

Supporting Information

Catalyst-free photo-induced aerobic radical synthesis of lactams from *N*-alkenyl trichloroacetamides in 2-methyl tetrahydrofuran as the radical initiator under violet light

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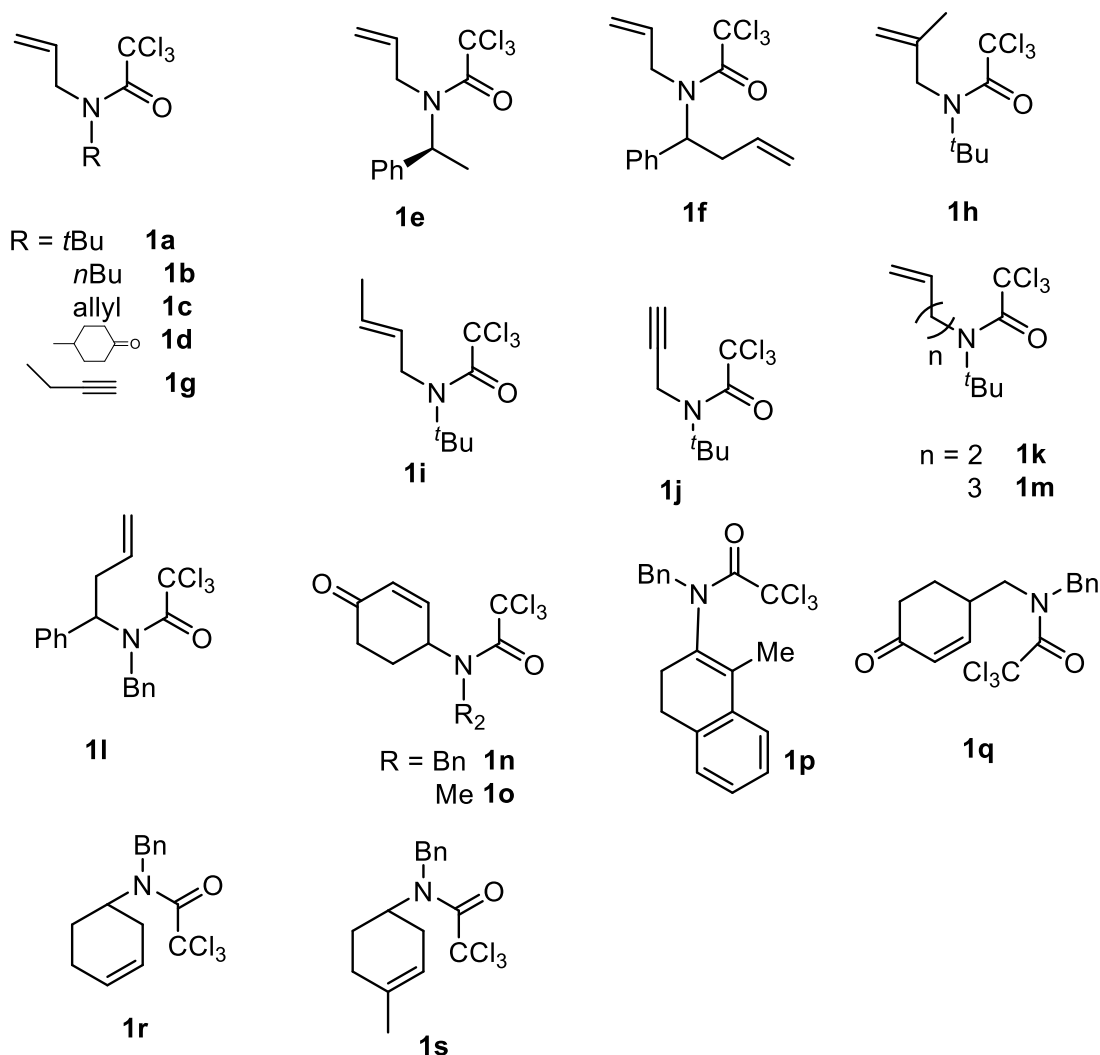
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1. General information

Unless otherwise stated, all reactions were carried out under air atmosphere with commercially available solvents. Photocatalyzed reactions were carried out in a 10 mL flask closed with a rubber stopper using violet light ($\lambda = 395\text{-}405\text{ nm}$). Reagents and solvents were used as received without further purification. All product mixtures were analyzed by thin-layer chromatography performed on SiO_2 (Merck silica gel 60 F254) and the spots were located by UV light ($\lambda 254\text{ nm}$) and/or a 1% KMnO_4 aqueous solution. Flash chromatography was carried out on SiO_2 (Carlo Erba silica gel 60A, 35–70 μ). Drying of organic extracts during the reaction workup was performed over anhydrous Na_2SO_4 and solvent evaporation was accomplished with a rotatory evaporator. ^1H and ^{13}C NMR spectra were recorded on a Bruker 400 and a Bruker 500 spectrometers in CDCl_3 . Chemical shifts are reported as δ values (ppm) relative to internal Me_4Si , ^{13}C NMR spectra are referenced to the deuterated solvent signal (CDCl_3 : 77.00 ppm). All NMR data assignments are supported by COSY and HSQC experiments. The following abbreviations (or combinations) were used to describe ^1H -NMR multiplicities: s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet, br = broad. Infrared spectra were recorded on a Nicolet 320 FT-IR spectrophotometer. Melting points were recorded on a Gallenkamp melting point apparatus. Electrochemical characterizations (Cyclic Voltammetry) were carried out in acetonitrile (MeCN)/0.1 M tetrabutylammonium hexafluorophosphate (98%) at room temperature, on a BASi Epsilon EClipseTM (Metrohm, The Netherlands) in a glass cell. A three-electrode cell was employed, which was composed of a glassy carbon (GC) working electrode (3 mm diameter), a platinum wire as a counter electrode and an Ag/AgCl as a reference electrode (RE). Oxygen was removed by purging the solution with high purity Nitrogen. The GC electrode was polished before any measurement with diamon paste and ultrasonically rinsed with deionized water for 15 minutes. The electrode was electrochemically activated in the background solution by means of several voltammetric cycles at 100 mV/s between the anodic and cathodic solvent /electrolyte discharges.¹ UV-Visible absorbances spectra were recorded with Secomam UVIKON XS UV/Vis Spectrometer.

¹ We thank Dr. Xavier Companyó for letting us use the machine and Paula Rodríguez for her help.

2. Preparation and characterization of trichloroacetamides 1a-1s



For the preparation and characterization of trichloroacetamides **1a**, **1b**, **1c**, **1d**, **1g**, **1h**, **1i**, **1k**, **1m**, **1n** see our previous work.² Preparation and characterization of **1e** has been reported previously.³ **1j** was prepared from *t*-butylamine and propargyl bromide using the two-step sequence described in ref.2. Synthesis and characterization of **1f** and **1s** is reported in our previous work.⁴ **1l** was prepared from the corresponding secondary amine⁵ and trichloroacetyl chloride using the conditions reported in ref.2. **1o** and **1q** were prepared by oxidation with IBX of the corresponding amides⁶ using the protocol

² G. Trenchs, F. Diaba, *Org. Biomol. Chem.*, 2022, **20**, 3118-3123.

³ M. L. Marin, R. J. Zaragoza, M. A. Miranda, F. Diaba, J. Bonjoch, *Org. Biomol. Chem.*, 2011, **9**, 3180-3187.

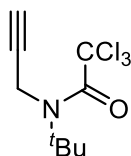
⁴ F. Diaba, E. Gomez-Bengoa, J. M. Cuerva, J. Bonjoch, J. Justicia, *RSC Adv.*, 2016, **6**, 55360-55365.

⁵ S. Rodriguez, E. Castillo, M Carda, J. A. Marco, *Tetrahedron*, 2002, **58**, 1185-1192.

⁶ F. Diaba, J. A. Montiel, G. Serban, J. Bonjoch, *Org. Lett.*, 2015, **17**, 3860-3863.

described previously.² Finally, the preparation and characterization of **1r** and **1p** were reported in our previous work.^{7,8}

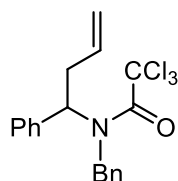
***N*-(*tert*-Butyl)-2,2,2-trichloro-*N*-(prop-2-yn-1-yl)acetamide (**1j**)**



Physical State: colorless oil

¹H NMR (400 MHz, CDCl₃) δ 4.53 (br s, 2H), 2.37 (t, *J* = 2.4 Hz, 1H), 1.58 (s, 9H, tBu); ¹³C NMR (101 MHz, CDCl₃) δ 159.6 (C=O), 94.7 (CCl₃), 80.2 (C), 73.3 (CH), 61.4 (C), 36.9 (CH₂), 27.8 (CH₃); IR (NaCl) 2975, 2930, 2122, 1686 cm⁻¹; HRMS (ESI-TOF) calcd. for C₉H₁₃Cl₃NO 256.0057 [M+H]⁺, found 256.0055. Calcd. for C₉H₁₆Cl₃N₂O 273.0323 [M+NH₄]⁺, found 273.0323.

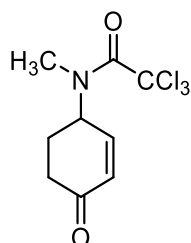
***N*-Benzyl-2,2,2-trichloro-*N*-(1-phenylbut-3-en-1-yl)acetamide (**1l**)**



Physical State: colorless oil

¹H NMR (400 MHz, CDCl₃) δ 3.02-2.64 (m, 2H), 4.12 and 5.12-4.64 (m, 5H), 5.91 and 5.68 (2 br s, 1H), 7.61-6.94 (m, 10H); ¹³C NMR (101 MHz, CDCl₃) δ 160.8 (C=O), 137.8, 137.0, 135.6 (C), 134.6, 133.7 (CH), 128.7, 128.4, 128.2, 127.9, 127.2 (Ar-CH), 117.9 (CH₂), 93.9 (CCl₃), 63.8 and 60.9 (CH), 53.1 and 49.5 (CH₂), 36.1 (CH₂); IR (NaCl) 1686 cm⁻¹; HRMS (ESI-TOF) calcd. for C₁₉H₁₉Cl₃NO 382.0527 [M+H]⁺, found 382.0530.

2,2,2-Trichloro-*N*-methyl-*N*-(4-oxocyclohex-2-en-1-yl)acetamide (1o**)**



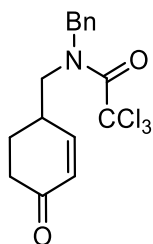
Physical State: white solid, m.p.: 110-113 °C

⁷ For **1r** see: J. Quirante, J.; Escolano, C.; Diaba, F.; Bonjoch, J. *Heterocycles*, 1999, **50**, 731-738.

⁸ For **1p** see: S. Jansana, F. Diaba, J. Bonjoch, *Org. Lett.*, 2019, **21**, 5757-5761.

^1H NMR (400 MHz, CDCl_3) δ 6.81 (d, $J = 10.3$ Hz, 1H), 6.17 (ddd, $J = 10.3, 2.8, 1.1$ Hz, 1H), 5.45 and 5.35 (2 br s, 1H), 3.23 and 2.91 (2 br s, 3H, CH_3), 2.62-2.40 and 2.35-2.09 (2 m, 4H); ^{13}C NMR (101 MHz, CDCl_3) δ 197.1 (C=O), 160.7 (C=O), 149.3 (CH), 132.0 (CH), 92.9 (CCl_3), 56.1 and 55.8 (CH), 36.5 (CH_2), 34.2 and 32.5 (CH_3), 27.6 and 26.1 (CH_2); IR (NaCl) 3056, 2986, 1681 cm^{-1} ; HRMS (ESI-TOF) calcd. for $\text{C}_9\text{H}_{11}\text{Cl}_3\text{NO}_2$ $[\text{M}+\text{H}]^+$ 269.9850, found 269.9851. Calcd for $\text{C}_9\text{H}_{10}\text{Cl}_3\text{NNaO}_2$ $[\text{M}+\text{Na}]^+$ 291.9669, found 291.9670.

***N*-Benzyl-2,2,2-trichloro-*N*-((4-oxocyclohex-2-en-1-yl)methyl)acetamide (1q)**



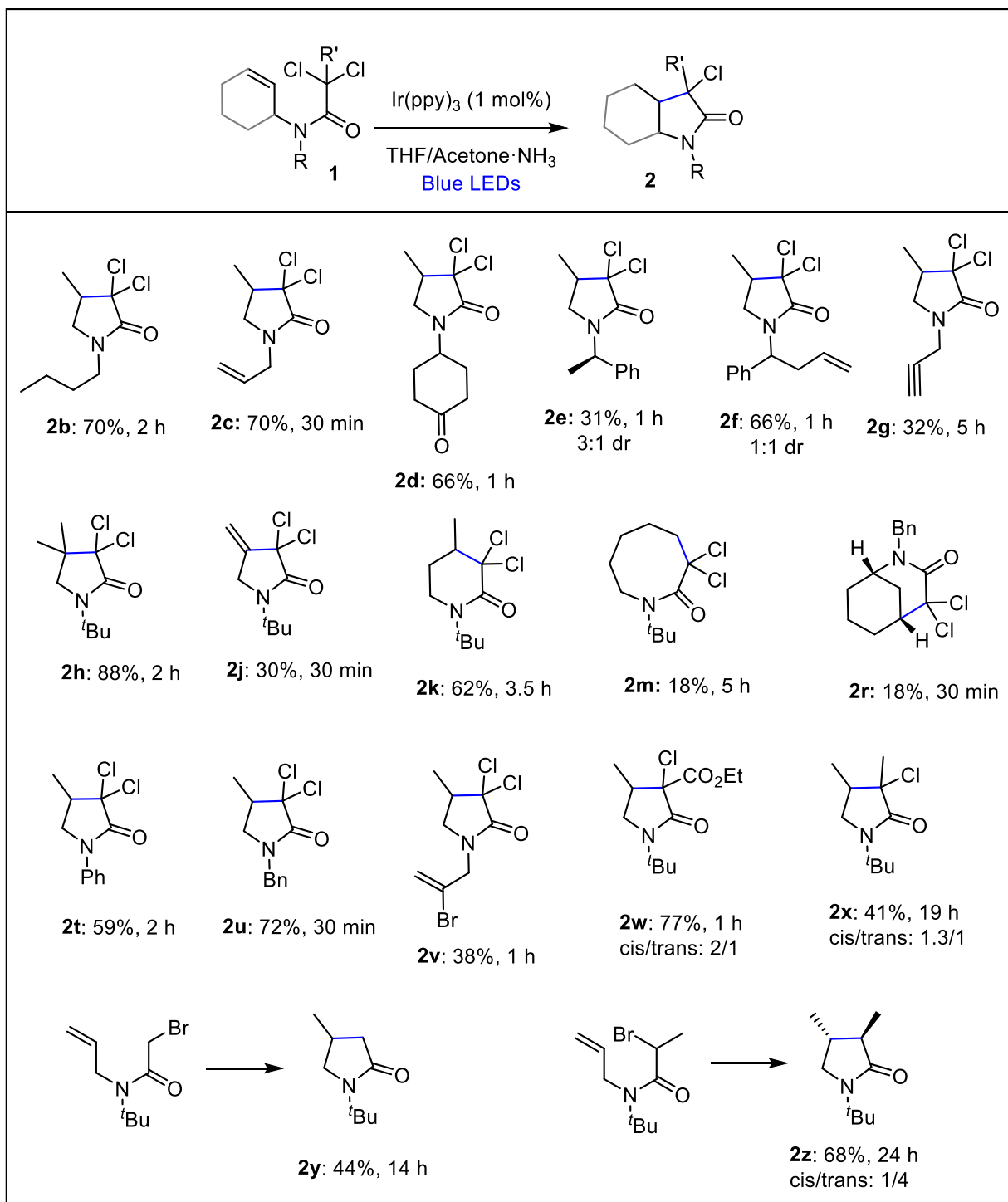
Physical state: amorphous solid

^1H NMR (400 MHz, CDCl_3) δ 7.43-7.30 (m, 3H, ArH), 7.28-7.22 (m, 2H, ArH), 6.71 (d, $J = 10.2$ Hz, 1H), 6.03 (dd, $J = 10.2, 2.5$ Hz, 1H), 5.06 (s, 2H, CH_2Ar), 3.51 – 3.28 (m, 2H, CH_2), 2.97 (m, 1H), 2.52 (dt, $J = 16.9, 5.0$ Hz, 1H), 2.36 (ddd, $J = 16.9, 12.0, 4.9$ Hz, 1H), 2.10 (m, 1H), 1.74 (m, 1H); ^{13}C NMR (101 MHz, CDCl_3) δ 198.7 (CO), 161.5 (CO), 150.1 (CH), 134.7 (C), 130.3 (CH), 129.1 (CH), 128.2 (CH), 127.0 (CH), 92.9 (CCl_3), 54.3 (CH_2), 51.2 (CH_2), 36.3 (CH_2), 34.0 (CH), 26.5 (CH_2); IR (NaCl) 3060, 3033, 2942, 2871, 1678 cm^{-1} ; HRMS (ESI-TOF) calcd. for $\text{C}_{16}\text{H}_{17}\text{Cl}_3\text{NO}_2$ $[\text{M}+\text{H}]^+$ 360.0319, found 360.0317.

3. Photocatalyzed synthesis of lactams 2 in the presence of ammonia

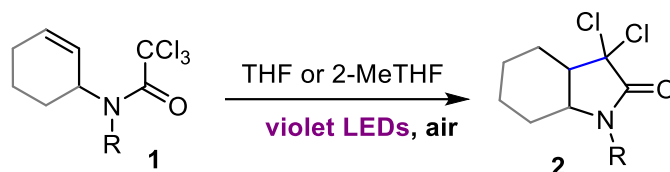
A mixture of trichloroacetamide **1** (0.2 mmol) and *fac*-Ir(ppy)₃ (1.3 mg, 0.002 mmol, 1 mol%) in a THF/Acetone solution (4 mL, 1:1) saturated with NH_3 (4-11 equiv.) was stirred at rt under blue LEDs irradiation for 0.5-24 h. The mixture was then concentrated and purified by chromatography using a mixture of Hexane/EtOAc (1:0 to 1:1) or cyclohexane/AcOEt (1:0 to 1:1) as eluent to provide the corresponding lactams **2**. The results obtained for the different substrates is indicated in the following Table 1.

Table 1. Scope of the photocatalyzed synthesis of lactams **2** in the presence of $\text{Ir}(\text{ppy})_3$ and ammonia^a



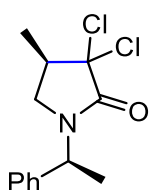
^a Except for **2i**, **2f** and **2j**, lactams **2** were already characterized in our previous work (see ref. 2).

4. Photocatalyzed synthesis of lactams **2** in THF or 2-MeTHF alone under violet irradiation



Trichloroacetamide **1** (0.2-2 mmol) in THF or 2-MeTHF (4–40 mL) was stirred at rt under violet LEDs irradiation for the time indicated. The reaction mixture was then concentrated and purified by chromatography using a mixture of Hexane/EtOAc (1:0 to 1:1) or cyclohexane/EtOAc (1:0 to 1:1) as eluent, to provide the corresponding lactams **2** and/or **3**.

(R)-3,3-Dichloro-4-methyl-1-((*S*)-1-phenylethyl)pyrrolidin-2-one (**2e**, diastereomer less polar)

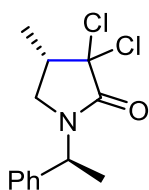


Physical state: colourless oil

$[\alpha]_D^{23} = -102.5$ (*c* 1, MeOH)

$^1\text{H NMR}$ (400, MHz CDCl_3) δ 7.40-7.26 (m, 5H, ArH), 5.47 (q, $J = 7.1$ Hz, 1H), 2.98 (dd, $J = 9.8, 7.1$ Hz, 1H, H-5), 2.92 (dd, $J = 9.8, 8.5$ Hz, 1H, H-5), 2.59 (dq, $J = 8.4, 6.7$ Hz, 1H, H-4), 1.54 (d, $J = 7.1$ Hz, 3H, CH_3), 1.27 (d, $J = 6.6$ Hz, 3H, CH_3); $^{13}\text{C NMR}$ (101 MHz, CDCl_3) δ 166.6 (C-2), 138.7 (*ipso*-C), 128.8, 128.0, 127.1 (Ar-CH), 87.6 (C-3), 50.5 (CH), 45.4 (C-4 and C-5), 15.5 (CH_3), 11.6 (CH_3); IR (NaCl) 3059, 2978, 2937, 1713 cm^{-1} ; HRMS (ESI-TOF) calcd. for $\text{C}_{13}\text{H}_{16}\text{Cl}_2\text{NO}$ $[\text{M}+\text{H}]^+$ 272.0603, found 272.0604.

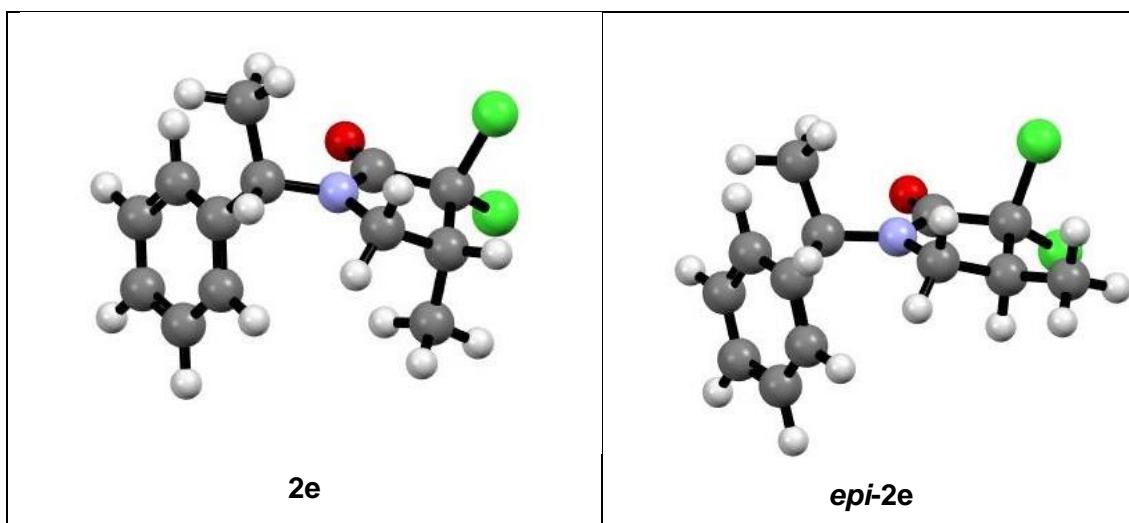
(S)-3,3-Dichloro-4-methyl-1-((*S*)-1-phenylbut-3-en-1-yl)pyrrolidin-2-one (**epi-2e**, diastereomer more polar)



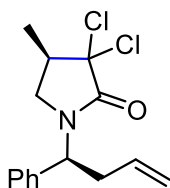
Physical state: white solid, m.p.: 89-91 °C

$[\alpha]_D^{23} = -150.1$ (c 1, MeOH)

^1H NMR (400 MHz CDCl_3) δ 7.38-7.25 (m, 5H, ArH), 5.49 (q, $J = 7.1$ Hz, 1H), 3.25 (dd, $J = 9.9, 6.8$ Hz, 1H, H-5), 2.73 (dq, $J = 8.4, 6.7$ Hz, H-4), 2.53 (dd, $J = 9.9, 8.4$ Hz, 1H, H-5), 1.58 (d, $J = 7.1$ Hz, 3H, CH_3), 1.22 (d, $J = 6.6$ Hz, 3H, CH_3); ^{13}C NMR (101 MHz, CDCl_3) δ 166.6 (C-2), 138.5 (*ipso*-C), 128.7, 128.0, 127.0 (Ar-CH), 87.5 (C-3), 50.2 (CH), 45.4 (C-5), 45.3 (C-4), 15.8 (CH_3), 11.8 (CH_3); IR (NaCl) 3054, 2981, 2939, 1705 cm^{-1} ; HRMS (ESI-TOF) calcd. $\text{C}_{13}\text{H}_{16}\text{Cl}_2\text{NO}$ $[\text{M}+\text{H}]^+$ 272.0603, found 272.0602.



