

Supporting Information

One-pot Synthesis, Structural Analysis, and Oxidation Applications of a
Series of Diaryltellurium Dicarboxylates..

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1. Experimental procedures
2. ^1H , ^{13}C , and ^{125}Te NMR spectra of diaryl tellurium dicarboxylate.

Experimental

General.

All reagents and chemicals received from commercial suppliers were of reagent grade and were used unmodified. NMR spectra were performed on Bruker Advance DRX 500 (^1H : 500 MHz, ^{13}C : 125 MHz, ^{19}F : 470 MHz, ^{125}Te : 158 MHz) spectrometers. Deuterated solvents used are indicated in each case. All of the chemical shifts are reported as δ values (ppm) relative to TMS (δ_{H} 0.00), the central peak of deuteriochloroform (δ_{C} 77.16), hexafluorobenzene (δ_{F} -162.9) and diphenylditeluride (δ_{Te} 422) unless otherwise noted; J values are expressed in hertz. The mass analyses were performed using a SIMADZU LCMS-IT-TOF or JEOL AccuTOF LC-plus JMS-T100LP spectrometer. The courses of the reactions were monitored using TLC aluminum sheets with silica gel 60 F₂₅₄ (Merck). The column chromatography was performed using CHROMATOREX PSQ 60B (FUJI SILYSIA CHEMICAL LTD.). X-ray crystallography All measurements for 1a–2b and 6a were made on Rigaku XtaLAB PRO.

Procedure.

A solution of diaryl telluride (0.1 mmol) carboxylic acid (0.22 mmol) and tetraphenylporphine (0.001 mmol) in CH_2Cl_2 (10 ml) was irradiated under aerobic conditions using LED lamp. After the TLC of reaction mixture showed complete consumption of diaryl telluride, the mixture was evaporated, and the product was purified by recrystallization.

diphenyl- λ^4 -tellurium diacetate (**1a**)

Yield: 0.0351g, (0.088 mmol 89%); white solid. m. p.= 130-135°C. ^1H NMR (500 MHz, CDCl_3): δ =1.97 (s, 6H), 7.50-7.84 (m, 10H). ^{13}C NMR (125 MHz, CDCl_3): δ =22.3 (2C), 129.7 (4C), 131.3 (2C), 133.2 (4C), 135.3 (2C), 177.5 (2C). ^{125}Te NMR (158 MHz, CDCl_3): δ =962.9. HRMS (ESI): m/z [$\text{Ph}_2\text{Te}(\text{OH})$]+ calcd for $\text{C}_{12}\text{H}_{11}\text{OTe}$: 300.9867; found: 300.9900.

dimesityl- λ^4 -tellurium diacetate (**1b**)

Yield: 0.0563g, (quant.); white solid. m. p.= 238-241 °C. dec.. ^1H NMR (500 MHz, CDCl_3): δ =1.85 (s, 6H), 2.30 (s, 6H), 2.36 (s, 6H), 2.76 (s, 6H), 6.97 (s, 2H), 6.98 (s, 2H). ^{13}C NMR (125 MHz, CDCl_3): δ =21.0 (2C), 22.0 (2C), 23.0 (2C), 23.8 (2C), 130.0 (2C), 130.7 (2C), 133.6 (2C), 141.0 (2C), 142.3 (2C), 143.3 (2C), 177.0 (2C). ^{125}Te NMR (158 MHz, CDCl_3): δ =949.3. HRMS (ESI): m/z [(2, 4, 6-Me-Ph)₂Te(OH)]+ calcd for $\text{C}_{18}\text{H}_{23}\text{OTe}$: 385.0806; found: 305.0804.

bis(4-fluorophenyl)- λ^4 -tellurium diacetate (**1c**)

Yield: 0.0409g, (0.086 mmol 86%); white solid. m. p.=129-140 °C. ^1H NMR (500 MHz, CDCl_3): δ =1.98 (s, 6H), 7.19 (m, 4H), 7.84 (m, 4H). ^{13}C NMR (125 MHz, CDCl_3): δ =22.4 (2C), 117.2 (2C), 117.4 (2C),

130.3 (2C), 135.6 (2C), 135.7 (2C) 163.4 (1C), 165.6 (1C) 177.7 (2C). ^{19}F NMR (470 MHz, CDCl_3): δ = -108.4 (2F). ^{125}Te NMR (157 MHz, CDCl_3): δ = 956.9. HRMS (ESI): m/z $[(4\text{-F-Ph})_2\text{Te(OH)}]^+$ calcd for $\text{C}_{12}\text{H}_9\text{F}_2\text{OTe}$: 336.9678; found: 336.9716.

bis(4-methoxyphenyl)- λ^4 -tellurium diacetate (1d)

Yield: 0.0375g, (0.082 mmol 82%); m. p. = 124-126 °C. ^1H NMR (500 MHz, CDCl_3): δ = 1.96 (s, 6H), 3.84 (s, 6H), 7.00 (d, J = 9, 4H), 7.76 (d, J = 9, 4H). ^{13}C NMR (125 MHz, CDCl_3): δ = 22.5 (2C), 55.5 (2C), 115.4 (4C), 125.7 (2C), 134.9 (4C), 161.9 (2C), 177.5 (2C). ^{125}Te NMR (157 MHz, CDCl_3): δ = 978.4. HRMS (ESI): m/z $[(4\text{-OMe-Ph})_2\text{Te(OH)}]^+$ calcd for $\text{C}_{14}\text{H}_{15}\text{O}_3\text{Te}$: 361.0078; found: 361.0118.

diphenyl- λ^4 -tellurium bis(trifluoroacetate) (2a)

Yield: 0.2084g, (0.410 mmol 82%); white solid. m. p. = 118-122 °C. ^1H NMR (500 MHz, CDCl_3): δ = 7.62 (m, 6H), 7.81 (d, J = 7, 4H). ^{13}C NMR (125 MHz, CDCl_3): δ = 113.1 (q, J_{CF} = 287, 2C), 130.6 (6C), 132.8 (4C), 133.3 (2C), 161.4 (q, J_{CF} = 40, 2C). ^{19}F NMR (470 MHz, CDCl_3): δ = -76.16 (6F). ^{125}Te NMR (158 MHz, CDCl_3): δ = 1068.9. HRMS (ESI): m/z $[\text{Ph}_2\text{Te(OH)}]^+$ calcd for $\text{C}_{12}\text{H}_{11}\text{OTe}$: 300.9867; found: 300.9853.

dimesityl- λ^4 -tellurium bis(trifluoroacetate) (2b)

Yield: 0.0604g, (quant.); white solid. m. p. = 235-242 °C. dec.. ^1H NMR (500 MHz, CDCl_3): δ = 2.34 (s, 12H), 2.75 (s, 6H), 7.06 (s, 4H). ^{13}C NMR (125 MHz, CDCl_3): δ = 21.1 (2C), 22.6 (2C), 23.7 (2C), 113.1 (q, J_{CF} = 287, 2C), 130.6 (2C), 130.9 (2C), 131.4 (2C), 142.6 (2C), 142.9 (2C), 143.8 (2C), 160.9 (q, J_{CF} = 40, 2C). ^{19}F NMR (470 MHz, CDCl_3): δ = -76.20 (6F). ^{125}Te NMR (158 MHz, CDCl_3): δ = 1067.5. HRMS (ESI): m/z $[(2, 4, 6\text{-Me-Ph})_2\text{Te(OH)}]^+$ calcd for $\text{C}_{18}\text{H}_{23}\text{OTe}$: 385.0806; found: 305.0829.

diphenyl- λ^4 -tellurium dibenzoate (3a)

Yield: 0.0584g, (quant.); white solid. m. p. = 129-138 °C. dec.. ^1H NMR (500 MHz, CDCl_3): δ = 7.38 (t, J = 7.8, 4H), 7.48-7.53 (m, 8H), 7.97-8.00 (m, 8H). ^{13}C NMR (125 MHz, CDCl_3): δ = 128.3 (2C), 130.0 (8C), 131.5 (4C), 132.0 (2C), 132.5 (4C), 133.5 (2C), 135.9 (2C), 172.0 (2C). ^{125}Te NMR (158 MHz, CDCl_3): δ = 970.2. HRMS (ESI): m/z $[\text{Ph}_2\text{Te(OH)}]^+$ calcd for $\text{C}_{12}\text{H}_{11}\text{OTe}$: 300.9867; found: 300.9887.

dimesityl- λ^4 -tellurium dibenzoate (3b)

Yield: 0.0632g, (quant.); white solid. m. p. = 240-244 °C. ^1H NMR (500 MHz, CDCl_3): δ = 2.30 (s, 6H), 2.44 (s, 6H), 2.85 (s, 6H), 6.94 (s, 2H), 7.02 (s, 2H), 7.32 (t, J = 8, 4H), 7.44 (t, J = 8, 2H), 7.88 (d, J = 8.5, 4H). ^{13}C NMR (125 MHz, CDCl_3): δ = 21.1 (2C), 23.2 (2C), 24.2 (2C), 128.2 (2C), 129.9 (4C), 130.0 (4C), 130.9 (2C), 132.1 (2C), 132.2 (2C), 133.7 (2C), 141.1 (2C), 142.6 (2C), 143.8 (2C), 171.3 (2C). ^{125}Te NMR (157 MHz, CDCl_3): δ = 955.27. HRMS (ESI): m/z $[(2, 4, 6\text{-Me-Ph})_2\text{Te(OH)}]^+$ calcd for $\text{C}_{18}\text{H}_{23}\text{OTe}$: 385.0806; found: 305.0832.

diphenyl- λ^4 -tellurium dicyclohexanecarboxylate (**4a**)

Yield: 0.0357g, (0.067 mmol 61%); white solid. m. p.= 81-90 °C. dec.. ^1H NMR (500 MHz, CDCl_3): δ =1.14-1.36 (m, 12H), 1.65-1.68 (m, 4H), 1.79-1.81 (m, 4H), 2.18 (m, 2H), 7.47 (d, J =2, 2H), 7.48 (d, J =3, 4H), 7.80-7.82(m, 4H). ^{13}C NMR (125 MHz, CDCl_3): δ =25.7 (2C), 25.9 (4C), 29.4 (4C), 44.4 (2C), 129.7 (2C), 131.2 (4C), 133.3 (4C), 135.8(2C), 182.2(2C). ^{125}Te NMR (158 MHz, CDCl_3): δ =949.0. HRMS (ESI): m/z [$\text{Ph}_2\text{Te}(\text{OH})$] $^+$ calcd for $\text{C}_{12}\text{H}_{11}\text{OTe}$: 300.9867; found: 300.9893.

dimesityl- λ^4 -tellurium dicyclohexanecarboxylate (**4b**)

Yield: 0.0426g, (0.069mmol 69%); white solid. m. p.=193-199 °C. ^1H NMR (500 MHz, CDCl_3): δ =1.06-1.28 (m, 12H), 1.62 (m, 4H), 1.72 (m, 4H), 2.05 (m, 2H), 2.29 (s, 6H), 2.35 (s, 6H), 2.75 (s, 6H), 6.94 (s, 2H), 6.96 (s, 2H). ^{13}C NMR (125 MHz, CDCl_3): δ =21.1 (2C), 23.1 (2C), 23.9 (2C), 25.8 (4C), 25.9 (4C), 29.5 (2C), 44.7 (2C), 129.9 (2C), 130.6 (2C), 133.9 (2C), 140.8 (2C), 142.4 (2C), 143.3 (2C), 181.6 (2C). ^{125}Te NMR (158 MHz, CDCl_3): δ =945.6. HRMS (ESI): m/z [(2, 4, 6-Me-Ph) $_2\text{Te}(\text{OH})$] $^+$ calcd for $\text{C}_{18}\text{H}_{23}\text{OTe}$: 385.0806; found: 305.0840.

diphenyl- λ^4 -tellurium bis(3-chlorobenzoate) (**5a**)

Yield: 0.0561g, (0.95mmol, 93%); white solid. m. p.= 109-121 °C. ^1H NMR (500 MHz, CDCl_3): δ =7.33 (t, J =7.9, 2H), 7.46 (d, J =8, 2H), 7.54 (m, 6H), 7.84 (d, J =7.8, 2H), 7.91 (s, 2H), 7.97 (m, 4H). ^{13}C NMR (125 MHz, CDCl_3): δ =128.2 (2C), 129.6 (2C), 130.0 (2C), 130.1 (2C), 131.7 (4C), 132.5 (2C), 133.4 (2C), 133.7 (4C), 134.3 (2C), 135.6 (2C), 170.7 (2C). ^{125}Te NMR (158 MHz, CDCl_3): δ =985.0. HRMS (ESI): m/z [$\text{Ph}_2\text{Te}(\text{OH})$] $^+$ calcd for $\text{C}_{12}\text{H}_{11}\text{OTe}$: 300.9867; found: 300.9904.

dimesityl- λ^4 -tellurium bis(3-chlorobenzoate) (**5b**)

Yield: 0.0646g, (0.095mmol 96%); white solid. m. p.= 194-196 °C. ^1H NMR (500 MHz, CDCl_3): δ =2.31 (s, 6H), 2.43 (s, 6H), 2.83(s, 6H), 6.96 (s, 2H), 7.04 (s, 2H), 7.26 (t, J =10, 2H), 7.41 (d, J =10, 2H), 7.76 (d, J =10, 8H), 7.84 (s, 2H). ^{13}C NMR (125 MHz, CDCl_3): δ =21.1(2C), 23.2(2C), 24.1(2C), 128.0(2C), 129.5(2C), 129.9(2C), 130.2(2C), 131.0(2C), 132.2(2C), 133.4(2C), 133.9(2C), 134.3(2C), 141.4(2C), 142.5(2C), 143.7(2C), 170.1(2C). ^{125}Te NMR (158 MHz, CDCl_3):971.1. HRMS (ESI): m/z [(2, 4, 6-Me-Ph) $_2\text{Te}(\text{OH})$] $^+$ calcd for $\text{C}_{18}\text{H}_{23}\text{OTe}$: 385.0806; found: 305.0816.

diphenyl- λ^4 -tellurium bis(2,2-diphenylacetate) (**6a**)

Yield: 0.0602g, (0.085 mmol 84%); white solid. m. p.= 149-154 °C. ^1H NMR (500 MHz, CDCl_3): δ =4.93(s, 2H), 7.14(d, J =9, 8H) 7.19-7.23(m, 12H), 7.32(t, J =7.8, 4H), 7.44(t, J =7.5, 2H), 7.55(d, J =8.5, 4H). ^{13}C NMR (125 MHz, CDCl_3): δ =58.7(2C), 126.9(4C), 128.4(8C), 128.9(8C), 129.7(4C), 131.3(2C), 133.4(4C), 134.6(2C), 139.6(4C), 177.5(2C). ^{125}Te NMR (158 MHz, CDCl_3): δ =973.7. HRMS (ESI): m/z [$\text{Ph}_2\text{Te}(\text{OH})$] $^+$ calcd for $\text{C}_{12}\text{H}_{11}\text{OTe}$: 300.9867; found: 300.9820.

dimesityl- λ^4 -tellurium bis(2,2-diphenylacetate) (**6b**)

Yield: 0.2723g, (0.345 mmol 69%); white solid. m. p.= 182-184 °C. ^1H NMR (500 MHz, CDCl_3): δ =1.95(s, 6H), 2.31(s, 6H), 2.56(s, 6H), 4.84(s, 2H), 6.74(s, 2H), 6.90-6.92(m, 6H), 7.05(d, J =7.5, 4H), 7.08(t, J =7.5, 4H), 7.12-7.20(m, 8H). ^{13}C NMR (125 MHz, CDCl_3): δ =21.1(2C), 22.8(2C), 23.8(2C), 58.5(2C), 126.7(2C), 126.8(2C), 128.3(8C), 128.7(4C), 128.8(4C), 129.7(2C), 130.9(4C), 133.4(4C), 139.1, 139.9, 140.9, 142.6, 143.9(2C), 177.3(2C). ^{125}Te NMR (158 MHz, CDCl_3): δ =972.4. HRMS (ESI): m/z [(2, 4, 6-Me-Ph) $_2\text{Te}(\text{OH})$] $^+$ calcd for $\text{C}_{18}\text{H}_{23}\text{OTe}$: 385.0806; found: 305.0787.

Procedure (oxidation reactions)

2b (0.30 mmol) and benzoin (0.25 mmol) were stirred in CH_2Cl_2 (3 ml) at room temperature for 24h. After reaction, the mixture was evaporated, and the product was purified and isolated using column chromatography.

1,2-diphenylethane-1,2-dione

Yield: 0.0511g, (0.24 mmol, 97%); yellow solid. m. p.= 84-90 °C.

^1H NMR (500 MHz, CDCl_3): δ =7.50-7.54(m, 4H), 7.65-7.69(m, 2H), 7.97-7.99(m, 4H).

^{13}C NMR (125 MHz, CDCl_3): δ =129.2(4C), 130.1(4C), 133.1(2C), 135.0(2C), 194.7(2C).

HRMS (ESI+): m/z [$\text{M}+\text{H}$] $^+$ calcd for $\text{C}_{14}\text{H}_{11}\text{O}_2$: 211.0754; found: 211.0718.

octane-4,5-dione

Yield: 0.0342g, (0.24 mmol 96%); yellow oil.

^1H NMR (500 MHz, CDCl_3): δ =0.95(t, J =7.5 Hz, 6H), 1.62(sext, J =7.4 Hz, 4H), 2.72(t, J =7.3 Hz, 4H).

^{13}C NMR (125 MHz, CDCl_3): δ =13.8(2C), 16.7(2C), 38.1(2C), 200.2(2C).

1,2-bis(4-methoxyphenyl)ethane-1,2-dione

Yield: 0.0674g, (0.25 mmol, quant.); yellow solid. m. p.= 126-127 °C.

