Supporting information

Synthesis and evaluation of triazole congeners of nitrobenzothiazinones potentially active against drug resistant *Mycobacterium tuberculosis* demonstrating bactericidal efficacy

Santosh Kumar Sahoo[a], Mohammad Naiyaz Ahmad[b,c], Grace Kaul[b,c], Srinivas Nanduri[a], Arunava Dasgupta[b,c*], Sidharth Chopra[b,c*], Venkata Madhavi Yaddanapudi[a*]

[a]Department of Chemical Sciences, National Institute of Pharmaceutical Education and Research (NIPER), Balanagar, Hyderabad 500037, Telangana, India.

[b]Division of Molecular Microbiology and Immunology, CSIR-Central Drug Research Institute, Sector 10, Janakipuram Extension, Sitapur Road, Lucknow 226031, UP, India.

[c]AcSIR: Academy of Scientific and Innovative Research (AcSIR), Ghaziabad 201002, India

*Corresponding author: E-mail: yssmadhavi@gmail.com (Venkata Madhavi Yaddanapudi)

*Co-Corresponding author: E-mail: skchopra007@gmail.com (Sidharth Chopra)

*Co-Corresponding author: E-mail: a.dasgupta@cdri.res.in (Arunava Dasgupta)

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1 Material and methods

All chemicals, reagents and solvents were procured from commercial providers and were used as such. The reactions were monitored by thin layer chromatography (TLC) on precoated Merck 60 F_{254} silica gel (0.5 mm) aluminium plates and visualized using UV light (254 nm). ^{1}H and ^{13}C NMR spectra were obtained on Bruker Advance 500 spectrometer (500 and 125 MHz for ^{1}H and ^{13}C NMR respectively) using tetramethyl silane (TMS) as internal standard. Chemical shifts (δ) are reported in ppm relative to TMS (δ 0.00 for ^{1}H NMR and ^{13}C NMR) or residual solvent peak in the corresponding spectra; $CDCl_3$ (δ 7.26 for ^{1}H NMR and 77.2 ^{13}C NMR) or DMSO-d_6 (δ 2.50 for ^{1}H NMR and 39.5 for ^{13}C NMR). Spin multiplicities for ^{1}H NMR are reported as s (singlet), brs (broad singlet), d (doublet), dd (double doublet), t (triplet), q (quartet) and m (multiplet). Unless and otherwise mentioned, values in ^{13}C NMR are implicated as single Carbon while multiple Carbon is shown as 'nC' where n implies no. of Carbon. Coupling constant (*J*) values are reported in hertz (Hz). In ^{13}C NMR of Fluorine containing compound, Carbon-Fluorine coupling is denoted by J_{CF}. HRMS were determined with Agilent QTOF mass spectrometer 6540 series instrument and were performed in ESI techniques at 70 eV. Column chromatography was performed using silica gel 60-120 or 100-200 mesh. Melting point was taken using Stuart® SMP30 apparatus.

1.1 Synthesis of intermediates 4a-e, 8a-d

Synthesis was carried out following literature reported procedure.[1, 2]

*1.1.1 General procedure for synthesis of compounds **2a-e***

To 50 mL of an ice-cold conc. H_2SO_4 was added 5g of appropriate 2-chlorobenzoic acid (**1a-e**) in small portions. 15 min. later, nitrating mixture (3 equiv. conc. HNO_3 in 10 mL conc. H_2SO_4) was added dropwise over a period of 15 min. keeping temp. below 0 ºC. The resulting thick reaction mixture was stirred at 0 °C (**1a-c**) or allowed to heat up to 90 °C (**1d**) or stirred at rt (**1e**) for 2 h. On completion, the reaction mixture was poured onto crushed ice and the resulting precipitate was vacuum filtered, repeatedly washing with cold water till filtrate becomes neutral. Obtained solid was vacuum dried to afford corresponding nitro derivative as white to off-white powder in 70-84 % yield which were carried to subsequent step without further purification.

*1.1.2 General procedure for synthesis of compounds **3a-e***

5g of appropriate nitro-benzoic acid derivatives (**2a-e**) was suspended in 60 mL dry $CHCl_3$ and allowed to cool on ice-bath followed by addition of 7 equiv. thionyl chloride and cat. DMF. Resulting mixture was refluxed under $CaCl_2$ guard for 4 h. After cooling to ambient temp., reaction mixture was spin dried on rotary evaporator keeping bath temp. below 40 °C. Obtained sticky residue (corresponding acyl chloride) was dissolved in 10 mL CH_3CN and was added dropwise to a previously ice-cold solution of 80 mL 25 % aq. NH_3: H_2O 1:1. The resultant mixture was stirred at 0 °C for 15 min. followed by rt for 30 min. Thereupon, formed precipitate was isolated by vacuum filtration washing with cold water and oven dried to obtain corresponding benzamide derivatives (**3a-e**) as white powder in 63-71 % yield that were sufficiently pure enough to be used in further reactions.

*1.1.3 General procedure for synthesis of intermediates **4a-e** (BTZ-S propargyl)*

To an ice-cold solution of powdered NaOH (2 equiv.) in 10 mL DMSO was added 3 equiv. CS_2 gradually followed by addition of 2 g 2-chlorobenzamide derivative (**3a-e**). The reaction mixture was stirred at 0 °C for 15 min. Thereafter, 1.2 equiv. propargyl bromide was slowly added upon which appearance of solid was observed. The reaction mixture was stirred for 1 h at rt or till complete consumption of starting material as monitored by TLC. After completion, the resulting mixture was added to crushed ice and resulting precipitate was vacuum filtered and further purified by silica gel column chromatography eluting at EA: Hex 1:10.

*1.1.3.1 6-chloro-8-nitro-2-(prop-2-yn-1-ylthio)-4H-benzo[e][1,3]thiazin-4-one **(4a)***

Brown solid, Yield 45 %, mp: 152-154 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.83 (d, J = 2.4 Hz, 1H), 8.63 (d, J = 2.4 Hz, 1H), 4.26 (d, J = 2.6 Hz, 2H), 3.37 (t, J = 2.6 Hz, 1H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.43, 163.33, 144.09, 136.36, 134.05, 130.78, 130.66, 126.50, 78.79, 75.60, 20.49 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{11}H_6ClN_2O_3S_2$ 312.9508; found 312.9506.

*1.1.3.2 6-fluoro-8-nitro-2-(prop-2-yn-1-ylthio)-4H-benzo[e][1,3]thiazin-4-one **(4b)***

Brown solid, Yield 42 %, mp: 134-136 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.56 (dd, J = 7.6, 3.0 Hz, 1H), 8.39 (dd, J = 7.4, 3.0 Hz, 1H), 4.18 (d, J = 2.7 Hz, 2H), 2.32 (t, J = 2.7 Hz, 1H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 180.21, 163.29 (d, J_{CF} = 1.9 Hz), 161.04 (d, J_{CF} = 255.6 Hz), 143.79, 127.93 (d, J_{CF} = 3.5 Hz), 127.45 (d, J_{CF} = 6.6 Hz), 124.48 (d, J_{CF} = 23.3 Hz), 118.38 (d, J_{CF} = 27.5 Hz), 76.56, 73.25, 20.57 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{11}H_6FN_2O_3S_2$ 296.9804; found 296.9800.

*1.1.3.3 6-bromo-8-nitro-2-(prop-2-yn-1-ylthio)-4H-benzo[e][1,3]thiazin-4-one **(4c)***

Brown solid, Yield 45 %, mp: 103-105 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.92 (d, J = 2.2 Hz, 1H), 8.75 (d, J = 2.2 Hz, 1H), 4.18 (d, J = 2.7 Hz, 2H), 2.32 (t, J = 2.6 Hz, 1H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 179.90, 163.13, 143.14, 140.25, 132.93, 131.17, 126.62, 122.16, 76.50, 73.30, 20.59 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{11}H_6BrN_2O_3S_2$ 356.9003; found 356.9007.

1.1.3.4 *6-(trifluoromethyl)-8-nitro-2-(prop-2-yn-1-ylthio)-4H-benzo[e][1,3]thiazin-4-one* ***(4d)***

Brown solid, Yield 40 %, mp: 127-129 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 9.05 (d, *J* = 2.0 Hz, 1H), 8.86 (d, *J* = 2.0 Hz, 1H), 4.20 (d, *J* = 2.7 Hz, 2H), 2.33 (t, *J* = 2.7 Hz, 1H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 179.96, 163.24, 142.95, 136.18, 134.23 (q, J_{CF} = 3.4 Hz), 130.99 (q, J_{CF} = 35.7 Hz), 126.67 (q, J_{CF} = 3.5 Hz), 126.52, 122.12 (q, J_{CF} = 273.3 Hz), 76.33, 73.44, 20.75 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{12}H_6F_3N_2O_3S_2$ 346.9772; found 346.9768.

1.1.3.5 *6-nitro-2-(prop-2-yn-1-ylthio)-4H-benzo[e][1,3]thiazin-4-one* ***(4e)***

Off-white solid, Yield 57 %, mp: 191-193 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.89 (d, *J* = 2.5 Hz, 1H), 8.55 (dd, *J* = 8.8, 2.6 Hz, 1H), 8.06 (d, *J* = 8.8 Hz, 1H), 4.27 (d, *J* = 2.6 Hz, 2H), 3.37 (t, *J* = 2.6 Hz, 1H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 177.07, 164.17, 148.20, 141.88, 128.37, 127.45, 125.14, 123.35, 78.78, 75.60, 20.27 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{11}H_7N_2O_3S_2$ 278.9898; found 278.9899.

1.1.4 *General procedure for synthesis of intermediates* ***8a-d*** *(BTZ-NH propargyl)*

Treatment of 2-chlorobenzamide derivatives (**3a-d**) following similar procedure as mentioned above by utilizing methyl iodide in the penultimate step in place of propargyl bromide led to the formation of crude BTZ-S Me derivatives (**7a-d**) that were purified by recrystallization from ethyl acetate. Equimolar quantities of **7a-d** and propargyl amine were dissolved in ethanol and stirred under heating at 60 °C for 30 min. Upon completion, after attaining ambient temperature, the reaction mixture was added to crushed ice and formed precipitate was vacuum filtered, dried and purified by recrystallization from CH_2Cl_2 and hexane to afford BTZ-NH propargyl derivatives **8a-d** in 62-81 % yield.

1.1.4.1 *6-chloro-8-nitro-2-(prop-2-yn-1-ylamino)-4H-benzo[e][1,3]thiazin-4-one* ***(8a)***

Yellow solid, Yield 81 %, mp: 196-198 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 9.84 (s, 1H), 8.69 (d, *J* = 1.6 Hz, 1H), 8.56 (d, *J* = 1.5 Hz, 1H), 4.29 (d, *J* = 1.2 Hz, 2H), 3.31 (t, *J* = 1.2 Hz, 1H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 165.92, 163.21, 144.61, 135.71, 132.17, 130.14, 129.85, 127.03, 79.68, 75.06, 31.54 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{11}H_7ClN_3O_3S$ 295.9897; found 295.9893.

1.1.4.2 6-fluoro-8-nitro-2-(prop-2-yn-1-ylamino)-4H-benzo[e][1,3]thiazin-4-one (**8b**)

Yellow solid, Yield 68 %, mp: 205-207 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 9.80 (s, 1H), 8.61 (dd, J = 8.0, 2.4 Hz, 1H), 8.43 (dd, J = 8.1, 2.3 Hz, 1H), 4.29 (d, J = 1.9 Hz, 2H), 3.31 (t, J = 2.0 Hz, 1H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 166.02, 163.51, 159.91 (d, J_{CF} = 249.1 Hz), 144.83 (d, J_{CF} = 7.9 Hz), 127.65 (d, J_{CF} = 6.1 Hz), 127.09 (d, J_{CF} = 2.2 Hz), 123.30 (d, J_{CF} = 23.5 Hz), 118.33 (d, J_{CF} = 27.9 Hz), 79.73, 75.02, 31.54 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{11}H_7FN_3O_3S$ 280.0192; found 280.0185.

1.1.4.3 6-bromo-8-nitro-2-(prop-2-yn-1-ylamino)-4H-benzo[e][1,3]thiazin-4-one (**8c**)

Brown solid, Yield 74 %, mp: 206-208 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 9.83 (s, 1H), 8.77 (d, J = 2.2 Hz, 1H), 8.67 (d, J = 2.2 Hz, 1H), 4.29 (d, J = 2.5 Hz, 2H), 3.32 (t, J = 2.5 Hz, 1H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 165.80, 163.11, 144.57, 138.59, 132.50, 130.61, 127.11, 119.77, 79.68, 75.08, 31.55 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{11}H_7BrN_3O_3S$ 339.9391; found 339.9367.

1.1.4.4 6-(trifluoromethyl)-8-nitro-2-(prop-2-yn-1-ylamino)-4H-benzo[e][1,3]thiazin-4-one (**8d**)

White solid, Yield 62 %, mp: 216-218 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 9.92 (s, 1H), 8.85 (s, 1H), 8.80 (s, 1H), 4.32 (d, J = 2.3 Hz, 2H), 3.30 (s, 1H, merged with H_2O) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 165.98, 162.91, 144.37, 136.15, 132.11 (q, J_{CF} = 3.5 Hz), 127.46 (q, J_{CF} = 34.7 Hz), 126.82, 126.65 (q, J_{CF} = 3.5 Hz), 123.11 (q, J_{CF} = 272.9 Hz), 79.57, 75.17, 31.67 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{12}H_7F_3N_3O_3S$ 330.0160; found 330.0156.

1.2 General procedure for synthesis of 6-chloro-8-nitro-2-mercaptobenzothiazinone linked triazole derivatives (5a-ak)

1 equiv. of 6-chloro-8-nitro-2-(prop-2-yn-1-ylthio)-4H-benzo[e][1,3]thiazin-4-one **4a** and 2 equiv. of appropriate azide were dissolved in a mixture of DMF: H_2O (10:0.5) followed by addition of $CuSO_4.5H_2O$ (0.2 equiv.) and sodium ascorbate (0.4 equiv.). The resulting mixture was allowed to stir for 18-20 h at rt. Upon completion, reaction mixture was added to crusted ice and formed precipitate was vacuum filtered and dried in oven to furnish crude product. Further purification of crude was carried out by silica gel column chromatography using EtOAc/Hex eluent mixture ranging from 1:5 to 3:1 to afford target compounds **5a-ak** in 58-86% yield. All newly synthesized compounds were characterized by ^{1}H NMR, ^{13}C NMR and HRMS (ESI). ^{1}H NMR signal was also elucidated for some representative compounds.

*1.2.1 6-chloro-2-(((1-phenyl-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5a**)*

Yellow solid, Yield 76 %, mp: 170-172 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.78 (d, *J* = 2.4 Hz, 1H), 8.60 (d, *J* = 2.4 Hz, 1H), 8.24 (s, 1H), 7.75 – 7.70 (m, 2H), 7.52 (dd, *J* = 10.6, 5.1 Hz, 2H), 7.44 (t, *J* = 7.4 Hz, 1H), 4.75 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 180.99, 163.46, 143.30, 142.78, 137.13, 136.85, 134.95, 130.99, 130.08, 129.79 (2C), 128.90, 126.54, 122.10, 120.51 (2C), 26.88 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{11}ClN_5O_3S_2$ 431.9992; found 431.9982.

*1.2.2 6-chloro-2-(((1-(2-fluorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5b**)*

Yellow solid, Yield 73 %, mp: 147-149 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.80 (d, *J* = 2.4 Hz, 1H), 8.62 (d, *J* = 2.4 Hz, 1H), 8.35 (s, 1H), 7.95 (t, *J* = 7.3 Hz, 1H), 7.49 – 7.44 (m, 1H), 7.34 (t, *J* = 8.7 Hz, 1H), 7.31 (d, *J* = 8.5 Hz, 1H), 4.81 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 180.90, 163.33, 153.38 (d, J_{CF} = 251.4 Hz), 143.28, 142.51, 137.18, 134.93, 130.95, 130.42 (d, J_{CF} = 7.8 Hz), 130.08, 126.54, 125.27 (d, J_{CF} = 3.7 Hz), 125.10 (d, J_{CF} = 5.1 Hz), 125.02 (d, J_{CF} = 3.2 Hz), 124.87, 117.12 (d, J_{CF} = 19.8 Hz), 26.79 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{10}ClFN_5O_3S_2$ 449.9898; found 449.9891.

*1.2.3 6-chloro-2-(((1-(2-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5c**)*

Yellow solid, Yield 87 %, mp: 155-157 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.76 (d, *J* = 2.4 Hz, 1H), 8.60 (d, *J* = 2.4 Hz, 1H), 8.20 (s, 1H), 7.60 (dd, *J* = 7.4, 2.1 Hz, 1H), 7.57 (dd, *J* = 7.5, 1.8 Hz, 1H), 7.46 (td, *J* = 7.5, 1.9 Hz, 1H), 7.43 (td, *J* = 7.5, 1.8 Hz, 1H), 4.78 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 180.99, 163.34, 143.29, 141.91, 137.15, 134.94, 134.67, 130.96, 130.89, 130.84, 130.09, 128.60, 127.94, 127.69, 126.52, 125.81, 26.79 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{10}Cl_2N_5O_3S_2$ 465.9602; found 465.9591.

*1.2.4 6-chloro-2-(((1-(3-fluorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5d**)*

Yellow solid, Yield 61 %, mp: 142-144 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.79 (d, *J* = 2.4 Hz, 1H), 8.61 (d, *J* = 2.4 Hz, 1H), 8.27 (s, 1H), 7.55 – 7.46 (m, 3H), 7.14 (t, *J* = 7.5 Hz, 1H), 4.74 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 180.99, 163.50, 163.09 (d, J_{CF} = 248.9 Hz), 143.30, 143.10, 137.96 (d, J_{CF} = 10.1 Hz), 137.17, 135.01, 131.26 (d, J_{CF} = 9.0 Hz), 130.97, 130.14, 126.49, 122.21, 115.88 (d, J_{CF} = 12.1 Hz), 115.78 (d, J_{CF} = 5.8 Hz), 108.31 (d, J_{CF} =

26.3 Hz), 26.81 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{10}ClFN_5O_3S_2$ 449.9898; found 449.9891.

*1.2.5 6-chloro-2-(((1-(3-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5e**)*

Yellow solid, Yield 85 %, mp: 172-174 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.79 (d, J = 2.4 Hz, 1H), 8.61 (d, J = 2.4 Hz, 1H), 8.25 (s, 1H), 7.79 (t, J = 1.9 Hz, 1H), 7.62 (d, J = 7.9 Hz, 1H), 7.46 (t, J = 8.0 Hz, 1H), 7.41 (d, J = 8.1 Hz, 1H), 4.74 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 180.99, 163.50, 143.29, 143.14, 137.66, 137.18, 135.66, 135.01, 130.96, 130.87, 130.14, 128.99, 126.49, 122.12, 120.81, 118.45, 26.74 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{10}Cl_2N_5O_3S_2$ 465.9602; found 465.9594.

*1.2.6 6-chloro-2-(((1-(3-(trifluoromethyl)phenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5f**)*

White solid, Yield 75 %, mp: 204-206 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.79 (d, J = 2.1 Hz, 1H), 8.61 (d, J = 2.1 Hz, 1H), 8.33 (s, 1H), 8.05 (s, 1H), 7.93 (d, J = 7.6 Hz, 1H), 7.70 (t, J = 6.9 Hz, 1H), 7.66 (d, J = 7.8 Hz, 1H), 4.75 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.03, 163.54, 143.40, 143.32, 137.20 (2C), 135.06, 132.54 (q, J_{CF} = 33.1 Hz), 130.95, 130.64, 130.18, 126.52, 125.56 (q, J_{CF} = 3.4 Hz), 123.67, 123.28 (q, J_{CF} = 272.7 Hz), 122.45, 117.67 (q, J_{CF} = 3.9 Hz), 27.00 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{18}H_{10}ClF_3N_5O_3S_2$ 499.9866; found 499.9857.

*1.2.7 6-chloro-2-(((1-(m-tolyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5g**)*

Yellow solid, Yield 66 %, mp: 173-175 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.78 (d, J = 2.4 Hz, 1H), 8.60 (d, J = 2.4 Hz, 1H), 8.20 (s, 1H), 7.56 (s, 1H), 7.48 (d, J = 8.0 Hz, 1H), 7.38 (t, J = 7.8 Hz, 1H), 7.24 (d, J = 7.6 Hz, 1H), 4.75 (s, 2H), 2.44 (s, 3H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 180.99, 163.44, 143.27, 142.63, 140.05, 137.11, 136.76, 134.90, 130.98, 130.06, 129.66, 129.54, 126.52, 122.06, 121.15, 117.55, 26.85, 21.40 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{18}H_{13}ClN_5O_3S_2$ 446.0148; found 446.0140.

*1.2.8 6-chloro-2-(((1-(3-nitrophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5h**)*

Yellow solid, Yield 74 %, mp: 185-187 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 9.01 (s, 1H), 8.82 (d, J = 2.1 Hz, 1H), 8.70 (s, 1H), 8.64 (d, J = 2.1 Hz, 1H), 8.38 (d, J = 7.5 Hz, 1H), 8.34 (d, J = 7.7 Hz, 1H), 7.91 (t, J = 8.2 Hz, 1H), 4.85 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.78, 163.37, 148.99, 144.04, 143.73, 137.51, 136.33, 133.97, 132.04, 130.89, 130.63, 126.69, 126.65, 123.73, 123.44, 115.37, 26.37 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{10}ClN_6O_5S_2$ 476.9843; found 476.9835.

*1.2.9 6-chloro-2-(((1-(3-cyanophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5i**)*

Off-white solid, Yield 62 %, mp: 158-160 °C; ^1H NMR (500 MHz, DMSO-d_6) δ 8.88 (s, 1H), 8.83 (d, *J* = 2.4 Hz, 1H), 8.64 (d, *J* = 2.4 Hz, 1H), 8.42 (t, *J* = 1.7 Hz, 1H), 8.27 (ddd, *J* = 8.3, 2.3, 1.0 Hz, 1H), 7.98 (dt, *J* = 8.0, 1.4 Hz, 1H), 7.82 (t, *J* = 8.0 Hz, 1H), 4.83 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.76, 163.37, 144.05, 143.66, 137.37, 136.34, 133.97, 132.88, 131.79, 130.89, 130.62, 126.68, 125.32, 124.04, 123.20, 118.23, 113.28, 26.38 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{18}H_{10}ClN_6O_3S_2$ 456.9944; found 456.9933.

*1.2.10 6-chloro-2-(((1-(3-acetylphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5j**)*

Light yellow solid, Yield 65 %, mp: 184-186 °C; ^1H NMR (500 MHz, DMSO-d_6) δ 8.90 (s, 1H), 8.81 (d, *J* = 2.4 Hz, 1H), 8.63 (d, *J* = 2.4 Hz, 1H), 8.36 (t, *J* = 1.9 Hz, 1H), 8.14 (dd, *J* = 8.1, 1.4 Hz, 1H), 8.06 (d, *J* = 7.8 Hz, 1H), 7.76 (t, *J* = 7.9 Hz, 1H), 4.83 (s, 2H), 2.67 (s, 3H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 197.57, 179.84, 163.38, 144.01, 143.34, 138.66, 137.22, 136.32, 133.94, 130.96, 130.90, 130.60, 128.82, 126.63, 124.99, 123.25, 119.92, 27.41, 26.47 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{19}H_{13}ClN_5O_4S_2$ 474.0097; found 474.0089.

*1.2.11 6-chloro-2-(((1-(3-isopropoxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5k**)*

White solid, Yield 58 %, mp: 137-139 °C; ^1H NMR (500 MHz, $CDCl_3$) δ 8.78 (d, *J* = 2.4 Hz, 1H), 8.60 (d, *J* = 2.4 Hz, 1H), 8.19 (s, 1H), 7.37 (t, *J* = 8.2 Hz, 1H), 7.30 (t, *J* = 2.2 Hz, 1H), 7.20 (dd, *J* = 7.9, 1.7 Hz, 1H), 6.93 (dd, *J* = 8.3, 2.2 Hz, 1H), 4.75 (s, 2H), 4.67 – 4.59 (m, 1H), 1.37 (d, *J* = 6.1 Hz, 6H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 180.98, 163.46, 158.99, 143.30, 142.66, 137.86, 137.15, 134.95, 130.99, 130.55, 130.08, 126.56, 122.11, 116.39, 112.14, 108.11, 70.50, 26.86, 21.93 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{20}H_{17}ClN_5O_4S_2$ 490.0410; found 490.0402.

*1.2.12 6-chloro-2-(((1-(3-carboxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5l**)*

Beige solid, Yield 70 %, mp: 198-200 °C; ^1H NMR (500 MHz, DMSO-d_6) δ 13.42 (brs, 1H), 8.89 (s, 1H), 8.82 (d, *J* = 2.4 Hz, 1H), 8.64 (d, *J* = 2.4 Hz, 1H), 8.37 (s, 1H), 8.14 (d, *J* = 8.0 Hz, 1H), 8.04 (d, *J* = 7.7 Hz, 1H), 7.74 (t, *J* = 7.9 Hz, 1H), 4.83 (s, 2H) ppm; ^{13}C NMR (125

MHz, DMSO-d_6) δ 179.82, 166.71, 163.38, 144.03, 143.40, 137.12, 136.33, 133.94, 133.04, 130.92, 130.87, 130.58, 129.79, 126.68, 124.73, 123.16, 120.99, 26.48 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{18}H_{11}ClN_5O_5S_2$ 475.9890; found 475.9869.

*1.2.13 6-chloro-2-(((1-(3-aminosulphonylphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5m**)*

White solid, Yield 69 %, mp: 236-238 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.87 (s, 1H), 8.83 (d, J = 2.4 Hz, 1H), 8.64 (d, J = 2.4 Hz, 1H), 8.35 (t, J = 1.8 Hz, 1H), 8.09 (ddd, J = 8.1, 2.1, 0.9 Hz, 1H), 7.92 (ddd, J = 7.8, 1.4, 0.9 Hz, 1H), 7.82 (t, J = 8.0 Hz, 1H), 7.59 (s, 2H), 4.84 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.82, 163.38, 146.25, 144.02, 143.60, 137.05, 136.34, 133.95, 131.39, 130.91, 130.61, 126.66, 126.10, 123.66, 123.21, 117.79, 26.43 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{12}ClN_6O_5S_3$ 510.9720; found 510.9700.

*1.2.14 6-chloro-2-(((1-(4-fluorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5n**)*

Yellow solid, Yield 74 %, mp: 191-193 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.82 (d, J = 2.4 Hz, 1H), 8.74 (s, 1H), 8.64 (d, J = 2.4 Hz, 1H), 7.92 (dd, J = 9.1, 4.7 Hz, 2H), 7.46 (t, J = 8.8 Hz, 2H), 4.81 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.81, 163.38, 162.18 (d, J_{CF} = 246.0 Hz), 144.03, 143.22, 136.33, 133.93, 133.51 (d, J_{CF} = 2.6 Hz), 130.92, 130.60, 126.66, 123.24, 123.04 (d, J_{CF} = 8.8 Hz, 2C), 117.22 (d, J_{CF} = 23.3 Hz, 2C), 26.48 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{10}ClFN_5O_3S_2$ 449.9898; found 449.9890.

*1.2.15 6-chloro-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5o**)*

Yellow solid, Yield 82 %, mp: 178-180 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.82 (d, J = 2.4 Hz, 1H), 8.79 (s, 1H), 8.64 (d, J = 2.4 Hz, 1H), 7.92 (d, J = 8.9 Hz, 2H), 7.68 (d, J = 8.9 Hz, 2H), 4.81 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.81, 163.38, 144.02, 143.41, 136.33, 135.73, 133.93, 133.57, 130.92, 130.60, 130.35 (2C), 126.65, 123.07, 122.32 (2C), 26.44 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{10}Cl_2N_5O_3S_2$ 465.9602; found 465.9595.

*1.2.16 6-chloro-2-(((1-(4-bromophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5p**)*

Beige solid, Yield 80 %, mp: 201-103 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.80 (d, J = 2.2 Hz, 1H), 8.63 (d, J = 2.2 Hz, 1H), 8.32 (s, 1H), 7.67 (d, J = 8.4 Hz, 4H), 4.76 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.01, 163.50, 143.31, 137.15, 135.80, 135.02, 133.04, 132.97

(2C), 130.97, 130.15, 126.49, 122.60, 122.19, 121.91 (2C), 26.87 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{10}BrClN_5O_3S_2$ 509.9097; found 509.9083.

*1.2.17 6-chloro-2-(((1-(p-tolyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5q**)*

Yellow solid, Yield 59 %, mp: 164-166 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.80 (d, *J* = 2.2 Hz, 1H), 8.63 (d, *J* = 2.2 Hz, 1H), 8.27 (s, 1H), 7.62 (d, *J* = 7.8 Hz, 2H), 7.33 (d, *J* = 7.3 Hz, 2H), 4.78 (s, 2H), 2.44 (s, 3H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.04, 163.46, 143.31, 142.55, 139.13, 137.13, 134.94, 134.54, 131.00, 130.29 (2C), 130.07, 126.55, 122.20, 120.46 (2C), 26.92, 21.09 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{18}H_{13}ClN_5O_3S_2$ 446.0148; found 446.0137.

*1.2.18 6-chloro-2-(((1-(4-methoxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5r**)*

Yellow solid, Yield 60 %, mp: 189-191 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.80 (d, *J* = 1.7 Hz, 1H), 8.63 (d, *J* = 1.7 Hz, 1H), 8.26 (s, 1H), 7.65 (d, *J* = 7.2 Hz, 2H), 7.04 (d, *J* = 7.1 Hz, 2H), 4.80 (s, 2H), 3.89 (s, 3H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.13, 163.52, 160.00, 143.31, 137.16, 134.96, 131.58, 131.03, 130.24, 130.11, 126.53, 122.40, 122.21 (2C), 114.85 (2C), 55.66, 26.91 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{18}H_{13}ClN_5O_4S_2$ 462.0097; found 462.0095.

*1.2.19 6-chloro-2-(((1-(4-(hexyloxy)phenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5s**)*

White solid, Yield 67 %, mp: 155-157 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.78 (d, *J* = 2.4 Hz, 1H), 8.60 (d, *J* = 2.4 Hz, 1H), 8.13 (s, 1H), 7.59 (d, *J* = 9.0 Hz, 2H), 6.99 (d, *J* = 9.0 Hz, 2H), 4.74 (s, 2H), 3.99 (t, *J* = 6.6 Hz, 2H), 1.83 – 1.77 (m, 2H), 1.50 – 1.44 (m, 2H), 1.35 (td, *J* = 7.1, 3.5 Hz, 4H), 0.91 (t, *J* = 7.0 Hz, 3H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.05, 163.47, 159.55, 143.31, 137.14, 134.92, 131.02, 130.09, 130.07, 126.56, 122.22, 122.17, 122.10 (2C), 115.33 (2C), 68.50, 31.54, 29.11, 26.93, 25.66, 22.57, 14.00 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{23}H_{23}ClN_5O_4S_2$ 532.0880; found 532.0876.

*1.2.20 6-chloro-2-(((1-(4-phenoxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5t**)*

White solid, Yield 71 %, mp: 150-152 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.78 (d, *J* = 2.4 Hz, 1H), 8.61 (d, *J* = 2.4 Hz, 1H), 8.19 (s, 1H), 7.65 (d, *J* = 9.0 Hz, 2H), 7.38 (dd, *J* = 8.5, 7.5 Hz, 2H), 7.17 (t, *J* = 7.4 Hz, 1H), 7.11 (d, *J* = 9.0 Hz, 2H), 7.05 (dd, *J* = 8.6, 1.0 Hz, 2H), 4.74 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.05, 163.49, 158.04, 156.24, 143.28, 142.71, 137.15, 134.95, 131.96, 131.01, 130.12, 130.04 (2C), 126.50, 124.22, 122.29, 122.26 (2C), 119.48 (2C), 119.25 (2C), 26.88 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{23}H_{15}ClN_5O_4S_2$ 524.0254; found 524.0249.

*1.2.21 6-chloro-2-(((1-(4-nitrophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5u**)*

Yellow solid, Yield 65 %, mp: 215-217 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.98 (s, 1H), 8.83 (d, *J* = 1.7 Hz, 1H), 8.64 (d, *J* = 1.6 Hz, 1H), 8.46 (d, *J* = 8.9 Hz, 2H), 8.21 (d, *J* = 8.8 Hz, 2H), 4.85 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.76, 163.39, 147.28, 144.06, 144.02, 141.16, 136.34, 133.96, 130.90, 130.63, 126.68, 126.05 (2C), 123.39, 121.21 (2C), 26.33 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{10}ClN_6O_5S_2$ 476.9843; found 476.9836.

*1.2.22 6-chloro-2-(((1-(4-hydroxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5v**)*

Off-white solid, Yield 70 %, mp: 177-179 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 10.09 (brs, 1H), 8.60 (s, 1H), 7.91 (d, *J* = 8.6 Hz, 1H), 7.76 (d, *J* = 8.6 Hz, 1H), 7.63 (d, *J* = 8.8 Hz, 2H), 6.93 (d, *J* = 8.8 Hz, 2H), 4.74 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 172.85, 164.92, 158.37, 142.66, 136.02, 133.93, 133.58, 132.71, 129.06, 127.94, 123.73, 122.89, 122.48 (2C), 116.53 (2C), 26.94 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{11}ClN_5O_4S_2$ 447.9941; found 447.9929.

*1.2.23 6-chloro-2-(((1-(4-carboxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5w**)*

Off-white solid, Yield 79 %, mp: 259-261 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 13.25 (brs, 1H), 8.88 (s, 1H), 8.83 (s, 1H), 8.64 (s, 1H), 8.14 (d, *J* = 7.6 Hz, 2H), 8.03 (d, *J* = 7.8 Hz, 2H), 4.83 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.78, 166.81, 163.38, 144.04, 143.61, 139.83, 136.34, 133.94, 131.54 (2C), 131.26, 130.91, 130.59, 126.68, 123.06, 120.37 (2C), 26.44 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{18}H_{11}ClN_5O_5S_2$ 475.9890; found 475.9890.

*1.2.24 6-chloro-2-(((1-(4-aminosulphonylphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5x**)*

White solid, Yield 62 %, mp: 244-246 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.88 (s, 1H), 8.84 (s, 1H), 8.65 (s, 1H), 8.11 (s, 2H), 8.03 (s, 2H), 7.54 (s, 2H), 4.84 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.79, 163.39, 144.47, 144.05, 143.63, 138.93, 136.34, 133.96, 130.91, 130.62, 127.98 (2C), 126.68, 123.19, 120.91 (2C), 26.42 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{12}ClN_6O_5S_3$ 510.9720; found 510.9772.

*1.2.25 6-chloro-2-(((1-(4-(piperidin-1-yl)phenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5y**)*

Brown solid, Yield 65 %, mp: 168-170 °C; ^1H NMR (500 MHz, $CDCl_3$) δ 8.78 (d, J = 2.4 Hz, 1H), 8.60 (d, J = 2.4 Hz, 1H), 8.09 (s, 1H), 7.53 (d, J = 9.1 Hz, 2H), 6.97 (d, J = 9.0 Hz, 2H), 4.74 (s, 2H), 3.23 (t, J = 5.5 Hz, 4H), 1.74 – 1.68 (m, 4H), 1.62 (dd, J = 11.8, 6.5 Hz, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.08, 163.46, 152.19, 143.28, 142.22, 137.13, 134.87, 131.04, 130.04, 128.13, 126.55, 121.89, 121.63 (2C), 116.11 (2C), 49.93 (2C), 26.98, 25.52 (2C), 24.20 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{22}H_{20}ClN_6O_3S_2$ 515.0727; found 515.0715.

*1.2.26 6-chloro-2-(((1-(2,4-dimethylphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5z**)*

Yellow solid, Yield 63 %, mp: 178-180 °C; ^1H NMR (500 MHz, $CDCl_3$) δ 8.76 (d, J = 2.4 Hz, 1H), 8.60 (d, J = 2.4 Hz, 1H), 7.92 (s, 1H), 7.19 (d, J = 7.9 Hz, 1H), 7.16 (s, 1H), 7.11 (d, J = 8.0 Hz, 1H), 4.77 (s, 2H), 2.39 (s, 3H), 2.15 (s, 3H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.13, 163.39, 143.32, 140.08, 137.13, 134.93, 133.88, 133.15, 132.09, 130.98, 130.06, 127.44, 126.57, 125.88, 125.71, 125.31, 26.90, 21.11, 17.78 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{19}H_{15}ClN_5O_3S_2$ 460.0305; found 460.0299.

*1.2.27 6-chloro-2-(((1-(3,4-difluorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5aa**)*

Off-white solid, Yield 86 %, mp: 181-183 °C; ^1H NMR (500 MHz, $CDCl_3$) δ 8.78 (d, J = 2.4 Hz, 1H), 8.61 (d, J = 2.4 Hz, 1H), 8.24 (s, 1H), 7.66 (ddd, J = 10.4, 6.8, 2.6 Hz, 1H), 7.48 – 7.44 (m, 1H), 7.32 (dd, J = 17.4, 9.2 Hz, 1H), 4.72 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 180.95, 163.49, 150.62 (dd, J_{CF} = 251.8, 13.7 Hz), 150.34 (dd, J_{CF} = 251.7, 12.6 Hz), 143.29, 143.25, 137.14, 135.03, 133.10 (dd, J_{CF} = 7.9, 3.2 Hz), 130.94, 130.16, 126.44, 122.33, 118.43 (d, J_{CF} = 18.8 Hz), 116.39 (dd, J_{CF} = 6.5, 3.9 Hz), 110.63 (d, J_{CF} = 21.7 Hz), 26.73 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_9ClF_2N_5O_3S_2$ 467.9803; found 467.9798.

*1.2.28 6-chloro-2-(((1-(3-chloro-4-fluorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5ab**)*

Off-white solid, Yield 88 %, mp: 192-194 °C; ^1H NMR (500 MHz, DMSO-d_6) δ 8.83 (d, J = 2.4 Hz, 1H), 8.81 (s, 1H), 8.64 (d, J = 2.4 Hz, 1H), 8.20 (dd, J = 6.4, 2.7 Hz, 1H), 7.94 (ddd, J = 9.0, 4.1, 2.7 Hz, 1H), 7.68 (t, J = 9.0 Hz, 1H), 4.82 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-

d_6) δ 179.79, 163.37, 157.41 (d, J_{CF} = 248.6 Hz), 144.02, 143.46, 136.34, 133.95, 133.93 (d, J_{CF} = 4.2 Hz), 130.90, 130.63, 126.64, 123.35, 122.97, 121.52 (d, J_{CF} = 8.0 Hz), 121.25 (d, J_{CF} = 19.1 Hz), 118.63 (d, J_{CF} = 22.7 Hz), 26.37 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_9Cl_2FN_5O_3S_2$ 483.9508; found 483.9502.

*1.2.29 6-chloro-2-(((1-(3,4-dimethoxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5ac**)*

Orange solid, Yield 67 %, mp: 170-172 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.82 (d, *J* = 2.4 Hz, 1H), 8.71 (s, 1H), 8.64 (d, *J* = 2.4 Hz, 1H), 7.44 (d, *J* = 2.5 Hz, 1H), 7.36 (dd, *J* = 8.6, 2.5 Hz, 1H), 7.13 (d, *J* = 8.7 Hz, 1H), 4.81 (s, 2H), 3.86 (s, 3H), 3.82 (s, 3H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.88, 163.41, 149.81, 149.50, 144.04, 142.71, 136.31, 133.92, 130.93, 130.60, 130.38, 126.65, 123.12, 112.81, 112.51, 105.32, 56.37, 56.31, 26.58 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{19}H_{15}ClN_5O_5S_2$ 492.0203; found 492.0195.

*1.2.30 6-chloro-2-(((1-(3,5-dimethoxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5ad**)*

Yellow solid, Yield 58 %, mp: 195-197 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.82 (d, *J* = 2.4 Hz, 1H), 8.80 (s, 1H), 8.63 (d, *J* = 2.4 Hz, 1H), 7.04 (d, *J* = 2.2 Hz, 2H), 6.62 (t, *J* = 2.1 Hz, 1H), 4.81 (s, 2H), 3.83 (s, 6H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.82, 163.39, 161.65 (2C), 144.01, 142.98, 138.43, 136.32, 133.93, 130.92, 130.59, 126.63, 123.17, 100.75, 98.95 (2C), 56.20 (2C), 26.50 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{19}H_{15}ClN_5O_5S_2$ 492.0203; found 492.0197.

*1.2.31 6-chloro-2-(((1-(3-fluoro-4-(piperidin-1-yl)phenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5ae**)*

Brown solid, Yield 75 %, mp: 186-188 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.78 (d, *J* = 2.4 Hz, 1H), 8.60 (d, *J* = 2.4 Hz, 1H), 8.14 (s, 1H), 7.43 (dd, *J* = 12.7, 2.5 Hz, 1H), 7.36 (dd, *J* = 8.7, 0.9 Hz, 1H), 7.02 (t, *J* = 8.8 Hz, 1H), 4.73 (s, 2H), 3.07 (t, *J* = 5.3 Hz, 4H), 1.80 – 1.72 (m, 4H), 1.64 – 1.60 (m, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 180.99, 163.45, 155.29 (d, J_{CF} = 248.8 Hz), 143.28, 142.70, 141.87 (d, J_{CF} = 8.4 Hz), 137.13, 134.93, 130.99, 130.38 (d, J_{CF} = 9.9 Hz), 130.08, 126.52, 121.97, 119.44 (d, J_{CF} = 4.0 Hz), 116.22 (d, J_{CF} = 3.3 Hz), 109.30 (d, J_{CF} = 26.1 Hz), 51.80 (d, J_{CF} = 3.4 Hz, 2C), 26.85, 26.00 (2C), 24.12 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{22}H_{19}ClFN_6O_3S_2$ 533.0633; found 533.0621.

*1.2.32 6-chloro-2-(((1-(3-fluoro-4-morpholinophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5af**)*

Beige solid, Yield 77 %, mp: 147-149 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.78 (d, *J* = 2.4 Hz, 1H), 8.60 (d, *J* = 2.4 Hz, 1H), 8.16 (s, 1H), 7.48 (dd, *J* = 12.8, 2.5 Hz, 1H), 7.40 (ddd, *J* = 8.7, 2.5, 1.1 Hz, 1H), 7.02 (t, *J* = 8.8 Hz, 1H), 4.73 (s, 2H), 3.88 (t, *J* = 4.7 Hz, 4H), 3.14 (t, *J* = 4.7 Hz, 4H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.00, 163.48, 155.30 (d, J_{CF} = 249.5 Hz), 143.32, 142.81, 140.52 (d, J_{CF} = 8.0 Hz), 137.14, 134.98, 131.12 (d, J_{CF} = 9.5 Hz), 130.98, 130.10, 126.53, 122.00, 119.05 (d, J_{CF} = 3.9 Hz), 116.36 (d, J_{CF} = 3.5 Hz), 109.54 (d, J_{CF} = 25.8 Hz), 66.82, 50.64 (d, J_{CF} = 3.5 Hz), 26.83 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{21}H_{17}ClFN_6O_4S_2$ 535.0425; found 535.0413.

*1.2.33 6-chloro-2-(((1-(3-hydroxy-4-carboxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5ag**)*

Off-white solid, Yield 60 %, mp: 149-151 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.87 (s, 1H), 8.82 (d, *J* = 2.4 Hz, 1H), 8.64 (d, *J* = 2.4 Hz, 1H), 7.97 (d, *J* = 8.3 Hz, 1H), 7.50 (s, 1H), 7.49 (d, *J* = 8.5 Hz, 1H), 4.81 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.76, 169.10, 163.36, 162.53, 144.00, 143.57, 141.54, 140.40, 136.33, 133.94, 132.73, 130.91, 130.58, 126.65, 123.05, 110.84, 108.21, 26.40 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{18}H_{11}ClN_5O_6S_2$ 491.9839; found 491.9820.

*1.2.34 6-chloro-2-(((1-(3,4,5-trimethoxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5ah**)*

Yellow solid, Yield 58 %, mp: 125-127 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.82 (d, *J* = 2.4 Hz, 1H), 8.80 (s, 1H), 8.63 (d, *J* = 2.4 Hz, 1H), 7.17 (s, 2H), 4.82 (s, 2H), 3.87 (s, 6H), 3.71 (s, 3H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.88, 163.41, 153.96 (2C), 144.02, 142.76, 137.94, 136.31, 133.95, 132.81, 130.90, 130.61, 126.60, 123.36, 98.76 (2C), 60.67, 56.77 (2C), 26.52 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{20}H_{17}ClN_5O_6S_2$ 522.0309; found 522.0298.

*1.2.35 6-chloro-2-(((1-(naphthalen-2-yl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5ai**)*

Yellow solid, Yield 67 %, mp: 184-186 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.74 (d, *J* = 2.4 Hz, 1H), 8.60 (d, *J* = 2.4 Hz, 1H), 8.13 (s, 1H), 8.02 (dq, *J* = 7.5, 3.6 Hz, 1H), 7.96 (d, *J* = 8.0 Hz, 1H), 7.63 – 7.58 (m, 2H), 7.57 – 7.56 (m, 2H), 7.55 – 7.52 (m, 1H), 4.84 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.13, 163.38, 143.26, 142.15, 137.14, 134.92, 134.16, 133.43, 130.94, 130.55, 130.08, 128.32, 127.98, 127.14, 126.52, 126.30, 124.97, 123.53, 122.25, 26.85 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{21}H_{13}ClN_5O_3S_2$ 482.0148; found 482.0142.

*1.2.36 6-chloro-2-(((1-(pyridin-3-yl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5aj**)*

Off-white solid, Yield 69 %, mp: 193-195 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 9.15 (s, 1H), 8.85 (s, 1H), 8.81 (d, *J* = 2.4 Hz, 1H), 8.71 (s, 1H), 8.63 (d, *J* = 2.4 Hz, 1H), 8.31 (d, *J* = 8.0 Hz, 1H), 7.67 (s, 1H), 4.83 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.77, 163.37, 150.23, 150.21, 144.02, 143.54, 141.93, 136.33, 133.95, 130.90, 130.60, 128.42, 126.65, 123.40, 26.40 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{16}H_{10}ClN_6O_3S_2$ 432.9944; found 432.9982.

*1.2.37 6-chloro-2-(((1-(2-oxo-2H-chromen-6-yl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**5ak**)*

White solid, Yield 62 %, mp: 227-229 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.81 (d, *J* = 2.4 Hz, 1H), 8.79 (s, 1H), 8.63 (d, *J* = 2.4 Hz, 1H), 8.30 (d, *J* = 2.6 Hz, 1H), 8.15 (d, *J* = 9.6 Hz, 1H), 8.08 (dd, *J* = 8.9, 2.6 Hz, 1H), 7.63 (d, *J* = 8.9 Hz, 1H), 6.63 (d, *J* = 9.6 Hz, 1H), 4.83 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 179.83, 163.37, 159.92, 153.50, 144.01, 143.96, 143.41, 136.33, 133.94, 133.15, 130.89, 130.61, 126.63, 124.13, 123.16, 120.26, 119.98, 118.35, 118.19, 26.45 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{20}H_{11}ClN_5O_5S_2$ 499.9890; found 499.9866.

1.3 General procedure for synthesis of substituted 2-mercaptobenzothiazinone linked triazole derivatives (6a-f)

Synthesized by employing aforementioned click reaction procedure from substituted 2-mercaptobenzothiazinones (**4a-e**) and appropriate azides. Chromatography of crude product on silica gel eluting with EtOAc/Hex 1:3 mixture gave compound **6a-f** in 53-90% yield.

*1.3.1 6-fluoro-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**6a**)*

Yellow solid, Yield 60 %, mp: 145-147 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.55 (dt, *J* = 6.2, 3.1 Hz, 1H), 8.39 (dd, *J* = 7.4, 3.0 Hz, 1H), 8.26 (s, 1H), 7.68 (d, *J* = 8.9 Hz, 2H), 7.49 (d, *J* = 8.9 Hz, 2H), 4.74 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.34, 163.60, 160.95 (d, J_{CF} = 255.5 Hz), 143.79 (d, J_{CF} = 7.2 Hz), 143.10, 135.28, 134.69, 129.97 (2C), 128.33 (d, J_{CF} = 3.4 Hz), 127.26 (d, J_{CF} = 6.4 Hz), 124.38 (d, J_{CF} = 23.3 Hz), 122.12, 121.62 (2C), 118.44 (d, J_{CF} = 27.5 Hz), 26.75 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{10}ClFN_5O_3S_2$ 449.9898; found 449.9914.

*1.3.2 6-bromo-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**6b**)*

Yellow solid, Yield 56 %, mp: 193-195 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.92 (d, *J* = 2.3 Hz, 1H), 8.75 (d, *J* = 2.3 Hz, 1H), 8.25 (s, 1H), 7.68 (d, *J* = 8.9 Hz, 2H), 7.49 (d, *J* = 8.9 Hz, 2H), 4.73 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 180.94, 163.38, 143.17, 143.05, 140.12, 135.30, 134.70, 132.92, 131.53, 129.97 (2C), 126.50, 122.12, 122.04, 121.63 (2C), 26.79 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{10}BrClN_5O_3S_2$ 509.9097; found 509.9084.

*1.3.3 6-(trifluoromethyl)-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**6c**)*

Yellow solid, Yield 53 %, mp: 218-220 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 9.05 (d, *J* = 1.6 Hz, 1H), 8.85 (d, *J* = 1.8 Hz, 1H), 8.26 (s, 1H), 7.69 (d, *J* = 8.9 Hz, 2H), 7.50 (d, *J* = 8.9 Hz, 2H), 4.75 (s, 2H) ppm; ^{13}C NMR (125 MHz, $CDCl_3$) δ 181.03, 163.50, 142.97, 142.85, 136.57, 135.27, 134.76, 134.09 (q, J_{CF} = 3.2 Hz), 130.90 (q, J_{CF} = 35.7 Hz), 130.00 (2C), 126.68 (q, J_{CF} = 3.4 Hz), 126.39, 122.14, 122.12 (q, J_{CF} = 273.0 Hz), 121.62 (2C), 26.94 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{18}H_{10}ClF_3N_5O_3S_2$ 499.9866; found 499.9860.

*1.3.4 6-nitro-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-4H-benzo[e][1,3]thiazin-4-one (**6d**)*

Brown solid, Yield 77 %, mp: 237-239 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.91 (d, *J* = 2.4 Hz, 1H), 8.80 (s, 1H), 8.55 (dd, *J* = 8.8, 2.5 Hz, 1H), 8.05 (d, *J* = 8.8 Hz, 1H), 7.92 (d, *J* = 8.8 Hz, 2H), 7.68 (d, *J* = 8.8 Hz, 2H), 4.82 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 177.43, 164.29, 148.14, 143.51, 142.10, 135.74, 133.55, 130.35 (2C), 128.30, 127.40, 125.12, 123.57, 123.09, 122.35 (2C), 26.25 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{11}ClN_5O_3S_2$ 431.9992; found 432.0023.

*1.3.5 6-chloro-2-(((1-(4-chlorobenzyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**6e**)*

Yellow solid, Yield 90 %, mp: 149-151 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 8.82 (d, *J* = 2.4 Hz, 1H), 8.63 (d, *J* = 2.4 Hz, 1H), 8.17 (s, 1H), 7.43 (d, *J* = 8.4 Hz, 2H), 7.32 (d, *J* = 8.4 Hz, 2H), 5.60 (s, 2H), 4.72 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 180.03, 163.31, 144.05, 142.15, 136.28, 135.35, 133.93, 133.33, 130.91, 130.62, 130.32 (2C), 129.21 (2C), 126.52, 124.86, 52.52, 26.64 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{18}H_{12}Cl_2N_5O_3S_2$ 479.9759; found 479.9799.

*1.3.6 2-(4-(((6-chloro-8-nitro-4-oxo-4H-benzo[e][1,3]thiazin-2-yl)thio)methyl)-1H-1,2,3-triazol-1-yl)-N-(4-chlorophenyl)acetamide (**6f**)*

Brown solid, Yield 65 %, mp: 161-163 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 10.60 (s, 1H), 8.82 (d, *J* = 2.3 Hz, 1H), 8.63 (d, *J* = 2.3 Hz, 1H), 8.16 (s, 1H), 7.59 (d, *J* = 8.8 Hz, 2H), 7.39 (d, *J* = 8.8 Hz, 2H), 5.33 (s, 2H), 4.77 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 180.09, 164.73, 163.34, 144.06, 137.77, 136.28, 133.93, 130.92, 130.62, 129.29 (3C), 127.84, 126.56, 126.46, 121.23 (2C), 52.76, 26.65 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{19}H_{13}Cl_2N_6O_4S_2$ 522.9817; found 522.9825.

1.4 General procedure for synthesis of substituted 2-aminobenzothiazinone linked triazole derivatives (9a-d)

Synthesis was carried out by using similar procedure as developed for **5a-ak** from 6-substituted-8-nitro-2-(prop-2-yn-1-ylamino)-4H-benzo[e][1,3]thiazin-4-one **8a-d** and 1-azido-4-chlorobenzene. Crude product was purified by recrystallization from DMF: EtOAc 1:10 to furnish compound **9a-d** in 27-39% yield.

*1.4.1 6-chloro-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)amino)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**9a**)*

White solid, Yield 39 %, mp: 270-272 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 9.99 (s, 1H), 8.81 (s, 1H), 8.69 (d, *J* = 2.1 Hz, 1H), 8.57 (d, *J* = 2.0 Hz, 1H), 7.95 (d, *J* = 8.6 Hz, 2H), 7.68 (d, *J* = 8.7 Hz, 2H), 4.83 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 166.00, 163.34, 144.71, 144.57, 135.80, 135.68, 133.42, 132.05, 130.34 (2C), 130.29, 129.79, 127.22, 122.29, 122.15 (2C), 37.61 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{11}Cl_2N_6O_3S$ 448.9990; found 448.9981.

*1.4.2 6-fluoro-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)amino)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**9b**)*

White solid, Yield 33 %, mp: 254-256 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 9.95 (s, 1H), 8.81 (s, 1H), 8.60 (dt, *J* = 7.3, 3.6 Hz, 1H), 8.43 (dt, *J* = 7.8, 3.9 Hz, 1H), 7.95 (d, *J* = 8.8 Hz, 2H), 7.68 (d, *J* = 8.8 Hz, 2H), 4.83 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 166.16, 163.70, 159.86 (d, J_{CF} = 248.7 Hz), 144.78 (d, J_{CF} = 7.8 Hz), 144.77, 135.81, 133.42, 130.35 (2C), 127.81 (d, J_{CF} = 6.3 Hz), 127.24 (d, J_{CF} = 2.6 Hz), 123.30 (d, J_{CF} = 23.5 Hz), 122.28, 122.16 (2C), 118.28 (d, J_{CF} = 27.9 Hz), 37.59 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{11}ClFN_6O_3S$ 433.0286; found 433.0274.

1.4.3 6-bromo-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)amino)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**9c**)

White solid, Yield 36 %, mp: 284-286 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 9.99 (s, 1H), 8.81 (s, 1H), 8.77 (d, J = 2.3 Hz, 1H), 8.68 (d, J = 2.3 Hz, 1H), 7.95 (d, J = 8.9 Hz, 2H), 7.68 (d, J = 8.9 Hz, 2H), 4.82 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 165.91, 163.28, 144.70, 144.51, 138.57, 135.81, 133.42, 132.43, 130.74, 130.33 (2C), 127.28, 122.29, 122.16 (2C), 119.67, 37.62 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{17}H_{11}BrClN_6O_3S$ 492.9485; found 492.9473.

1.4.4 6-(trifluoromethyl)-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)amino)-8-nitro-4H-benzo[e][1,3]thiazin-4-one (**9d**)

Off-white solid, Yield 27 %, mp: 263-265 °C; ^{1}H NMR (500 MHz, DMSO-d_6) δ 10.10 (s, 1H), 8.86 (s, 1H), 8.83 (s, 1H), 8.81 (s, 1H), 7.95 (d, J = 8.7 Hz, 2H), 7.68 (d, J = 8.7 Hz, 2H), 4.85 (s, 2H) ppm; ^{13}C NMR (125 MHz, DMSO-d_6) δ 166.09, 163.08, 144.57, 144.29, 136.26, 135.78, 133.43, 132.07 (q, J_{CF} = 3.1 Hz), 130.33 (2C), 127.38 126.61 (q, J_{CF} = 34.8 Hz), 126.98, 126.61 (q, J_{CF} = 3.7 Hz), 123.12 (q, J_{CF} = 272.7 Hz), 122.34, 122.13 (2C), 37.69 ppm; HRMS-QTOF (ESI): m/z calcd. for $[M+H]^+$ $C_{18}H_{11}ClF_3N_6O_3S$ 483.0254; found 483.0250.

1.5 Antibiotic susceptibility testing against mycobacteria

Antimycobacterial susceptibility testing for newly synthesized compounds was carried out by resazurin microtiter plate assay (REMA) employing broth dilution method.[3] 10 mg/mL stock solutions of test and control compounds were prepared in DMSO and stored in -20 °C. Mycobacterial cultures were inoculated in Middlebrook 7H9 enriched (Difco, Becton, NJ, USA) media supplemented with 10% ADC-Tween-80 (Bovine Serum Albumin, Dextrose, 0.2% glycerol and 0.05% Tween-80) and OD600 of cultures was measured, followed by dilution to achieve ~10^6 CFU/mL. The final test conc. ranged from 64 to 0.03 µg/mL prepared by two-fold serial diluted fashion from stock solution with 2.5 mL of each concentration added per well of a 96-well round bottom microtiter plate. Later, 97.5 mL of bacterial suspension was added to each well containing the test compound along with appropriate controls. Presto blue (Thermo Fisher, USA) resazurin-based dye was used for the visual identification of active compounds.[4] MIC of active compound was determined as lowest concentration of compound that inhibited visible growth after incubation period. The MIC results evaluated were obtained from one among the conc. of 0.03, 0.06, 0.12, 0.25, 0.5, 1, 2, 4, 8, 16, 32, 64 and > 64 mg/mL of test solution. MIC was detected on basis of visual colour change of culture medium from blue to pink. The lowest conc. that prevents this colour change was recorded as MIC, the determination of which was performed in triplicate and consistent MIC value obtained was reported as final analysed MIC. i.e., the MIC result reported is the one obtained twice or thrice out of three times experiment. Average of the thrice replicate was not taken as MIC, as it would represent unjustified concentrations. The MIC plates were incubated at 37 °C for 7 days for Mtb and 48 h for other mycobacterial pathogens.

1.6 Antibiotic susceptibility testing against bacterial pathogen panel

Antibiotic susceptibility testing was carried out on the newly synthesized compounds by determining the Minimum Inhibitory Concentration (MIC) with reference to the standard CLSI guidelines.[5] MIC is defined as the minimum concentration of compound at which visible bacterial growth is inhibited. Bacterial cultures were grown in Mueller-Hinton cation supplemented broth (CAMHB). Optical density (OD600) of the cultures was measured, followed by dilution for ~10^6 CFU/mL. This inoculum was added into a series of test wells in a microtiter plate that contained various concentrations of compound under test ranging from 64 to 0.03 µg/mL. Controls i.e., cells alone and media alone (without compound + cells) and levofloxacin used as a reference standard. Plates were incubated at 37 °C for 16-18 h followed by observations of MIC values by the absence or presence of visible growth. For each compound, MIC determinations were performed independently thrice using duplicate samples each time.

1.7 Cell cytotoxicity assay

Compounds were examined for their cell toxicity against Vero cells using MTT assay.[6] ~10^3 cells/ well were seeded in 96 well plate and incubated at 37 °C with a 5% CO_2 atmosphere. After 24 h, compound was added ranging from 100 to 5 mg/L and incubated for 72 h at 37 °C with 5% CO_2 atmosphere. After the incubation was over, MTT was added at 5 mg/L in each well, incubated at 37 °C for further 4 h, residual medium was discarded, 0.1 mL of DMSO was added to solubilise the formazan crystals and OD was taken at 540 nm for the calculation of CC_{50}. CC_{50} is defined as the lowest concentration of compound which leads to a 50% reduction in cell viability.

1.8 Computational studies

To rationalize the experimental results obtained, molecular docking studies were performed at the active site of Decaprenylphosphoryl-β-D-ribose 2′-epimerase (DprE1) by employing covalent docking module in GLIDE of Schrodinger suite release 2020-3. The protein crystal structure of DprE1 in complex with PBTZ169 was retrieved from the RCSB Protein Data Bank

(PDB code: 4NCR, resolution 1.88 Å).[7] Following this, bond between covalently bound cocrystal PBTZ169 and Cys387 was deleted prior to being prepared by using Protein Preparation Wizard of Maestro. Missing amino acid residues and side chains were added using Prime module of Maestro followed by optimization and energy minimization. The bound co-crystallized ligand was used to define the active site. All ligand molecules (nitroso form of compound **5o**, **9a-d**) were built and optimized using Maestro Molecule Builder and OPLS-3e force field in LigPrep modules of Schrodinger software. Subsequently, reaction type for covalent bonding was defined and the prepared ligands were docked at active site of DprE1.

1.9 Time-kill kinetic study

The presence or absence of bactericidal activity was assessed by time-kill method. Mtb H37Rv was diluted to ~10^5 CFU/mL, added to 96 well plate along with compounds and appropriate controls at 1x and 10x MIC, followed by incubation at 37 °C for 6 days. For evaluating the reduction in CFU, 0.03 mL sample was removed at various time-points, serially two-fold diluted in 0.27 ml normal saline and 0.1 ml of the respective dilution was spread on Middlebrook 7H11 agar plate supplemented with OADC. The plates were incubated at 37 °C for 1 week and colonies were enumerated. Kill curves were constructed by counting the colonies from plates and plotting the CFU/mL of surviving bacteria at each time point in the presence and absence of compound.

Table S1. Antimycobacterial screening results for compounds 5a-ak, 6a-f and 9a-d

Entry	Compound code	MIC(µg/ml)			
		M. tuberculosis H37Rv ATCC 27294	*M. abscessus ATCC 19977*	*M. fortuitum ATCC 6841*	*M. chelonae ATCC 35752*
1	**5a**	32	>64	>64	>64
2	**5b**	16	>64	>64	>64
3	**5c**	32	>64	>64	>64
4	**5d**	**8**	>64	>64	>64
5	**5e**	16	>64	>64	>64
6	**5f**	**8**	>64	>64	>64
7	**5g**	**8**	>64	>64	>64
8	**5h**	32	>64	>64	>64
9	**5i**	64	>64	>64	>64
10	**5j**	32	>64	>64	>64
11	**5k**	64	>64	>64	>64
12	**5l**	>64	>64	>64	>64
13	**5m**	>64	>64	>64	>64

14	**5n**	**8**	>64	>64	>64
15	**5o**	**0.5**	>64	>64	>64
16	**5p**	**4**	>64	>64	>64
17	**5q**	**8**	>64	>64	>64
18	**5r**	32	>64	>64	>64
19	**5s**	**8**	>64	>64	>64
20	**5t**	32	>64	>64	>64
21	**5u**	16	>64	>64	>64
22	**5v**	64	>64	>64	>64
23	**5w**	>64	>64	>64	>64
24	**5x**	>64	>64	>64	>64
25	**5y**	64	>64	>64	>64
26	**5z**	32	>64	>64	>64
27	**5aa**	**8**	>64	>64	>64
28	**5ab**	**8**	>64	>64	>64
29	**5ac**	32	>64	>64	>64
30	**5ad**	>64	>64	>64	>64
31	**5ae**	64	>64	>64	>64
32	**5af**	64	>64	>64	>64
33	**5ag**	>64	>64	>64	>64
34	**5ah**	64	>64	>64	>64
35	**5ai**	64	>64	>64	>64
36	**5aj**	32	>64	>64	>64
37	**5ak**	32	>64	>64	>64
38	**6a**	**2**	>64	>64	>64
39	**6b**	**1**	>64	>64	>64
40	**6c**	**2**	>64	>64	>64
41	**6d**	>64	>64	>64	>64
42	**6e**	32	>64	>64	>64
43	**6f**	>64	>64	>64	>64
44	**9a**	**0.03**	>64	>64	>64
45	**9b**	**0.12**	>64	>64	>64
46	**9c**	**0.03**	>64	>64	>64
47	**9d**	**0.06**	>64	>64	>64
48	**INH**	0.03	n.d.	n.d.	n.d.
49	**RIF**	0.06	n.d.	n.d.	n.d.
50	**STR**	1	n.d.	n.d.	n.d.
51	**ETB**	1	n.d.	n.d.	n.d.

n.d.: not determined

Table S2. Antibacterial screening results of compounds 5a-ak, 6a-f and 9a-d

Entry	Compd. code	MIC(μg/ml)				
		E. coli ATCC 25922	*S. aureus* ATCC 29213	*K. pneumoniae* BAA 1705	*A. baumannii* BAA 1605	*P. aeruginosa* ATCC 27853
1	**5a**	>64	>64	>64	>64	>64
2	**5b**	>64	64	>64	>64	>64
3	**5c**	>64	64	>64	>64	>64
4	**5d**	>64	64	>64	>64	>64
5	**5e**	>64	32	>64	>64	>64
6	**5f**	>64	>64	>64	>64	>64
7	**5g**	>64	32	>64	>64	>64
8	**5h**	>64	32	>64	>64	>64
9	**5i**	>64	64	>64	>64	>64
10	**5j**	>64	>64	>64	>64	>64
11	**5k**	>64	32	>64	>64	>64
12	**5l**	>64	64	>64	>64	>64
13	**5m**	>64	64	>64	>64	>64
14	**5n**	>64	64	>64	>64	>64
15	**5o**	>64	32	>64	>64	>64
16	**5p**	>64	32	>64	>64	>64
17	**5q**	>64	32	>64	>64	>64
18	**5r**	>64	>64	>64	>64	>64
19	**5s**	>64	32	>64	>64	>64
20	**5t**	>64	>64	>64	>64	>64
21	**5u**	>64	>64	>64	>64	>64
22	**5v**	>64	>64	>64	>64	>64
23	**5w**	>64	32	>64	>64	>64
24	**5x**	>64	64	>64	>64	>64
25	**5y**	>64	64	>64	>64	>64
26	**5z**	>64	64	>64	>64	>64
27	**5aa**	>64	>64	>64	>64	>64
28	**5ab**	>64	64	>64	>64	>64
29	**5ac**	>64	32	>64	>64	>64
30	**5ad**	>64	>64	>64	>64	>64
31	**5ae**	>64	64	>64	>64	>64
32	**5af**	>64	64	>64	>64	>64
33	**5ag**	>64	64	>64	>64	>64
34	**5ah**	>64	64	>64	>64	>64
35	**5ai**	>64	32	>64	>64	>64

36	**5aj**	>64	64	>64	>64	>64
37	**5ak**	>64	32	>64	>64	>64
38	**6a**	>64	64	>64	>64	>64
39	**6b**	>64	64	>64	>64	>64
40	**6c**	>64	64	>64	>64	>64
41	**6d**	>64	64	>64	>64	>64
42	**6e**	>64	>64	>64	>64	>64
43	**6f**	>64	>64	>64	>64	>64
44	**9a**	>64	>64	>64	>64	>64
45	**9b**	>64	>64	>64	>64	>64
46	**9c**	>64	>64	>64	>64	>64
47	**9d**	>64	>64	>64	>64	>64
48	Levofloxacin	0.0156	0.125	64	8	1

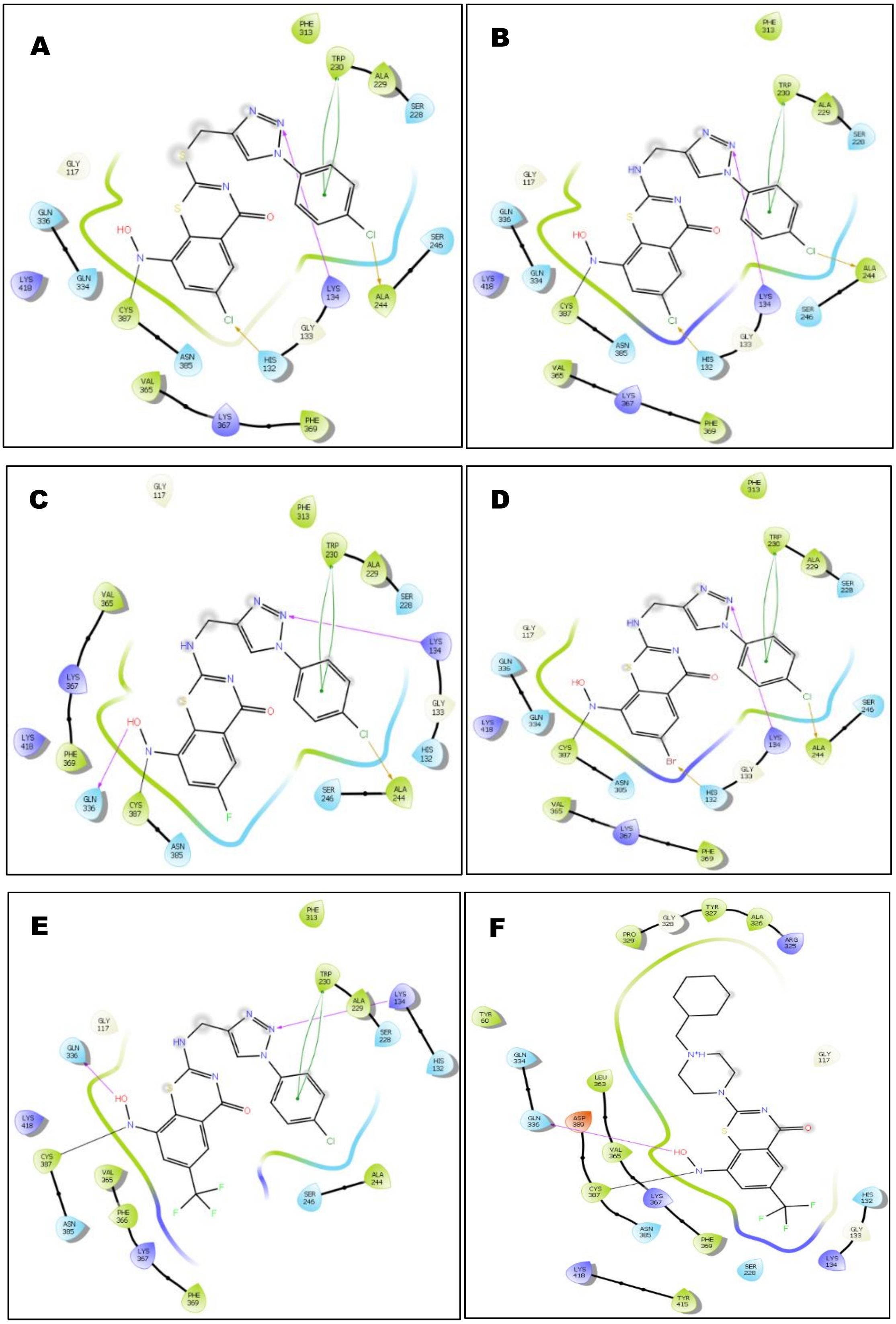


Figure S1. 2D docking pose of compound 5o (A), 9a (B), 9b (C), 9c (D), 9d (E) and co-crystal ligand PBTZ169 (F) in the binding site of Mtb DprE1 protein.

