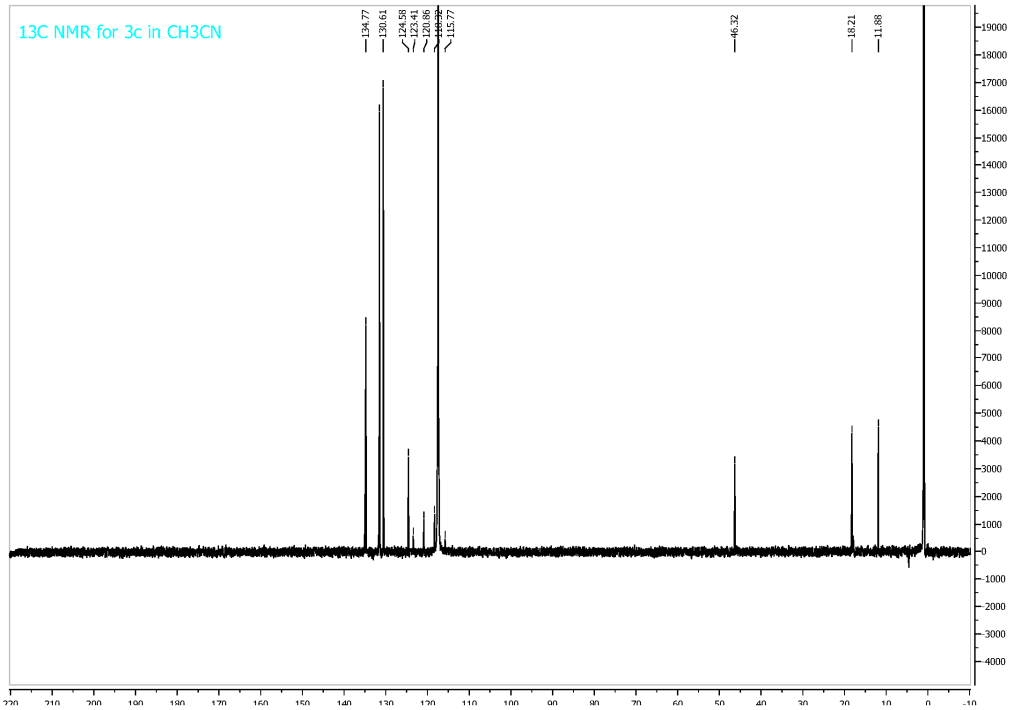
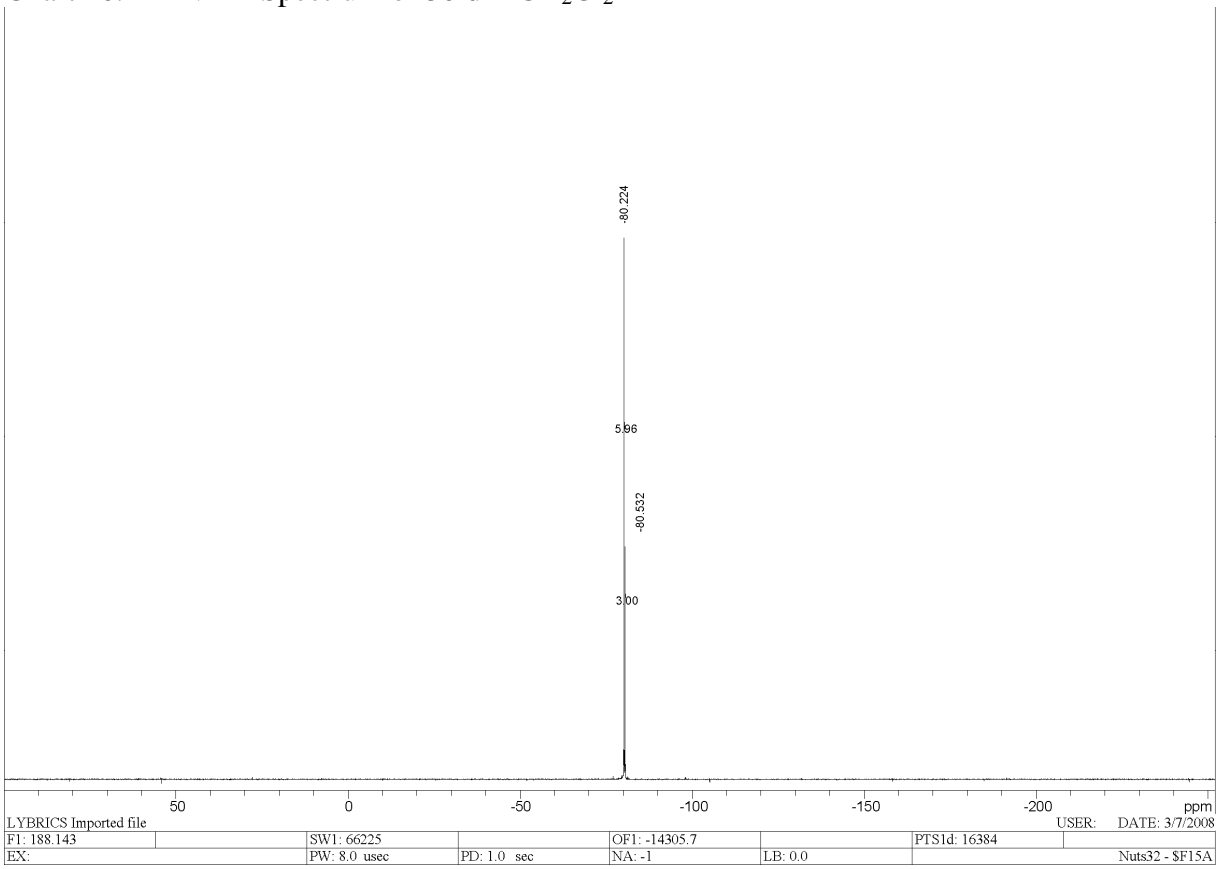


Chart 16. ^{19}F NMR Spectrum of **3c-d** inCH_2Cl_2



Mixture of isomers **3e** and **3f**: Orange oil; Anal. Calcd for $C_{19}H_{19}F_9N_20_5S_4$: C, 34.86; H, 2.9; F, 26.15; N, 4.28; S 19.57. Found: C, 35.03; H, 3.08; F, 25.9; N, 4.17; S 19.6.

n-Butyl-diphenylsulfonium bis(trifluoromethylsulfonylimino) trifluoromethane sulfonat $[Ph_2S(n\text{-}C_4H_9)]^+$ $[CF_3S(NTf)_2O]^-$ (**3e**)

^1H NMR (300MHz, $CDCl_3$): δ 0.85(3H, t, CH_3, J_{HH} = 7.4 Hz), 1.56(2H, tt, CH_2, J_{HH} = 7.4 Hz), 1.74 (2H, tq, CH_2, J_{HH} = 7.4 Hz), 3.9 (2H, t, CH_2, J_{HH} = 7.4 Hz), 7.65 (m, 6H, Ar), 7.79 (m, 4H, Ar); ^{13}C NMR (125.76 MHz, $CDCl_3$):δ 133.9 (ipso), 130.7 (meta), 129.1 (orto), 122.5 (para), 118.46 (q, CF_3, J_{CF} = 321 Hz), 118.5 (q, CF_3, J_{CF} = 323Hz), 44.2 (CH_2), 25.3(CH_2), 20.2(CH_2), 11.8 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ -79.14 (s, 6F, CF_3), -79.6 (s, 3F, CF_3).

. *iso-Butyl-diphenylsulfonium bis(trifluoromethylsulfonylimino) trifluoromethane sulfonat* $[Ph_2SCH(CH_3)(C_2H_5)]^+$ $[CF_3S(NTf)_2O]^-$ (**3f**)

^1H NMR (300MHz, $CDCl_3$): δ 1.1 (3H, t, CH_3, J_{HH} = 7.35 Hz), 1.45 (3H, d, CH_3, J_{HH} = 6.6 Hz), 1.73 (2H, dq, CH_2), 4.59 (1H, br.s, CH), 7.65 (m, 6H, Ar), 7.79 (m, 4H, Ar); ^{13}C NMR (125.76

MHz, $CDCl_3$):δ 134.138, 134.108(ipso), 130.73, 130.69(meta), 130.005, 129.79 (orto), 121.78, 121.57 (para), 118.46 (q, CF_3, J_{CF} = 321 Hz), 118.5 (q, CF_3, J_{CF} = 323Hz), 55.4 (CH), 23.9(CH_2), 13.7(CH_3), 8.3 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ -79.14 (s, 6F, CF_3), -79.6 (s, 3F, CF_3).