(*RS*)-3,3-Dichloro-4-methyl-1-((*SR*)-1-phenylbut-3-en-1-yl)pyrrolidin-2-one (2f, diastereomer less polar)

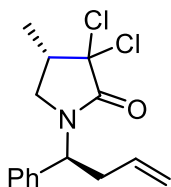


Physical state: colourless oil

^1H NMR (400 MHz CDCl_3) δ 7.41-7.24 (m, 5H, ArH), 5.79 (dddd, $J = 17.6, 10.3, 7.7, 5.7$ Hz, 1H, =CH), 5.41 (dd, $J = 10.2, 5.8$ Hz, 1H), 5.19 (dq, $J = 17.1, 1.6$ Hz, 1H, = CH_2), 5.11 (dq, $J = 10.2, 1.3$ Hz, 1H, = CH_2), 3.03 (dd, $J = 9.6, 7.0$ Hz, 1H, H-5), 2.94 (dd, $J = 9.6, 8.5$ Hz, 1H, H-5), 2.85-2.2.64 (m, 2H), 2.56 (m, 1H, H-4), 1.26 (d, $J = 6.6$ Hz, 3H, CH_3); ^{13}C NMR (101 MHz, CDCl_3) δ 167.1 (CO), 137.6 (*ipso*-C), 133.4 (=CH), 128.9, 128.2, 127.5 (Ar-CH), 118.4 (= CH_2), 87.4 (C-3), 54.4 (CH), 45.6 (C-4 and C-5), 34.5 (CH_2), 11.7 (CH_3); IR (NaCl) 3064, 3031, 2978, 2936, 2879, 1719 cm^{-1} ; HRMS (ESI-TOF) calc. for

C₁₅H₁₈Cl₂NO 298.0760 [M+H]⁺, found 298.0755. Calcd. for C₁₅H₁₇Cl₂NNaO 320.0579 [M+Na]⁺, found 320.0576.

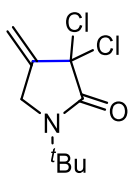
(*RS*)-3,3-Dichloro-4-methyl-1-((*RS*)-1-phenylbut-3-en-1-yl)pyrrolidin-2-one (*epi*-2f, diastereomer more polar)



Physical state: amorphous solid

¹H NMR (400 MHz, CDCl₃) δ 7.43-7.22 (m, 5H, ArH), 5.80 (dddd, *J* = 17.1, 10.2, 8.0, 5.5 Hz, 1H, =CH), 5.40 (dd, *J* = 10.2, 6.0 Hz, 1H), 5.16 (dq, *J* = 16.9, 1.5 Hz, 1H, =CH₂), 5.11 (dq, *J* = 10.2, 1.3 Hz, 1H, =CH₂), 3.24 (dd, *J* = 9.7, 6.7 Hz, 1H, H-5), 2.88- 2.62 (m, 3H), 2.56 (dd, *J* = 9.7, 8.4 Hz, 1H, H-5), 1.21 (d, *J* = 6.6 Hz, 3H, CH₃); ¹³C NMR (101 MHz, CDCl₃) δ 167.1 (C-2), 137.4 (*ipso*-C), 133.9 (=CH), 128.8, 128.1, 127.4 (Ar-CH), 118.0 (=CH₂), 87.4 (C-3), 54.3 (CH), 45.7 (C-5), 45.2 (C-4), 34.2 (CH₂), 11.7 (CH₃); IR (NaCl) 3062, 3032, 2979, 2937, 2881, 1717 cm⁻¹; HRMS (ESI-TOF) calcd. for C₁₅H₁₈Cl₂NO 298.0760 [M+H]⁺, found 298.0756. Calcd. for C₁₅H₁₇Cl₂NNaO 320.0579 [M+Na]⁺, found 320.0579.

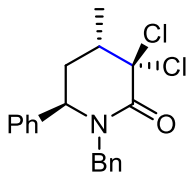
1-(*tert*-Butyl)-3,3-dichloro-4-methylenepyrrolidin-2-one (2j)



Physical state: White solid, m.p.: 90-95 °C

¹H NMR (400 MHz, CDCl₃) δ 5.91 (td, *J* = 2.1, 1.0 Hz, 1H, =CH₂), 5.45 (td, *J* = 1.8, 1.0 Hz, 1H, =CH₂), 4.12 (t, *J* = 1.9 Hz, 2H, CH₂-5), 1.47 (s, 9H, CH₃); ¹³C NMR (101 MHz, CDCl₃) δ 165.4 (C-2), 141.5 (C-4), 115.1 (=CH₂), 79.9 (C-3), 55.5 (C), 47.3 (C-5), 27.2 (CH₃); IR (NaCl) 3104, 2977, 2936, 2872, 1713, 1669 cm⁻¹; HRMS (ESI-TOF) calcd. for C₉H₁₄Cl₂NO 222.0447 [M+H]⁺, found 222.0446. Calcd. for C₉H₁₃Cl₂NNaO 244.0266 [M+Na]⁺, found 244.0273.

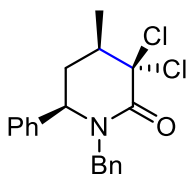
**(4*RS*,6*SR*)-1-Benzyl-3,3-dichloro-4-methyl-6-phenylpiperidin-2-one (2I,
diastereomer less polar)**



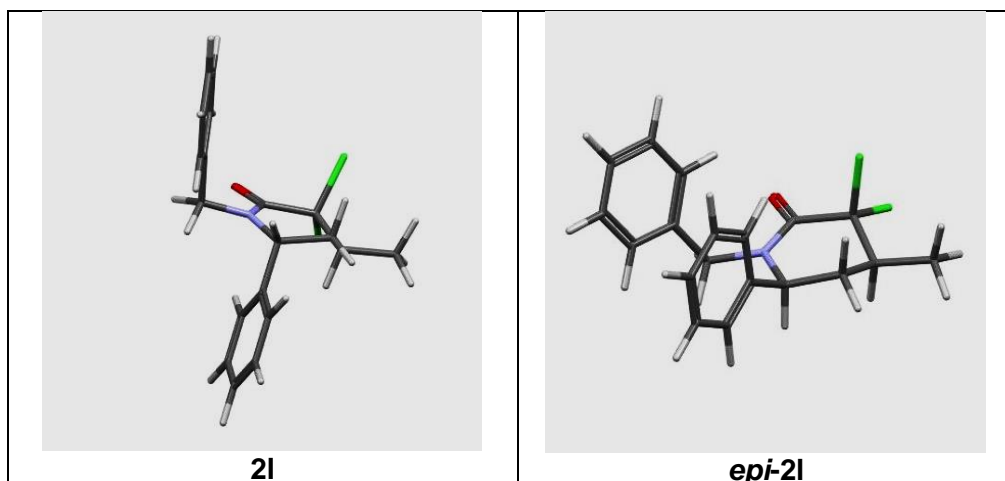
Physical state: amorphous solid

^1H NMR (400 MHz, CDCl_3) δ 7.46-7.26 (m, 6H, ArH), 7.21-7.10 (m, 4H, ArH), 5.59 (d, J = 14.8 Hz, 1H, CH_2Ar), 4.51 (dd, J = 6.1, 2.2 Hz, 1H, H-6), 3.46 (d, J = 14.8 Hz, 1H, CH_2Ar), 2.68 (dq, J = 12.8, 6.4, 2.8 Hz, 1H, H-4), 2.31 (ddd, J = 14.2, 12.4, 6.1 Hz, 1H, H-5), 1.77 (dt, J = 14.3, 2.5 Hz, 1H, H-5), 1.22 (d, J = 6.4 Hz, 3H, CH_3); ^{13}C NMR (101 MHz, CDCl_3) δ 165.1 (C-2), 139.7 (*ipso*-C), 136.1 (*ipso*-C), 129.2, 128.8, 128.1, 128.0, 127.8, 126.3 (Ar-CH), 89.2 (C-3), 58.3 (C-6), 49.4 (CH_2Ar), 39.2 (C-4), 35.1 (C-5), 16.5 (CH_3); IR (NaCl) 3155, 3022, 2928, 2899, 1669 cm^{-1} ; HRMS (ESI-TOF) calc. for $\text{C}_{19}\text{H}_{20}\text{Cl}_2\text{NO}$ $[\text{M}+\text{H}]^+$ 348.0916, found 349.0918.

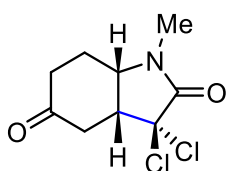
**(4*RS*,6*RS*)-1-Benzyl-3,3-dichloro-4-methyl-6-phenylpiperidin-2-one (*epi*-2I,
diastereomer more polar)**



^1H NMR (400 MHz, CDCl_3) δ 7.46-7.08 (m, 8H, ArH), 7.05-6.98 (m, 2H, ArH), 5.35 (d, J = 14.6 Hz, 1H, CH_2Ar), 4.30 (dd, J = 11.2, 6.4 Hz, 1H, H-6), 3.54 (d, J = 14.6 Hz, 1H, CH_2Ar), 2.59 (dq, J = 12.7, 6.4, 3.6 Hz, 1H, H-4), 2.10 (ddd, J = 14.7, 12.4, 11.2 Hz, 1H, H-5), 2.02 (ddd, J = 14.7, 6.4, 3.6 Hz, 1H, H-5), 1.33 (d, J = 6.4 Hz, 3H, CH_3); ^{13}C NMR (101 MHz, CDCl_3) δ 165.1 (C-2), 140.4 (*ipso*-C), 136.2 (*ipso*-C), 129.1, 128.6, 128.4, 127.6, 127.0 (Ar-CH), 89.4 (C-3), 60.2 (C-6), 48.2 (CH_2Ar), 42.8 (C-4), 37.1 (C-5), 16.2 (CH_3).



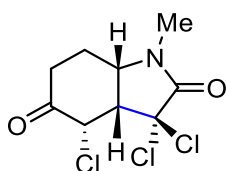
(3*aRS*,7*aSR*)-3,3-Dichloro-1-methylhexahydro-2*H*-indole-2,5(3*H*)-dione (2o)



Physical state: amorphous solid

^1H NMR (400 MHz CDCl_3) δ 3.91 (ddd, $J = 8.8, 7.1, 5.0$ Hz, 1H, H-7a), 3.36 (q, 1H, $J = 7.2$ Hz, H-3a), 3.01 (s, 3H, CH_3), 2.83 (dd, $J = 16.5, 6.8$ Hz, 1H, H-4), 2.72 (ddd, $J = 16.5, 7.8, 0.9$ Hz, 1H, H-4), 2.49-2.42 (m, 1H), 2.36-2.24 (m, 2H), 2.19-2.08 (m, 1H); ^{13}C NMR (101 MHz, CDCl_3) δ 206.5 (C-5), 166.2 (C-2), 85.2 (C-3), 55.0 (C-7a), 48.7 (C-3a), 38.4 (C-4), 35.6 (C-6), 29.0 (CH_3), 24.3 (C-7); IR (NaCl) 2950, 2919, 2851, 1716, 1674 cm^{-1} ; HRMS (ESI-TOF) calcd. for $\text{C}_9\text{H}_{12}\text{Cl}_2\text{NO}_2$ $[\text{M}+\text{H}]^+$ 236.0240, found 236.0238.

(3*aRS*,4*RS*,7*aRS*)-3,3,4-Trichloro-1-methylhexahydro-2*H*-indole-2,5(3*H*)-dione (3o)

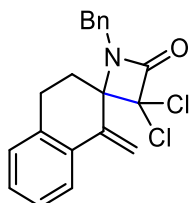


Physical state: amorphous solid

^1H NMR (400 MHz, CDCl_3) δ 4.85 (d, $J = 4.9$ Hz, 1H, H-4), 3.86 (ddd, $J = 11.3, 8.2, 5.0$ Hz, 1H, H-7a), 3.49 (ddd, $J = 8.3, 5.0, 0.6$ Hz, 1H, H-3a), 2.94 (s, 3H, CH_3), 2.76 (ddd, $J = 16.9, 13.0, 5.9$ Hz, 1H, H-6), 2.48 (dddd, $J = 16.9, 4.8, 3.5, 0.9$ Hz, 1H, H-6), 2.36 (dddd, $J = 13.8, 5.9, 4.5, 3.6, 0.9$ Hz, 1H, H-7), 2.06 (tdd, $J = 13.8, 11.3, 5.1$ Hz, 1H, H-

7); ^{13}C NMR (101 MHz, CDCl_3) δ 199.2 (C-5), 165.2 (C-2), 82.2 (C-3), 57.2 (C-3a and C-4), 54.6 (C-7a), 32.7 (C-6), 29.3 (CH_3), 24.4 (C-7); IR (NaCl) 1717 cm^{-1} ; HRMS (ESI-TOF) calcd. for $\text{C}_9\text{H}_{11}\text{Cl}_3\text{NO}_2$ $[\text{M}+\text{H}]^+$ 269.9850, found 269.9853.

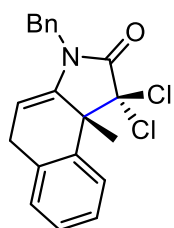
β -Lactam 4p



Physical state: colourless oil

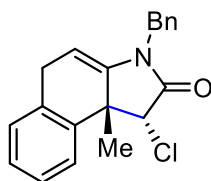
^1H NMR (400 MHz, CDCl_3) δ 7.73-7.66 (m, 1H, ArH), 7.39-7.28 (m, 5H, ArH), 7.27-7.20 (m, 2H, ArH), 7.12-7.07 (m, 1H, ArH), 6.02 (s, 1H, $=\text{CH}_2$), 5.22 (s, 1H, $=\text{CH}_2$), 4.94 (d, $J = 15.4$ Hz, 1H, CH_2Ar), 4.04 (d, $J = 15.4$ Hz, 1H, CH_2Ar), 3.28 (ddd, $J = 17.6, 12.6, 5.7$ Hz, 1H), 2.84 (ddd, $J = 17.6, 5.9, 2.6$ Hz, 1H), 2.11 (ddd, $J = 13.6, 5.5, 2.5$ Hz, 1H), 1.99 (ddd, $J = 13.6, 12.6, 5.9$ Hz, 1H); ^{13}C NMR (101 MHz, CDCl_3) δ 161.9 (CO), 139.6, 135.9, 134.8, 132.0 (C), 129.0, 128.8, 128.6, 128.3, 128.2, 126.6, 125.0 (Ar-CH), 112.4 ($=\text{CH}_2$), 88.4 (CCl_2), 75.4 (C), 44.6 (CH_2Ar), 30.0 (CH_2), 26.4 (CH_2); IR (NaCl) 3068, 3032, 2926, 2854, 1781 cm^{-1} ; HRMS (ESI-TOF) calcd. for $\text{C}_{20}\text{H}_{18}\text{Cl}_2\text{NO}$ $[\text{M}+\text{H}]^+$ 358.0760, found 358.0758.

γ -Lactam 2p'



^1H NMR (400 MHz, CDCl_3) δ 7.75 (dd, $J = 7.6, 1.5$ Hz, 1H, ArH), 7.60-7.02 (m, 8H, ArH), 5.33 (dd, $J = 4.5, 3.7$ Hz, 1H, $=\text{CH}$), 4.85 (d, $J = 4.8$ Hz, 1H, CH_2Ar), 4.79 (d, $J = 4.8$ Hz, 1H, CH_2Ar), 3.41 (d, $J = 4.1$ Hz, 2H, CH_2), 1.47 (s, 3H, CH_3); ^{13}C NMR (101 MHz, CDCl_3) δ 166.4 (CO), 139.6, 136.3, 135.0, 134.3 (C), 128.8, 128.2, 127.9, 127.2, 126.6, 125.8 (ArCH), 100.7 ($=\text{CH}$), 88.3 (CCl_2), 51.9 (C), 45.0 (CH_2Ar), 28.7 (CH_2), 28.1 (CH_3).

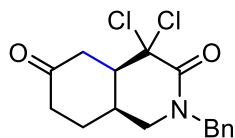
γ -Lactam 5p



Physical state: colourless viscous oil

^1H NMR (400 MHz, CDCl_3) δ 7.64 (dd, $J = 7.6, 1.5$ Hz, 1H, ArH), 7.36-7.14 (m, 8H, ArH), 5.24 (dd, $J = 6.2, 2.3$ Hz, 1H, =CH), 4.98 (s, 1H), 4.90 (d, $J = 15.3$ Hz, 1H, CH_2Ar), 4.63 (d, $J = 15.3$ Hz, 1H, CH_2Ar), 3.41 (br d, $J = 20.1$ Hz, 1H), 3.32 (dd, $J = 20.1$ Hz, 1H), 1.35 (s, 3H, CH_3); ^{13}C NMR (101 MHz, CDCl_3) δ 169.0 (CO), 142.5, 140.6, 135.4 (C), 128.7, 128.0, 127.7, 127.4, 127.0, 126.9, 124.3 (ArCH), 98.5 (=CH), 64.6 (CHCl), 45.5 (C), 44.5 (CH_2Ar), 29.0 (CH_2), 24.1 (CH_3); HRMS (ESI-TOF) calcd. for $\text{C}_{20}\text{H}_{19}\text{ClNO}$ $[\text{M}+\text{H}]^+$ 324.1150, found 324.1153.

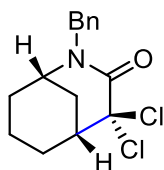
(4a*RS*,8a*SR*)-2-Benzyl-4,4-dichlorohexahydroisoquinoline-3,6(2*H*,4*H*)-dione (2q)



Physical state: amorphous solid

^1H NMR (400 MHz CDCl_3) δ 7.39-7.25 (m, 5H, ArH), 4.77 (d, $J = 14.5$ Hz, 1H, CH_2Ar), 4.57 (d, $J = 14.5$ Hz, 1H, CH_2Ar), 3.48 (dd, $J = 13.1, 10.6$ Hz, 1H), 3.36 (dd, $J = 13.1, 7.0$ Hz, 1H), 3.04-2.90 (m, 3H), 2.43-2.27 (m, 3H), 2.01-1.83 (m, 2H); ^{13}C NMR (101 MHz, CDCl_3) δ 207.1 (CO), 162.5 (CO), 135.6 (*ipso*-C), 129.0, 128.2, 128.1, 85.6 (C), 51.7 (CH_2Ar), 50.0 (CH), 46.8 (CH_2), 40.0 (CH_2), 35.9 (CH_2), 28.8 (CH), 25.5 (CH_2); IR (NaCl) 3061, 3029, 2929, 1714, 1673 cm^{-1} ; HRMS (ESI-TOF) calc. for $\text{C}_{16}\text{H}_{18}\text{Cl}_2\text{NO}_2$ $[\text{M}+\text{H}]^+$ 326.0709, found 326.0713.

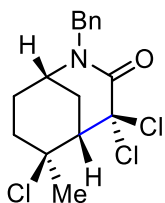
(1*RS*,5*SR*)-2-Benzyl-4,4-dichloro-2-azabicyclo[3.3.1]nonan-3-one (2r)



Physical state: White solid, m.p.: 116-120 $^{\circ}\text{C}$

^1H NMR (400 MHz CDCl_3) δ 7.36-7.24 (m, 5H, ArH), 5.36 (d, $J = 14.9$ Hz, 1H, CH_2Ar), 3.86 (d, $J = 14.9$ Hz, 1H, CH_2Ar), 3.53 (br s, 1H, H-1), 2.84 (m, 1H, H-5), 2.57 (dm, $J = 13.7$, 1H), 2.43 (dm, $J = 13.6$, 1H), 1.85 (m, 1H), 1.80 (ddd, $J = 13.7, 3.5, 2.4$ Hz, 1H), 1.70-1.53 (m, 2H), 1.50-1.37 (m, 2H); ^{13}C NMR (101 MHz, CDCl_3) δ 165.6 (CO), 136.6 (*ipso*-C), 128.8, 127.8, 127.7 (ArCH), 87.9 (C-4), 52.1 (C-1), 49.1 (CH_2Ar), 45.8 (C-5), 29.8 (CH_2), 28.9 (CH_2), 27.9 (CH_2), 16.1 (CH_2); IR (NaCl) 3060, 3031, 2958, 2929, 2870, 1662, 1601 cm^{-1} ; HRMS (ESI-TOF) calcd. for $\text{C}_{15}\text{H}_{18}\text{Cl}_2\text{NO}$ $[\text{M}+\text{H}]^+$ 298.0760, found 298.07061.⁹

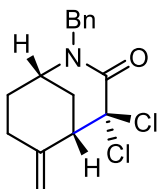
(1*RS*,5*RS*,6*RS*)-2-Benzyl-4,4,6-trichloro-6-methyl-2-azabicyclo[3.3.1]nonan-3-one (3s)



Physical state: white solid, m.p.: 72-74 °C

^1H NMR (400 MHz, CDCl_3) δ 7.39-7.21 (m, 5H, ArH), 5.34 (d, $J = 14.9$ Hz, 1H, CH_2Ar), 3.90 (d, $J = 14.9$ Hz, 1H, CH_2Ar), 3.52 (br s, 1H, H-1), 3.07 (br s, 1H, H-5), 2.80-2.67 (m, 2H, CH_2 -9), 2.12 (s, 3H, CH_3), 2.05-1.94 (m, 2H, H-7 and H-8), 1.88-1.71 (m, 2H, H-7 and H-8); ^{13}C NMR (101 MHz, CDCl_3) δ 164.1 (CO), 136.2 (*ipso*-C), 128.9, 127.9, 127.8 (ArCH), 85.7 (C-4), 75.6 (C-6), 56.5 (C-5), 50.7 (C-1), 49.2 (CH_2Ar), 35.4 (CH_3), 33.1 (C-7), 29.4 (C-9), 25.3 (C-8); IR (NaCl) 3054, 3030, 2982, 2941, 1673 cm^{-1} ; HRMS (ESI-TOF) calcd. for $\text{C}_{16}\text{H}_{19}\text{Cl}_3\text{NO}$ $[\text{M}+\text{H}]^+$ 346.0527, found 346.0526. Calcd. for $\text{C}_{16}\text{H}_{18}\text{Cl}_3\text{NNaO}$ $[\text{M}+\text{Na}]^+$ 368.0346, found 368.0350.