Table S3. GLIDE covalent docking results for compound 5o, 9a-d and co-crystal ligand at the active site of Mtb DprE1 (PDB ID: 4NCR).

			Interactions			
Entry	Ligand	cdock affinity	H-bond	π -π	Hydrophobic	Covalent (Cys387)
1	**5o**	-5.296	Lys134	Trp230	Ser228, Ala229, Ala244, Ser246, Phe313, Val365, Phe369, Asn385	Positive
2	**9a**	-5.068	Lys134	Trp230	Ser228, Ala229, Ala244, Ser246, Phe313, Val365, Asn385	Positive
3	**9b**	-4.599	Lys134, Gln336	Trp230	Ser228, Ala229, Ala244, Ser246, Asn385	Positive
4	**9c**	-4.97	Lys134	Trp230	Ser228, Ala229, Ala244, Ser246, Lys367, Phe369, Asn385	Positive
5	**9d**	-6.241	Lys134, Gln336, Lys418	Trp230	Trp111, Phe199, Ser228, Ala229, Ala244, Ser246, Phe313, Val365, Phe366, Lys367, Phe369, Asn385	Positive
6	**PBTZ169 (Cocrystal)**	-4.864	Gln336	-	Tyr314, Arg325, Ala326, Tyr327, Gly328, Pro329, Val365, Phe366, Lys367, Phe369, Asn385	Positive

2 Determination of ^{1}H NMR signals for some representative final compounds

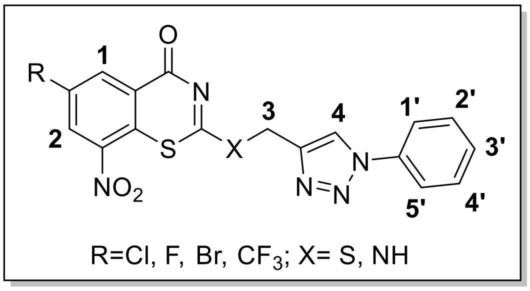


Fig. S2. Representative structure numbered as per convenience in proton identification.

a) 6-chloro-2-(((1-(2-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one ***(5c)***

^{1}H NMR (500 MHz, $CDCl_3$) δ 8.76 (d, *J* = 2.4 Hz, 1H, H2), 8.60 (d, *J* = 2.4 Hz, 1H, H1), 8.20 (s, 1H, H4), 7.60 (dd, *J* = 7.4, 2.1 Hz, 1H, H5'), 7.57 (dd, *J* = 7.5, 1.8 Hz, 1H, H2'), 7.46 (td, *J* = 7.5, 1.9 Hz, 1H, H4'), 7.43 (td, *J* = 7.5, 1.8 Hz, 1H, H3'), 4.78 (s, 2H, H3) ppm.

b) 6-chloro-2-(((1-(3-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one ***(5e)***

^{1}H NMR (500 MHz, $CDCl_3$) δ 8.79 (d, *J* = 2.4 Hz, 1H, H2), 8.61 (d, *J* = 2.4 Hz, 1H, H1), 8.25 (s, 1H, H4), 7.79 (t, *J* = 1.9 Hz, 1H, H1'), 7.62 (d, *J* = 7.9 Hz, 1H, H5'), 7.46 (t, *J* = 8.0 Hz, 1H, H4'), 7.41 (d, *J* = 8.1 Hz, 1H, H3'), 4.74 (s, 2H, H3) ppm.

c) *6-chloro-2-(((1-(3-nitrophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one* ***(5h)***

^{1}H NMR (500 MHz, DMSO-d_6) δ 9.01 (s, 1H, H4), 8.82 (d, *J* = 2.1 Hz, 1H, H2), 8.70 (s, 1H, H1'), 8.64 (d, *J* = 2.1 Hz, 1H, H1), 8.38 (d, *J* = 7.5 Hz, 1H, H3'), 8.34 (d, *J* = 7.7 Hz, 1H, H5'), 7.91 (t, *J* = 8.2 Hz, 1H, H4'), 4.85 (s, 2H, H3) ppm.

d) *6-chloro-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one* ***(5o)***

^{1}H NMR (500 MHz, DMSO-d_6) δ 8.82 (d, *J* = 2.4 Hz, 1H, H2), 8.79 (s, 1H, H4), 8.64 (d, *J* = 2.4 Hz, 1H, H1), 7.92 (d, *J* = 8.9 Hz, 2H, H1', H5'), 7.68 (d, *J* = 8.9 Hz, 2H, H2', H4'), 4.81 (s, 2H, H3) ppm.

e) *6-chloro-2-(((1-(4-carboxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one* ***(5w)***

^{1}H NMR (500 MHz, DMSO-d_6) δ 13.25 (brs, 1H, COOH), 8.88 (s, 1H, H4), 8.83 (s, 1H, H2), 8.64 (s, 1H, H1), 8.14 (d, *J* = 7.6 Hz, 2H, H2', H4'), 8.03 (d, *J* = 7.8 Hz, 2H, H1', H5'), 4.83 (s, 2H, H3) ppm.

f) *6-chloro-2-(((1-(2,4-dimethylphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one* ***(5z)***

^{1}H NMR (500 MHz, $CDCl_3$) δ 8.76 (d, *J* = 2.4 Hz, 1H, H2), 8.60 (d, *J* = 2.4 Hz, 1H, H1), 7.92 (s, 1H, H4), 7.19 (d, *J* = 7.9 Hz, 1H, H5'), 7.16 (s, 1H, H2'), 7.11 (d, *J* = 8.0 Hz, 1H, H4'), 4.77 (s, 2H, H3), 2.39 (s, 3H, 3'-CH3), 2.15 (s, 3H, 1'-CH3) ppm.

g) *6-chloro-2-(((1-(3-chloro-4-fluorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one* ***(5ab)***

^{1}H NMR (500 MHz, DMSO-d_6) δ 8.83 (d, *J* = 2.4 Hz, 1H, H2), 8.81 (s, 1H, H4), 8.64 (d, *J* = 2.4 Hz, 1H, H1), 8.20 (dd, *J* = 6.4, 2.7 Hz, 1H, H1'), 7.94 (ddd, *J* = 9.0, 4.1, 2.7 Hz, 1H, H5'), 7.68 (t, *J* = 9.0 Hz, 1H, H4'), 4.82 (s, 2H, H3) ppm.

h) *6-chloro-2-(((1-(3,5-dimethoxyphenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one* ***(5ad)***

[1]H NMR (500 MHz, DMSO-d_6) δ 8.82 (d, *J* = 2.4 Hz, 1H, H2), 8.80 (s, 1H, H4), 8.63 (d, *J* = 2.4 Hz, 1H, H1), 7.04 (d, *J* = 2.2 Hz, 2H, H1', H5'), 6.62 (t, *J* = 2.1 Hz, 1H, H3'), 4.81 (s, 2H, H3), 3.83 (s, 6H, 2'-OCH3, 4'-OCH3) ppm.

i) *6-(trifluoromethyl)-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)thio)-8-nitro-4H-benzo[e][1,3]thiazin-4-one* ***(6c)***

[1]H NMR (500 MHz, $CDCl_3$) δ 9.05 (d, *J* = 1.6 Hz, 1H, H2), 8.85 (d, *J* = 1.8 Hz, 1H, H1), 8.26 (s, 1H, H4), 7.69 (d, *J* = 8.9 Hz, 2H, H1', H5'), 7.50 (d, *J* = 8.9 Hz, 2H, H2', H4'), 4.75 (s, 2H, H3) ppm.

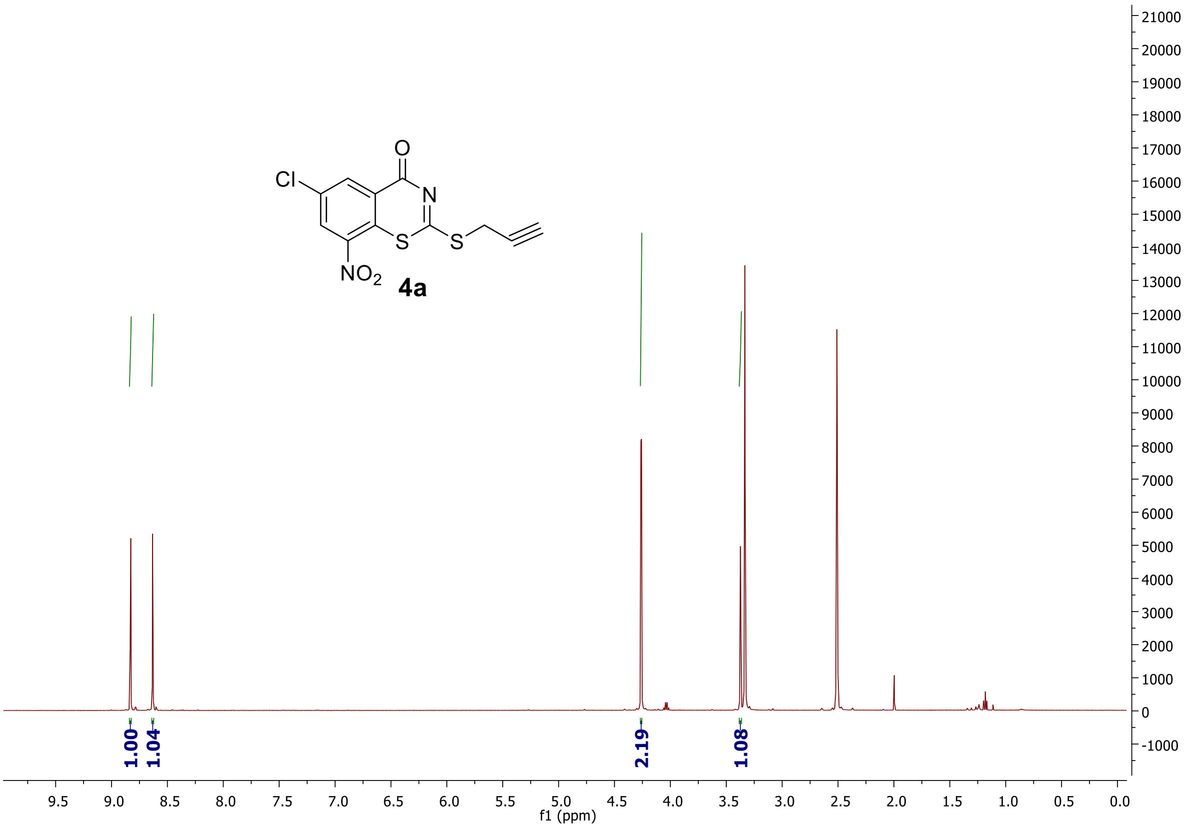
j) *6-chloro-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)amino)-8-nitro-4H-benzo[e][1,3]thiazin-4-one* ***(9a)***

[1]H NMR (500 MHz, DMSO-d_6) δ 9.99 (s, 1H, NH), 8.81 (s, 1H, H4), 8.69 (d, *J* = 2.1 Hz, 1H, H2), 8.57 (d, *J* = 2.0 Hz, 1H, H1), 7.95 (d, *J* = 8.6 Hz, 2H, H1', H5'), 7.68 (d, *J* = 8.7 Hz, 2H, H2', H4'), 4.83 (s, 2H, H3) ppm.

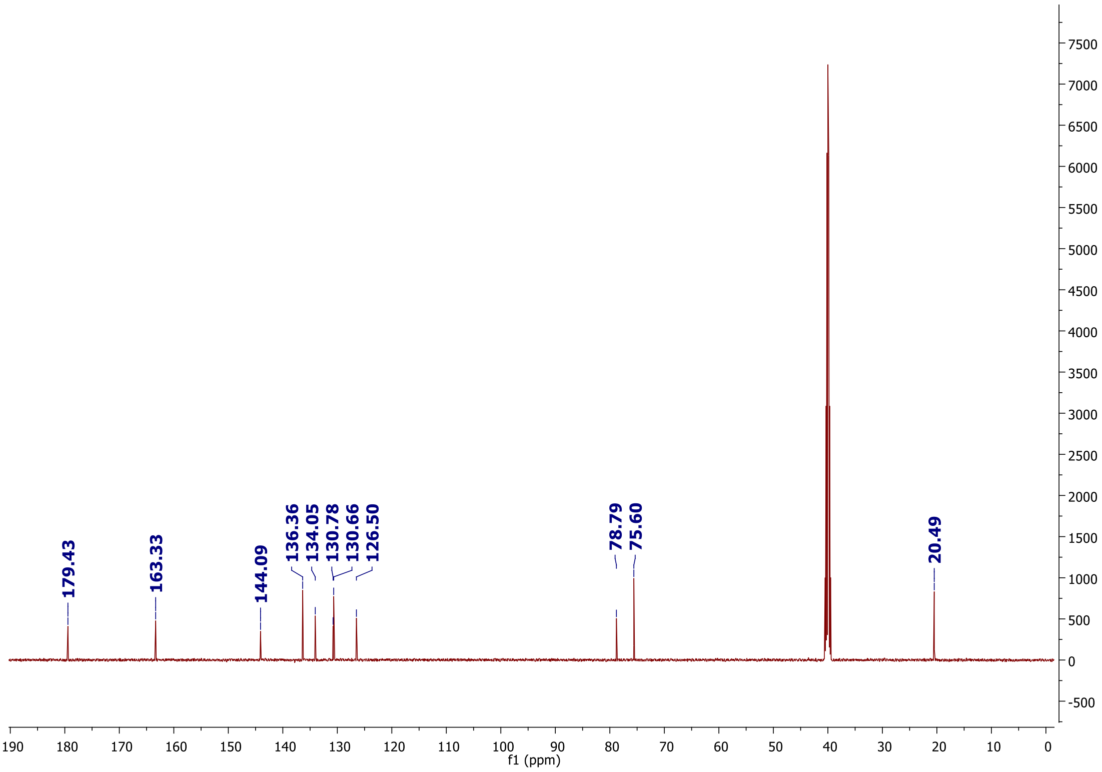
k) *6-(trifluoromethyl)-2-(((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methyl)amino)-8-nitro-4H-benzo[e][1,3]thiazin-4-one* ***(9d)***

[1]H NMR (500 MHz, DMSO-d_6) δ 10.10 (s, 1H, NH), 8.86 (s, 1H, H2), 8.83 (s, 1H, H4), 8.81 (s, 1H, H1), 7.95 (d, *J* = 8.7 Hz, 2H, H1', H5'), 7.68 (d, *J* = 8.7 Hz, 2H, H2', H4'), 4.85 (s, 2H, H3) ppm.

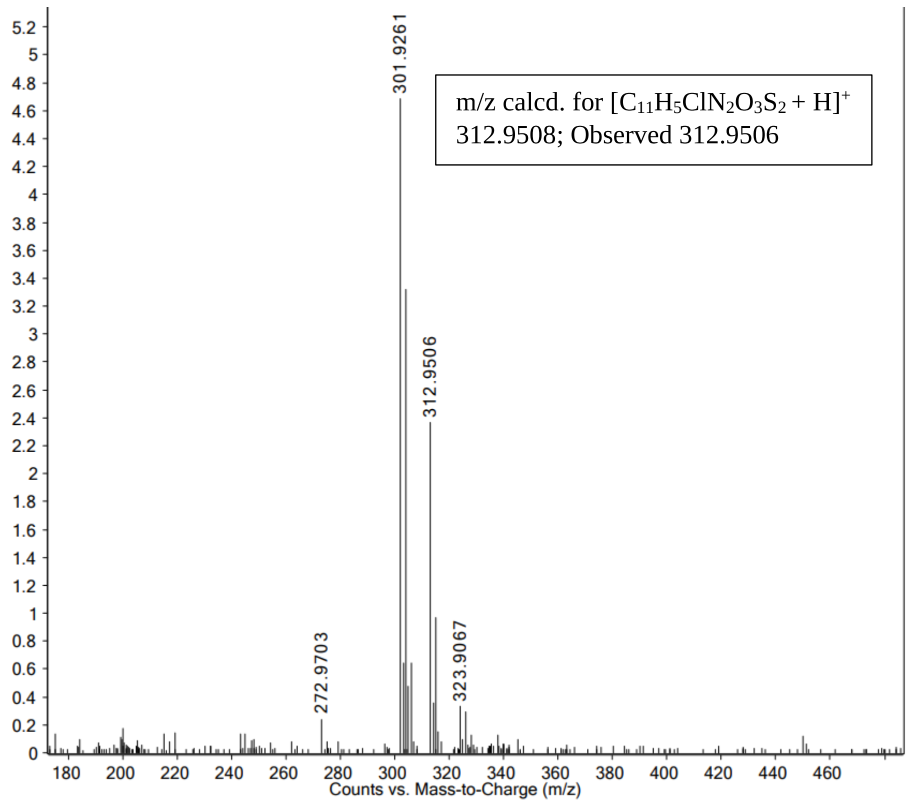
3 [1]H, [13]C and HRMS spectra of intermediates 4a-e, 8a-d



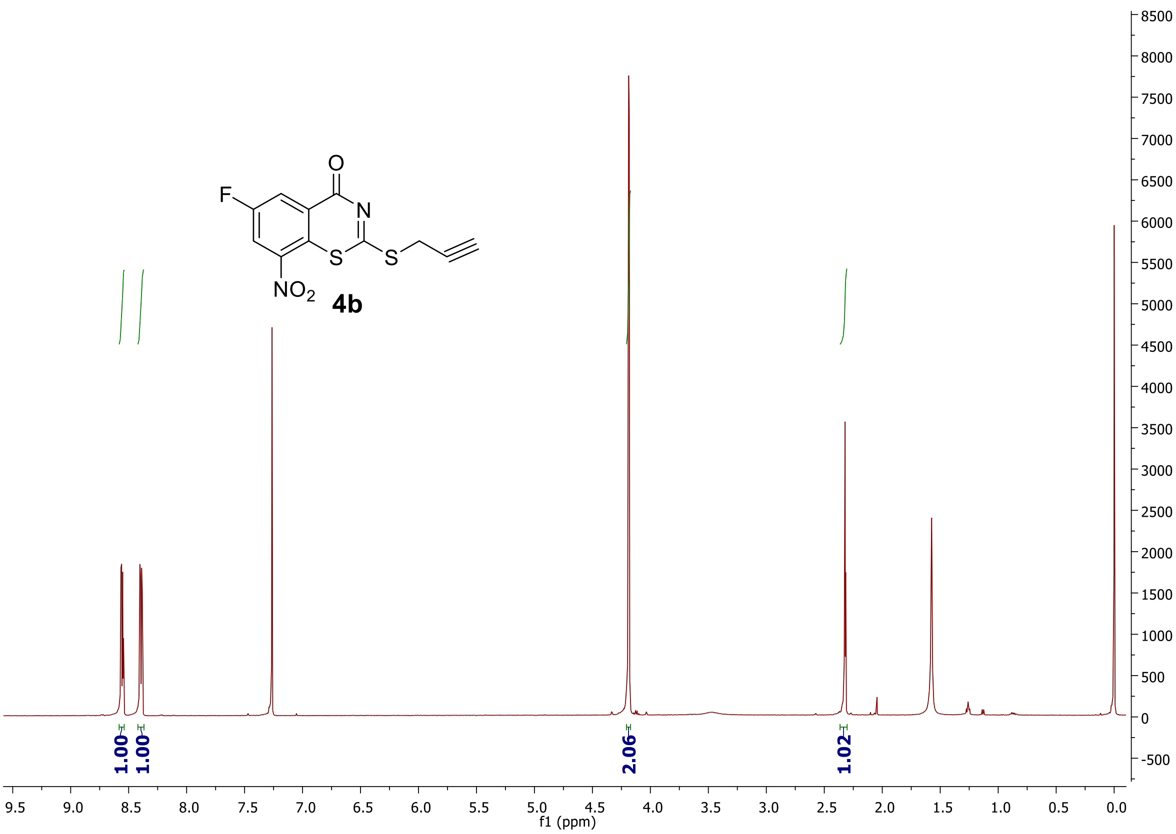
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **4a**



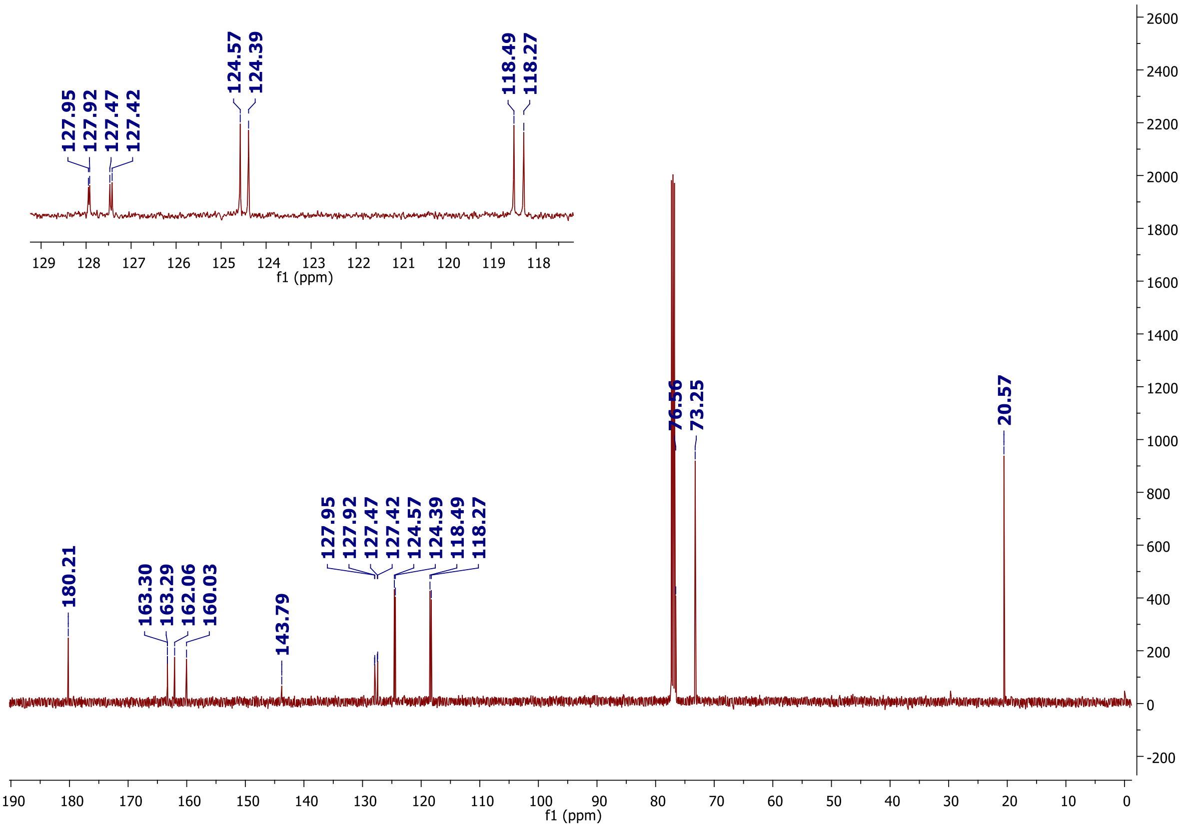
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **4a**



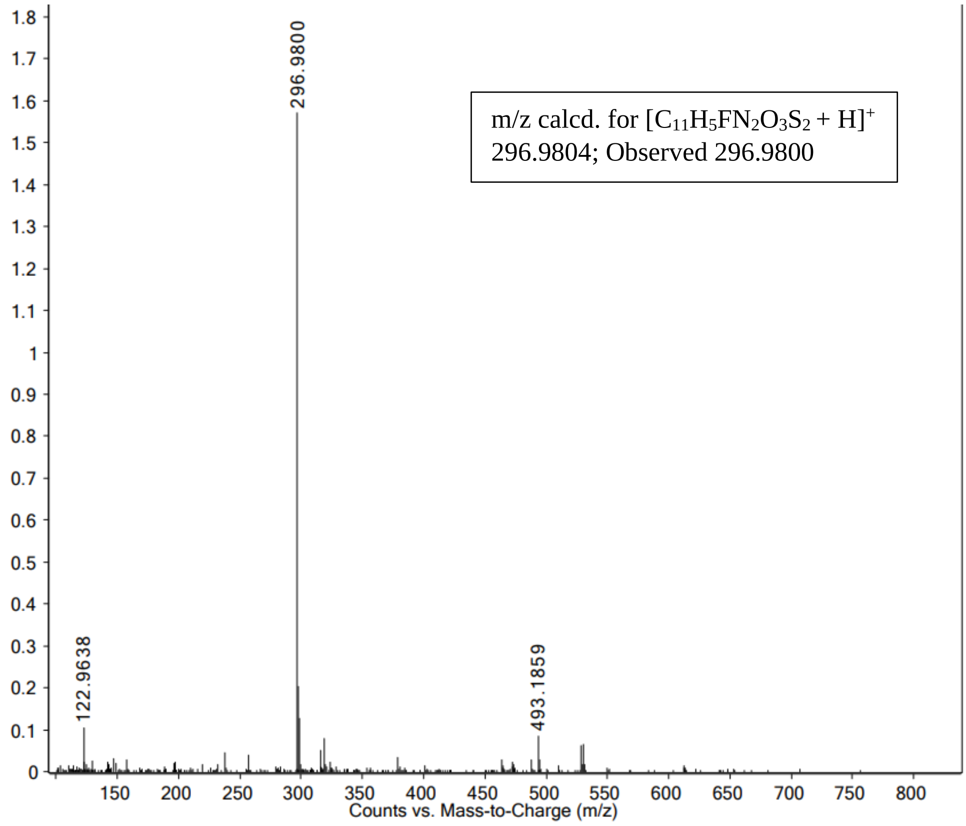
Mass spectrum of compound **4a**



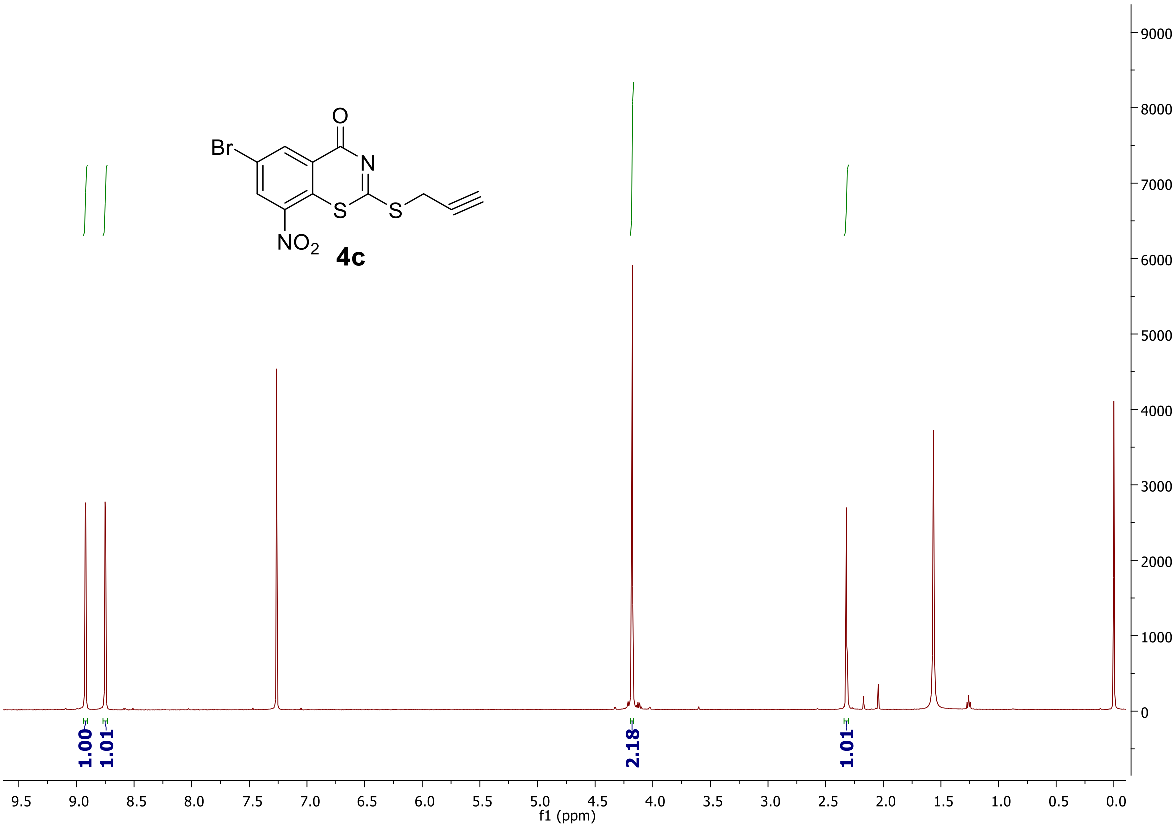
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **4b**



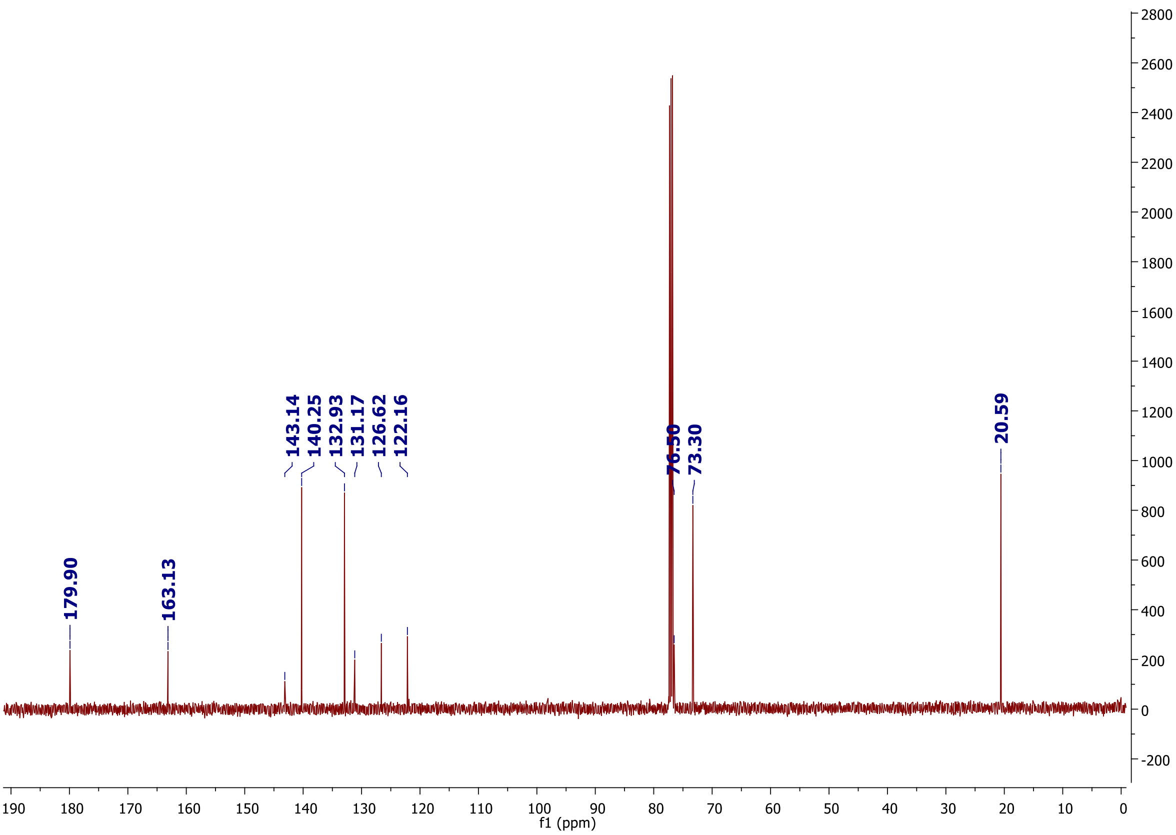
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **4b**



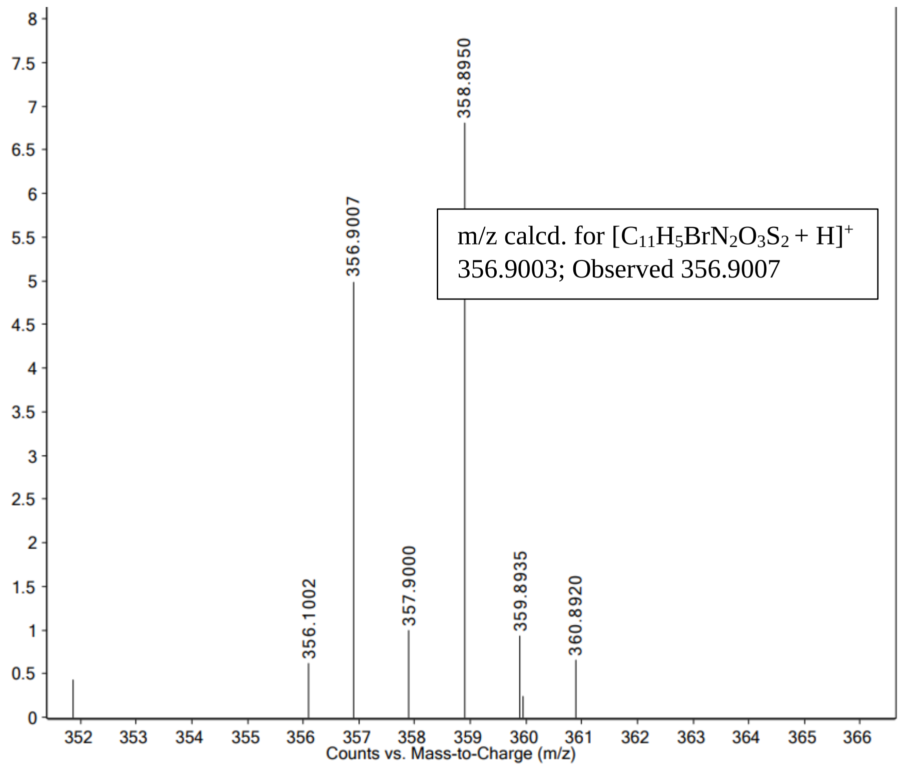
Mass spectrum of compound **4b**



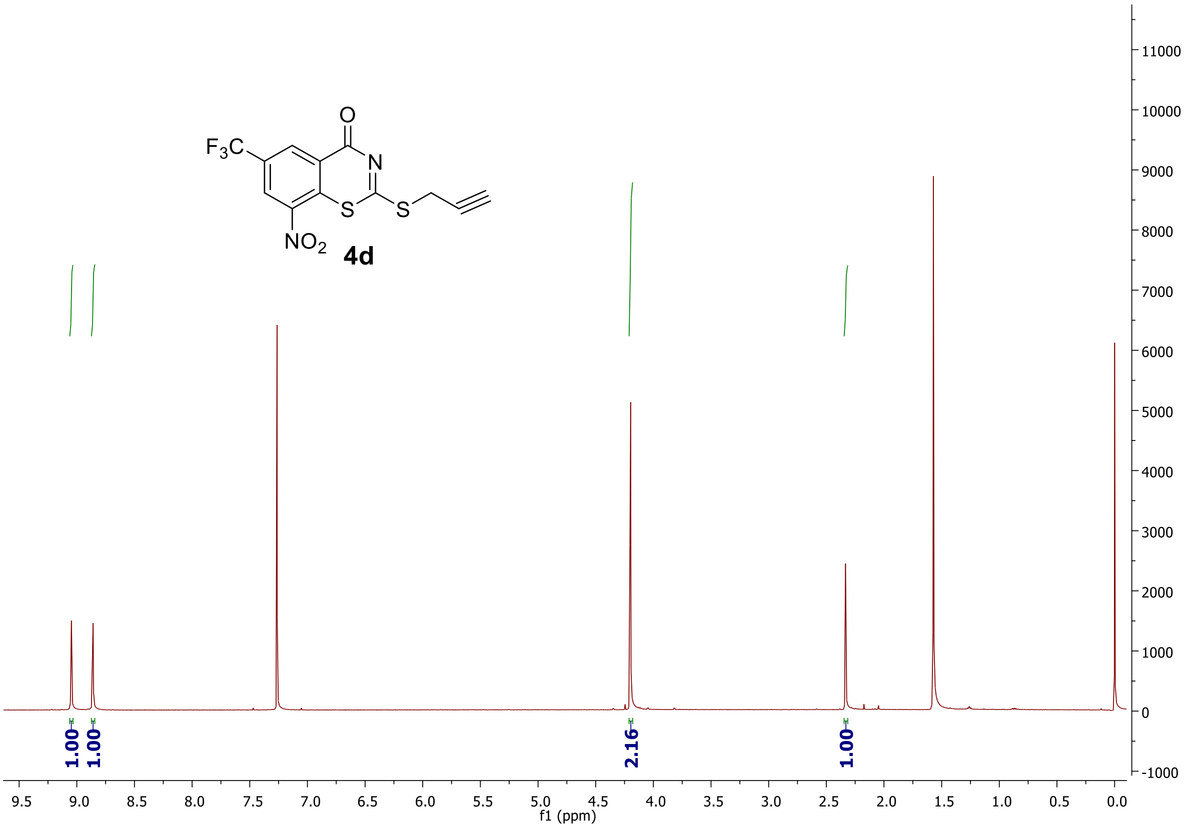
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **4c**



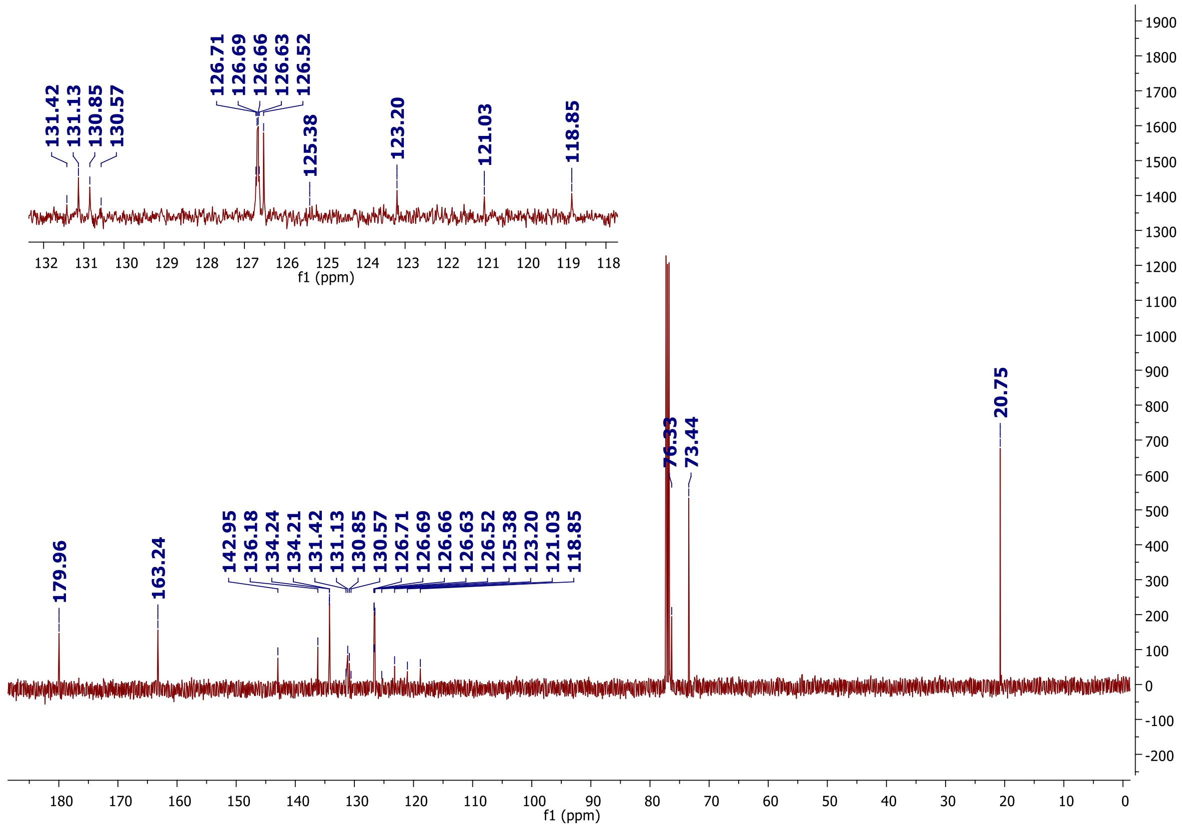
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **4c**



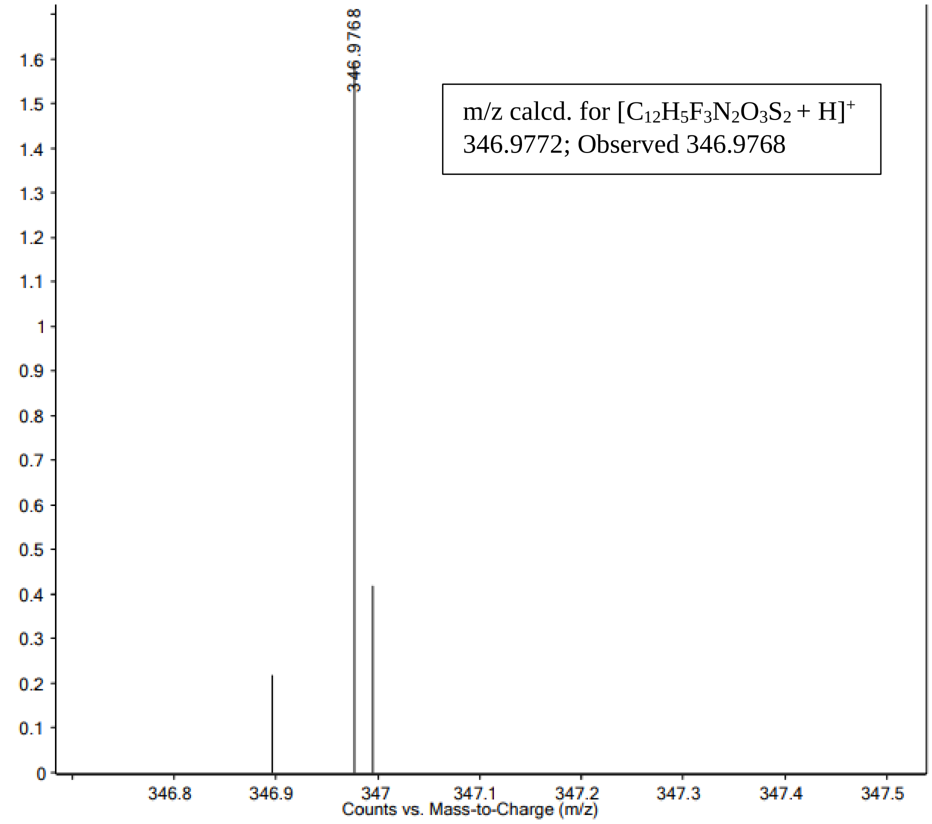
Mass spectrum of compound **4c**



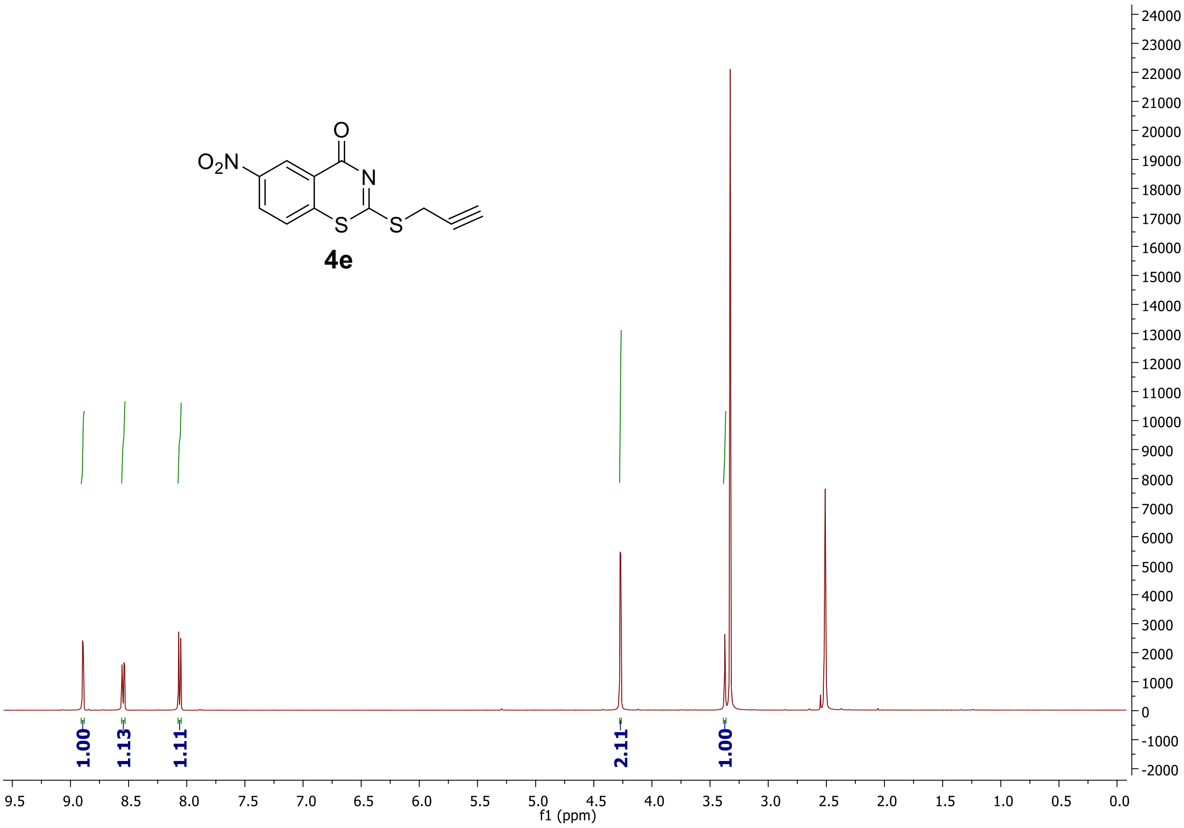
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **4d**



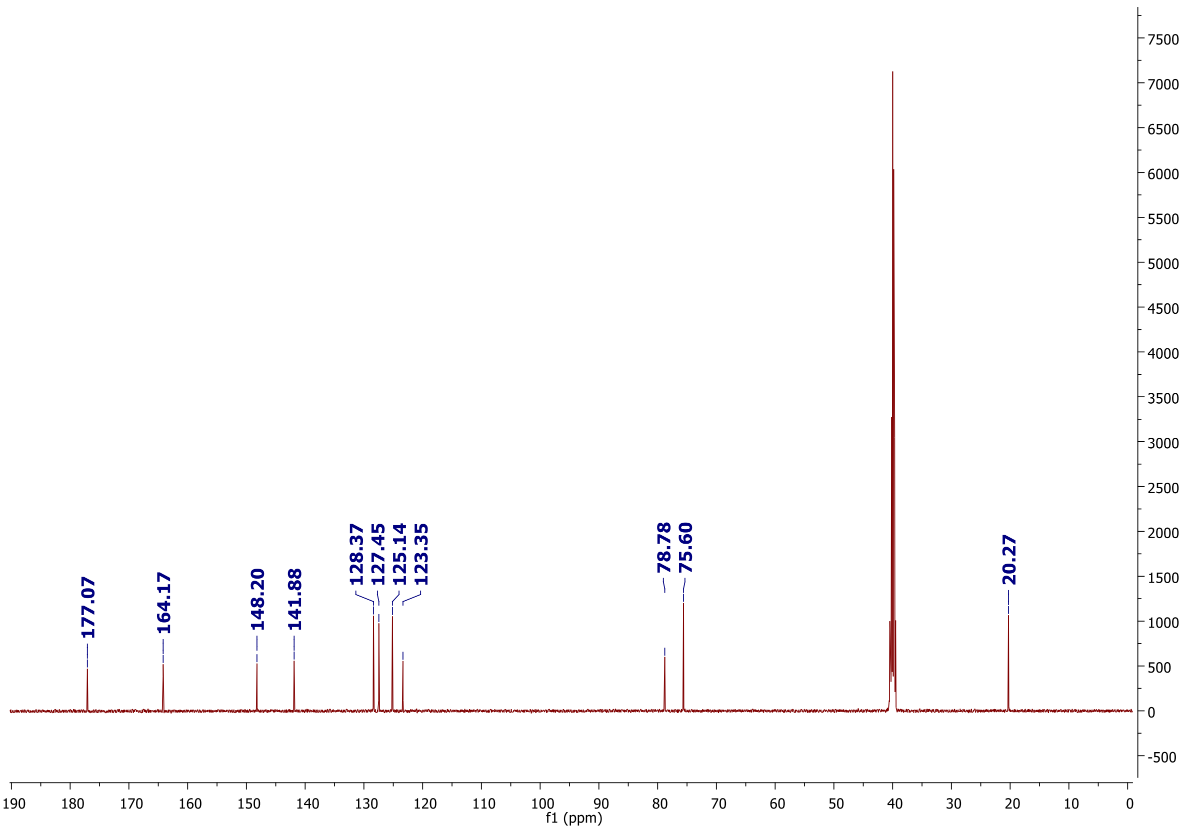
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **4d**



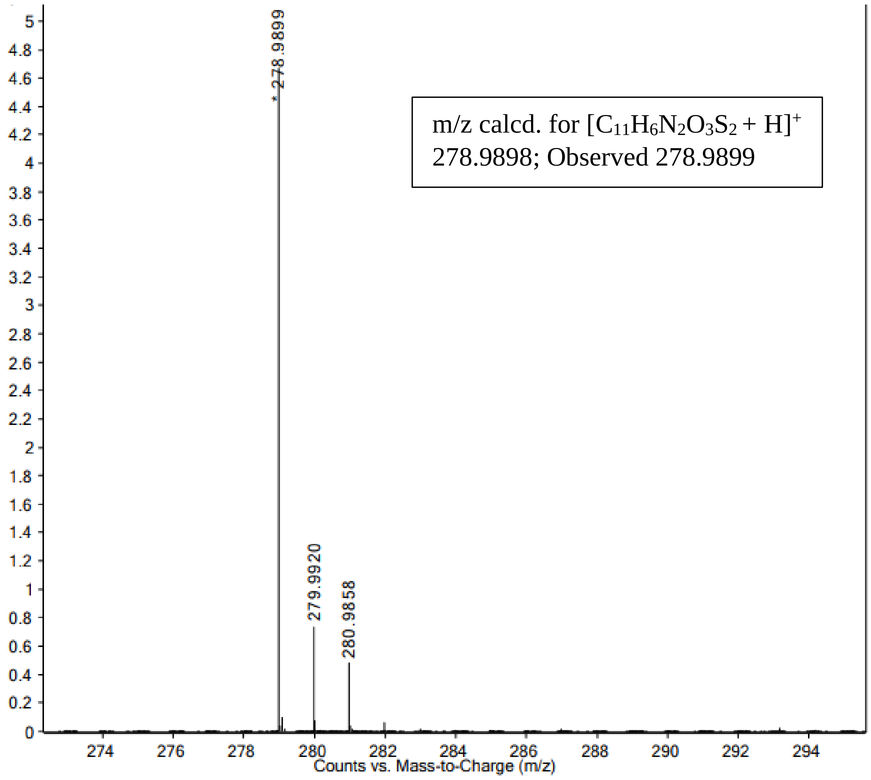
Mass spectrum of compound **4d**



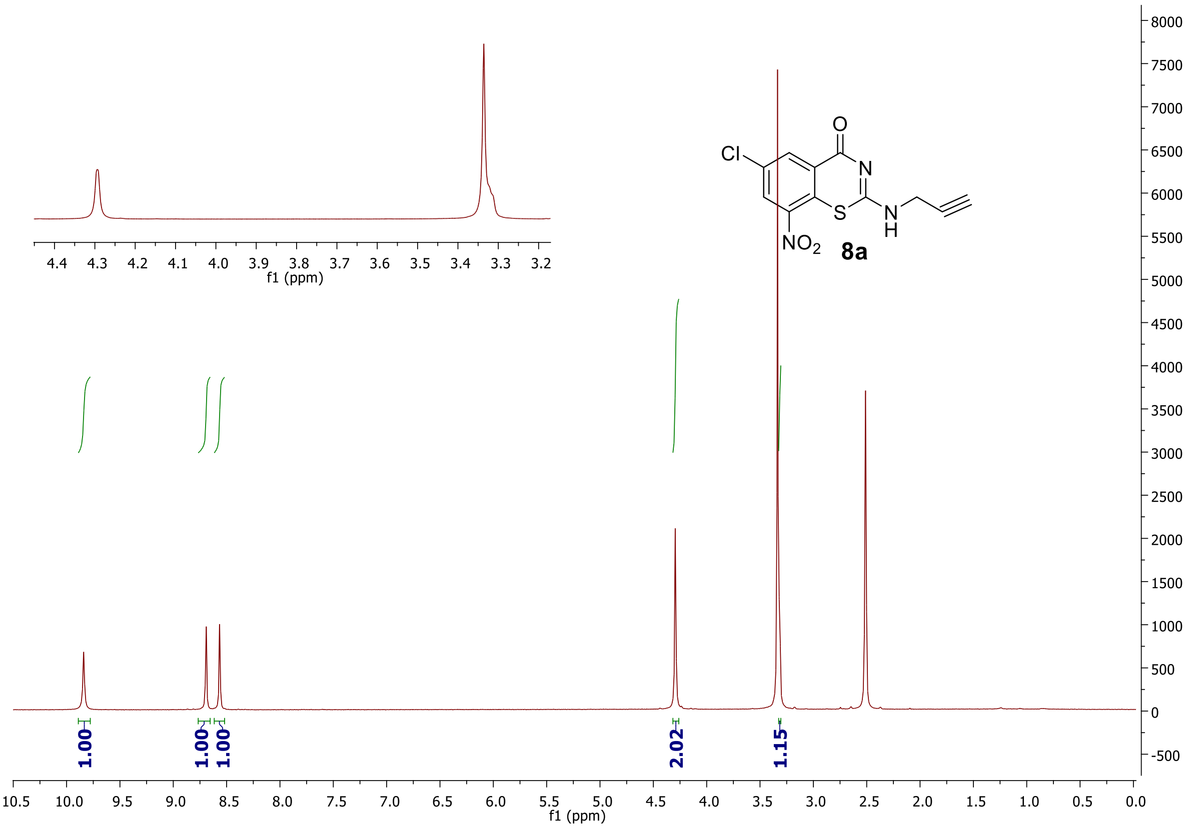
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **4e**



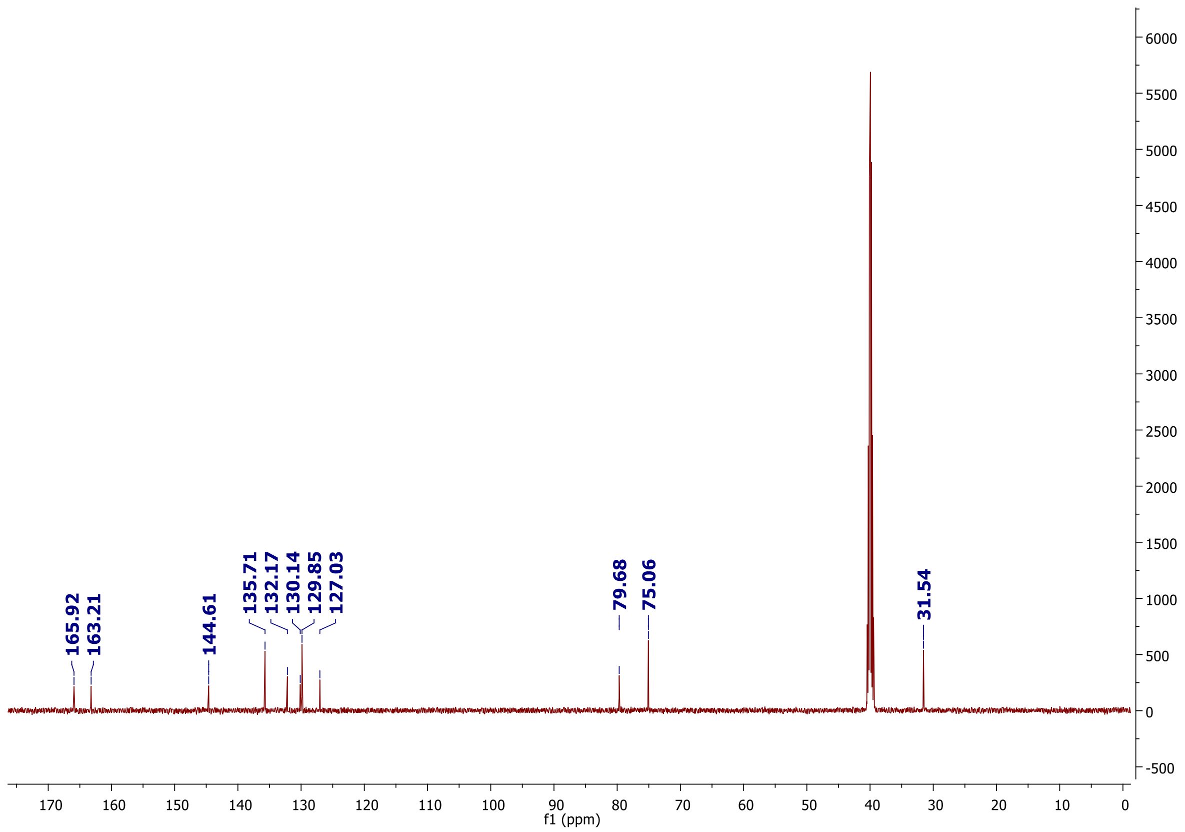
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **4e**



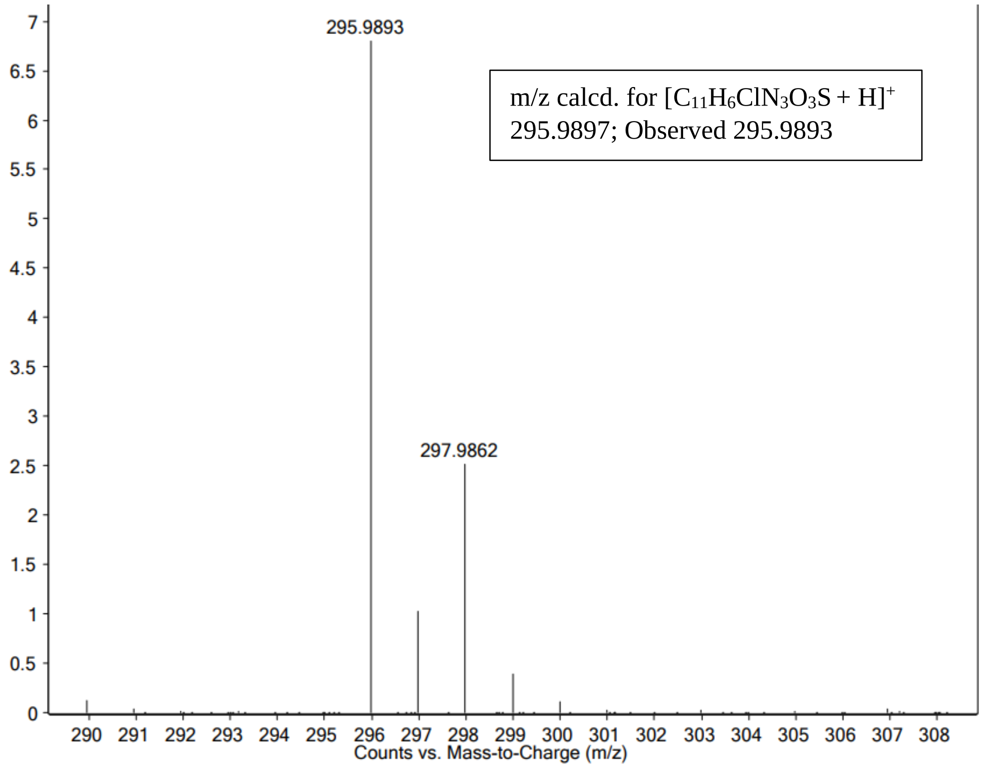
Mass spectrum of compound **4e**



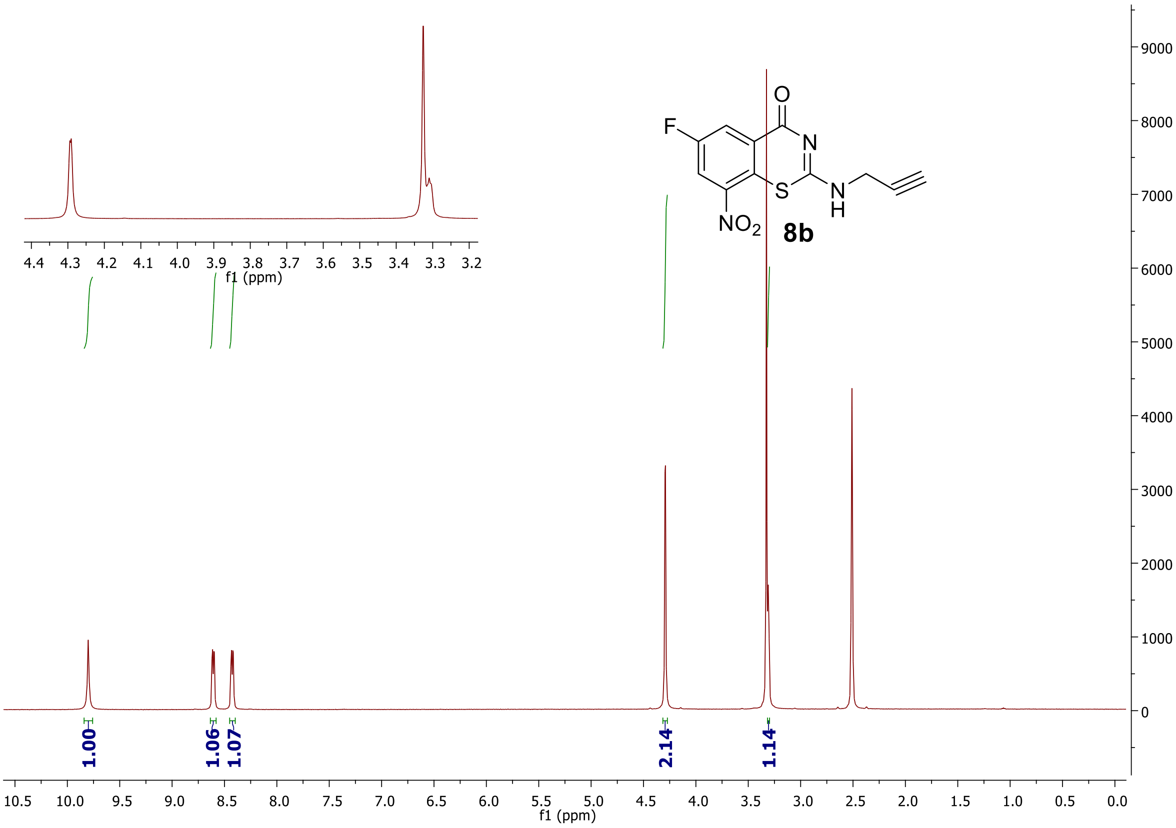
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **8a**



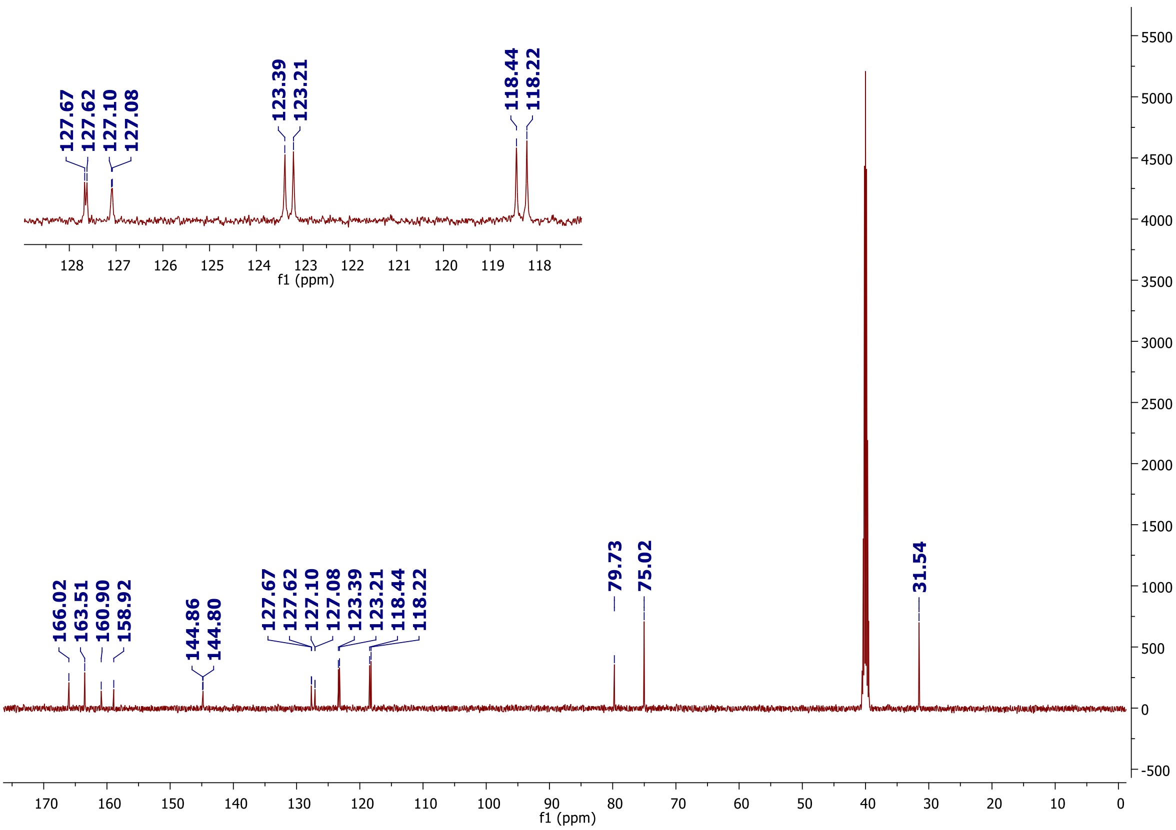
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **8a**



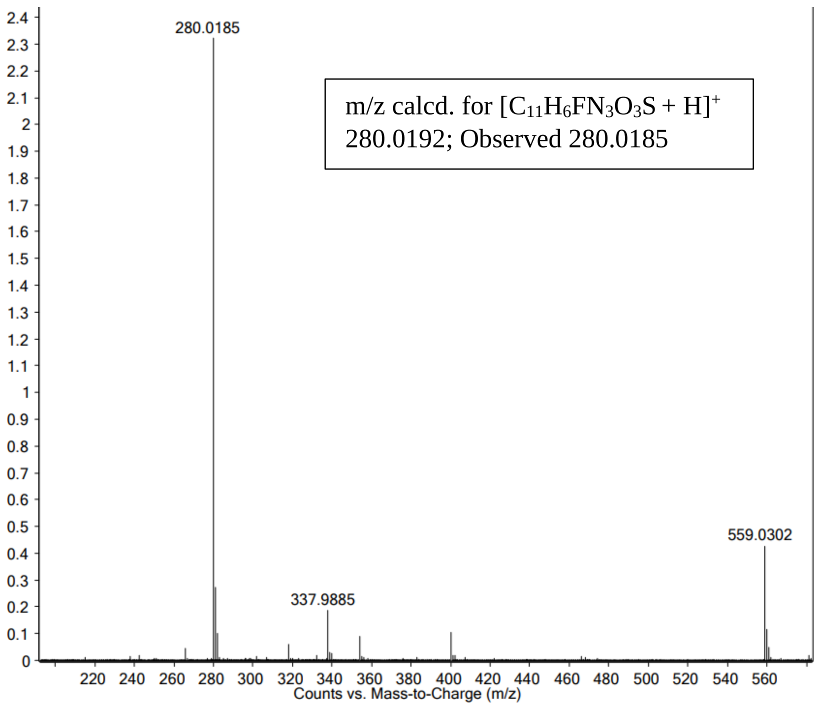
Mass spectrum of compound **8a**



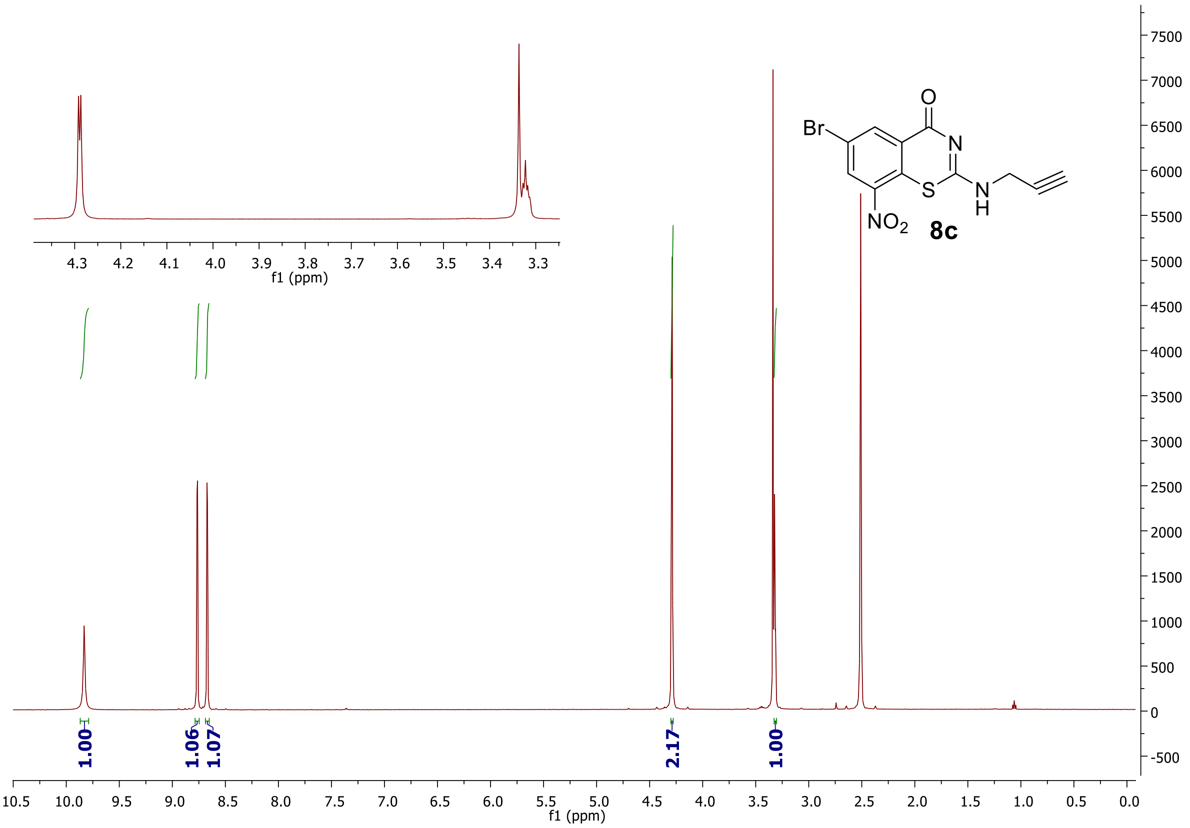
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **8b**