^1H NMR (500 MHz, CDCl_3): δ =3.88(s, 6H), 6.97(d, J =9.0 Hz, 4H), 7.94(d, J =9 Hz, 4H).

^{13}C NMR (125 MHz, CDCl_3): δ =55.7(2C), 114.4(4C), 126.4(2C), 132.5(4C), 165.0(2C), 193.616(2C).

HRMS (ESI+): m/z [$\text{M}+\text{H}$] $^+$ calcd for $\text{C}_{16}\text{H}_{15}\text{O}_4$: 271.0965; found: 271.0919.

1,2-di-*p*-tolylethane-1,2-dione

Yield: 0.0543g, (0.23 mmol, 91%); white solid. m. p.= 90-96 °C.

^1H NMR (500 MHz, CDCl_3): δ =2.42(s, 6H), 7.29(d, J =8.0 Hz, 4H), 7.86(d, J =8.5 Hz, 4H).

^{13}C NMR (125 MHz, CDCl_3): δ =22.0(2C), 129.8(4C), 130.1(4C), 130.8(2C), 146.2(2C), 194.6(2C).

HRMS (MALDI): m/z [$\text{M}+\text{Na}$] $^+$ calcd for $\text{C}_{16}\text{H}_{14}\text{O}_2\text{Na}$: 261.0886; found: 261.0930.

1,2-di(2-furyl)ethane-1,2-dione

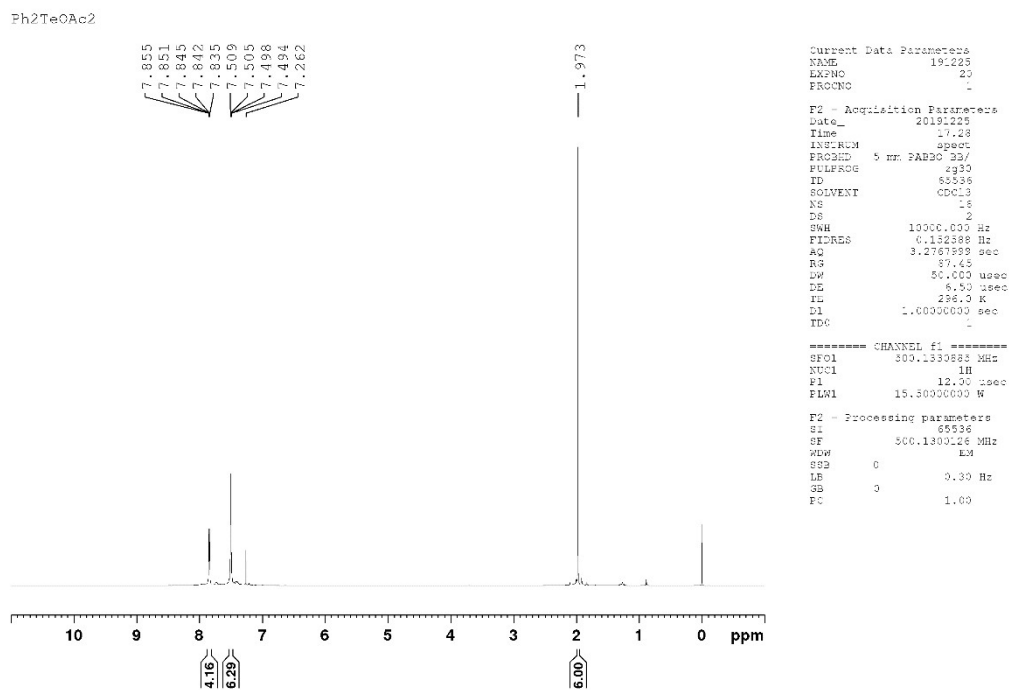
Yield: 0.0464g, (0.25 mmol 98%); yellow solid. m. p.= 157-158 °C.

^1H NMR (500 MHz, CDCl_3): δ =6.64-6.65(m, 2H), 7.65-7.66(m, 2H), 7.79(m, 2H).

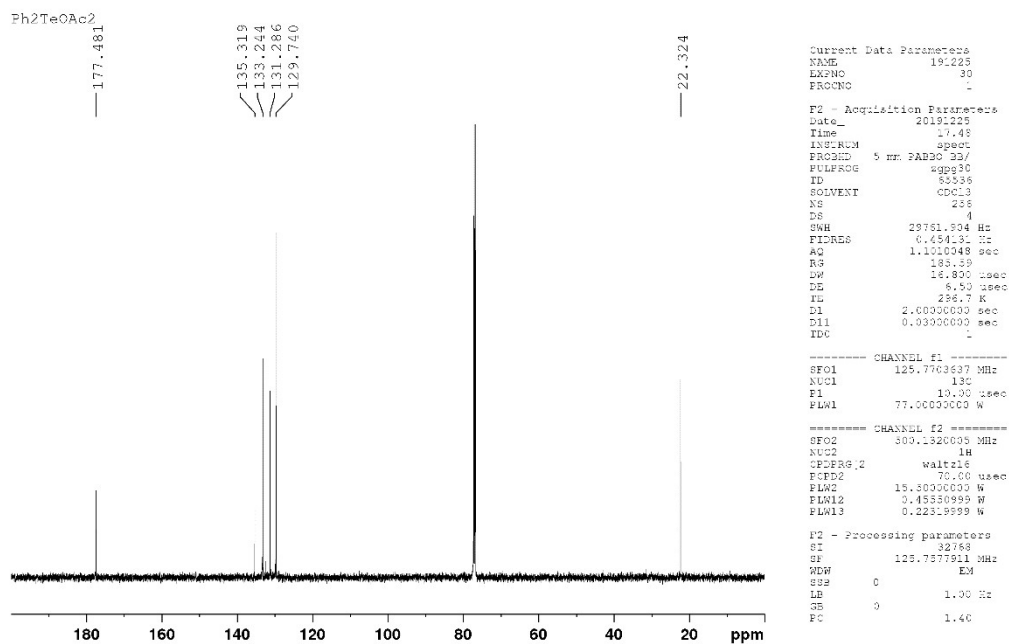
^{13}C NMR (125 MHz, CDCl_3): δ =133.2(2C), 124.9(2C), 149.5(2C), 149.6(2C), 177.0(2C).

HRMS (ESI+): m/z $[\text{M}+\text{H}]^+$ calcd for $\text{C}_{10}\text{H}_7\text{O}_4$: 191.0339; found: 191.0321.

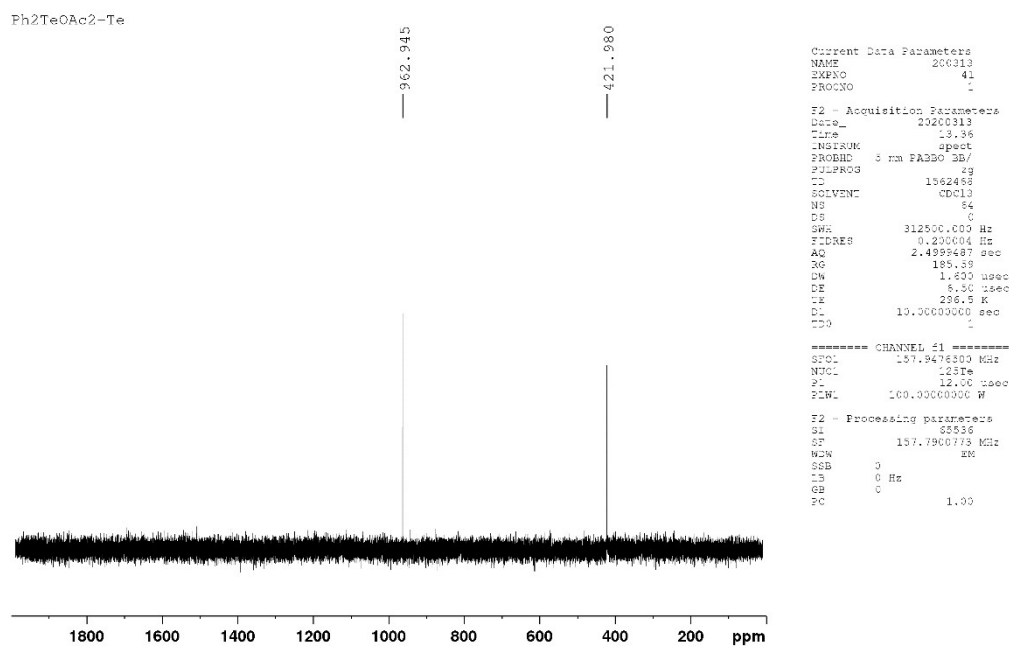
¹H NMR of diphenyl-λ⁴-tellurium diacetate (1a)



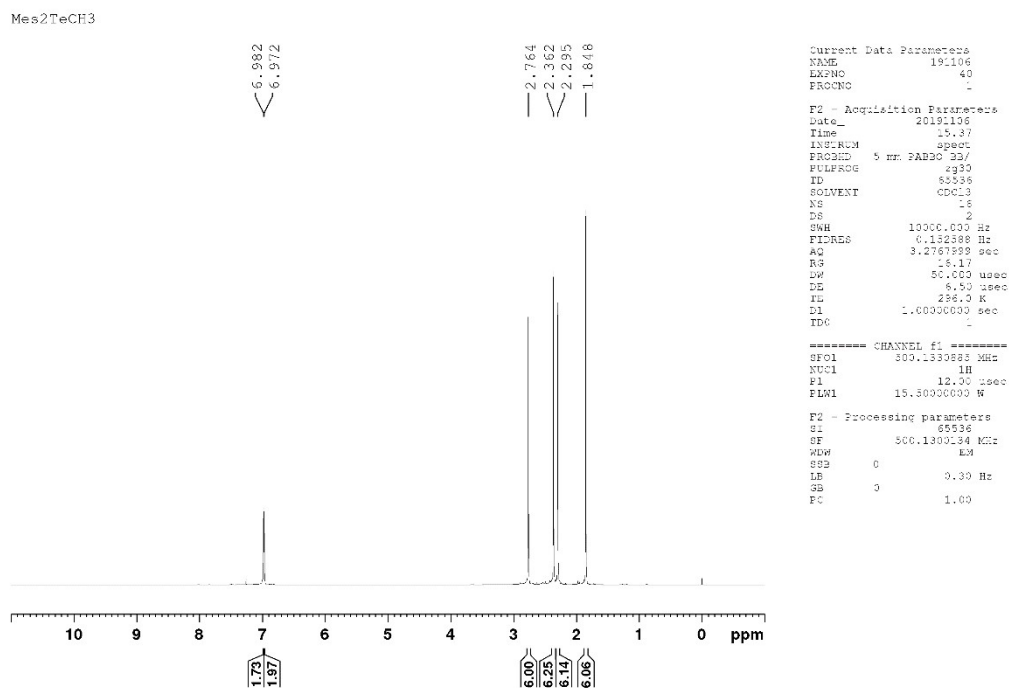
¹³C NMR of diphenyl-λ⁴-tellurium diacetate (1a)



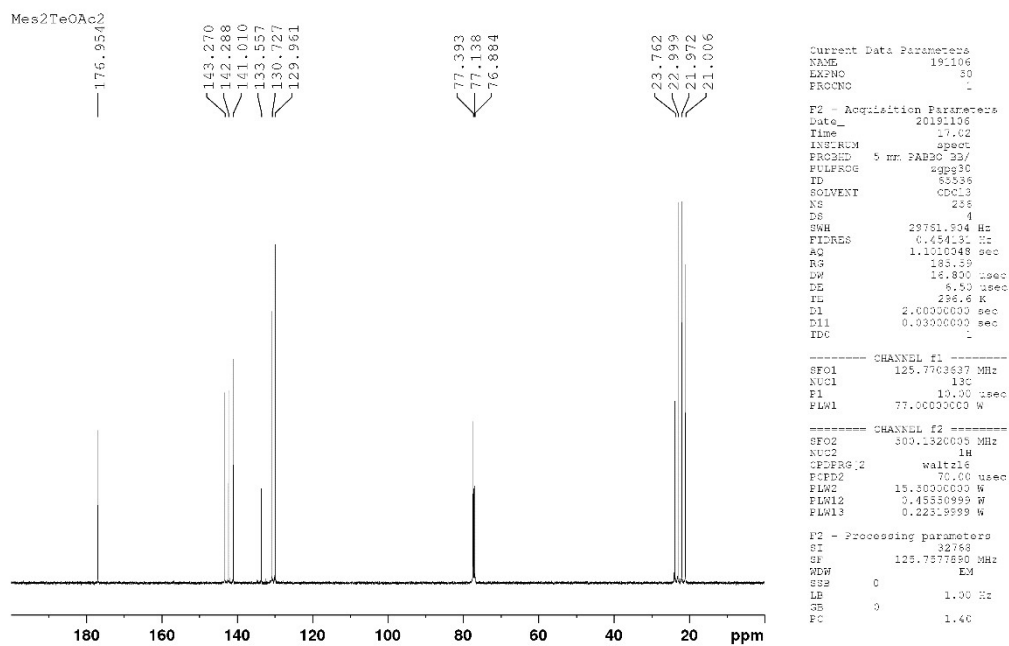
^{125}Te NMR of diphenyl- λ^4 -tellurium diacetate (1a)



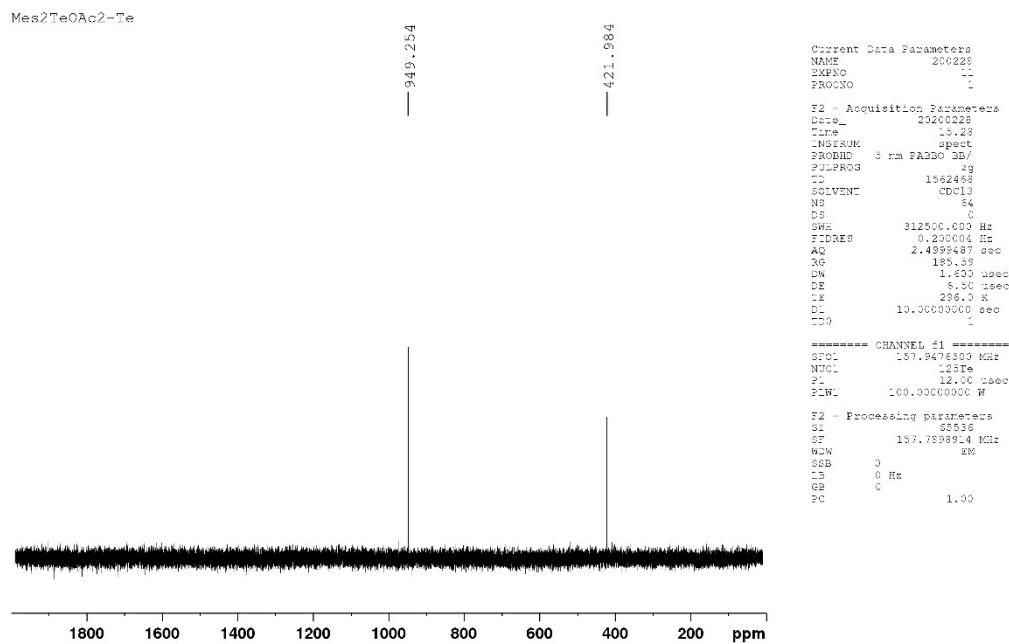
^1H NMR of dimesityl- λ^4 -tellurium diacetate (1b)



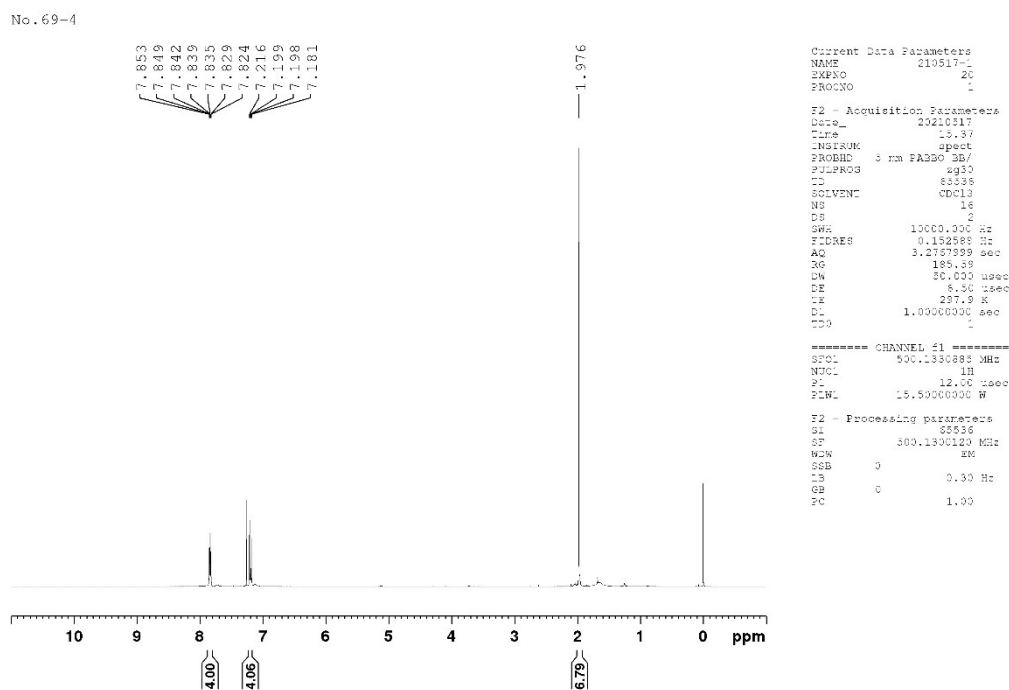
¹³C NMR of dimesityl-λ⁴-tellurium diacetate (1b)