Chart 17. ^{1}H NMR Spectrum of **3e-f** in$CDCl_3$

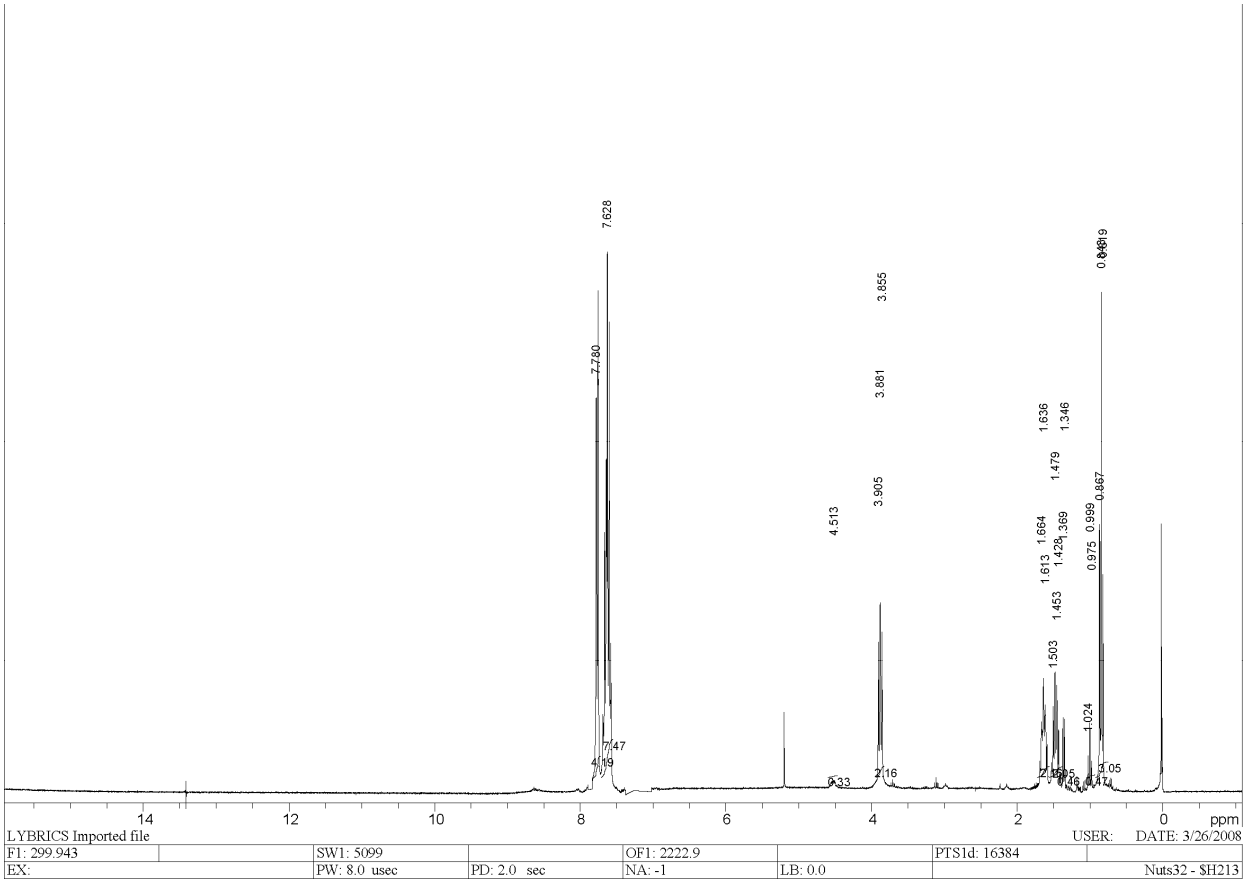


Chart 18. ^{13}C NMR Spectrum of **3e** in CH_2Cl_2

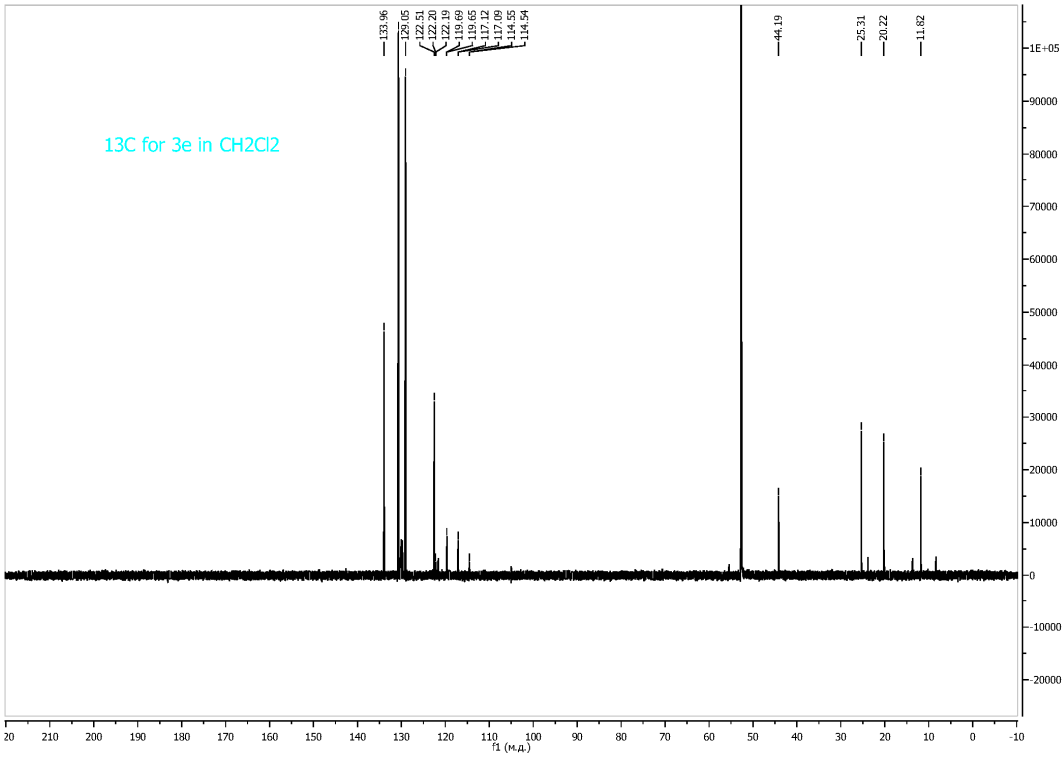
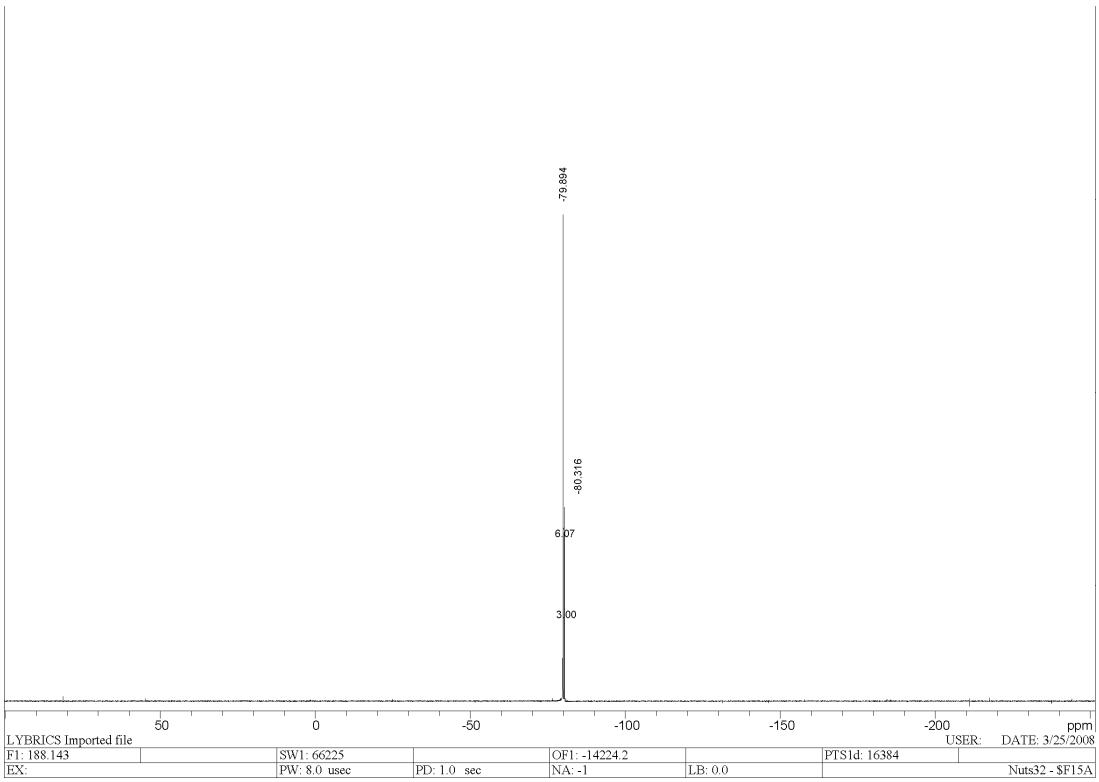


Chart 19. ^{19}F NMR Spectrum of **3e-f** in CH_2Cl_2



Mixture of isomers **3g** and **3h:** Orange oil; Anal. Calcd for $C_{20}H_{21}F_9N_20_5S_4$: C, 35.93; H, 3.14; F, 25.6; N, 4.19; S 19.16. Found: C, 36.2; H, 3.32; F, 25.38; N, 3.97; S 19.3.

n-Amyl-diphenylsulfonium bis(trifluoromethylsulfonylimino)trifluoromethane sulfonat $[Ph_2S(n\text{-}C_5H_{11})]^+$ $[CF_3S(NTf)_2O]^-$ (**3g**)

^{1}H NMR (300MHz, $CDCl_3$): δ 0.84 (3H, t, CH_3, J_{HH} = 7.3 Hz), 1.32 (2H, tt, CH_2, J_{HH} = 7.3 Hz), 1.48 (2H, tq, CH_2, J_{HH} = 7.3 Hz), 1.75 (2H, tt, CH_2, J_{HH} = 7.3 Hz), 3.95 (2H, t, CH_2, J_{HH} = 7.3 Hz), 7.7 (m, 6H, Ar), 7.85 (m, 4H, Ar); ^{13}C NMR (125.76 MHz, CH_3CN):δ 134.6 (ipso), 131.4 (meta), 130.4 (orto), 124.4 (para), 119.5 (q, CF_3, J_{CF} = 320 Hz), 119.5 (q, CF_3, J_{CF} = 320.5Hz), 44.6 (CH_2), 29.7(CH_2), 23.8(CH_2), 21.5(CH_2), 12.9 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ -79.32 (s, 6F, CF_3), -79.76 (s, 3F, CF_3).).

iso-Amyl-diphenylsulfonium bis(trifluoromethylsulfonylimino)trifluoromethane sulfonat $[Ph_2SCH(CH_3)(n\text{-}C_3H_7)]^+$ $[CF_3S(NTf)_2O]^-$ (**3h**)

^{1}H NMR (300 MHz, $CDCl_3$): δ 0.865 (3H, t, CH_3, J_{HH} = 7.3 Hz), 1.03 (3H, t, CH_3, J_{HH} = 7.3 Hz), 1.46 (2H, tq, CH_2, J_{HH} = 7.3 Hz), 1.7 (2H, dt, CH_2, J_{HH} = 7.3 Hz), 4.6 (1H, br.s., CH), 7.75 (m, 6H, Ar), 7.94 (m, 4H, Ar); ^{13}C NMR (125.76 MHz, CH_3CN):δ 134.0 (ipso), 131.5 (meta), 129.4 (orto), 123.3 (para), 119.46 (q, CF_3, J_{CF} = 320 Hz), 119.5 (q, CF_3, J_{CF} = 320.5Hz), 54.7 (CH), 33.3 (CH_2), 23.9 (CH_2), 20.6 (CH_3), 12.8 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ -79.32 (s, 6F, CF_3), -79.76 (s, 3F, CF_3).

