Electronic Supplementary Material (ESI) for Organic & Biomolecular Chemistry.

Regioselective hydroarylation and arylation of maleimides with indazoles via a Rh(III)-catalyzed C−H activation

Asim Kumar Ghosh, Sadhanendu Samanta, Payel Ghosh, Sukanya Neogi, and Alakananda Hajra*

Department of Chemistry, Visva-Bharati (A Central University), Santiniketan 731235, India;
Tel./Fax: +913463 261526; E-mail: alakananda.hajra@visva-bharati.ac.in

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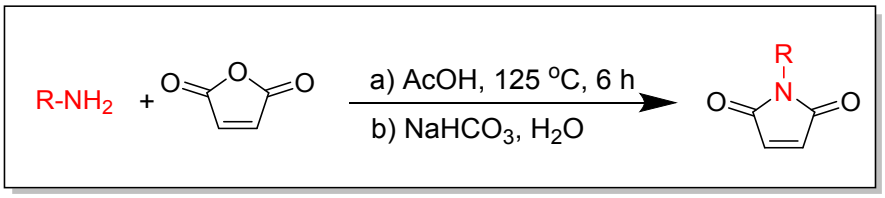
General Information. All reagents were purchased from commercial sources and used without further purification. ^{1}H NMR spectra were determined on 400 MHz spectrometer as solutions in $CDCl_3$. Chemical shifts are expressed in parts per million (δ) and the signals were reported as s (singlet), d (doublet), t (triplet), m (multiplate) and coupling constants (J) were given in Hz. $^{13}C\{^{1}H\}$ NMR spectra were recorded at 100 MHz in $CDCl_3$. Chemical shifts as internal standard are referenced to $CDCl_3$ (δ = 7.26 for ^{1}H and δ = 77.16 for $^{13}C\{^{1}H\}$ NMR) as internal standard. TLC was done on silica gel coated glass slide. All solvents were dried and distilled before use. All reactions involving moisture sensitive reactants were executed using oven dried glassware. Melting points (M.p.) were determined after recrystallization of solid compounds from a solution of dichloromethane/petroleum ether (1:3).

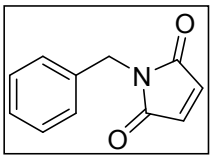
Starting Materials. All 2*H*-indazoles was prepared by the reported method.[1]



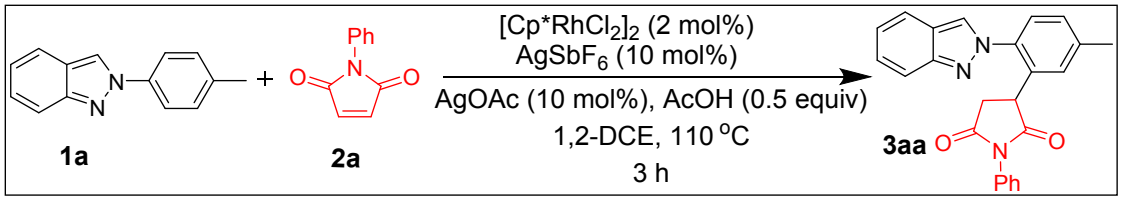
General procedure for the preparation of *N*-aryl & *N*-alkyl maleimides derivatives:[2] Maleic anhydride (2.0 equiv) were stirred in acetic acid (1.5 mL per mmol of amine) until maleic anhydride was dissolved completely. Then primary amine was added (1.0 equiv) to the reaction mixture and refluxed for 6 h at 125 °C. After completion of the reaction, the reaction mixture was allowed to cool down at room temperature and transfer to a 250 mL beaker. Saturated $NaHCO_3$ aqueous solution was added to the beaker containing reaction mixture until effervescence of CO_2 stop. Then, the aqueous mixture was extracted with ethyl acetate (3 x 10 mL). The organic phase was dried over anhydrous Na_2SO_4. The crude residue was obtained after evaporating the solvent in vacuum. Then crude residue was further washed with 1(N) HCl (2 x

20 mL) and brine solution (5 mL) respectively. The aqueous mixture was again extracted with ethyl acetate (3 x 10 mL). Finally, excess solvent was removed under reduced pressure and the residue was purified by column chromatography using ethyl acetate/hexane to get extra pure maleimide with high yields.

2. **Characterization data for the synthesized products:**

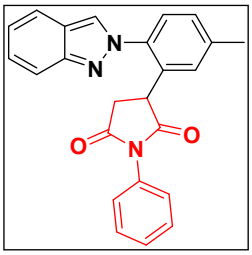


1-Benzyl-1H-pyrrole-2,5-dione **(2h):** Yellow solid (90%, 33 mg); R_f = 0.50 (PE : EA = 80 : 20); ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.30-7.20 (m, 5H), 6.64 (s, 2H), 4.62 (s, 2H); $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 170.5, 136.3, 134.2, 128.8, 128.4, 127.9, 41.5.

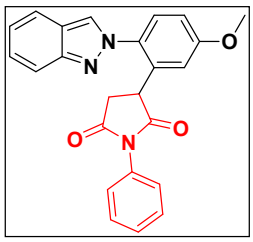


Typical experimental procedure for the synthesized compounds (3aa-3ga): A mixture of 2-(*p*-tolyl)-2*H*-indazole (0.2 mmol, 41.6 mg) (**1a**), $[Cp^*RhCl_2]_2$ (2 mol%, 2.4 mg), $AgSbF_6$ (10 mol%, 6.8 mg), and AgOAc (10 mol%, 3.3 mg) were taken in an oven dried screw-capped reaction tube. Then 1,2-DCE (2 mL) and AcOH (0.5 equiv, 6.0 mg) were added to the mixture and stirred for 5 min at room temperature under open atmosphere. After that, 1-phenyl-1*H*-pyrrole-2,5-dione (**2a)** (0.24 mmol, 41.5 mg) was added, and the resultant mixture was stirred at 110 ^{o}C for 3 h. After completion of the reaction (TLC), the reaction was cooled to room temperature and extracted with dichloromethane. The organic phase was dried over anhydrous Na_2SO_4. The crude residue was obtained after evaporating the solvent in vacuum and was

purified by column chromatography on silica gel using a mixture of petroleum ether and ethyl acetate (72:28) as an eluting solvent to afford the pure product **3aa** (67 mg, 89%) as a light yellow solid.

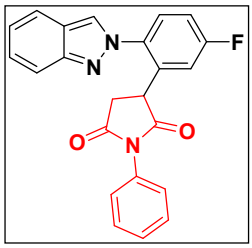


3-(2-(2H-Indazol-2-yl)-5-methylphenyl)-1-phenylpyrrolidine-2,5-dione **(3aa)**: Light yellow solid (89%, 67 mg); R_f = 0.50 (PE : EA = 72 : 28); M.p. 143-144 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.24 (s, 1H), 7.71-7.65 (m, 2H), 7.38 (d, J = 8.0 Hz, 1H), 7.35-7.28 (m, 5H), 7.23 (s, 1H), 7.15-7.11 (m, 1H), 6.92-6.90 (m, 2H), 4.21 (t, J = 8.4 Hz, 1H), 3.26 (d, J = 8.4 Hz, 2H), 2.46 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 176.1, 175.1, 149.7, 140.1, 137.7, 132.7, 131.8, 131.2, 129.7, 128.9, 128.4, 127.09, 127.07, 126.3, 125.3, 122.6, 122.4, 120.6, 117.9, 43.9, 38.0, 21.3; Anal. Calcd for $C_{24}H_{19}N_3O_2$: C, 75.57; H, 5.02; N, 11.02%; Found: C, 75.38; H, 4.98; N, 11.11%.

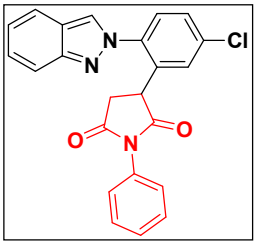


3-(2-(2H-Indazol-2-yl)-5-methoxyphenyl)-1-phenylpyrrolidine-2,5-dione **(3ba):** Brown solid (73%, 58 mg); R_f = 0.45 (PE : EA = 65 : 35); M.p. 148-149 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.21 (s, 1H), 7.71-7.65 (m, 2H), 7.42 (d, J = 8.8 Hz, 1H), 7.35-7.28 (m, 4H), 7.13 (t, J = 7.6 Hz, 1H), 7.00-6.98 (m, 1H), 6.94 (d, J = 2.8 Hz, 1H), 6.89-6.87 (m, 2H), 4.20-4.16 (m, 1H), 3.89 (s,

3H), 3.28-3.25 (m, 2H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 175.9, 175.0, 160.4, 149.7, 134.5, 133.2, 131.8, 129.0, 128.6, 128.5, 127.0, 126.4, 125.6, 122.6, 122.4, 120.6, 117.9, 116.3, 113.4, 55.8, 44.0, 37.9; Anal. Calcd for $C_{24}H_{19}N_3O_3$: C, 72.53; H, 4.82; N, 10.57; Found: C, 72.66; H, 4.85; N, 10.52%.

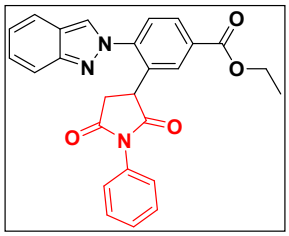


3-(5-Fluoro-2-(2H-indazol-2-yl)phenyl)-1-phenylpyrrolidine-2,5-dione **(3ca):** White solid (81%, 62 mg); R_f = 0.50 (PE : EA = 67 : 33); M.p. 177-178 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.23 (s, 1H), 7.71-7.65 (m, 2H), 7.50-7.47 (m, 1H), 7.35-7.29 (m, 4H), 7.23-7.13 (m, 3H), 6.89-6.87 (m, 2H), 4.22 (t, J = 8.4 Hz, 1H), 3.27-3.25 (m, 2H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 175.3, 174.6, 162.7 (d, $J_{C\text{-}F}$ = 249.0 Hz), 149.9, 136.4, 136.3, 135.5 (d, $J_{C\text{-}F}$ = 8.0 Hz), 131.6, 129.2 (d, $J_{C\text{-}F}$ = 8.0 Hz), 129.0, 128.6, 127.3, 126.3, 125.5, 122.7 (d, $J_{C\text{-}F}$ = 8.0 Hz), 120.6, 117.9 (d, $J_{C\text{-}F}$ = 10.0 Hz), 117.6, 116.0 (d, $J_{C\text{-}F}$ = 22.0 Hz), 43.9, 37.7; Anal. Calcd for $C_{23}H_{16}FN_3O_2$: C, 71.68; H, 4.18; N, 10.90%; Found: C, 71.85; H, 4.23; N, 10.79%.

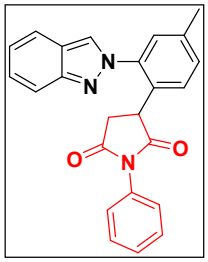


3-(5-Chloro-2-(2H-indazol-2-yl)phenyl)-1-phenylpyrrolidine-2,5-dione **(3da):** White solid (91%, 73 mg); R_f = 0.50 (PE : EA = 71 : 29); M.p. 158-159 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.23 (s, 1H), 7.71-7.62 (m, 2H), 7.49-7.42 (m, 3H), 7.34-7.27 (m, 4H), 7.16-7.13 (m, 1H), 6.87-

6.83 (m, 2H), 4.25-4.21 (m, 1H), 3.28-3.24 (m, 2H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 175.3, 174.6, 149.9, 138.5, 135.5, 134.5, 131.6, 131.2, 129.2, 128.9, 128.5, 128.3, 127.4, 126.2, 125.2, 122.9, 122.5, 120.6, 117.9, 44.1, 37.7; HRMS (ESI-TOF) *m/z*: $[M + Na]^+$ Calcd for $C_{23}H_{16}ClN_3O_2Na$: 424.0823; found: 424.0816.

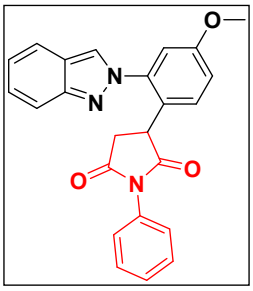


Ethyl-3-(2,5-dioxo-1-phenylpyrrolidin-3-yl)-4-(2H-indazol-2-yl)benzoate **(3ea):** Light yellow solid (79%, 69 mg); R_f = 0.45 (PE : EA = 69 : 31); M.p. 169-170 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.32 (s, 1H), 8.19-8.16 (m, 2H), 7.72 (d, J = 8.8 Hz, 1H), 7.63-7.59 (m, 2H), 7.34-7.27 (m, 4H), 7.17-7.13 (m, 1H), 6.88-6.86 (m, 2H), 4.47-4.38 (m, 3H), 3.37-3.34 (m, 2H), 1.46-1.42 (m, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 175.5, 174.9, 165.2, 150.2, 143.3, 133.0, 132.8, 131.7, 131.5, 130.3, 129.0, 128.5, 127.6, 126.9, 126.3, 125.1, 123.1, 122.7, 120.7, 118.0, 61.8, 44.6, 37.9, 14.4; HRMS (ESI-TOF) *m/z*: $[M + H]^+$ Calcd for $C_{26}H_{22}N_3O_4$: 440.1605; found: 440.1602.

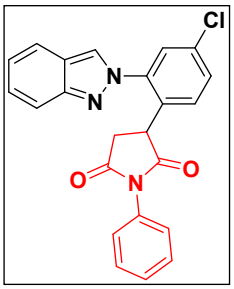


3-(2-(2H-Indazol-2-yl)-4-methylphenyl)-1-phenylpyrrolidine-2,5-dione **(3fa):** Yellow solid (93%, 71 mg); R_f = 0.45 (PE : EA = 74 : 26); M.p. 138-139 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.27 (s, 1H), 7.71-7.66 (m, 2H), 7.34-7.28 (m, 7H), 7.13 (t, J = 8.0 Hz, 1H), 6.91-6.89 (m, 2H),

4.21-4.17 (m, 1H), 3.22-3.20 (m, 2H), 2.43 (s, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 176.1, 175.1, 149.7, 139.7, 139.3, 131.8, 130.4, 129.8, 128.8, 128.3, 127.7, 127.0, 126.3, 125.2, 122.5, 122.3, 120.5, 117.9, 43.6, 37.8, 20.9; Anal. Calcd for $C_{24}H_{19}N_3O_2$: C, 75.57; H, 5.02; N, 11.02%; Found: C, 75.76; H, 5.05; N, 11.10%.

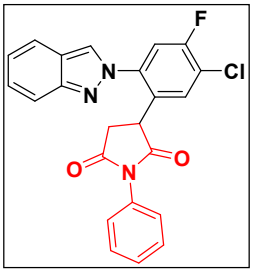


3-(2-(2H-Indazol-2-yl)-4-methoxyphenyl)-1-phenylpyrrolidine-2,5-dione (**3ga**): Light yellow solid (88%, 69 mg); R_f = 0.45 (PE : EA = 59 : 41); M.p. 147-148 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.25 (s, 1H), 7.68-7.63 (m, 2H), 7.30-7.25 (m, 5H), 7.11 (t, J = 7.6 Hz, 1H), 7.03-7.01 (m, 2H), 6.87 (d, J = 8.0 Hz, 2H), 4.13 (t, J = 8.0 Hz, 1H), 3.81 (s, 3H), 3.16 (d, J = 8.0 Hz, 2H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 176.3, 175.1, 159.7, 149.7, 140.7, 131.8, 131.7, 128.8, 128.3, 127.1, 126.3, 125.2, 124.6, 122.6, 122.3, 120.6, 117.9, 115.4, 112.7, 55.7, 43.4, 37.8; Anal. Calcd for $C_{24}H_{19}N_3O_3$: C, 72.53; H, 4.82; N, 10.57%; Found: C, 72.75; H, 4.88; N, 10.48%.

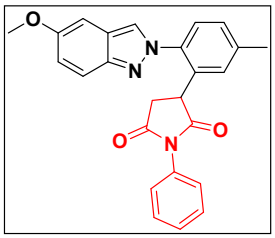


3-(4-Chloro-2-(2H-indazol-2-yl)phenyl)-1-phenylpyrrolidine-2,5-dione **(3ha):** Brown solid (85%, 68 mg); R_f = 0.45 (PE : EA = 70 : 30); M.p. 153-154 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ

8.25 (s, 1H), 7.70-7.62 (m, 2H), 7.51-7.45 (m, 2H), 7.36-7.27 (m, 5H), 7.14 (t, J = 8.0 Hz, 1H), 6.87-6.84 (m, 2H), 4.23 (t, J = 8.0 Hz, 1H), 3.21 (d, J = 7.6 Hz, 2H); $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 175.5, 174.7, 149.9, 140.7, 134.4, 132.3, 131.6, 131.2, 129.7, 128.9, 128.4, 127.4, 127.1, 126.2, 125.1, 122.9, 122.4, 120.6, 117.9, 43.8, 37.6; Anal. Calcd for $C_{23}H_{16}ClN_3O_2$: C, 68.75; H, 4.01; N, 10.46%; Found: C, 68.90; H, 3.97; N, 10.35%.

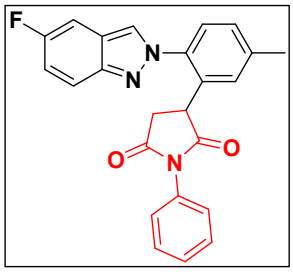


3-(5-Chloro-4-fluoro-2-(2H-indazol-2-yl)phenyl)-1-phenylpyrrolidine-2,5-dione **(3ia):** White solid (87%, 72 mg); R_f = 0.50 (PE : EA = 65 : 35); M.p. 173-174 °C; ^1H NMR (400 MHz, $CDCl_3$): δ 8.23 (s, 1H), 7.71-7.58 (m, 3H), 7.33-7.25 (m, 5H), 7.15 (t, J = 8.4 Hz, 1H), 6.86-6.83 (m, 2H), 4.22 (t, J = 8.0 Hz, 1H), 3.25 (d, J = 8.0 Hz, 2H); $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 175.0, 174.4, 158.2 (d, $J_{C\text{-}F}$ = 252.0 Hz), 150.0, 136.6 (d, $J_{C\text{-}F}$ = 4.0 Hz), 133.5 (d, $J_{C\text{-}F}$ = 6.0 Hz), 131.5, 129.5, 129.0, 128.6, 127.6, 126.2, 125.4, 123.2, 122.6, 121.5 (d, $J_{C\text{-}F}$ = 19.0 Hz), 120.6, 118.9 (d, $J_{C\text{-}F}$ = 23.0 Hz), 117.9, 43.8, 37.6; Anal. Calcd for $C_{23}H_{15}ClFN_3O_2$: C, 65.80; H, 3.60; N, 10.01%; Found: C, 65.64; H, 3.62; N, 9.92%.

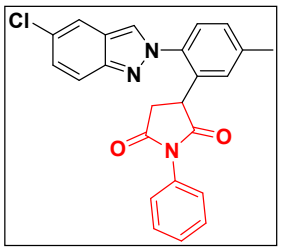


3-(2-(5-Methoxy-2H-indazol-2-yl)-5-methylphenyl)-1-phenylpyrrolidine-2,5-dione **(3ja)**: Brown gummy mass (86%, 70 mg); R_f = 0.55 (PE : EA = 64 : 36); ^1H NMR (400 MHz, $CDCl_3$):

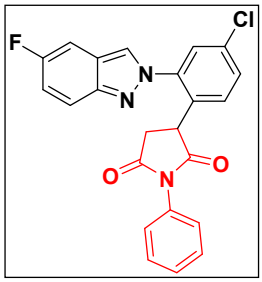
δ 8.07 (s, 1H), 7.54 (d, J = 9.6 Hz, 1H), 7.36-7.25 (m, 5H), 7.21 (s, 1H), 7.01-6.98 (m, 1H), 6.95-6.93 (m, 2H), 6.88 (d, J = 2.4 Hz, 1H), 4.20 (t, J = 8.0 Hz, 1H), 3.82 (s, 3H), 3.20 (d, J = 8.0 Hz, 2H), 2.44 (s, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 176.1, 175.1, 155.6, 146.5, 139.7, 137.5, 132.4, 131.8, 131.4, 129.5, 128.8, 128.3, 126.8, 126.3, 124.1, 122.3, 122.1, 119.2, 96.4, 55.4, 44.0, 37.8, 21.1; Anal. Calcd for $C_{25}H_{21}N_3O_3$: C, 72.98; H, 5.14; N, 10.21%; Found: C, 72.76; H, 5.19; N, 10.31%.



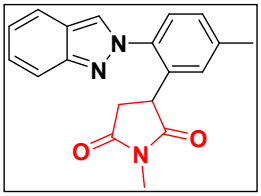
3-(2-(5-Fluoro-2H-indazol-2-yl)-5-methylphenyl)-1-phenylpyrrolidine-2,5-dione **(3ka):** Yellow solid (76%, 60 mg); R_f = 0.40 (PE : EA = 71 : 29); M.p. 175-176 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.20 (s, 1H), 7.63-7.60 (m, 1H), 7.39-7.24 (m, 7H), 7.12-7.07 (m, 1H), 6.94-6.92 (m, 2H), 4.24-4.20 (m, 1H), 3.27-3.24 (m, 2H), 2.46 (s, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 176.1, 175.1, 160.0, 147.2, 140.3, 137.5, 132.5, 131.6 (d, $J_{C\text{-}F}$ = 36.0 Hz), 129.8, 129.0, 128.5, 127.0, 126.2, 125.4 (d, $J_{C\text{-}F}$ = 8.0 Hz), 121.7 (d, $J_{C\text{-}F}$ = 12.0 Hz), 120.1 (d, $J_{C\text{-}F}$ = 10.0 Hz), 118.9, 118.6, 102.9 (d, $J_{C\text{-}F}$ = 24.0 Hz), 44.0, 37.9, 21.3; Anal. Calcd for $C_{24}H_{18}FN_3O_2$: C, 72.17; H, 4.54; N, 10.52%; Found: C, 72.31; H, 4.61; N, 10.43%.



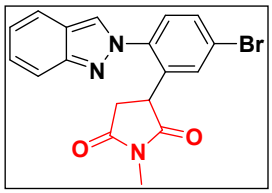
3-(2-(5-Chloro-2H-indazol-2-yl)-5-methylphenyl)-1-phenylpyrrolidine-2,5-dione **(3la):** White solid (81%, 67 mg); R_f = 0.50 (PE : EA = 68 : 32); M.p. 179-180 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.19 (s, 1H), 7.67 (s, 1H), 7.58 (d, J = 9.2 Hz, 1H), 7.38-7.29 (m, 5H), 7.24-7.21 (m, 2H), 6.92-6.90 (m, 2H), 4.20 (t, J = 7.2 Hz, 1H), 3.25-3.23 (m, 2H), 2.46 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 176.0, 175.0, 148.0, 140.4, 137.3, 132.6, 131.8, 131.4, 129.8, 129.0, 128.55, 128.50, 128.3, 127.0, 126.2, 125.0, 122.7, 119.5, 119.3, 44.0, 37.9, 21.3; Anal. Calcd for $C_{24}H_{18}ClN_3O_2$: C, 69.31; H, 4.36; N, 10.10%; Found: C, 69.18; H, 4.32; N, 10.04%.



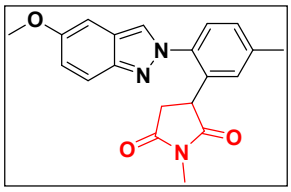
3-(4-Chloro-2-(5-fluoro-2H-indazol-2-yl)phenyl)-1-phenylpyrrolidine-2,5-dione **(3ma):** Yellow solid (92%, 77 mg); R_f = 0.50 (PE : EA = 70 : 30); M.p. 160-161 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.24 (s, 1H), 7.63-7.60 (m, 1H), 7.53-7.49 (m, 2H), 7.40-7.27 (m, 5H), 7.14-7.09 (m, 1H), 6.91 (d, J = 8.4 Hz, 2H), 4.29-4.25 (m, 1H), 3.25-3.22 (m, 2H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 175.5, 174.7, 158.9 (d, $J_{C\text{-}F}$ = 240.0 Hz), 147.3, 140.5, 134.6, 132.4, 131.6, 131.1, 129.8, 128.9, 128.5, 127.1, 126.1, 125.2 (d, $J_{C\text{-}F}$ = 9.0 Hz), 121.8 (d, $J_{C\text{-}F}$ = 12.0 Hz), 120.1 (d, $J_{C\text{-}F}$ = 9.0 Hz), 119.2 (d, $J_{C\text{-}F}$ = 29.0 Hz), 102.9 (d, $J_{C\text{-}F}$ = 25.0 Hz), 43.8, 37.6; Anal. Calcd for $C_{23}H_{15}ClFN_3O_2$: C, 65.80; H, 3.60; N, 10.01%; Found: C, 65.96; H, 3.53; N, 10.10%.



3-(2-(2H-Indazol-2-yl)-5-methylphenyl)-1-methylpyrrolidine-2,5-dione **(3ab):** Light yellow solid (80%, 51 mg); R_f = 0.40 (PE : EA = 69 : 29); M.p. 134-135 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.19 (s, 1H), 7.71-7.64 (m, 2H), 7.36 (d, J = 8.0 Hz, 1H), 7.32-7.25 (m, 2H), 7.11 (t, J = 8.8 Hz, 2H), 4.03-3.99 (m, 1H), 3.07 (t, J = 9.6 Hz, 2H), 2.68 (s, 3H), 2.43 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 177.4, 176.3, 149.5, 140.1, 137.5, 133.1, 130.8, 129.5, 126.95, 126.91, 125.3, 122.5, 122.3, 120.5, 117.7, 43.5, 38.1, 25.0, 21.2; Anal. Calcd for $C_{19}H_{17}N_3O_2$: C, 71.46; H, 5.37; N, 13.16%; Found: C, 71.26; H, 5.34; N, 13.04%.

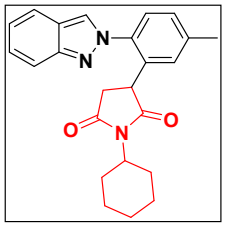


3-(5-Bromo-2-(2H-indazol-2-yl)phenyl)-1-methylpyrrolidine-2,5-dione **(3nb):** Yellow gummy mass (88%, 67 mg); R_f = 0.45 (PE : EA = 69 : 29); ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.19 (s, 1H), 7.69 (d, J = 8.4 Hz, 1H), 7.65-7.59 (m, 2H), 7.50 (d, J = 2.4 Hz, 1H), 7.36-7.30 (m, 2H), 7.12 (t, J = 8.0 Hz, 1H), 4.07-4.03 (m, 1H), 3.10-3.07 (m, 2H), 2.66 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 176.5, 175.7, 149.7, 139.0, 135.3, 133.7, 132.1, 128.4, 127.3, 125.2, 123.5, 122.9, 122.5, 120.5, 117.8, 43.5, 37.9, 25.1; Anal. Calcd for $C_{18}H_{14}BrN_3O_2$: C, 56.27; H, 3.67; N, 10.94%; Found: C, 56.15; H, 3.71; N, 11.01%.

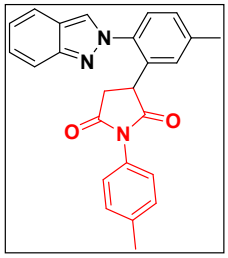


3-(2-(5-Methoxy-2H-indazol-2-yl)-5-methylphenyl)-1-methylpyrrolidine-2,5-dione **(3jb):** White solid (84%, 58 mg); R_f = 0.45 (PE : EA = 68 : 32); M.p. 165-167 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.06 (s, 1H), 7.56 (d, J = 9.2 Hz, 1H), 7.36 (d, J = 8.4 Hz, 1H), 7.27 (s, 1H), 7.13 (s,

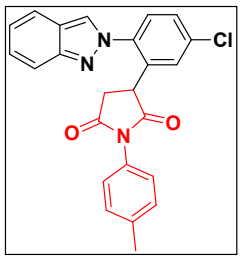
1H), 7.04-7.01 (m, 1H), 6.91 (d, J =2.4 Hz, 1H), 4.06-4.02 (m, 1H), 3.85 (s, 3H), 3.10-3.05 (m, 2H), 2.72 (s, 3H), 2.44 (s, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 177.5, 176.3, 155.6, 146.4, 139.8, 137.6, 133.0, 131.0, 129.5, 126.8, 124.2, 122.3, 122.1, 119.1, 96.4, 55.4, 43.6, 38.1, 25.0, 21.2; Anal. Calcd for $C_{20}H_{19}N_3O_3$: C, 68.75; H, 5.48; N, 12.03%; Found: C, 68.96; H, 5.43; N, 11.92%.



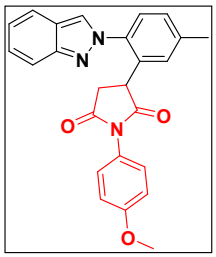
3-(2-(2H-Indazol-2-yl)-5-methylphenyl)-1-cyclohexylpyrrolidine-2,5-dione **(3ac)**: Yellow gummy mass (75%, 58 mg); R_f = 0.50 (PE : EA = 75 : 25); ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.26 (s, 1H), 7.71 (d, J = 8.8 Hz, 2H), 7.35-7.29 (m, 2H), 7.24 (d, J = 8.0 Hz, 1H), 7.11 (t, J = 7.6 Hz, 1H), 7.02 (s, 1H), 3.94-3.85 (m, 2H), 3.07-3.00 (m, 1H), 2.92-2.86 (m, 1H), 2.42 (s, 3H), 2.14 (s, 1H), 2.06-1.97 (m, 2H), 1.75 (d, J = 10.8 Hz, 2H), 1.60 (d, J = 11.2 Hz, 1H), 1.40 (d, J = 9.2 Hz, 1H), 1.25-1.19 (m, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 177.6, 176.2, 149.6, 140.2, 138.0, 133.7, 129.3, 129.0, 127.1, 126.8, 125.5, 122.4, 122.2, 120.5, 117.8, 52.0, 42.0, 38.0, 28.7, 25.8, 25.0, 21.3; Anal. Calcd for $C_{24}H_{25}N_3O_2$: C, 74.39; H, 6.50; N, 10.84%; Found: C, 74.62; H, 6.53; N, 10.96%.



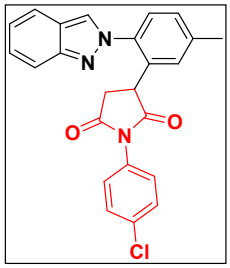
3-(2-(2H-Indazol-2-yl)-5-methylphenyl)-1-(p-tolyl)pyrrolidine-2,5-dione **(3ad):** White solid (83%, 65 mg); R_f = 0.50 (PE : EA = 71 : 29); M.p. 155-156 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.24 (s, 1H), 7.71-7.66 (m, 2H), 7.38 (d, J = 8.0 Hz, 1H), 7.32-7.27 (m, 2H), 7.22 (s, 1H), 7.16-7.12 (m, 3H), 6.79 (d, J = 8.4 Hz, 2H), 4.19 (t, J = 8.0 Hz, 1H), 3.25-3.23 (m, 2H), 2.46 (s, 3H), 2.33 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 176.3, 175.2, 149.7, 140.1, 138.4, 137.7, 132.8, 131.1, 129.6, 129.2, 127.08, 127.02, 126.1, 125.3, 122.5, 122.4, 120.6, 117.9, 43.9, 38.0, 21.29, 21.24; Anal. Calcd for $C_{25}H_{21}N_3O_2$: C, 75.93; H, 5.35; N, 10.63%; Found: C, 76.05; H, 5.32; N, 10.55%.



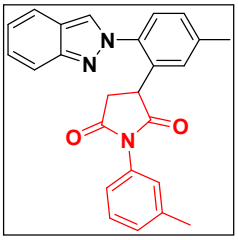
3-(5-Chloro-2-(2H-indazol-2-yl)phenyl)-1-(p-tolyl)pyrrolidine-2,5-dione **(3dd):** White solid (69%, 57 mg); R_f = 0.55 (PE : EA = 70 : 30); M.p. 192-194 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.24 (s, 1H), 7.72-7.64 (m, 2H), 7.50-7.43 (m, 3H), 7.33-7.29 (m, 1H), 7.17-7.11 (m, 3H), 6.74 (d, J = 8.4 Hz, 2H), 4.26-4.22 (m, 1H), 3.29-3.26 (m, 2H), 2.32 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 175.4, 174.7, 150.0, 138.6, 135.6, 134.7, 131.0, 129.7, 129.2, 129.0, 128.4, 127.4, 126.1, 125.3, 123.0, 122.6, 120.6, 118.0, 44.0, 37.8, 21.2; Anal. Calcd for $C_{24}H_{18}ClN_3O_2$: C, 69.31; H, 4.36; N, 10.10%; Found: C, 69.45; H, 4.41; N, 9.98%.



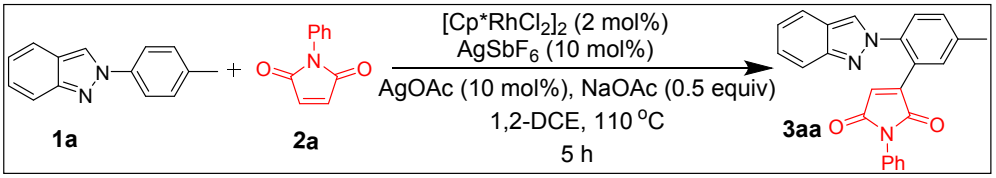
3-(2-(2H-Indazol-2-yl)-5-methylphenyl)-1-(4-methoxyphenyl)pyrrolidine-2,5-dione **(3ae):** Yellow solid (82%, 67 mg); R_f = 0.45 (PE : EA = 68 : 32); M.p. 188-189 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.23 (s, 1H), 7.71-7.65 (m, 2H), 7.38 (d, J = 8.0 Hz, 1H), 7.30 (t, J = 8.4 Hz, 2H), 7.22 (s, 1H), 7.13 (t, J = 7.6 Hz, 1H), 6.84-6.78 (m, 4H), 4.19 (t, J = 8.4 Hz, 1H), 3.77 (s, 3H), 3.26-3.24 (m, 2H), 2.46 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 176.4, 175.4, 159.4, 149.7, 140.1, 137.7, 132.8, 131.2, 129.6, 127.6, 127.1, 127.0, 125.4, 124.5, 122.6, 122.4, 120.6, 117.9, 114.3, 55.5, 43.9, 38.0, 21.3; Anal. Calcd for $C_{25}H_{21}N_3O_3$: C, 72.98; H, 5.14; N, 10.21%; Found: C, 73.21; H, 5.07; N, 10.11%.



3-(2-(2H-Indazol-2-yl)-5-methylphenyl)-1-(4-chlorophenyl)pyrrolidine-2,5-dione **(3af):** White solid (90%, 74 mg); R_f = 0.50 (PE : EA = 70 : 30); M.p. 190-191 °C; ^{1}H NMR (400 MHz, ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.20 (s, 1H), 7.69 (d, J = 8.4 Hz, 1H), 7.60 (d, J = 8.4 Hz, 1H), 7.38 (d, J = 8.0 Hz, 1H), 7.31-7.22 (m, 5H), 7.13 (t, J = 8.4 Hz, 1H), 6.76 (d, J = 8.8 Hz, 2H), 4.22-4.18 (m, 1H), 3.37-3.19 (m, 2H), 2.46 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 175.7, 174.8, 149.7, 140.0, 137.4, 134.0, 132.3, 132.0, 130.3, 129.8, 129.0, 127.5, 127.1, 127.0, 125.2, 122.7, 122.4, 120.6, 117.9, 44.5, 37.9, 21.2; Anal. Calcd for $C_{24}H_{18}ClN_3O_2$: C, 69.31; H, 4.36; N, 10.10%; Found: C, 69.43; H, 4.38; N, 10.04%.

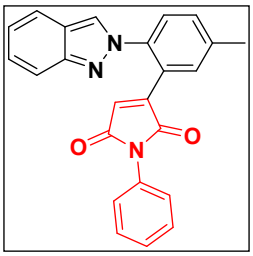


3-(2-(2H-Indazol-2-yl)-5-methylphenyl)-1-(m-tolyl)pyrrolidine-2,5-dione **(3ag):** Yellow gummy mass (87%, 68 mg); R_f = 0.45 (PE : EA = 75 : 25); ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.24 (s, 1H), 7.72-7.66 (m, 2H), 7.38 (d, J = 8.0 Hz, 1H), 7.30 (t, J = 8.4 Hz, 2H), 7.23-7.19 (m, 2H), 7.16-7.09 (m, 2H), 6.72 (d, J = 8.0 Hz, 1H), 6.55 (s, 1H), 4.22-4.18 (m, 1H) 3.38-3.21 (m, 2H), 2.46 (s, 3H), 2.26 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 176.1, 175.2, 149.7, 140.0, 139.0, 137.6, 132.7, 131.6, 131.5, 129.6, 129.3, 128.7, 127.1, 127.0, 125.3, 123.4, 122.6, 122.4, 120.6, 118.0, 44.1, 38.1, 21.3, 21.2; Anal. Calcd for $C_{25}H_{21}N_3O_2$: C, 75.93; H, 5.35; N, 10.63%; Found: C, 76.13; H, 5.31; N, 10.55%.

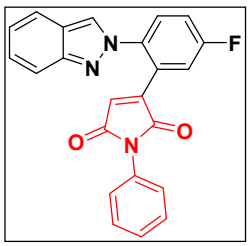


Typical experimental procedure for the synthesized compounds (4aa-4ga): A mixture of 2-(*p*-tolyl)-2*H*-indazole (0.2 mmol, 41.6 mg) (**1a**), $[Cp^*RhCl_2]_2$ (2 mol%, 2.4 mg), $AgSbF_6$ (10 mol%, 6.8 mg), AgOAc (10 mol%, 3.3 mg), and NaOAc (0.5 equiv, 8.2 mg) were taken in an oven dried screw-capped reaction tube. Then 1,2-DCE (2 mL) was added to the mixture and stirred for 5 min at room temperature under open atmosphere. After that, 1-phenyl-1*H*-pyrrole-2,5-dione (**2a**) (0.24 mmol, 41.5 mg) was added, and the resultant mixture was stirred at 110 °C for 5 h. After completion of the reaction (TLC), the reaction was cooled to room temperature and extracted with dichloromethane. The organic phase was dried over anhydrous Na_2SO_4. The crude

residue was obtained after evaporating the solvent in vacuum and was purified by column chromatography on silica gel using a mixture of petroleum ether and ethyl acetate (79:21) as an eluting solvent to afford the pure product **4aa** (50 mg, 67%) as a yellow solid.

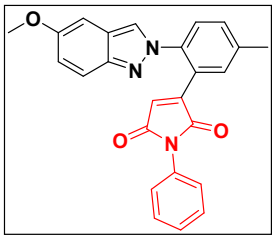


3-(2-(2H-Indazol-2-yl)-5-methylphenyl)-1-phenyl-1H-pyrrole-2,5-dione **(4aa):** Yellow solid (67%, 50 mg); R_f = 0.50 (PE : EA = 79 : 21); M.p. 125-126 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.29 (s, 1H), 7.74-7.68 (m, 2H), 7.55 (d, J = 8.4 Hz, 2H), 7.45 (d, J = 8.0 Hz, 1H), 7.34-7.29 (m, 3H), 7.26-7.25 (m, 1H), 7.14 (t, J = 8.0 Hz, 1H), 7.00-6.98 (m, 2H), 6.48 (s, 1H), 2.51 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 169.2, 167.8, 149.7, 145.4, 139.4, 137.3, 132.1, 131.9, 131.4, 129.0, 127.7, 127.1, 126.7, 126.0, 125.4, 124.7, 124.5, 122.9, 122.8, 120.7, 117.6, 21.2; Anal. Calcd for $C_{24}H_{17}N_3O_2$: C, 75.98; H, 4.52; N, 11.08%; Found: C, 75.86; H, 4.56; N, 11.03%.

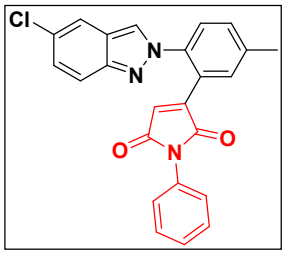


3-(5-Fluoro-2-(2H-indazol-2-yl)phenyl)-1-phenyl-1H-pyrrole-2,5-dione **(4ca):** Light yellow solid (52%, 39 mg); R_f = 0.50 (PE : EA = 78 : 22); M.p. 129-130 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.27 (s, 1H), 7.74-7.69 (m, 2H), 7.66-7.62 (m, 1H), 7.57-7.55 (m, 1H), 7.38-7.27 (m, 5H), 7.18-7.14 (m, 1H), 7.01-6.99 (m, 2H), 6.42 (s, 1H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ

167.5, 163.4, 160.9, 149.9, 143.3, 131.2, 129.3, 129.1, 127.9, 127.8, 127.7, 127.5, 127.1, 126.0, 124.8, 123.0 (d, $J_{C\text{-}F}$ = 19.0 Hz), 120.7, 118.6, 118.4, 118.3 (d, $J_{C\text{-}F}$ = 14.0 Hz), 117.7; Anal. Calcd for $C_{23}H_{14}FN_3O_2$: C, 72.06; H, 3.68; N, 10.96%; Found: C, 72.24; H, 3.66; N, 11.03%.

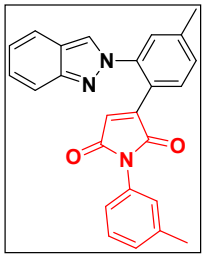


3-(2-(5-Methoxy-2H-indazol-2-yl)-5-methylphenyl)-1-phenyl-1H-pyrrole-2,5-dione **(4ja):** Brown solid (71%, 58 mg); R_f = 0.45 (PE : EA = 72 : 28); M.p. 162-163 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.15 (s, 1H), 7.60-7.52 (m, 3H), 7.45-7.43 (m, 1H), 7.34-7.30 (m, 2H), 7.27-7.24 (m, 1H), 7.04-7.00 (m, 3H), 6.91 (d, J = 2.0 Hz, 1H), 6.49 (s, 1H), 3.85 (s, 3H), 2.50 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 169.3, 167.9, 155.7, 146.7, 145.7, 139.1, 137.4, 132.1, 131.9, 131.5, 129.0, 127.7, 126.5, 126.1, 125.2, 124.5, 123.4, 123.0, 122.3, 119.0, 96.5, 55.4, 21.2; Anal. Calcd for $C_{25}H_{19}N_3O_3$: C, 73.34; H, 4.68; N, 10.26%; Found: C, 73.17; H, 4.71; N, 10.14%.

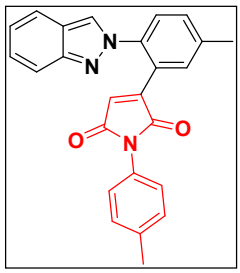


3-(2-(5-Chloro-2H-indazol-2-yl)-5-methylphenyl)-1-phenyl-1H-pyrrole-2,5-dione **(4la):** Yellow solid (69%, 56 mg); R_f = 0.45 (PE : EA = 72 : 28); M.p. 141-142 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.25 (s, 1H), 7.70 (s, 1H), 7.64 (d, J = 9.2 Hz, 1H), 7.54 (d, J = 8.0 Hz, 2H), 7.47-7.45 (m, 1H), 7.35-7.31 (m, 2H), 7.28-7.24 (m, 2H), 6.99 (d, J = 7.6 Hz, 2H), 6.52 (s, 1H),

2.51 (s, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 169.1, 167.8, 148.0, 145.5, 139.7, 137.0, 132.2, 132.0, 131.4, 129.1, 128.6, 128.4, 127.8, 126.8, 126.0, 125.3, 124.7, 124.1, 123.2, 119.4, 119.2, 21.2; Anal. Calcd for $C_{24}H_{16}ClN_3O_2$: C, 69.65; H, 3.90; N, 10.15%; Found: C, 69.80; H, 3.92; N, 10.09%.

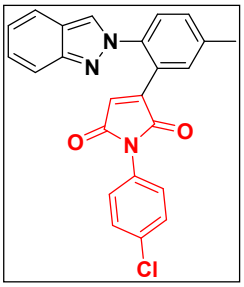


3-(2-(2H-Indazol-2-yl)-4-methylphenyl)-1-(m-tolyl)-1H-pyrrole-2,5-dione **(4ag):** Light yellow liquid (64%, 50 mg); R_f = 0.45 (PE : EA = 79 : 21); ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.30 (s, 1H), 7.74-7.70 (m, 2H), 7.55 (t, J = 4.8 Hz, 2H), 7.45 (d, J = 7.2 Hz, 1H), 7.35-7.31 (m, 1H), 7.21-7.13 (m, 2H), 7.05 (d, J = 7.6 Hz, 1H), 6.82 (d, J = 7.6 Hz, 1H), 6.66 (s, 1H), 6.51 (s, 1H), 2.51 (s, 3H), 2.22 (s, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 169.3, 167.9, 149.7, 145.5, 139.4, 139.0, 137.4, 132.1, 131.9, 131.3, 128.8, 128.6, 127.1, 126.8, 126.6, 125.4, 124.9, 124.7, 123.2, 122.9, 122.8, 120.8, 117.7, 21.3, 21.2; Anal. Calcd for $C_{25}H_{19}N_3O_2$: C, 76.32; H, 4.87; N, 10.68%; Found: C, 76.44; H, 4.84; N, 10.71%.

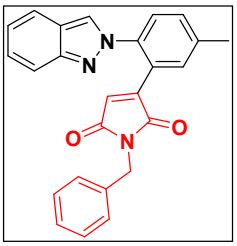


3-(2-(2H-Indazol-2-yl)-5-methylphenyl)-1-(p-tolyl)-1H-pyrrole-2,5-dione **(4ad):** Yellow solid (76%, 59 mg); R_f = 0.50 (PE : EA = 77 : 23); M.p. 135-136 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.28 (s, 1H), 7.71 (t, J = 8.4 Hz, 2H), 7.57-7.53 (m, 2H), 7.45-7.43 (m, 1H), 7.34-7.30 (m, 1H),

7.15-7.10 (m, 3H), 6.87 (d, J = 8.4 Hz, 2H), 6.45 (s, 1H), 2.50 (s, 3H), 2.30 (s, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 169.4, 168.0, 149.7, 145.2, 139.4, 137.8, 137.4, 132.1, 131.9, 129.7, 128.8, 127.1, 126.7, 126.0, 125.5, 124.9, 124.5, 122.9, 122.8, 120.7, 117.7, 21.26, 21.20; HRMS (ESI-TOF) *m/z*: $[M + H]^+$ Calcd for $C_{25}H_{20}N_3O_2$: 394.1550; found: 394.1548.