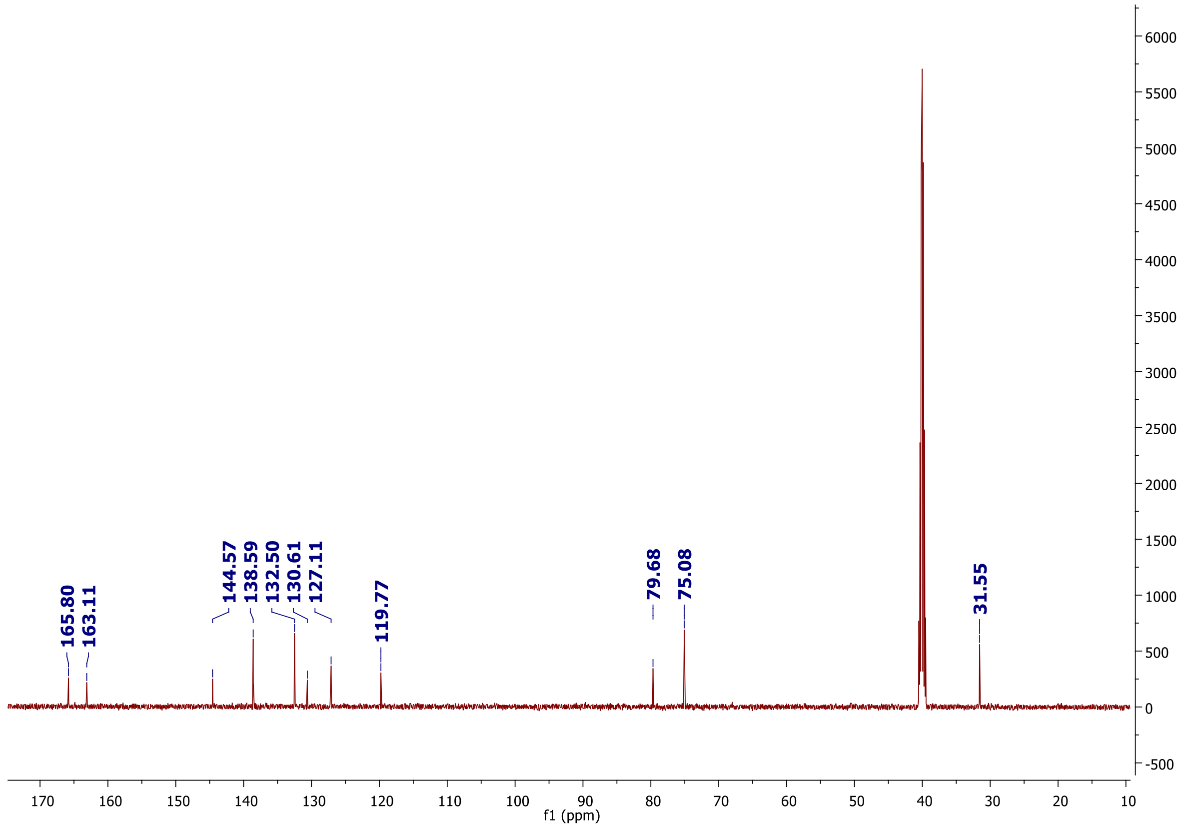
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **8b**



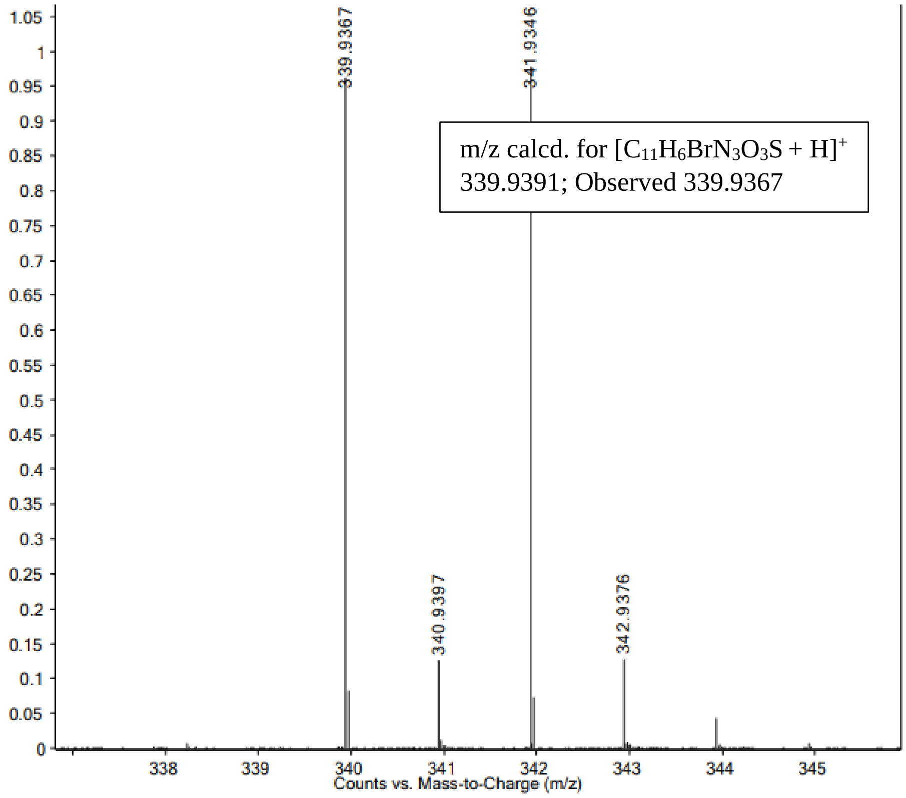
Mass spectrum of compound **8b**



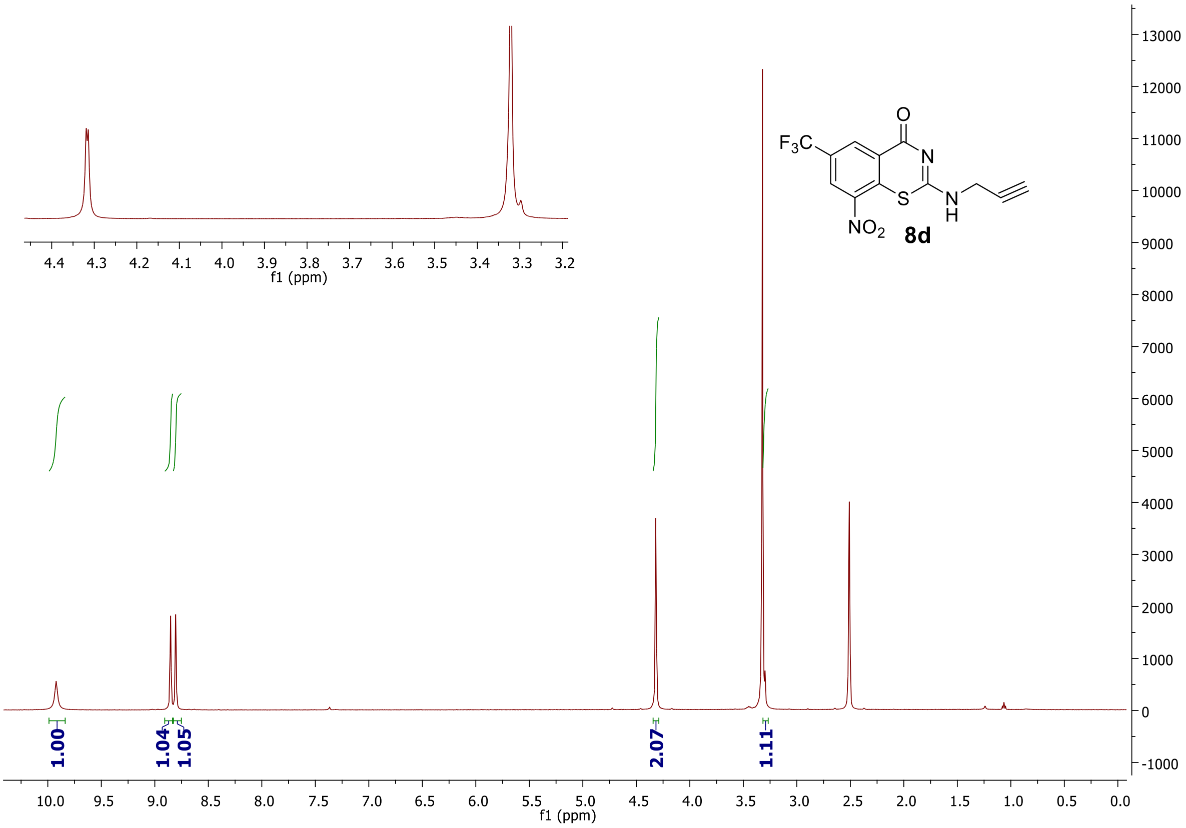
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **8c**



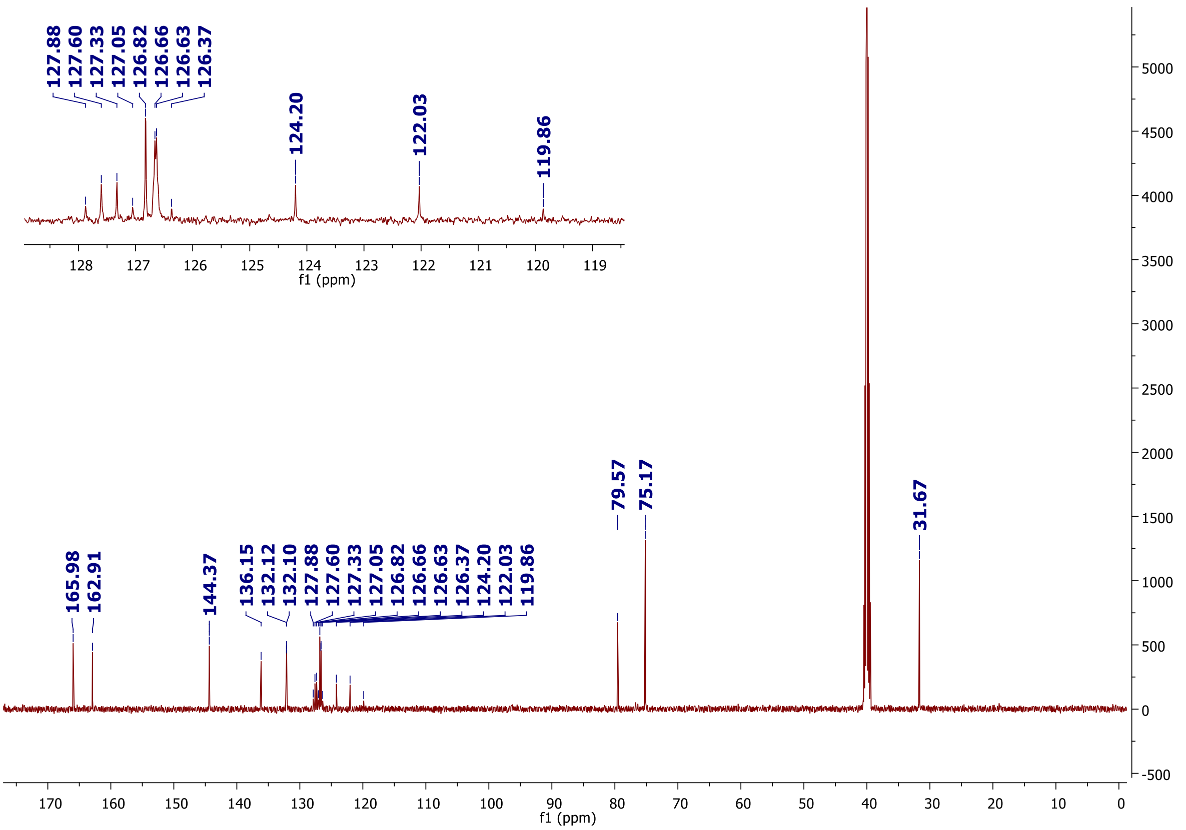
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **8c**



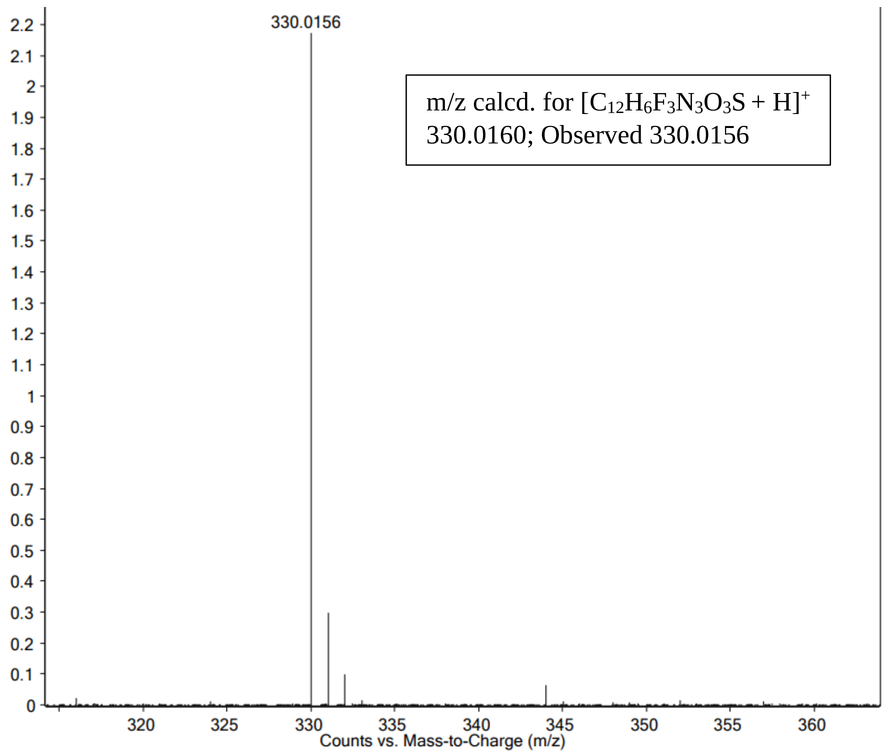
Mass spectrum of compound **8c**



^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **8d**

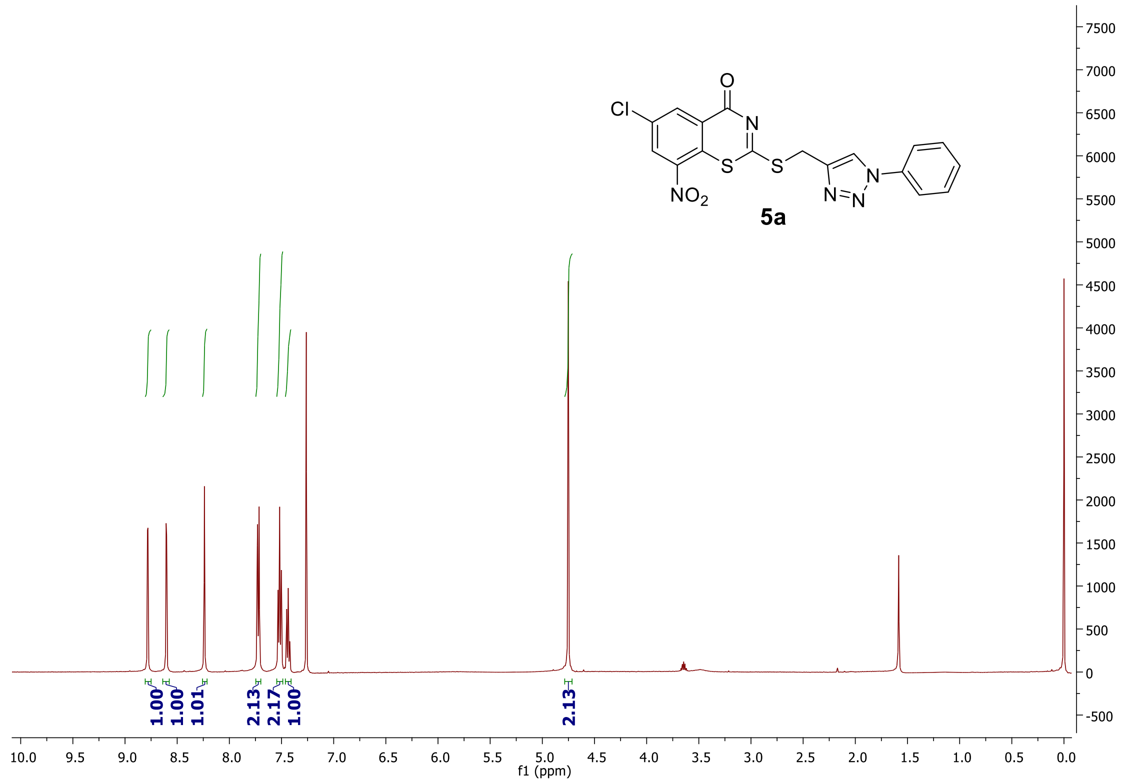


^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **8d**

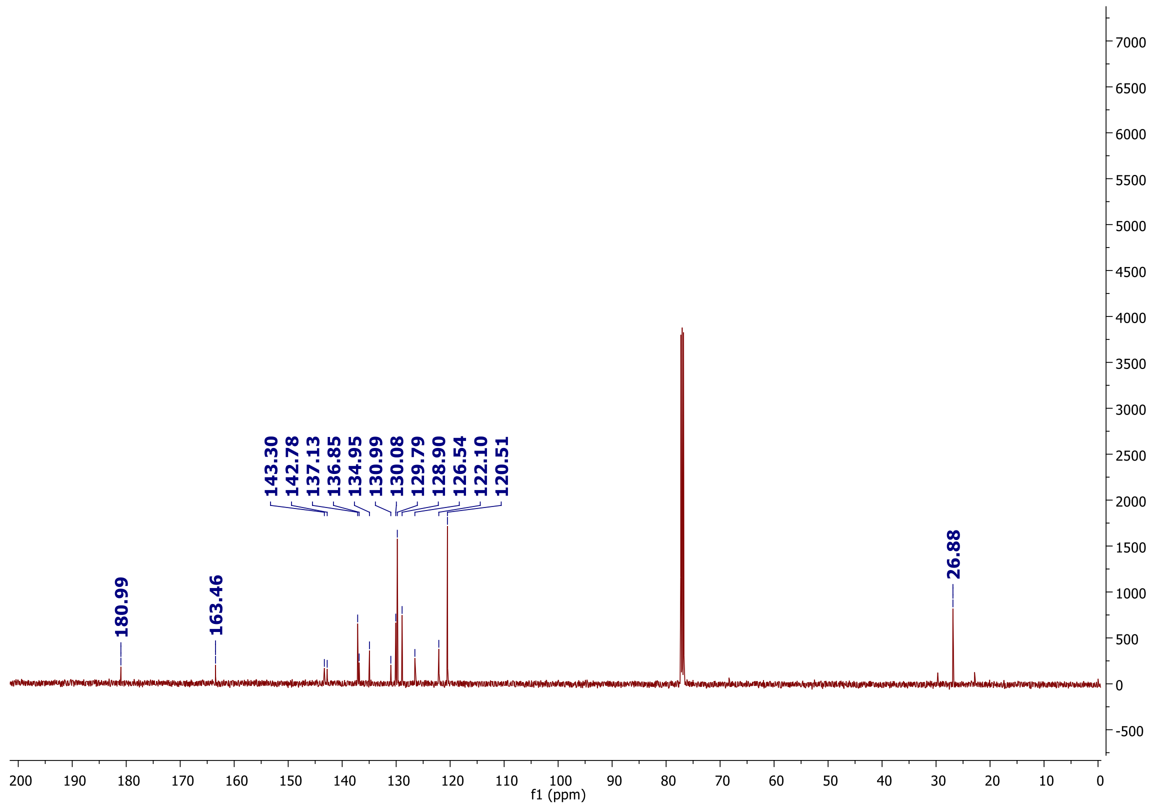


Mass spectrum of compound **8d**

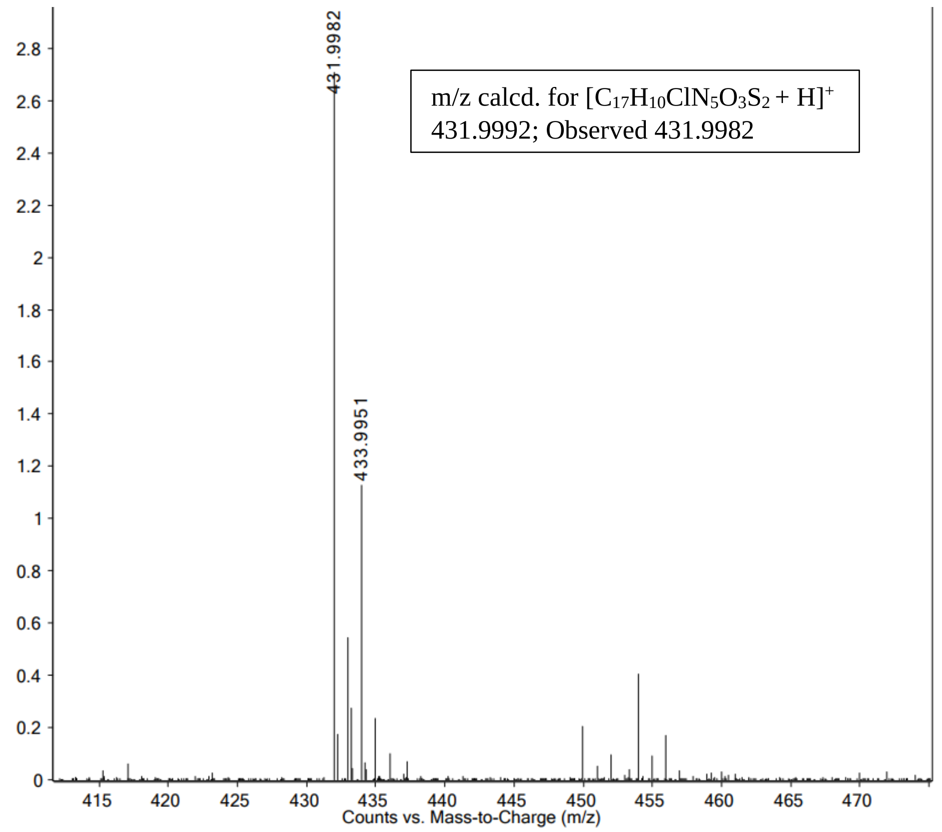
4 ^{1}H, ^{13}C and HRMS spectra of all final compounds 5a-ak, 6a-f, 9a-d



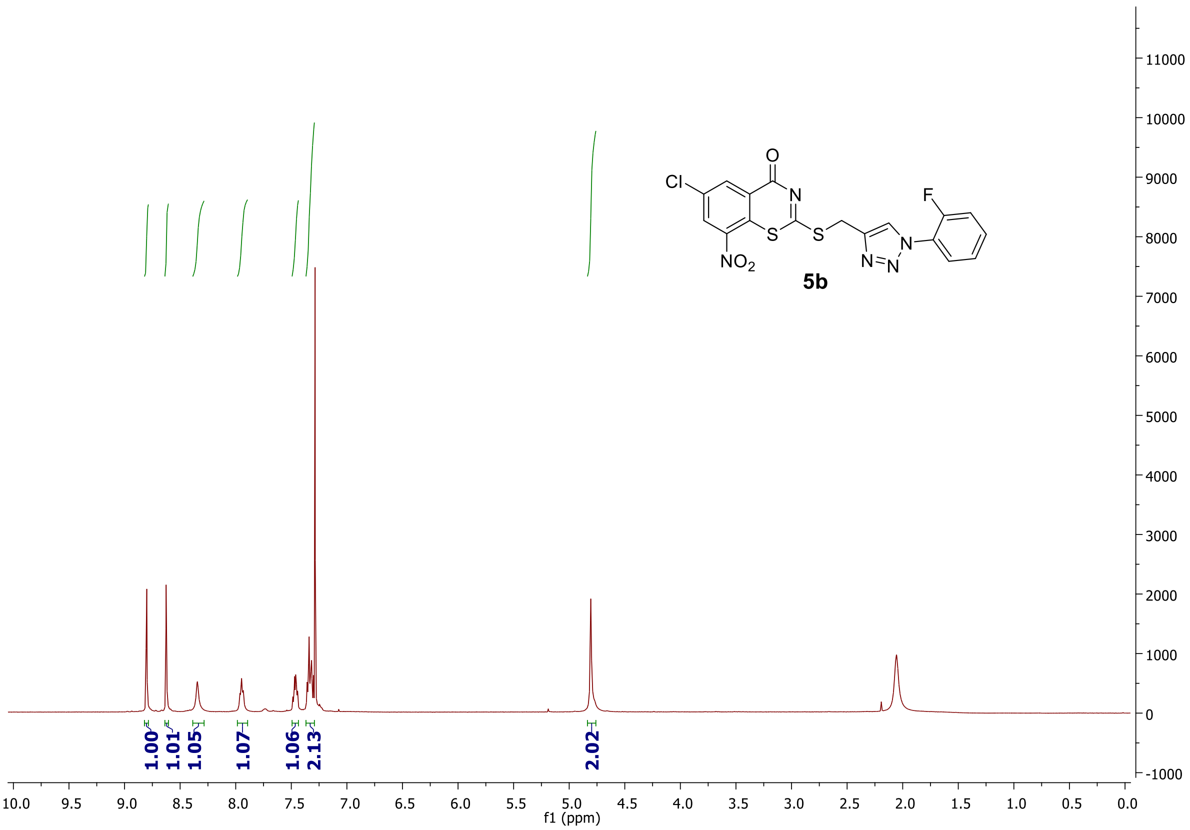
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5a**



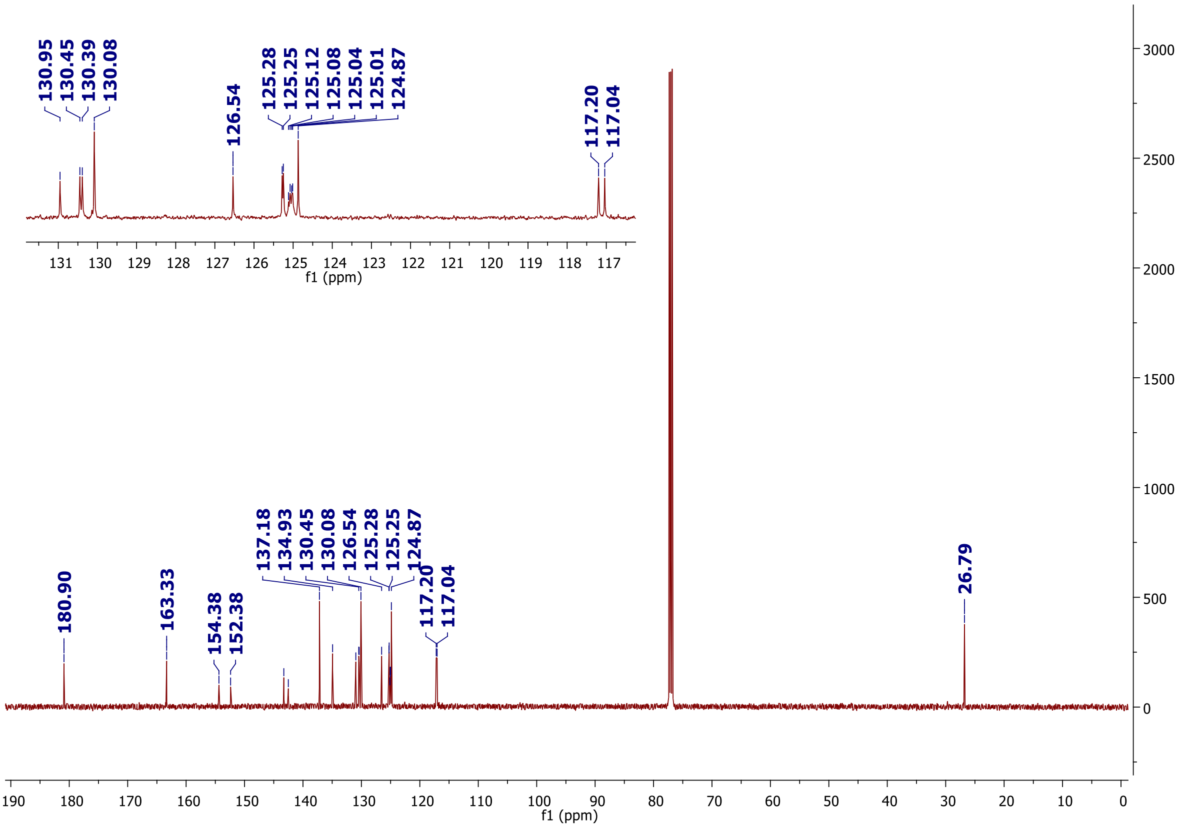
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5a**



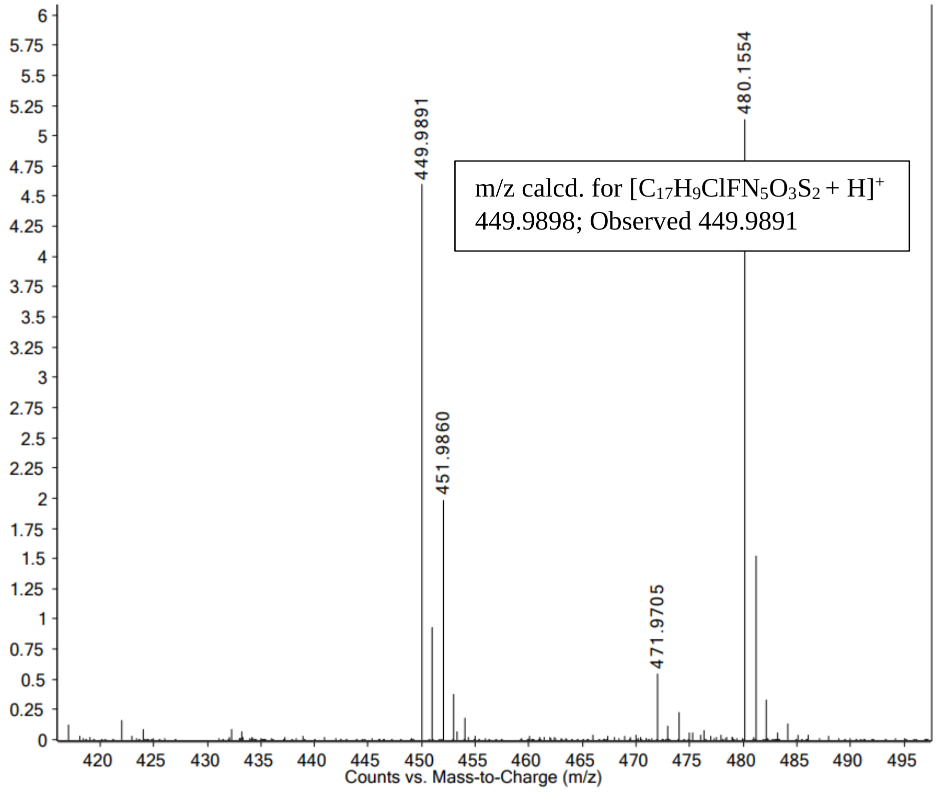
Mass spectrum of compound **5a**



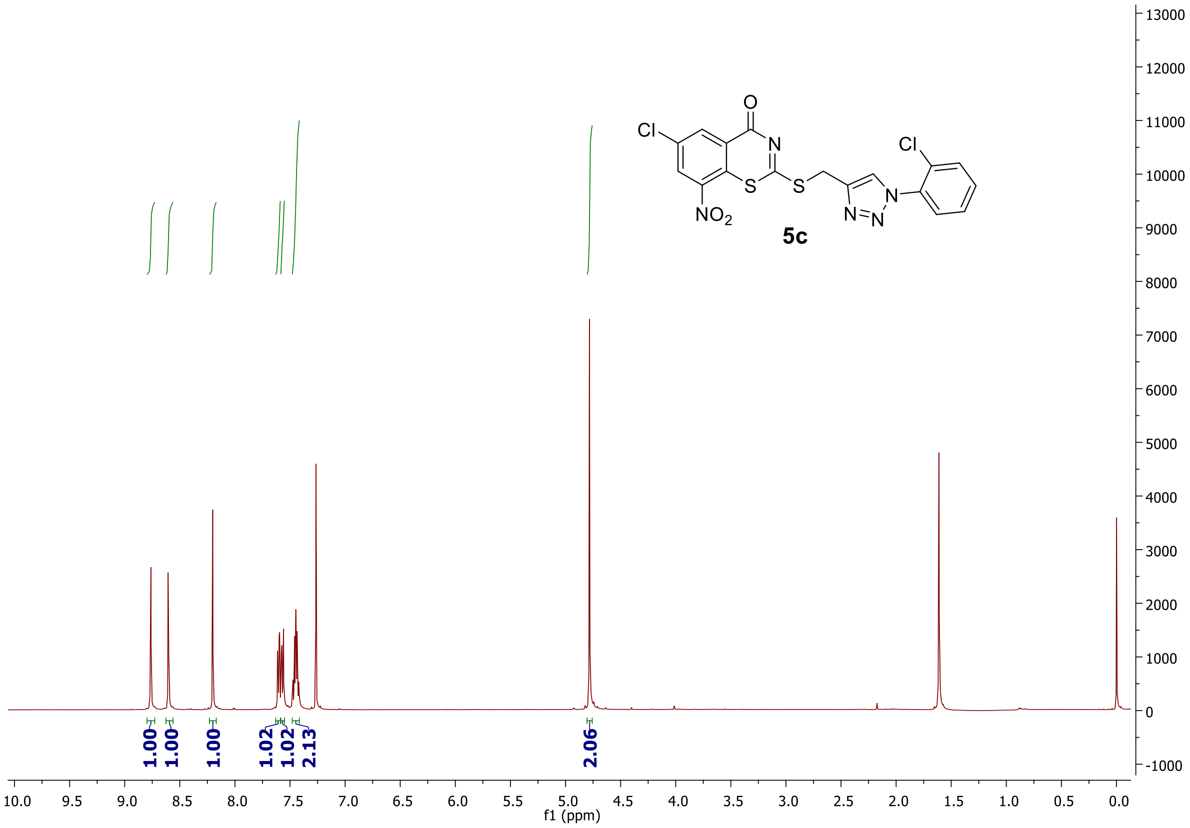
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5b**



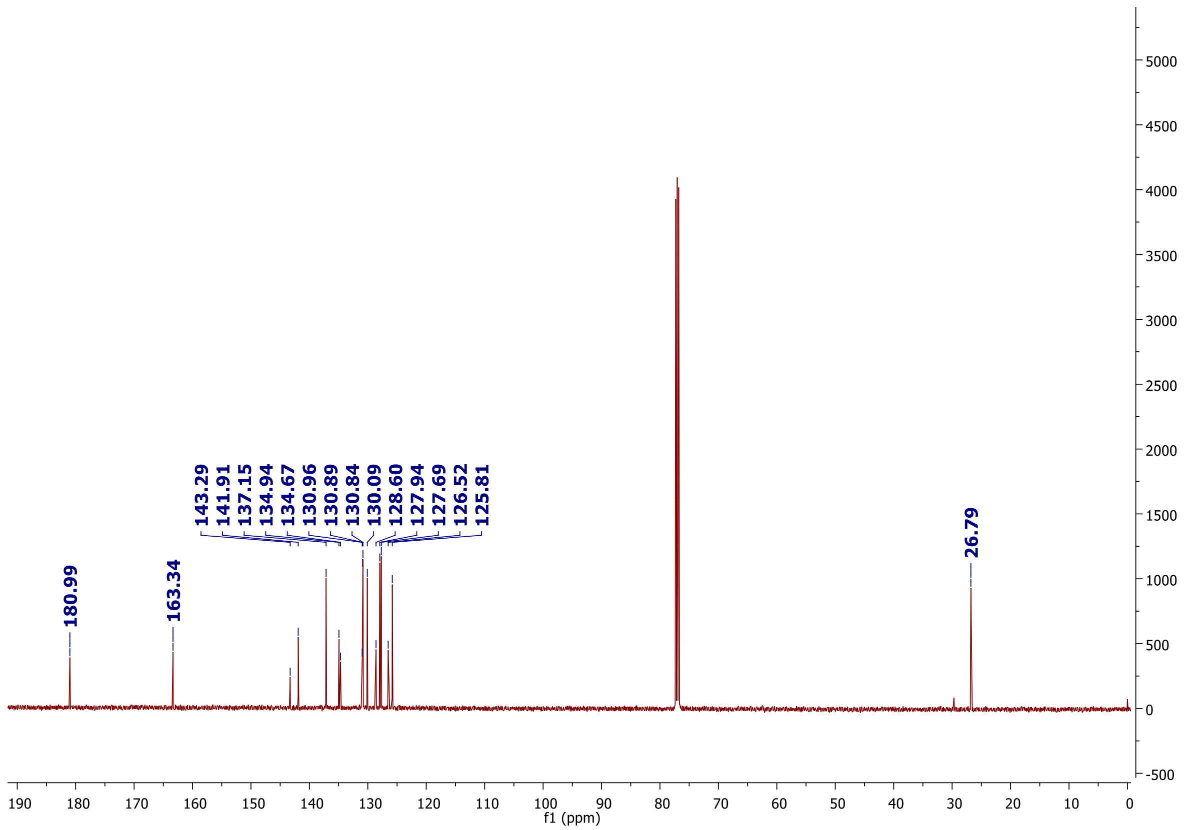
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5b**



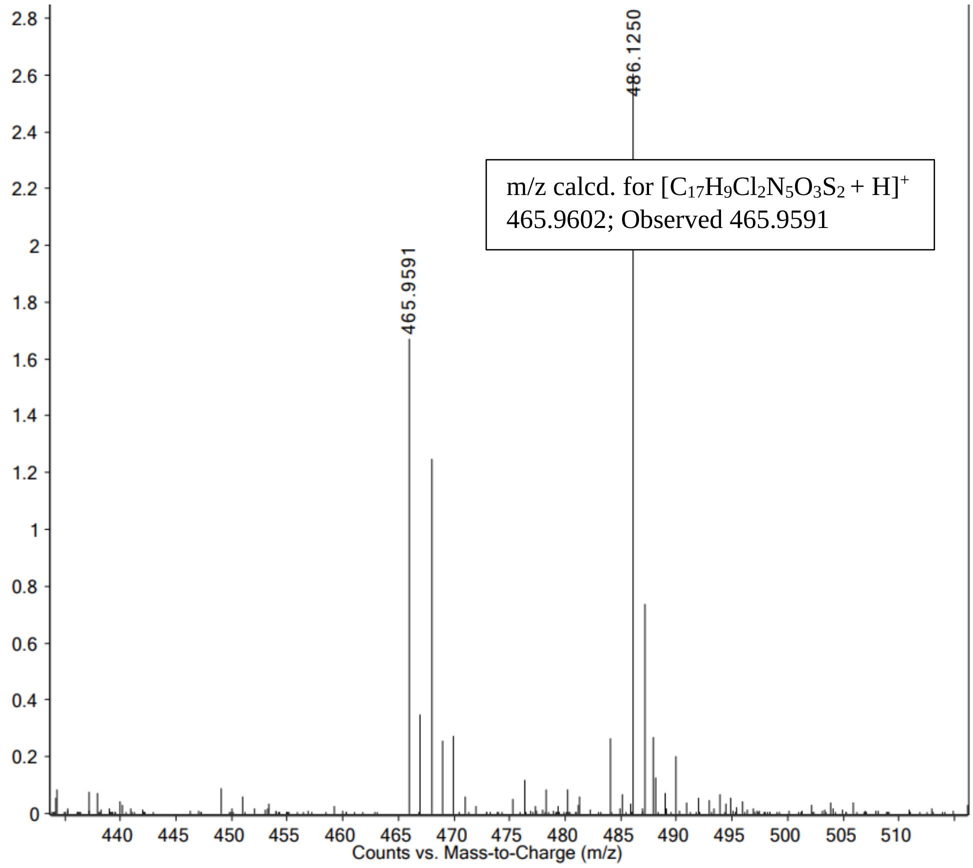
Mass spectrum of compound **5b**



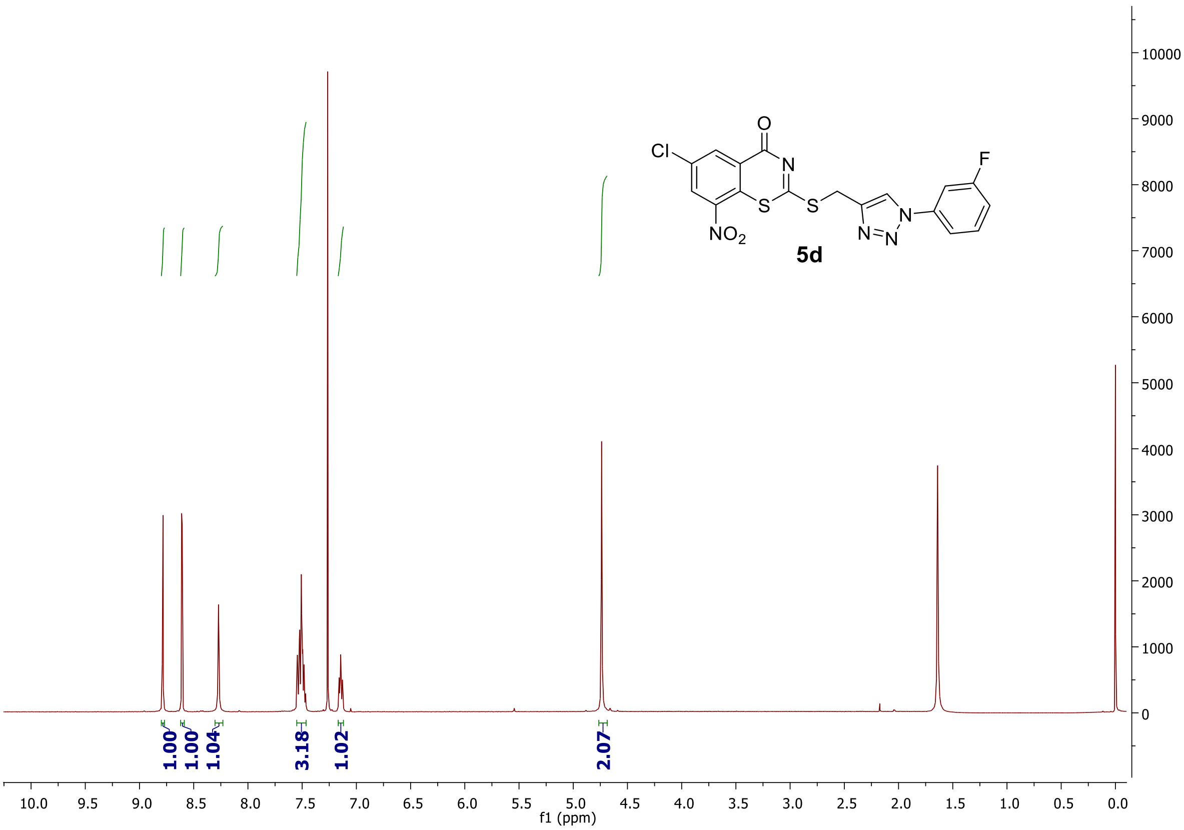
[1]H NMR (500 MHz, $CDCl_3$) spectrum of compound **5c**



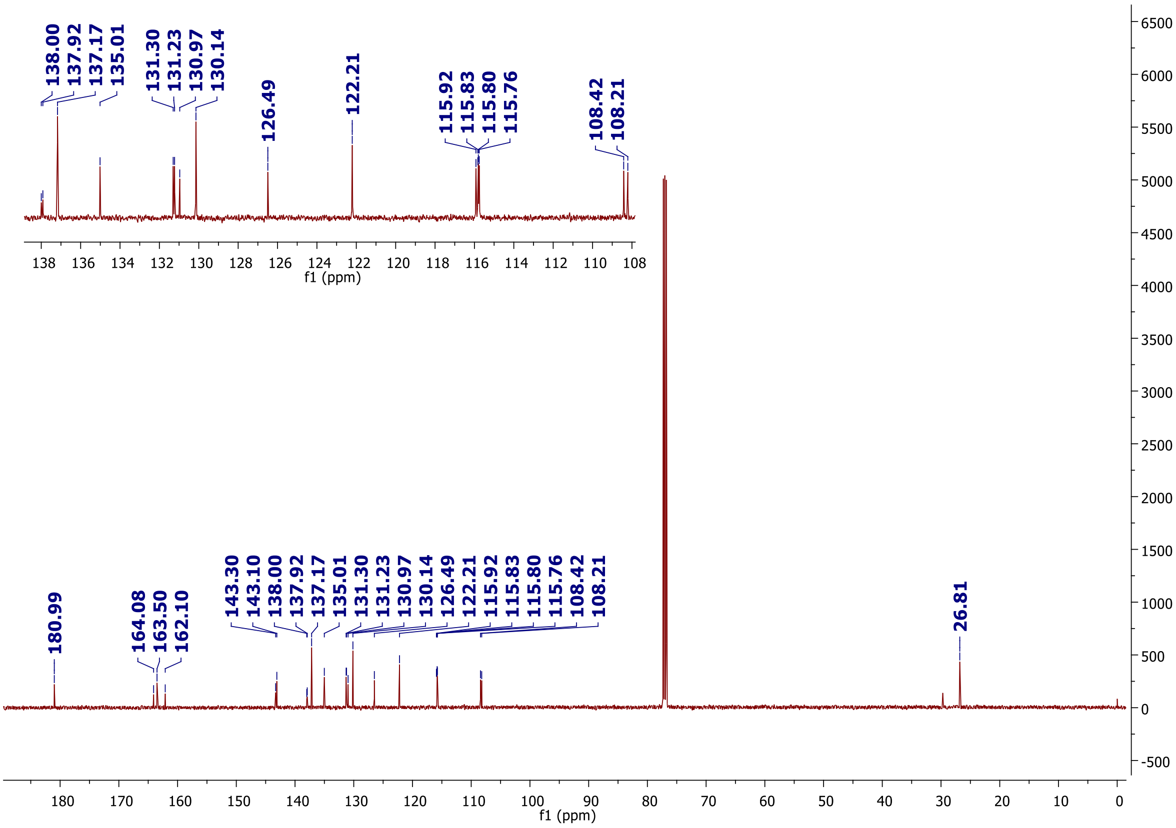
[13]C NMR (125 MHz, $CDCl_3$) spectrum of compound **5c**



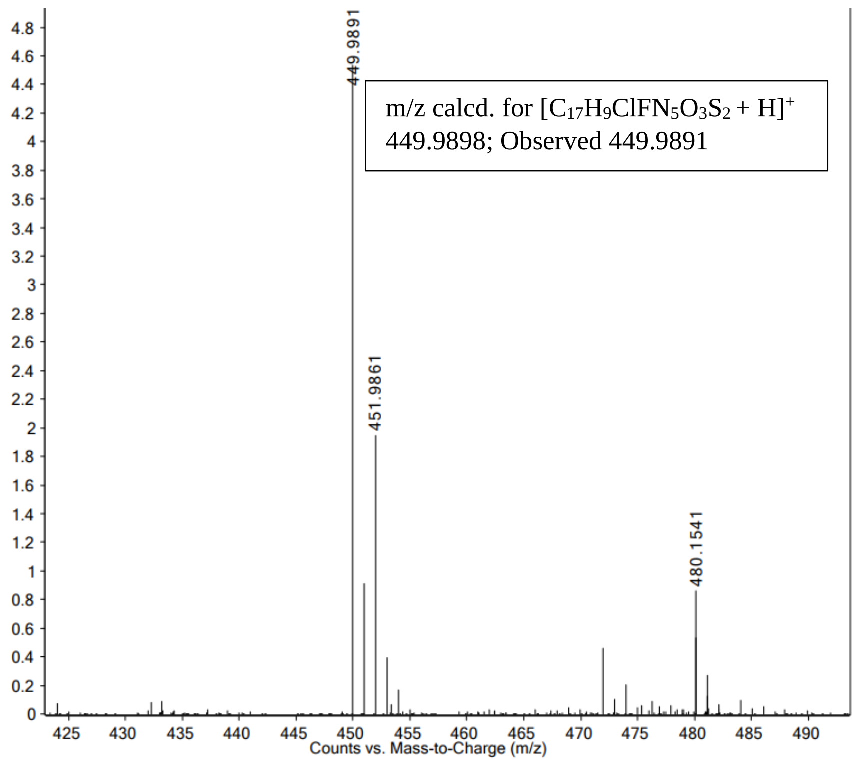
Mass spectrum of compound **5c**



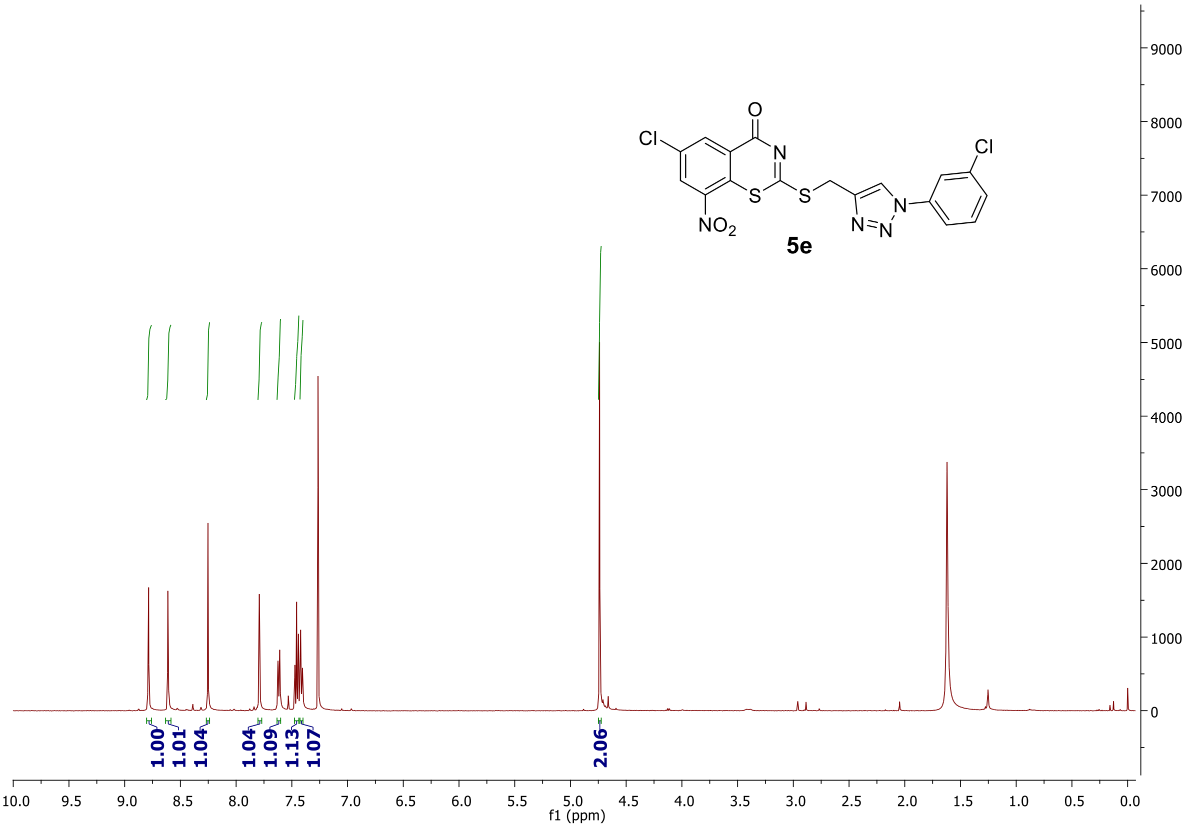
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5d**



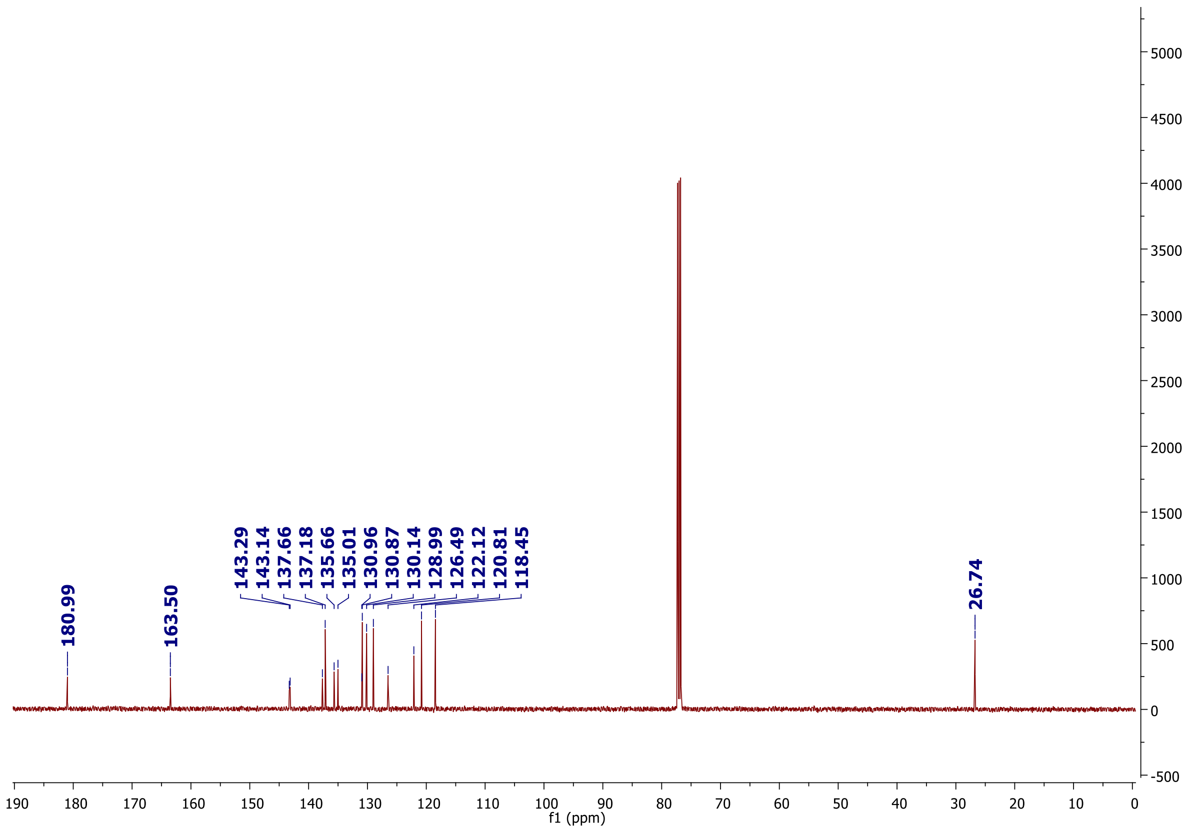
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5d**



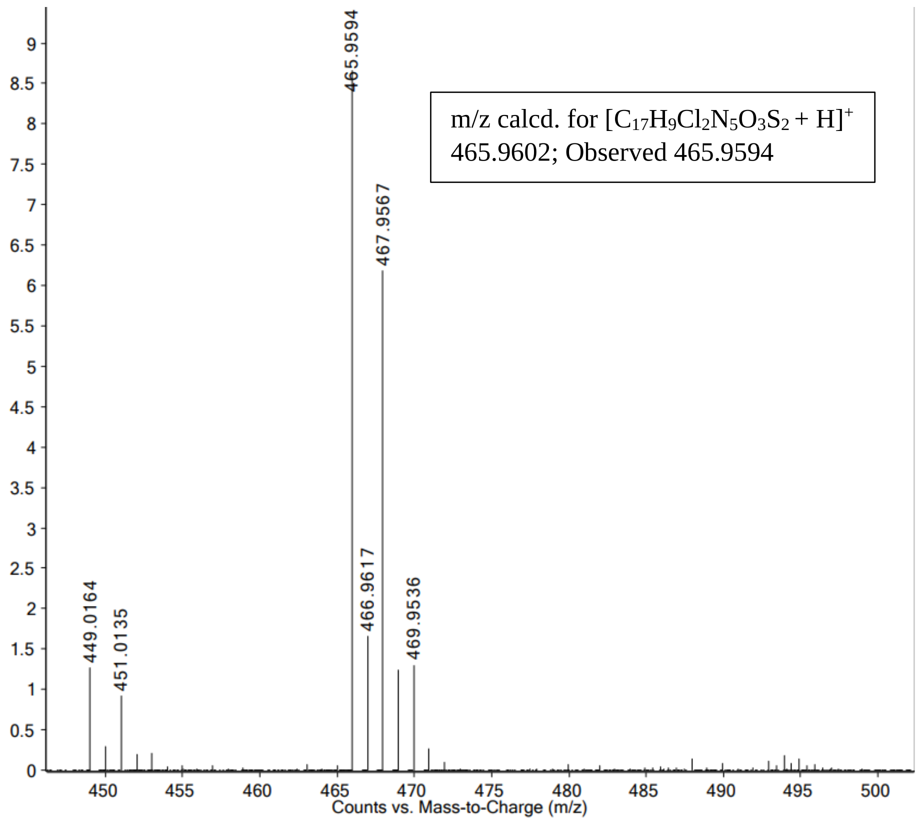
Mass spectrum of compound **5d**



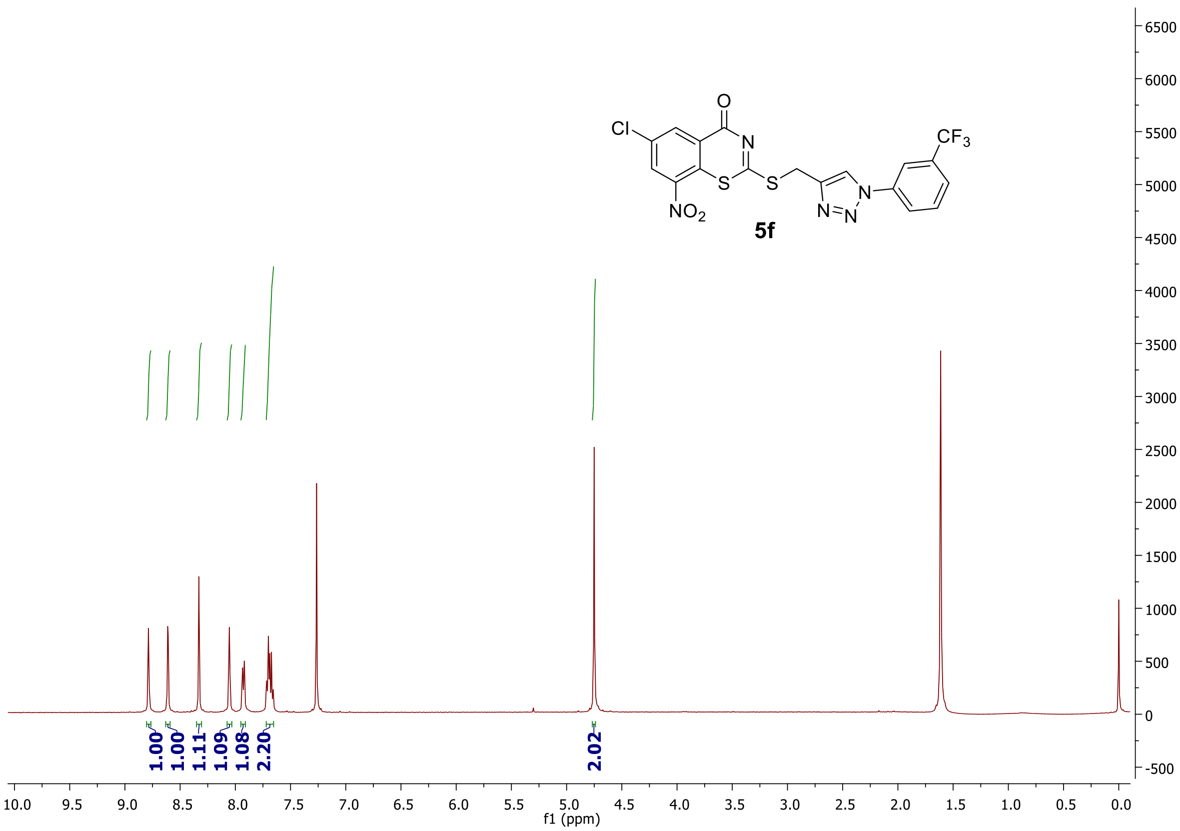
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5e**



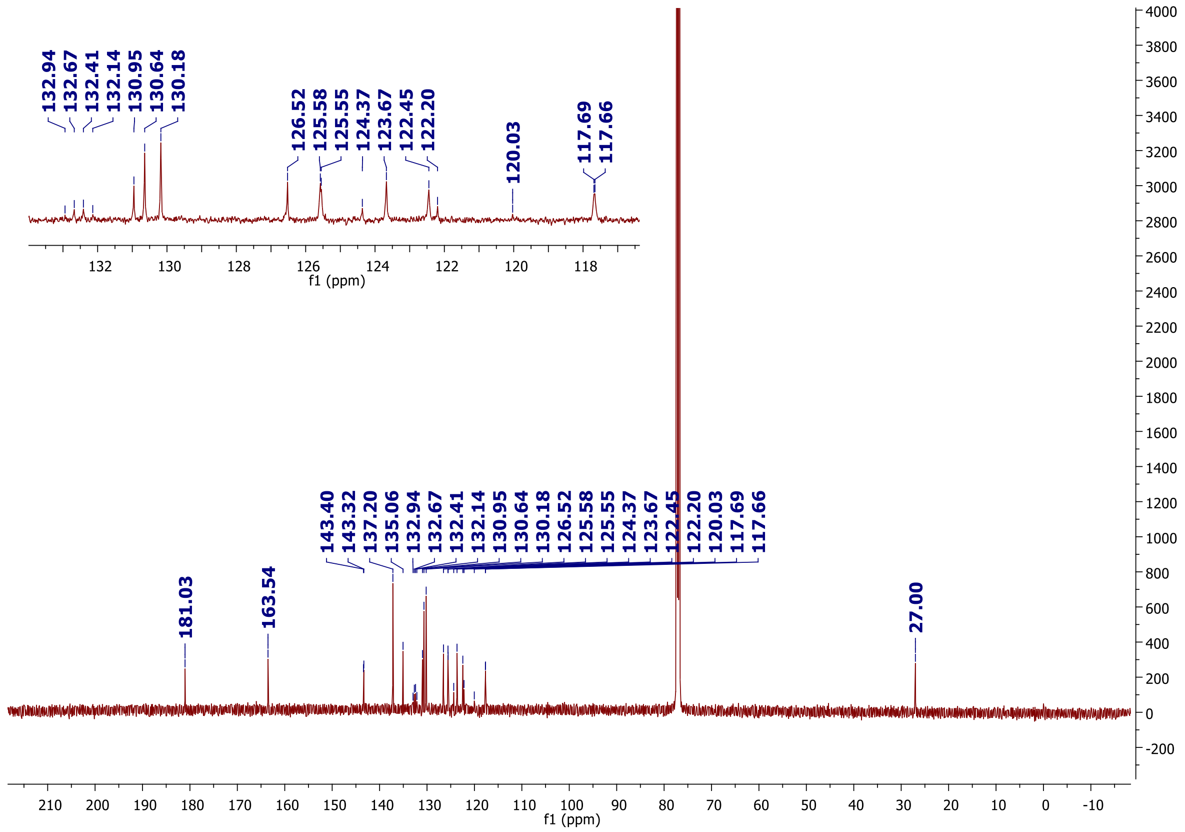
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5e**



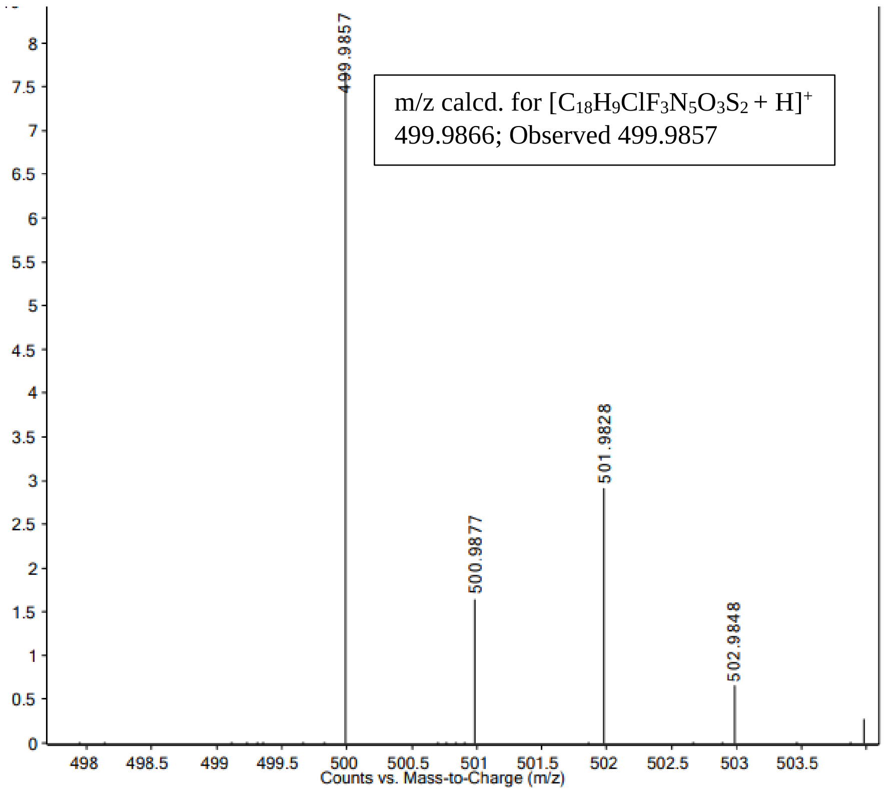
Mass spectrum of compound **5e**



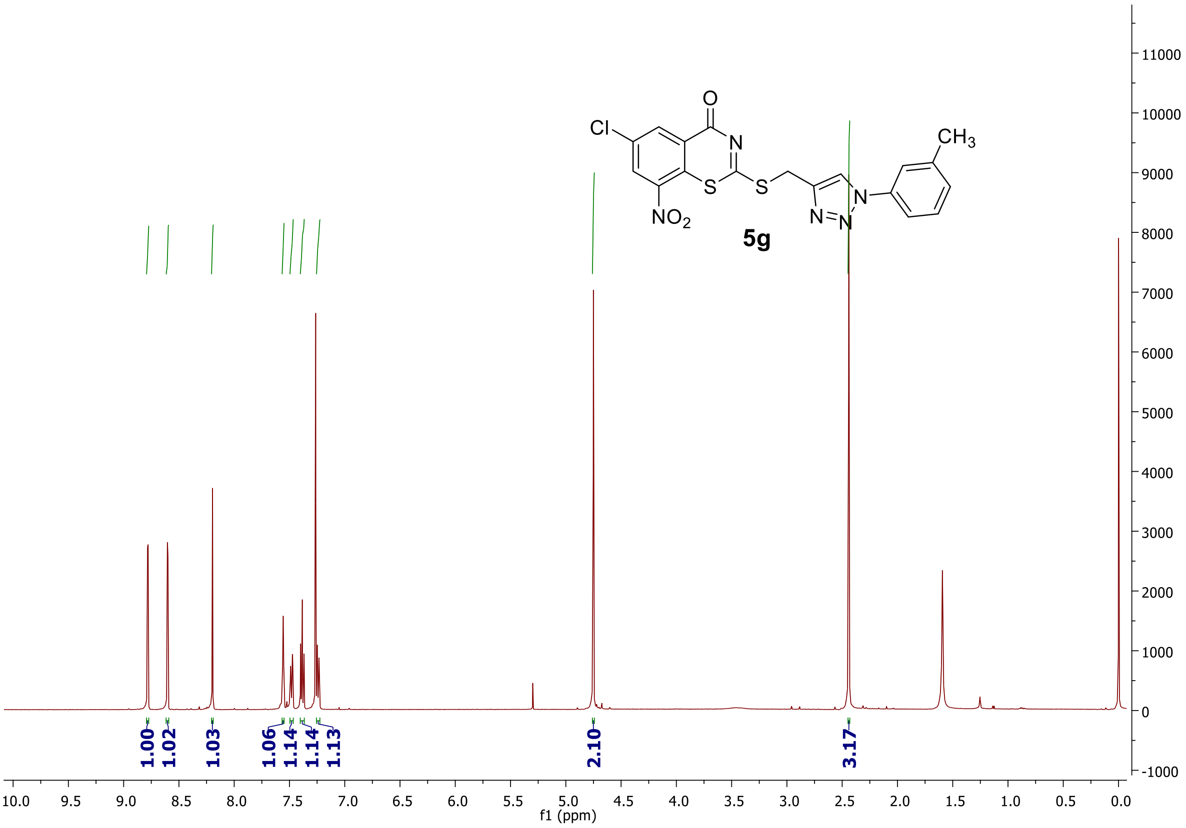
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5f**