Chart 20. ^{1}H NMR Spectrum of **3g-h** in$CDCl_3$

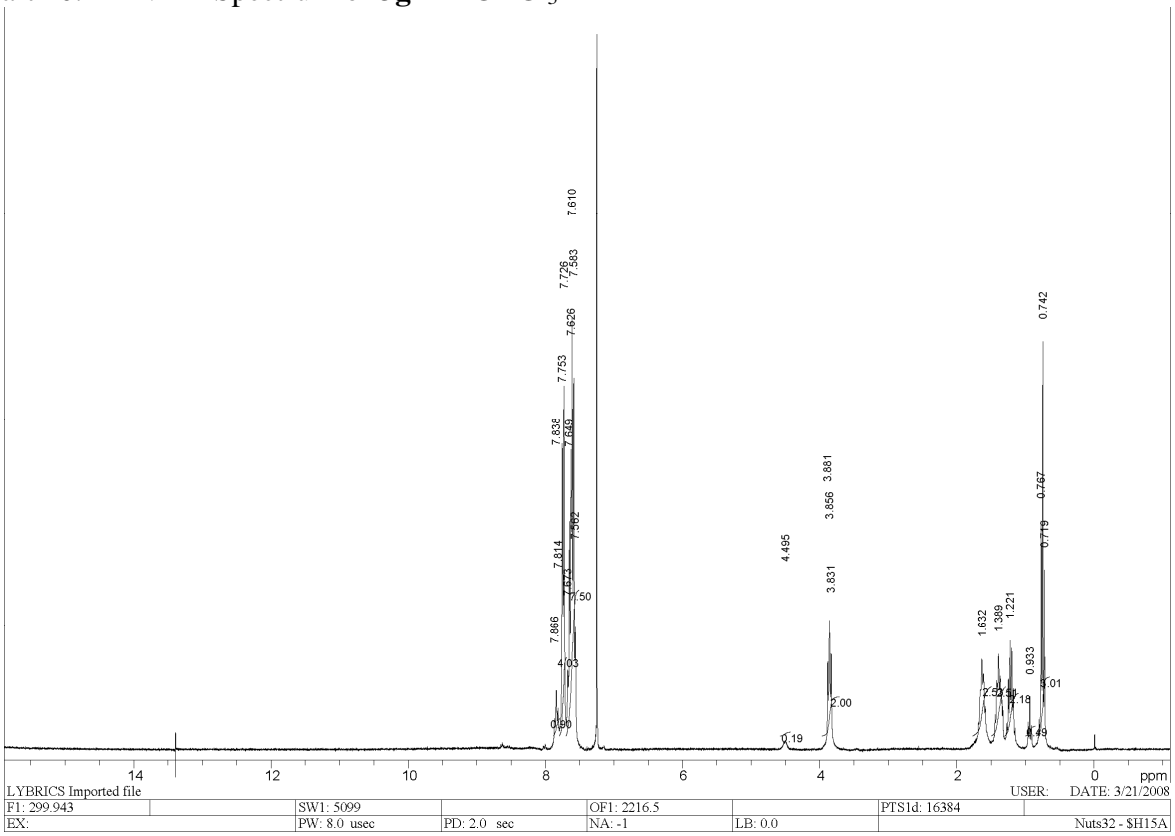


Chart 21. ^{13}C NMR Spectrum of **3g-h** in $CDCl_3$

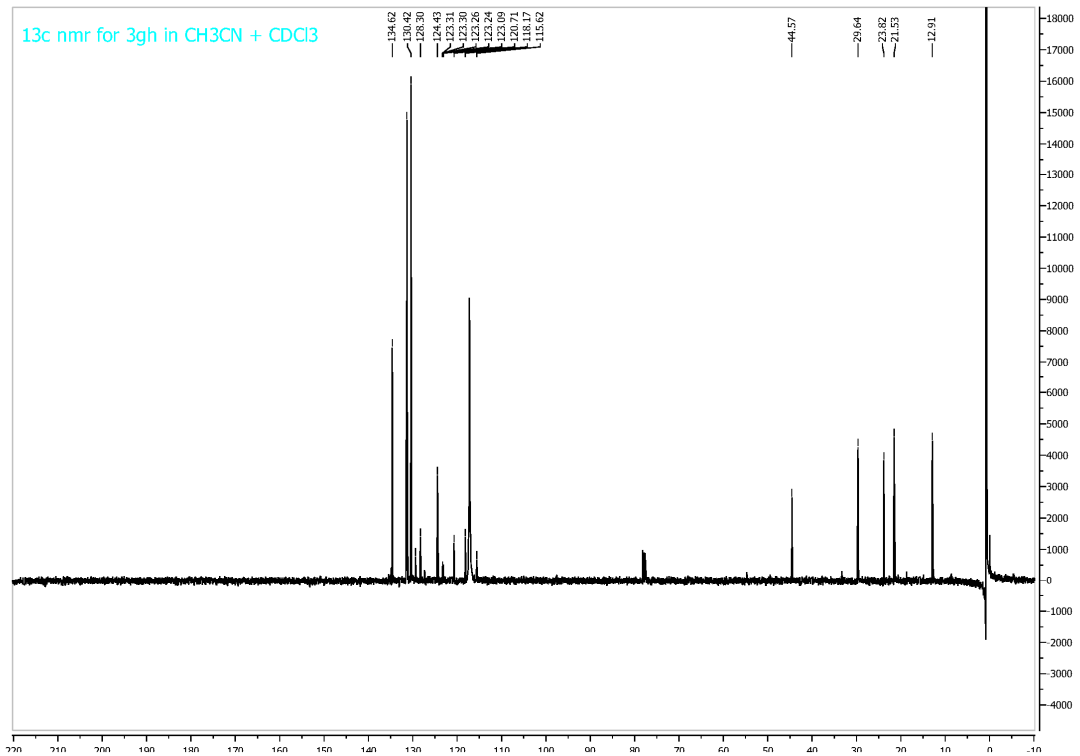
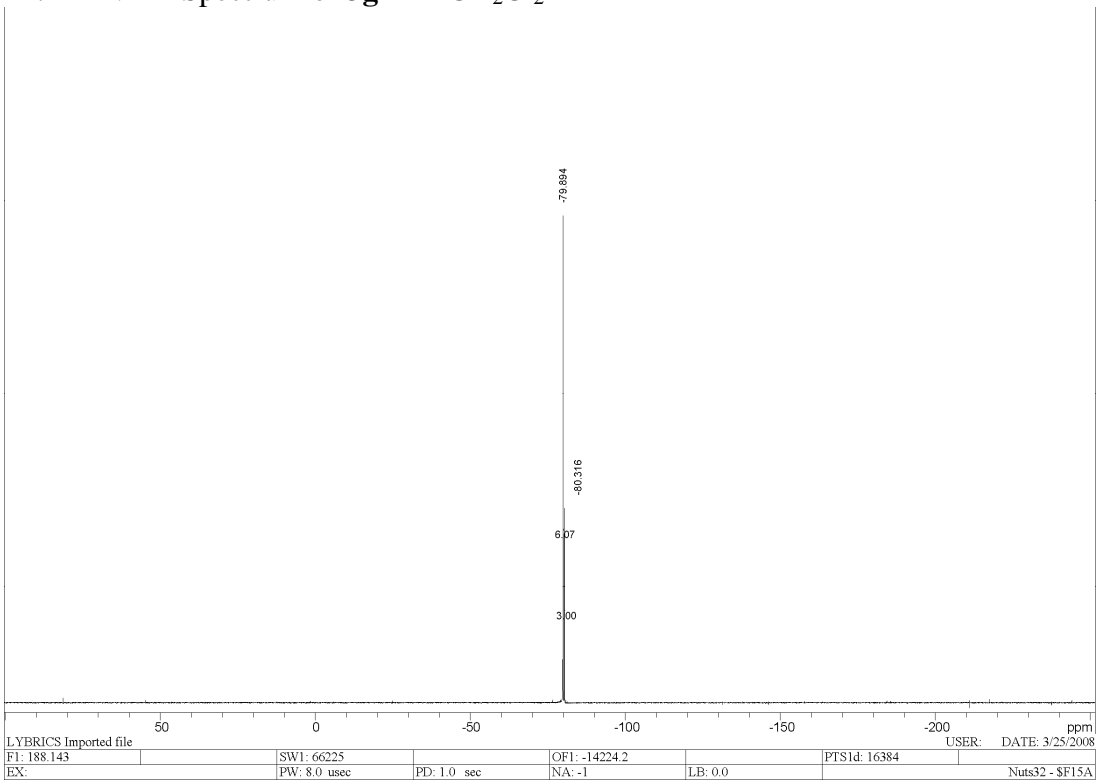
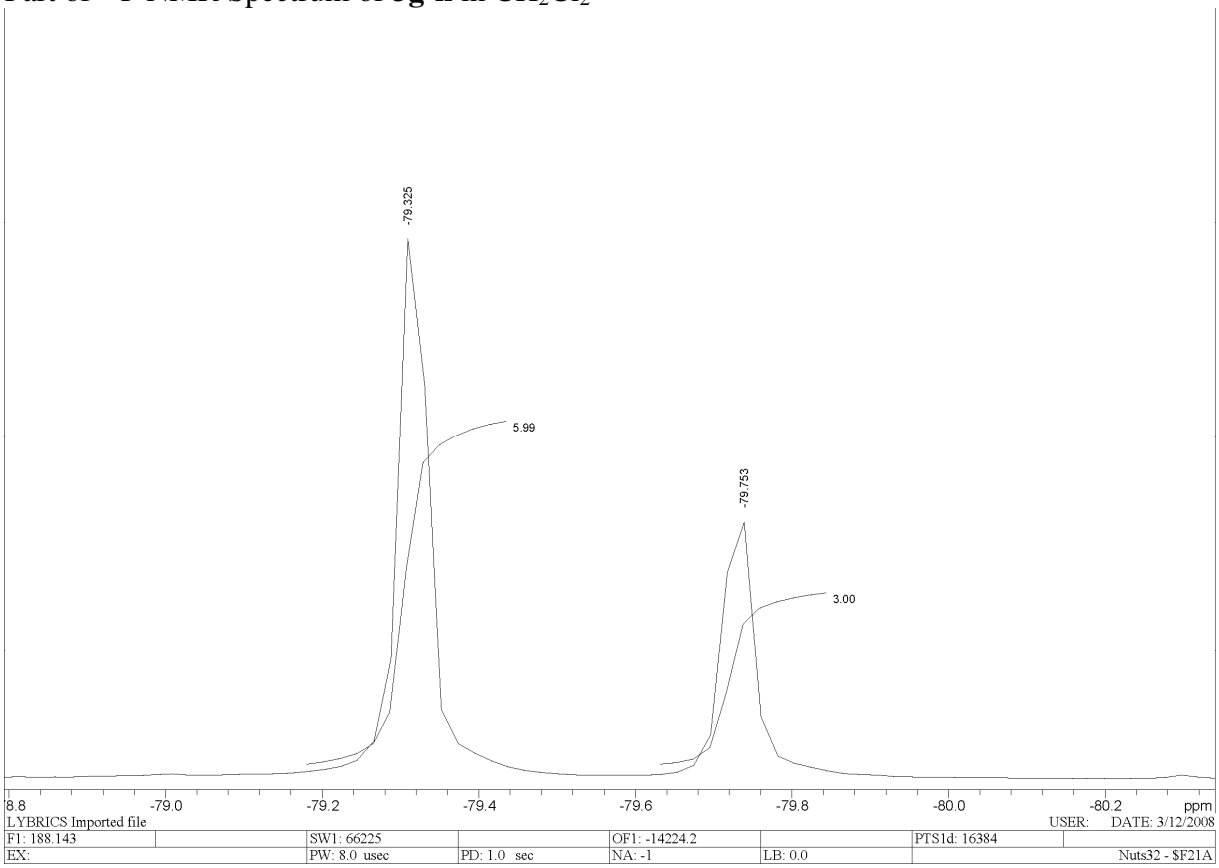


Chart 22. ^{19}F NMR Spectrum of **3g-h** in CH_2Cl_2



Part of ^{19}F NMR Spectrum of **3g-h** in CH_2Cl_2



*Methoxy-triphenylphosphonium bis(trifluoromethylsulfonylimino)trifluoromethane sulfonat $[Ph_3P(OCH_3)]^+$ $[CF_3S(NTf)_2O]^-$ (**4a**)*

Colorless viscous oil; ^{1}H NMR (300MHz, $CDCl_3$): δ 4.05 (3H, d, CH_3, J_{PH} = 12.3 Hz), 7.76 (m, 12H, ArH), 7.88 (m, 3H, ArH); ^{13}C NMR (125.76 MHz, $CDCl_3$): δ 136.1(ipso, d, J_{PC} = 2.89 Hz), 132.9(meta, d, J_{PC} = 11.57 Hz), 128.6 (orto, d, J_{PC} = 13.58 Hz), 127.7(para), 118.9 (q, CF_3, J_{CF} = 321 Hz), 118.9 (q, CF_3, J_{CF} = 321 Hz), 57.1 (d, CH_3, J_{CF} = 7.67 Hz); ^{19}F NMR (200 MHz, $CDCl_3$): δ -79.07 (s, 6F, CF_3), -79.47 (s, 3F, CF_3); ^{31}P NMR (85.76 MHz, $CDCl_3$): δ 63.49 (m). Anal. Calcd for $C_{22}H_{18}F_9N_20_6PS_3$: C, 37.5; H, 2.56; F, 24.29; N, 3.98; S 13.64. Found: C, 37.38; H, 2.83; F, 24.07; N, 3.88; S 13.38.