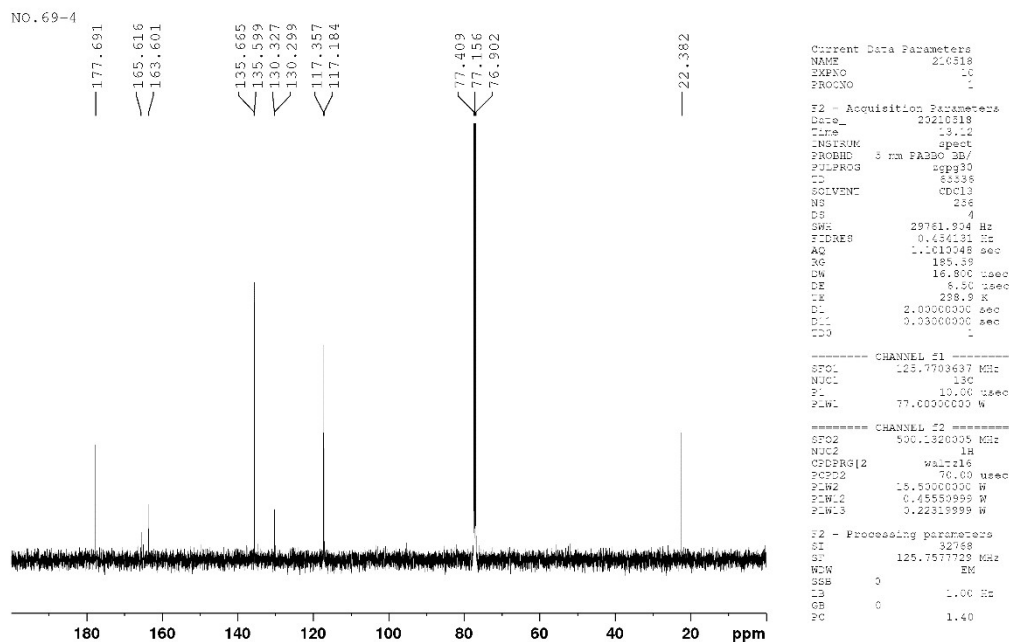
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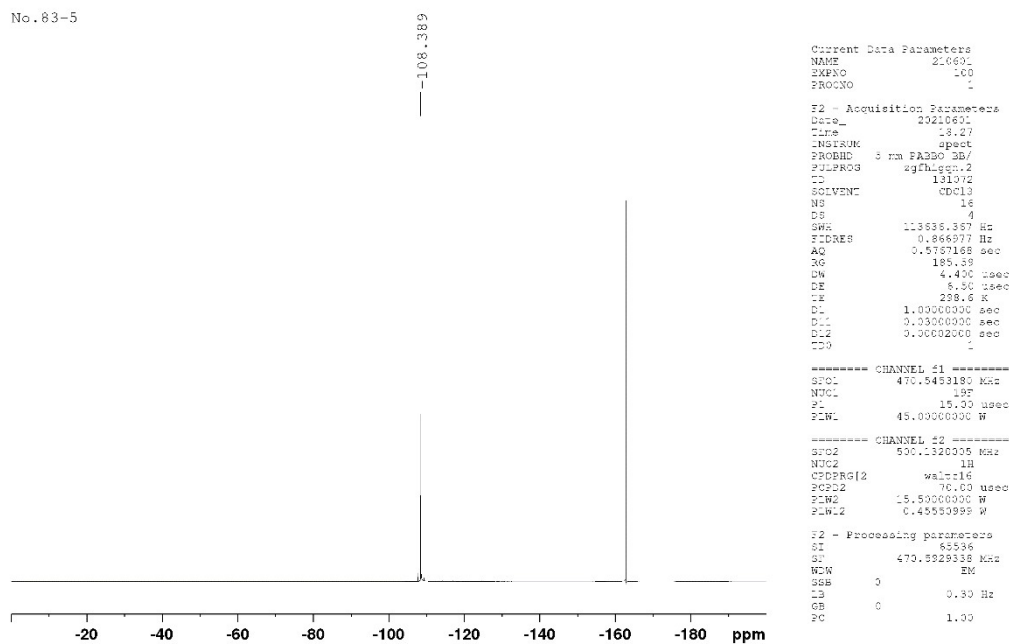
¹H NMR of bis(4-fluorophenyl)- λ⁴-tellurium diacetate (1c)



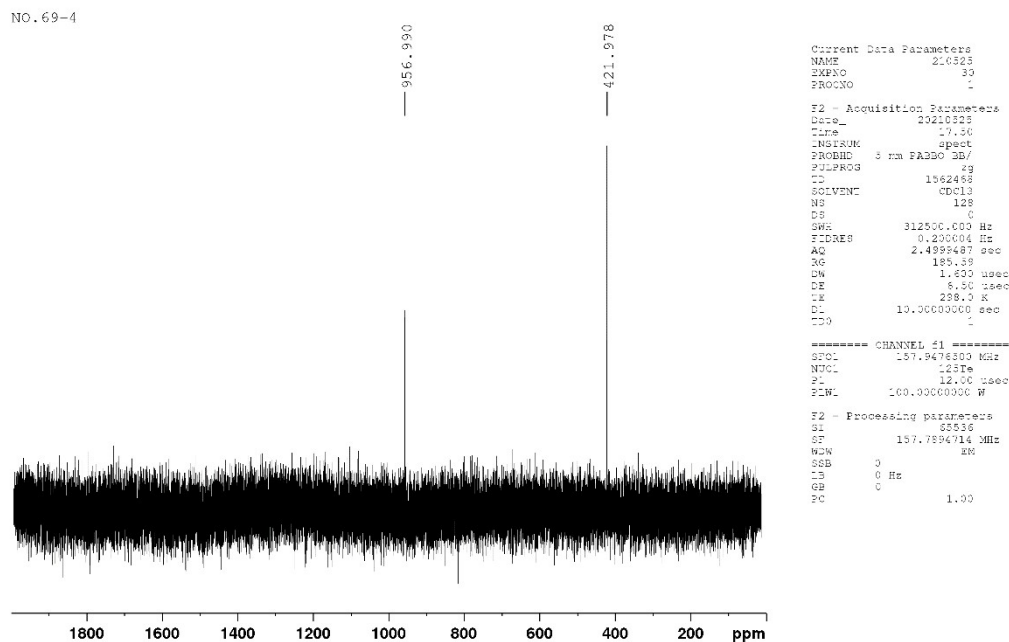
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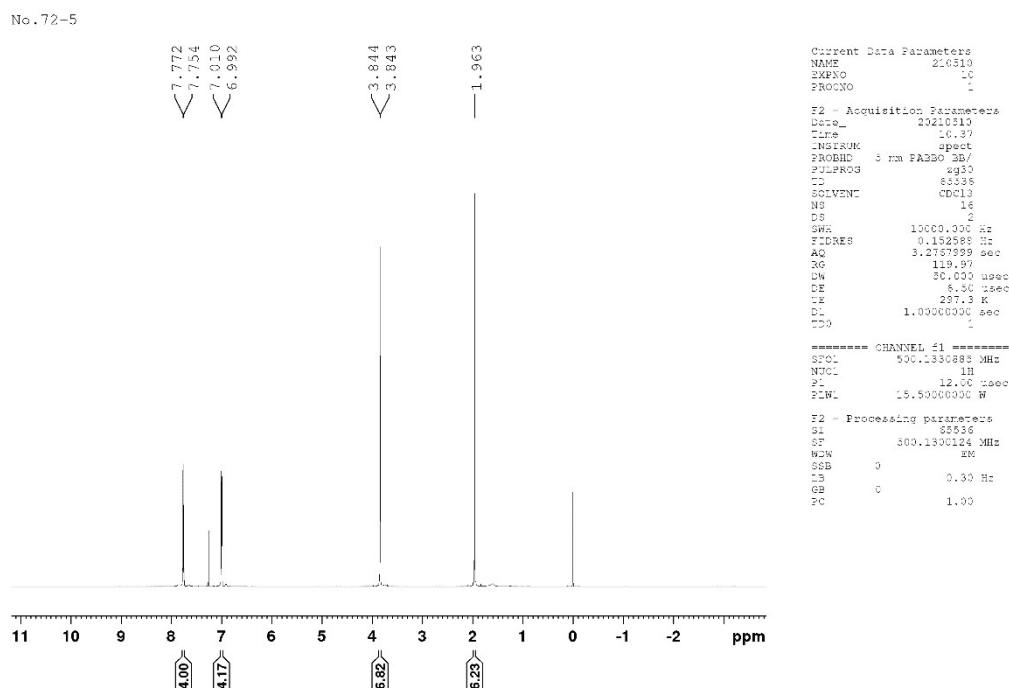
^{19}F NMR of bis(4-fluorophenyl)- λ^4 -tellurium diacetate (1c)



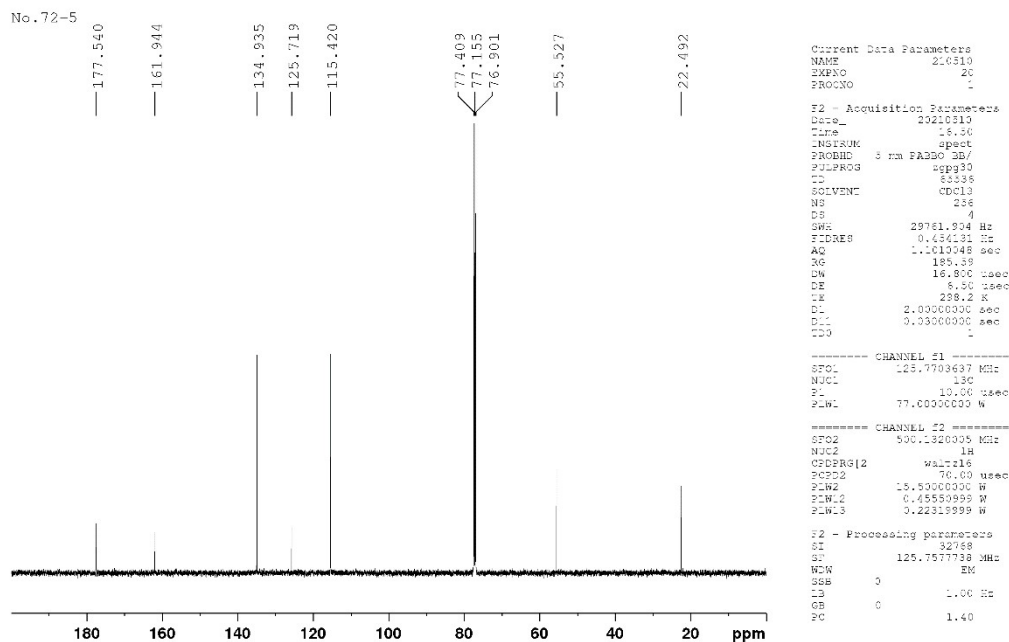
^{125}Te NMR of bis(4-fluorophenyl)- λ^4 -tellurium diacetate (1c)



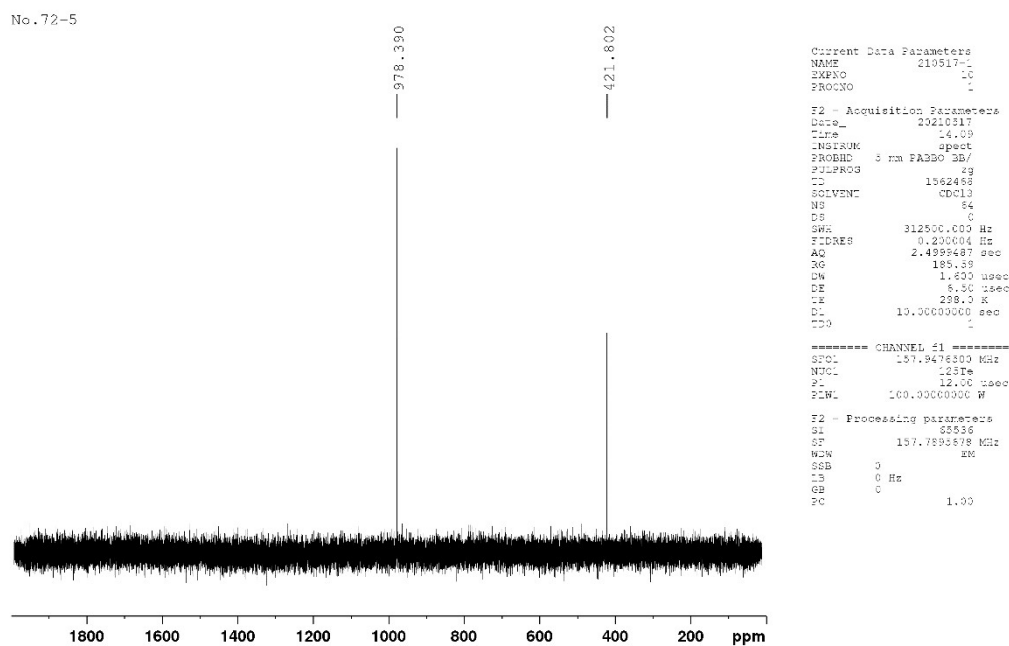
¹H NMR of bis(4-methoxyphenyl)- λ⁴-tellurium diacetate (1d)



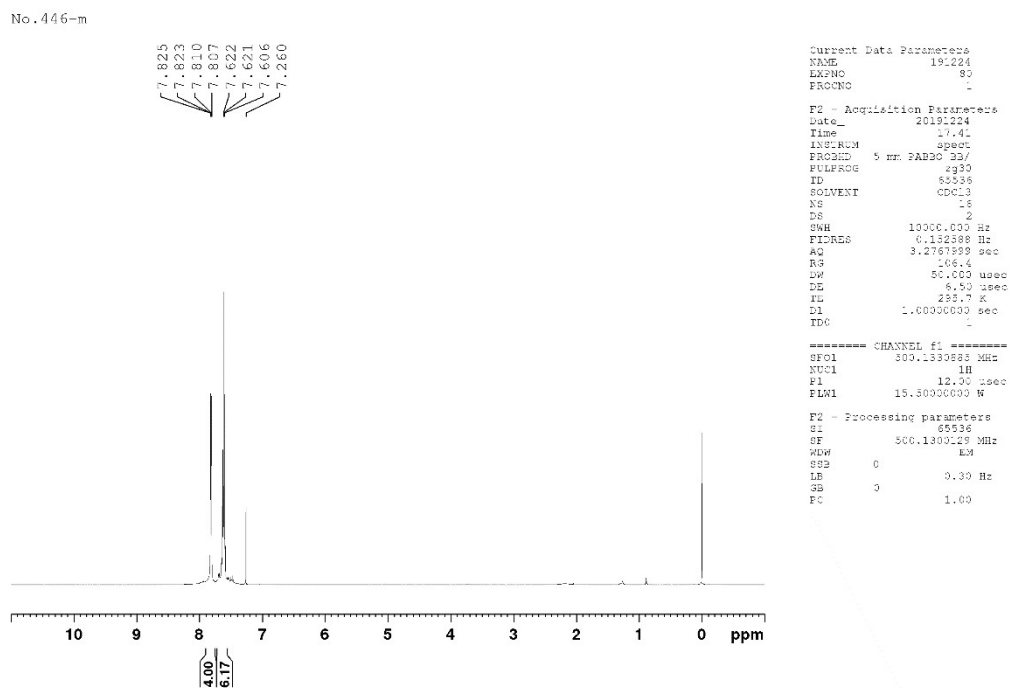
¹³C NMR of bis(4-methoxyphenyl)- λ⁴-tellurium diacetate (1d)



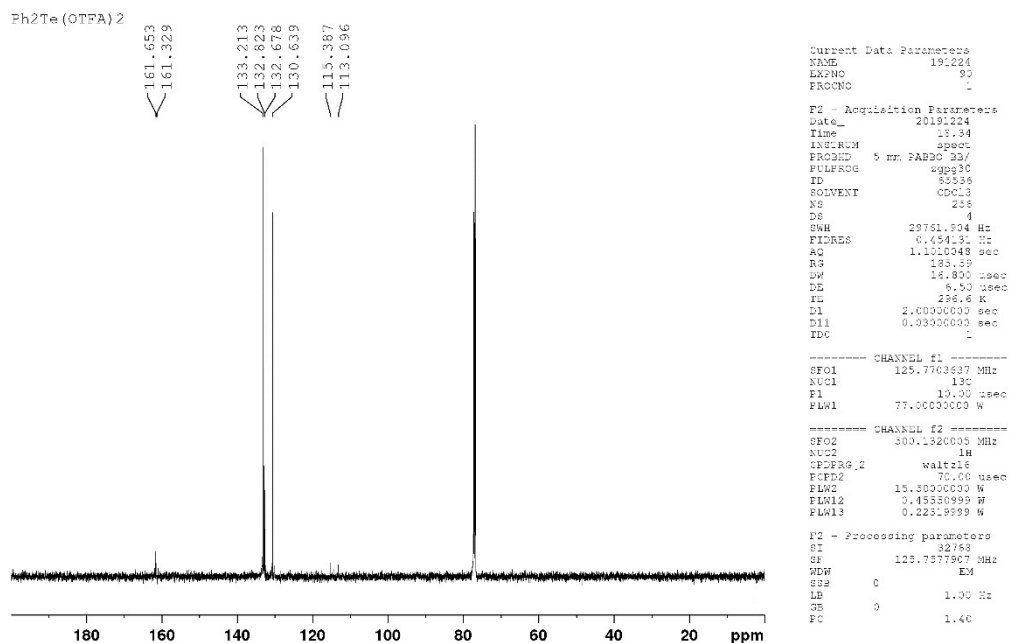
¹²⁵Te NMR of bis(4-methoxyphenyl)-λ⁴-tellurium diacetate (1d)