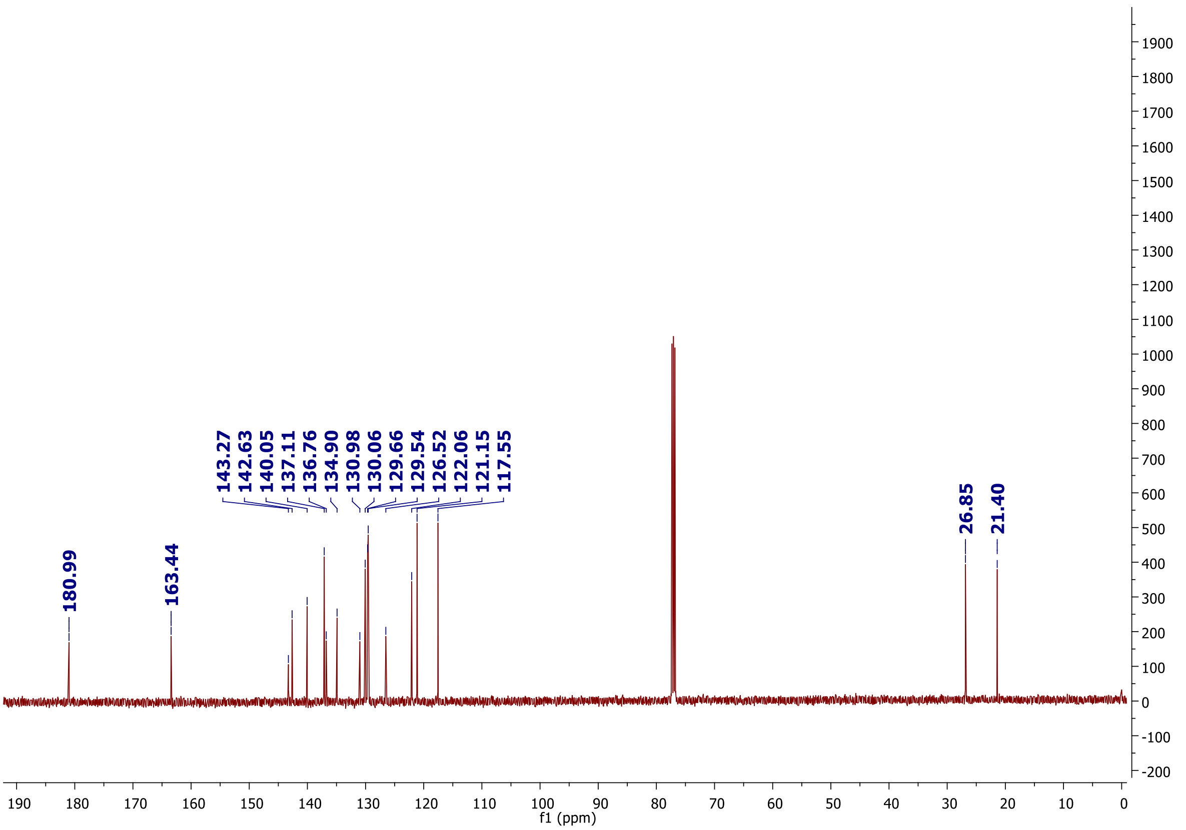
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5f**



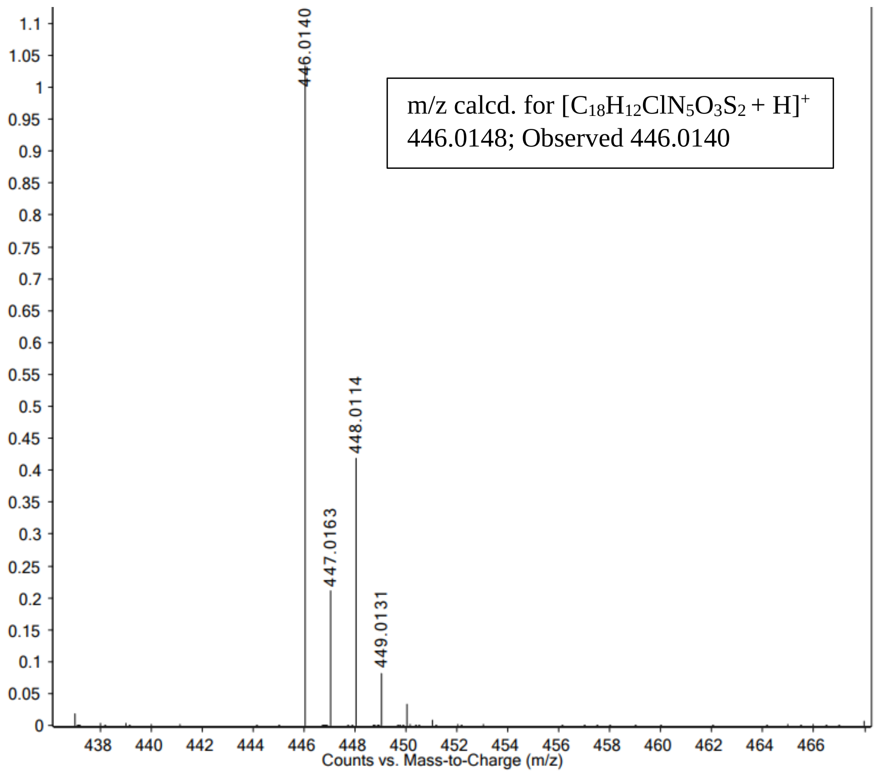
Mass spectrum of compound **5f**



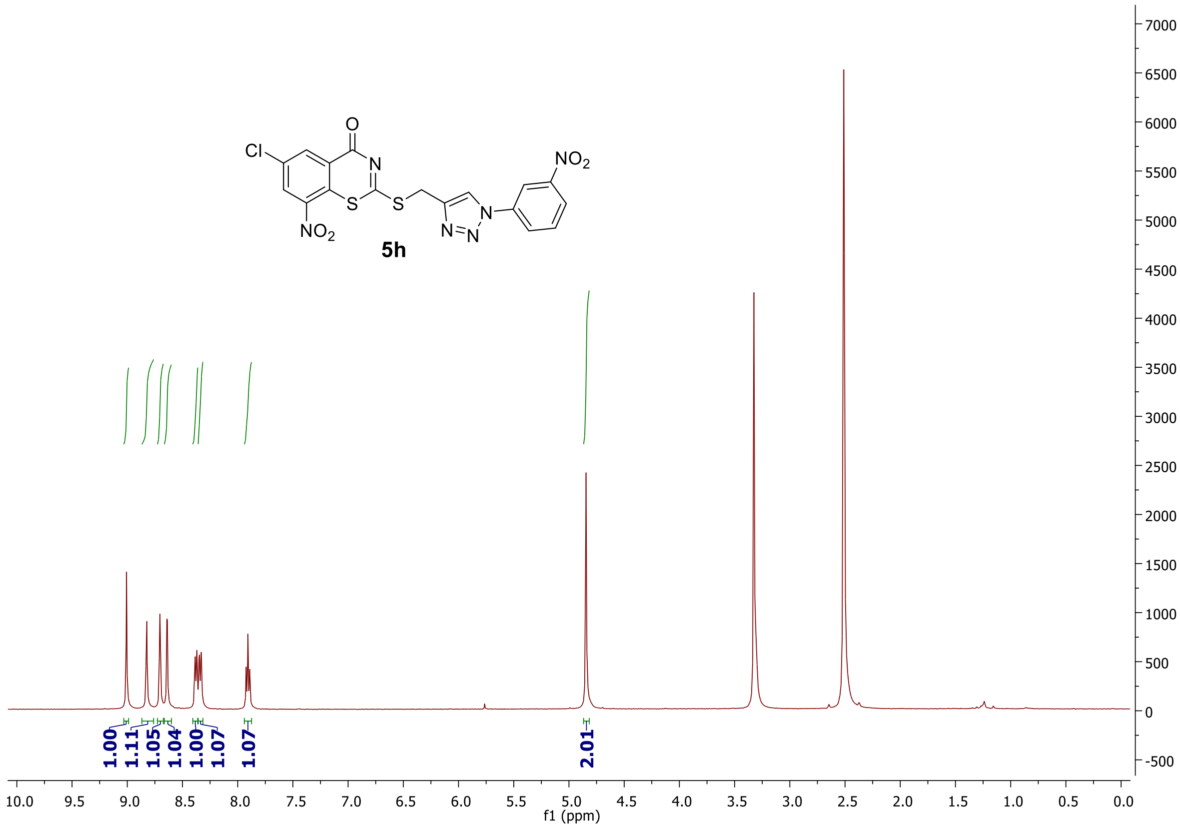
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5g**



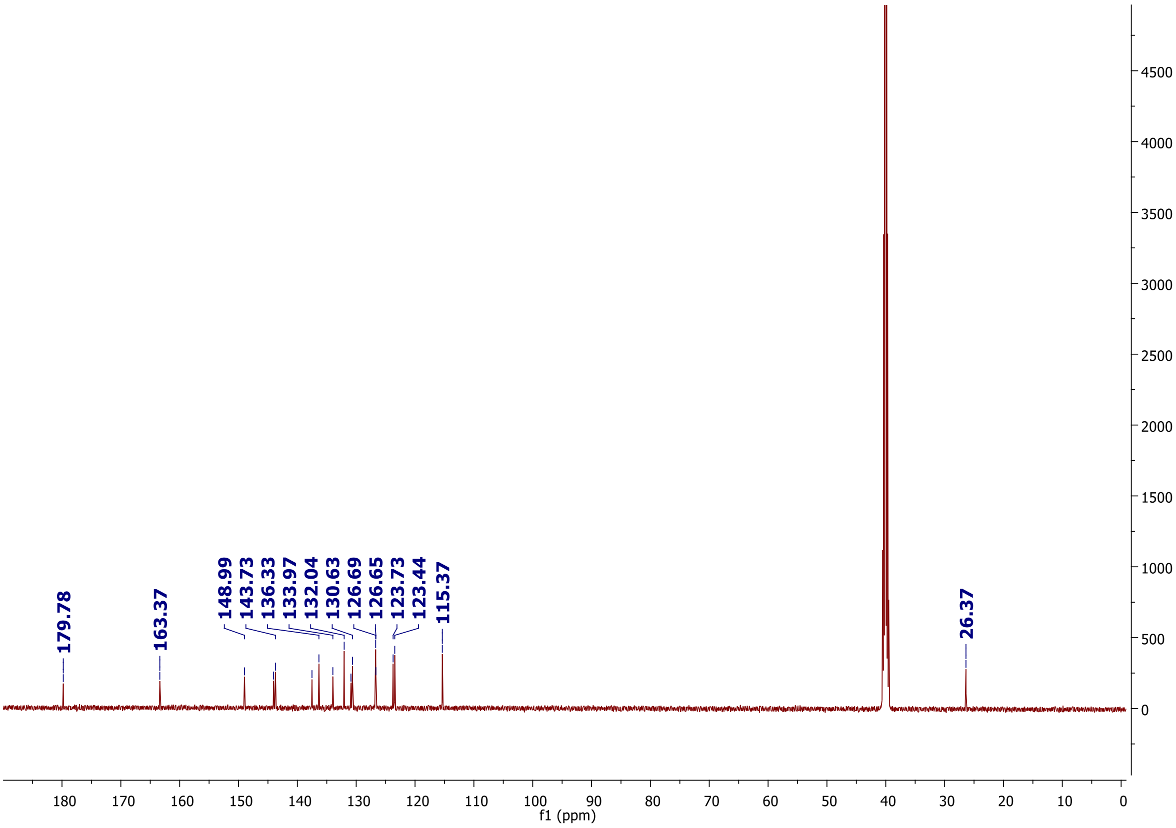
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5g**



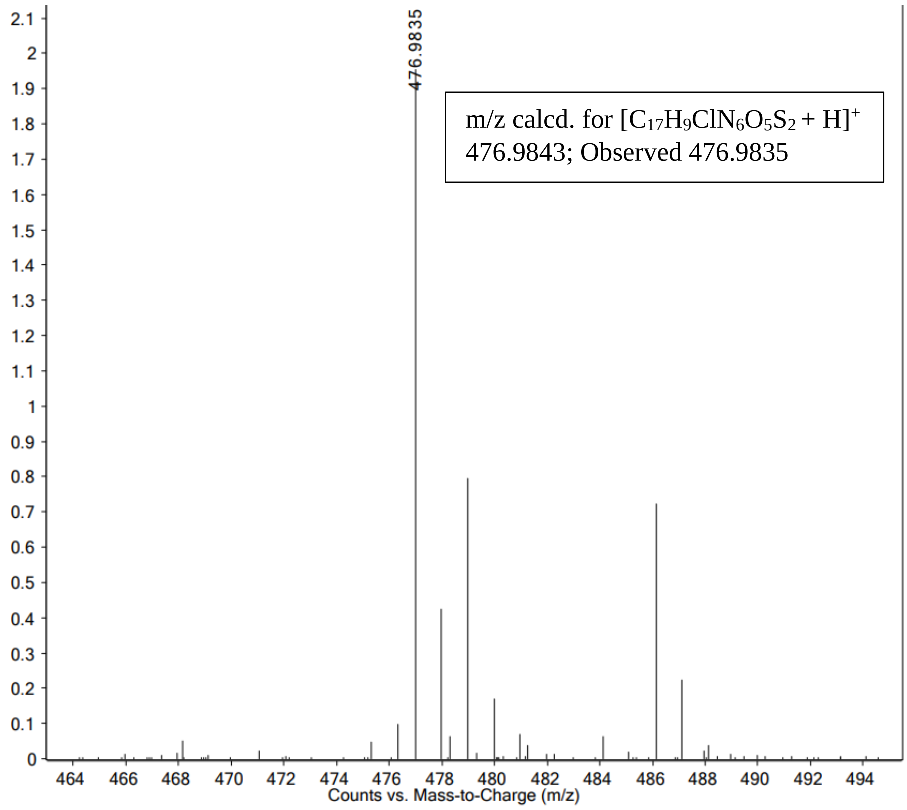
Mass spectrum of compound **5g**



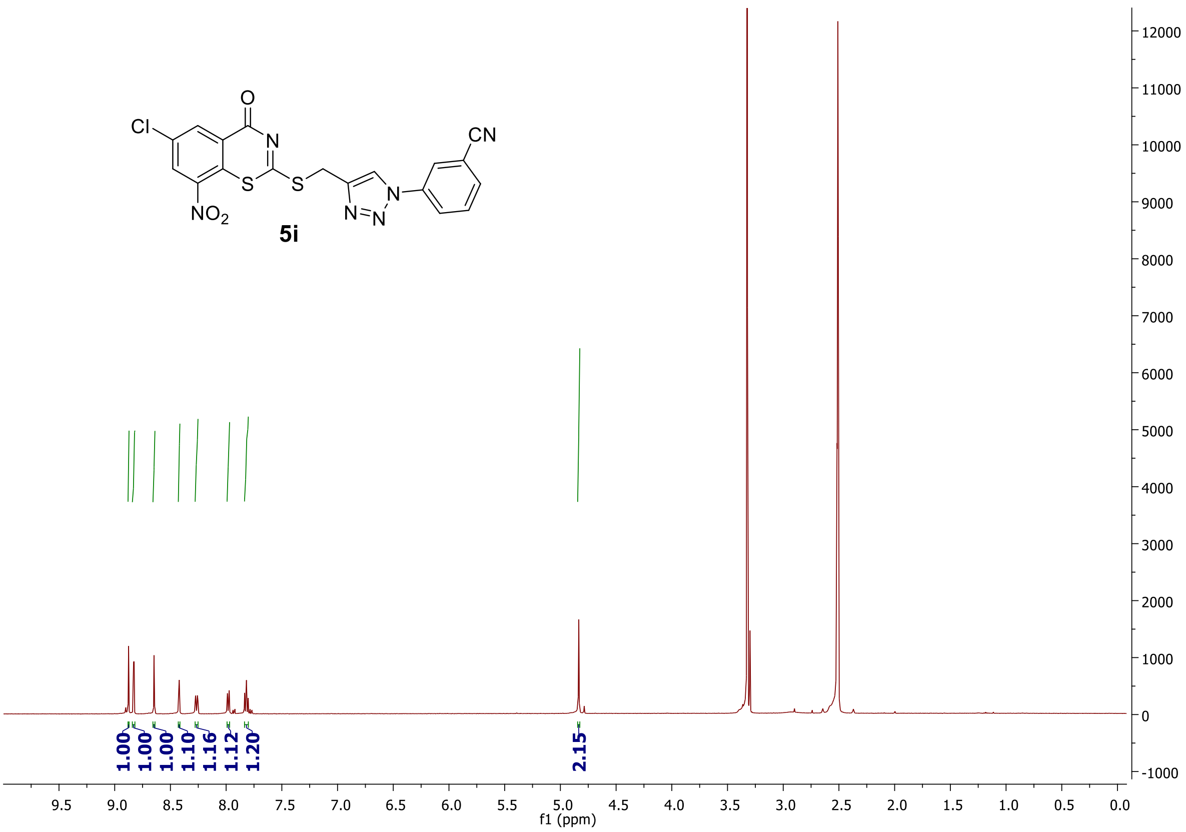
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5h**



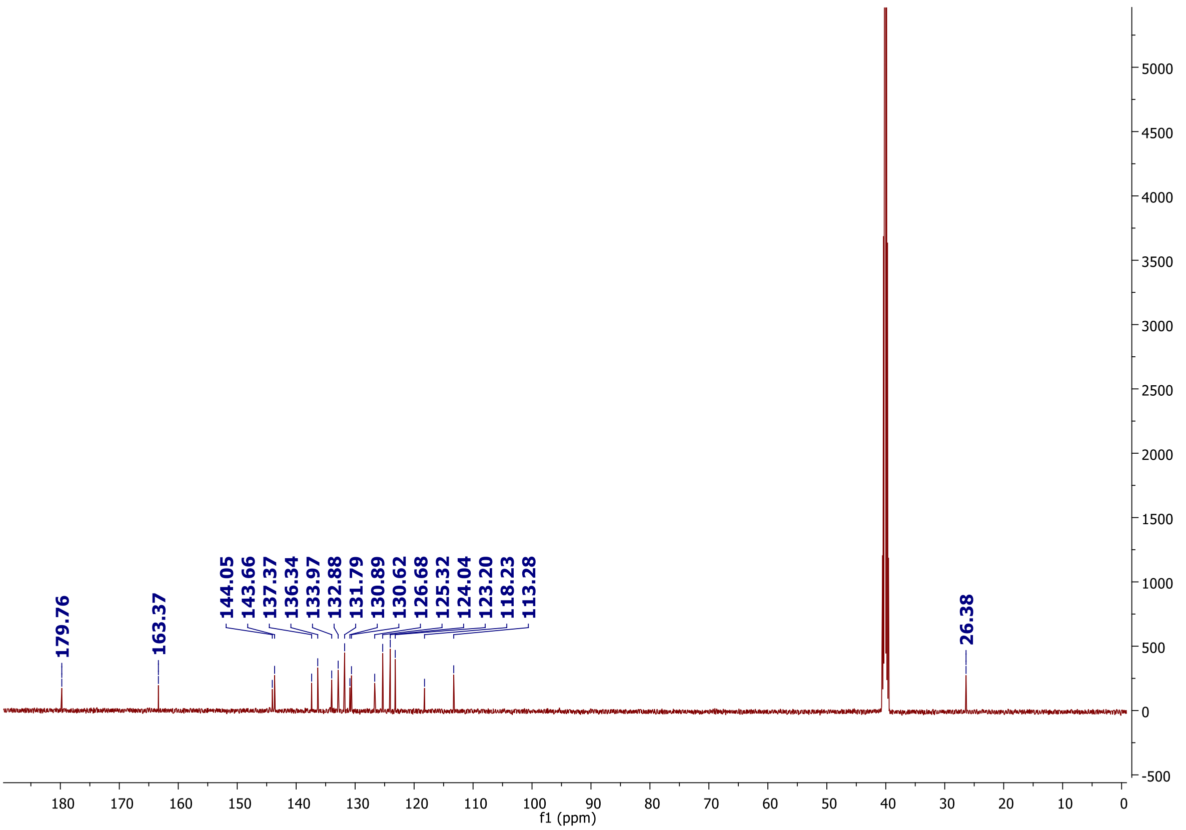
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5h**



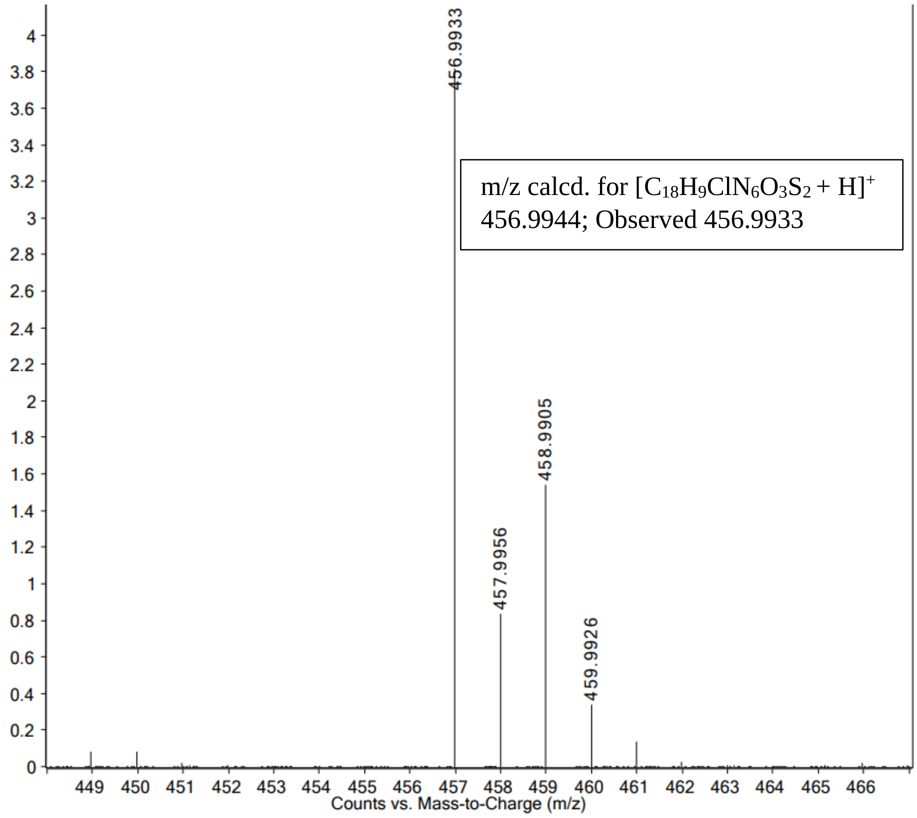
Mass spectrum of compound **5h**



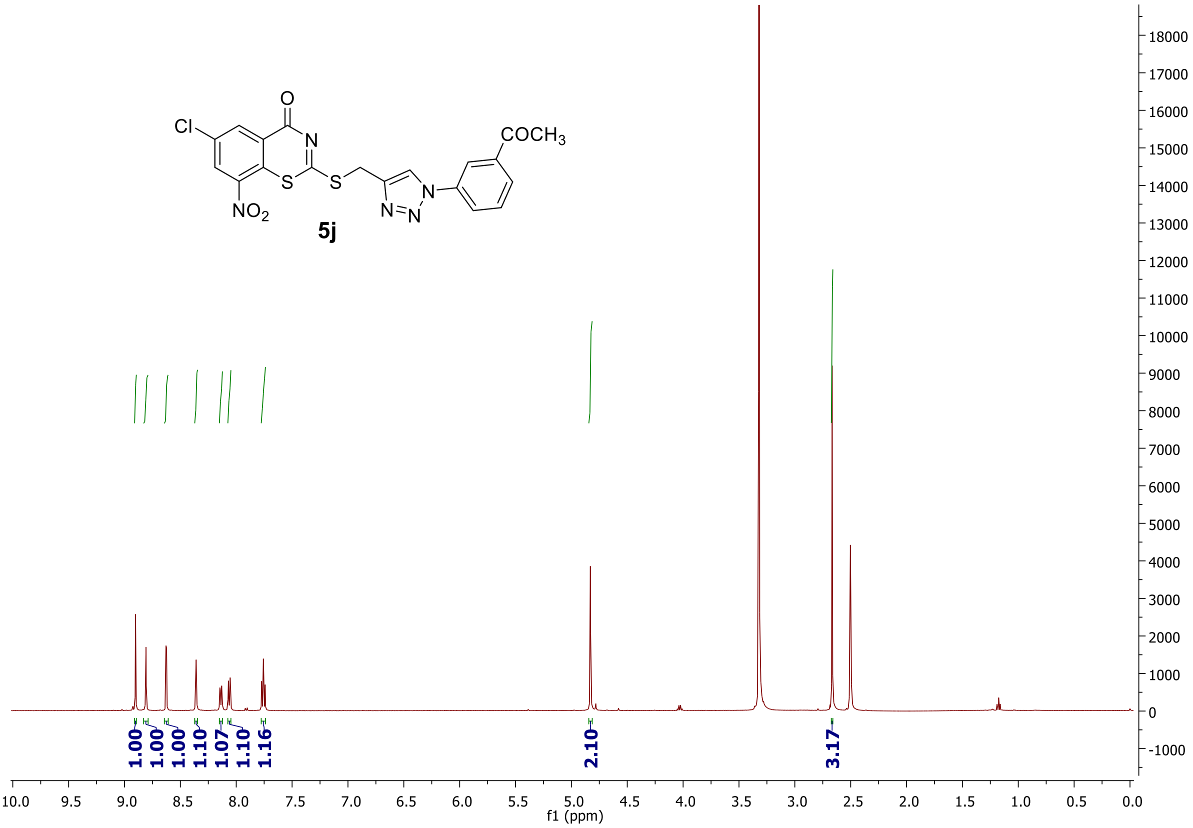
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5i**



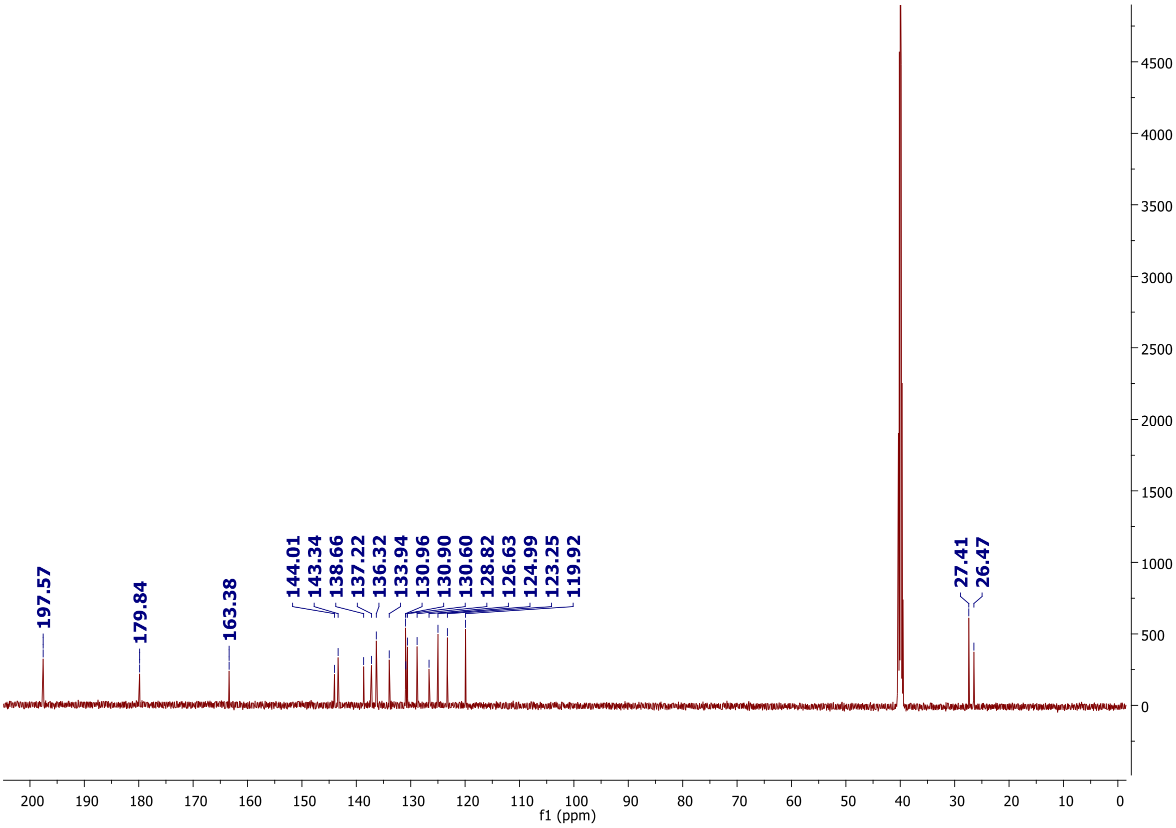
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5i**



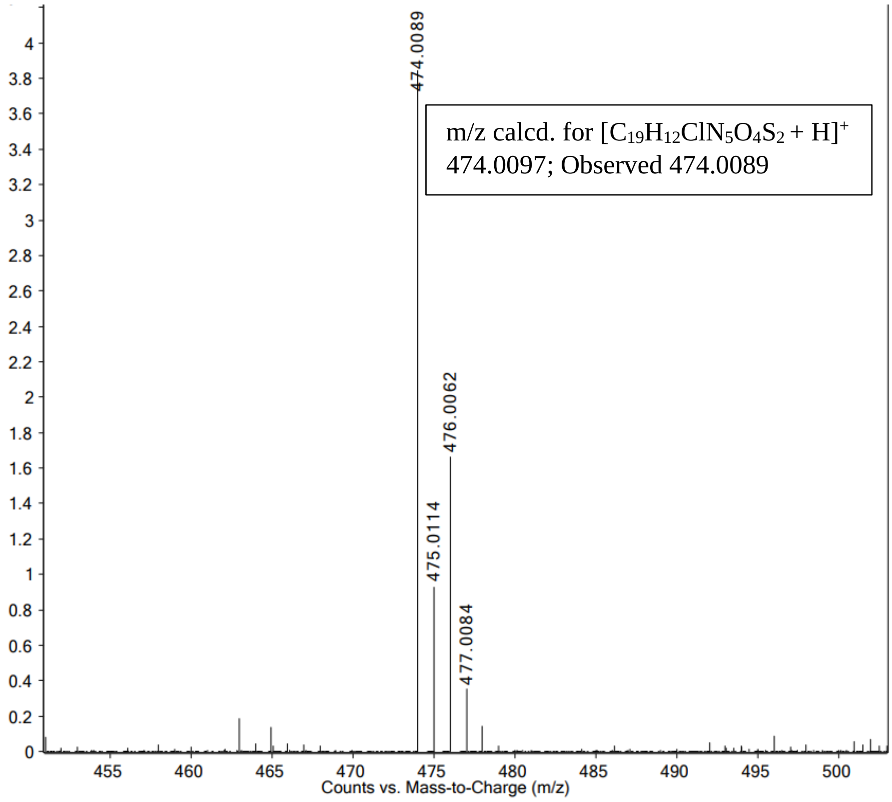
Mass spectrum of compound **5i**



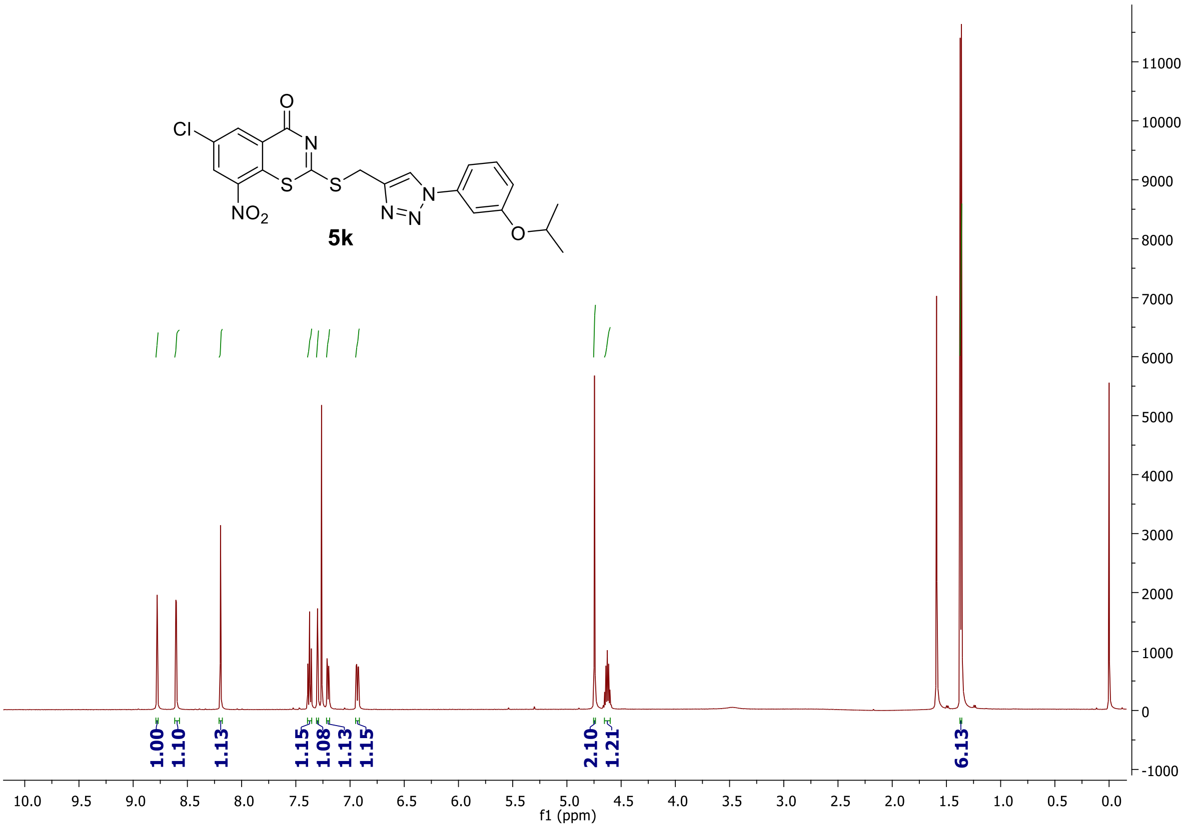
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5j**



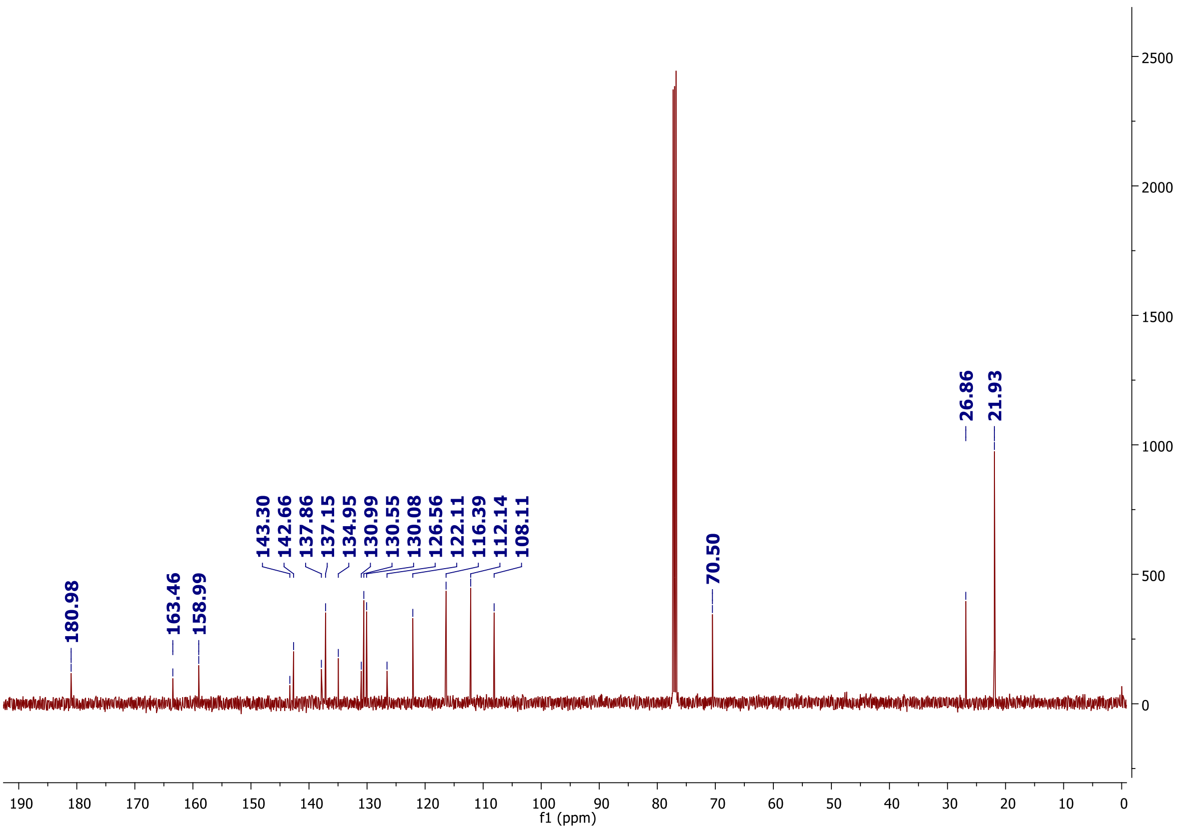
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5j**



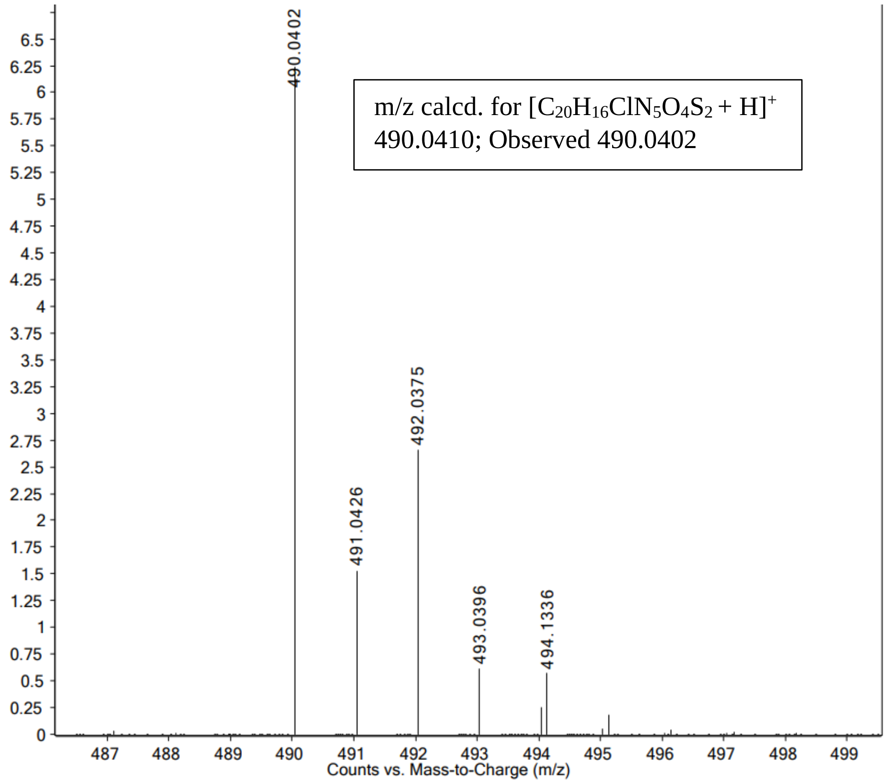
Mass spectrum of compound **5j**



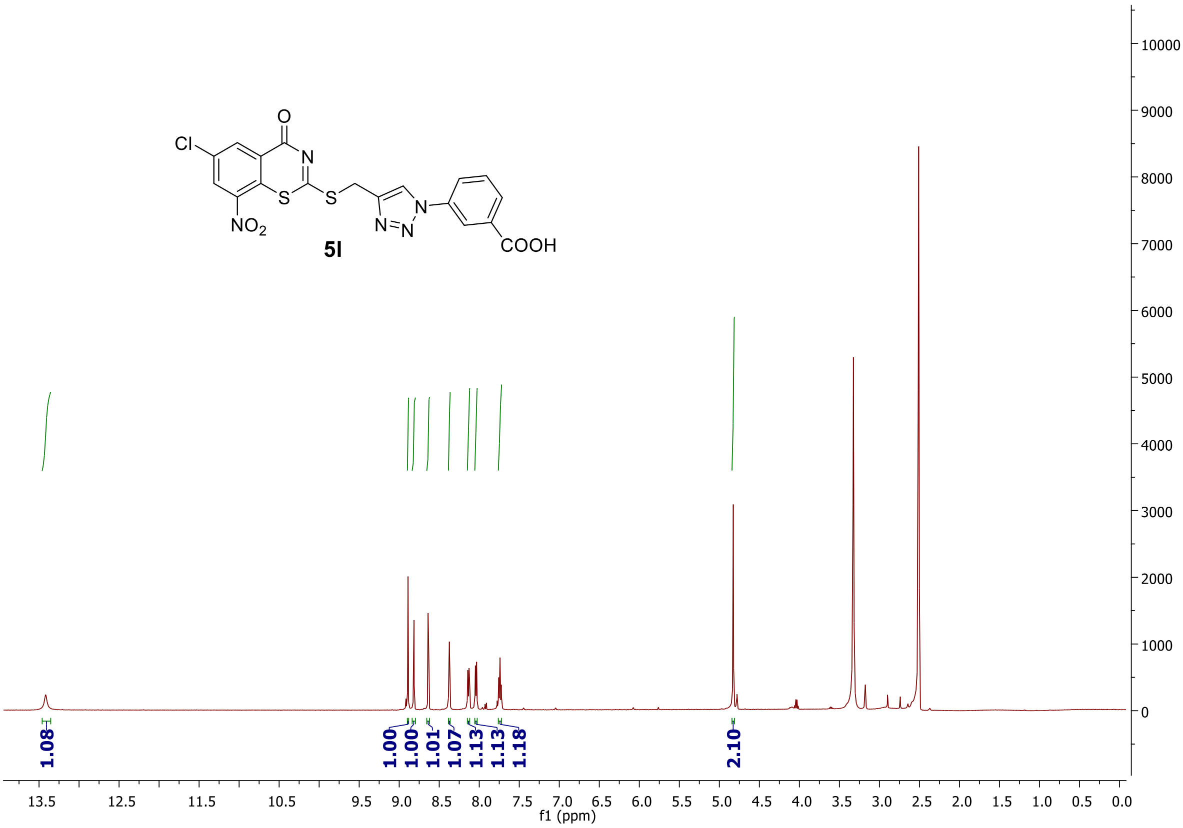
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5k**



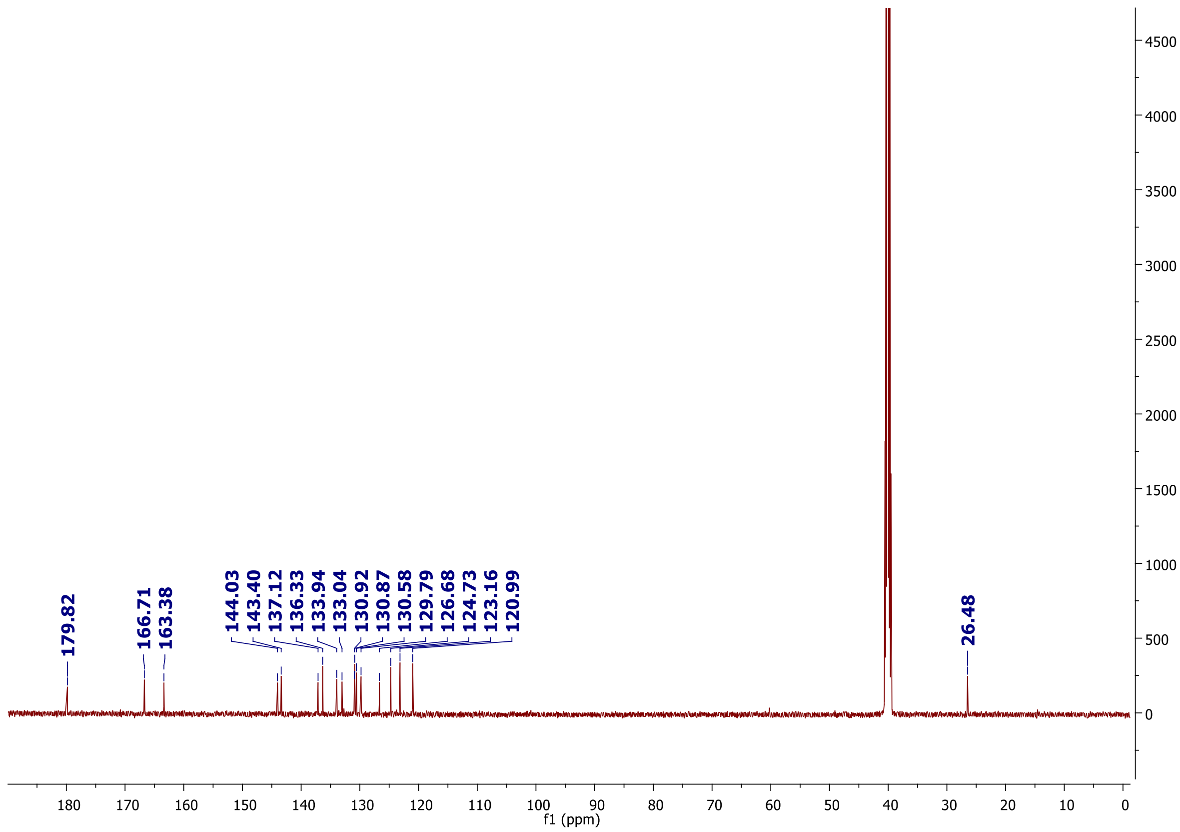
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5k**



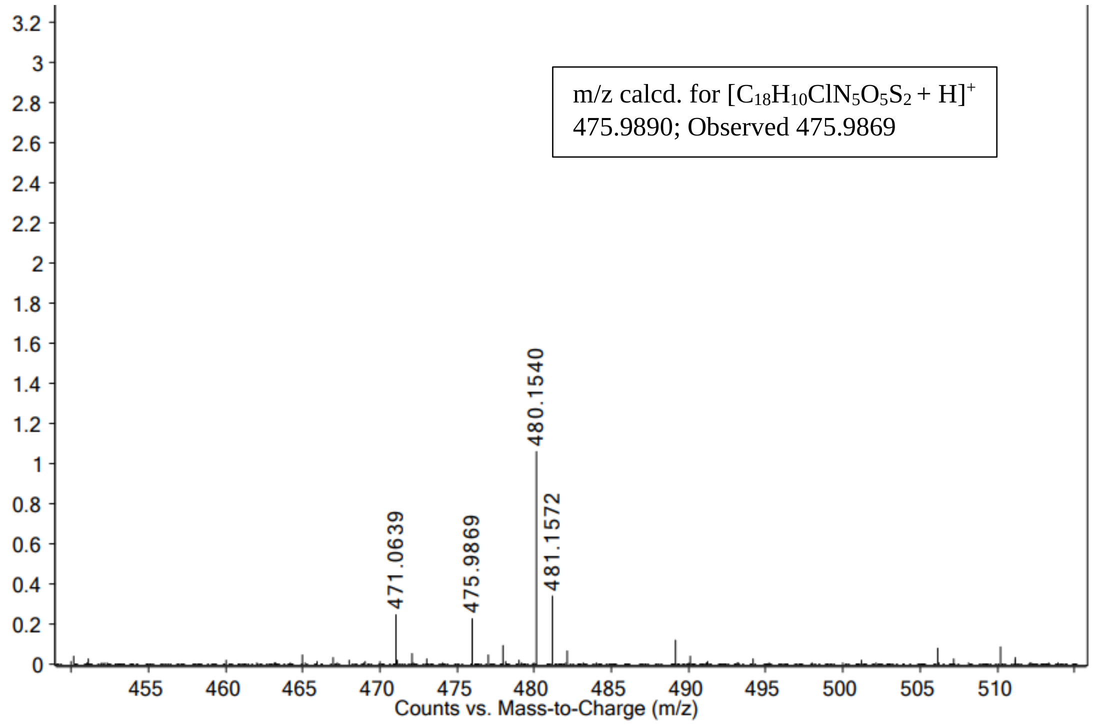
Mass spectrum of compound **5k**



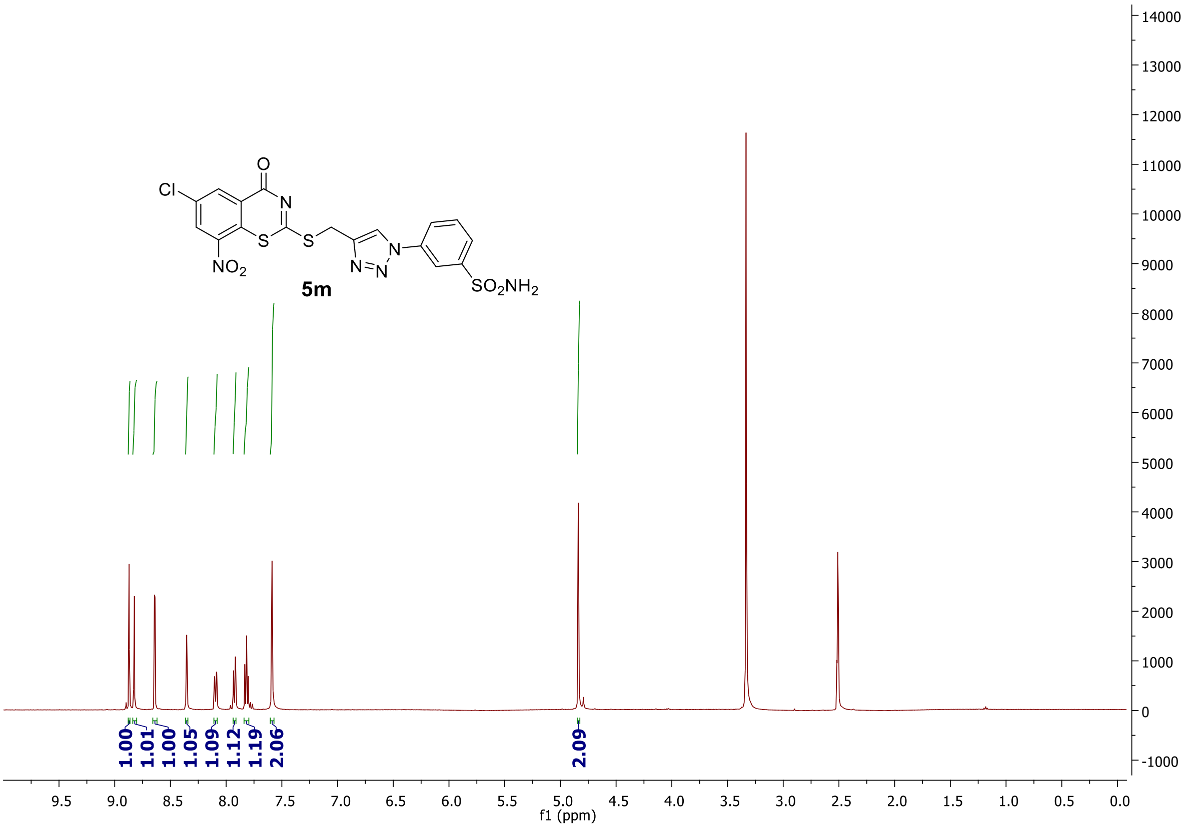
[1]H NMR (500 MHz, DMSO-d_6) spectrum of compound **5l**



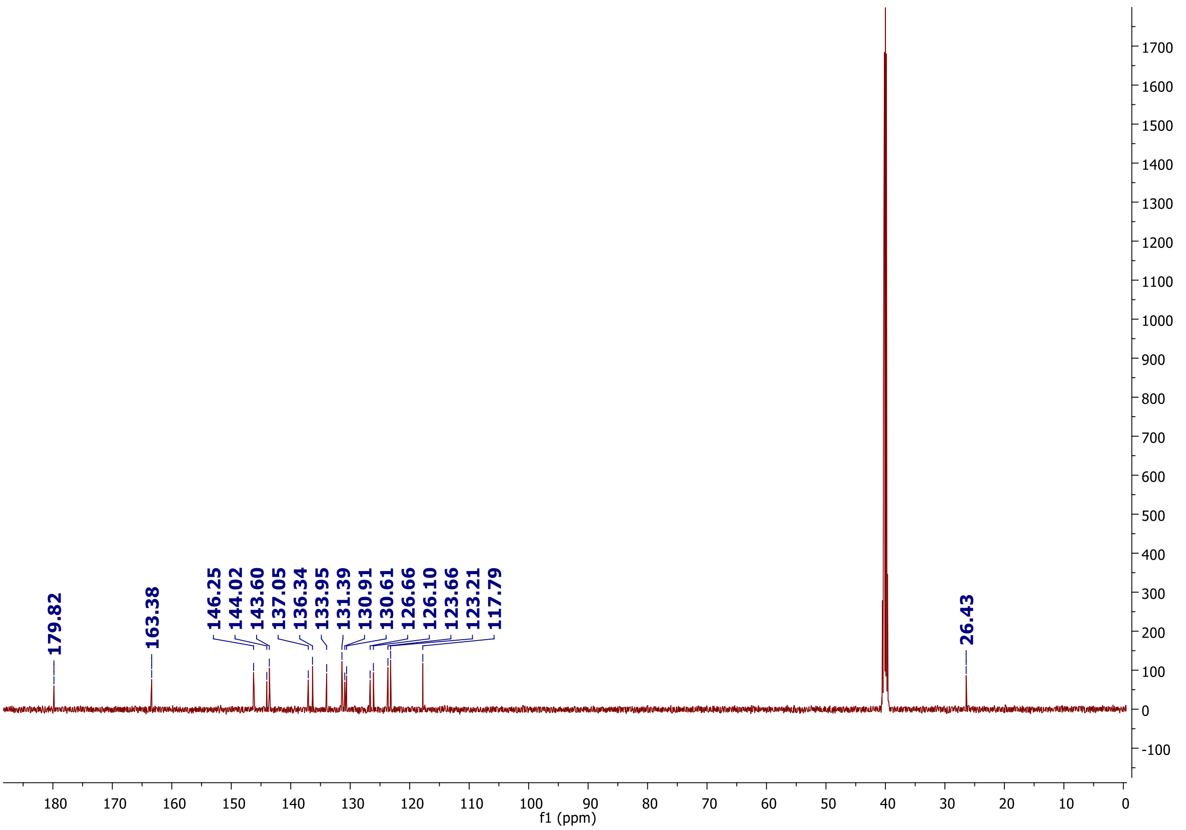
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5l**



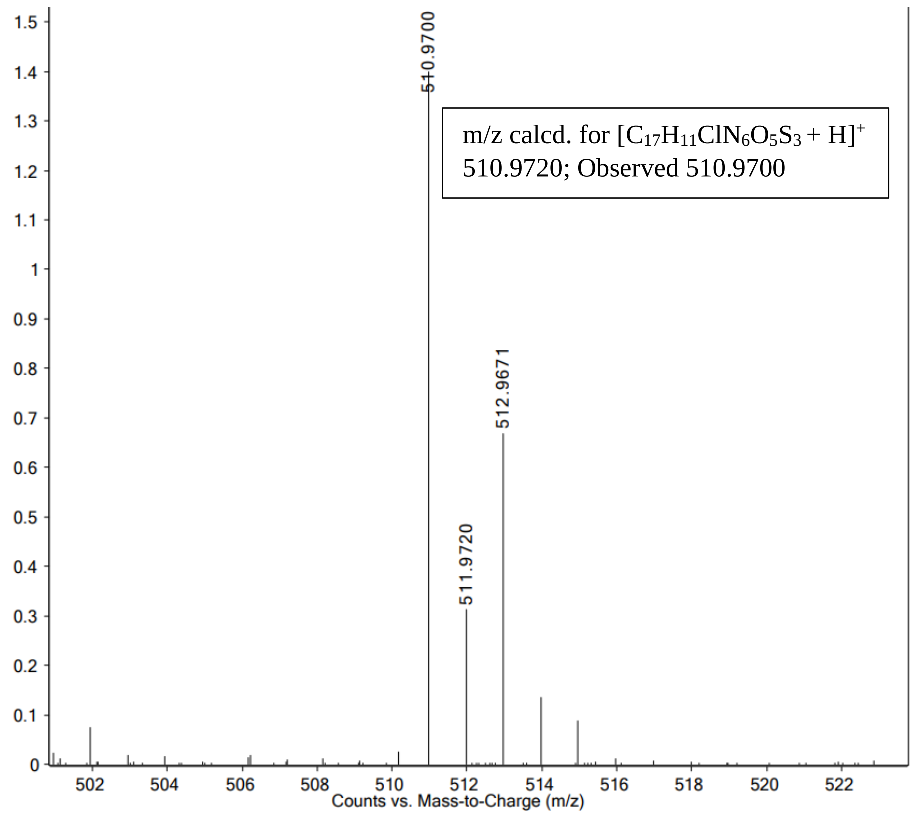
Mass spectrum of compound **5l**



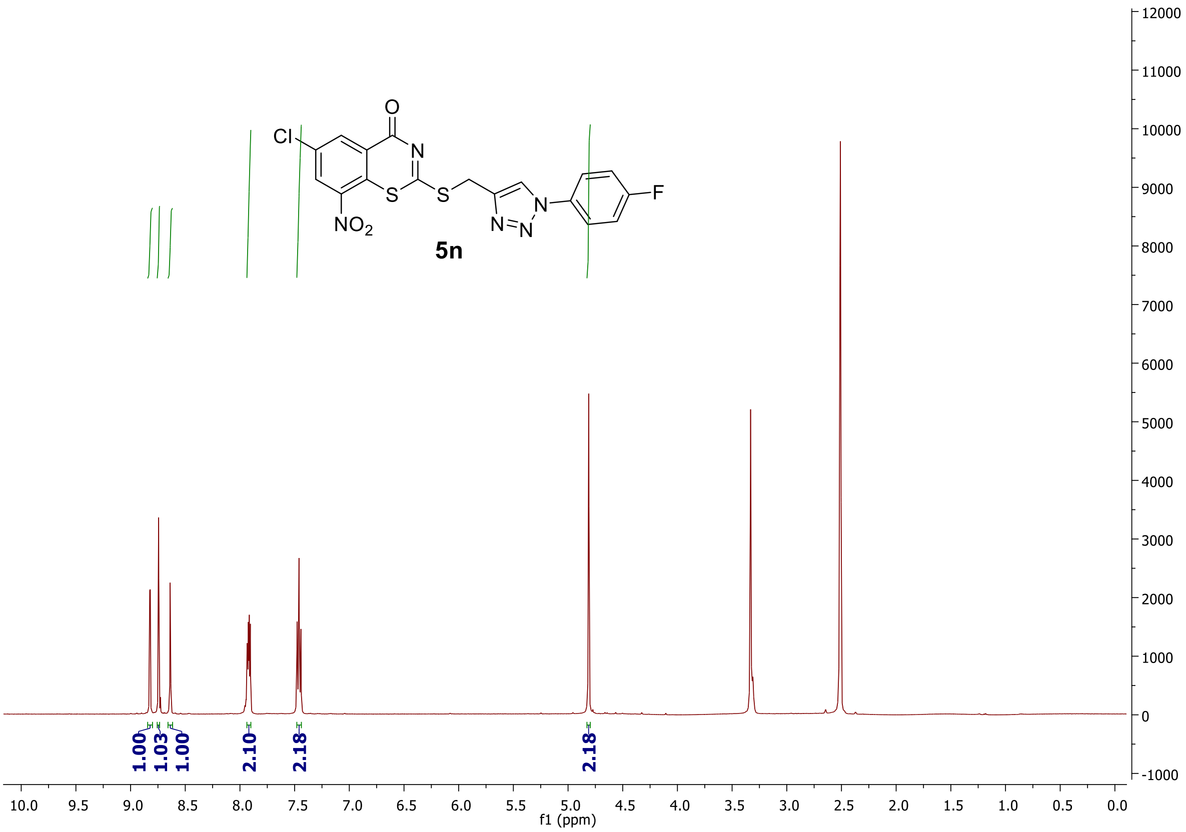
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5m**



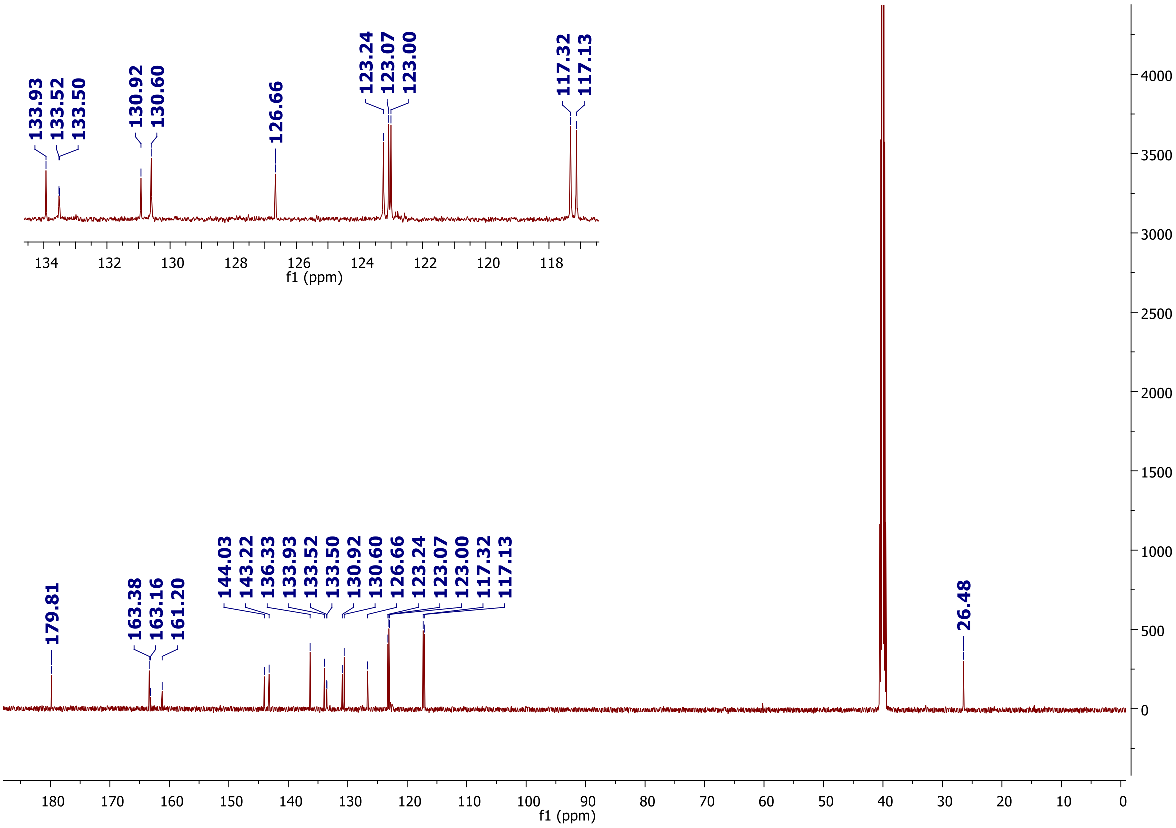
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5m**



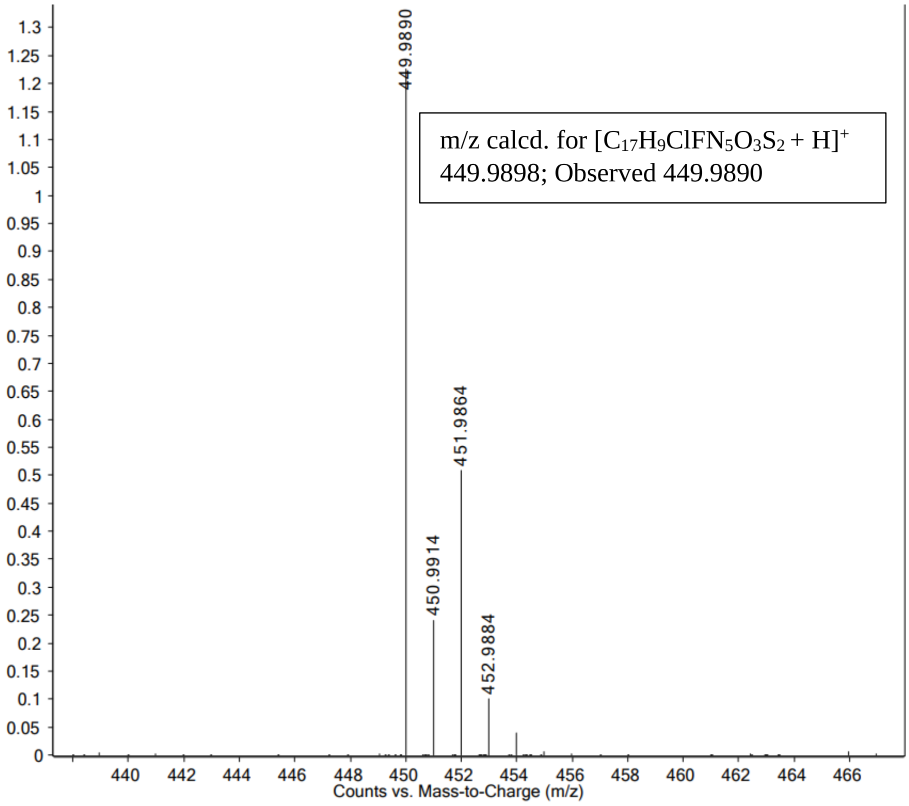
Mass spectrum of compound **5m**



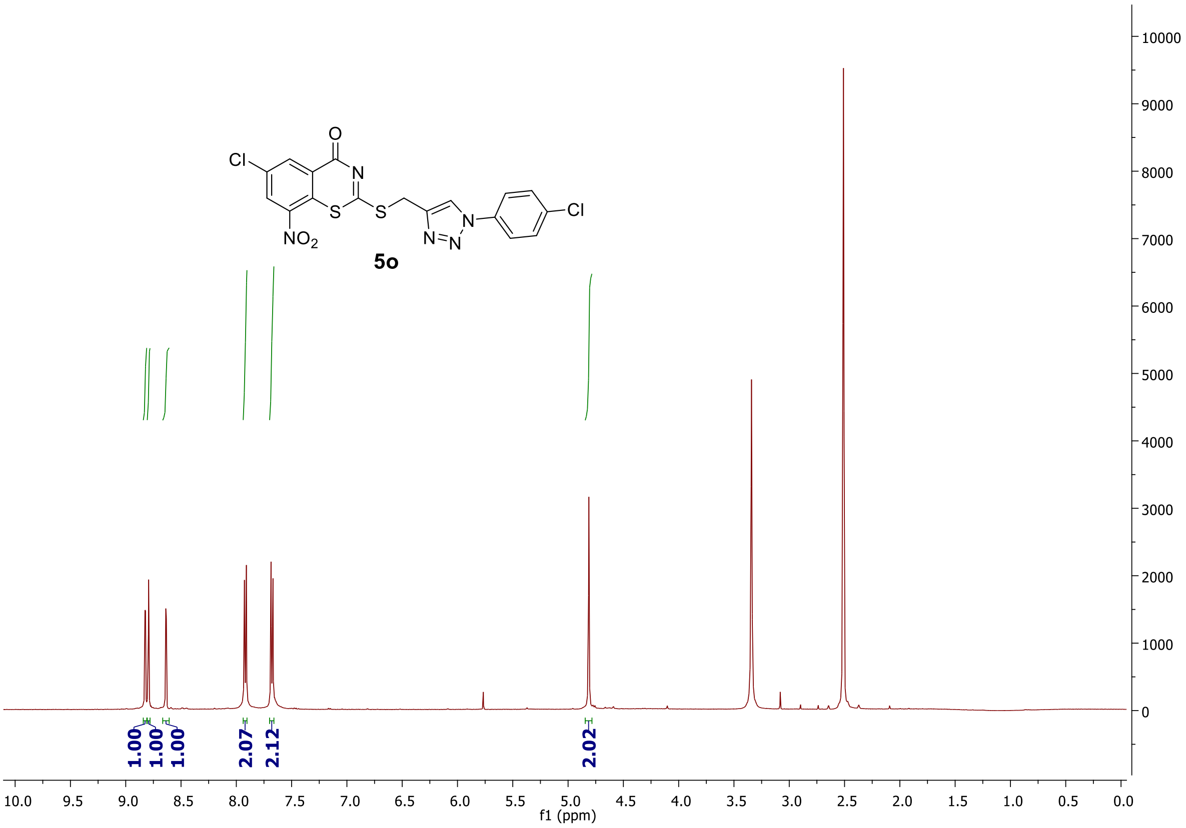
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5n**



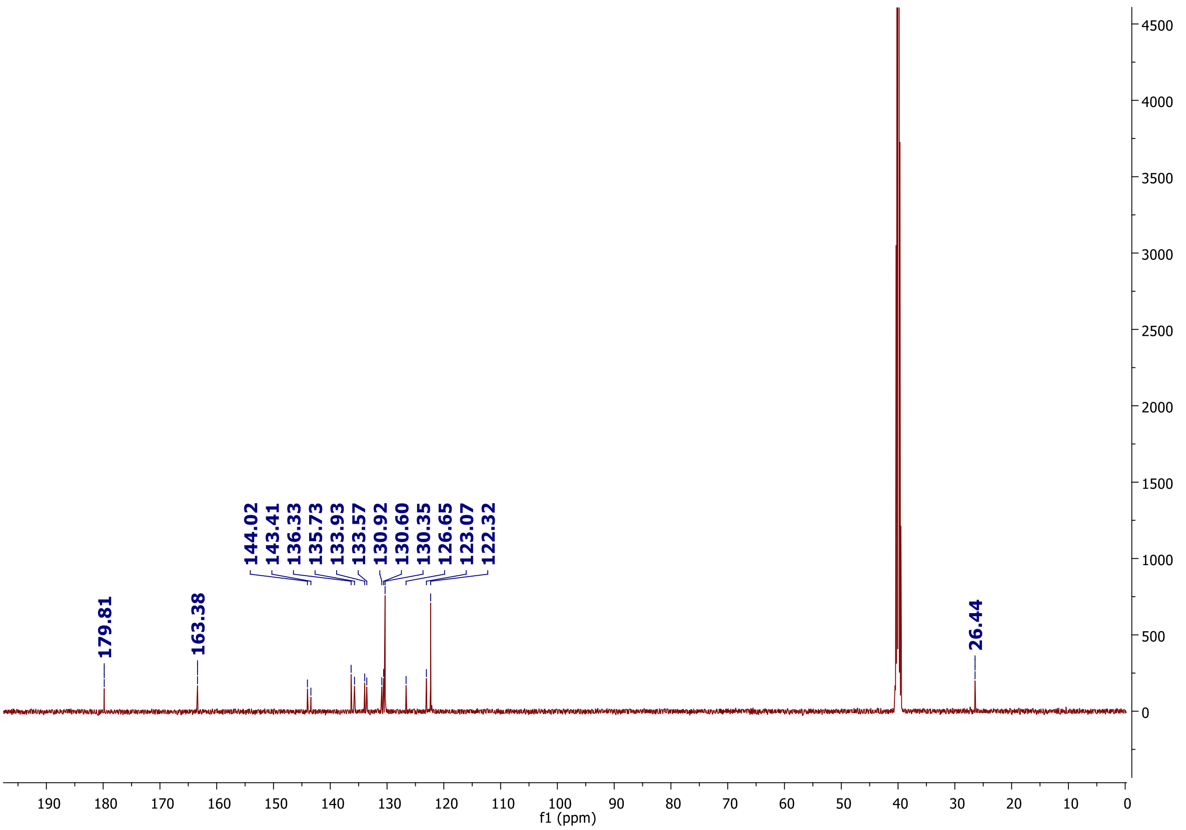
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5n**