Chart 23. ^{1}H NMR Spectrum of **4a** in$CDCl_3$

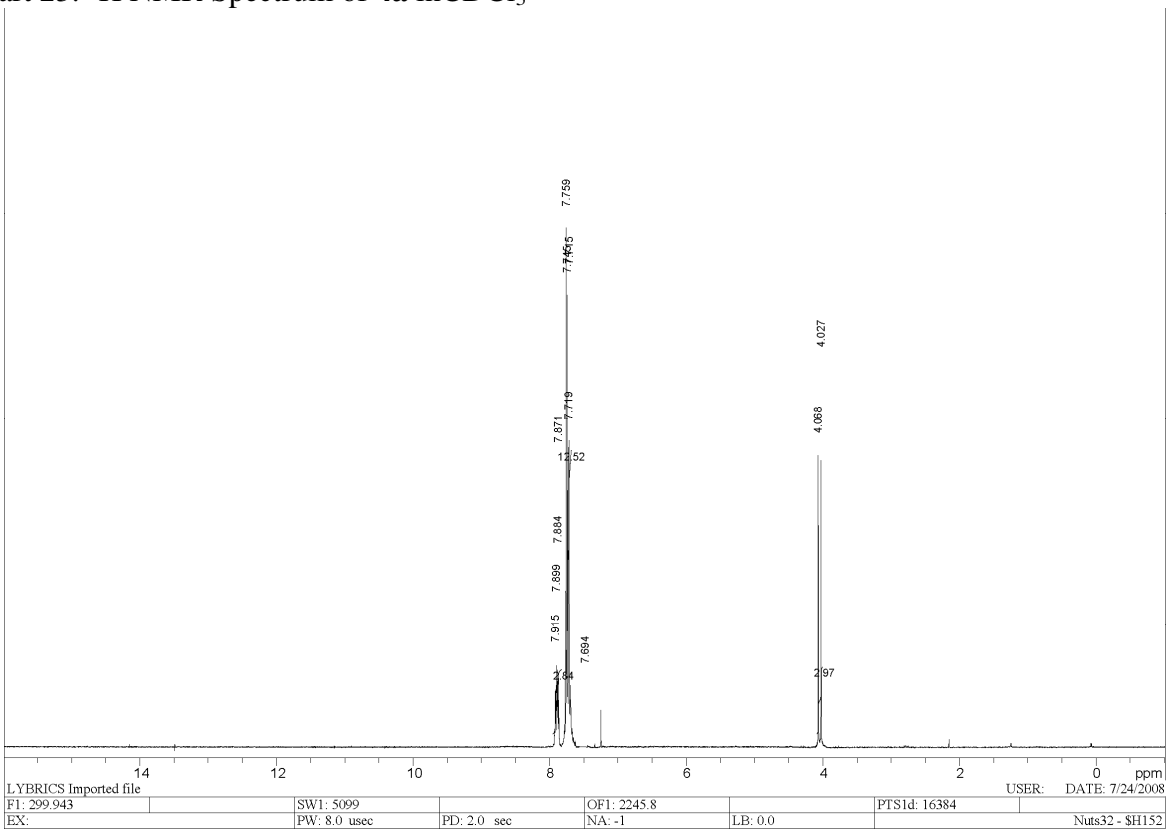


Chart 24. ^{13}C NMR Spectrum of **4a** in CH_2Cl_2

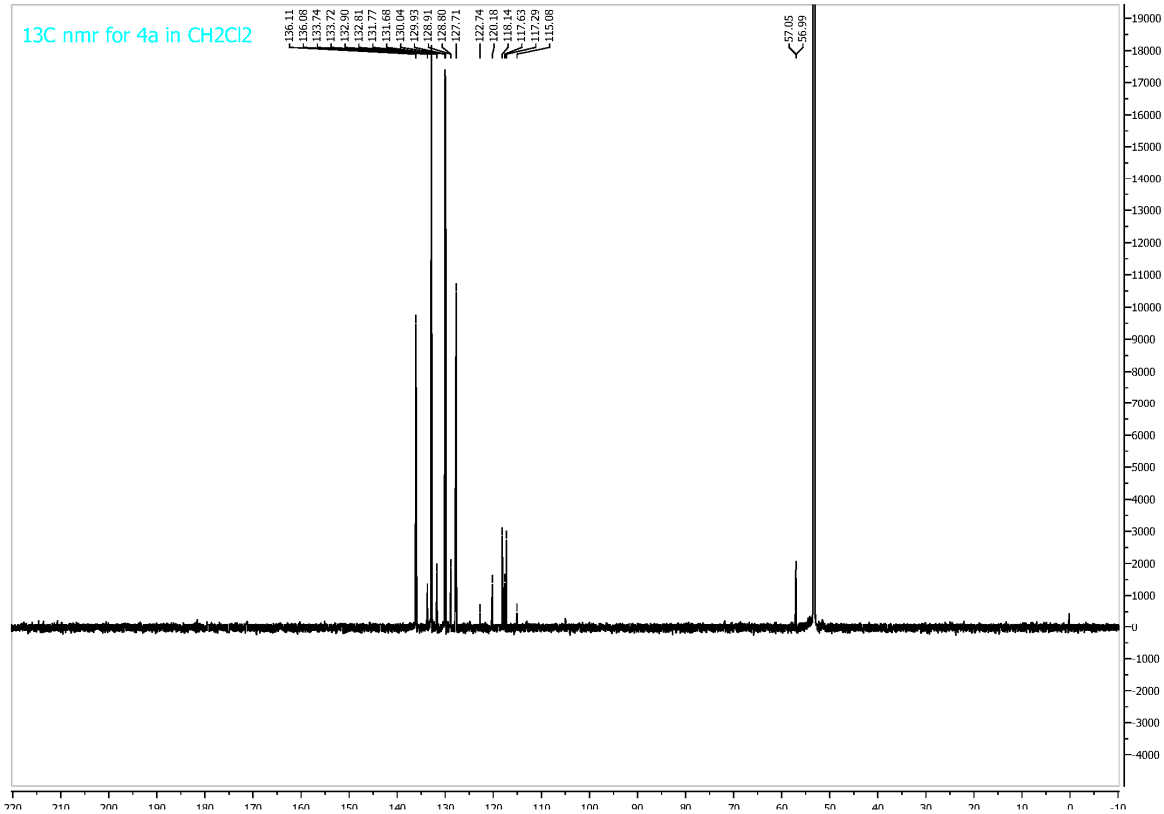


Chart 25. ^{19}F NMR Spectrum of **4a** in CH_2Cl_2

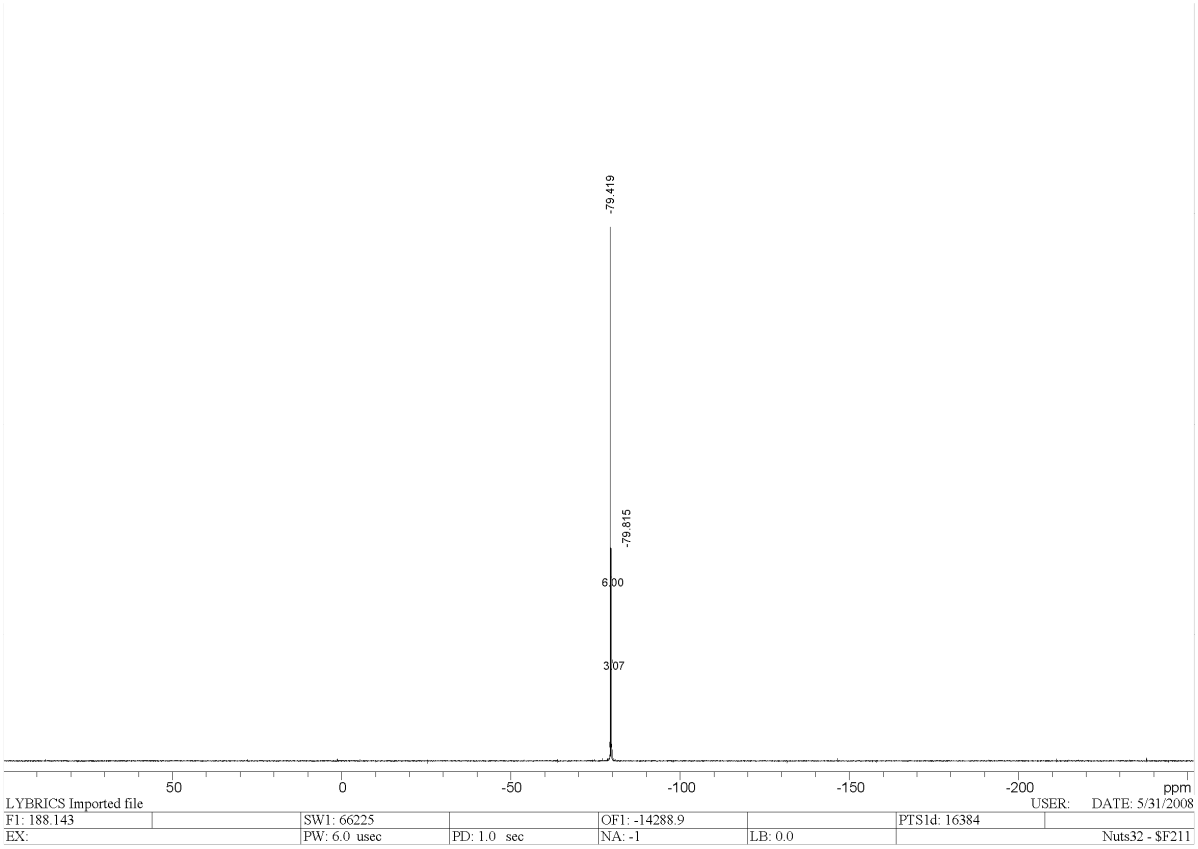
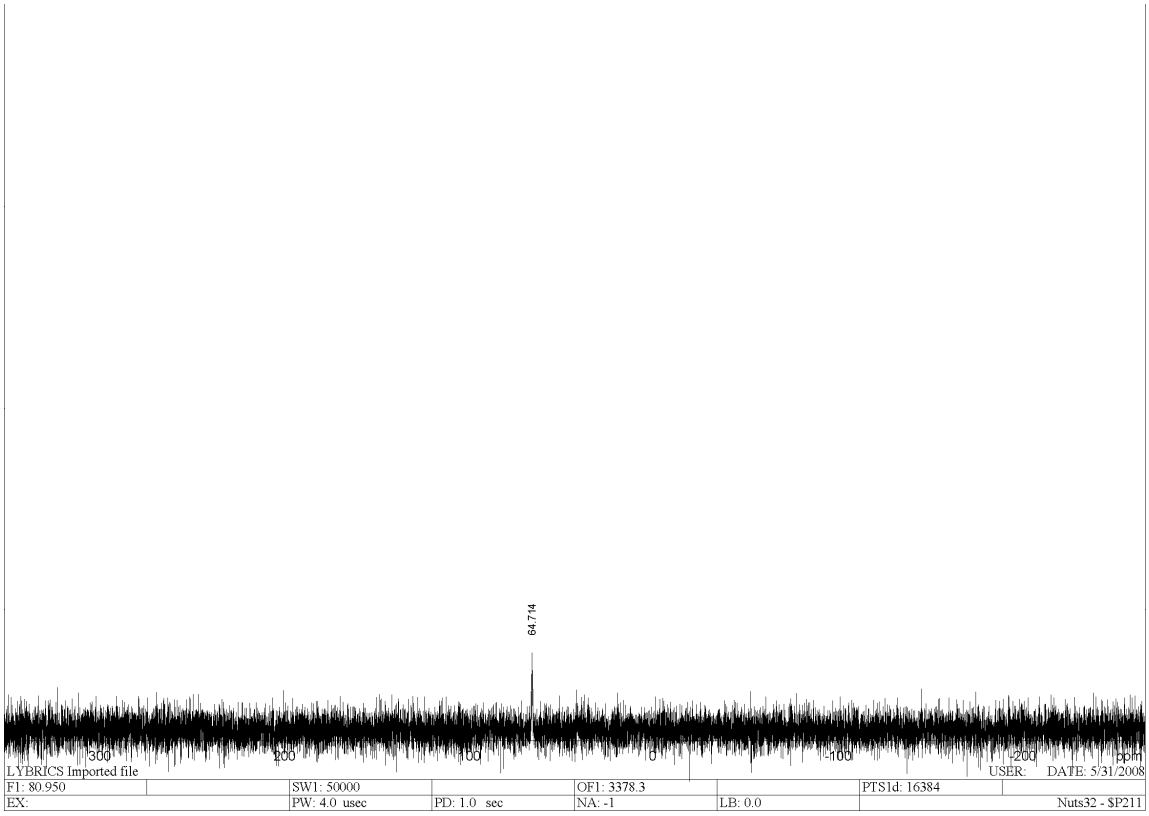


Chart 26. ^{31}P NMR Spectrum of **4a** in CH_2Cl_2



Methyl-triphenylphosphonium bis(trifluoromethylsulfonylimino) trifluoromethane sulfonat $[Ph_3P(CH_3)]^+$ $[CF_3S(NTf)_2O]^-$ (**5a**)

Flaxen viscous oil; ^1H NMR (300MHz, $CDCl_3$): δ 2.65 (3H, d, CH_3, J_{PH} = 13.5 Hz), 7.45 (m, 6H, ArH), 7.57 (m, 6H, ArH), 7.7 (m, 3H, ArH); ^{13}C NMR (125.76 MHz, CH_3CN):δ 135.3 (ipso, d, J_{PH} = 3.02 Hz), 133.4 (meta, d, J_{PH} = 10.69 Hz), 128.6 (orto, d, J_{PH} = 13.08 Hz), 128.5 (para, d, , J_{PH} = 2.01 Hz), 119.7 (q, CF_3, J_{CF} = 320 Hz), 118.7 (q, CF_3, J_{CF} = 320 Hz), 8.6 (d, CH_3, J_{CF} = 57.85 Hz); ^{19}F NMR (200 MHz, $CDCl_3$): δ -79.13 (s, 6F, CF_3), -79.49 (s, 3F, CF_3); ^{31}P NMR (85.76 MHz, $CDCl_3$):δ 20 (m). Anal. Calcd for $C_{22}H_{18}F_9N_20_5PS_3$: C, 38.37; H, 2.62; F, 24.98; N, 4.07; S 13.95. Found: C, 38.25; H, 2.89; F, 24.77; N, 3.98; S 13.7.