(1*RS*,5*RS*)-2-Benzyl-4,4-dichloro-6-methylene-2-azabicyclo[3.3.1]nonan-3-one (4s)

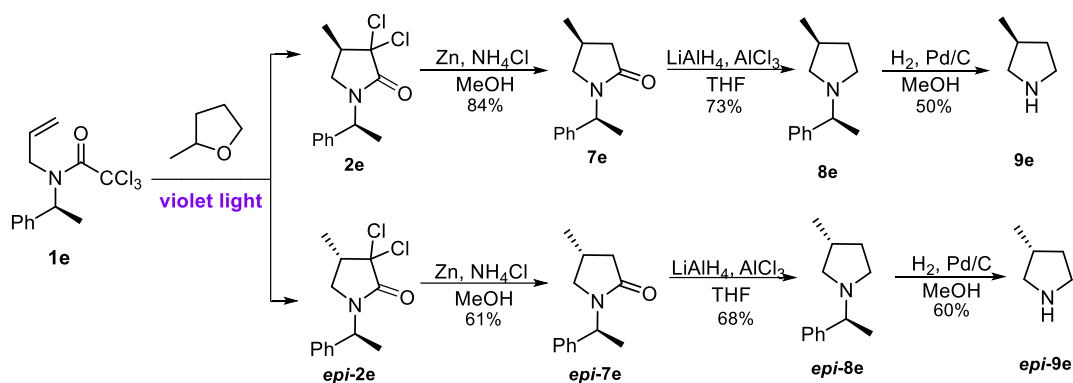


⁹ For the characterization of **3r** see: F. Diaba, A. Martínez-Laporta, J. Bonjoch, A. Pereira, J. M. Muñoz-Molina, P. J. Pérez and T. R. Belderrain, *Chem. Commun.*, 2012, **48**, 8799-8801.

Physical state: amorphous solid

^1H NMR (400 MHz, CDCl_3) δ 7.37-7.24 (m, 5H, ArH), 5.38 (d, $J = 14.9$ Hz, 1H, CH_2Ar), 4.96 (dm, $J = 6.3$ Hz, 2H, $=\text{CH}_2$), 3.93 (d, $J = 14.9$ Hz, 1H, CH_2Ar), 3.59 (br s, 1H, H-1), 3.40 (br s, 1H, H-5), 2.66 (ddt, $J = 13.7, 4.0, 2.7$ Hz, 1H, H-9), 2.33-2.25 (m, 1H, H-7), 2.23-2.10 (m, 1H, H-7), 1.95 (dm, 1H, $J = 13.4$, 1H, H-8), 1.86 (ddd, $J = 13.7, 3.7, 2.4$ Hz, 1H, H-9), 1.51 (tdd, $J = 13.4, 5.2, 2.4$ Hz, 1H, H-8); ^{13}C NMR (101 MHz, CDCl_3) δ 165.1 (CO), 144.2 (C-6), 136.4 (*ipso*-C), 128.9, 127.8 (ArCH), 114.4 ($=\text{CH}_2$), 85.3 (C-4), 55.9 (C-5), 51.9 (C-1), 49.3 (CH_2Ar), 31.2 (C-9), 29.4 (C-7), 25.4 (C-8); IR (NaCl) 3061, 3031, 2938, 2857, 1667, 1604, 1584 cm^{-1} ; HRMS (ESI-TOF) calcd. for $\text{C}_{16}\text{H}_{17}\text{Cl}_2\text{NO}$ $[\text{M}+\text{H}]^+$ 309.0682, found 309.0685.

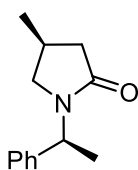
5. Reactions achieved from 2e and *epi*-2e



5.1. Reductive dechlorination of 2e and *epi*-2e

To a solution 2e (465.4 mg, 1.7 mmol) in MeOH (18 mL) was added NH_4Cl (540 mg, 10.1 mmol) and Zn (1.12 g, 17.1 mmol) and the mixture was stirred at 0 °C for 1 h and then at rt overnight. The reaction mixture was filtered through a short celite pad and the filter cake was washed with MeOH. The solution was then concentrated and purified by chromatography using a mixture of Hexane/EtOAc (1:0 to 1:1) to yield 7e (291.8 mg, 84%). Operating from *epi*-2e and following the same procedure *epi*-7e was isolated (70%).

(S)-4-Methyl-1-((S)-1-phenylethyl)pyrrolidin-2-one (7e)

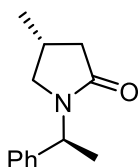


Physical state: colourless viscous oil

$[\alpha]_D^{23} = -134.6$ (*c* 1, MeOH)

$^1\text{H NMR}$ (400 MHz, CDCl_3) δ 7.38-7.22 (m, 5H, ArH), 5.49 (q, $J = 7.1$ Hz, 1H), 3.09 (dd, $J = 9.6, 7.6$ Hz, 1H, H-5), 2.87 (dd, $J = 9.6, 6.3$ Hz, 1H, H-5), 2.56 (dd, $J = 16.5, 8.4$ Hz, 1H, H-3), 2.30 (octet, $J = 7.1$ Hz, 1H, H-4), 2.07 (dd, $J = 16.5, 7.4$ Hz, 1H, H-3), 1.51 (d, $J = 7.1$ Hz, 3H, CH_3), 1.09 (d, $J = 6.8$ Hz, 3H, CH_3); $^{13}\text{C NMR}$ (101 MHz, CDCl_3) δ 174.0 (CO), 140.3 (*ipso*-C), 128.4, 127.3, 127.0 (ArCH), 49.6 (C-5), 48.7 (CH), 39.8 (C-3), 26.5 (C-4), 19.5 (CH_3), 16.1 (CH_3). IR (NaCl) 3030, 2961, 2932, 2873, 1667 cm^{-1} ; HRMS (ESI-TOF) calcd. for $\text{C}_{13}\text{H}_{18}\text{NO}$ $[\text{M}+\text{H}]^+$ 204.1383, found 204.1385.

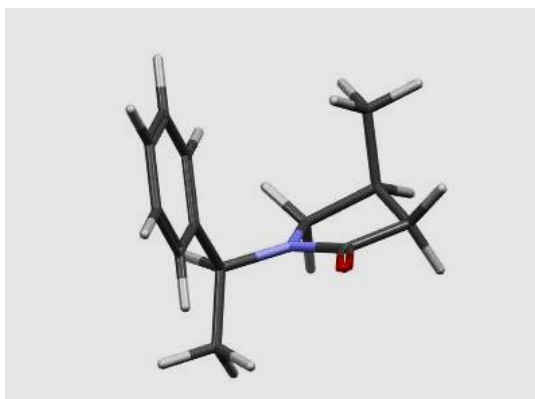
(*R*)-4-Methyl-1-((*S*)-1-phenylethyl)pyrrolidin-2-one (*epi*-7e)



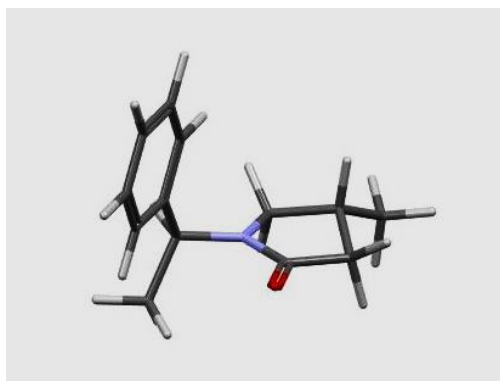
Physical state: colourless viscous oil

$[\alpha]_D^{23} = -141.3$ (*c* 1, MeOH)

$^1\text{H NMR}$ (400 MHz, CDCl_3) δ 7.39-7.22 (m, 5H, ArH), 5.50 (q, $J = 7.1$ Hz, 1H), 3.42 (dd, $J = 9.5, 7.5$ Hz, 1H, H-5), 2.59 (dd, $J = 16.5, 8.4$ Hz, 1H, H-3), 2.51 (dd, $J = 9.5, 5.6$ Hz, 1H, H-5), 2.37 (m, 1H, H-4), 2.03 (dd, $J = 16.5, 6.4$ Hz, 1H, H-3), 1.51 (d, $J = 7.2$ Hz, 3H, CH_3), 0.97 (d, $J = 6.8$ Hz, 3H, CH_3); $^{13}\text{C NMR}$ (101 MHz, CDCl_3) δ 174.0 (CO), 140.1 (*ipso*-C), 128.5, 127.4, 127.1 (ArCH), 49.4 (C-5), 48.7 (CH), 39.8 (C-3), 26.4 (C-4), 19.6 (CH_3), 16.1 (CH_3); IR (NaCl) 3030, 2961, 2932, 2872, 1667 cm^{-1} ; HRMS (ESI-TOF) calcd. for $\text{C}_{13}\text{H}_{18}\text{NO}$ $[\text{M}+\text{H}]^+$ 204.1383, found 204.1379.



7e

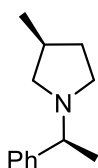


***Epi*-7e**

5.2. Reduction of amides **7e** and *epi-7e*

To a solution of AlCl₃ (39 mg, 0.29 mmol) in THF (0.86 mL) was added a 1 M solution of LiAlH₄ in THF (0.46 mL, 0.46 mmol) and the mixture was stirred at rt for 15 min. A solution of **6e** (39 mg, 0.19 mmol) in THF (0.75 mL) was then added dropwise and the mixture was stirred at rt for 4 h under argon atmosphere. The mixture was cooled to 0 °C and quenched with a NaOH aqueous solution until basic pH, extracted with CHCl₃ and the organics were dried and concentrated to yield **8e** (26.6 mg, 73%). Operating from *epi-7e* and following the same procedure *epi-8e* was isolated (68%).

(*S*)-3-Methyl-1-((*S*)-1-phenylethyl)pyrrolidine (**8e**)

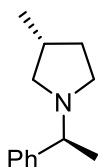


Physical state: colourless viscous oil

$$[\alpha]_D^{23} = -47.2 \text{ (c 1, MeOH)}$$

¹H NMR (400 MHz, CDCl₃) δ 7.37-7.17 (m, 5H, ArH), 3.18 (q, *J* = 6.6 Hz, 1H), 2.93 (dd, *J* = 9.1, 7.6 Hz, 1H, H-2), 2.51-2.40 (m, 2H, CH₂-5), 2.31-2.18 (m, 1H, H-3), 2.97 (m, 1H, H-4), 1.94 (dd, *J* = 9.0, 7.3 Hz, 1H, H-2), 1.37 (d, *J* = 6.6 Hz, 3H, CH₃), 1.30 (ddt, *J* = 12.5, 8.2, 6.2 Hz, 1H, H-4), 1.00 (d, *J* = 6.8 Hz, 3H, CH₃); ¹³C NMR (101 MHz, CDCl₃) δ 145.8 (*ipso*-C), 128.2, 127.2, 126.7 (ArCH), 66.0 (CH), 61.0 (C-2), 53.0 (C-5), 32.6 (C-4), 31.7 (C-3), 23.2 (CH₃), 20.5 (CH₃); IR (NaCl) 3025, 2954, 2926, 2870, 2774 cm⁻¹; HRMS (ESI-TOF) calcd. for C₁₃H₂₀N [M+H]⁺ 190.1590, found 190.1592.

(*R*)-3-Methyl-1-((*S*)-1-phenylethyl)pyrrolidine (*epi-8e*)



Physical state: colourless viscous oil

$$[\alpha]_D^{23} = -63.0 \text{ (c 1, CHCl}_3\text{)}$$

¹H NMR (400 MHz, CDCl₃) δ 7.35-7.19 (m, 5H, ArH), 3.16 (q, *J* = 6.6 Hz, 1H), 2.87 (m, 1H, H-5), 2.65 (dd, *J* = 9.1, 7.3 Hz, 1H, H-2), 2.33 (td, *J* = 9.0, 6.5 Hz, 1H, H-5), 2.26-2.09 (m, 1H, H-4), 2.03 (dddd, *J* = 12.5, 9.4, 8.0, 6.5, H-4), 1.87 (dd, *J* = 9.1, 7.9 Hz, 1H,

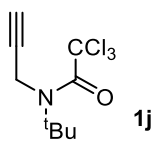
H-2), 1.37 (d, $J = 6.6$ Hz, 3H, CH₃), 1.36-1.27 (m, 1H, H-3), 0.96 (d, $J = 6.7$ Hz, 3H, CH₃); ¹³C NMR (101 MHz, CDCl₃) δ 145.8 (*ipso*-C), 128.2, 127.2, 126.8 (ArCH), 66.1 (CH), 61.3 (C-2), 52.7 (C-5), 32.5 (C-4), 31.8 (C-3), 23.0 (CH₃), 20.1 (CH₃); IR (NaCl) 3026, 2956, 2927, 2870, 2777 cm⁻¹; HRMS (ESI-TOF) calcd. for C₁₃H₂₀N [M+H]⁺ 190.1590, found 190.1592.

5.3. Debenzylation of amines **8e** and *epi*-**8e**

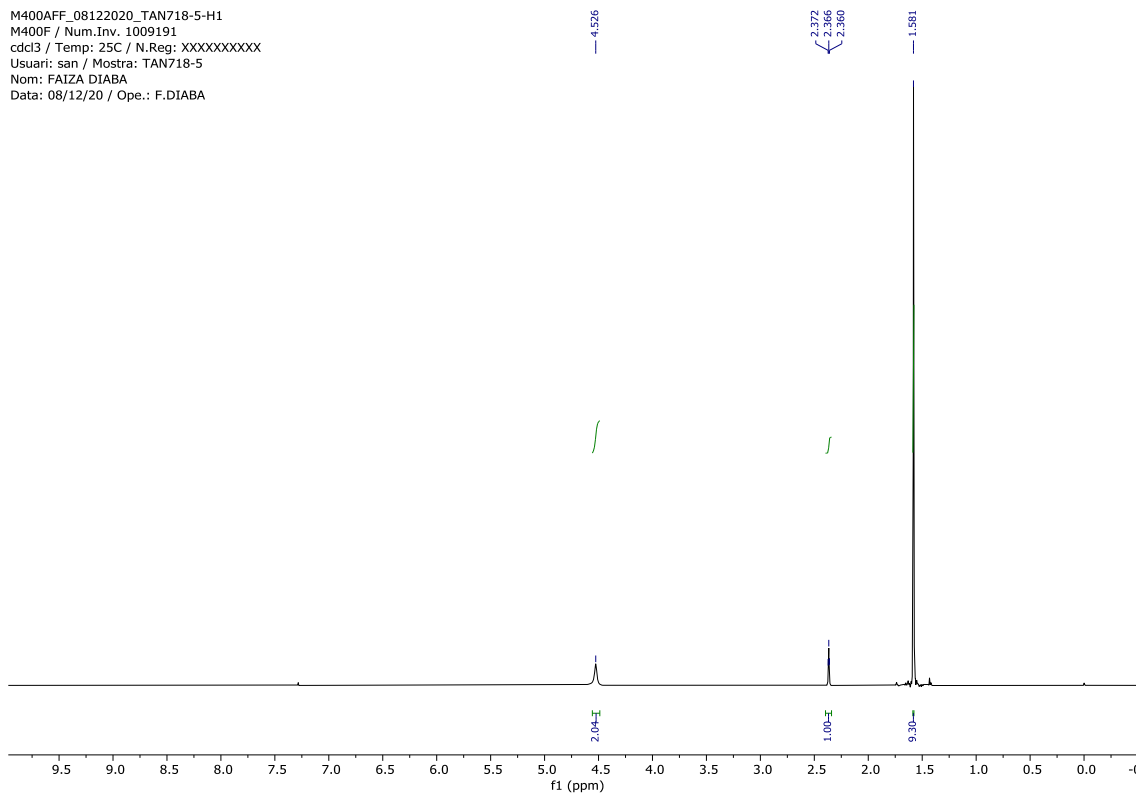
To a solution **8e** (465.4 mg, 1.7 mmol) in MeOH (18 mL) was added NH₄Cl (540 mg, 10.1 mmol) and Zn (1.12 g, 17.1 mmol) and the mixture was stirred at 0 °C for 1 h and then at rt overnight. The reaction mixture was filtered through a short celite pad and the filter cake was washed with MeOH. The solution was then carefully concentrated to yield **9e** (208 mg, 60%). Operating from *epi*-**8e** and following the same procedure *epi*-**9e** was isolated (59%).¹⁰

¹⁰ The ¹H and ¹³C NMR as well as the specific rotation data of **9** and *epi*-**9** are in accordance with the literature see: (a) K. Kondo; H. Ogawa, T. Shinohara, M. Kurimura, Y. Tanada, K. Kan, H. Yamashita, S. Nakamura, T. Hirano, Y. Yamamura, T. Mori, M. Tominaga, A. Itai, *J. Med. Chem.*, 2000, **43**, 4388–4397; (b) B. Ringdahl, R. Dahlbom, *Acta Pharm. Suec.*, 1978, **15**, 255-263.

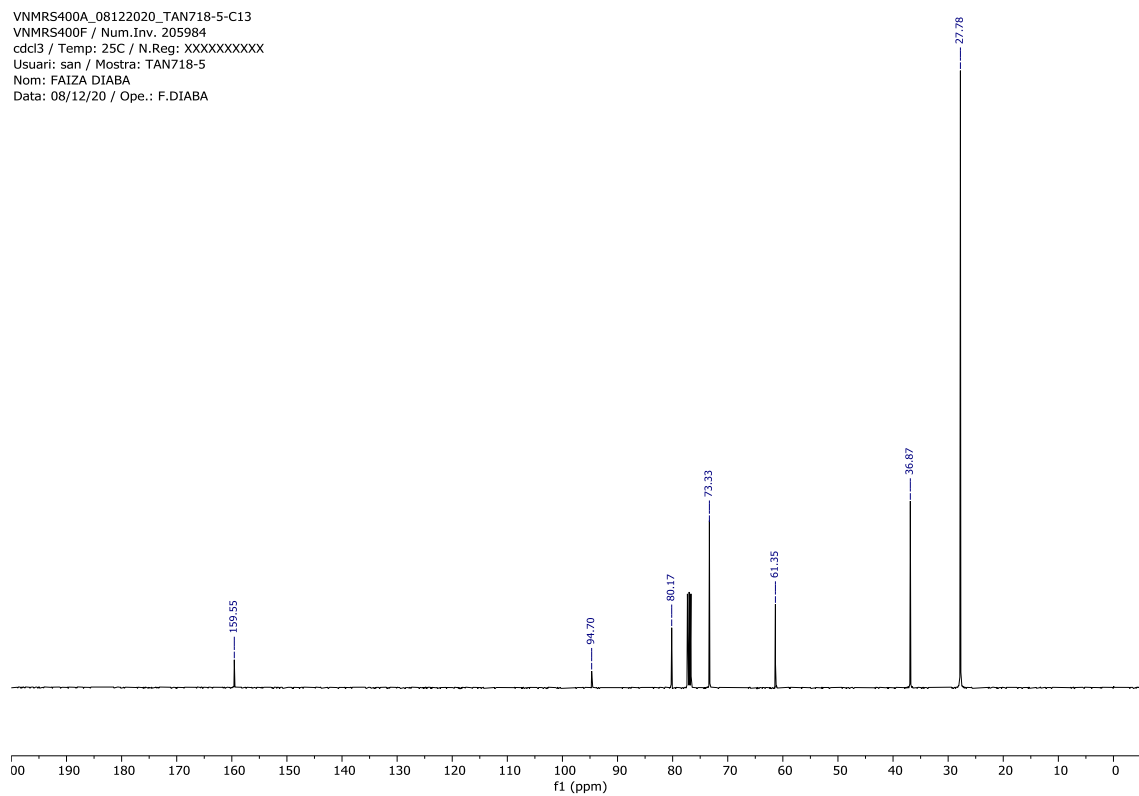
6. ¹H and ¹³C NMR spectra of new compounds

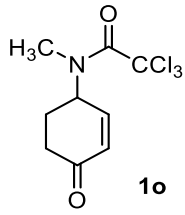


M400AFF_08122020_TAN718-5-H1
M400F / Num.Inv. 1009191
cdcl3 / Temp: 25C / N.Reg: XXXXXXXXXXXX
Usuari: san / Mostra: TAN718-5
Nom: FAIZA DIABA
Data: 08/12/20 / Ope.: F.DIABA



VNMRS400A_08122020_TAN718-5-C13
VNMRS400F / Num.Inv. 205984
cdcl3 / Temp: 25C / N.Reg: XXXXXXXXXXXX
Usuari: san / Mostra: TAN718-5
Nom: FAIZA DIABA
Data: 08/12/20 / Ope.: F.DIABA