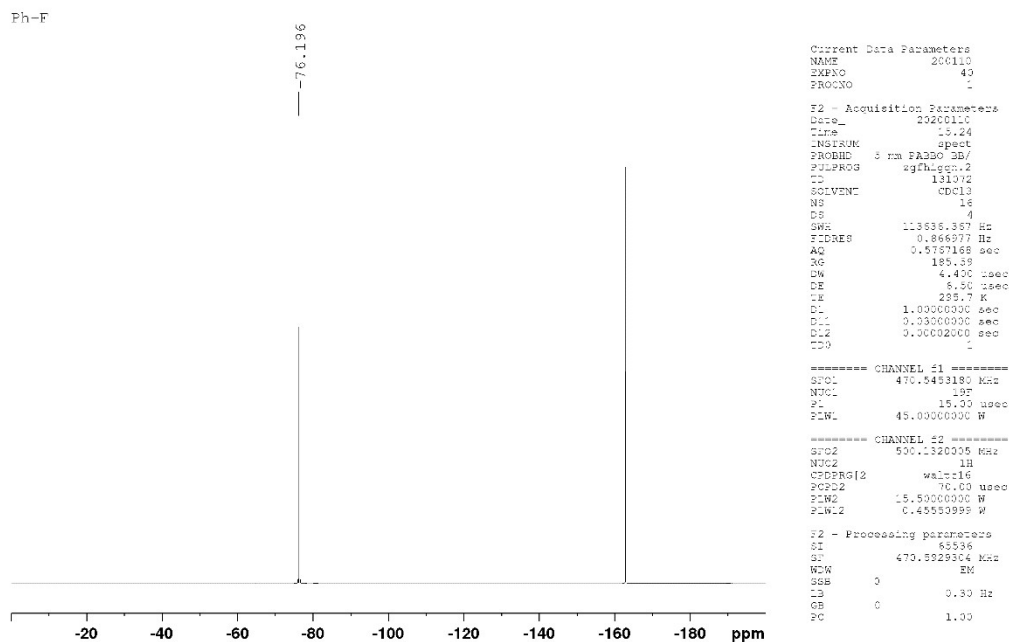
¹H NMR of diphenyl-λ⁴-tellurium bis(trifluoroacetate) (2a)



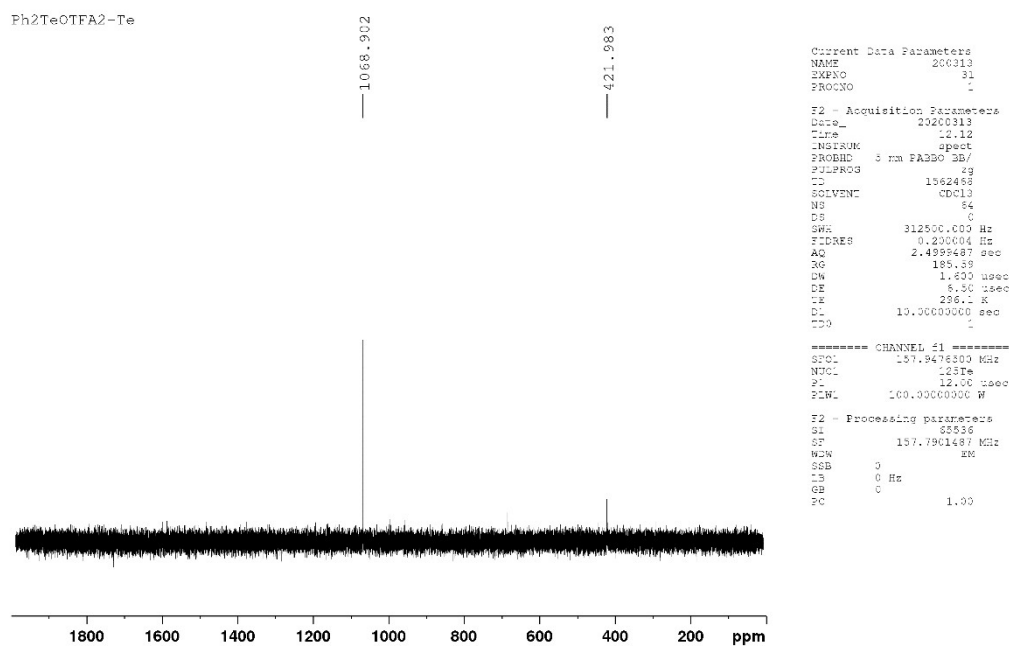
¹³C NMR of diphenyl-λ⁴-tellurium bis(trifluoroacetate) (2a)



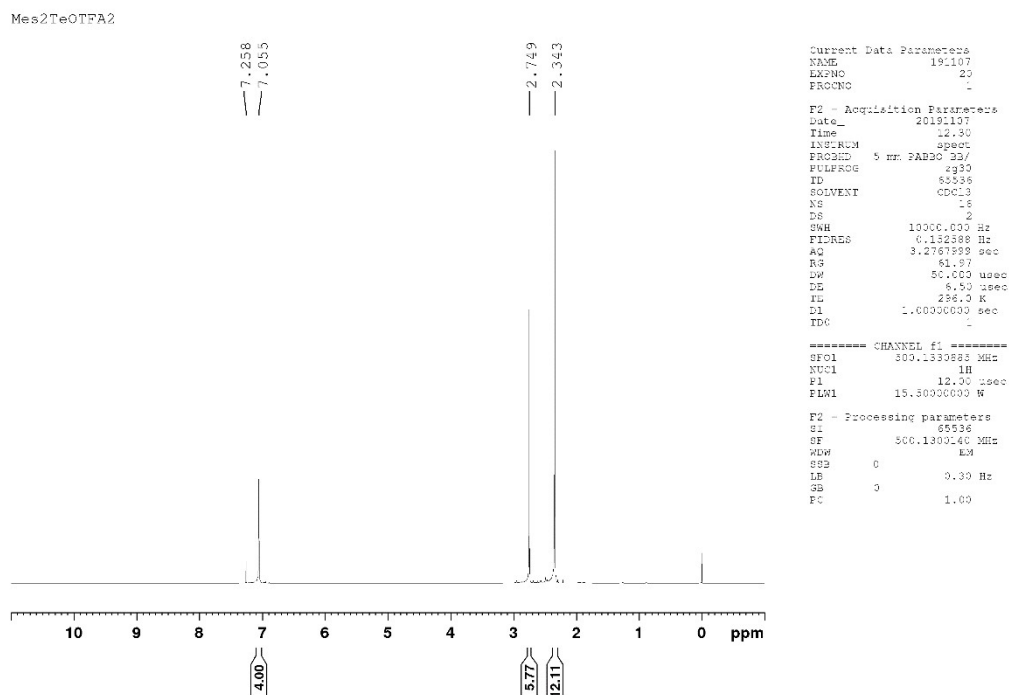
¹⁹F NMR of diphenyl-λ⁴-tellurium bis(trifluoroacetate) (2a)



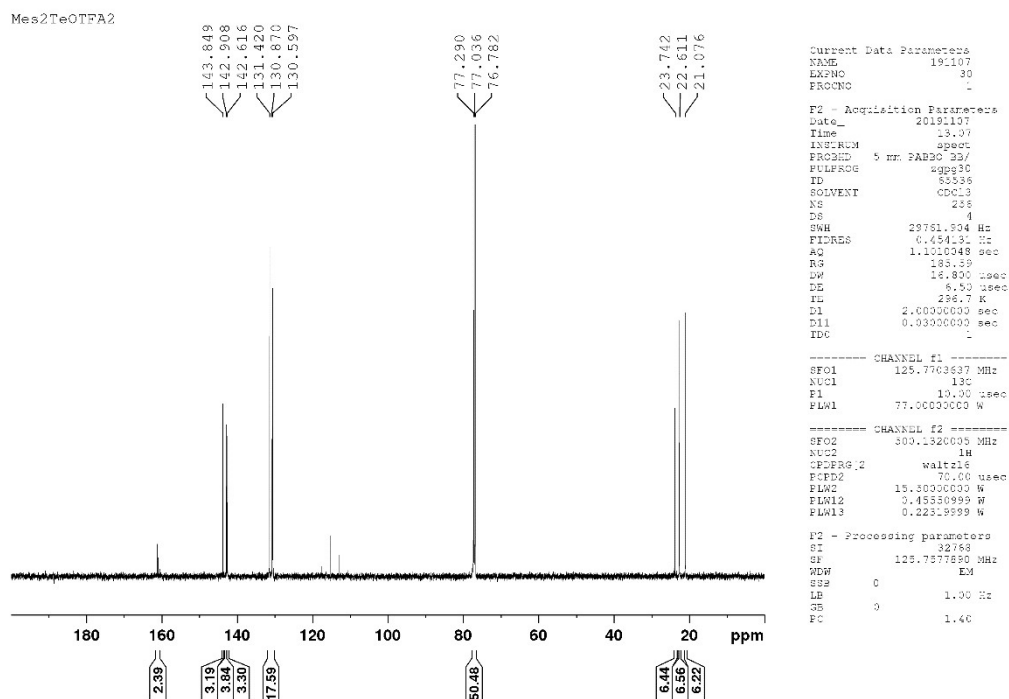
¹²⁵Te NMR of diphenyl-λ⁴-tellurium bis(trifluoroacetate) (2a)



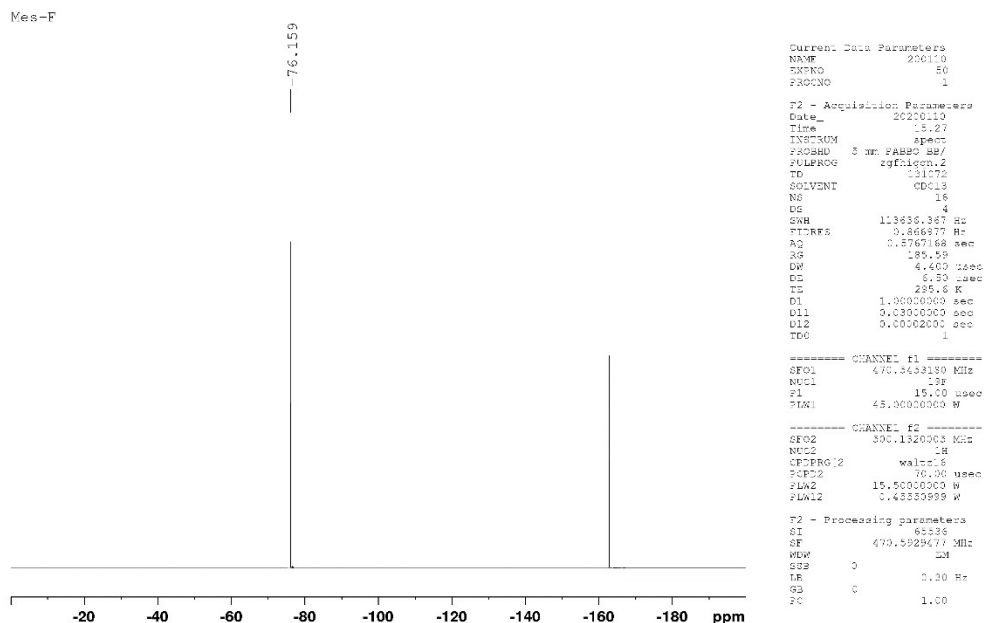
¹H NMR of dimesityl-λ⁴-tellurium bis(trifluoroacetate) (2b)



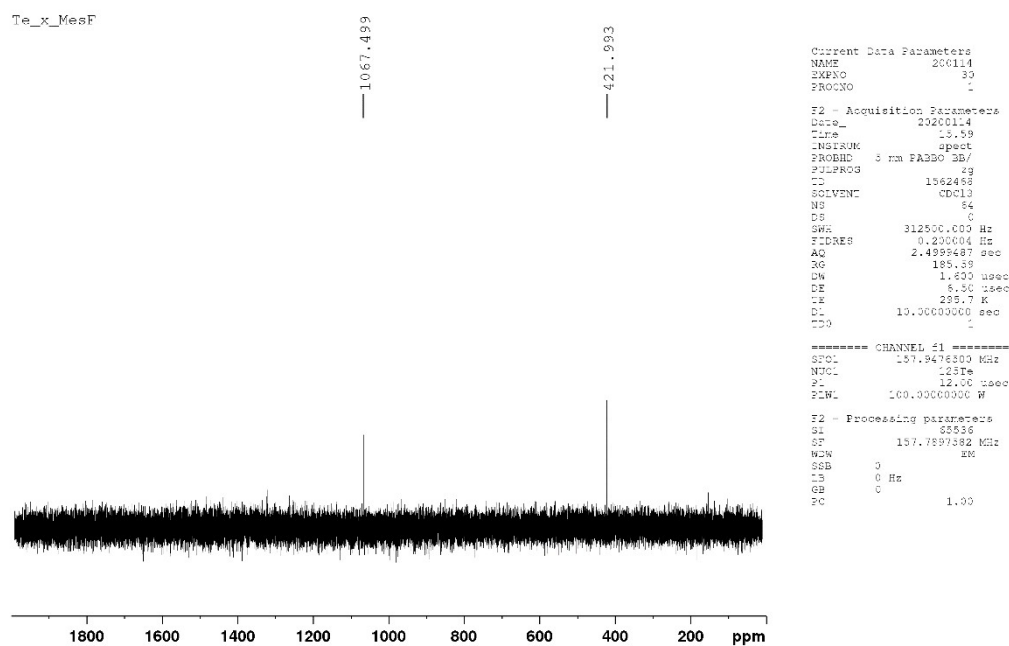
¹³C NMR of dimesityl-λ⁴-tellurium bis(trifluoroacetate) (2b)



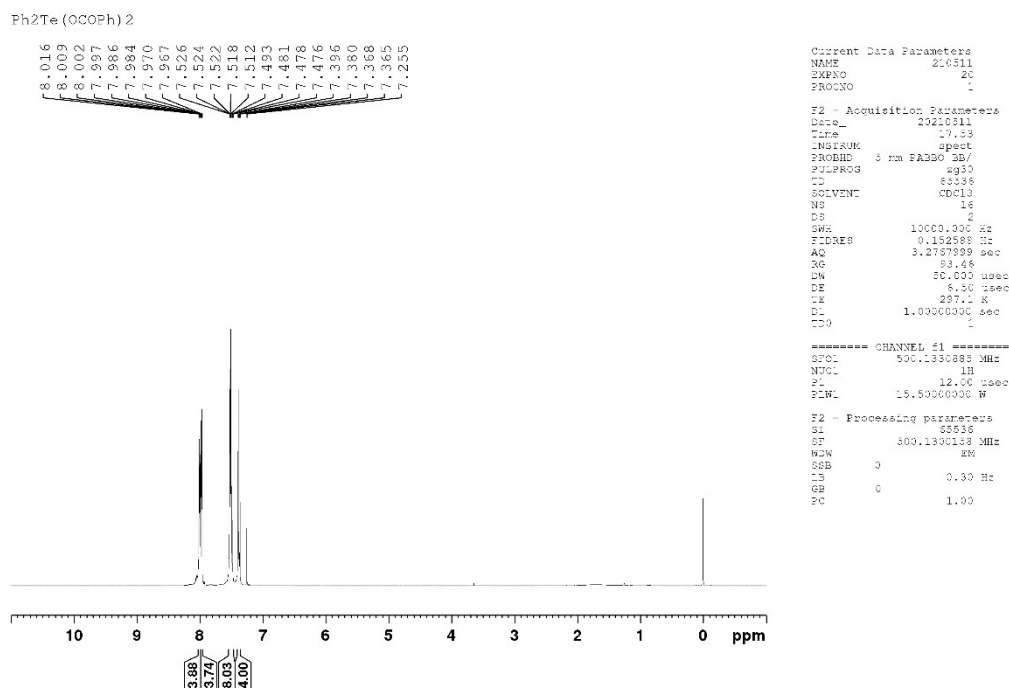
¹⁹F NMR of dimesityl-λ⁴-tellurium bis(trifluoroacetate) (2b)



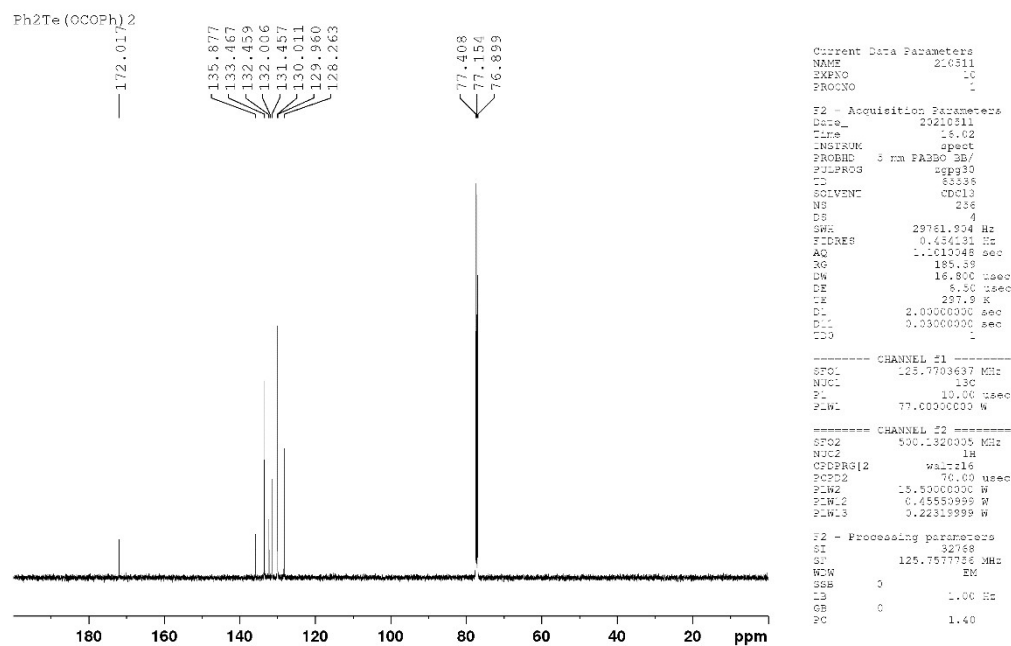
¹²⁵Te NMR of dimesityl-λ⁴-tellurium bis(trifluoroacetate) (2b)