Chart 27. ^{1}H NMR Spectrum of **5a** in$CDCl_3$

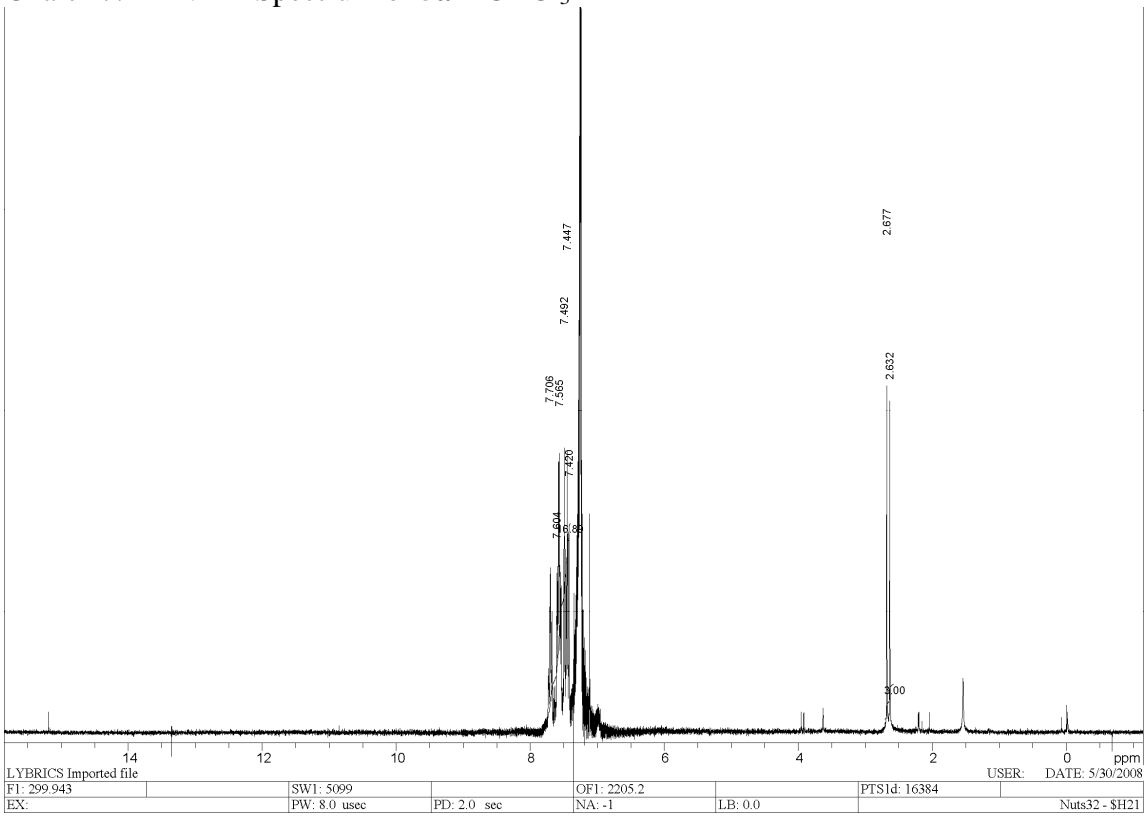


Chart 28. ^{13}C NMR Spectrum of **5a** in CH_3CN

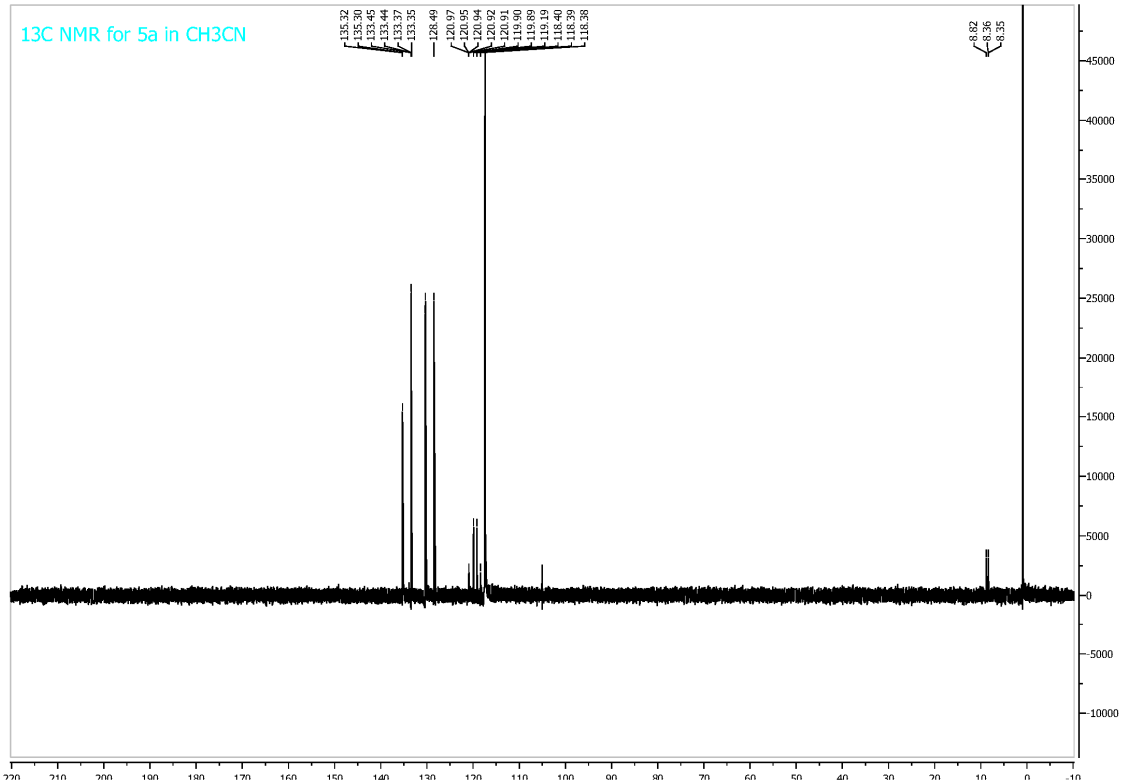


Chart 29. ^{19}F NMR Spectrum of **5a** in CH_2Cl_2

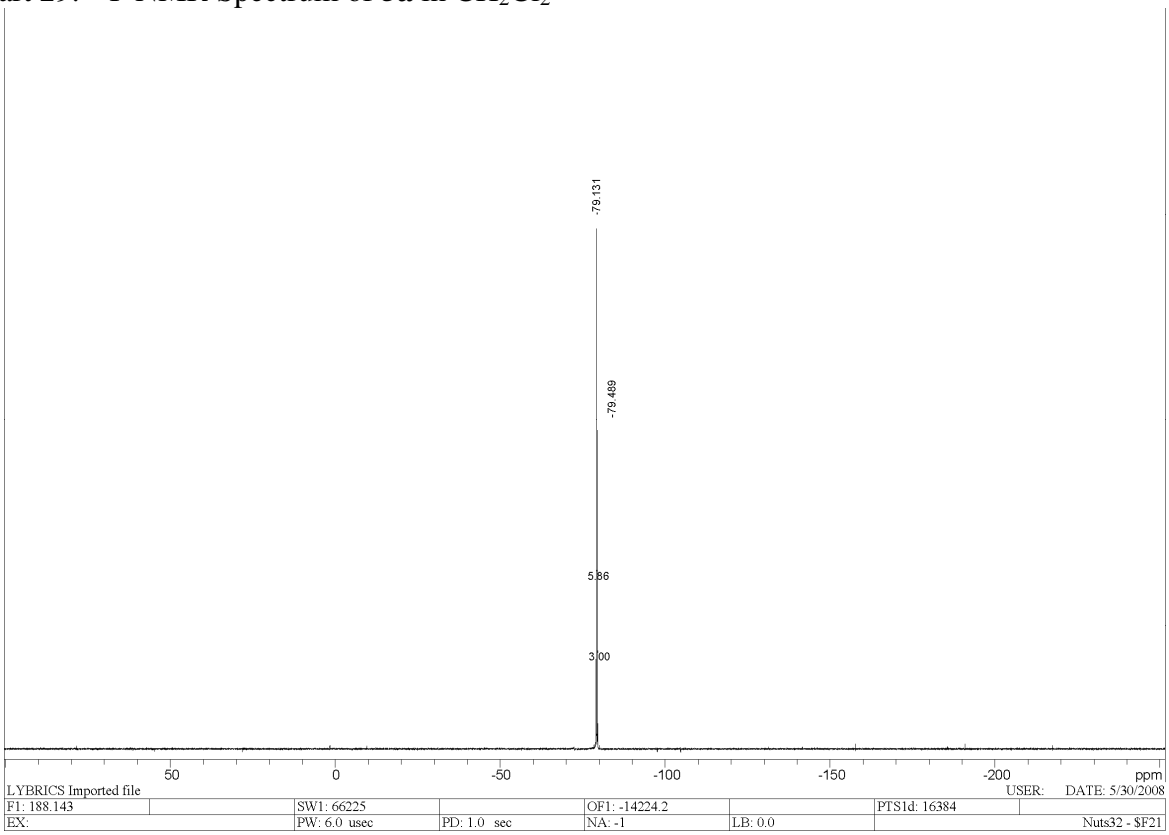
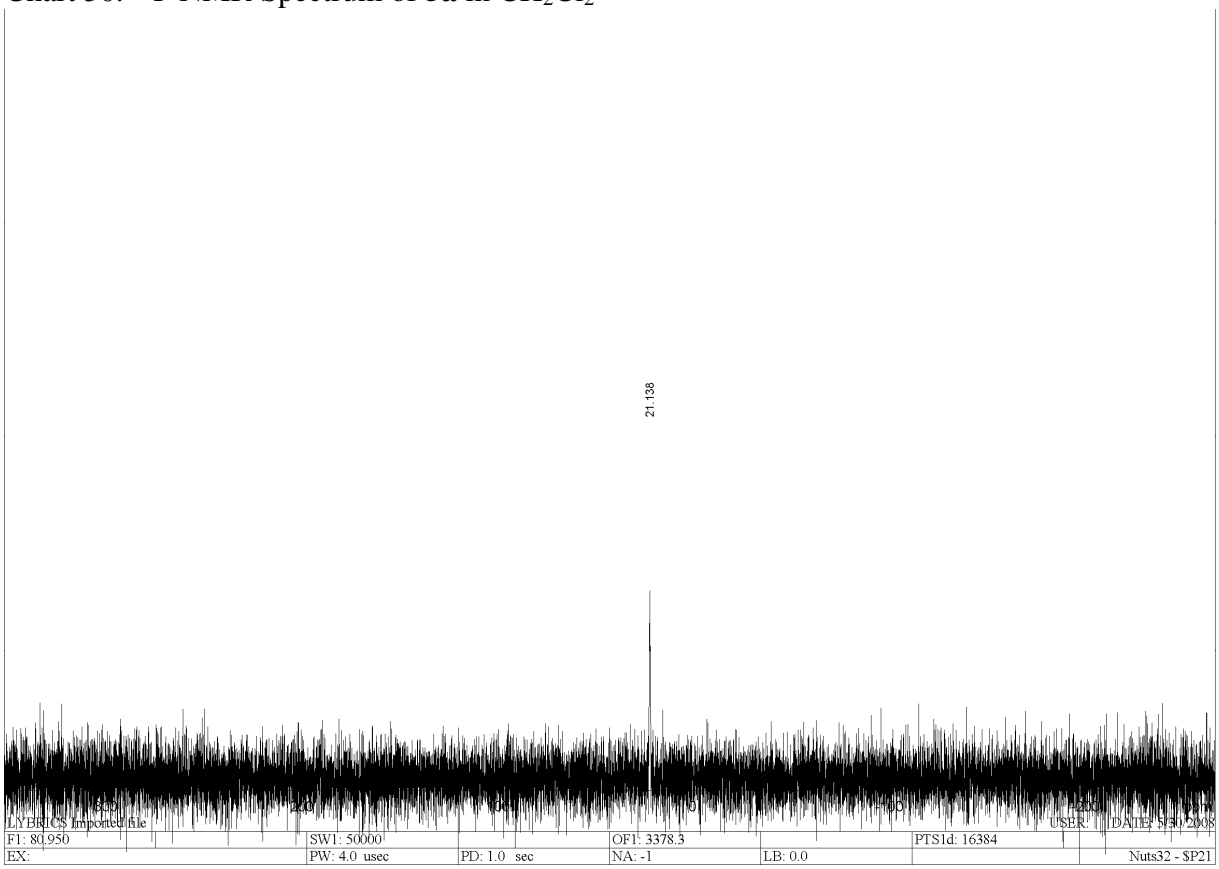


Chart 30. ^{31}P NMR Spectrum of **5a** in CH_2Cl_2



*1-(Methyl)-3-(1,1,2,2,tetrafluoroethyl)-imidazolium-bis(trifluoromethylsulfonylimino) trifluoromethanesulfonat(***6a***)*

Pale green viscous oil; ^{1}H NMR (300MHz, $(CD_3)_2SO$): δ 3.95 (s, CH_3), 7.17 (tt, 1H, CF_2CF_2H, $^{1}J_{FH}$ = 52 Hz, $^{2}J_{FH}$ = 2.85 Hz), 8.06 (s, 1H, ImH), 8.29 (s, 1H, ImH), 10 (s, 1H, ImH);); ^{13}C NMR (125.76 MHz, CH_3CN):δ 136.1, 125.8, 119.46, 119.5 (q, CF_3, J_{CF} = 320 Hz), 119.3 (q, CF_3, J_{CF} = 320 Hz), 109.5 (tt, , CF_2CF_2H, $^{1}J_{FC}$ = 279.5 Hz, $^{2}J_{FC}$ = 30.37 Hz), 107.4 (tt, , CF_2CF_2H, $^{1}J_{FC}$ = 252.9 Hz, $^{2}J_{FC}$ = 39.7 Hz), 36.9 (CH_3); ^{19}F NMR (200 MHz, CH_3CN): δ -79.46 (s, 6F, CF_3), -79.81 (s, 3F, CF_3), -99.16 (s, 2F, CF_2CF_2H), 137.1 (d, 2F, CF_2CF_2H, $^{1}J_{FH}$ = 52 Hz). Anal. Calcd for $C_9H_7F_{13}N_40_5S_3$: C, 18.18; H, 1.18; F, 41.58; N, 9.43; S 16.16. Found: C, 18.05; H, 1.43; F, 41.41; N, 9.36; S 15.97.