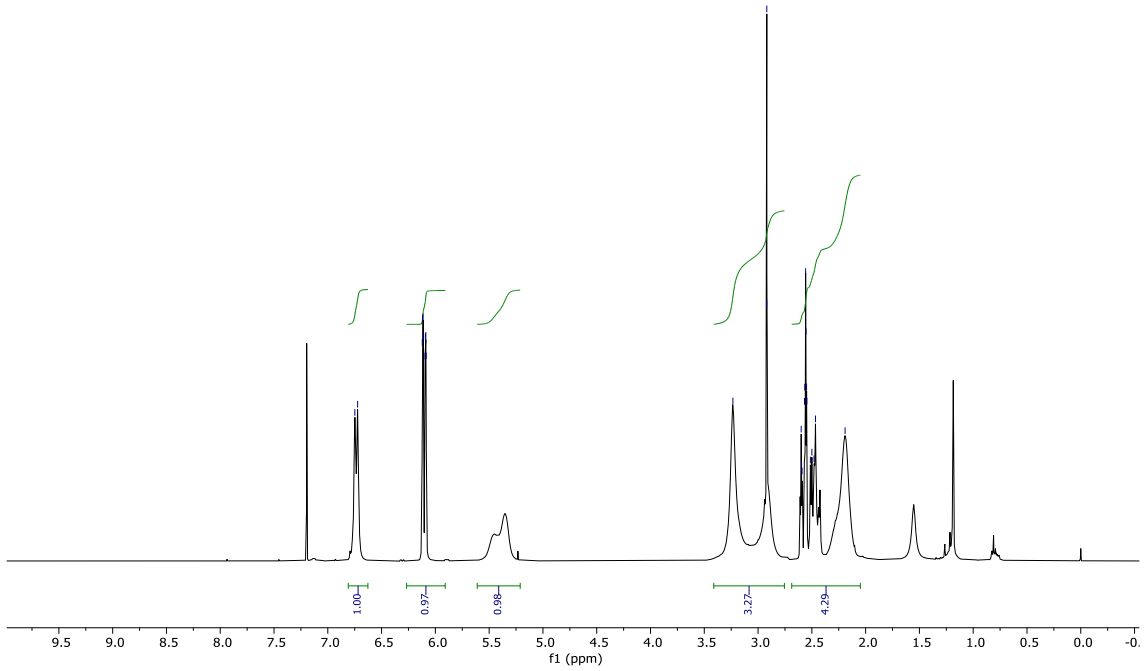




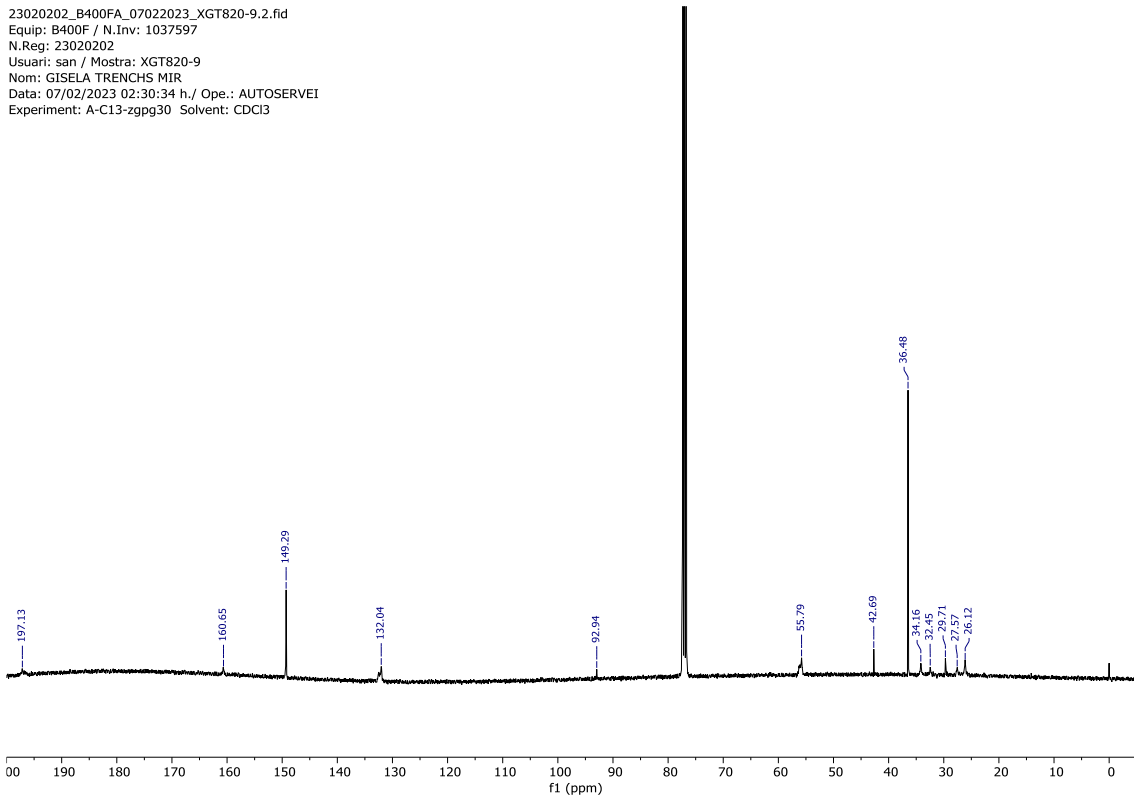
23020288_B400FA_07022023_XGT820-9.1.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23020288
 Usuari: san / Mostra: XGT820-9
 Nom: GISELA TRENCHS MIR
 Data: 07/02/2023 17:04:07 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

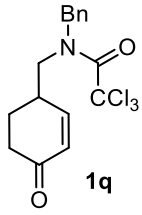
6.749
6.723
6.122
6.119
6.115
6.112
6.093
6.089
6.086

3.234
2.920
2.919
2.599
2.586
2.569
2.566
2.558
2.555
2.446
2.514
2.500
2.479
2.466
2.191

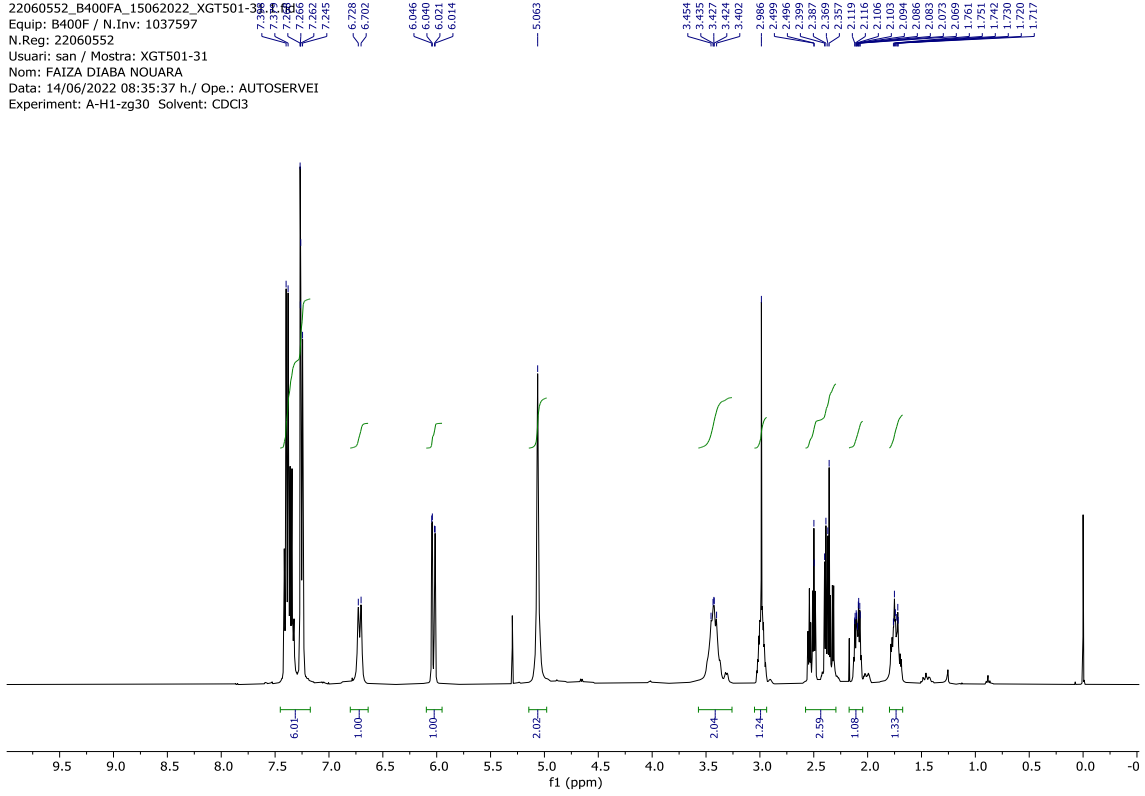


23020202_B400FA_07022023_XGT820-9.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23020202
 Usuari: san / Mostra: XGT820-9
 Nom: GISELA TRENCHS MIR
 Data: 07/02/2023 02:30:34 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgg30 Solvent: CDCl3

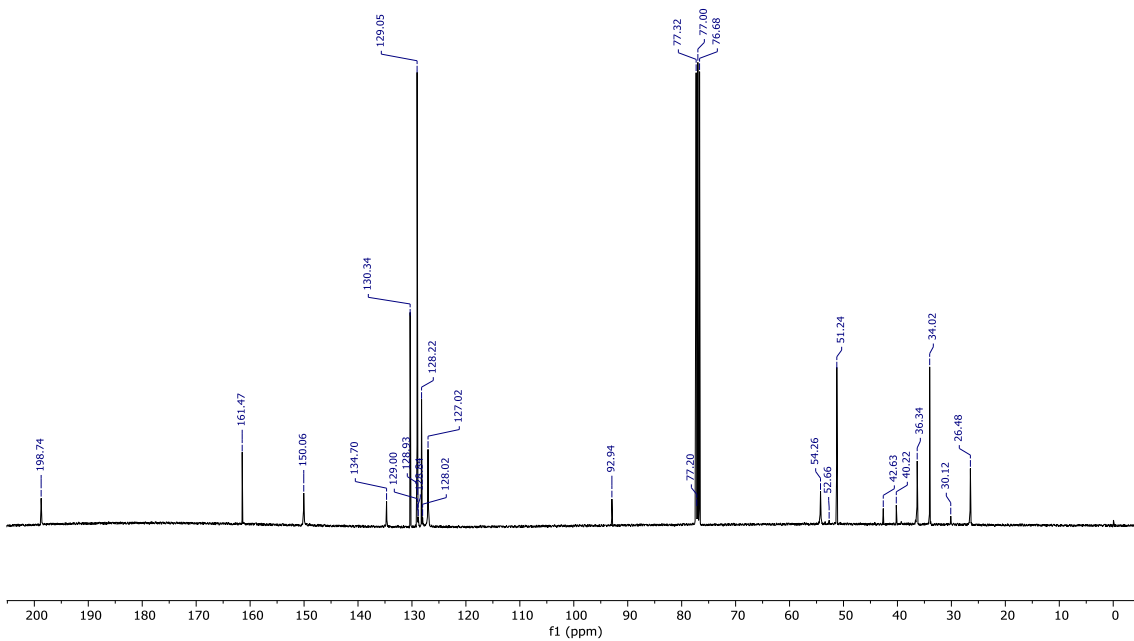


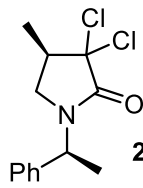


22060552_B400FA_15062022_XGT501-31.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 22060552
 Usuari: san / Mostra: XGT501-31
 Nom: FAIZA DIABA NOUARA
 Data: 14/06/2022 08:35:37 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3



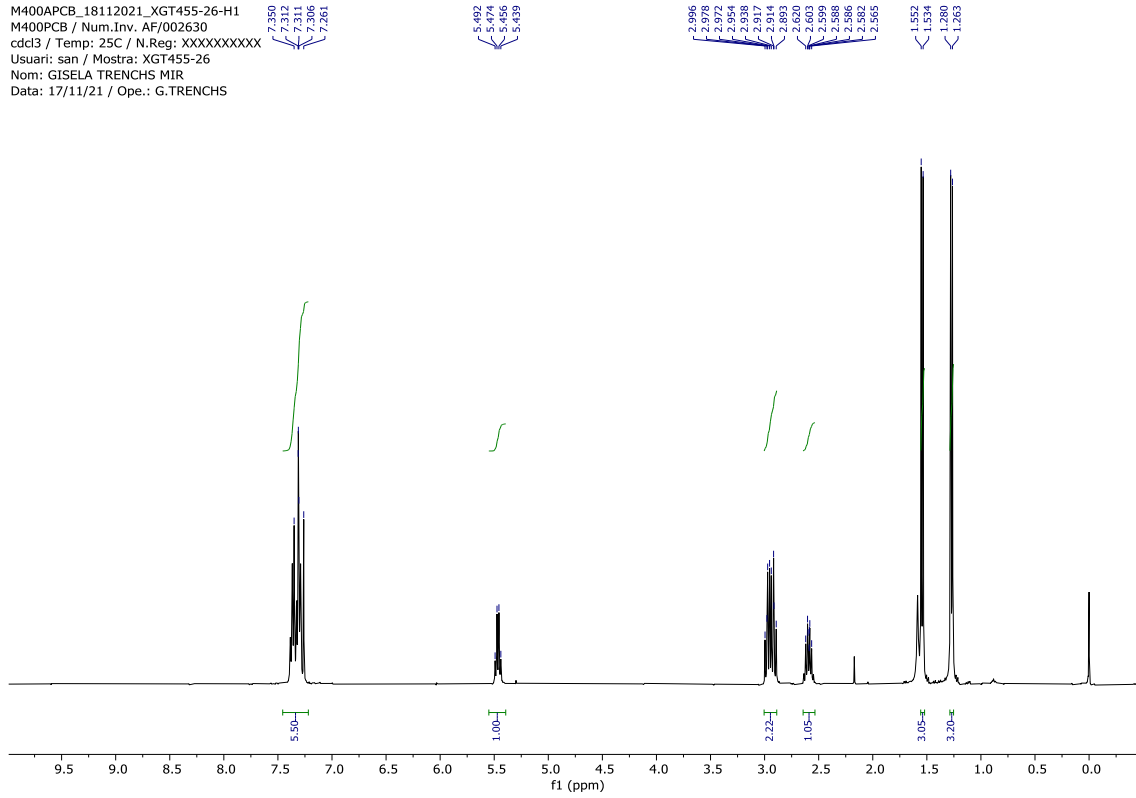
22060552_B400FA_15062022_XGT501-31.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 22060552
 Usuari: san / Mostra: XGT501-31
 Nom: FAIZA DIABA NOUARA
 Data: 15/06/2022 06:05:20 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3



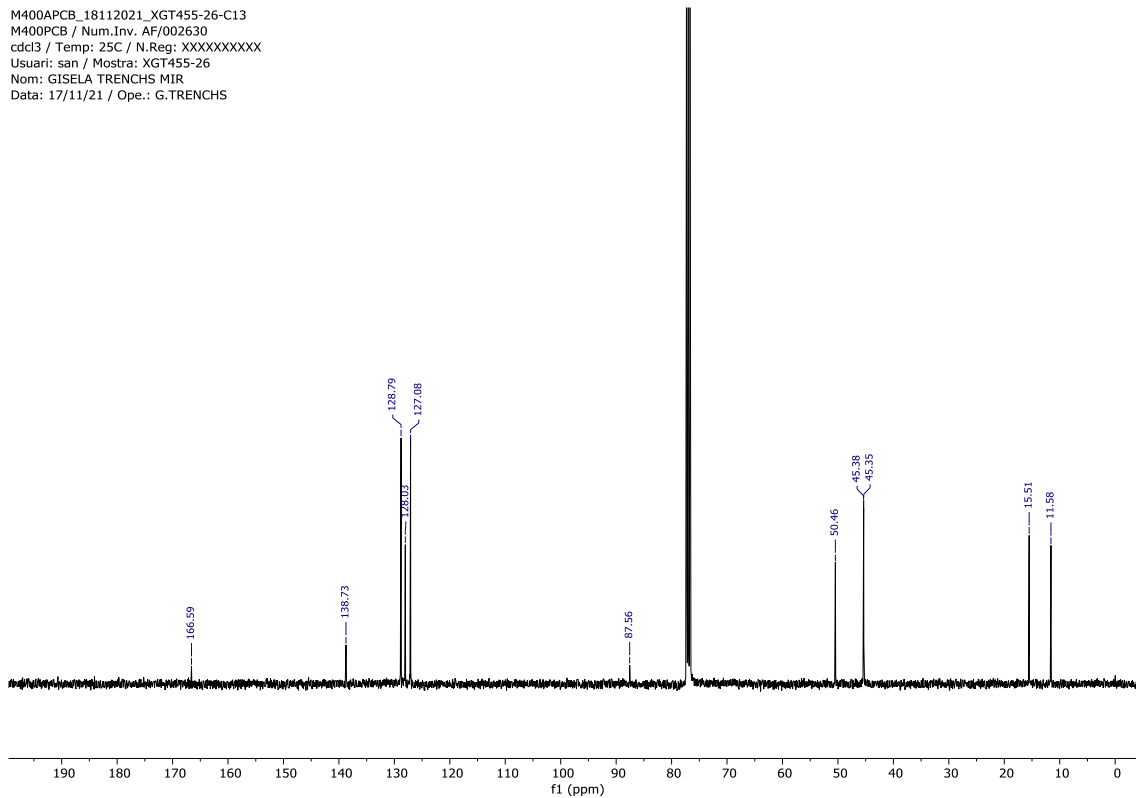


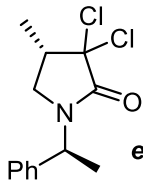
2e (diastereomer less polar)

M400APCB_18112021_XGT455-26-H1
 M400PCB / Num.Inv. AF/002630
 cdc13 / Temp: 25C / N.Reg: XXXXXXXXXXXX
 Usuari: san / Mostra: XGT455-26
 Nom: GISELA TRENCHS MIR
 Data: 17/11/21 / Ope.: G.TRENCHS



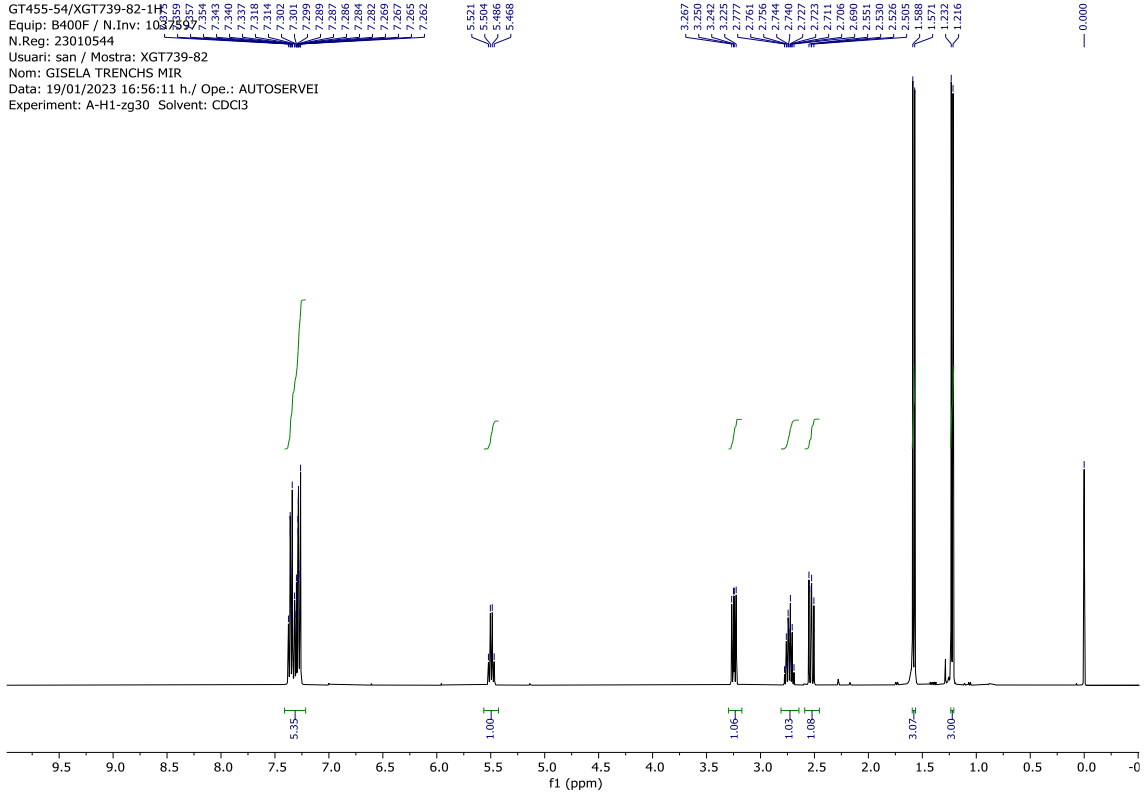
M400APCB_18112021_XGT455-26-C13
 M400PCB / Num.Inv. AF/002630
 cdc13 / Temp: 25C / N.Reg: XXXXXXXXXXXX
 Usuari: san / Mostra: XGT455-26
 Nom: GISELA TRENCHS MIR
 Data: 17/11/21 / Ope.: G.TRENCHS



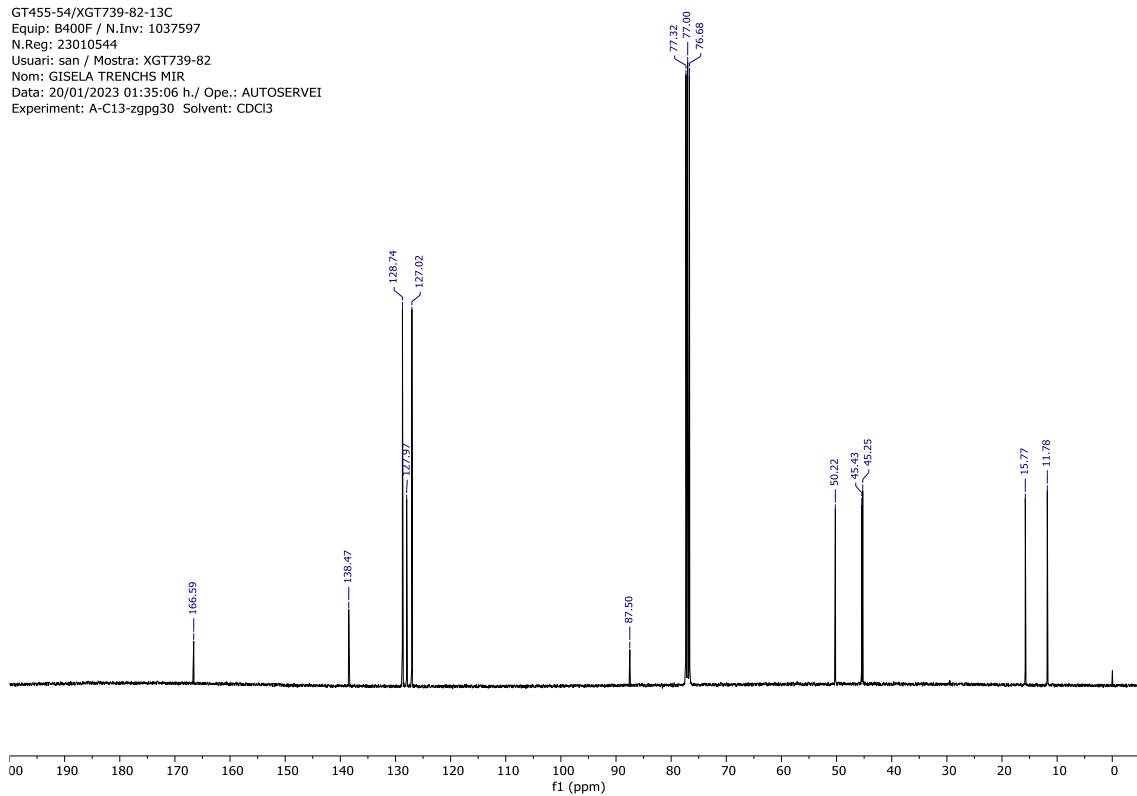


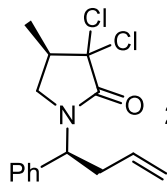
epi-2e (diastereomer more polar)