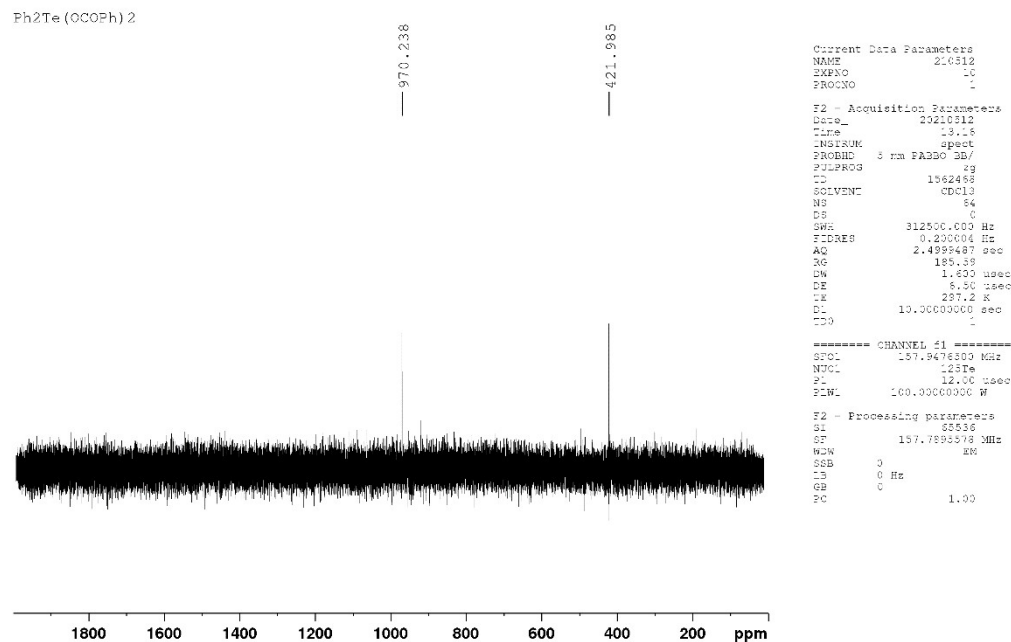
¹H NMR of diphenyl-λ⁴-tellurium dibenzoate (3a)



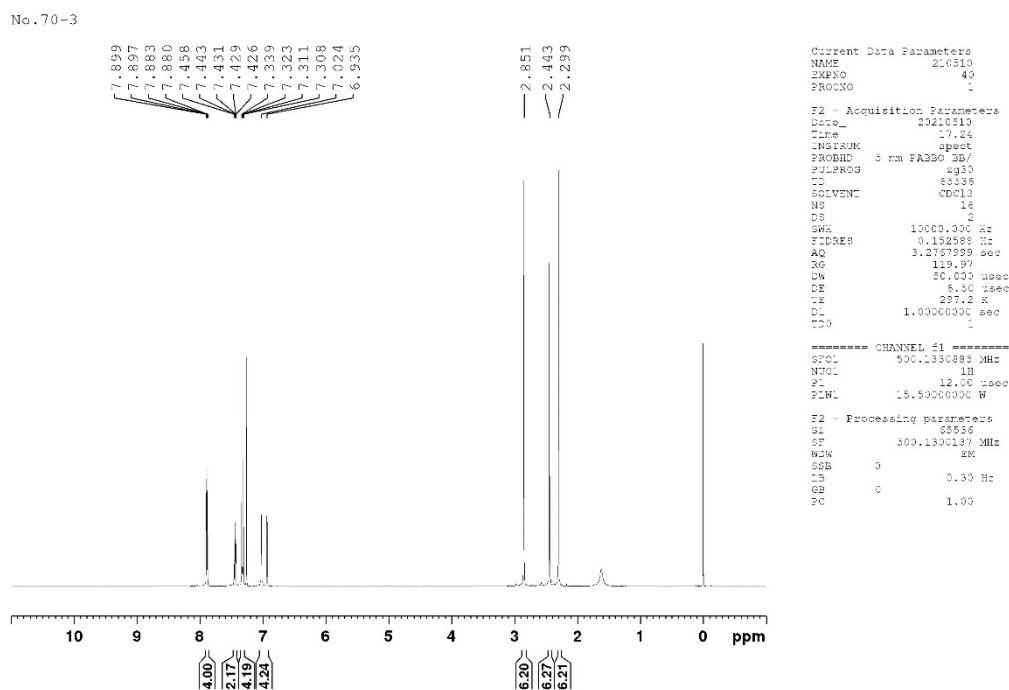
¹³C NMR of diphenyl-λ⁴-tellurium dibenzoate (3a)



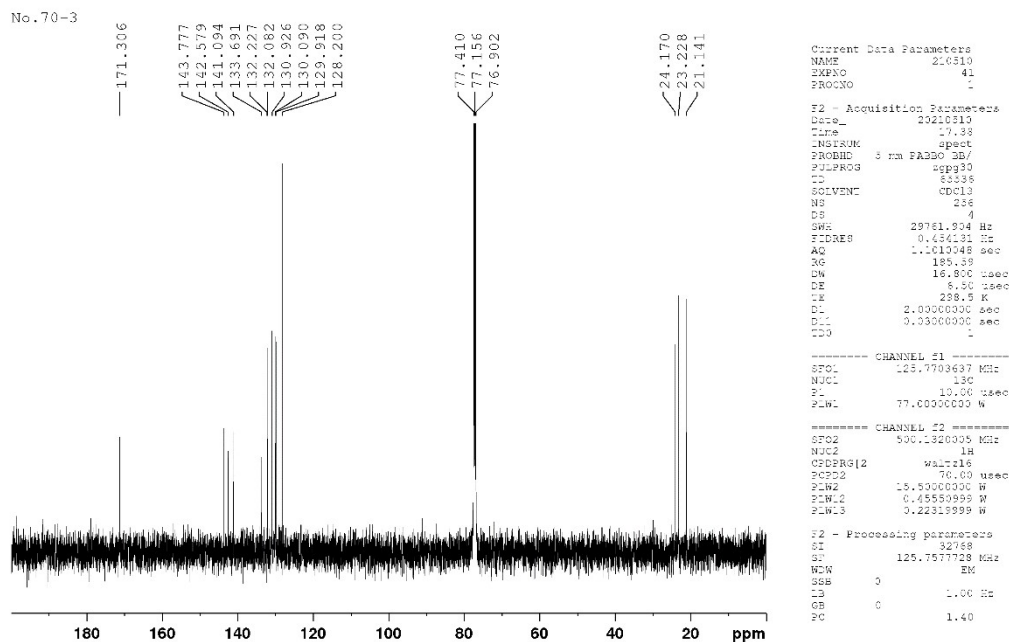
¹²⁵Te NMR of diphenyl-λ⁴-tellurium dibenzoate (3a)



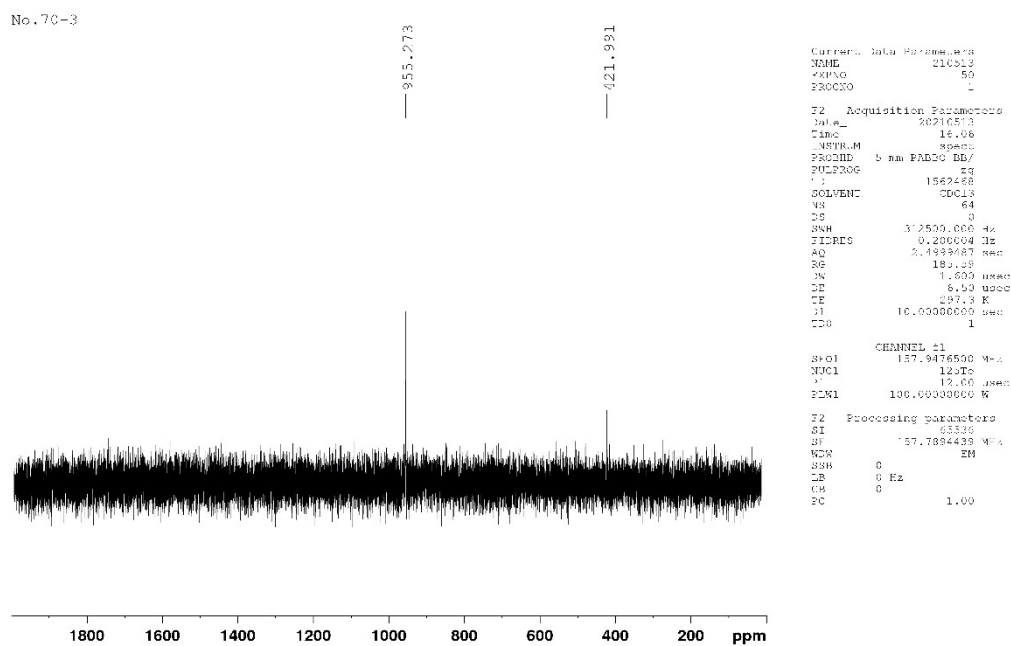
¹H NMR of dimesityl-λ⁴-tellurium dibenzoate (3b)



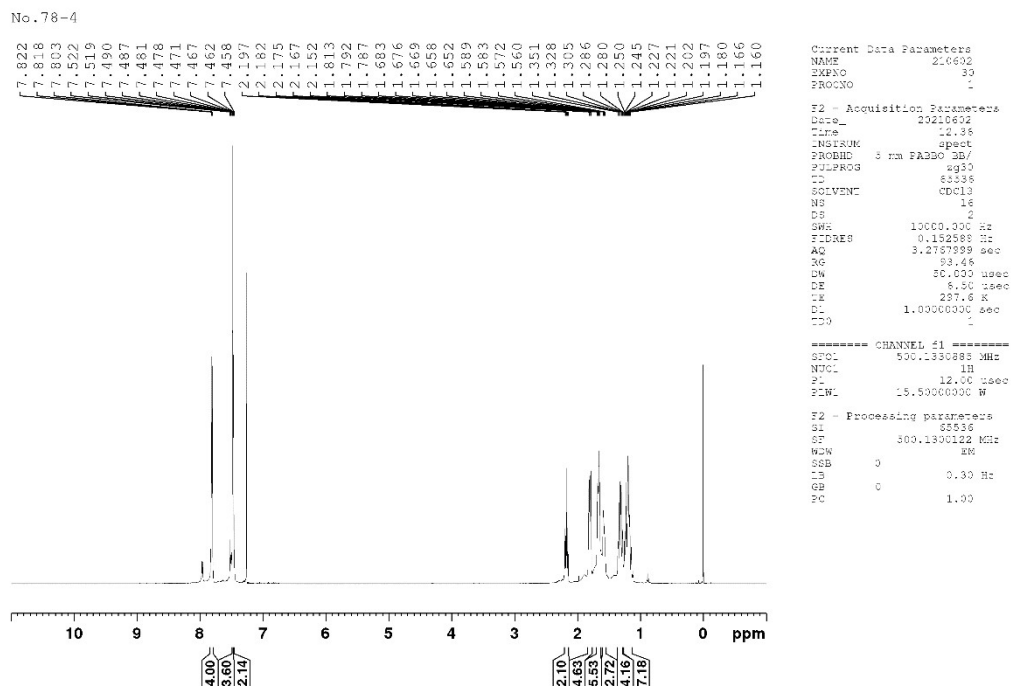
¹³C NMR of dimesityl-λ⁴-tellurium dibenzoate (3b)



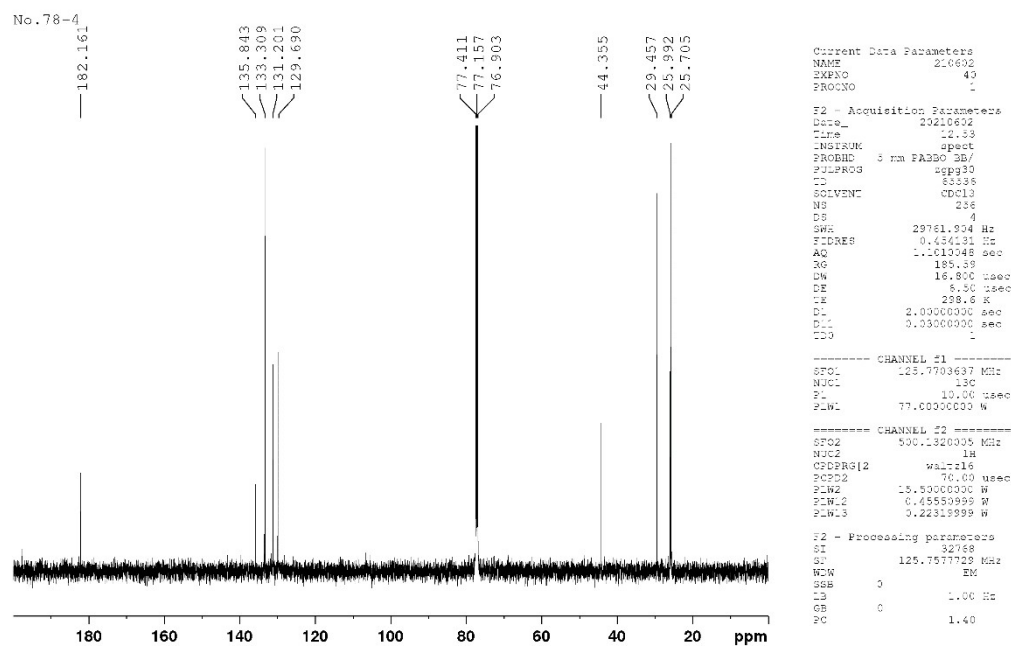
^{125}Te NMR of dimesityl- λ^4 -tellurium dibenzoate (3b)



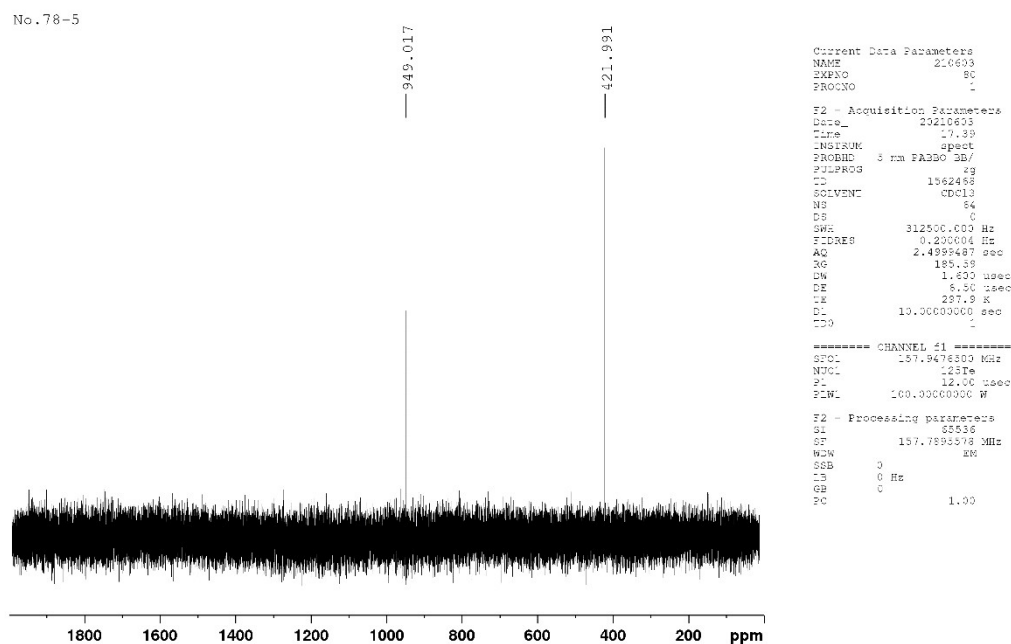
^1H NMR of diphenyl- λ^4 -tellurium dicyclohexanecarboxylate (4a)