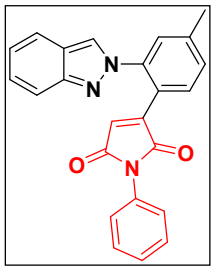


3-(2-(2H-Indazol-2-yl)-5-methylphenyl)-1-(4-chlorophenyl)-1H-pyrrole-2,5-dione **(4af):** Yellow solid (77%, 63 mg); R_f = 0.55 (PE : EA = 70 : 30); M.p. 149-150 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.31 (s, 1H), 7.74-7.65 (m, 2H), 7.55 (t, J = 8.0 Hz, 2H), 7.46 (d, J = 9.6 Hz, 1H), 7.34-7.32 (m, 1H), 7.30-7.24 (m, 2H), 7.16-7.14 (m, 1H), 6.93-6.90 (m, 2H), 6.52 (s, 1H), 2.50 (s, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 168.9, 167.4, 149.7, 145.9, 139.4, 137.3, 133.3, 132.3, 131.9, 130.0, 129.2, 127.2, 127.1, 126.8, 126.5, 125.2, 124.6, 122.9, 122.8, 120.7, 117.5, 21.2; Anal. Calcd for $C_{24}H_{16}ClN_3O_2$: C, 69.65; H, 3.90; N, 10.15%; Found: C, 69.47; H, 3.92; N, 10.12%.

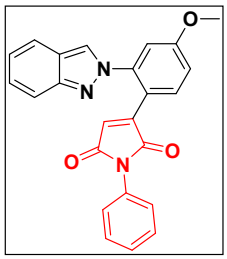


3-(2-(2H-Indazol-2-yl)-5-methylphenyl)-1-benzyl-1H-pyrrole-2,5-dione **(4ah):** Yellow gummy mass (81%, 63 mg); R_f = 0.45 (PE : EA = 79 : 21); ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.22 (s, 1H), 7.68 (d, J = 8.4 Hz, 1H), 7.56-7.48 (m, 3H), 7.42-7.40 (m, 1H), 7.30-7.26 (m, 1H), 7.21-7.20 (m,

3H), 7.13-7.10 (m, 3H), 6.30 (s, 1H), 4.49 (s, 2H), 2.48 (s, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 170.0, 168.9, 149.6, 145.0, 139.3, 137.4, 136.2, 131.9, 128.7, 128.2, 127.7, 127.0, 126.9, 125.9, 124.9, 124.2, 122.7, 122.6, 120.5, 117.9, 41.6, 21.2; Anal. Calcd for $C_{25}H_{19}N_3O_2$: C, 76.32; H, 4.87; N, 10.68%; Found: C, 76.54; H, 4.92; N, 10.73%.

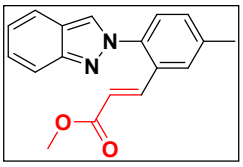


3-(2-(2H-Indazol-2-yl)-4-methylphenyl)-1-phenyl-1H-pyrrole-2,5-dione **(4fa):** Yellow solid (79%, 59 mg); R_f = 0.50 (PE : EA = 79 : 21); M.p. 116-117 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.20 (s, 1H), 7.64-7.59 (m, 3H), 7.38 (s, 1H), 7.30 (d, J = 7.6 Hz, 1H), 7.24-7.19 (m, 3H), 7.16 (t, J = 4.4 Hz, 1H), 7.07-7.03 (m, 1H), 6.92-6.90 (m, 2H), 6.28 (s, 1H) 2.42 (s, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 169.3, 168.0, 149.8, 144.9, 142.5, 139.6, 131.5, 131.4, 129.9, 129.0, 127.7, 127.2, 126.5, 126.2, 126.1, 124.5, 122.9, 122.2, 120.7, 117.7, 21.5; HRMS (ESI-TOF) *m/z*: $[M + Na]^+$ Calcd for $C_{24}H_{17}N_3O_2Na$: 402.1213; found: 402.1215.

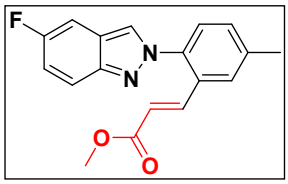


3-(2-(2H-Indazol-2-yl)-4-methoxyphenyl)-1-phenyl-1H-pyrrole-2,5-dione **(4ga):** Light yellow solid (55%, 43 mg); R_f = 0.50 (PE : EA = 70 : 30); M.p. 136-137 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.28 (s, 1H), 7.81 (d, J = 8.4 Hz, 1H), 7.74-7.71 (m, 2H), 7.36-7.27 (m, 4H), 7.18-7.10 (m, 3H), 7.03 (d, J = 7.2 Hz, 2H), 6.18 (s, 1H), 3.93 (s, 3H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$):

δ 169.4, 168.3, 162.0, 149.8, 144.1, 141.2, 132.9, 131.5, 129.0, 127.7, 127.4, 126.1, 125.2, 124.5, 123.0, 122.9, 120.7, 117.8, 117.4, 114.7, 112.3, 56.0; Anal. Calcd for $C_{24}H_{17}N_3O_3$: C, 72.90; H, 4.33; N, 10.63%; Found: C, 72.68; H, 4.29; N, 10.71%.



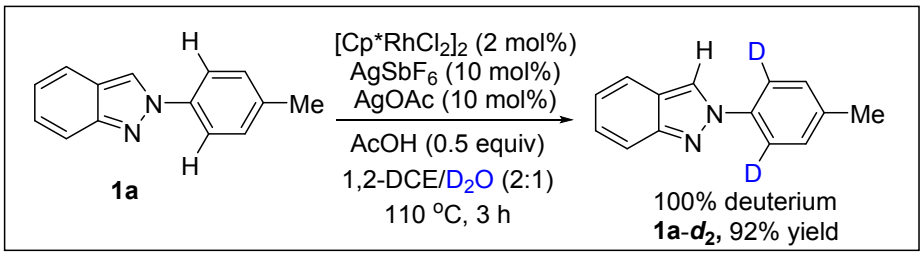
Methyl (E)-3-(2-(2H-indazol-2-yl)-5-methylphenyl)acrylate **(4ai):** Yellow liquid (81%, 47 mg); R_f = 0.50 (PE : EA = 78 : 22); ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.09 (s, 1H), 7.80 (d, J = 9.2 Hz, 1H), 7.72 (d, J = 8.4 Hz, 1H), 7.56-7.44 (m, 3H), 7.37-7.32 (m, 2H), 7.16-7.13 (m, 1H), 6.41 (d, J = 16.0 Hz, 1H), 3.71 (s, 3H), 2.46(s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 166.8, 149.8, 139.9, 139.4, 138.0, 131.4, 130.0, 128.0, 127.0, 126.8, 125.3, 122.5, 122.4, 120.8, 120.4, 118.1, 51.8, 21.3; Anal. Calcd for $C_{18}H_{16}N_2O_2$: C, 73.95; H, 5.52; N, 9.58%; Found: C, 74.16; H, 5.55; N, 9.49%.



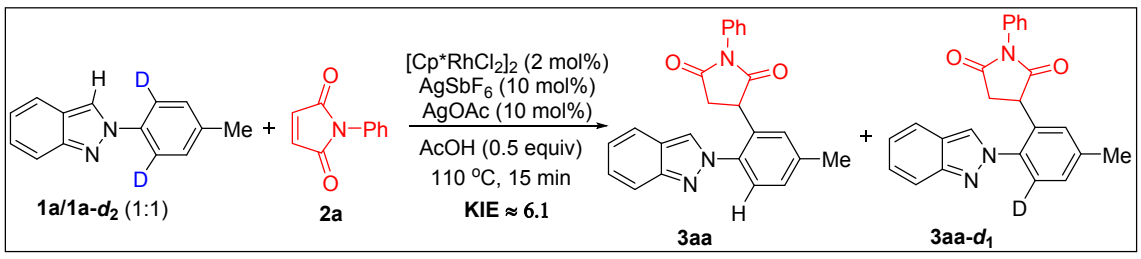
Methyl (E)-3-(2-(5-fluoro-2H-indazol-2-yl)-5-methylphenyl)acrylate **(4ki):** Yellow liquid (53%, 32 mg); R_f = 0.45 (PE : EA = 71 : 29); ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.05 (s, 1H), 7.78-7.75 (m, 1H), 7.56 (s, 1H), 7.50-7.42 (m, 2H), 7.34-7.27 (m, 2H), 7.18-7.12 (m, 1H), 6.40 (d, J = 16.0 Hz, 1H), 3.72 (s, 3H), 2.47 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 166.8, 158.8 (d, $J_{C\text{-}F}$ = 240.0 Hz), 147.3, 139.7 (d, $J_{C\text{-}F}$ = 7.0 Hz), 137.8, 131.5, 130.1, 128.1, 126.9, 125.4 (d, $J_{C\text{-}F}$ = 9.0 Hz), 121.7, 121.6, 120.5 (d, $J_{C\text{-}F}$ = 70.0 Hz), 120.2, 118.6 (d, $J_{C\text{-}F}$ = 29.0 Hz), 102.7 (d, $J_{C\text{-}F}$

= 23.0 Hz), 51.9, 21.3; Anal. Calcd for $C_{18}H_{15}FN_2O_2$: C, 69.67; H, 4.87; N, 9.03%; Found: C, 69.43; H, 4.91; N, 8.91%.

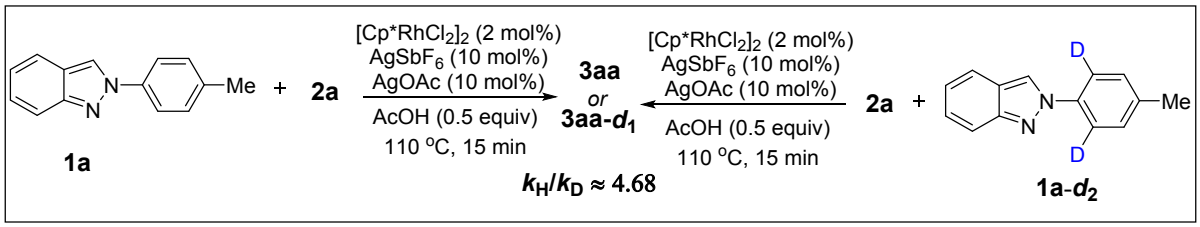
3. Mechanistic investigations:



Preparation of 2-(4-methylphenyl-2,6-*d*$_2$)-2*H*-indazole (1a-*d*$_2$).[3] A mixture of 2-(*p*-tolyl)-2*H*-indazole (0.2 mmol, 41.6 mg) (**1a**), $[Cp^*RhCl_2]_2$ (2 mol%, 2.4 mg), $AgSbF_6$ (10 mol%, 6.8 mg), and AgOAc (10 mol%, 3.3 mg) were taken in an oven dried screw-capped reaction tube. Then 1,2-DCE (2 mL) and AcOH (0.5 equiv, 6.0 mg) was added to the mixture and stirred for 5 min at room temperature under open atmosphere. After that, D_2O (1 mL) was added, and the resultant mixture was stirred at 110 °C for 3 h. Then, the reaction was cooled to room temperature and extracted with dichloromethane. The organic phase was dried over anhydrous Na_2SO_4. The crude residue was obtained after evaporating the solvent in vacuum and was purified by column chromatography on silica gel using a mixture of petroleum ether and ethyl acetate (85:15) as an eluting solvent to afford the pure product **1a-*d*$_2$** as a white solid. The deuterium incorporation was determined using 400 MHz ^{1}H NMR as 100%.

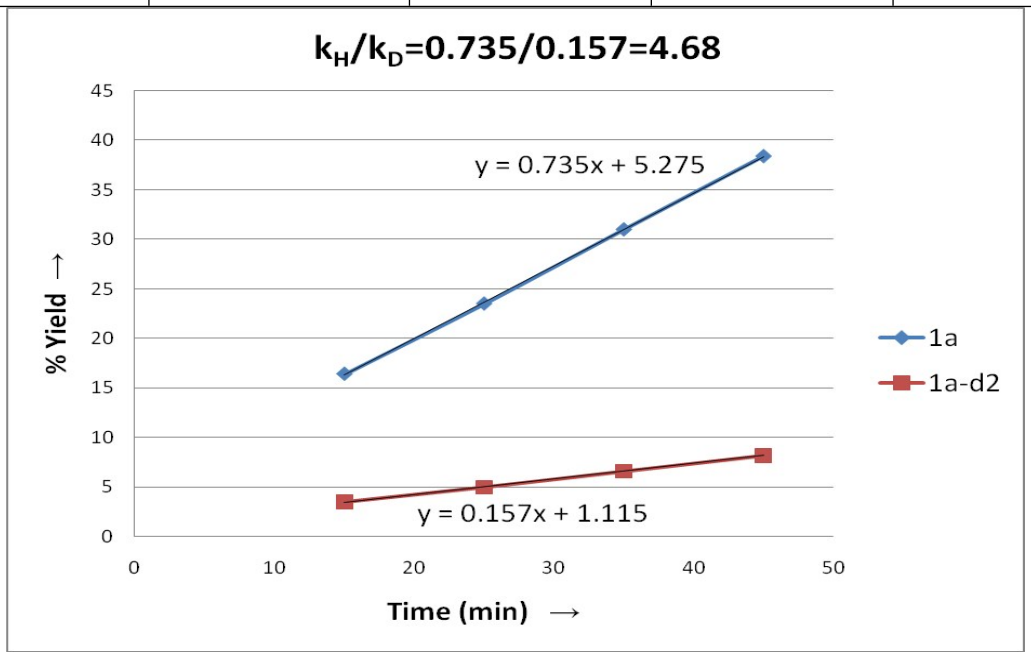


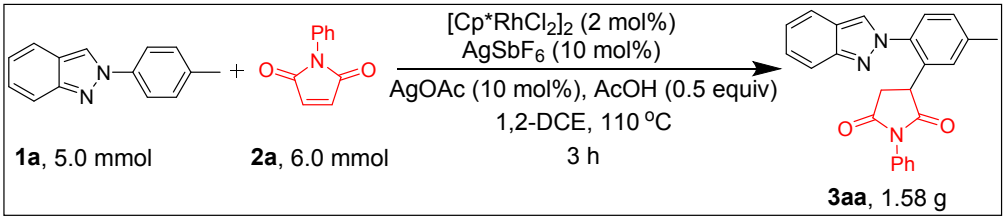
Intermolecular experiment.[4a] 1-Phenyl-1*H*-pyrrole-2,5-dione (**2a**) (0.24 mmol, 41.5 mg) was reacted with 2-(*p*-tolyl)-2*H*-indazole (**1a**) (0.1 mmol, 20.8 mg) and 2-(4-methylphenyl-2,6-d_2)-2*H*-indazole (**1a-*d*$_2$**) (0.1 mmol, 21.0 mg) for 15 min under standard reaction condition. The resulting solution was then diluted with dichloromethane (3 x 10 mL) and washed with brine (2 x 5 mL) and water (5 mL). The organic phase was dried over anhydrous Na_2SO_4. The crude residue was obtained after evaporating the solvent in vacuum and was purified by column chromatography on silica gel using a mixture of petroleum ether and ethyl acetate (72:28) as an eluting solvent to afford **3aa** and a mixture of unreacted **1a** and **1a-*d*$_2$** as a light yellow solid. The KIE was found to be 6.1 after 15 min at ~20% conversion, based on 400 MHz ^{1}H NMR of the product **3aa** and **3aa-*d*$_1$**.



Parallel Experiment study.[4] In a set of two experiments: in first set, 1-phenyl-1*H*-pyrrole-2,5-dione (**2a**) (0.12 mmol, 20.7 mg) was reacted with 2-(*p*-tolyl)-2*H*-indazole (**1a**) (0.1 mmol, 20.8 mg) under standard reaction conditions. Whereas in another set, 2-(4-methylphenyl-2,6-d_2)-2*H*-indazole (**1a-*d*$_2$**) (0.1 mmol, 21.0 mg) was used instead of **1a** in the reaction with 1-phenyl-1*H*-pyrrole-2,5-dione (**2a**) under the standard reaction conditions. The two reactions were allowed to stir at 110 °C with stirring for 15, 25, 35 and 45 minutes. After cooling down, the mixture was concentrated in vacuo and purified by column chromatography, affording the product **3aa** or **3aa-*d*$_1$**. The KIE value was determined to be 4.68.

t/min. / yield	15	25	35	45
3aa	16.4%	23.5%	31%	38.4%
3aa-d_1	3.5%	5.0%	6.6%	8.2%





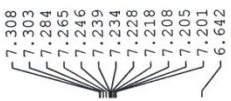
Experimental procedure of 3aa on 5 mmol scale: A mixture of 2-(*p*-tolyl)-2*H*-indazole (5.0 mmol, 1.04 g) (**1a**), $[Cp^*RhCl_2]_2$ (2 mol%, 61.8 mg), $AgSbF_6$ (10 mol%, 171.8 mg), AgOAc (10 mol%, 83.5 mg), and AcOH (0.5 equiv, 150.0 mg) were taken in an oven dried round-bottom pressure flask (100 mL). Then 1,2-DCE (50 mL) was added to the mixture and stirred for 5 min at room temperature under open atmosphere. After that, 1-phenyl-1*H*-pyrrole-2,5-dione (**2a**) (6.0 mmol, 1.03 g) was added, and the resultant mixture was stirred at 110 °C for 3 h. After completion of the reaction (TLC), the reaction was cooled to room temperature and extracted with dichloromethane. The organic phase was dried over anhydrous Na_2SO_4. The crude residue

was obtained after evaporating the solvent in vacuum and was purified by column chromatography on silica gel using a mixture of petroleum ether and ethyl acetate (72:28) as an eluting solvent to afford the pure product **3aa** (1.58 g, 83%) as a light yellow solid.

4. References:

1. (*a*) M. R. Kumar, A. Park, N. Park and S. Lee, *Org. Lett*., 2011, **13**, 3542-3545; (*b*) G. Bogonda, H. Y. Kim and K. Oh, *Org. Lett.,* 2018, **20**, 2711-2715.
2. G. B. Deshmukha, N. S. Patila, V. B. Gaikwada, A. D. Bholeb and S. V. Patil, *J. Chem. Pharm. Res.,* 2014, **6**, 393-399.
3. S. Samanta, S. Mondal, D. Ghosh and A. Hajra, *Org. Lett*., 2019, **21**, 4905-4909.
4. (*a*) A. Modi, P. Sau, N. Chakraborty and B. K. Patel, *Adv. Synth. Catal*., 2019, **361**, 1368–1375. (*b*) A. Maji, S. Guin, S. Feng, A. Dahiya, V. K. Singh, P. Liu and D. Maiti, *Angew. Chem., Int. Ed*., 2017, **56**, 14903-14907.

5. NMR spectra for the synthesized products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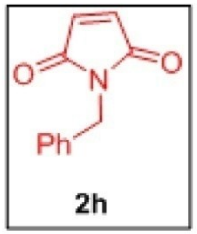
4.626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N
O
Ph
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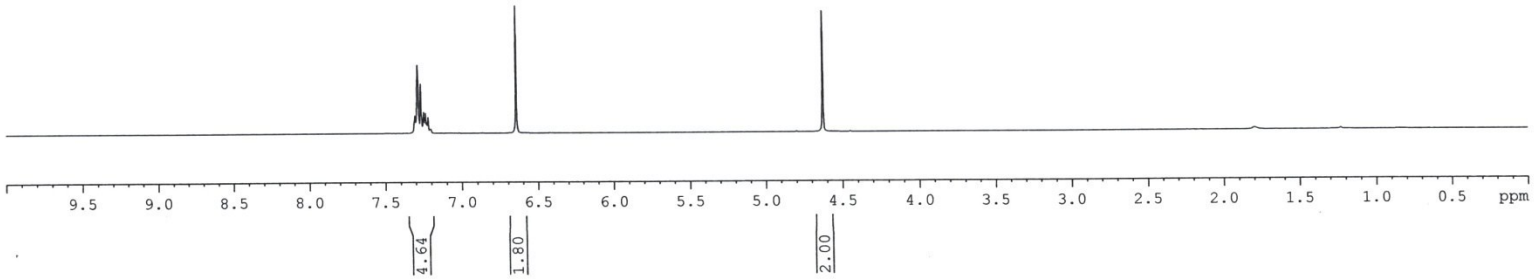
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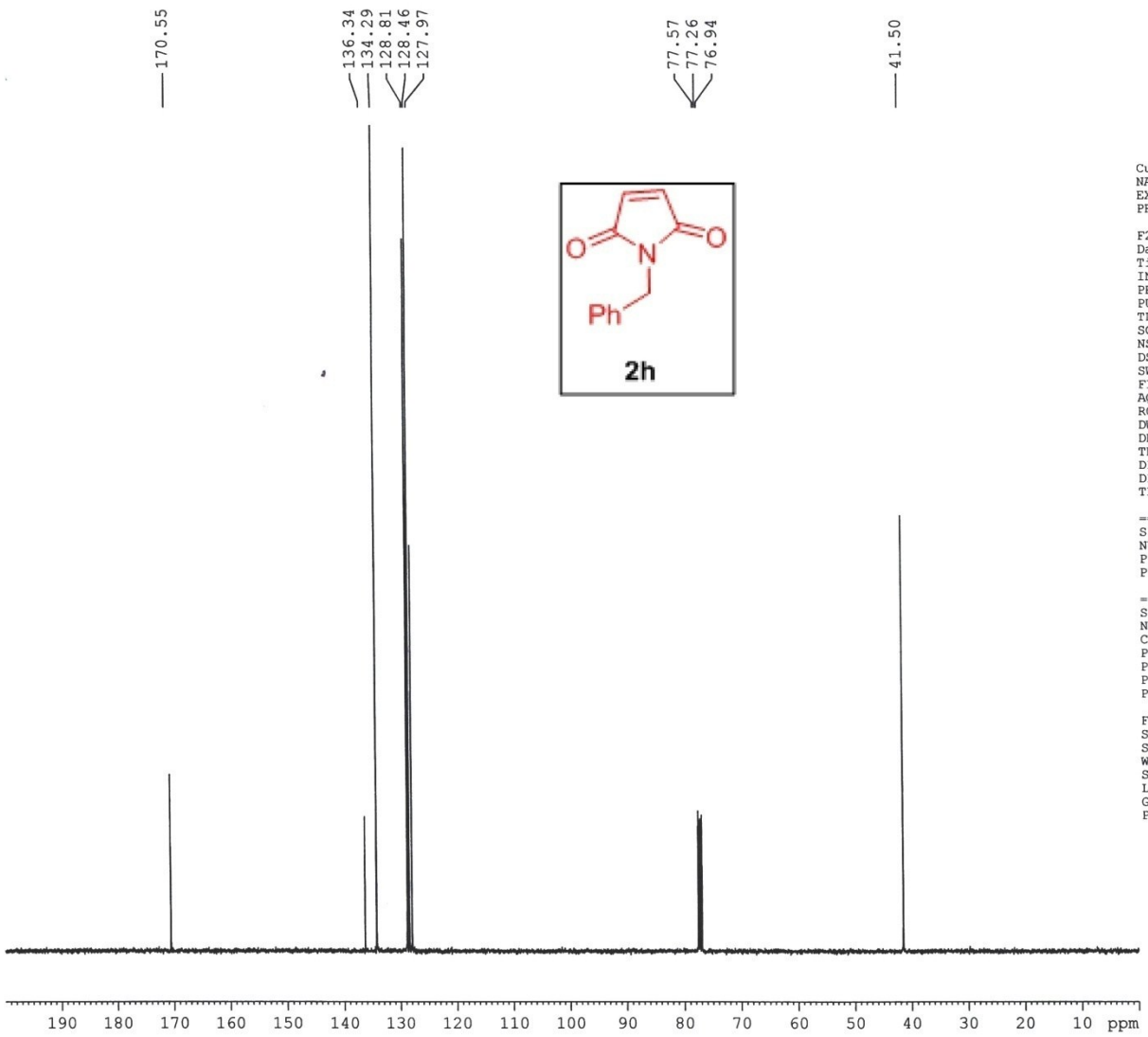


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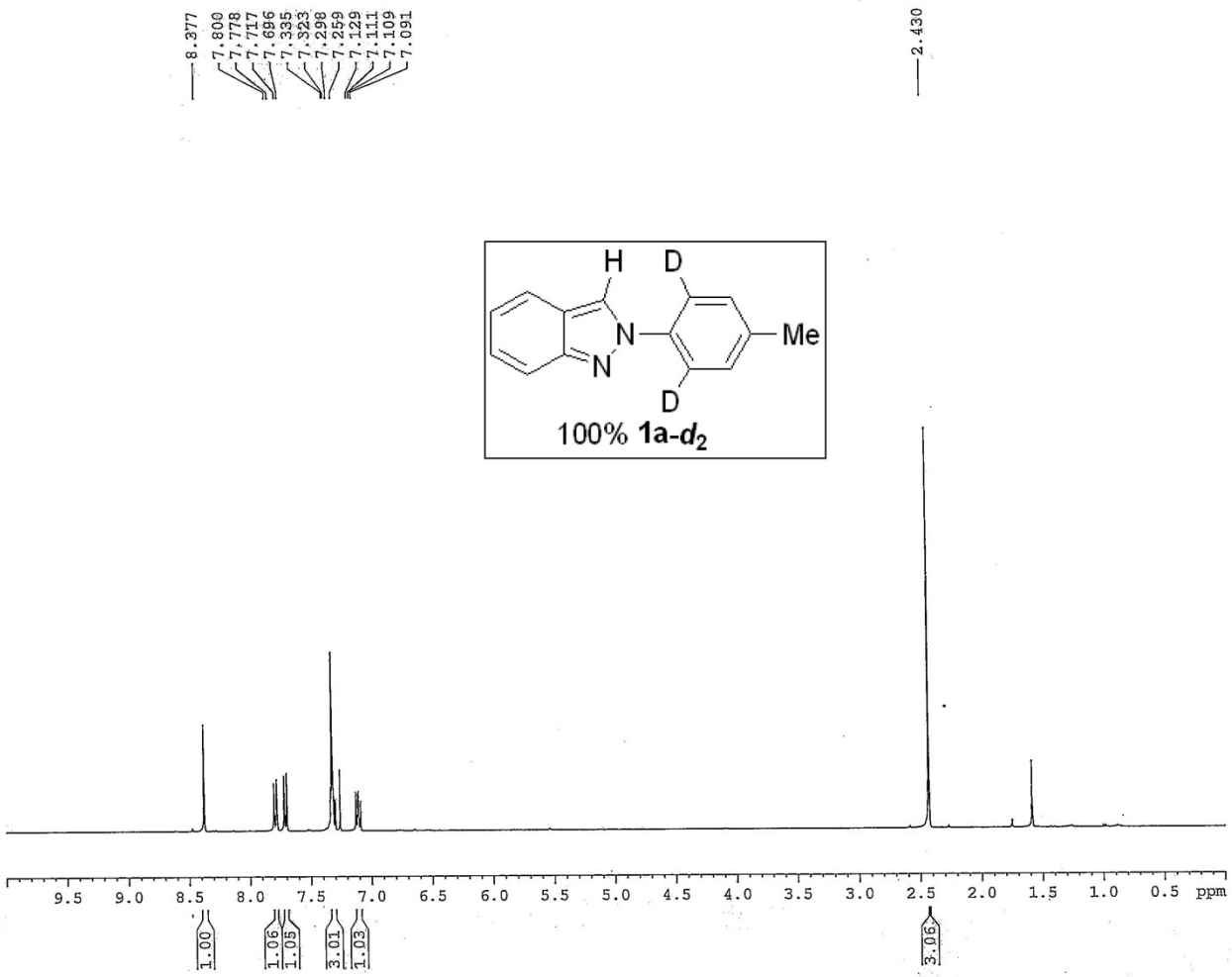


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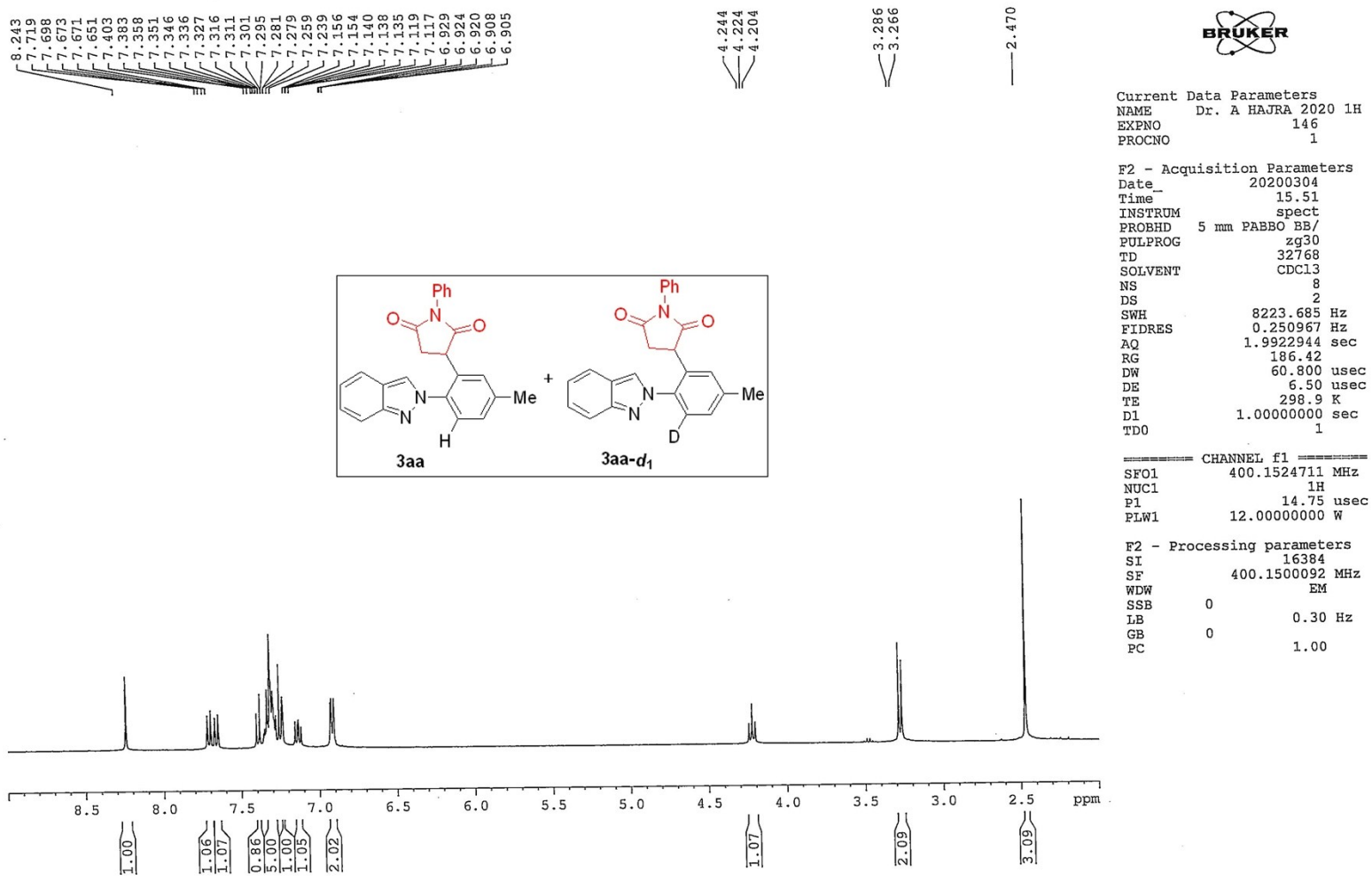
Time              11.42
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG           zg30
TD               32768
SOLVENT          CDCl3
NS                   8
DS                   2
SWH           8223.685 Hz
FIDRES        0.250967 Hz
AQ            1.9922944 sec
RG              186.42
DW               60.800 usec
DE                6.50 usec
TE               298.1 K
D1            1.00000000 sec
TD0                  1

======== CHANNEL f1 ========
SFO1        400.1524711 MHz
NUC1                1H
P1                14.75 usec
PLW1        12.00000000 W

F2 - Processing parameters
SI                16384
SF          400.1500092 MHz
WDW                 EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



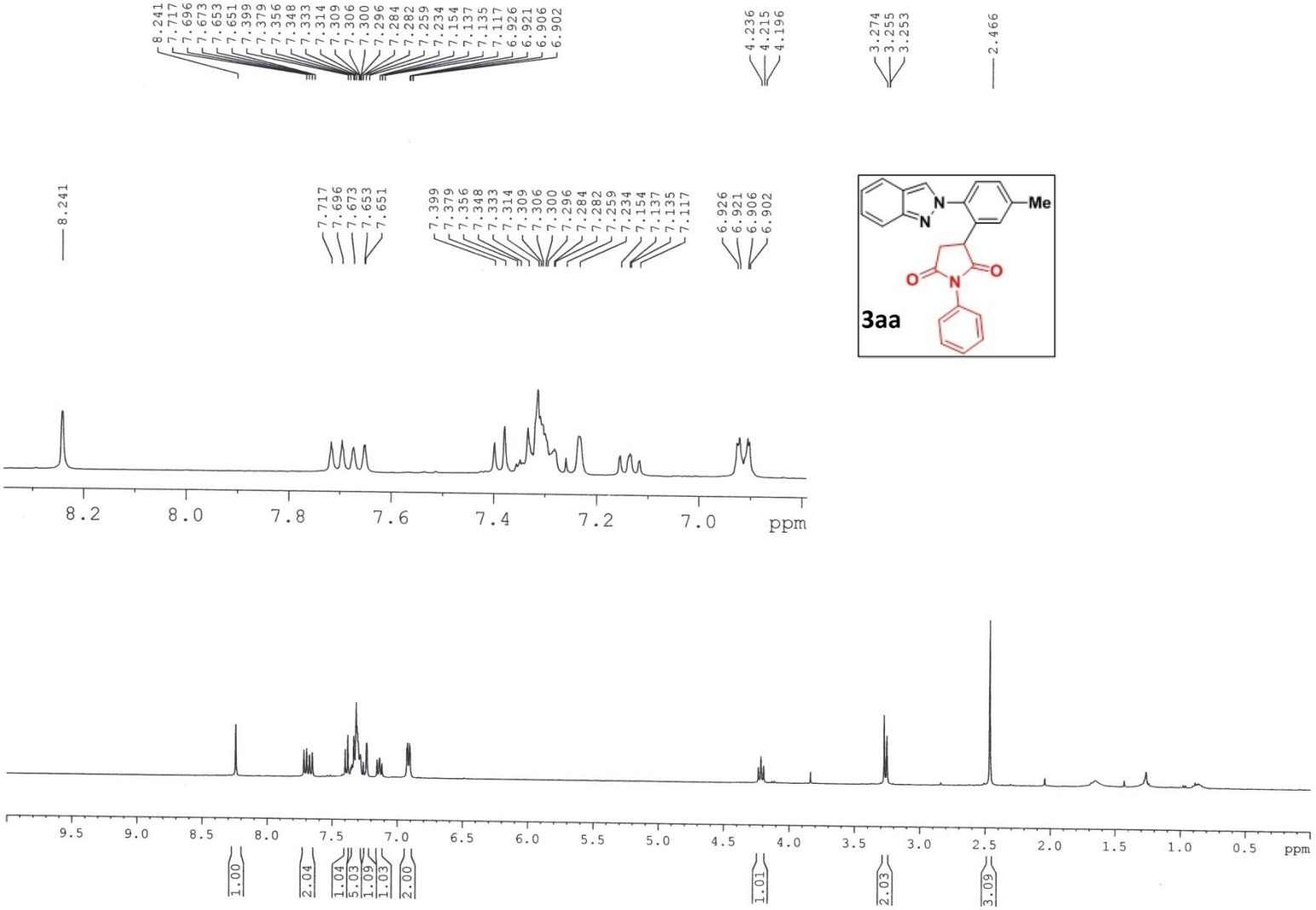
BRUKER

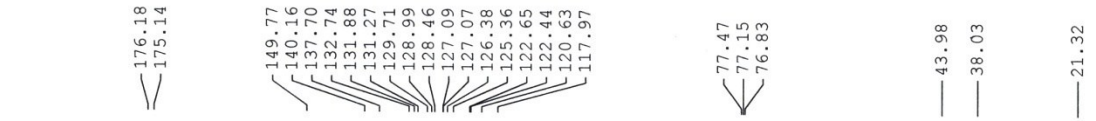
Current Data Parameters
NAME Dr. A HAJRA 2020 1H
EXPNO 146
PROCNO 1

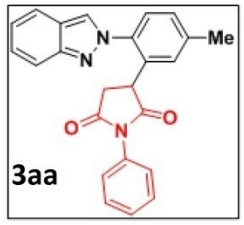
F2 - Acquisition Parameters
Date_ 20200304
Time 15.51
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 8
DS 2
SWH 8223.685 Hz
FIDRES 0.250967 Hz
AQ 1.9922944 sec
RG 186.42
DW 60.800 usec
DE 6.50 usec
TE 298.9 K
D1 1.00000000 sec
TD0 1

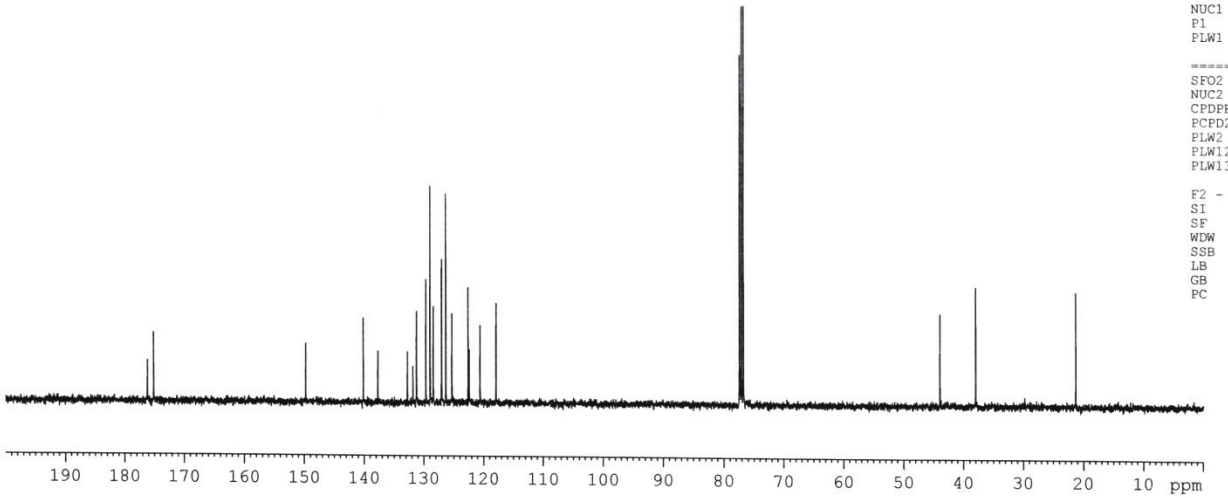
======== CHANNEL f1 ========
SFO1 400.1524711 MHz
NUC1 1H
P1 14.75 usec
PLW1 12.00000000 W

F2 - Processing parameters
SI 16384
SF 400.1500092 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


8.241
7.717
7.696
7.673
7.653
7.651
7.399
7.379
7.356
7.348
7.333
7.314
7.309
7.306
7.300
7.296
7.284
7.282
7.259
7.234
7.154
7.137
7.135
7.117
6.926
6.921
6.906
6.902
4.236
4.215
4.196
3.274
3.255
3.253
2.466
Me
N
N
O
O
N
3aa
8.2
8.0
7.8
7.6
7.4
7.2
7.0
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.00
2.04
1.04
5.03
1.09
1.03
2.00
1.01
2.03
3.09