GT455-54/XGT739-82-1H7
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23010544
 Usuari: san / Mostra: XGT739-82
 Nom: GISELA TRENCHS MIR
 Data: 19/01/2023 16:56:11 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3



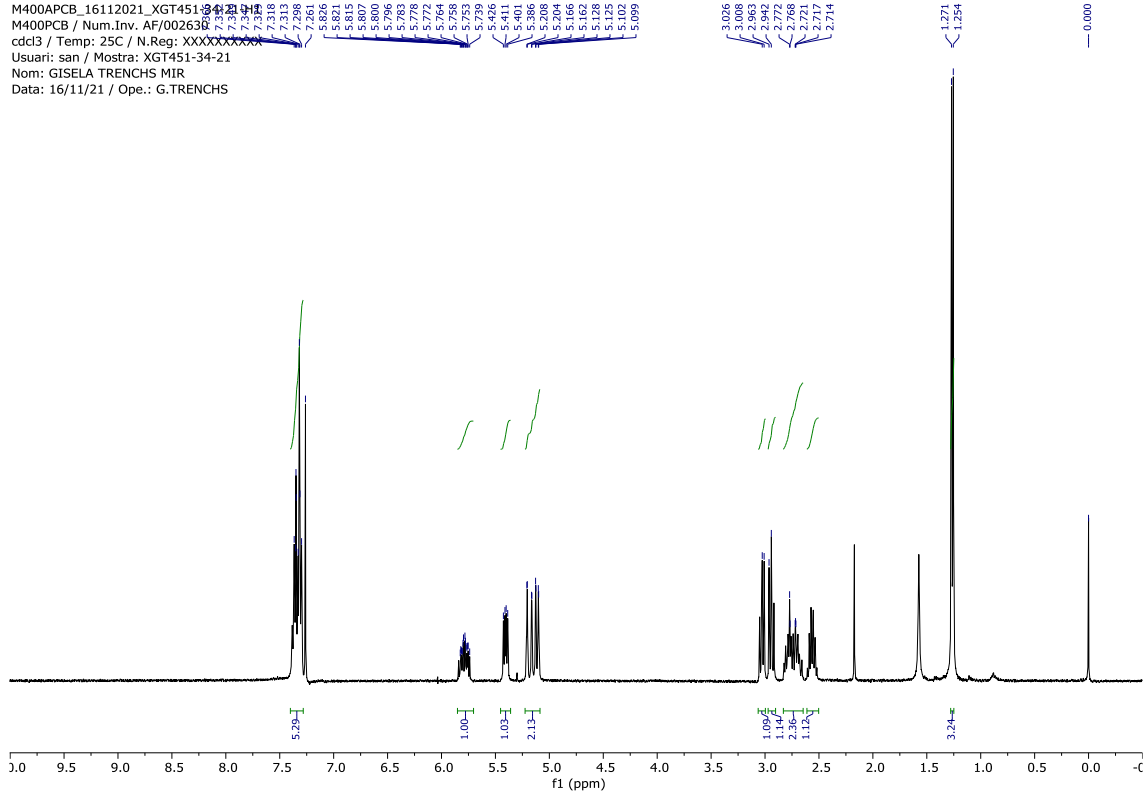
GT455-54/XGT739-82-13C
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23010544
 Usuari: san / Mostra: XGT739-82
 Nom: GISELA TRENCHS MIR
 Data: 20/01/2023 01:35:06 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3



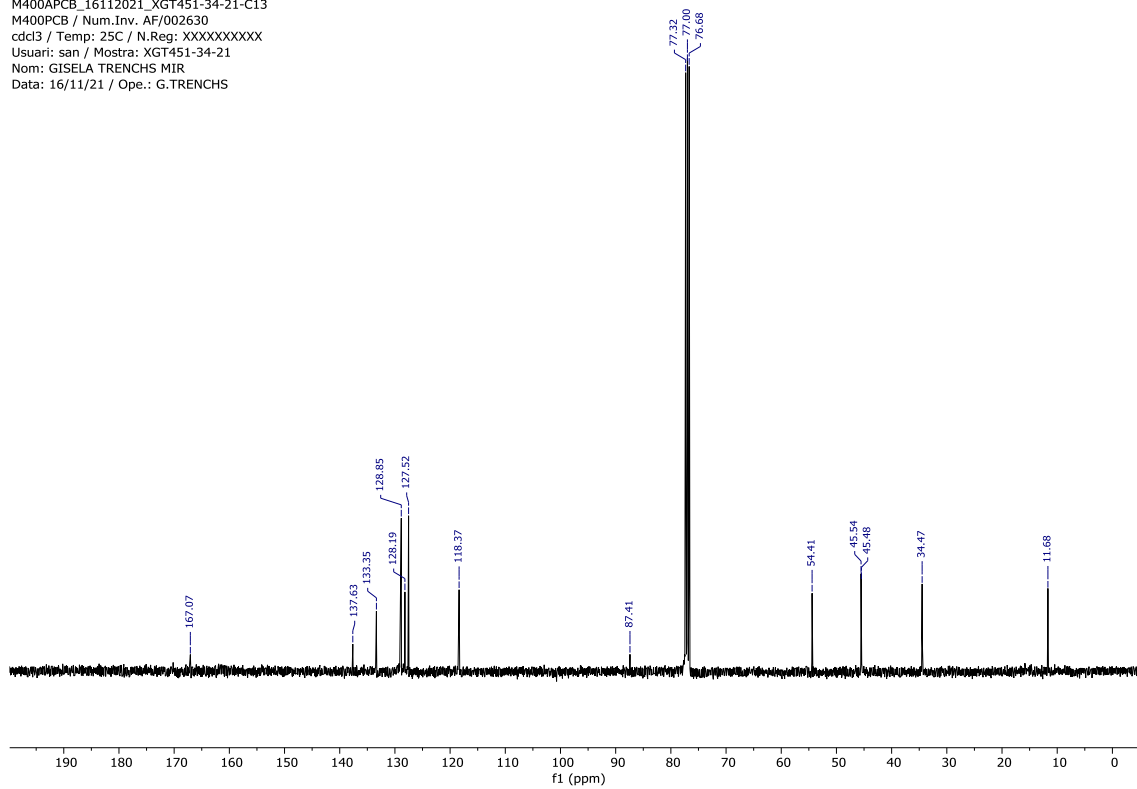


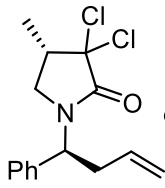
2f (diastereomer less polar)

M400APCB_16112021_XGT451-34-21-C13
M400PCB / Num.Inv. AF/002630
cdcl3 / Temp: 25C / N.Reg: XXXXXXXXXX
Usuari: san / Mostra: XGT451-34-21
Nom: GISELA TRENCHS MIR
Data: 16/11/21 / Ope.: G.TRENCHS



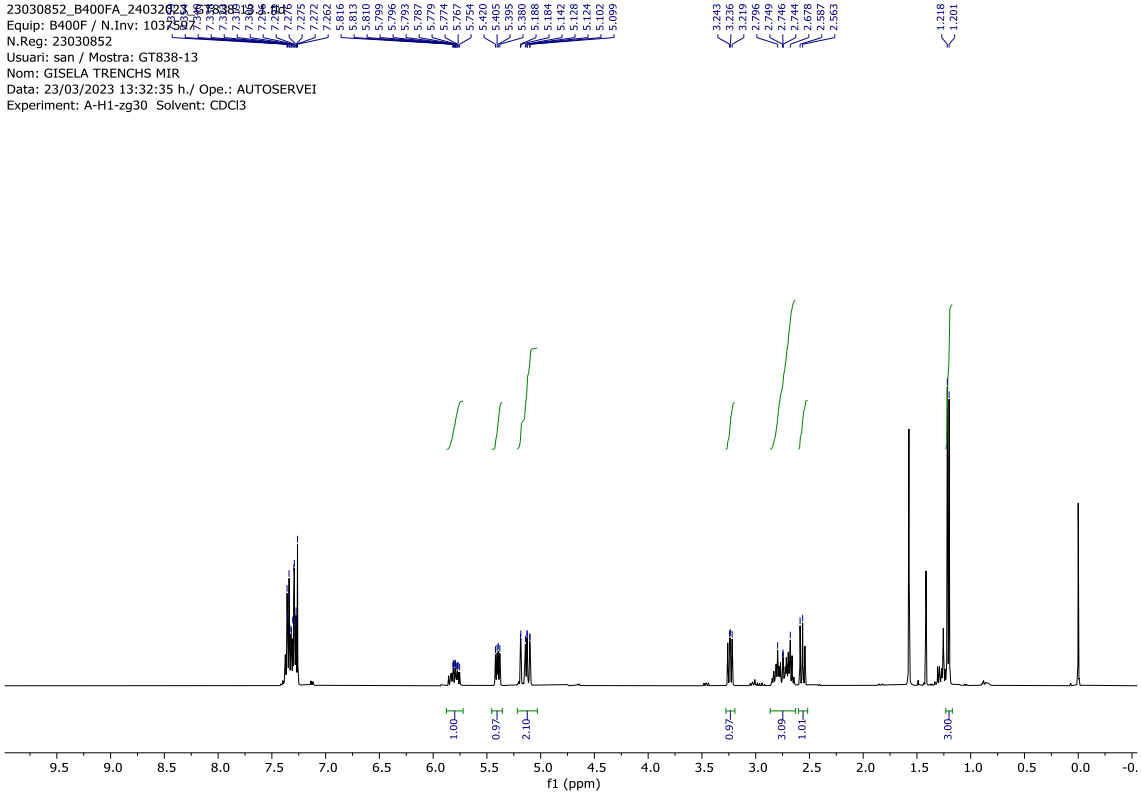
M400APCB_16112021_XGT451-34-21-C13
M400PCB / Num.Inv. AF/002630
cdcl3 / Temp: 25C / N.Reg: XXXXXXXXXX
Usuari: san / Mostra: XGT451-34-21
Nom: GISELA TRENCHS MIR
Data: 16/11/21 / Ope.: G.TRENCHS





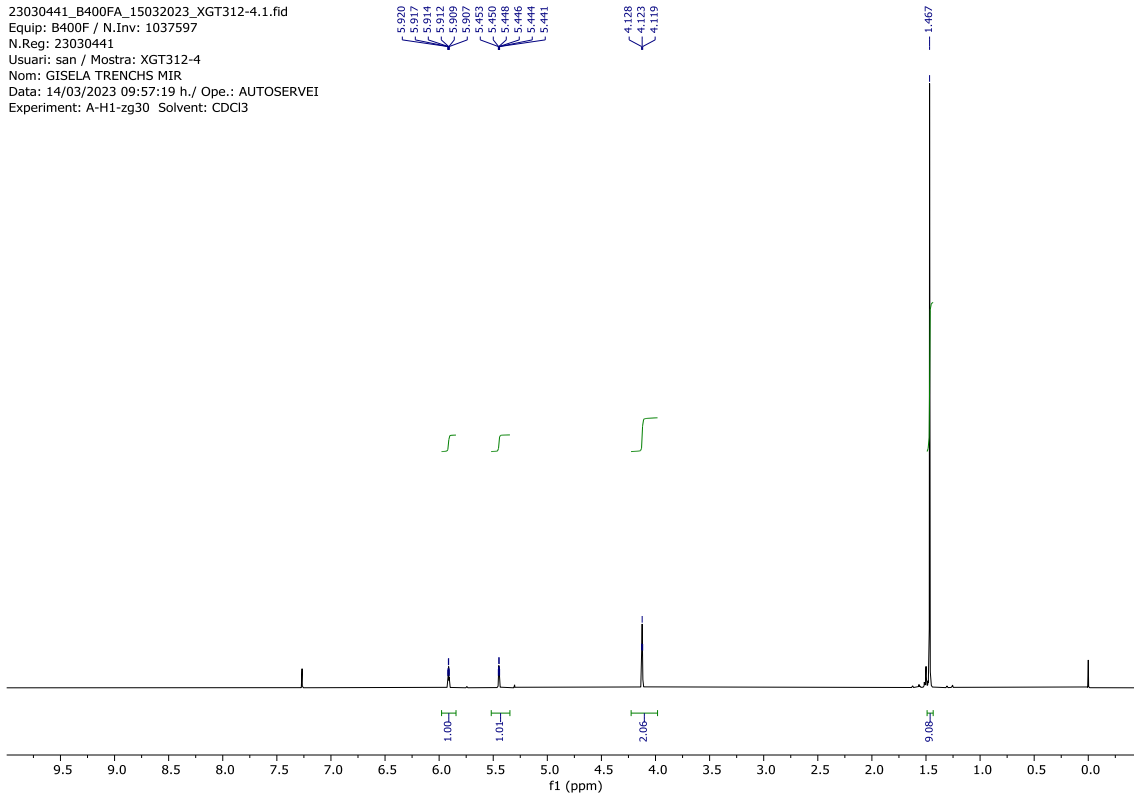
epi-2f (diastereomer more polar)

23030852_B400FA_24032023_GT838-13.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23030852
 Usuari: san / Mostra: GT838-13
 Nom: GISELA TRENCHS MIR
 Data: 23/03/2023 13:32:35 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

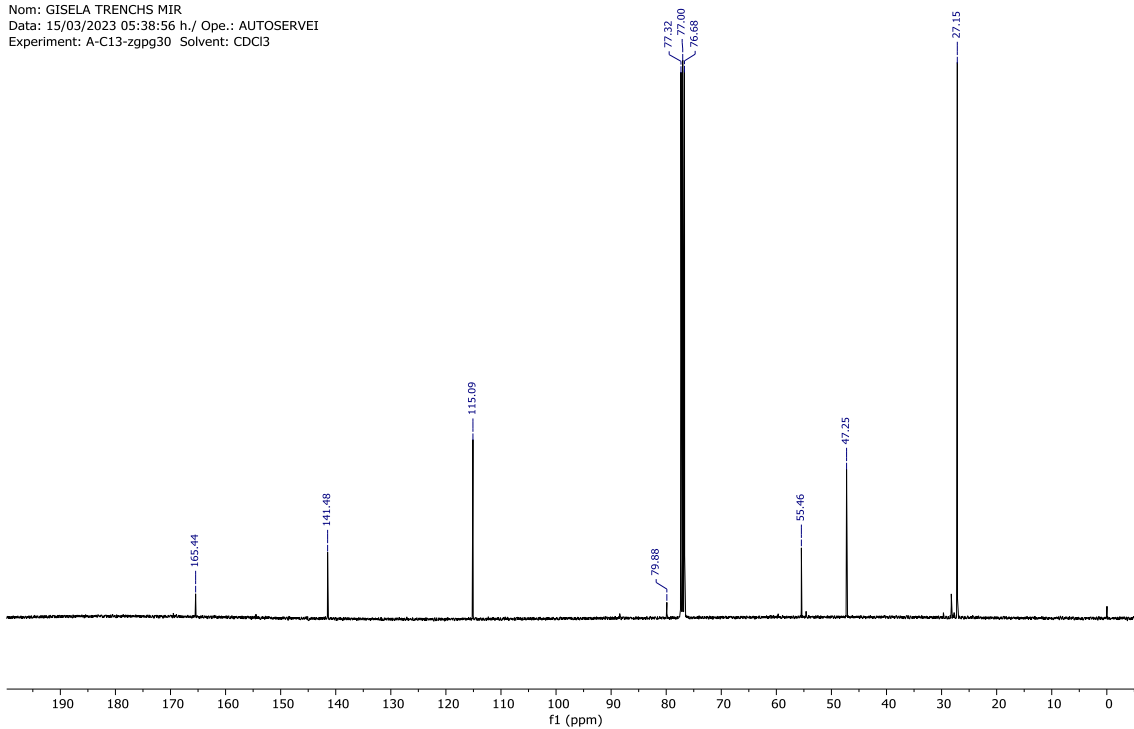


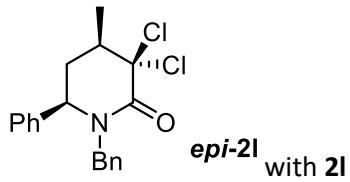


23030441_B400FA_15032023_XGT312-4.1.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23030441
 Usuari: san / Mostra: XGT312-4
 Nom: GISELA TRENCHS MIR
 Data: 14/03/2023 09:57:19 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

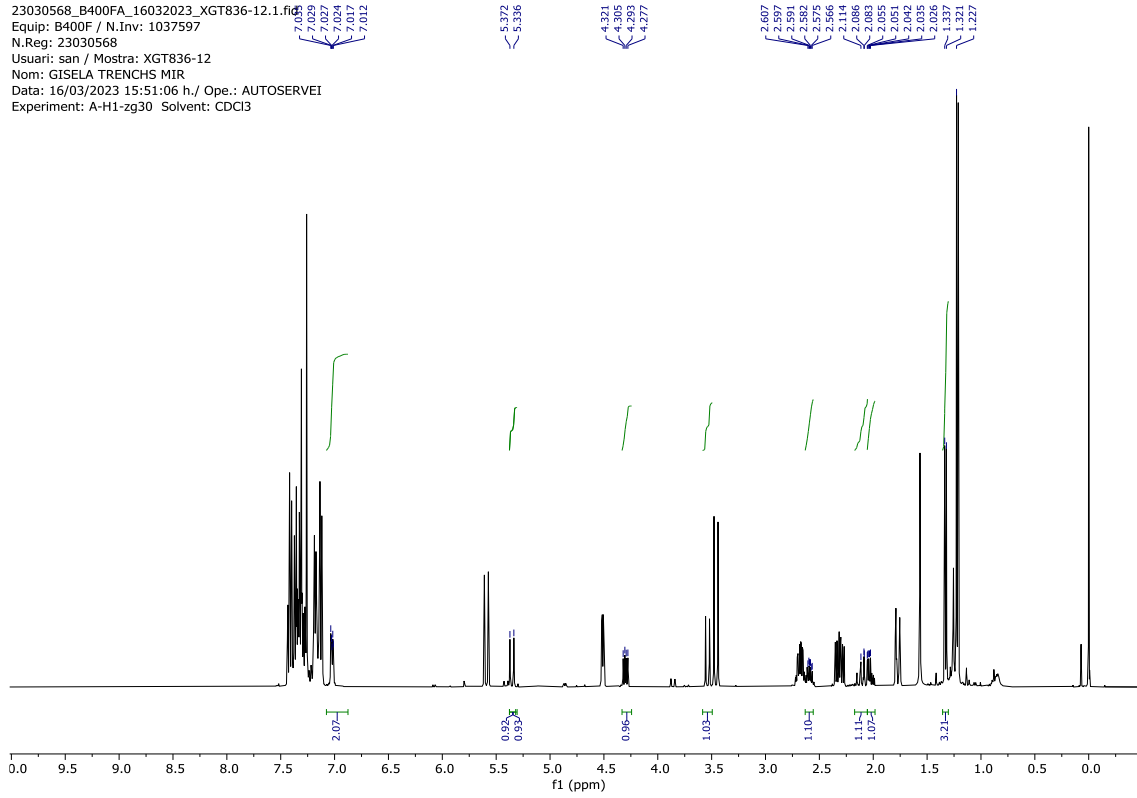


23030441_B400FA_15032023_XGT312-4.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23030441
 Usuari: san / Mostra: XGT312-4
 Nom: GISELA TRENCHS MIR
 Data: 15/03/2023 05:38:56 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3

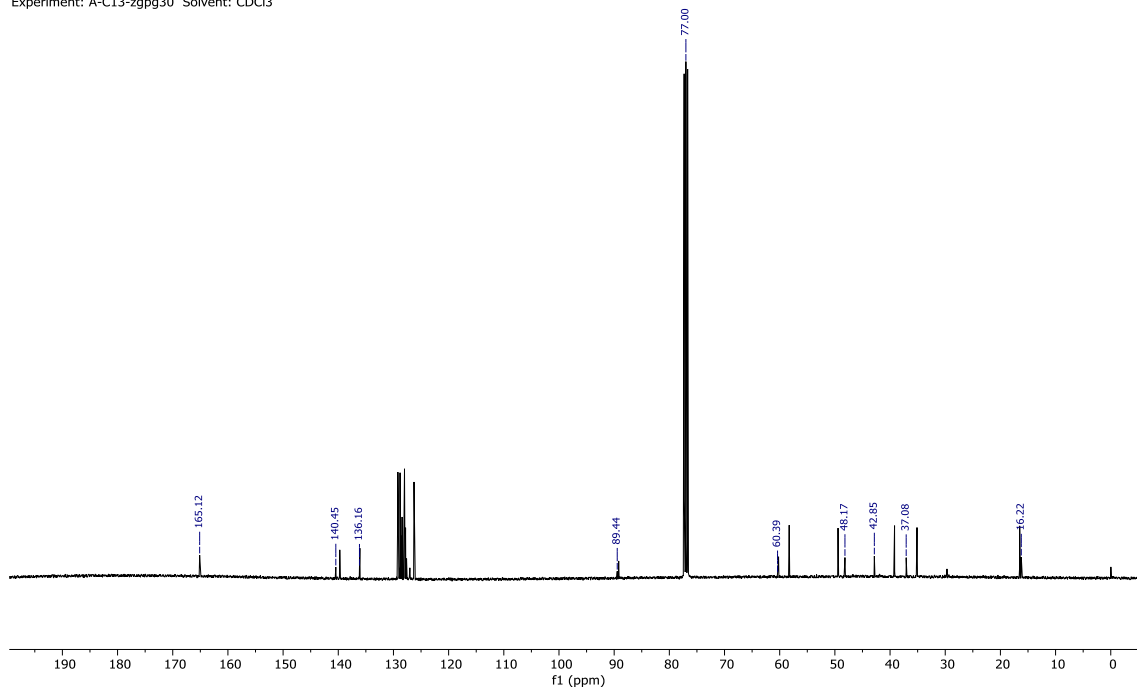


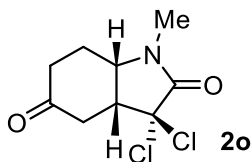


23030568_B400FA_16032023_XGT836-12.1.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23030568
 Usuari: san / Mostra: XGT836-12
 Nom: GISELA TRENCHS MIR
 Data: 16/03/2023 15:51:06 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3



