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Supporting Information

Iodine Pentoxide-Mediated Oxidative Selenation and Seleno/Thiocyanation of Electron-Rich Arenes

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Content

1. General information

Reagents were used as received without further purification unless otherwise indicated. Solvents were dried and distilled prior to use. Petroleum ether used had a boiling point range of 60−90°C. Diselenides were prepared from the corresponding iodides with elemental selenium according to Braga's report.[1] Chromatographic purification of products was performed as flash column chromatography on silica gel (200−300 meshes). Thin-layer chromatography (TLC) was carried out on silica plates (TLC Silica GF_{254}). Visualization of the compounds was accomplished by projecting UV-light onto the developed plates. Nuclear magnetic resonance spectra were recorded at ambient temperature (unless otherwise stated) at 400 MHz (100 MHz for ^{13}C) in $CDCl_3$ or DMSO-d_6. Chemical shifts were reported in ppm (δ) using TMS as internal standard, and spin−spin coupling constants (*J*) were given in Hz. Multiplicities of NMR signals are abbreviated as follows: br = broad, s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet. High resolution mass spectrometry (HRMS) analyses were carried out on a Thermo Fisher Q Exactive Mass Spectrometer. Melting points were determined on glass slides using a digital display microscopic melting point apparatus and were presented uncorrected.

2. Photograph of the color of reaction mixture

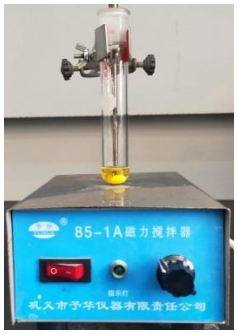

Fig. S1a at the beginning of the reaction

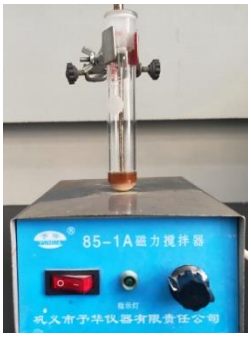

Fig. S1b at the end of the reaction

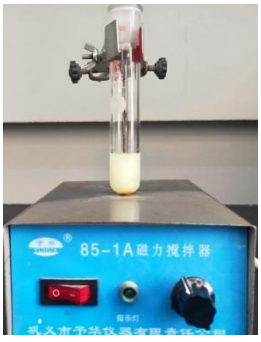

Fig. S1c after adding an aqueous $Na_2S_2O_3$

3. General procedure for selenation of electron rich arenes

The reaction was carried out in an open air system at ambient temperature. To a 10 mL vessel with magnetic stir bar were added 0.5 mmol indole/arene, 0.5

mmol diselenide, 0.5 mmol I_2O_5 and 2 mL of CH_3CN. The reaction mixture was stirred for an indicated time. Then, the reaction was quenched with a saturated aqueous $Na_2S_2O_3$ solution and extracted with EtOAc. The combined organic layers were dried (Na_2SO_4) and concentrated to give a crude residue, which was purified by flash column chromatography.

4. Characterization data

3-(Phenylselanyl)-1*H*-indole (**3aa**). Compound **3aa** was prepared according to the general procedure and isolated as a yellow solid (122 mg, 90% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). mp=135-136 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.36 (brs, 1H), 7.56 (d, *J* = 7.9 Hz, 1H), 7.40 (d, *J* = 2.5 Hz, 1H), 7.36 (d, *J* = 8.1 Hz, 1H), 7.23 – 7.13 (m, 3H), 7.13 – 6.97 (m, 4H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 135.3, 132.8, 130.2, 128.9, 127.9, 127.6, 124.5, 121.9, 119.8, 119.3, 110.3, 97.1. The data are in accordance with the literature.[2]

4-Methyl-3-(phenylselanyl)-1*H*-indole (**3ab**). Compound **3ab** was prepared according to the general procedure and isolated as a brown solid (122 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate = 25/1). mp=110-112 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.15 (brs, 1H), 7.30 (d, *J* = 2.6 Hz, 1H), 7.25 – 7.14 (m, 3H), 7.14 – 7.01 (m, 4H), 6.87 (d, *J* = 7.1 Hz, 1H), 2.68 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 136.9, 136.2, 132.6, 132.3, 129.2, 128.2, 127.3, 125.5, 123.1, 122.5, 109.5, 96.8, 19.0. The data are in accordance with the literature.[2]

5-Methyl-3-(phenylselanyl)-1*H*-indole (**3ac**). Compound **3ac** was prepared according to the general procedure and isolated as a brown solid (122 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). mp=93-95 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.62 (d, *J* = 8.1 Hz, 1H), 7.37 (d, *J* = 8.3 Hz, 1H), 7.34 – 7.25 (m, 2H), 7.25 – 7.20 (m, 2H), 7.20 – 7.05 (m, 4H), 3.83 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 137.5, 135.7, 134.2, 130.7, 128.9, 128.6, 125.5, 122.5, 120.5, 120.4, 109.6, 96.0, 33.1. The data are in accordance with the literature.[2]

6-Methyl-3-(phenylselanyl)-1*H*-indole (**3ad**). Compound **3ad** was prepared according to the general procedure and isolated as a brown solid (113 mg, 79% yield)

after flash chromatography (petroleum ether/ethyl acetate = 20/1). mp=136-138 ℃.^{1}H NMR (400 MHz, $CDCl_3$): δ 8.21 (brs, 1H), 7.49 (d, *J* = 8.1 Hz, 1H), 7.35 (d, *J* = 2.5 Hz, 1H), 7.26 – 7.17 (m, 3H), 7.17 – 7.04 (m, 3H), 6.99 (d, *J* = 8.2 Hz, 1H), 2.46 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 136.9, 134.0, 132.9, 130.7, 129.0, 128.6, 127.8, 125.6, 122.7, 120.0, 111.4, 97.9, 21.7. The data are in accordance with the literature.[2]

7-Methyl-3-(phenylselanyl)-1*H*-indole (**3ae**). Compound **3ae** was prepared according to the general procedure and isolated as a yellow solid (112 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 25/1). mp=56-57 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.26 (brs, 1H), 7.48 (d, *J* = 7.5 Hz, 1H), 7.41 (d, *J* = 2.6 Hz, 1H), 7.29 – 7.19 (m, 2H), 7.15 – 6.96 (m, 5H), 2.49 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 136.0, 133.9, 131.0, 129.6, 129.0, 128.7, 125.6, 123.5, 121.1, 120.6, 118.1, 98.6, 16.5. The data are in accordance with the literature.[2]

Methyl 3-(phenylselanyl)-1*H*-indole-4-carboxylate (**3af**). Compound **3af** was prepared according to the general procedure and isolated as an oil (112 mg, 68% yield) after flash chromatography (petroleum ether/ethyl acetate = 2/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.85 (brs, 1H), 7.60 – 7.45 (m, 2H), 7.33 – 7.25 (m, 2H), 7.27 – 7.20 (m, 2H), 7.18 – 7.09 (m, 3H), 3.72 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 169.4, 137.5, 134.1, 132.7, 130.1, 129.0, 126.1, 126.0, 125.1, 122.3, 121.9, 115.0, 98.3, 51.9. The data are in accordance with the literature.[3]

Methyl 3-(phenylselanyl)-1*H*-indole-5-carboxylate (**3ag**). Compound **3ag** was prepared according to the general procedure and isolated as white solid (124 mg, 75% yield) after flash chromatography (petroleum ether/ethyl acetate = 2/1). mp=155-157 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.73 (s, 1H), 8.41 (d, *J* = 1.7 Hz, 1H), 7.97 (dd, *J* = 8.6, 1.7 Hz, 1H), 7.55 (d, *J* = 2.5 Hz, 1H), 7.54 – 7.41 (m, 1H), 7.29 – 7.17 (m, 2H), 7.19 – 7.02 (m, 3H), 3.90 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 167.9, 139.0, 133.5, 132.7, 129.8, 129.1, 128.8, 125.8, 124.4, 123.2, 123.1, 111.3, 99.9, 52.0. The data are in accordance with the literature.[2]

Methyl 3-(phenylselanyl)-1*H*-indole-6-carboxylate (**3ah**). Compound **3ah** was prepared according to the general procedure and isolated as a white solid (134 mg, 81%

yield) after flash chromatography (petroleum ether/ethyl acetate = 2/1). mp=164-166 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.82 (brs, 1H), 8.22 (d, *J* = 1.4 Hz, 1H), 7.85 (dd, *J* = 8.4, 1.4 Hz, 1H), 7.73 – 7.52 (m, 2H), 7.39 – 7.18 (m, 2H), 7.17 – 6.96 (m, 3H), 3.94 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 168.0, 135.8, 134.3, 133.7, 133.3, 129.1, 128.8, 125.9, 124.8, 121.9, 120.1, 113.8, 98.8, 52.1. The data are in accordance with the literature.[3]

5-Fluoro-3-(phenylselanyl)-1*H*-indole (**3ai**). Compound **3ai** was prepared according to the general procedure and isolated as an pink solid (96 mg, 66% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp=116-118 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.41 (brs, 1H), 7.50 (d, *J* = 2.5 Hz, 1H), 7.34 (dd, *J* = 8.8, 4.2 Hz, 1H), 7.27 (dd, *J* = 9.3, 2.5 Hz, 1H), 7.25 – 7.18 (m, 2H), 7.18 – 7.07 (m, 3H), 6.99 (td, *J* = 9.0, 2.6 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 158.7 (d, *J* = 236.5 Hz), 133.4, 132.9, 132.8, 130.9 (d, *J* = 10.2 Hz), 129.1, 128.8, 125.8, 112.2 (d, *J* = 9.6 Hz), 111.5 (d, *J* = 26.7 Hz), 105.4 (d, *J* = 24.2 Hz), 98.3 (d, *J* = 4.8 Hz). ^{19}F NMR (376 MHz, $CDCl_3$): δ -122.7. The data are in accordance with the literature.[3]

5-Chloro-3-(phenylselanyl)-1*H*-indole (**3aj**). Compound **3aj** was prepared according to the general procedure and isolated as a white solid (115 mg, 75% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp=192-193 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.40 (brs, 1H), 7.60 (d, *J* = 2.1 Hz, 1H), 7.45 (d, *J* = 2.3 Hz, 1H), 7.31 (d, *J* = 8.6 Hz, 1H), 7.25 – 7.16 (m, 3H), 7.17 – 7.05 (m, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 134.8, 133.4, 132.6, 131.3, 129.1, 128.7, 126.8, 125.9, 123.4, 119.9, 112.5, 98.0. The data are in accordance with the literature.[3]

5-Bromo-3-(phenylselanyl)-1*H*-indole (**3ak**). Compound **3ak** was prepared according to the general procedure and isolated as a white solid (128 mg, 73% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp=97-99 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.45 (brs, 1H), 7.77 (d, *J* = 1.7 Hz, 1H), 7.46 (d, *J* = 2.5 Hz, 1H), 7.39 – 7.27 (m, 2H), 7.25 – 7.17 (m, 2H), 7.17 – 7.09 (m, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 135.1, 133.4, 132.4, 131.9, 129.1, 128.7, 126.0, 125.9, 123.0, 114.4, 112.9, 97.9. The data are in accordance with the literature.[3]

5-Iodo-3-(phenylselanyl)-1*H*-indole (**3al**). Compound **3al** was prepared according to

the general procedure and isolated as an white solid (139 mg, 70% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp=128-130 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.43 (brs, 1H), 7.98 (d, *J* = 1.5 Hz, 1H), 7.50 (dd, *J* = 8.5, 1.5Hz, 1H), 7.41 (d, *J* = 2.5 Hz, 1H), 7.24 – 7.10 (m, 6H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 135.5, 133.4, 132.6, 132.1, 131.4, 129.2, 129.1, 128.7, 125.9, 113.4, 97.5, 84.7. The data are in accordance with the literature.[4]

5-Methoxy-3-(phenylselanyl)-1*H*-indole (**3am**). Compound **3am** was prepared according to the general procedure and isolated as an oil (137 mg, 91% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.37 (brs, 1H), 7.39 (d, *J* = 2.6 Hz, 1H), 7.28 (d, *J* = 8.8 Hz, 1H), 7.22 (dt, *J* = 6.0, 1.5 Hz, 2H), 7.17 – 7.02 (m, 4H), 6.90 (dd, *J* = 8.8, 2.5 Hz, 1H), 3.78 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 155.1, 134.0, 132.0, 131.3, 130.8, 129.0, 128.5, 125.6, 113.5, 112.3, 101.6, 97.6, 55.8. The data are in accordance with the literature.[3]

3-(Phenylselanyl)-1*H*-indole-5-carbonitrile (**3an**). Compound **3an** was prepared according to the general procedure and isolated as an white solid (74 mg, 50% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). mp=151-152 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.86 (brs, 1H), 7.98 (d, *J* = 1.2 Hz, 1H), 7.62 (d, *J* = 2.5 Hz, 1H), 7.55 – 7.43 (m, 2H), 7.29 – 7.20 (m, 2H), 7.19 – 7.07 (m, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 138.2, 133.2, 132.5, 130.0, 129.19, 129.16, 126.2, 126.1, 125.9, 120.3, 112.5, 104.1, 99.8. The data are in accordance with the literature.[2]

3-(Phenylselanyl)-5-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-1*H*-indole (**3ao**). Compound **3ao** was prepared according to the general procedure and isolated as a pink solid (139 mg, 70% yield) after flash chromatography (petroleum ether/ethyl acetate = 6/1). mp=166-168 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.57 (brs, 1H), 8.21 (d, *J* = 1.1 Hz, 1H), 7.71 (dd, *J* = 8.2, 1.1 Hz, 1H), 7.41 (d, *J* = 2.5 Hz, 1H), 7.38 (d, *J* = 8.2 Hz, 1H), 7.22 – 7.14 (m, 2H), 7.13 – 7.02 (m, 3H), 1.33 (s, 12H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 138.5, 134.3, 131.8, 129.8, 129.1, 129.0, 128.4, 127.9, 125.5, 110.9, 98.6, 83.6, 24.9. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{20}H_{23}BNO_2Se$, 400.0982; found, 400.0986.

3-(Phenylselanyl)-6-(trifluoromethyl)-1*H*-indole (**3ap**). Compound **3ap** was

prepared according to the general procedure and isolated as a brown solid (116 mg, 68% yield) after flash chromatography (petroleum ether/ethyl acetate = 4/1). mp=110-111 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.61 (brs, 1H), 7.84 – 7.64 (m, 2H), 7.59 (d, *J* = 2.6 Hz, 1H), 7.39 (dd, *J* = 8.5, 1.4 Hz, 1H), 7.27 – 7.18 (m, 2H), 7.18 – 7.03 (m, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 135.3, 133.6, 133.1, 132.4, 129.1, 128.9, 126.4, 126.0, 125.2 (q, J_{C-F} = 31.9 Hz), 123.7, 120.9, 117.6 (d, J_{C-F} = 3.5 Hz), 109.1 (q, J_{C-F} = 4.5 Hz), 98.9. ^{19}F NMR (376 MHz, $CDCl_3$): δ -60.6. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{15}H_{11}F_3NSe$, 342.0003; found, 342.0014.

3-(Phenylselanyl)-1*H*-indole-7-carbaldehyde (**3aq**). Compound **3aq** was prepared according to the general procedure and isolated as a white solid (84 mg, 56% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). mp=110-112 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 10.39 (brs, 1H), 10.13 (s, 1H), 7.91 (d, *J* = 7.8 Hz, 1H), 7.70 (dd, *J* = 7.3, 1.0 Hz, 1H), 7.60 (d, *J* = 2.4 Hz, 1H), 7.29 (t, *J* = 7.6 Hz, 1H), 7.25 – 7.18 (m, 2H), 7.16 – 7.03 (m, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 193.4, 134.4, 133.3, 132.9, 131.2, 129.6, 129.1, 128.9, 127.8, 125.9, 120.9, 120.5, 98.8. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{15}H_{12}NOSe$, 302.0079; found, 302.0086.

1-Methyl-3-(phenylselanyl)-1*H*-indole (**3ar**). Compound **3ar** was prepared according to the general procedure and isolated as an brown solid (123 mg, 86% yield) after flash chromatography (petroleum ether/ethyl acetate = 30/1). mp=85-87 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.62 (d, *J* = 8.5 Hz, 1H), 7.37 (d, *J* = 8.3 Hz, 1H), 7.35 – 7.26 (m, 2H), 7.25 – 7.20 (m, 2H), 7.20 – 7.04 (m, 4H), 3.83 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 137.5, 135.7, 134.2, 130.7, 128.9, 128.6, 125.5, 122.5, 120.5, 120.4, 109.6, 96.0, 33.1. The data are in accordance with the literature.[2]

1-Benzyl-3-(phenylselanyl)-1*H*-indole (**3as**). Compound **3as** was prepared according to the general procedure and isolated as a white solid (147 mg, 81% yield) after flash chromatography (petroleum ether/ethyl acetate = 80/1). mp=75-77 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.64 (d, *J* = 7.8 Hz, 1H), 7.40 (s, 1H), 7.36 – 7.27 (m, 4H), 7.27 – 7.19 (m, 3H), 7.20 – 7.04 (m, 6H), 5.36 (s, 2H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 137.1, 136.7, 135.0, 134.1, 130.9, 129.0, 128.9, 128.5, 127.9, 127.0, 125.5, 122.7, 120.7, 120.6, 110.1, 96.8, 50.4. The data are in accordance with the literature.[2]

2-Methyl-3-(phenylselanyl)-1*H*-indole (**3at**). Compound **3at** was prepared according to the general procedure and isolated as a pink solid (122 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp=90-91 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.26 (brs, 1H), 7.55 (d, *J* = 7.7 Hz, 1H), 7.33 (d, *J* = 7.7 Hz, 1H), 7.23 – 6.97 (m, 7H), 2.55 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 140.8, 135.8, 133.9, 131.2, 128.9, 128.3, 125.4, 122.1, 120.6, 119.8, 110.5, 96.3, 13.2. The data are in accordance with the literature.[2]

2-Phenyl-3-(phenylselanyl)-1*H*-indole (**3au**). Compound **3au** was prepared according to the general procedure and isolated as an oil (134 mg, 77% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.54 (s, 1H), 7.70 (d, *J* = 6.8 Hz, 2H), 7.65 (d, *J* = 7.9 Hz, 1H), 7.56 – 7.33 (m, 4H), 7.32 – 7.02 (m, 7H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 142.1, 136.2, 134.1, 132.1, 132.0, 129.1, 128.7, 128.6, 128.3, 125.5, 123.3, 121.1, 120.9, 111.1, 95.8. The data are in accordance with the literature.[2]

3-Methyl-2-(phenylselanyl)-1*H*-indole (**3av**). Compound **3av** was prepared according to the general procedure and isolated as an oil (76 mg, 53% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.95 (brs, 1H), 7.53 (d, *J* = 7.9 Hz, 1H), 7.22 (d, *J* = 7.9 Hz, 1H), 7.18 – 7.01 (m, 7H), 2.34 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 136.5, 131.0, 128.3, 128.2, 127.2, 125.3, 122.1, 118.9, 118.5, 118.2, 117.0, 109.7, 9.4. The data are in accordance with the literature.[5]

2-Methyl-3-(*p*-tolylselanyl)-1*H*-indole (**3ba**). Compound **3ba** was prepared according to the general procedure and isolated as an oil (111 mg, 74% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.18 (brs, 1H), 7.72 – 7.47 (m, 1H), 7.30 (d, *J* = 8.0 Hz, 1H), 7.20 – 7.02 (m, 4H), 6.93 (d, *J* = 7.9 Hz, 2H), 2.52 (s, 3H), 2.22 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): 140.7, 135.8, 135.2, 131.3, 130.0, 129.8, 128.6, 122.1, 120.6, 119.8, 110.5, 96.6, 20.9, 13.2. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{16}H_{16}NSe$, 302.0442; found, 302.0437.

3-((4-Methoxyphenyl)selanyl)-2-methyl-1*H*-indole (**3bb**). Compound **3bb** was

prepared according to the general procedure and isolated as an oil (123 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.21 (brs, 1H), 7.57 (d, *J* = 7.6 Hz, 1H), 7.29 (d, *J* = 7.6 Hz, 2H), 7.22 – 7.02 (m, 4H), 6.69 (d, *J* = 8.7 Hz, 2H), 3.70 (s, 3H), 2.54 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): 158.1, 140.4, 135.7, 131.2, 130.7, 123.7, 122.0, 120.5, 119.8, 114.8, 110.4, 97.4, 55.3, 13.2. The data are in accordance with the literature.[5]

2-Methyl-3-((4-(trifluoromethoxy)phenyl)selanyl)-1*H*-indole (**3bc**). Compound **3bc** was prepared according to the general procedure and isolated as an oil (152 mg, 82% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.27 (brs, 1H), 7.53 (d, *J* = 7.8 Hz, 1H), 7.34 (d, *J* = 8.0 Hz, 1H), 7.27 – 7.07 (m, 4H), 7.00 – 6.92 (m, 2H), 2.54 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 147.3 (d, $J_{C\text{-}F}$ = 2.1 Hz), 141.0, 135.8, 132.45, 131.0, 129.4, 122.3, 121.7, 120.8, 119.6, 117.9 (q, $J_{C\text{-}F}$ = 256.9 Hz), 110.6, 96.0, 13.2. ^{19}F NMR (376 MHz, $CDCl_3$): δ -58.0. HRMS (ESI): m/z [M + H]$^{+}$ calcd for $C_{16}H_{13}F_3NOSe$, 372.0109; found, 372.0126.

3-([1,1'-Biphenyl]-4-ylselanyl)-2-methyl-1*H*-indole (**3bd**). Compound **3bd** was prepared according to the general procedure and isolated as a brown solid (154 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp=150-151 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.30 (brs, 1H), 7.58 (d, *J* = 18.0 Hz, 1H), 7.49 (d, *J* = 8.0 Hz, 2H), 7.42 – 7.26 (m, 6H), 7.23 – 7.11 (m, 4H), 2.58 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 140.9, 140.7, 138.4, 135.8, 133.2, 131.2, 128.7, 128.6, 127.7, 127.1, 126.8, 122.2, 120.7, 119.8, 110.5, 96.1, 13.3. HRMS (ESI): m/z [M + H]$^{+}$ calcd for $C_{21}H_{18}NSe$, 364.0599; found, 364.0610.

3-((4-Fluorophenyl)selanyl)-2-methyl-1*H*-indole (**3be**). Compound **3be** was prepared according to the general procedure and isolated as a brown solid (122 mg, 80% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp=74-76 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.17 (brs, 1H), 7.54 (d, *J* = 7.7 Hz, 1H), 7.29 (d, *J* = 7.4 Hz, 1H), 7.24 – 7.06 (m, 4H), 6.91 – 6.58 (m, 2H), 2.51 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 161.4 (d, $J_{C\text{-}F}$= 244.1 Hz), 140.8, 135.8, 131.1, 130.3 (d, $J_{C\text{-}F}$ = 7.6 Hz), 128.2 (d, $J_{C\text{-}F}$ = 3.3 Hz), 122.2, 120.8, 119.7, 116.1 (d, $J_{C\text{-}F}$ = 21.6 Hz), 110.6,

96.7, 13.2. ^{19}F NMR (376 MHz, $CDCl_3$): δ -117.6. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{15}H_{13}FNSe$, 306.0192; found, 306.0169.

3-((4-Chlorophenyl)selanyl)-2-methyl-1*H*-indole (**3bf**). Compound **3bf** was prepared according to the general procedure and isolated as a brown solid (138 mg, 86% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp=81-83 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.28 (brs, 1H), 7.51 (d, *J* = 7.7 Hz, 1H), 7.33 (d, *J* = 8.1 Hz, 1H), 7.19 (dd, *J* = 8.1, 7.1 Hz, 1H), 7.13 (dd, *J* = 8.1, 7.1 Hz, 1H), 7.07 (s, 4H), 2.53 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 140.9, 135.8, 132.2, 131.3, 131.0, 129.6, 129.0, 122.3, 120.8, 119.6, 110.6, 96.0, 13.2. 13.2. The data are in accordance with the literature.[5]

3-(Mesitylselanyl)-2-methyl-1*H*-indole (**3bg**). Compound **3bg** was prepared according to the general procedure and isolated as a brown solid (123 mg, 75% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=88-89 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.90 (brs, 1H), 7.36 (d, *J* = 7.8 Hz, 1H), 7.19 (d, *J* = 7.8 Hz, 1H), 7.08 (ddd, *J* = 8.0, 7.1, 1.4 Hz, 1H), 7.02 (dd, *J* = 8.2, 7.1, 1.2 Hz, 1H), 6.82 (s, 2H), 2.44 (s, 6H), 2.37 (s, 3H), 2.20 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): 141.9, 137.9, 137.2, 135.6, 131.0, 128.7, 128.6, 121.5, 120.1, 119.6, 110.3, 98.1, 24.3, 20.9, 13.2. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{18}H_{20}NSe$, 330.0755; found, 330.0779.

3-(Benzo[d][1,3]dioxol-5-ylselanyl)-2-methyl-1*H*-indole (**3bh**). Compound **3bh** was prepared according to the general procedure and isolated as a yellow solid (134 mg, 81% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). mp=86-88 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.22 (brs, 1H), 7.57 (d, *J* = 8.0 Hz, 1H), 7.31 (d, *J* = 8.0 Hz, 1H), 7.21 – 7.13 (m, 2H), 6.77 (dd, *J* = 8.0, 1.7 Hz, 1H), 6.66 (d, *J* = 1.7 Hz, 1H), 6.62 (d, *J* = 8.0 Hz, 1H), 5.84 (s, 2H), 2.56 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 148.1, 146.2, 140.5, 135.7, 131.1, 125.2, 122.3, 122.1, 120.7, 119.7, 110.5, 110.1, 108.9, 100.9, 97.3, 13.2. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{16}H_{14}NO_2Se$, 332.0184; found, 332.0186.

2-Methyl-3-(methylselanyl)-1*H*-indole (**3bi**). Compound **3bi** was prepared according to the general procedure and isolated as an oil (86 mg, 77% yield) after

flash chromatography (petroleum ether/ethyl acetate = 8/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.98 (brs, 1H), 7.73 – 7.54 (m, 1H), 7.38 – 7.21 (m, 1H), 7.17 – 7.14 (m, 2H), 2.52 (s, 3H), 2.07 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 139.0, 135.6, 131.0, 121.8, 120.2, 119.6, 110.5, 98.1, 13.1, 8.6. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{10}H_{12}NSe$, 226.0129; found, 226.0139.

3-(Ethylselanyl)-2-methyl-1*H*-indole (**3bj**). Compound **3bj** was prepared according to the general procedure and isolated as an oil (83 mg, 70% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.04 (brs, 1H), 7.72 – 7.55 (m, 1H), 7.37 – 7.21 (m, 1H), 7.18 – 7.07 (m, 2H), 2.61 (q, *J* = 7.5 Hz, 2H), 2.52 (s, 3H), 1.27 (t, *J* = 7.5 Hz, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 139.9, 135.7, 131.7, 121.8, 120.2, 119.7, 110.4, 96.7, 21.8, 16.1, 13.3. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{11}H_{14}NSe$, 240.0286; found, 240.0259.

3-(Benzylselanyl)-2-methyl-1*H*-indole (**3bk**). Compound **3bk** was prepared according to the general procedure and isolated as an oil (138 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.89 (brs, 1H), 7.67 – 7.56 (m, 1H), 7.26 – 7.17 (m, 1H), 7.17 – 7.13 (m, 2H), 7.11 – 7.08 (m, 3H), 6.96 – 6.87 (m, 2H), 3.73 (s, 2H), 1.98 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 141.2, 140.0, 135.7, 131.4, 128.8, 128.1, 126.3, 121.8, 120.3, 119.6, 110.5, 96.7, 31.5, 12.5. 13.2. The data are in accordance with the literature.[6]

2-Methyl-3-(phenethylselanyl)-1*H*-indole (**3bl**). Compound **3bl** was prepared according to the general procedure and isolated as a brown solid (138 mg, 88% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=61-63 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.95 (brs, 1H), 7.64 (dd, *J* = 5.9, 3.2 Hz, 1H), 7.26 – 7.18 (m, 3H), 7.16 – 7.10 (m, 3H), 7.09 – 7.04 (m, 2H), 3.06 – 2.75 (m, 4H), 2.47 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 141.5, 139.9, 135.7, 131.6, 128.45, 128.41, 126.2, 121.9, 120.4, 119.7, 110.5, 96.8, 37.3, 28.9, 13.3. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{17}H_{18}NSe$, 316.0599; found, 316.0583.

2-Methyl-3-(pentylselanyl)-1*H*-indole (**3bm**). Compound **3bm** was prepared according to the general procedure and isolated as an oil (94 mg, 67% yield) after

flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.01 (brs, 1H), 7.65 – 7.62 (m, 1H), 7.26 – 7.23 (m, 1H), 7.20 – 7.06 (m, 2H), 2.60 (t, *J* = 7.4 Hz, 2H), 2.52 (s, 3H), 1.64 – 1.46 (m, 2H), 1.40 – 1.16 (m, 4H), 0.84 (t, *J* = 7.2 Hz, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 139.7, 135.7, 131.6, 121.7, 120.2, 119.7, 110.4, 97.1, 31.9, 30.3, 28.5, 22.3, 14.0, 13.3. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{14}H_{20}NSe$, 282.0755; found, 282.0744.

3-(Heptylselanyl)-2-methyl-1*H*-indole (**3bn**). Compound **3bn** was prepared according to the general procedure and isolated as an oil (102 mg, 66% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.05 (s, 1H), 7.78 – 7.54 (m, 1H), 7.43 – 7.21 (m, 1H), 7.21 – 7.08 (m, 2H), 2.61 (t, *J* = 7.4 Hz, 2H), 2.54 (s, 3H), 1.55 (p, *J* = 7.3 Hz, 2H), 1.35 – 1.30 (m, 2H), 1.29 – 1.16 (m, 6H), 0.85 (t, *J* = 6.8 Hz, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 139.6, 135.6, 131.6, 121.7, 120.2, 119.7, 110.3, 97.1, 31.8, 30.6, 29.7, 28.9, 28.5, 22.6, 14.1, 13.3. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{16}H_{24}NSe$, 310.1068; found, 310.1075.

3-(Isobutylselanyl)-2-methyl-1*H*-indole (**3bo**). Compound **3bo** was prepared according to the general procedure and isolated as an oil (99 mg, 74% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.99 (brs, 1H), 7.71 – 7.58 (m, 1H), 7.31 – 7.21 (m, 1H), 7.20 – 7.10 (m, 2H), 2.83 – 2.35 (m, 5H), 1.69 (dt, *J* = 13.4, 6.7 Hz, 1H), 0.98 (d, *J* = 6.6 Hz, 6H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 139.4, 135.7, 131.6, 121.7, 120.2, 119.7, 110.4, 97.5, 38.4, 29.0, 22.5, 13.3. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{13}H_{18}NSe$, 268.0599; found, 268.0573.

3-(Cyclohexylselanyl)-2-methyl-1*H*-indole (**3bp**). Compound **3bp** was prepared according to the general procedure and isolated as an oil (99 mg, 68% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.09 (brs, 1H), 7.70 – 7.53 (m, 1H), 7.35 – 7.20 (m, 1H), 7.23 – 7.01 (m, 2H), 3.05 – 2.92 (m, 1H), 2.54 (s, 3H), 2.13 – 1.78 (m, 2H), 1.69 – 1.66 (m, 2H), 1.56 – 1.34 (m, 3H), 1.29 – 1.03 (m, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 140.3, 135.6, 132.3, 121.7, 120.2, 120.1, 110.3, 96.5, 43.0, 34.5, 27.0, 25.7, 13.4. HRMS

(ESI): m/z $[M + H]^+$ calcd for $C_{15}H_{20}NSe$, 294.0755; found, 294.0751.

Methyl 2-methyl-2-((2-methyl-1*H*-indol-3-yl)selanyl)propanoate (**3bq**). Compound **3bq** was prepared according to the general procedure and isolated as a yellow solid (109 mg, 70% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). mp=98-100 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.42 (brs, 1H), 7.70 – 7.44 (m, 1H), 7.23 – 7.18 (m, 1H), 7.16 – 7.05 (m, 2H), 3.56 (s, 3H), 2.48 (d, *J* = 0.8 Hz, 3H), 1.57 (s, 6H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 175.8, 142.2, 135.5, 132.1, 121.9, 120.4, 119.9, 110.5, 97.3, 52.3, 45.7, 26.2, 13.2. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{14}H_{18}NO_2Se$, 312.0497; found, 312.0490.

Ethyl (*R*)-2-((2-methyl-1*H*-indol-3-yl)selanyl)propanoate (**3br**). Compound **3br** was prepared according to the general procedure and isolated as a yellow solid (116 mg, 75% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=65-67 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.35 (s, 1H), 7.60 – 7.39 (m, 1H), 7.16 – 7.10 (m, 1H), 7.08 – 7.00 (m, 2H), 4.09 – 3.75 (m, 2H), 3.48 (q, *J* = 7.1 Hz, 1H), 2.39 (s, 3H), 1.39 (d, *J* = 7.1 Hz, 3H), 1.03 (t, *J* = 7.1 Hz, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 174.2, 141.8, 135.6, 131.9, 121.9, 120.4, 119.6, 110.5, 95.7, 61.0, 36.7, 17.6, 13.9, 13.1. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{14}H_{18}NO_2Se$, 312.0497; found, 312.0491.

***N*-Methyl-4-(phenylselanyl)aniline** (**5a**). Compound **5a** was prepared according to the general procedure and isolated as an oil (92 mg, 70% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.44 (d, *J* = 8.6 Hz, 2H), 7.28 – 7.23 (m, 2H), 7.22 – 7.04 (m, 3H), 6.54 (d, *J* = 8.6 Hz, 2H), 3.83 (brs, 1H), 2.82 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 149.6, 137.4, 134.6, 129.8, 129.1, 125.9, 114.4, 113.3, 30.5. The data are in accordance with the literature.[2]

3,4,5-Trimethoxy-2-(phenylselanyl)aniline (**5b**). Compound **5b** was prepared according to the general procedure and isolated as a yellow solid (127 mg, 75% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=66-68 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.24 – 7.09 (m, 5H), 6.21 (s, 1H), 4.32 (s, 2H), 3.85 (s, 3H), 3.80 (s, 3H), 3.78 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 155.9, 155.7,

146.1, 134.5, 132.6, 129.2, 128.5, 125.8, 99.1, 94.3, 61.4, 61.2, 55.8. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{15}H_{18}NO_3Se$, 340.0446; found, 340.0460.

6-(Phenylselanyl)benzo[d][1,3]dioxol-5-amine (**5c**). Compound **5c** was prepared according to the general procedure and isolated as a white solid (99 mg, 68% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). mp=70-72 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.16 – 7.06 (m, 5H), 6.98 (s, 1H), 6.33 (s, 1H), 5.83 (s, 2H), 4.07 (brs, 2H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 149.3, 143.6, 139.3, 131.3, 128.2, 127.8, 125.0, 116.0, 101.3, 100.0, 95.9. The data are in accordance with the literature.[4]

Phenyl(2,4,6-trimethoxyphenyl)selane (**5d**). Compound **5d** was prepared according to the general procedure and isolated as a white solid (134 mg, 83% yield) after flash chromatography (petroleum ether/ethyl acetate =25/1). mp = 103-105°C. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.41 – 6.70 (m, 5H), 6.14 (s, 2H), 3.79 (s, 3H), 3.72 (s, 6H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$) δ 161.9, 160.9, 132.5, 127.7, 127.6, 124.2, 96.0, 90.1, 55.3, 54.4. The data are in accordance with the literature.[2]

3-(Phenylselanyl)imidazo[1,2-*a*]pyridine (**5e**). Compound **5e** was prepared according to the general procedure and isolated as a white solid (90 mg, 66% yield) after flash chromatography (petroleum ether/ethyl acetate = 2/1). mp=59-61 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.27 (d, *J* = 6.8 Hz, 1H), 7.98 (s, 1H), 7.69 (d, *J* = 9.0 Hz, 1H), 7.37 – 7.23 (m, 1H), 7.21 – 7.07 (m, 5H), 6.86 (td, *J* = 6.8, 1.1 Hz, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 148.3, 143.1, 130.6, 129.5, 129.0, 126.8, 125.7, 125.2, 117.9, 113.1, 106.4. The data are in accordance with the literature.[2]

1-(Phenylselanyl)naphthalen-2-ol (**5f**). Compound **5f** was prepared according to the general procedure and isolated as a yellow solid (109 mg, 73% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). mp=49-51 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.27 (d, *J* = 8.5 Hz, 1H), 7.87 (d, *J* = 8.8 Hz, 1H), 7.78 (dd, *J* = 8.0, 1.2 Hz, 1H), 7.50 – 7.46 (m, 1H), 7.44 – 7.26 (m, 2H), 7.17 – 7.04 (m, 6H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 156.3, 135.8, 132.8, 130.6, 129.5, 129.1, 128.5, 128.0, 127.0, 126.6, 123.8, 116.6, 109.0. The data are in accordance with the literature.[4]

1-(Phenylselanyl)naphthalen-2-amine (**5g**). Compound **5g** was prepared according

to the general procedure and isolated as a brown solid (91 mg, 61% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). mp=77-79 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.32 (d, *J* = 8.7 Hz, 1H), 7.73 (d, *J* = 8.8 Hz, 1H), 7.69 (d, *J* = 8.0 Hz, 1H), 7.47 – 7.40 (m, 1H), 7.31 – 7.22 (m, 1H), 7.17 – 7.08 (m, 5H), 7.05 (d, *J* = 8.8 Hz, 1H), 4.72 (s, 2H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 148.1, 136.9, 131.83, 131.76, 129.2, 128.6, 128.33, 128.32, 127.8, 126.6, 125.8, 122.5, 117.4, 105.5. The data are in accordance with the literature.[4]

6-(Phenylselanyl)-1,2,3,4-tetrahydroquinoline (**5h**). Compound **5h** was prepared according to the general procedure and isolated as a yellow solid (66 mg, 46% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=47-49 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.37 – 7.06 (m, 7H), 6.41 (d, *J* = 8.0 Hz, 1H), 3.96 (brs, 1H), 3.32 (t, *J* = 5.4 Hz, 2H), 2.73 (t, *J* = 6.4 Hz, 2H), 1.98 – 1.78 (m, 2H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 145.2, 137.4, 134.9, 134.8, 129.7, 129.0, 125.8, 122.4, 114.8, 41.8, 26.8, 21.7. The data are in accordance with the literature.[2]

2-Phenyl-5-(phenylselanyl)thiophene (**5i**) Compound **5i** was prepared according to the general procedure and isolated as an oil (121 mg, 77% yield) after flash chromatography (petroleum ether/ethyl acetate = 100/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.58 – 7.54 (m, 2H), 7.45 – 7.33 (m, 4H), 7.29 (d, *J* = 3.8 Hz, 2H), 7.28 – 7.16 (m, 4H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 150.8, 138.0, 133.8, 133.4, 130.0, 129.3, 129.0, 128.0, 126.9, 125.9, 124.1, 122.6. The data are in accordance with the literature.[7]

2-Methoxy-5-(phenylselanyl)thiophene (**5j**) Compound **5j** was prepared according to the general procedure and isolated as an oil (82 mg, 61% yield) after flash chromatography (petroleum ether/ethyl acetate = 200/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.31 (d, *J* = 6.9 Hz, 2H), 7.26 – 7.15 (m, 3H), 7.05 (d, *J* = 3.9 Hz, 1H), 6.16 (d, *J* = 3.8 Hz, 1H), 3.89 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 171.2, 136.5, 134.2, 129.2, 129.1, 129.0, 126.4, 107.7, 105.3, 60.2. The data are in accordance with the literature.[2]

5. General procedure for selenocyanation of electron rich arenes

The reaction was carried out in an open air system at ambient temperature. To a 10 mL vessel with magnetic stir bar were added 0.5 mmol indole, 0.5 mmol KSeCN, 0.5 mmol I_2O_5 and 2 mL of MeOH. The reaction mixture was stirred for an indicated time. Then, the reaction was quenched with a saturated aqueous $Na_2S_2O_3$ solution and extracted with EtOAc. The combined organic layers were dried (Na_2SO_4) and concentrated to give a crude residue, which was purified by flash column chromatography.

3-Selenocyanato-1*H*-indole (**6a**). Compound **6a** was prepared according to the general procedure and isolated as a brown solid (88 mg, 80% yield) after flash chromatography (petroleum ether/ethyl acetate = 6/1). mp=107-109 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.68 (s, 1H), 7.79 – 7.66 (m, 1H), 7.47 (d, *J* = 2.8 Hz, 1H), 7.45 – 7.41 (m, 1H), 7.32 – 7.28 (m, 2H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 136.0, 131.8, 128.7, 123.8, 121.9, 119.6, 111.9, 101.9, 89.5. The data are in accordance with the literature.[8]

Methyl 3-selenocyanato-1*H*-indole-4-carboxylate (**6b**). Compound **6b** was prepared according to the general procedure and isolated as an oil (88 mg, 63% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.81 (brs, 1H), 7.87 (dd, *J* = 7.5, 1.0 Hz, 1H), 7.64 (dd, *J* = 8.2, 1.0 Hz, 1H), 7.59 (d, *J* = 2.8 Hz, 1H), 7.29 – 7.24 (m, 1H), 3.97 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 168.6, 137.9, 127.2, 125.4, 124.1, 122.3, 120.5, 117.5, 106.7, 92.4, 52.6. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{11}H_9N_2O_2Se$, 280.9824; found, 280.9829.