Chart 31. ^{1}H NMR Spectrum of **6a** in $(CD_3)_2SO$

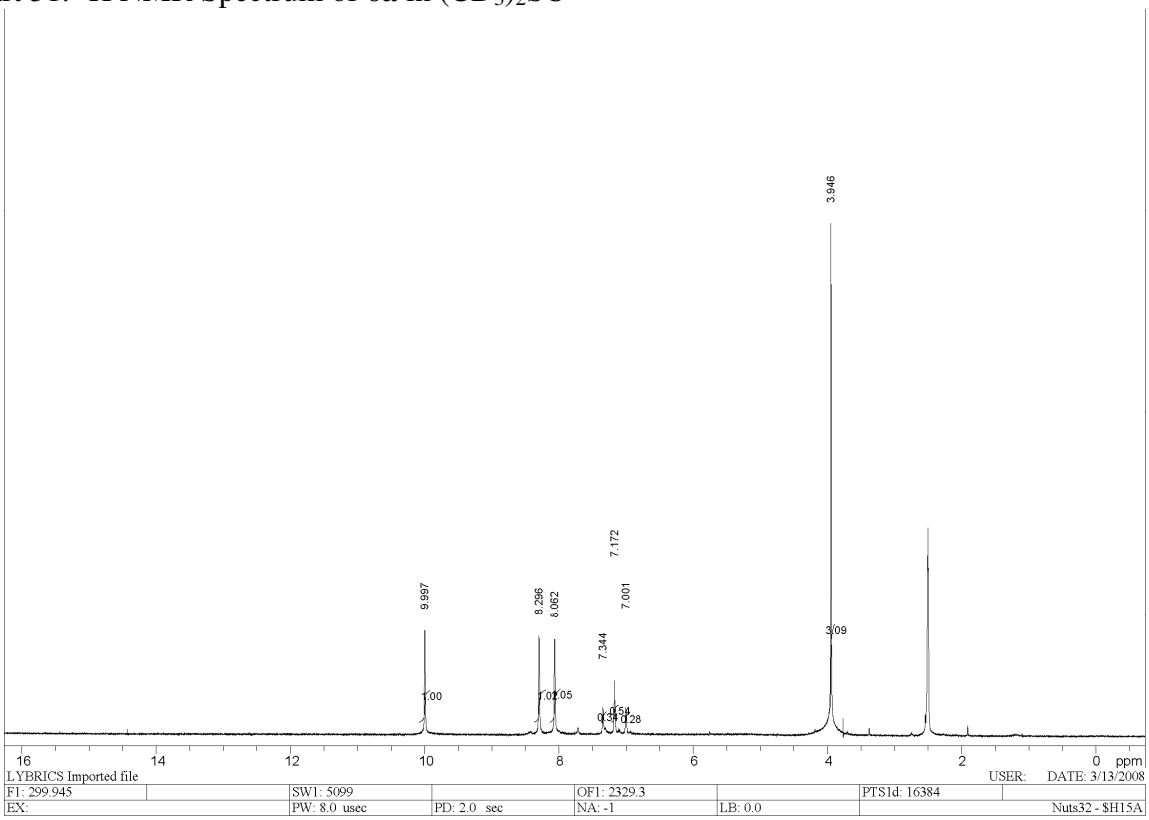


Chart 32. ^{13}C NMR Spectrum of **6a** in CH_3CN

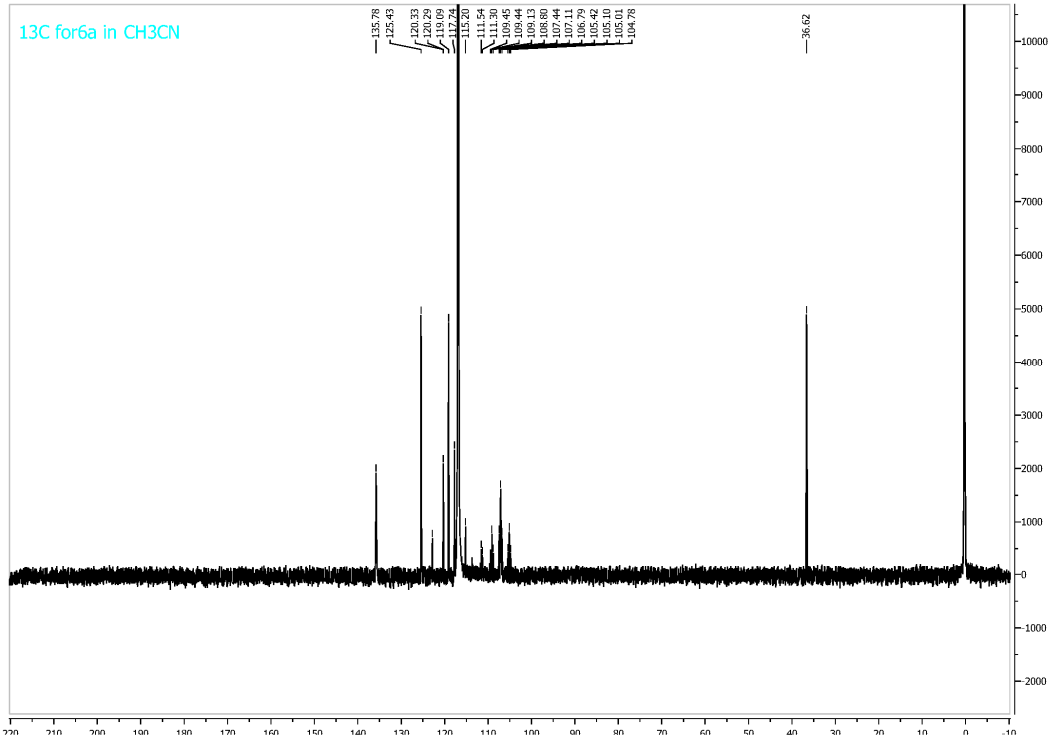
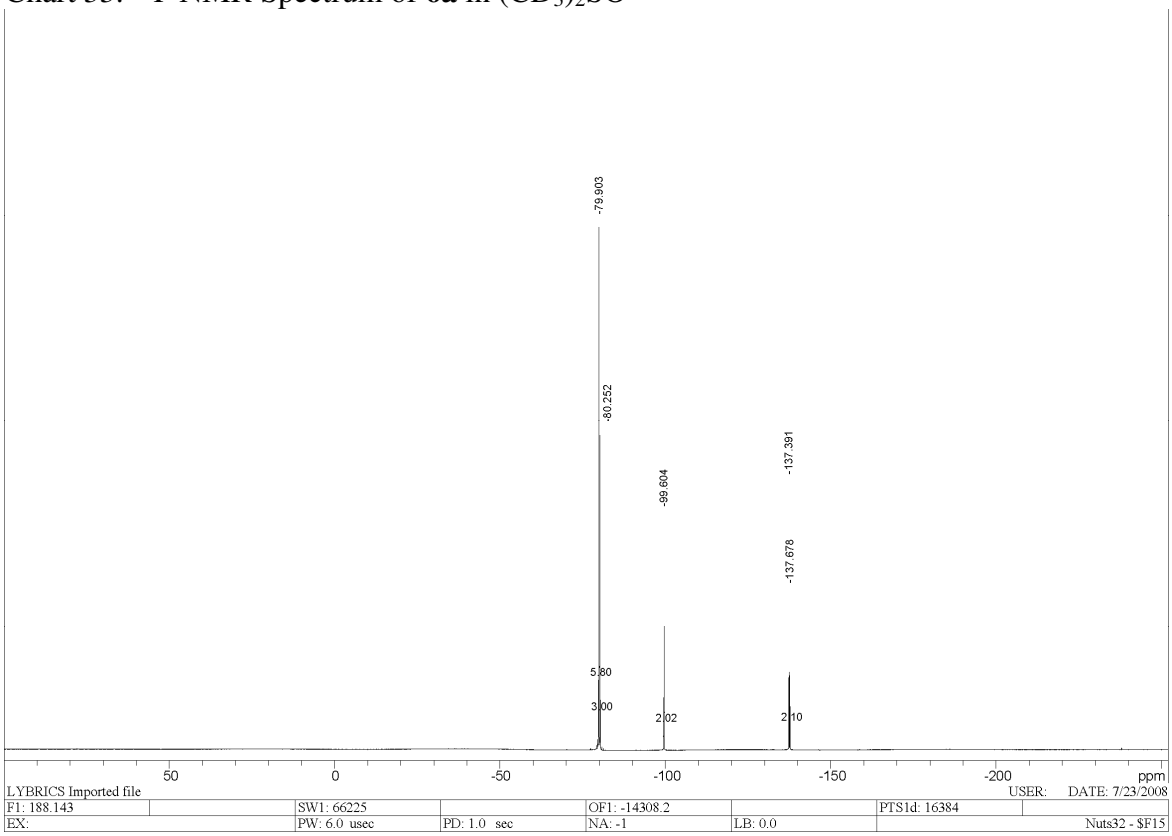


Chart 33. ^{19}F NMR Spectrum of **6a** in $(CD_3)_2SO$



*1-(n-Butyl)-3-(1,1,2,2,tetrafluoroethyl)-imidazolium-bis(trifluoromethylsulfonylimino) trifluoromethanesulfonat (***6e***)*

Pale yellow viscous oil; ^{1}H NMR (300MHz, $(CD_3)_2CO$): δ 0.98 (3H, t, CH_3, J_{HH} = 7.4 Hz), 1.3(2H, tq, CH_2, $^{1}J_{HH}$ = 10.65 Hz, $^{2}J_{HH}$ = 7.4 Hz), 1.83 (2H, tt, CH_2, J_{HH} = 7.4 Hz), 4.27 (t, CH_2, J_{HH} = 10.65 Hz), 7.17 (tt, 1H, CF_2CF_2H, $^{1}J_{FH}$ = 51.4, Hz, $^{2}J_{FH}$ = 3.1 Hz), 8.17 (s, 1H, ImH), 8.34 (s, 1H, ImH), 10.06 (s, 1H, ImH);); ^{13}C NMR (125.76 MHz, CH_3CN):δ 135.7, 124.2, 119.46, 119.32 (q, CF_3, J_{CF} = 320 Hz), 119.3 (q, CF_3, J_{CF} = 320 Hz), 109.5 (tt, , CF_2CF_2H, $^{1}J_{FC}$ = 279.5 Hz, $^{2}J_{FC}$ = 30.37 Hz), 107.4 (tt, , CF_2CF_2H, $^{1}J_{FC}$ = 252.9 Hz, $^{2}J_{FC}$ = 39.7 Hz), 50.3 (CH_2), 30.6 (CH_2), 18.5(CH_2), 12.2 (CH_3); ^{19}F NMR (200 MHz, $(CD_3)_2CO$): δ -77.9 (s, 6F, CF_3), -78.34 (s, 3F, CF_3), -98.36 (s, 2F, CF_2CF_2H), 136.44 (d, 2F, CF_2CF_2H, $^{1}J_{FH}$ = 51.4 Hz). Anal. Calcd for $C_{12}H_{13}F_{13}N_40_5S_3$: C, 22.64; H, 2.04; F, 38.84; N, 8.81; S 15.09. Found: C, 22.48; H, 2.3; F, 38.69; N, 8.65; S 14.88.

Chart 34. ^{1}H NMR Spectrum of **6e** in $(CD_3)_2SO$

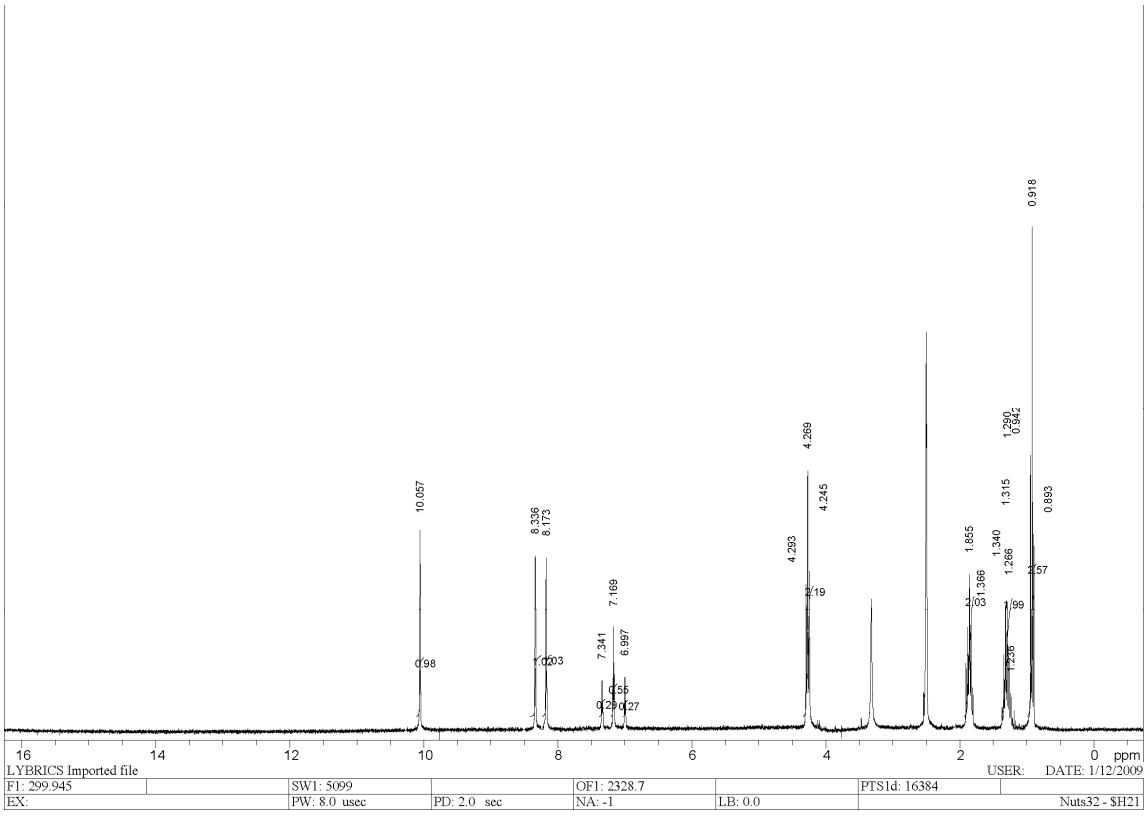


Chart 35. ^{13}C NMR Spectrum of **6e** in CH_3CN + $(CD_3)_2SO$

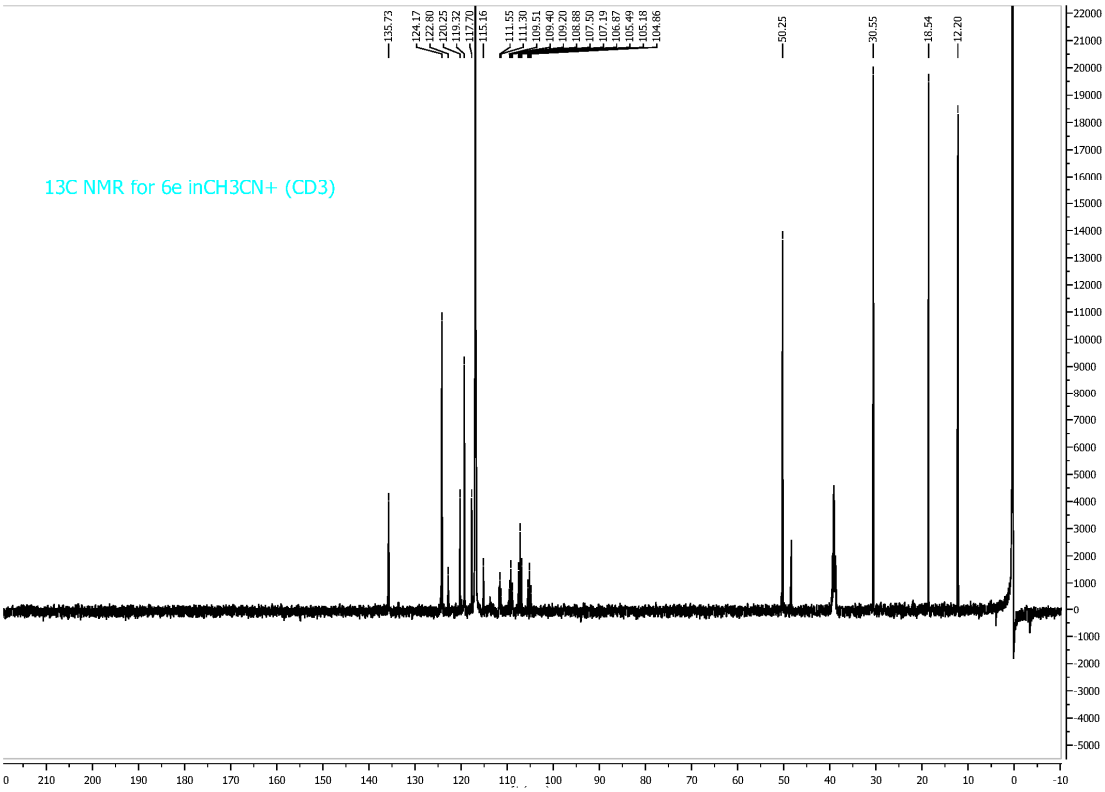
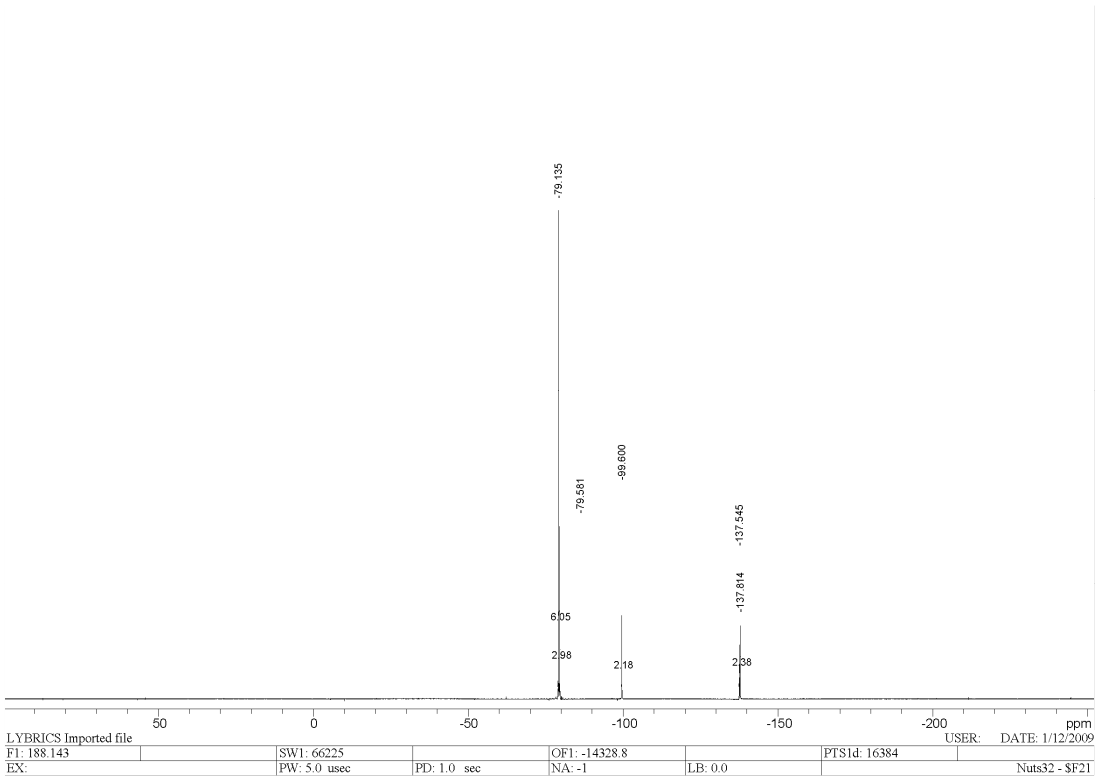


Chart 36. ^{19}F NMR Spectrum of **6e** in $(CD_3)_2SO$



*1-(H)-3-(1,1,2,2,tetrafluoroethyl)-imidazolium-bis(trifluoromethylsulfonylimino) tri-fluoromethanesulfonat (**7**)*

Colorless viscous oil; ^{1}H NMR (300MHz, $(CD_3)_2SO$): δ 7.11 (tt, 1H, CF_2CF_2H, $^{1}J_{FH}$ = 53, Hz, $^{2}J_{FH}$ = 3.1 Hz), 7.55 (s, 1H, ImH), 7.91 (s, 1H, ImH), 8.94 (s, 1H, ImH), 9 (br.s, 1H) ; ^{13}C NMR (125.76 MHz, CH_3CN):δ 135.7, 124.2, 119.46, 119.32 (q, CF_3, J_{CF} = 320 Hz), 119.3 (q, CF_3, J_{CF} = 320 Hz), 109.5 (tt, , CF_2CF_2H, $^{1}J_{FC}$ = 279.5 Hz, $^{2}J_{FC}$ = 30.37 Hz), 107.4 (tt, , CF_2CF_2H, $^{1}J_{FC}$ = 252.9 Hz, $^{2}J_{FC}$ = 39.7 Hz); ^{19}F NMR (200 MHz, $(CD_3)_2SO$): δ -80.31 (s, 6F, CF_3), -80.78 (s, 3F, CF_3), -99.2 (s, 2F, CF_2CF_2H), 131.9 (d, 2F, CF_2CF_2H, $^{1}J_{FH}$ = 53 Hz). Anal. Calcd for $C_8H_5F_{13}N_40_5S_3$: C, 16.55; H, 0.86; F, 42.59; N, 9.66; S 16.55. Found: C, 16.27; H, 1.1; F, 42.3; N, 9.38; S 16.36.