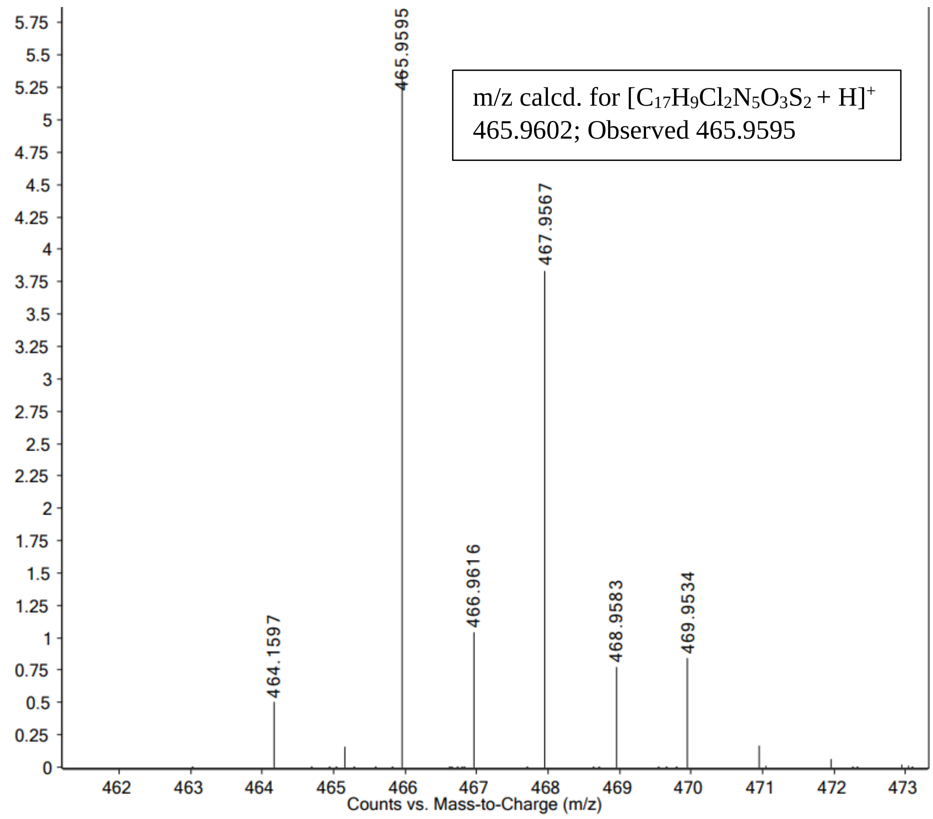
Mass spectrum of compound **5n**



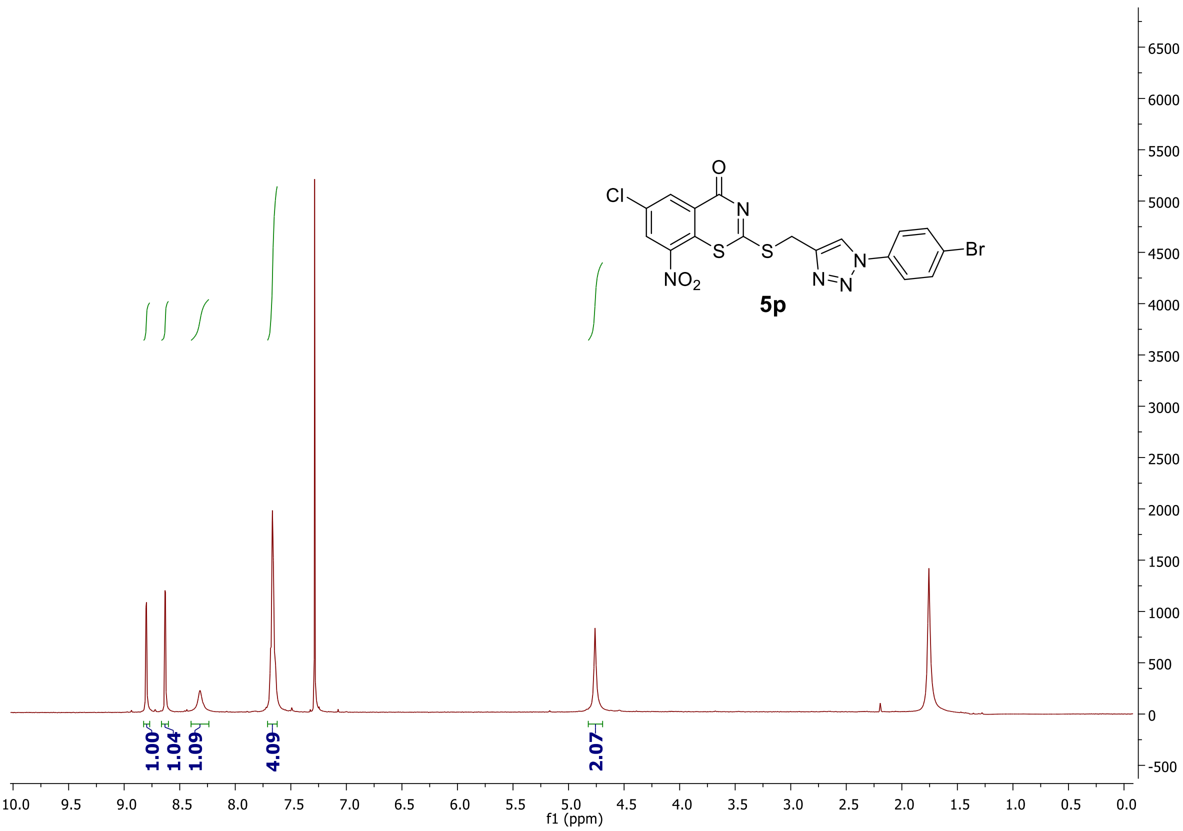
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5o**



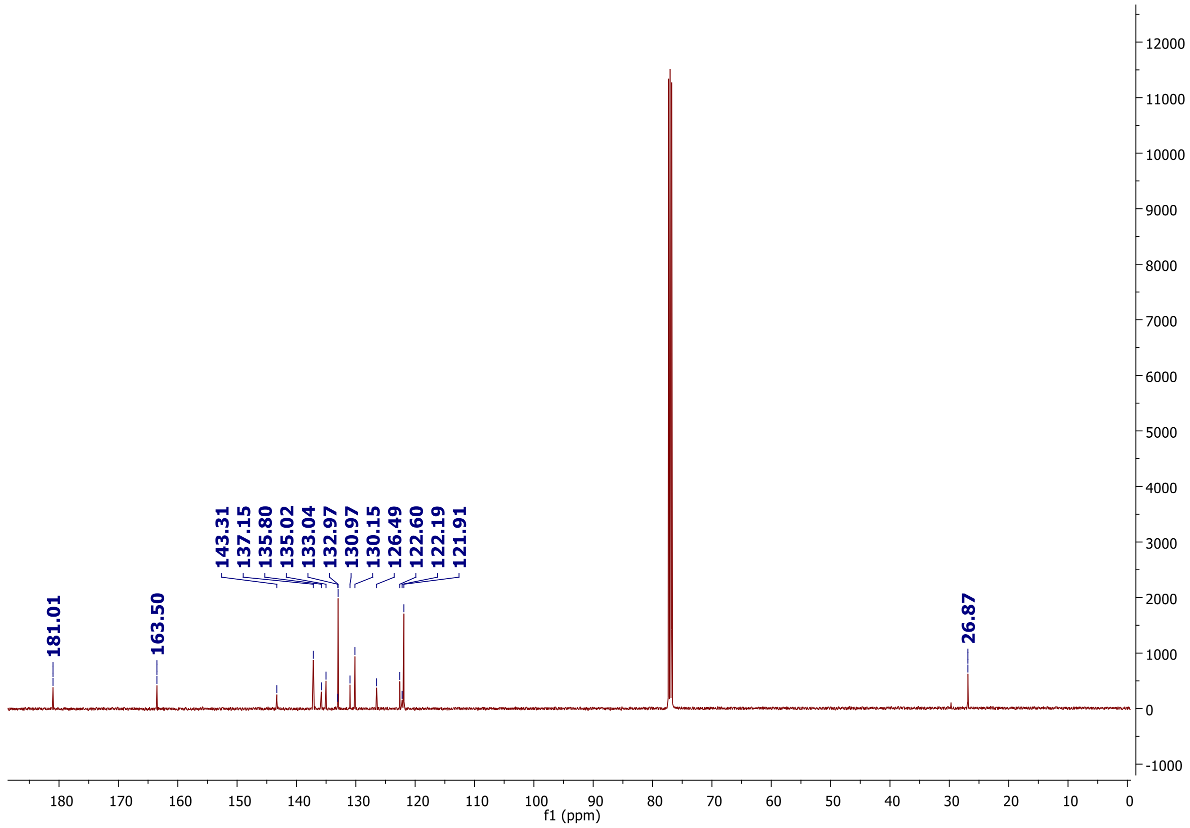
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5o**



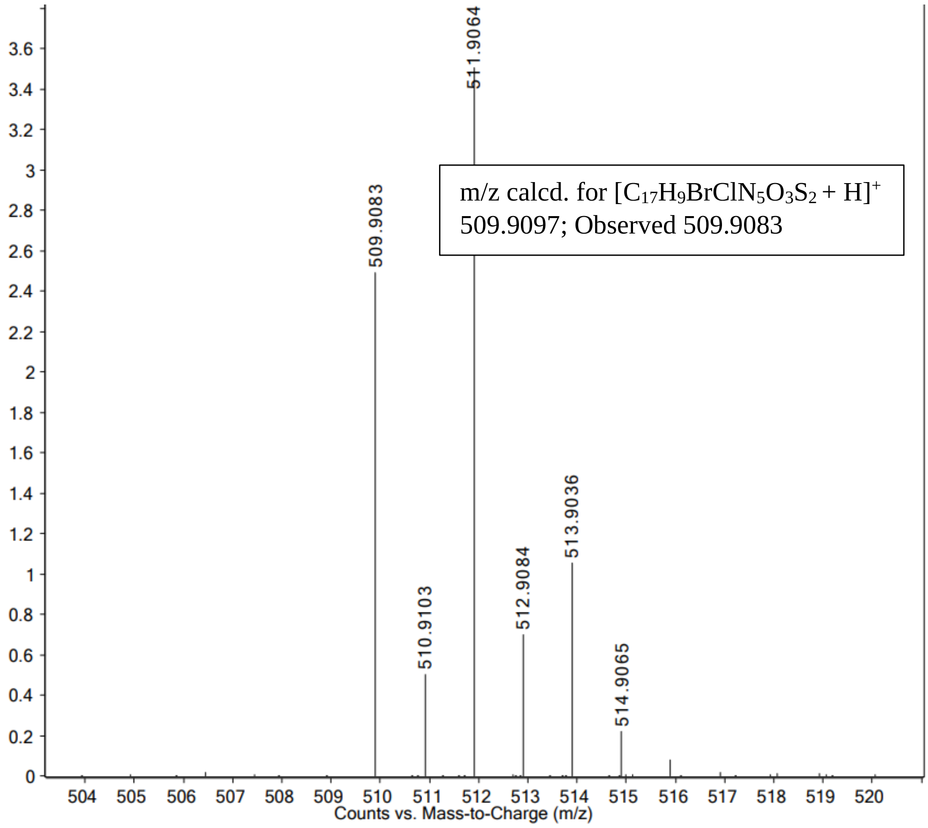
Mass spectrum of compound **5o**



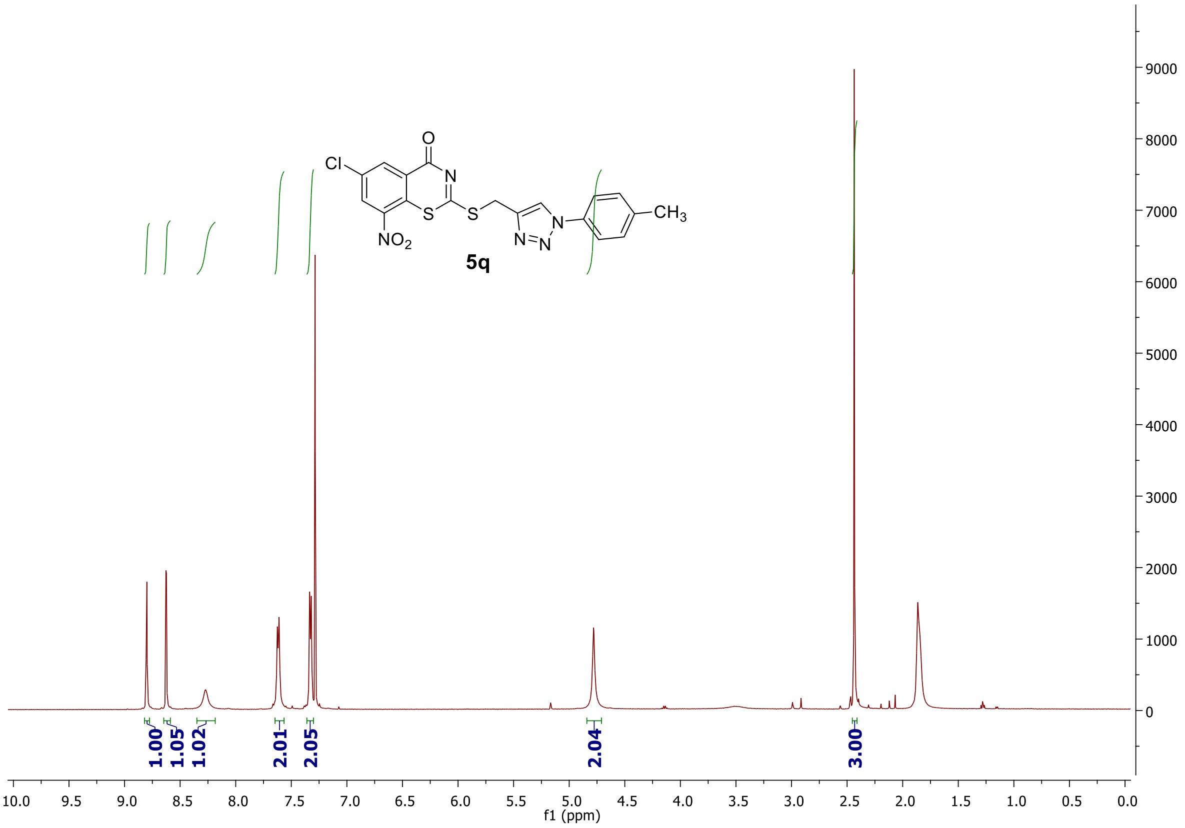
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5p**



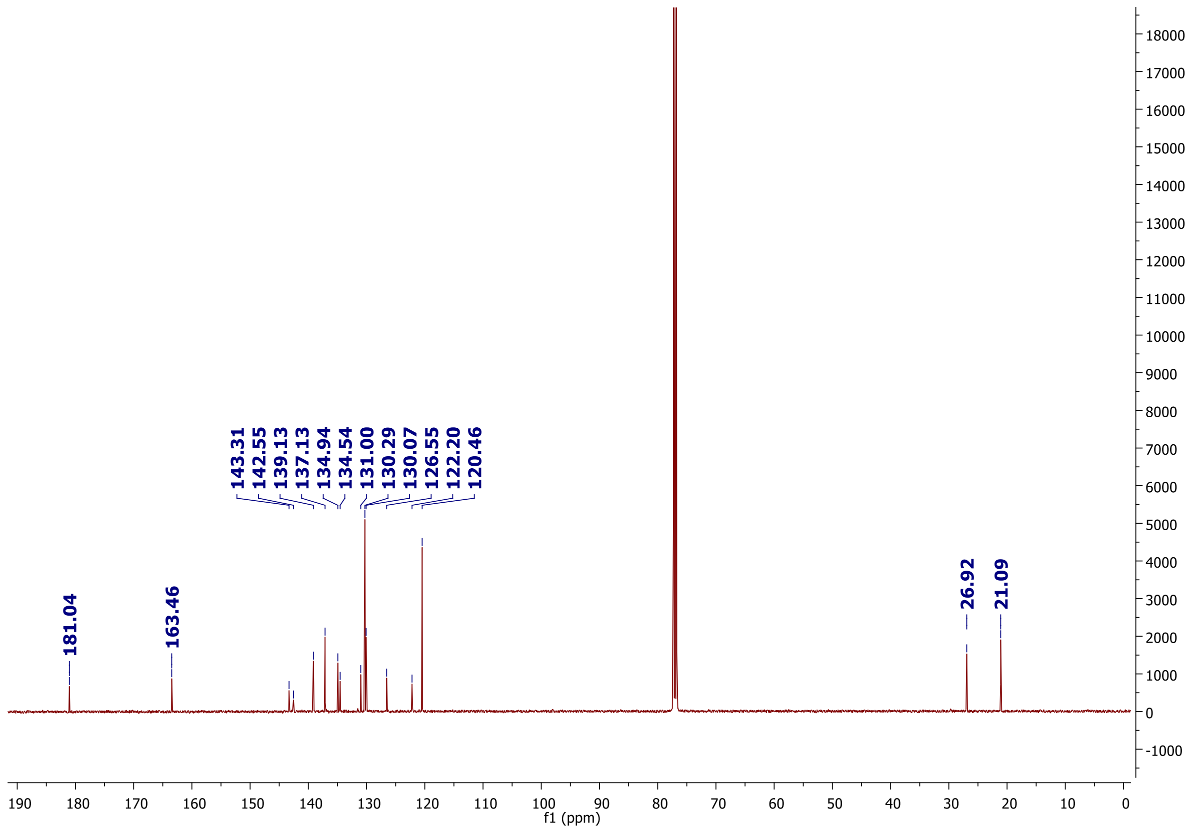
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5p**



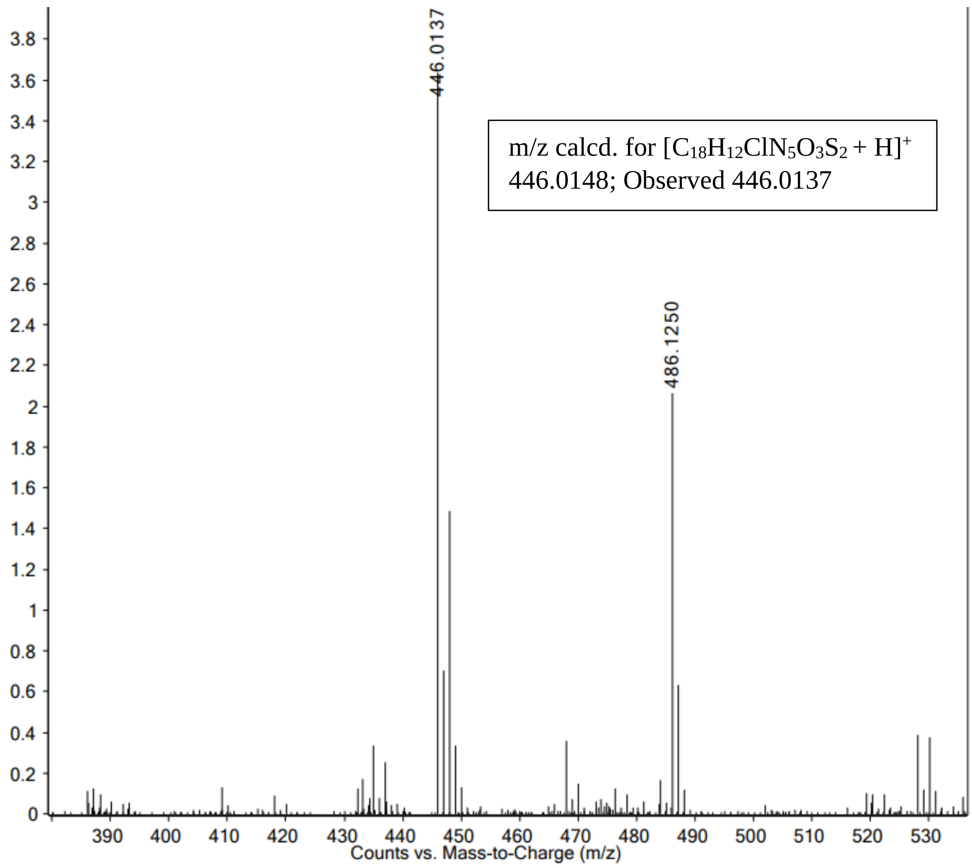
Mass spectrum of compound **5p**



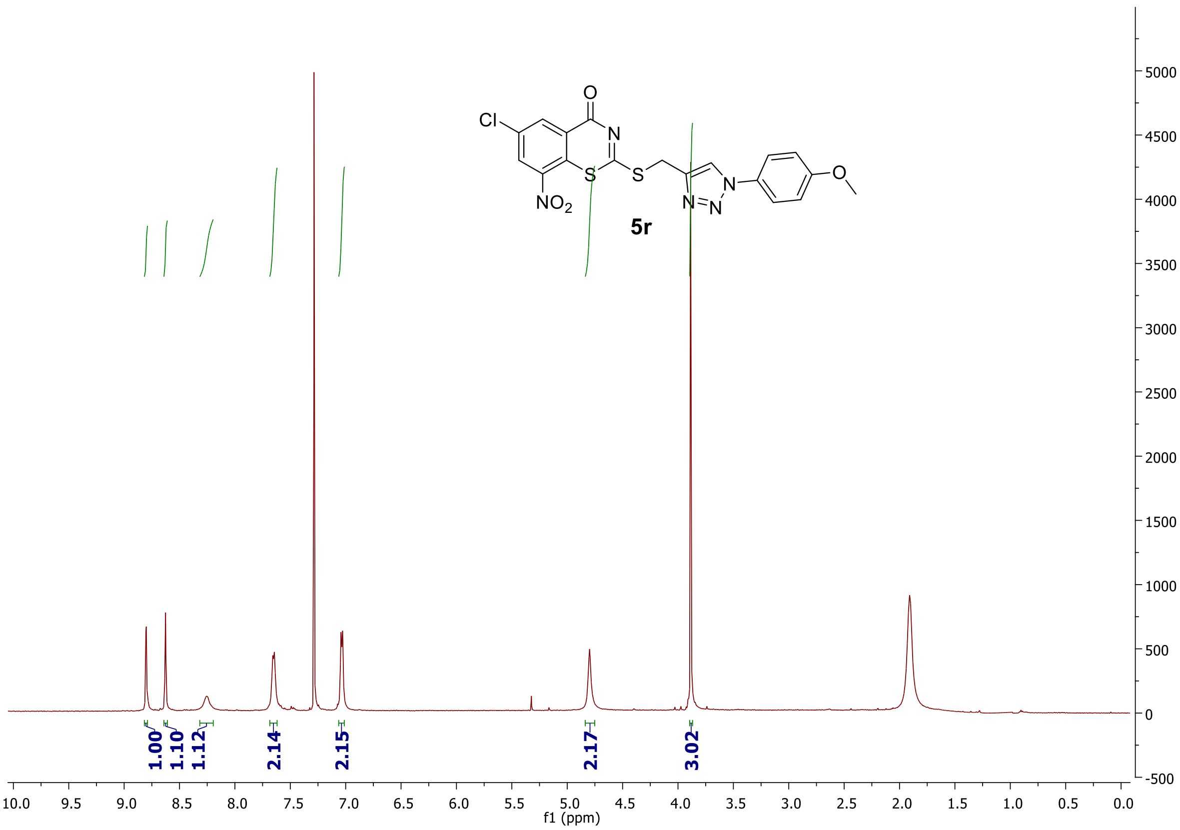
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5q**



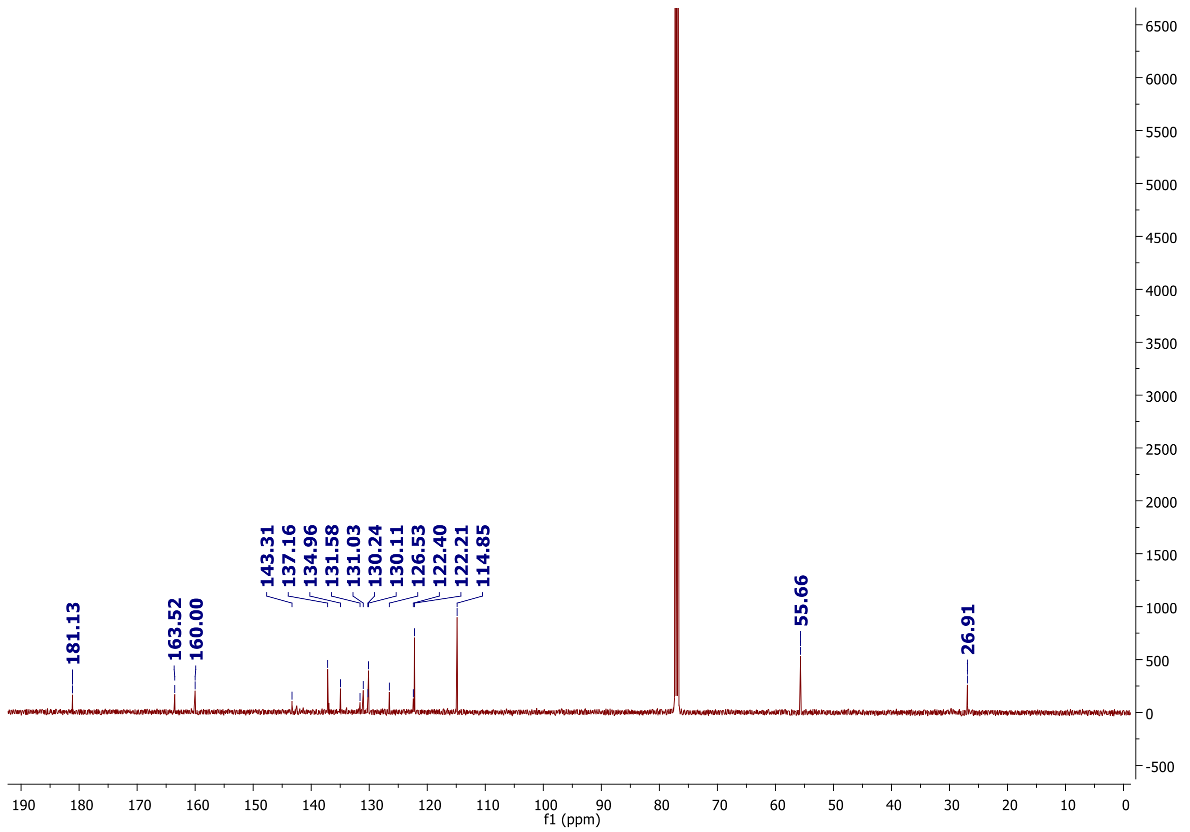
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5q**



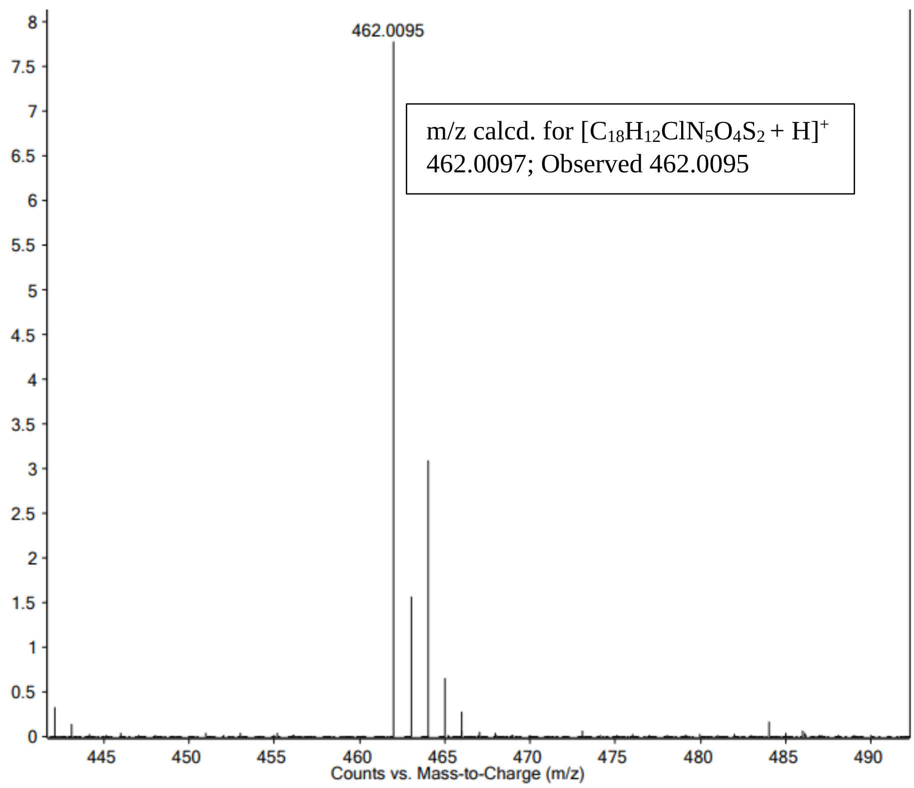
Mass spectrum of compound **5q**



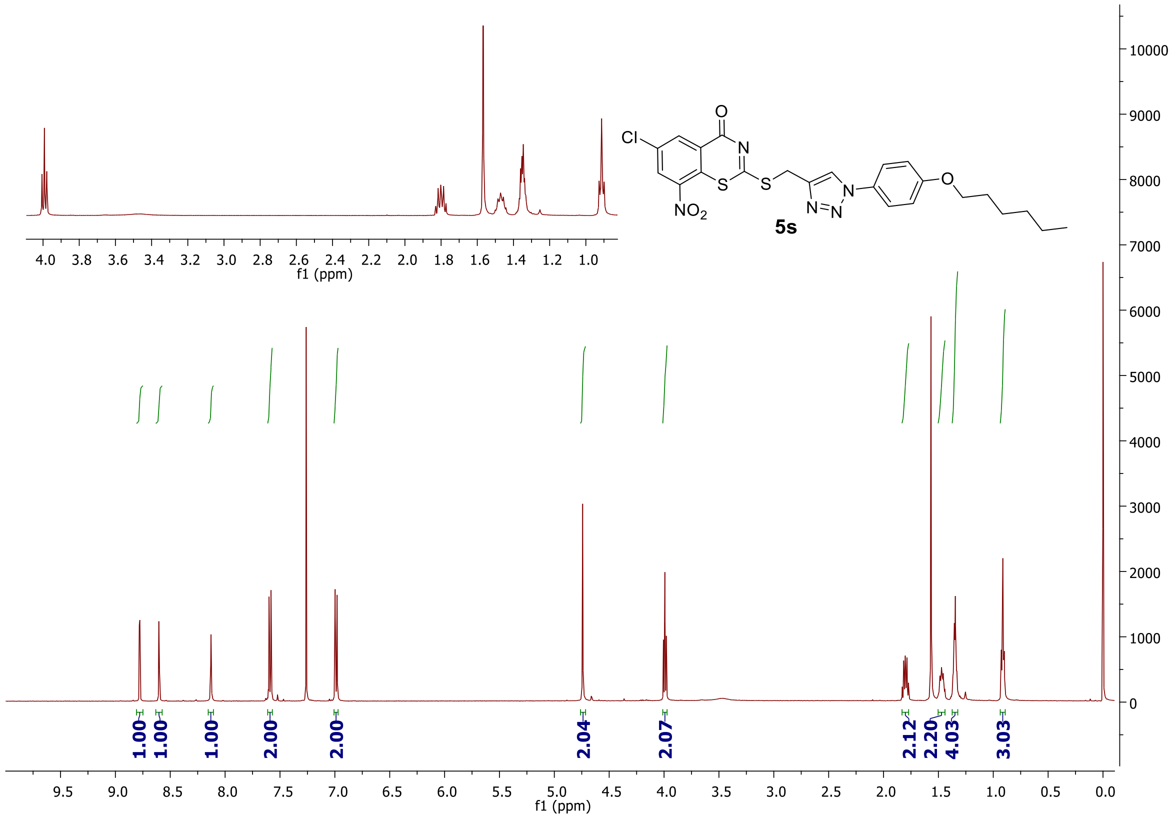
[1]H NMR (500 MHz, $CDCl_3$) spectrum of compound **5r**



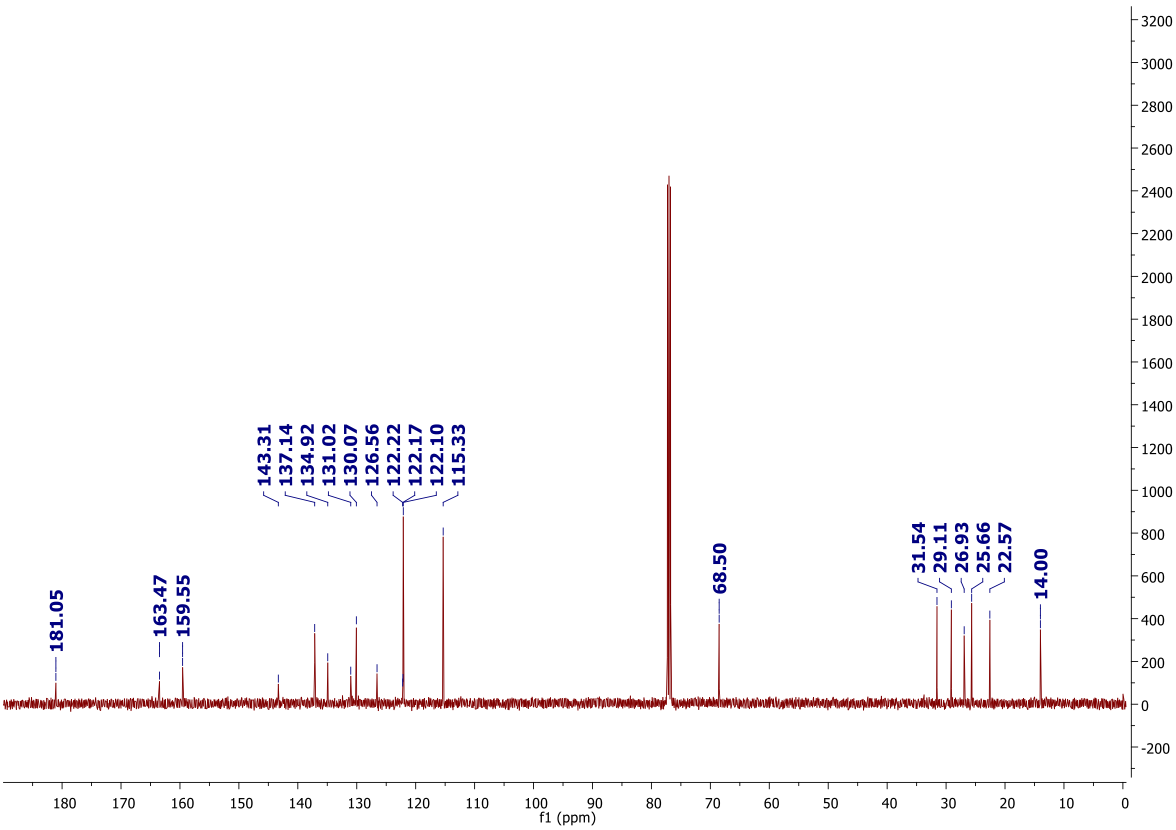
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5r**



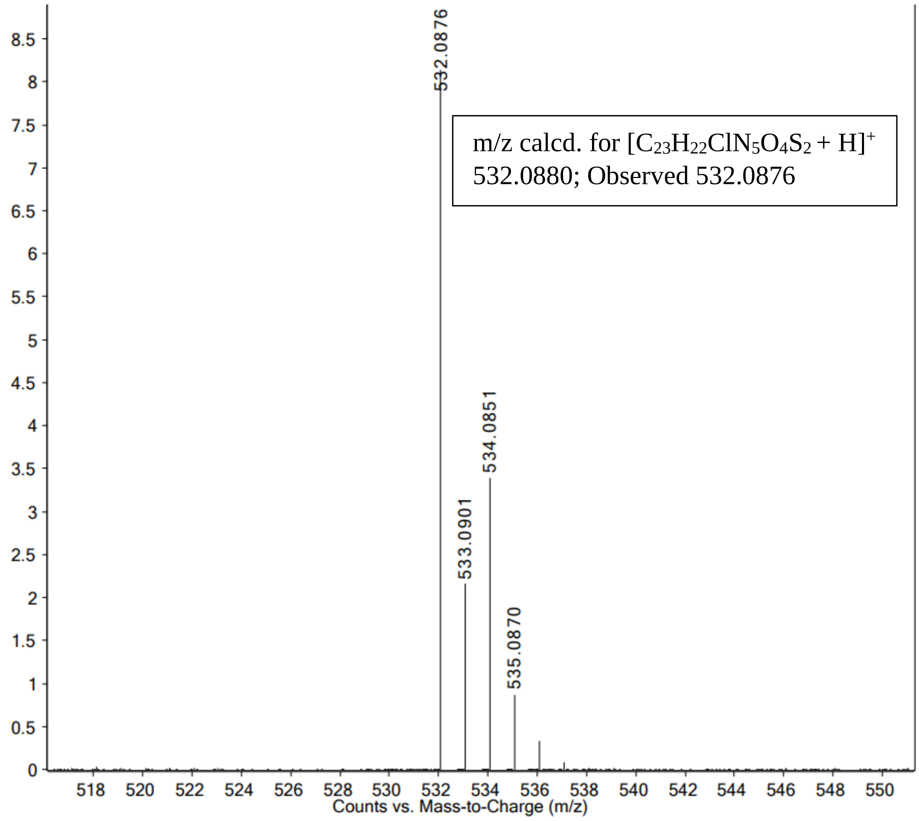
Mass spectrum of compound **5r**



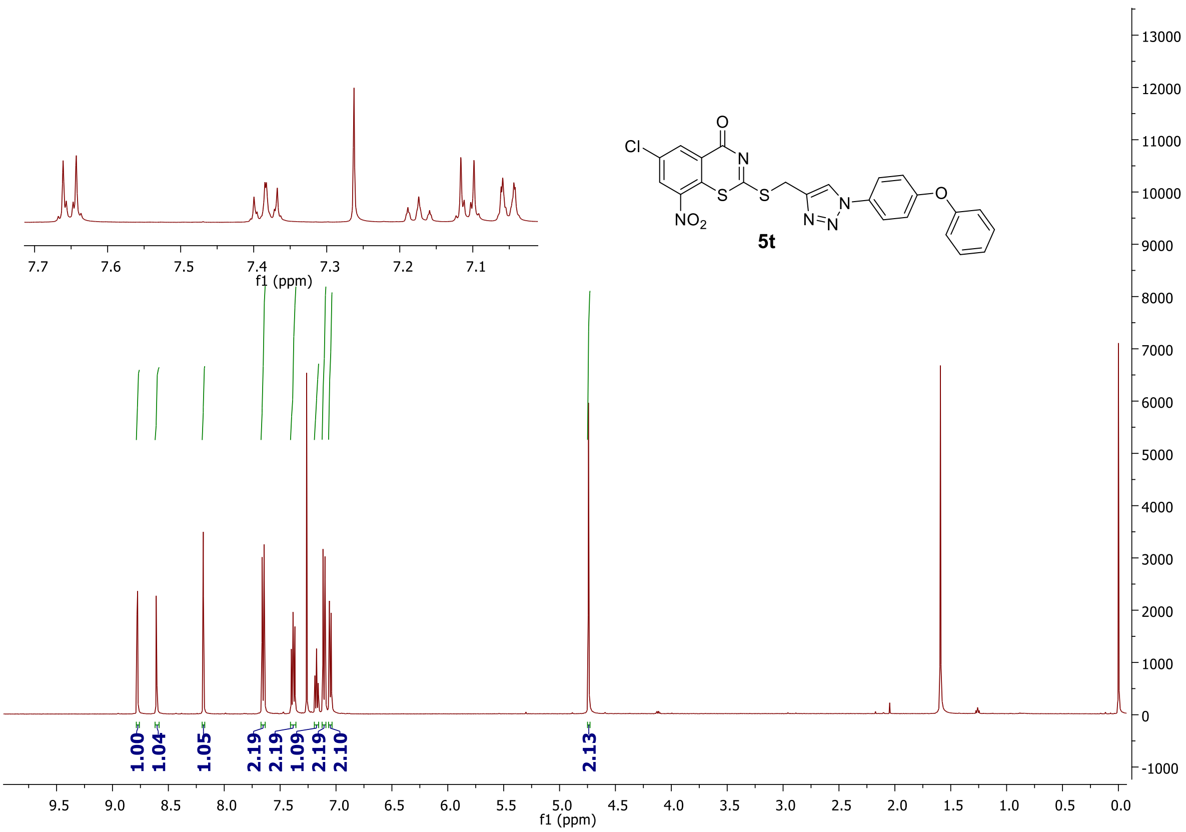
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5s**



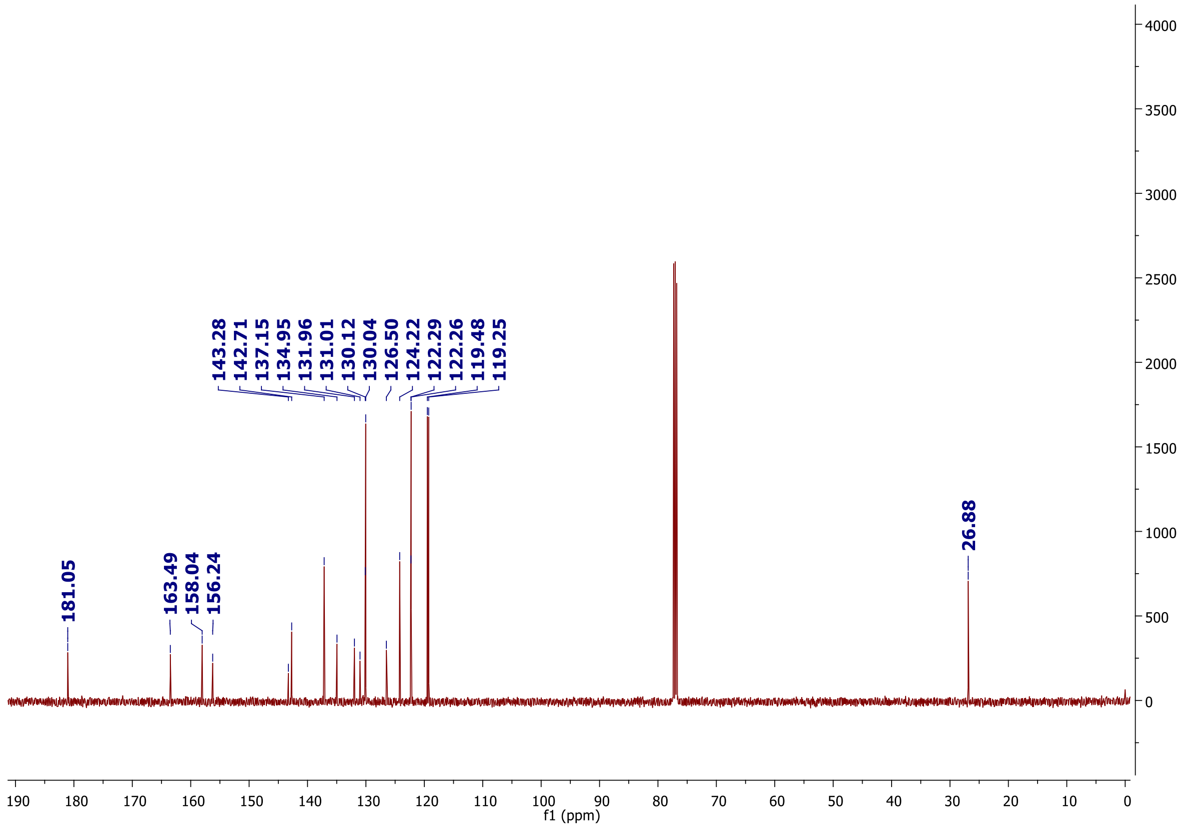
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5s**



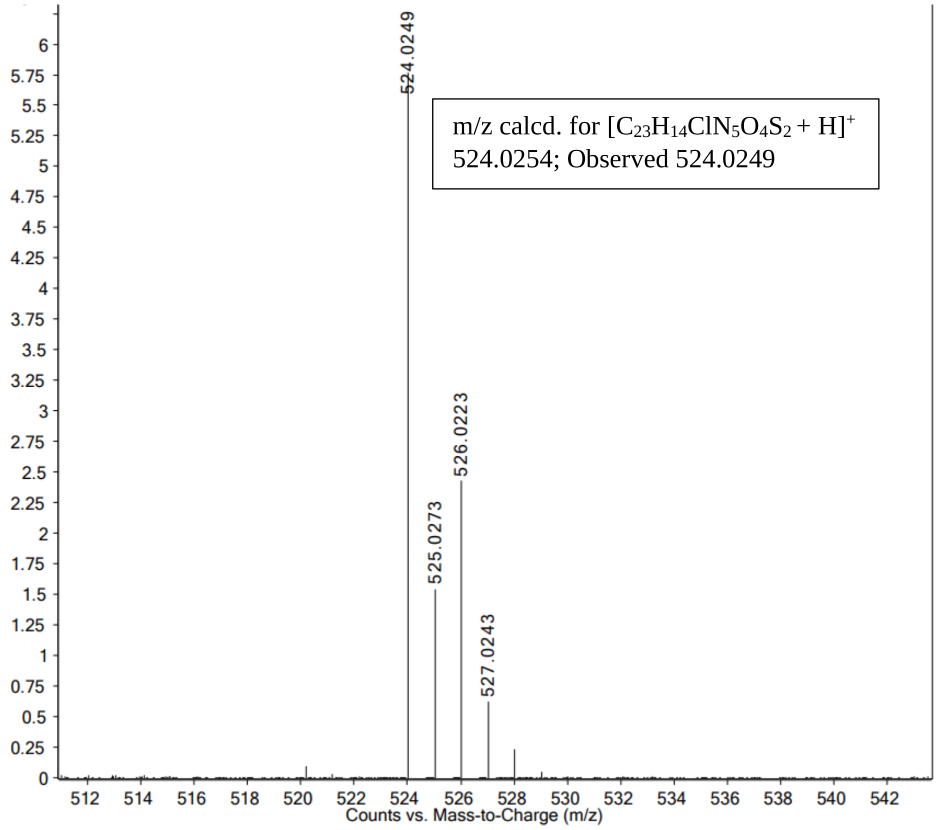
Mass spectrum of compound **5s**



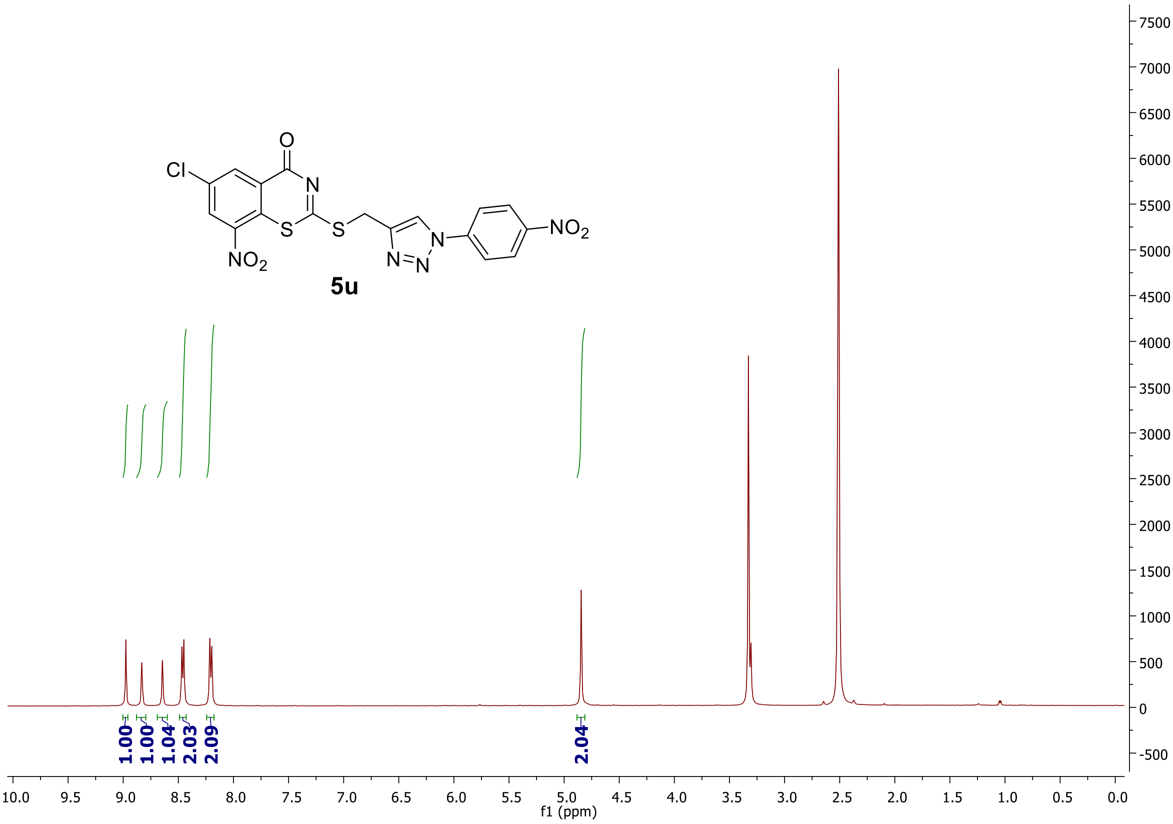
[1]H NMR (500 MHz, $CDCl_3$) spectrum of compound **5t**



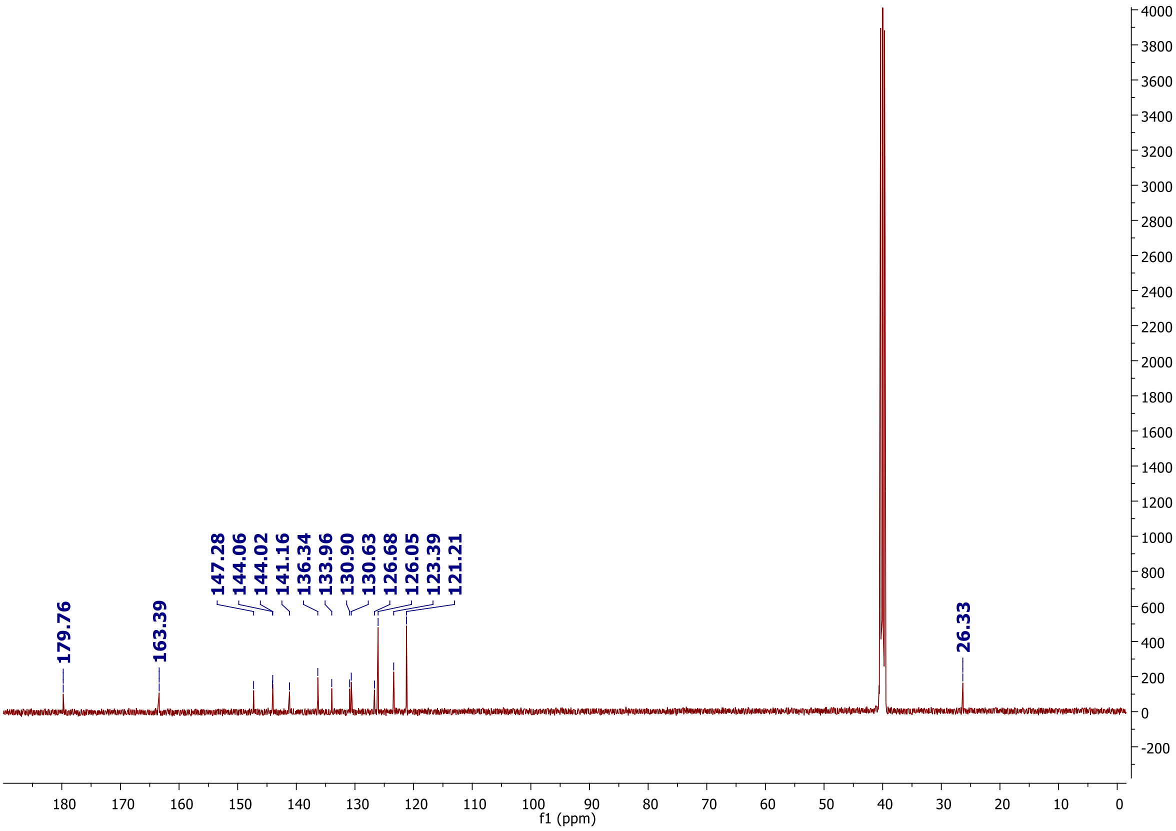
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5t**



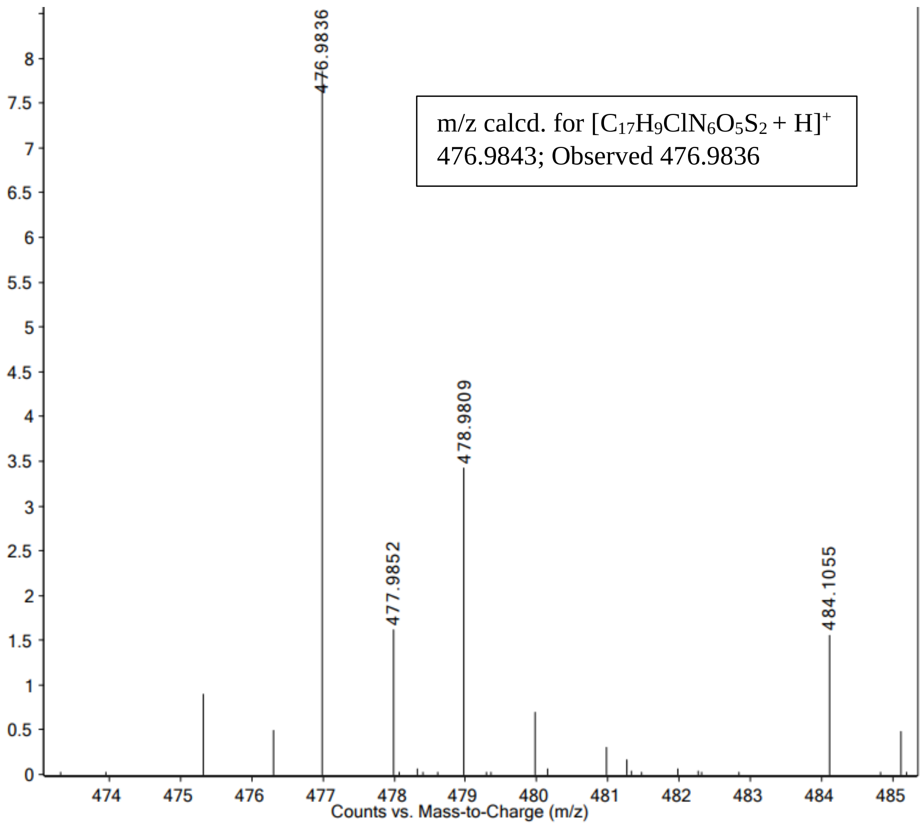
Mass spectrum of compound **5t**



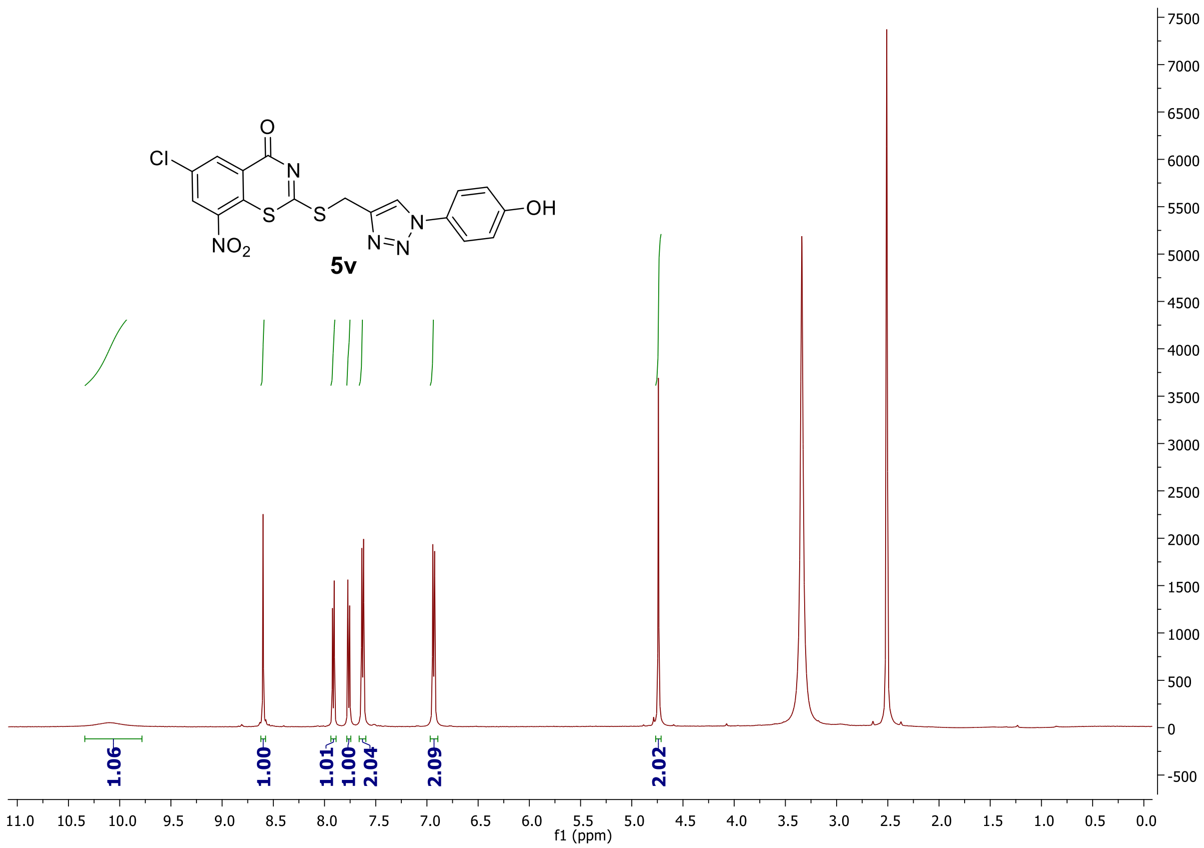
[1]H NMR (500 MHz, DMSO-d_6) spectrum of compound **5u**



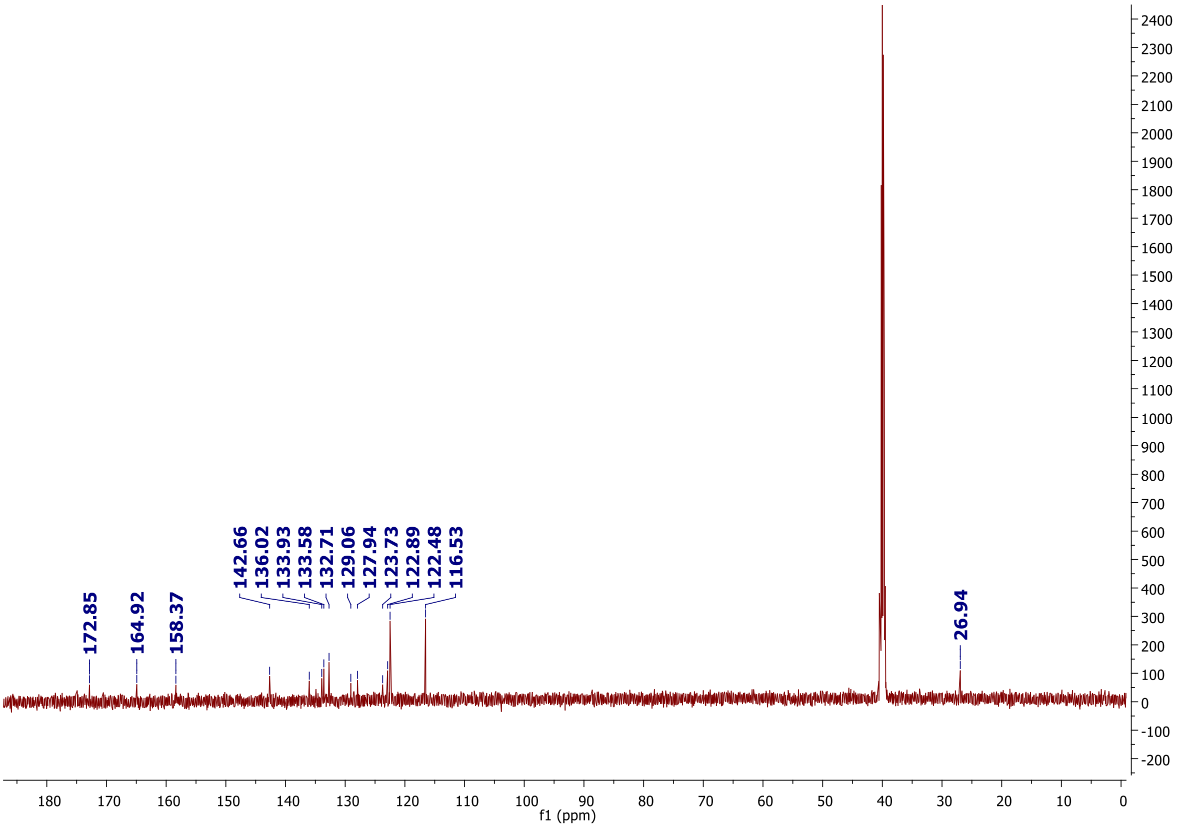
[13]C NMR (125 MHz, DMSO-d_6) spectrum of compound **5u**



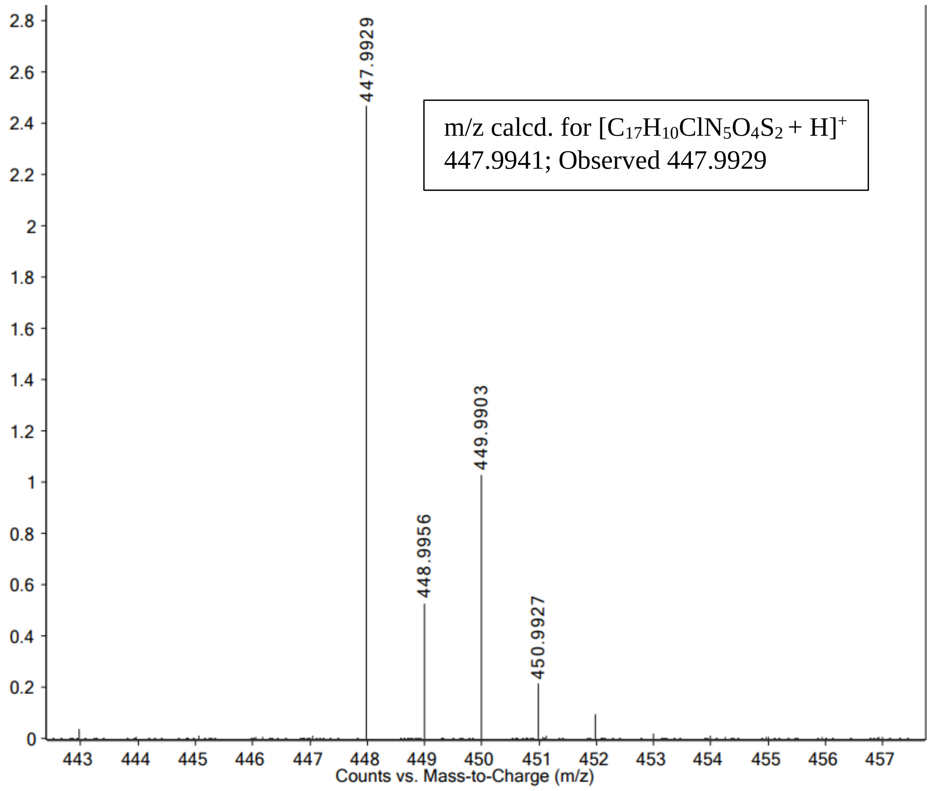
Mass spectrum of compound **5u**



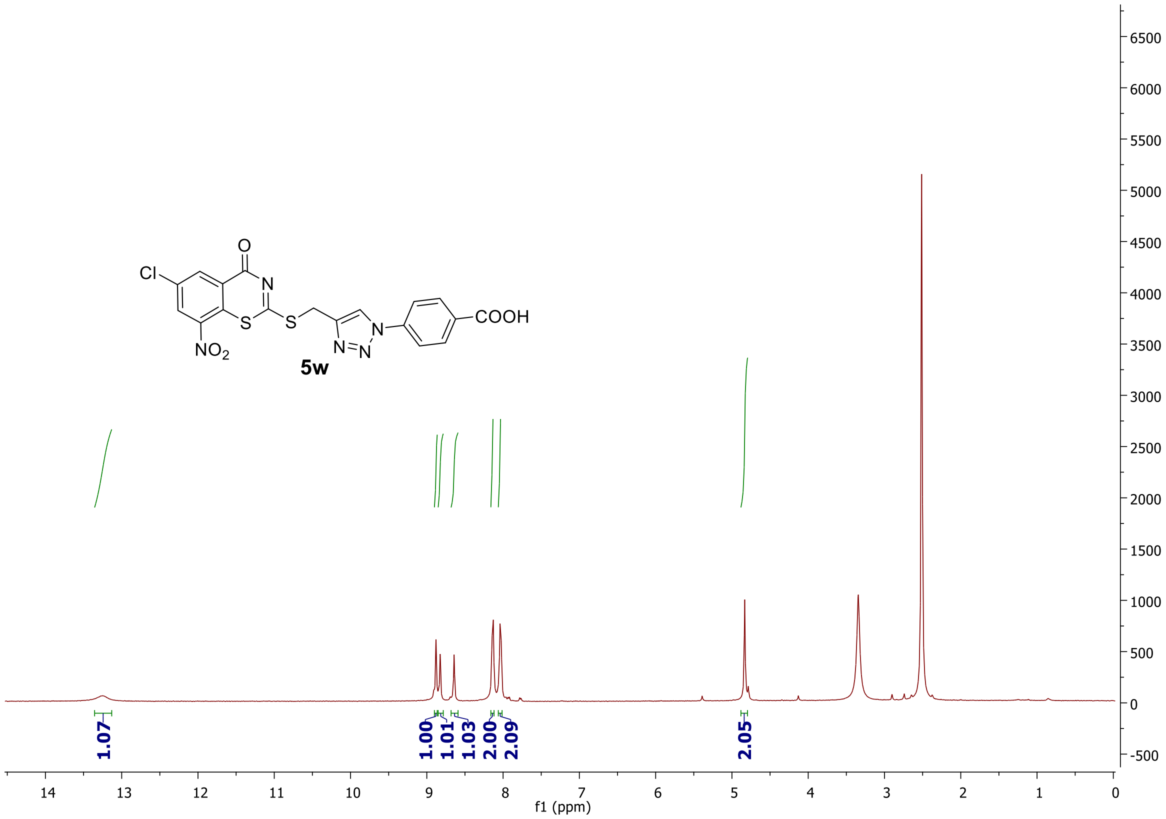
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5v**



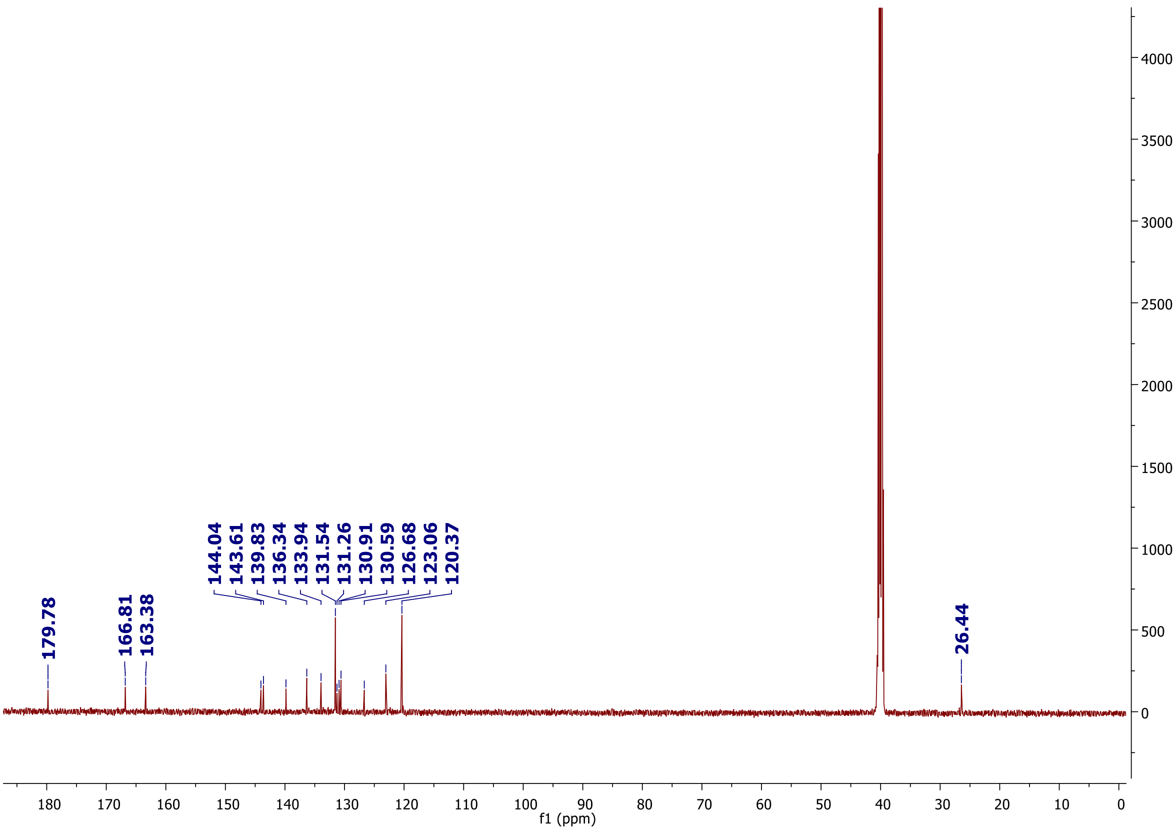
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5v**