Methyl 3-selenocyanato-1*H*-indole-6-carboxylate (**6c**). Compound **6c** was prepared according to the general procedure and isolated as a yellow solid (92 mg, 66% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). mp=166-168 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.94 (brs, 1H), 8.22 (d, *J* = 0.7 Hz, 1H), 7.99 (dd, *J* = 8.4, 1.4 Hz, 1H), 7.79 (d, *J* = 8.4, 0.7 Hz, 1H), 7.71 (d, *J* = 2.9 Hz, 1H), 3.97 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 167.5, 135.4, 134.6, 132.3, 125.8, 122.9, 119.5, 114.2, 101.2, 90.4, 52.3. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{11}H_9N_2O_2Se$,

280.9824; found, 280.9810.

3-Selenocyanato-6-(trifluoromethyl)-1*H*-indole (**6d**). Compound **6d** was prepared according to the general procedure and isolated as a yellow solid (79 mg, 55% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=101-103 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 10.69 (brs, 1H), 7.81 (d, *J* = 8.4 Hz, 1H), 7.74 (s, 1H), 7.66 (d, *J* = 2.8 Hz, 1H), 7.51 (dd, *J* = 8.4, 1.4 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 135.4, 134.9, 131.1, 125.6 (q, J_{C-F} = 32.2 Hz), 123.5, 119.9, 118.1 (q, J_{C-F} = 3.5 Hz), 109.8 (d, J_{C-F} = 4.4 Hz), 101.8, 89.0. ^{19}F NMR (376 MHz, $CDCl_3$): δ -60.9. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{10}H_6F_3N_2Se$, 290.9643; found, 290.9642.

5-Fluoro-3-selenocyanato-1*H*-indole (**6e**). Compound **6e** was prepared according to the general procedure and isolated as a brown solid (82 mg, 69% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=104-105 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.73 (s, 1H), 7.55 (d, *J* = 2.9 Hz, 1H), 7.47 – 7.27 (m, 2H), 7.05 (td, *J* = 9.0, 2.5 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 159.1 (d, J_{C-F} = 238.7 Hz), 133.4, 132.4, 129.6 (d, J_{C-F} = 10.5 Hz), 112.9 (d, J_{C-F} = 9.6 Hz), 112.5 (d, J_{C-F} = 26.5 Hz), 104.8 (d, J_{C-F} = 24.9 Hz), 101.6, 89.6 (d, J_{C-F} = 4.7 Hz). ^{19}F NMR (376 MHz, $CDCl_3$): δ -120.9. The data are in accordance with the literature.[9]

5-Chloro-3-selenocyanato-1*H*-indole (**6f**). Compound **6f** was prepared according to the general procedure and isolated as a yellow solid (89 mg, 70% yield) after flash chromatography (petroleum ether/ethyl acetate = 2/1). mp=151-153 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.70 (brs, 1H), 7.73 (d, *J* = 1.9 Hz, 1H), 7.57 (d, *J* = 2.8 Hz, 1H), 7.37 (d, *J* = 8.7 Hz, 1H), 7.30 – 7.27 (m, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 134.4, 133.0, 130.0, 128.0, 124.4, 119.3, 112.9, 101.2, 89.5. The data are in accordance with the literature.[9]

5-Bromo-3-selenocyanato-1*H*-indole (**6g**). Compound **6g** was prepared according to the general procedure and isolated as a yellow solid (95 mg, 63% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). mp=155-156 ℃. ^{1}H NMR (400 MHz, DMSO-d_6) δ 12.06 (brs, 1H), 7.93 (d, *J* = 2.7 Hz, 1H), 7.70 (d, *J* = 1.9 Hz, 1H), 7.49 (d, *J* = 8.6 Hz, 1H), 7.36 (dd, *J* = 8.6, 1.9 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6): δ 135.4, 135.1, 131.0, 125.6, 121.4, 115.0, 113.8, 104.9, 89.5. The data

are in accordance with the literature.[8]

3-Selenocyanato-1*H*-indole-5-carbonitrile (**6h**). Compound **6h** was prepared according to the general procedure and isolated as a white solid (63 mg, 51% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). mp=187-189 ℃. ^{1}H NMR (400 MHz, DMSO-d_6): δ 12.37 (brs, 1H), 8.09 – 8.07 (m, 2H), 7.69 (d, *J* = 8.4 Hz, 1H), 7.61 (dd, *J* = 8.5, 1.6 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6): δ 138.6, 136.3, 129.0, 125.8, 124.7, 120.5, 114.3, 105.0, 103.4, 91.6. The data are in accordance with the literature.[8]

5-Methyl-3-selenocyanato-1*H*-indole (**6i**). Compound **6i** was prepared according to the general procedure and isolated as a yellow solid (89 mg, 76% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=104-106 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.62 (brs, 1H), 7.51 (s, 1H), 7.40 (d, *J* = 2.8 Hz, 1H), 7.29 (d, *J* = 8.3 Hz, 1H), 7.11 (dd, *J* = 8.3, 1.5 Hz, 1H), 2.50 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 134.3, 131.8, 131.4, 128.9, 125.4, 119.1, 111.6, 102.2, 88.8, 21.6. The data are in accordance with the literature.[10]

5-Methoxy-3-selenocyanato-1*H*-indole (**6j**). Compound **6j** was prepared according to the general procedure and isolated as a yellow solid (100 mg, 80% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). mp=108-109 ℃. ^{1}H NMR (400 MHz, DMSO-d_6): δ 11.75 (brs, 1H), 7.80 (d, *J* = 2.8 Hz, 1H), 7.41 (d, *J* = 8.8 Hz, 1H), 7.02 (d, *J* = 2.4 Hz, 1H), 6.88 (dd, *J* = 8.8, 2.4 Hz, 1H), 3.82 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6): δ 155.1, 134.1, 131.5, 129.8, 113.8, 113.2, 104.7, 100.5, 88.8, 55.9. The data are in accordance with the literature.[8]

1-Methyl-3-selenocyanato-1*H*-indole (**6k**). Compound **6k** was prepared according to the general procedure and isolated as a yellow solid (96 mg, 82% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). mp=95-97 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.73 (d, *J* = 7.5 Hz, 1H), 7.54 – 6.76 (m, 4H), 3.79 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 137.2, 136.0, 129.5, 123.3, 121.5, 119.8, 110.1, 101.9, 87.2, 33.4. The data are in accordance with the literature.[8]

1-Benzyl-3-selenocyanato-1*H*-indole (**6l**). Compound **6l** was prepared according to the general procedure and isolated as a yellow solid (135 mg, 87% yield) after flash

chromatography (petroleum ether/ethyl acetate = 15/1). mp=88-90 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.90 – 7.58 (m, 2H), 7.38 – 7.20 (m, 6H), 7.14 – 7.11 (m, 2H), 5.29 (s, 2H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 136.8, 135.9, 135.2, 129.7, 129.1, 128.3, 127.2, 123.5, 121.8, 120.0, 110.6, 101.8, 88.2, 50.7. The data are in accordance with the literature.[8]

2-Phenyl-3-selenocyanato-1*H*-indole (**6m**). Compound **6m** was prepared according to the general procedure and isolated as a yellow solid (107 mg, 72% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). mp=151-153 ℃. ^{1}H NMR (400 MHz, DMSO-d_6): δ 12.25 (brs, 1H), 7.87 (d, J = 7.0 Hz, 2H), 7.67 – 7.64 (m, 1H), 7.62 – 7.59 (m, 2H), 7.54 – 7.50 (m, 2H), 7.31 – 7.24 (m, 2H). $^{13}C\{^{1}H\}$ NMR (100 MHz, DMSO-d_6): δ 143.2, 136.6, 131.4, 130.9, 129.6, 129.4, 129.1, 123.5, 121.5, 119.7, 112.6, 105.2, 88.6. The data are in accordance with the literature.[9]

***N,N*-Dimethyl-4-selenocyanatoaniline** (**6n**). Compound **6n** was prepared according to the general procedure and isolated as a yellow solid (92 mg, 82% yield) after flash chromatography (petroleum ether/ethyl acetate = 25/1). mp=81-83 ℃. ^{1}H NMR (400 MHz, DMSO-d_6): δ 7.50 (d, J = 8.9 Hz, 2H), 6.72 (d, J = 8.9 Hz, 2H). $^{13}C\{^{1}H\}$ NMR (100 MHz, DMSO-d_6): δ 151.6, 136.5, 136.5, 113.7, 106.5, 105.9., 40.2. The data are in accordance with the literature.[8]

1-Selenocyanatonaphthalen-2-amine (**6o**). Compound **6o** was prepared according to the general procedure and isolated as an oil (58 mg, 47% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, DMSO-d_6): δ 7.90 (d, J = 8.1 Hz, 1H), 7.75 (d, J = 8.7 Hz, 1H), 7.72 (brs, 2H), 7.62 (d, J = 7.5 Hz, 1H), 7.54 (d, J = 8.6 Hz, 1H), 7.48 (ddd, J = 8.2, 6.9, 1.3 Hz, 1H), 7.37 (ddd, J = 8.1, 6.8, 1.2 Hz, 1H). The data are in accordance with the literature.[11]

1,3,5-Trimethoxy-2-selenocyanatobenzene (**6p**). Compound **6p** was prepared according to the general procedure and isolated as an oil (75 mg, 55% yield) after flash chromatography (petroleum ether/ethyl acetate = 6/1). ^{1}H NMR (400 MHz, DMSO-d_6): δ 6.37 (s, 2H), 3.86 (s, 6H), 3.84 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, DMSO-d_6): δ 164.3, 161.1, 104.5, 92.1, 90.6, 56.9, 56.1. The data are in accordance with the literature.[8]

6. General procedure for thiocyanation of electron rich arenes

The reaction was carried out in an open air system at ambient temperature. To a 10 mL vessel with magnetic stir bar were added 0.5 mmol indole, 0.5 mmol KSCN, 0.5 mmol I_2O_5 and 2 mL of MeOH. The reaction mixture was stirred for an indicated time. Then, the reaction was quenched with a saturated aqueous $Na_2S_2O_3$ solution and extracted with EtOAc. The combined organic layers were dried (Na_2SO_4) and concentrated to give a crude residue, which was purified by flash column chromatography.

3-Thiocyanato-1*H*-indole (**7a**). Compound **7a** was prepared according to the general procedure and isolated as a red solid (70 mg, 80% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=49-50 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.64 (brs, 1H), 8.02 – 7.68 (m, 1H), 7.53 (d, *J* = 2.8 Hz, 1H), 7.49 – 7.38 (m, 1H), 7.38 – 7.27 (m, 2H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 136.0, 130.9, 127.7, 124.0, 122.0, 118.9, 112.0, 111.7, 92.6. The data are in accordance with the literature.[8]

5-Fluoro-3-thiocyanato-1*H*-indole (**7b**). Compound **7b** was prepared according to the general procedure and isolated as a yellow solid (68 mg, 71% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=87-89 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 10.22 (brs, 1H), 7.54 (d, *J* = 3.0 Hz, 1H), 7.41 (dd, *J* = 9.0, 2.5 Hz, 1H), 7.36 (dd, *J* = 8.9, 4.2 Hz, 1H), 7.02 (td, *J* = 9.0, 2.5 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): 158.9 (d, $J_{C\text{-}F}$ = 238.2 Hz), 133.2, 132.8, 128.5 (d, $J_{C\text{-}F}$ = 10.5 Hz), 113.3 (d, $J_{C\text{-}F}$ = 9.7 Hz), 112.3, 112.0, 103.7 (d, $J_{C\text{-}F}$ = 24.8 Hz), 91.2 (d, $J_{C\text{-}F}$ = 4.8 Hz). ^{19}F NMR (376 MHz, $CDCl_3$): δ -121.4. The data are in accordance with the literature.[12]

5-Chloro-3-thiocyanato-1*H*-indole (**7c**). Compound **7c** was prepared according to the general procedure and isolated as a white solid (78 mg, 75% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=123-125 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 10.49 (brs, 1H), 7.74 (d, *J* = 1.9 Hz, 1H), 7.54 (d, *J* = 2.9 Hz, 1H), 7.35 (d, *J* = 8.6 Hz, 1H), 7.23 (dd, *J* = 8.7, 2.0 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): 134.8, 133.0, 128.9, 127.5, 123.9, 118.0, 113.5, 111.9, 90.8. The data are in

accordance with the literature.[13]

5-Bomo-3-thiocyanato-1*H*-indole (**7d**). Compound **7d** was prepared according to the general procedure and isolated as a brown solid (98 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). mp=99-101 ℃. ^{1}H NMR (400 MHz, DMSO-d_6): δ 12.21 (brs, 1H), 8.07 (d, J = 2.6 Hz, 1H), 7.81 (d, J = 1.9 Hz, 1H), 7.51 (d, J = 8.6 Hz, 1H), 7.40 (dd, J = 8.7, 1.9 Hz, 1H).^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6): δ 135.6, 135.2, 129.7, 126.1, 120.4, 115.4, 114.2, 112.6, 89.9. The data are in accordance with the literature.[8]

4-Methyl-3-thiocyanato-1*H*-indole (**7e**). Compound **7e** was prepared according to the general procedure and isolated as a white solid (69 mg, 73% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=121-123 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.66 (brs, 1H), 7.46 (d, J = 2.8 Hz, 1H), 7.31 – 7.21 (m, 1H), 7.16 (t, J = 7.7 Hz, 1H), 7.05 – 6.90 (m, 1H), 2.93 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 136.5, 132.1, 131.1, 125.6, 124.0, 123.5, 113.4, 110.1, 92.2, 19.2. The data are in accordance with the literature.[12]

5-Methyl-3-thiocyanato-1*H*-indole (**7f**). Compound **7f** was prepared according to the general procedure and isolated as a yellow solid (77 mg, 82% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). mp=67-69 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.45 (brs, 1H), 7.57 – 7.49 (m, 1H), 7.43 (d, J = 2.9 Hz, 1H), 7.26 (d, J = 8.3 Hz, 1H), 7.08 (dd, J = 8.4, 1.6 Hz, 1H), 2.44 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 134.3, 131.6, 130.8, 128.0, 125.6, 118.4, 111.8, 111.6, 91.9, 21.5. The data are in accordance with the literature.[12]

3-Thiocyanato-6-(trifluoromethyl)-1*H*-indole (**7g**). Compound **7g** was prepared according to the general procedure and isolated as a yellow solid (102 mg, 84% yield) after flash chromatography (petroleum ether/ethyl acetate = 6/1). mp=84-86 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 9.07 (s, 1H), 7.80 (d, J = 8.4 Hz, 1H), 7.64 (s, 1H), 7.58 (d, J = 2.8 Hz, 1H), 7.45 (dd, J = 8.4, 1.4 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 134.0, 132.5, 128.9, 125.2 (q, $J_{C\text{-}F}$= 33.0 Hz), 122.2, 118.3, 117.6 (d, $J_{C\text{-}F}$ = 3.4 Hz), 110.6, 108.8 (q, $J_{C\text{-}F}$= 4.5 Hz), 91.9. ^{19}F NMR (376 MHz, $CDCl_3$): δ -61.0. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{10}H_6F_3N_2S$, 243.0198; found, 243.0213.

3-Tiocyanato-1*H*-indole-7-carbaldehyde (**7h**). Compound **7h** was prepared according to the general procedure and isolated as a yellow solid (61 mg, 60% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp=152-153 ℃. ^{1}H NMR (400 MHz, DMSO-d_6): δ 12.38 (brs, 1H), 10.21 (s, 1H), 8.07 (dt, *J* = 7.8, 0.9 Hz, 1H), 8.03 (d, *J* = 3.0 Hz, 1H), 7.96 (dd, *J* = 7.3, 1.1 Hz, 1H), 7.51 (t, *J* = 7.6 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6): δ 193.4, 135.5, 133.1, 130.3, 129.2, 125.4, 122.1, 121.6, 112.6, 92.0. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{10}H_7N_2OS$, 203.0274; found, 203.0260.

2-Methyl-3-thiocyanato-1*H*-indole (**7i**). Compound **7i** was prepared according to the general procedure and isolated as a pink solid (70 mg, 74% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). mp=89-91 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.53 (brs, 1H), 7.66 (d, *J* = 7.0 Hz, 1H), 7.31 – 7.26 (m, 1H), 7.26 – 7.18 (m, 2H), 2.48 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 142.0, 135.1, 128.7, 123.0, 121.6, 118.1, 112.1, 111.2, 88.9, 12.1. The data are in accordance with the literature.[8]

1-Methyl-3-thiocyanato-1*H*-indole (**7j**). Compound **7j** was prepared according to the general procedure and isolated as a yellow solid (71 mg, 76% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp=61-63 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.85 – 7.65 (m, 1H), 7.43 – 7.27 (m, 4H), 3.79 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 137.2, 135.1, 128.5, 123.5, 121.6, 119.0, 111.9, 110.2, 89.9, 33.5. The data are in accordance with the literature.[8]

1,3,5-Trimethoxy-2-thiocyanatobenzene (**7k**). Compound **7k** was prepared according to the general procedure and isolated as an oil (57 mg, 51% yield) after flash chromatography (petroleum ether/ethyl acetate = 6/1). ^{1}H NMR (400 MHz, DMSO-d_6): δ 6.39 (s, 2H), 3.90 (s, 6H), 3.85 (s, 3H). ^{13}C{^{1}H} (100 MHz, DMSO-d_6): δ 164.7, 161.4, 112.4, 92.4, 88.6, 57.1, 56.3. The data are in accordance with the literature.[13]

1-Thiocyanatonaphthalen-2-amine (**7l**). Compound **7l** was prepared according to the general procedure and isolated as an oil (42 mg, 42% yield) after flash chromatography (petroleum ether/ethyl acetate = 4/1). ^{1}H NMR (400 MHz,

DMSO-d_6): δ 7.93 (d, *J* = 8.1 Hz, 1H), 7.77 (d, *J* = 8.7 Hz, 1H), 7.72 (d, *J* = 8.2 Hz, 1H), 7.64 (brs, 2H), 7.58 (d, *J* = 8.7 Hz, 1H), 7.56 – 7.49 (m, 1H), 7.43 – 7.28 (m, 1H). The data are in accordance with the literature.[11]

***N*,*N*-Dimethyl-4-thiocyanatoaniline** (**7m**). Compound **7m** was prepared according to the general procedure and isolated as an oil (56 mg, 63% yield) after flash chromatography (petroleum ether/ethyl acetate = 40/1). ^{1}H NMR (400 MHz, DMSO-d_6): δ7.46 (d, *J* = 9.0 Hz, 2H), 6.77 (d, *J* = 9.0 Hz, 2H). ^{13}C{^{1}H} (100 MHz, DMSO-d_6): 152.0, 134.8, 113.7, 113.4, 106.1, 40.2. The data are in accordance with the literature.[8]

7. Gram-Scale Reaction for the Synthesis of 3an

To a 50 mL round-bottom flask with magnetic stir bar were added 5-methoxy-1*H*-indole (0.735 g, 5 mmol), Ph_2Se_2 (1.560 g, 5 mmol), I_2O_5 (1.670 g, 5 mmol) and 20 mL of CH_3CN. The reaction mixture was stirred at room temperature in the open air and the reaction was monitored by TLC. After completion of reaction, the reaction was next quenched with a saturated aqueous $Na_2S_2O_3$ solution and extracted with EtOAc. The combined organic layers were dried (Na_2SO_4) and concentrated to give a crude residue, which was purified by flash column chromatography (silica gel, petroleum ether : ethyl acetate = 10:1) to give **3an** in 82% yield (1.238 g).

8. Control Experiments

To a 10 mL vessel with magnetic stir bar were added N-3-butenylindole **1x** (85.5 mg, 0.5 mmol), Ph_2Se_2 (156.0 mg, 0.5 mmol), I_2O_5 (167.0 mg, 0.5 mmol) and 2 mL of CH_3CN. The reaction mixture was stirred for an indicated time. Then, the reaction was quenched with a saturated aqueous $Na_2S_2O_3$ solution and extracted with EtOAc. The combined organic layers were dried (Na_2SO_4) and concentrated to give a crude residue, which was purified by flash column chromatography (silica gel, petroleum ether : ethyl acetate = 40:1) to give **3aw** and **3aw'**.

1-(But-3-en-1-yl)-3-(phenylselanyl)-1*H*-indole (**3aw**). Oil, 72 mg, 44% yield. ^{1}H

NMR (400 MHz, $CDCl_3$): δ 7.54 (d, *J* = 7.9 Hz, 1H), 7.38 – 7.25 (m, 2H), 7.21 – 7.19 (m, 1H), 7.16 – 7.07 (m, 3H), 7.06 – 6.98 (m, 3H), 5.96 – 5.61 (m, 1H), 5.02 – 4.98 (m, 1H), 4.97 (t, *J* = 1.5 Hz, 1H), 4.14 (t, *J* = 7.1 Hz, 2H), 2.53 (qt, *J* = 7.0, 1.3 Hz, 2H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 135.6, 133.7, 133.2, 133.1, 129.7, 127.8, 127.4, 127.3, 124.4, 121.3, 119.5, 119.4, 116.8, 108.6, 94.9, 45.2, 33.4. The data are in accordance with the literature.[14]

9-(Phenylselanyl)-1-((phenylselanyl)methyl)-2,3-dihydro-1*H*-pyrrolo[1,2-a]indole (**3aw'**). Oil, 29 mg, 12% yield. ^1H NMR (400 MHz, $CDCl_3$): δ 7.60 (d, *J* = 7.7 Hz, 1H), 7.54 (d, *J* = 7.1 Hz, 2H), 7.39 – 7.20 (m, 5H), 7.18 – 7.06 (m, 6H), 4.35 – 4.22 (m, 1H), 4.10 – 4.02 (m, 1H), 3.75 – 3.69 (m, 1H), 3.51 (dd, *J* = 17.2, 4.9 Hz, 1H), 3.15 (dd, *J* = 17.2, 7.9 Hz, 1H), 2.52 – 2.37 (m, 1H), 2.28 – 2.18 (m, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 140.7, 136.6, 135.5, 134.0, 130.9, 129.2, 129.0, 128.4, 128.2, 127.7, 125.4, 121.6, 120.9, 119.6, 109.0, 93.8, 41.6, 35.9, 30.7, 29.7. HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{24}H_{22}NSe_2$, 484.0077; found, 484.0075.

9. References

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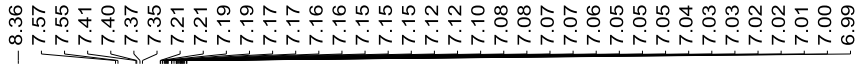
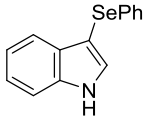
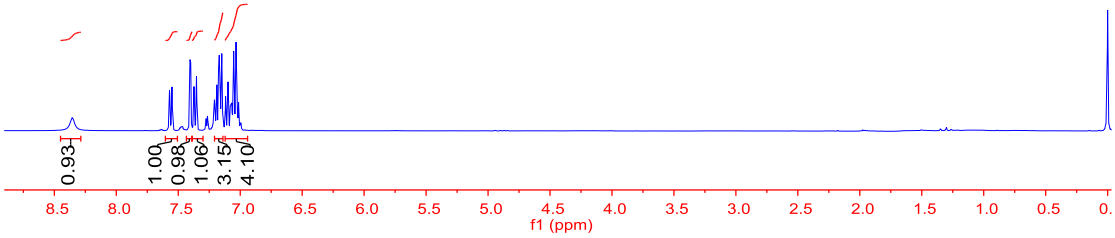
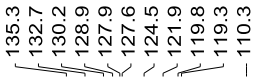
10. Copies of NMR spectra

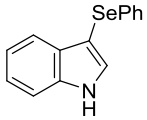




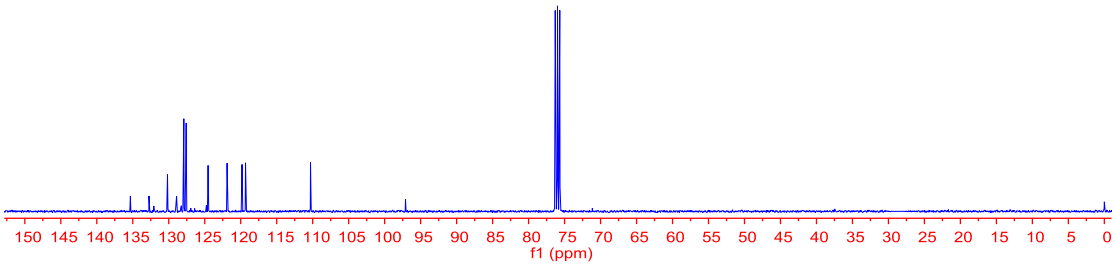
^{1}H NMR (400 MHz, $CDCl_3$) of **3aa**

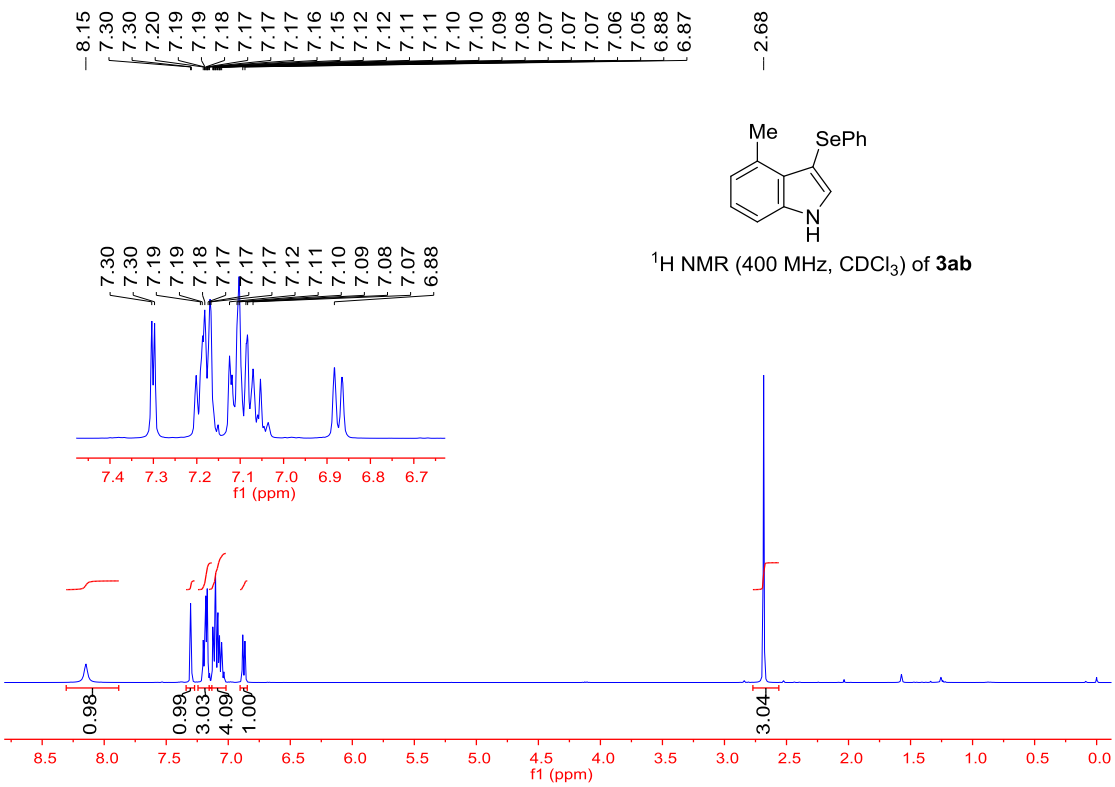




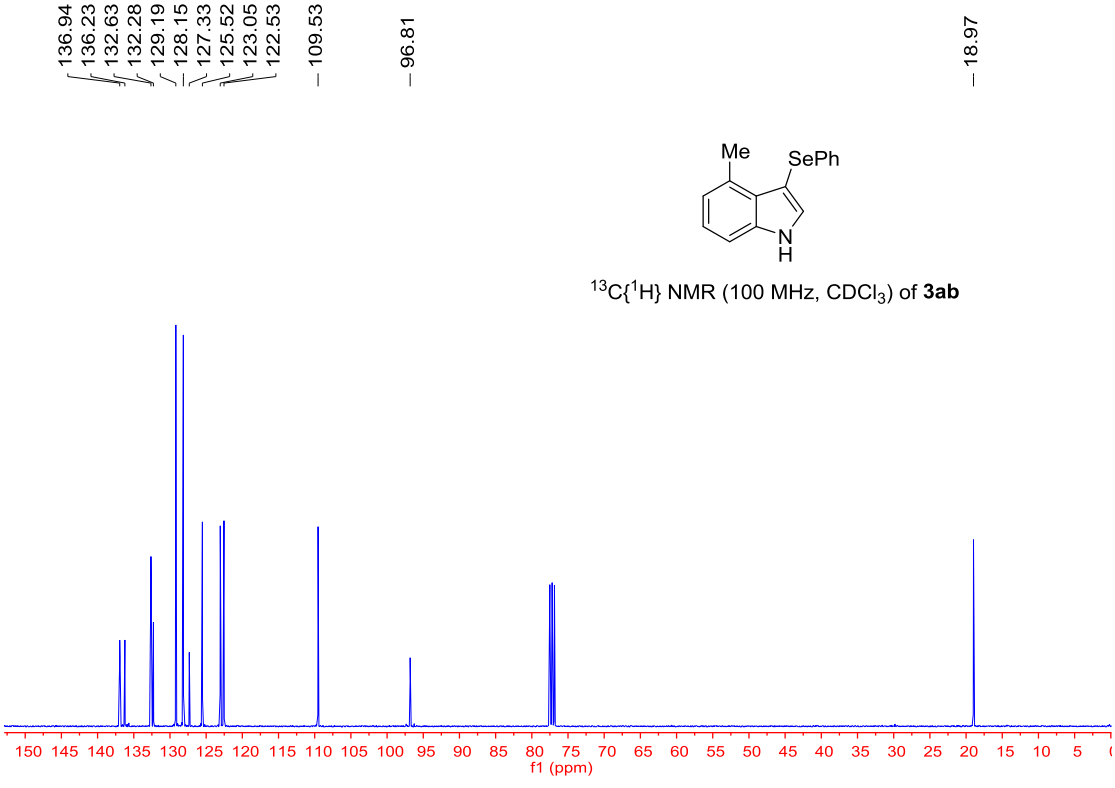


^{13}C NMR (100 MHz, $CDCl_3$) of **3aa**

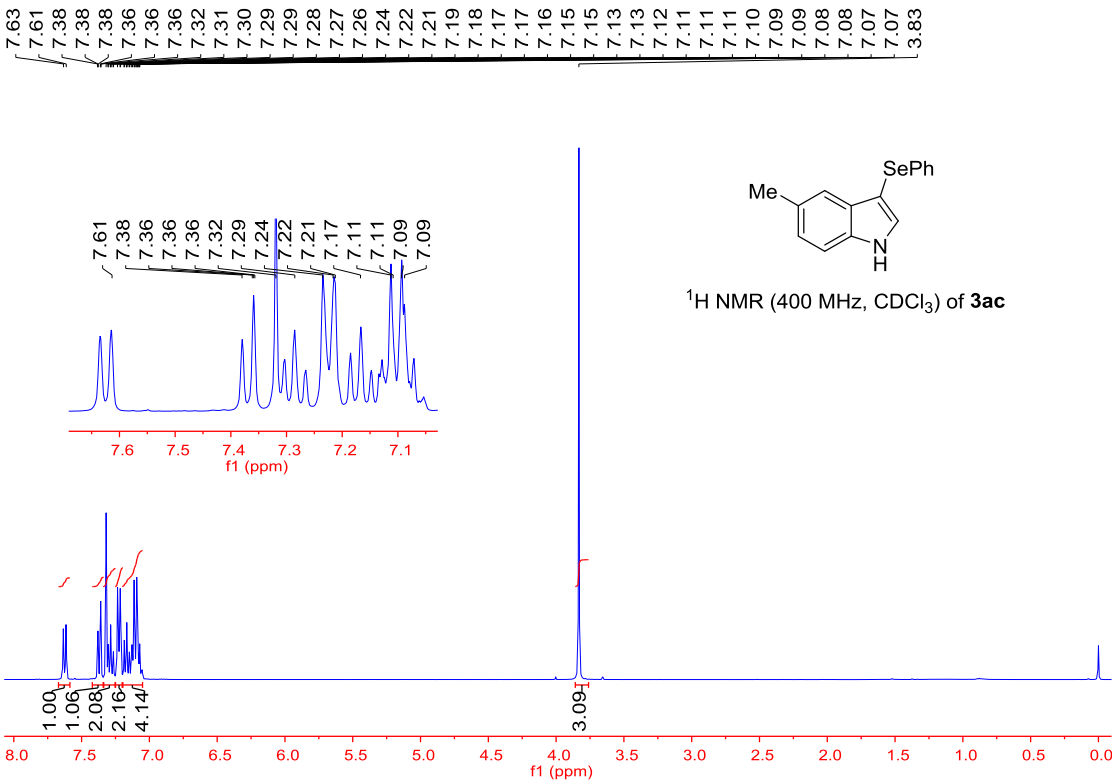




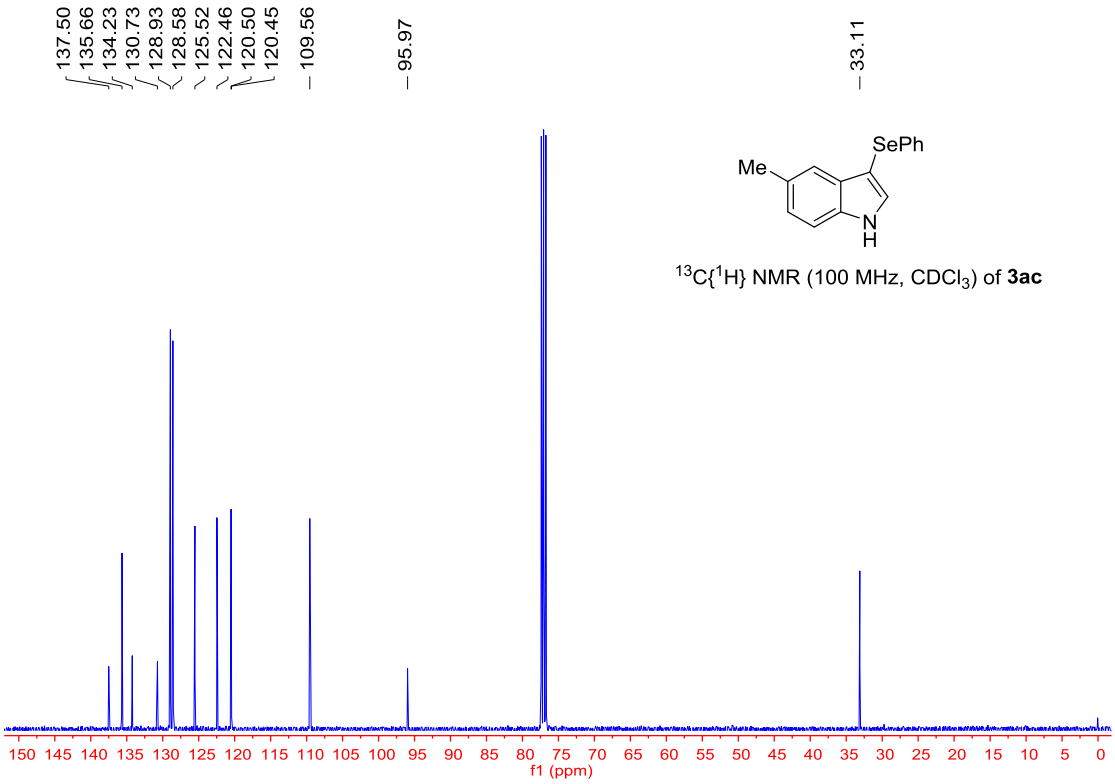
^{1}H NMR (400 MHz, $CDCl_3$) of **3ab**



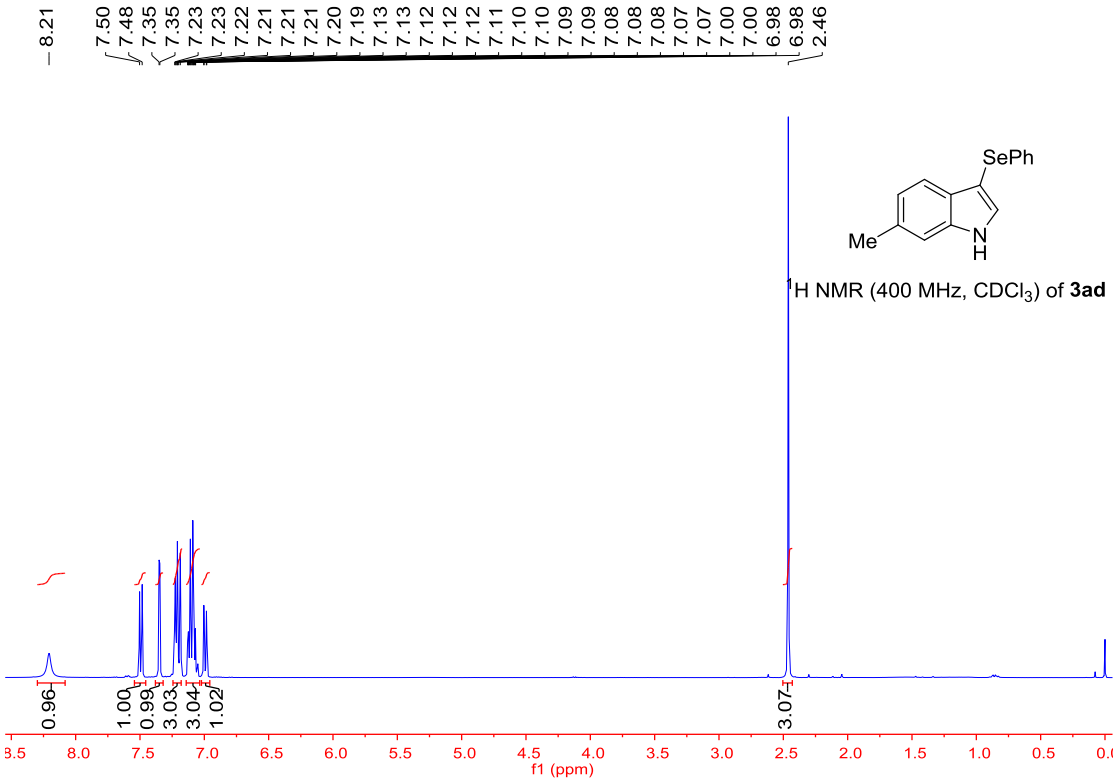
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3ab**



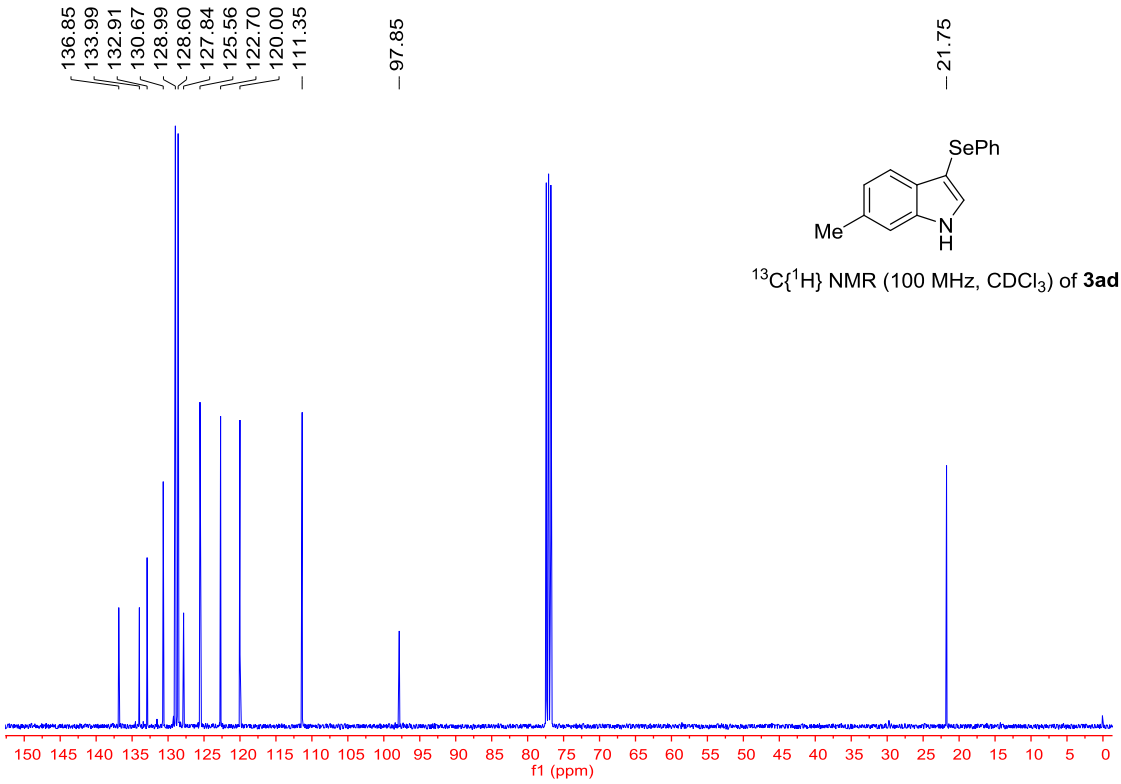
^{1}H NMR (400 MHz, $CDCl_3$) of **3ac**