Chart 37. ^{1}H NMR Spectrum of **7** in $(CD_3)_2SO$

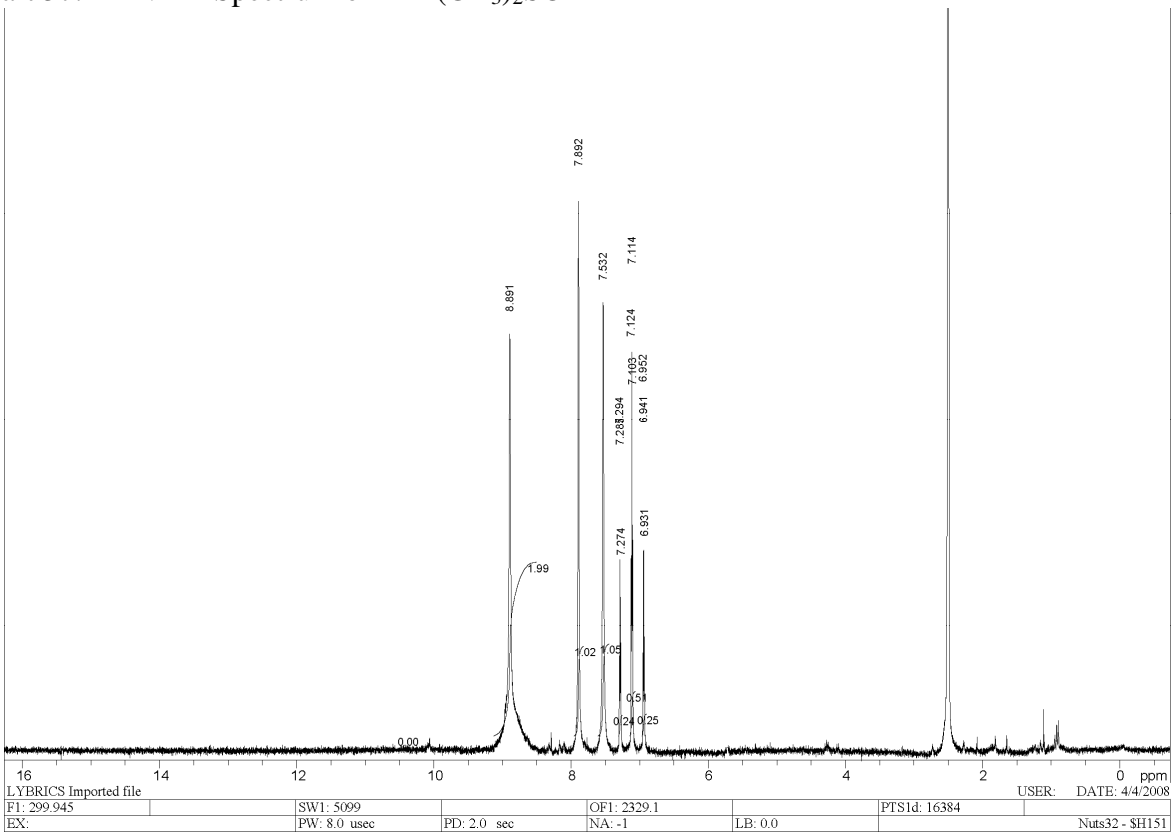
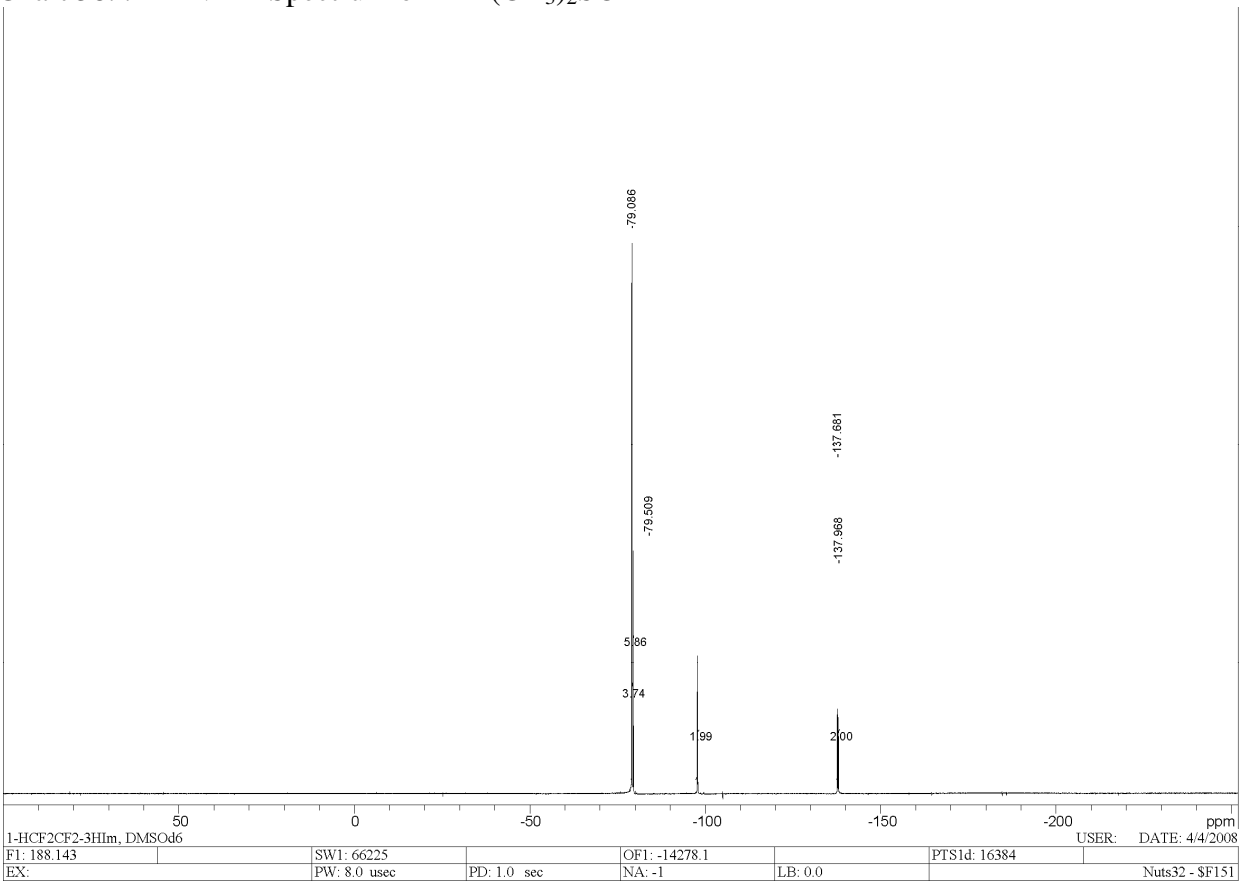


Chart 38. . ^{19}F NMR Spectrum of **7** in $(CD_3)_2SO$



Mixture of isomers **9-10**: Slightly brownish liquid; Anal. Calcd for $C_7H_3F_{15}N_20_5S_3$: C, 14.58; H, 0.52; F, 49.48; N, 4.86; S 16.67. Found: C, 14.45 H, 0.7; F, 49.32; N, 4.68; S 16.58.

*N-Methyl, N-(trifluoromethylsulfonyl)-[N'-(n-nonofluorobutylsufonyl)trifluoromethyl-sulfoximidoyl] imide (**9**)*

^1H NMR (300MHz, $CDCl_3$): δ 3.76 (3H, s, CH_3); ^{13}C NMR (125.76 MHz, $CDCl_3$):δ 118.9 (q, CF_3, J_{CF} = 326 Hz), 118.8 (q, CF_3, J_{CF} = 324 Hz), 118, 117.8, 117.7, 115.7-114.7, 113.6-111.9, 109.99-109.5, 108.1-107.3 ($SO_2C_4F_9$), 40.5 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ/ppm -71.97(s, 3F, CF_3), -72.78 (s, 3F, CF_3), -80.7 (t, 3F, CF_3), -111(2t, 2F, J_{FF} = 12 Hz), -120 (br., 2F), -126.64 (t, 2F, J_{FF} = 9 Hz).

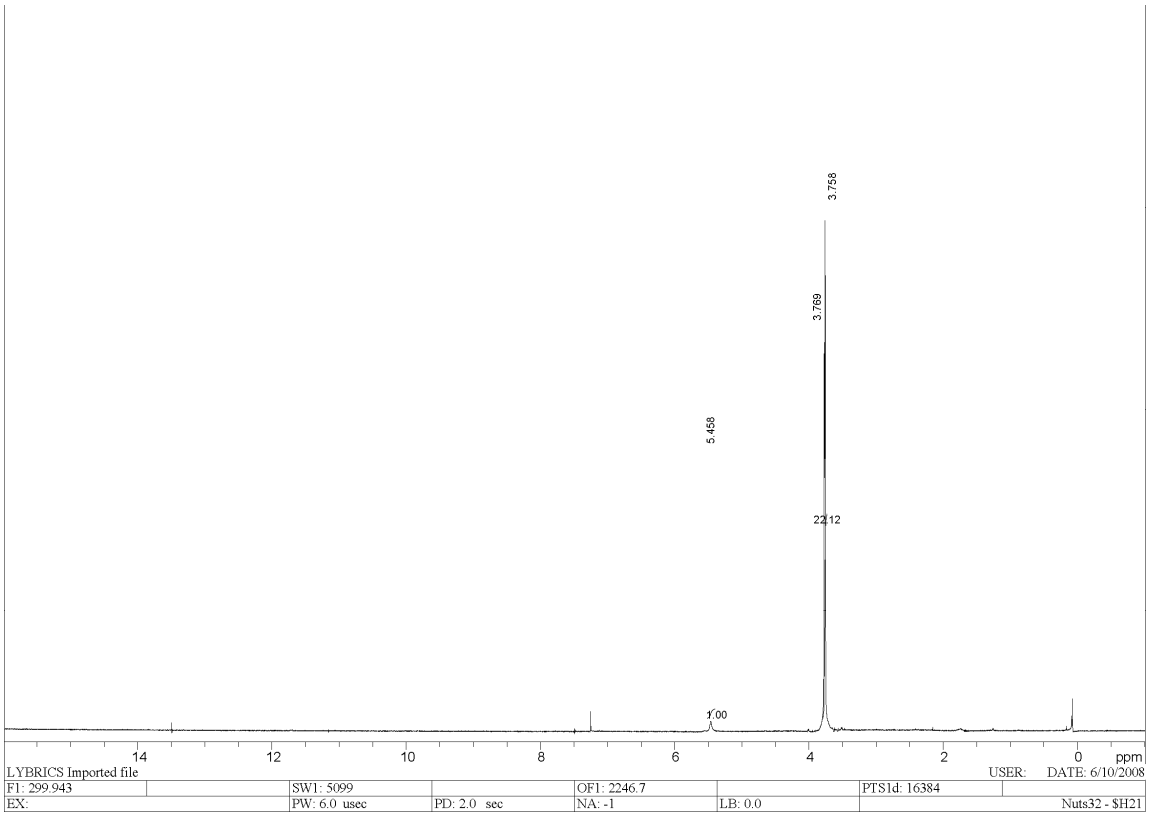
*N-Methyl, N-(n-nonafluorobutylsufonyl)-[N'-(trifluoromethylsulfonyl)trifluoromethyl-sulfoximidoyl] imide (**10**)*

^{1}H NMR (300MHz, $CDCl_3$): δ 3.77 (3H, s, CH_3); ^{13}C NMR (125.76 MHz, $CDCl_3$):δ 118.9 (q, CF_3, J_{CF} = 326 Hz), 118.8 (q, CF_3, J_{CF} = 324 Hz), 118, 117.8, 117.7, 115.7-114.7, 113.6-111.9, 109.99-109.5, 108.1-107.3 ($SO_2C_4F_9$), 40.8 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ -71.7(s, 3F, CF_3), -77.98 (s, 3F, CF_3), -80.7 (t, 3F, CF_3), -106.48 (t, 2F, J_{FF} = 12.5 Hz), -120 (br., 2F), -126.45 (t, 2F, J_{FF} = 10 Hz).