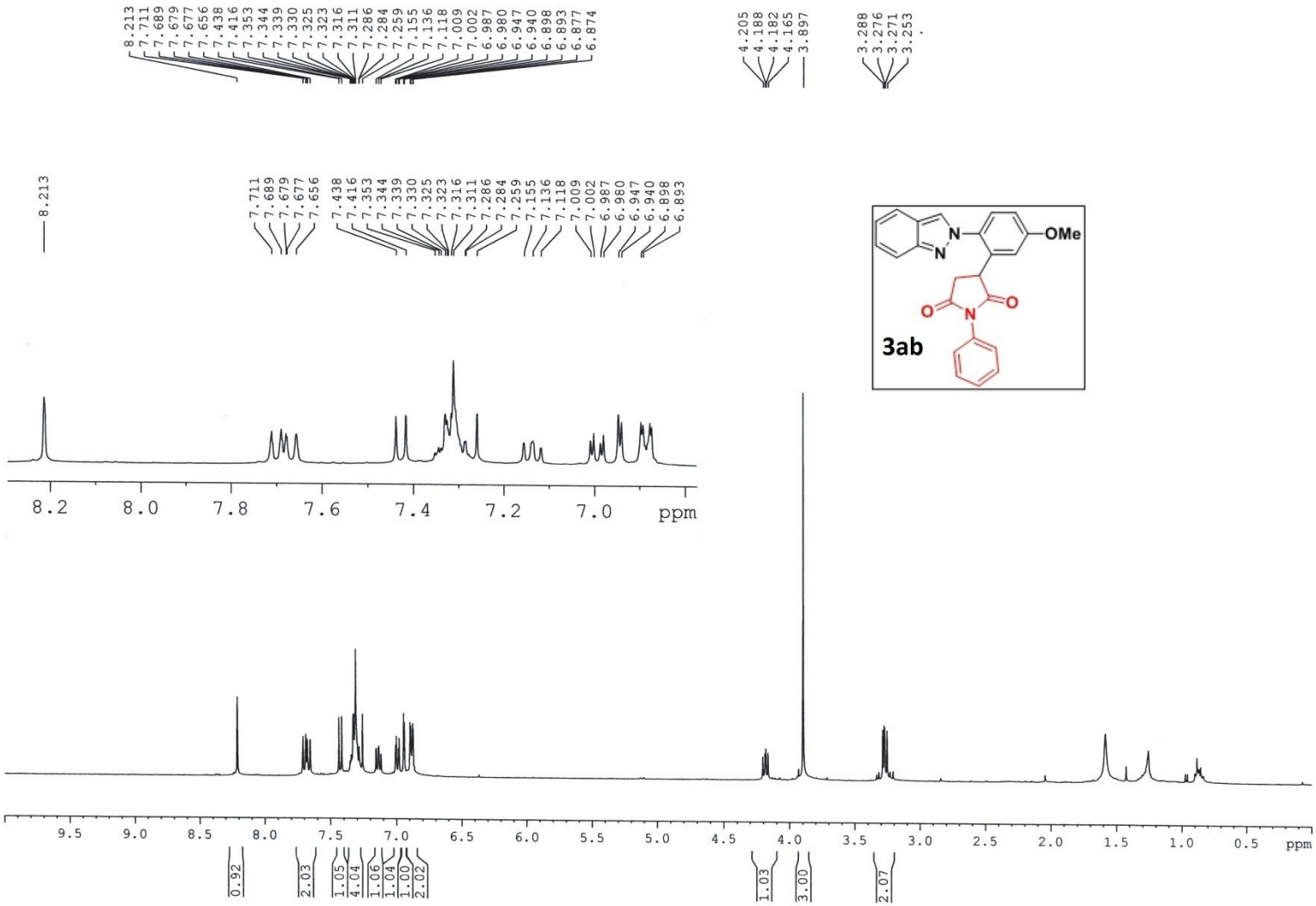

```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  430
PROCNO                   1

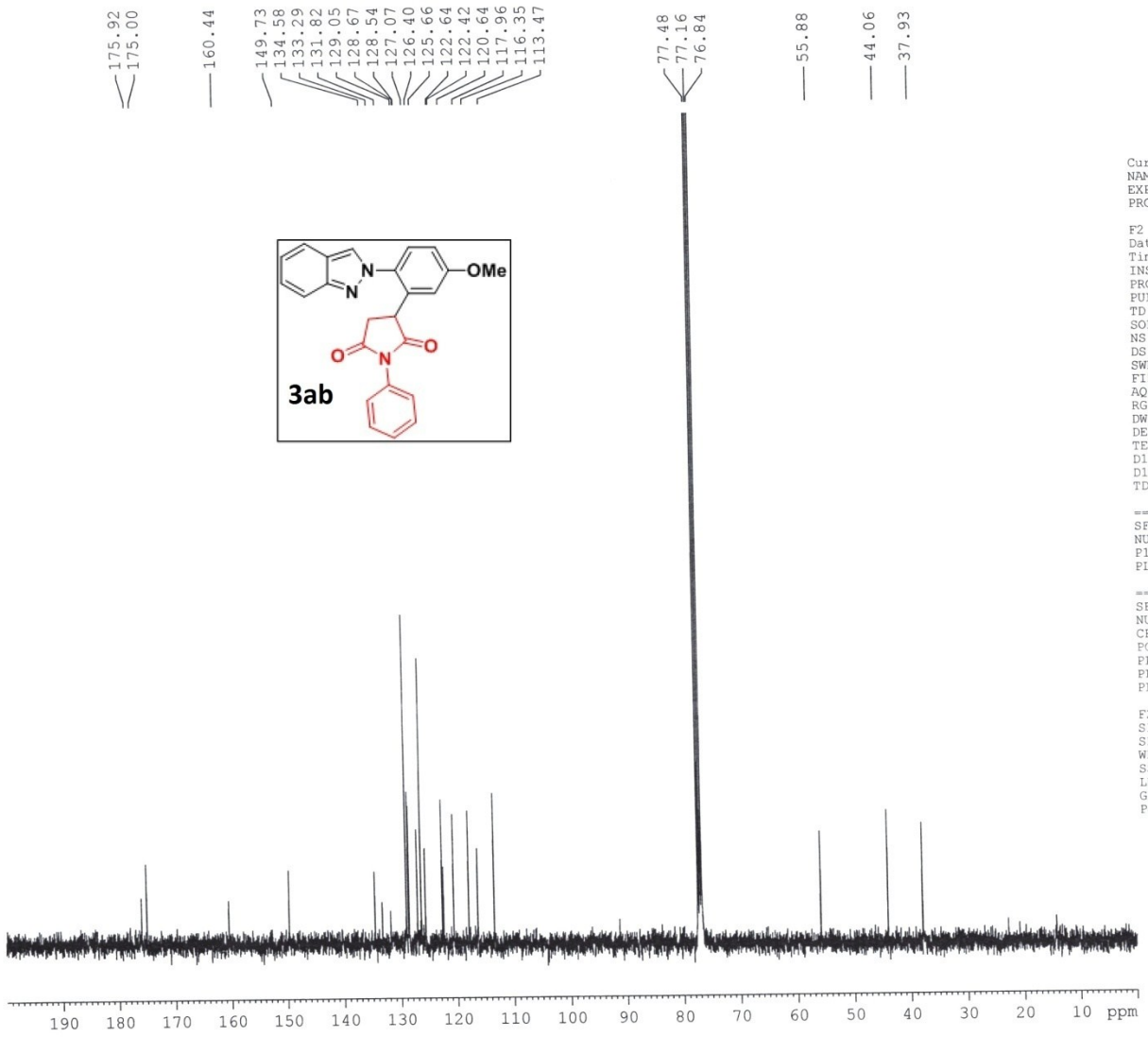
F2 - Acquisition Parameters
Date_           20191019
Time               18.26
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                32768
SOLVENT           CDCl3
NS                  320
DS                    2
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             0.6815744 sec
RG                186.42
DW                20.800 usec
DE                 6.50 usec
TE                299.5 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         100.6278588 MHz
NUC1                13C
P1                 8.90 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2         400.1516006 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.32231000 W
PLW13        0.16212000 W

F2 - Processing parameters
SI                 16384
SF           100.6177873 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```


8.213
7.711
7.689
7.679
7.677
7.656
7.438
7.416
7.353
7.344
7.339
7.330
7.325
7.323
7.316
7.311
7.286
7.284
7.259
7.155
7.136
7.118
7.009
7.002
6.987
6.980
6.947
6.940
6.898
6.893
6.877
6.874
4.205
4.188
4.182
4.165
3.897
3.288
3.276
3.271
3.253
OMe
3ab
8.2
8.0
7.8
7.6
7.4
7.2
7.0
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
0.92
2.03
1.05
4.04
1.06
1.04
1.00
2.02
1.03
3.00
2.07



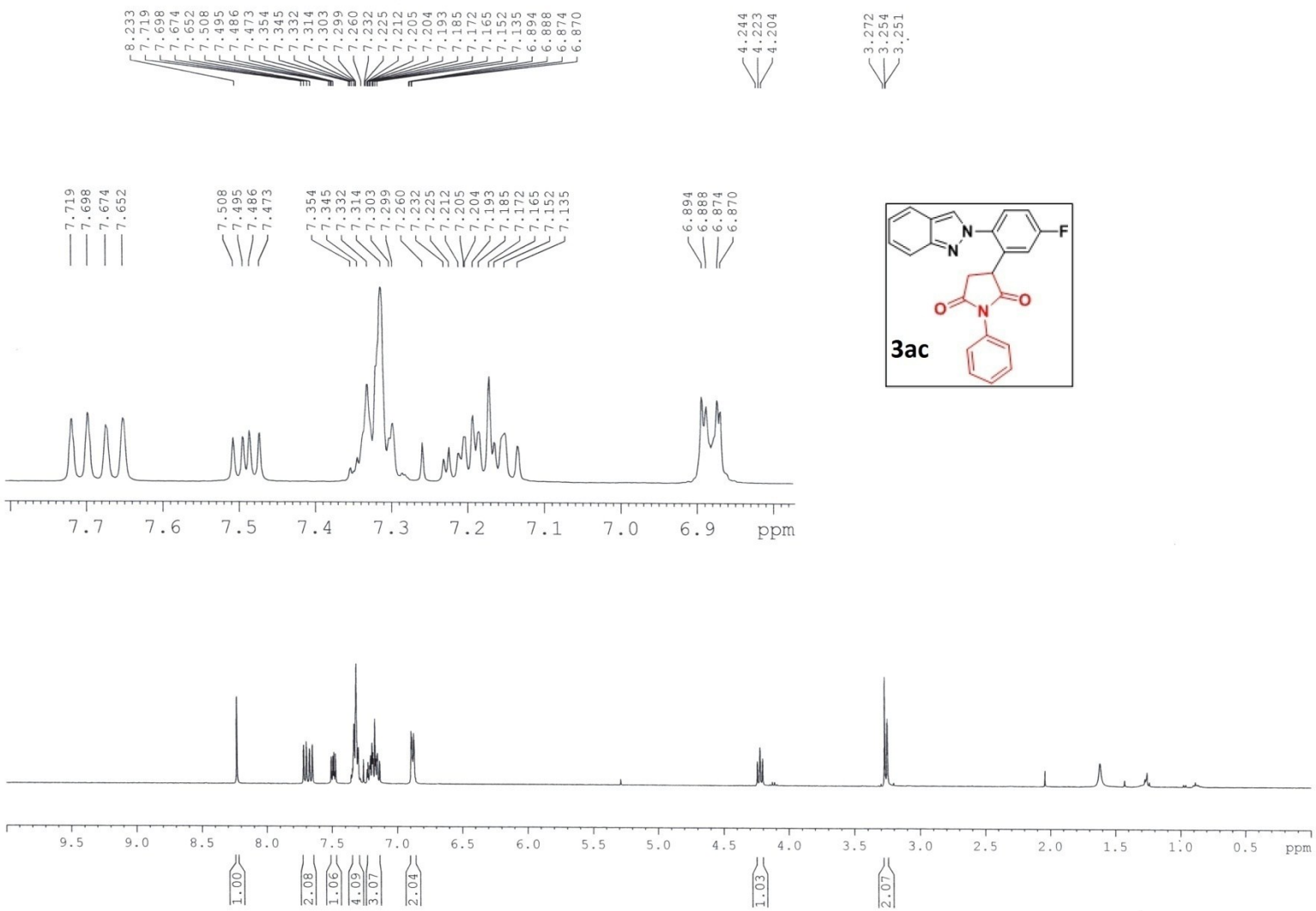
Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 441
PROCNO 1

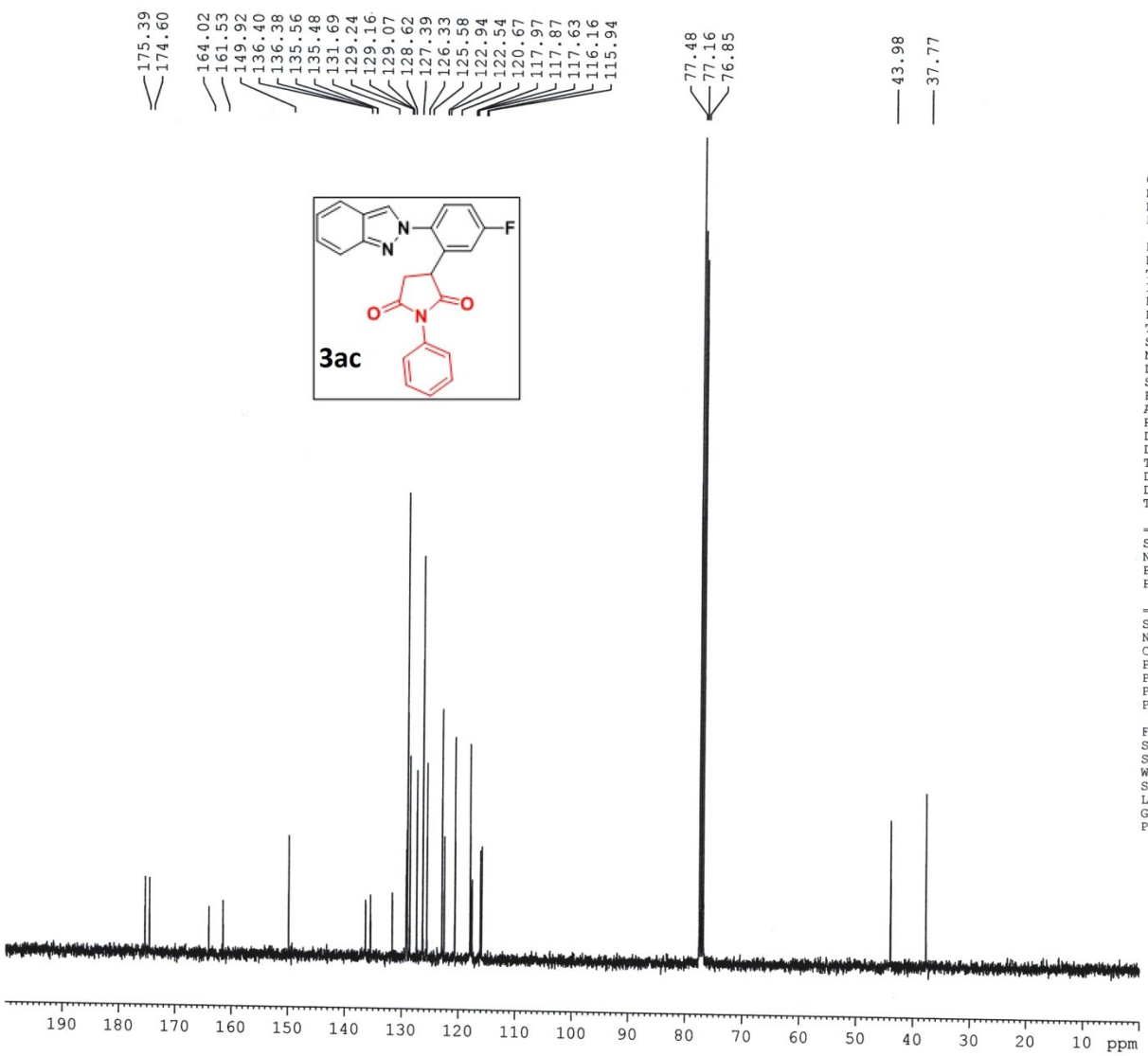
F2 - Acquisition Parameters
Date_ 20191022
Time 9.03
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDC13
NS 624
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 186.42
DW 20.800 usec
DE 6.50 usec
TE 297.9 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W

======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W

F2 - Processing parameters
SI 16384
SF 100.6177839 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


8.233
7.719
7.698
7.674
7.652
7.508
7.495
7.486
7.473
7.354
7.345
7.332
7.314
7.303
7.299
7.260
7.232
7.225
7.212
7.205
7.204
7.193
7.185
7.172
7.165
7.152
7.135
6.894
6.888
6.874
6.870
4.244
4.223
4.204
3.272
3.254
3.251
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7.0
6.9
ppm
3ac
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.00
2.08
1.06
4.09
3.07
2.04
1.03
2.07



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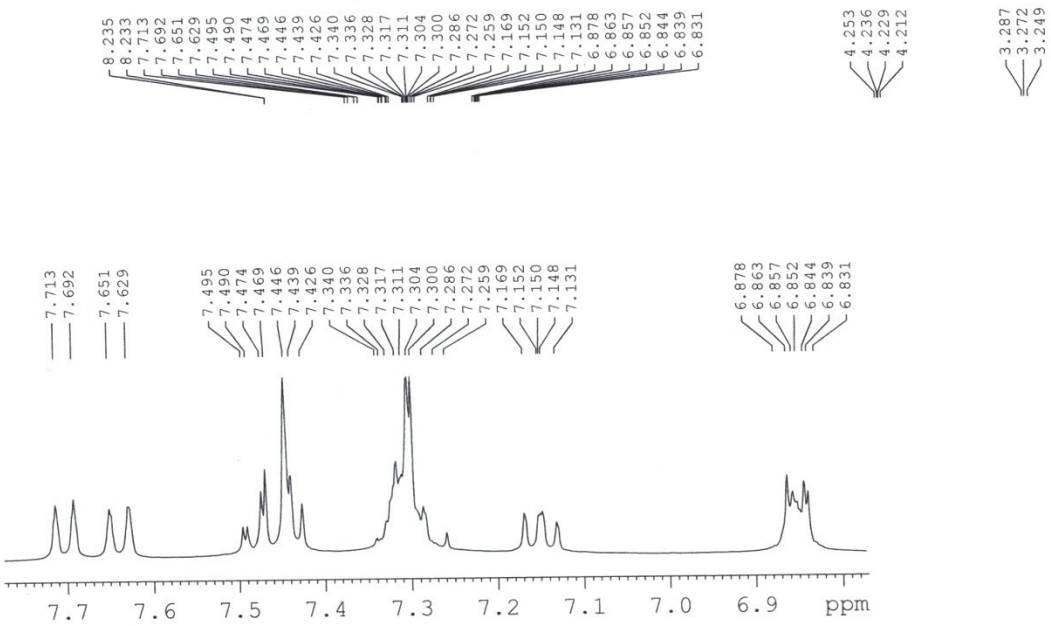
Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 402
PROCNO 1

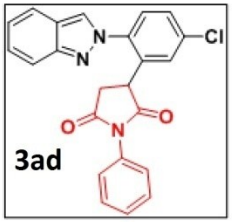
F2 - Acquisition Parameters
Date_ 20191003
Time 13.03
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 420
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 186.42
DW 20.800 usec
DE 6.50 usec
TE 299.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

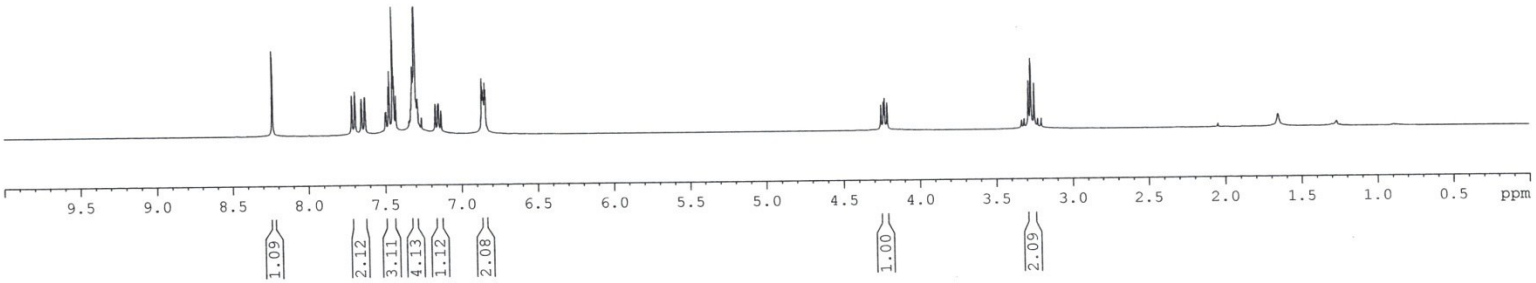
======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W

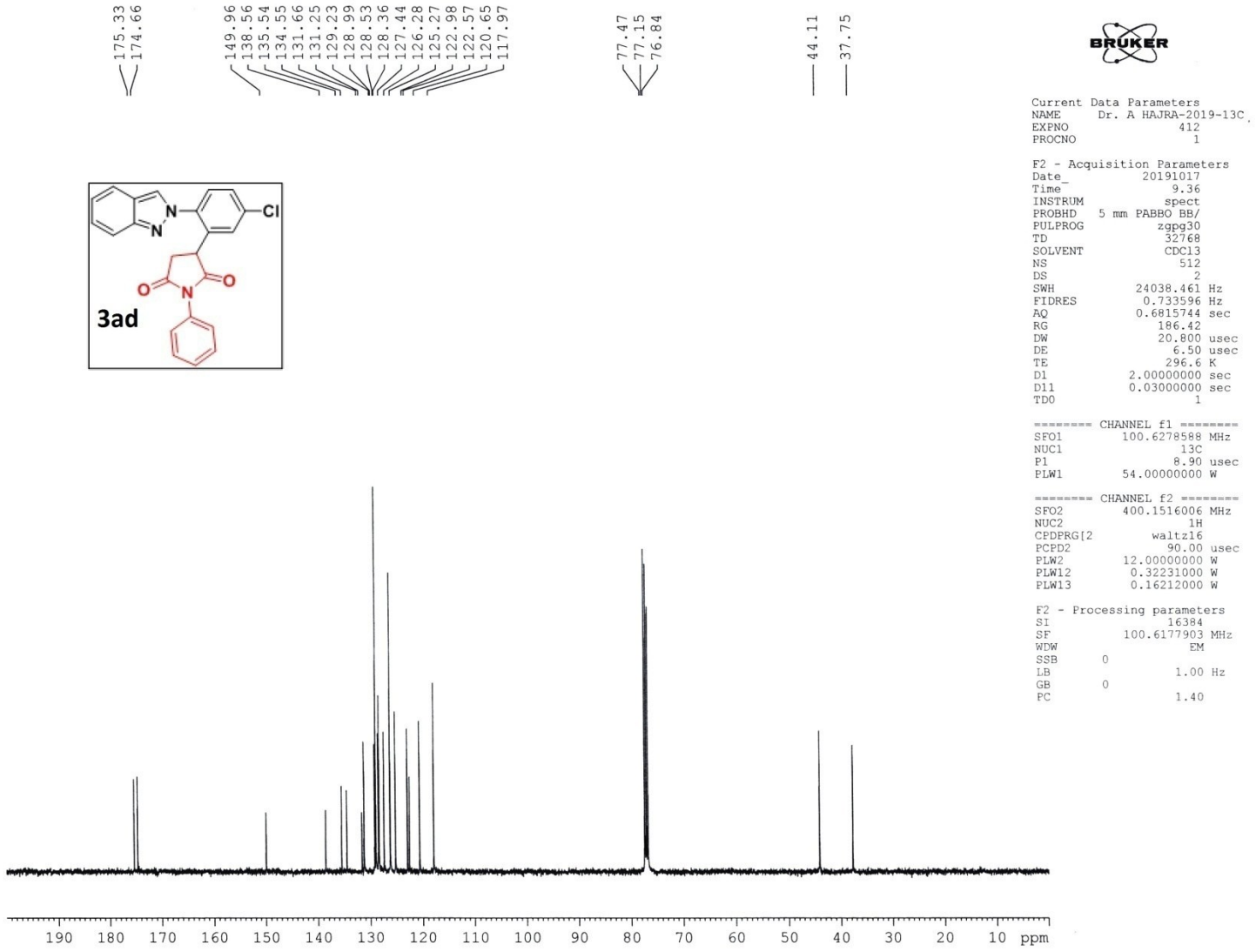
======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W

F2 - Processing parameters
SI 16384
SF 100.6177854 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


8.235
8.233
7.713
7.692
7.651
7.629
7.495
7.490
7.474
7.469
7.446
7.439
7.426
7.340
7.336
7.328
7.317
7.311
7.304
7.300
7.286
7.272
7.259
7.169
7.152
7.150
7.148
7.131
6.878
6.863
6.857
6.852
6.844
6.839
6.831
4.253
4.236
4.229
4.212
3.287
3.272
3.249
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7.0
6.9
ppm


Cl
N
N
O
O
N
3ad


9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.09
2.12
3.11
4.13
1.12
2.08
1.00
2.09



BRUKER

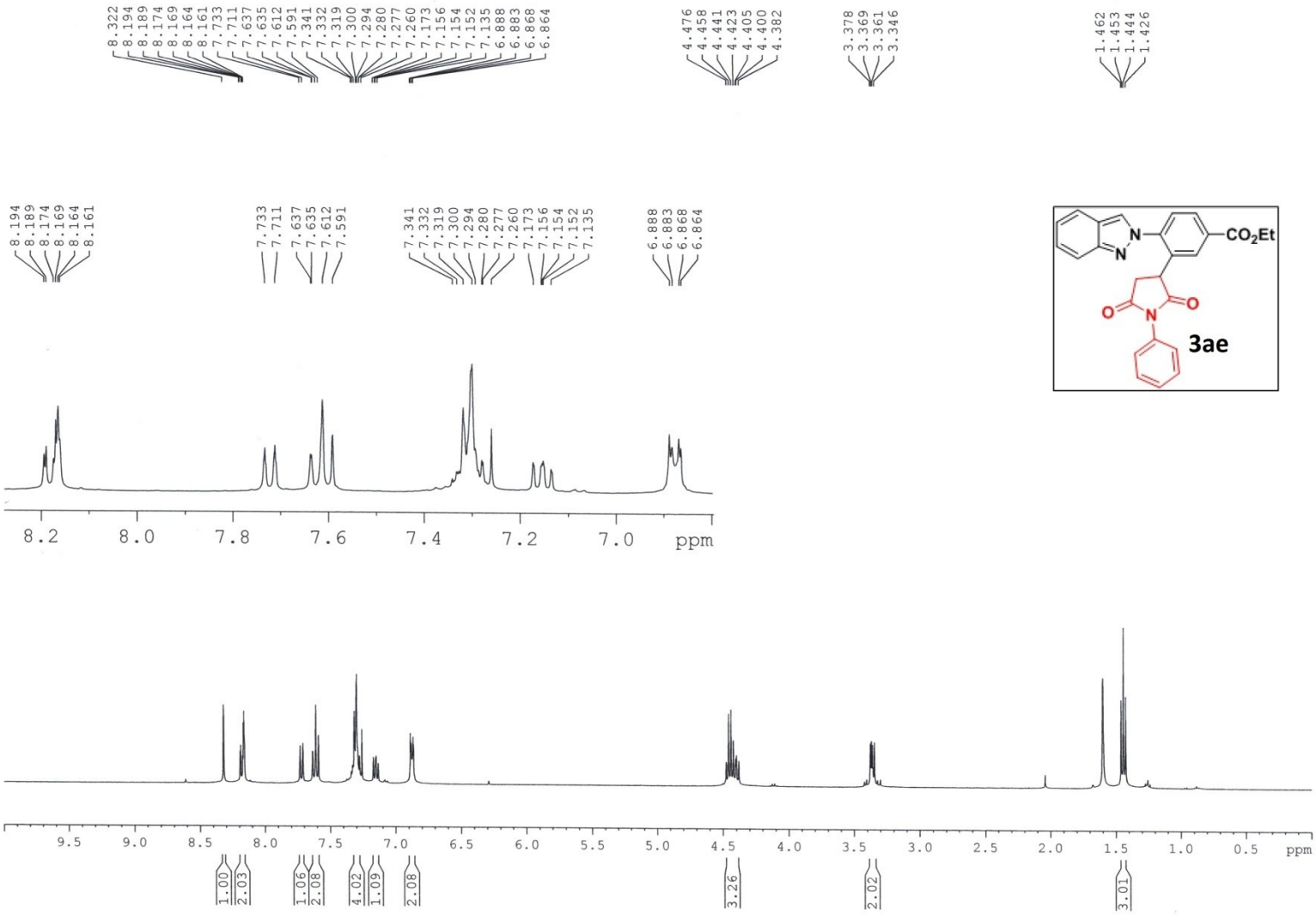
```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  412
PROCNO                   1

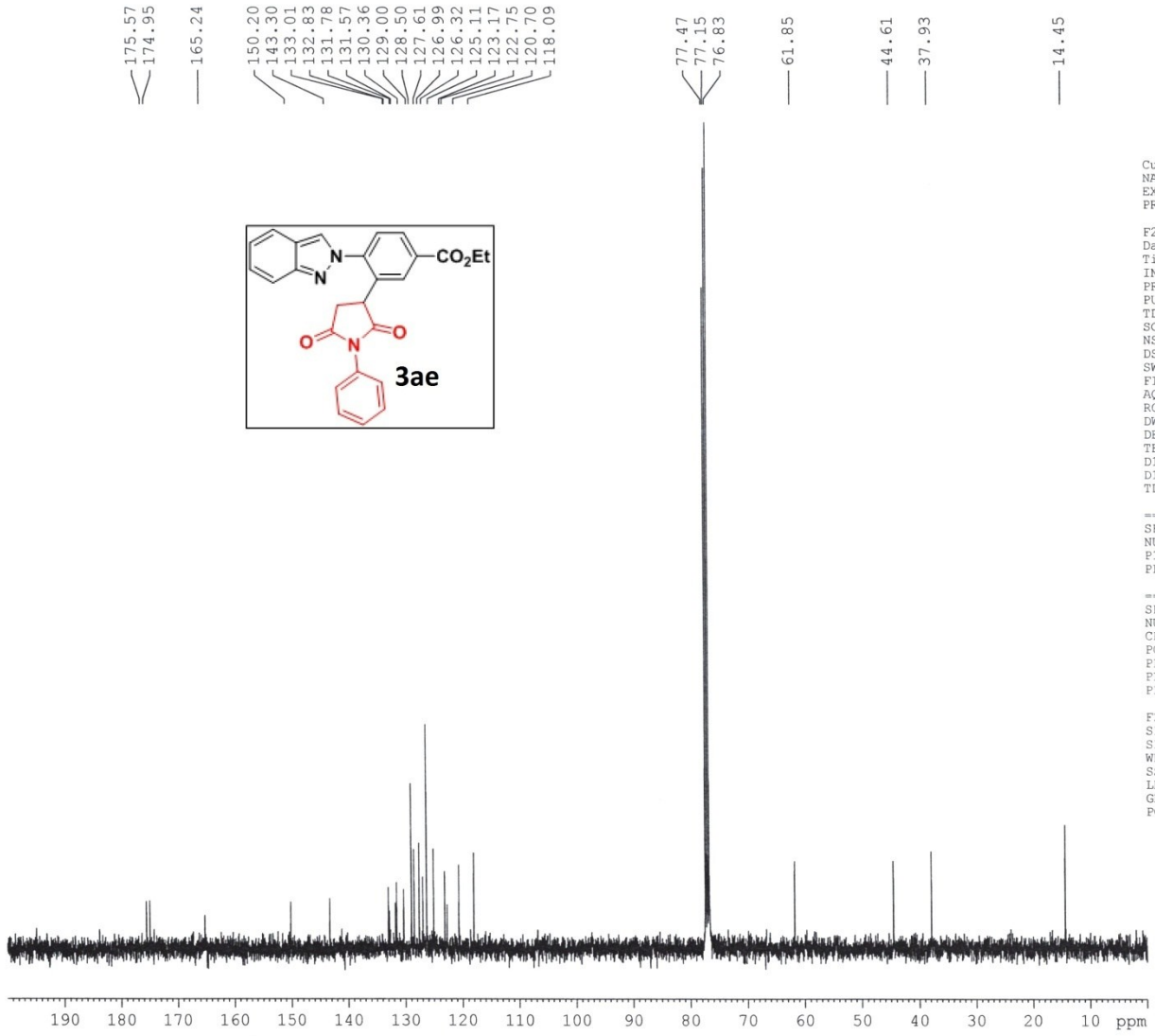
F2 - Acquisition Parameters
Date_           20191017
Time                9.36
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 32768
SOLVENT            CDCl3
NS                   512
DS                     2
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              0.6815744 sec
RG                186.42
DW                20.800 usec
DE                 6.50 usec
TE                296.6 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          100.6278588 MHz
NUC1                 13C
P1                  8.90 usec
PLW1          54.00000000 W

======== CHANNEL f2 ========
SFO2          400.1516006 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.32231000 W
PLW13          0.16212000 W

F2 - Processing parameters
SI                  16384
SF            100.6177903 MHz
WDW                    EM
SSB       0
LB                  1.00 Hz
GB        0
PC                  1.40
```


8.322
8.194
8.189
8.174
8.169
8.164
8.161
7.733
7.711
7.637
7.635
7.612
7.591
7.341
7.332
7.319
7.300
7.294
7.280
7.277
7.260
7.173
7.156
7.154
7.152
7.135
6.888
6.883
6.868
6.864
4.476
4.458
4.441
4.423
4.405
4.400
4.382
3.378
3.369
3.361
3.346
1.462
1.453
1.444
1.426
CO2Et
N
N
O
N
O
3ae
8.2
8.0
7.8
7.6
7.4
7.2
7.0
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.00
2.03
1.06
2.08
4.02
1.09
2.08
3.26
2.02
3.01



BRUKER

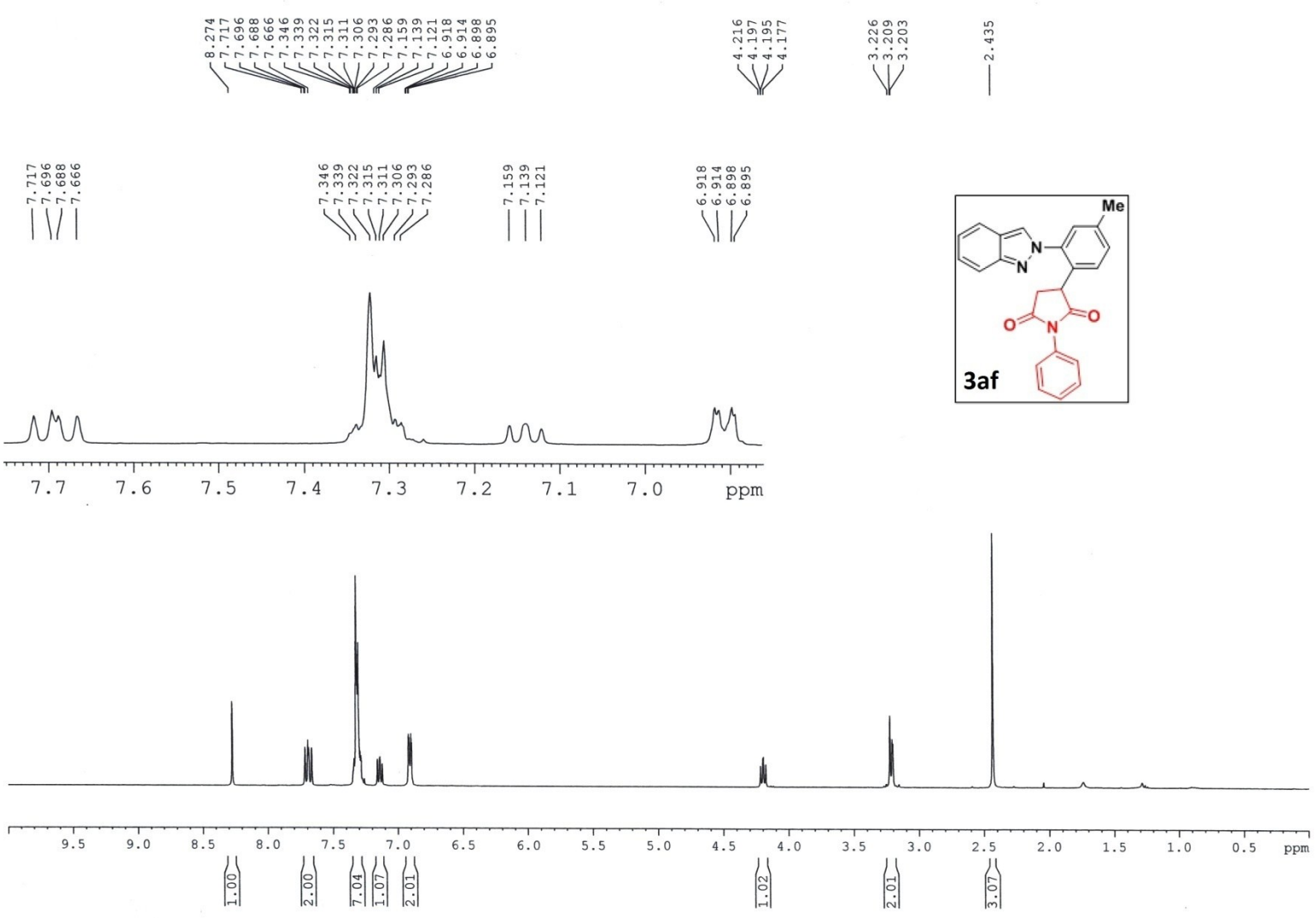
```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  478
PROCNO                   1

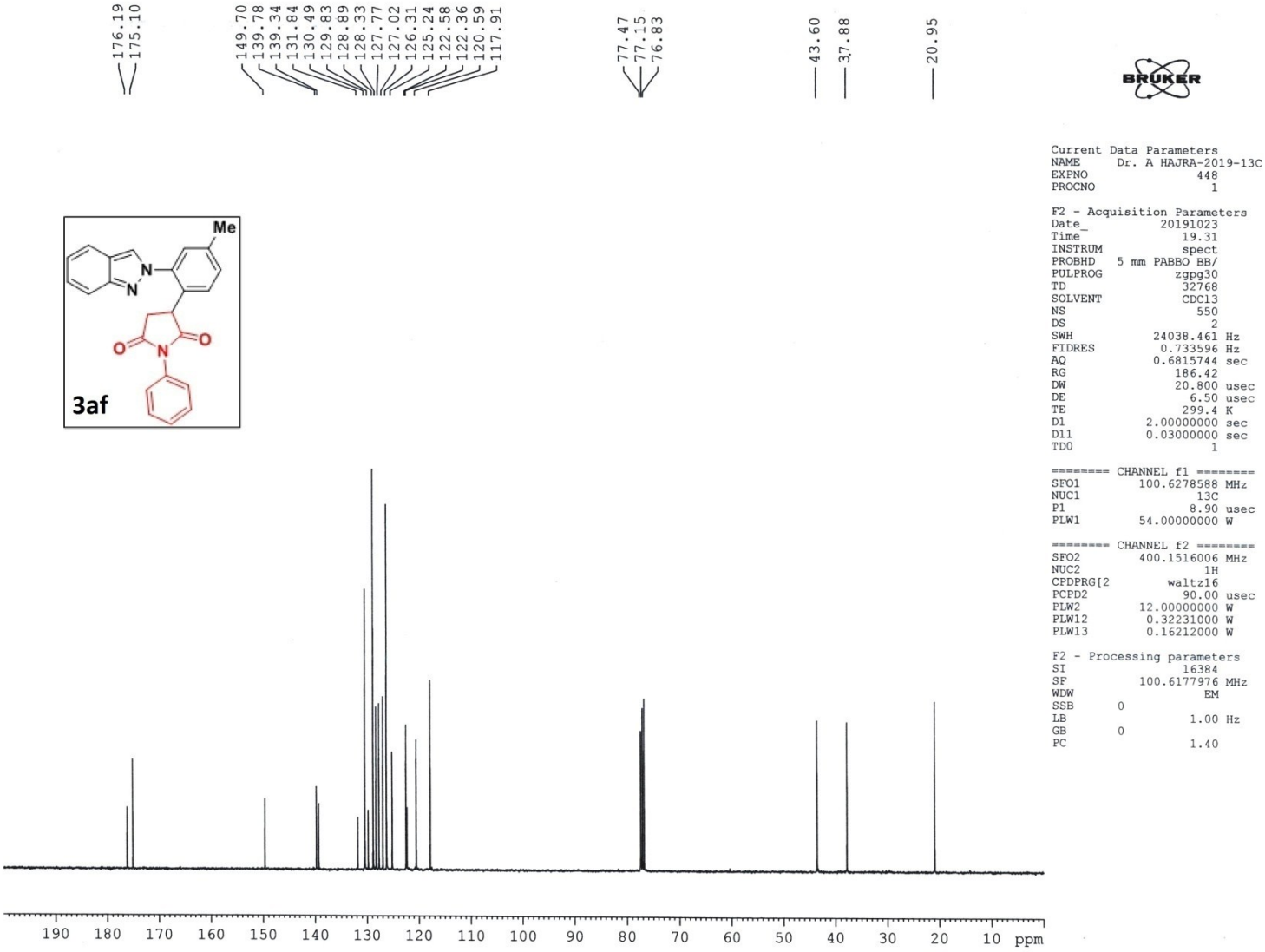
F2 - Acquisition Parameters
Date_           20191030
Time               16.43
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                32768
SOLVENT           CDCl3
NS                  220
DS                    2
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             0.6815744 sec
RG                186.42
DW                20.800 usec
DE                 6.50 usec
TE                297.3 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         100.6278588 MHz
NUC1                13C
P1                 8.90 usec
PLW1         54.00000000 W

======== CHANNEL f2 ========
SFO2         400.1516006 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.32231000 W
PLW13         0.16212000 W

F2 - Processing parameters
SI                 16384
SF           100.6177855 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```


8.274
7.717
7.696
7.688
7.666
7.346
7.339
7.322
7.315
7.311
7.306
7.293
7.286
7.159
7.139
7.121
6.918
6.914
6.898
6.895
4.216
4.197
4.195
4.177
3.226
3.209
3.203
2.435
Me
3af
ppm
1.00
2.00
7.04
1.07
2.01
1.02
2.01
3.07



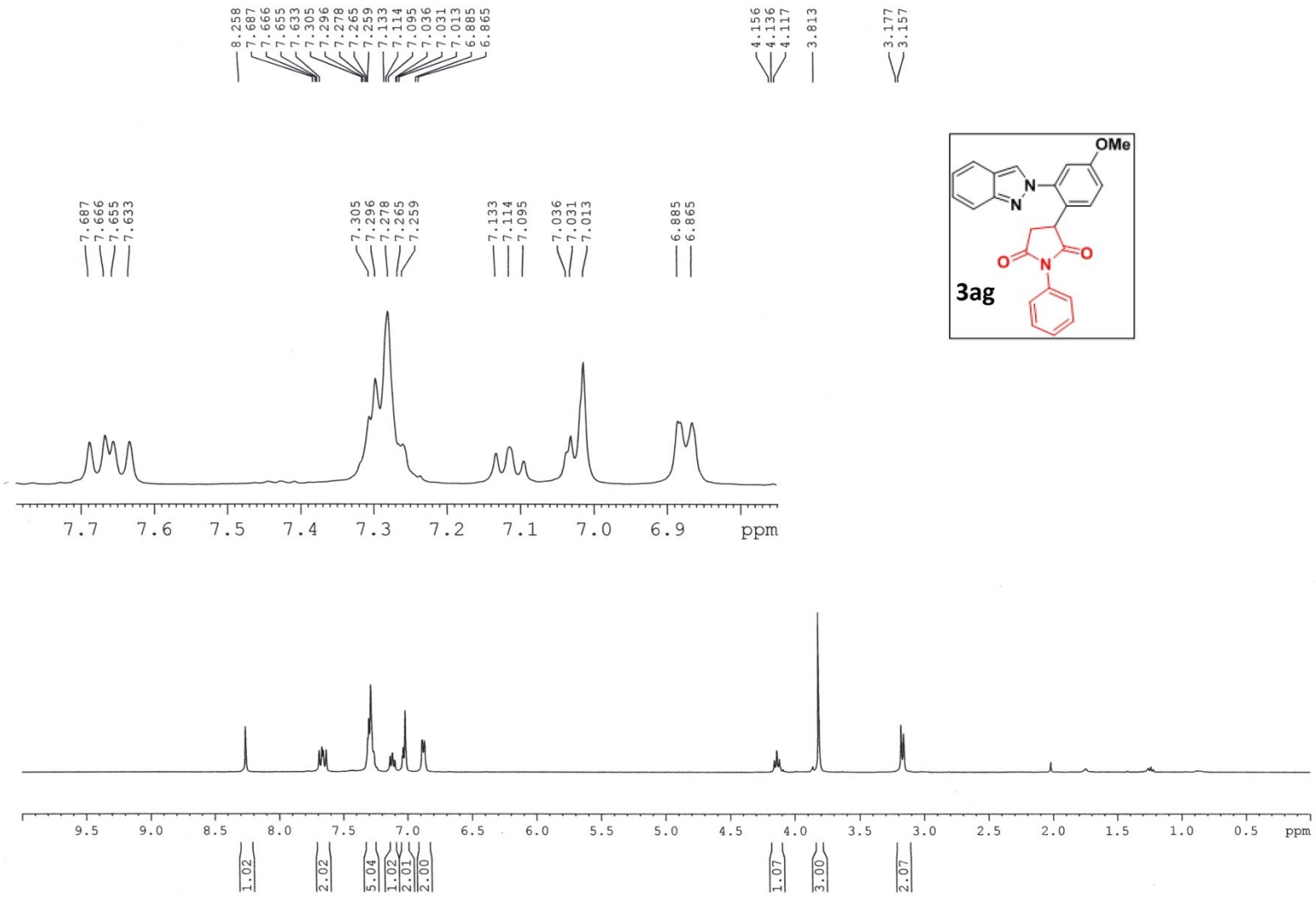

```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  448
PROCNO                   1

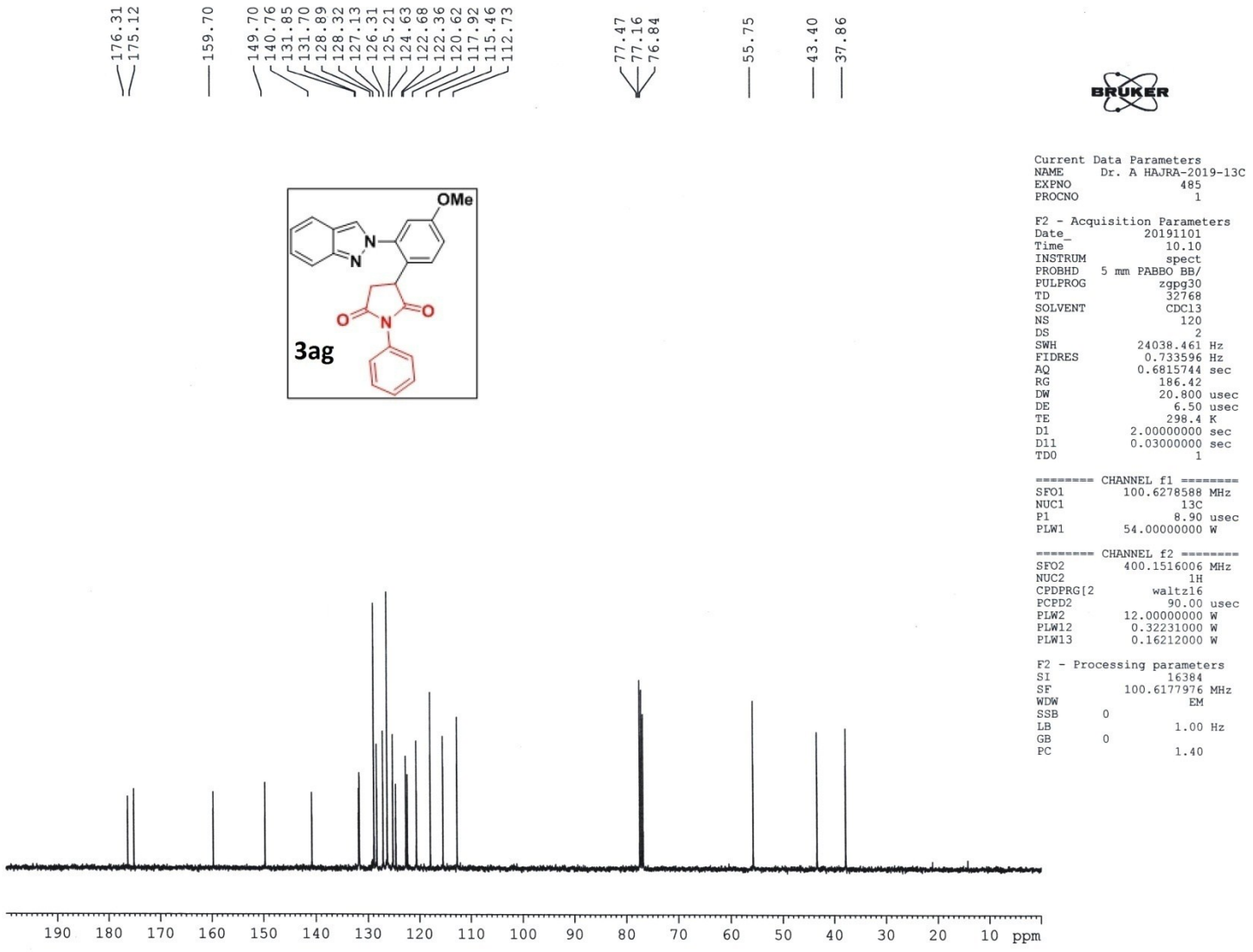
F2 - Acquisition Parameters
Date_              20191023
Time                 19.31
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   32768
SOLVENT              CDCl3
NS                     550
DS                       2
SWH              24038.461 Hz
FIDRES            0.733596 Hz
AQ                0.6815744 sec
RG                  186.42
DW                  20.800 usec
DE                   6.50 usec
TE                  299.4 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                      1

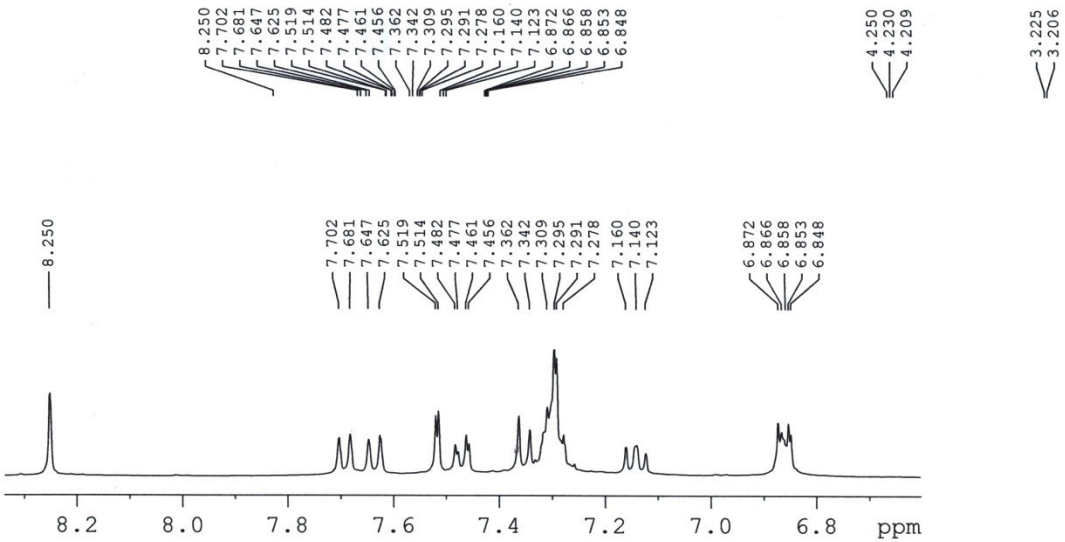
======== CHANNEL f1 ========
SFO1            100.6278588 MHz
NUC1                   13C
P1                    8.90 usec
PLW1           54.00000000 W

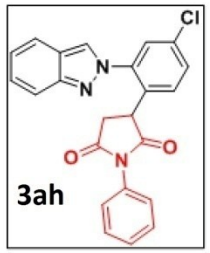
======== CHANNEL f2 ========
SFO2            400.1516006 MHz
NUC2                   1H
CPDPRG[2            waltz16
PCPD2                 90.00 usec
PLW2           12.00000000 W
PLW12           0.32231000 W
PLW13           0.16212000 W

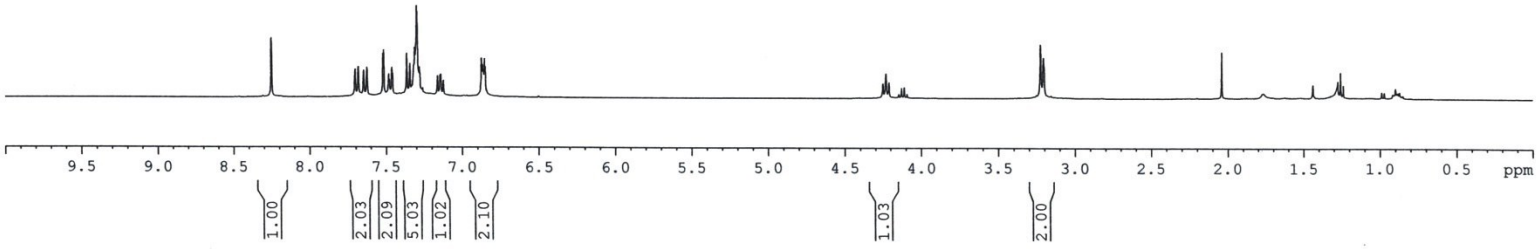
F2 - Processing parameters
SI                     16384
SF              100.6177976 MHz
WDW                      EM
SSB          0
LB                    1.00 Hz
GB           0
PC                    1.40
```