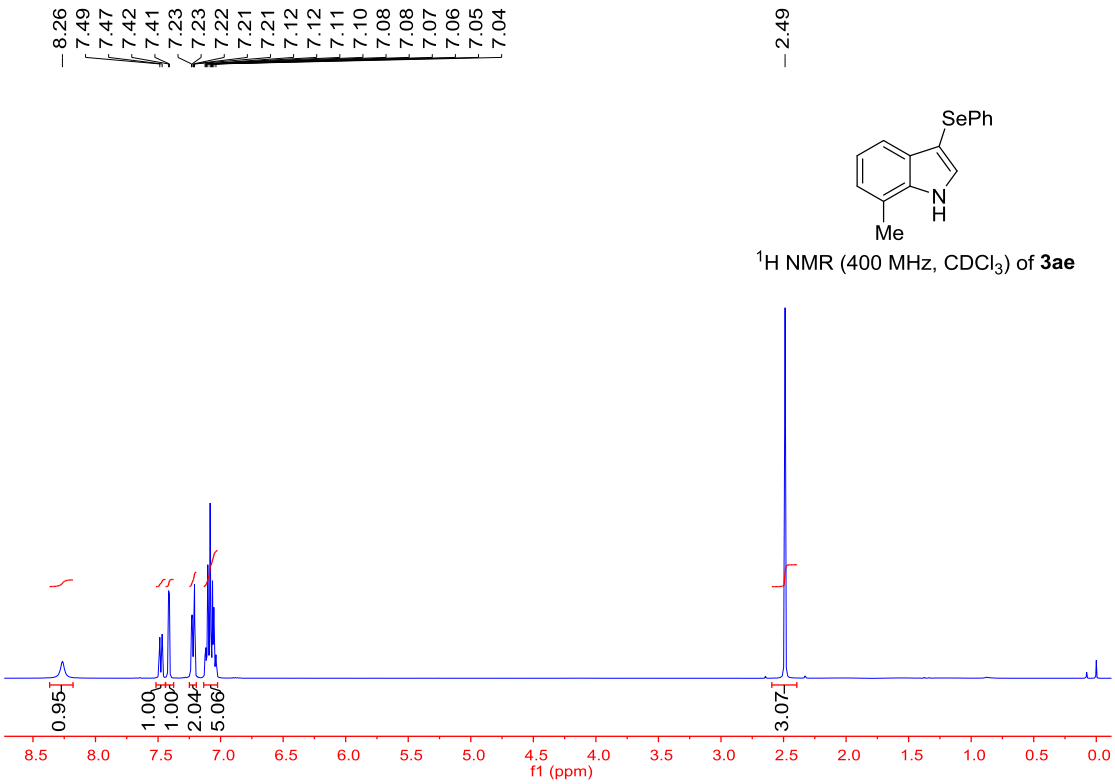
$^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$) of **3ac**



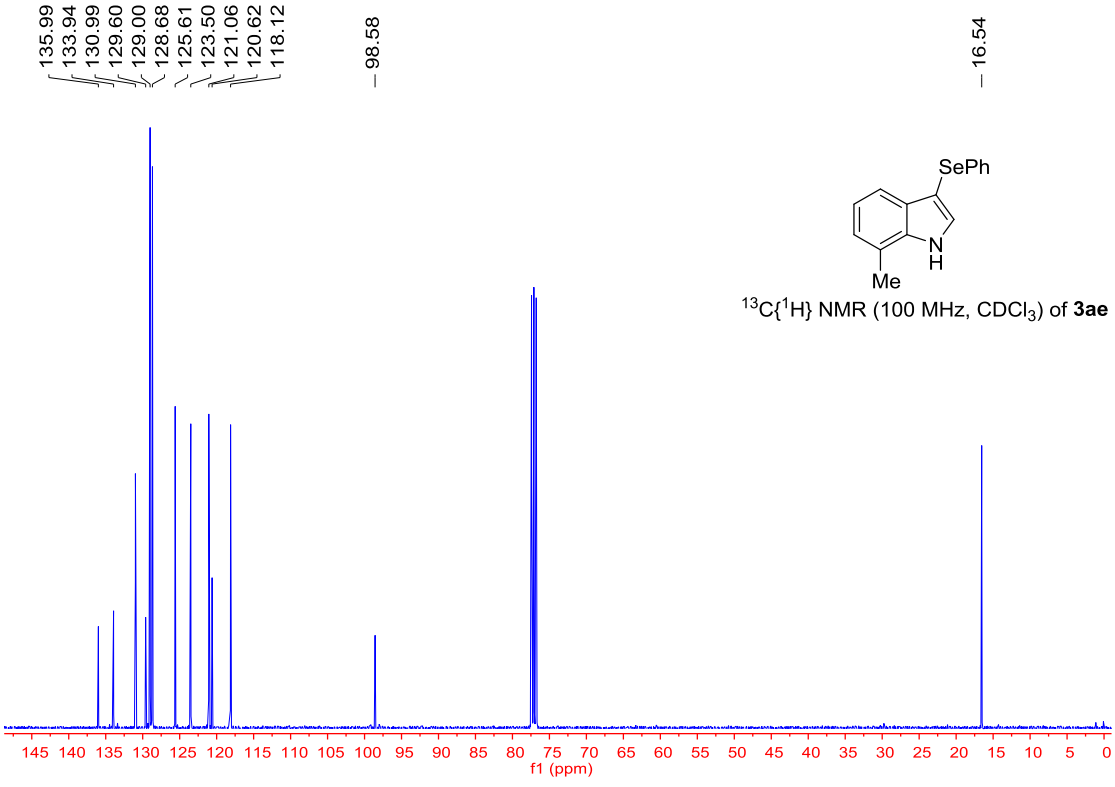
^{1}H NMR (400 MHz, $CDCl_3$) of **3ad**



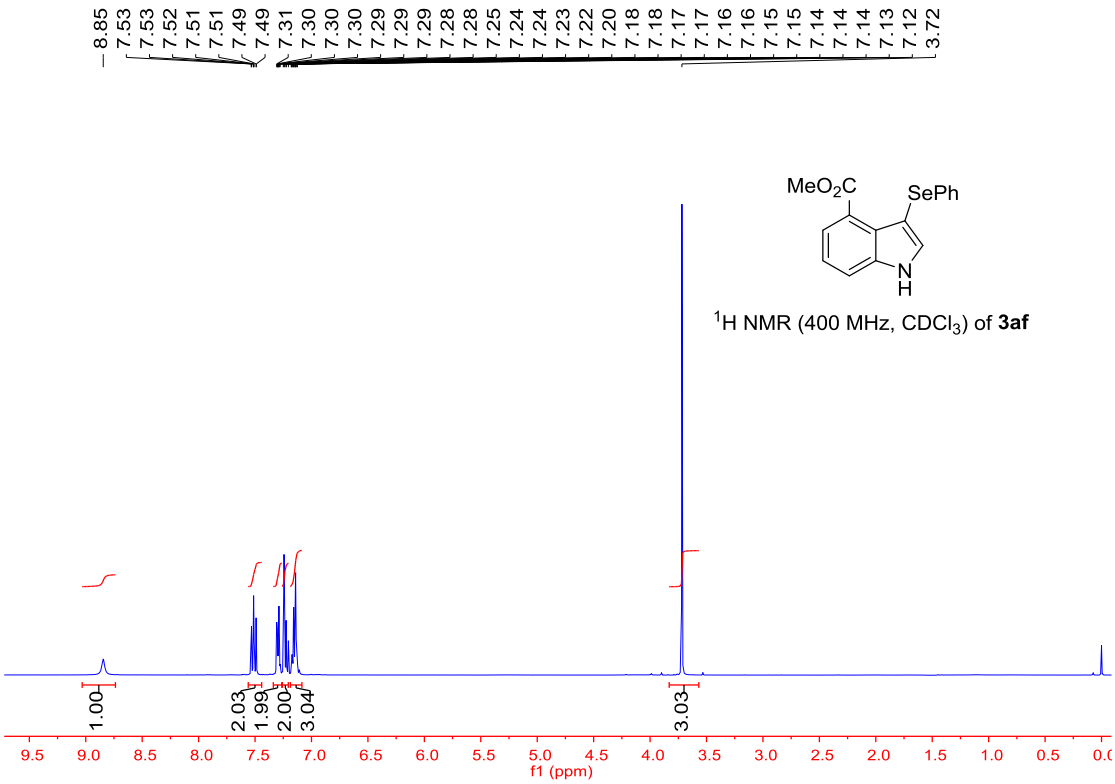
$^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$) of **3ad**



^{1}H NMR (400 MHz, $CDCl_3$) of **3ae**



$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3ae**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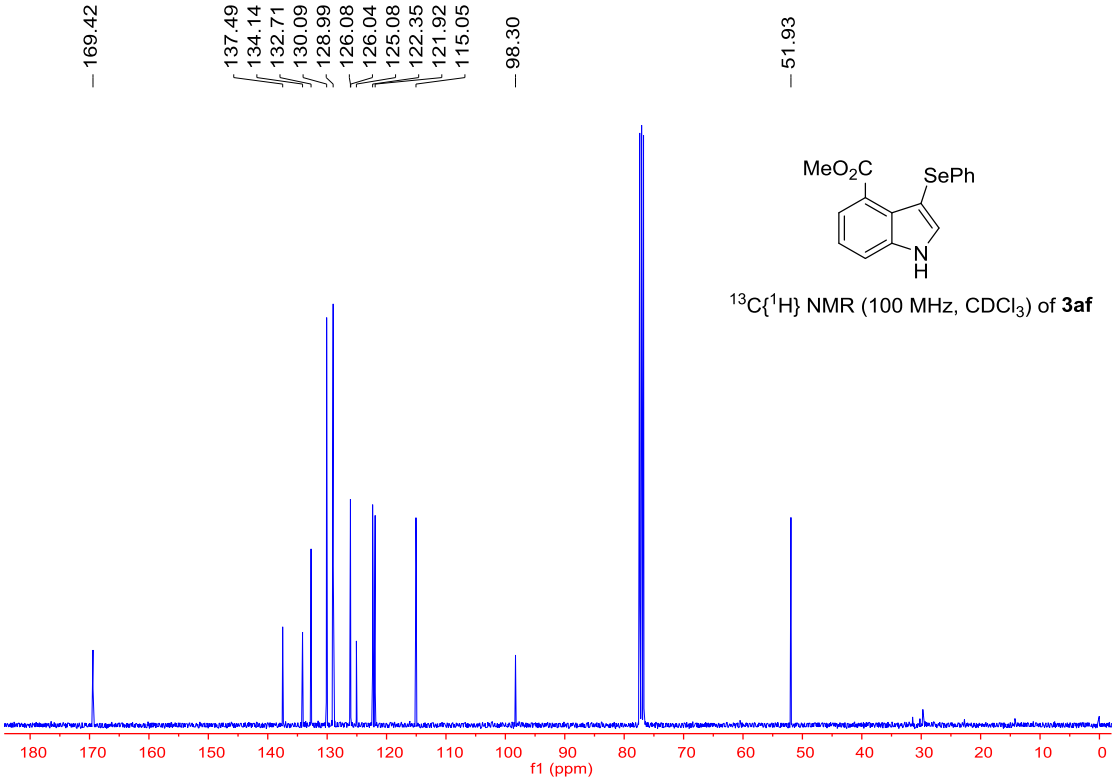
7.53
7.52
7.51
7.51
7.49
7.49
7.31
7.30
7.30
7.30
7.29
7.29
7.29
7.28
7.28
7.25
7.24
7.24
7.23
7.22
7.20
7.18
7.18
7.17
7.17
7.16
7.16
7.15
7.15
7.14
7.14
7.14
7.13
7.12
3.72
MeO2C
SePh
N
H
1H NMR (400 MHz, CDCl3) of 3af
1.00
2.03
1.99
2.00
3.04
3.03
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
f1 (ppm)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137.49
134.14
132.71
130.09
128.99
126.08
126.04
125.08
122.35
121.92
115.05
98.30
51.93
MeO2C
SePh
N
H
13C{1H} NMR (100 MHz, CDCl3) of 3af
180
170
160
150
140
130
120
110
100
90
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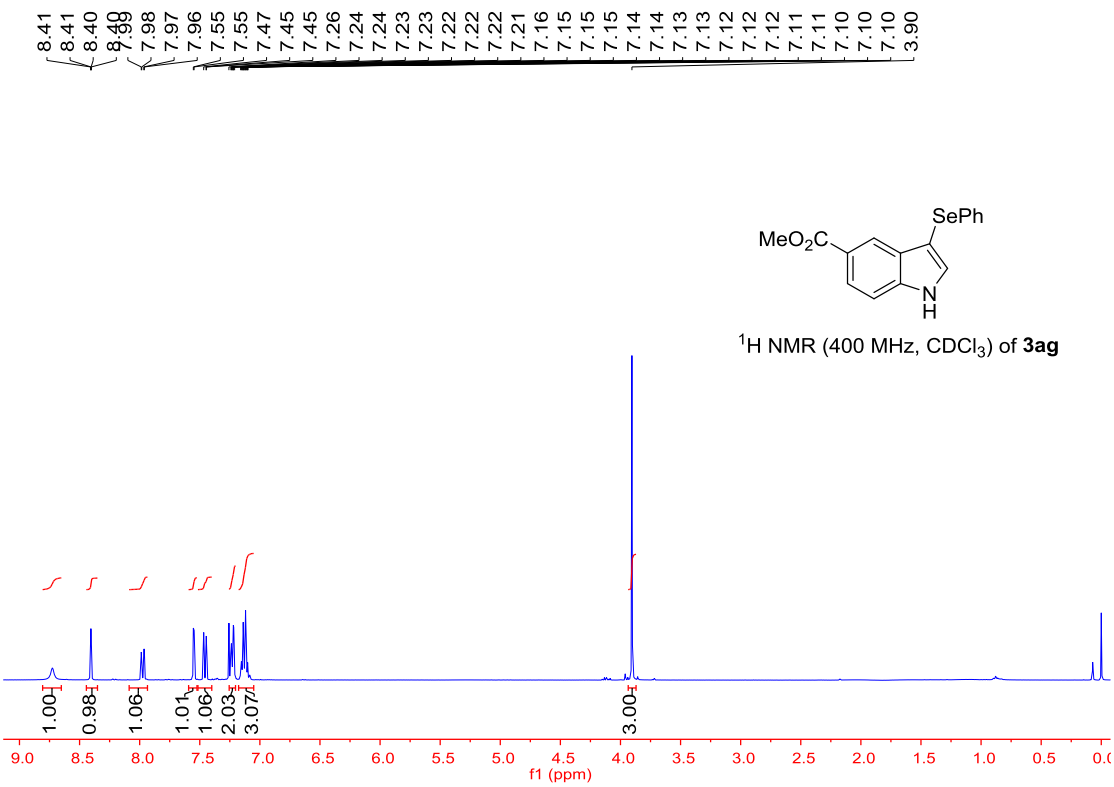
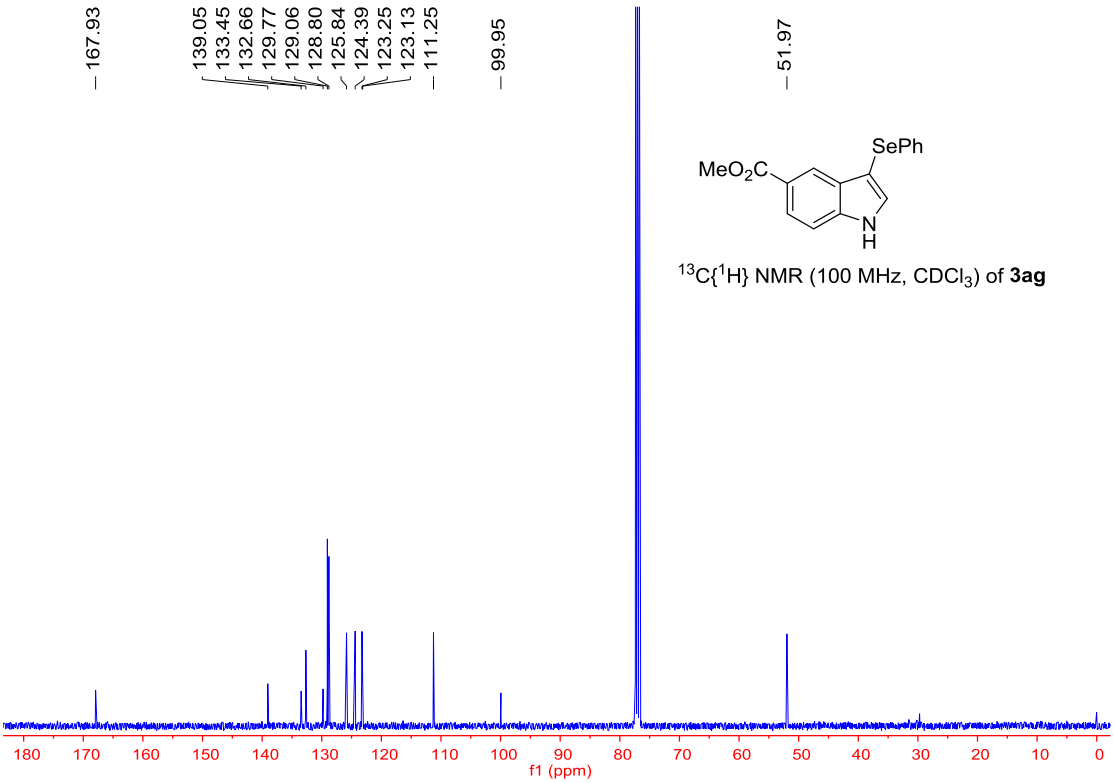
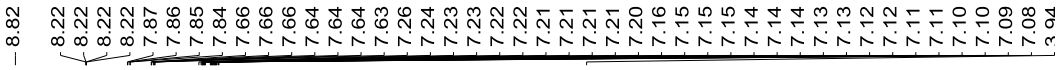
70
60
50
40
30
20
10
0
f1 (ppm)

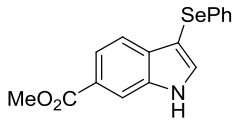


^{1}H NMR (400 MHz, $CDCl_3$) of **3ag**

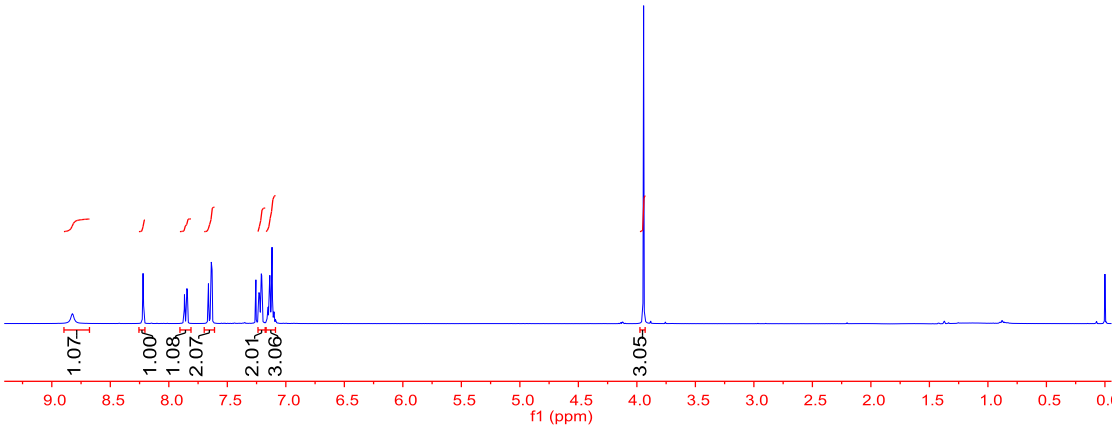


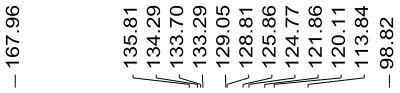
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3ag**

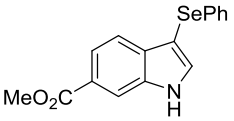




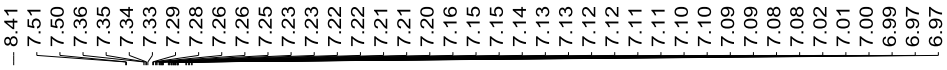
^{1}H NMR (400 MHz, $CDCl_3$) of **3ah**



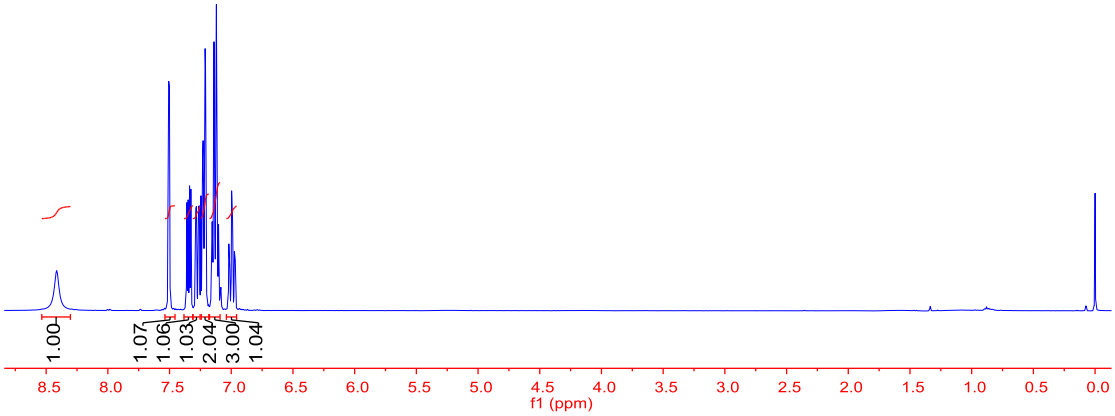


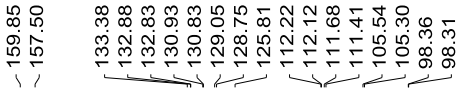


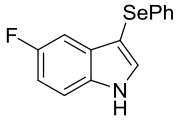
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3ah**



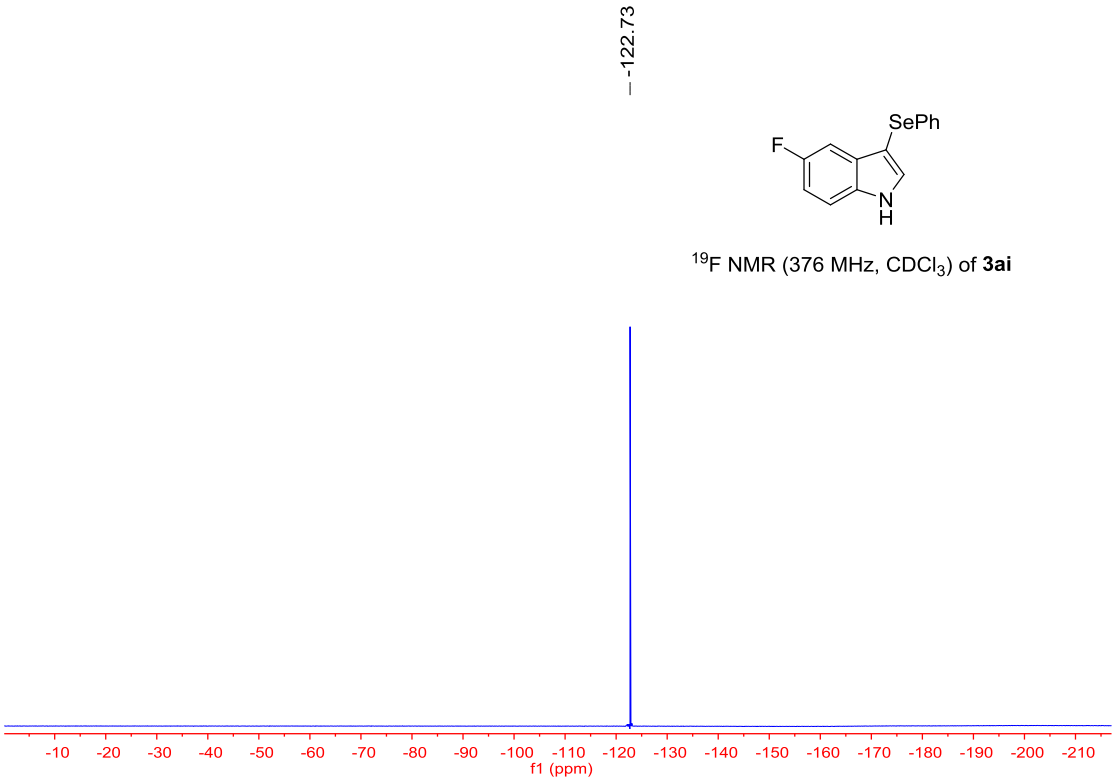
^{1}H NMR (400 MHz, $CDCl_3$) of **3ai**



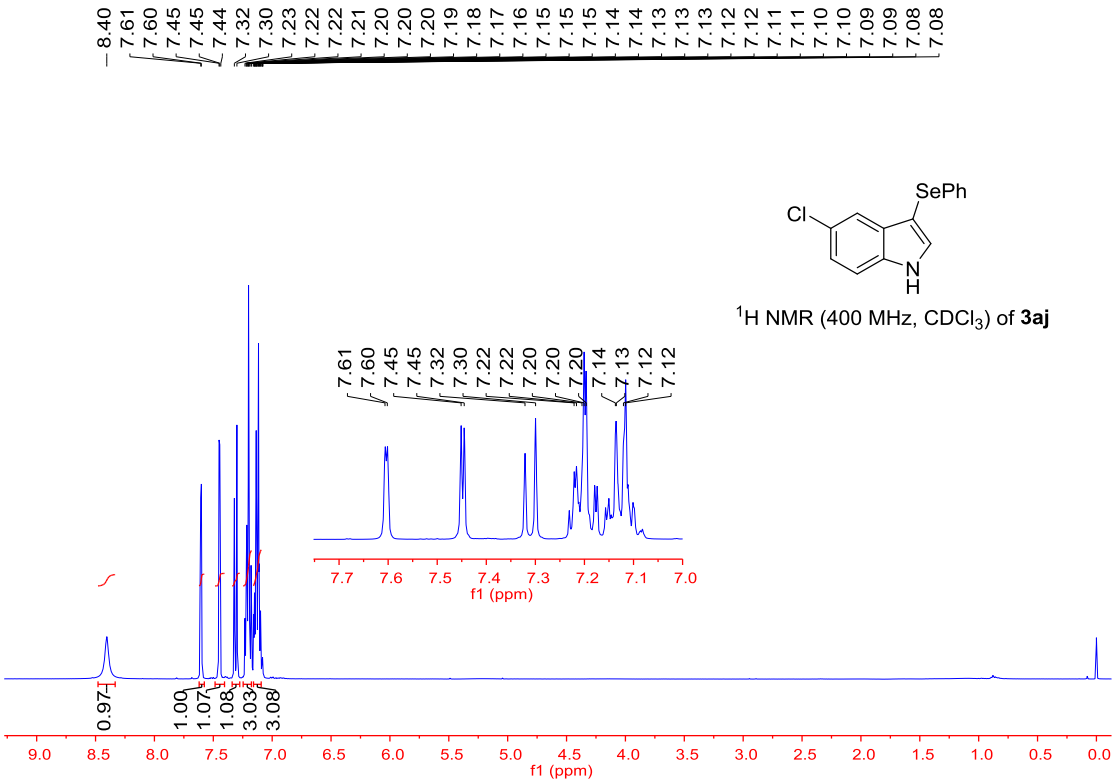




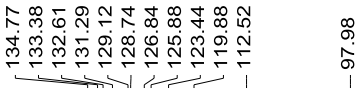
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3ai**

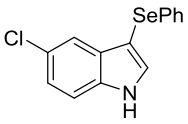


^{19}F NMR (376 MHz, $CDCl_3$) of **3ai**

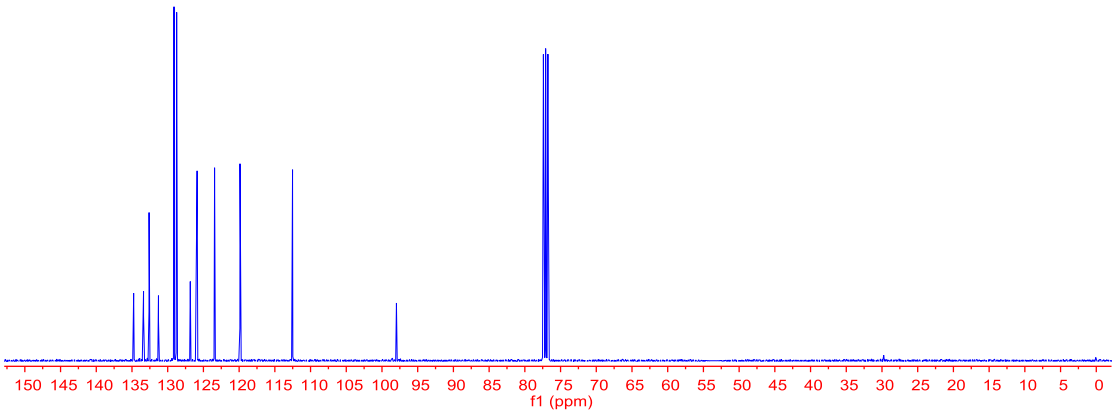


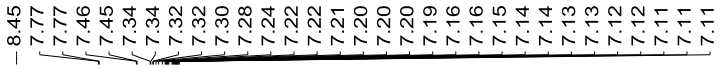
^{1}H NMR (400 MHz, $CDCl_3$) of **3aj**

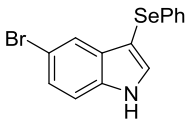




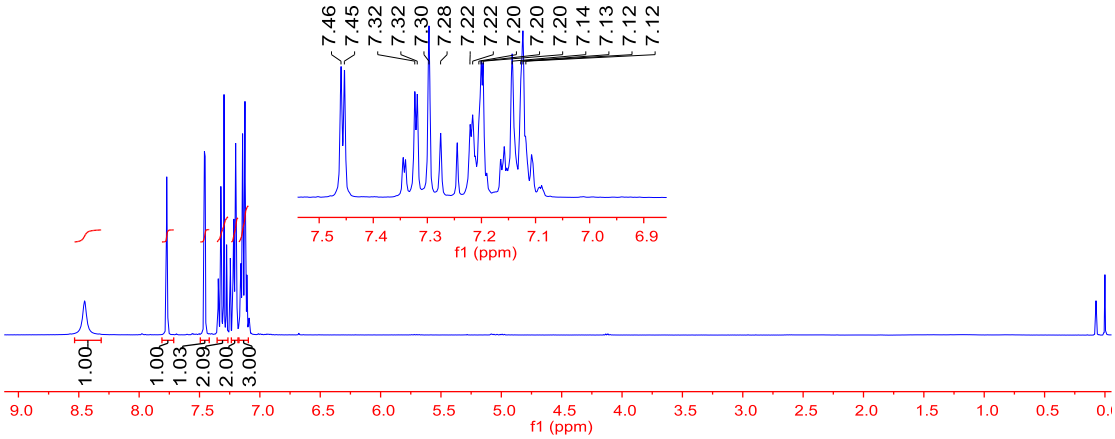
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3aj**

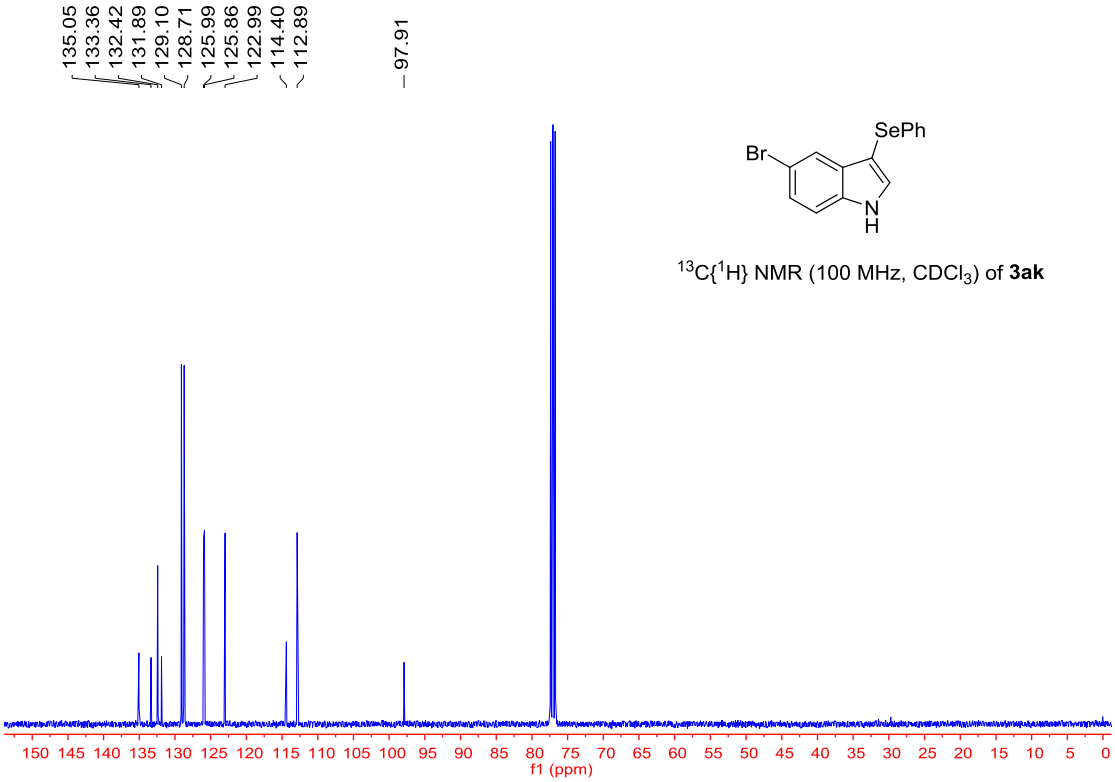




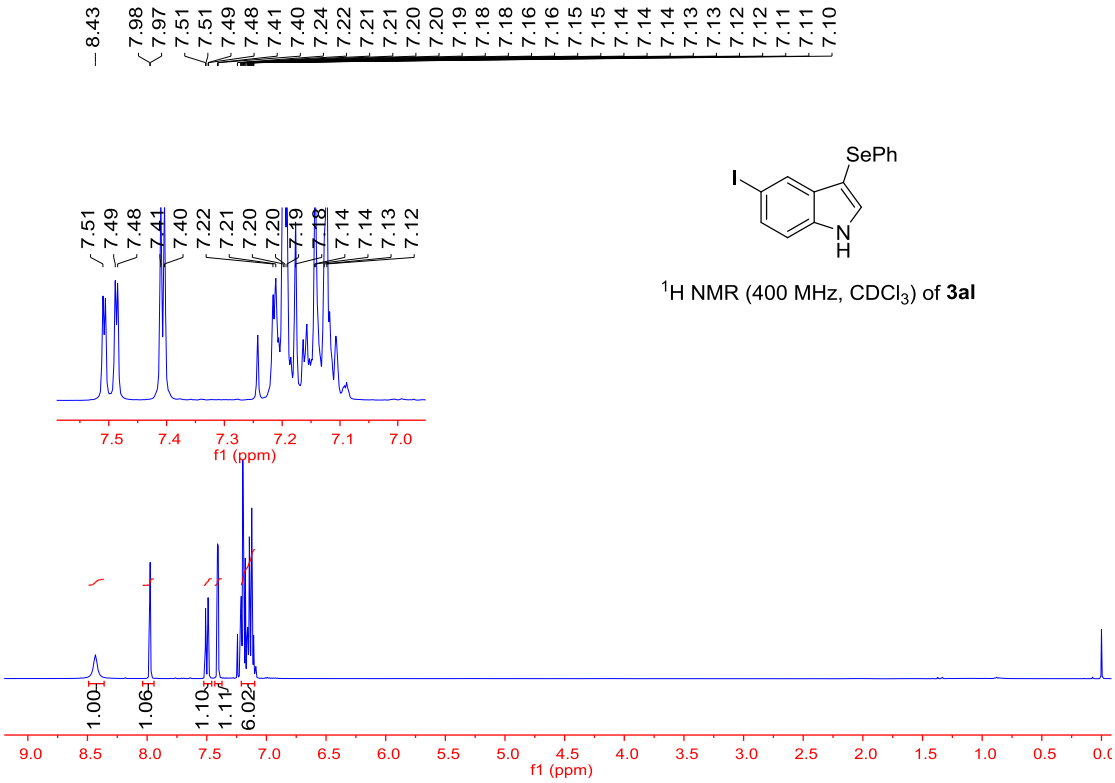


^{1}H NMR (400 MHz, $CDCl_3$) of **3ak**





$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3ak**



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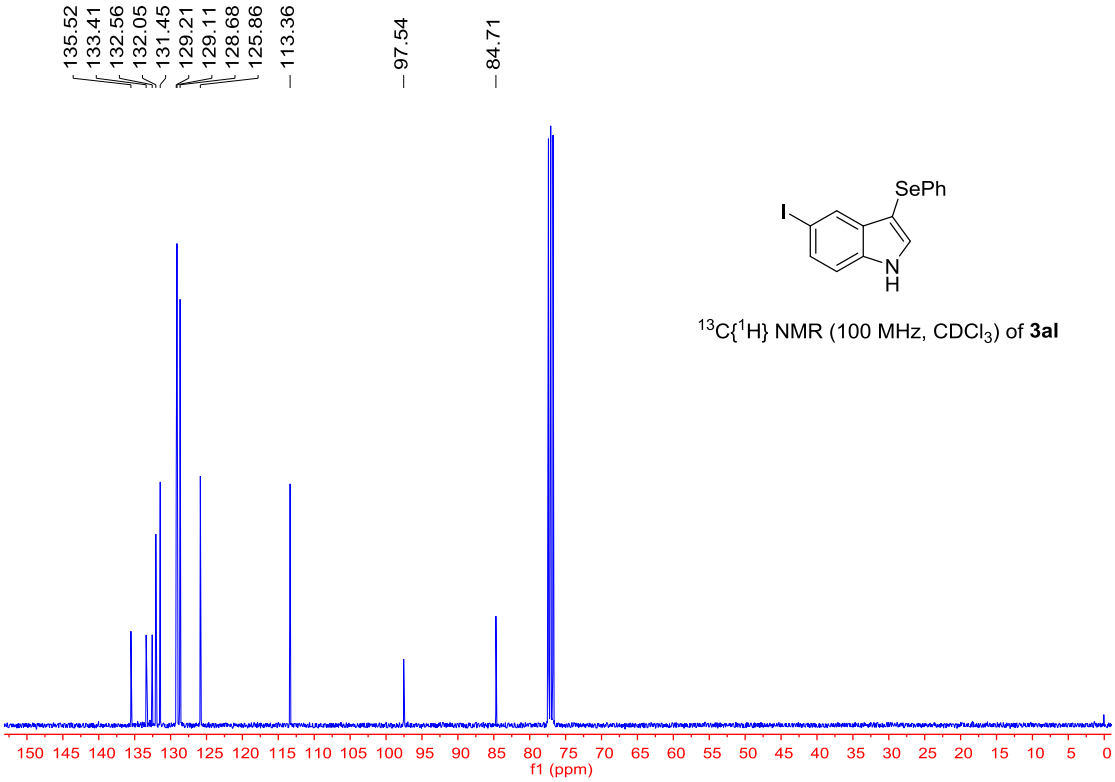

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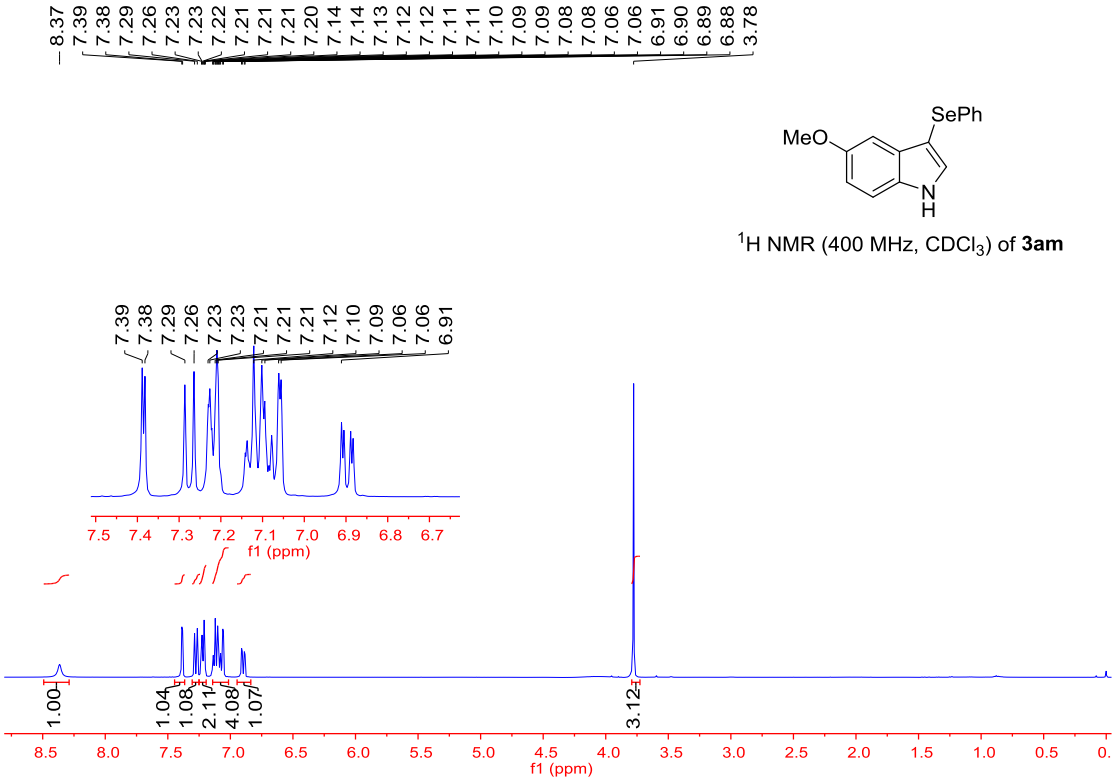