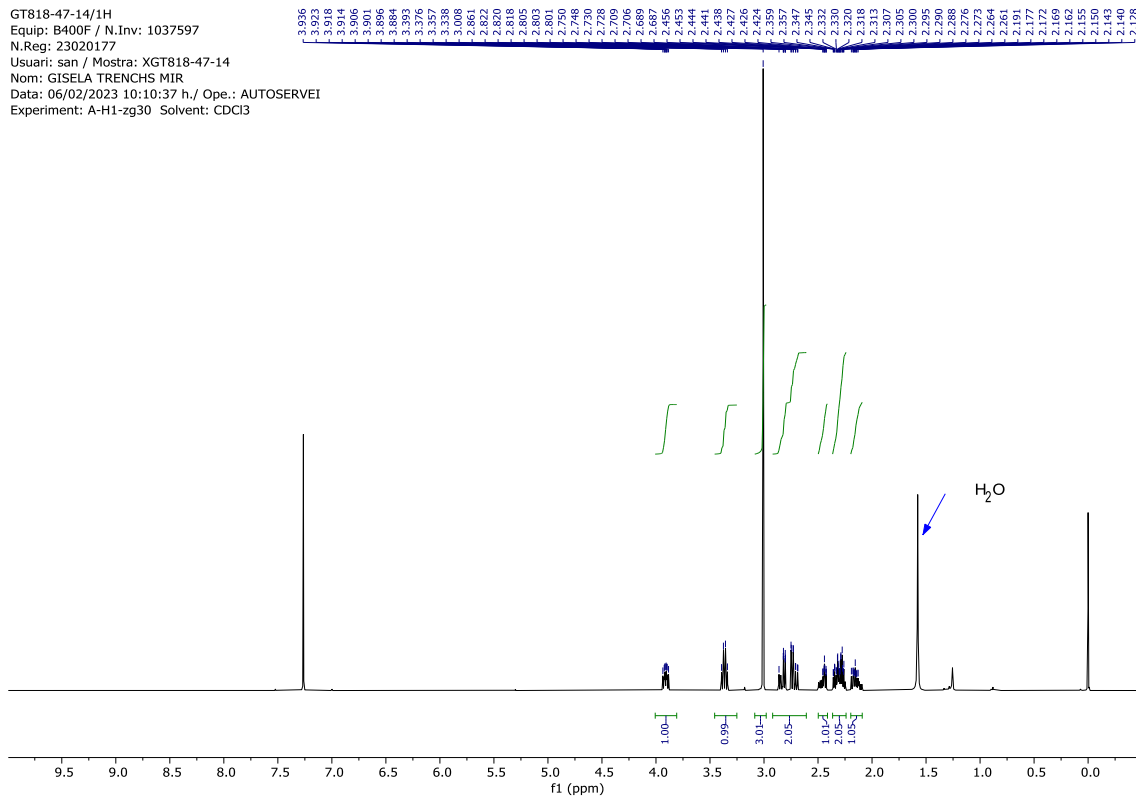
23030568_B400FA_17032023_XGT836-12.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23030568
 Usuari: san / Mostra: XGT836-12
 Nom: GISELA TRENCHS MIR
 Data: 17/03/2023 06:22:48 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3



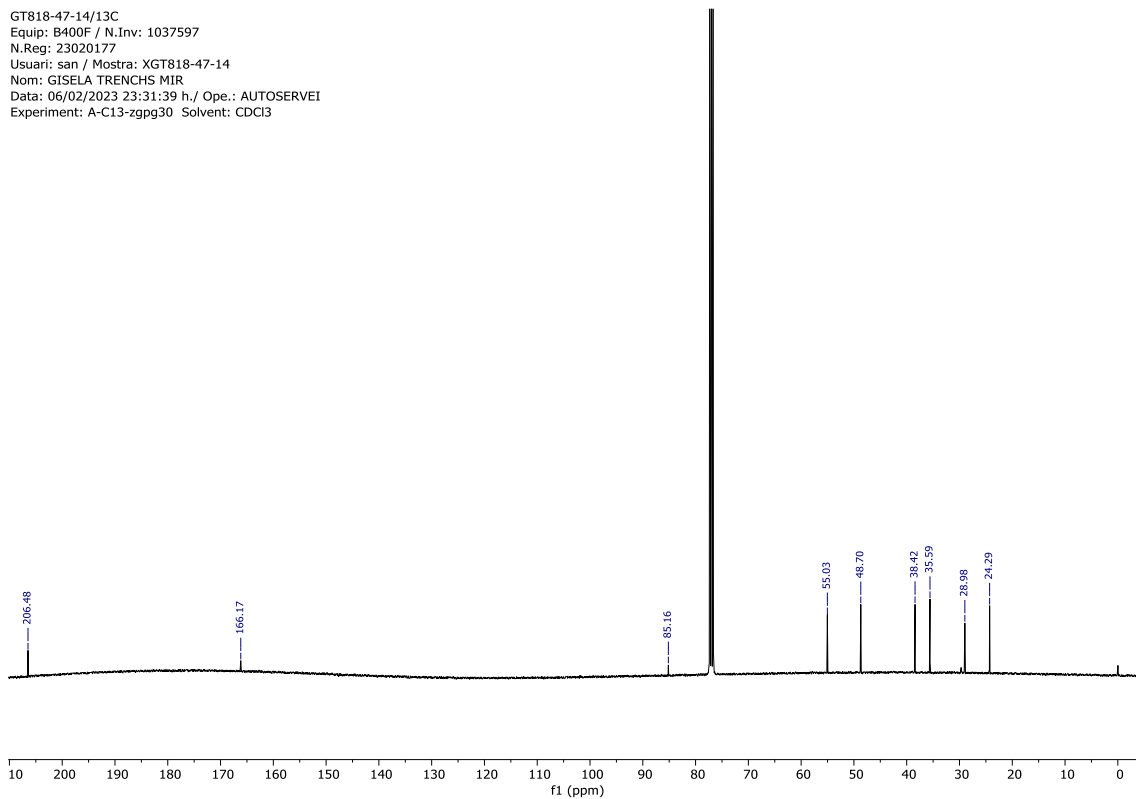


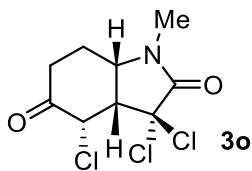
GT818-47-14/1H
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23020177

Usuari: san / Mostra: XGT818-47-14
 Nom: GISELA TRENCHS MIR
 Data: 06/02/2023 10:10:37 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

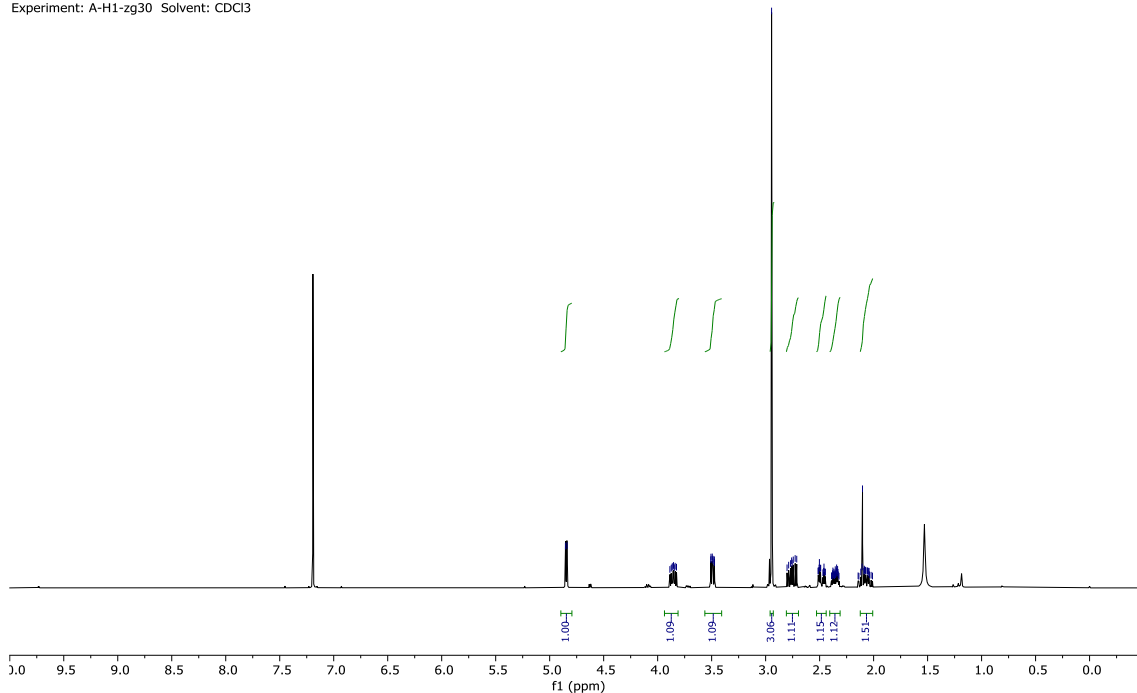


GT818-47-14/13C
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23020177
 Usuari: san / Mostra: XGT818-47-14
 Nom: GISELA TRENCHS MIR
 Data: 06/02/2023 23:31:39 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3

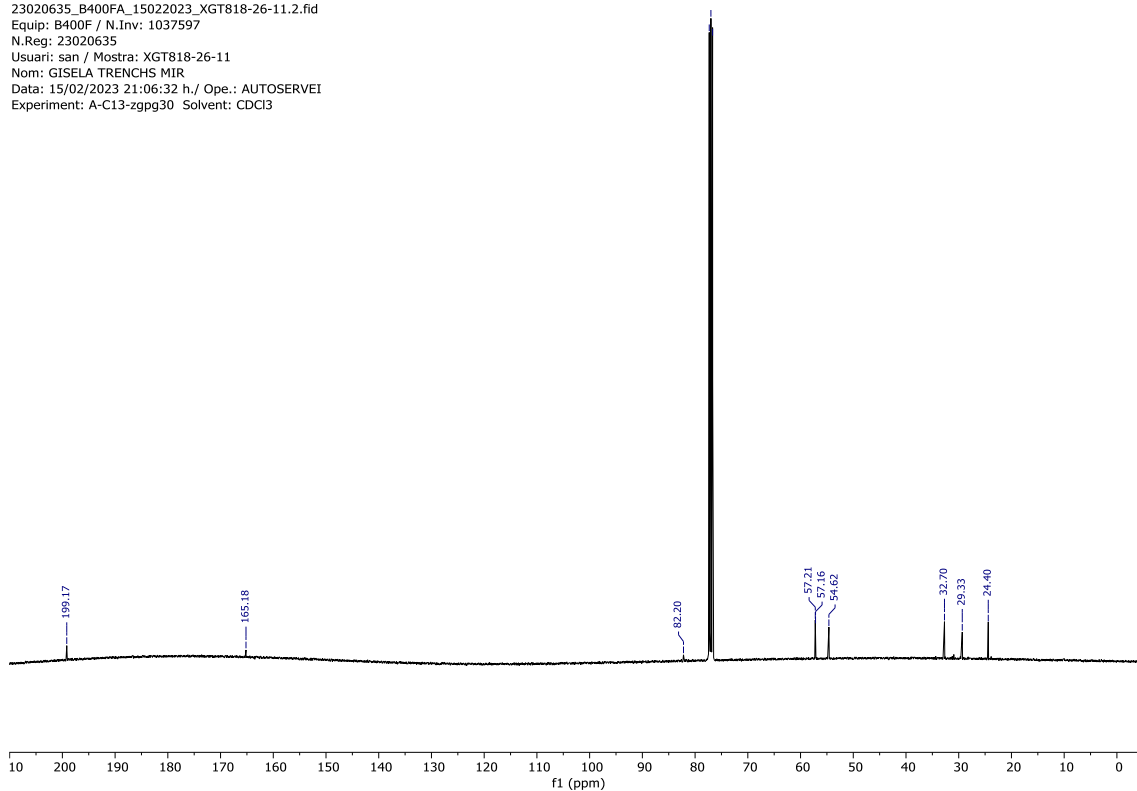


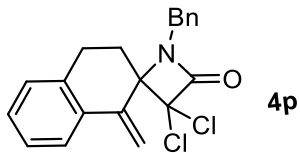


23020635_B400FA_15022023_XGT818-26-11.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23020635
 Usuari: san / Mostra: XGT818-26-11
 Nom: GISELA TRENCHS MIR
 Data: 15/02/2023 18:57:52 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

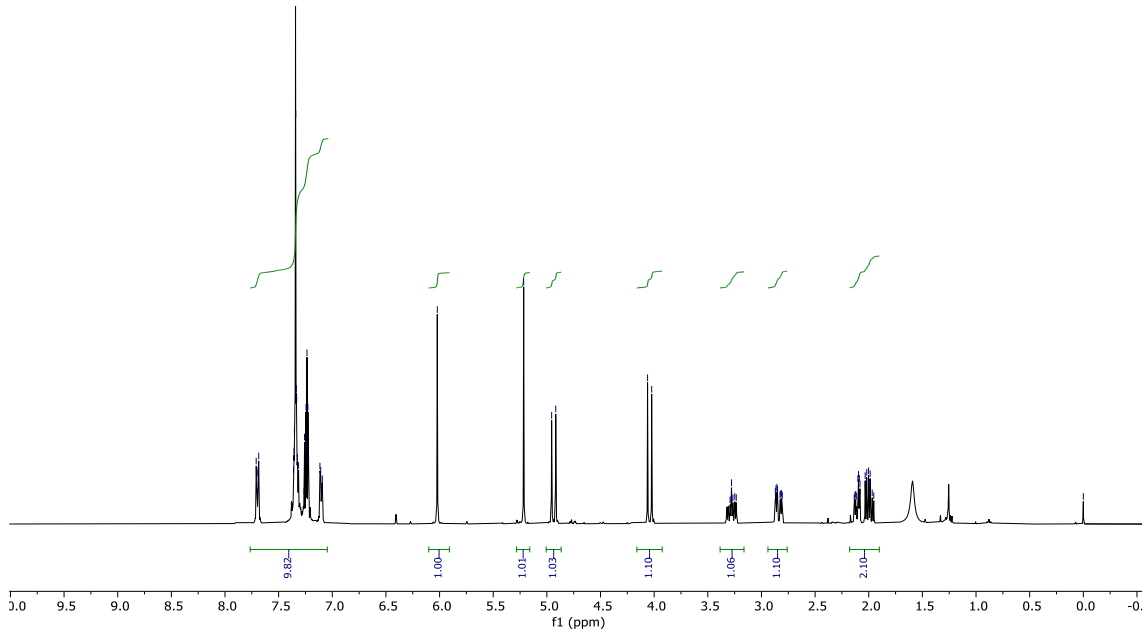


23020635_B400FA_15022023_XGT818-26-11.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23020635
 Usuari: san / Mostra: XGT818-26-11
 Nom: GISELA TRENCHS MIR
 Data: 15/02/2023 21:06:32 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3

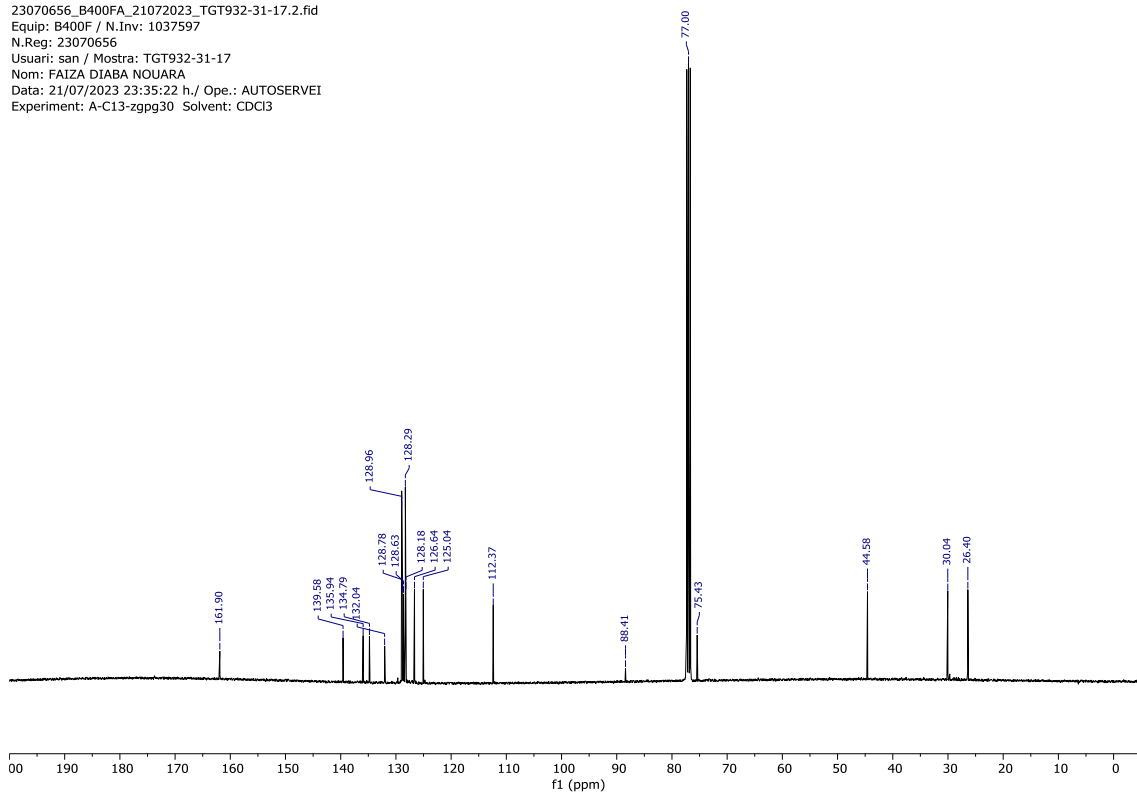


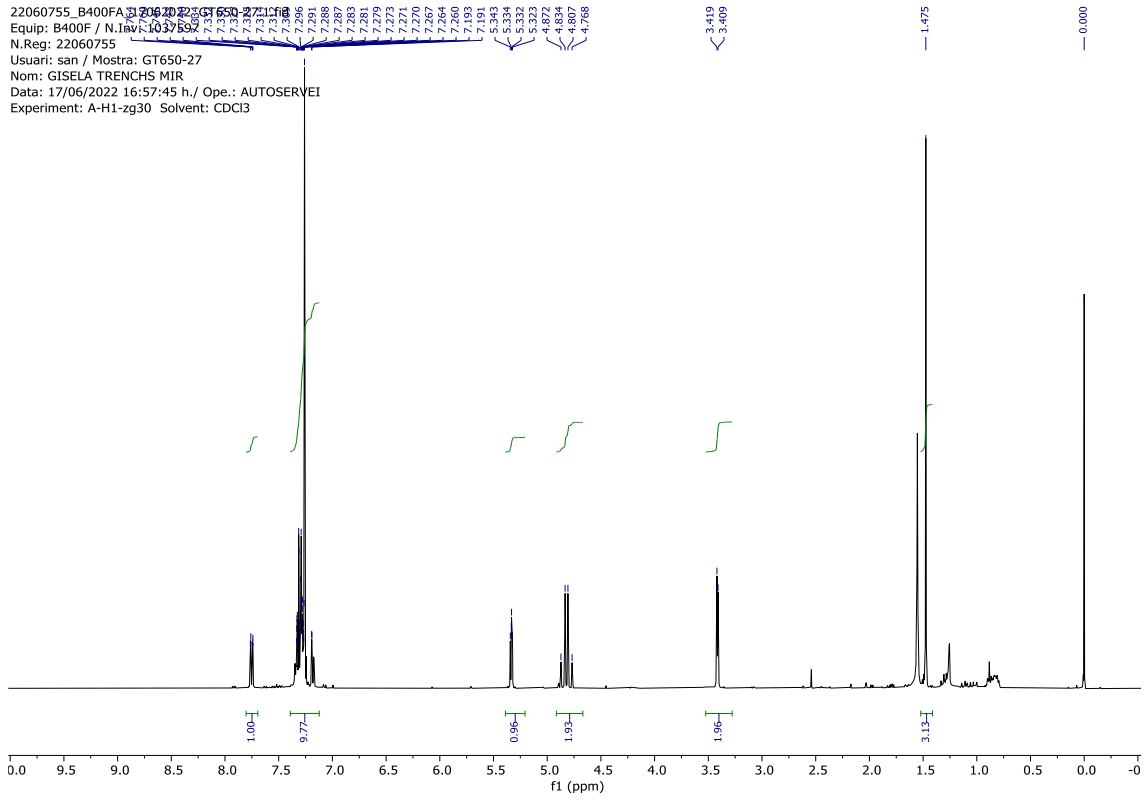
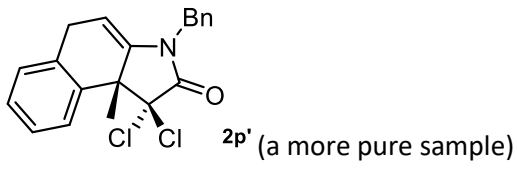


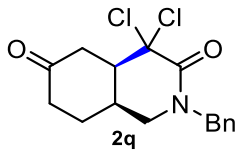
23070656_B400FA_21072023_TGT932-31-17.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23070656
 Usuari: san / Mostra: TGT932-31-17
 Nom: FAIZA DIABA NOUARA
 Data: 21/07/2023 13:29:00 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3



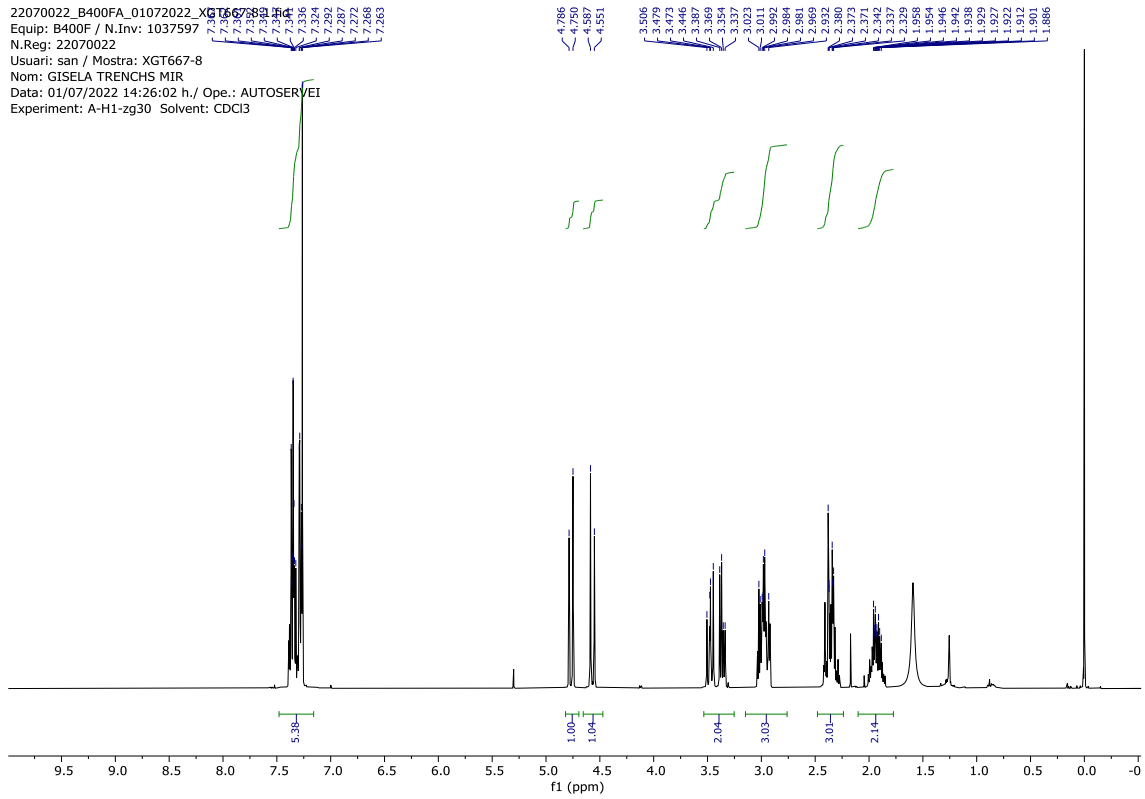
23070656_B400FA_21072023_TGT932-31-17.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23070656
 Usuari: san / Mostra: TGT932-31-17
 Nom: FAIZA DIABA NOUARA
 Data: 21/07/2023 23:35:22 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3