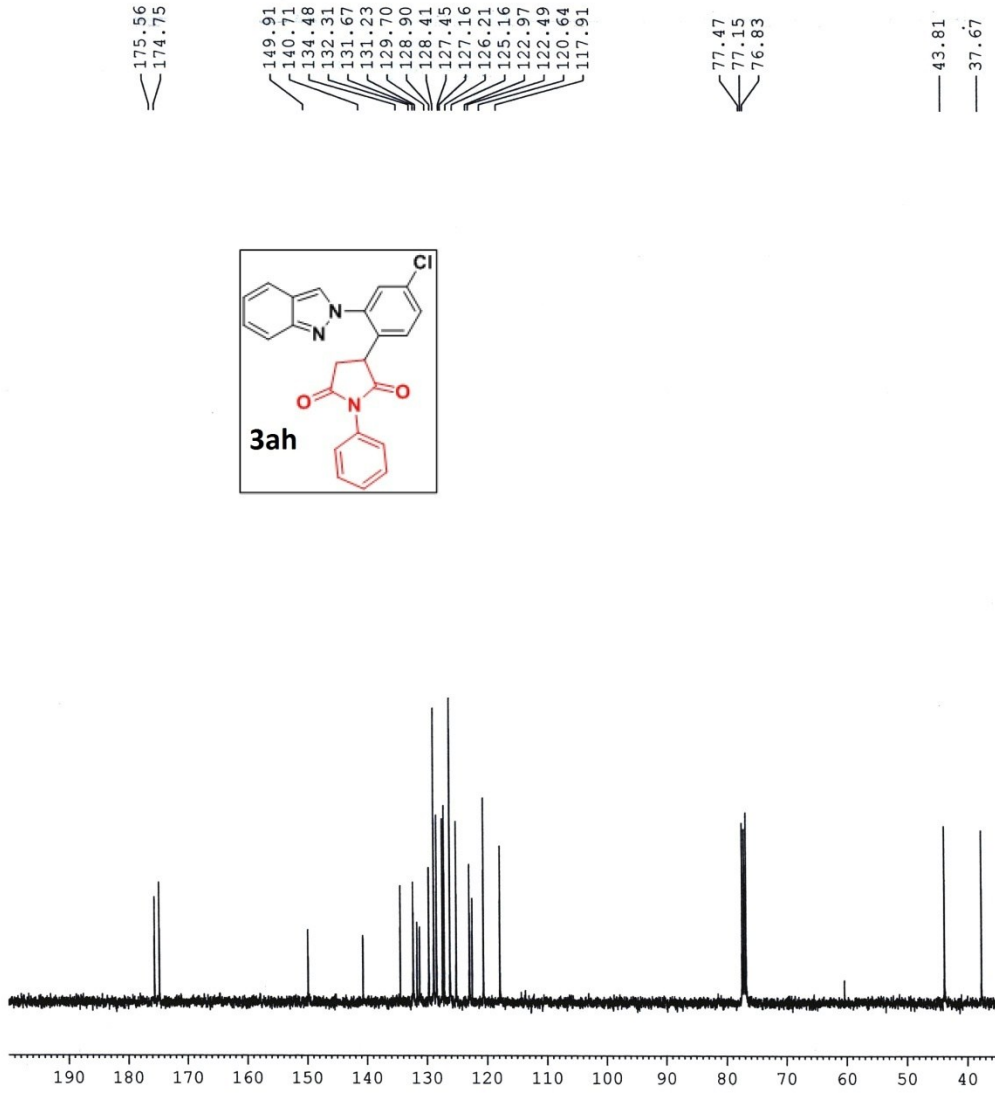

8.258
7.687
7.666
7.655
7.633
7.305
7.296
7.278
7.265
7.259
7.133
7.114
7.095
7.036
7.031
7.013
6.885
6.865
4.156
4.136
4.117
3.813
3.177
3.157
OMe
N
N
O
O
N
3ag
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7.0
6.9
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.02
2.02
5.04
1.02
2.01
2.00
1.07
3.00
2.07


176.31
175.12
159.70
149.70
140.76
131.85
131.70
128.89
128.32
127.13
126.31
125.21
124.63
122.68
122.36
120.62
117.92
115.46
112.73
77.47
77.16
76.84
55.75
43.40
37.86
OMe
N
N
O
O
N
3ag
BRUKER
Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 485
PROCNO 1
F2 - Acquisition Parameters
Date_ 20191101
Time 10.10
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 120
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 186.42
DW 20.800 usec
DE 6.50 usec
TE 298.4 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W
======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W
F2 - Processing parameters
SI 16384
SF 100.6177976 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


8.250
7.702
7.681
7.647
7.625
7.519
7.514
7.482
7.477
7.461
7.456
7.362
7.342
7.309
7.295
7.291
7.278
7.160
7.140
7.123
6.872
6.866
6.858
6.853
6.848
4.250
4.230
4.209
3.225
3.206
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
ppm


Cl
N
N
O
O
N
3ah


9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.00
2.03
2.09
5.03
1.02
2.10
1.03
2.00



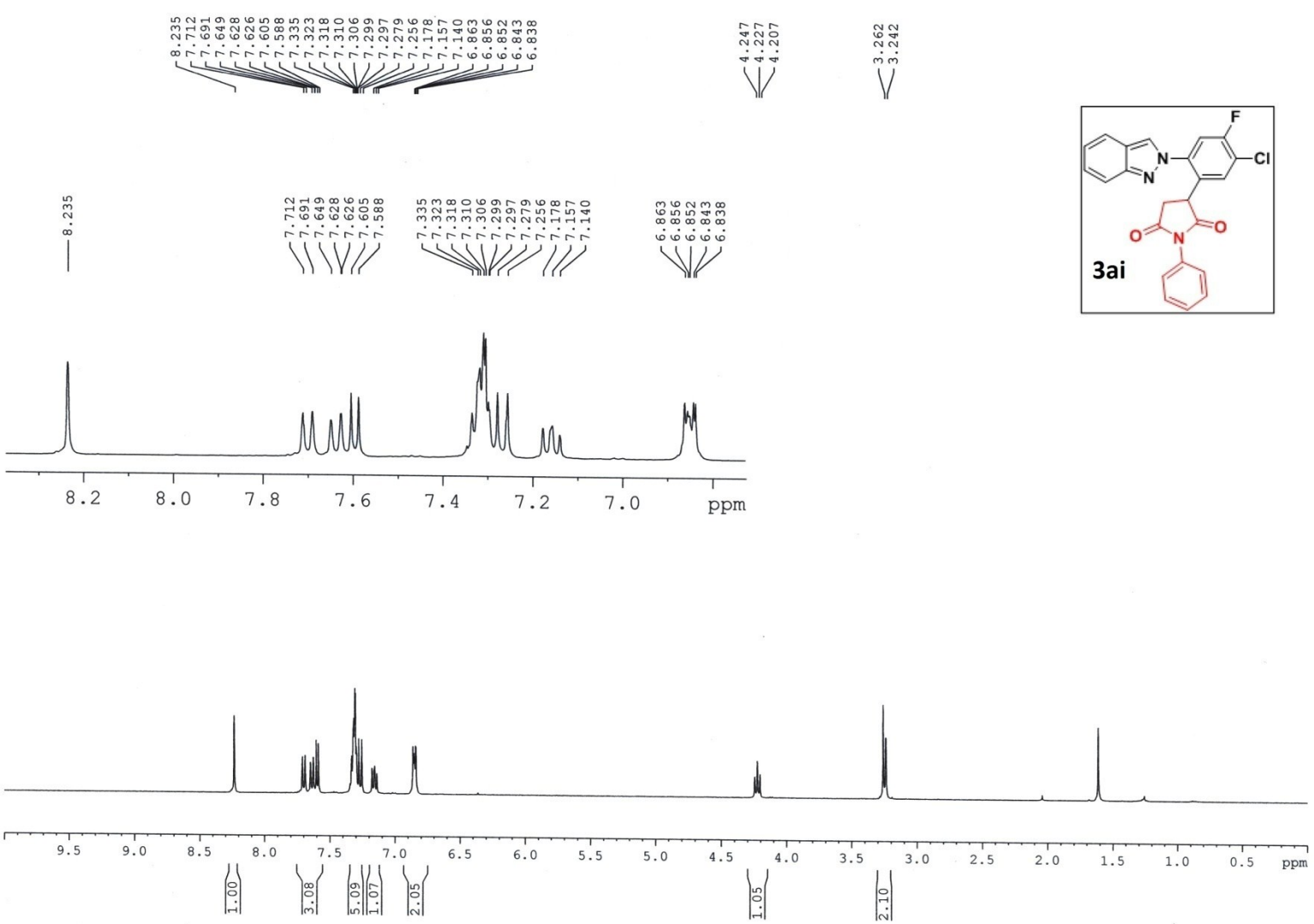

```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  474
PROCNO                   1

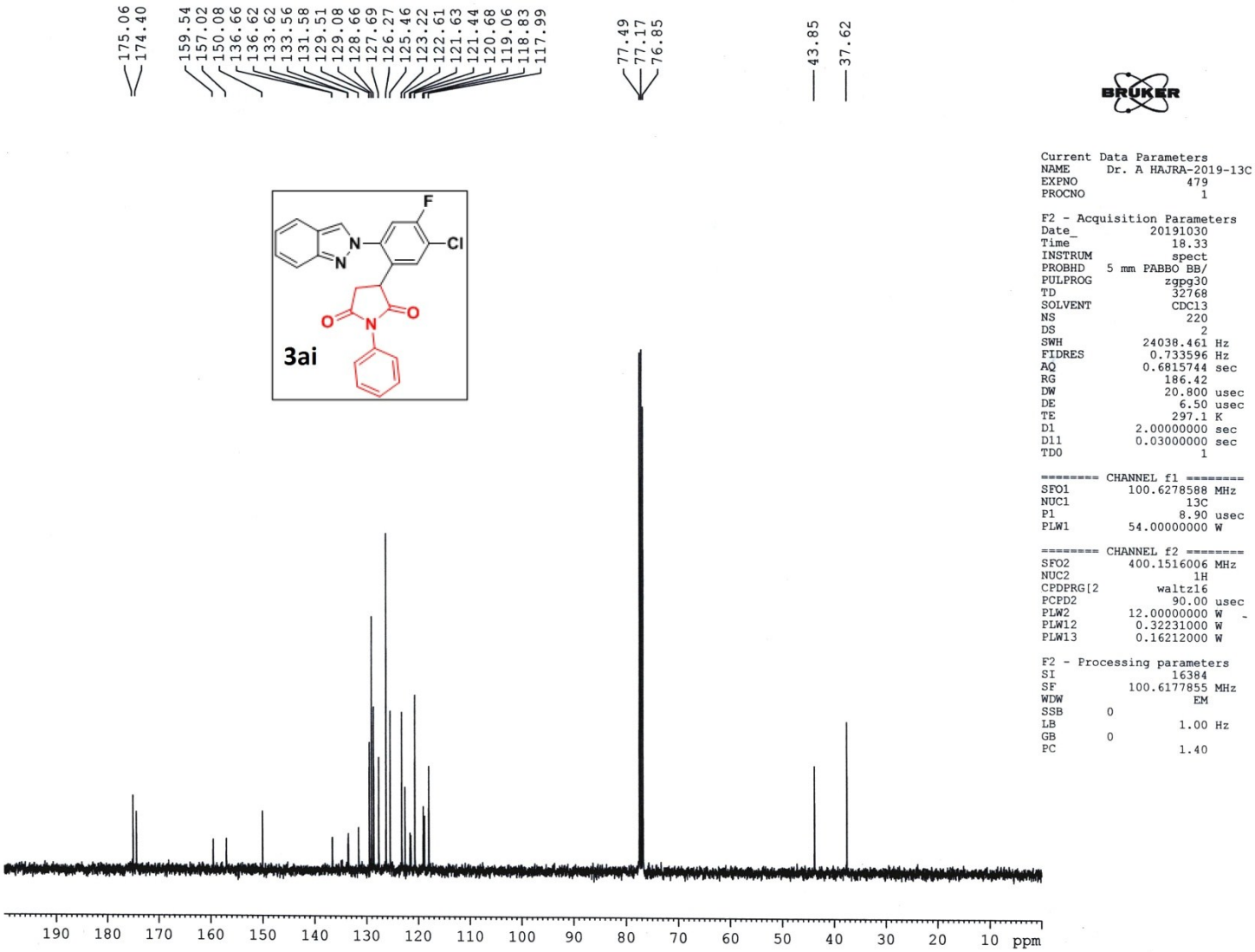
F2 - Acquisition Parameters
Date_           20191028
Time              17.09
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG         zgpg30
TD                32768
SOLVENT           CDCl3
NS                   50
DS                    2
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             0.6815744 sec
RG               186.42
DW                20.800 usec
DE                 6.50 usec
TE                296.9 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         100.6278588 MHz
NUC1                13C
P1                 8.90 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2         400.1516006 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.32231000 W
PLW13        0.16212000 W

F2 - Processing parameters
SI                16384
SF          100.6177985 MHz
WDW                 EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```


8.235
7.712
7.691
7.649
7.628
7.626
7.605
7.588
7.335
7.323
7.318
7.310
7.306
7.299
7.297
7.279
7.256
7.178
7.157
7.140
6.863
6.856
6.852
6.843
6.838
4.247
4.227
4.207
3.262
3.242
F
Cl
N
N
O
O
N
3ai
8.2
8.0
7.8
7.6
7.4
7.2
7.0
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.00
3.08
5.09
1.07
2.05
1.05
2.10



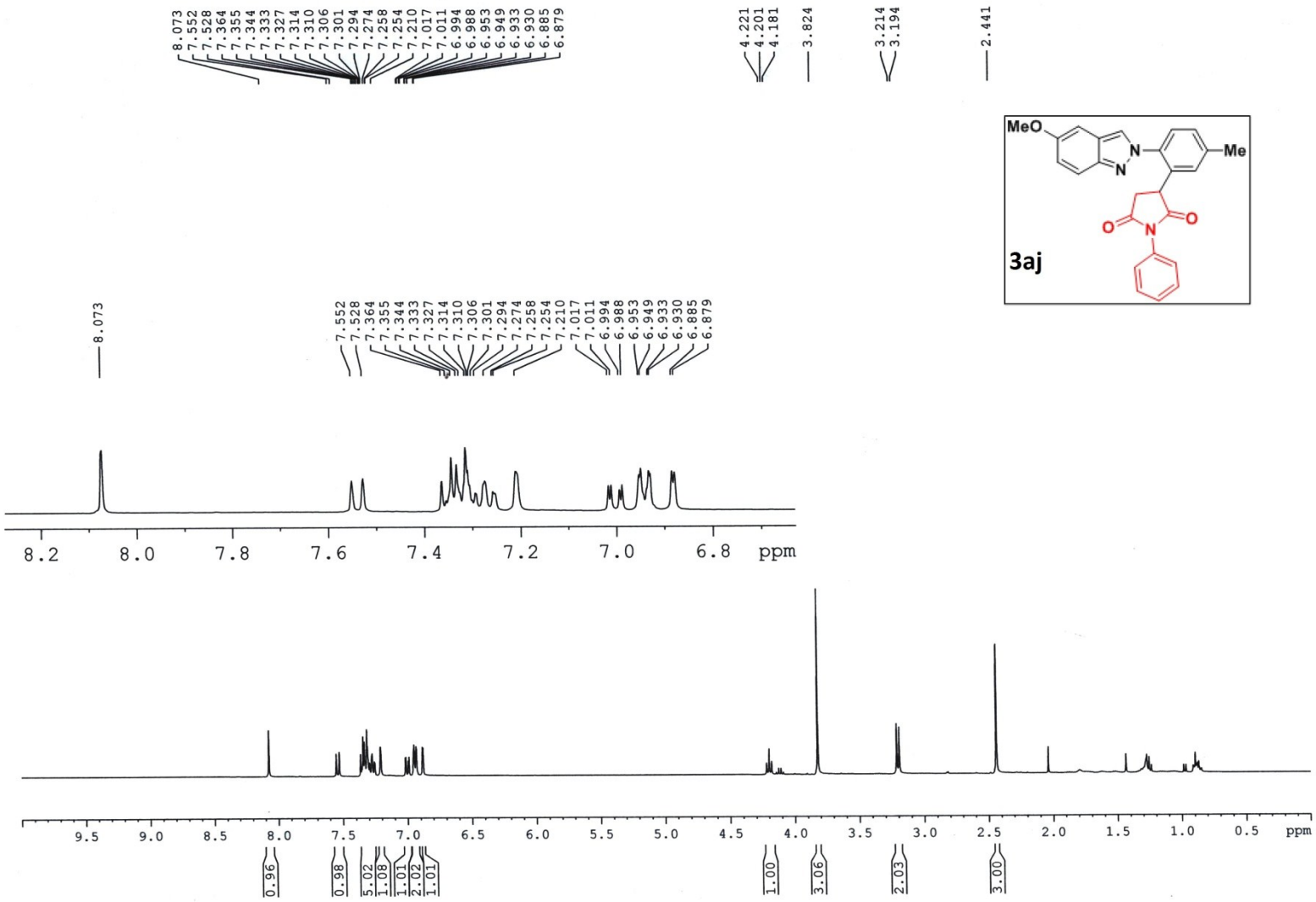

```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  479
PROCNO                   1

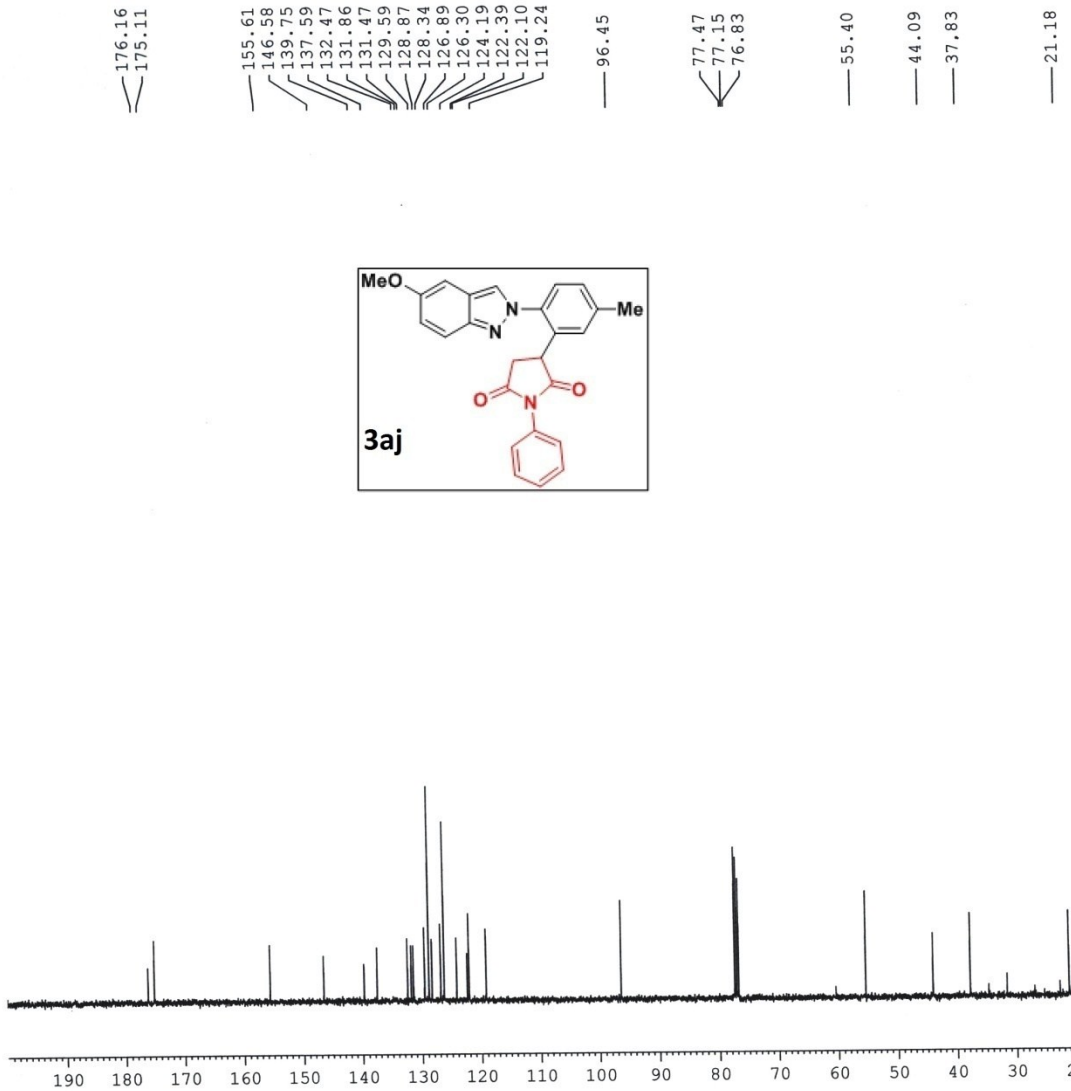
F2 - Acquisition Parameters
Date_              20191030
Time                 18.33
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   32768
SOLVENT              CDCl3
NS                     220
DS                       2
SWH              24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6815744 sec
RG                  186.42
DW                  20.800 usec
DE                   6.50 usec
TE                  297.1 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

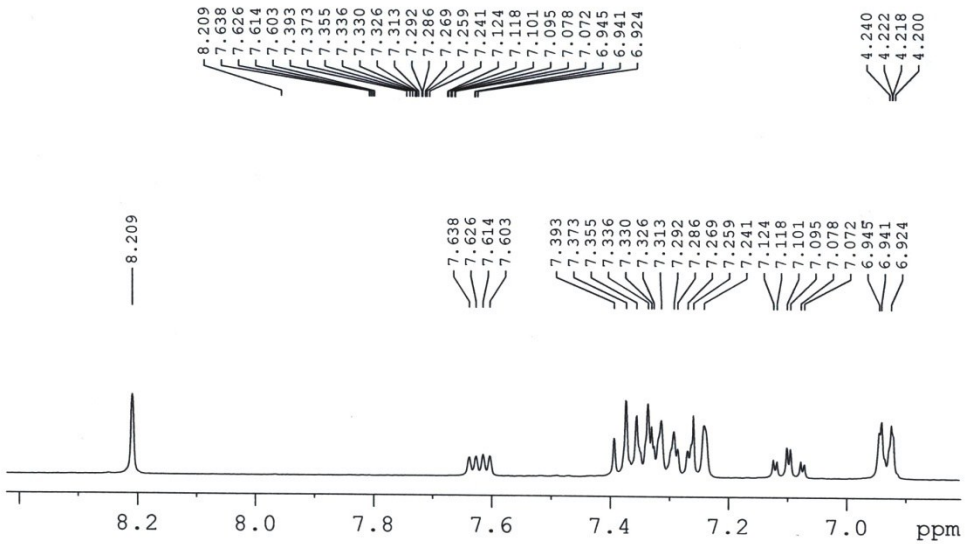
======== CHANNEL f1 ========
SFO1          100.6278588 MHz
NUC1                   13C
P1                    8.90 usec
PLW1          54.00000000 W

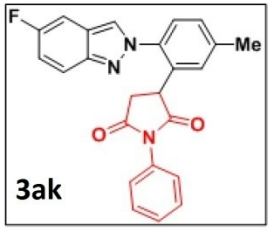
======== CHANNEL f2 ========
SFO2          400.1516006 MHz
NUC2                   1H
CPDPRG[2           waltz16
PCPD2                90.00 usec
PLW2          12.00000000 W
PLW12          0.32231000 W
PLW13          0.16212000 W

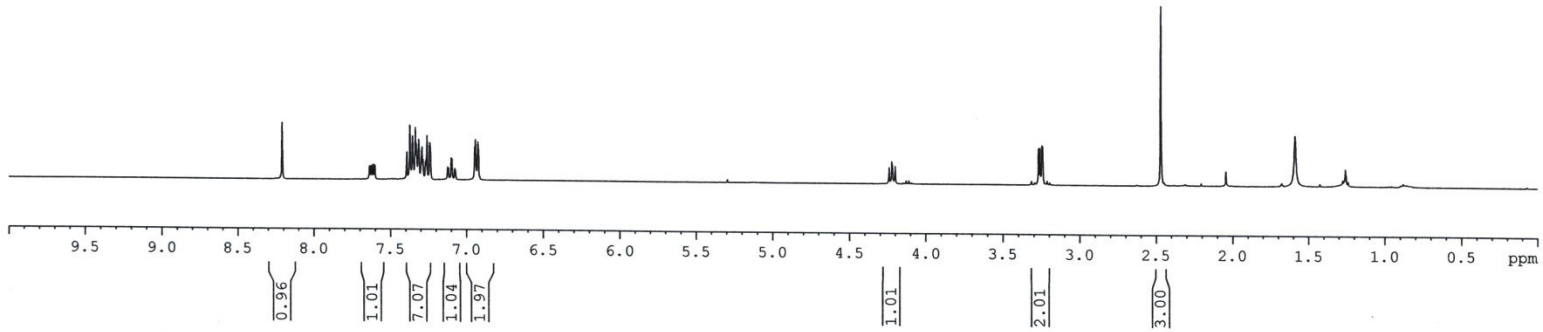
F2 - Processing parameters
SI                   16384
SF            100.6177855 MHz
WDW                    EM
SSB       0
LB                    1.00 Hz
GB        0
PC                    1.40
```

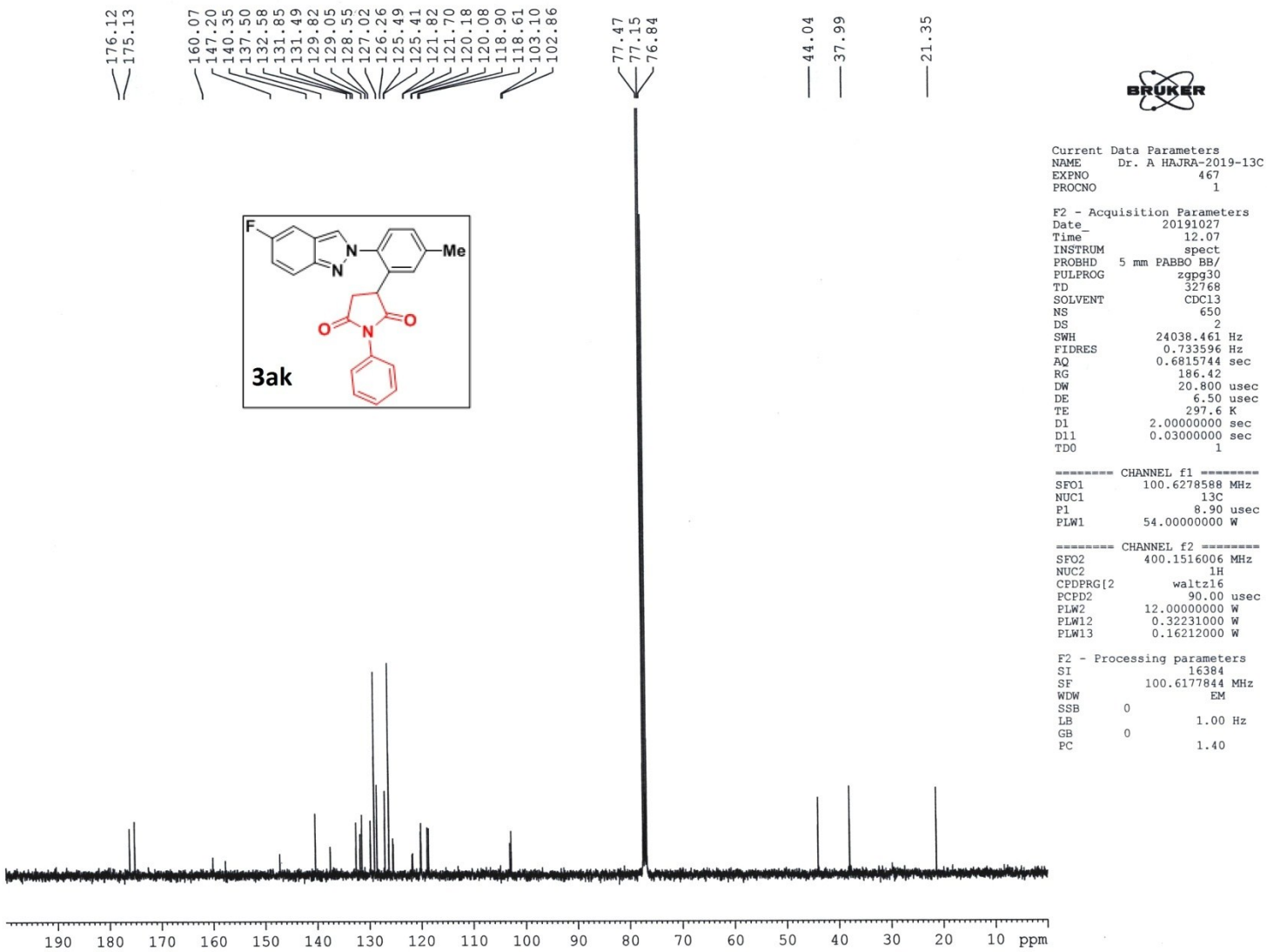

8.073
7.552
7.528
7.364
7.355
7.344
7.333
7.327
7.314
7.310
7.306
7.301
7.294
7.274
7.258
7.254
7.210
7.017
7.011
6.994
6.988
6.953
6.949
6.933
6.930
6.885
6.879
4.221
4.201
4.181
3.824
3.214
3.194
2.441
MeO
Me
N
N
O
N
O
3aj
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
0.96
0.98
5.02
1.08
1.01
2.02
1.01
1.00
3.06
2.03
3.00


176.16
175.11
155.61
146.58
139.75
137.59
132.47
131.86
131.47
129.59
128.87
128.34
126.89
126.30
124.19
122.39
122.10
119.24
96.45
77.47
77.15
76.83
55.40
44.09
37,83
21.18
MeO
Me
N
N
O
O
N
O
3aj
BRUKER
Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 452
PROCNO 1
F2 - Acquisition Parameters
Date_ 20191024
Time 12.04
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDC13
NS 30
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 186.42
DW 20.800 usec
DE 6.50 usec
TE 297.7 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W
======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W
F2 - Processing parameters
SI 16384
SF 100.6177968 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


8.209
7.638
7.626
7.614
7.603
7.393
7.373
7.355
7.336
7.330
7.326
7.313
7.292
7.286
7.269
7.259
7.241
7.124
7.118
7.101
7.095
7.078
7.072
6.945
6.941
6.924
8.2
8.0
7.8
7.6
7.4
7.2
7.0
ppm


F
N
N
Me
O
N
O
3ak


4.240
4.222
4.218
4.200
3.270
3.261
3.248
3.243
2.469
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
0.96
1.01
7.07
1.04
1.97
1.01
2.01
3.00



BRUKER

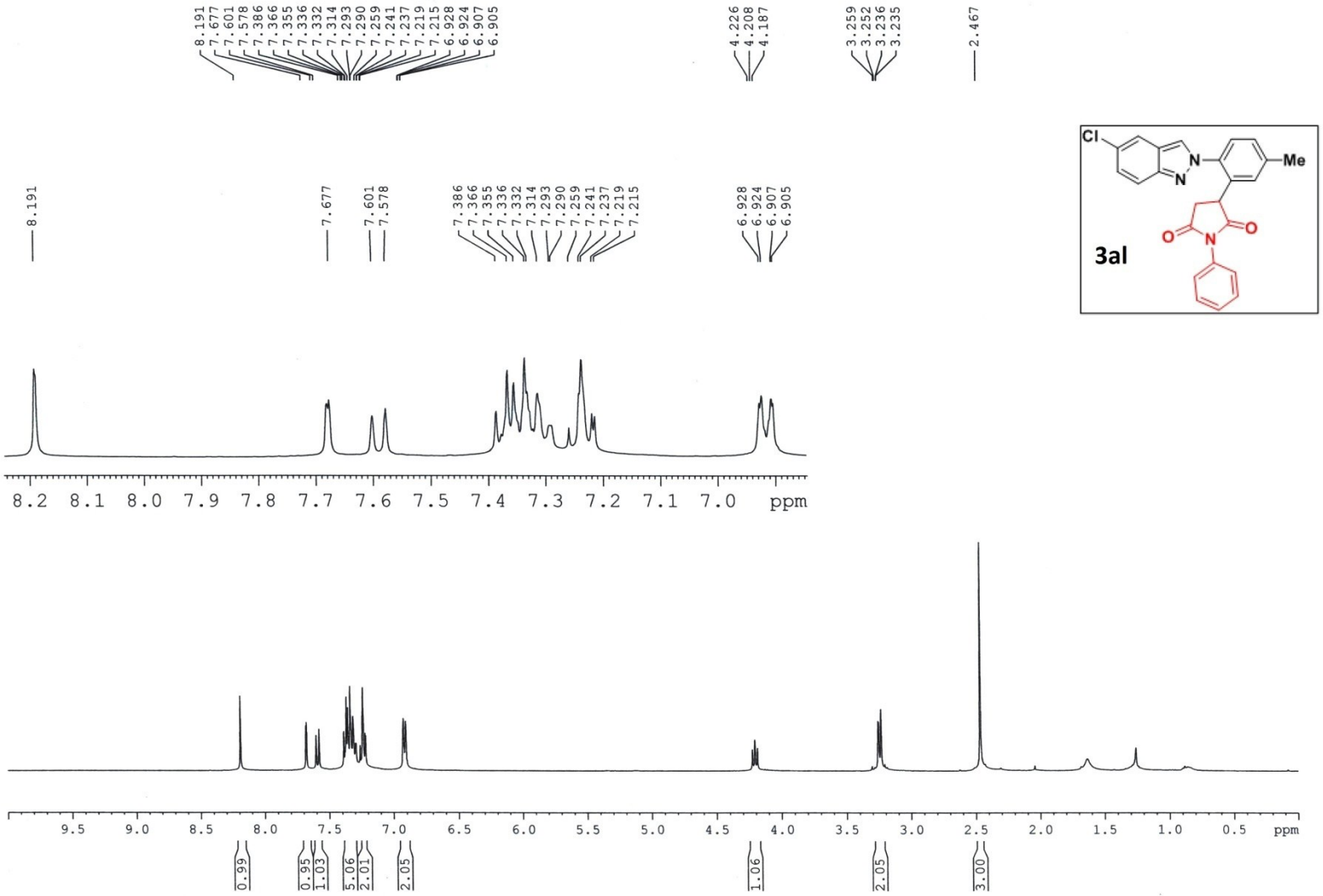
```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  467
PROCNO                   1

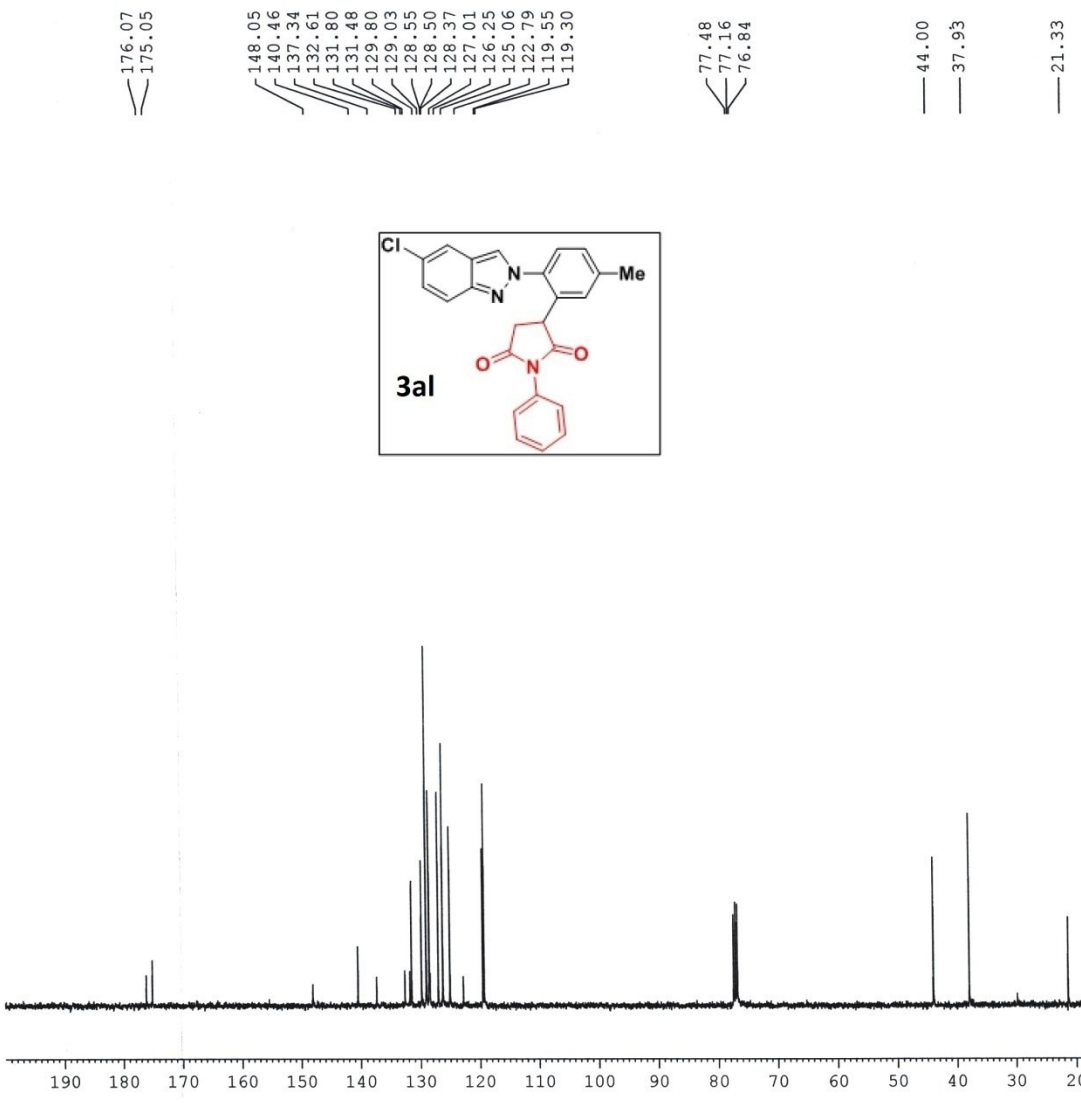
F2 - Acquisition Parameters
Date_               20191027
Time                   12.07
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG              zgpg30
TD                    32768
SOLVENT               CDCl3
NS                      650
DS                        2
SWH                24038.461 Hz
FIDRES             0.733596 Hz
AQ                 0.6815744 sec
RG                    186.42
DW                    20.800 usec
DE                     6.50 usec
TE                    297.6 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                       1

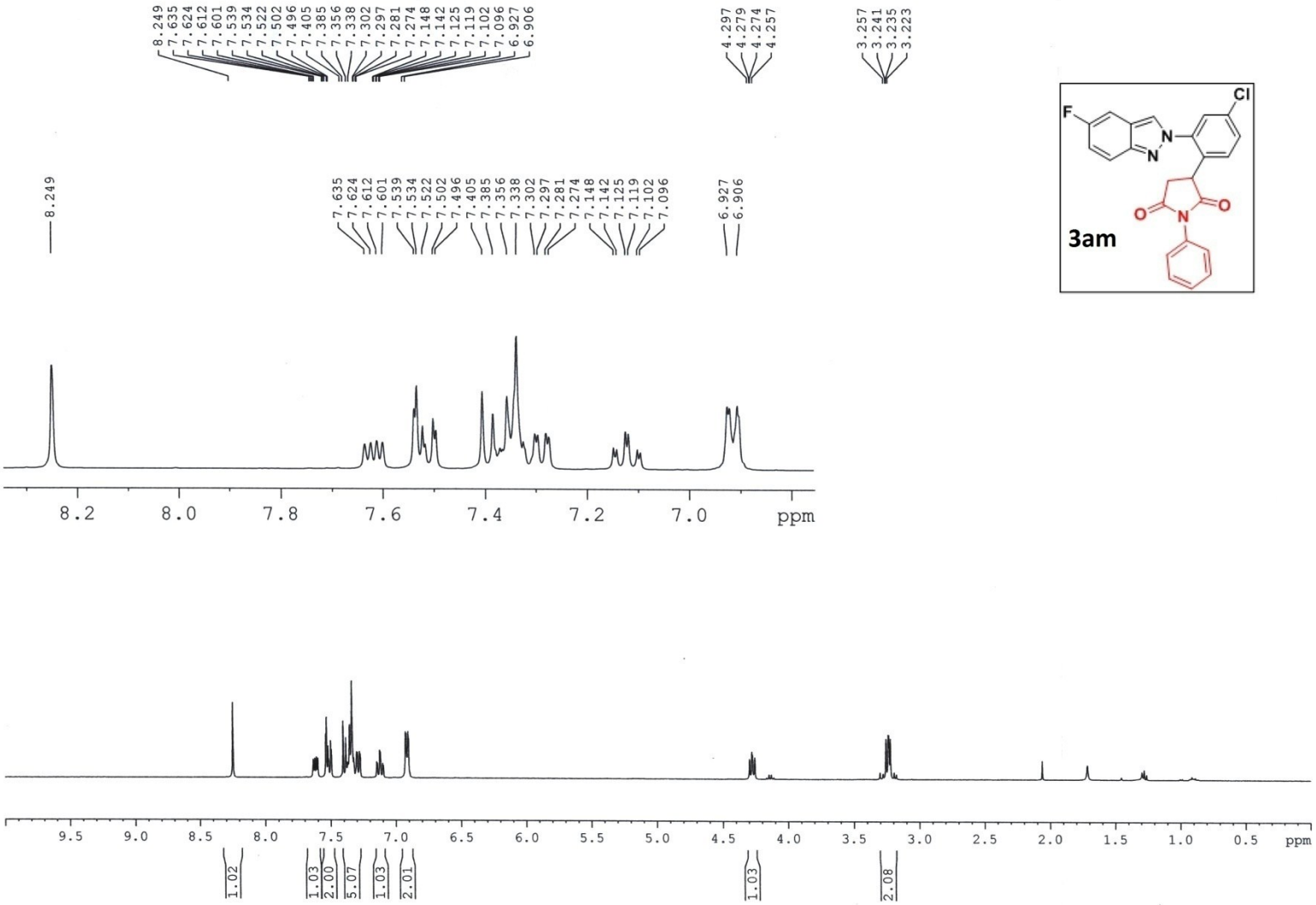
======== CHANNEL f1 ========
SFO1              100.6278588 MHz
NUC1                     13C
P1                      8.90 usec
PLW1              54.00000000 W

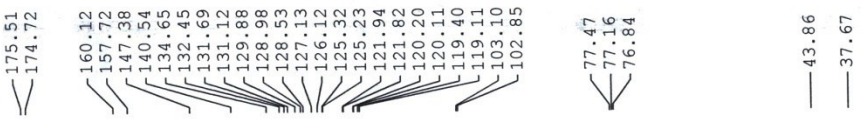
======== CHANNEL f2 ========
SFO2              400.1516006 MHz
NUC2                     1H
CPDPRG[2              waltz16
PCPD2                  90.00 usec
PLW2              12.00000000 W
PLW12              0.32231000 W
PLW13              0.16212000 W