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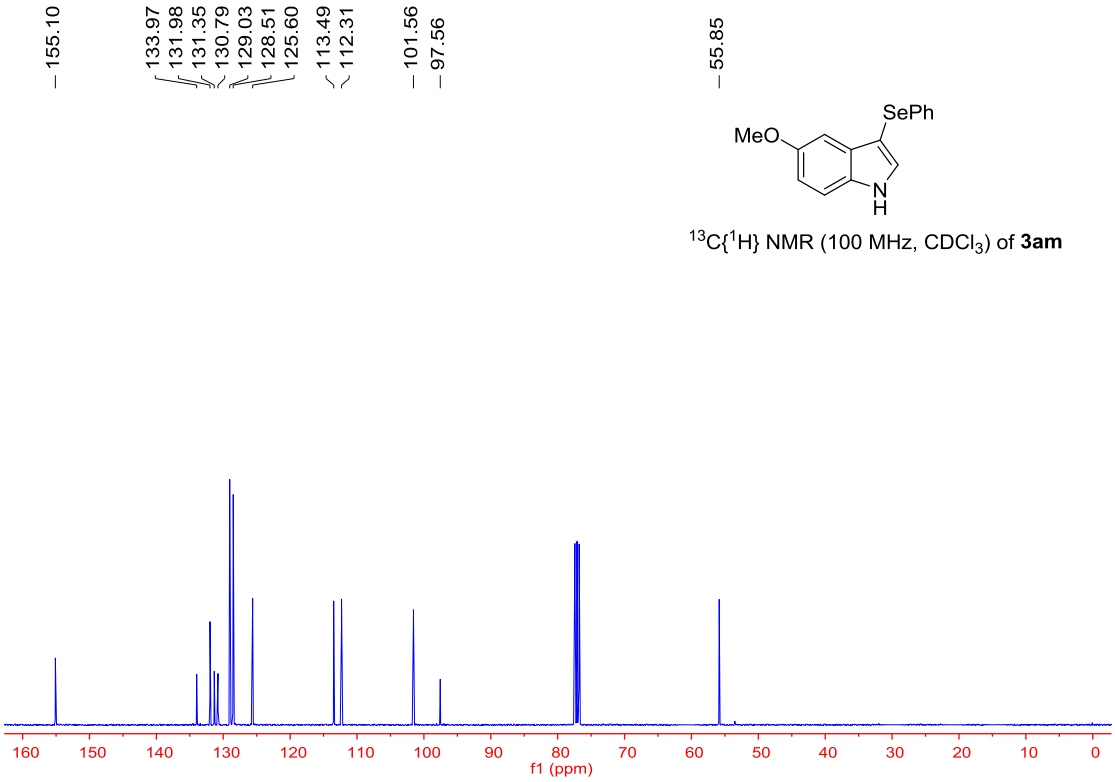

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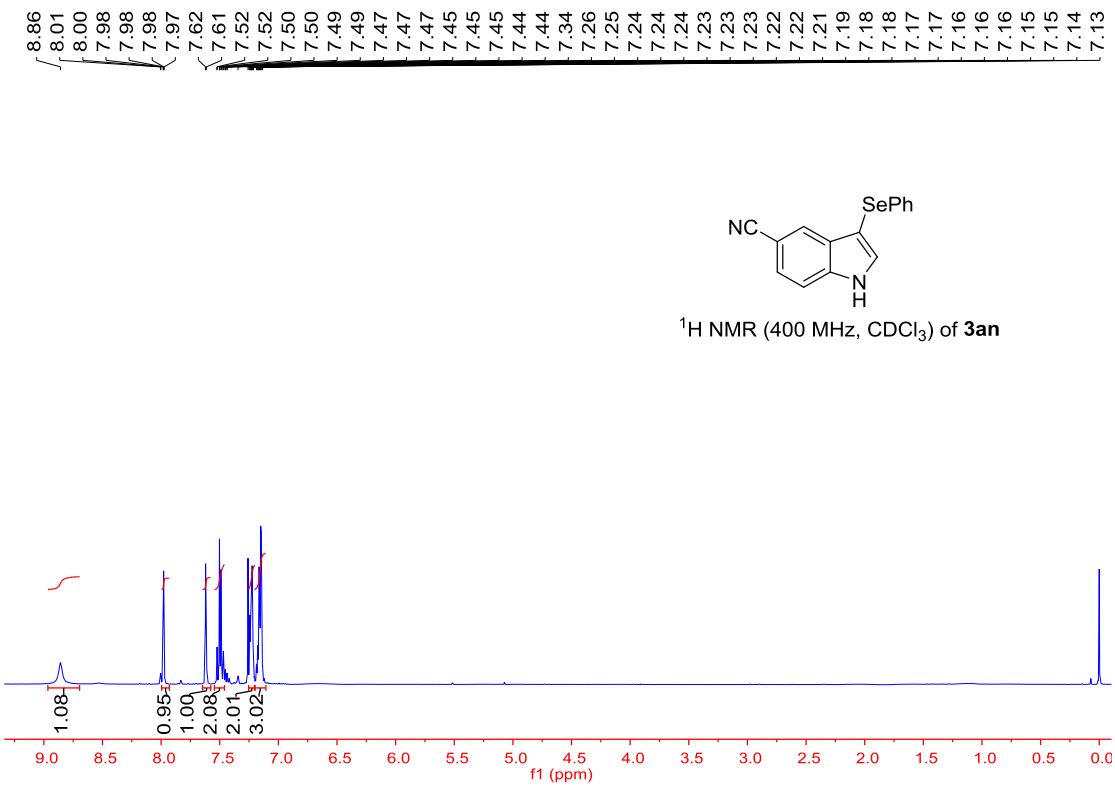

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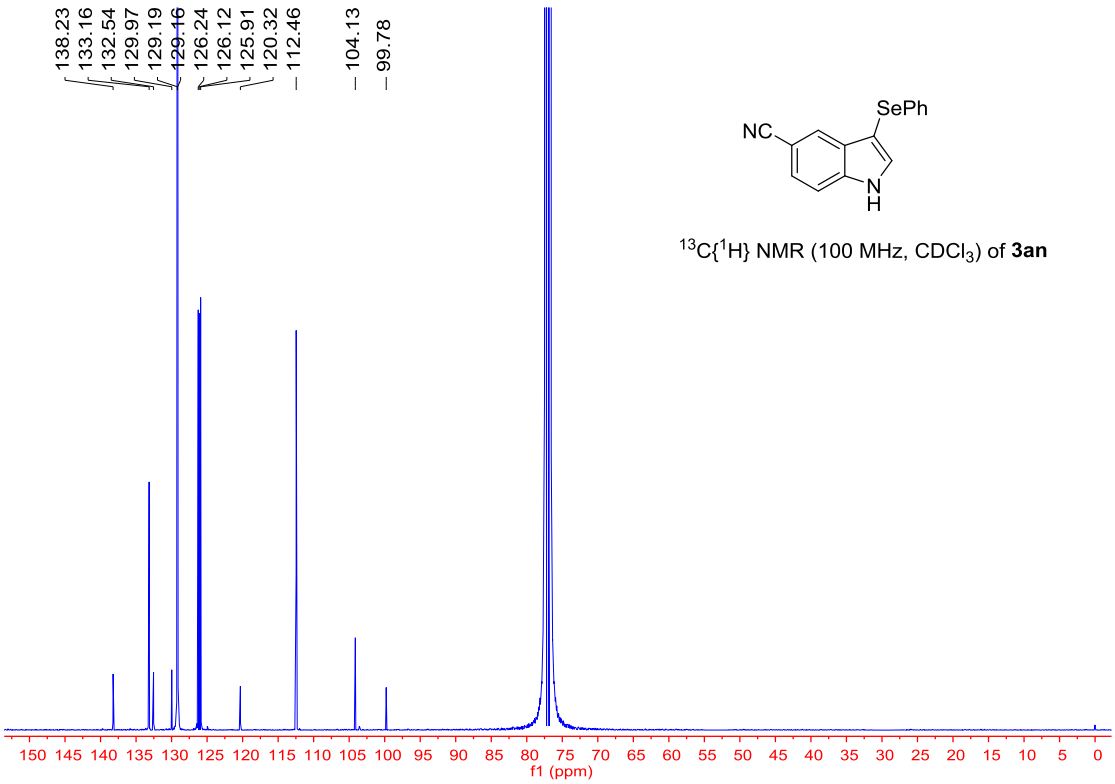
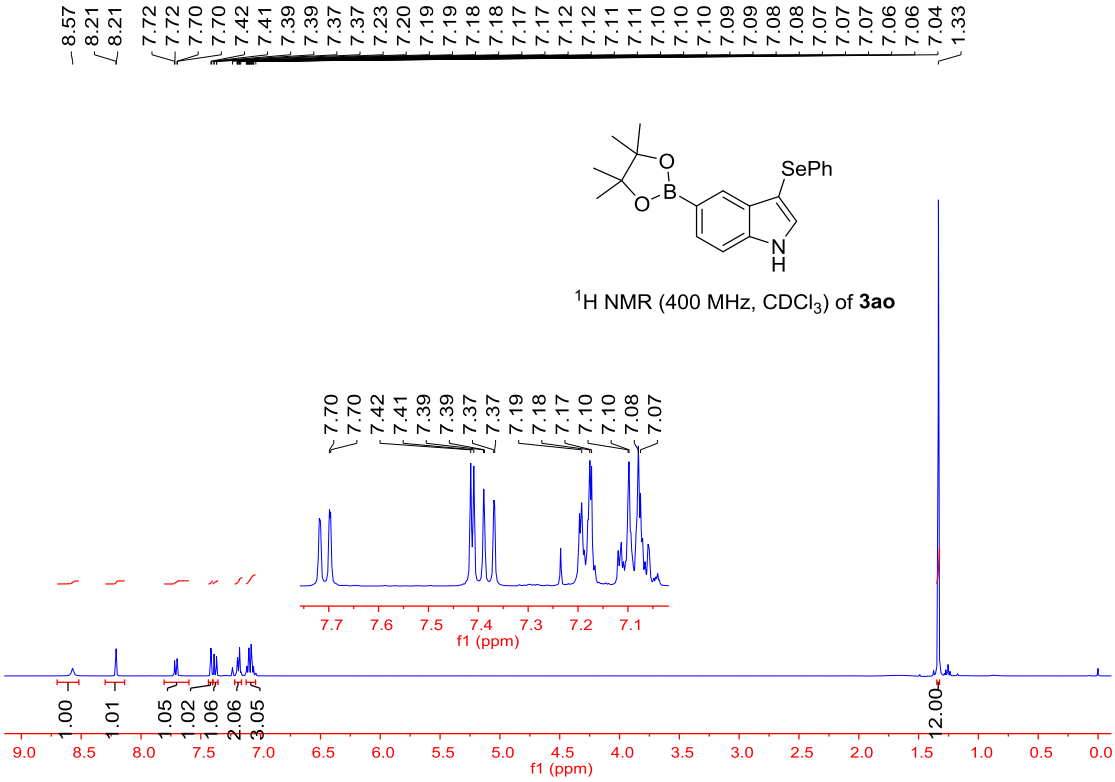
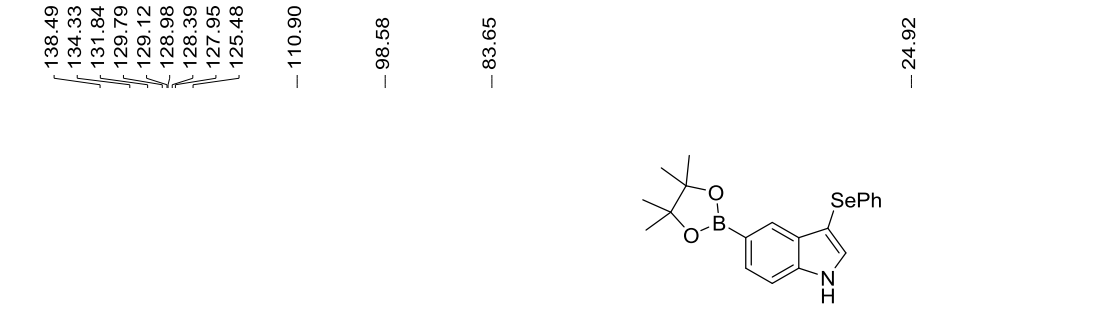


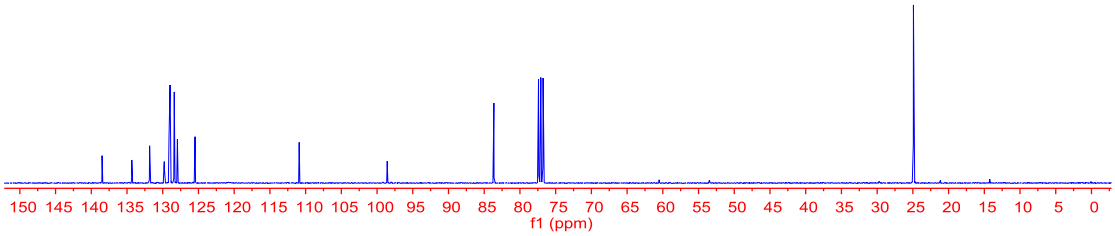
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3an**

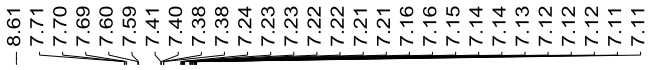


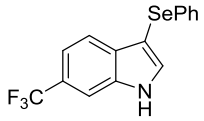
^{1}H NMR (400 MHz, $CDCl_3$) of **3ao**



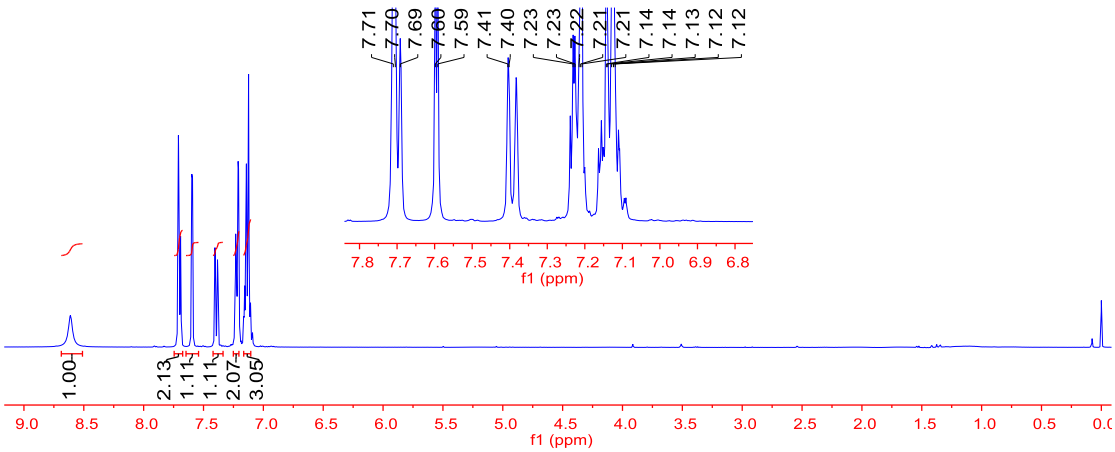
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3ao**

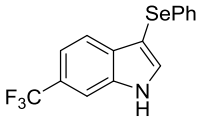




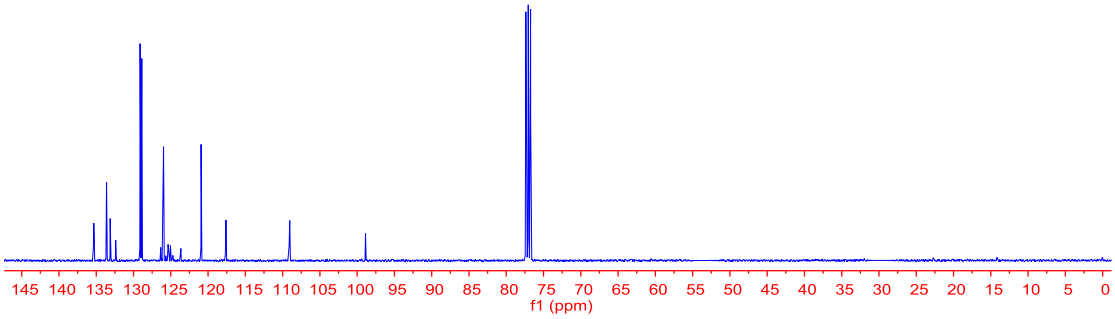


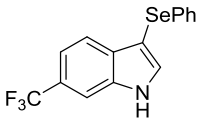
^{1}H NMR (400 MHz, $CDCl_3$) of **3ap**



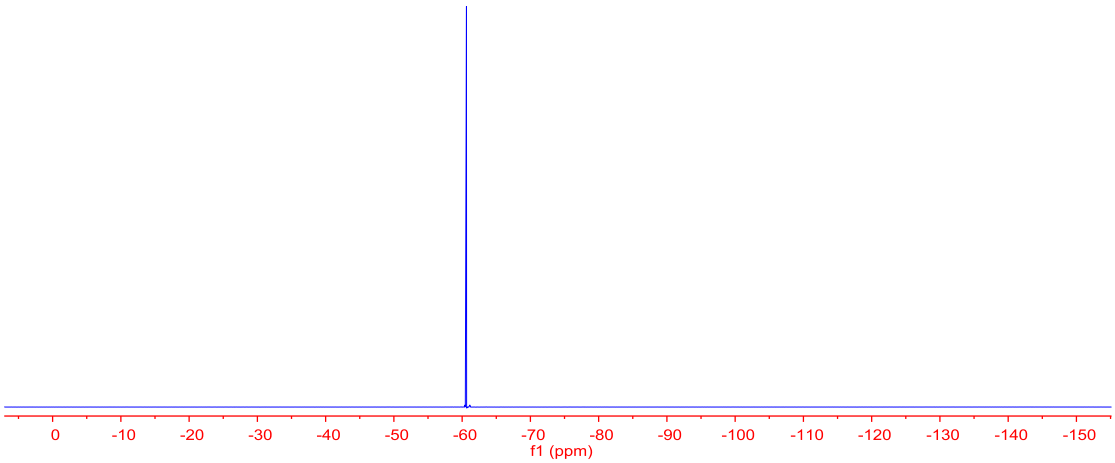


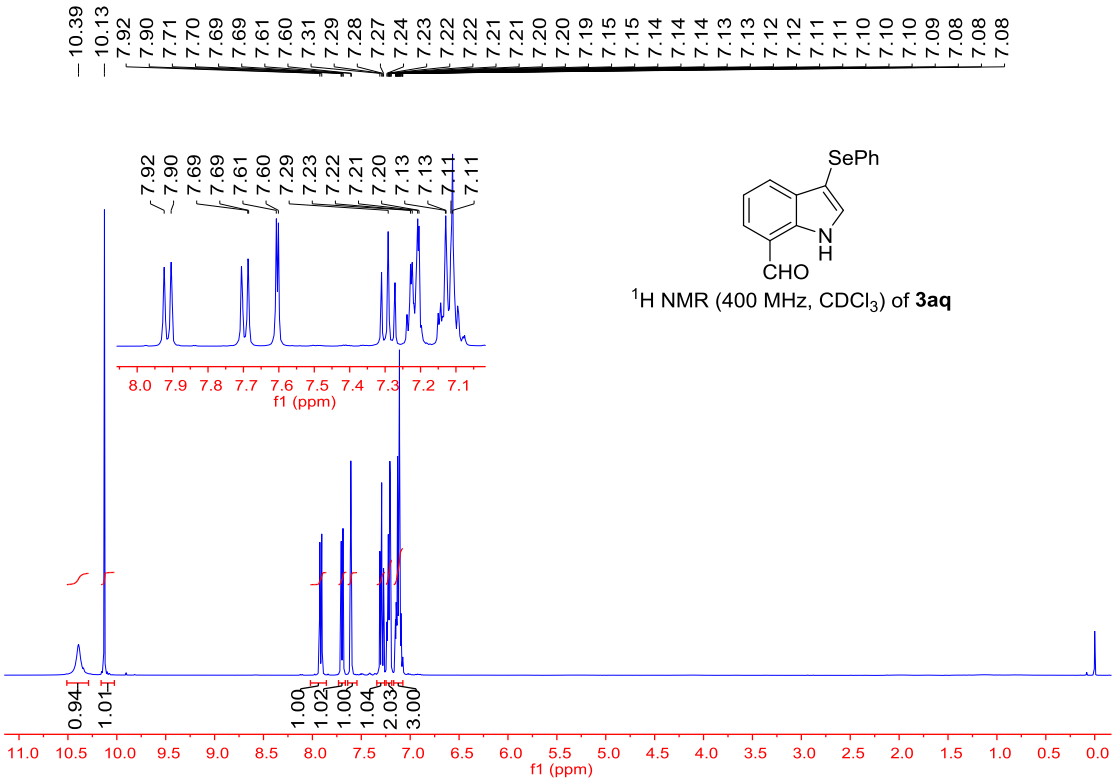
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3ap**



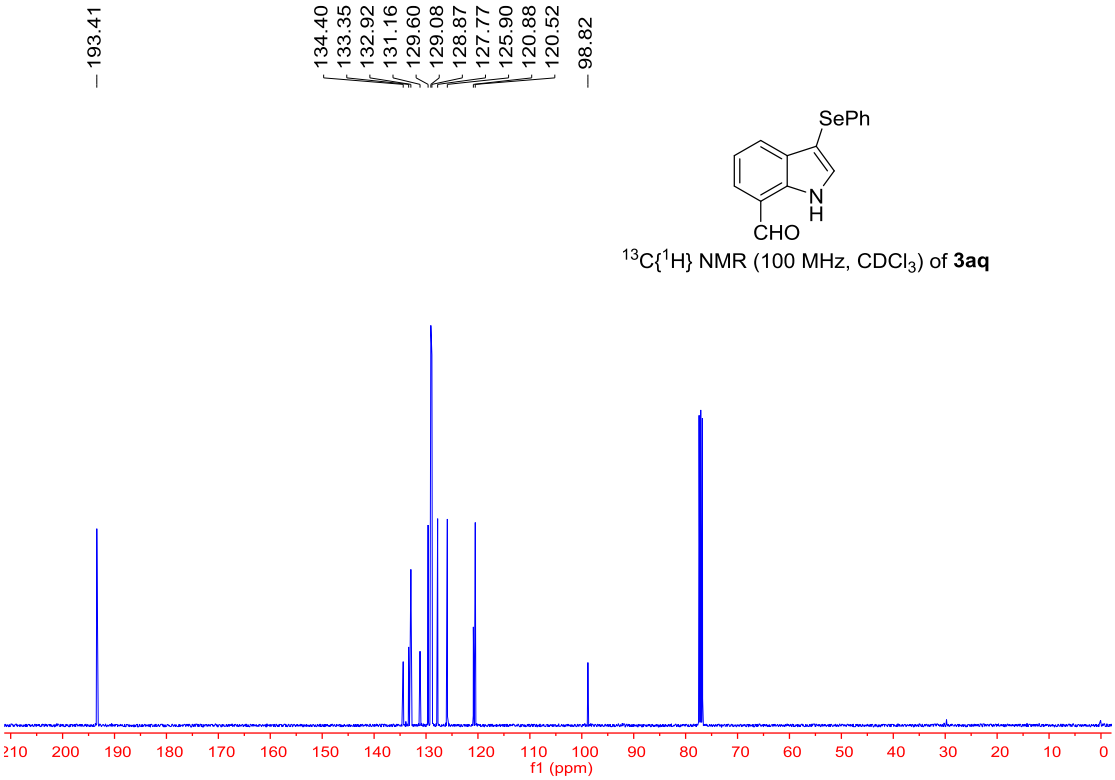


^{19}F NMR (376 MHz, $CDCl_3$) of **3ap**

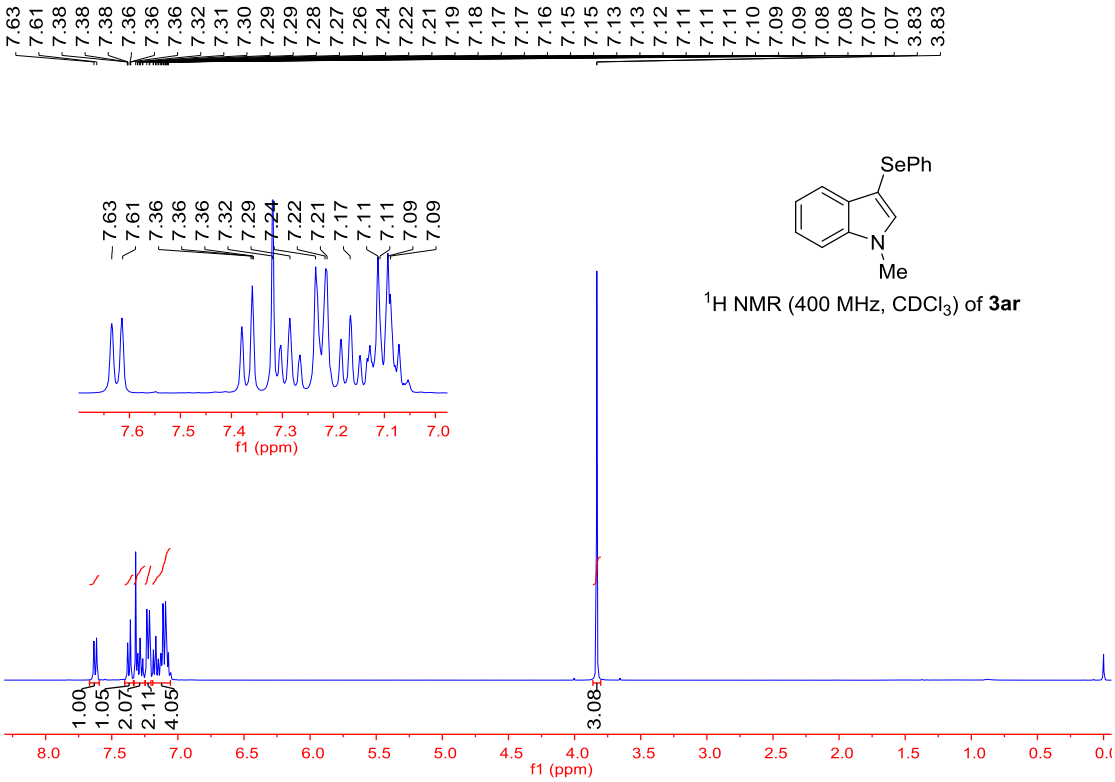




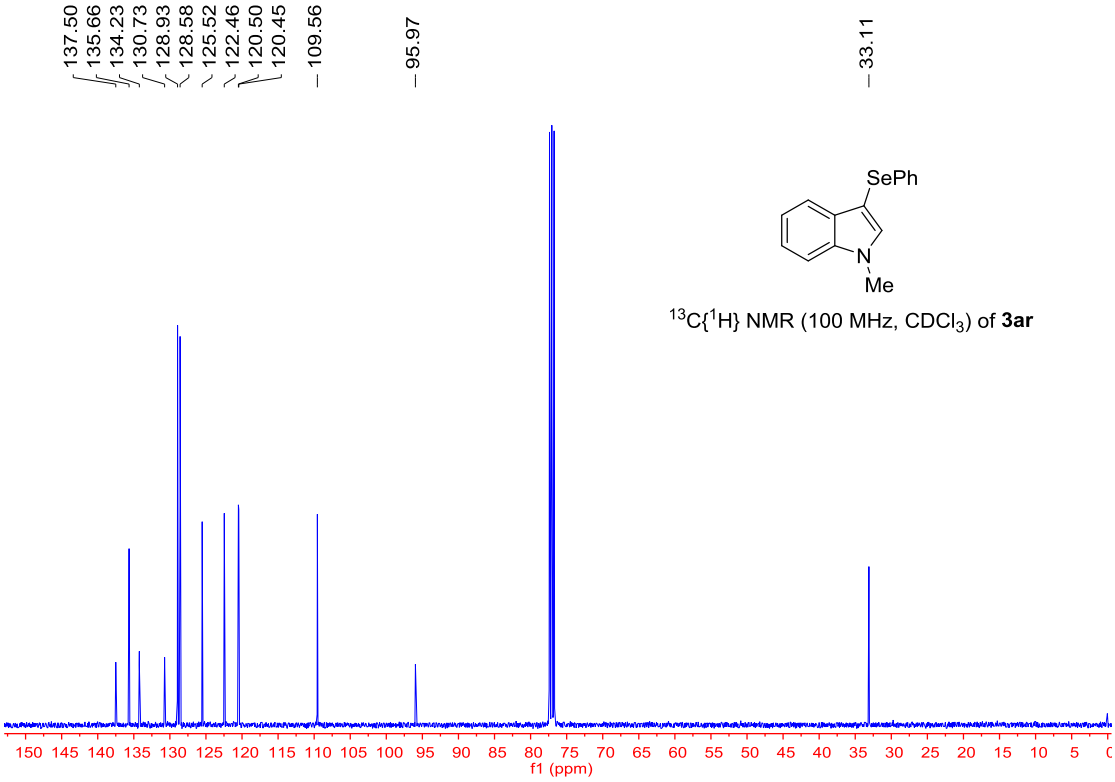
^{1}H NMR (400 MHz, $CDCl_3$) of **3aq**



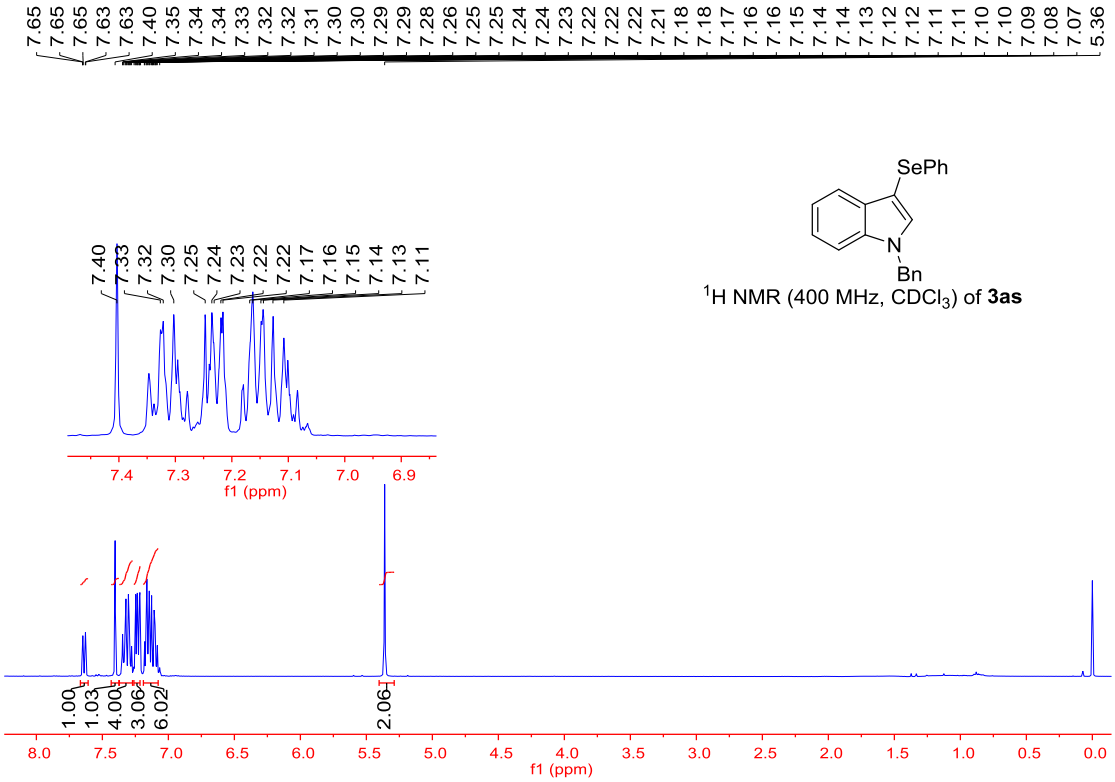
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3aq**



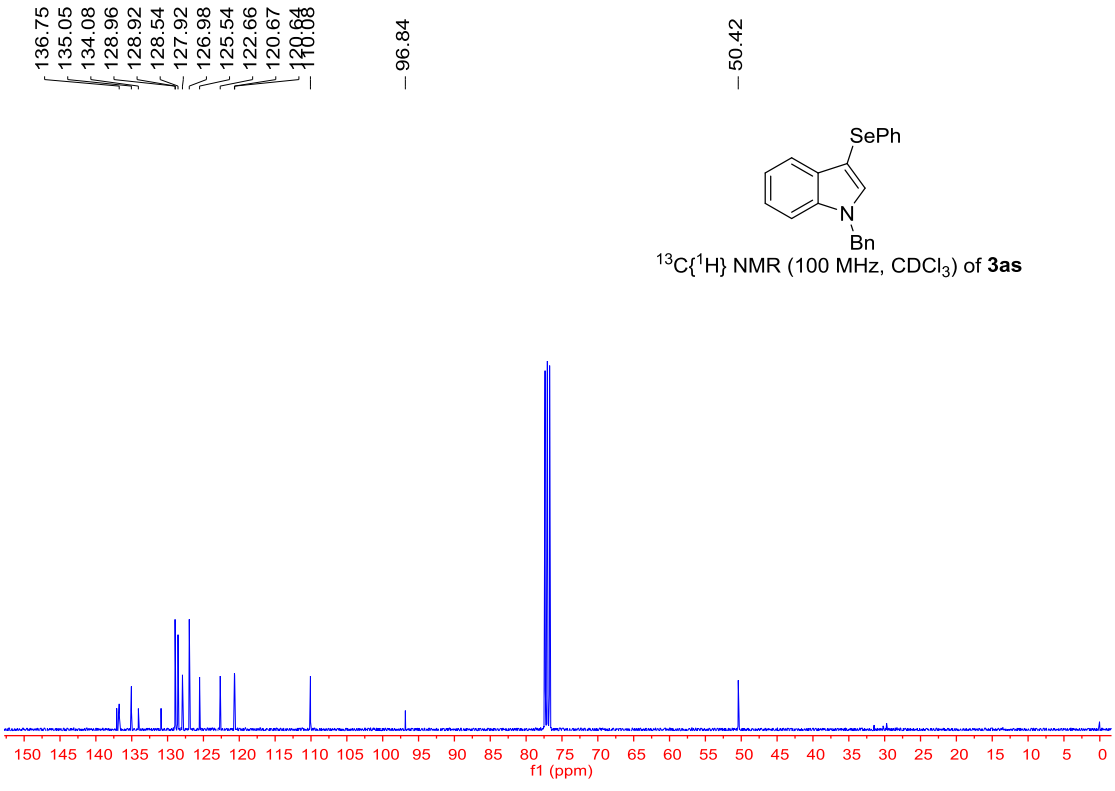
^{1}H NMR (400 MHz, $CDCl_3$) of **3ar**



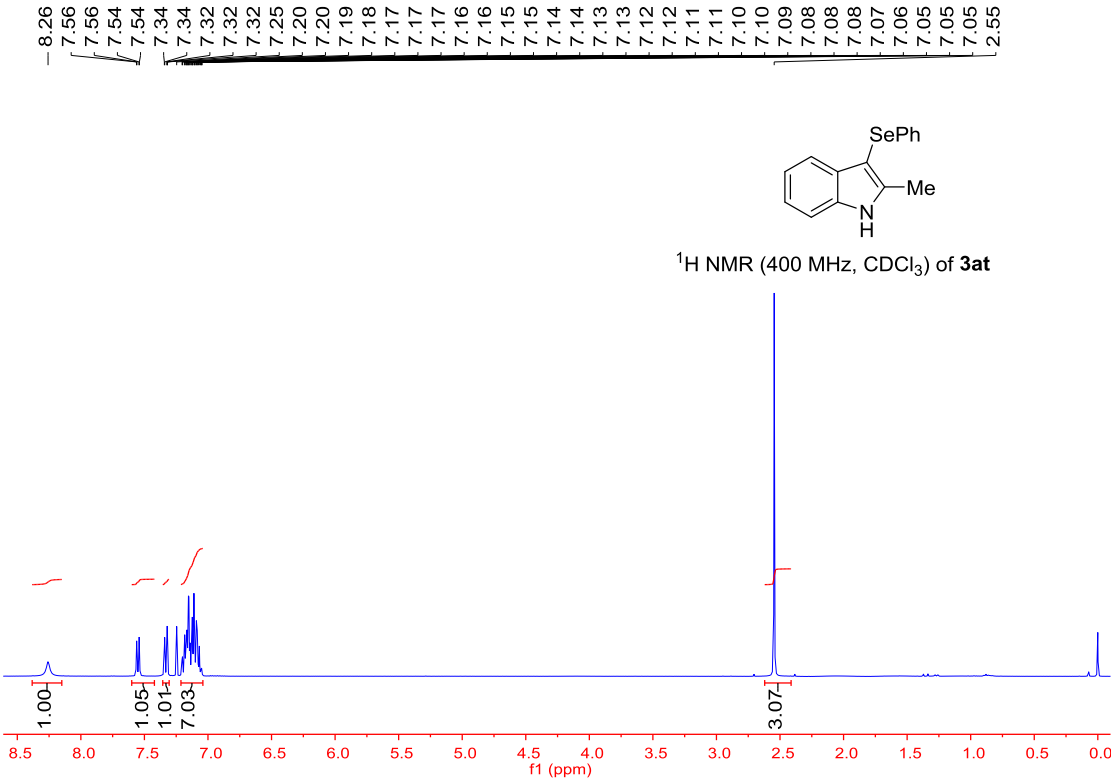
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3ar**



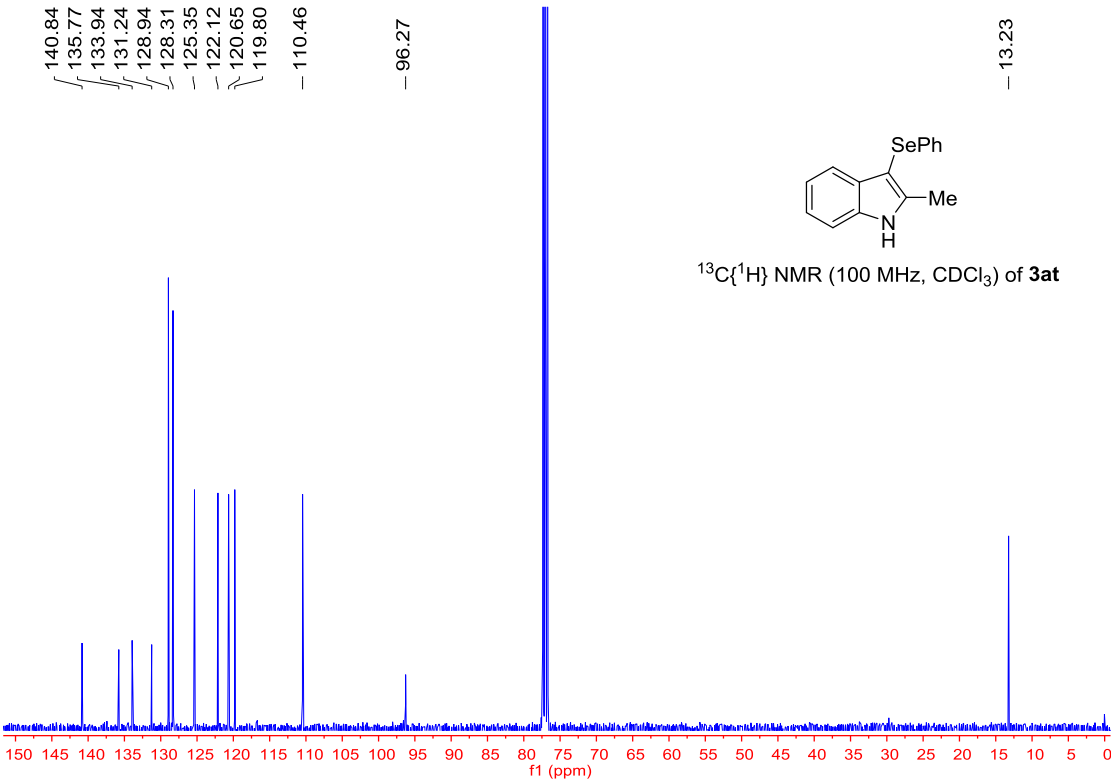
^{1}H NMR (400 MHz, $CDCl_3$) of **3as**