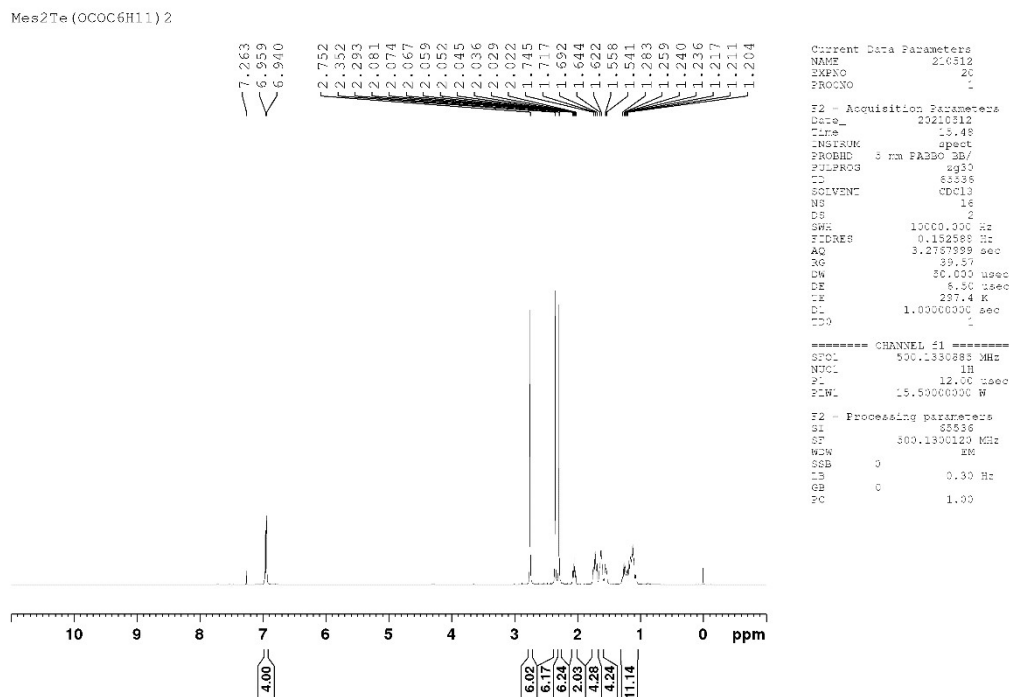
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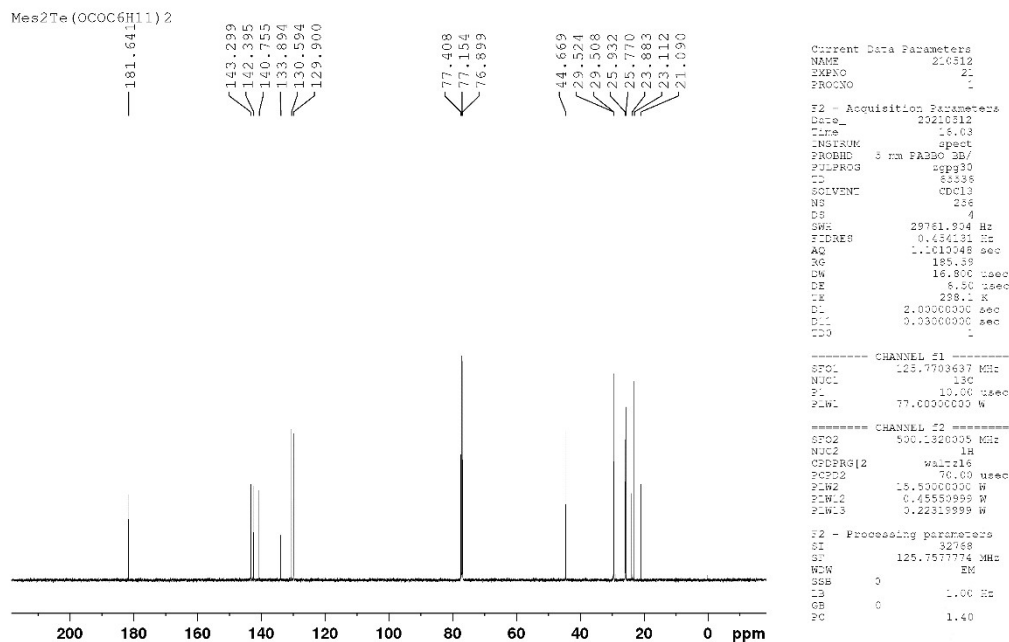
¹²⁵Te NMR of diphenyl-λ⁴-tellurium dicyclohexanecarboxylate (4a)



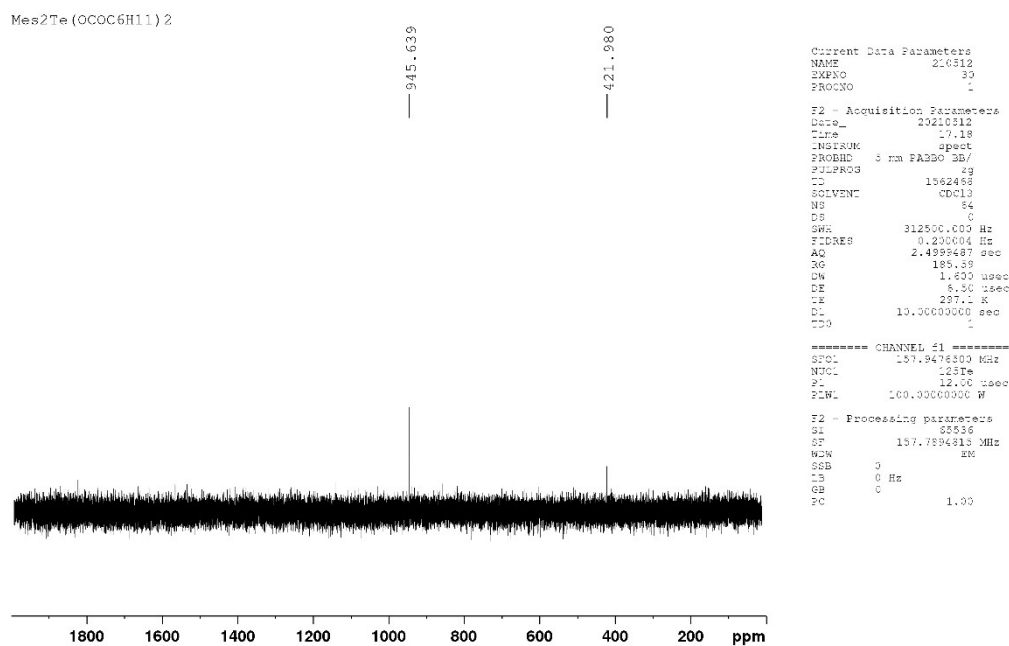
¹H NMR of dimesityl- λ^4 -tellurium dicyclohexanecarboxylate (4b)



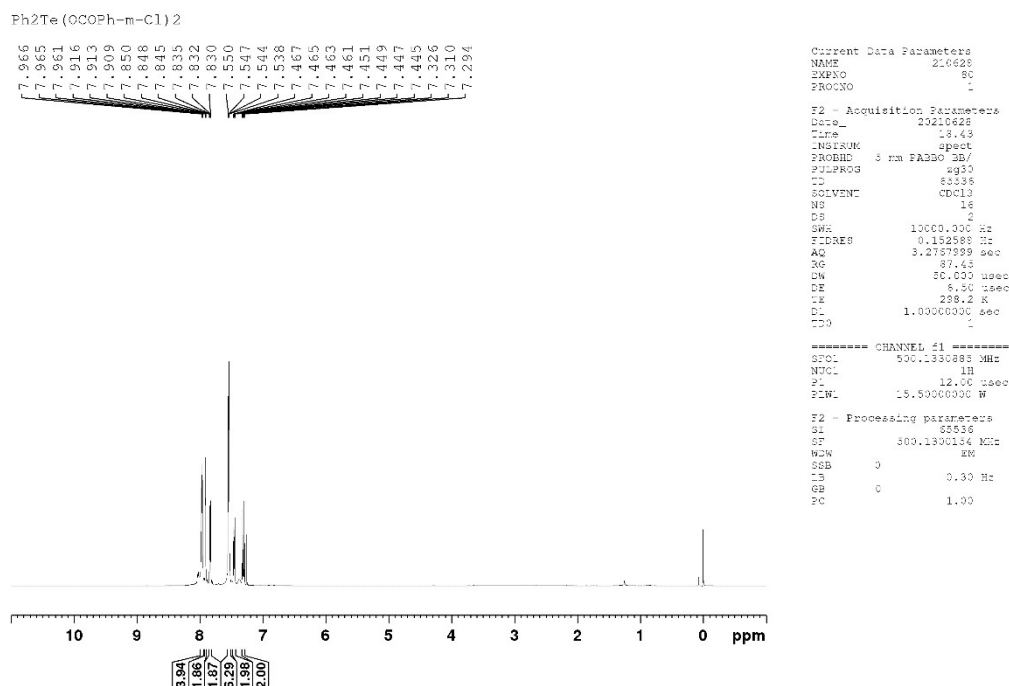
¹³C NMR of dimesityl- λ^4 -tellurium dicyclohexanecarboxylate (4b)



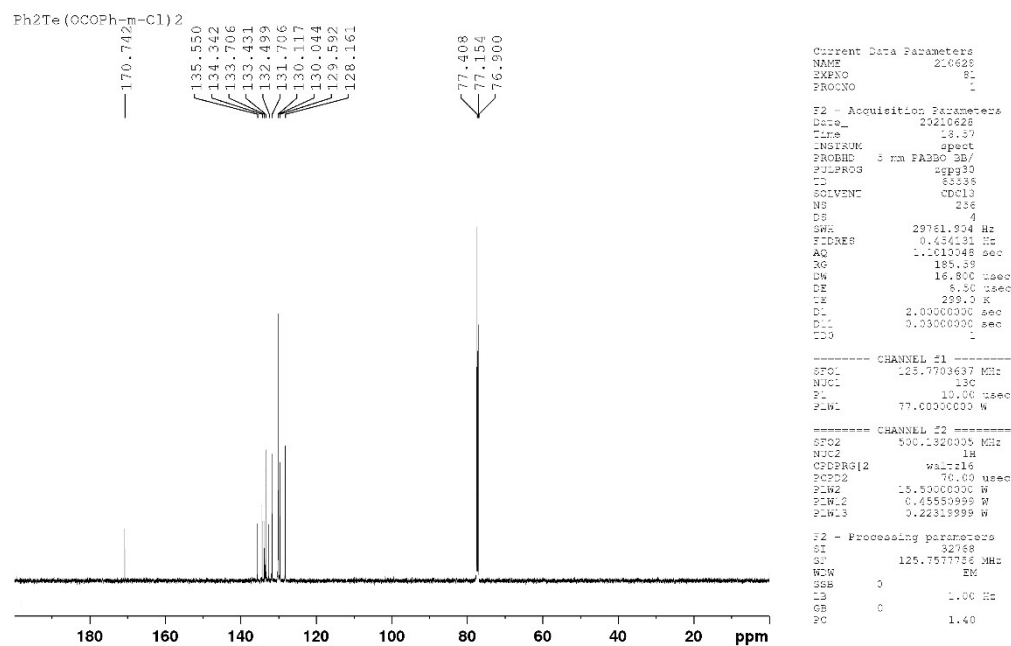
^{125}Te NMR of dimesityl- λ^4 -tellurium dicyclohexanecarboxylate (4b)



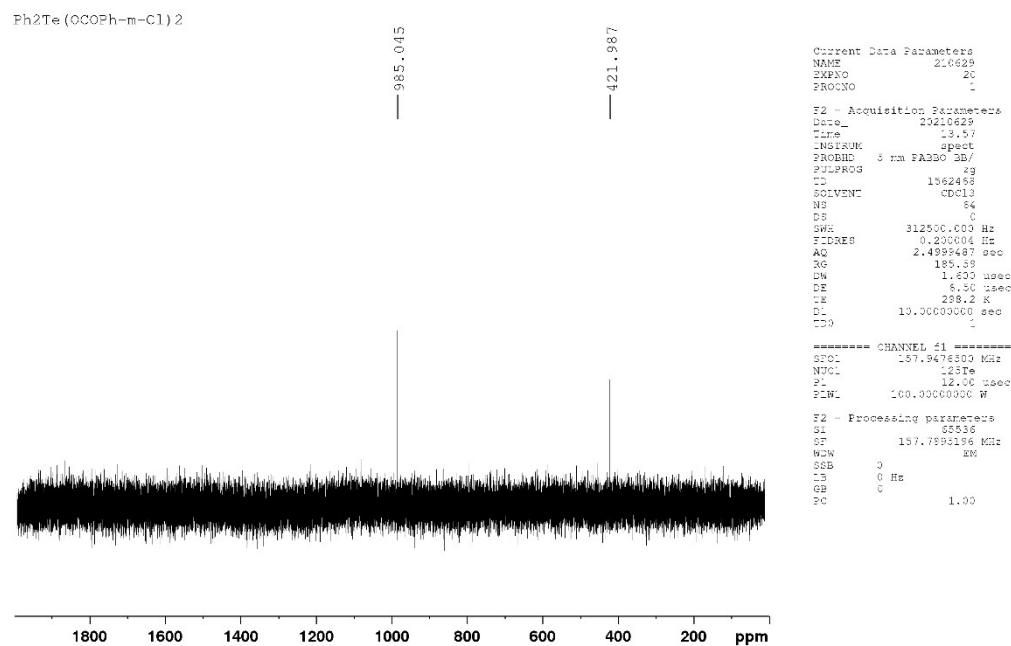
^1H NMR of diphenyl- λ^4 -tellurium bis(3-chlorobenzoate) (5a)