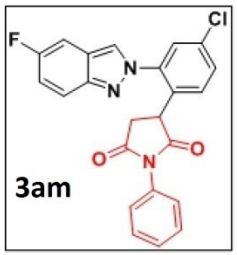
F2 - Processing parameters
SI                       16384
SF                400.6177844 MHz
WDW                        EM
SSB          0
LB                      1.00 Hz
GB           0
PC                      1.40
```

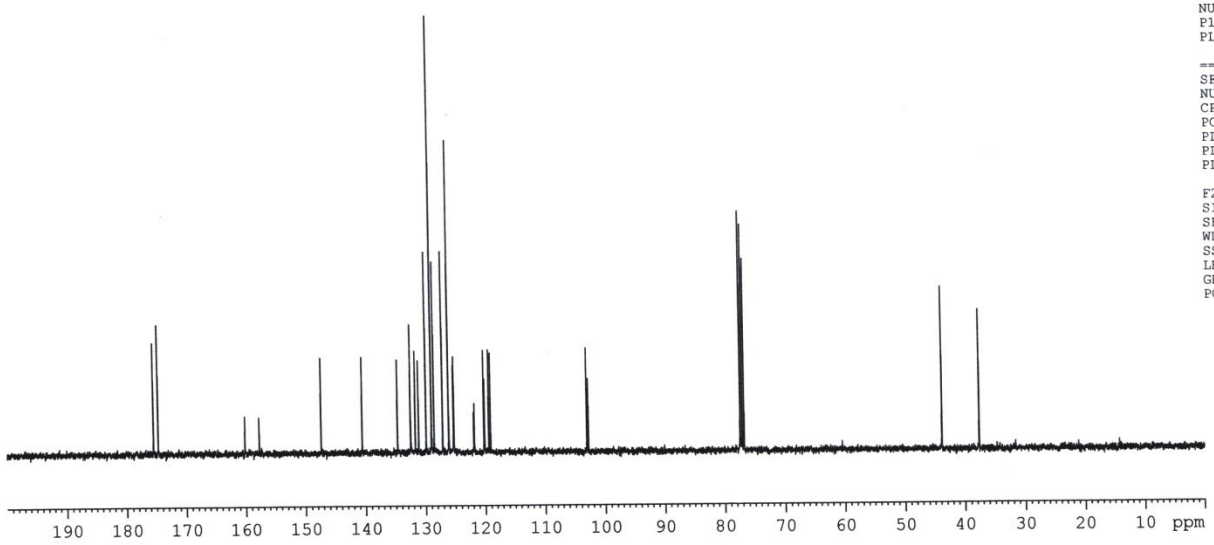

8.191
7.677
7.601
7.578
7.386
7.366
7.355
7.336
7.332
7.314
7.293
7.290
7.259
7.241
7.237
7.219
7.215
6.928
6.924
6.907
6.905
4.226
4.208
4.187
3.259
3.252
3.236
3.235
2.467
Cl
N
N
Me
O
N
O
3al
8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 ppm
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 ppm
0.99
0.95
1.03
5.06
2.01
2.05
1.06
2.05
3.00


176.07
175.05
148.05
140.46
137.34
132.61
131.80
131.48
129.80
129.03
128.55
128.50
128.37
127.01
126.25
125.06
122.79
119.55
119.30
77.48
77.16
76.84
44.00
37.93
21.33
Cl
N
N
Me
O
N
O
3al
BRUKER
Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 419
PROCNO 1
F2 - Acquisition Parameters
Date_ 20191017
Time 20.45
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgdc
TD 32768
SOLVENT CDCl3
NS 420
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 186.42
DW 20.800 usec
DE 6.50 usec
TE 298.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W
======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
F2 - Processing parameters
SI 16384
SF 100.6177867 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.00
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


8.249
7.635
7.624
7.612
7.601
7.539
7.534
7.522
7.502
7.496
7.405
7.385
7.356
7.338
7.302
7.297
7.281
7.274
7.148
7.142
7.125
7.119
7.102
7.096
6.927
6.906
4.297
4.279
4.274
4.257
3.257
3.241
3.235
3.223
F
Cl
N
N
O
N
O
3am
8.2
8.0
7.8
7.6
7.4
7.2
7.0
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.02
1.03
2.00
5.07
1.03
2.01
1.03
2.08







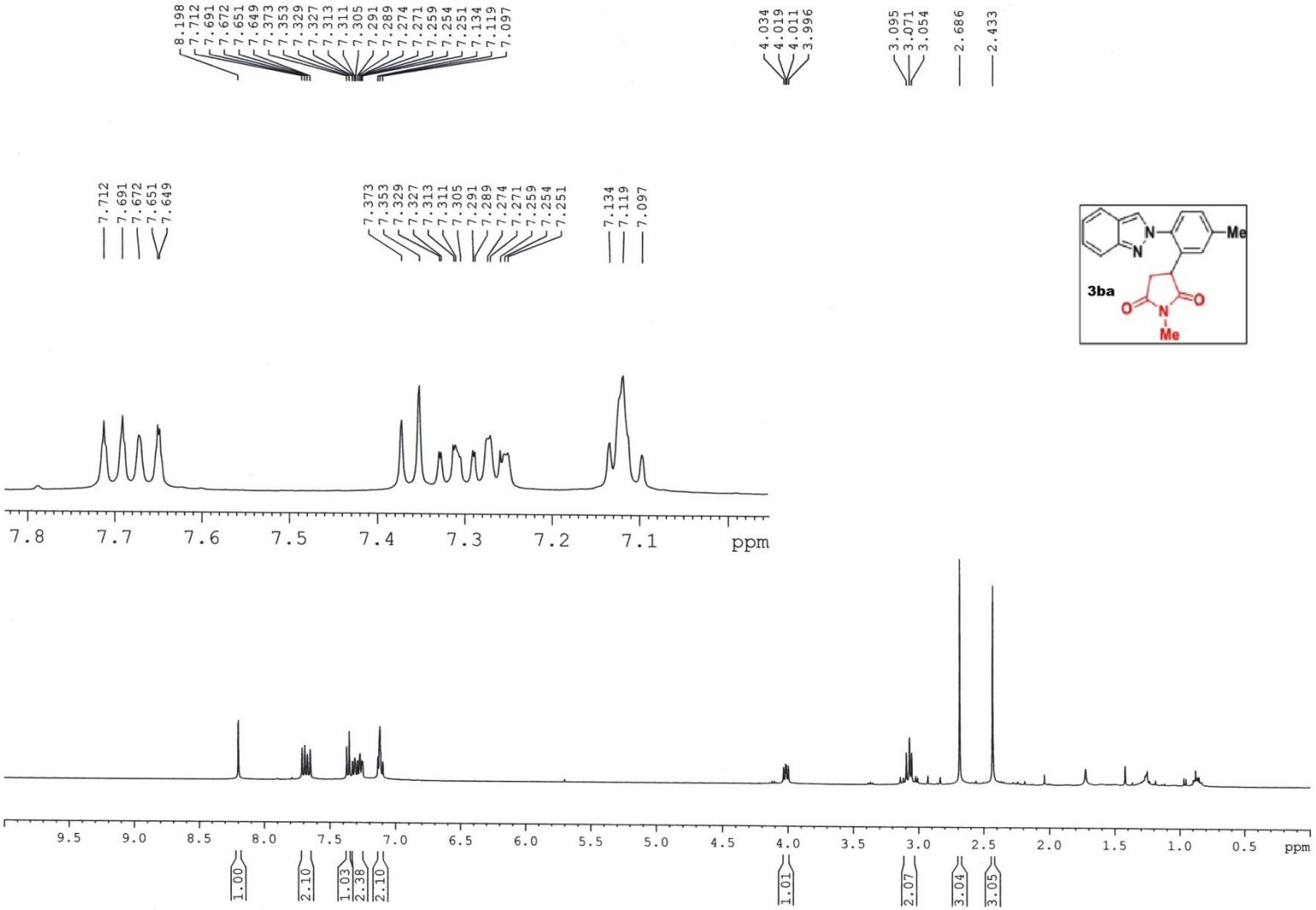

```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  481
PROCNO                   1

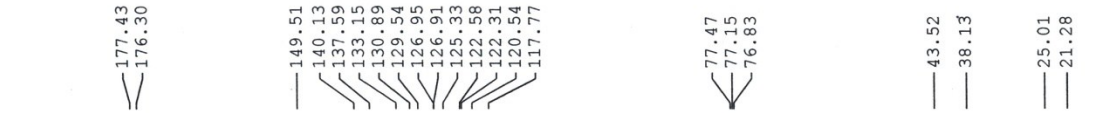
F2 - Acquisition Parameters
Date_              20191031
Time                 10.06
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   32768
SOLVENT              CDCl3
NS                     120
DS                       2
SWH              24038.461 Hz
FIDRES            0.733596 Hz
AQ                0.6815744 sec
RG                   186.42
DW                  20.800 usec
DE                   6.50 usec
TE                  298.3 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                      1

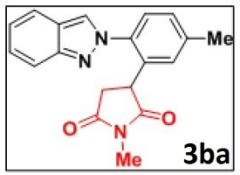
======== CHANNEL f1 ========
SFO1           100.6278588 MHz
NUC1                   13C
P1                    8.90 usec
PLW1          54.00000000 W

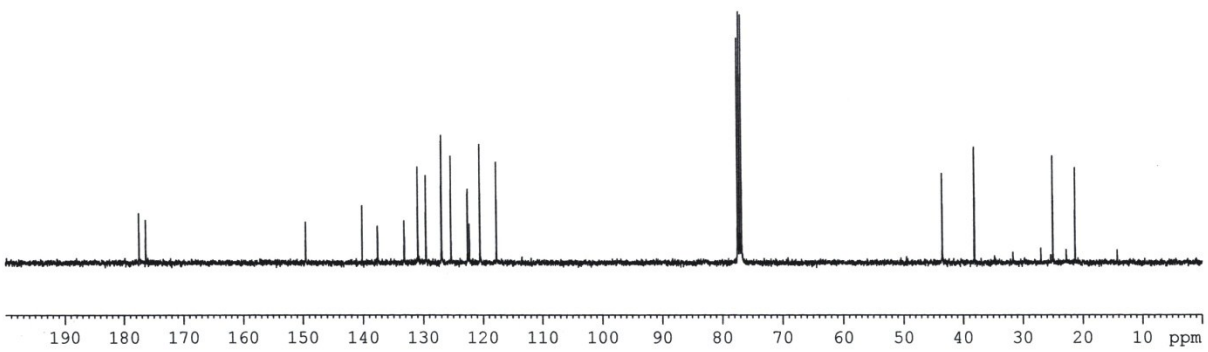
======== CHANNEL f2 ========
SFO2           400.1516006 MHz
NUC2                   1H
CPDPRG[2           waltz16
PCPD2                90.00 usec
PLW2          12.00000000 W
PLW12          0.32231000 W
PLW13          0.16212000 W

F2 - Processing parameters
SI                   16384
SF           100.6177931 MHz
WDW                    EM
SSB       0
LB                    1.00 Hz
GB        0
PC                    1.40
```


8.198
7.712
7.691
7.672
7.651
7.649
7.373
7.353
7.329
7.327
7.313
7.311
7.305
7.291
7.289
7.274
7.271
7.259
7.254
7.251
7.134
7.119
7.097
4.034
4.019
4.011
3.996
3.095
3.071
3.054
2.686
2.433
3ba
Me
N
N
O
O
N
Me
ppm
1.00
2.10
1.03
2.38
2.10
1.01
2.07
3.04
3.05







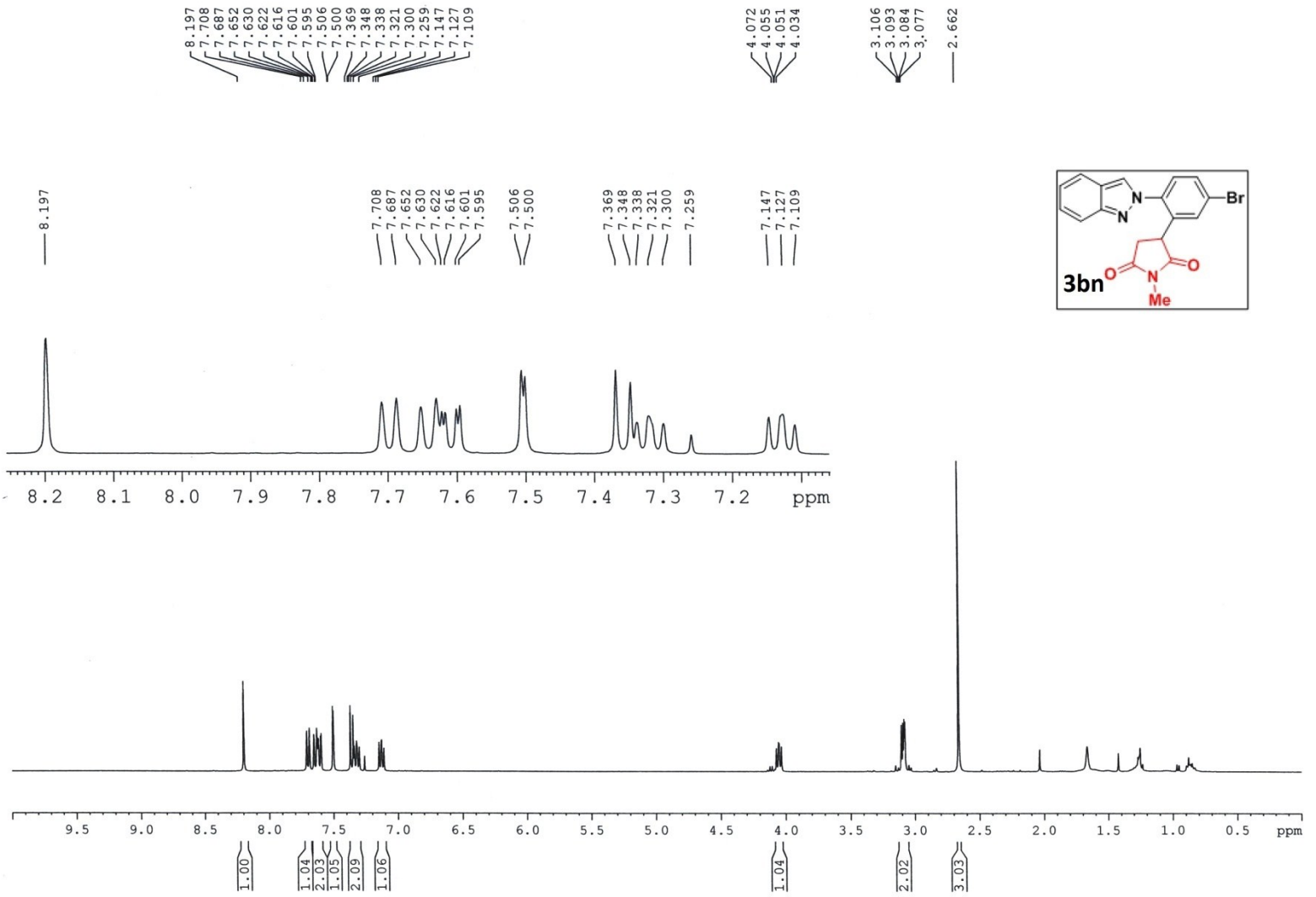

```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  520
PROCNO                   1

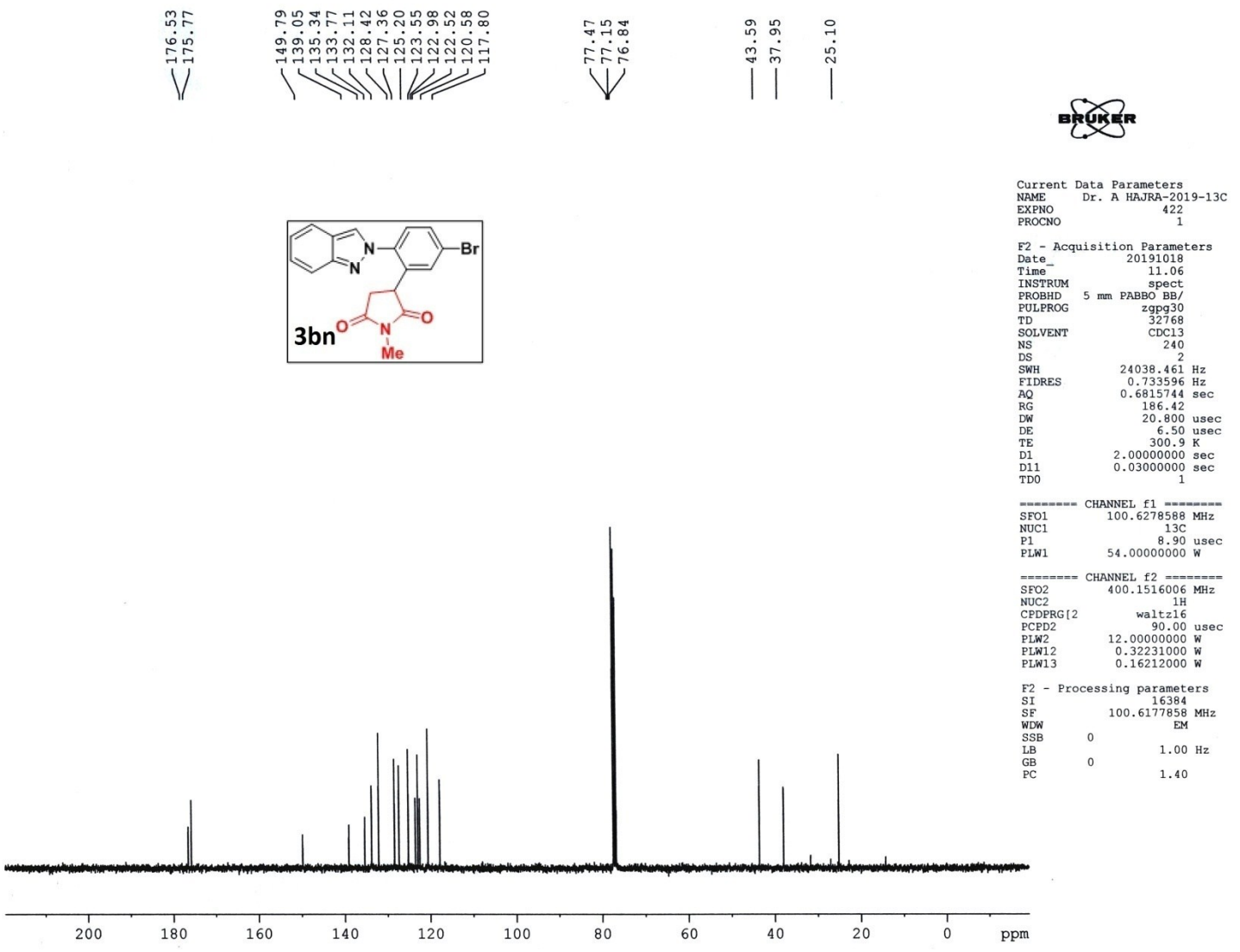
F2 - Acquisition Parameters
Date_           20191113
Time              10.16
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                32768
SOLVENT           CDCl3
NS                  300
DS                    2
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             0.6815744 sec
RG                67.81
DW                20.800 usec
DE                 6.50 usec
TE                296.7 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1

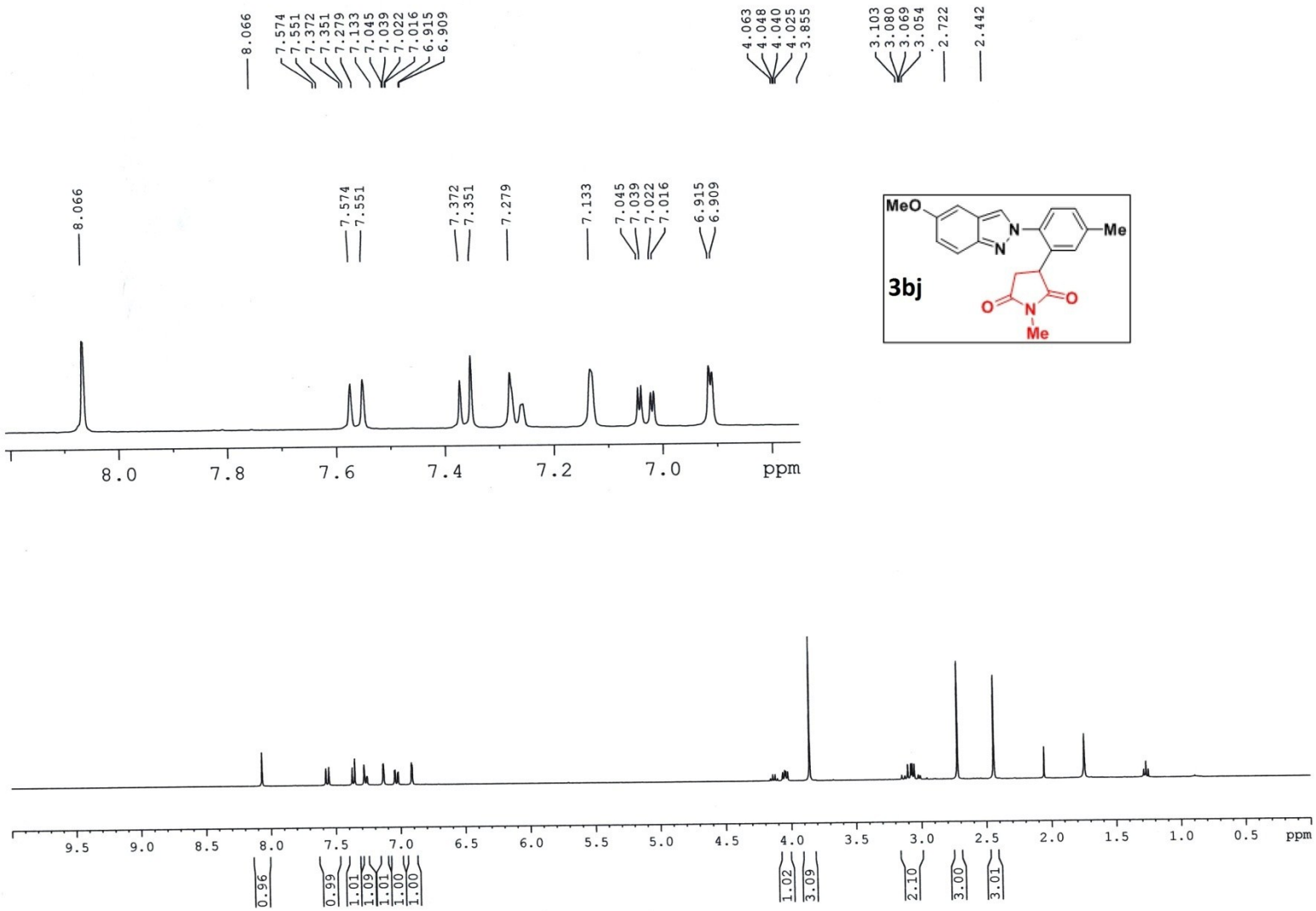
======== CHANNEL f1 ========
SFO1         100.6278588 MHz
NUC1                13C
P1                 8.90 usec
PLW1         54.00000000 W

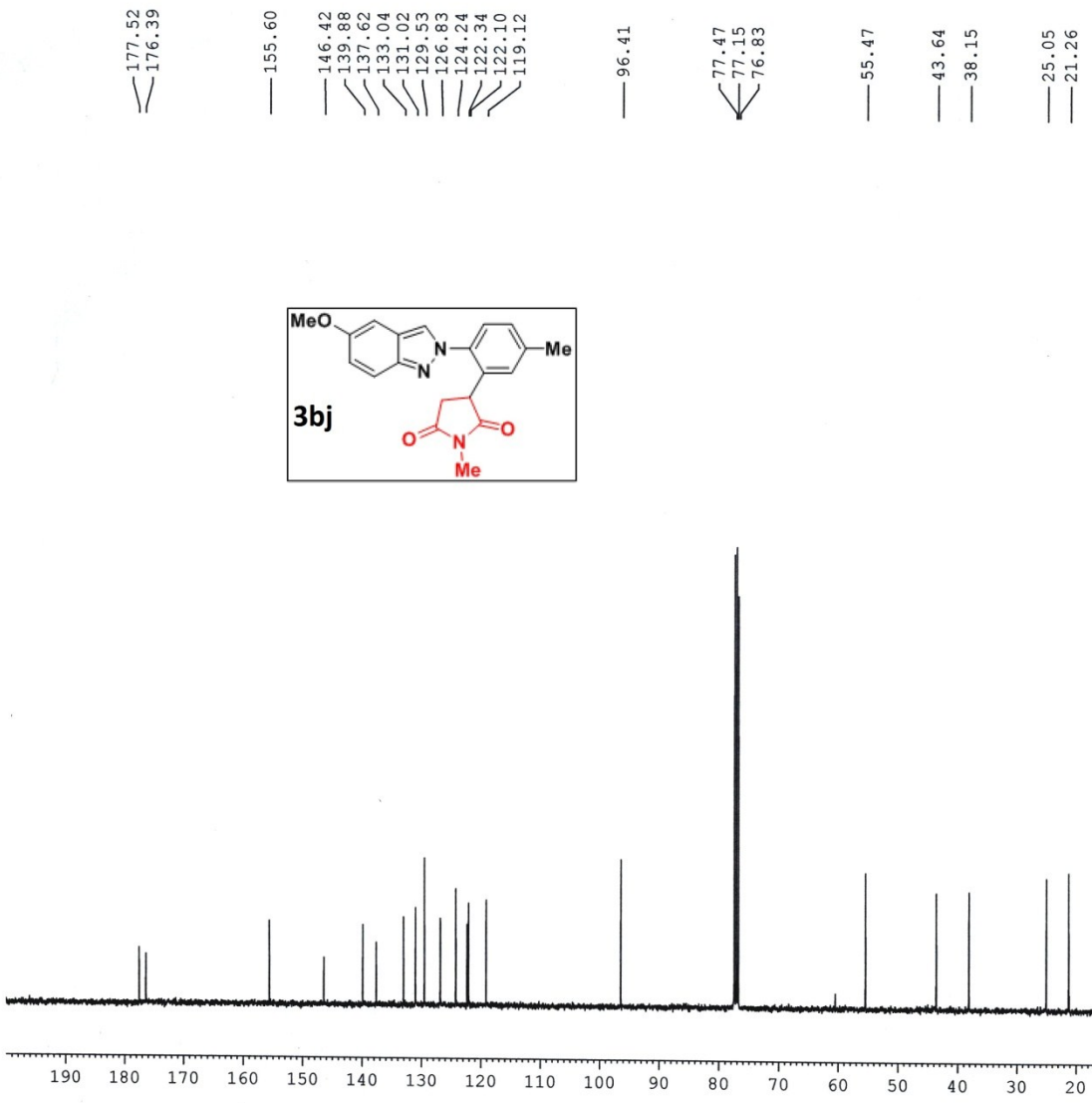
======== CHANNEL f2 ========
SFO2         400.1516006 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.32231000 W
PLW13         0.16212000 W

F2 - Processing parameters
SI                 16384
SF           100.6177886 MHz
WDW                  EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```


8.197
7.708
7.687
7.652
7.630
7.622
7.616
7.601
7.595
7.506
7.500
7.369
7.348
7.338
7.321
7.300
7.259
7.147
7.127
7.109
4.072
4.055
4.051
4.034
3.106
3.093
3.084
3.077
2.662
Br
N
N
O
O
N
Me
3bn
ppm
1.00
1.04
2.03
1.05
2.09
1.06
1.04
2.02
3.03


176.53
175.77
149.79
139.05
135.34
133.77
132.11
128.42
127.36
125.20
123.55
122.98
122.52
120.58
117.80
77.47
77.15
76.84
43.59
37.95
25.10
3bn
Br
N
N
O
O
N
Me
BRUKER
Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 422
PROCNO 1
F2 - Acquisition Parameters
Date_ 20191018
Time 11.06
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 240
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 186.42
DW 20.800 usec
DE 6.50 usec
TE 300.9 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W
======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W
F2 - Processing parameters
SI 16384
SF 100.6177858 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
200
180
160
140
120
100
80
60
40
20
0
ppm


8.066
7.574
7.551
7.372
7.351
7.279
7.133
7.045
7.039
7.022
7.016
6.915
6.909
4.063
4.048
4.040
4.025
3.855
3.103
3.080
3.069
3.054
2.722
2.442
MeO
Me
N
N
3bj
O
O
N
Me
8.0
7.8
7.6
7.4
7.2
7.0
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
0.96
0.99
1.01
1.09
1.01
1.00
1.00
1.02
3.09
2.10
3.00
3.01



BRUKER

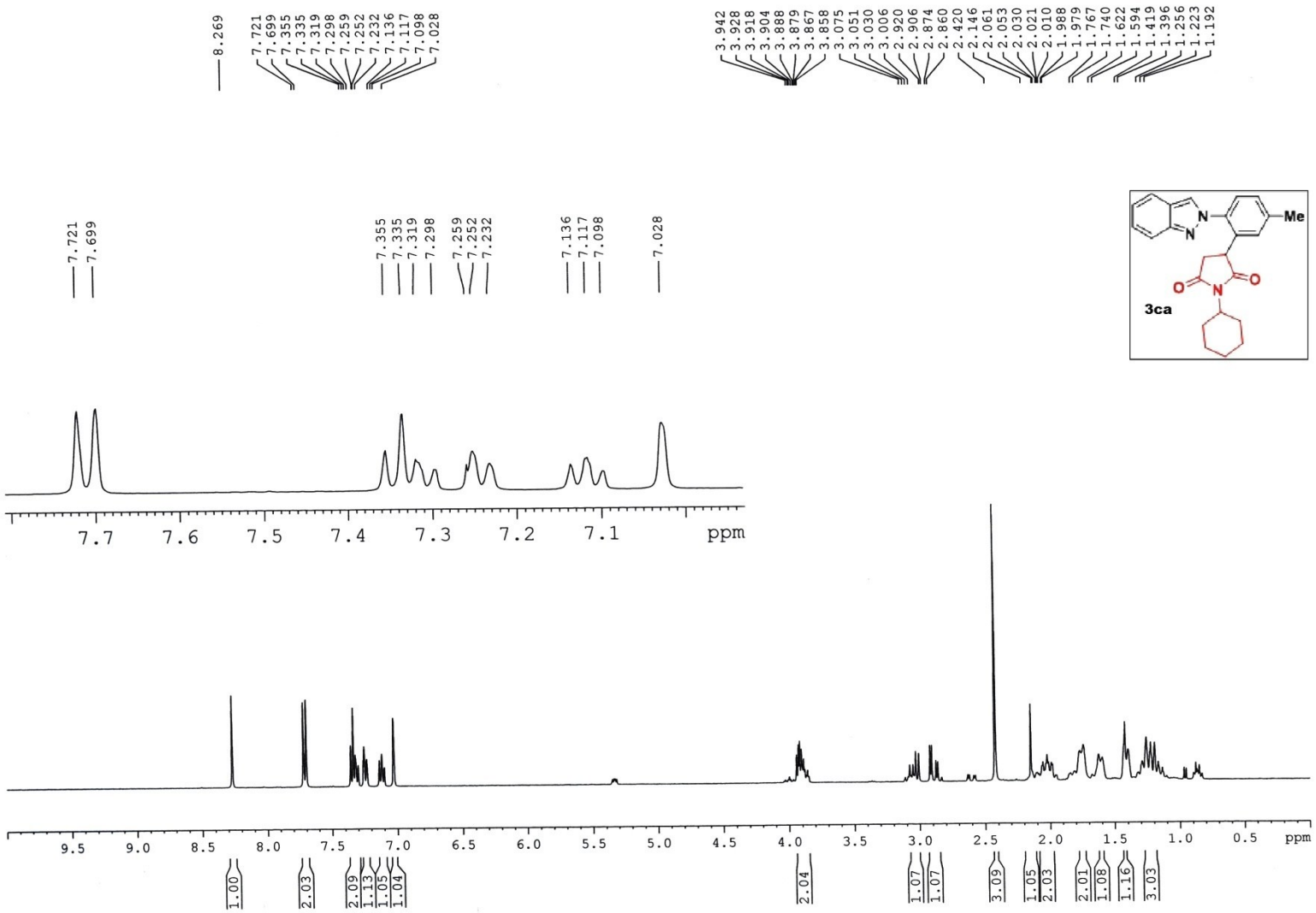
```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  473
PROCNO                   1

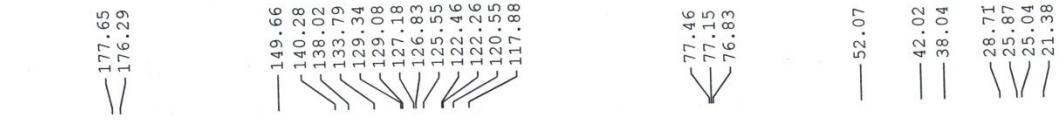
F2 - Acquisition Parameters
Date_             20191028
Time                 16.07
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 32768
SOLVENT            CDCl3
NS                   512
DS                     2
SWH              24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6815744 sec
RG                 186.42
DW                 20.800 usec
DE                  6.50 usec
TE                 296.8 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                    1

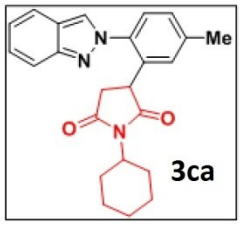
======== CHANNEL f1 ========
SFO1         100.6278588 MHz
NUC1                13C
P1                 8.90 usec
PLW1         54.00000000 W

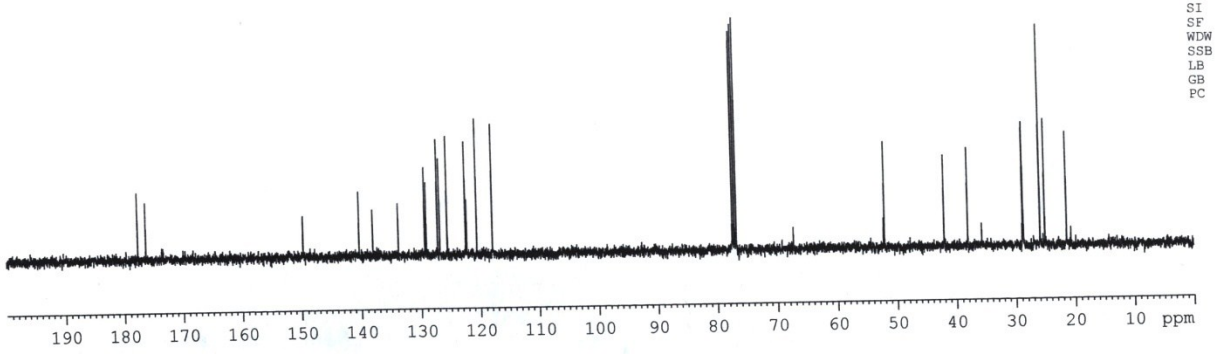
======== CHANNEL f2 ========
SFO2         400.1516006 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2         12.00000000 W
PLW12         0.32231000 W
PLW13         0.16212000 W

F2 - Processing parameters
SI                 16384
SF           100.6177873 MHz
WDW                  EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```


8.269
7.721
7.699
7.355
7.335
7.319
7.298
7.259
7.252
7.232
7.136
7.117
7.098
7.028
3.942
3.928
3.918
3.904
3.888
3.879
3.867
3.858
3.075
3.051
3.030
3.006
2.920
2.906
2.874
2.860
2.420
2.146
2.061
2.053
2.030
2.021
2.010
1.988
1.979
1.767
1.740
1.622
1.594
1.419
1.396
1.256
1.223
1.192
Me
N
N
O
N
O
3ca
ppm
1.00
2.03
2.09
1.13
1.05
1.04
2.04
1.07
1.07
3.09
1.05
2.03
2.01
1.08
1.16
3.03







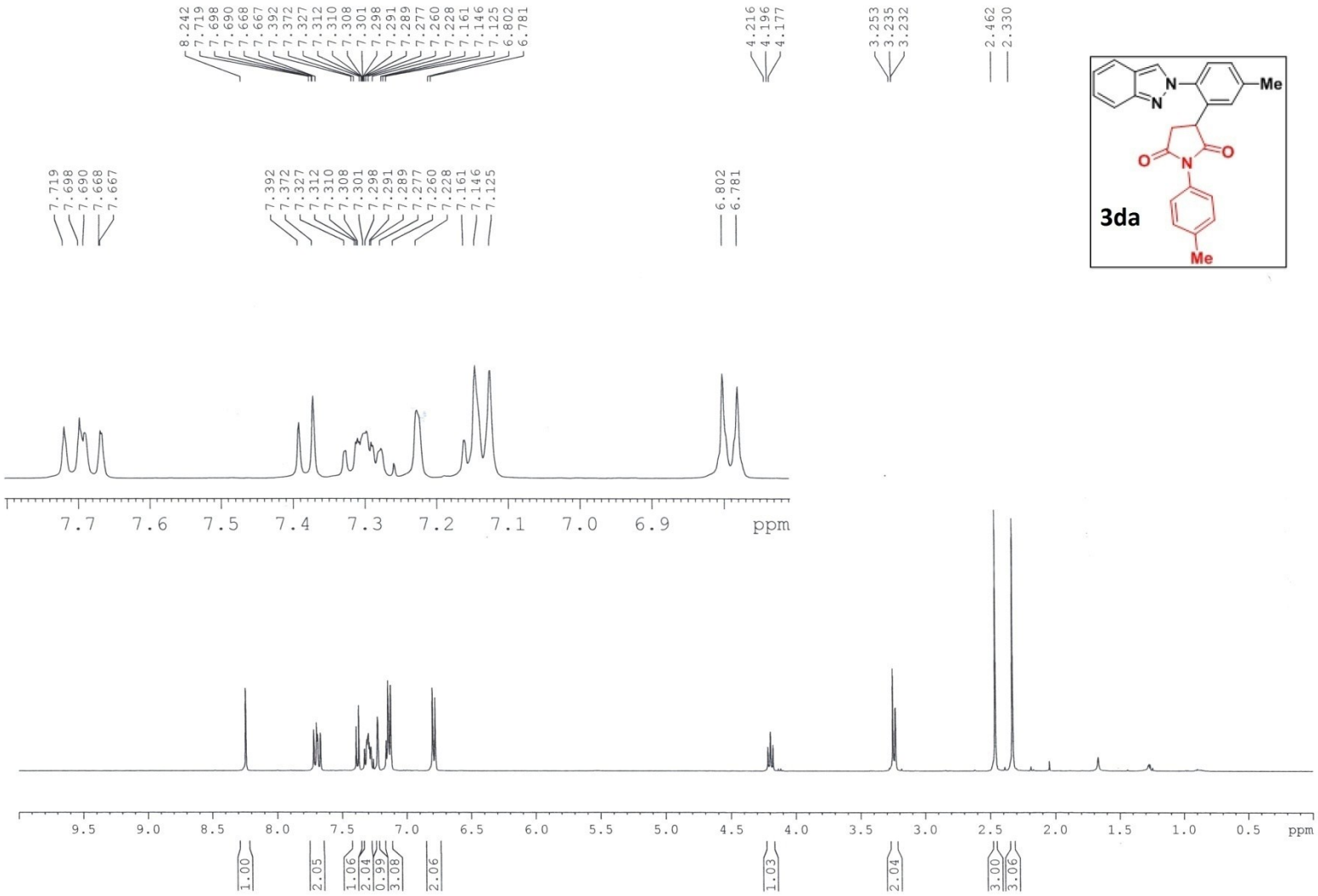

```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  527
PROCNO                   1

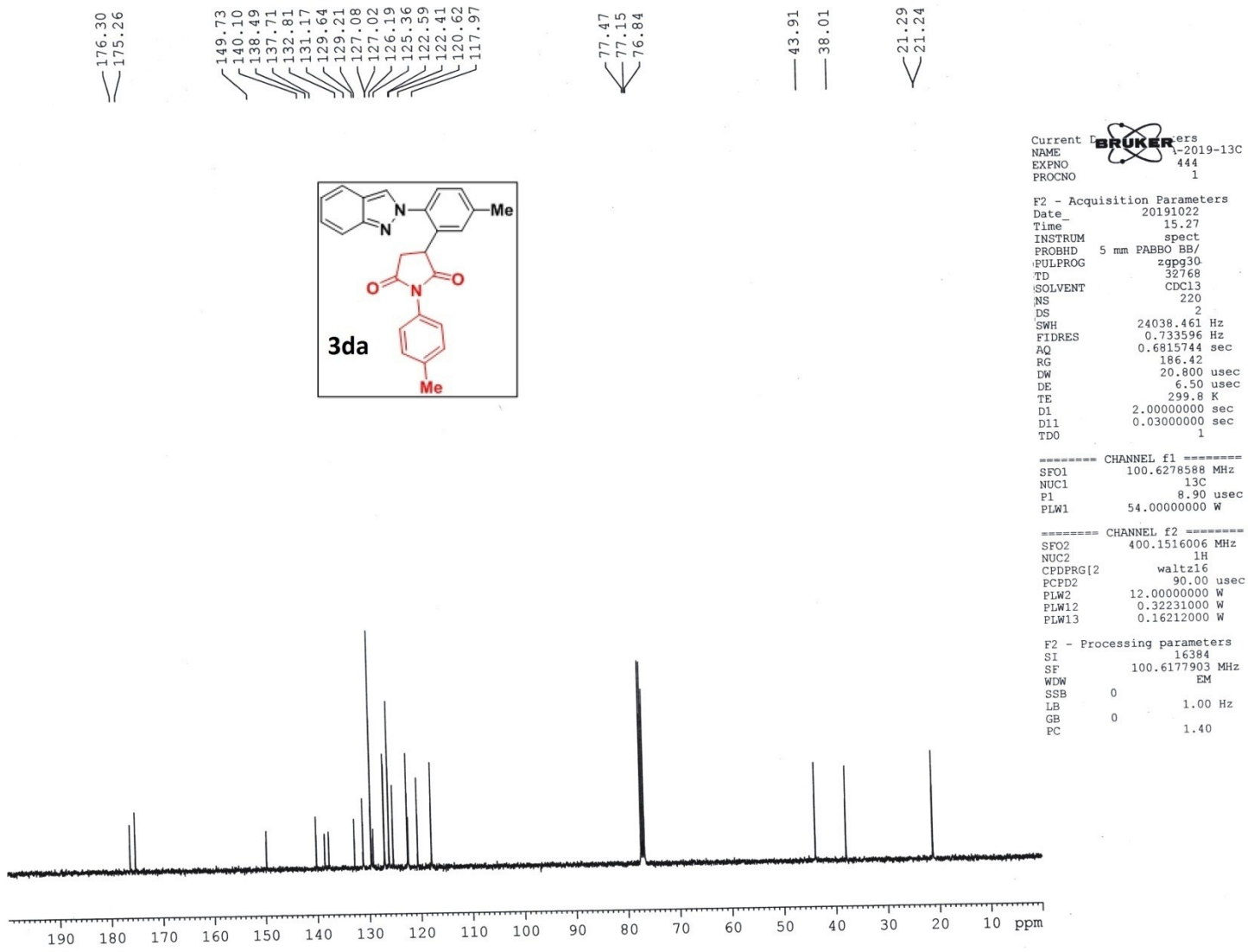
F2 - Acquisition Parameters
Date_              20191115
Time                 12.18
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   32768
SOLVENT              CDCl3
NS                      50
DS                       2
SWH              24038.461 Hz
FIDRES            0.733596 Hz
AQ                0.6815744 sec
RG                   62.69
DW                  20.800 usec
DE                   6.50 usec
TE                  297.1 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                      1

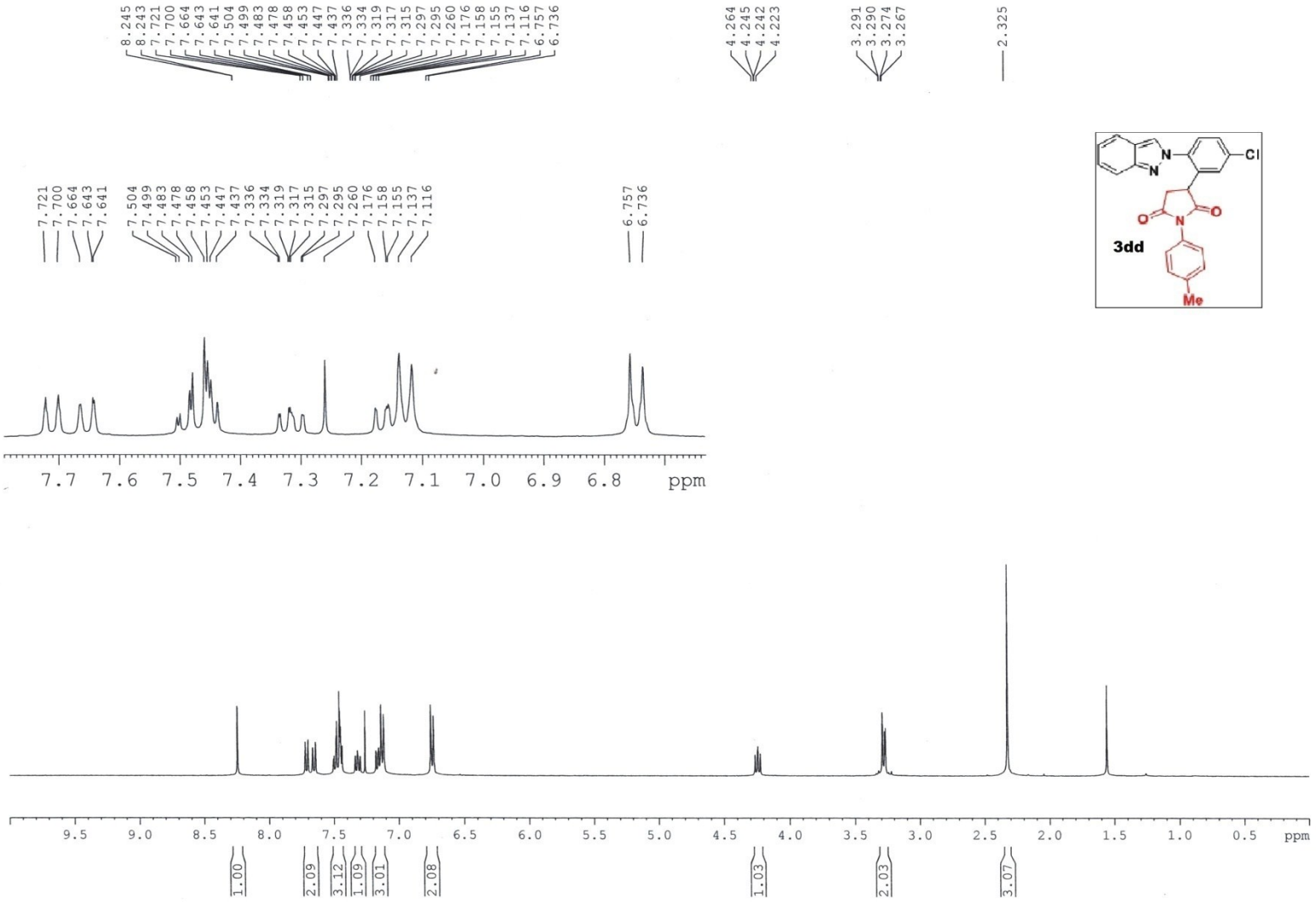
======== CHANNEL f1 ========
SFO1           100.6278588 MHz
NUC1                   13C
P1                    8.90 usec
PLW1          54.00000000 W