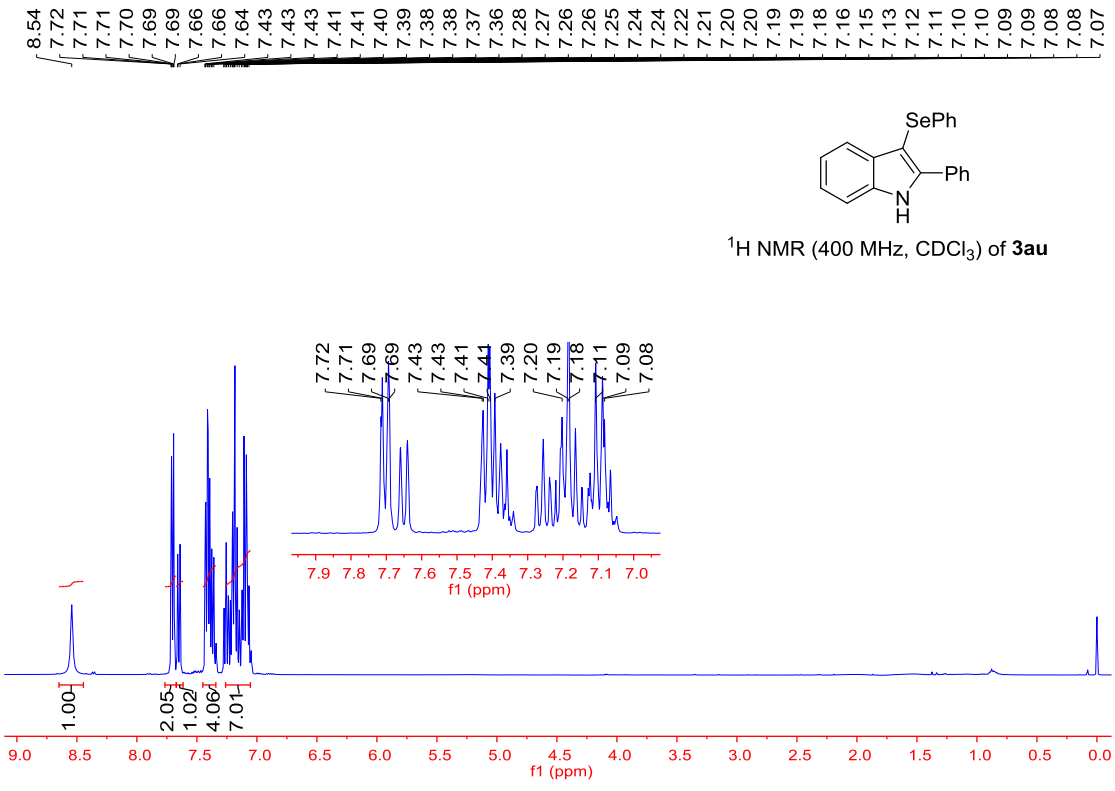
$^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$) of **3as**



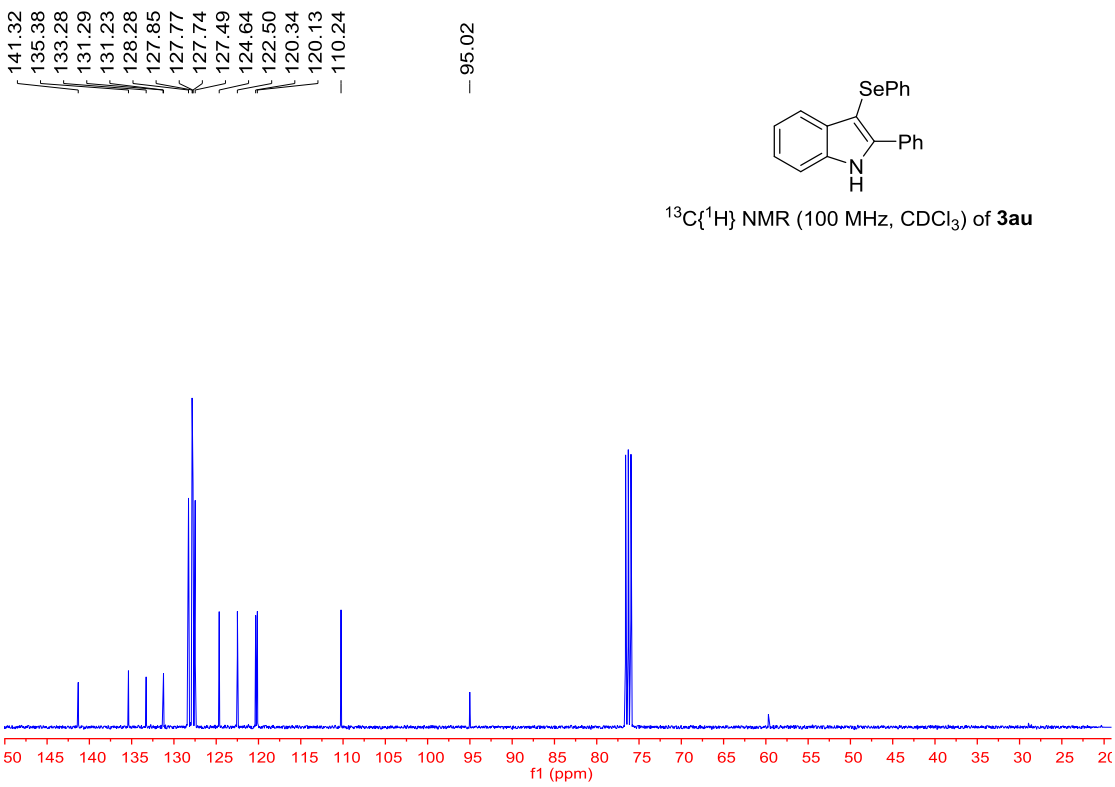
^{1}H NMR (400 MHz, $CDCl_3$) of **3at**



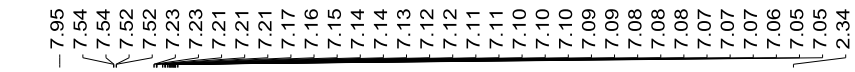
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3at**

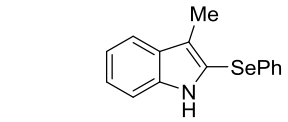


^{1}H NMR (400 MHz, $CDCl_3$) of **3au**

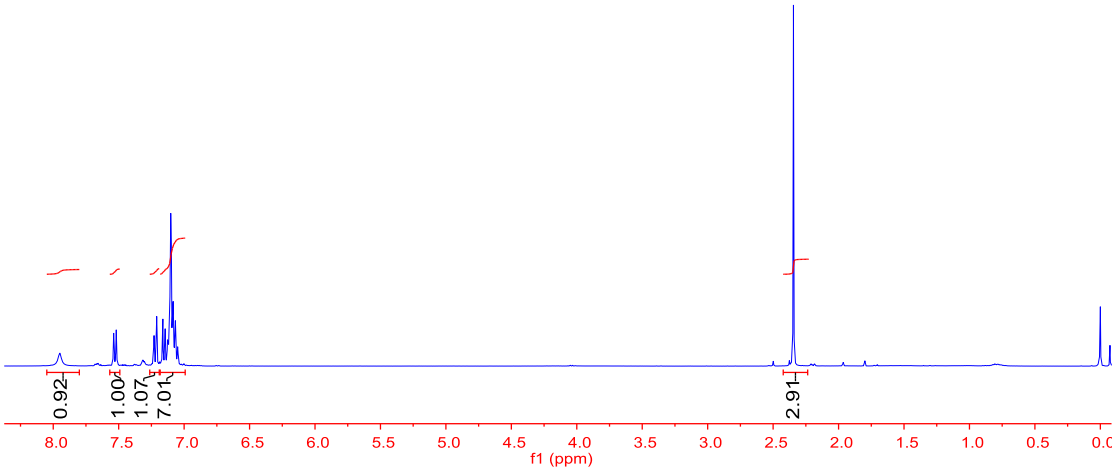


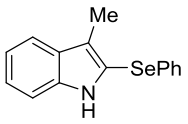
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3au**



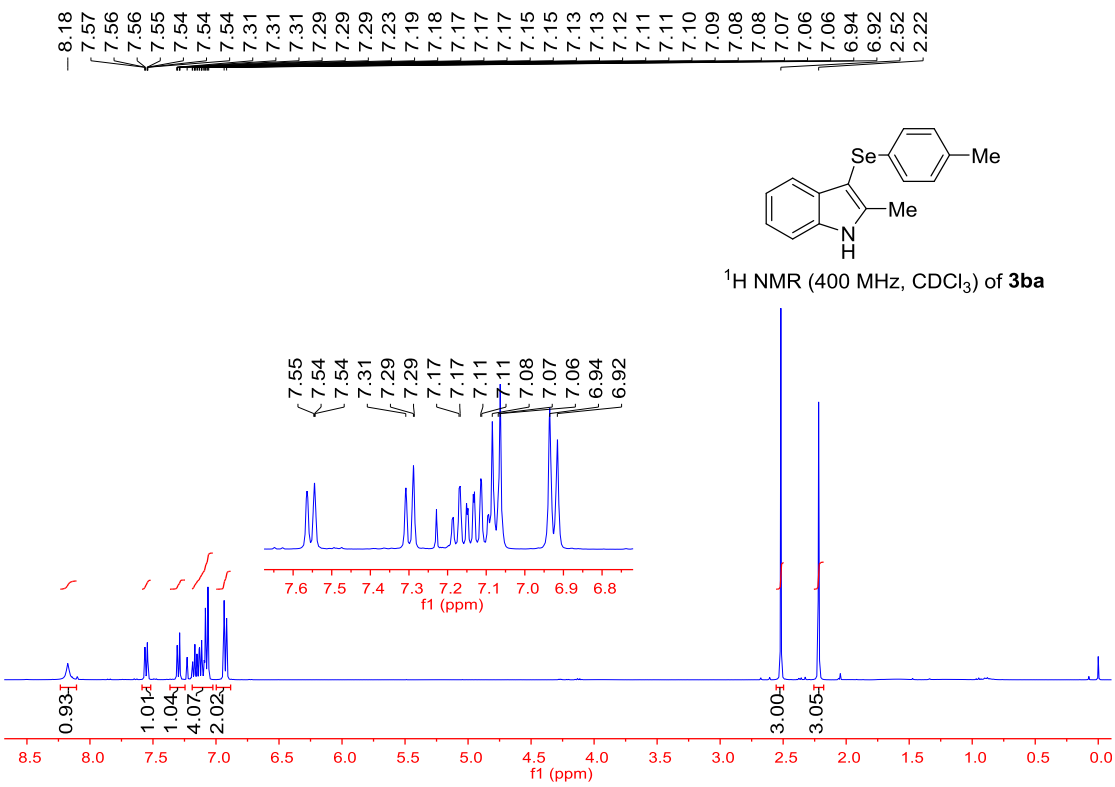


^{1}H NMR (400 MHz, $CDCl_3$) of **3av**

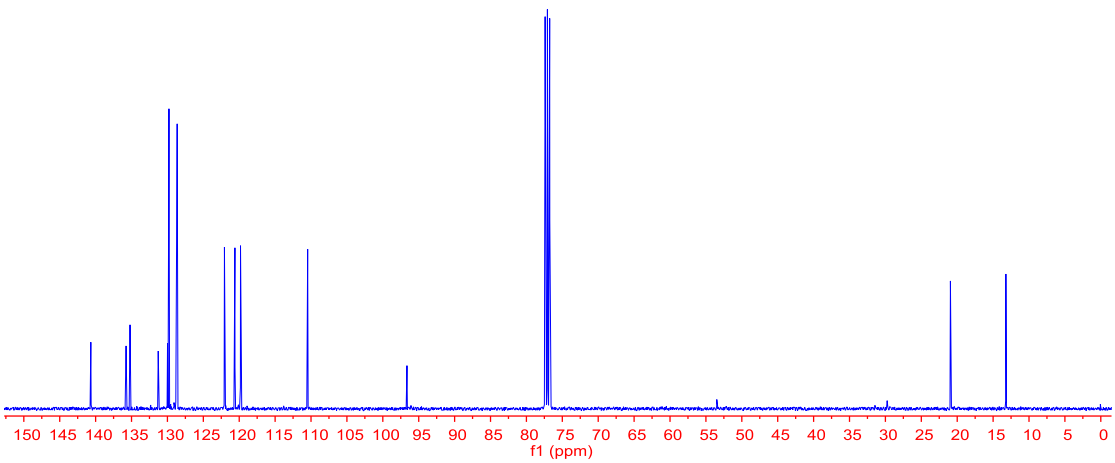




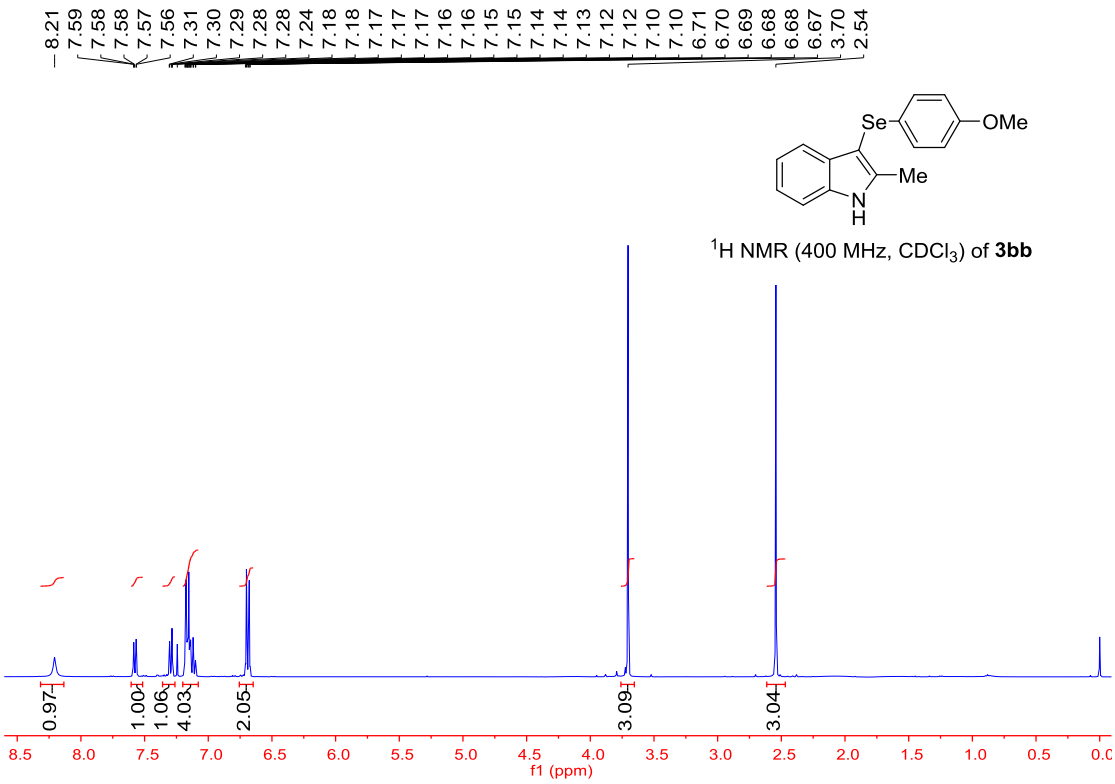
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3av**



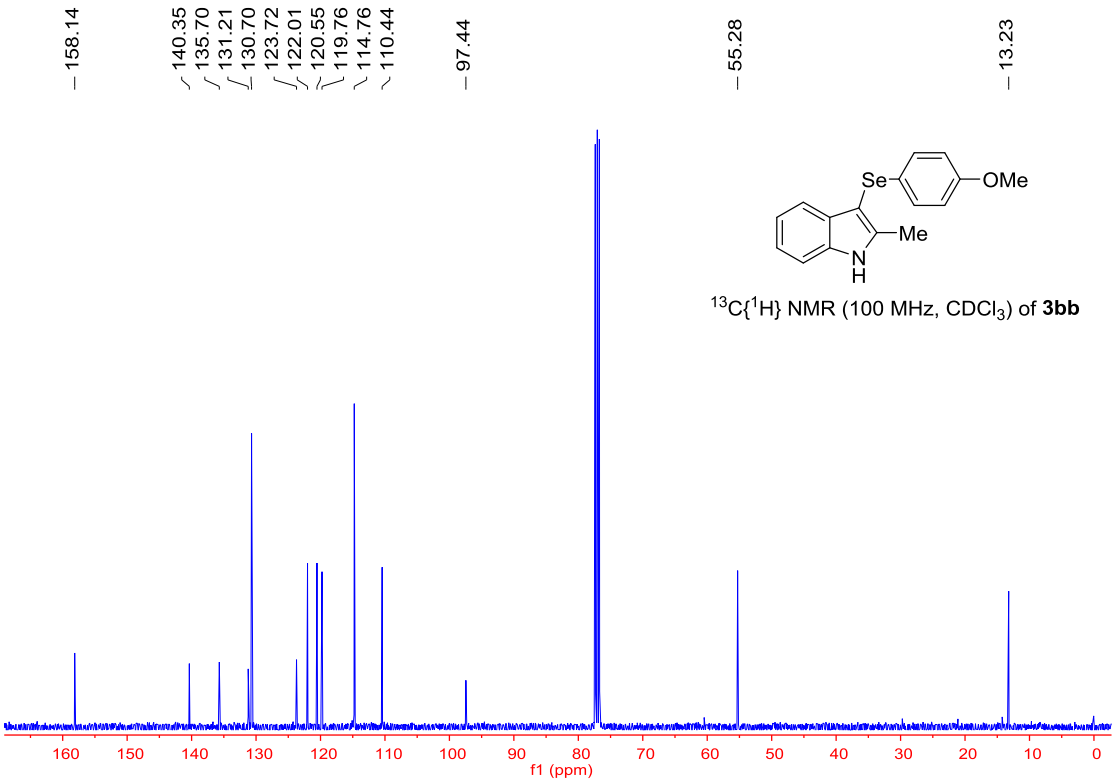
^{1}H NMR (400 MHz, $CDCl_3$) of **3ba**



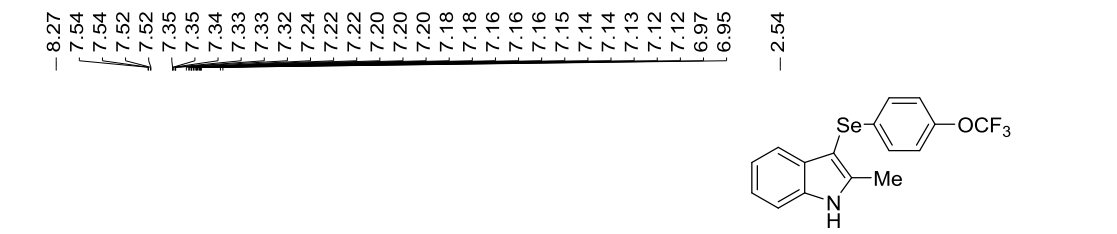
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3ba**



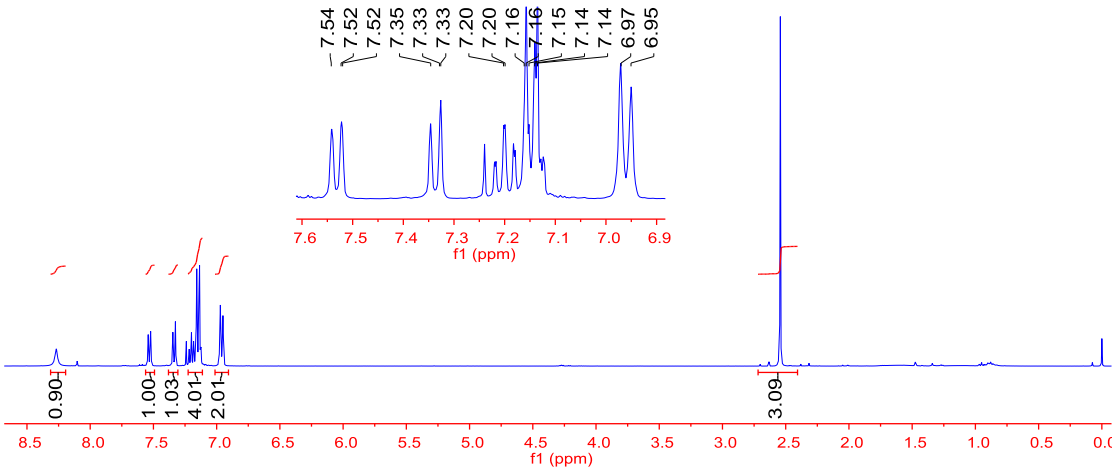
^{1}H NMR (400 MHz, $CDCl_3$) of **3bb**

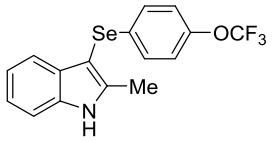


^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3bb**

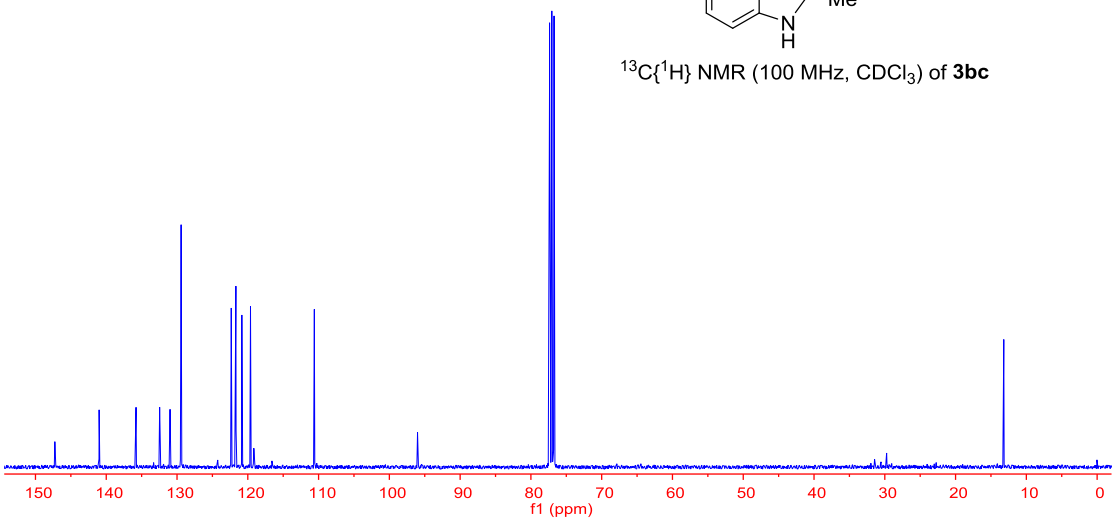


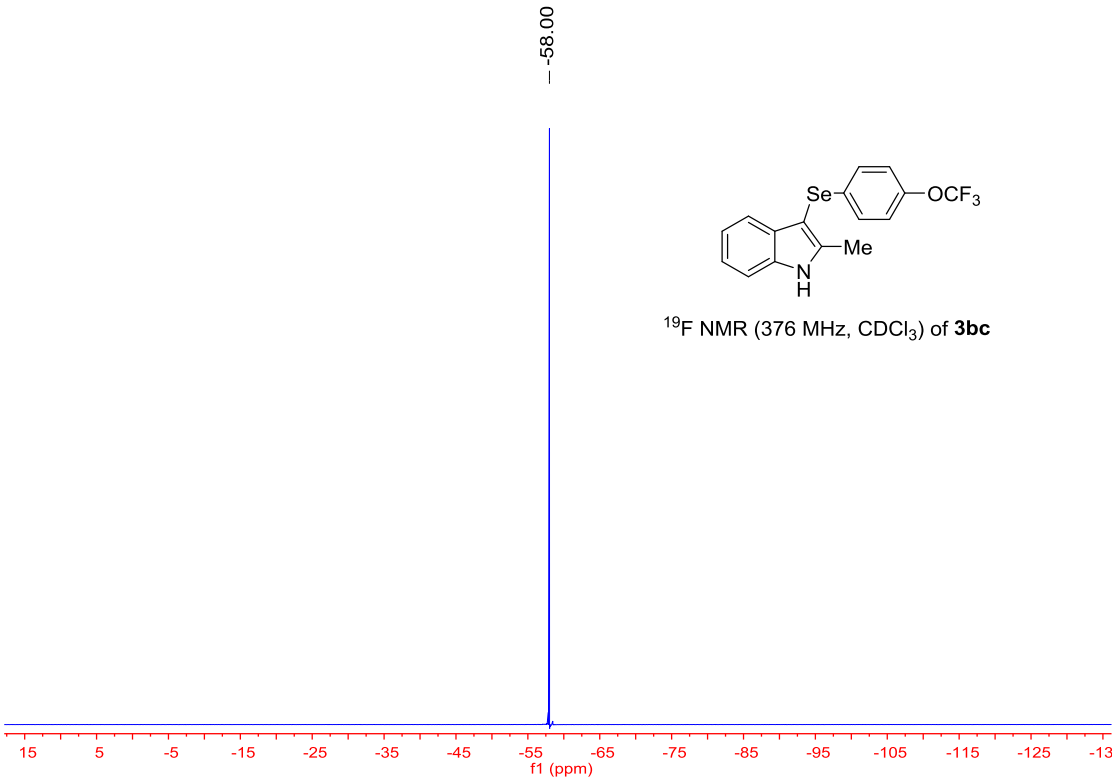
^{1}H NMR (400 MHz, $CDCl_3$) of **3bc**



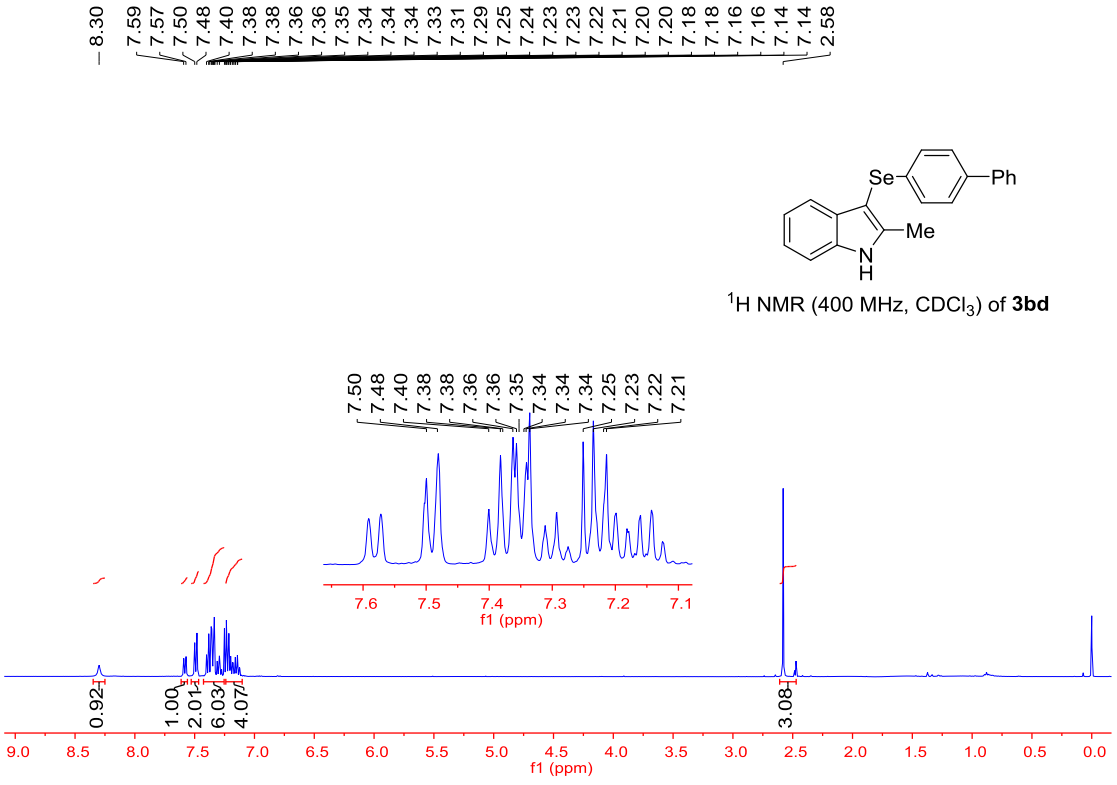


^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3bc**

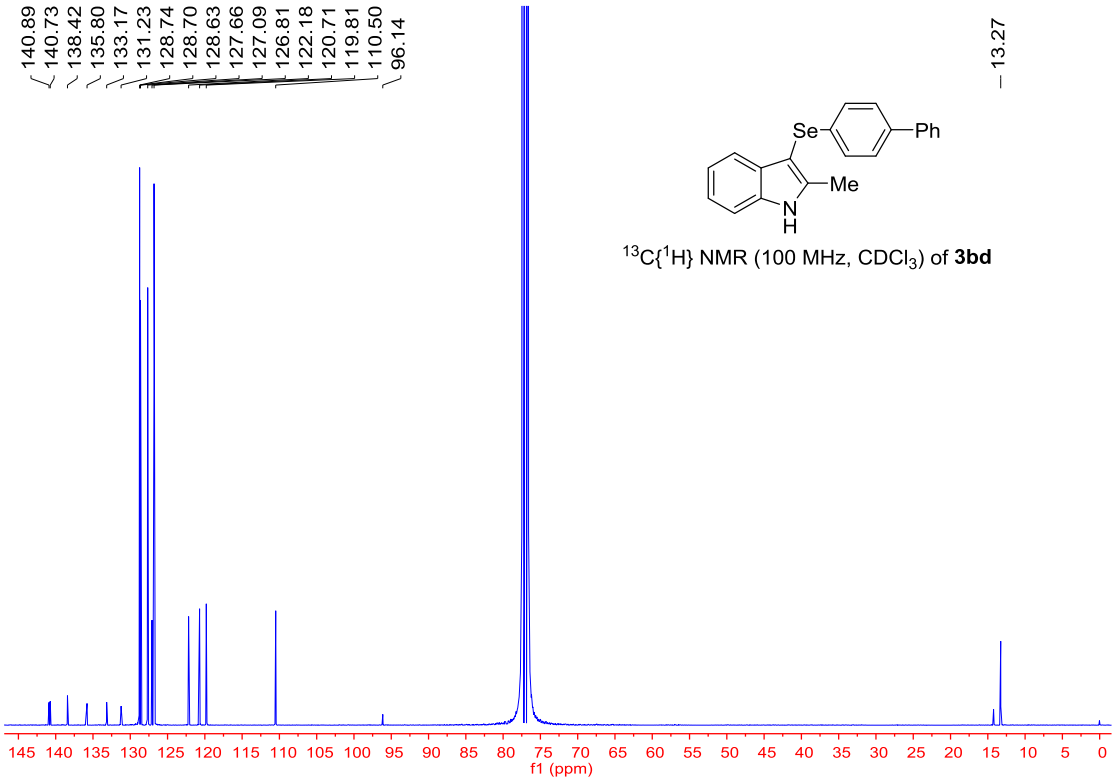




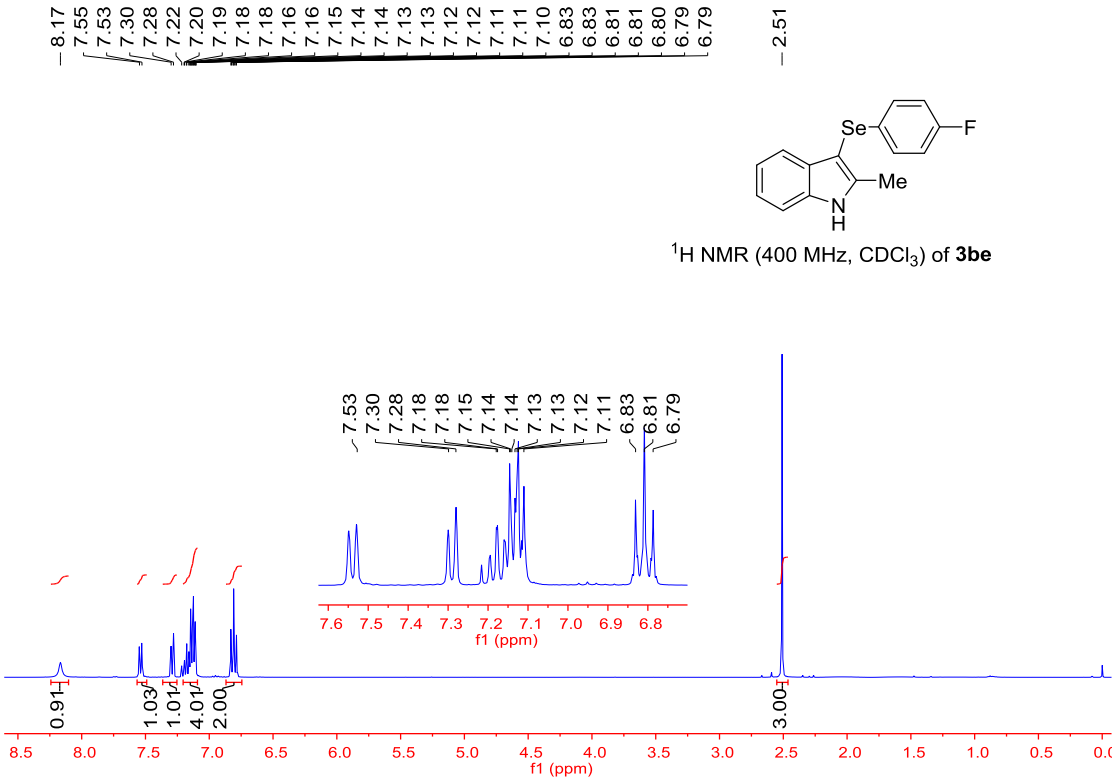
^{19}F NMR (376 MHz, $CDCl_3$) of **3bc**



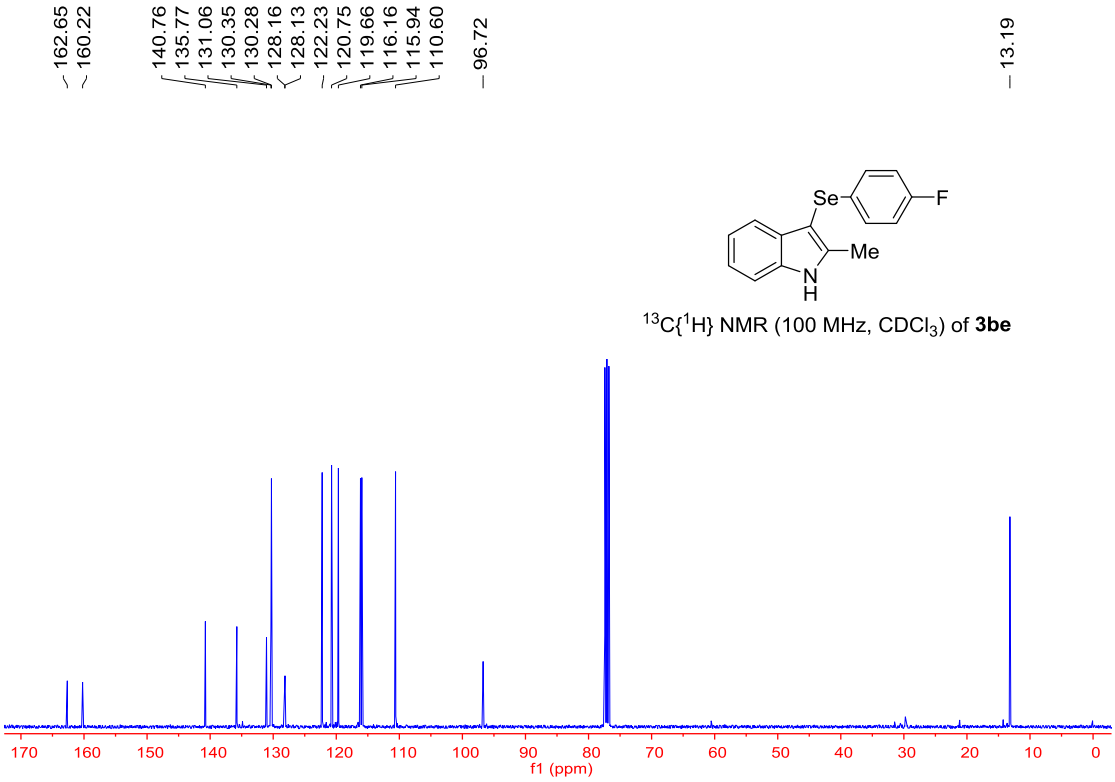
^{1}H NMR (400 MHz, $CDCl_3$) of **3bd**



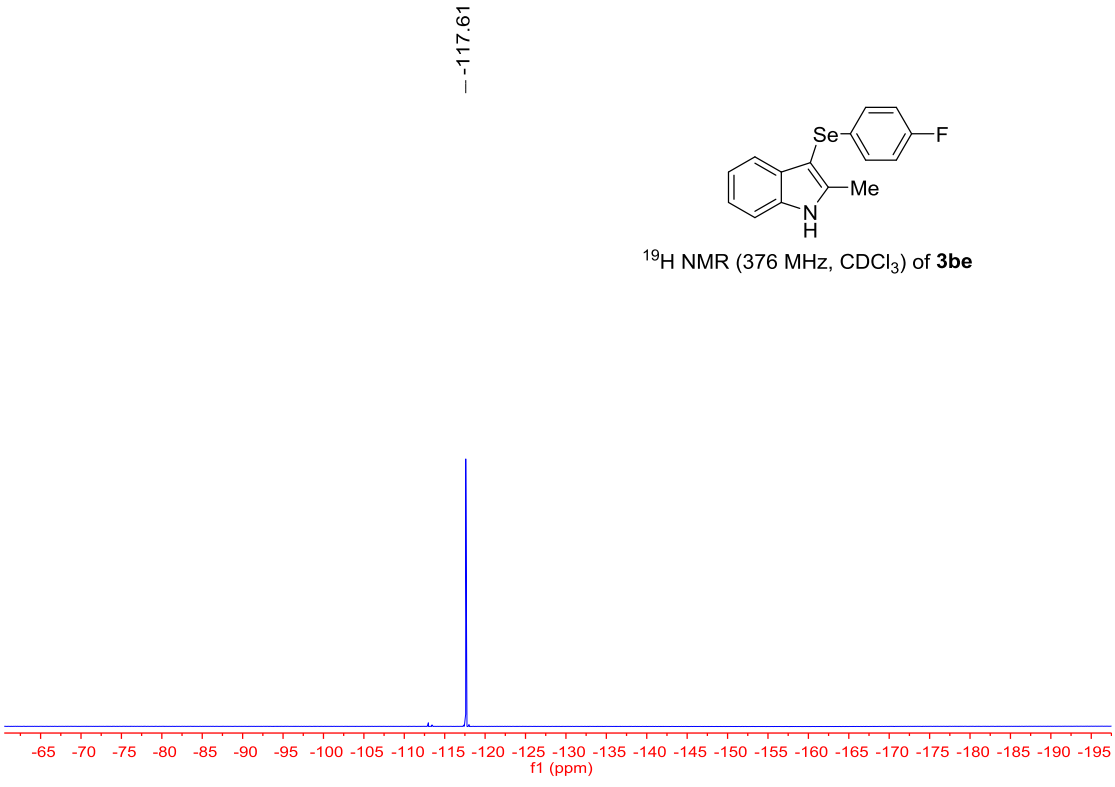
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bd**



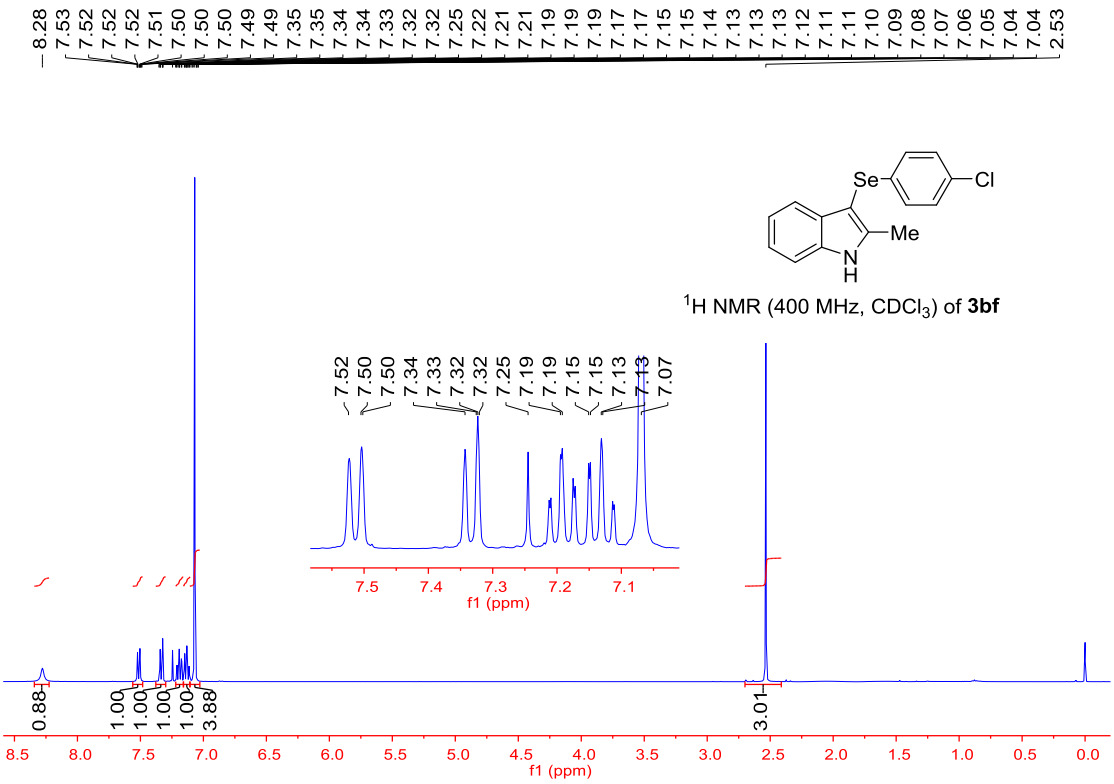
^{1}H NMR (400 MHz, $CDCl_3$) of **3be**