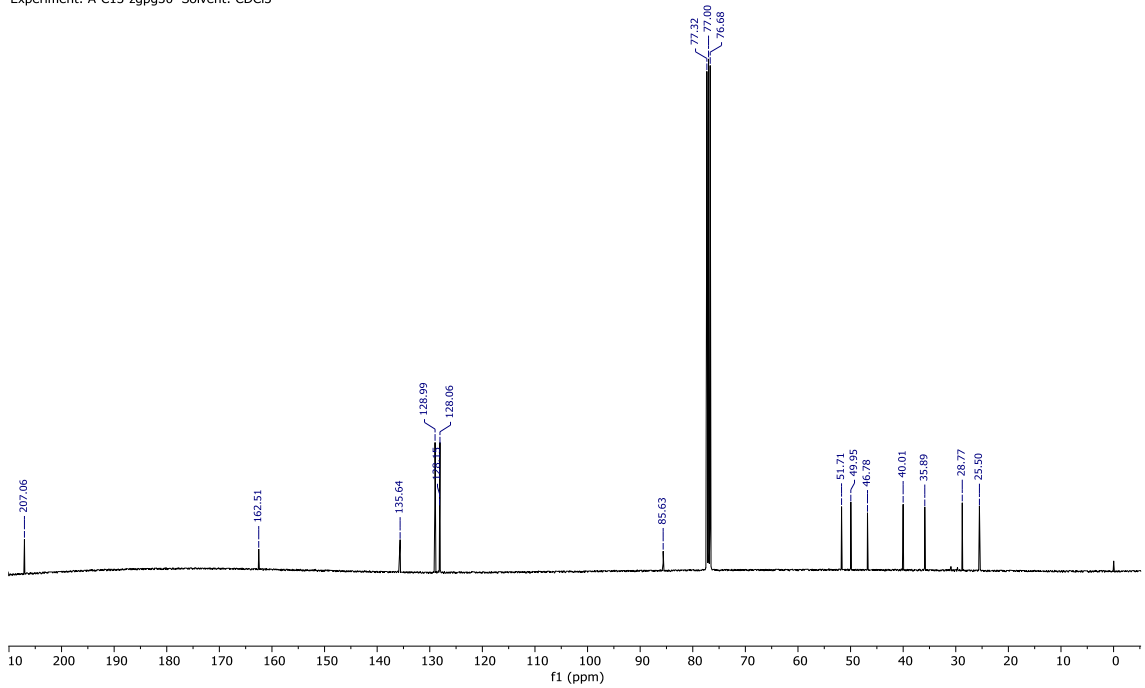


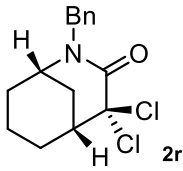


22070022_B400FA_01072022_XGT667-8.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 22070022
 Usuari: san / Mostra: XGT667-8
 Nom: GISELA TRENCHS MIR
 Data: 01/07/2022 14:26:02 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

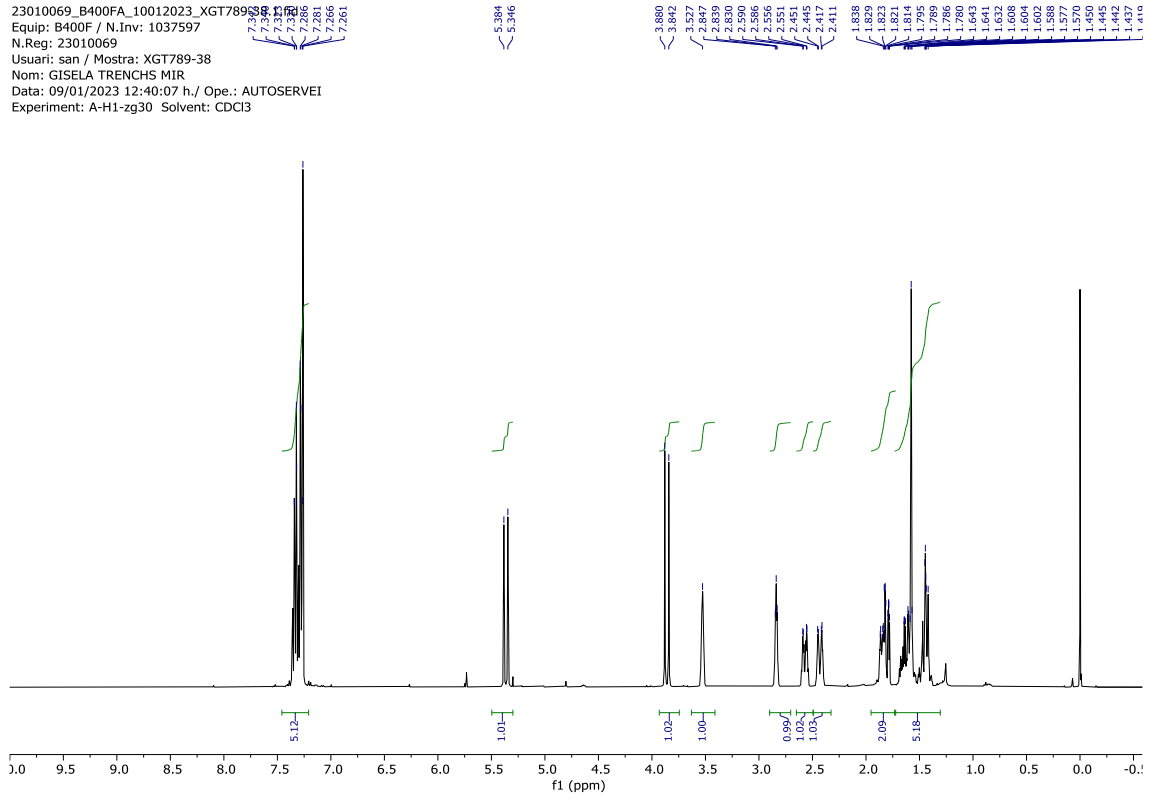


22070022_B400FA_01072022_XGT667-8.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 22070022
 Usuari: san / Mostra: XGT667-8
 Nom: GISELA TRENCHS MIR
 Data: 01/07/2022 23:06:21 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3

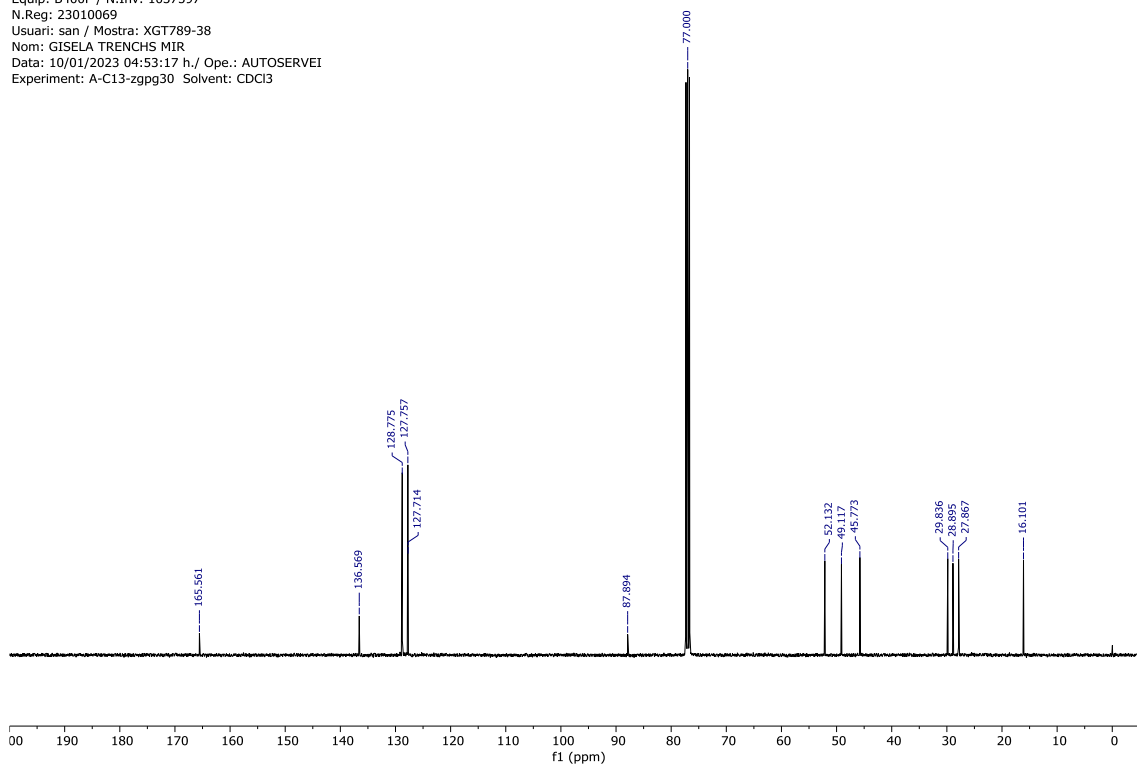


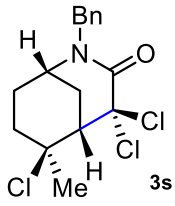


23010069_B400FA_10012023_XGT789-38.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23010069
 Usuari: san / Mostra: XGT789-38
 Nom: GISELA TRENCHS MIR
 Data: 09/01/2023 12:40:07 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

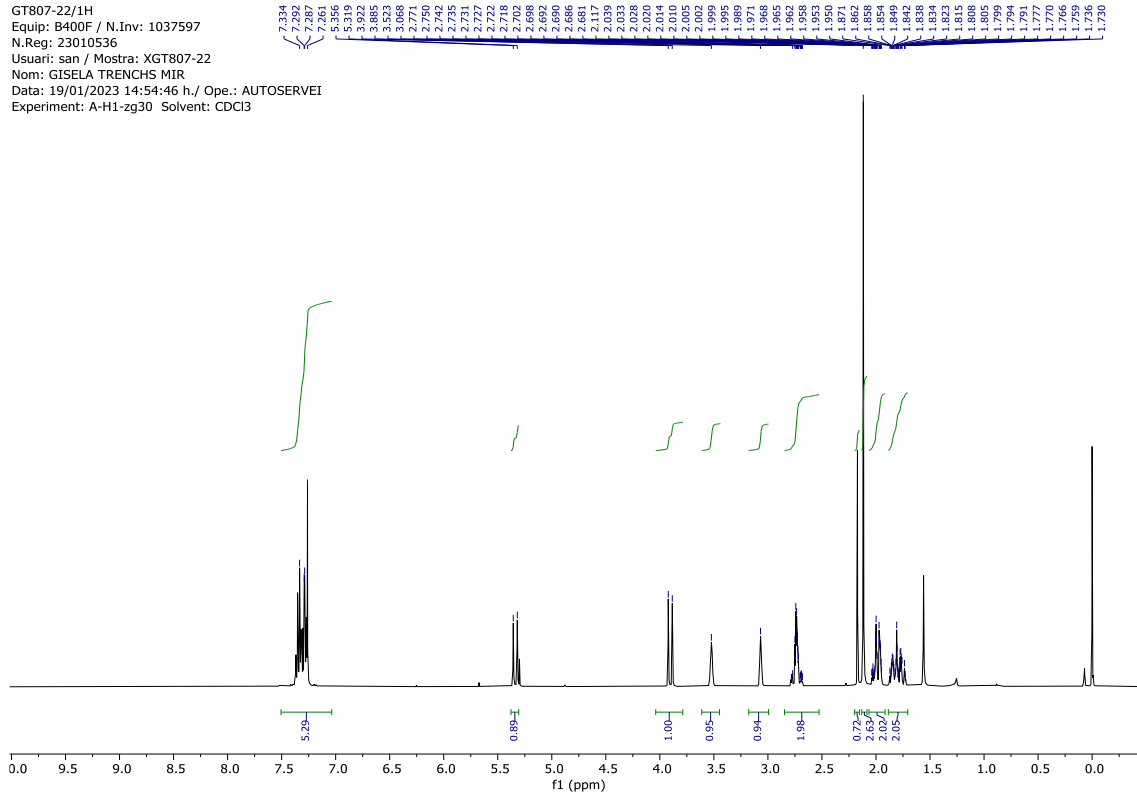


23010069_B400FA_10012023_XGT789-38.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23010069
 Usuari: san / Mostra: XGT789-38
 Nom: GISELA TRENCHS MIR
 Data: 10/01/2023 04:53:17 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3

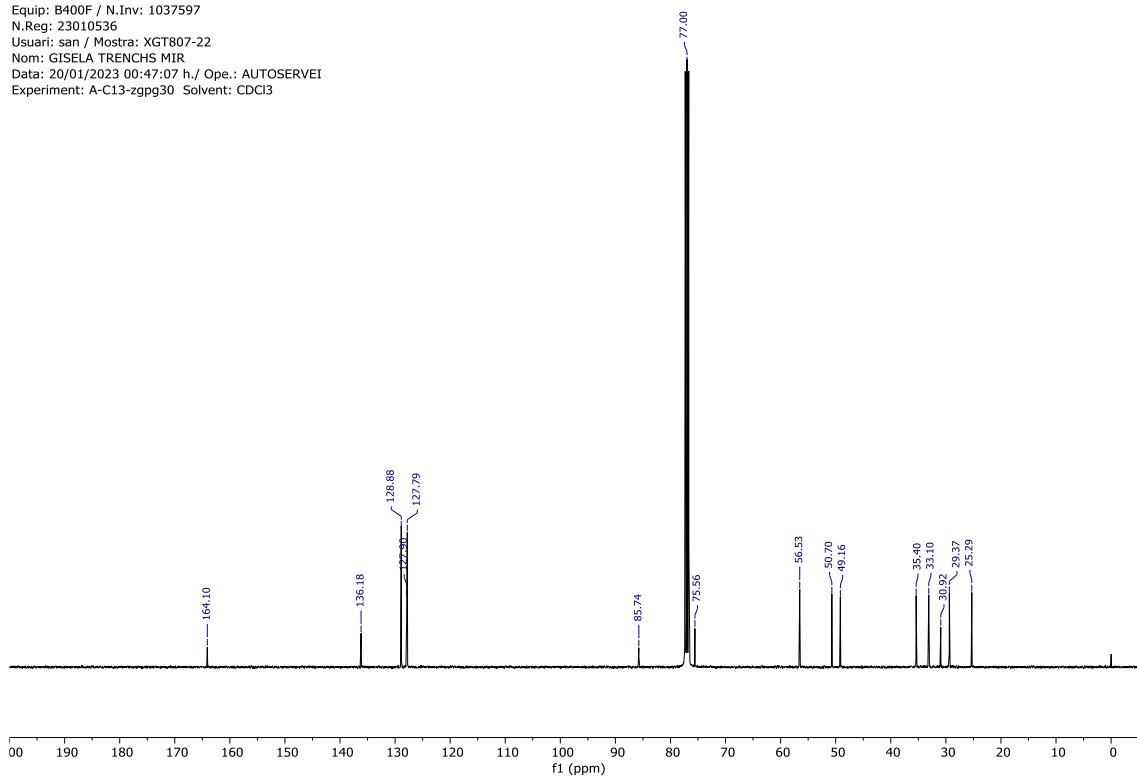


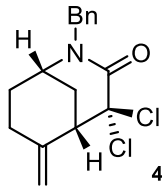


GT807-22/1H
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23010536
 Usuari: san / Mostra: XGT807-22
 Nom: GISELA TRENCHS MIR
 Data: 19/01/2023 14:54:46 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

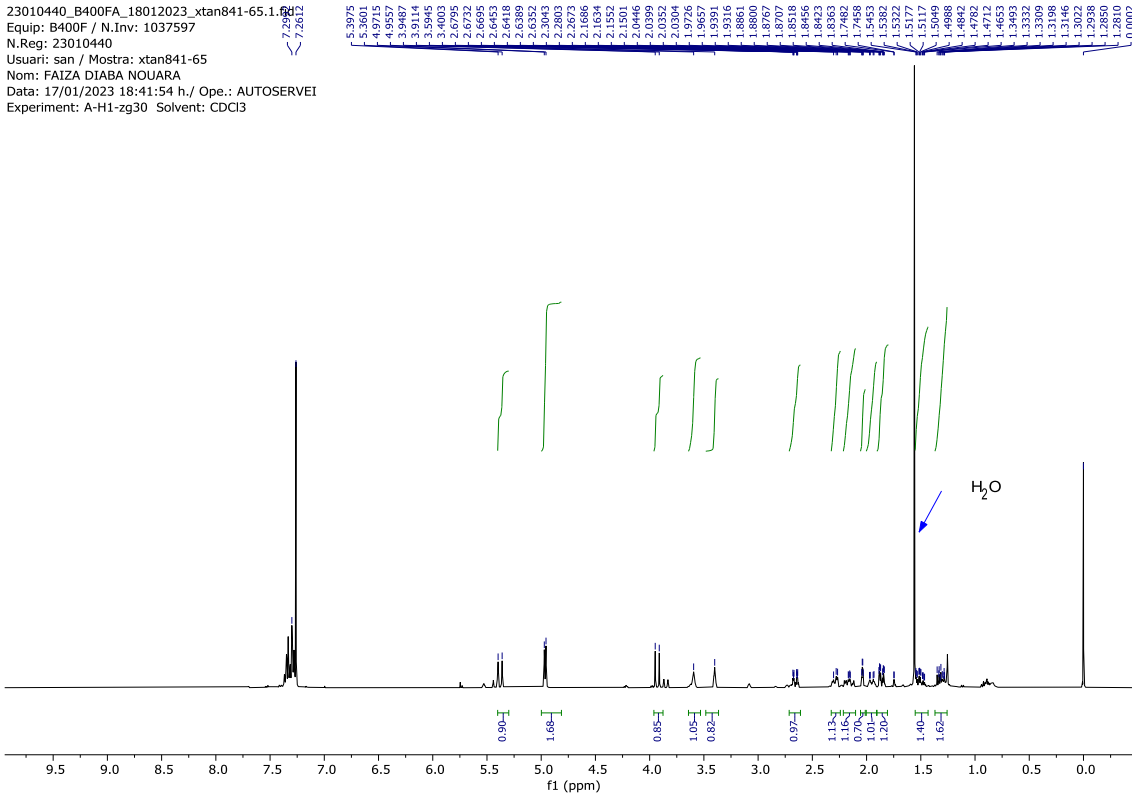


GT807-22/13C
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23010536
 Usuari: san / Mostra: XGT807-22
 Nom: GISELA TRENCHS MIR
 Data: 20/01/2023 00:47:07 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3

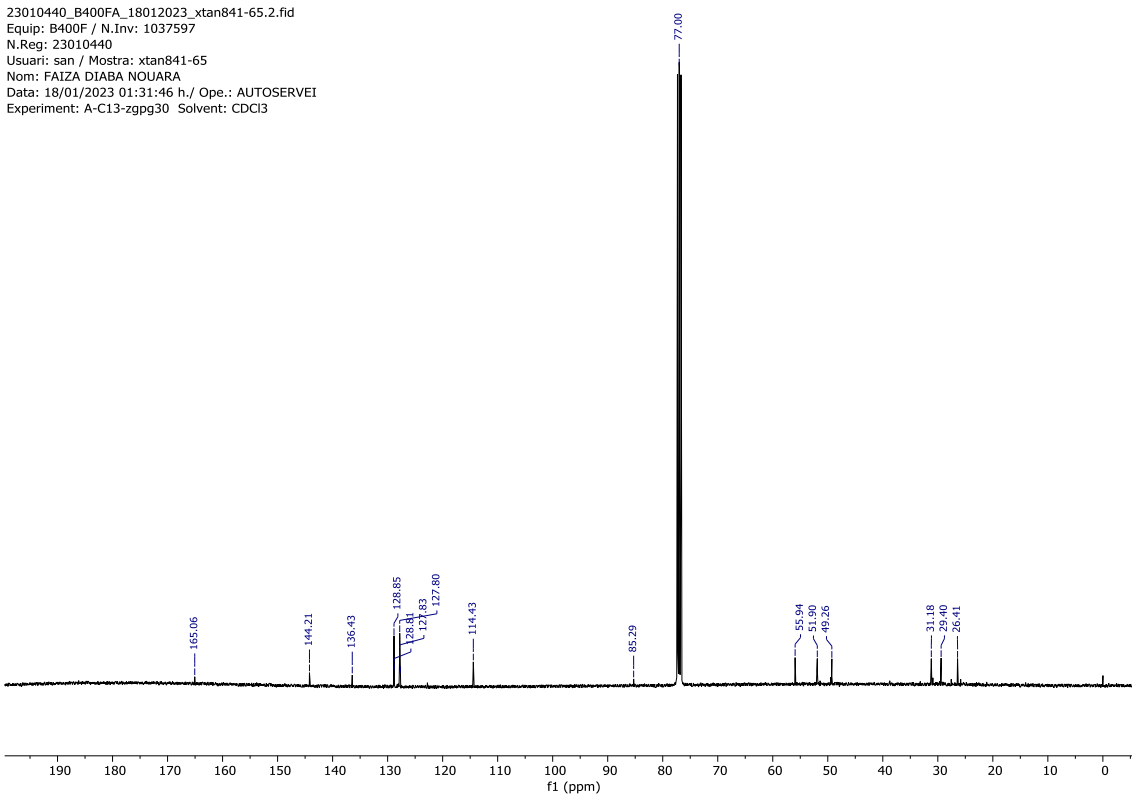


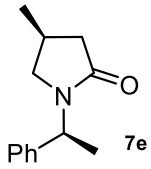


23010440_B400FA_18012023_xtan841-65.1.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23010440
 Usuari: san / Mostra: xtan841-65
 Nom: FAIZA DIABA NOUARA
 Data: 17/01/2023 18:41:54 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