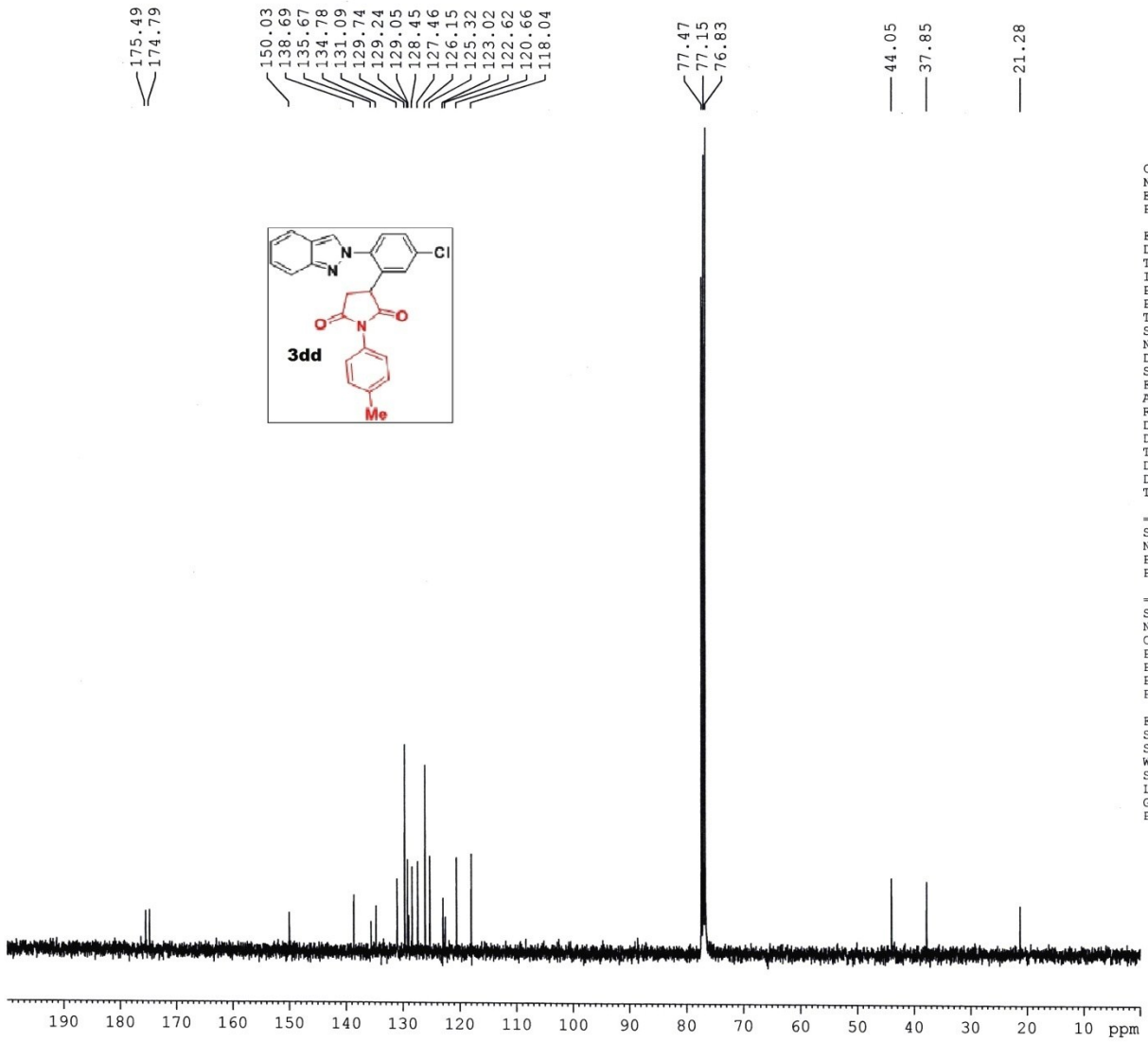
======== CHANNEL f2 ========
SFO2           400.1516006 MHz
NUC2                   1H
CPDPRG[2            waltz16
PCPD2                90.00 usec
PLW2          12.00000000 W
PLW12          0.32231000 W
PLW13          0.16212000 W

F2 - Processing parameters
SI                    16384
SF             100.6177901 MHz
WDW                     EM
SSB       0
LB                    1.00 Hz
GB        0
PC                    1.40
```


8.242
7.719
7.698
7.690
7.668
7.667
7.392
7.372
7.327
7.312
7.310
7.308
7.301
7.298
7.291
7.289
7.277
7.260
7.228
7.161
7.146
7.125
6.802
6.781
4.216
4.196
4.177
3.253
3.235
3.232
2.462
2.330
Me
N
N
O
O
N
3da
Me
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7.0
6.9
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.00
2.05
1.06
2.04
0.99
3.08
2.06
1.03
2.04
3.00
3.06


176.30
175.26
149.73
140.10
138.49
137.71
132.81
131.17
129.64
129.21
127.08
127.02
126.19
125.36
122.59
122.41
120.62
117.97
77.47
77.15
76.84
43.91
38.01
21.29
21.24
Me
N
N
O
N
O
3da
Me
Current D ers
NAME -2019-13C
EXPNO 444
PROCNO 1
F2 - Acquisition Parameters
Date_ 20191022
Time 15.27
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 220
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 186.42
DW 20.800 usec
DE 6.50 usec
TE 299.8 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W
======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W
F2 - Processing parameters
SI 16384
SF 100.6177903 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


8.245
8.243
7.721
7.700
7.664
7.643
7.641
7.504
7.499
7.483
7.478
7.458
7.453
7.447
7.437
7.336
7.334
7.319
7.317
7.315
7.297
7.295
7.260
7.176
7.158
7.155
7.137
7.116
6.757
6.736
4.264
4.245
4.242
4.223
3.291
3.290
3.274
3.267
2.325
3dd
Me
Cl
ppm
1.00
2.09
3.12
1.09
3.01
2.08
1.03
2.03
3.07



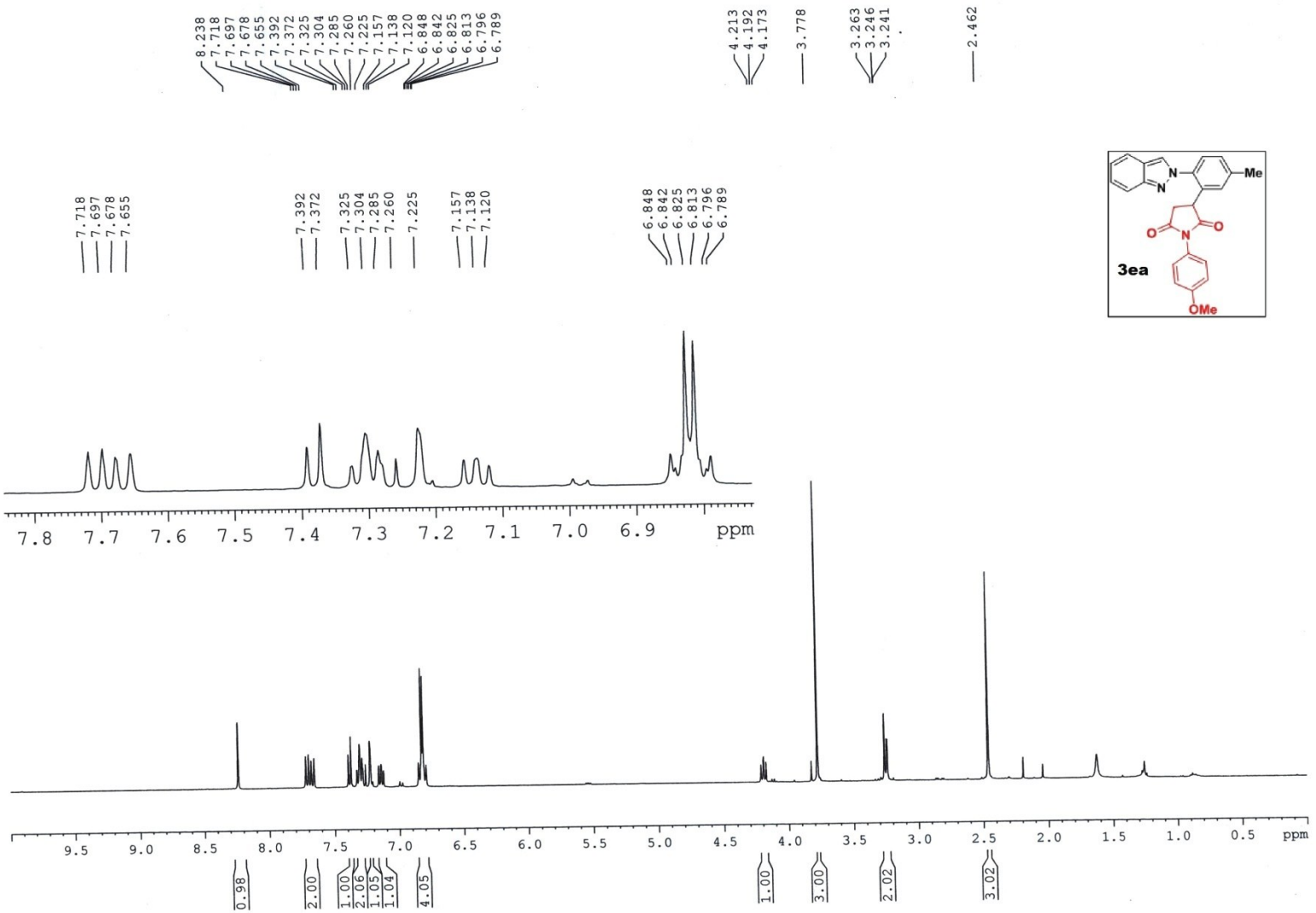
Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 434
PROCNO 1

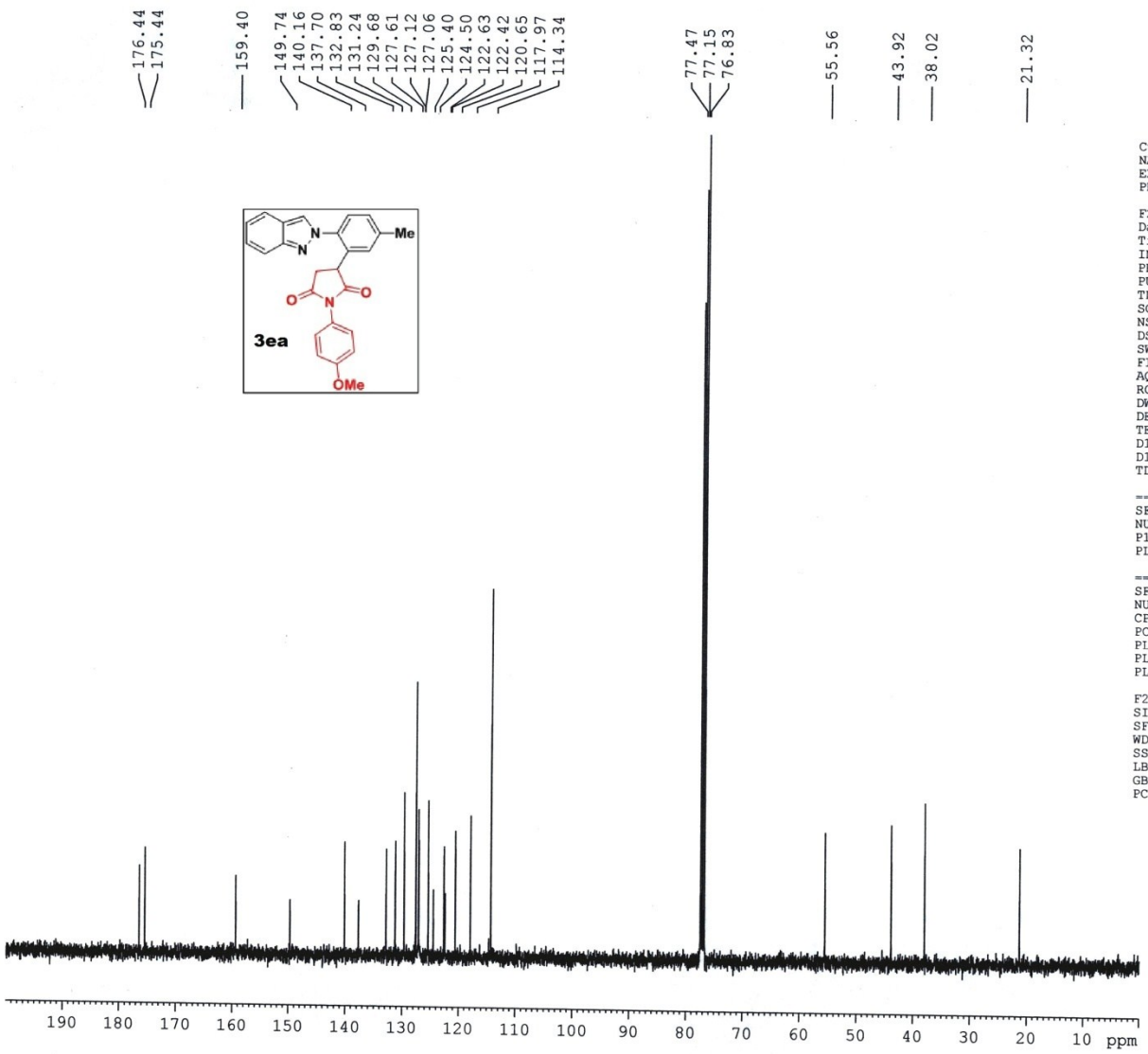
F2 - Acquisition Parameters
Date_ 20191021
Time 15.49
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 512
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 186.42
DW 20.800 usec
DE 6.50 usec
TE 299.0 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W

======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W

F2 - Processing parameters
SI 16384
SF 100.6177844 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


8.238
7.718
7.697
7.678
7.655
7.392
7.372
7.325
7.304
7.285
7.260
7.225
7.157
7.138
7.120
6.848
6.842
6.825
6.813
6.796
6.789
4.213
4.192
4.173
3.778
3.263
3.246
3.241
2.462
Me
N
N
O
N
O
3ea
OMe
ppm
0.98
2.00
1.00
2.06
1.05
1.04
4.05
1.00
3.00
2.02
3.02



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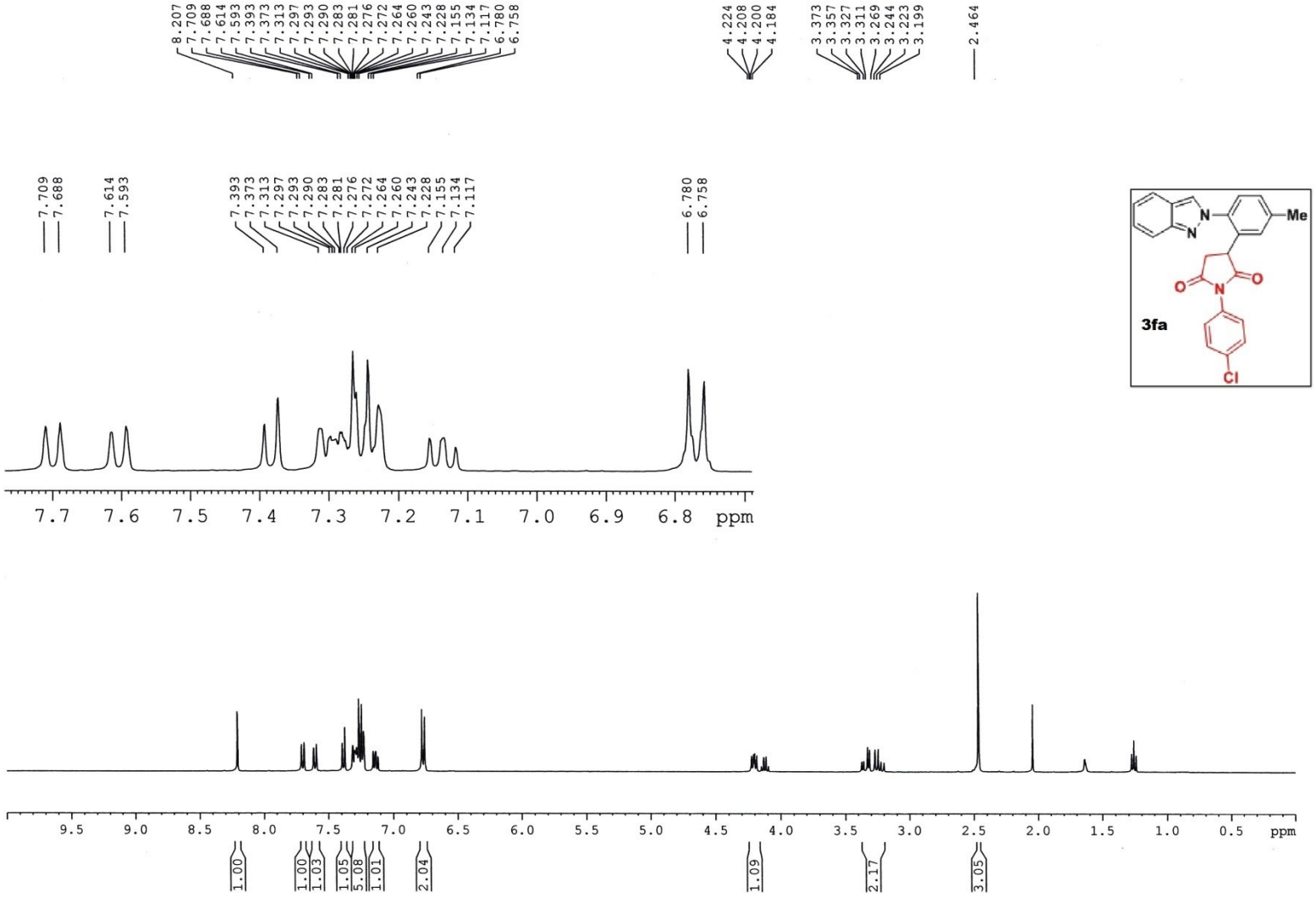
Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 458
PROCNO 1

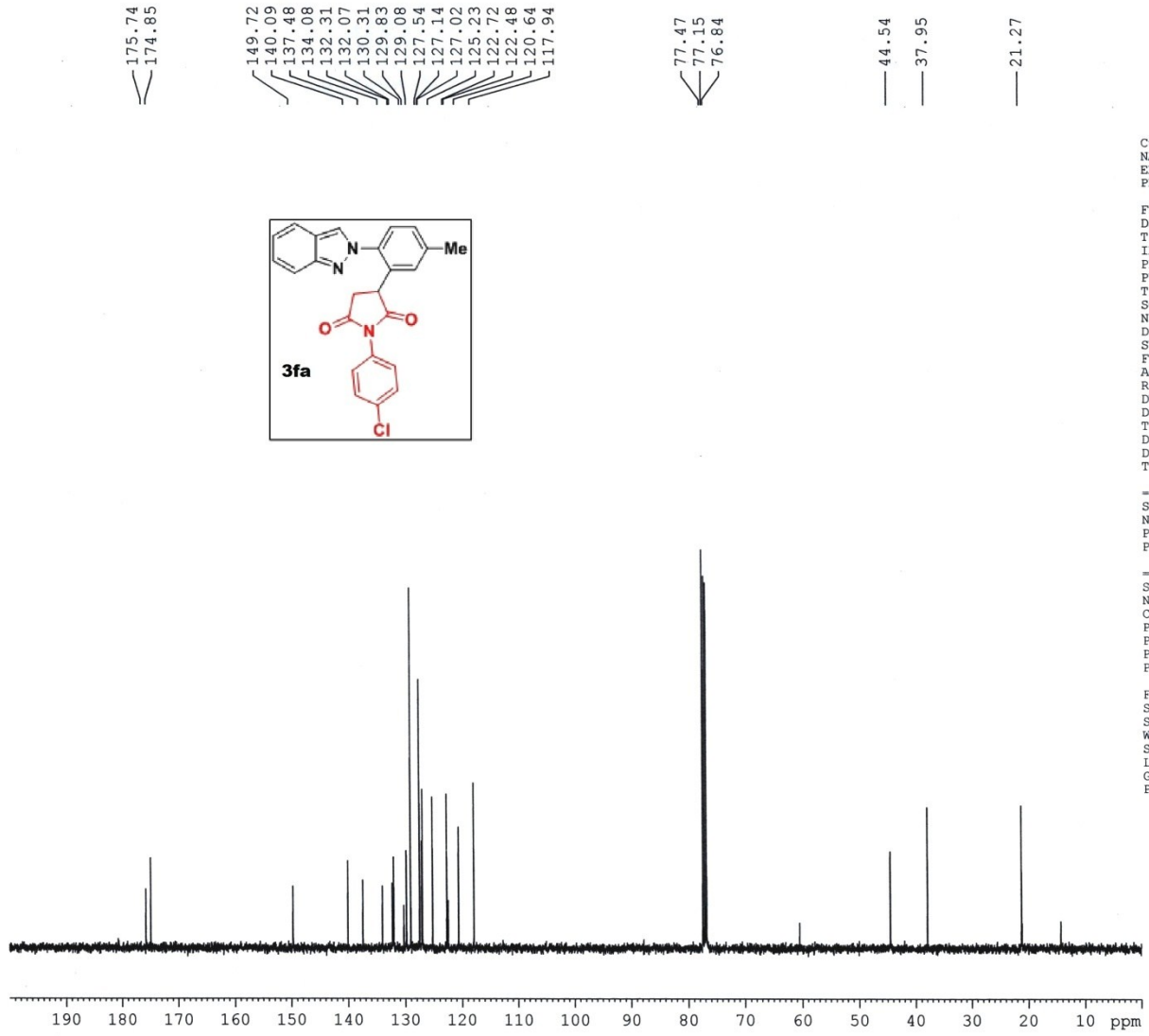
F2 - Acquisition Parameters
Date_ 20191025
Time 17.48
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 250
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 186.42
DW 20.800 usec
DE 6.50 usec
TE 297.8 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W

======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W

F2 - Processing parameters
SI 16384
SF 100.6177871 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


8.207
7.709
7.688
7.614
7.593
7.393
7.373
7.313
7.297
7.293
7.290
7.283
7.281
7.276
7.272
7.264
7.260
7.243
7.228
7.155
7.134
7.117
6.780
6.758
4.224
4.208
4.200
4.184
3.373
3.357
3.327
3.311
3.269
3.244
3.223
3.199
2.464
Me
3fa
Cl
ppm
1.00
1.00
1.03
1.05
5.08
1.01
2.04
1.09
2.17
3.05



BRUKER

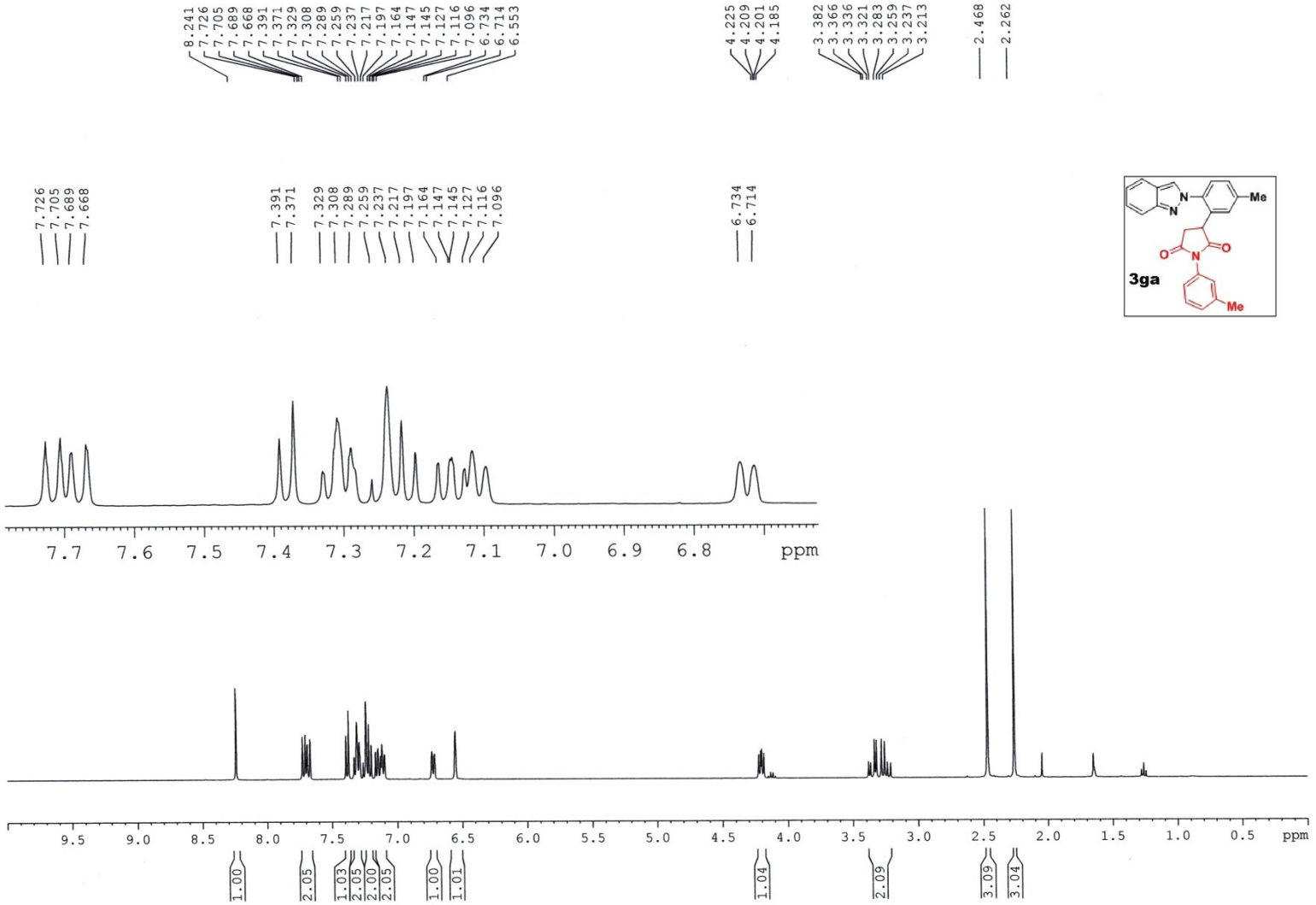
```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  509
PROCNO                   1

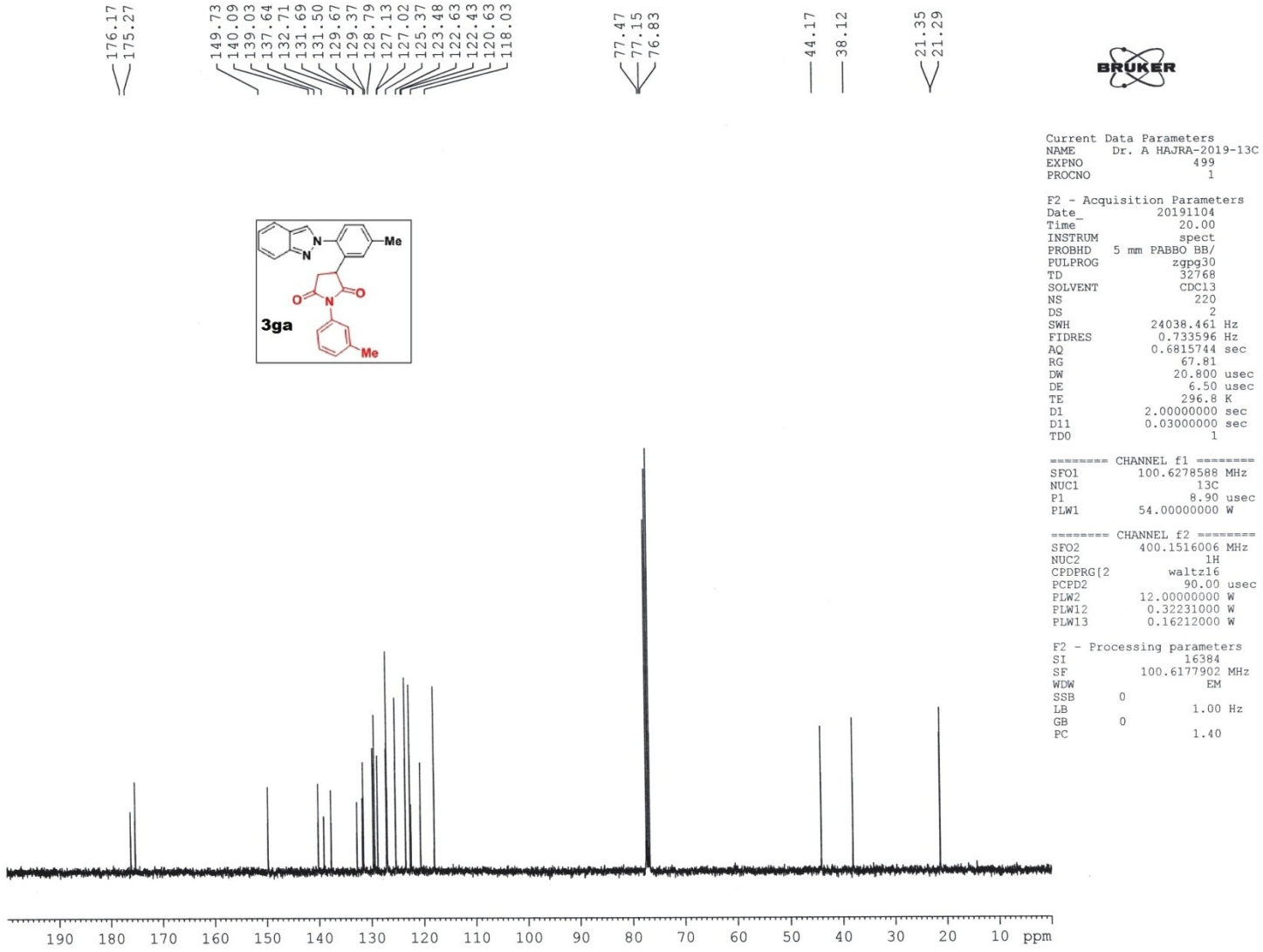
F2 - Acquisition Parameters
Date_              20191107
Time                 10.59
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG            zgpg30
TD                  32768
SOLVENT             CDCl3
NS                    205
DS                      2
SWH              24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6815744 sec
RG                   77.59
DW                  20.800 usec
DE                   6.50 usec
TE                  298.7 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                     1

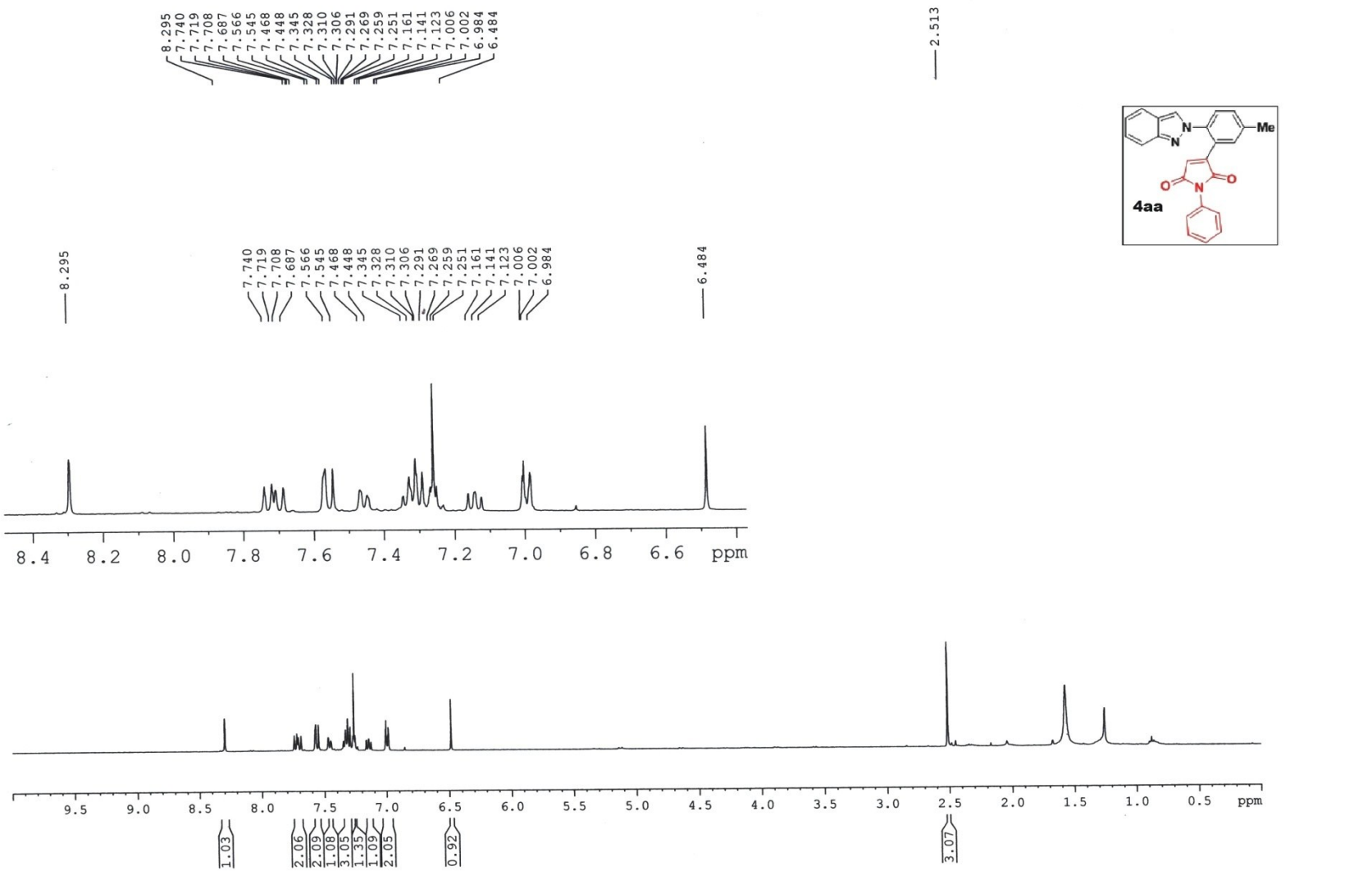
======== CHANNEL f1 ========
SFO1         100.6278588 MHz
NUC1                 13C
P1                  8.90 usec
PLW1         54.00000000 W

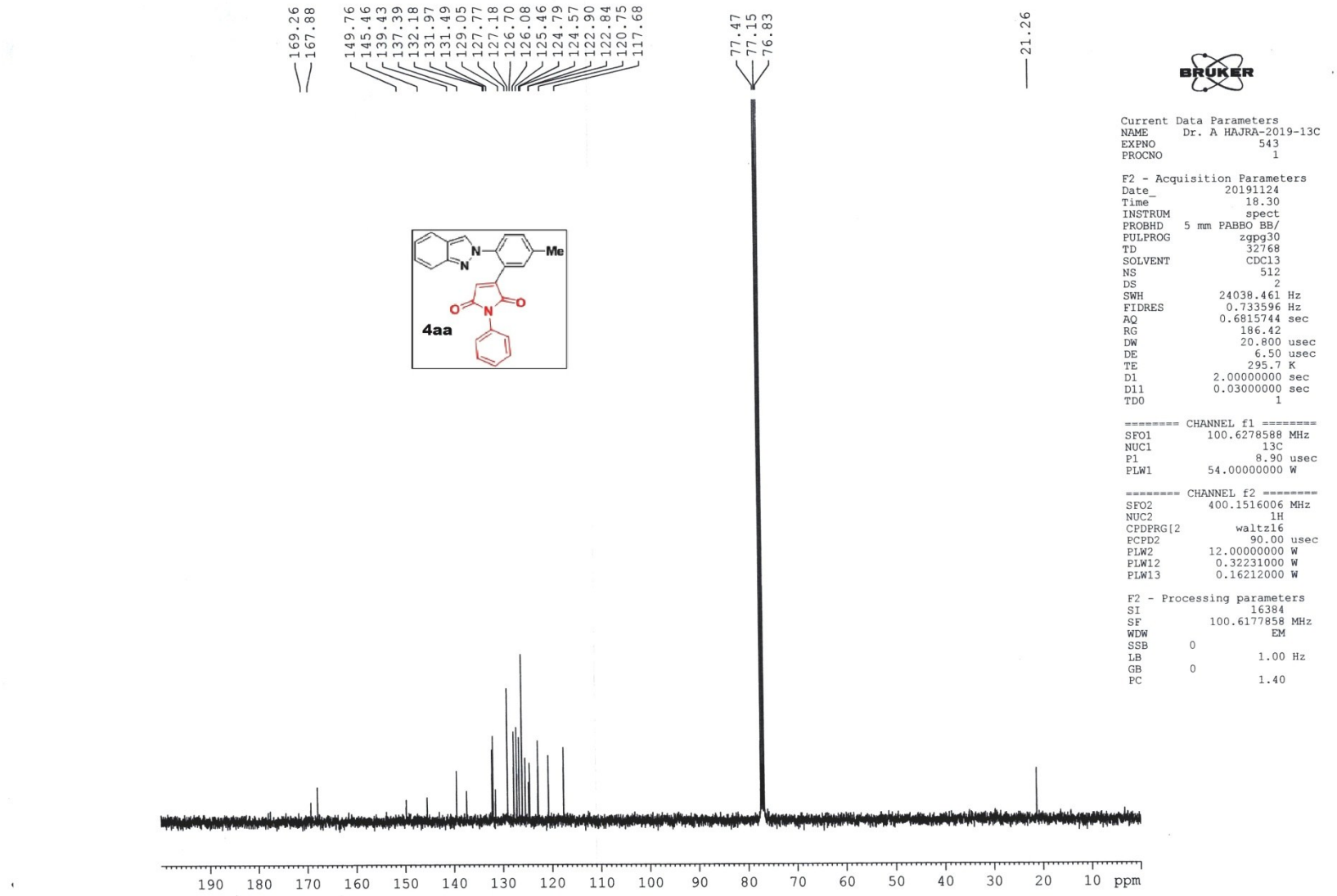
======== CHANNEL f2 ========
SFO2         400.1516006 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2         12.00000000 W
PLW12         0.32231000 W
PLW13         0.16212000 W