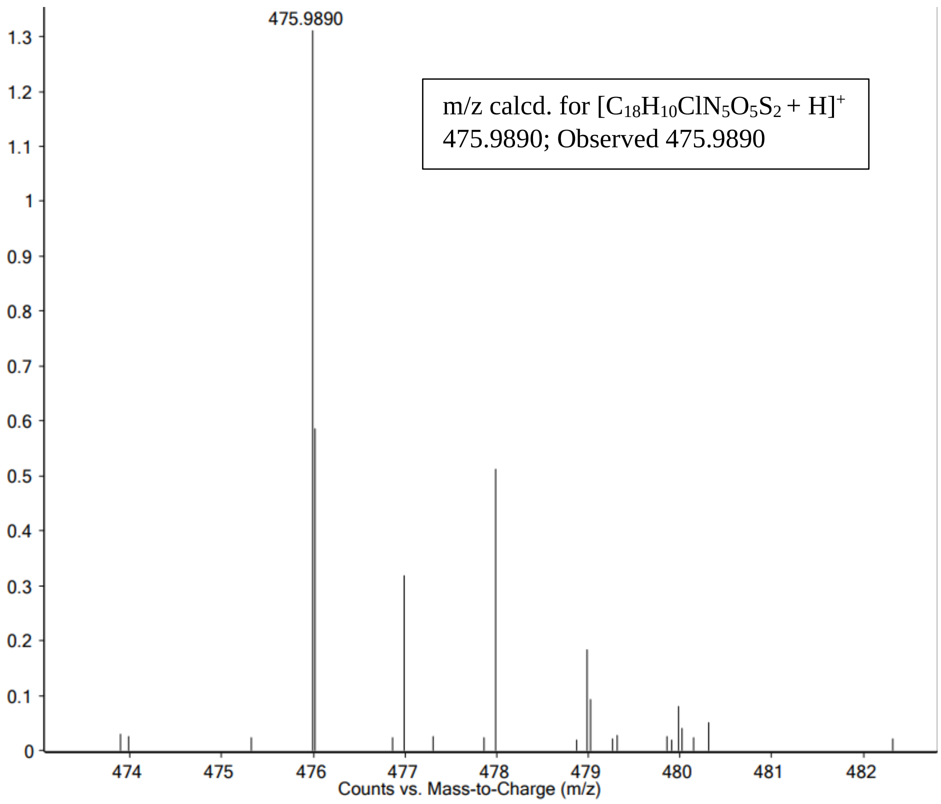
Mass spectrum of compound **5v**



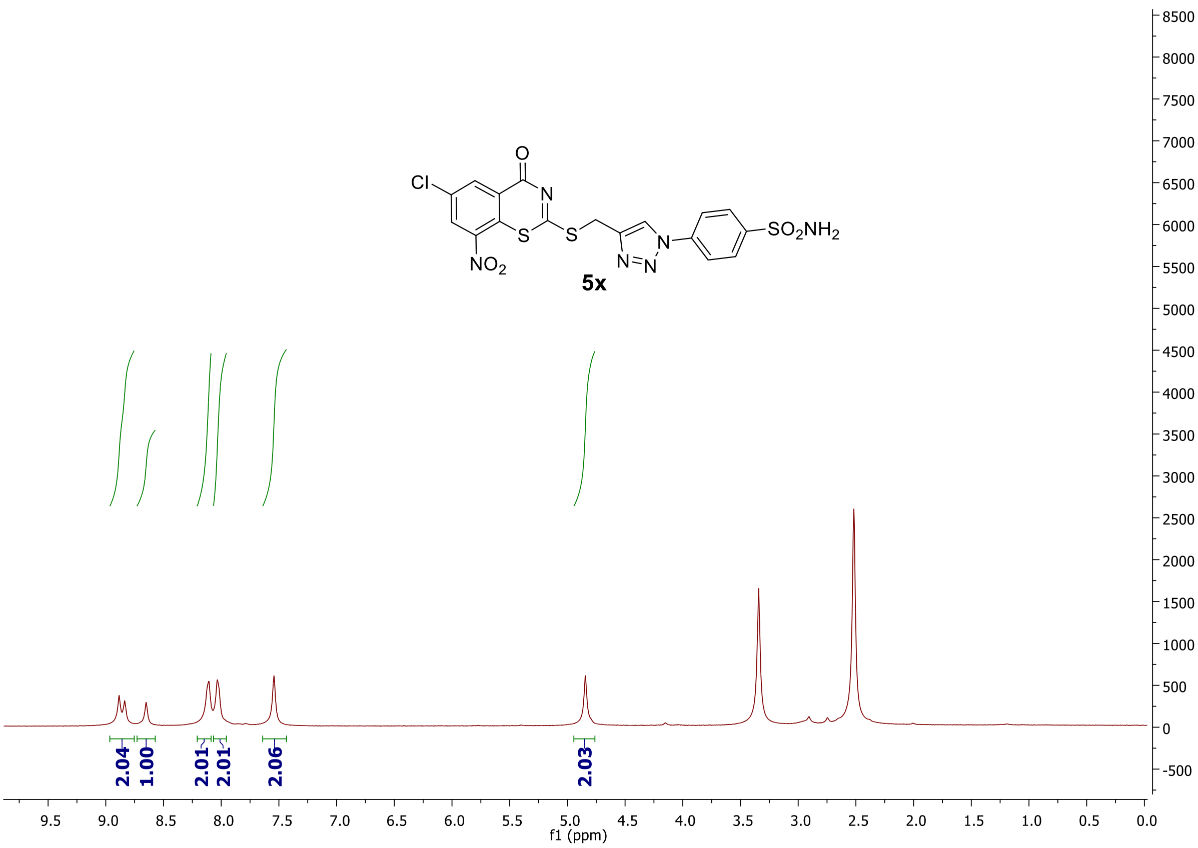
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5w**



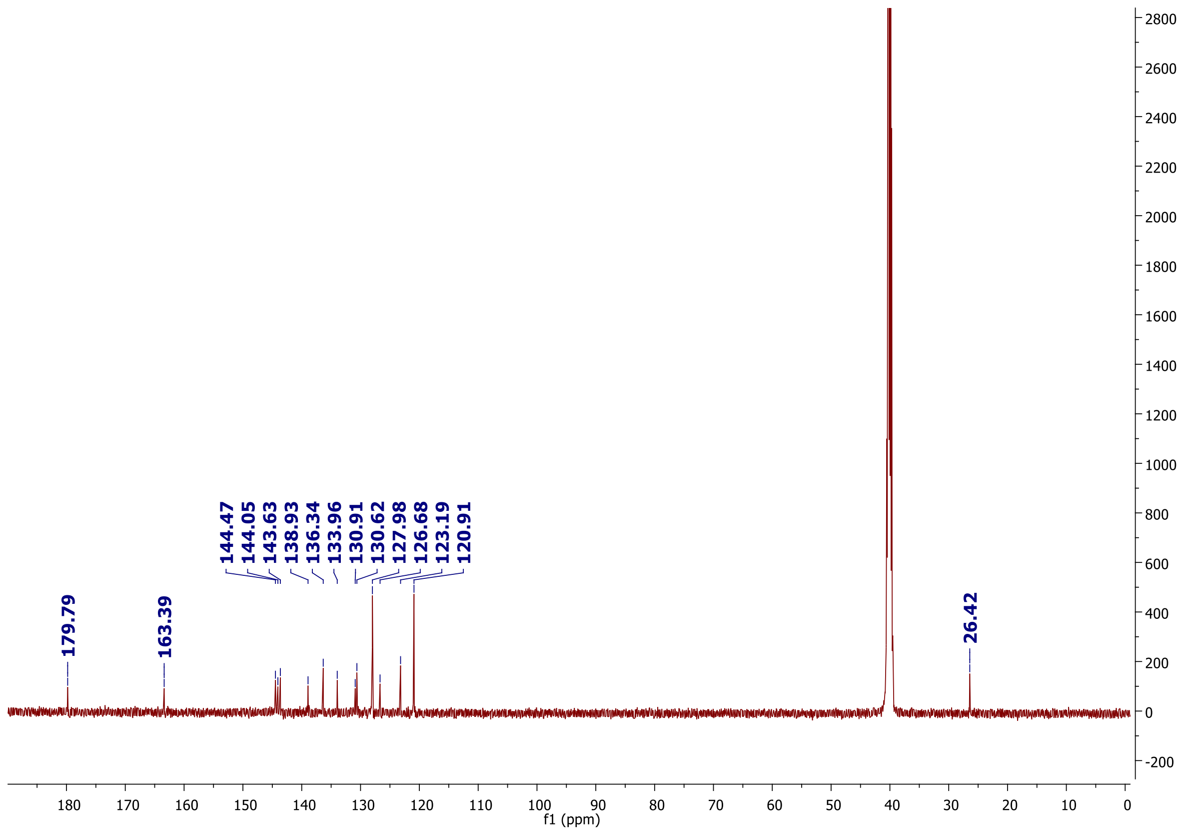
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5w**



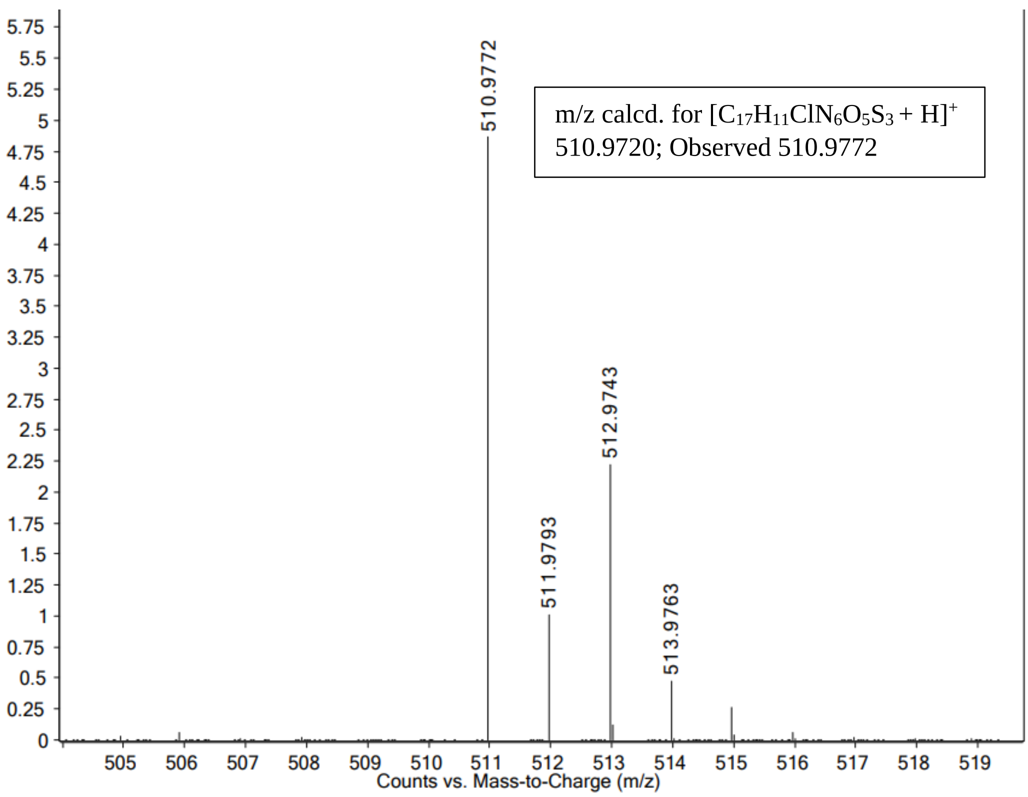
Mass spectrum of compound **5w**



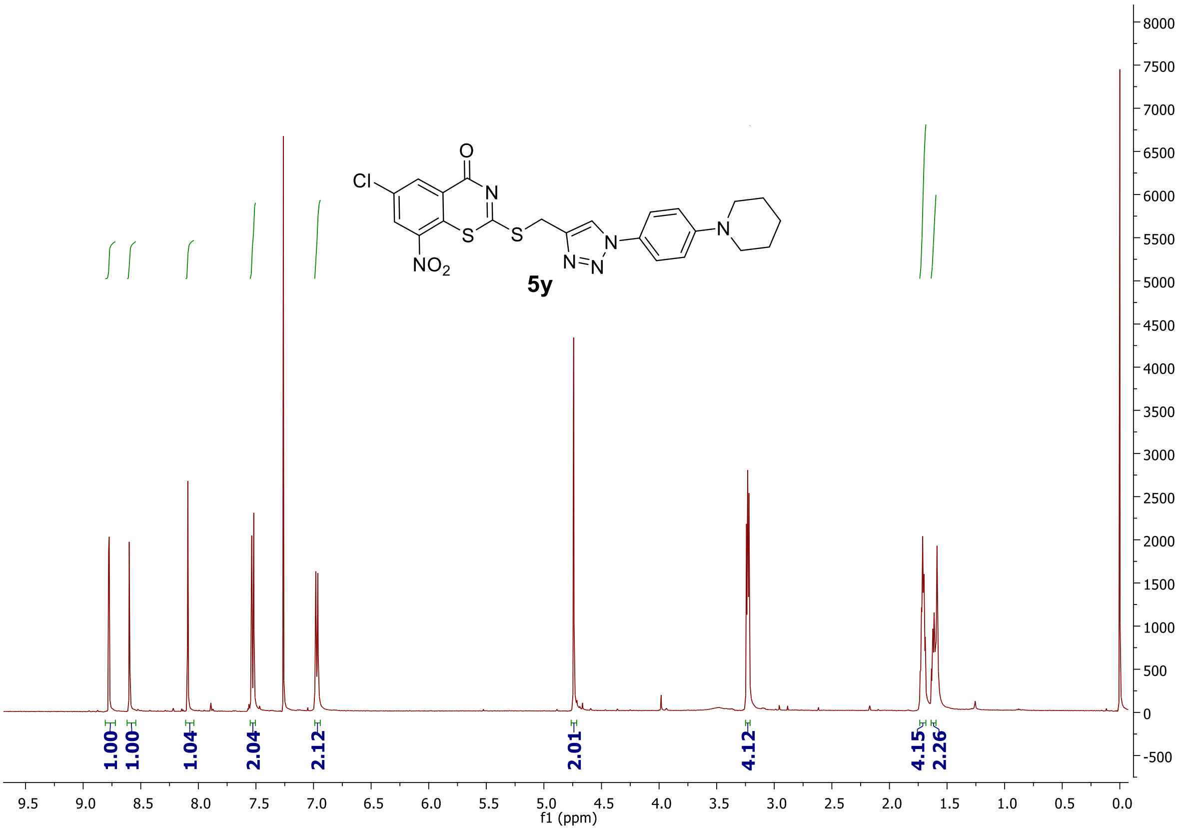
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5x**



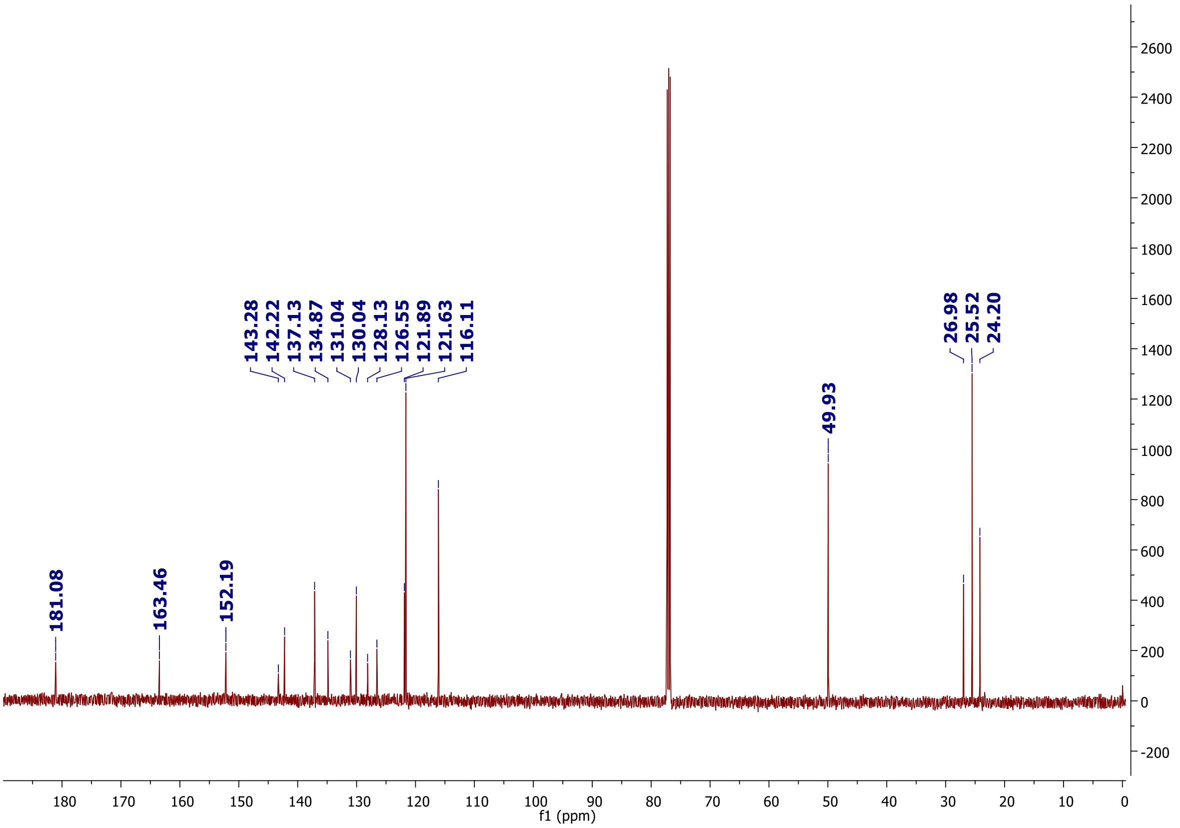
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5x**



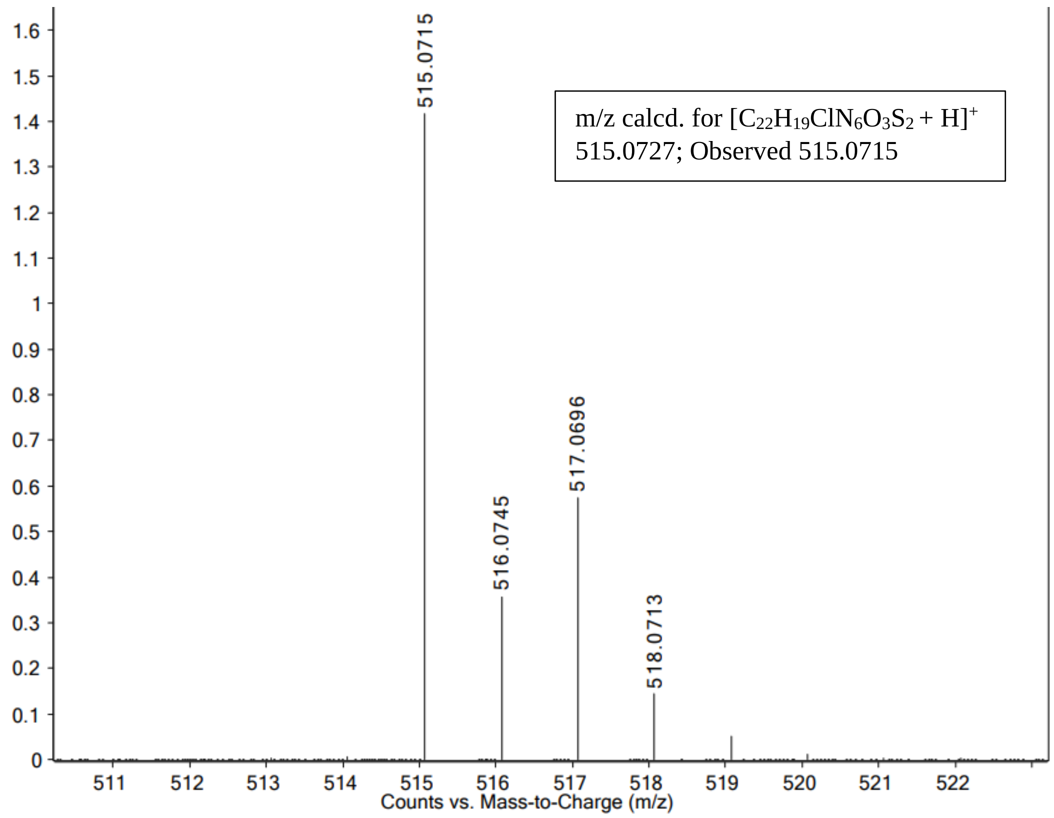
Mass spectrum of compound **5x**



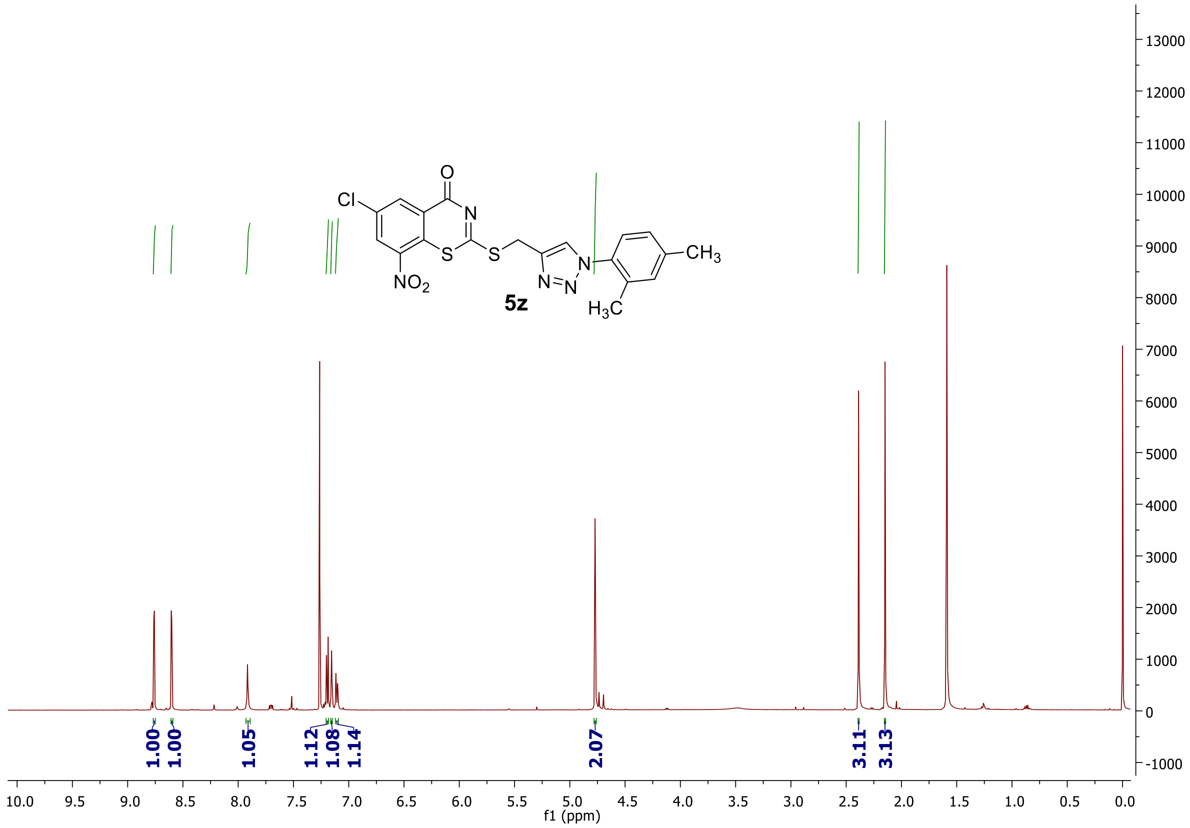
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5y**



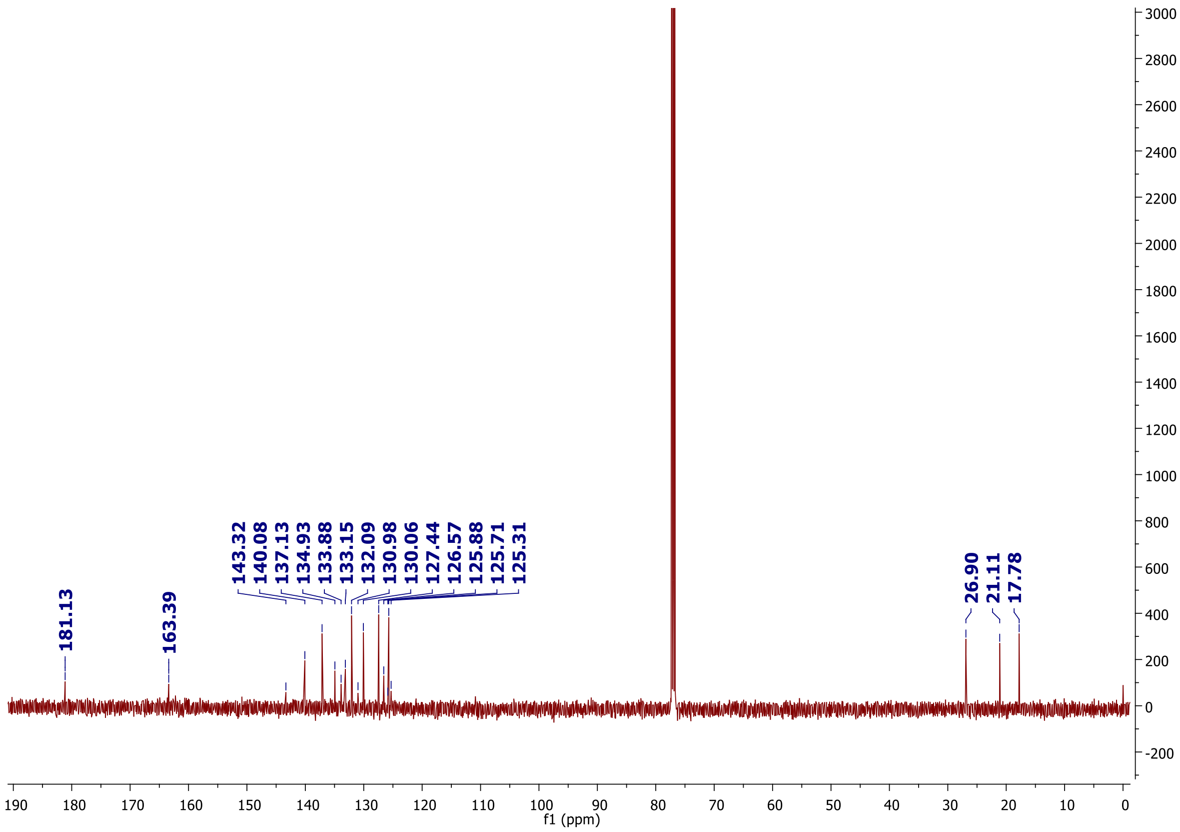
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5y**



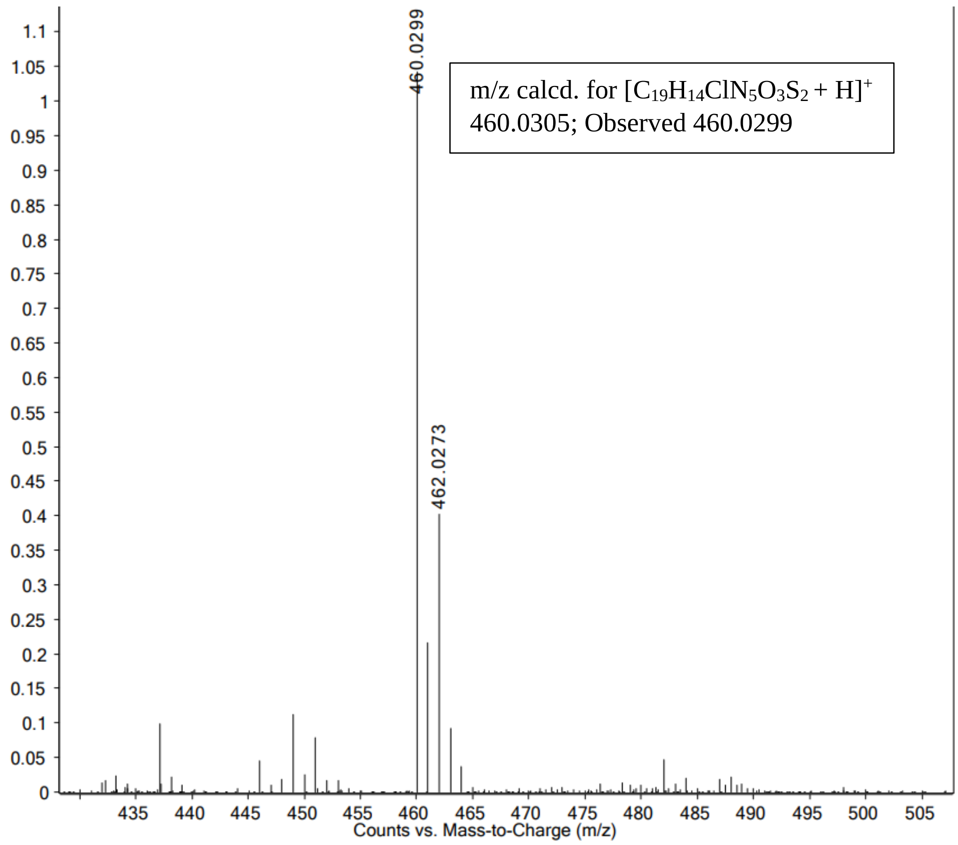
Mass spectrum of compound **5y**



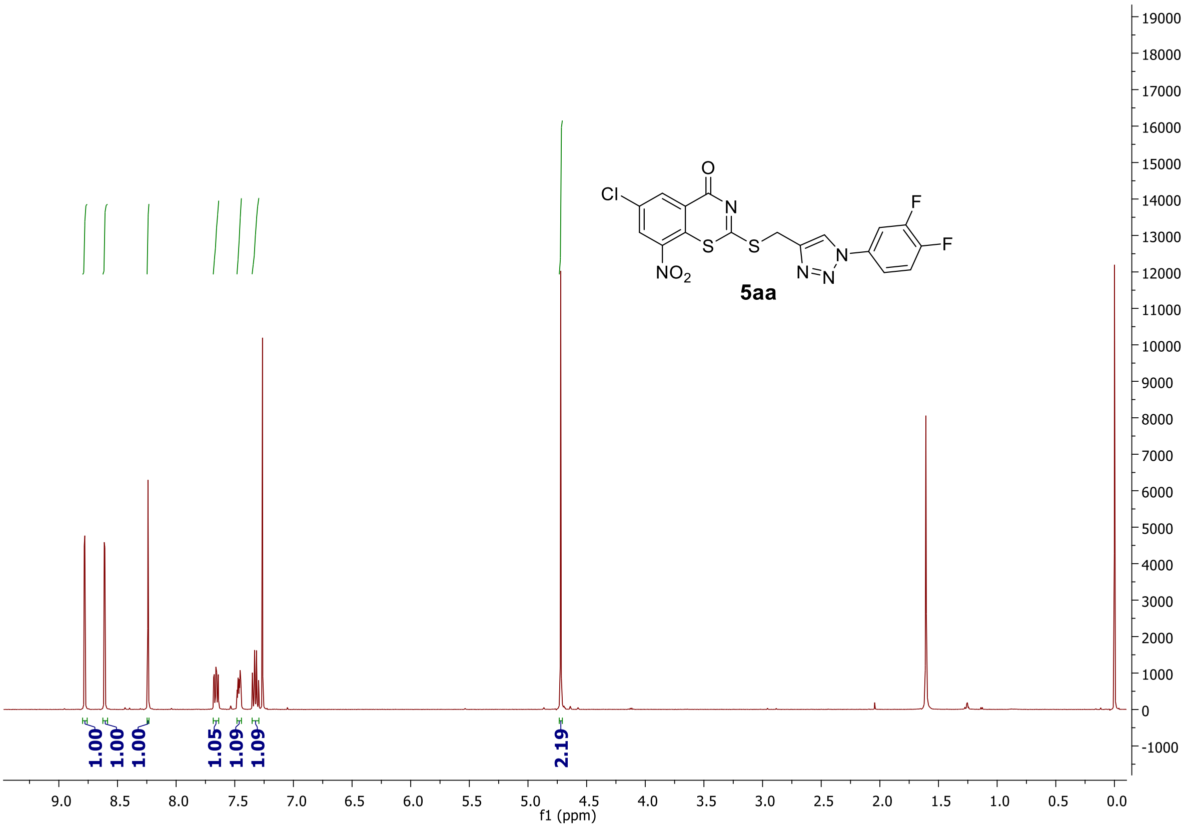
[1]H NMR (500 MHz, $CDCl_3$) spectrum of compound **5z**



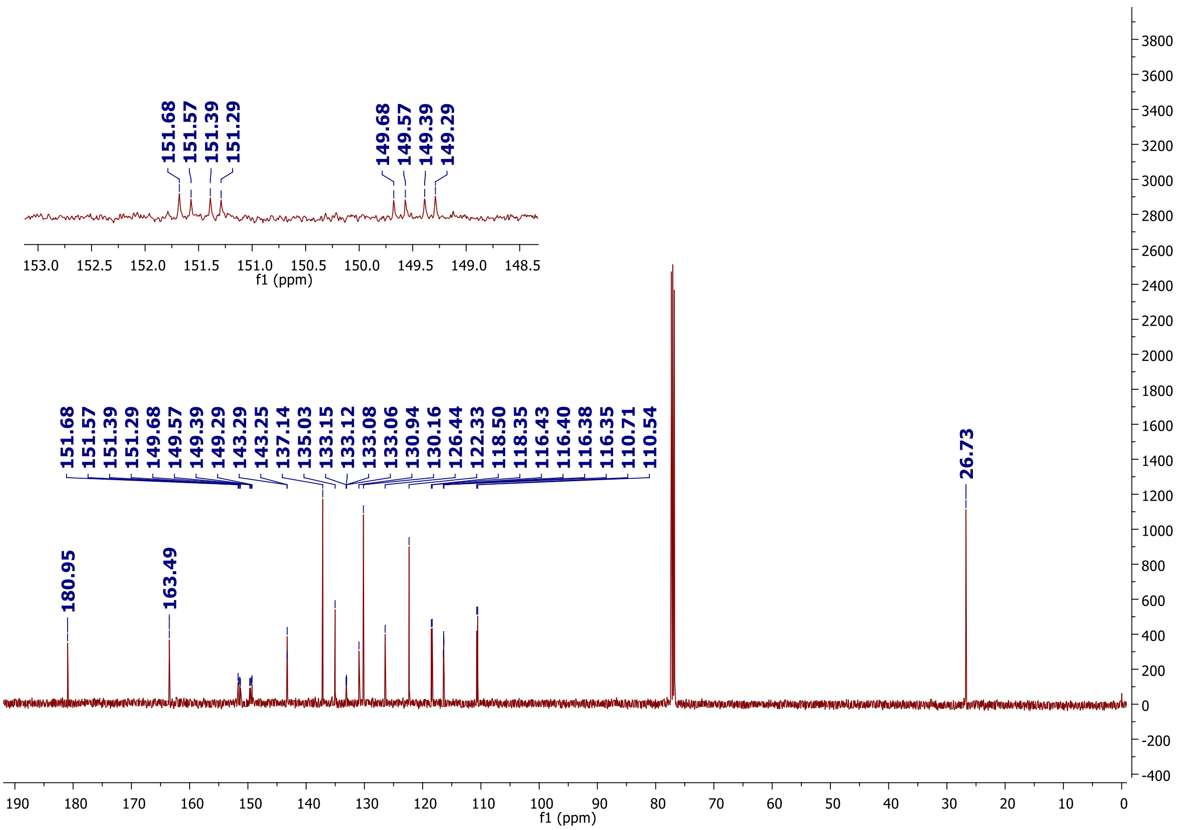
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5z**



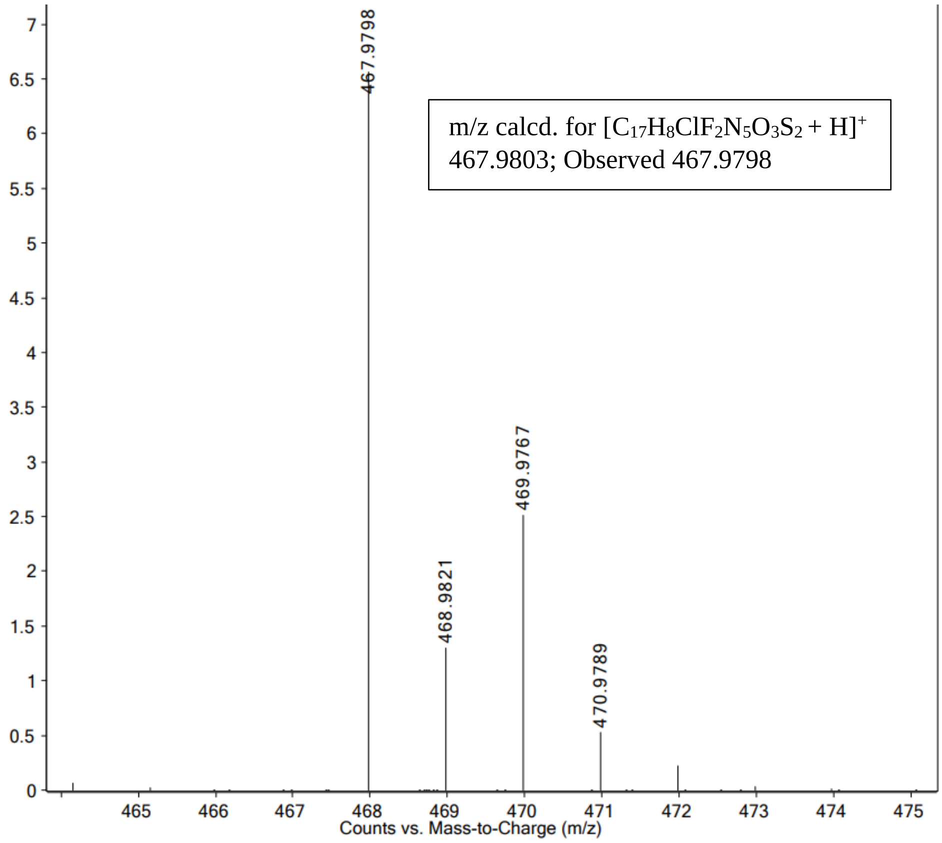
Mass spectrum of compound **5z**



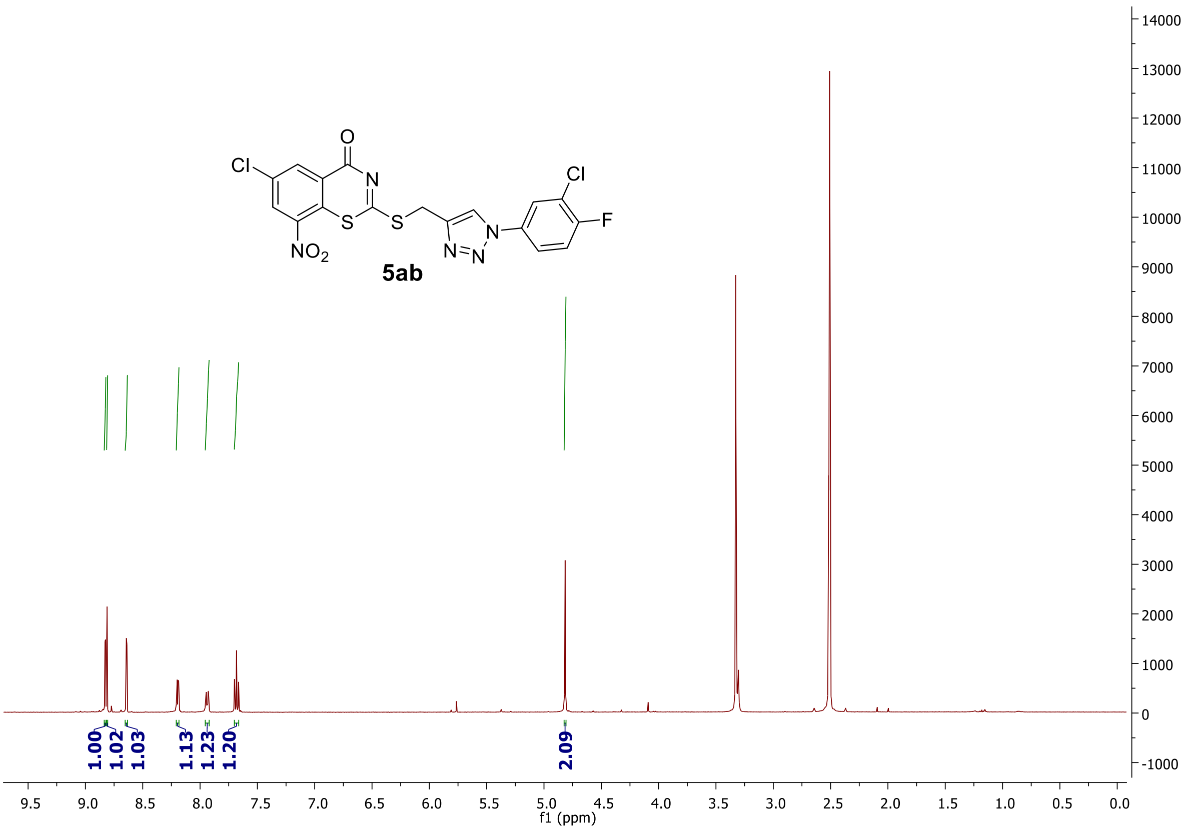
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5aa**



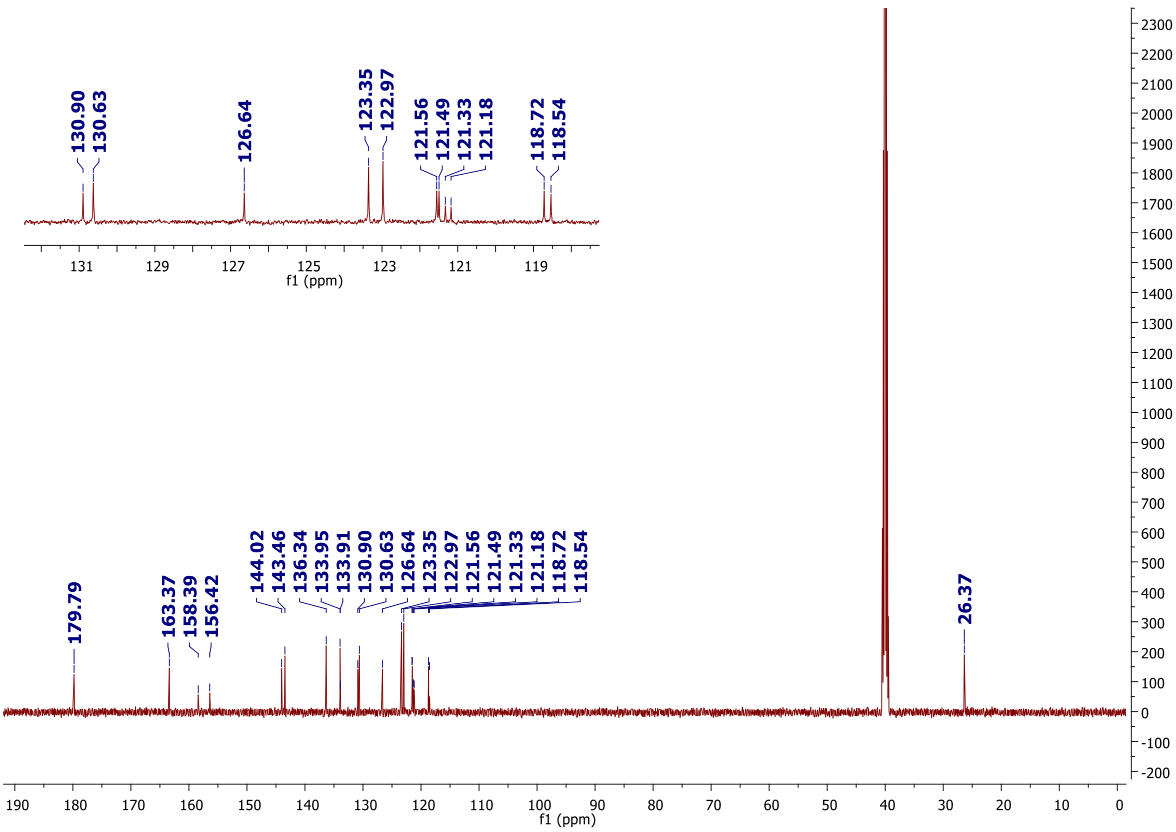
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5aa**



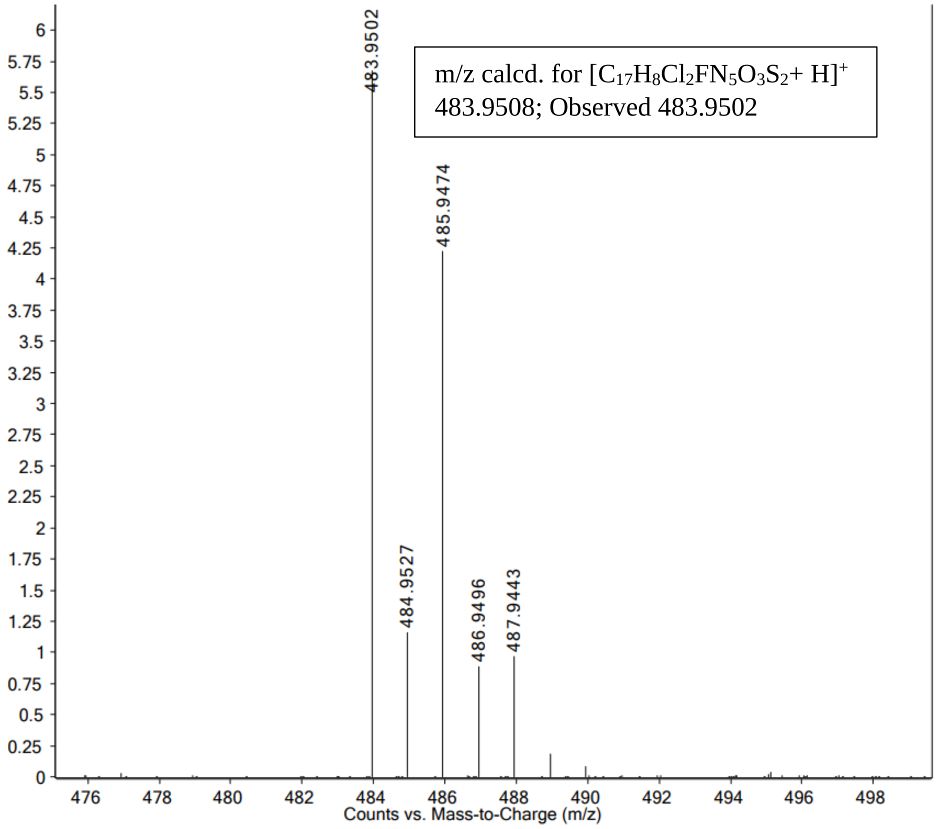
Mass spectrum of compound **5aa**



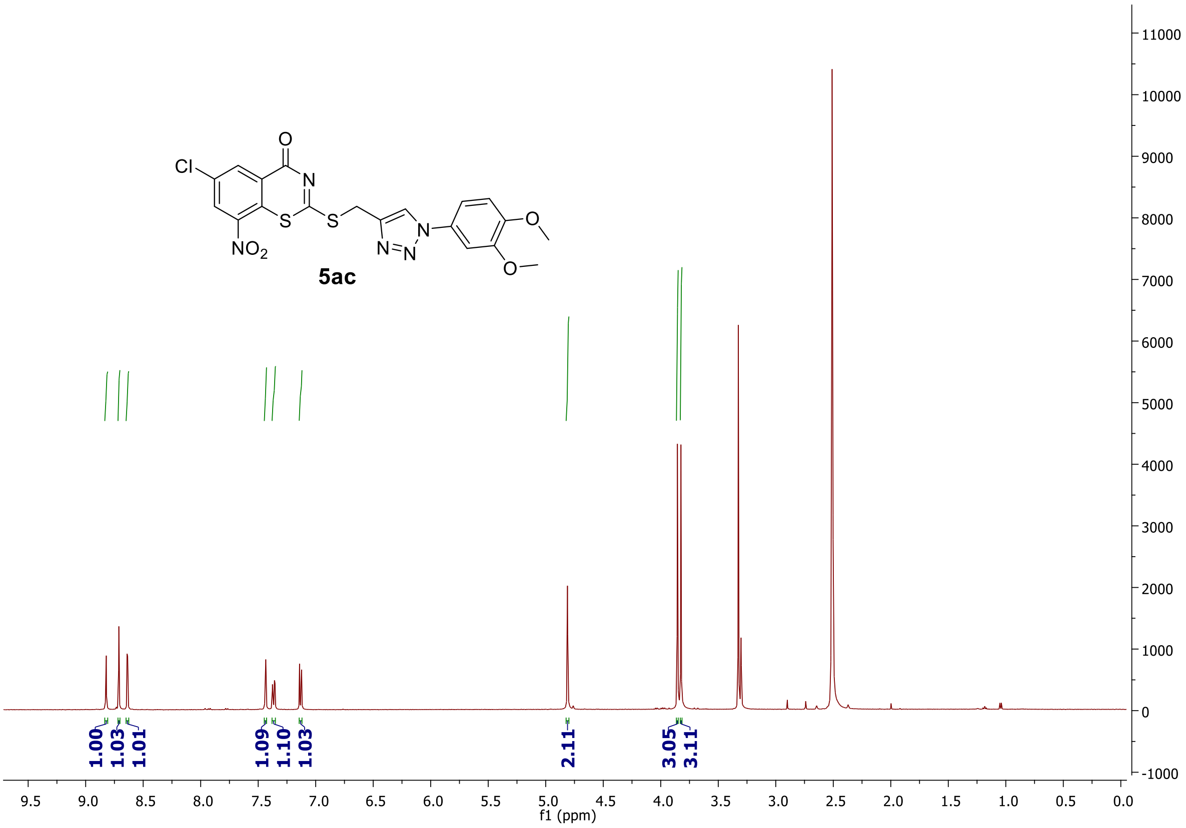
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5ab**



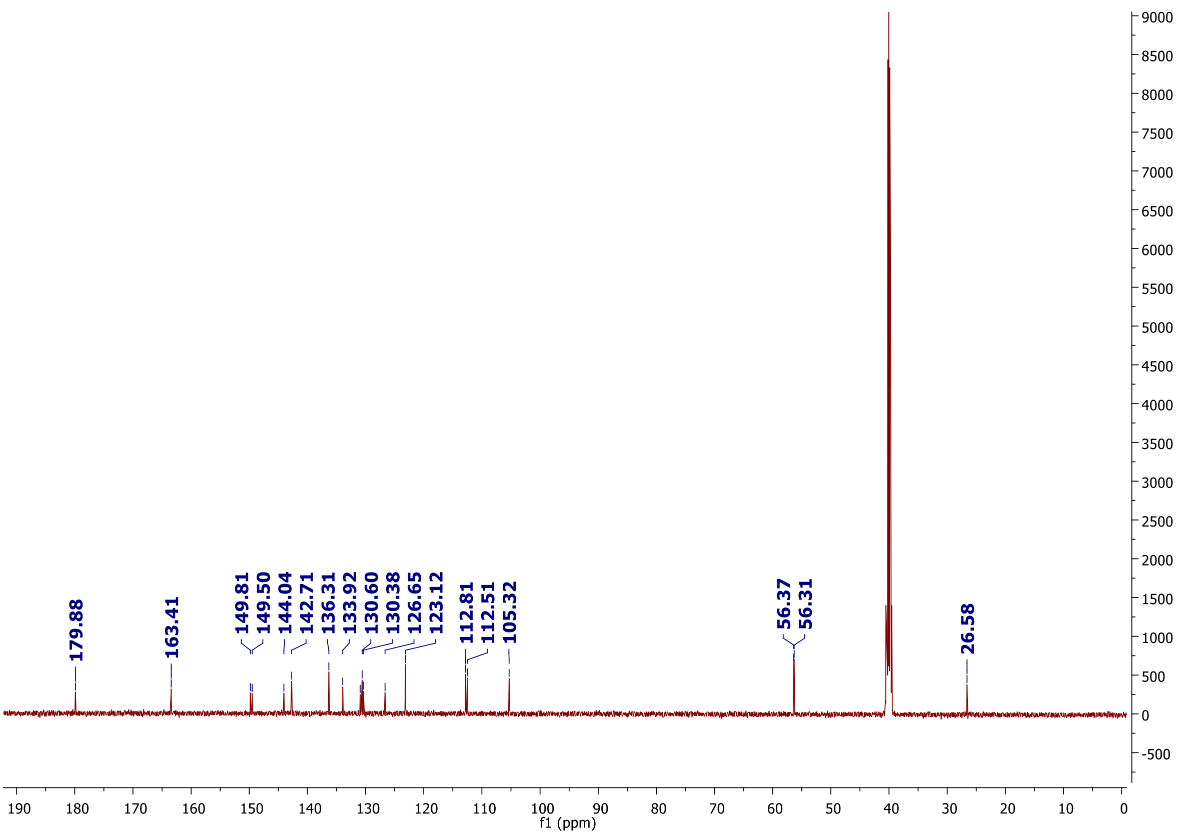
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5ab**



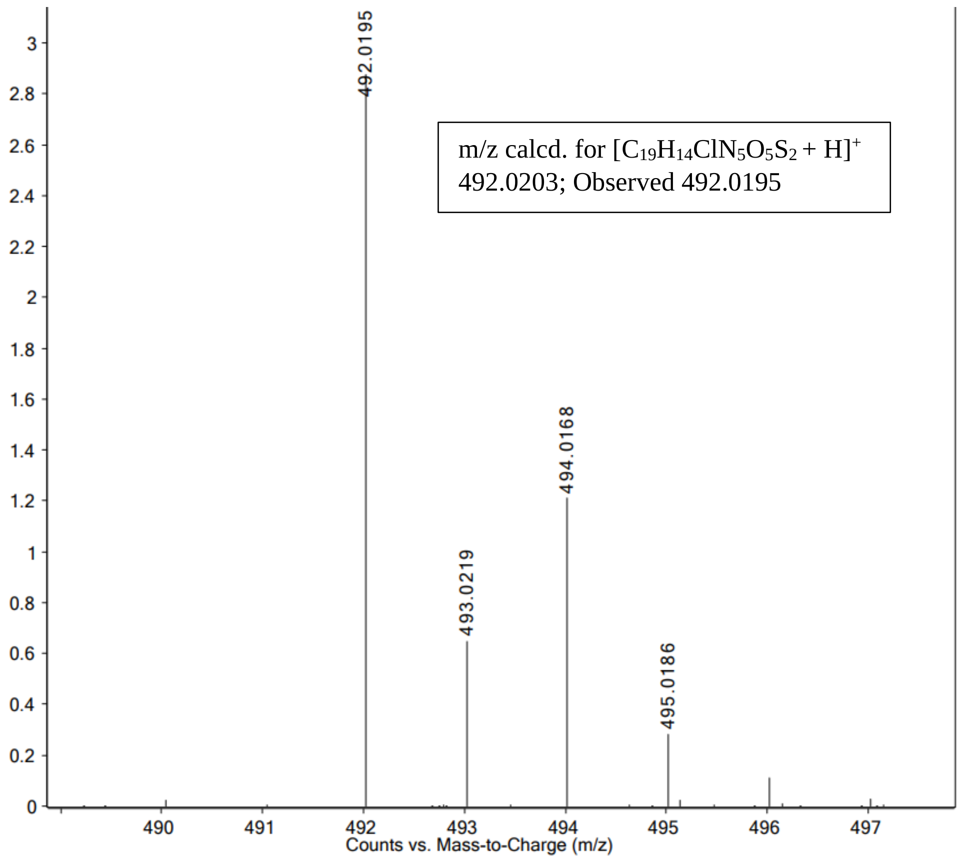
Mass spectrum of compound **5ab**



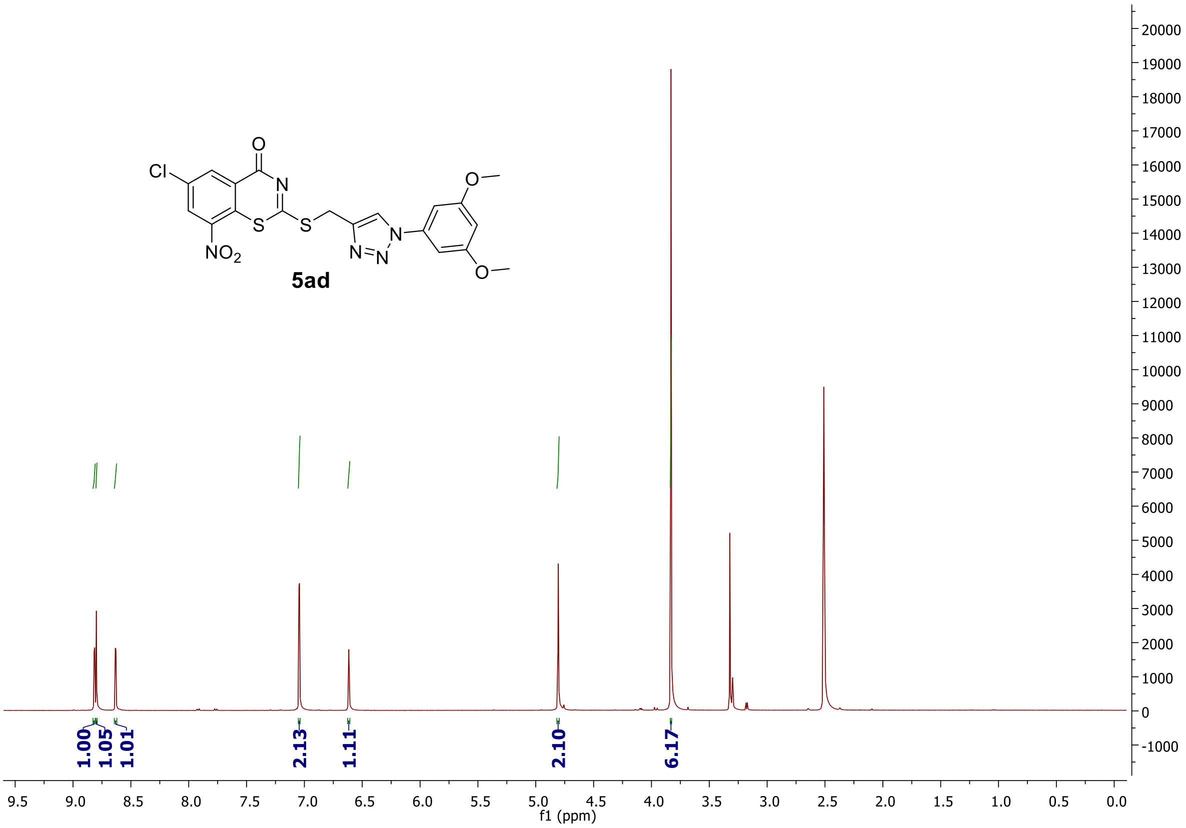
[1]H NMR (500 MHz, DMSO-d_6) spectrum of compound **5ac**



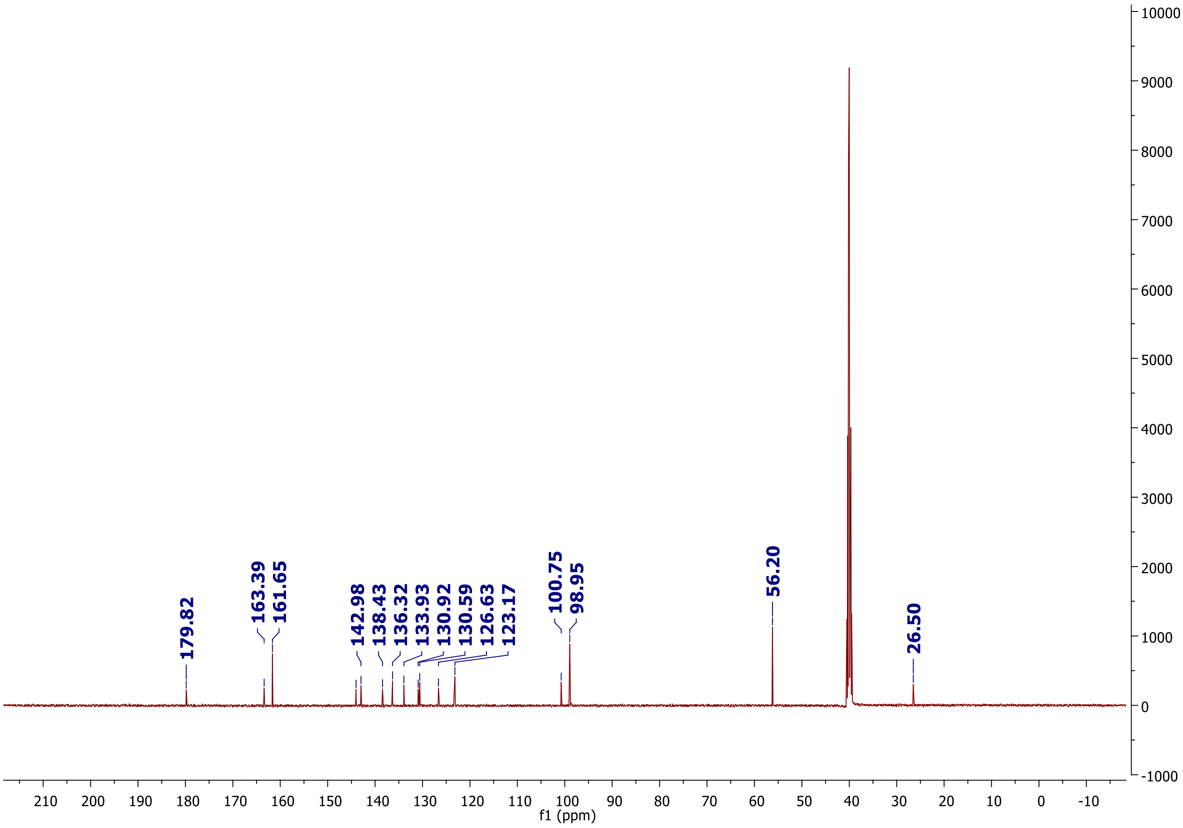
[13]C NMR (125 MHz, DMSO-d_6) spectrum of compound **5ac**



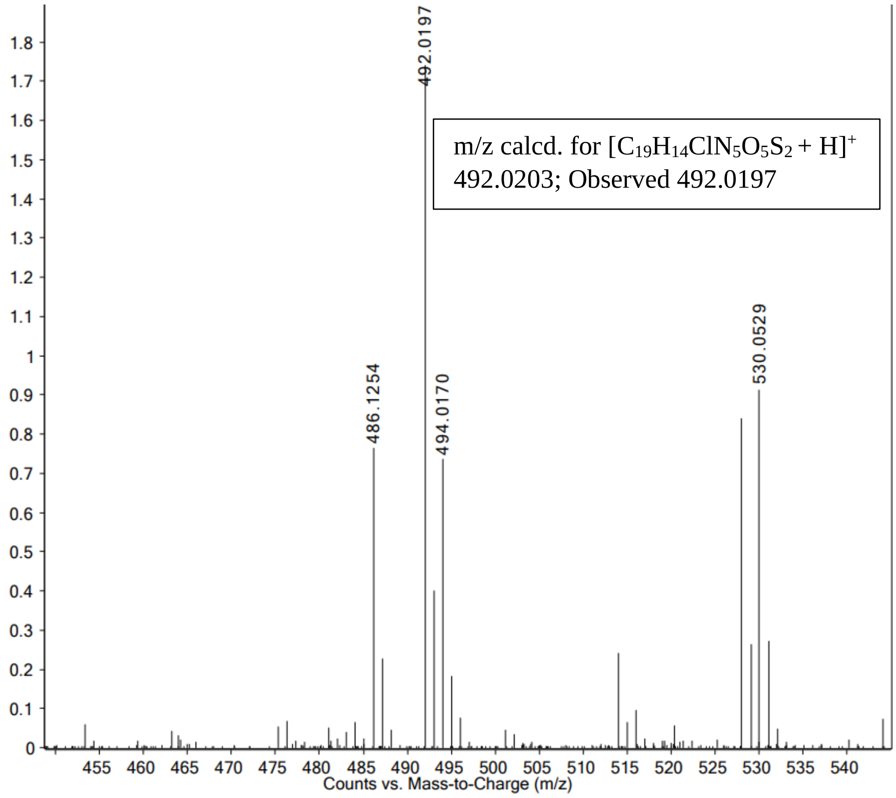
Mass spectrum of compound **5ac**



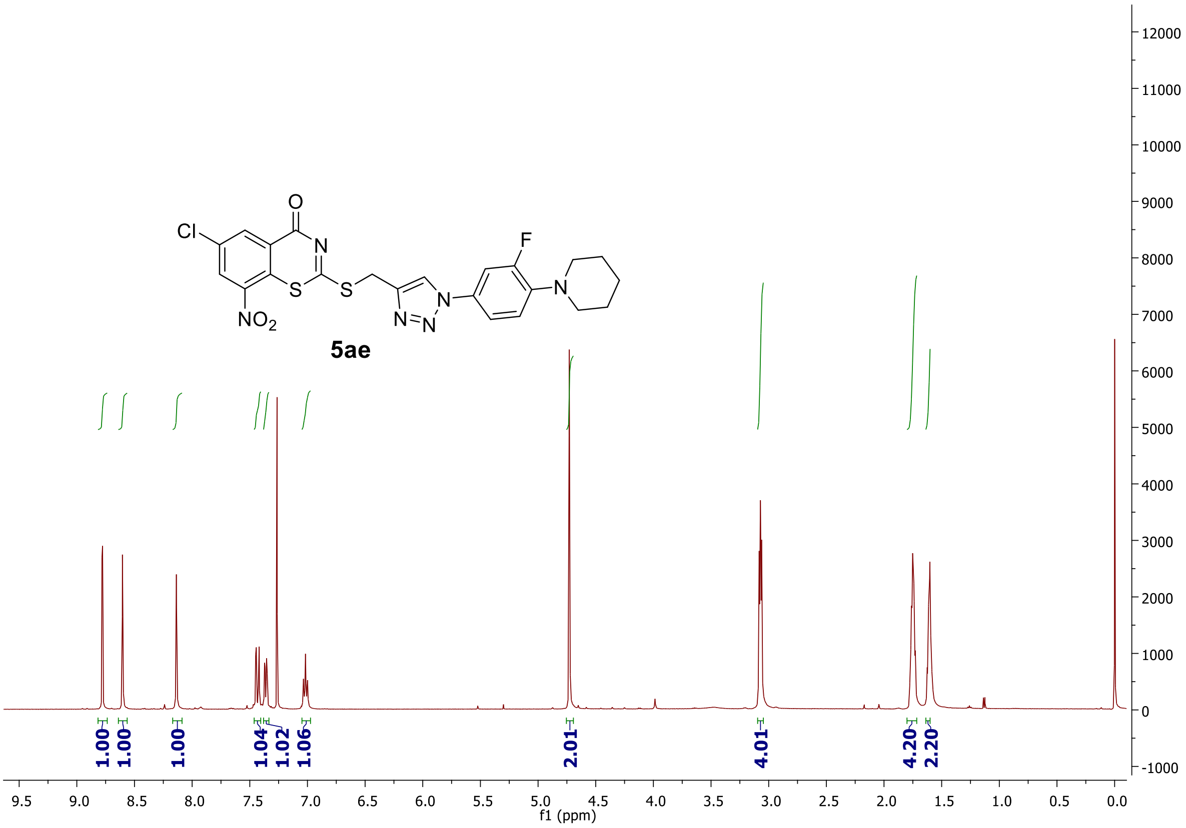
[1]H NMR (500 MHz, DMSO-d_6) spectrum of compound **5ad**



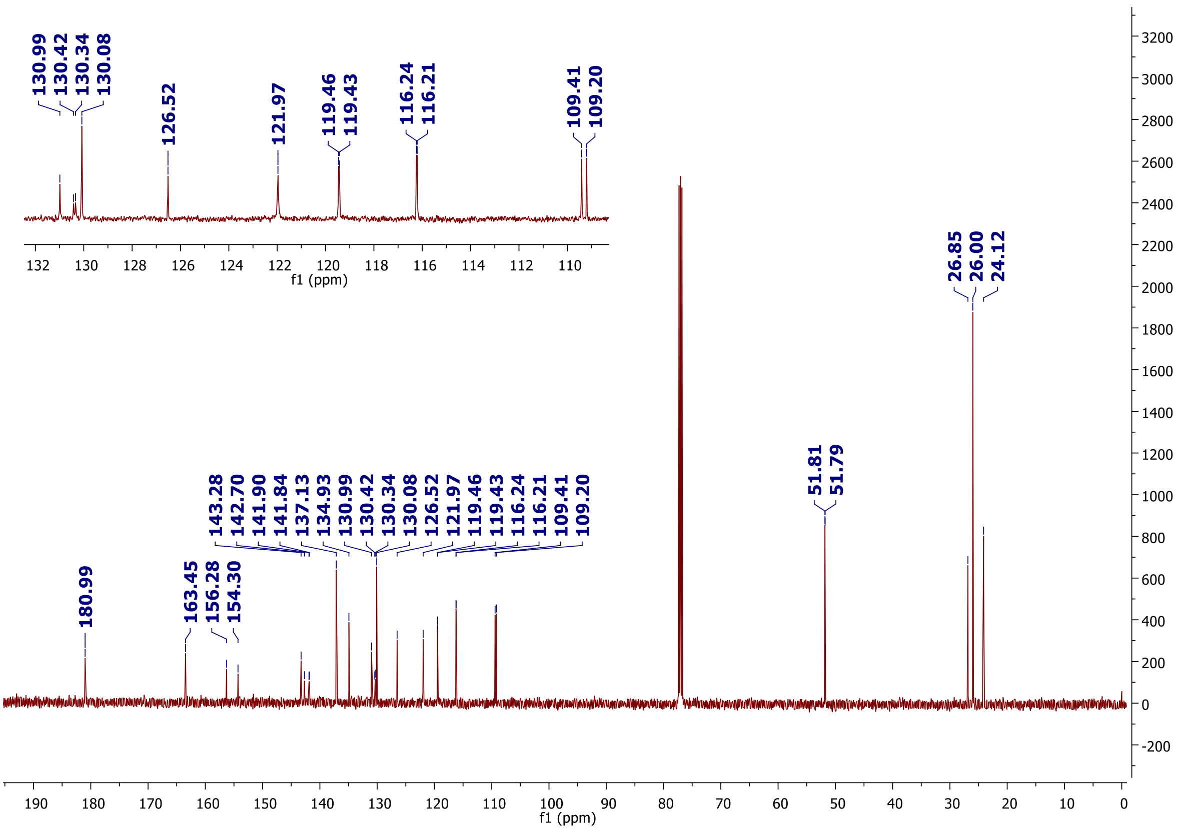
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5ad**