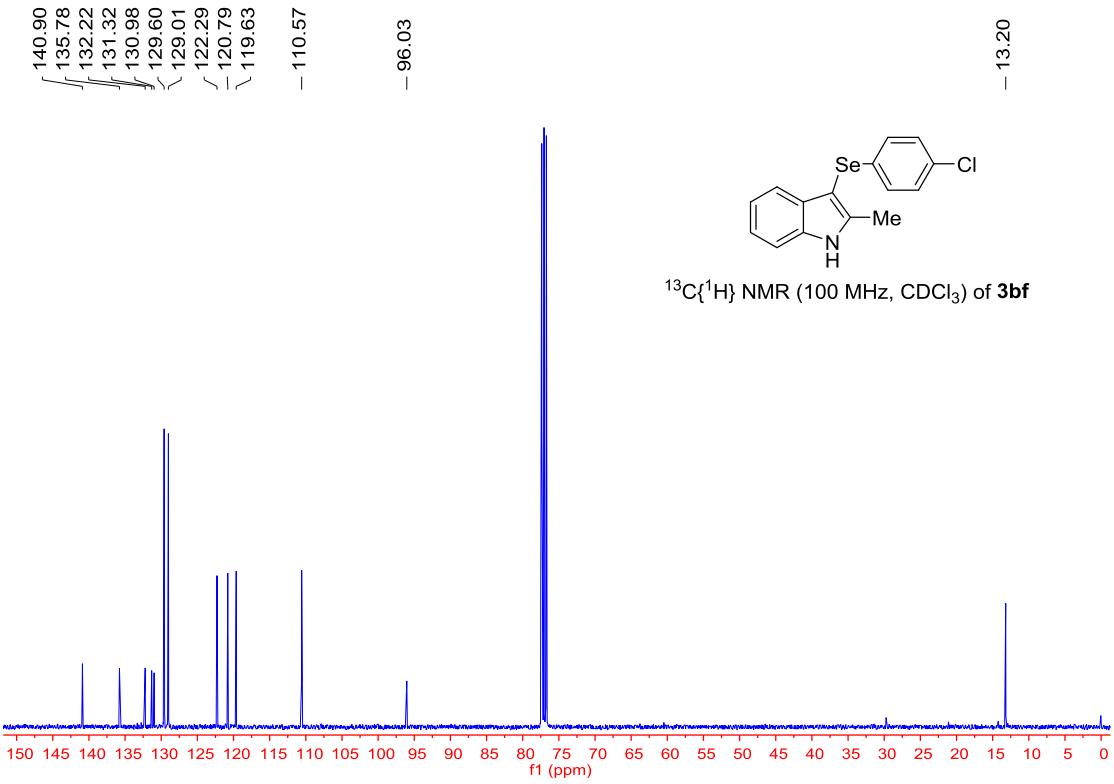
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3be**



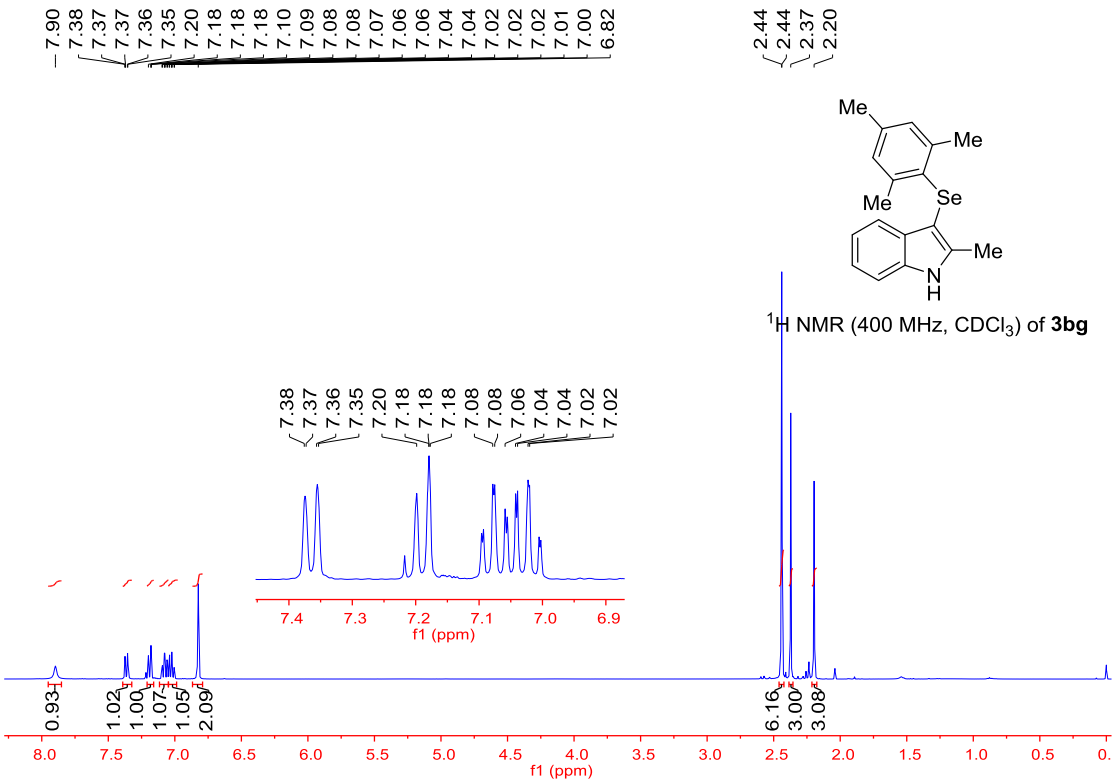
^{19}H NMR (376 MHz, $CDCl_3$) of **3be**



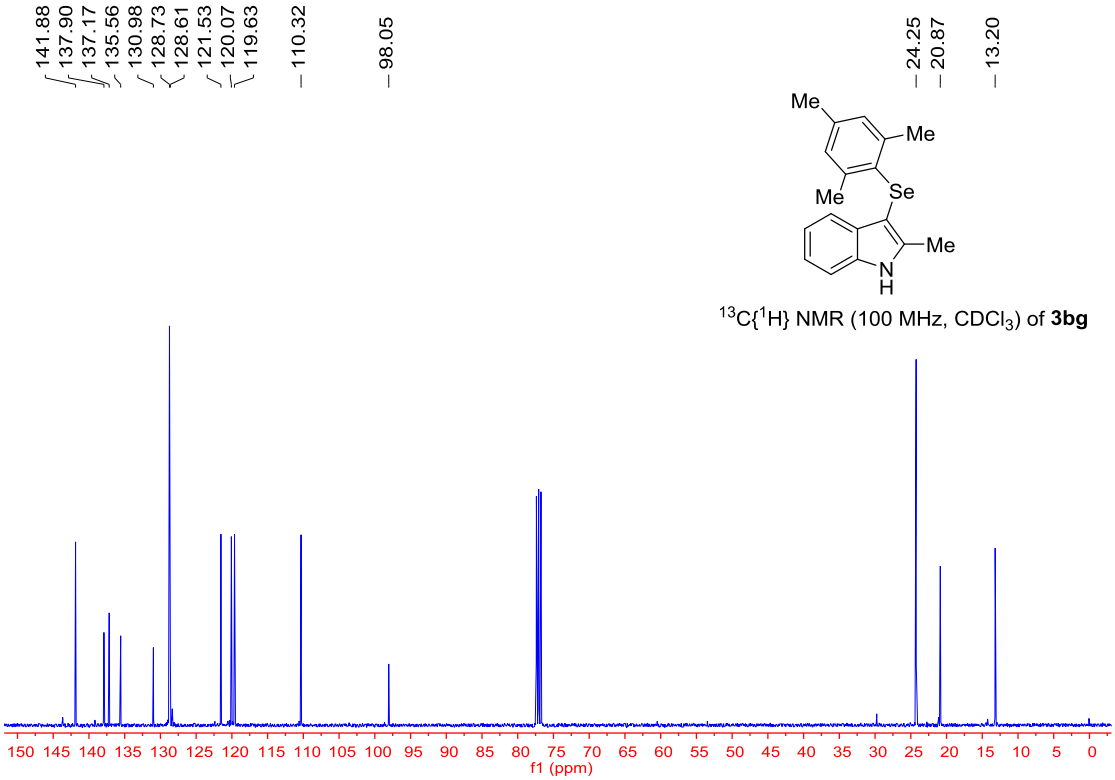
^{1}H NMR (400 MHz, $CDCl_3$) of **3bf**



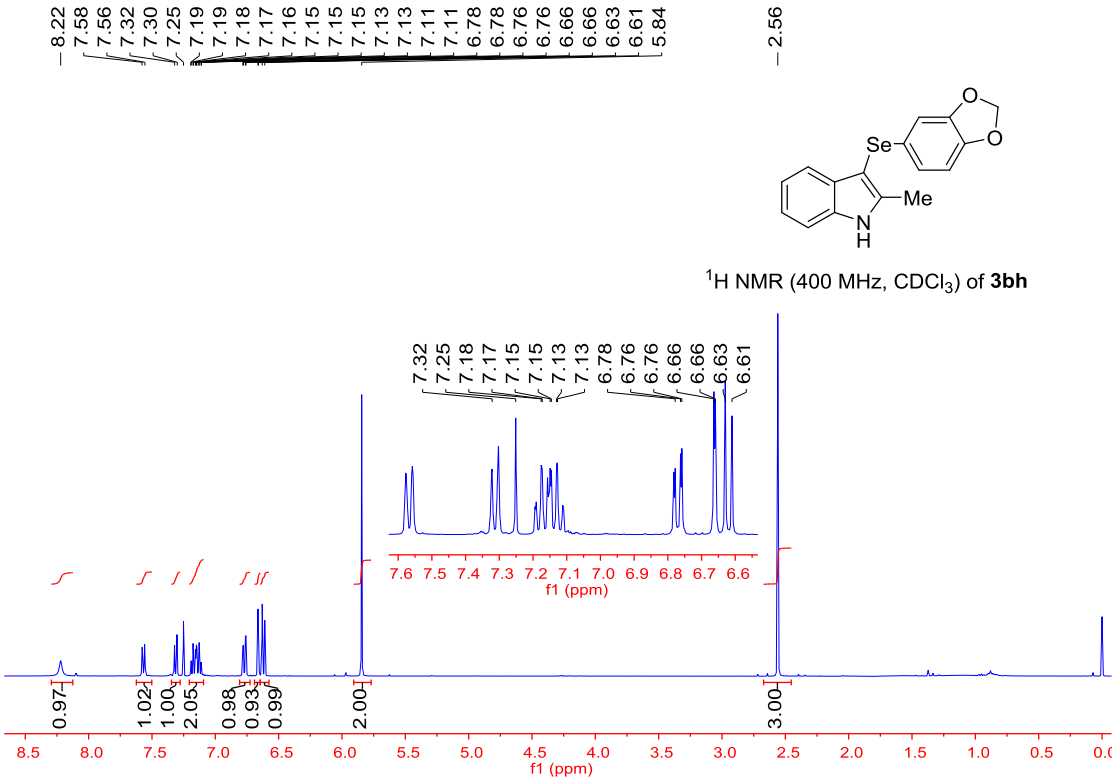
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3bf**



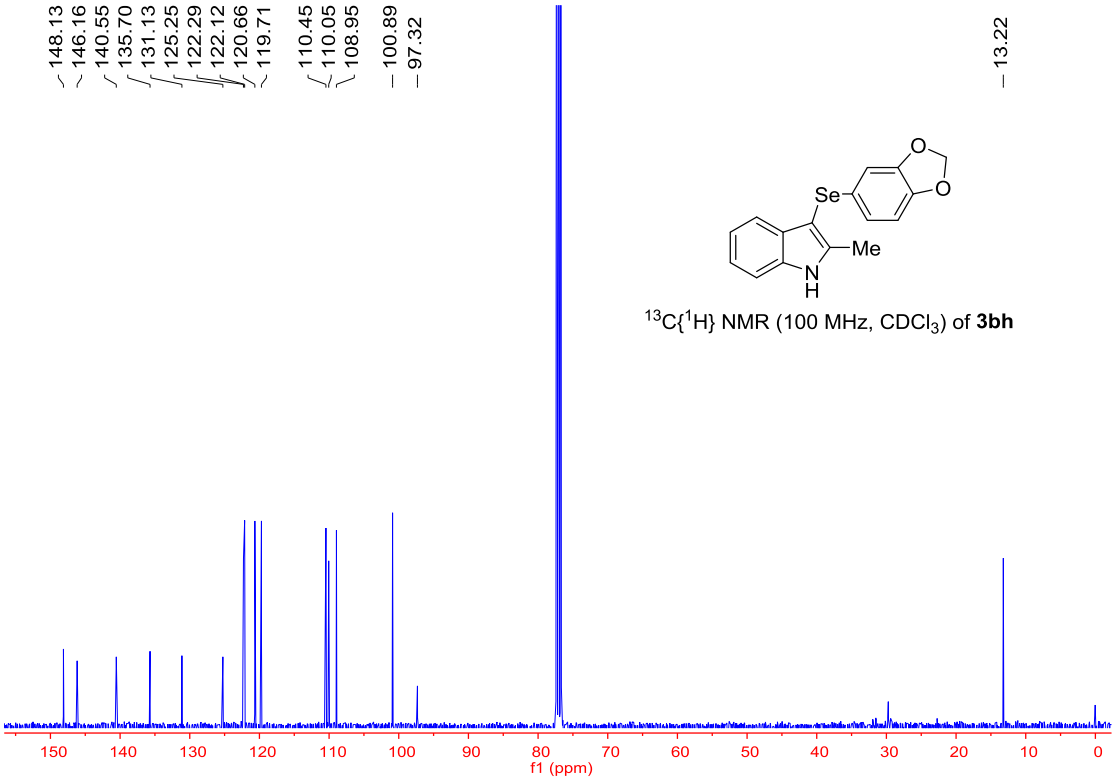
^{1}H NMR (400 MHz, $CDCl_3$) of **3bg**



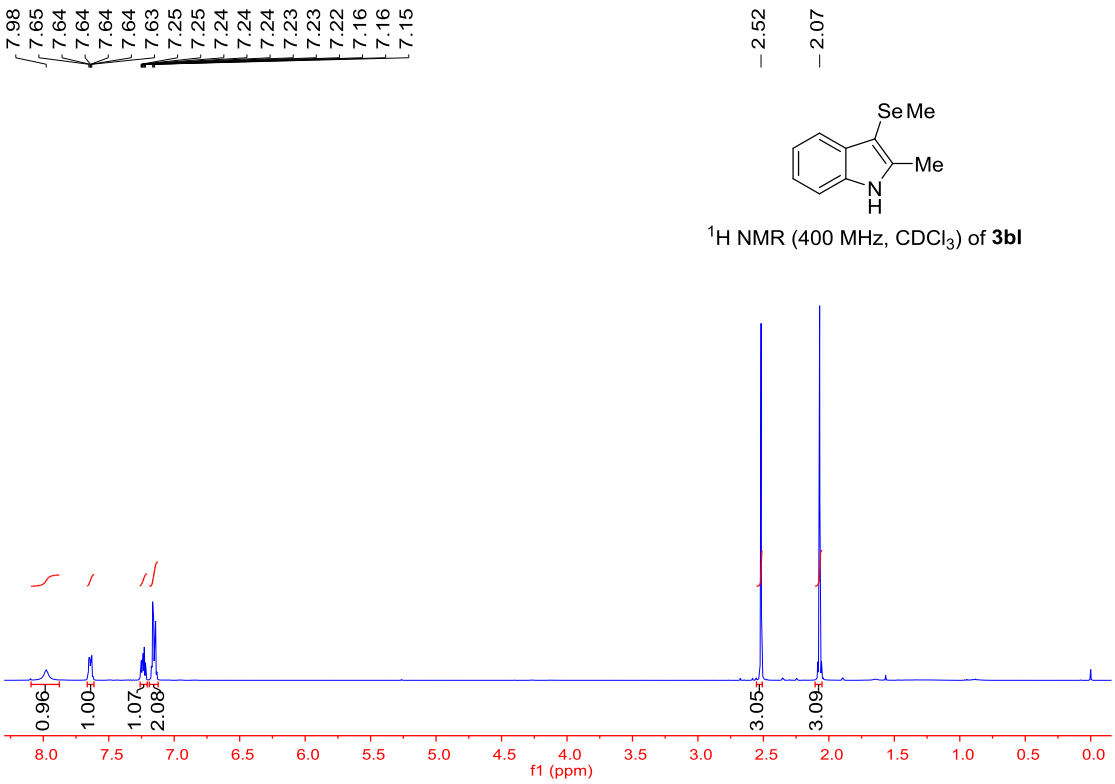
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3bg**



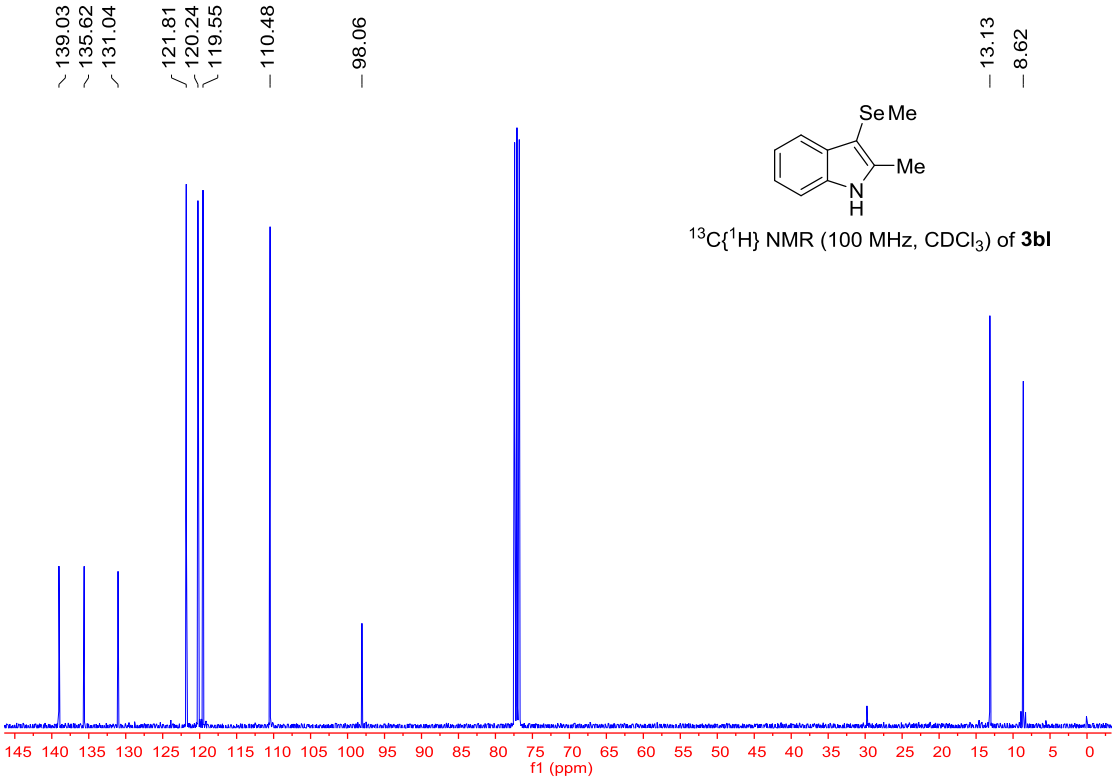
^{1}H NMR (400 MHz, $CDCl_3$) of **3bh**



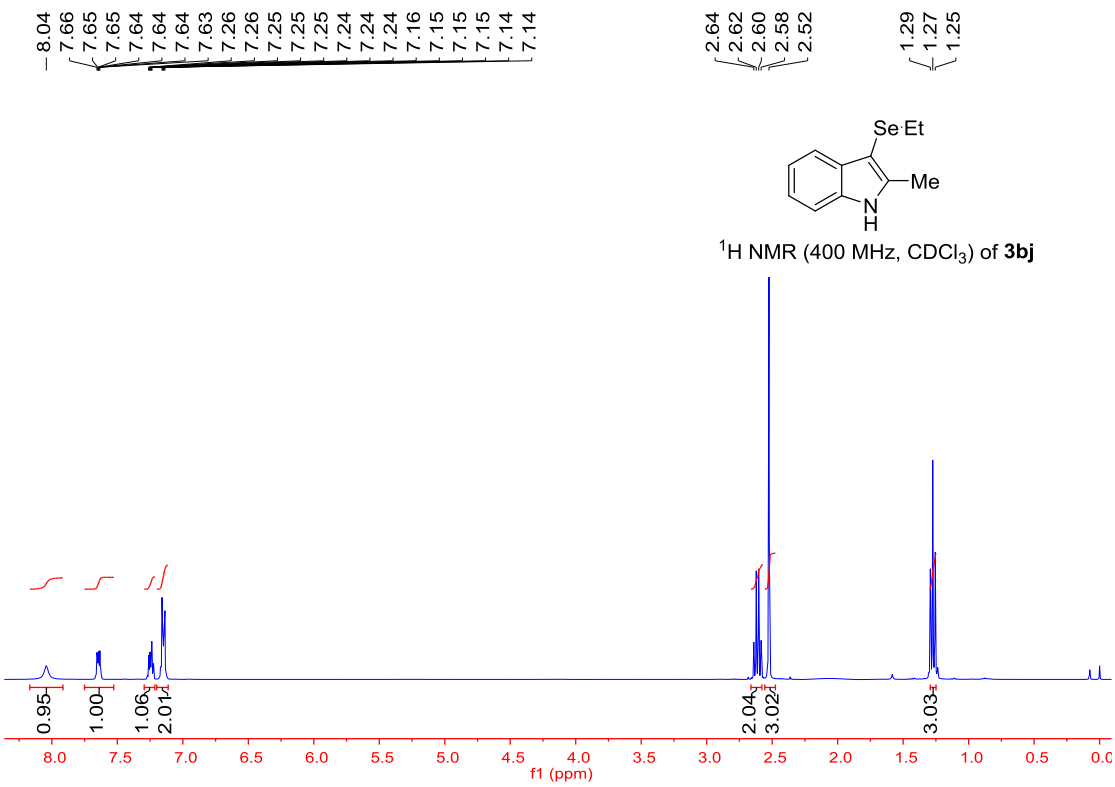
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bh**



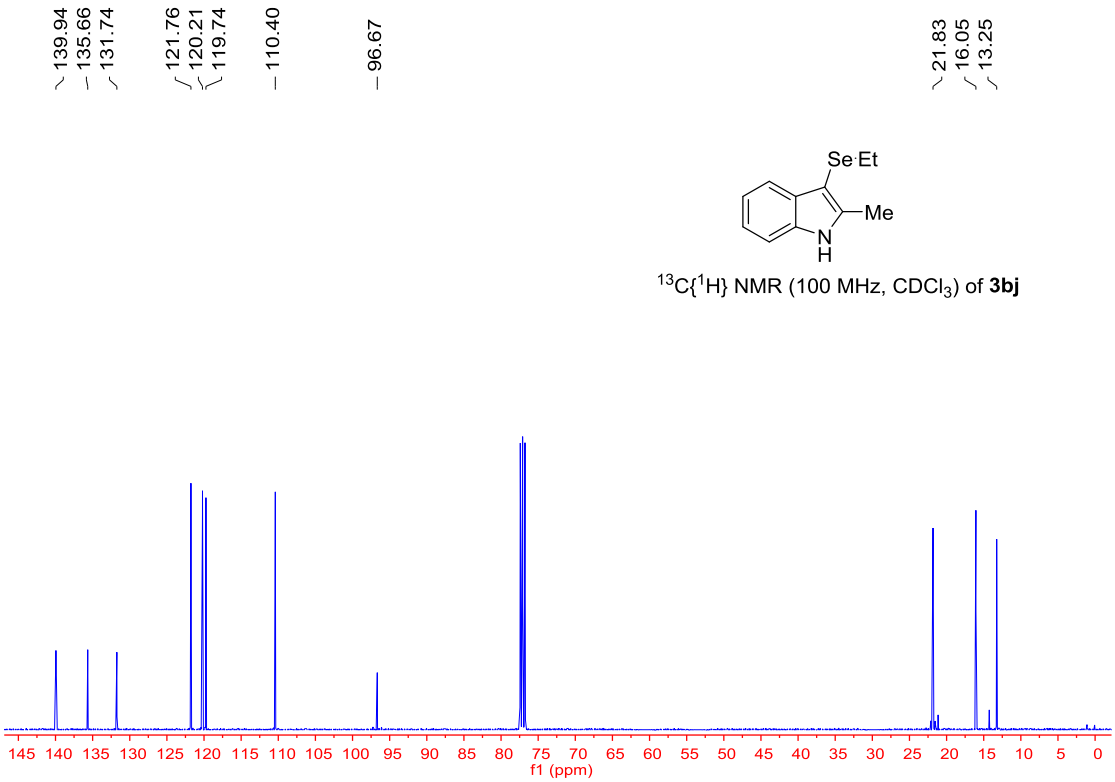
^{1}H NMR (400 MHz, $CDCl_3$) of **3bl**



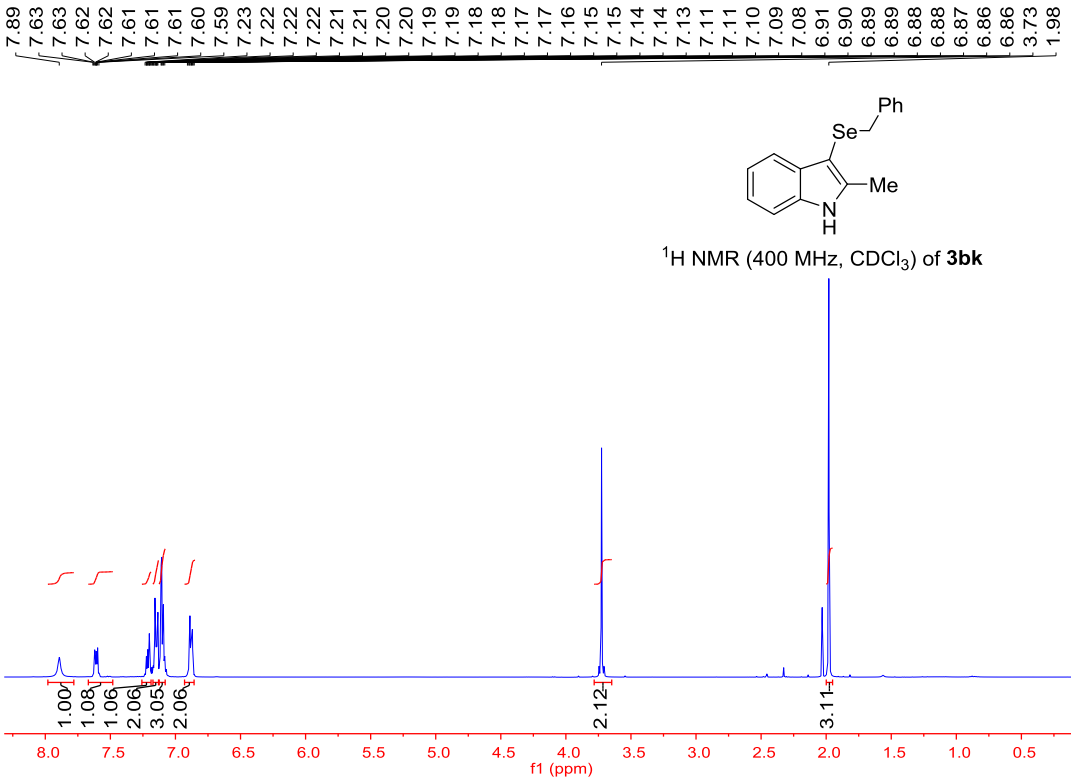
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3bl**



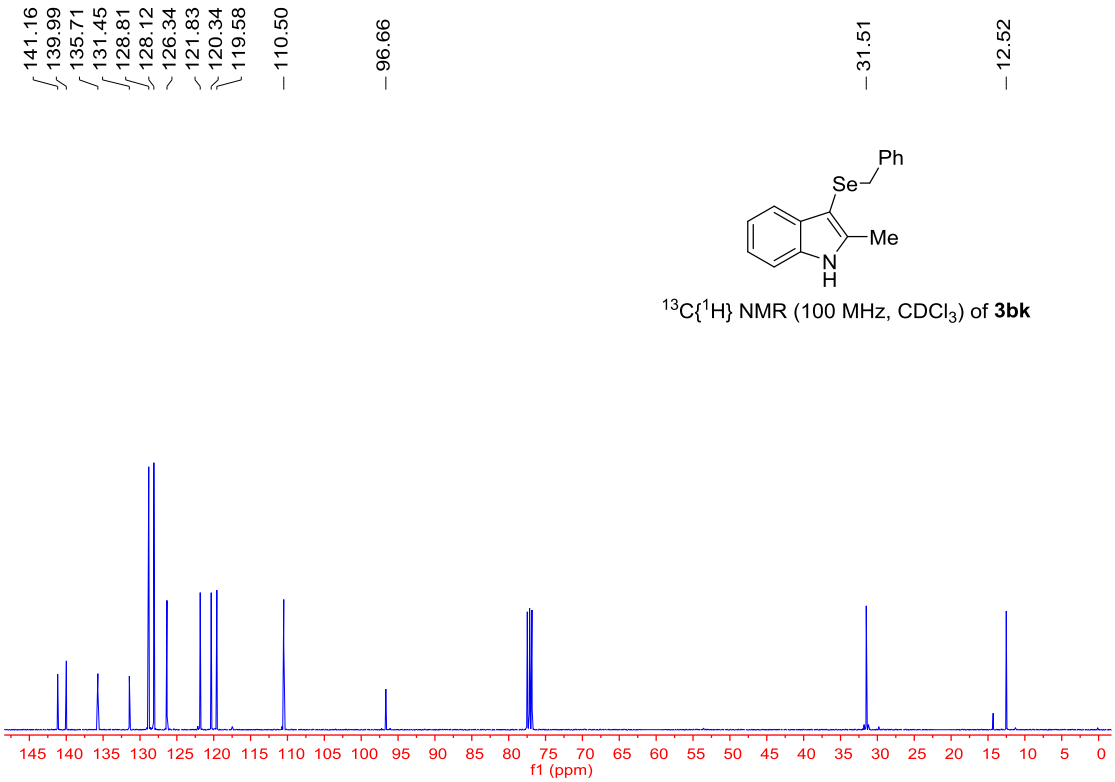
^{1}H NMR (400 MHz, $CDCl_3$) of **3bj**



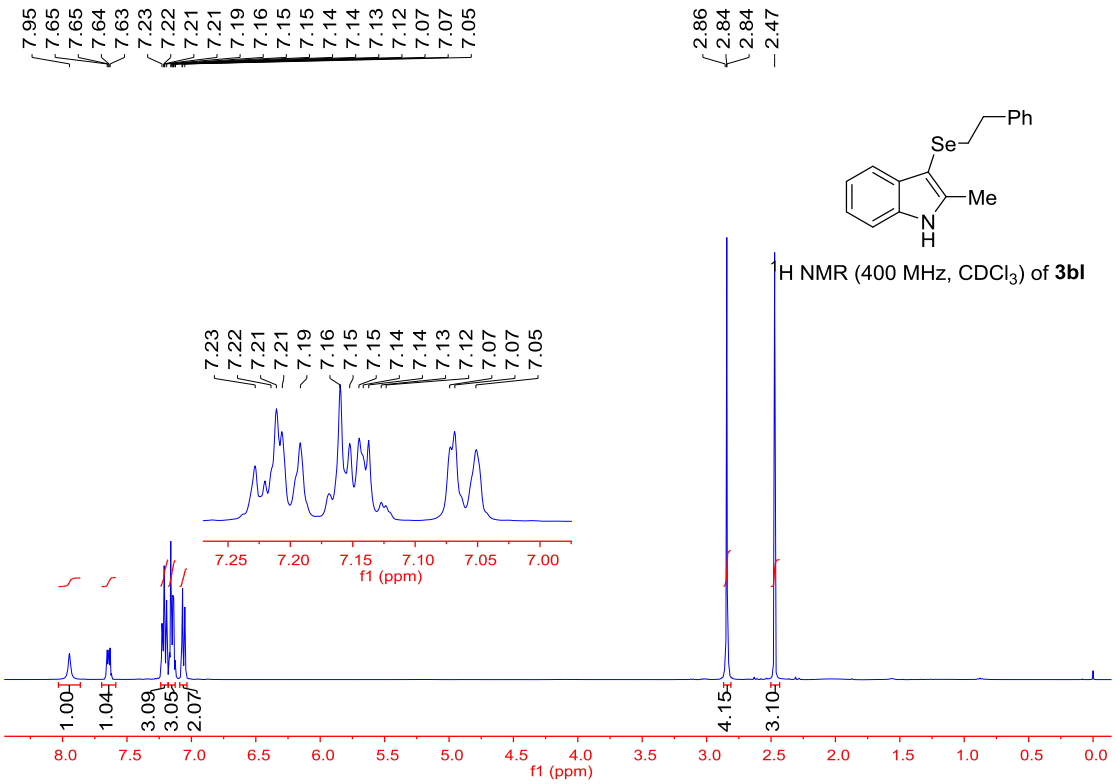
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bj**



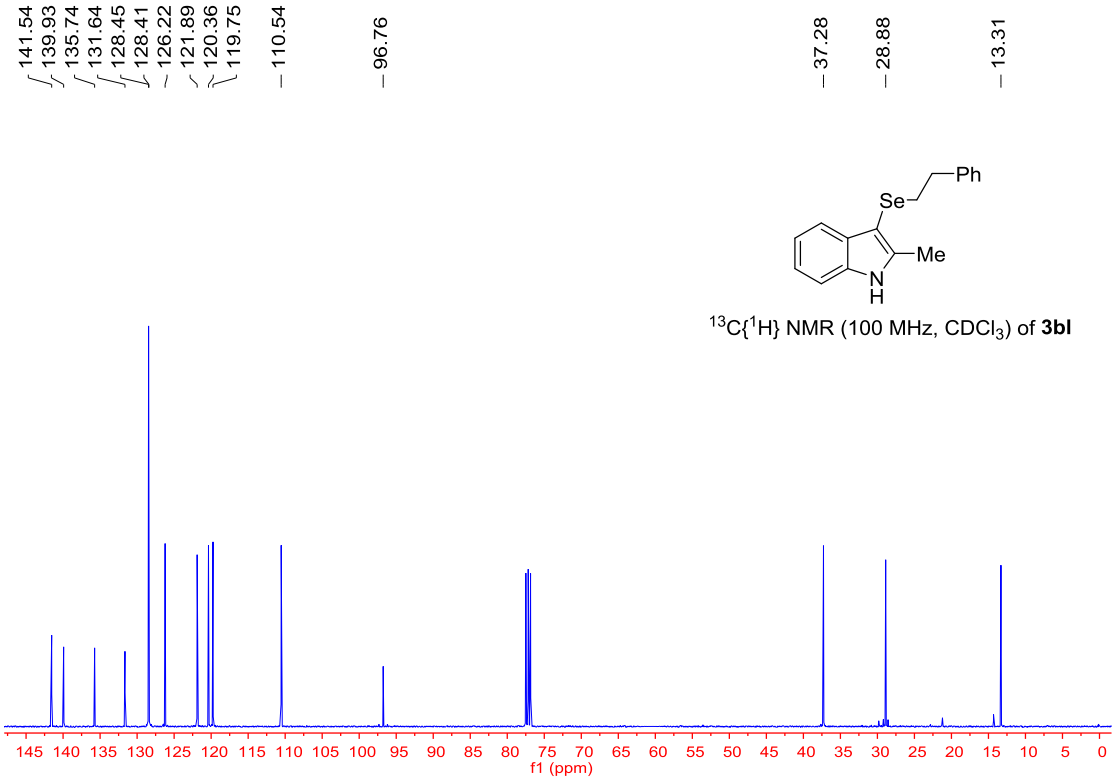
^{1}H NMR (400 MHz, $CDCl_3$) of **3bk**



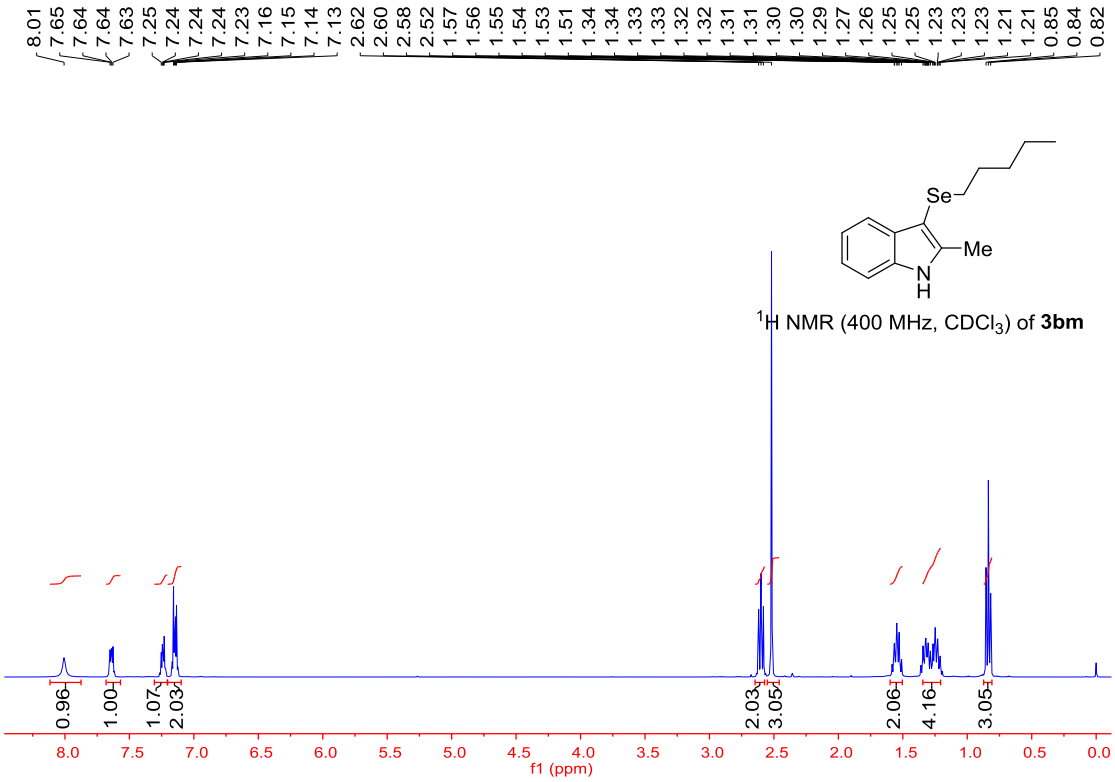
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3bk**



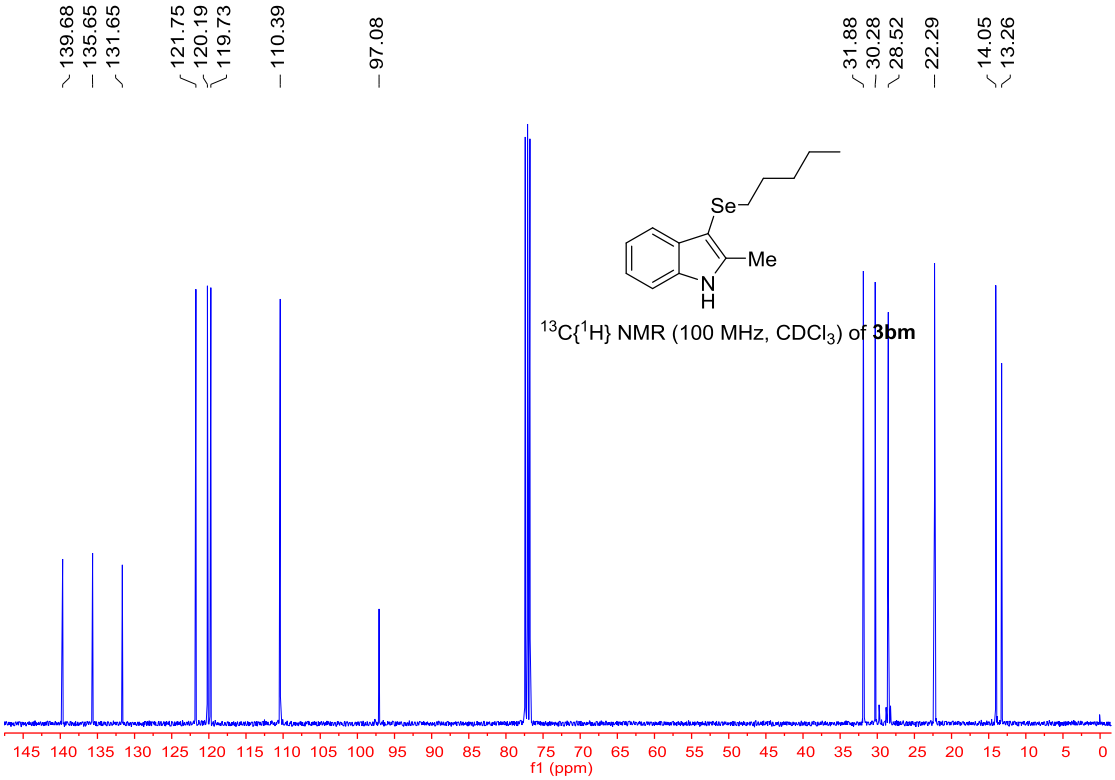
^{1}H NMR (400 MHz, $CDCl_3$) of **3bl**