F2 - Processing parameters
SI                  16384
SF           100.6177875 MHz
WDW                    EM
SSB       0
LB                  1.00 Hz
GB        0
PC                  1.40
```


8.241
7.726
7.705
7.689
7.668
7.391
7.371
7.329
7.308
7.289
7.259
7.237
7.217
7.197
7.164
7.147
7.145
7.127
7.116
7.096
6.734
6.714
6.553
4.225
4.209
4.201
4.185
3.382
3.366
3.336
3.321
3.283
3.259
3.237
3.213
2.468
2.262
3ga
Me
Me
ppm
1.00
2.05
1.03
2.05
2.00
2.05
1.00
1.01
1.04
2.09
3.09
3.04


176.17
175.27
149.73
140.09
139.03
137.64
132.71
131.69
131.50
129.67
129.37
128.79
127.13
127.02
125.37
123.48
122.63
122.43
120.63
118.03
77.47
77.15
76.83
44.17
38.12
21.35
21.29
BRUKER
Me
3ga
Me
Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 499
PROCNO 1
F2 - Acquisition Parameters
Date_ 20191104
Time 20.00
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDC13
NS 220
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 67.81
DW 20.800 usec
DE 6.50 usec
TE 296.8 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W
======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W
F2 - Processing parameters
SI 16384
SF 100.6177902 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


8.295
7.740
7.719
7.708
7.687
7.566
7.545
7.468
7.448
7.345
7.328
7.310
7.306
7.291
7.269
7.259
7.251
7.161
7.141
7.123
7.006
7.002
6.984
6.484
2.513
Me
4aa
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.03
2.06
2.09
1.08
3.05
1.35
1.09
2.05
0.92
3.07



BRUKER

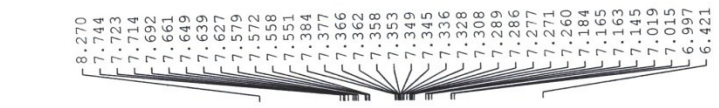
Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 543
PROCNO 1

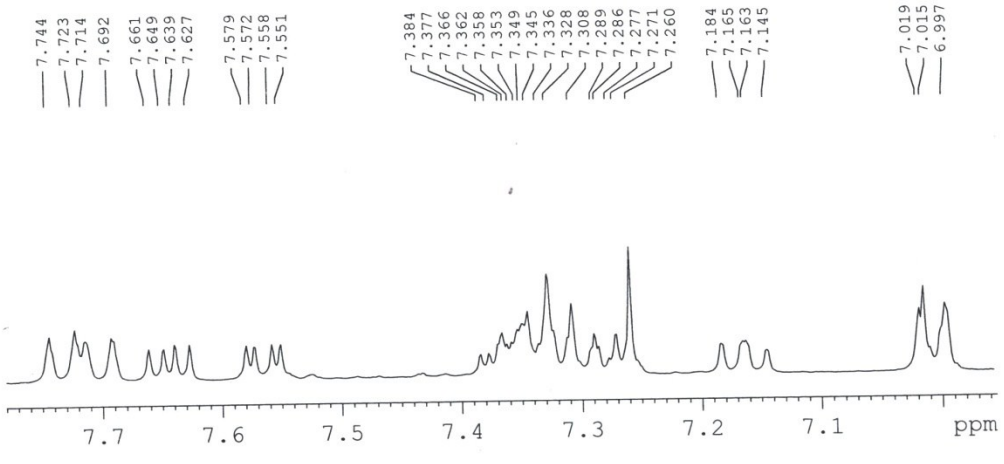
F2 - Acquisition Parameters
Date_ 20191124
Time 18.30
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDC13
NS 512
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 186.42
DW 20.800 usec
DE 6.50 usec
TE 295.7 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

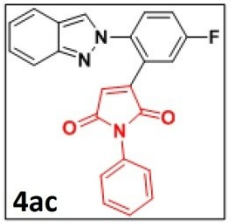
======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W

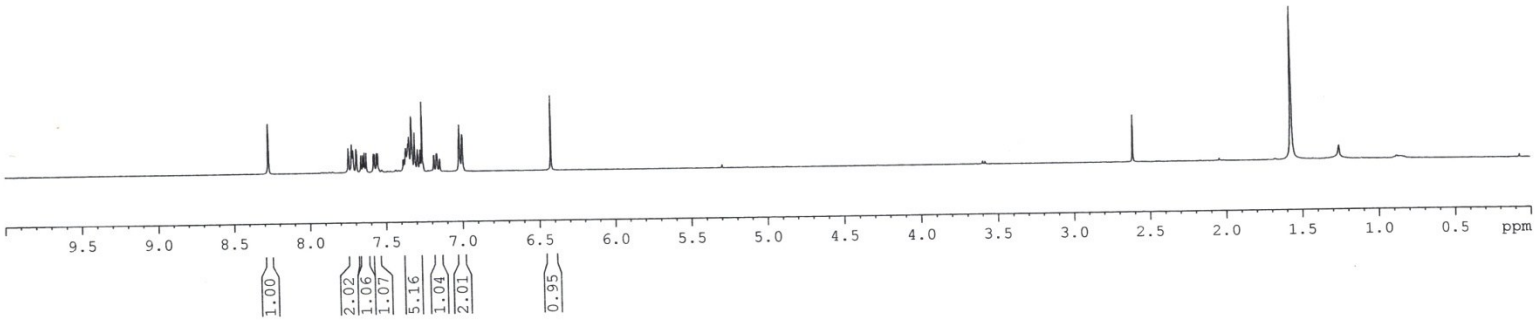
======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W

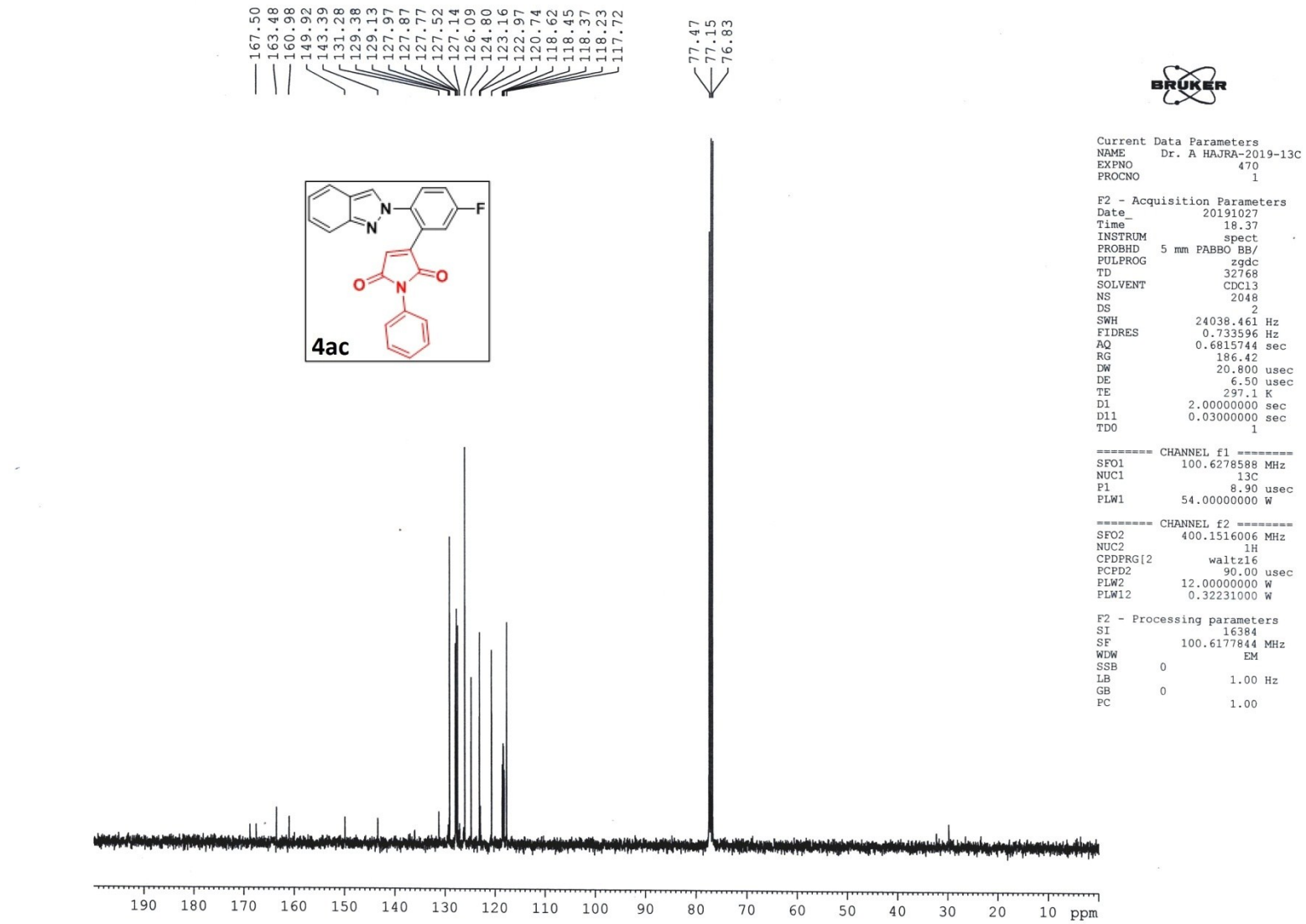
F2 - Processing parameters
SI 16384
SF 100.6177858 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


8.270
7.744
7.723
7.714
7.692
7.661
7.649
7.639
7.627
7.579
7.572
7.558
7.551
7.384
7.377
7.366
7.362
7.358
7.353
7.349
7.345
7.336
7.328
7.308
7.289
7.286
7.277
7.271
7.260
7.184
7.165
7.163
7.145
7.019
7.015
6.997
6.421


7.744
7.723
7.714
7.692
7.661
7.649
7.639
7.627
7.579
7.572
7.558
7.551
7.384
7.377
7.366
7.362
7.358
7.353
7.349
7.345
7.336
7.328
7.308
7.289
7.286
7.277
7.271
7.260
7.184
7.165
7.163
7.145
7.019
7.015
6.997
7.7
7.6
7.5
7.4
7.3
7.2
7.1
ppm


F
N
N
O
N
O
4ac


9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.00
2.02
1.06
1.07
5.16
1.04
2.01
0.95



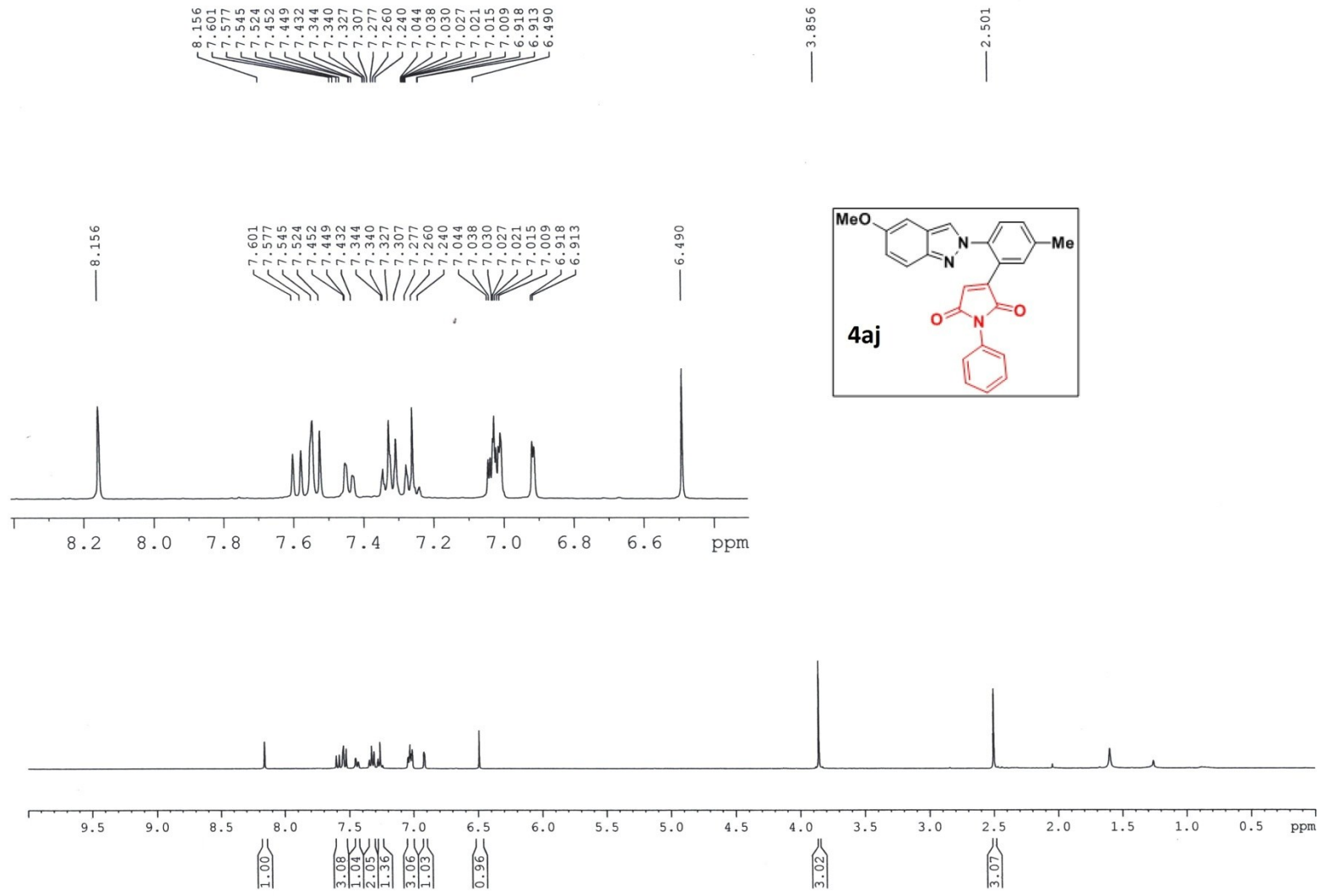

```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  470
PROCNO                   1

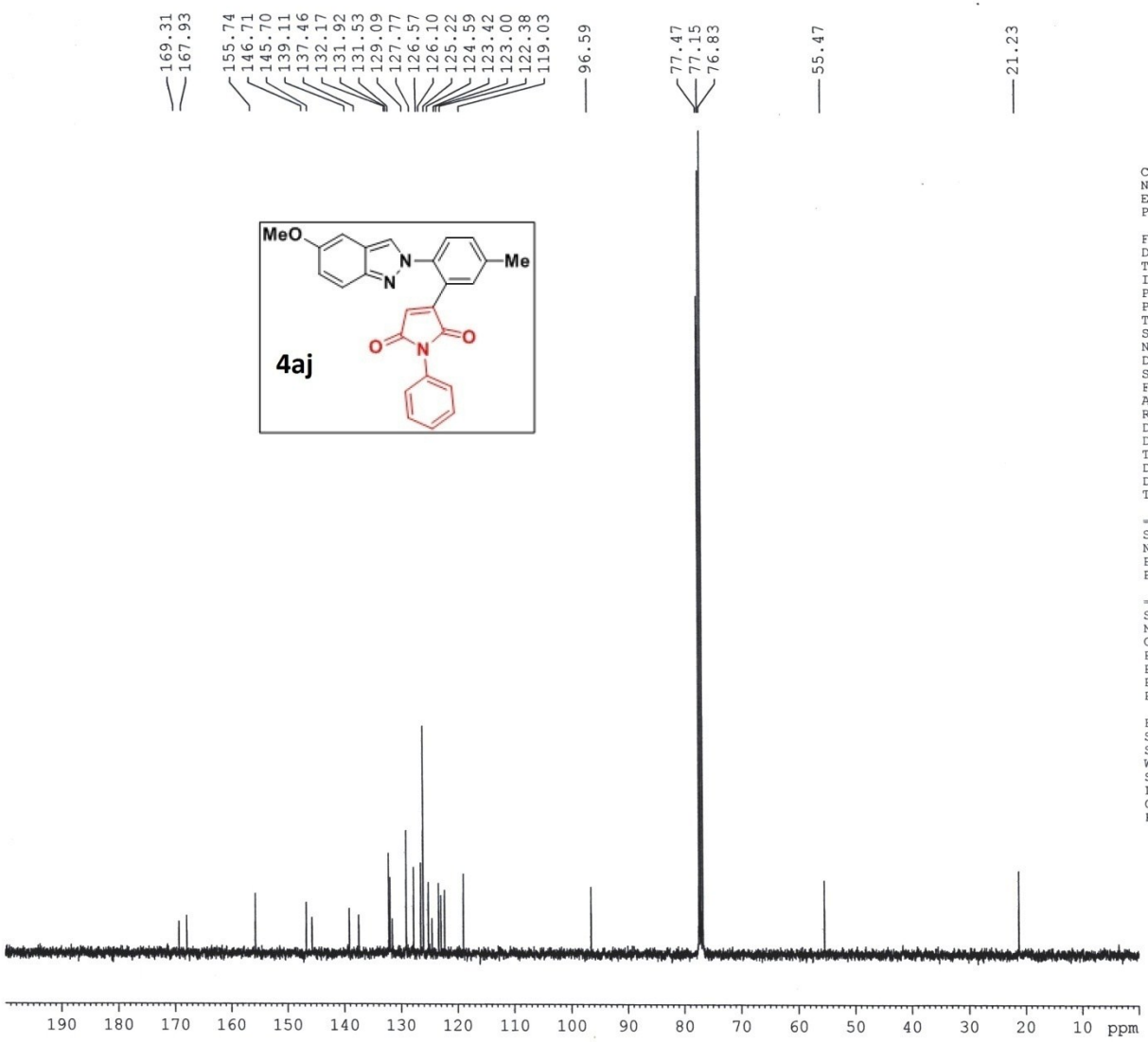
F2 - Acquisition Parameters
Date_              20191027
Time                 18.37
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zgdc
TD                   32768
SOLVENT              CDCl3
NS                    2048
DS                       2
SWH              24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6815744 sec
RG                  186.42
DW                  20.800 usec
DE                   6.50 usec
TE                  297.1 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          100.6278588 MHz
NUC1                  13C
P1                   8.90 usec
PLW1          54.00000000 W

======== CHANNEL f2 ========
SFO2          400.1516006 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2               90.00 usec
PLW2          12.00000000 W
PLW12          0.32231000 W

F2 - Processing parameters
SI                   16384
SF            100.6177844 MHz
WDW                     EM
SSB       0
LB                   1.00 Hz
GB        0
PC                   1.00
```


8.156
7.601
7.577
7.545
7.524
7.452
7.449
7.432
7.344
7.340
7.327
7.307
7.277
7.260
7.240
7.044
7.038
7.030
7.027
7.021
7.015
7.009
6.918
6.913
6.490
3.856
2.501
MeO
Me
N
N
O
O
N
4aj
ppm
1.00
3.08
1.04
2.05
1.36
3.06
1.03
0.96
3.02
3.07



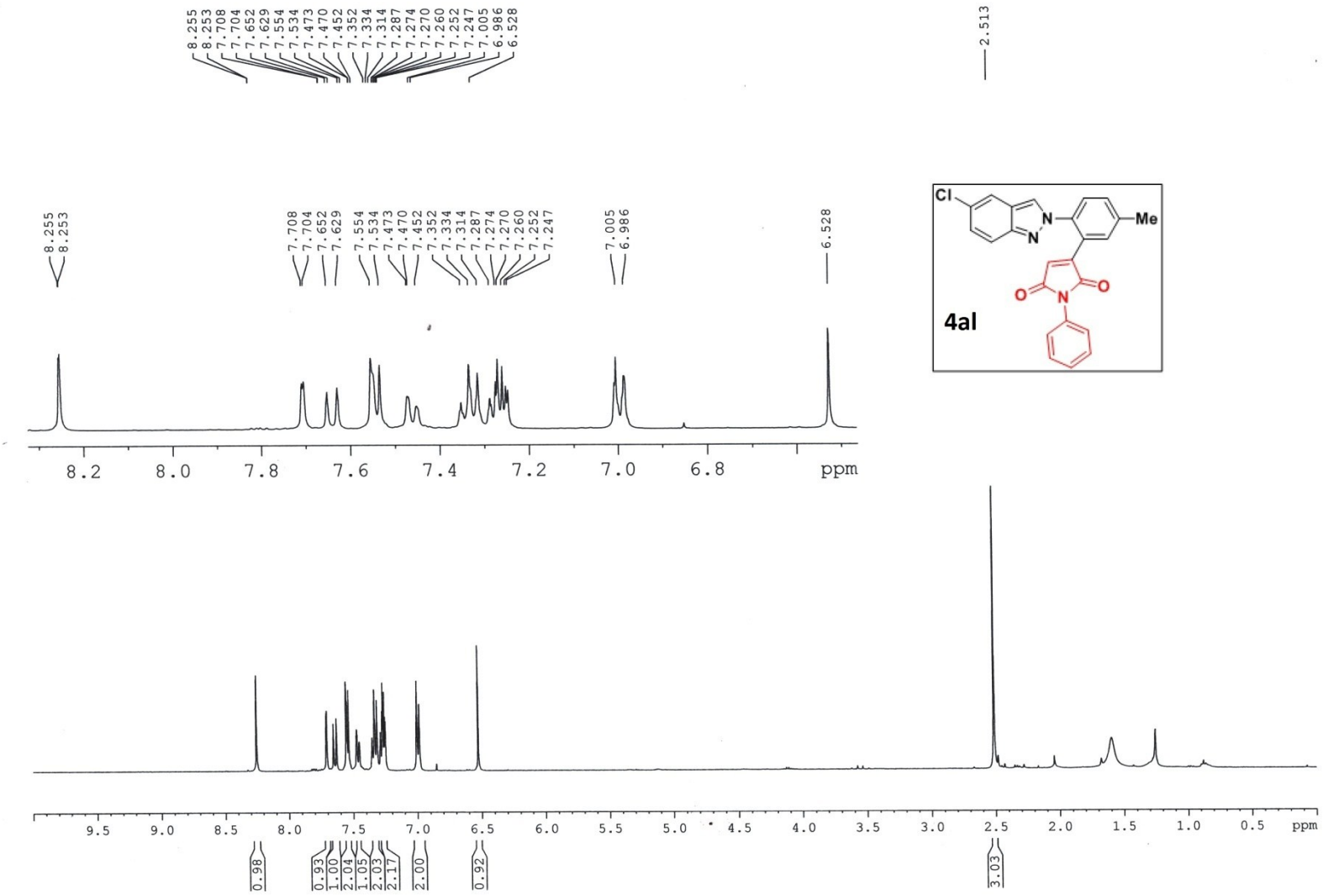

```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  538
PROCNO                   1

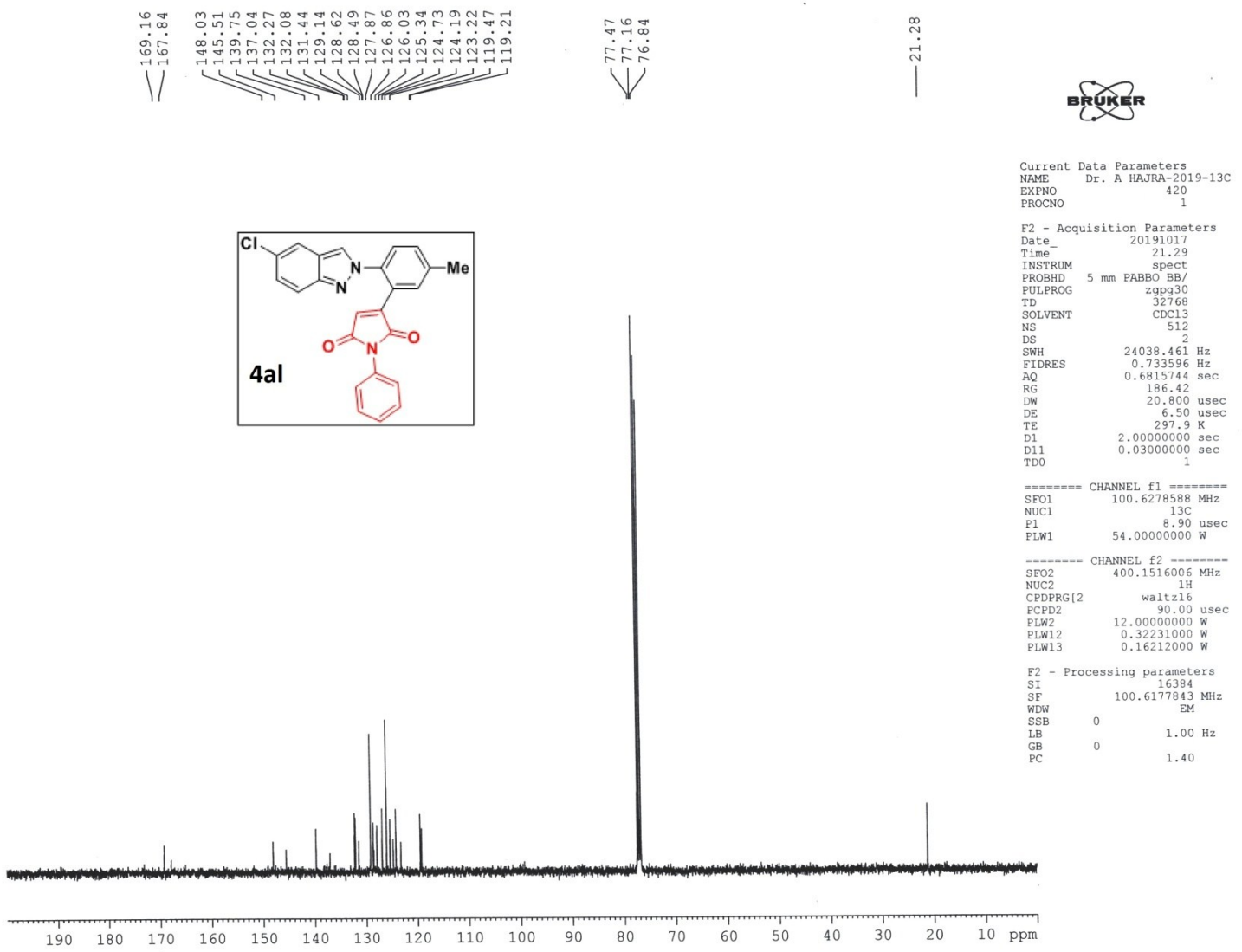
F2 - Acquisition Parameters
Date_           20191121
Time              19.31
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                32768
SOLVENT           CDCl3
NS                  512
DS                    2
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             0.6815744 sec
RG               186.42
DW                20.800 usec
DE                 6.50 usec
TE                296.8 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         100.6278588 MHz
NUC1               13C
P1                8.90 usec
PLW1         54.00000000 W

======== CHANNEL f2 ========
SFO2         400.1516006 MHz
NUC2               1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.32231000 W
PLW13         0.16212000 W

F2 - Processing parameters
SI                16384
SF           100.6177857 MHz
WDW                EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```


8.255
8.253
7.708
7.704
7.652
7.629
7.554
7.534
7.473
7.470
7.452
7.352
7.334
7.314
7.287
7.274
7.270
7.260
7.252
7.247
7.005
6.986
6.528
2.513
Cl
N
N
Me
O
N
O
4al
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
0.98
0.93
1.00
2.04
1.05
2.03
2.17
2.00
0.92
3.03



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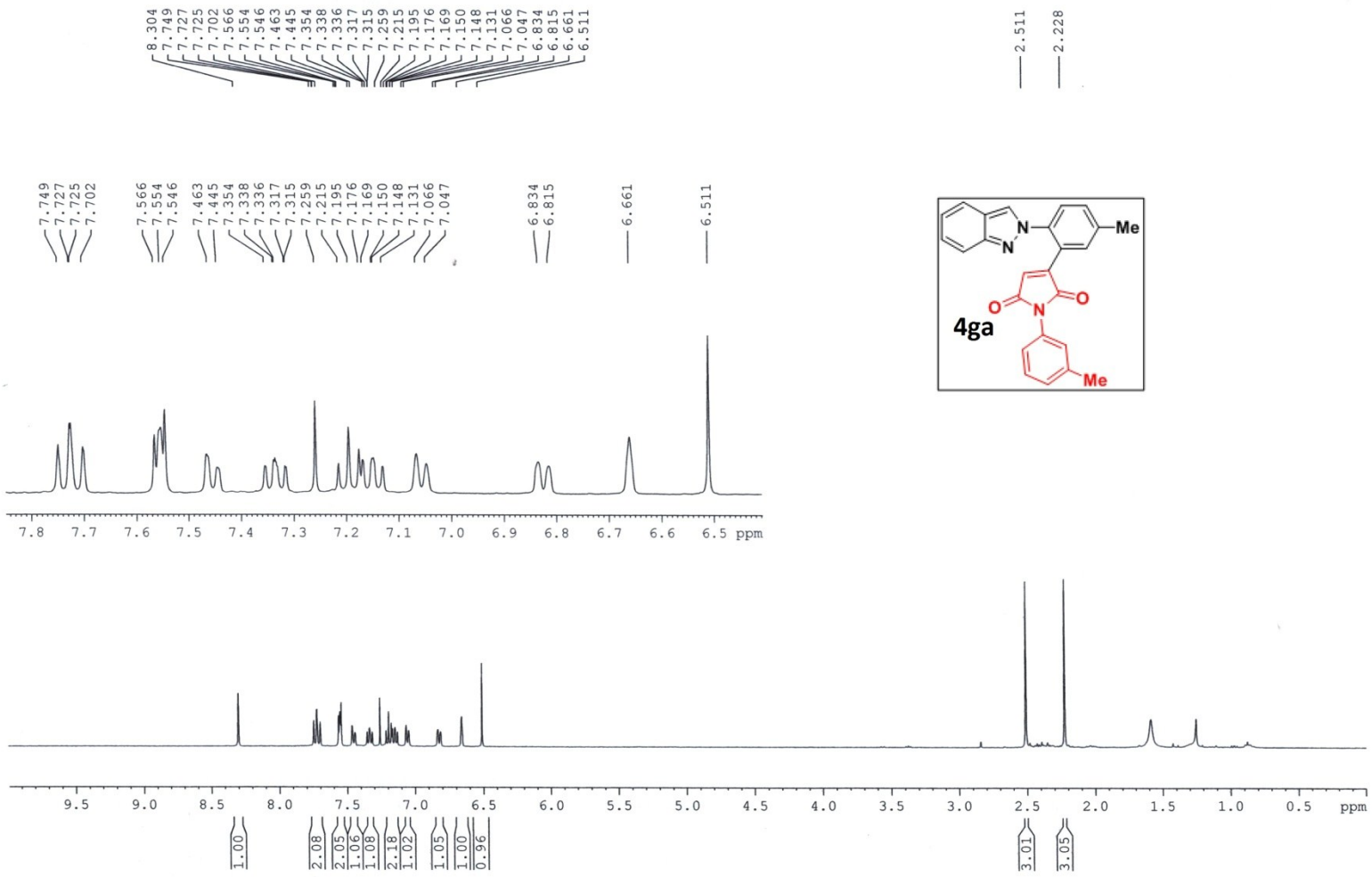
```
Current Data Parameters
NAME        Dr. A HAJRA-2019-13C
EXPNO                        420
PROCNO                         1

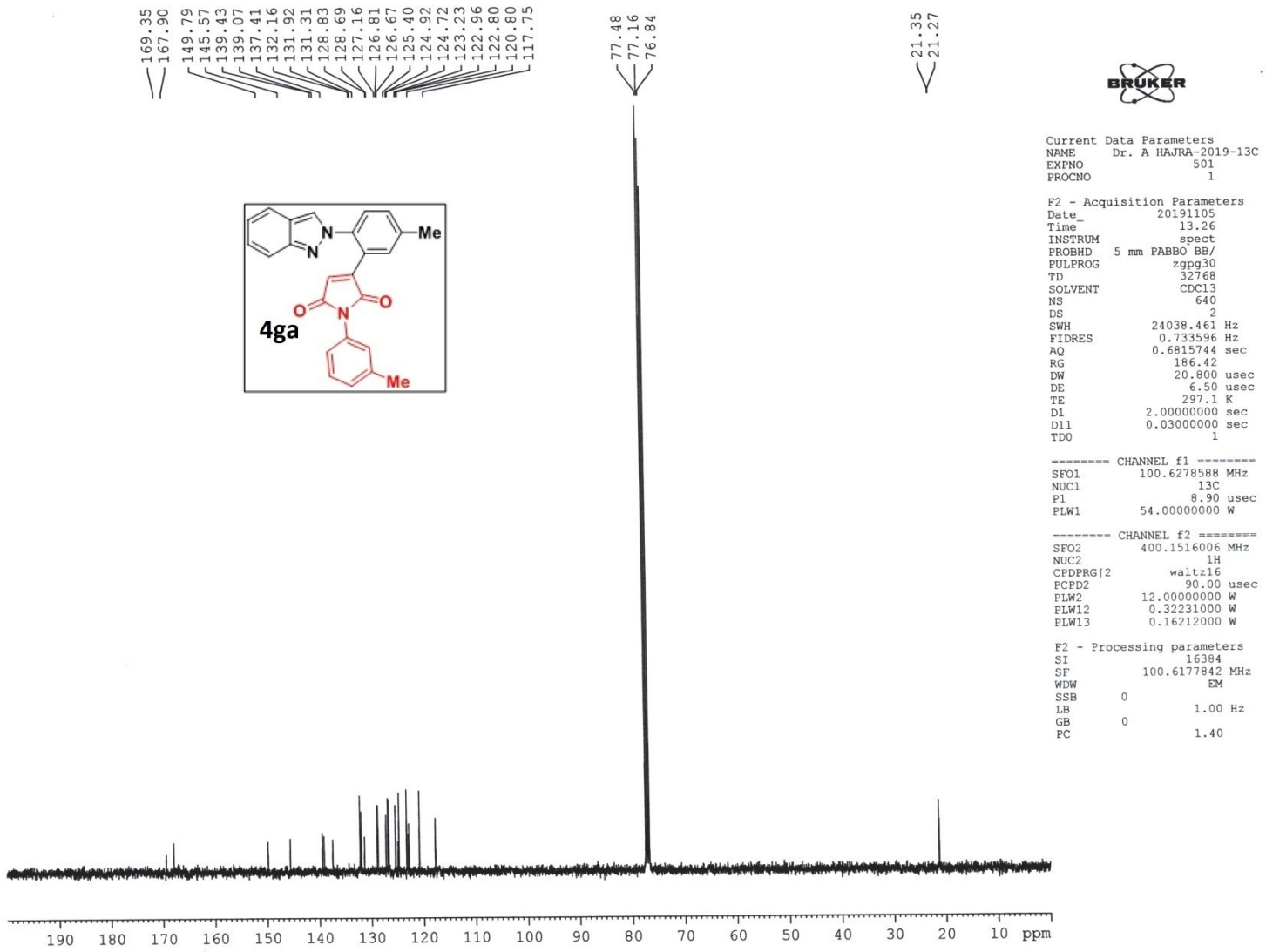
F2 - Acquisition Parameters
Date_                   20191017
Time                       21.29
INSTRUM                    spect
PROBHD    5 mm PABBO BB/
PULPROG                  zgpg30
TD                        32768
SOLVENT                   CDCl3
NS                          512
DS                            2
SWH                  24038.461 Hz
FIDRES                0.733596 Hz
AQ                    0.6815744 sec
RG                       186.42
DW                       20.800 usec
DE                        6.50 usec
TE                       297.9 K
D1                    2.00000000 sec
D11                   0.03000000 sec
TD0                            1

======== CHANNEL f1 ========
SFO1                100.6278588 MHz
NUC1                        13C
P1                         8.90 usec
PLW1                54.00000000 W

======== CHANNEL f2 ========
SFO2                400.1516006 MHz
NUC2                        1H
CPDPRG[2                waltz16
PCPD2                     90.00 usec
PLW2                12.00000000 W
PLW12                0.32231000 W
PLW13                0.16212000 W

F2 - Processing parameters
SI                         16384
SF                  100.6177843 MHz
WDW                           EM
SSB          0
LB                         1.00 Hz
GB           0
PC                         1.40
```


8.304
7.749
7.727
7.725
7.702
7.566
7.554
7.546
7.463
7.445
7.354
7.338
7.336
7.317
7.315
7.259
7.215
7.195
7.176
7.169
7.150
7.148
7.131
7.066
7.047
6.834
6.815
6.661
6.511
2.511
2.228
4ga
Me
Me
7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 6.7 6.6 6.5 ppm
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 ppm
1.00
2.08
2.05
1.06
1.08
2.18
1.02
1.05
1.00
0.96
3.01
3.05



BRUKER

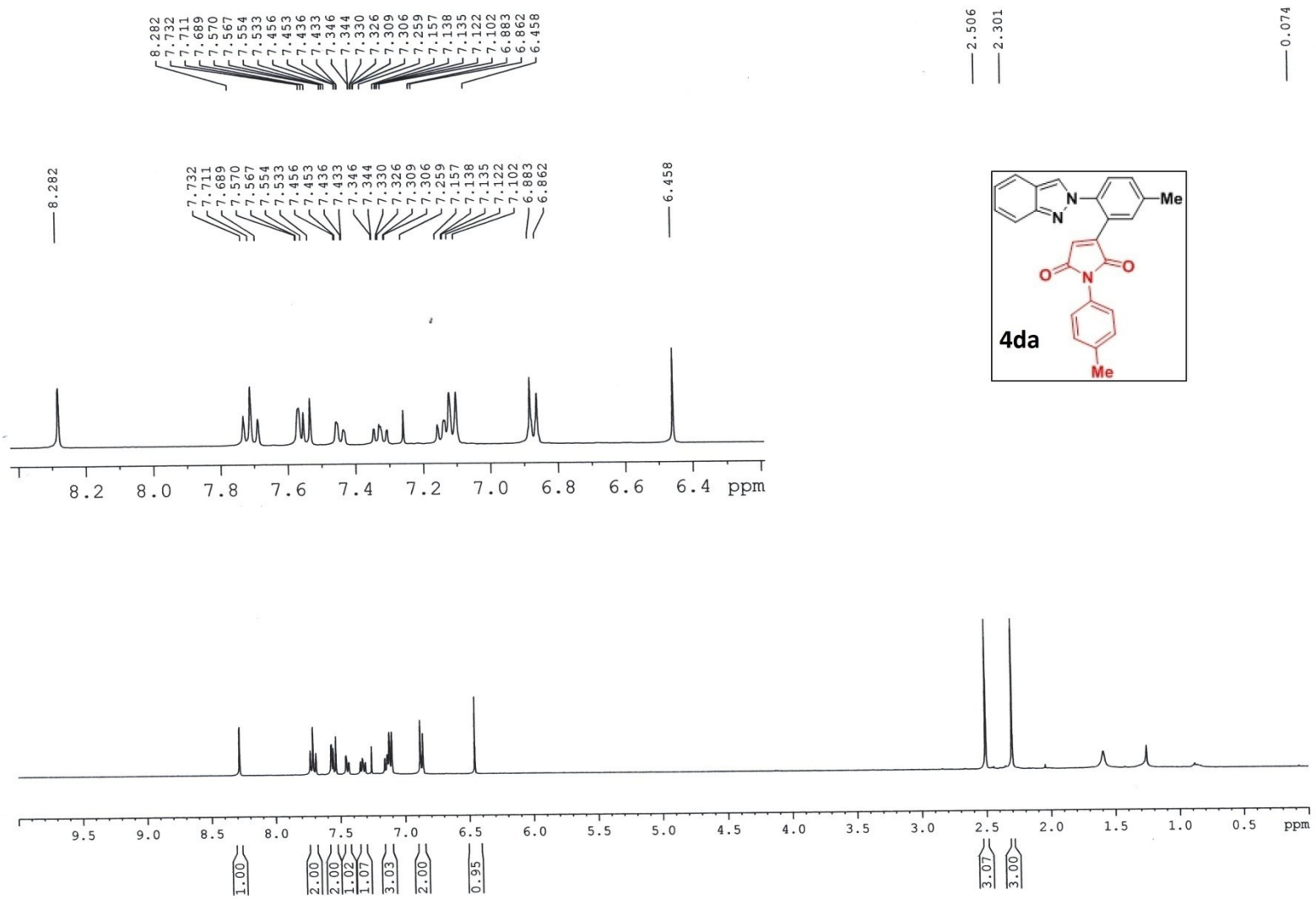
```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  501
PROCNO                   1

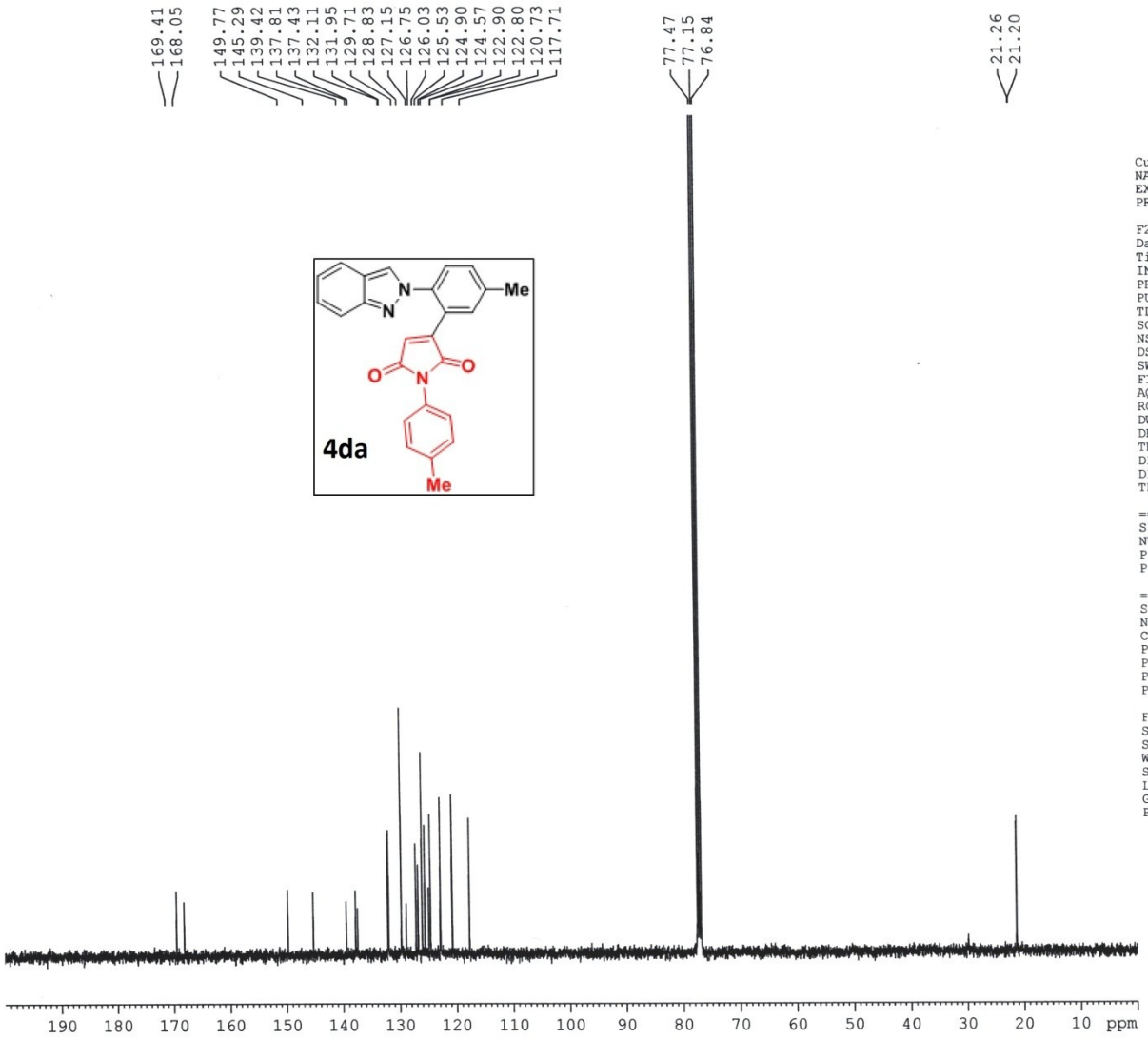
F2 - Acquisition Parameters
Date_           20191105
Time              13.26
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                32768
SOLVENT           CDCl3
NS                  640
DS                    2
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             0.6815744 sec
RG                186.42
DW                20.800 usec
DE                 6.50 usec
TE                297.1 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         100.6278588 MHz
NUC1               13C
P1                8.90 usec
PLW1         54.00000000 W

======== CHANNEL f2 ========
SFO2         400.1516006 MHz
NUC2               1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.32231000 W
PLW13         0.16212000 W

F2 - Processing parameters
SI                16384
SF           100.6177842 MHz
WDW                EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```


8.282
7.732
7.711
7.689
7.570
7.567
7.554
7.533
7.456
7.453
7.436
7.433
7.346
7.344
7.330
7.326
7.309
7.306
7.259
7.157
7.138
7.135
7.122
7.102
6.883
6.862
6.458
2.506
2.301
0.074
Me
N
N
O
O
N
4da
Me
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
6.4
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.00
2.00
2.00
1.02
1.07
3.03
2.00
0.95
3.07
3.00



BRUKER

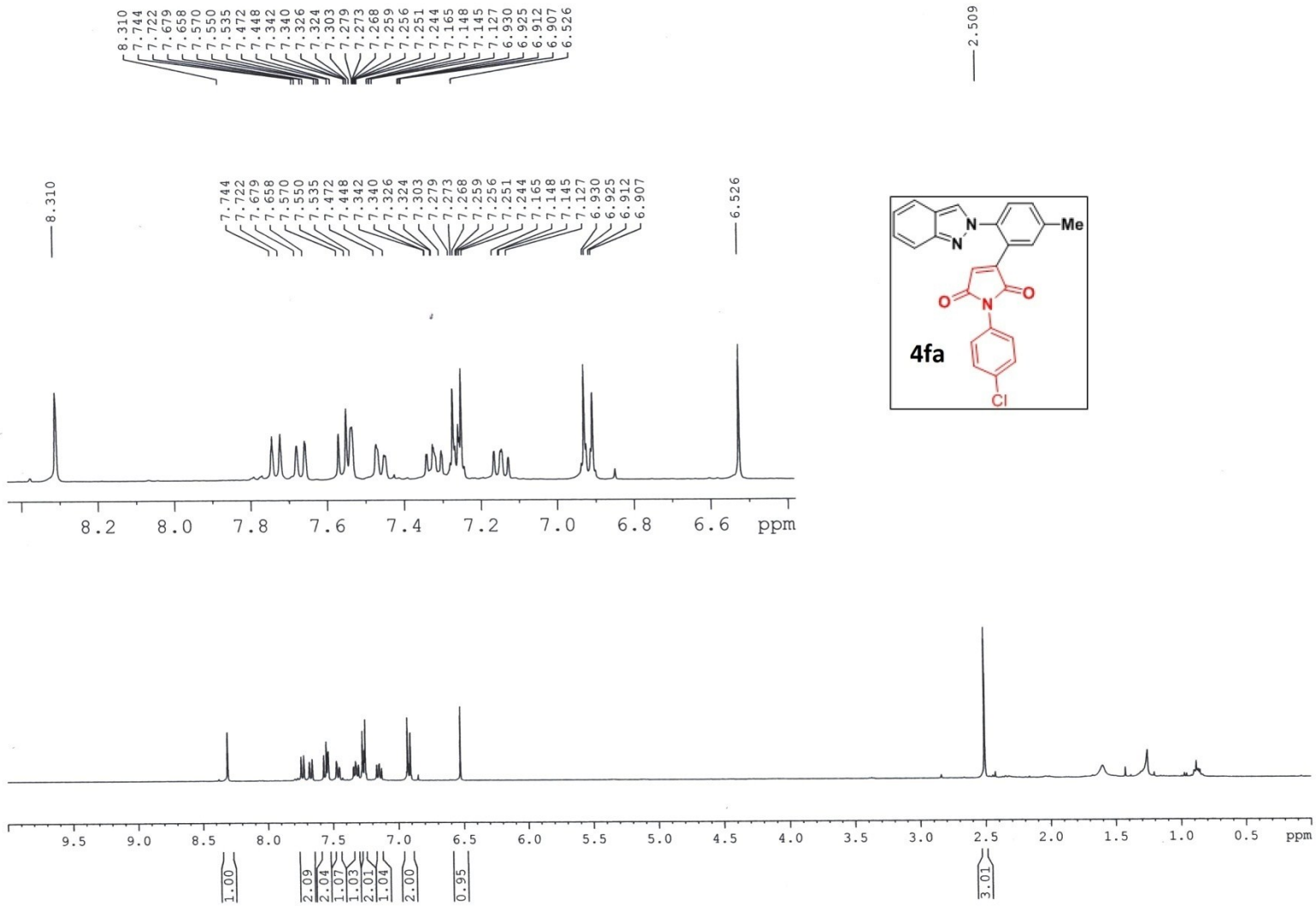
```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  442
PROCNO                   1

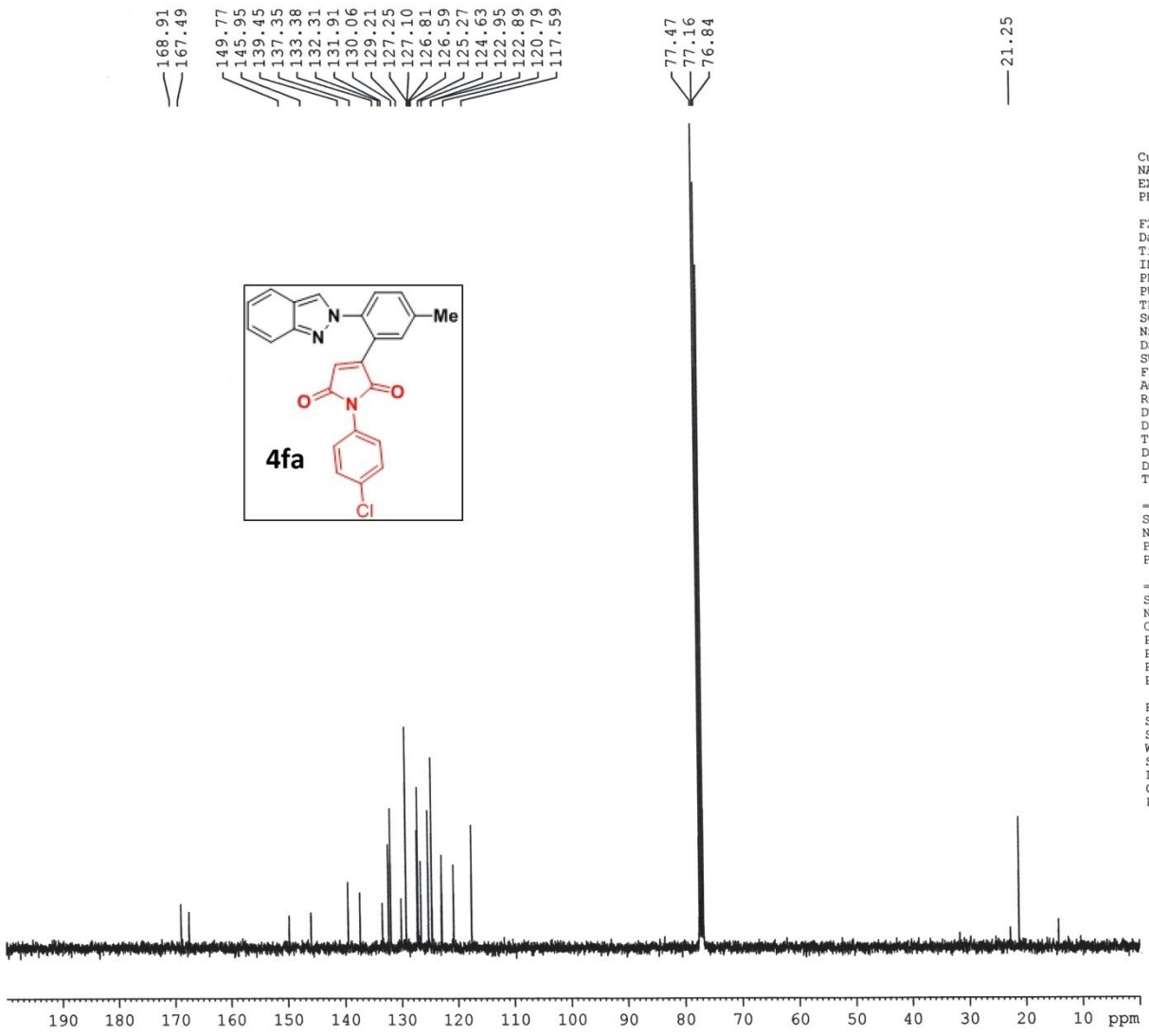
F2 - Acquisition Parameters
Date_              20191022
Time                 11.00
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   32768
SOLVENT              CDCl3
NS                     824
DS                       2
SWH              24038.461 Hz
FIDRES            0.733596 Hz
AQ                0.6815744 sec
RG                   186.42
DW                   20.800 usec
DE                    6.50 usec
TE                   299.3 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1            100.6278588 MHz
NUC1                    13C
P1                     8.90 usec
PLW1           54.00000000 W