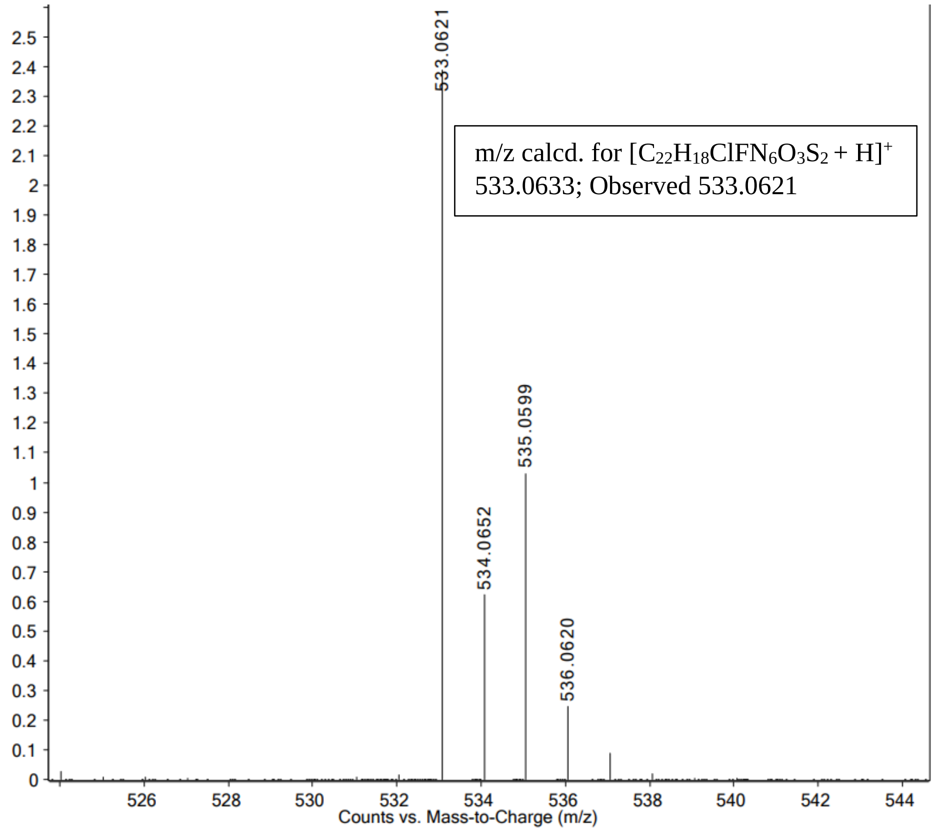
Mass spectrum of compound **5ad**



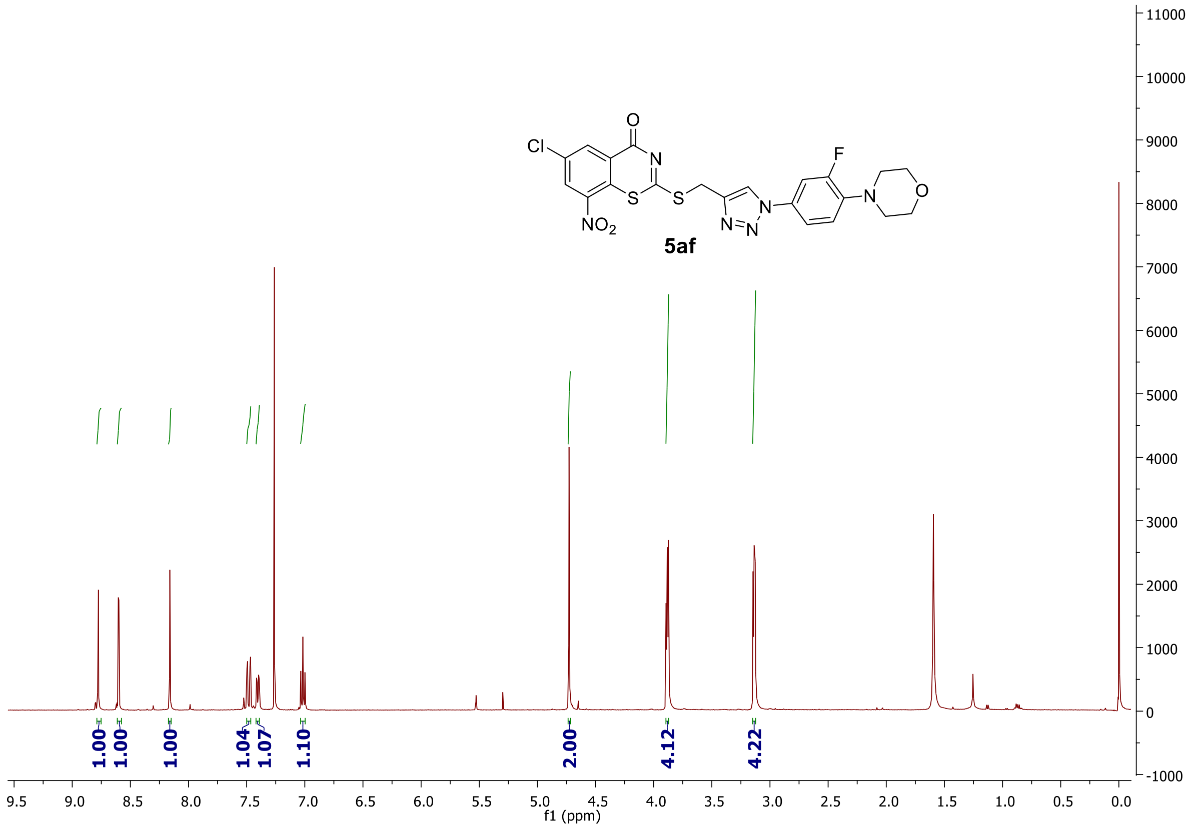
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5ae**



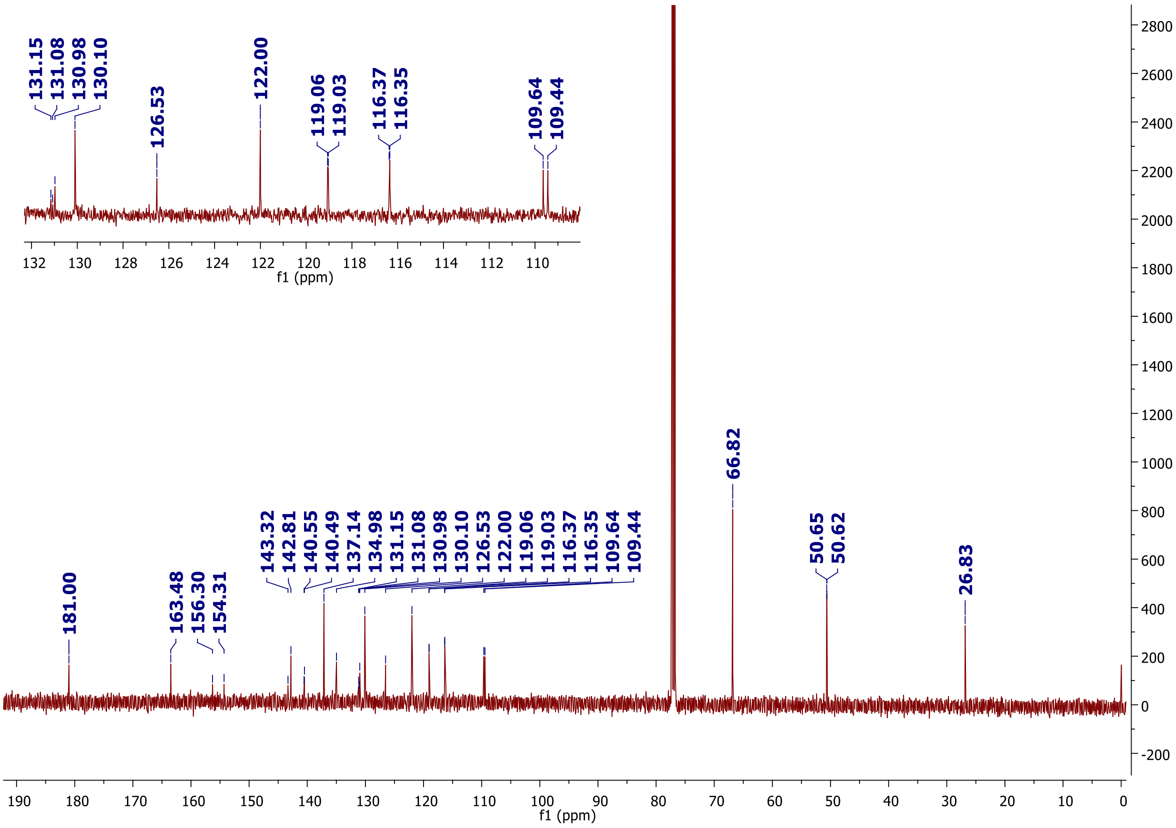
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5ae**



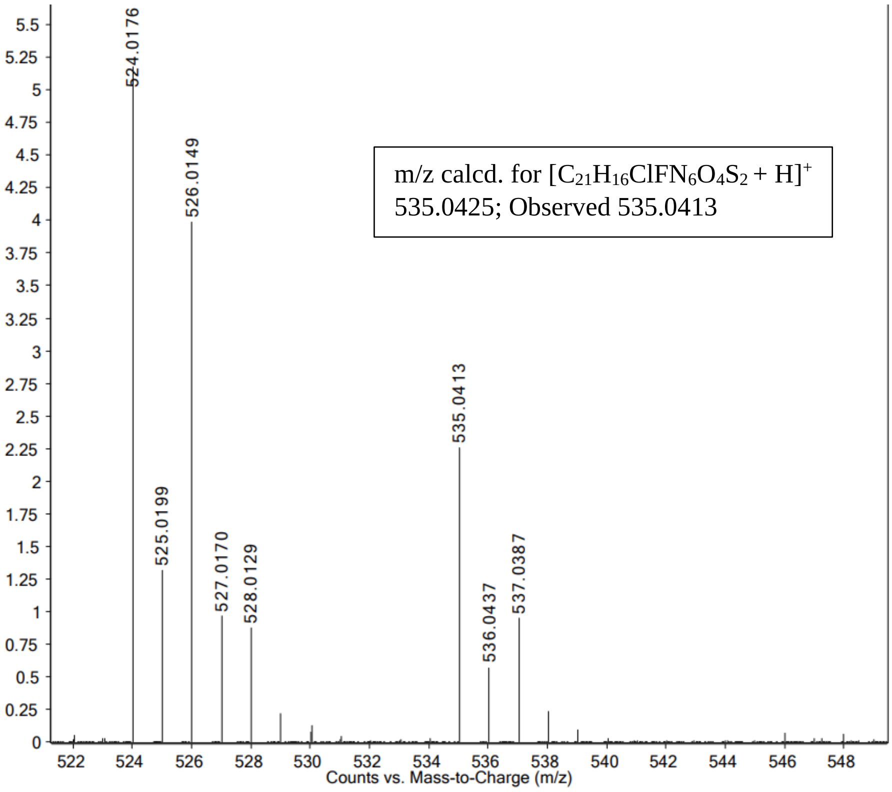
Mass spectrum of compound **5ae**



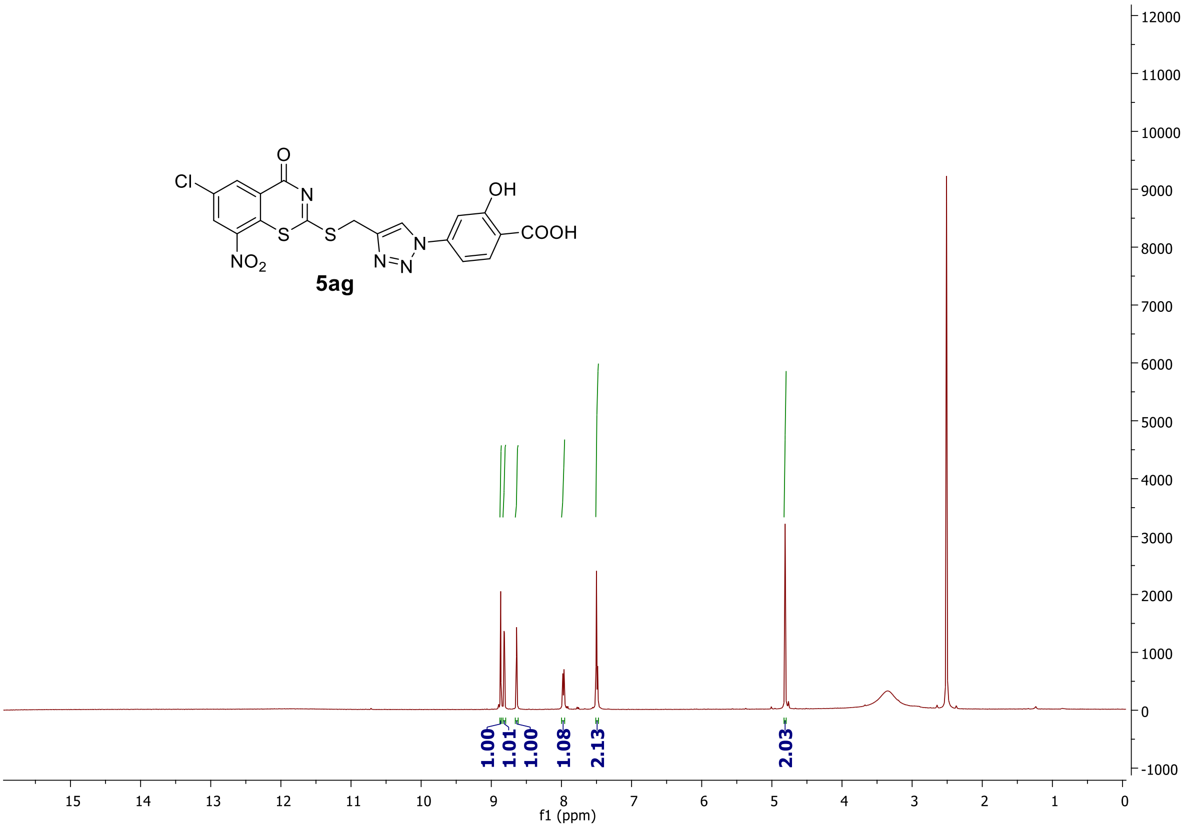
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5af**



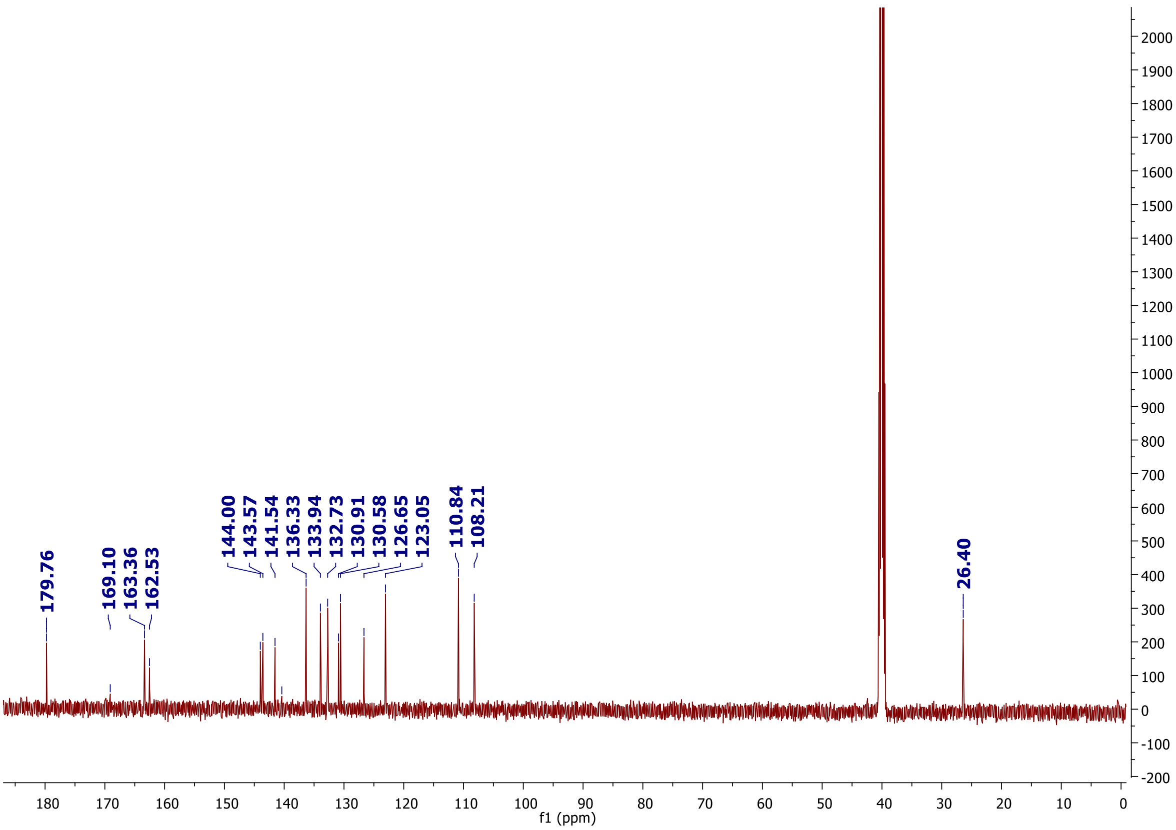
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5af**



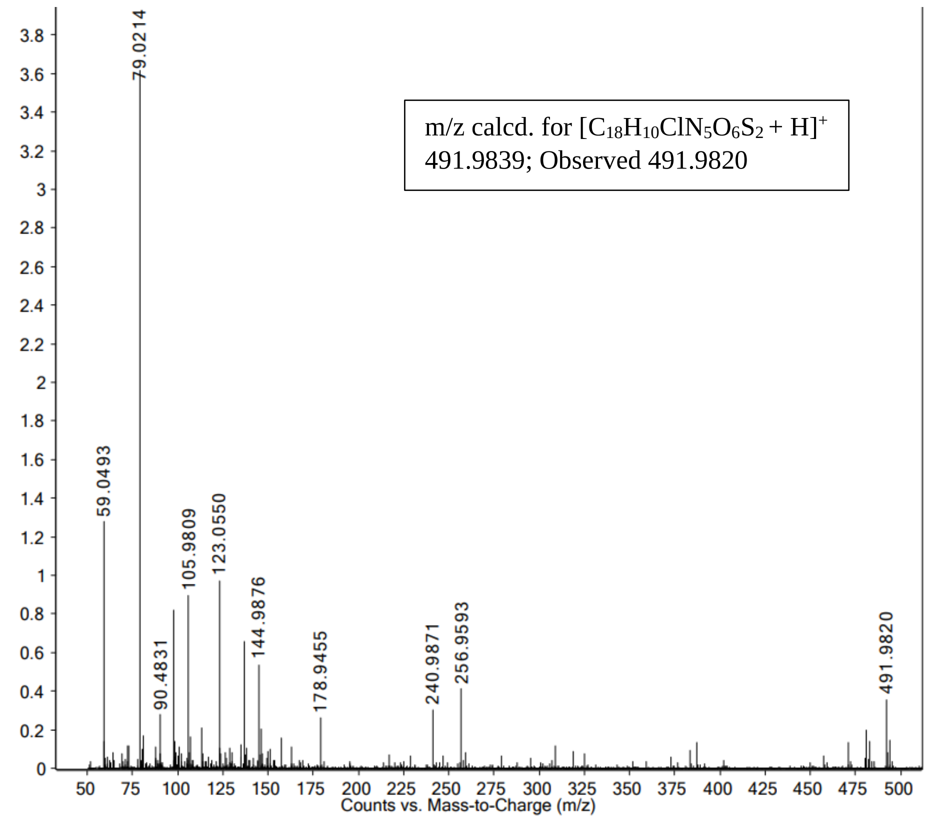
Mass spectrum of compound **5af**



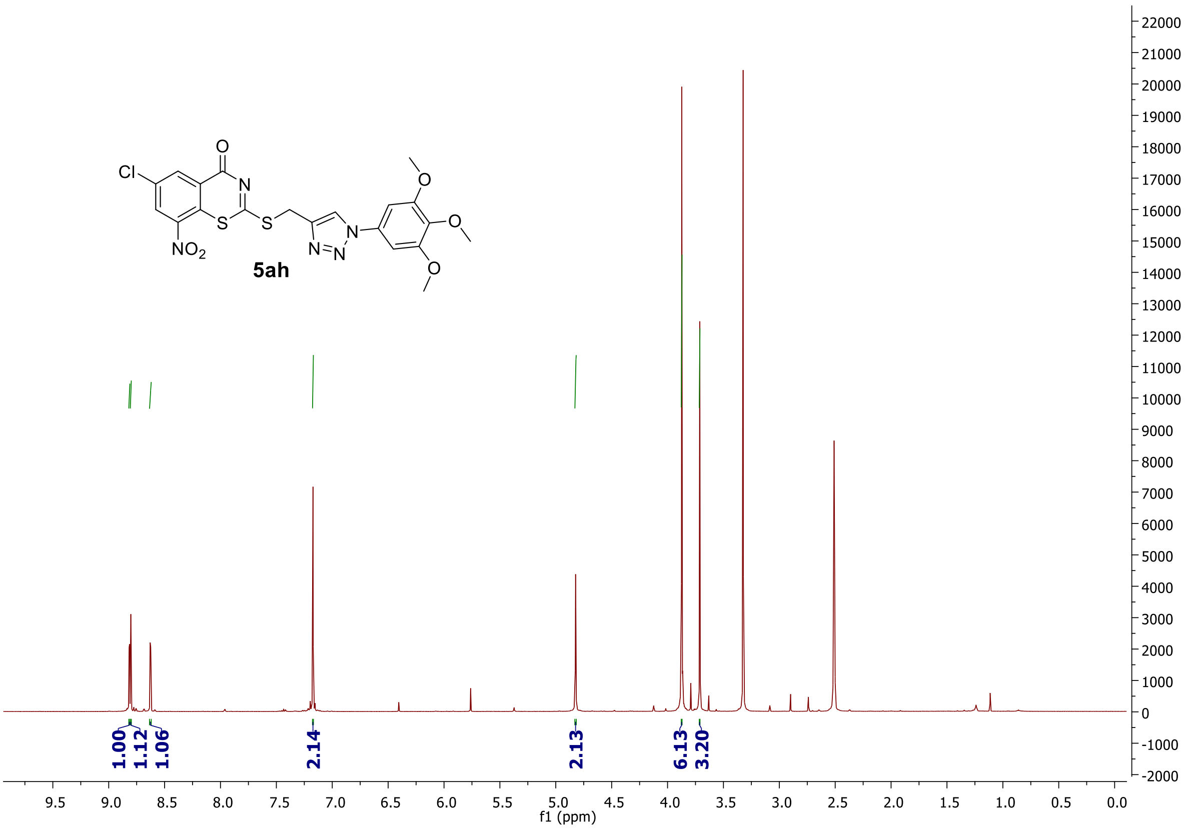
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5ag**



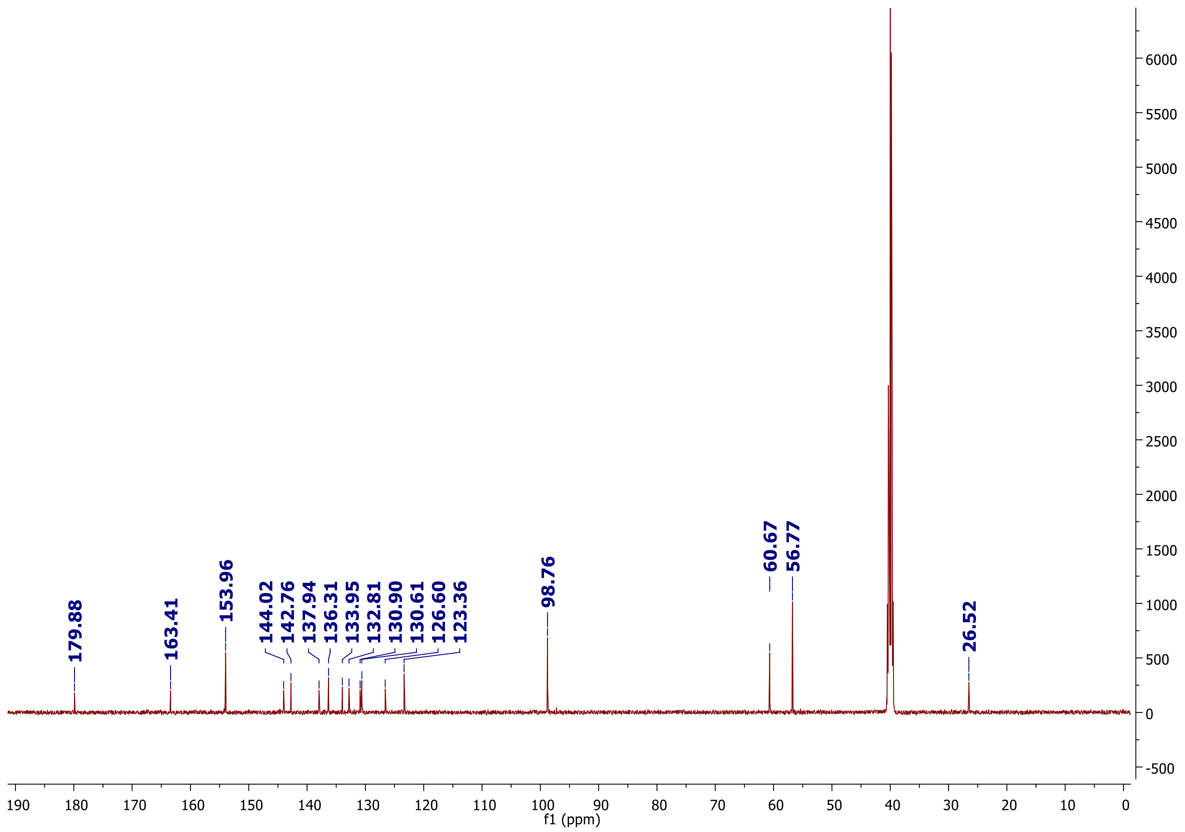
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5ag**



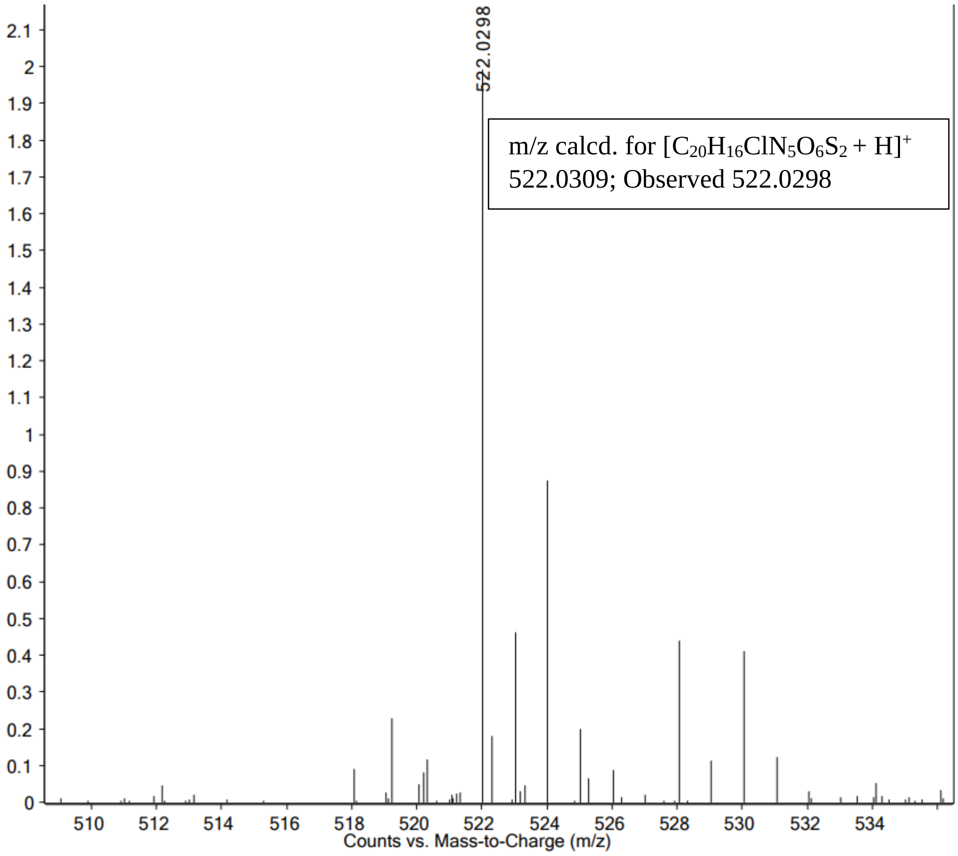
Mass spectrum of compound **5ag**



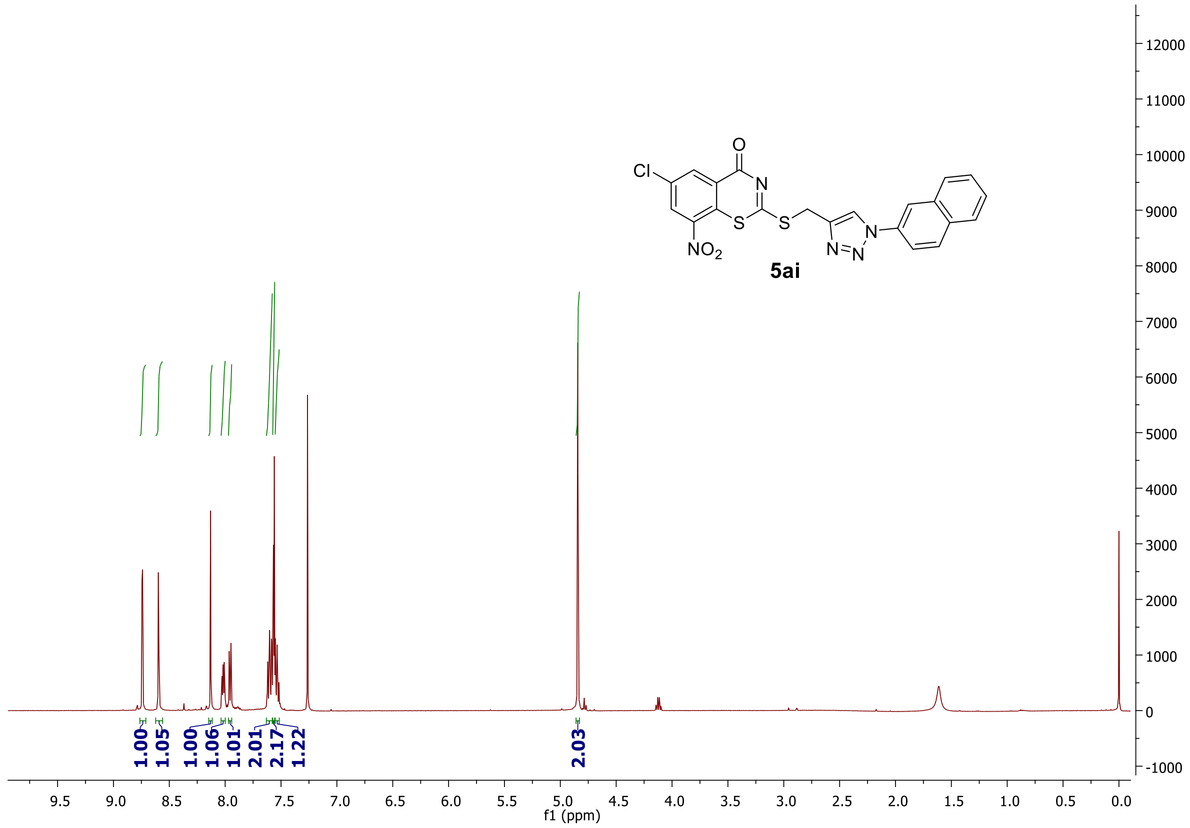
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5ah**



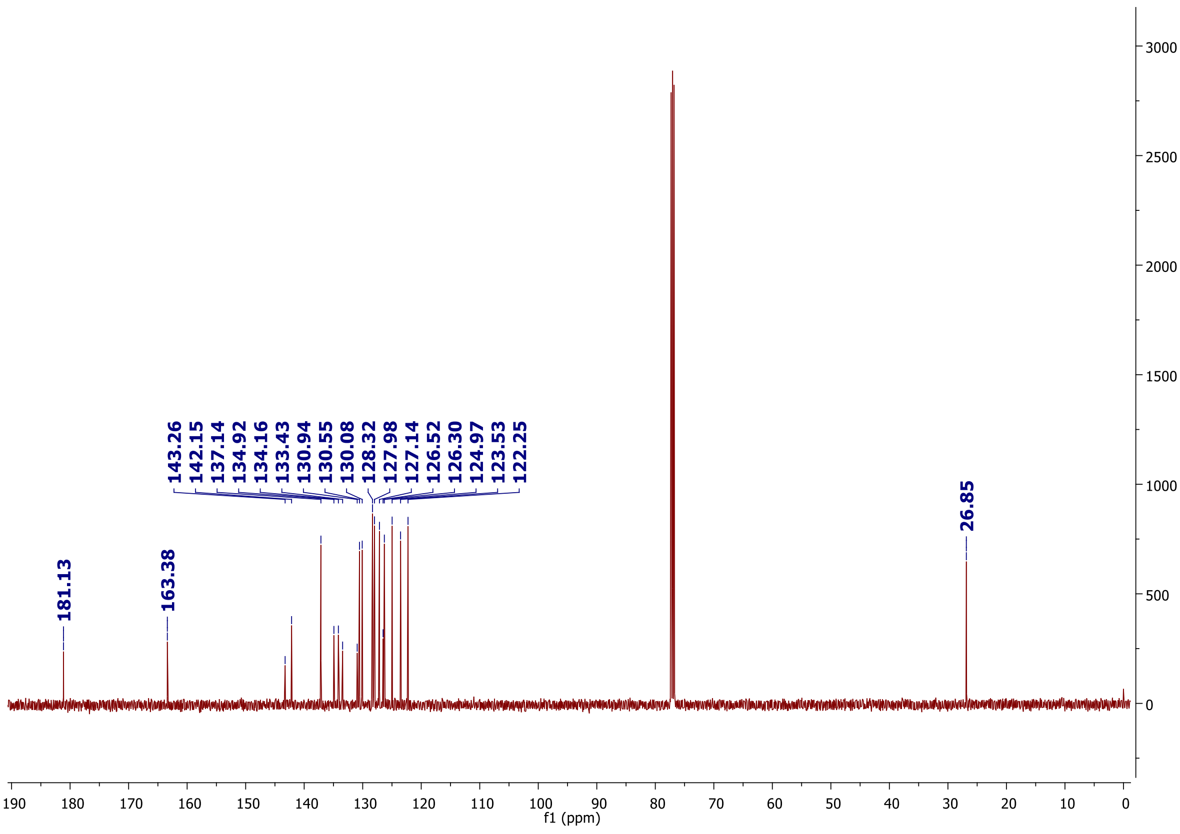
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5ah**



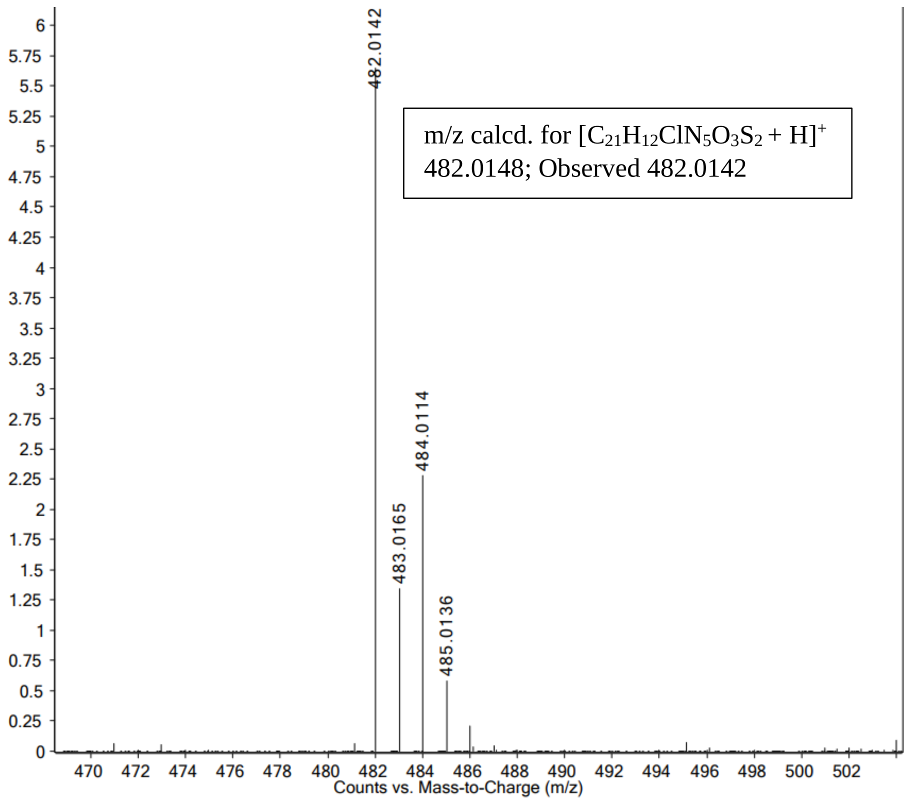
Mass spectrum of compound **5ah**



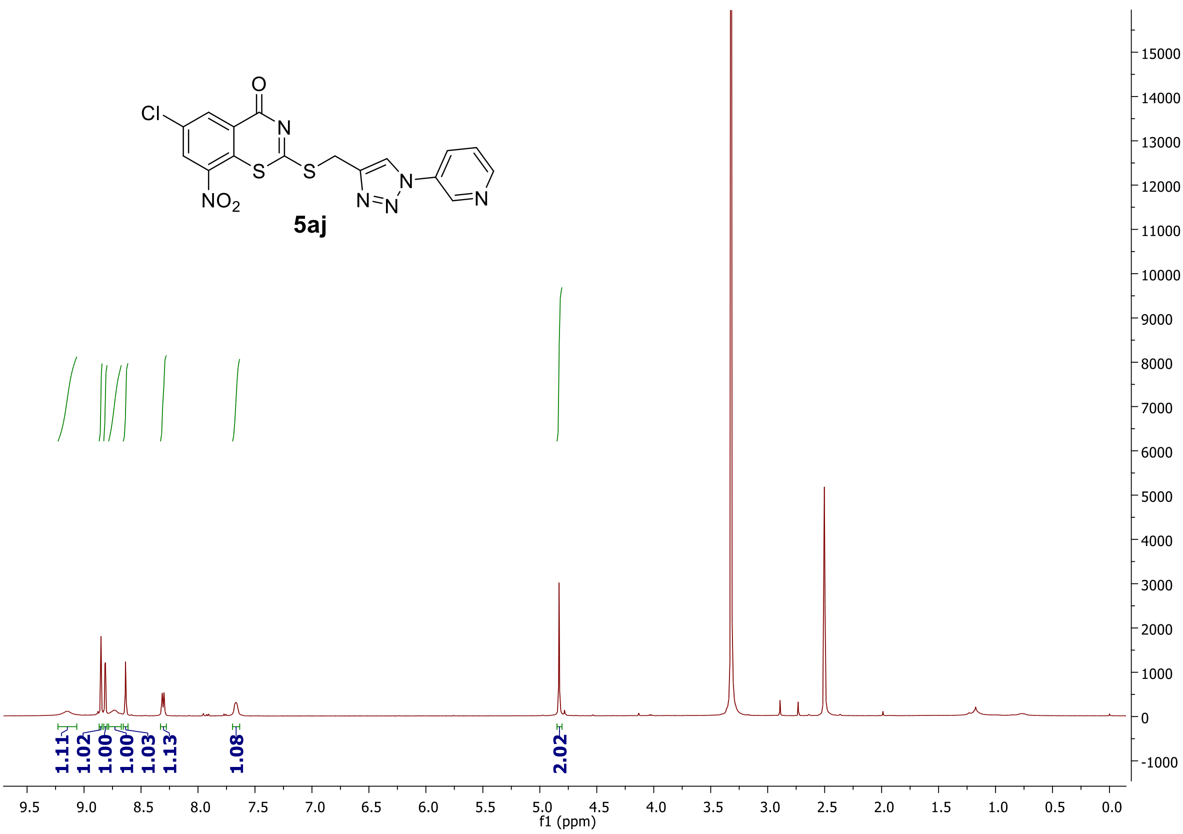
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **5ai**



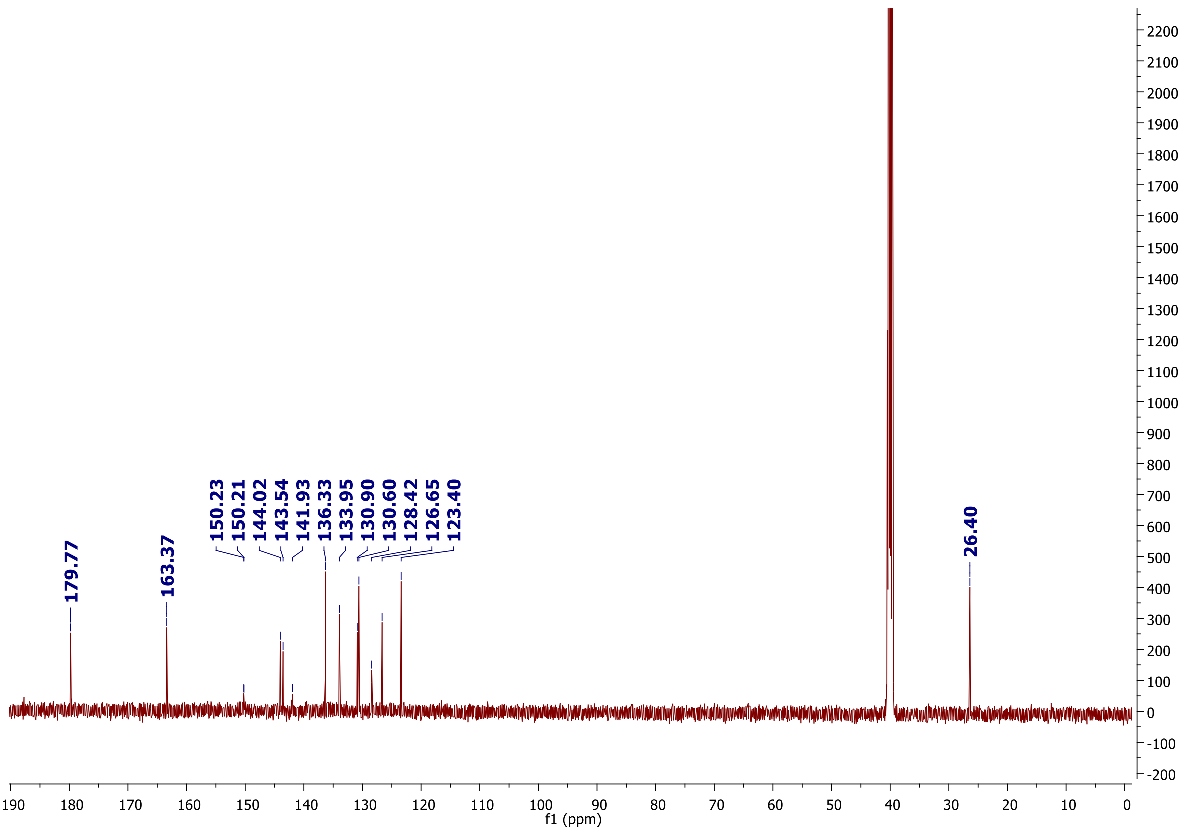
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **5ai**



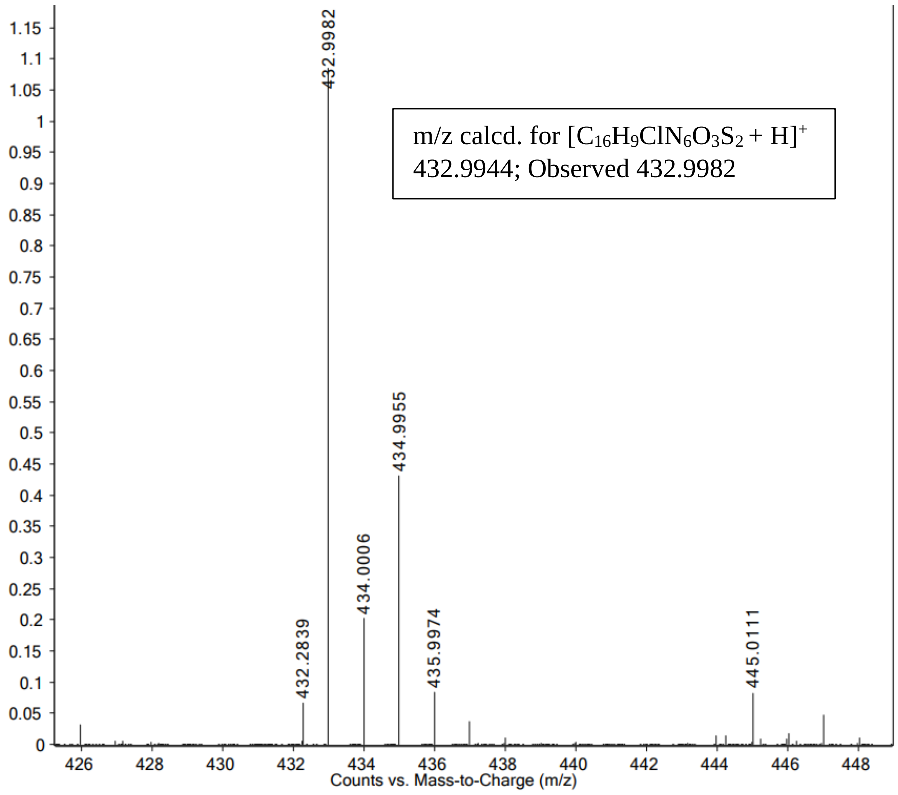
Mass spectrum of compound **5ai**



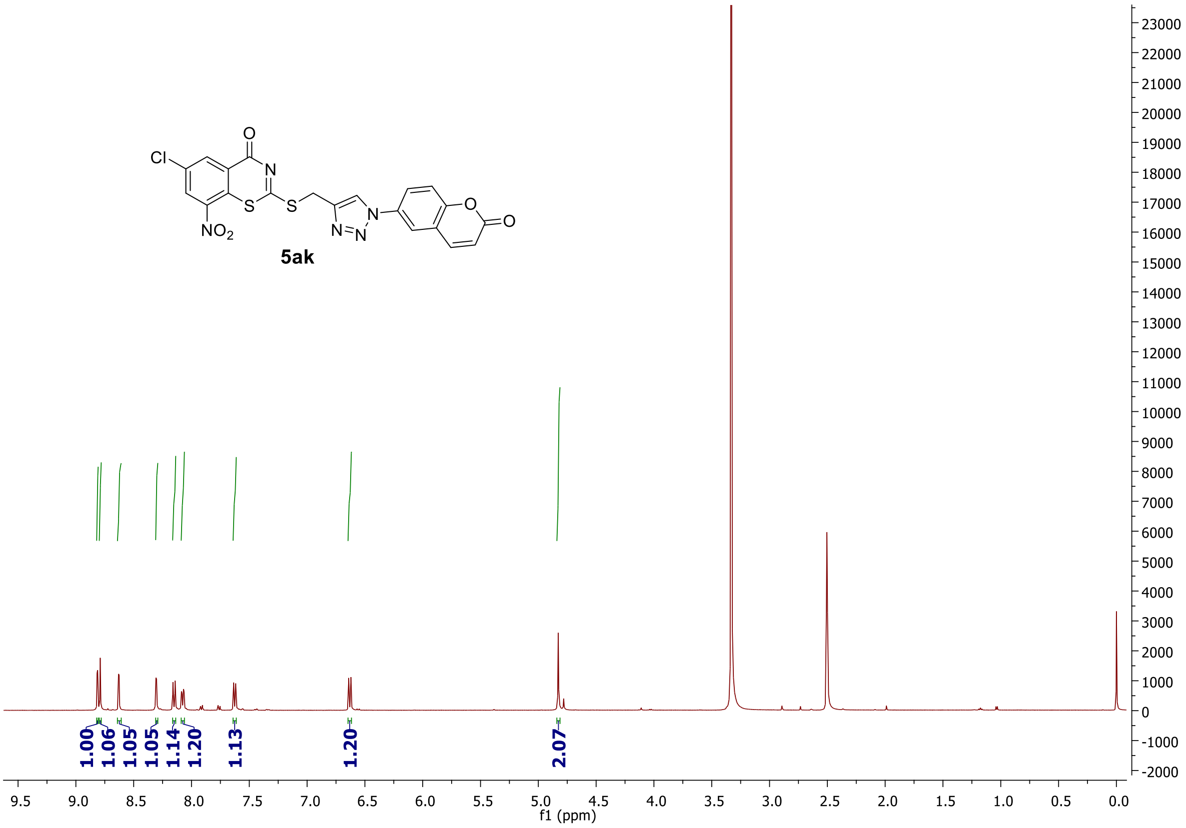
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **5aj**



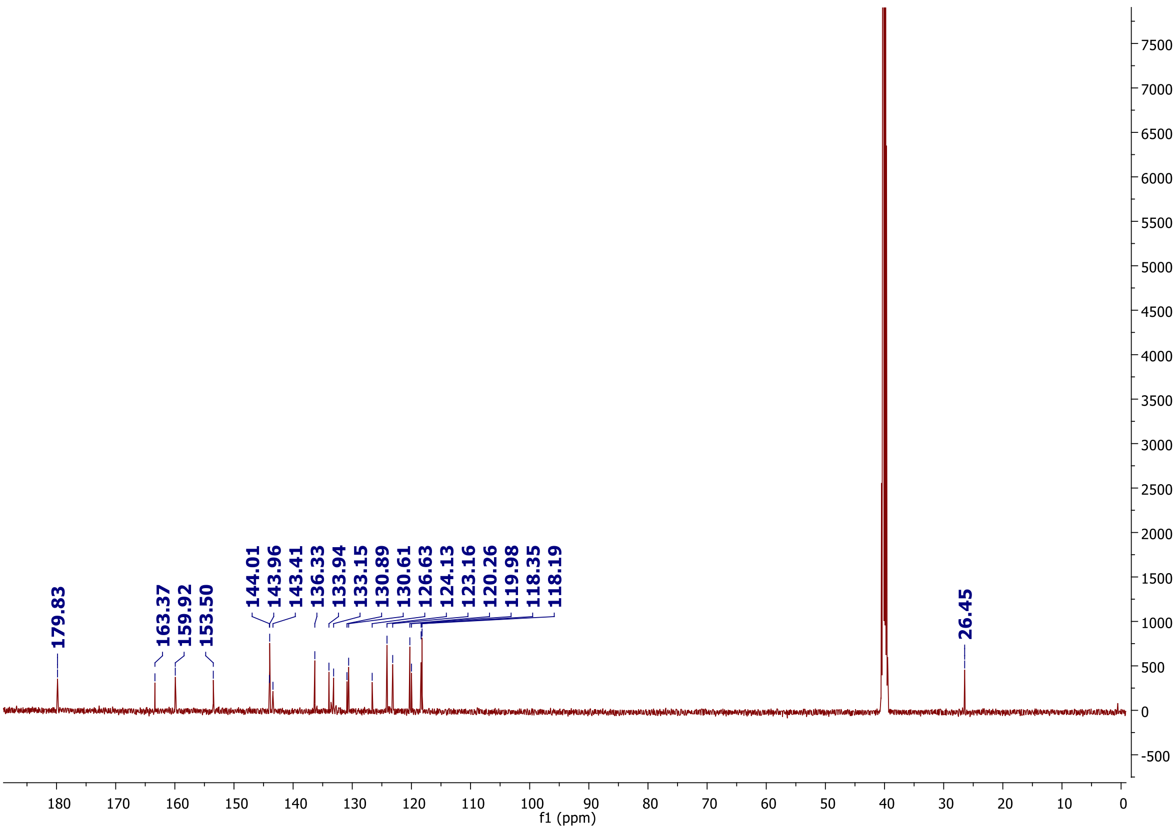
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **5aj**



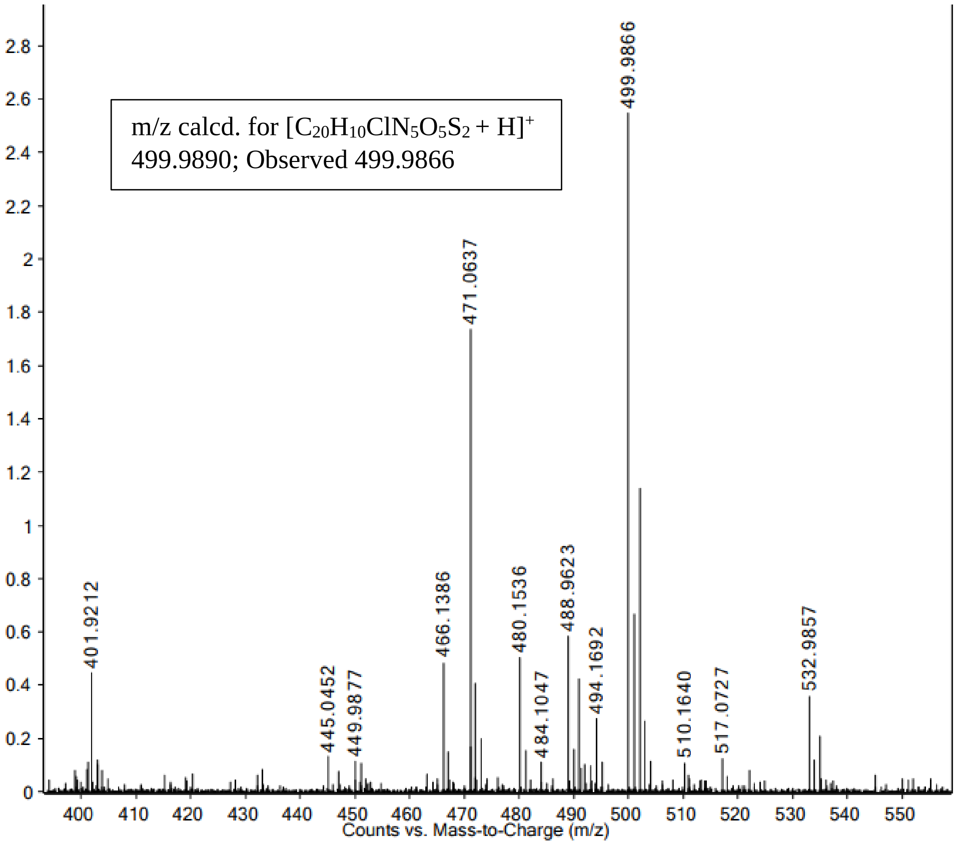
Mass spectrum of compound **5aj**



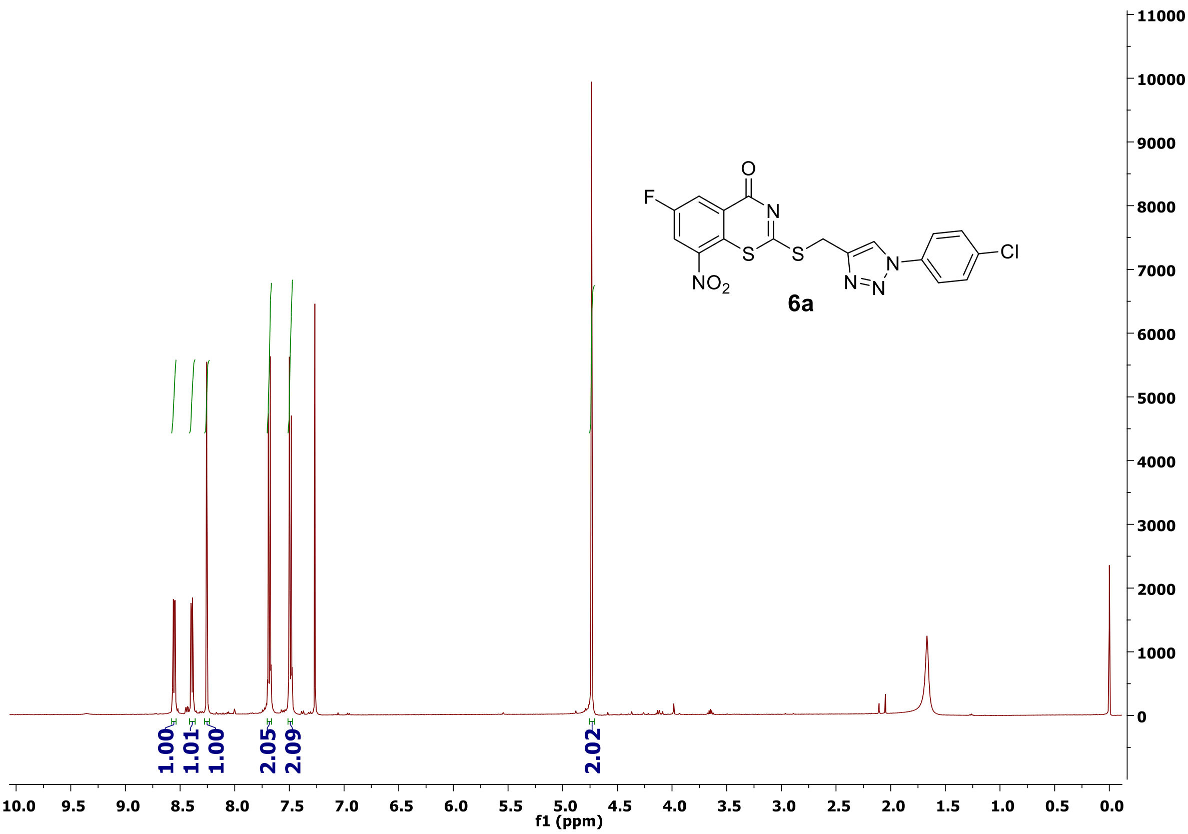
[1]H NMR (500 MHz, DMSO-d_6) spectrum of compound **5ak**



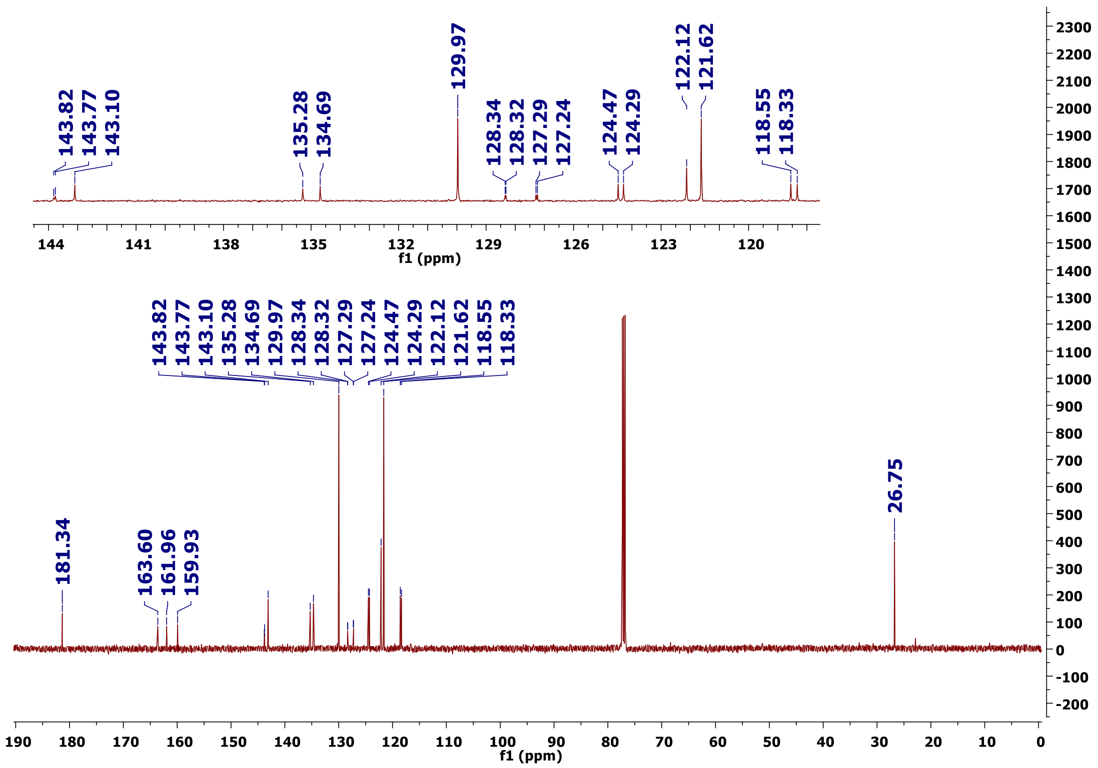
[13]C NMR (125 MHz, DMSO-d_6) spectrum of compound **5ak**



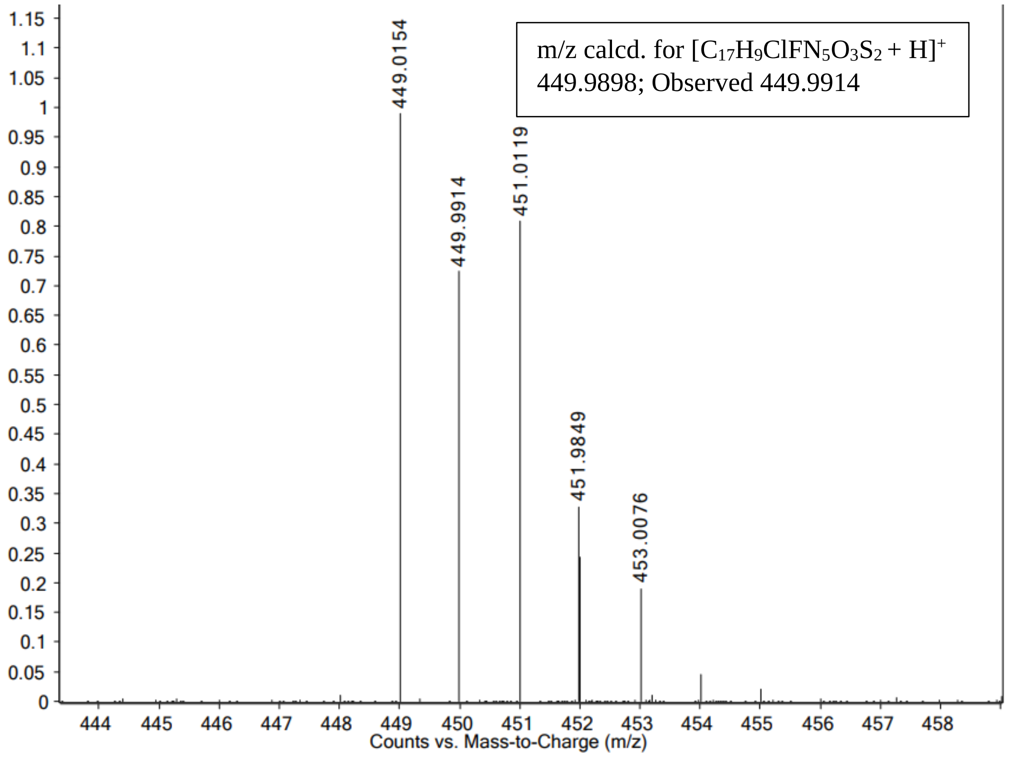
Mass spectrum of compound **5ak**



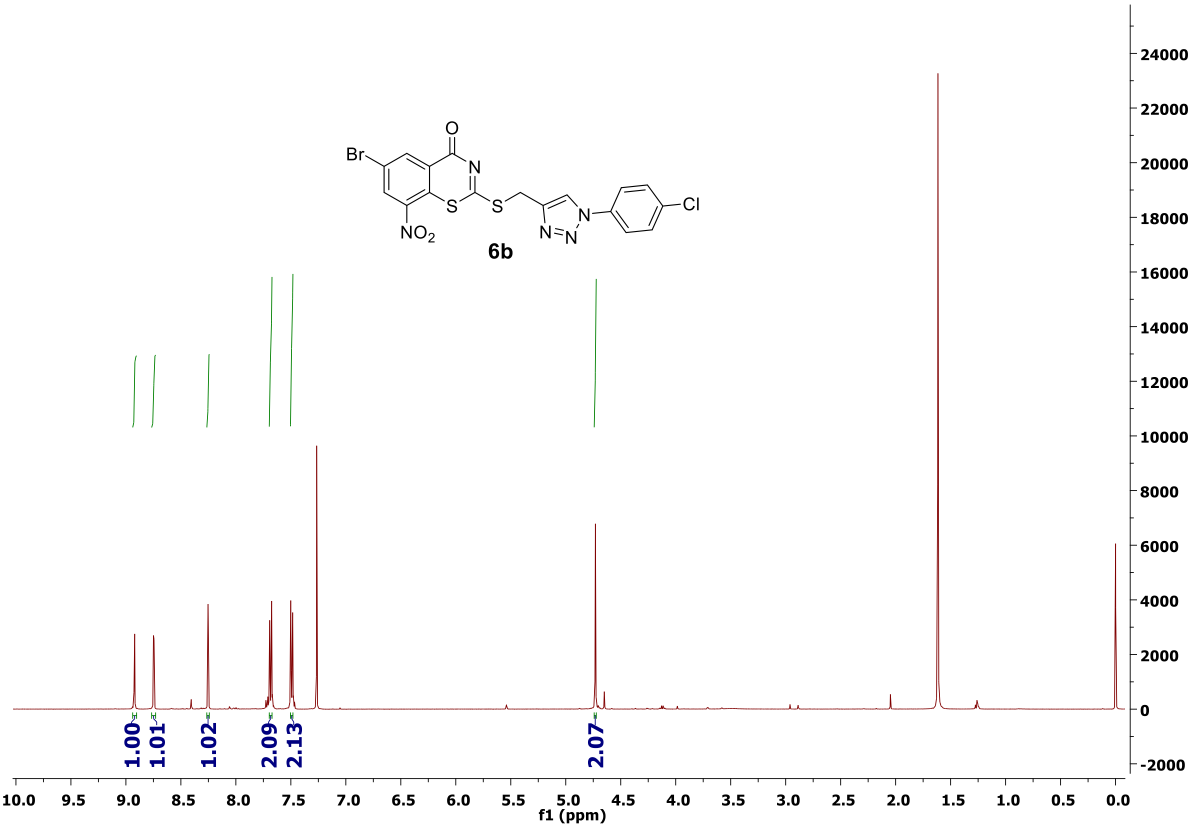
[1]H NMR (500 MHz, $CDCl_3$) spectrum of compound **6a**



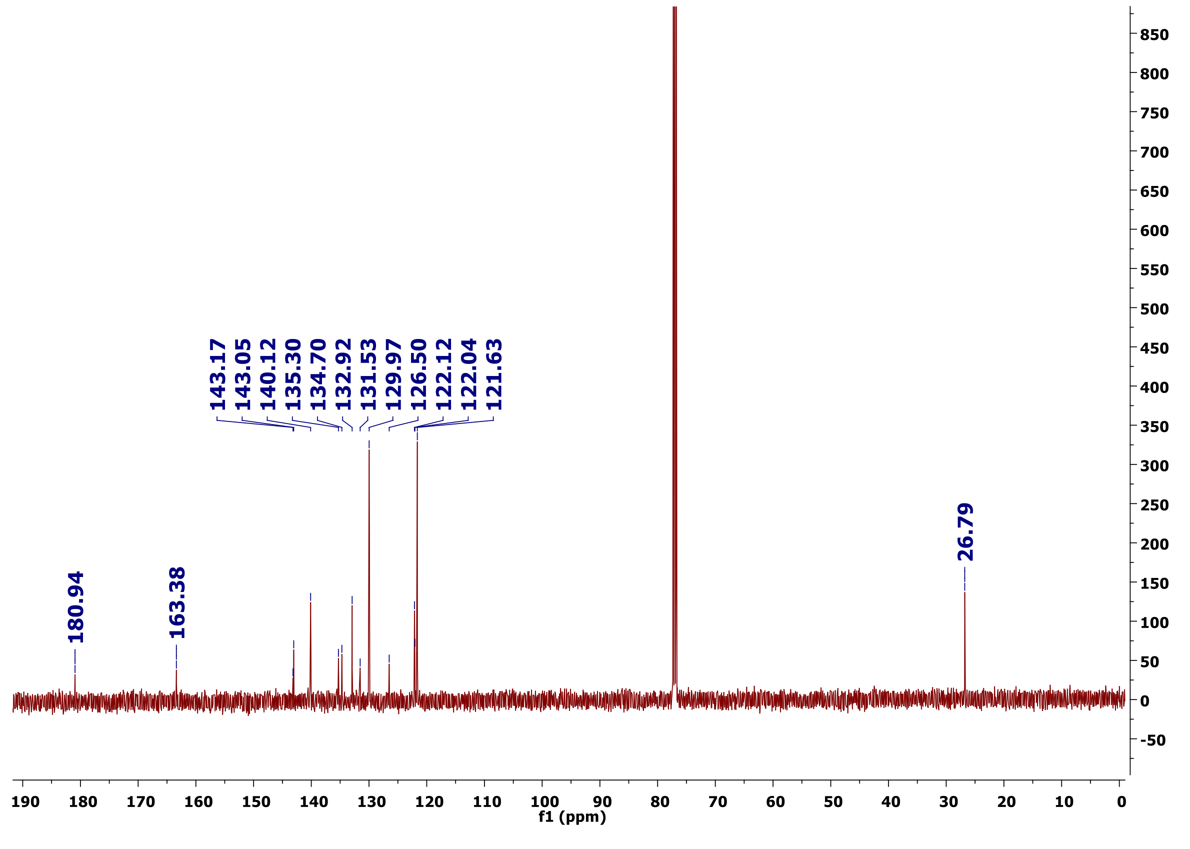
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **6a**