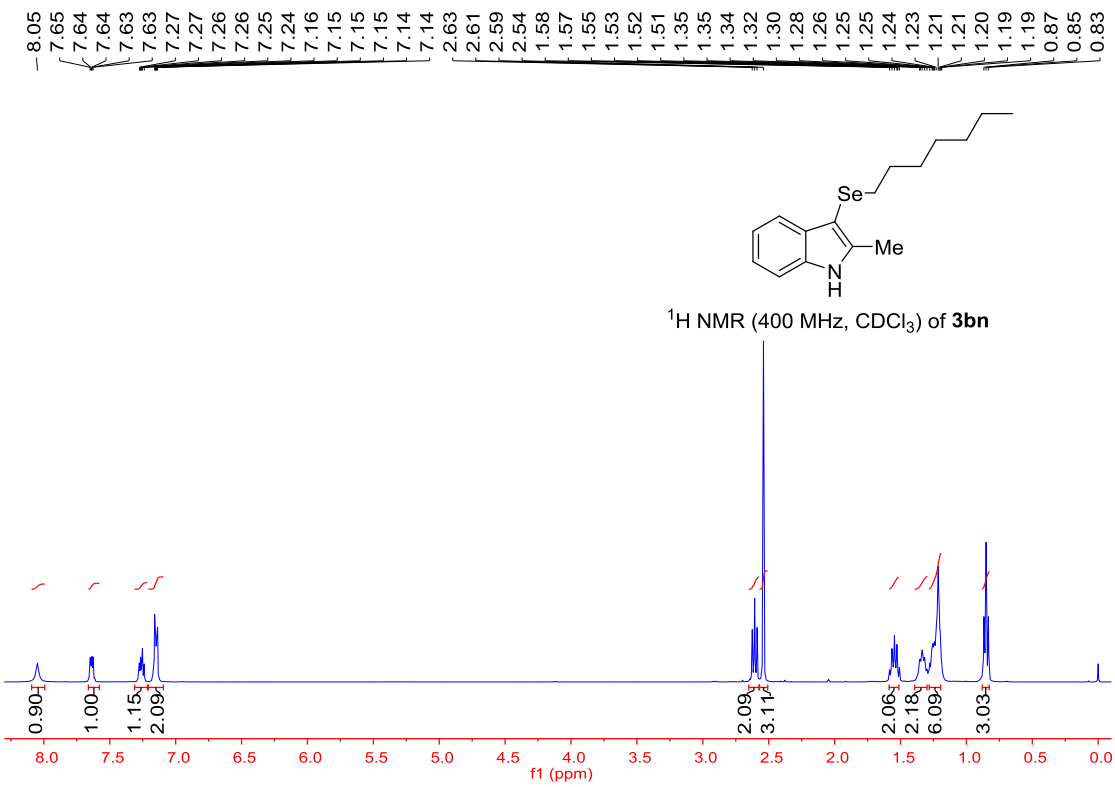
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bl**



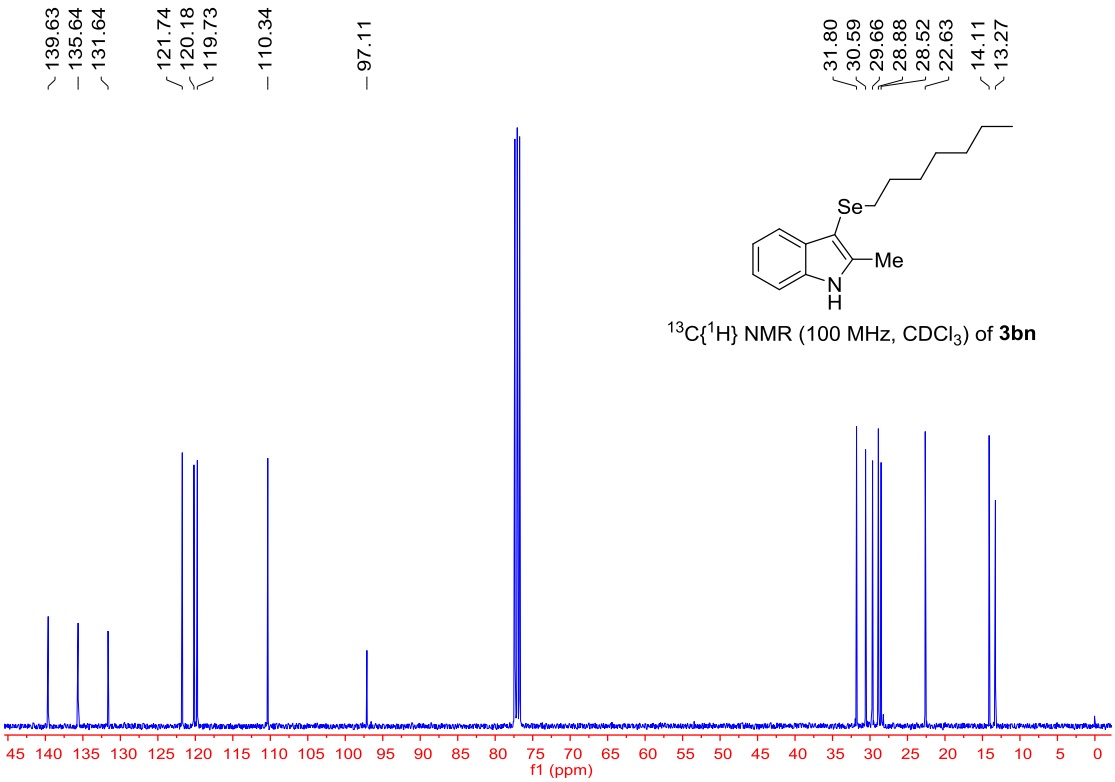
^{1}H NMR (400 MHz, $CDCl_3$) of **3bm**



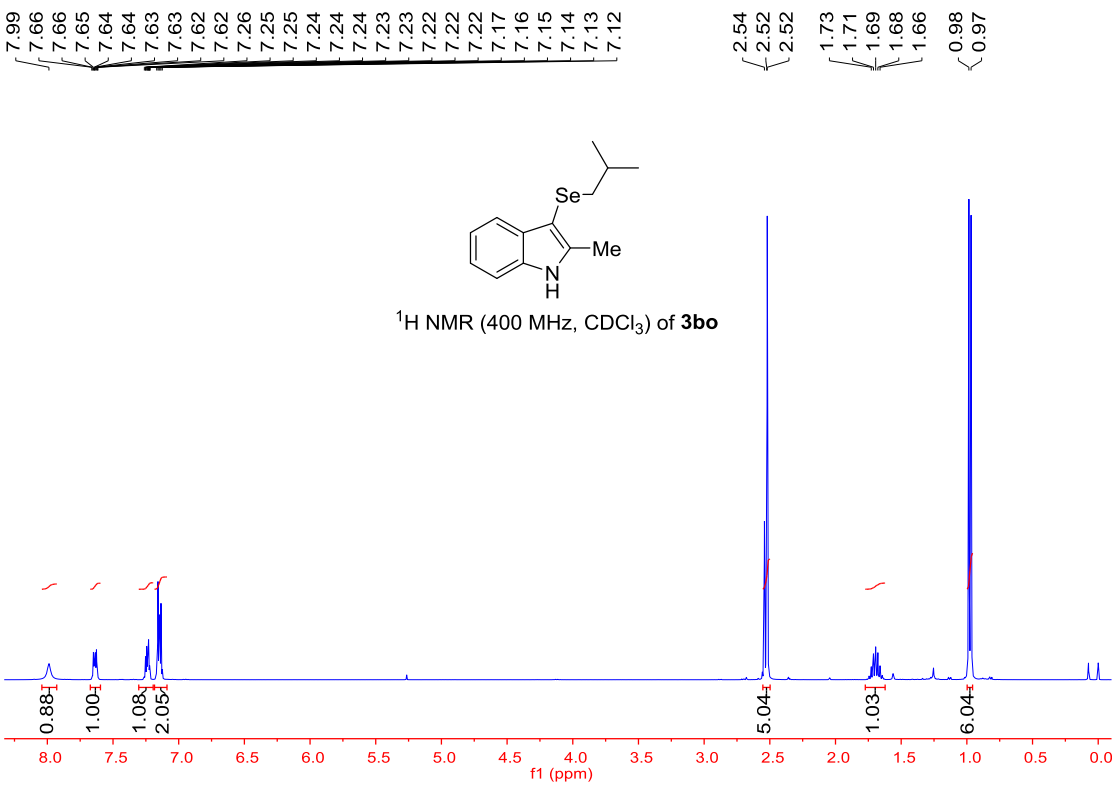
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3bm**



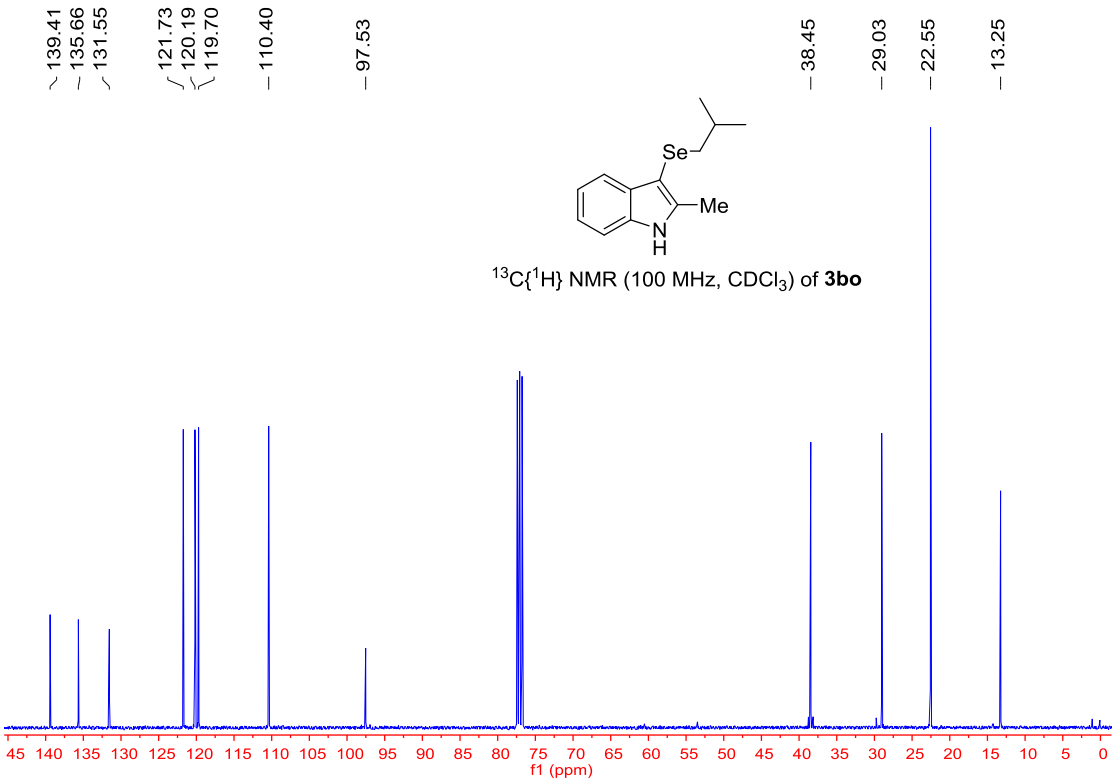
^{1}H NMR (400 MHz, $CDCl_3$) of **3bn**



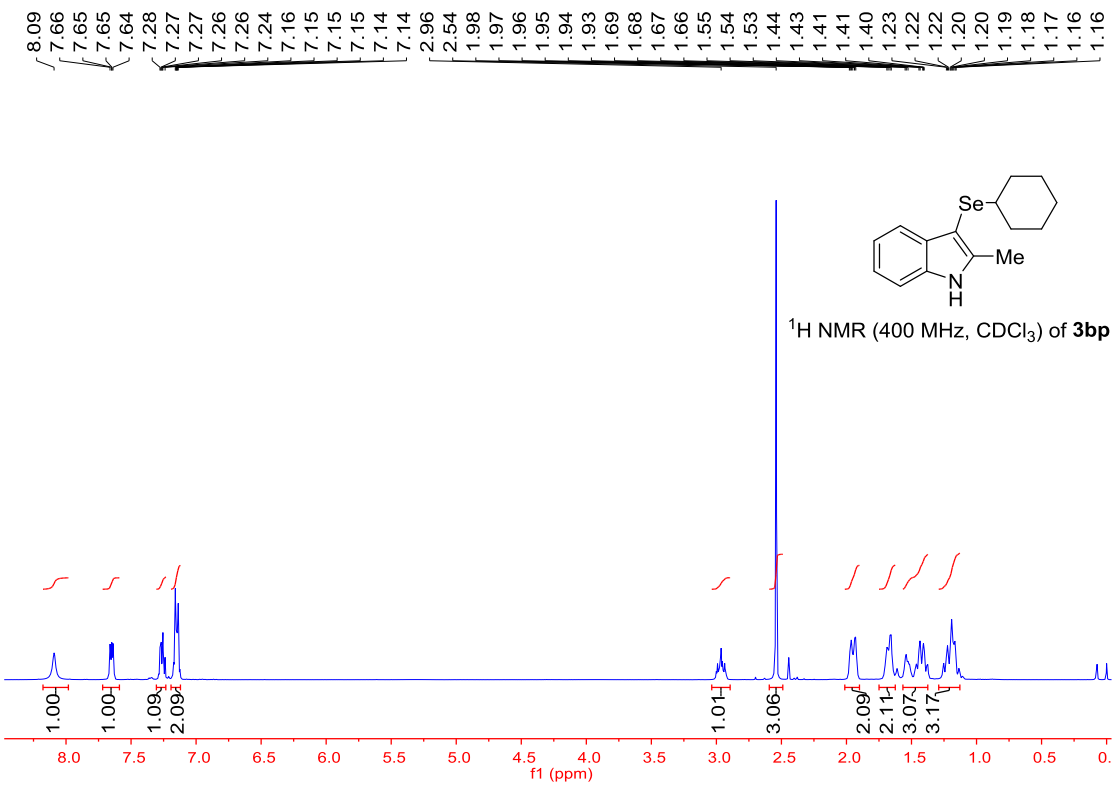
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3bn**



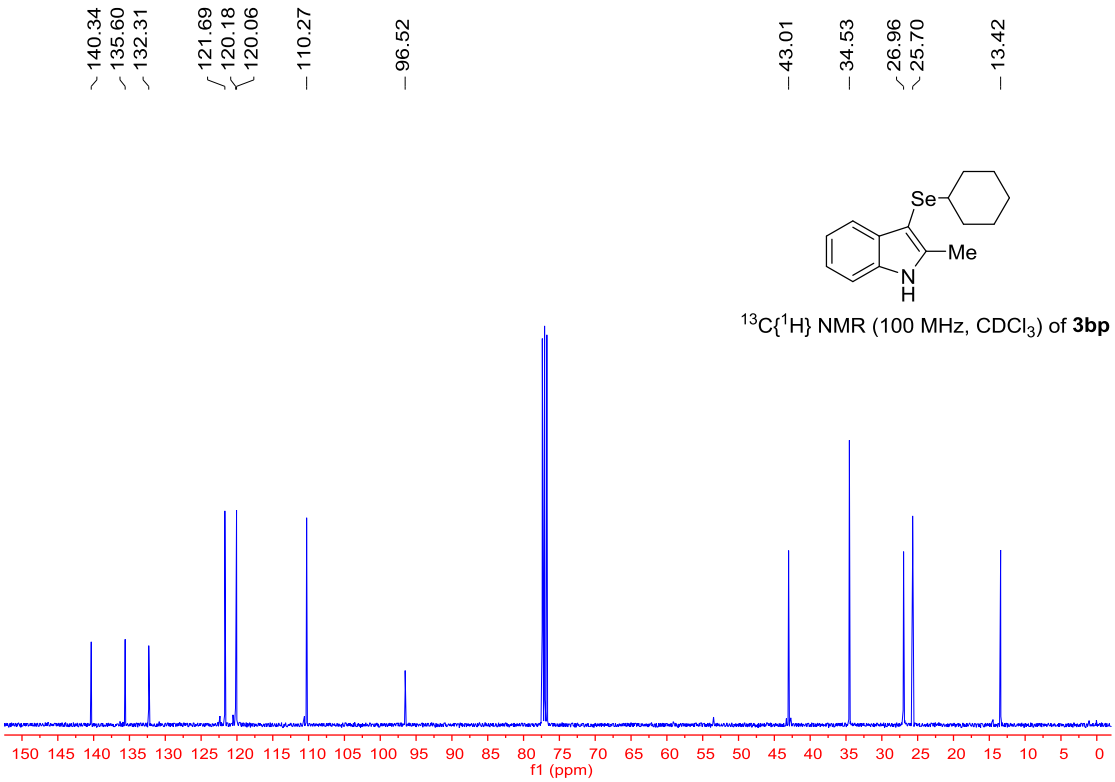
^{1}H NMR (400 MHz, $CDCl_3$) of **3bo**



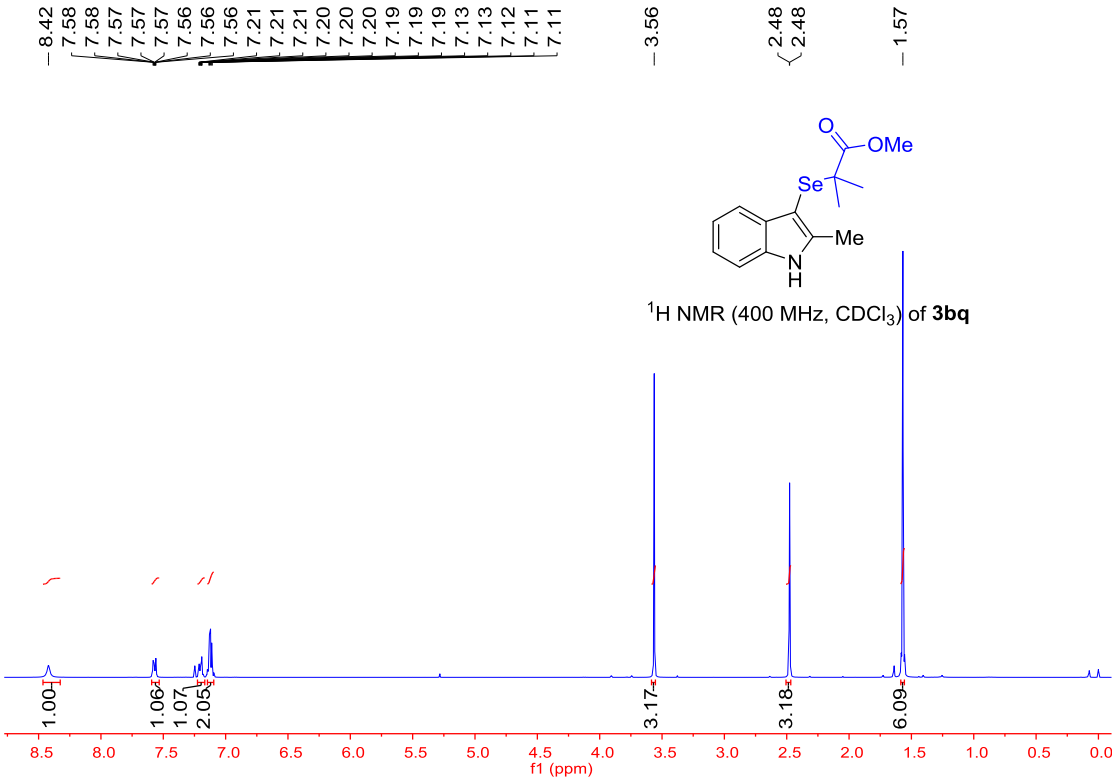
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3bo**



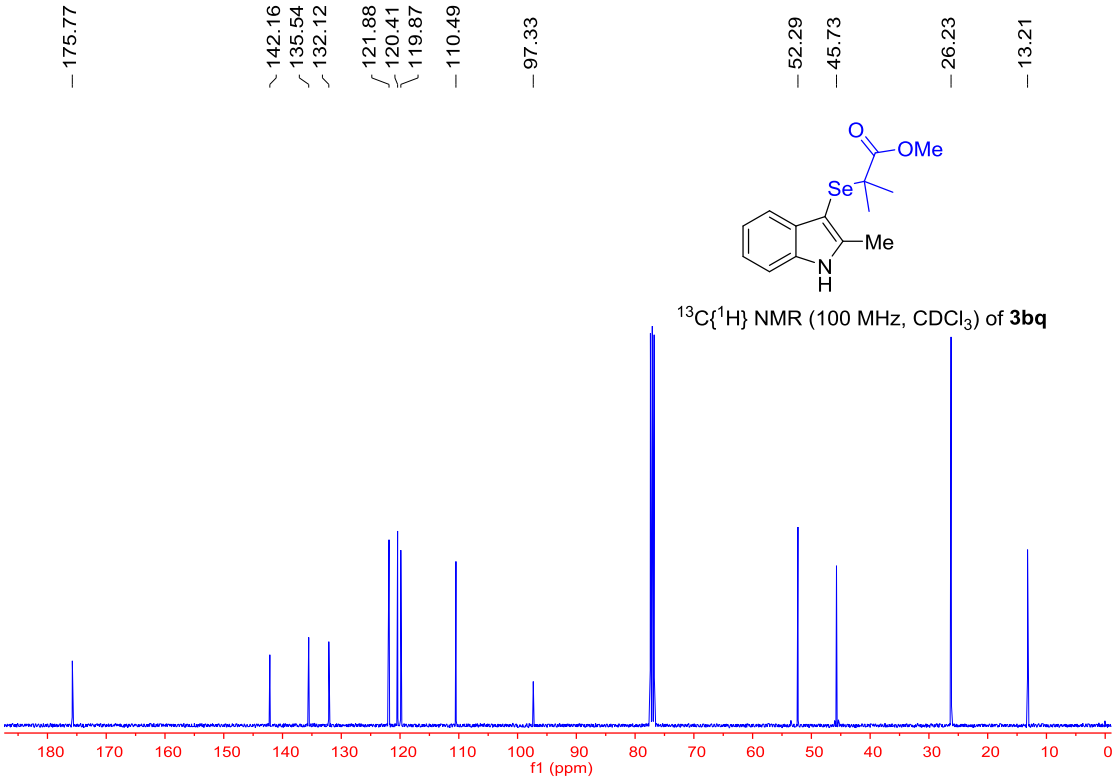
^{1}H NMR (400 MHz, $CDCl_3$) of **3bp**



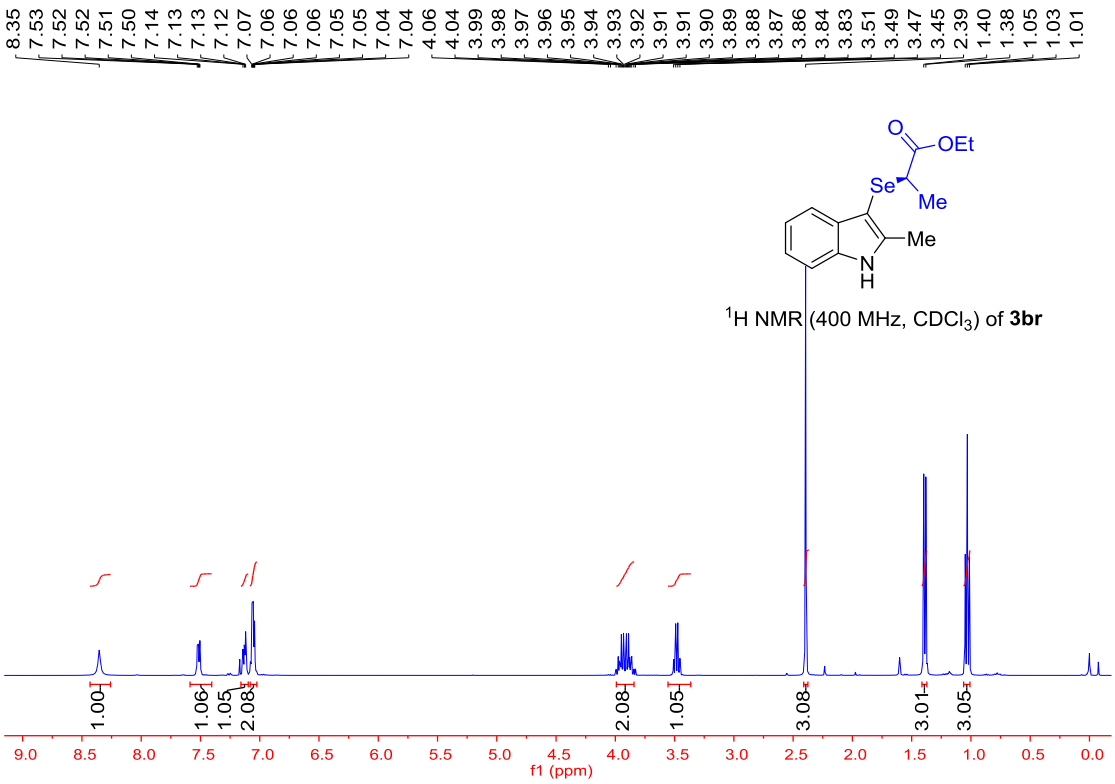
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3bp**



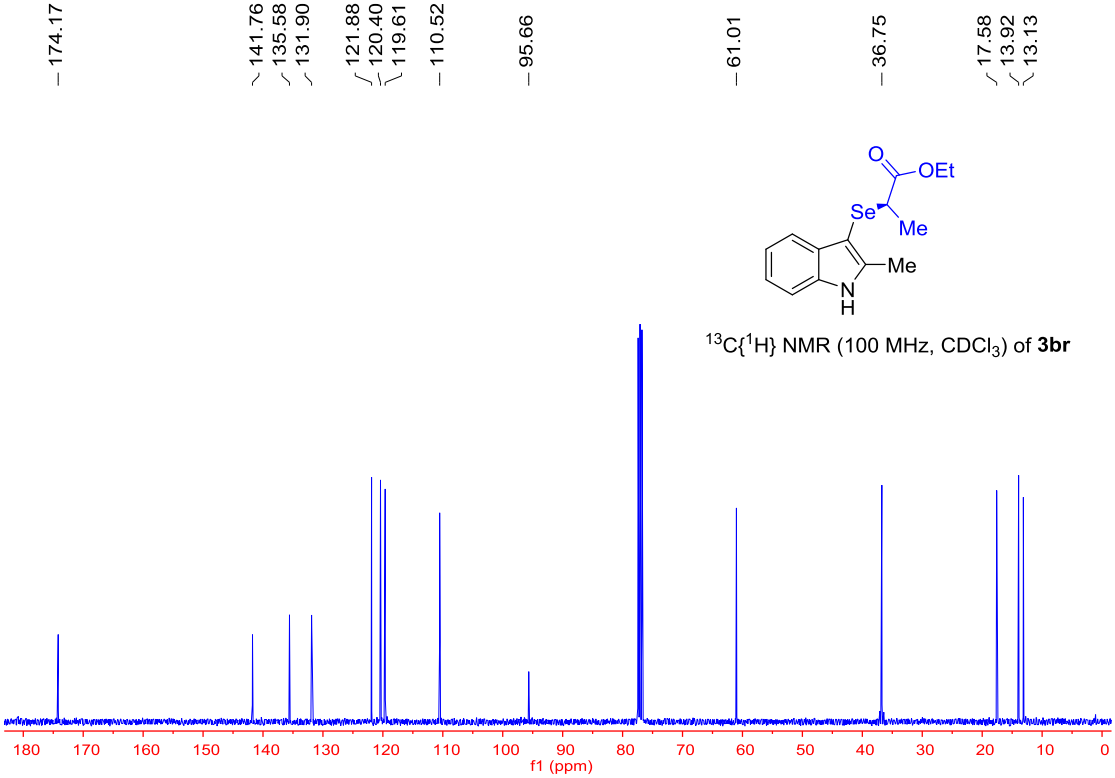
^{1}H NMR (400 MHz, $CDCl_3$) of **3bq**



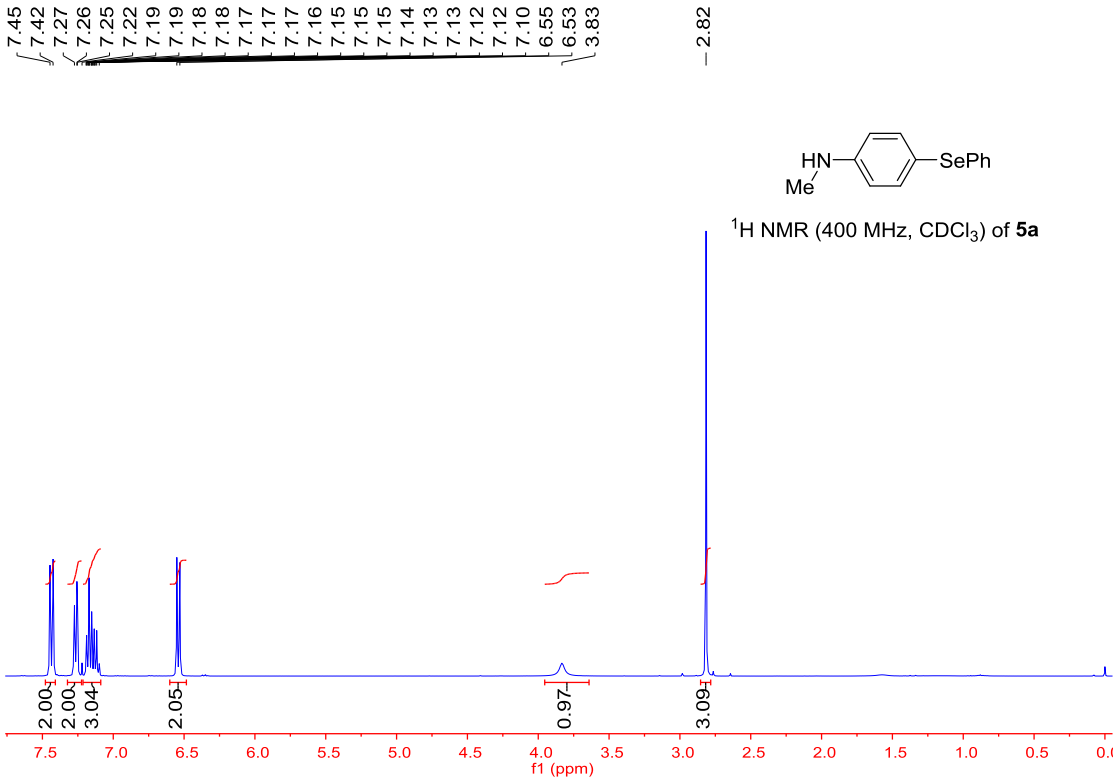
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3bq**



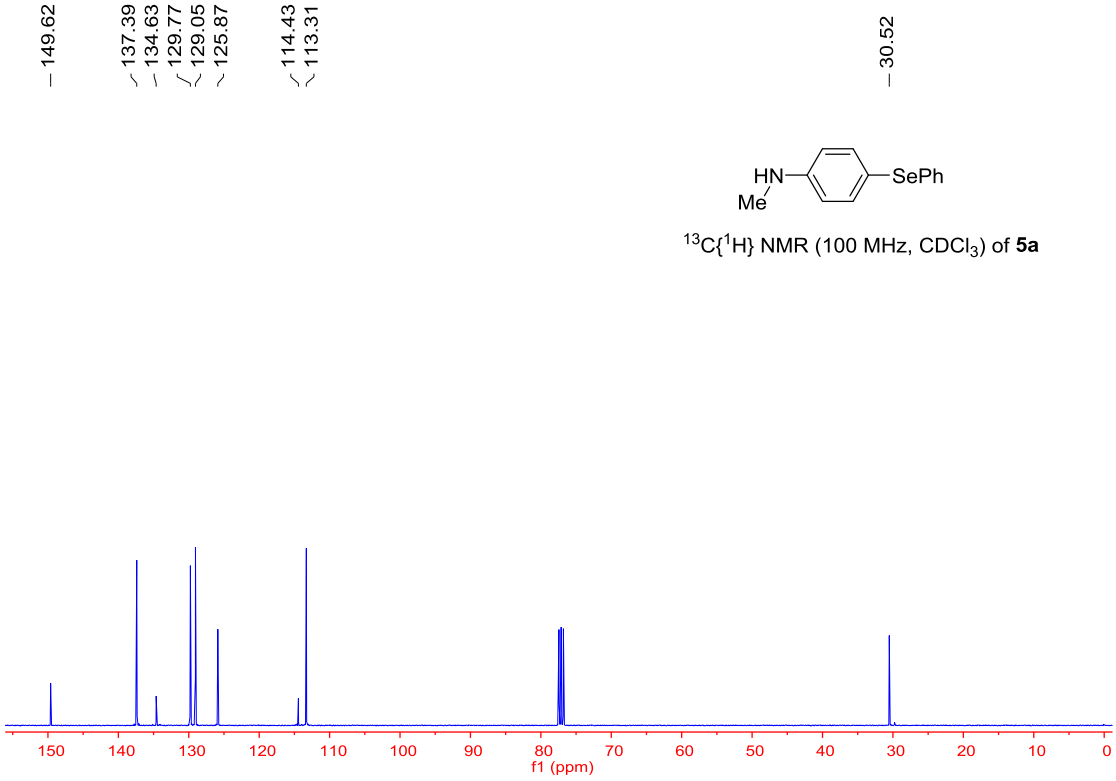
^{1}H NMR (400 MHz, $CDCl_3$) of **3br**



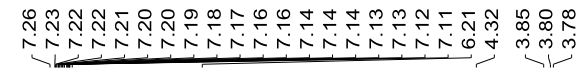
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **3br**

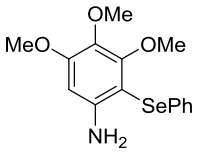


^{1}H NMR (400 MHz, $CDCl_3$) of **5a**

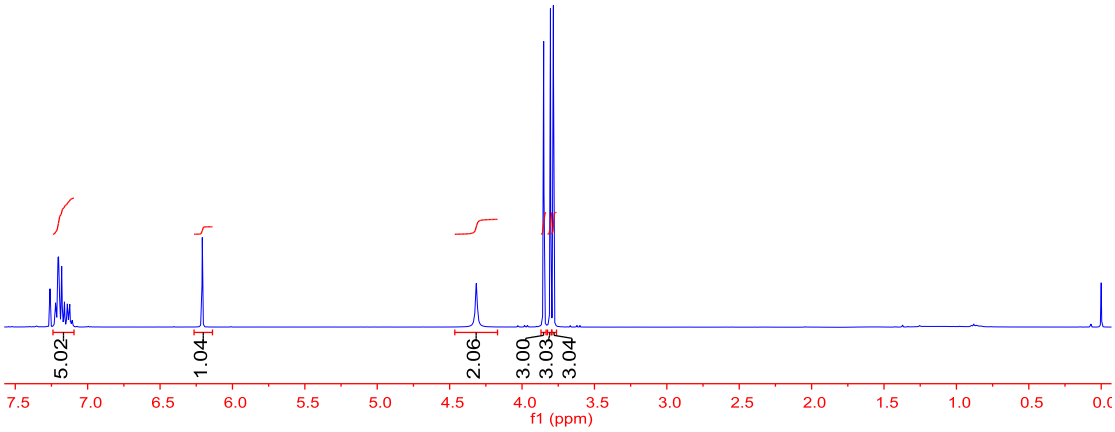


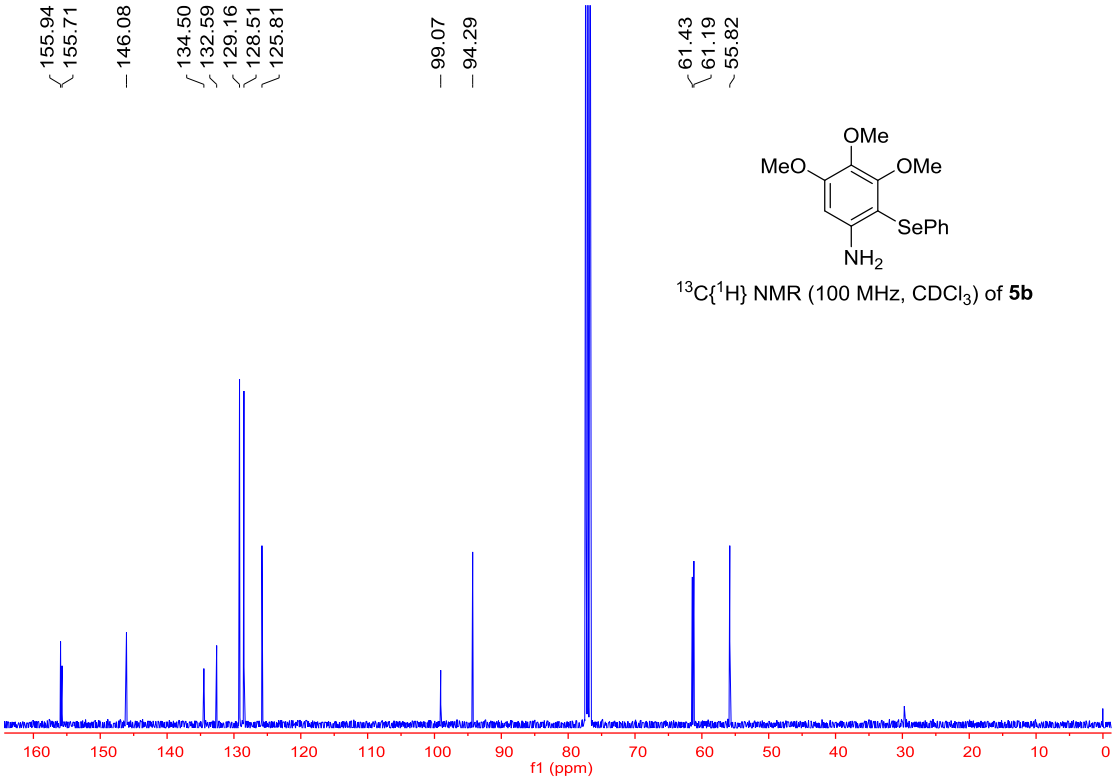
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5a**



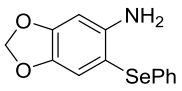


^{1}H NMR (400 MHz, $CDCl_3$) of **5b**

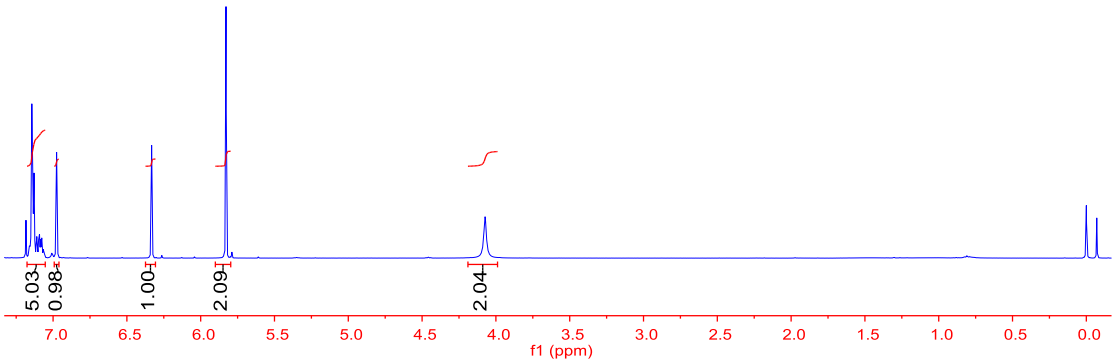


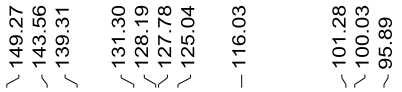


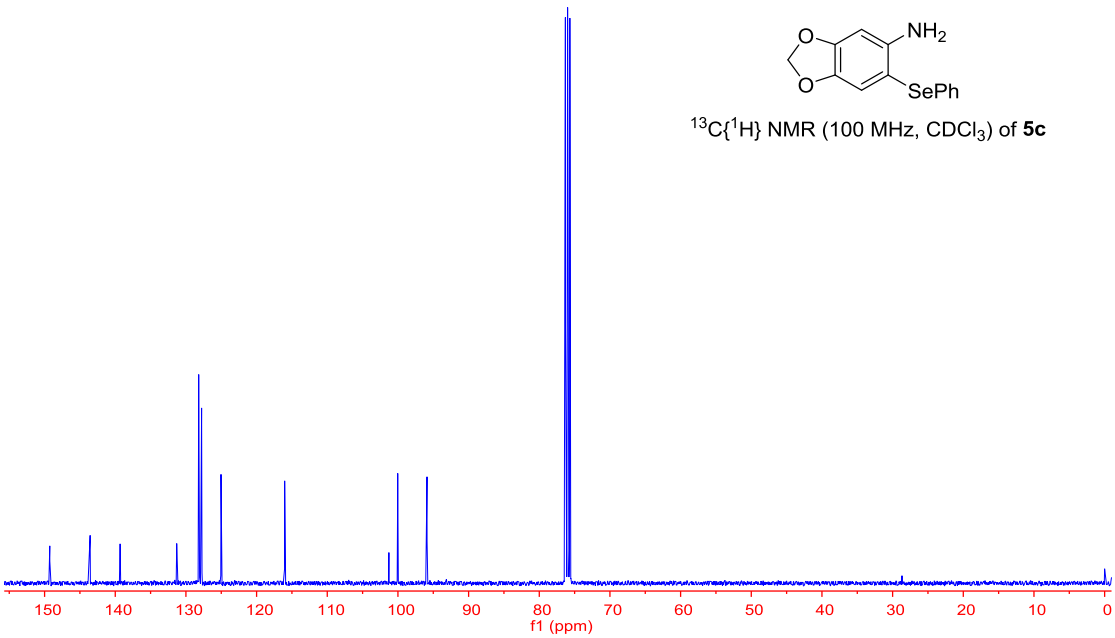
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **5b**