======== CHANNEL f2 ========
SFO2            400.1516006 MHz
NUC2                    1H
CPDPRG[2             waltz16
PCPD2                 90.00 usec
PLW2           12.00000000 W
PLW12           0.32231000 W
PLW13           0.16212000 W

F2 - Processing parameters
SI                      16384
SF              100.6177847 MHz
WDW                        EM
SSB          0
LB                     1.00 Hz
GB           0
PC                     1.40
```


8.310
7.744
7.722
7.679
7.658
7.570
7.550
7.535
7.472
7.448
7.342
7.340
7.326
7.324
7.303
7.279
7.273
7.268
7.259
7.256
7.251
7.244
7.165
7.148
7.145
7.127
6.930
6.925
6.912
6.907
6.526
2.509
Me
N
N
O
O
N
4fa
Cl
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
ppm
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.00
2.09
2.04
1.07
1.03
2.01
1.04
2.00
0.95
3.01



BRUKER

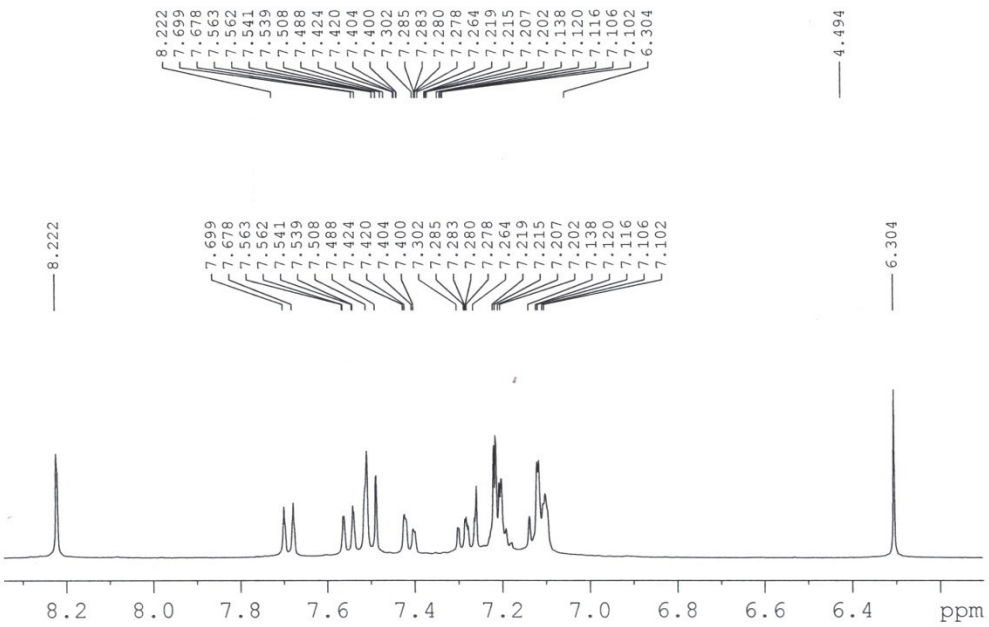
Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 508
PROCNO 1

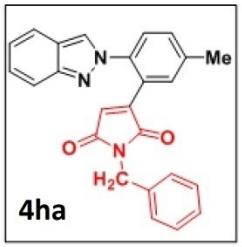
F2 - Acquisition Parameters
Date_ 20191107
Time 10.17
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 512
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 120.16
DW 20.800 usec
DE 6.50 usec
TE 299.4 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

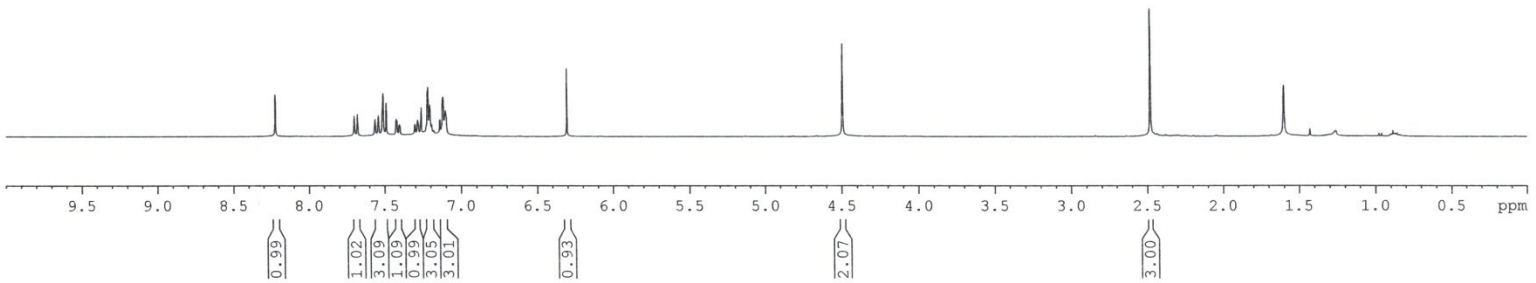
======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W

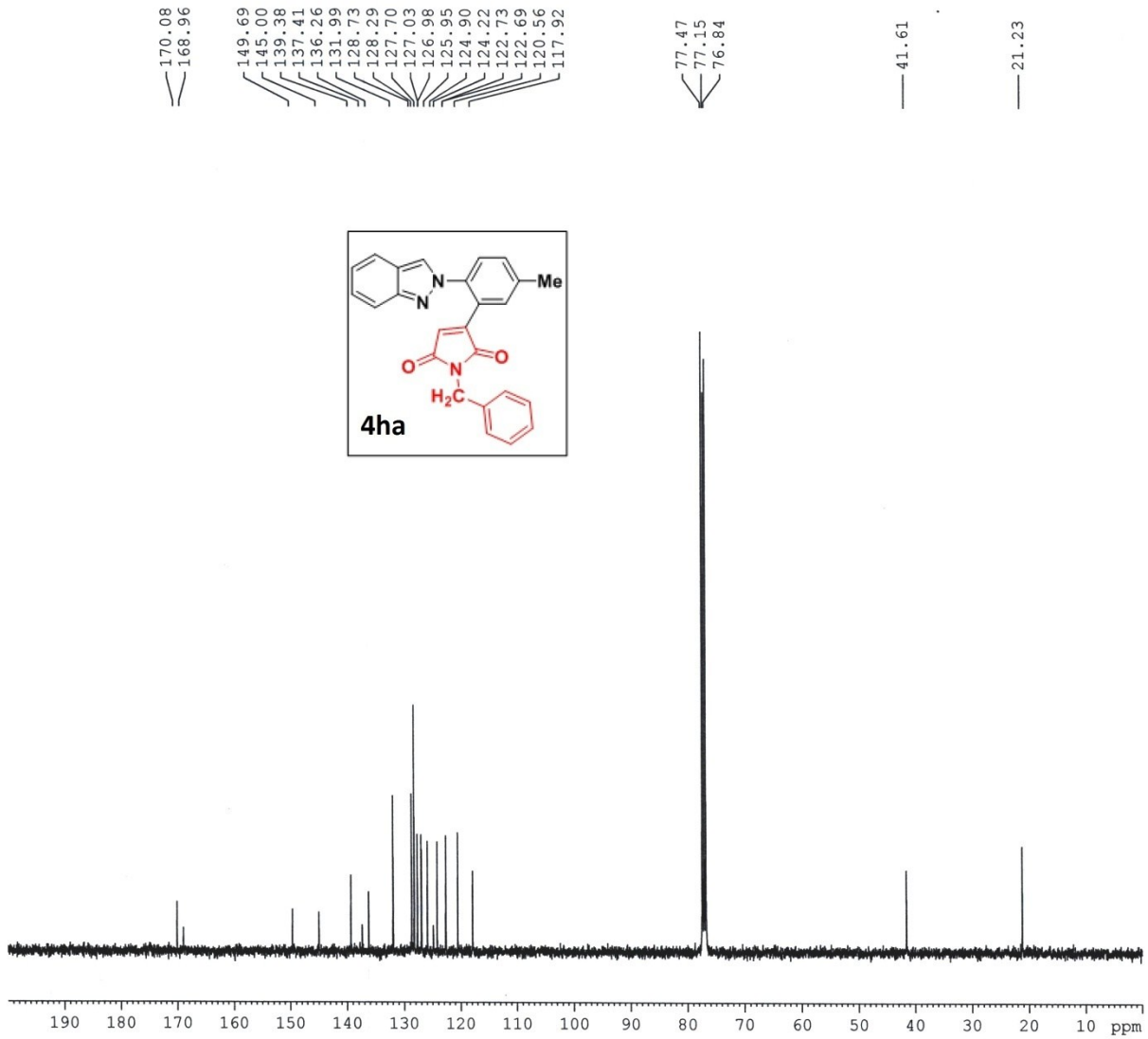
======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W

F2 - Processing parameters
SI 16384
SF 100.6177843 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


8.222
7.699
7.678
7.563
7.562
7.541
7.539
7.508
7.488
7.424
7.420
7.404
7.400
7.302
7.285
7.283
7.280
7.278
7.264
7.219
7.215
7.207
7.202
7.138
7.120
7.116
7.106
7.102
6.304
4.494
2.480
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
6.4
ppm


Me
N
N
O
O
N
H2C
4ha


9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
0.99
1.02
3.09
1.09
0.99
3.05
3.01
0.93
2.07
3.00



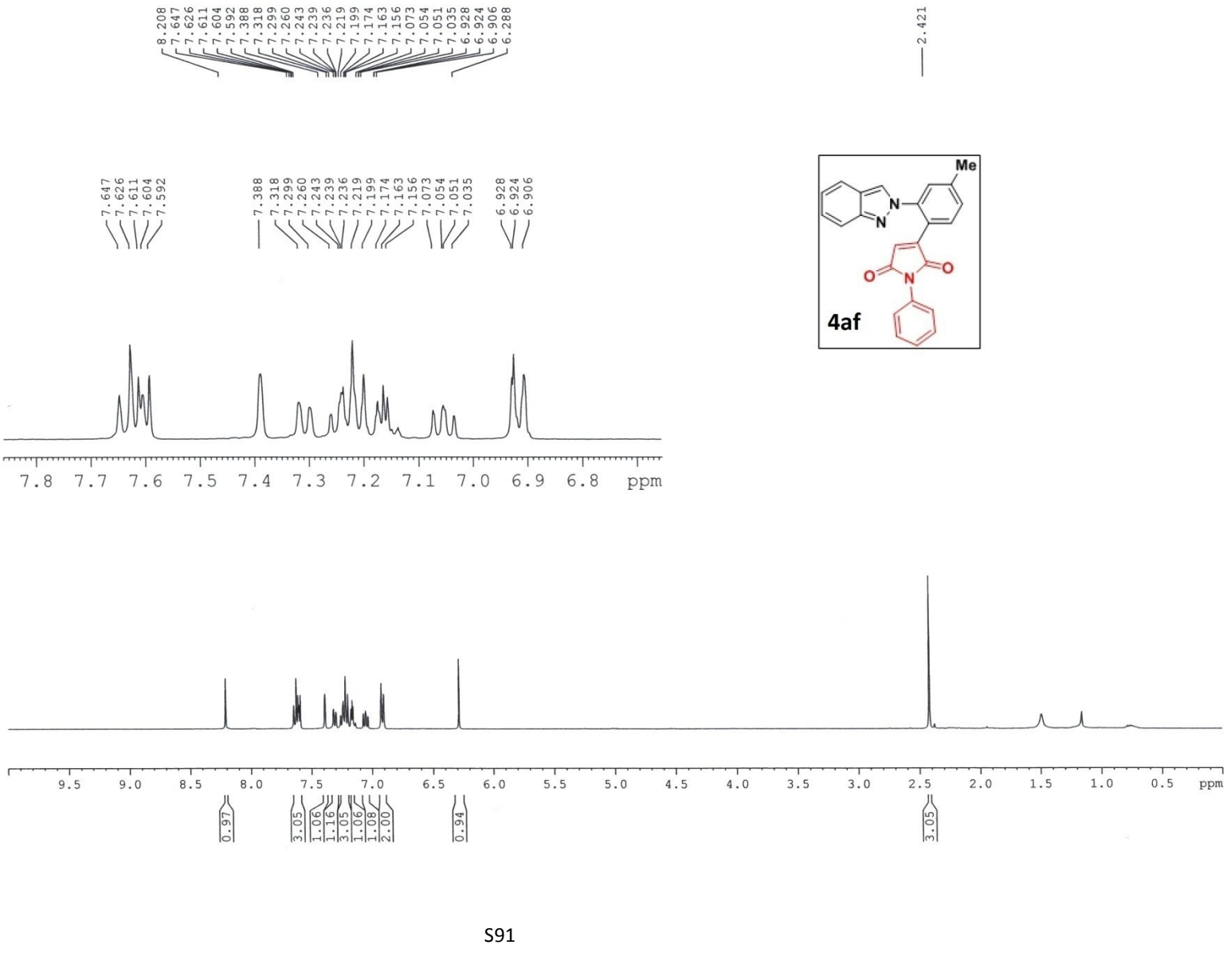

```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  462
PROCNO                   1

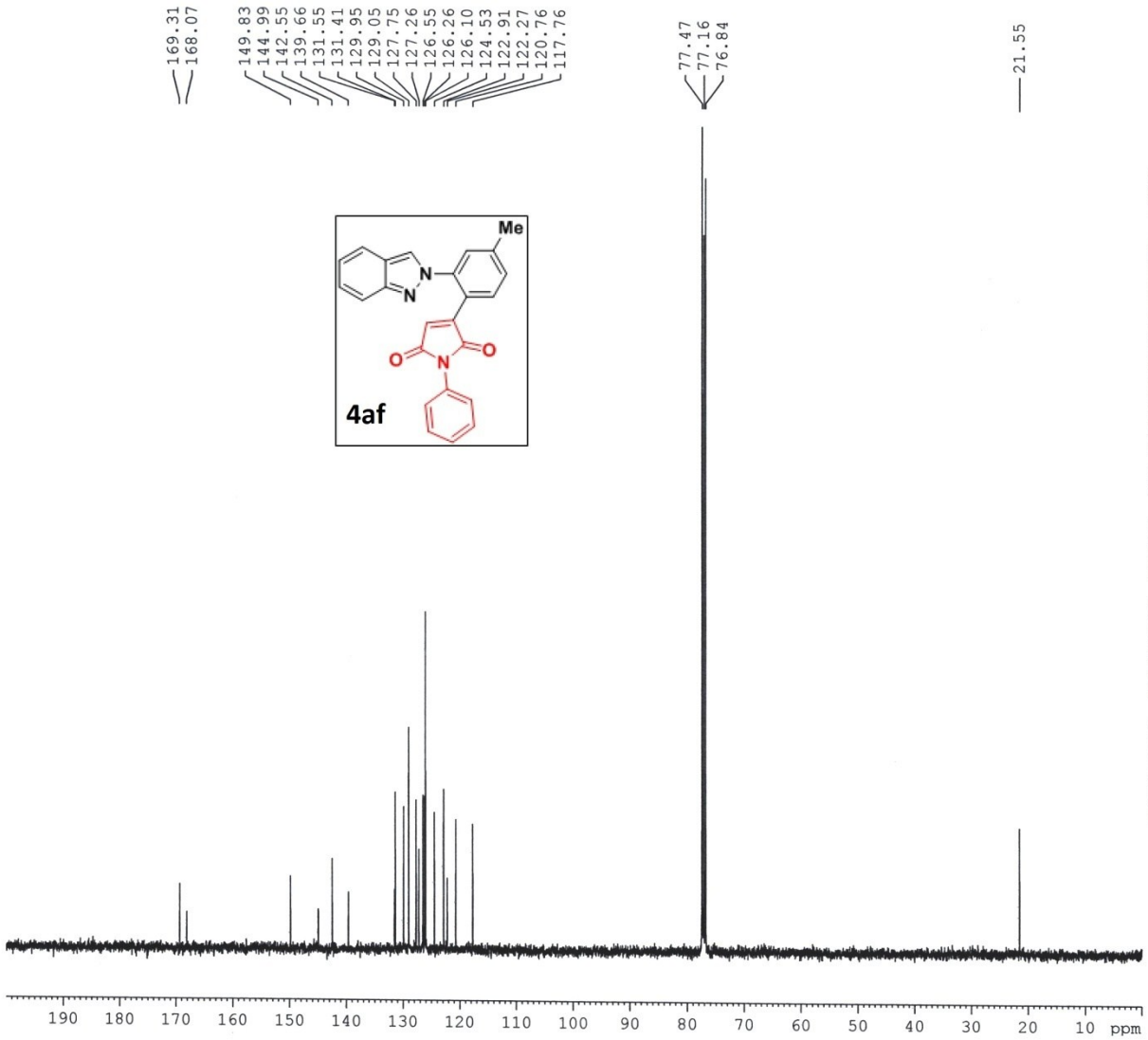
F2 - Acquisition Parameters
Date_              20191026
Time                  9.39
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   32768
SOLVENT              CDCl3
NS                     640
DS                       2
SWH              24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6815744 sec
RG                  186.42
DW                  20.800 usec
DE                   6.50 usec
TE                  299.1 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          100.6278588 MHz
NUC1                   13C
P1                    8.90 usec
PLW1          54.00000000 W

======== CHANNEL f2 ========
SFO2          400.1516006 MHz
NUC2                   1H
CPDPRG[2           waltz16
PCPD2                90.00 usec
PLW2          12.00000000 W
PLW12          0.32231000 W
PLW13          0.16212000 W

F2 - Processing parameters
SI                   16384
SF            100.6177848 MHz
WDW                     EM
SSB       0
LB                    1.00 Hz
GB        0
PC                    1.40
```


8.208
7.647
7.626
7.611
7.604
7.592
7.388
7.318
7.299
7.260
7.243
7.239
7.236
7.219
7.199
7.174
7.163
7.156
7.073
7.054
7.051
7.035
6.928
6.924
6.906
6.288
2.421
Me
N
N
O
N
O
4af
7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 ppm
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 ppm
0.97
3.05
1.06
1.16
3.05
1.06
1.08
2.00
0.94
3.05



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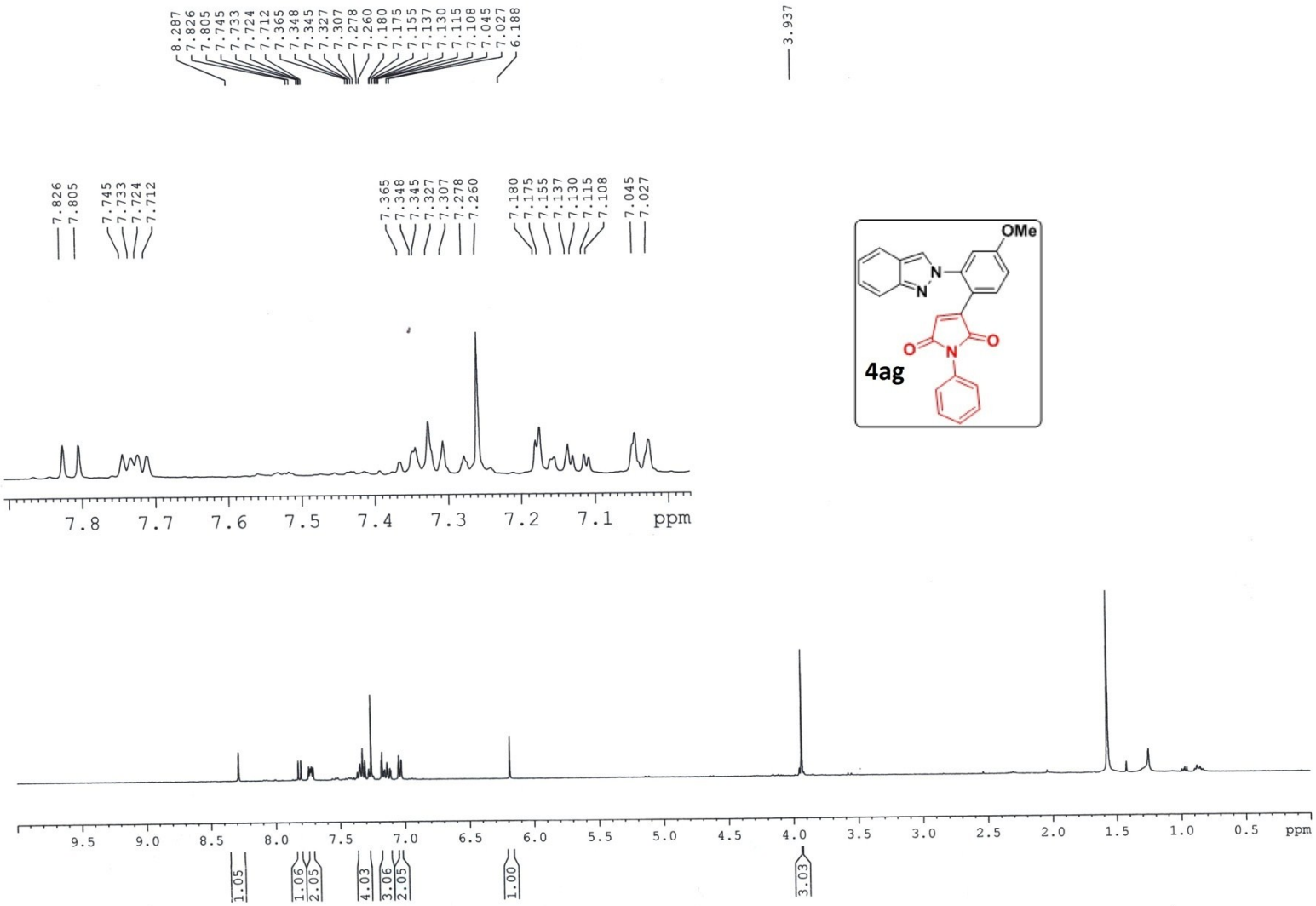
```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  445
PROCNO                   1

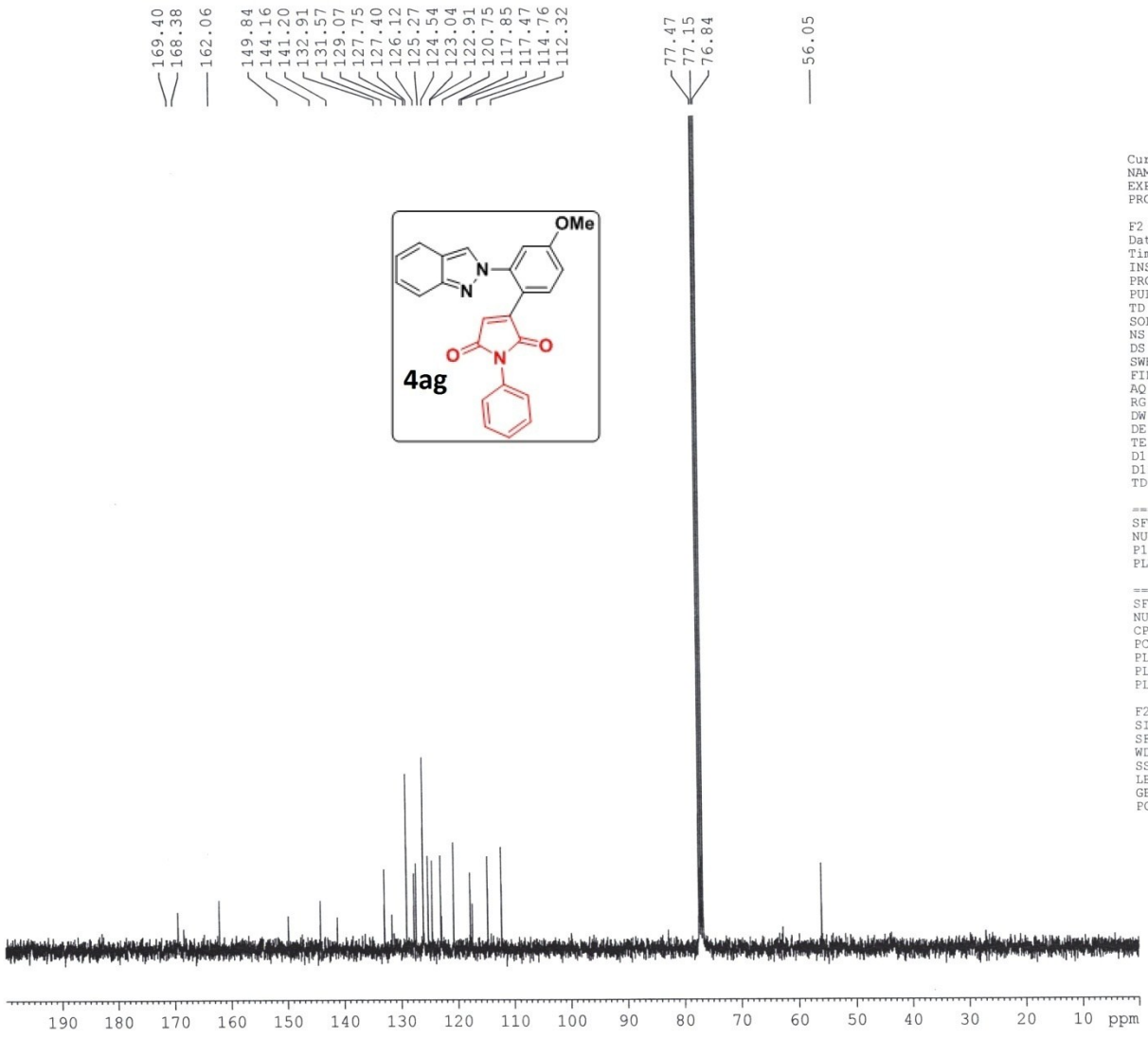
F2 - Acquisition Parameters
Date_              20191022
Time                 20.57
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG            zgpg30
TD                  32768
SOLVENT             CDCl3
NS                    620
DS                      2
SWH              24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6815744 sec
RG                  186.42
DW                  20.800 usec
DE                   6.50 usec
TE                  299.6 K
D1               2.00000000 sec
D11              0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          100.6278588 MHz
NUC1                  13C
P1                   8.90 usec
PLW1         54.00000000 W

======== CHANNEL f2 ========
SFO2          400.1516006 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2                90.00 usec
PLW2         12.00000000 W
PLW12         0.32231000 W
PLW13         0.16212000 W

F2 - Processing parameters
SI                   16384
SF            100.6177846 MHz
WDW                     EM
SSB       0
LB                    1.00 Hz
GB        0
PC                    1.40
```


8.287
7.826
7.805
7.745
7.733
7.724
7.712
7.365
7.348
7.345
7.327
7.307
7.278
7.260
7.180
7.175
7.155
7.137
7.130
7.115
7.108
7.045
7.027
6.188
3.937
OMe
N
N
O
O
N
4ag
ppm
1.05
1.06
2.05
4.03
3.06
2.05
1.00
3.03



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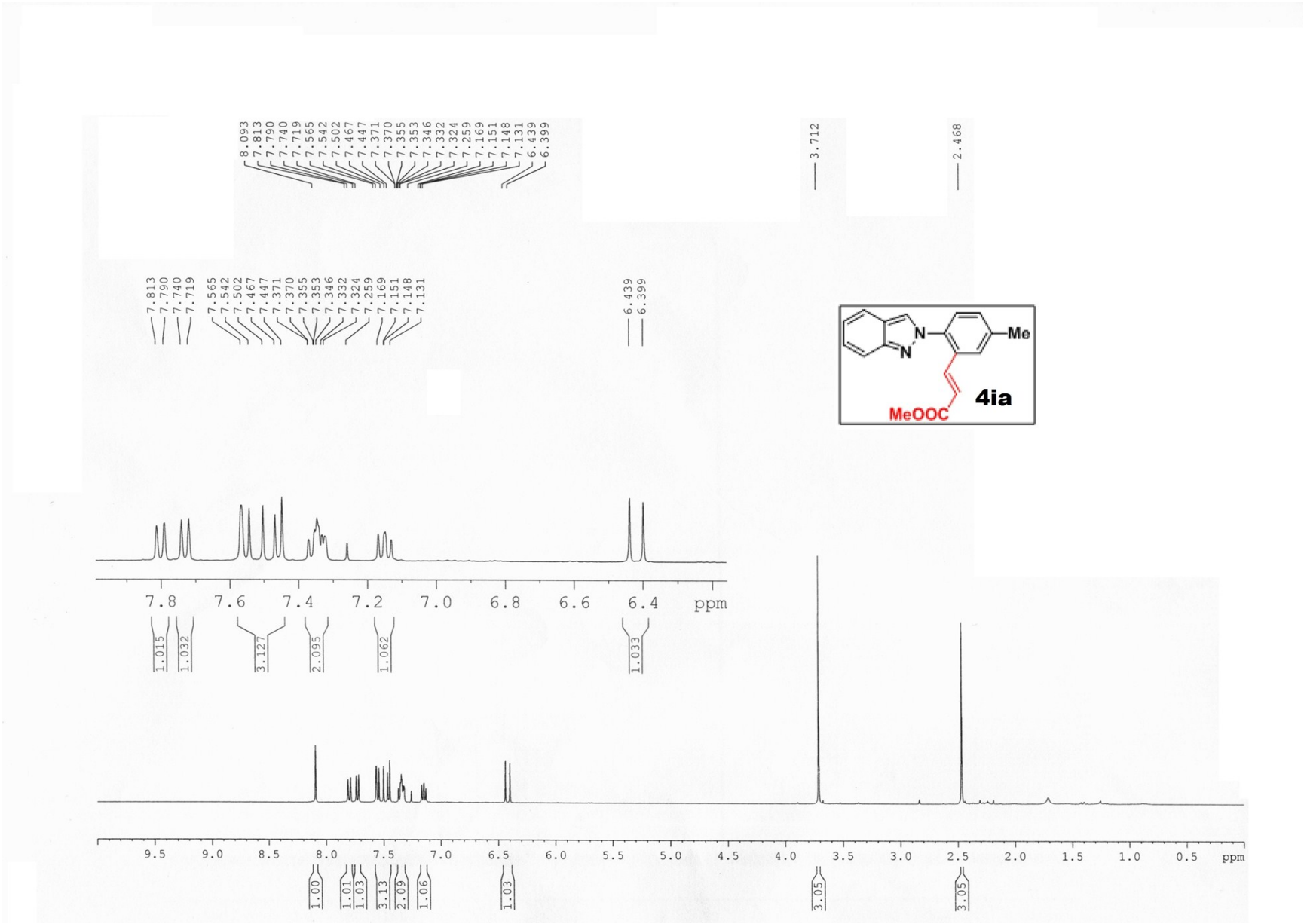
```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO              491
PROCNO               1

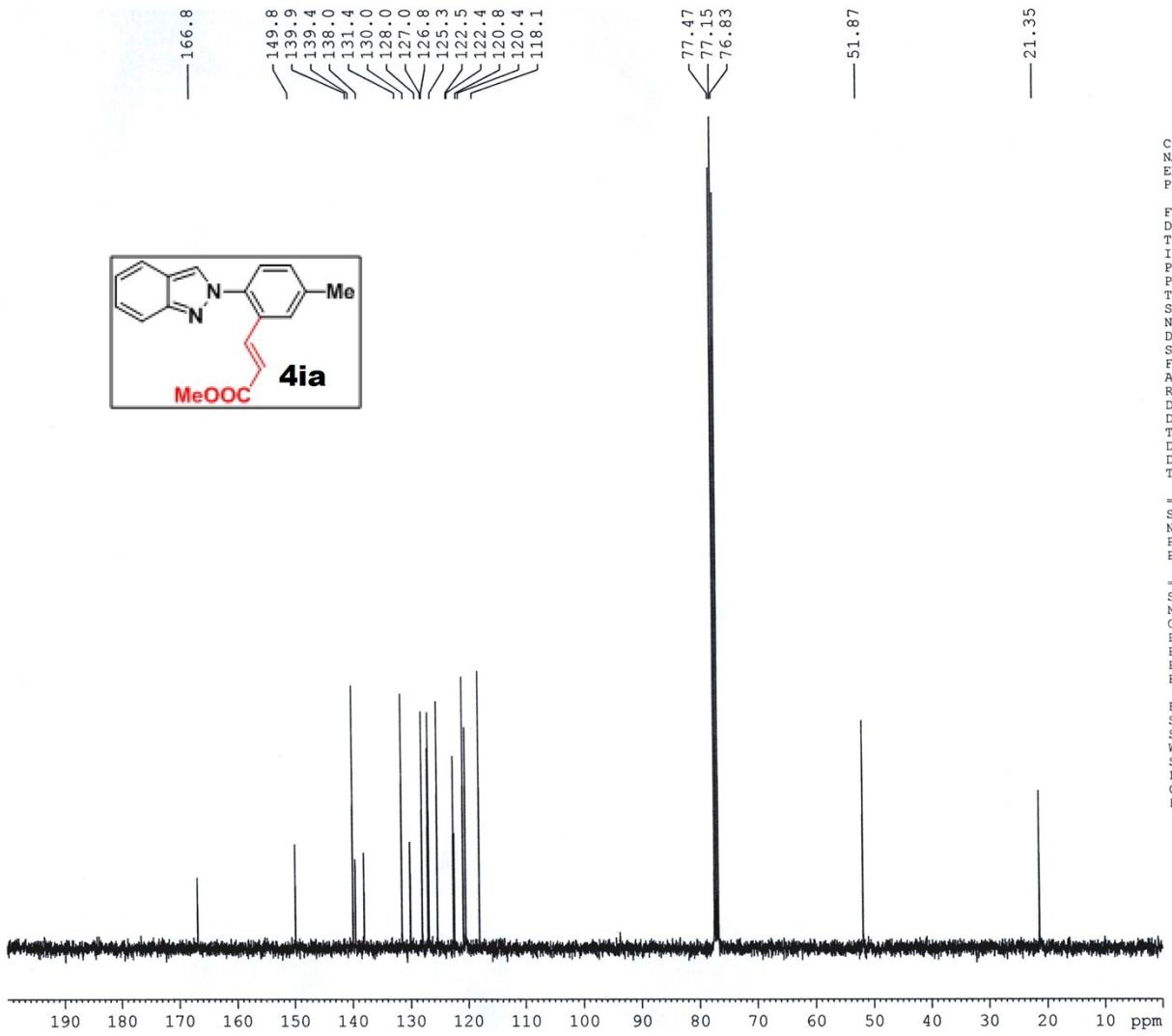
F2 - Acquisition Parameters
Date_          20191103
Time              11.55
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG         zgpg30
TD               32768
SOLVENT          CDCl3
NS                 512
DS                   2
SWH          24038.461 Hz
FIDRES        0.733596 Hz
AQ            0.6815744 sec
RG              186.42
DW               20.800 usec
DE                6.50 usec
TE              297.8 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
SFO1       100.6278588 MHz
NUC1              13C
P1                8.90 usec
PLW1      54.00000000 W

======== CHANNEL f2 ========
SFO2       400.1516006 MHz
NUC2              1H
CPDPRG[2       waltz16
PCPD2            90.00 usec
PLW2      12.00000000 W
PLW12      0.32231000 W
PLW13      0.16212000 W

F2 - Processing parameters
SI                16384
SF         100.6177843 MHz
WDW                EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```


8.093
7.813
7.790
7.740
7.719
7.565
7.542
7.502
7.467
7.447
7.371
7.370
7.355
7.353
7.346
7.332
7.324
7.259
7.169
7.151
7.148
7.131
6.439
6.399
3.712
2.468
Me
N
N
MeOOC
4ia
ppm
1.015
1.032
3.127
2.095
1.062
1.033
1.00
1.01
1.03
3.13
2.09
1.06
1.03
3.05
3.05



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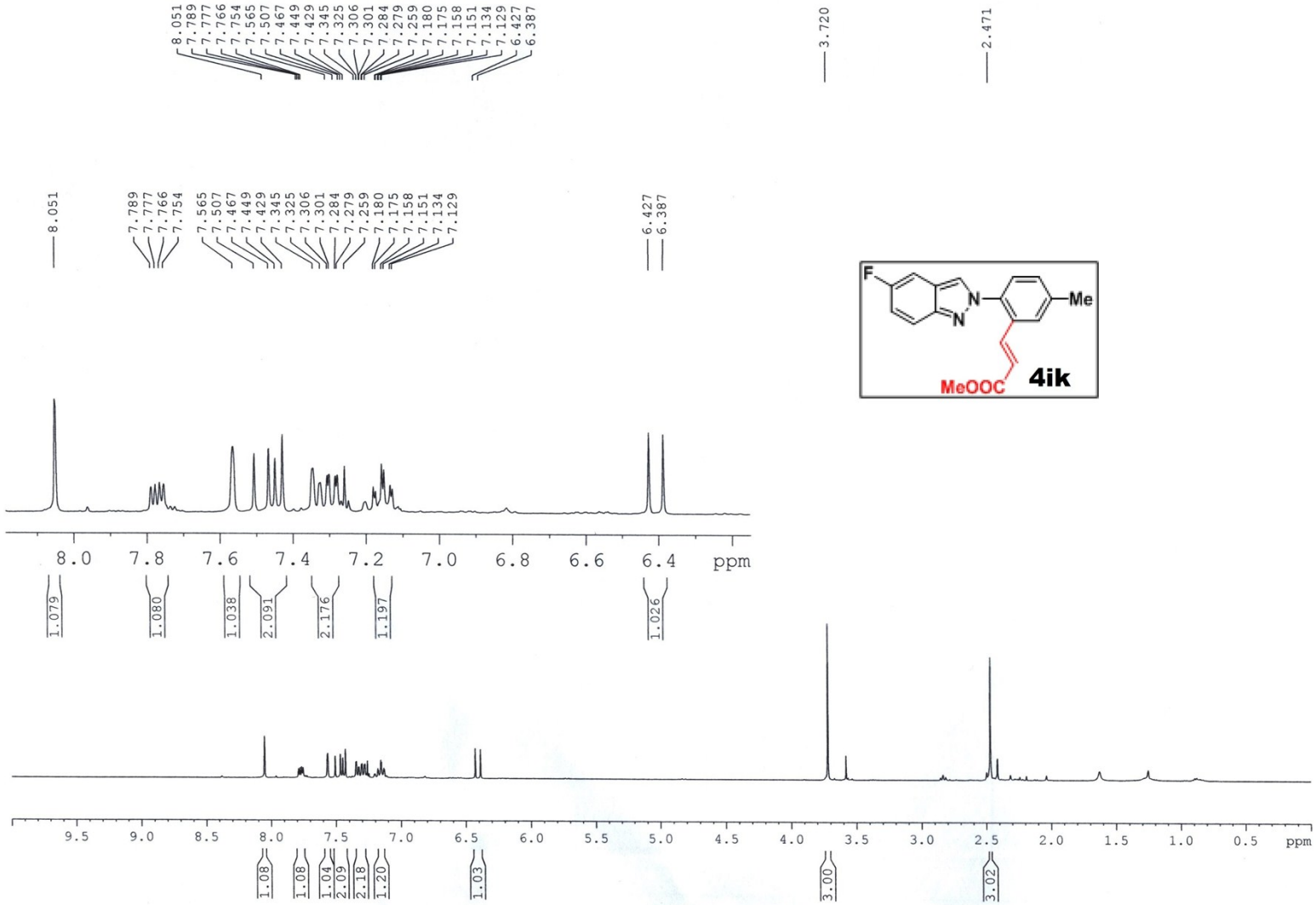
```
Current Data Parameters
NAME      Dr. A HAJRA-2019-13C
EXPNO                  591
PROCNO                   1

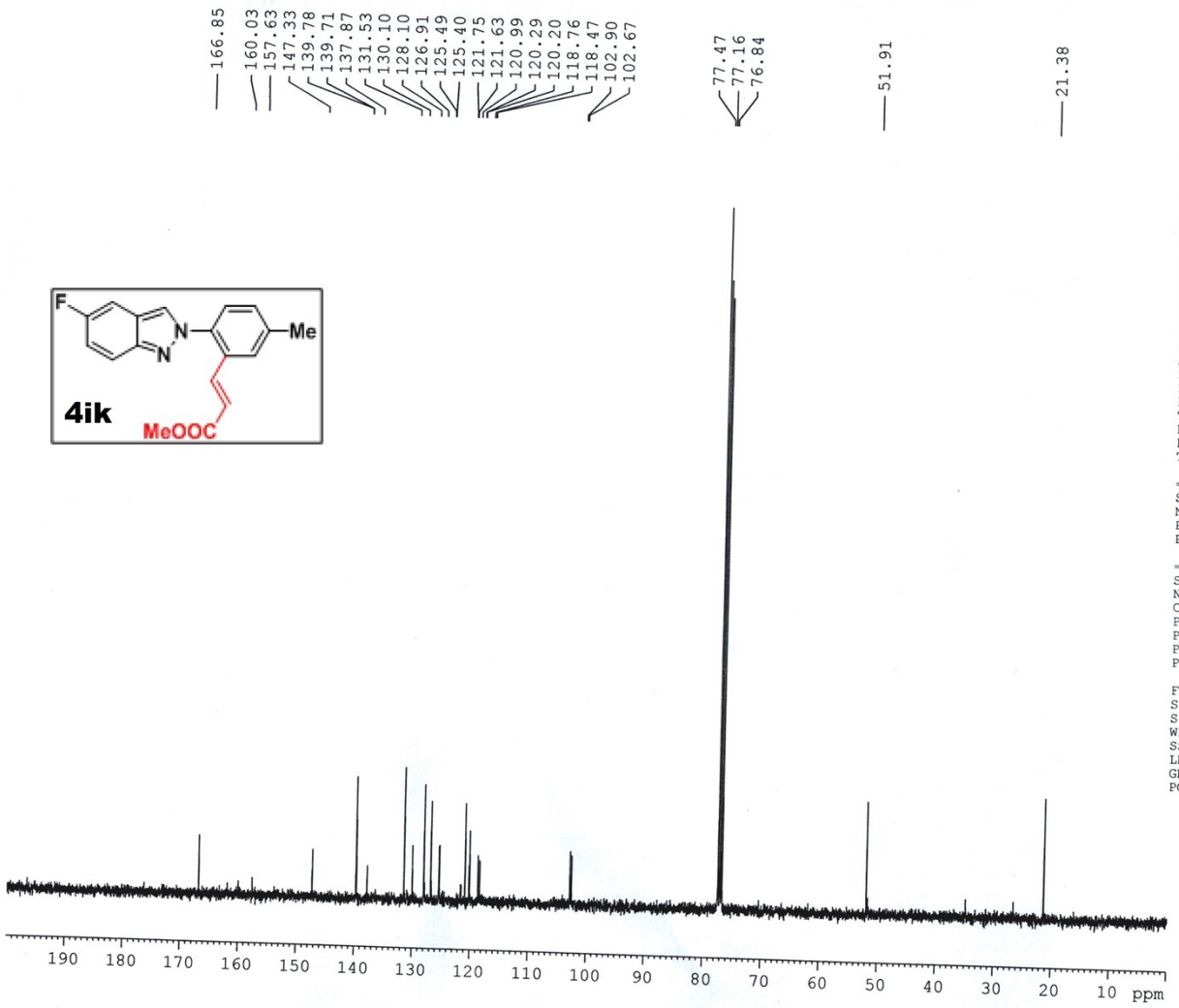
F2 - Acquisition Parameters
Date_             20191223
Time                 20.15
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG              zgpg30
TD                    32768
SOLVENT               CDCl3
NS                      220
DS                        2
SWH              24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6815744 sec
RG                  186.42
DW                  20.800 usec
DE                   6.50 usec
TE                  297.0 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1           100.6278588 MHz
NUC1                    13C
P1                     8.90 usec
PLW1           54.00000000 W

======== CHANNEL f2 ========
SFO2           400.1516006 MHz
NUC2                    1H
CPDPRG[2             waltz16
PCPD2                90.00 usec
PLW2           12.00000000 W
PLW12           0.32231000 W
PLW13           0.16212000 W

F2 - Processing parameters
SI                    16384
SF           100.6177872 MHz
WDW                      EM
SSB          0
LB                    1.00 Hz
GB           0
PC                    1.40
```


8.051
7.789
7.777
7.766
7.754
7.565
7.507
7.467
7.449
7.429
7.345
7.325
7.306
7.301
7.284
7.279
7.259
7.180
7.175
7.158
7.151
7.134
7.129
6.427
6.387
3.720
2.471
F
N
N
Me
MeOOC
4ik
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
6.4
ppm
1.079
1.080
1.038
2.091
2.176
1.197
1.026
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
1.08
1.08
1.04
2.09
2.18
1.20
1.03
3.00
3.02



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Current Data Parameters
NAME Dr. A HAJRA-2019-13C
EXPNO 592
PROCNO 1

F2 - Acquisition Parameters
Date_ 20191225
Time 15.47
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 350
DS 2
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 186.42
DW 20.800 usec
DE 6.50 usec
TE 298.5 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 100.6278588 MHz
NUC1 13C
P1 8.90 usec
PLW1 54.00000000 W

======== CHANNEL f2 ========
SFO2 400.1516006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.16212000 W

F2 - Processing parameters
SI 16384
SF 100.6177844 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40