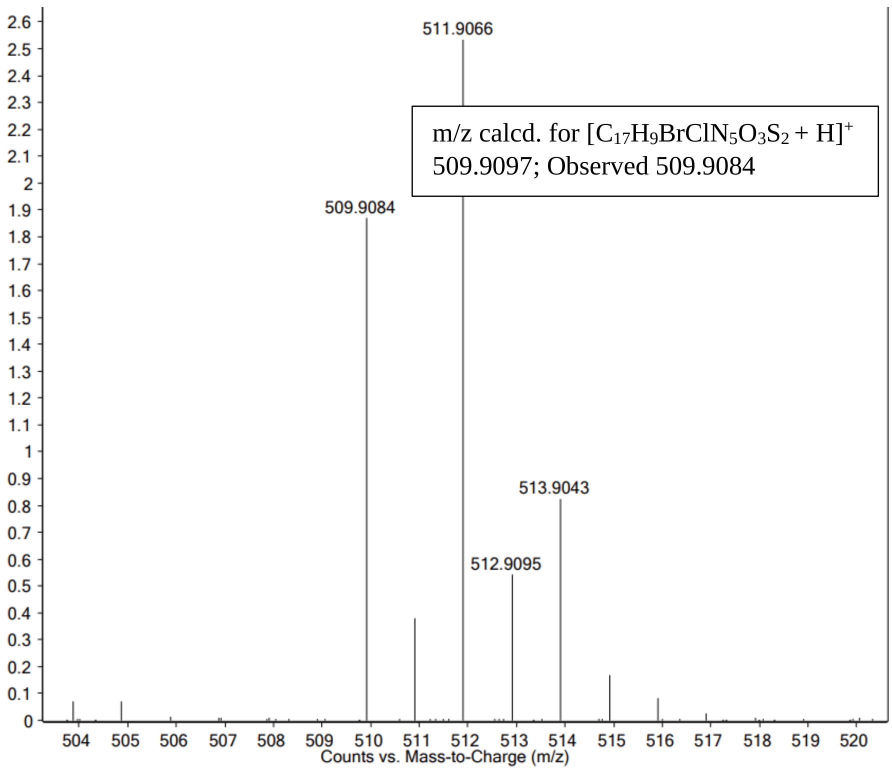
Mass spectrum of compound **6a**



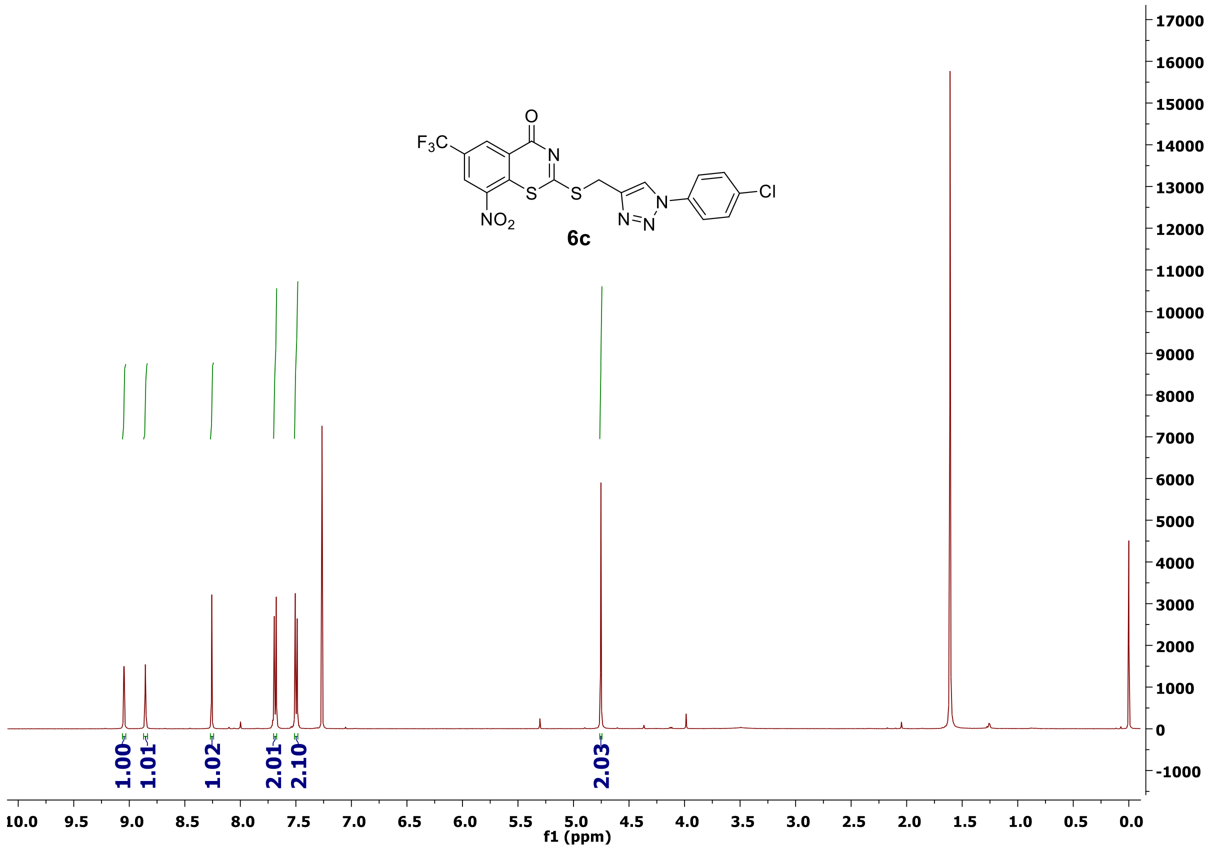
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **6b**



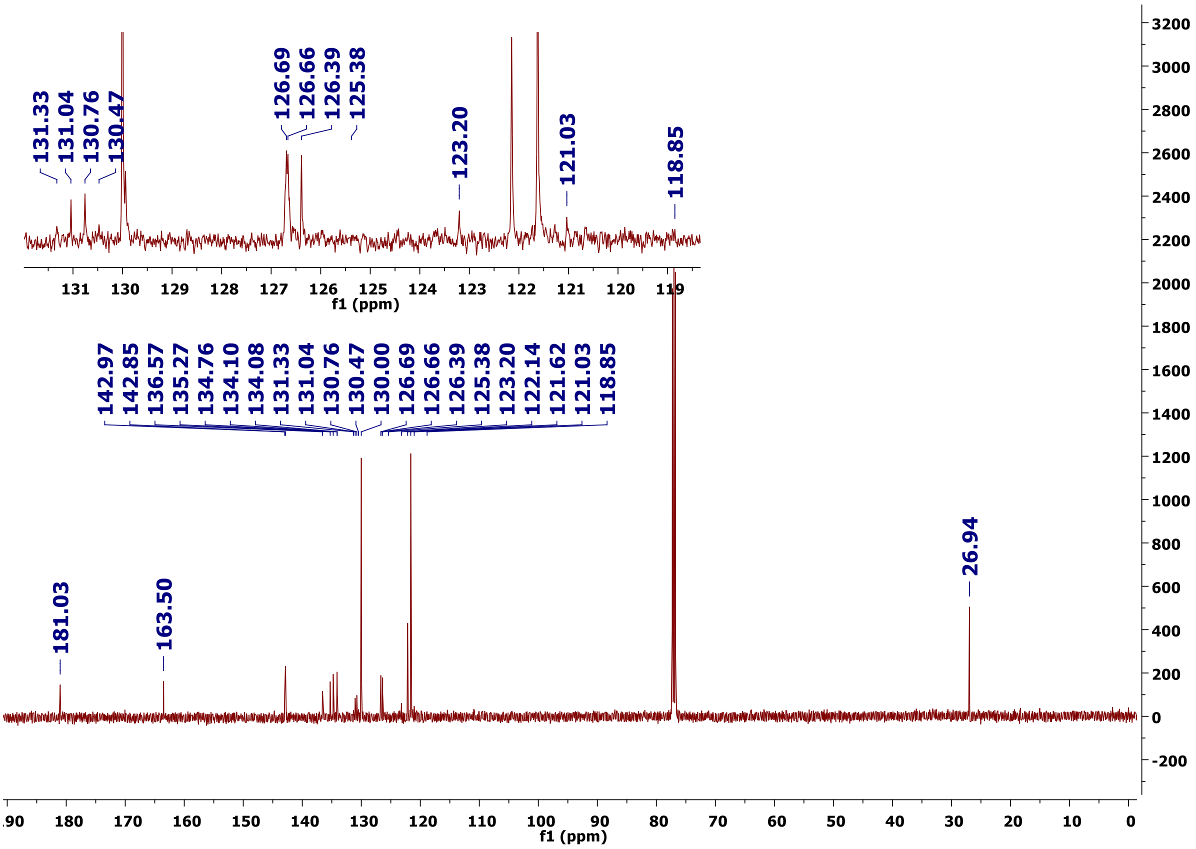
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **6b**



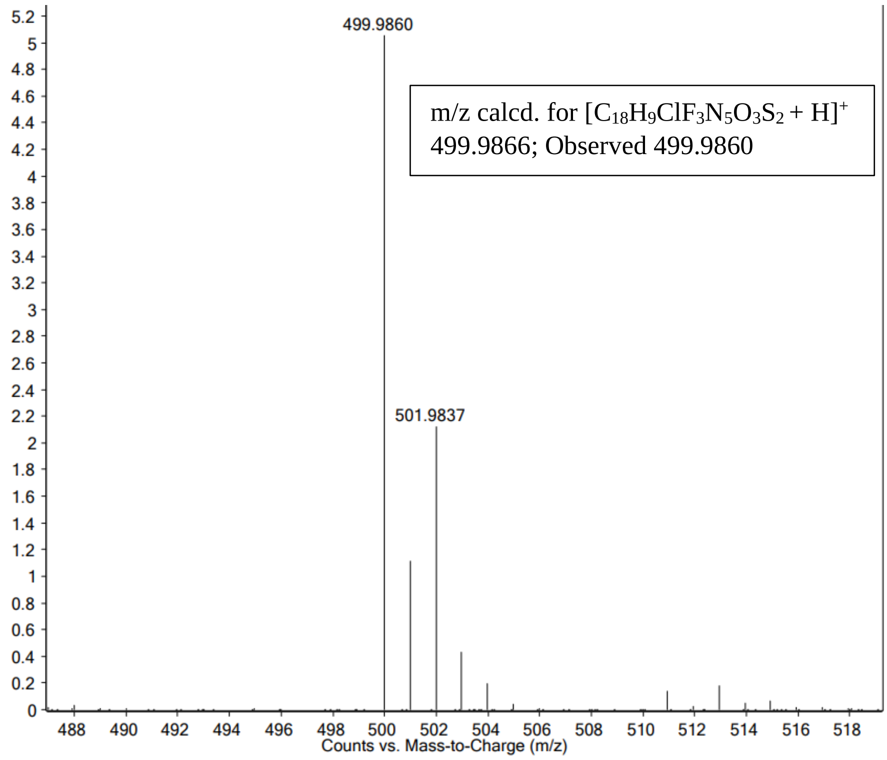
Mass spectrum of compound **6b**



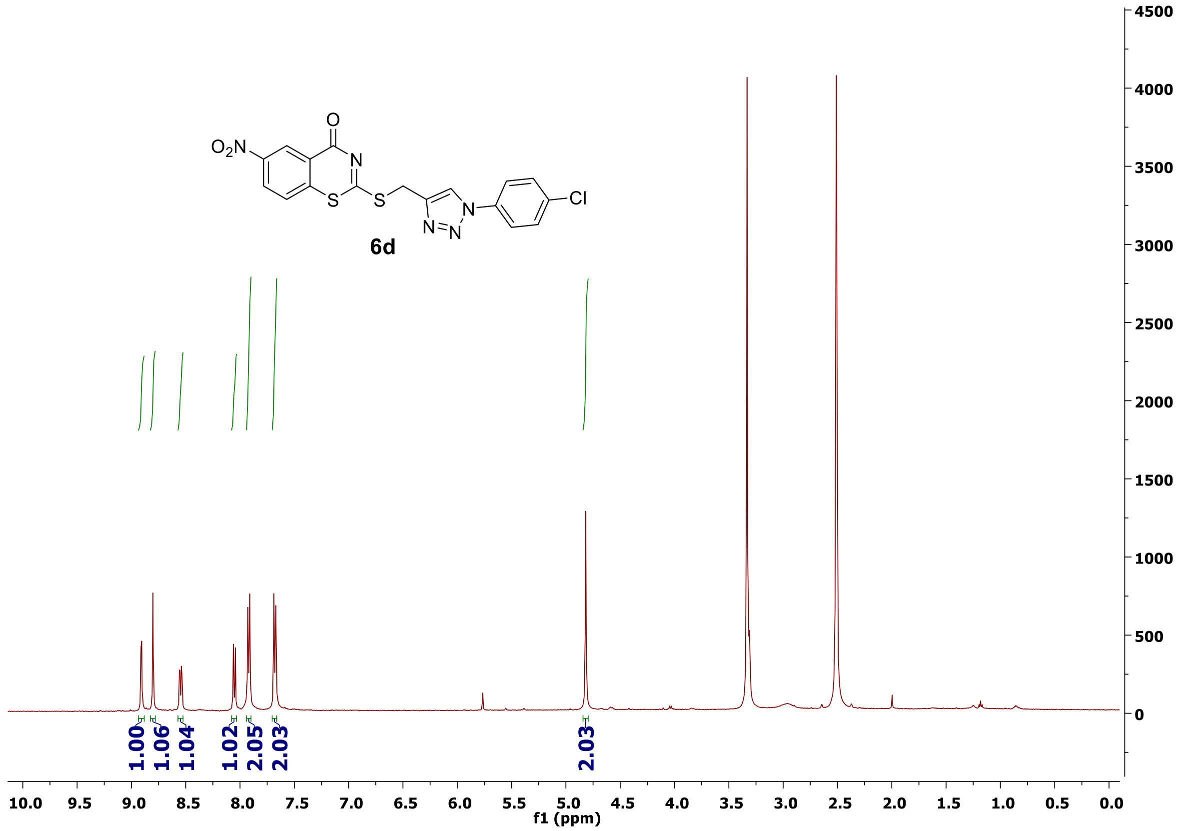
^{1}H NMR (500 MHz, $CDCl_3$) spectrum of compound **6c**



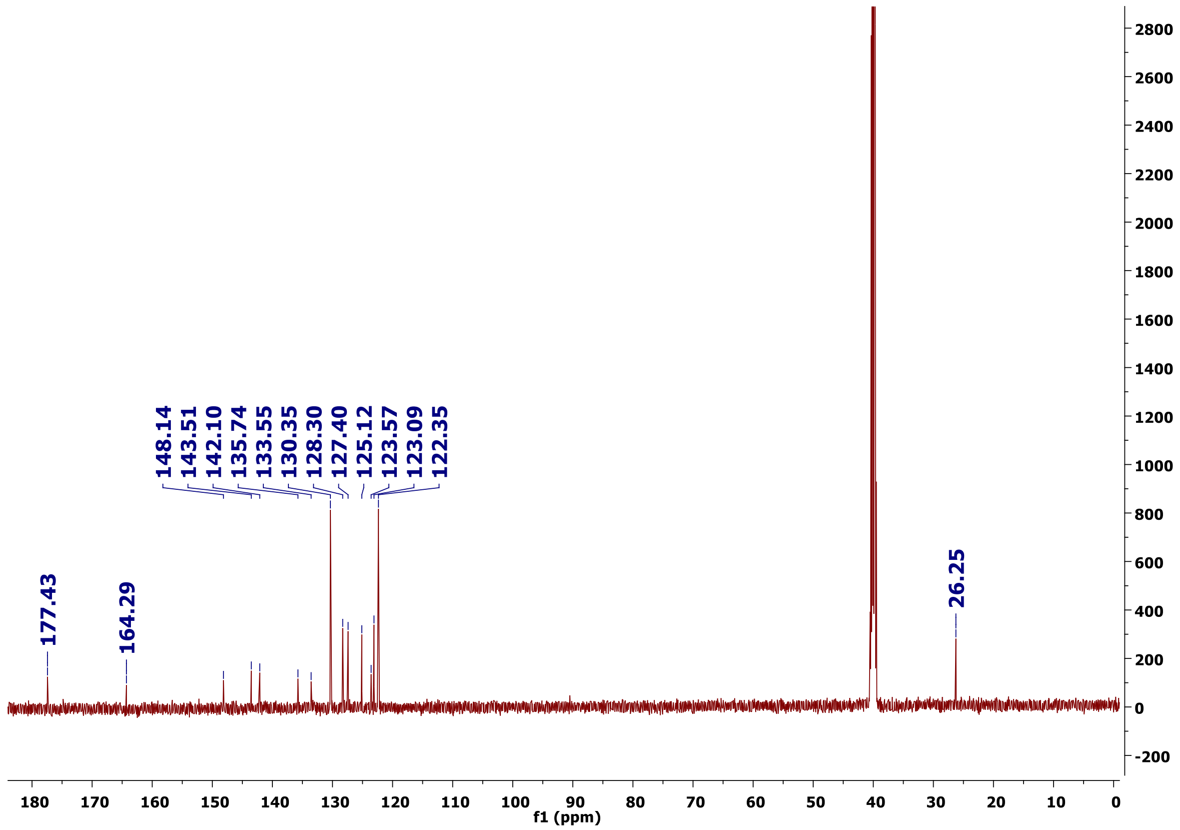
^{13}C NMR (125 MHz, $CDCl_3$) spectrum of compound **6c**



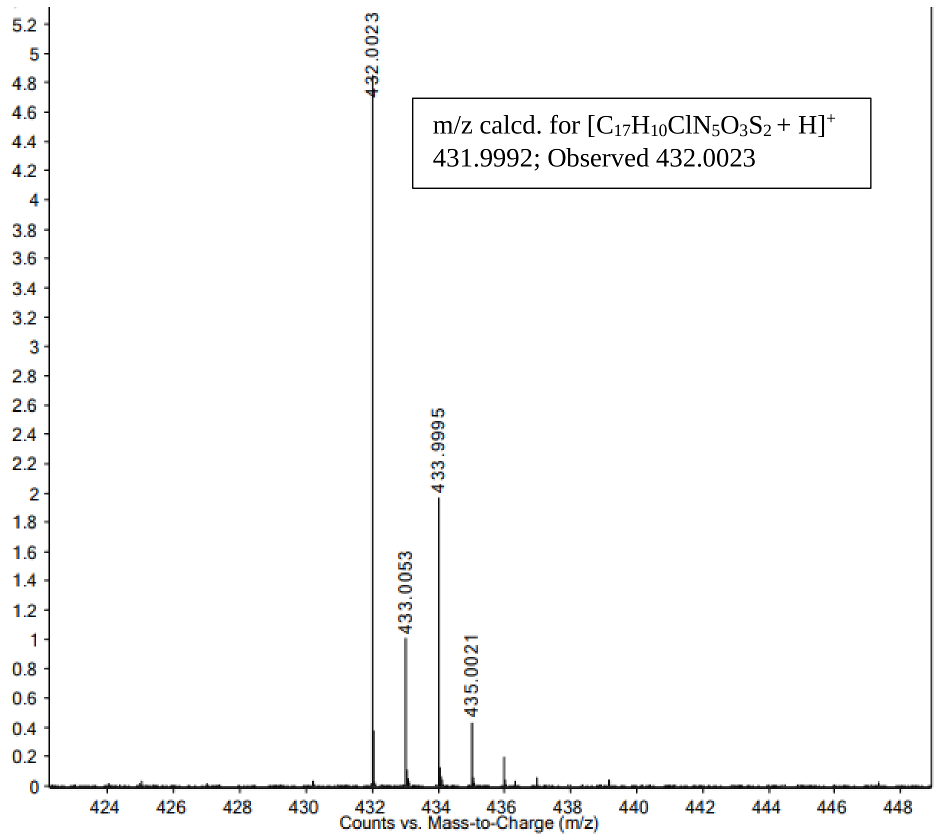
Mass spectrum of compound **6c**



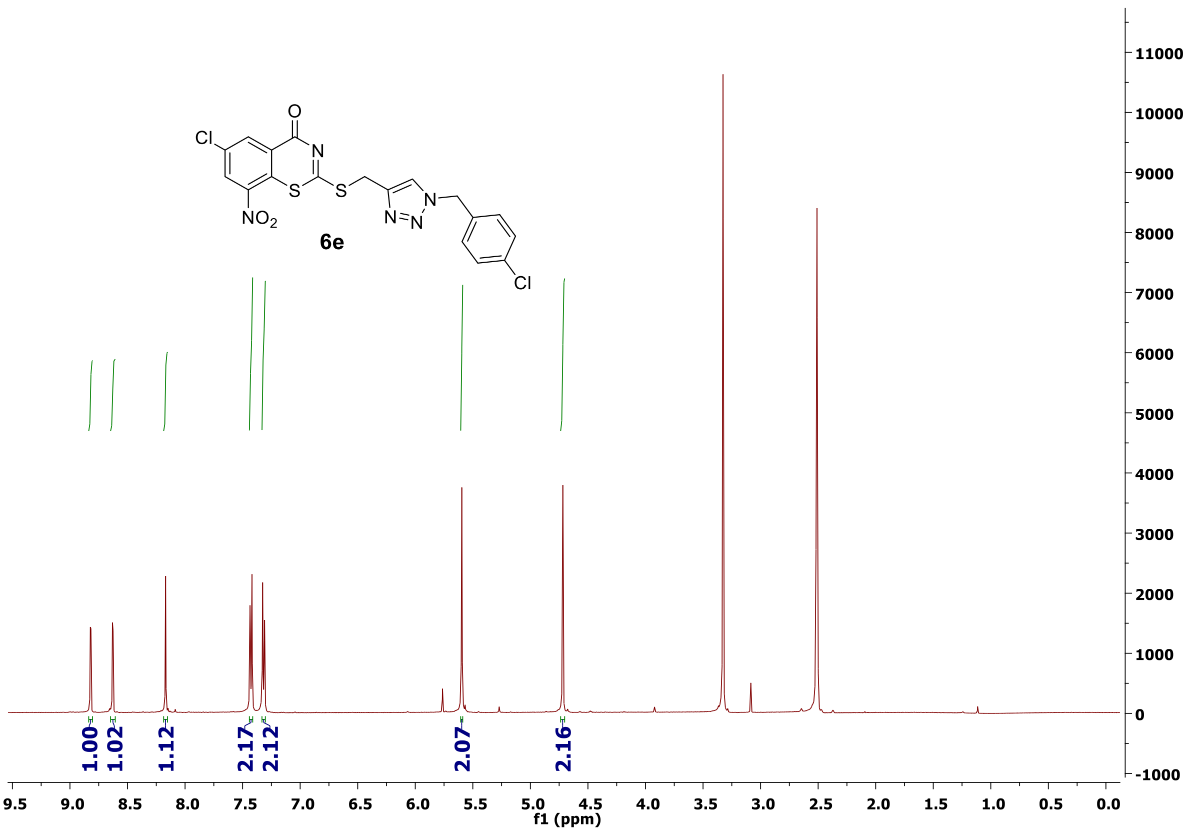
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **6d**



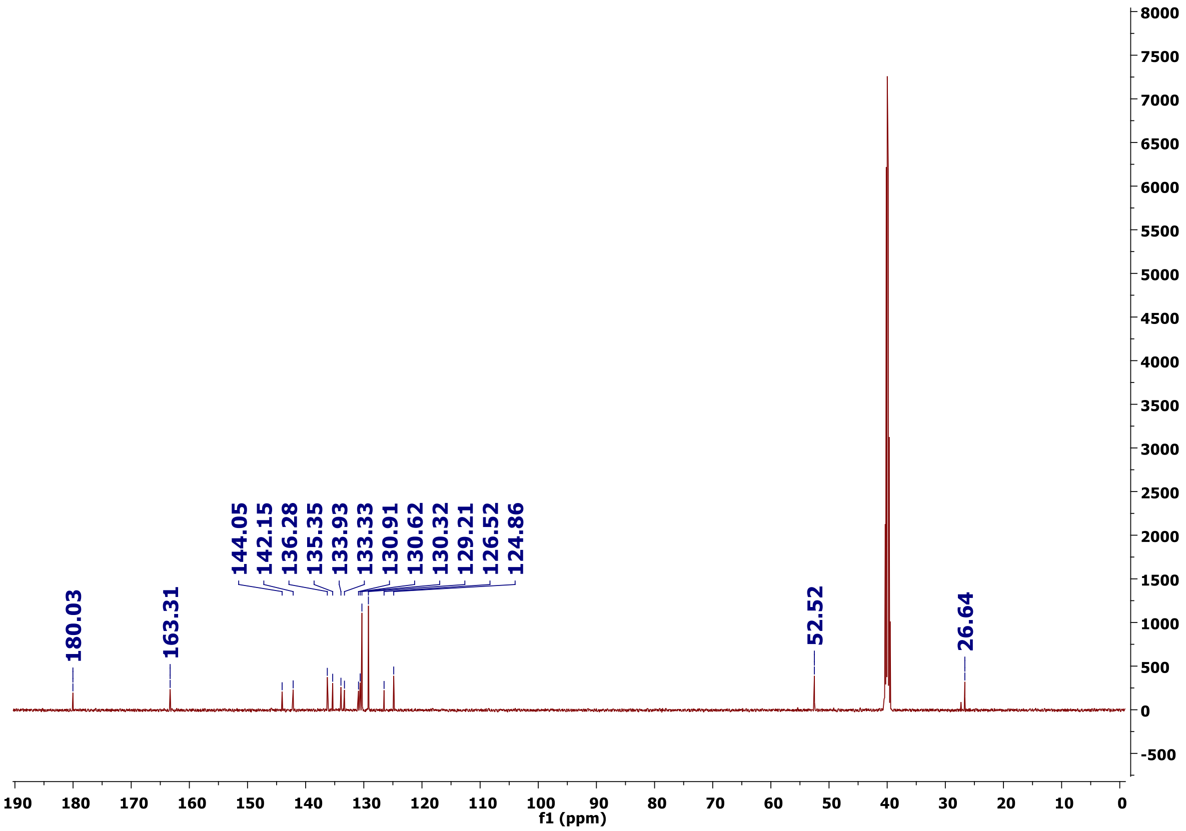
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **6d**



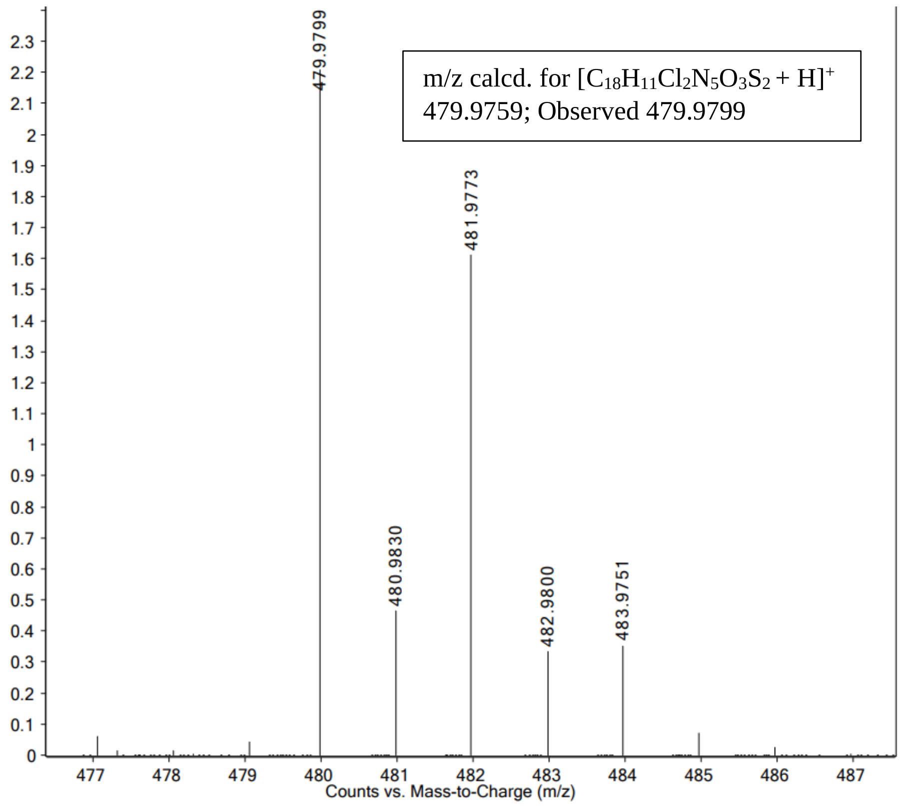
Mass spectrum of compound **6d**



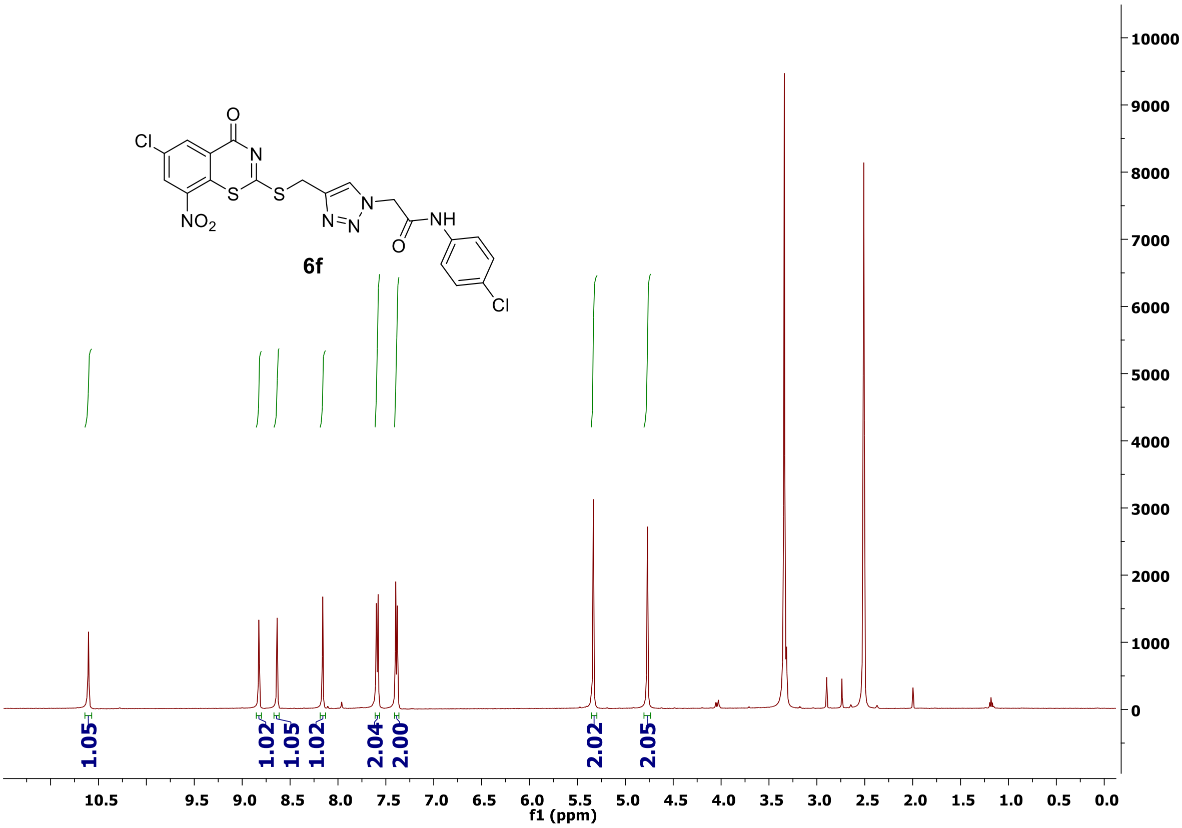
[1]H NMR (500 MHz, DMSO-d_6) spectrum of compound **6e**



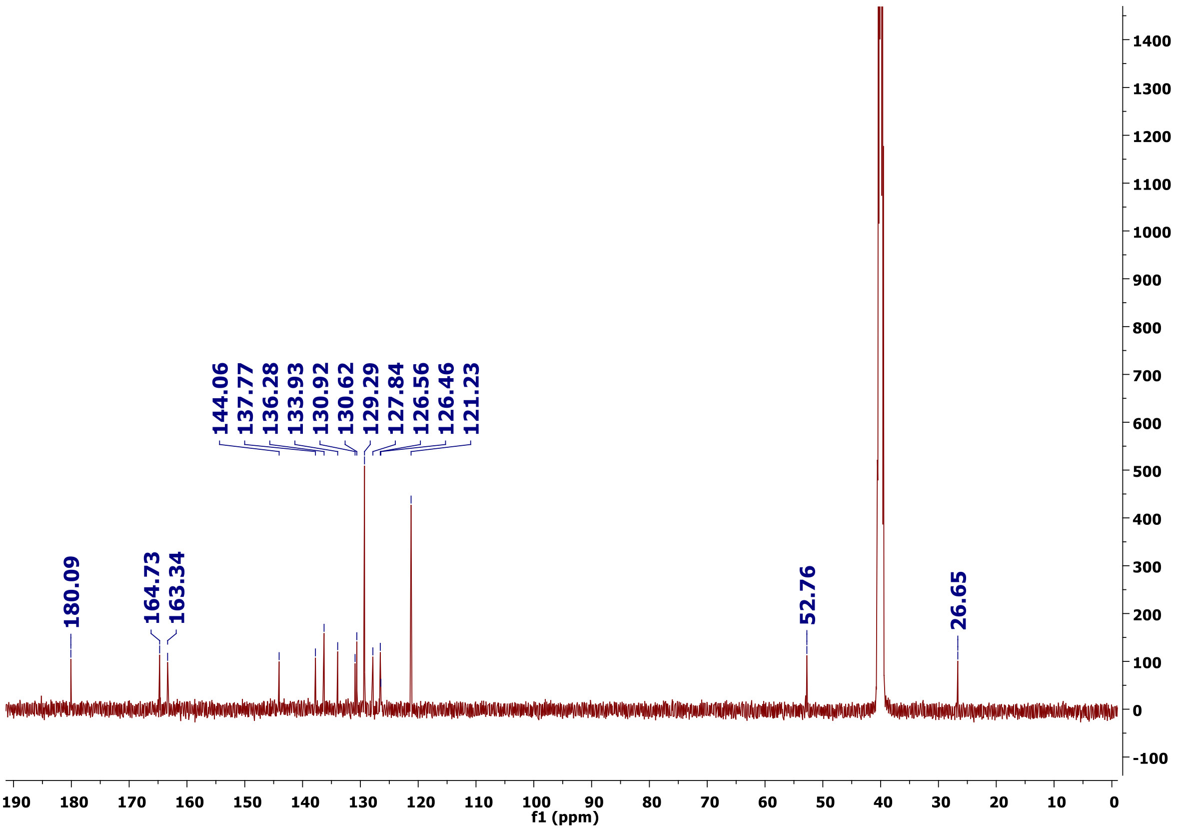
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **6e**



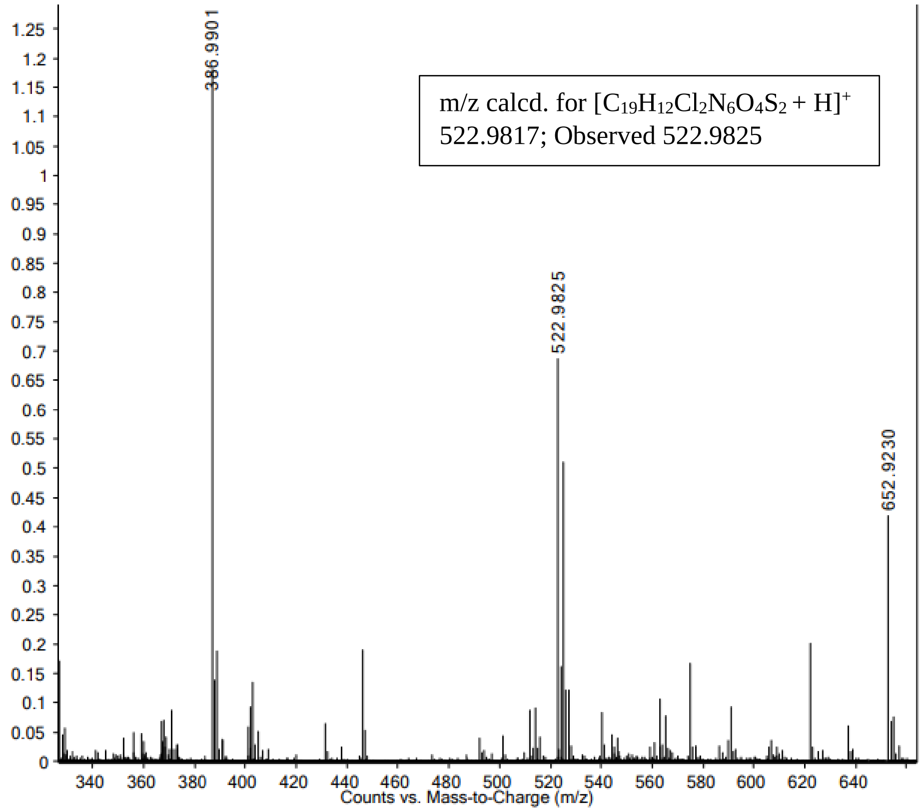
Mass spectrum of compound **6e**



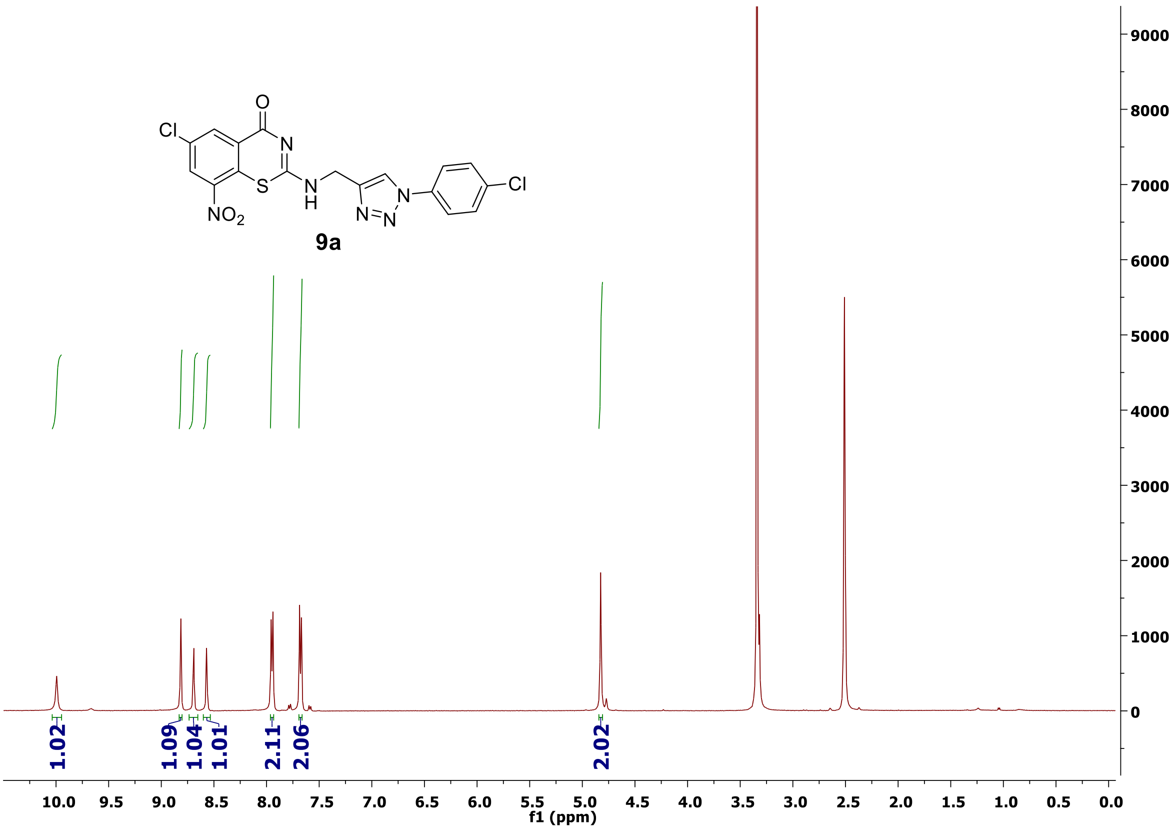
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **6f**



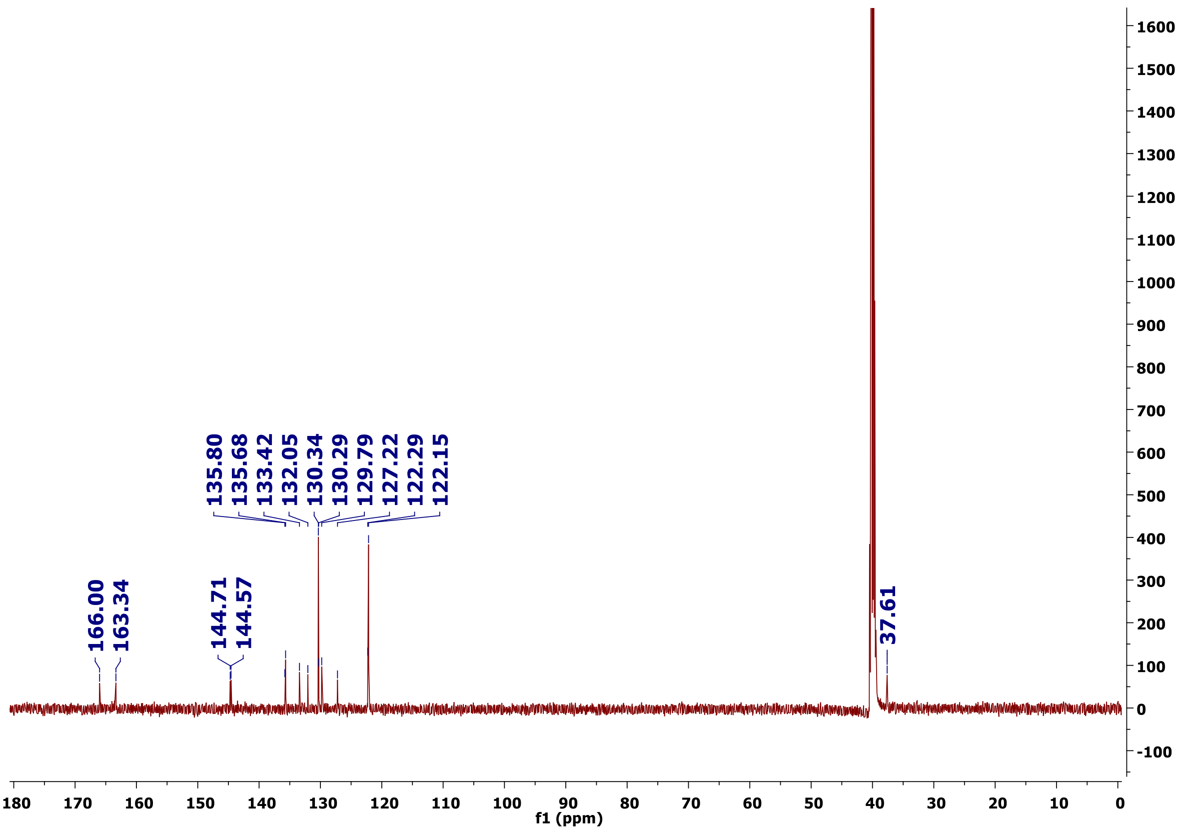
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **6f**



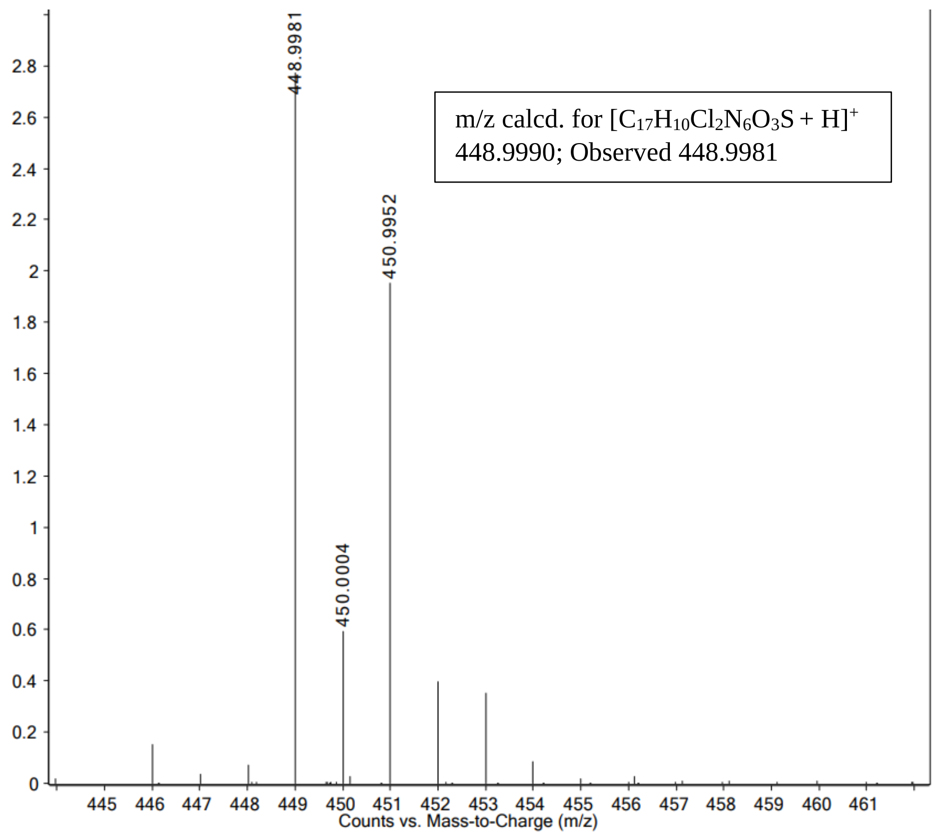
Mass spectrum of compound **6f**



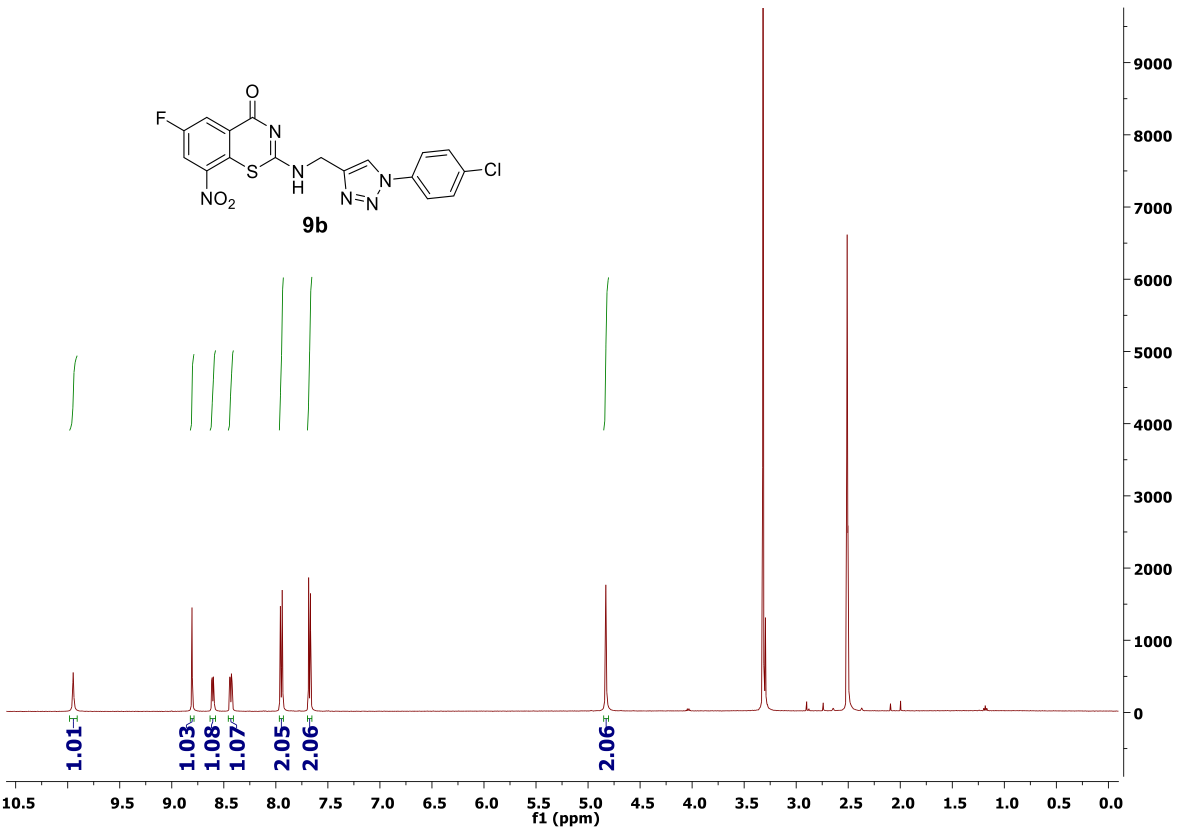
[1]H NMR (500 MHz, DMSO-d_6) spectrum of compound **9a**



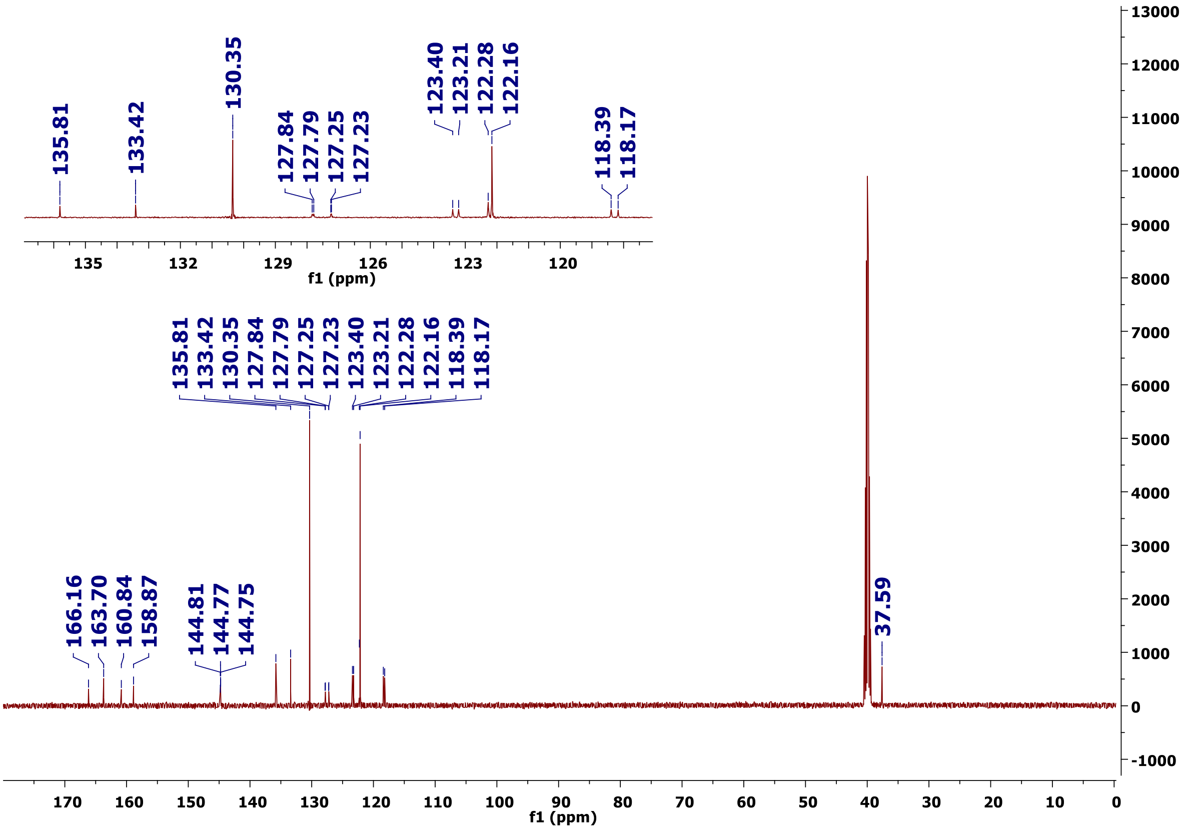
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **9a**



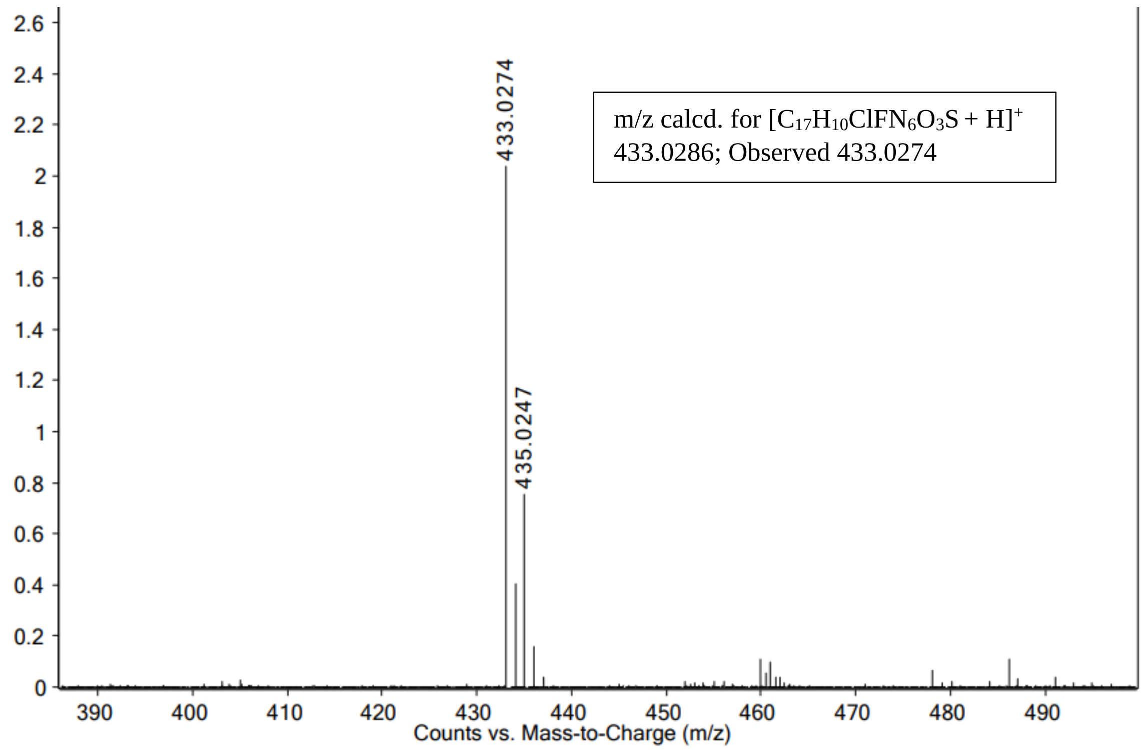
Mass spectrum of compound **9a**



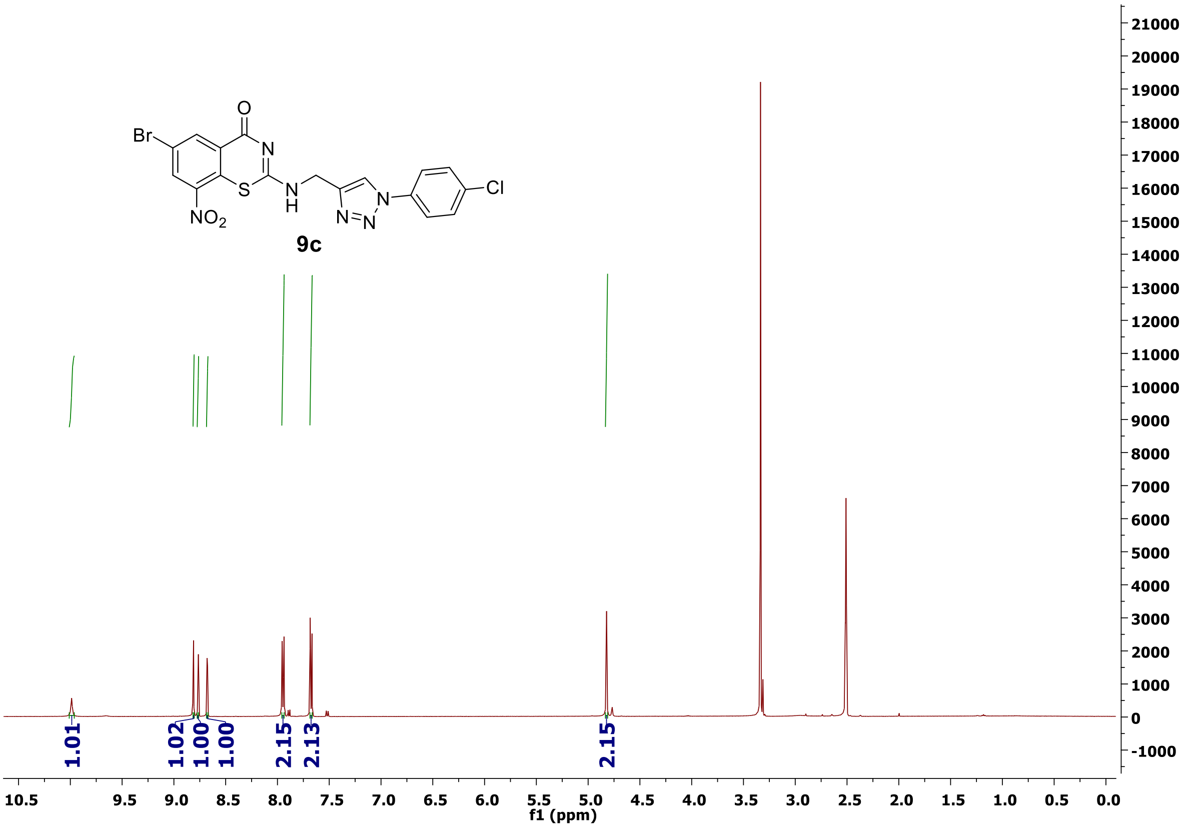
^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **9b**



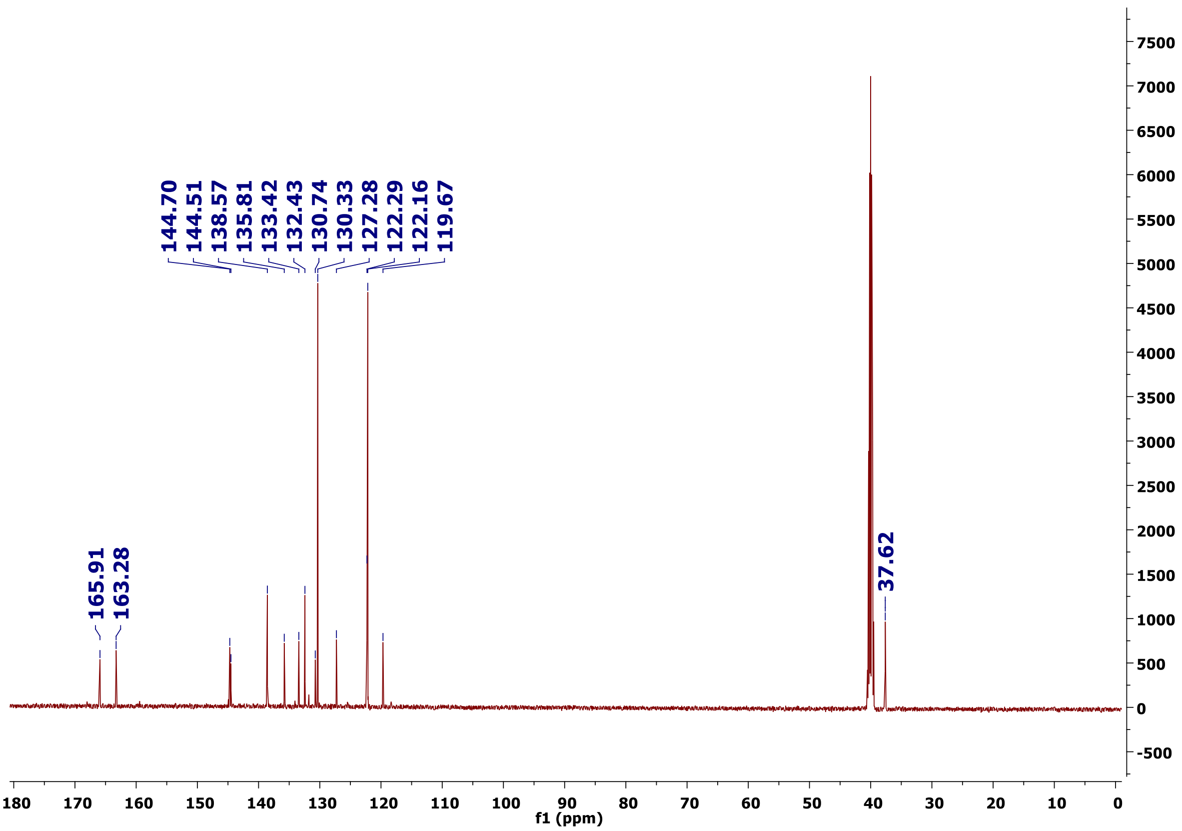
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **9b**



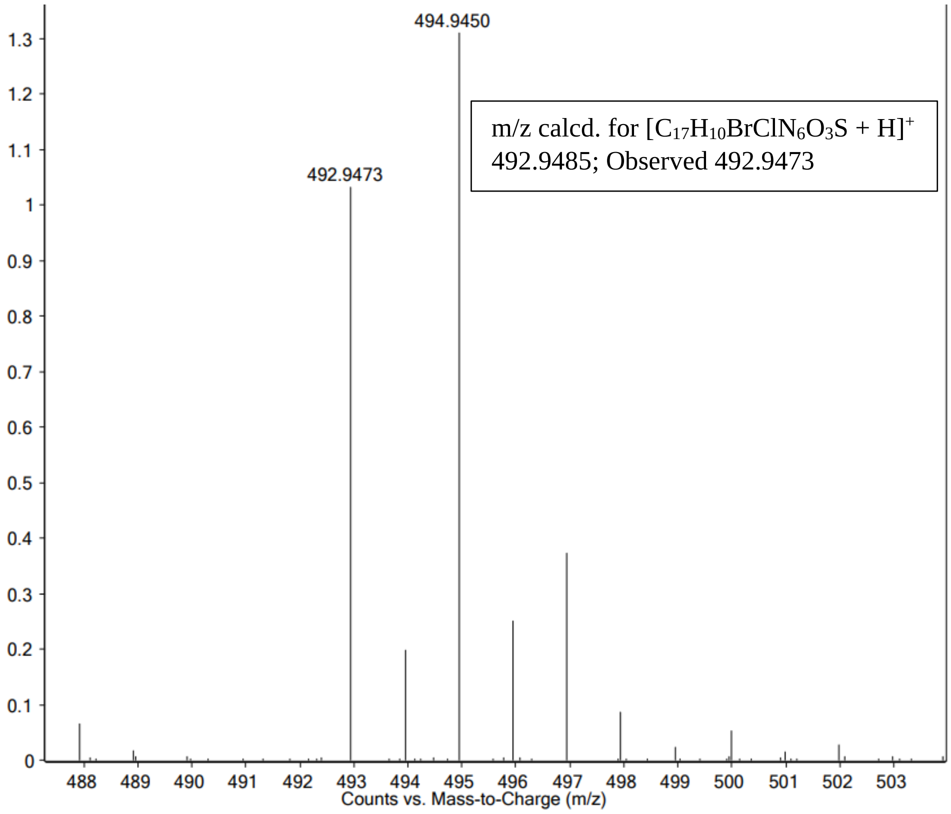
Mass spectrum of compound **9b**



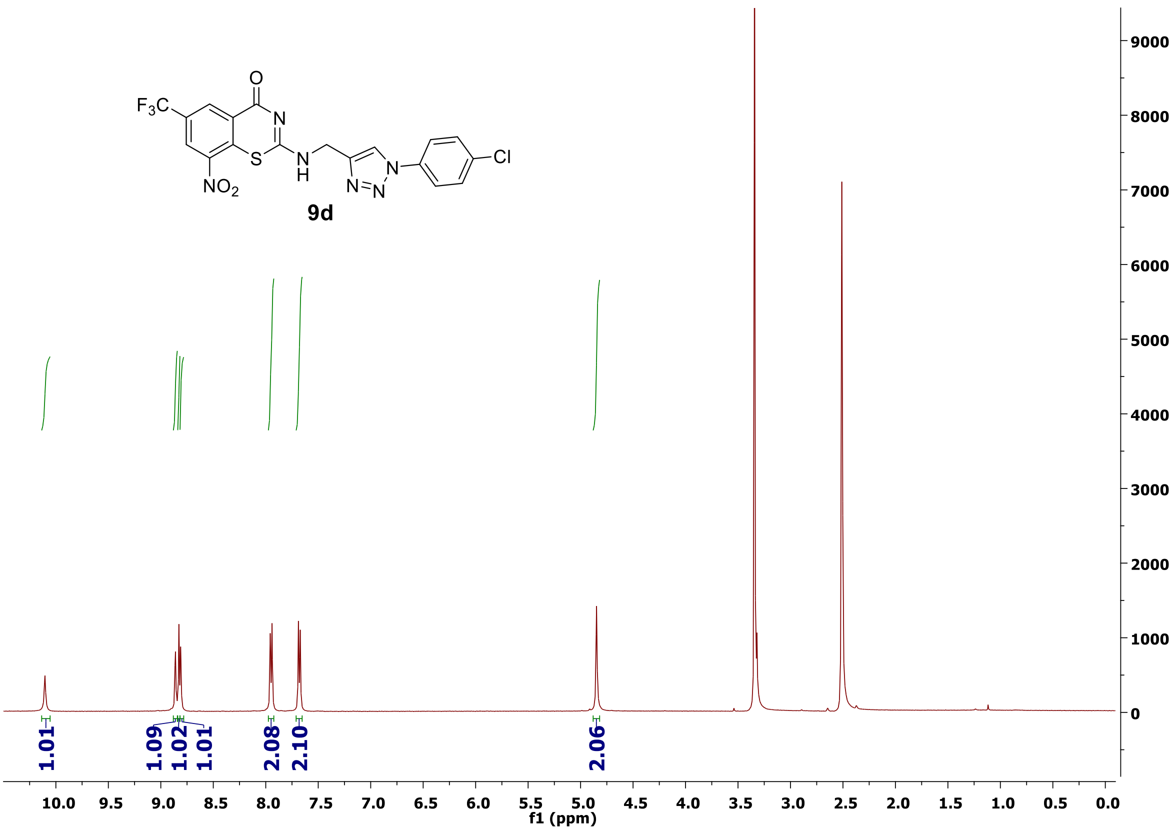
[1]H NMR (500 MHz, DMSO-d_6) spectrum of compound **9c**



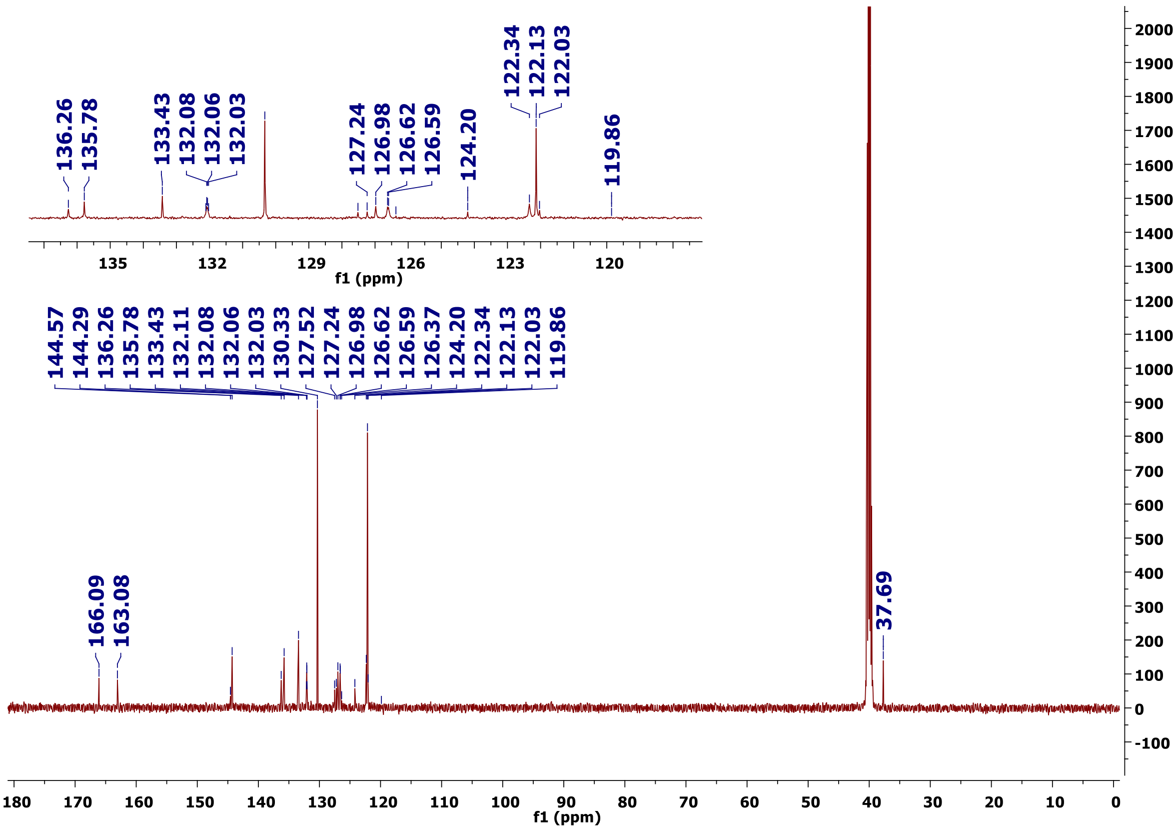
^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **9c**



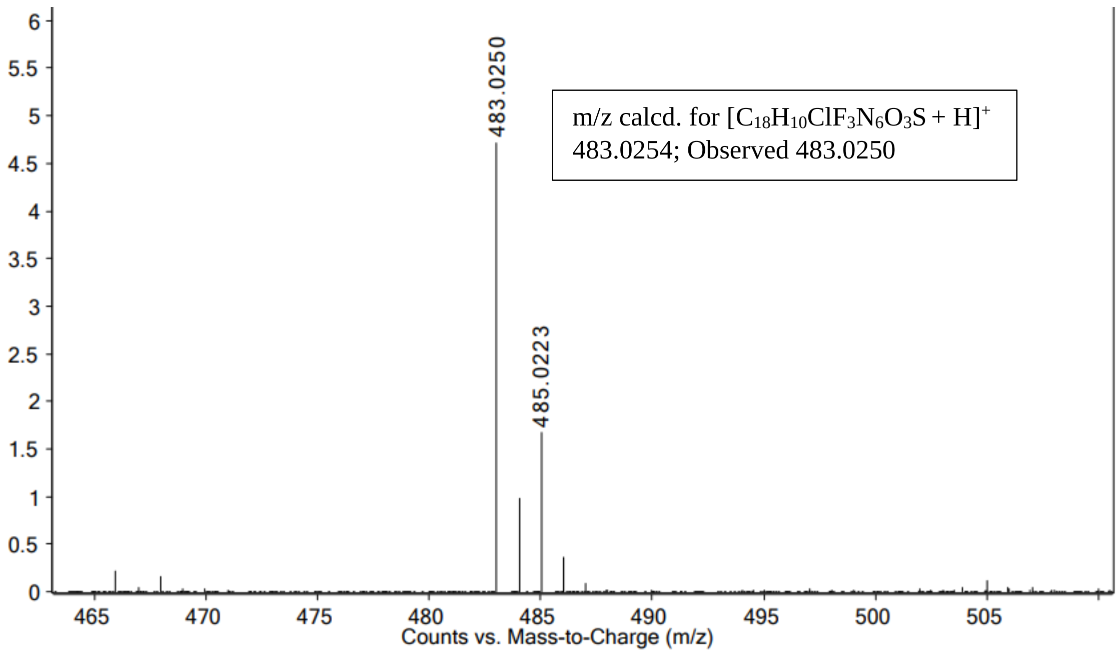
Mass spectrum of compound **9c**



^{1}H NMR (500 MHz, DMSO-d_6) spectrum of compound **9d**



^{13}C NMR (125 MHz, DMSO-d_6) spectrum of compound **9d**



Mass spectrum of compound **9d**

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