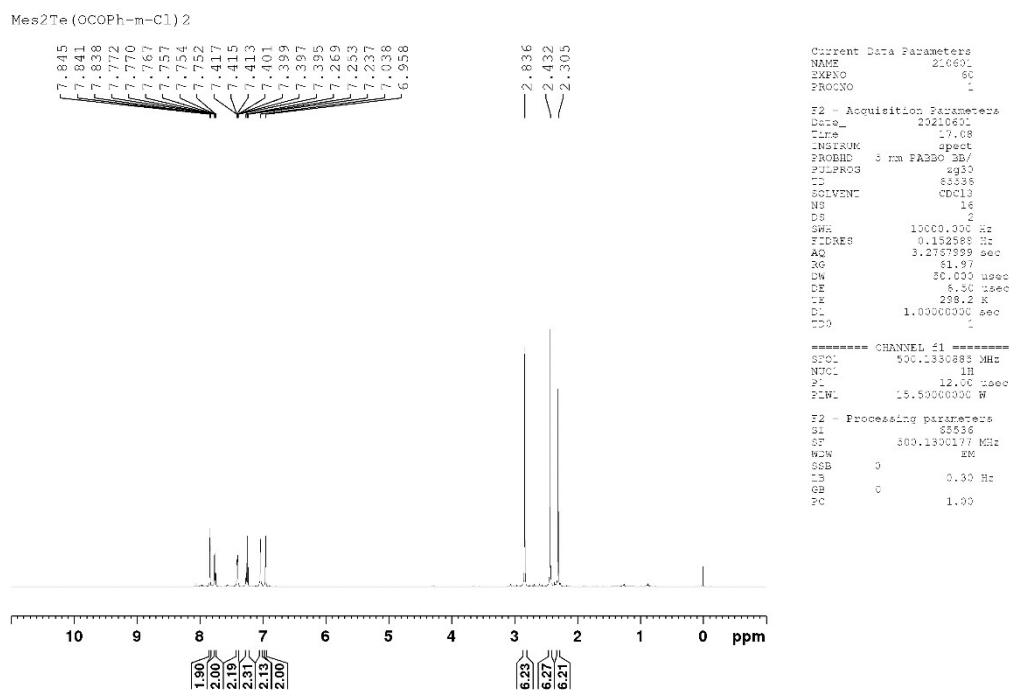
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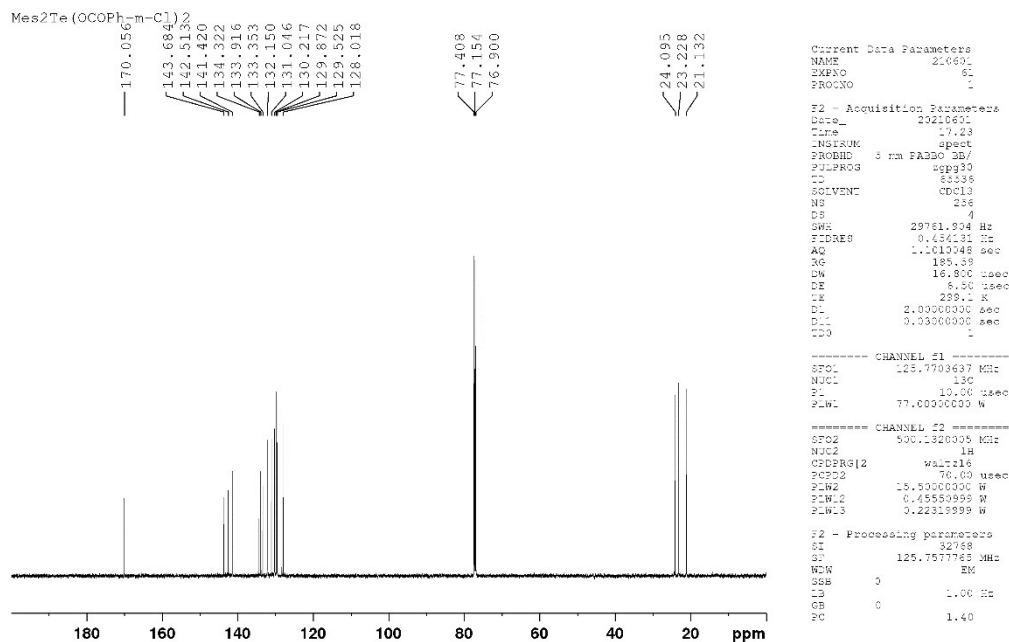
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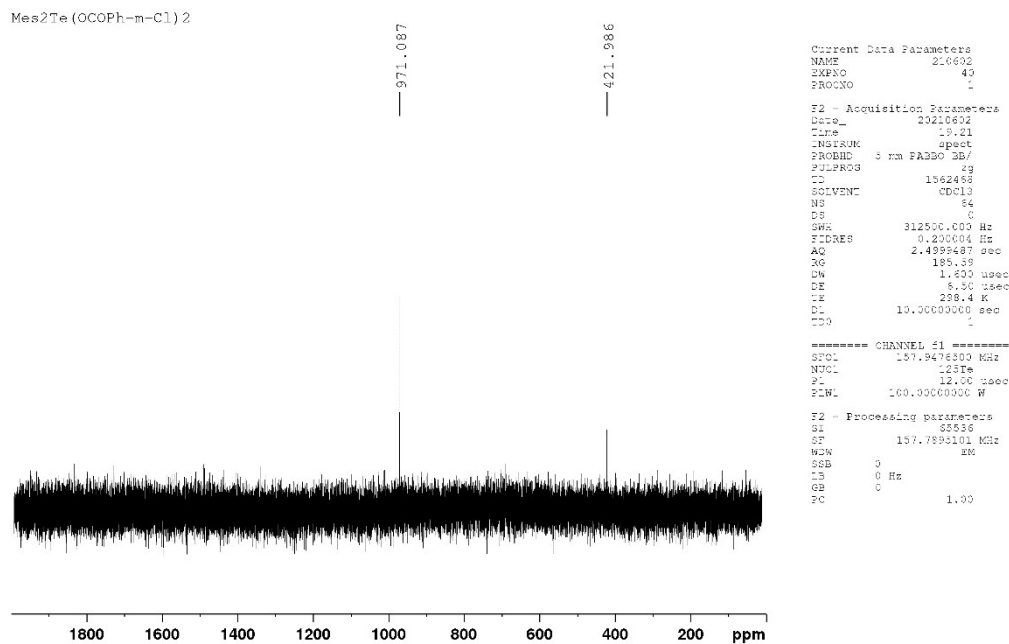
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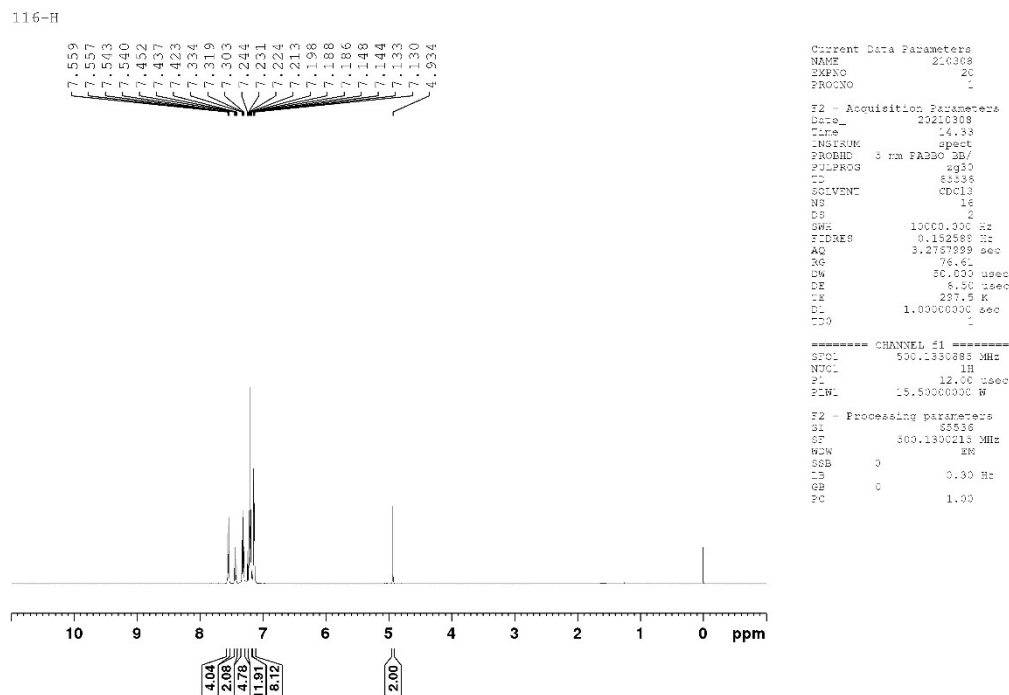
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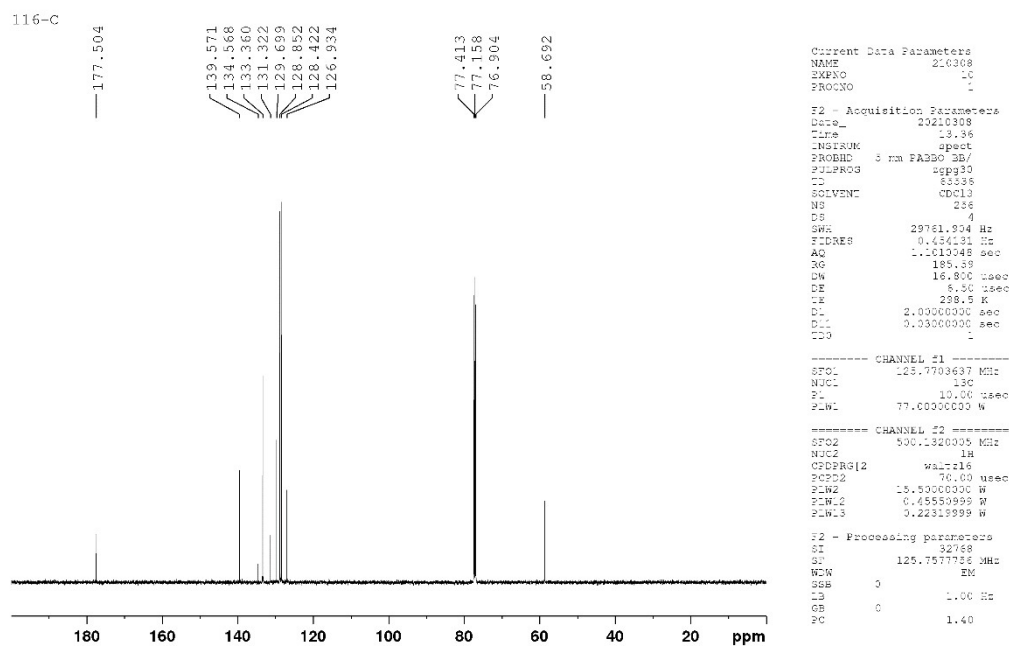
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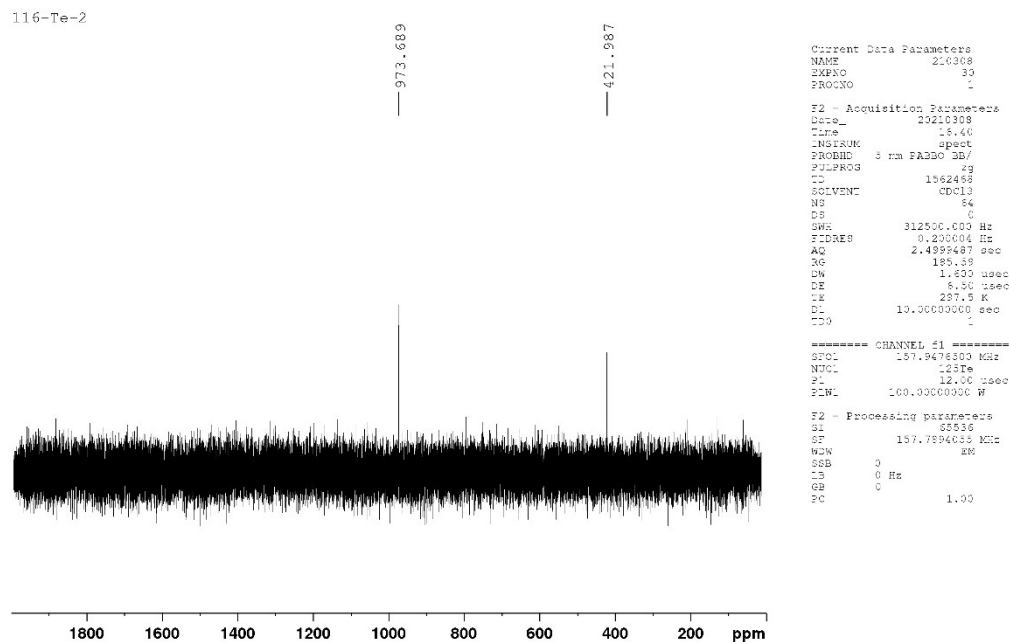
¹H NMR of diphenyl-λ⁴-tellurium bis(2,2-diphenylacetate) (6a)



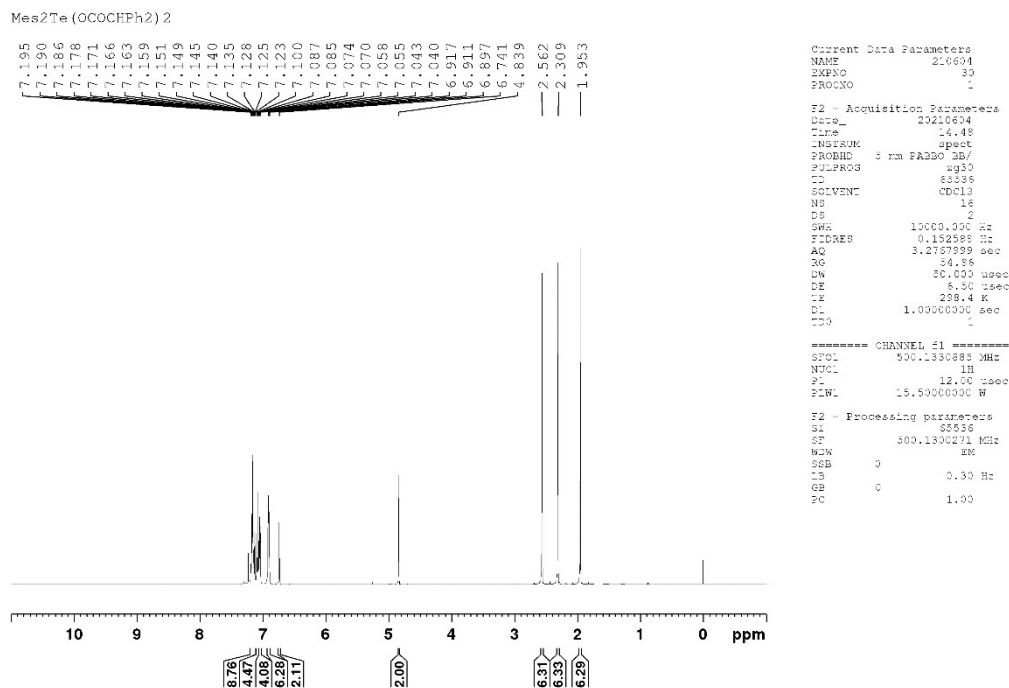
¹³C NMR of diphenyl-λ⁴-tellurium bis(2,2-diphenylacetate) (6a)



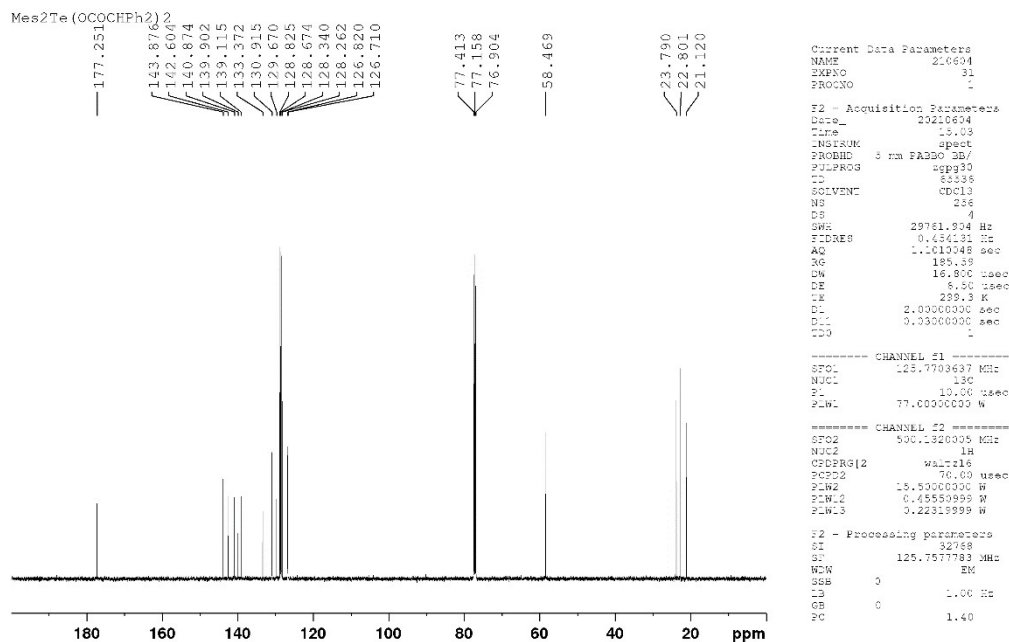
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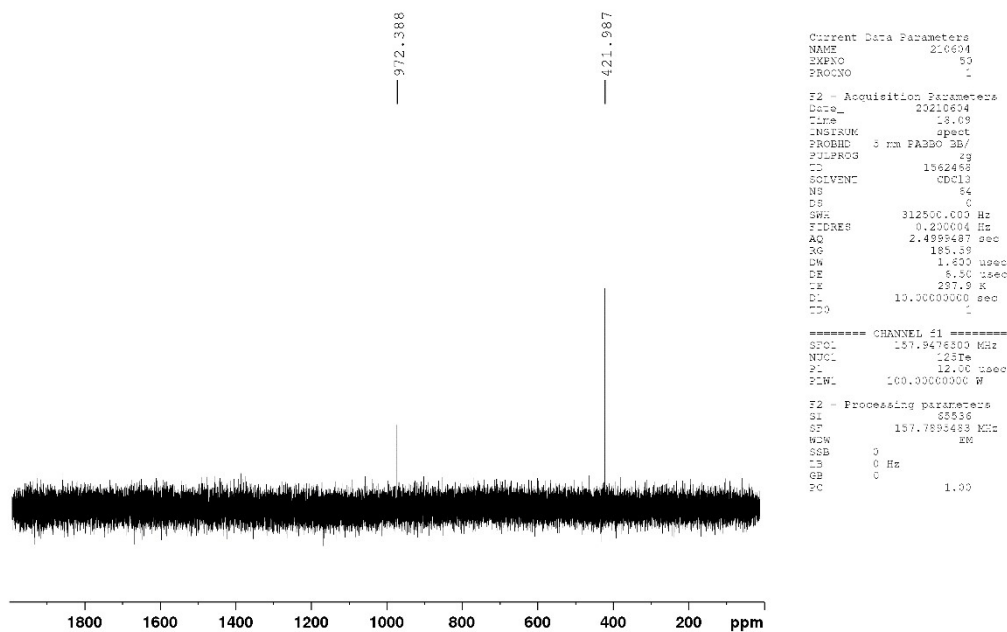
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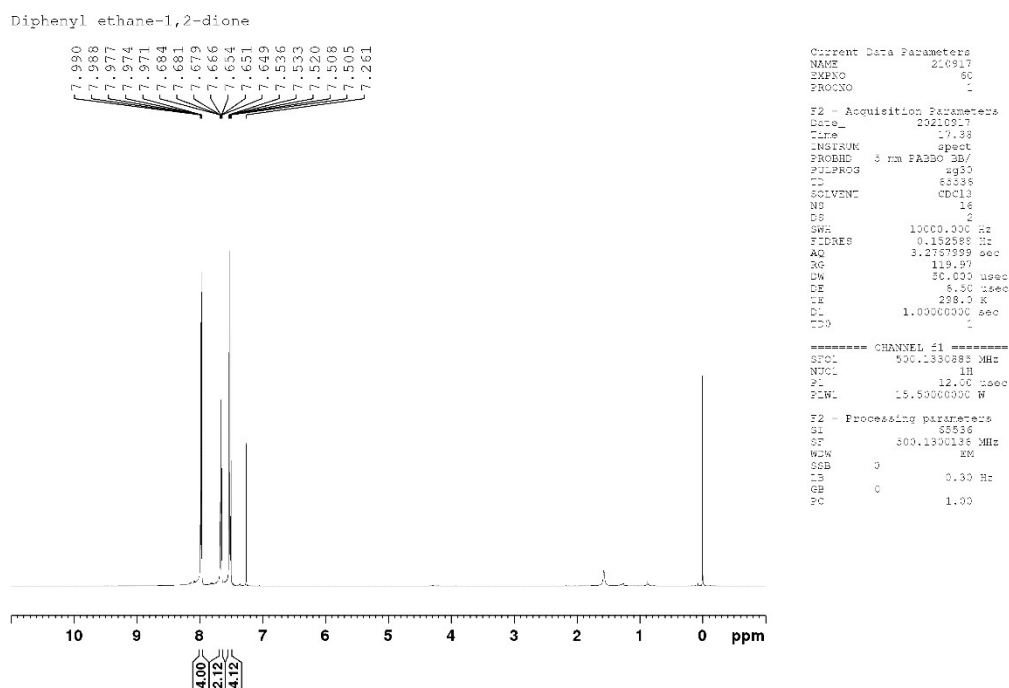
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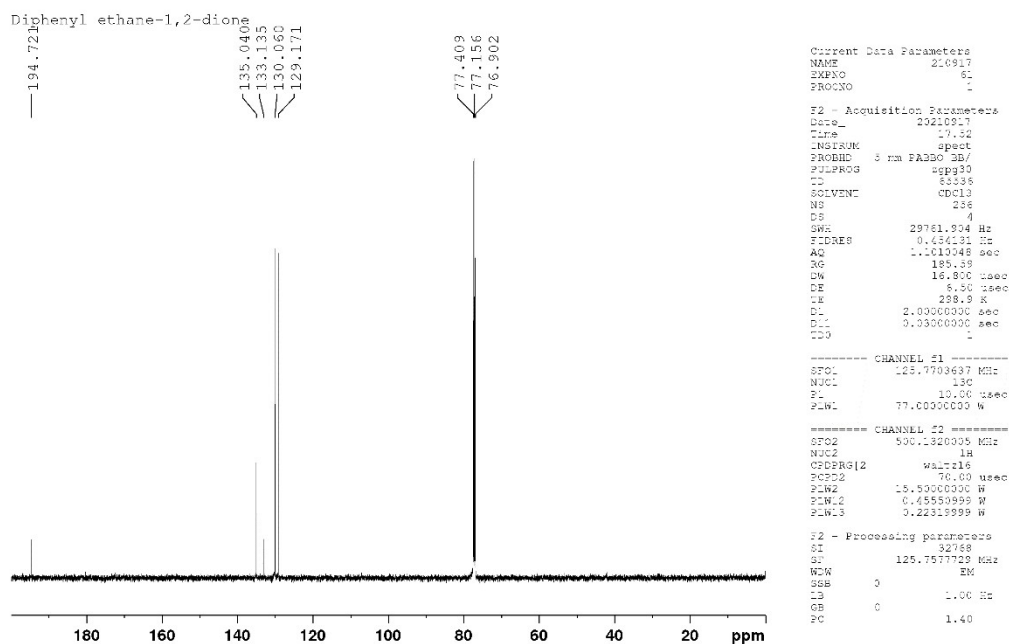
^{125}Te NMR of dimesityl- λ^4 -tellurium bis(2,2-diphenylacetate) (6b)