*N-[N'-(Nonafluorobutylsufonyl)trifluoromethylsulfoximidoyl]trifluorometansulfonic acid methyl ester (**11**)*

^{1}H NMR (300MHz, $CDCl_3$): δ 5.46 (br.s, 3H, CH_3); ^{13}C NMR (125.76 MHz, $CDCl_3$):δ 118.9 (q, CF_3, J_{CF} = 326 Hz), 118.8 (q, CF_3, J_{CF} = 324 Hz), 118, 117.8, 117.7, 115.7-114.7, 113.6-111.9, 109.99-109.5, 108.1-107.3 ($SO_2C_4F_9$), 29.2 (CH_3); ^{19}F NMR (200 MHz, $CDCl_3$): δ -71.7, -71.97(2s, 3F, CF_3), -73.41 (s, 3F, CF_3), -80.7 (t, 3F, CF_3), -110.3, -113.4 (2t, 2F, J_{FF} = 13.64 Hz), -121.26 (br., 2F), -125.95 (t, 2F, J_{FF} = 10 Hz).

Chart 39. ^{1}H NMR Spectrum of **9-11** in $CDCl_3$



Part of . ^{1}H NMR Spectrum of **9-11** in $CDCl_3$

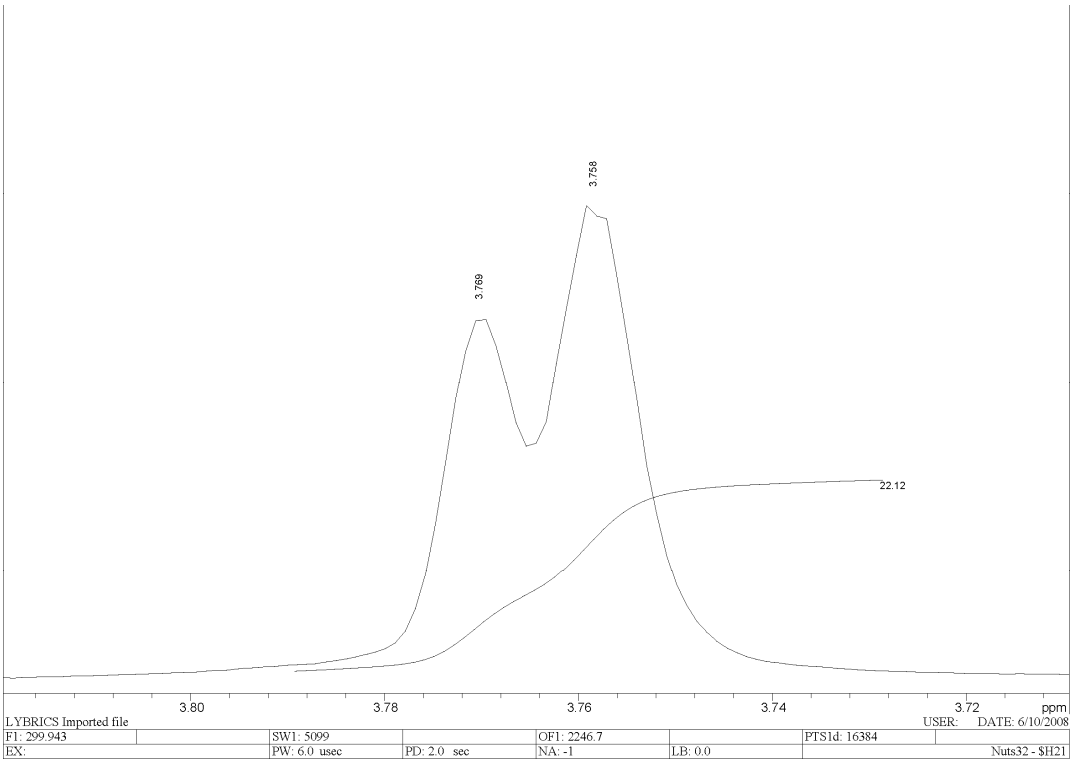


Chart 40. ^{13}C NMR Spectrum of **9-11** in CH_2Cl_2

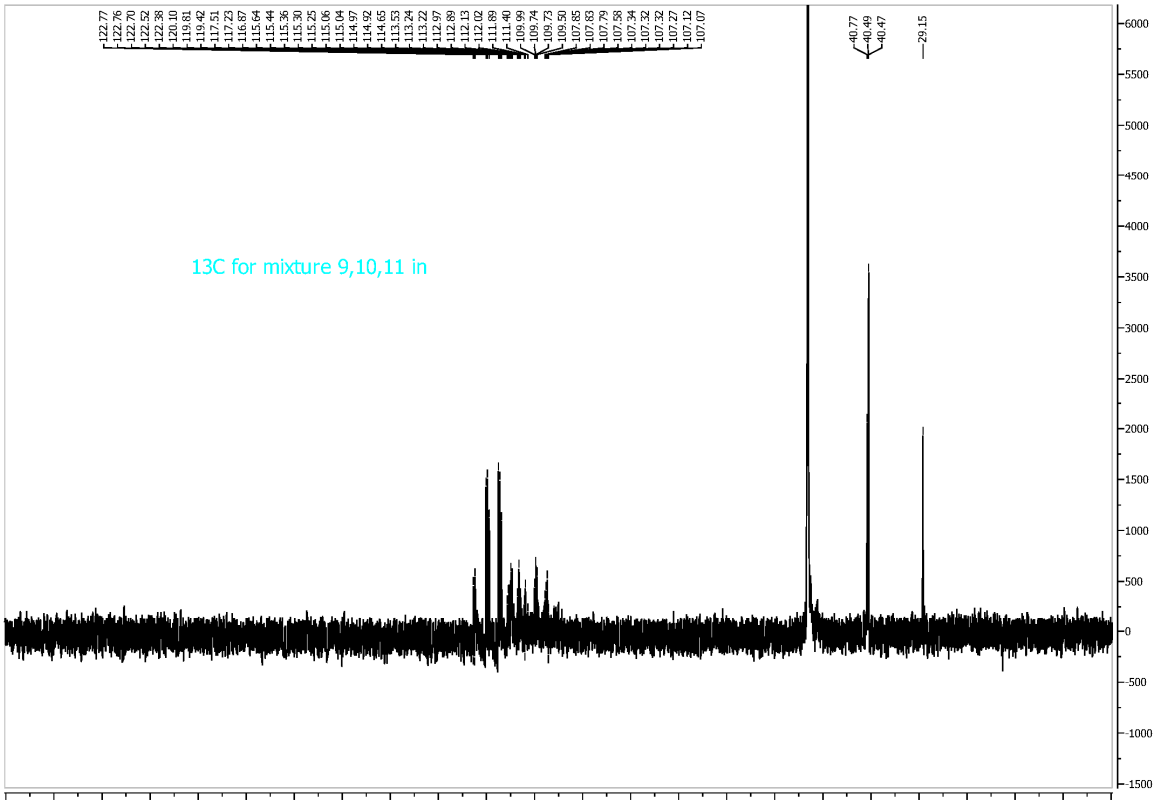
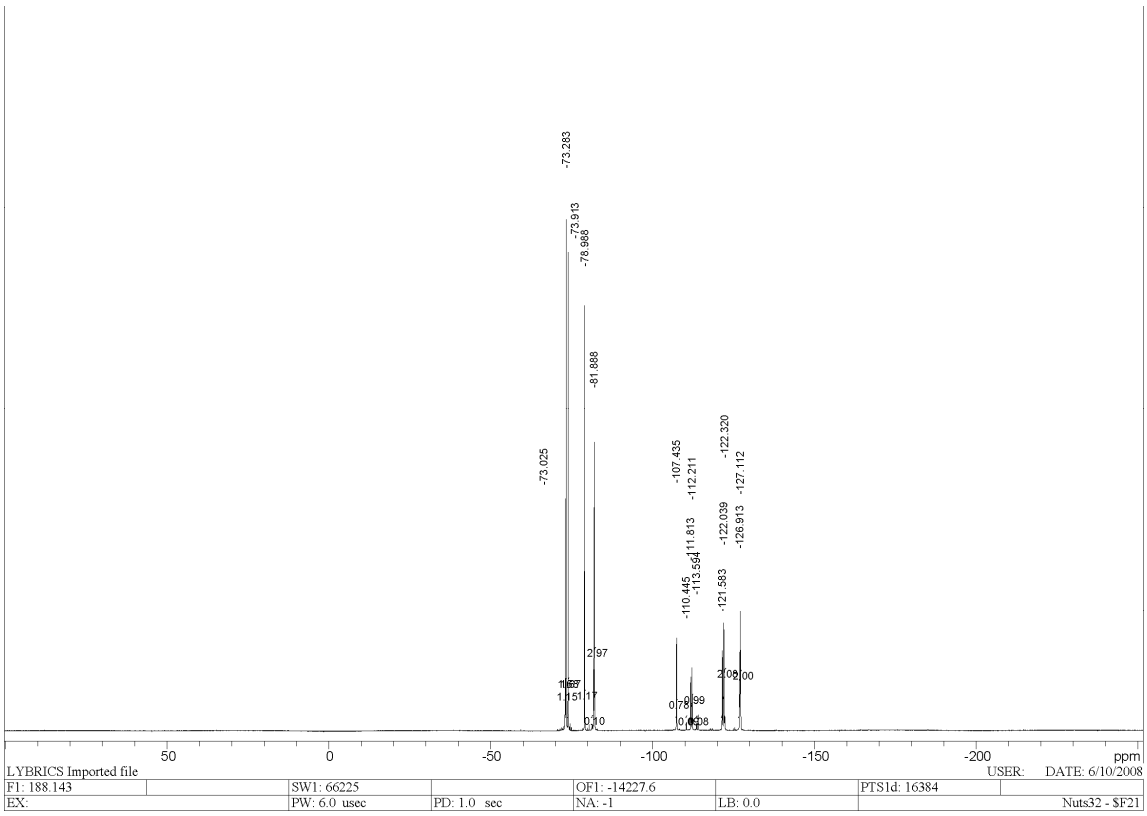
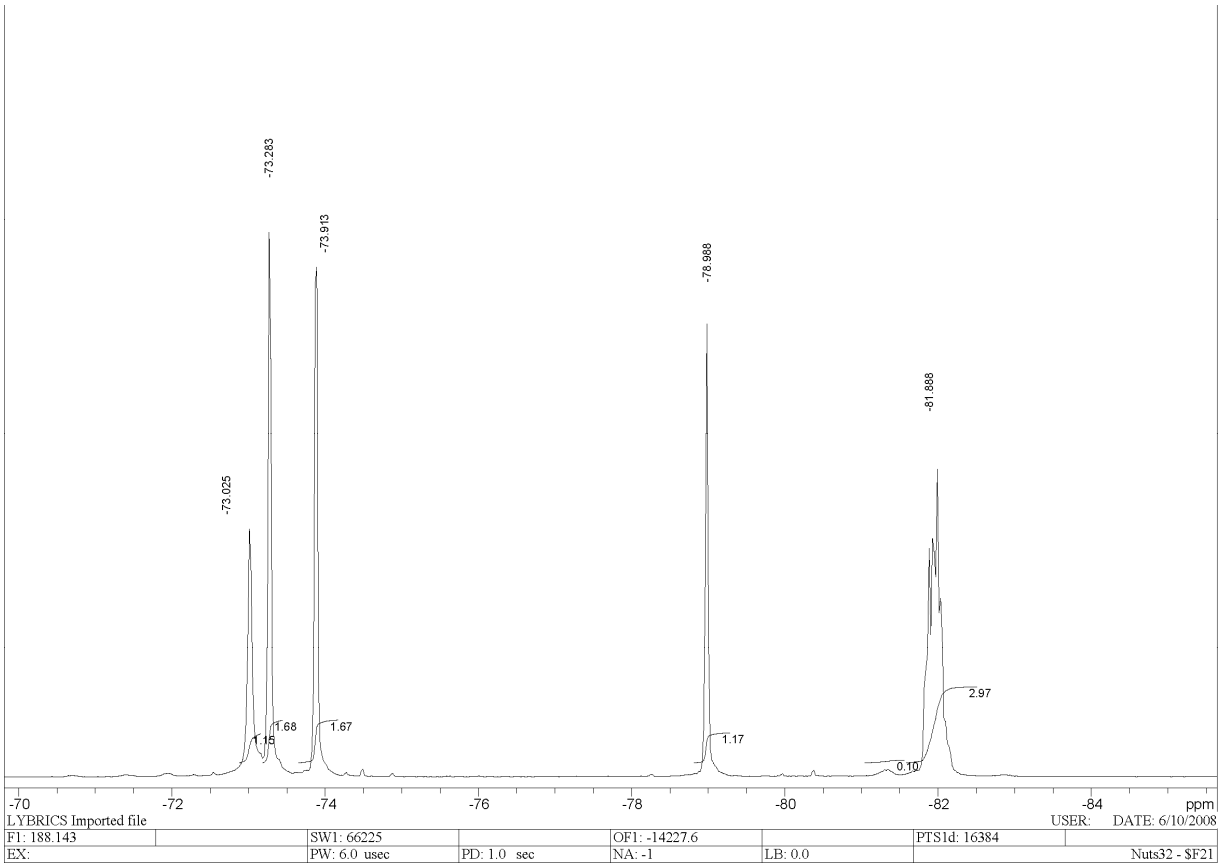


Chart 41. ^{19}F NMR Spectrum of **9-11** in $CDCl_3$



Part of. ^{19}F NMR Spectrum of **9-11** in $CDCl_3$