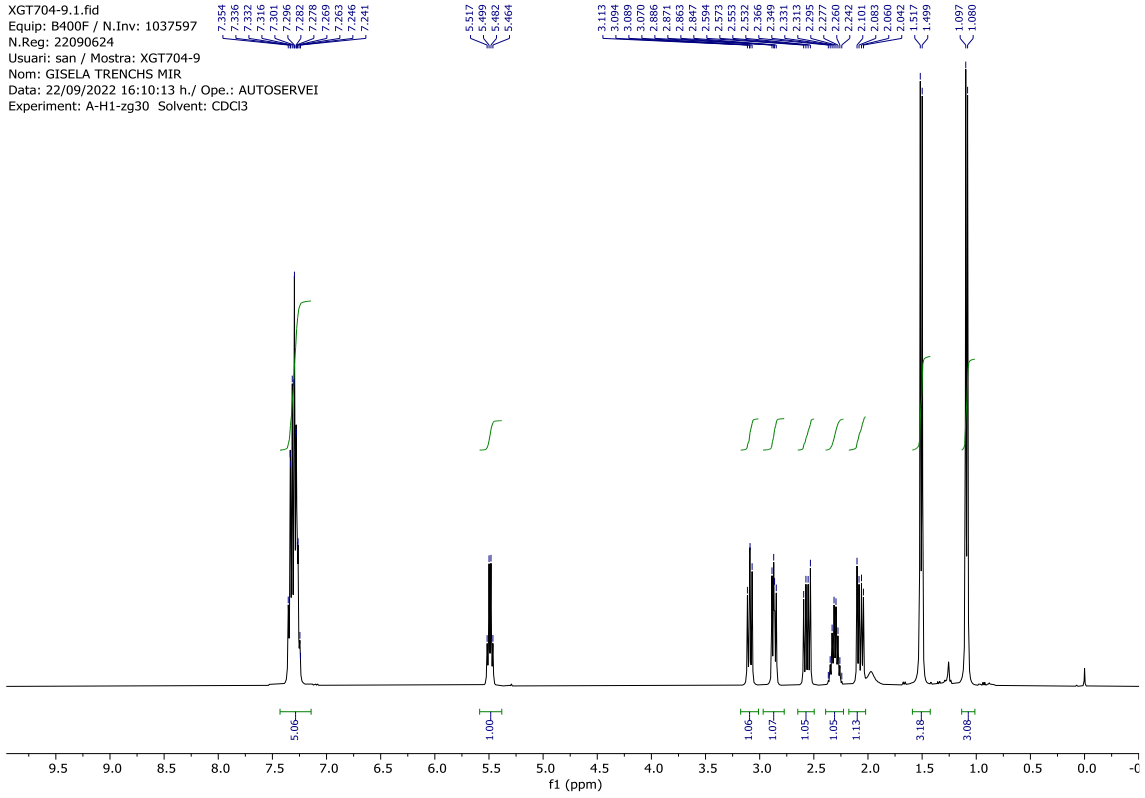


23010440_B400FA_18012023_xtan841-65.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23010440
 Usuari: san / Mostra: xtan841-65
 Nom: FAIZA DIABA NOUARA
 Data: 18/01/2023 01:31:46 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3

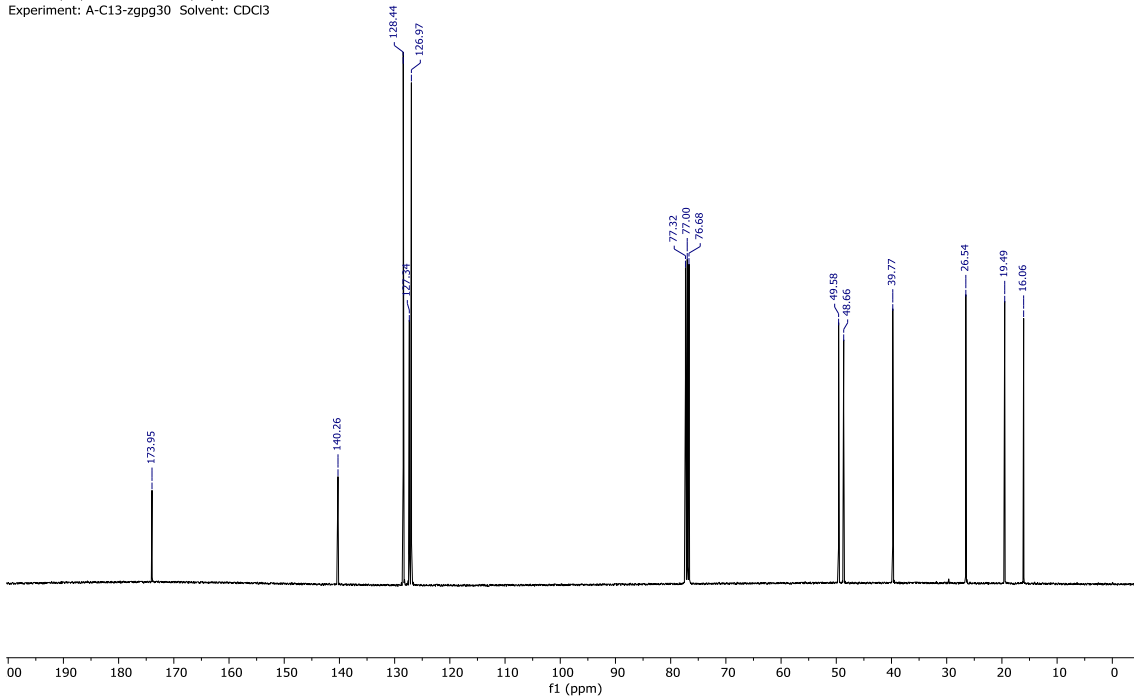


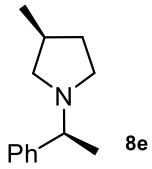


XGT704-9.1.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 22090624
 Usuari: san / Mostra: XGT704-9
 Nom: GISELA TRENCHS MIR
 Data: 22/09/2022 16:10:13 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

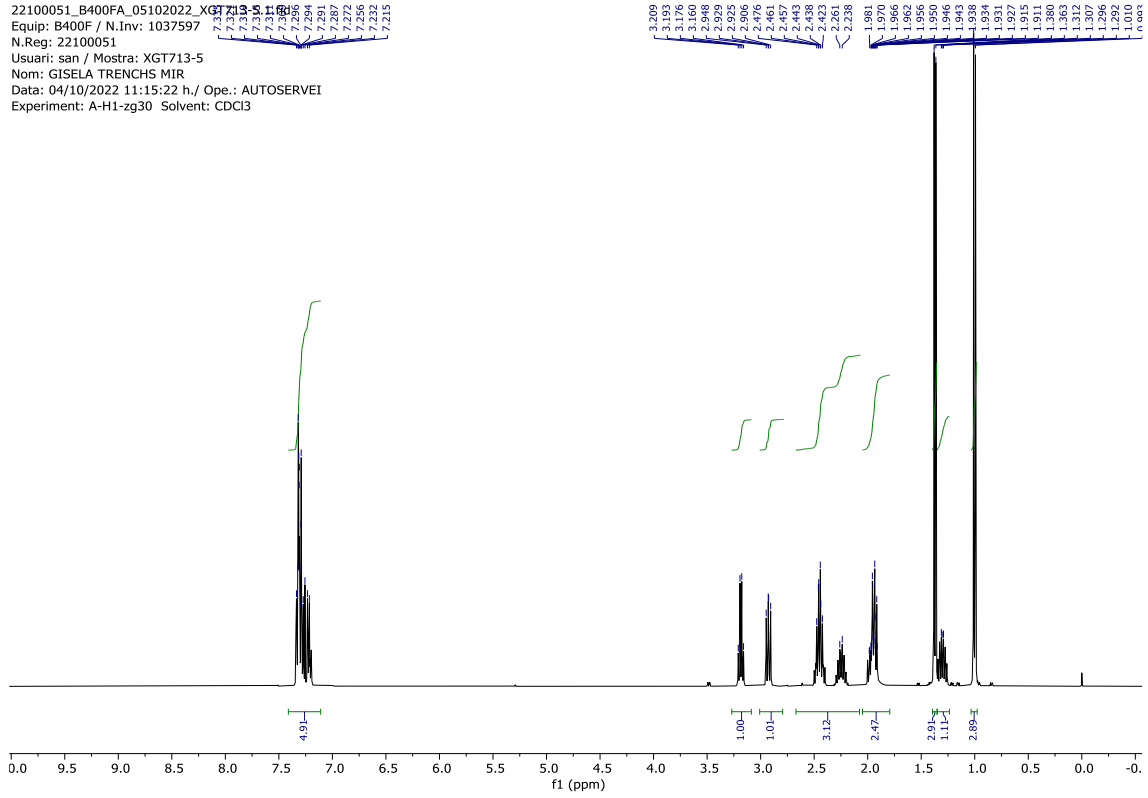


XGT704-9.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 22090624
 Usuari: san / Mostra: XGT704-9
 Nom: GISELA TRENCHS MIR
 Data: 23/09/2022 06:16:57 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zpgg30 Solvent: CDCl3

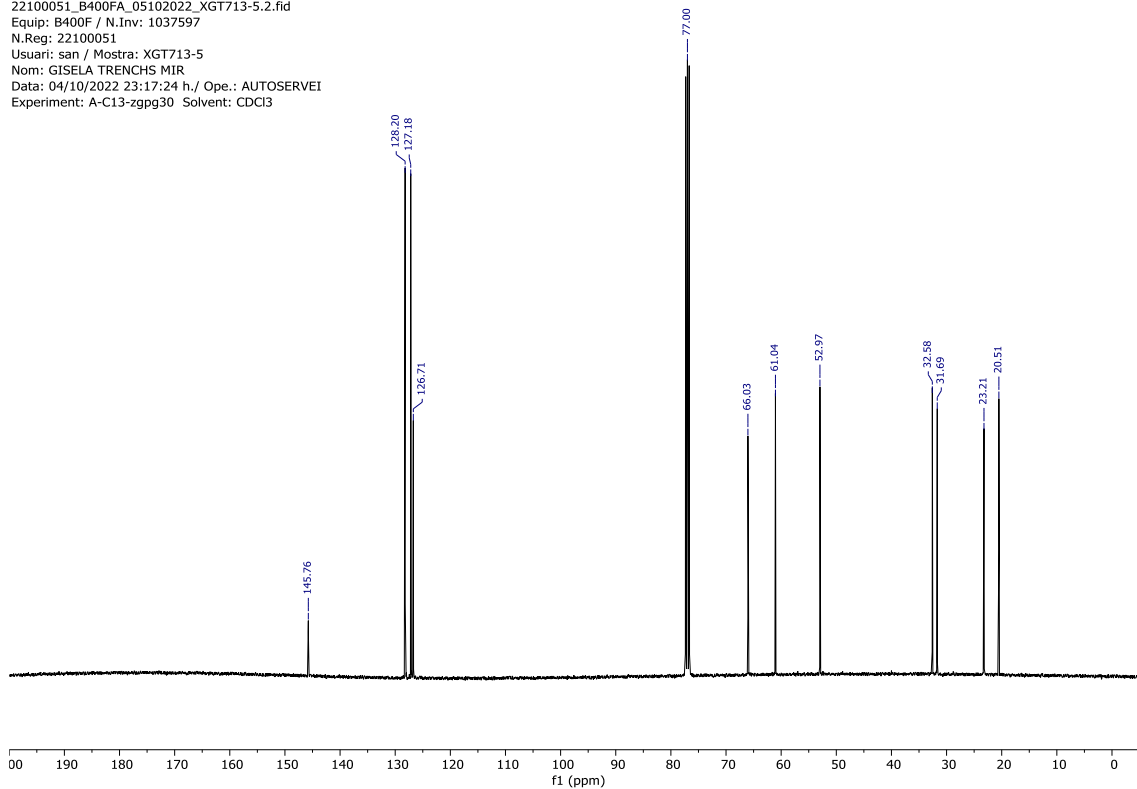


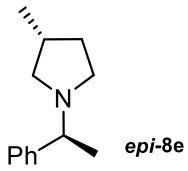


22100051_B400FA_05102022_XGT713-5.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 22100051
 Usuari: san / Mostra: XGT713-5
 Nom: GISELA TRENCHS MIR
 Data: 04/10/2022 11:15:22 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

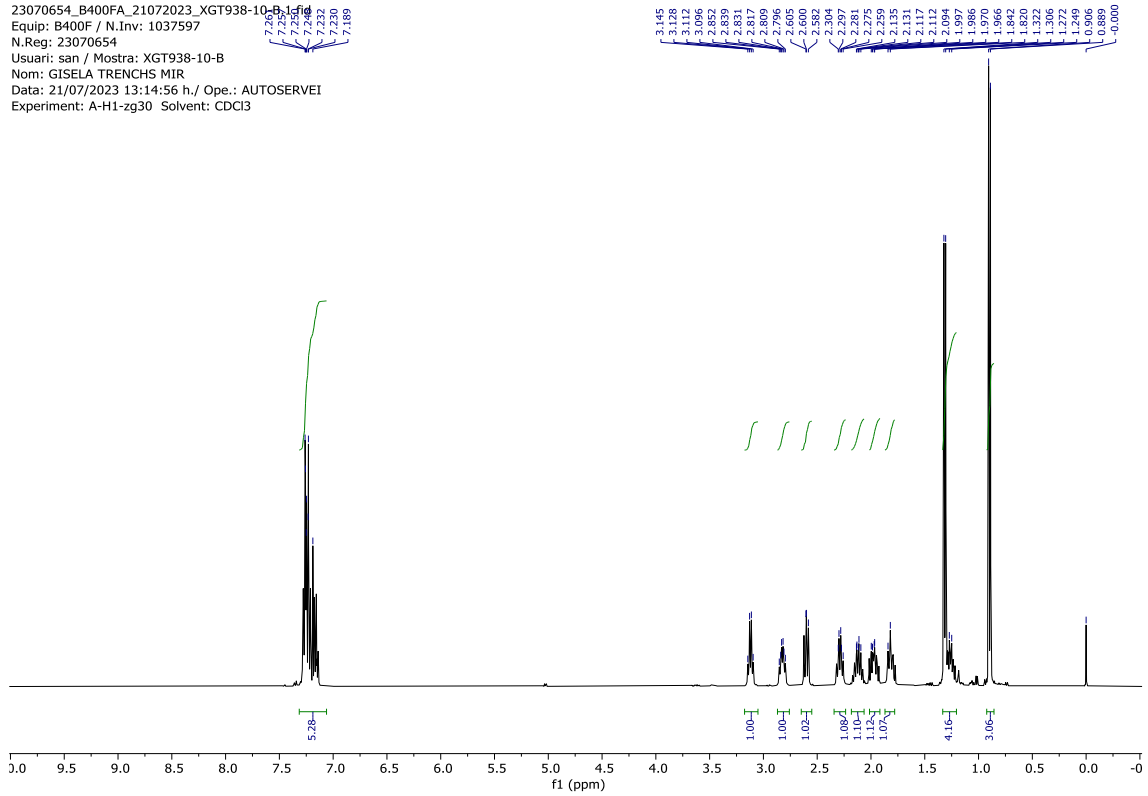


22100051_B400FA_05102022_XGT713-5.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 22100051
 Usuari: san / Mostra: XGT713-5
 Nom: GISELA TRENCHS MIR
 Data: 04/10/2022 23:17:24 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zgpg30 Solvent: CDCl3

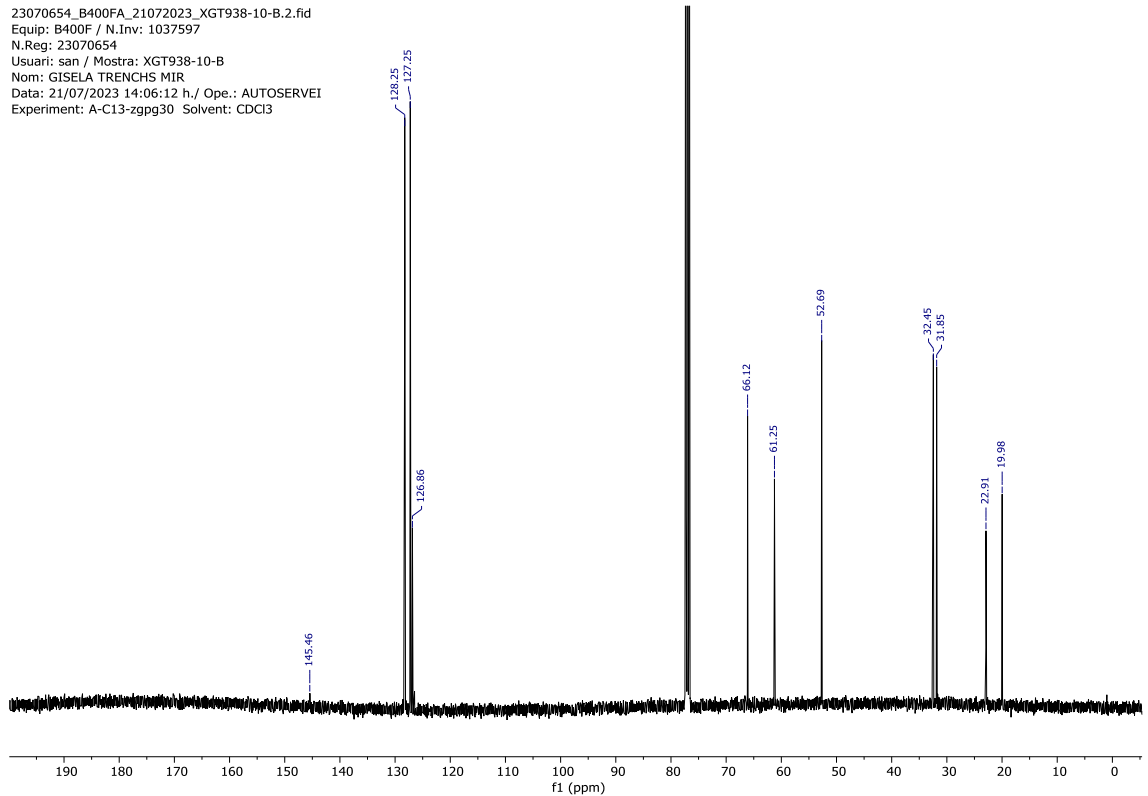


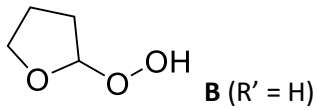


23070654_B400FA_21072023_XGT938-10-B.1.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23070654
 Usuari: san / Mostra: XGT938-10-B
 Nom: GISELA TRENCHS MIR
 Data: 21/07/2023 13:14:56 h./ Ope.: AUTOSERVEI
 Experiment: A-H1-zg30 Solvent: CDCl3

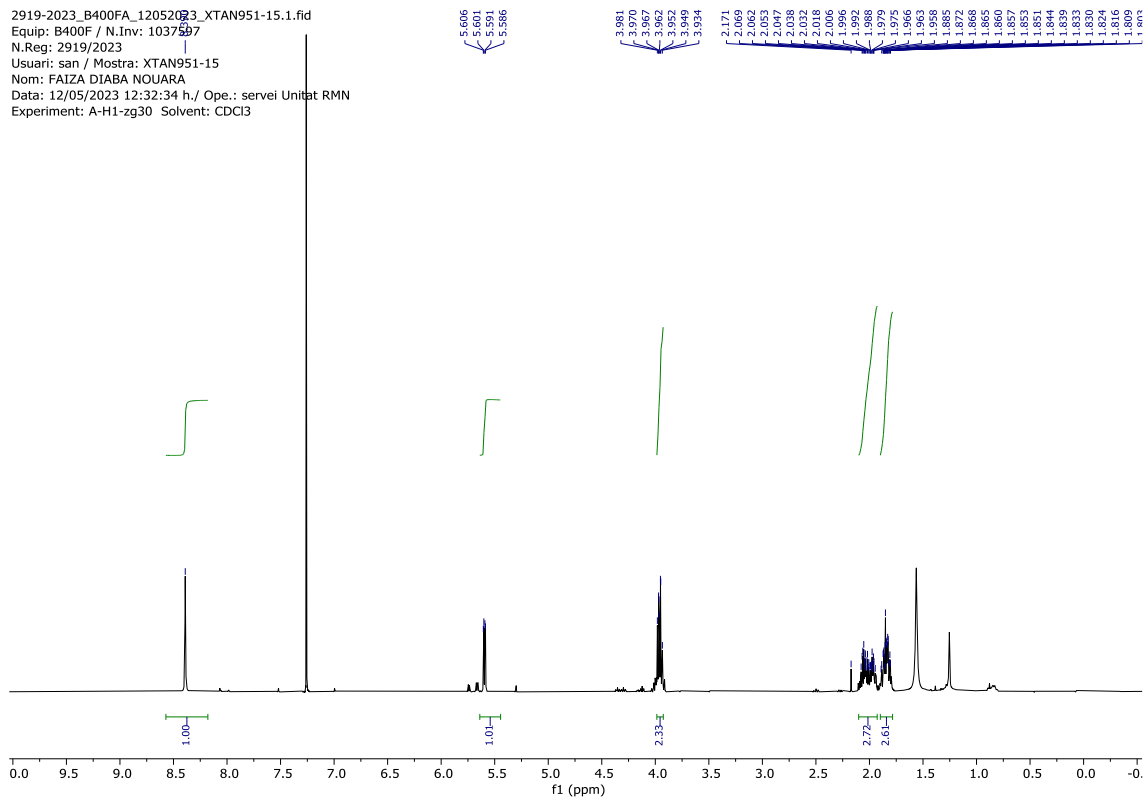


23070654_B400FA_21072023_XGT938-10-B.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 23070654
 Usuari: san / Mostra: XGT938-10-B
 Nom: GISELA TRENCHS MIR
 Data: 21/07/2023 14:06:12 h./ Ope.: AUTOSERVEI
 Experiment: A-C13-zpgg30 Solvent: CDCl3





2919-2023_B400FA_12052023_XTAN951-15.1.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 2919/2023
 Usuari: san / Mostra: XTAN951-15
 Nom: FAIZA DIABA NOUARA
 Data: 12/05/2023 12:32:34 h./ Ope.: servei Unitat RMN
 Experiment: A-H1-zg30 Solvent: CDCl3



2919-2023_B400FA_12052023_XTAN951-15.2.fid
 Equip: B400F / N.Inv: 1037597
 N.Reg: 2919/2023
 Usuari: san / Mostra: XTAN951-15
 Nom: FAIZA DIABA NOUARA
 Data: 12/05/2023 12:32:34 h./ Ope.: servei Unitat RMN
 Experiment: A-C13-zgpg30 Solvent: CDCl3