¹H NMR of 1,2-diphenylethane-1,2-dione

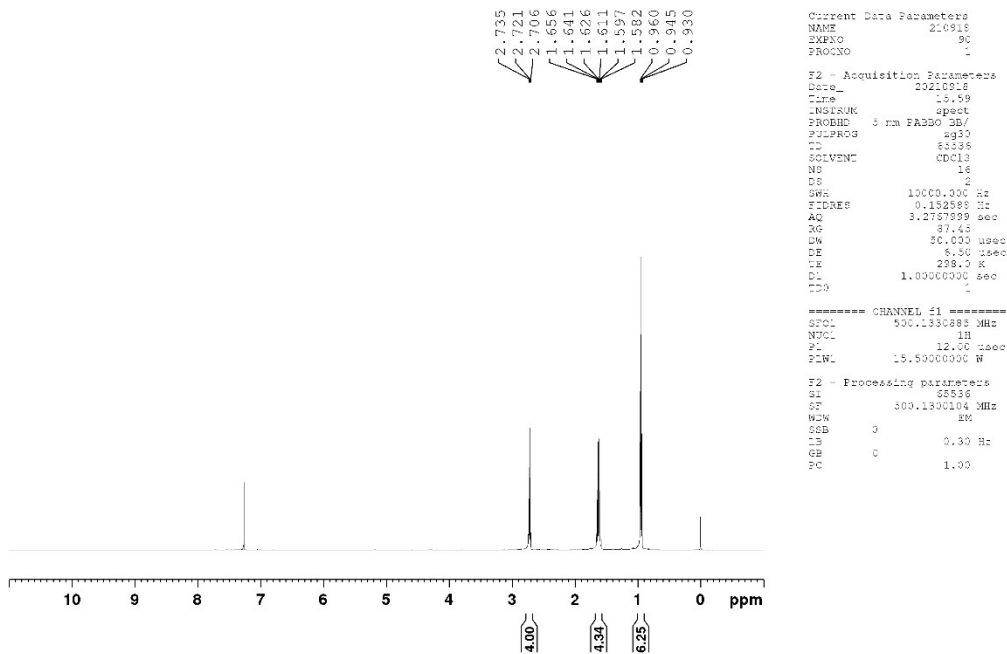


¹³C NMR of 1,2-diphenylethane-1,2-dione

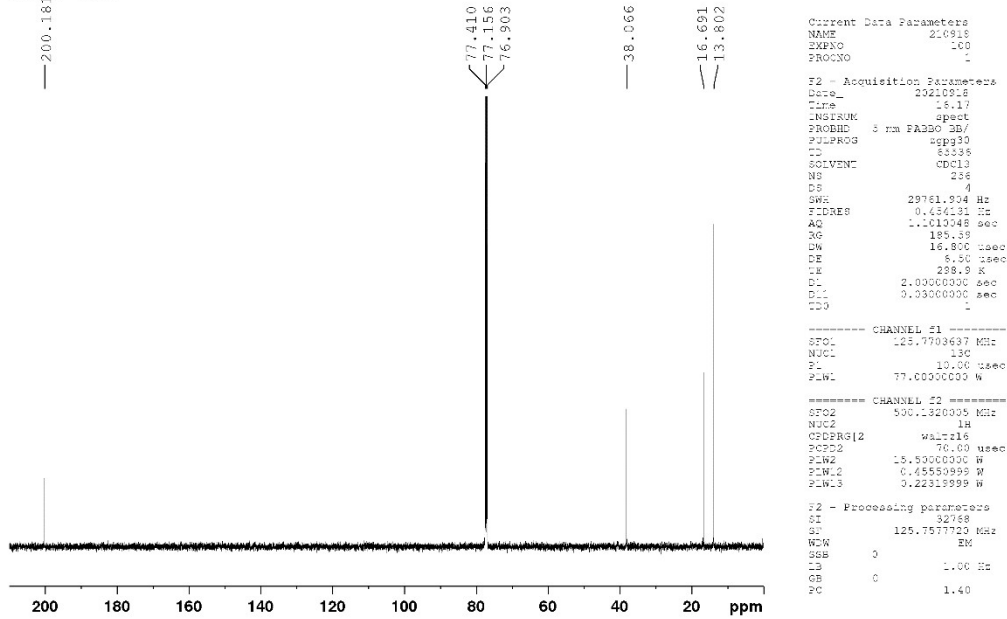


¹H NMR of octane-4,5-dione

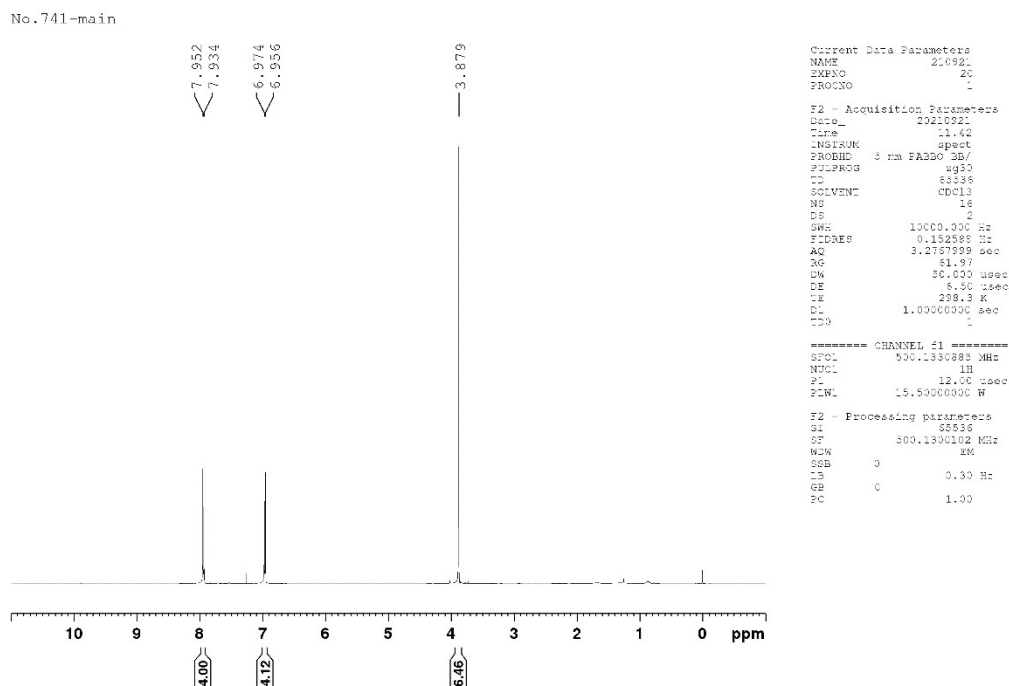
No.740-main

 ^{13}C NMR of **octane-4,5-dione**

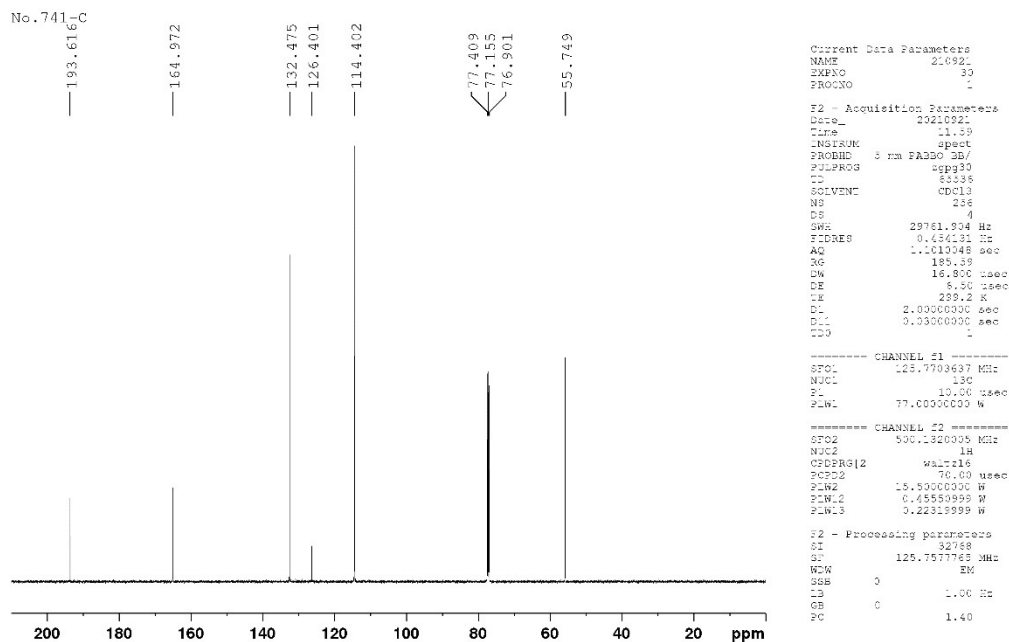
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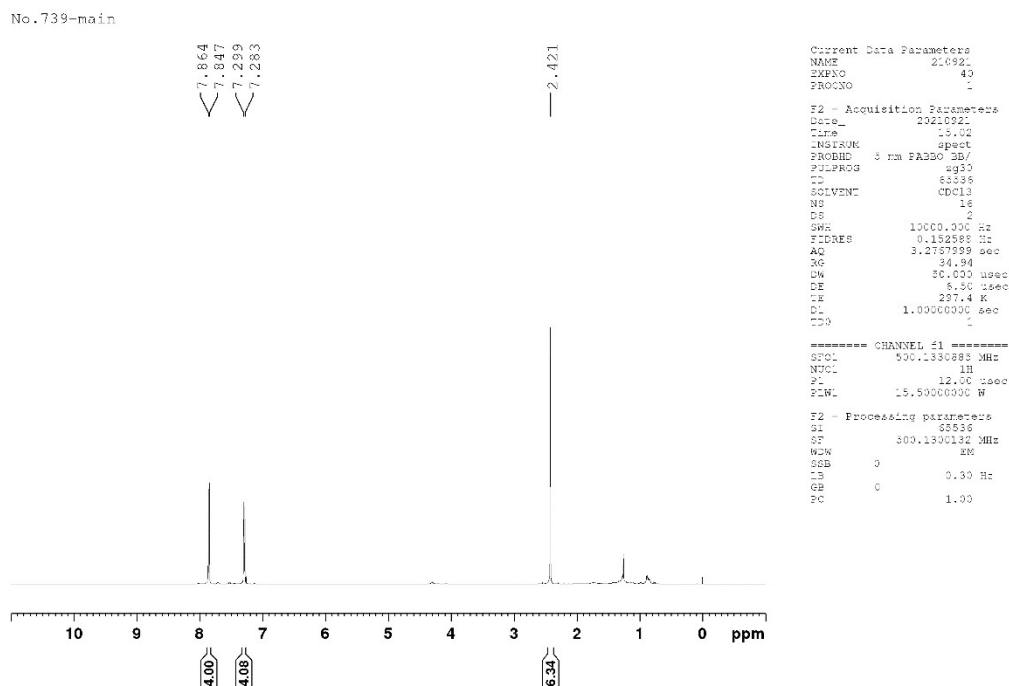
¹H NMR of 1,2-bis(4-methoxyphenyl)ethane-1,2-dione



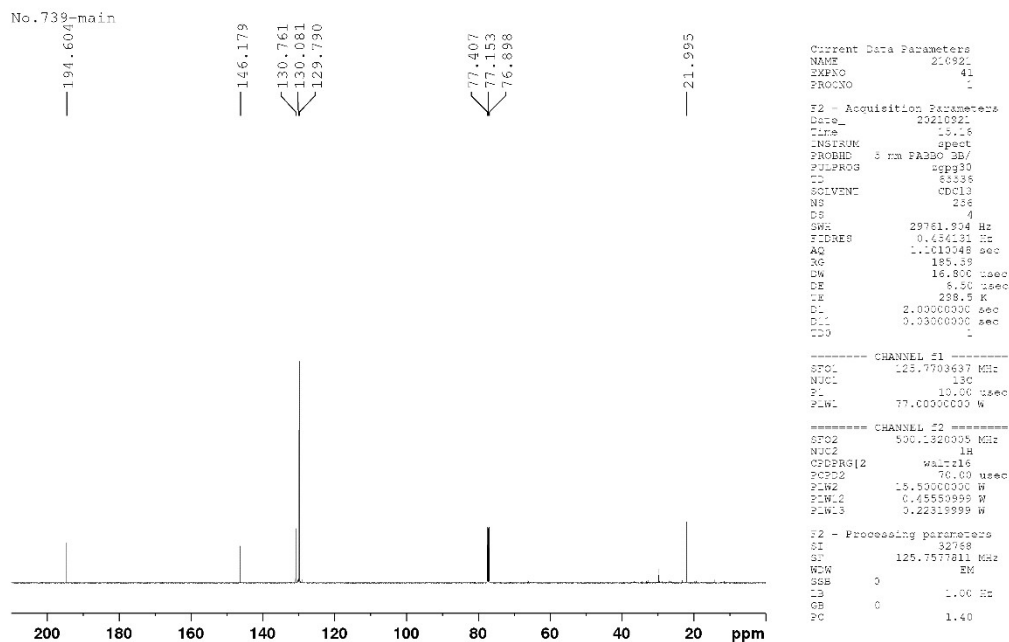
¹³C NMR of 1,2-bis(4-methoxyphenyl)ethane-1,2-dione



¹H NMR of 1,2-di-*p*-tolylethane-1,2-dione

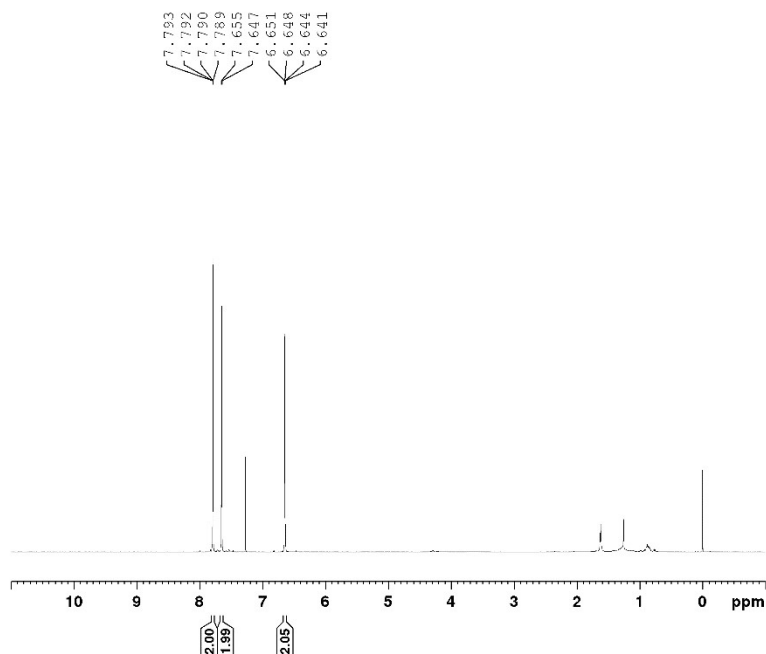


¹³C NMR of 1,2-di-*p*-tolylethane-1,2-dione



¹H NMR of 1,2-di(2-furyl)ethane-1,2-dione

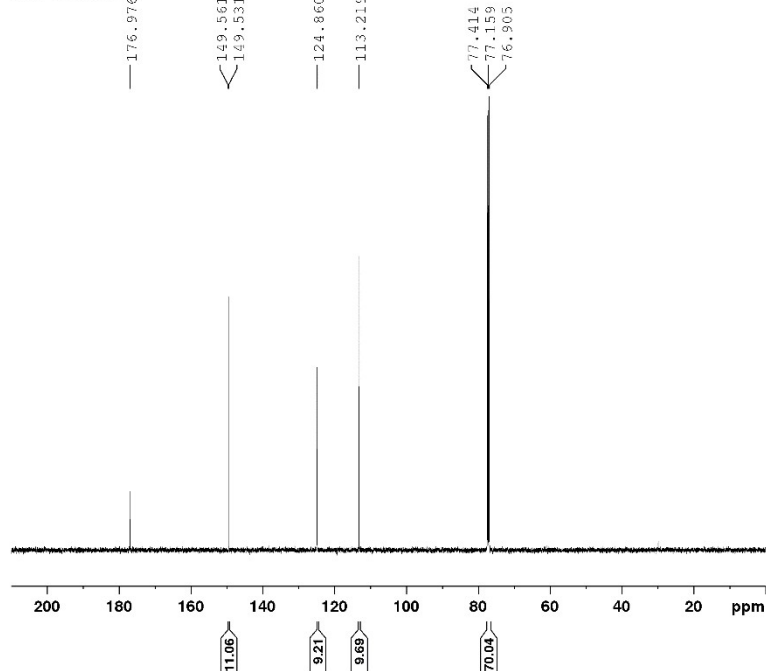
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¹³C NMR of 1,2-di(2-furyl)ethane-1,2-dione

No.742-main



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