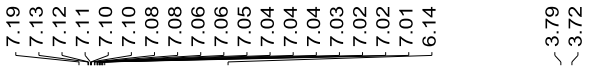
^{1}H NMR (400 MHz, $CDCl_3$) of **5c**

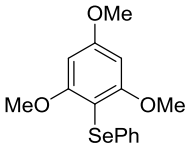




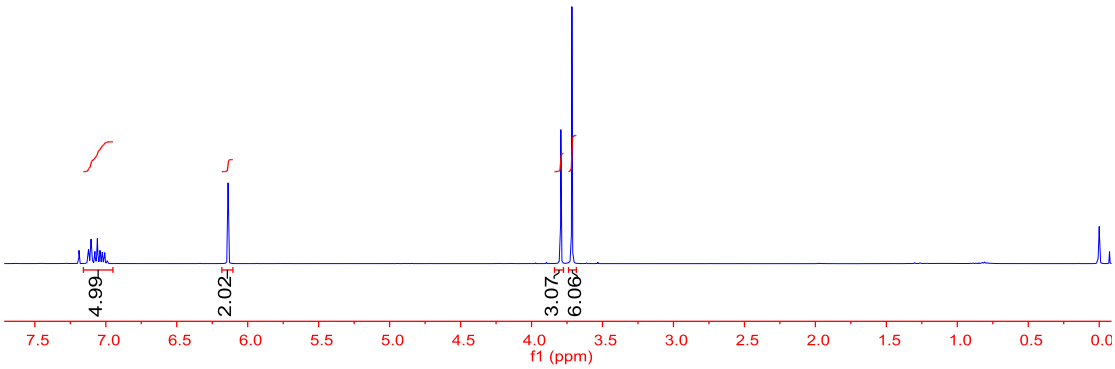


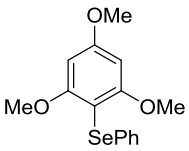
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **5c**



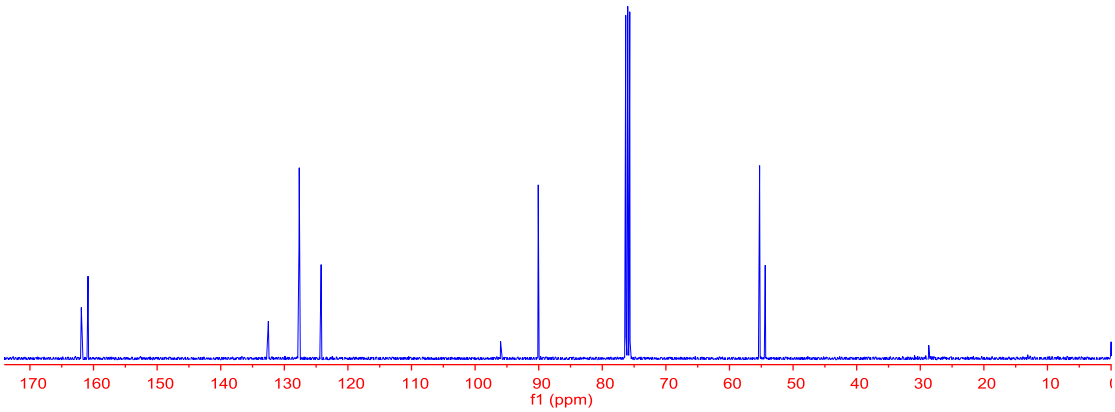


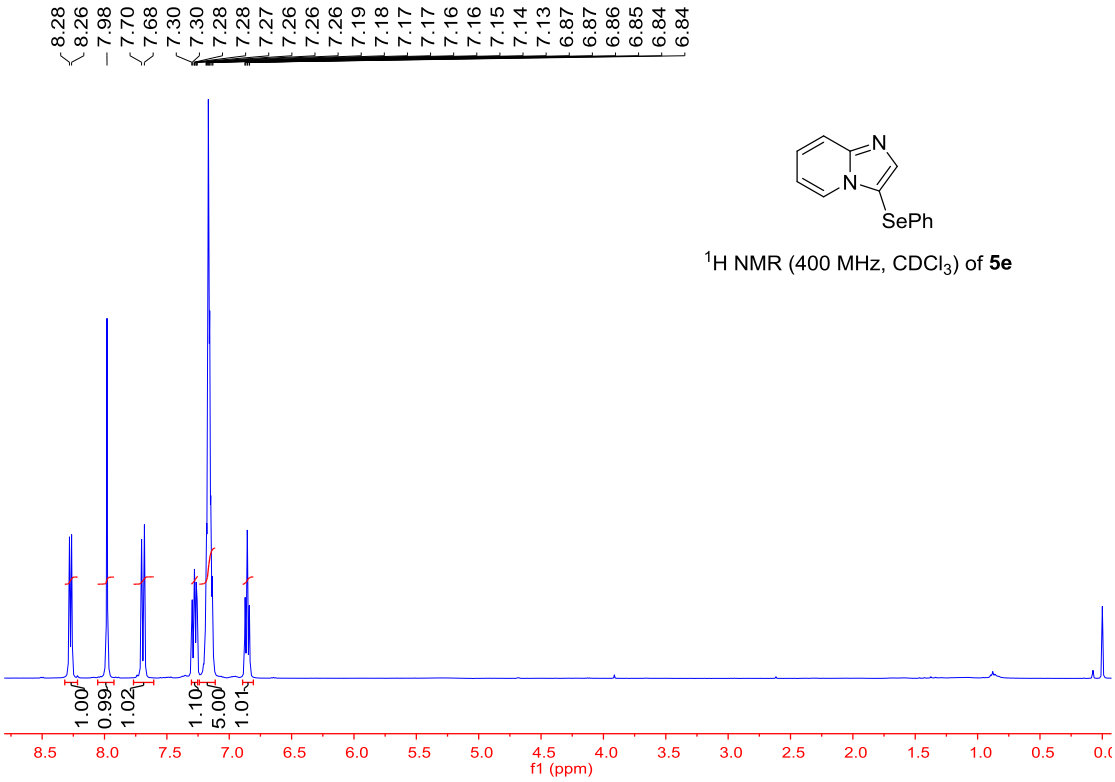
^{1}H NMR (400 MHz, $CDCl_3$) of **5d**



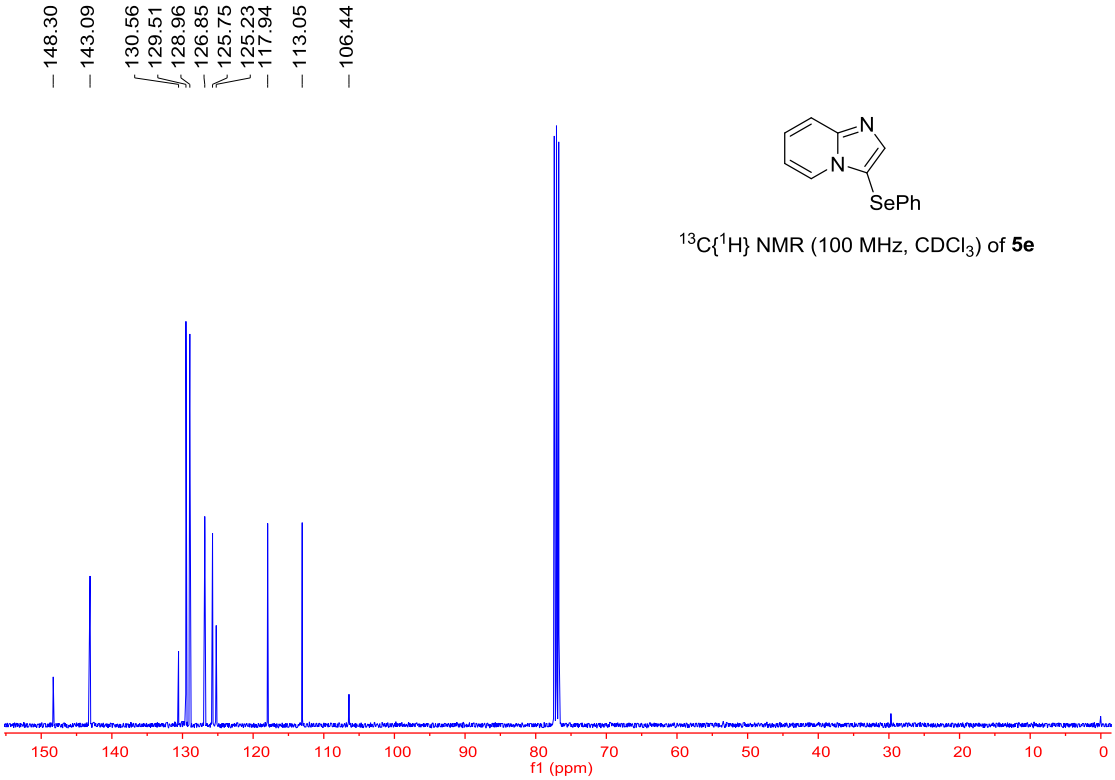


^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **5d**

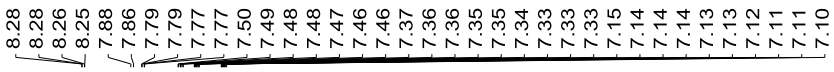


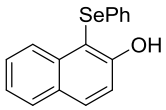


^{1}H NMR (400 MHz, $CDCl_3$) of **5e**

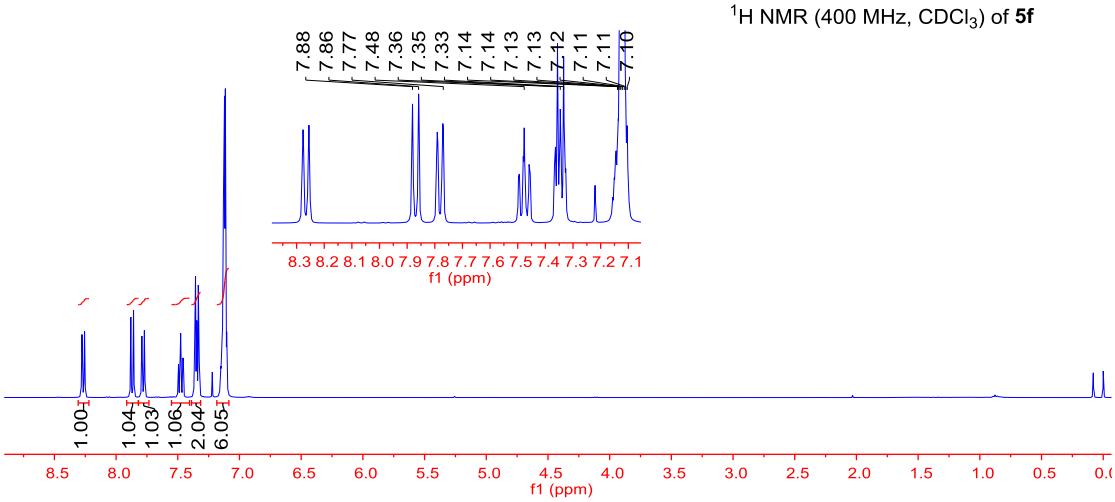


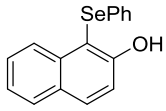
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **5e**



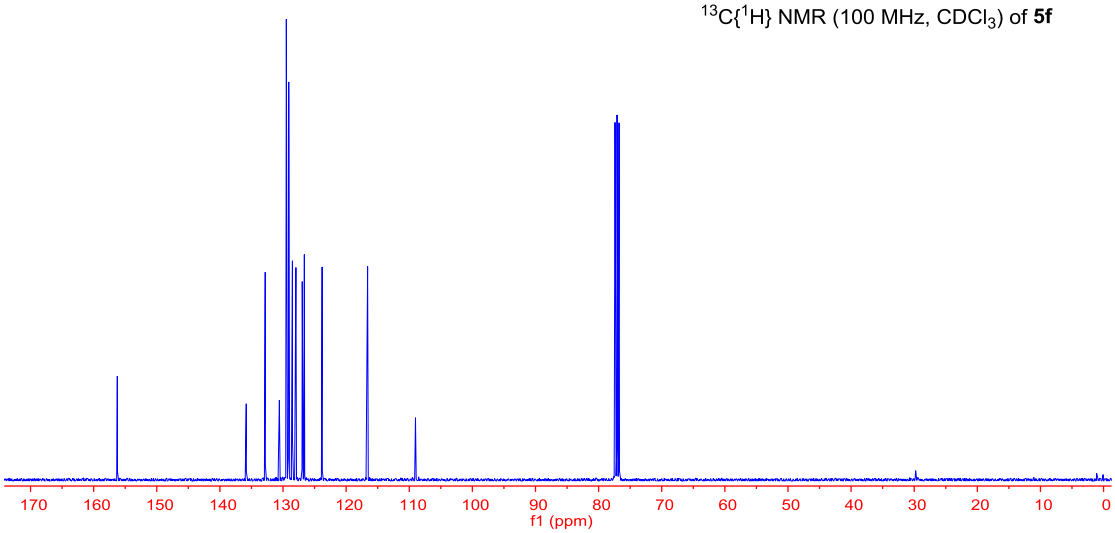


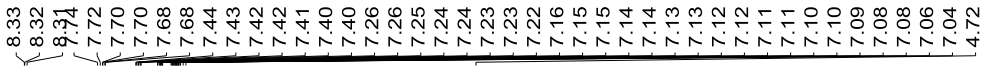
^{1}H NMR (400 MHz, $CDCl_3$) of **5f**

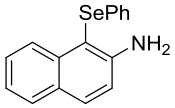




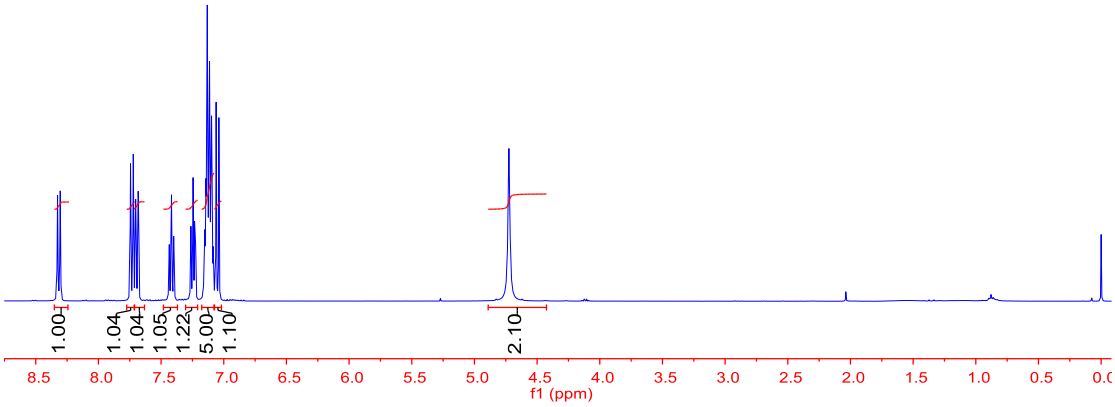
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5f**

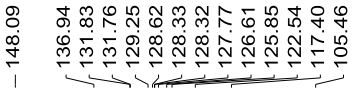


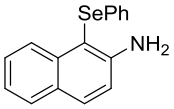




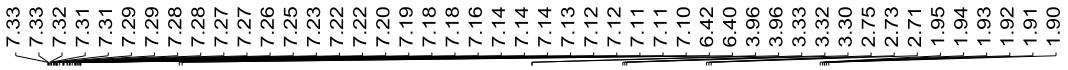
^{1}H NMR (400 MHz, $CDCl_3$) of **5g**

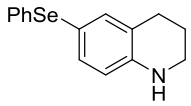




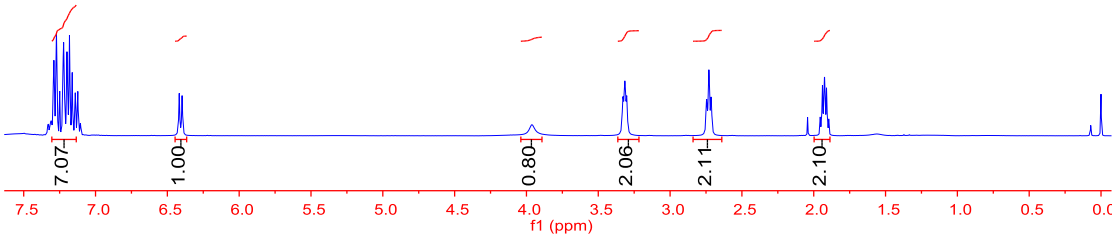


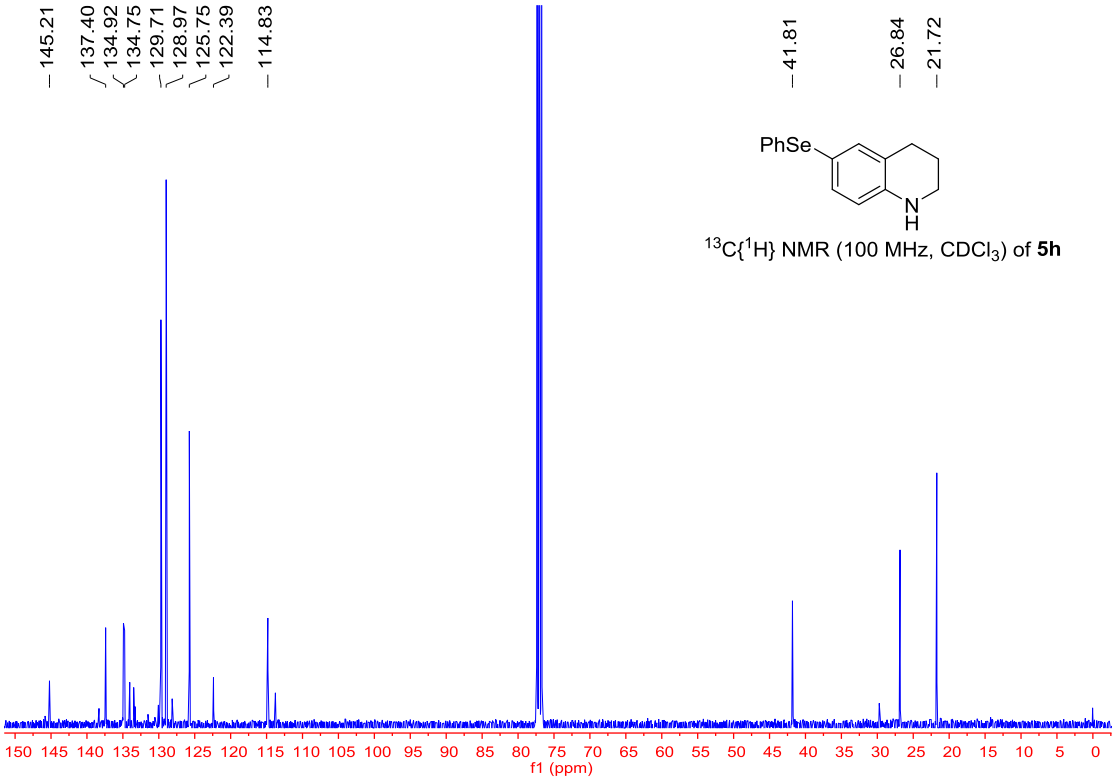
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **5g**



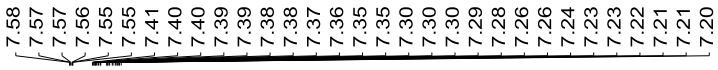


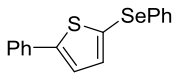
^{1}H NMR (400 MHz, $CDCl_3$) of **5h**



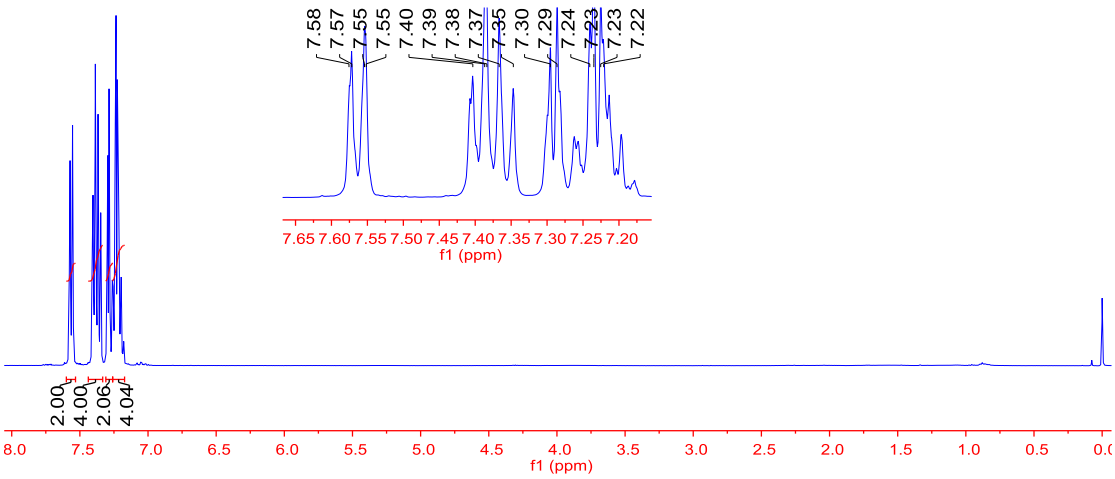


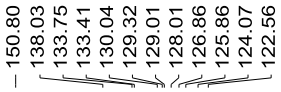
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **5h**

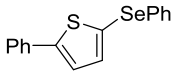




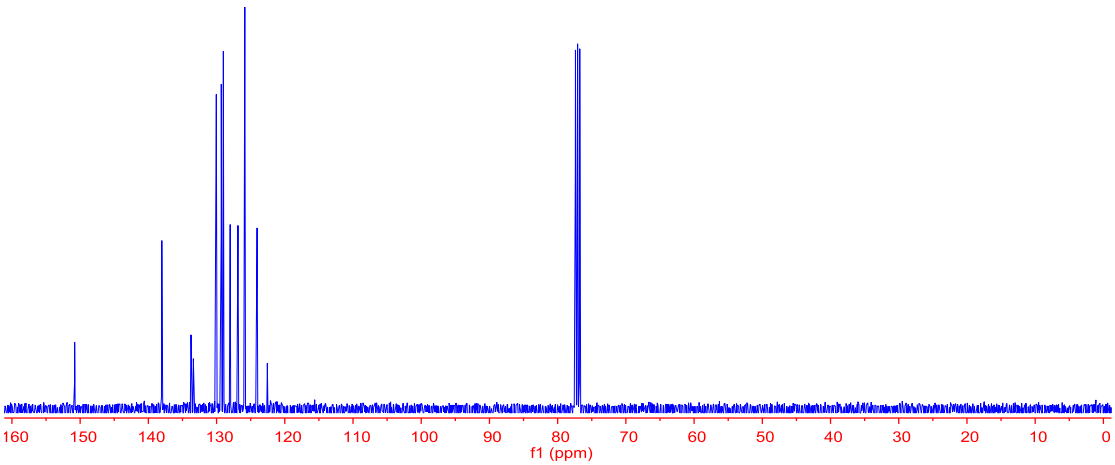
^{1}H NMR (400 MHz, $CDCl_3$) of **5i**

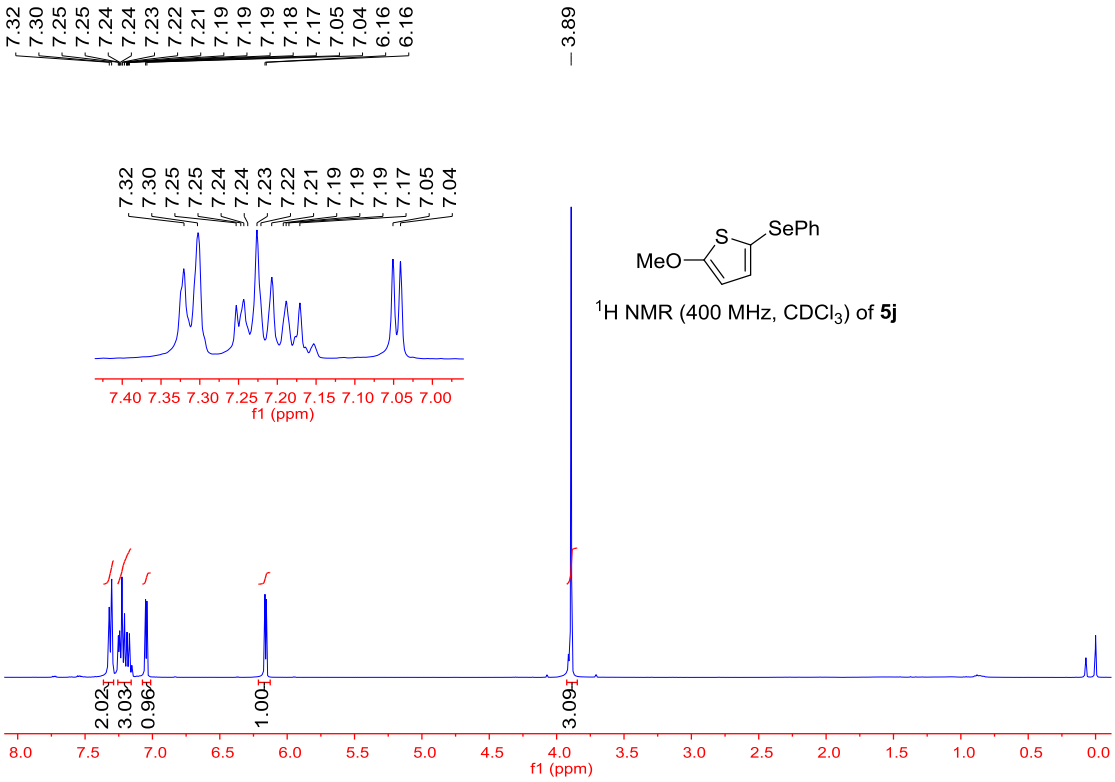




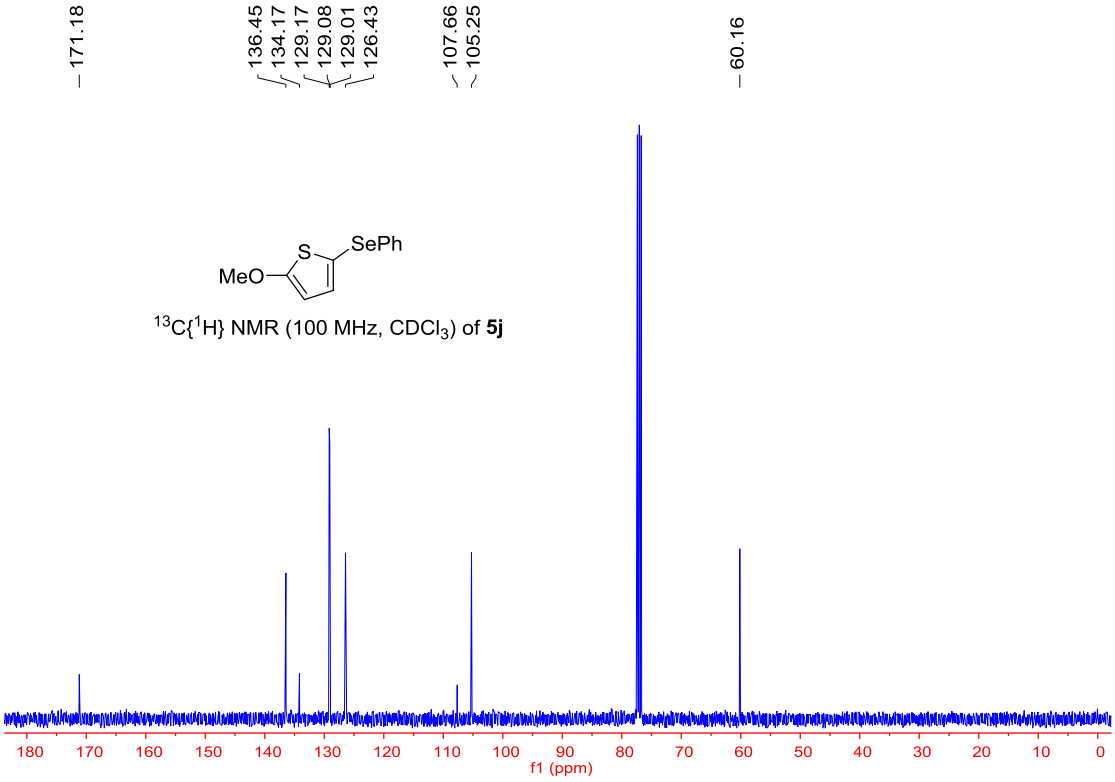


^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **5i**

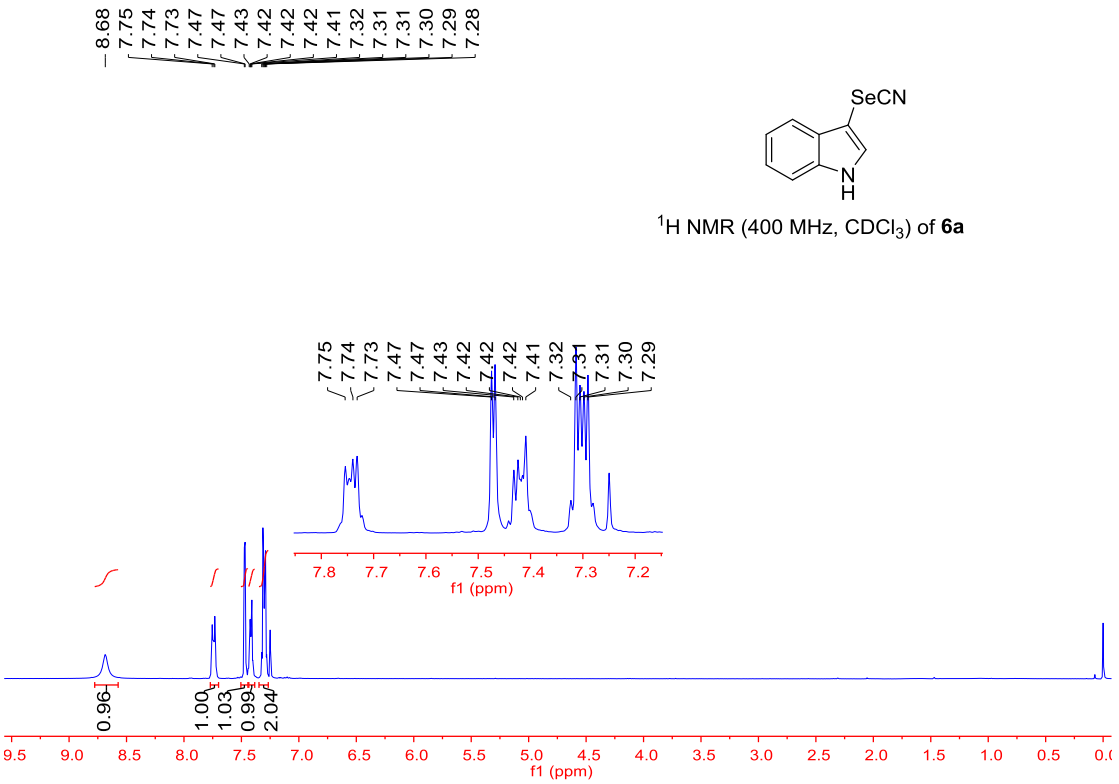




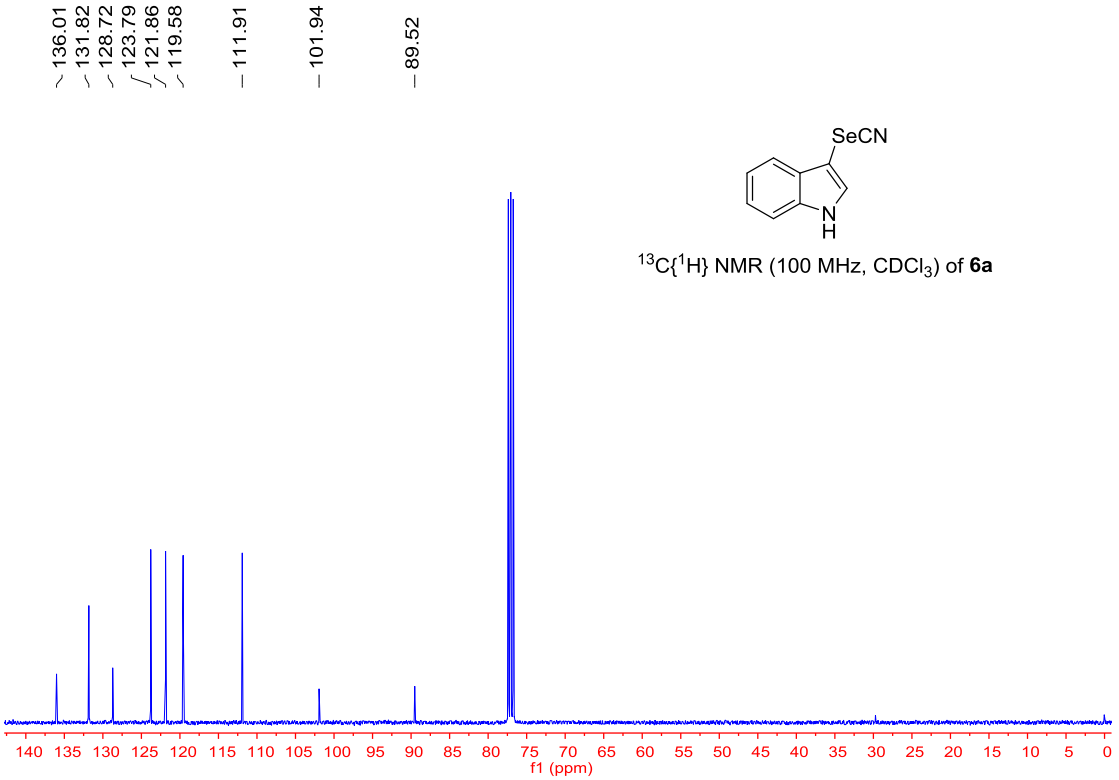
^{1}H NMR (400 MHz, $CDCl_3$) of **5j**



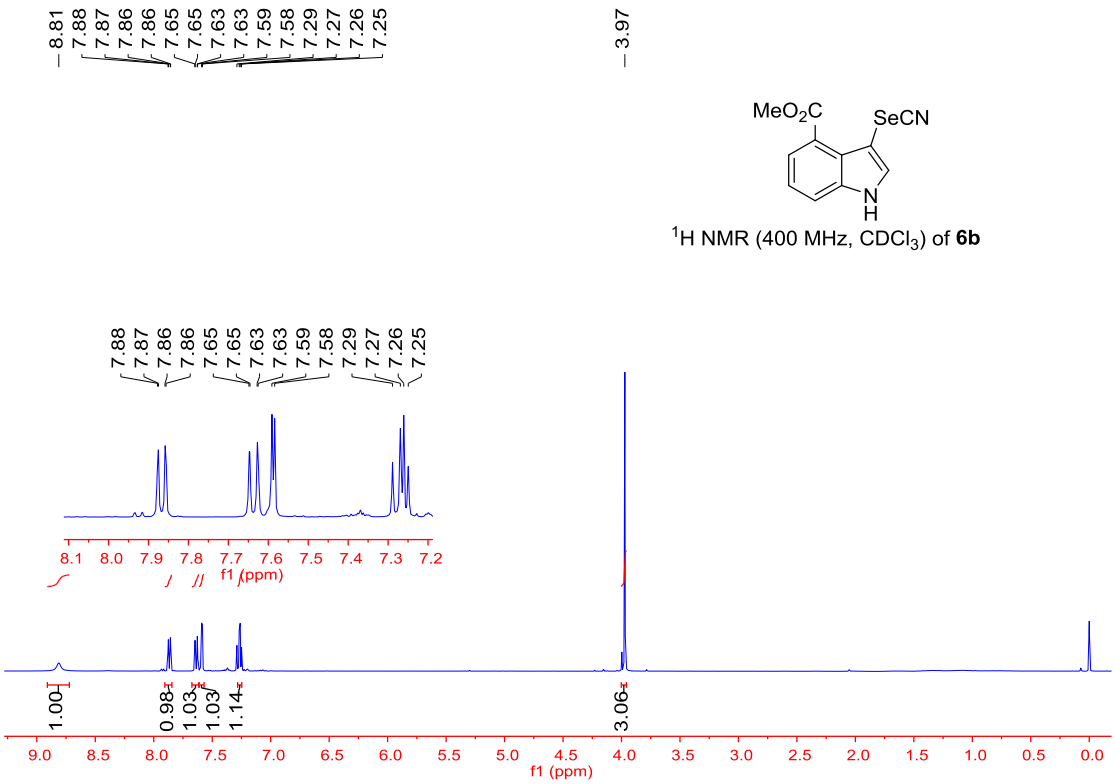
$^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$) of **5j**



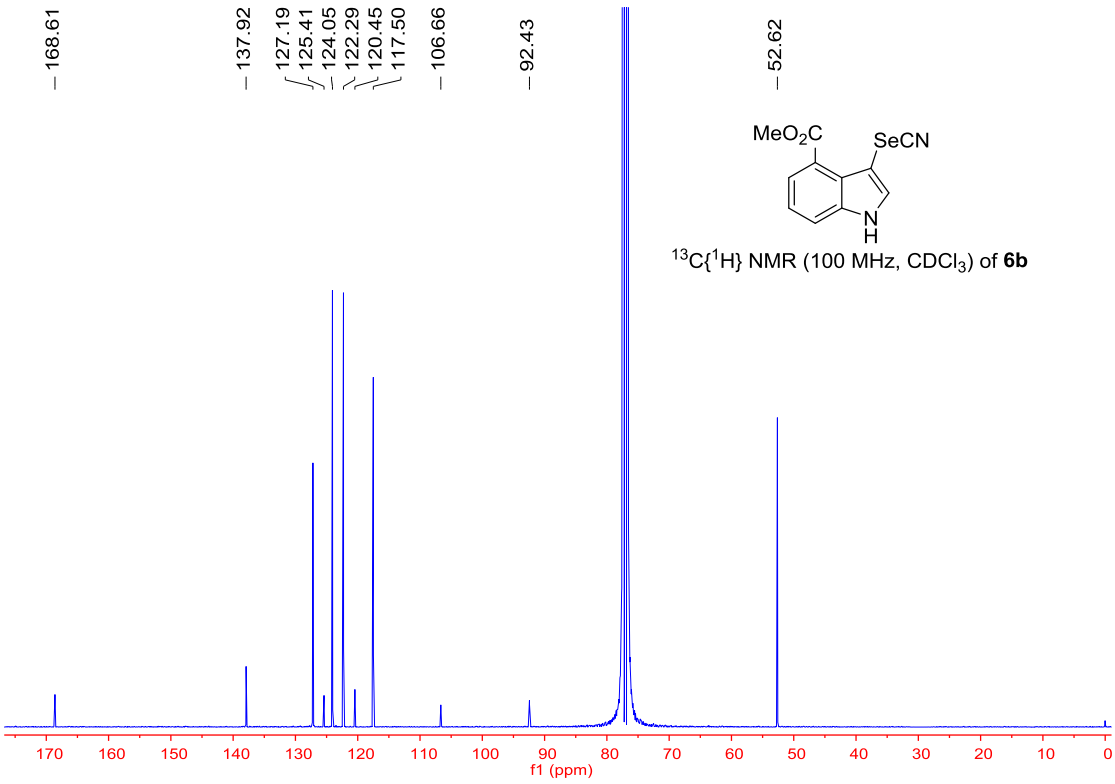
^{1}H NMR (400 MHz, $CDCl_3$) of **6a**



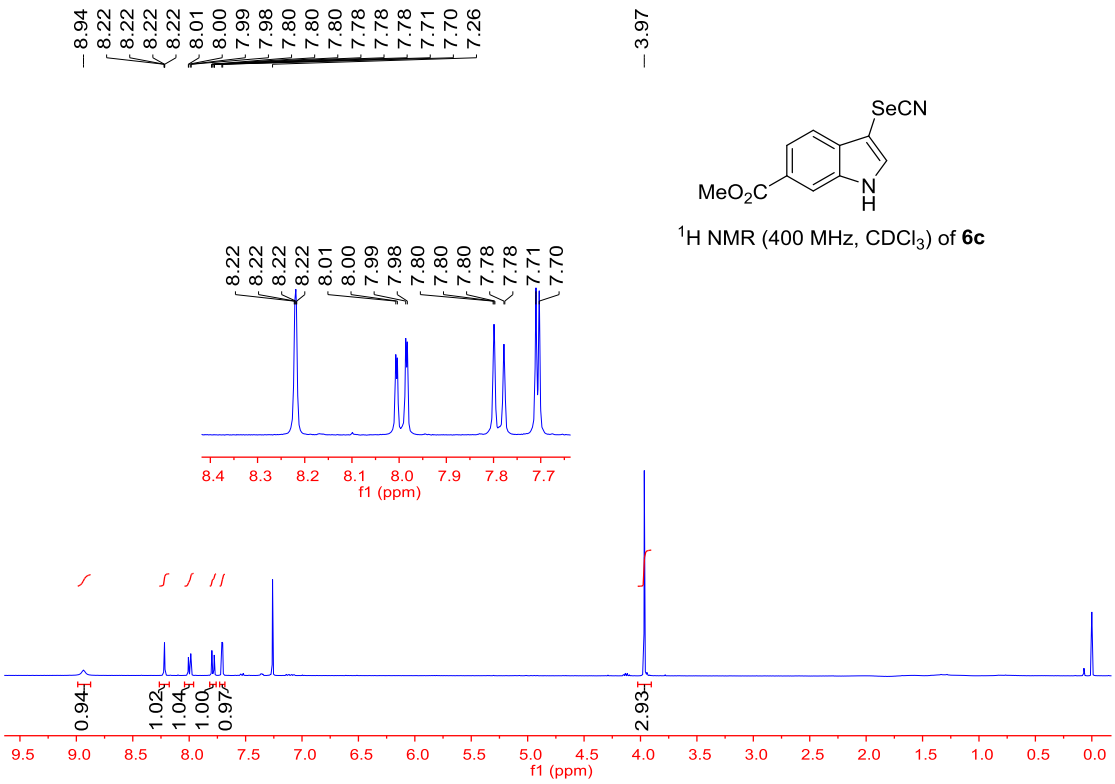
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **6a**



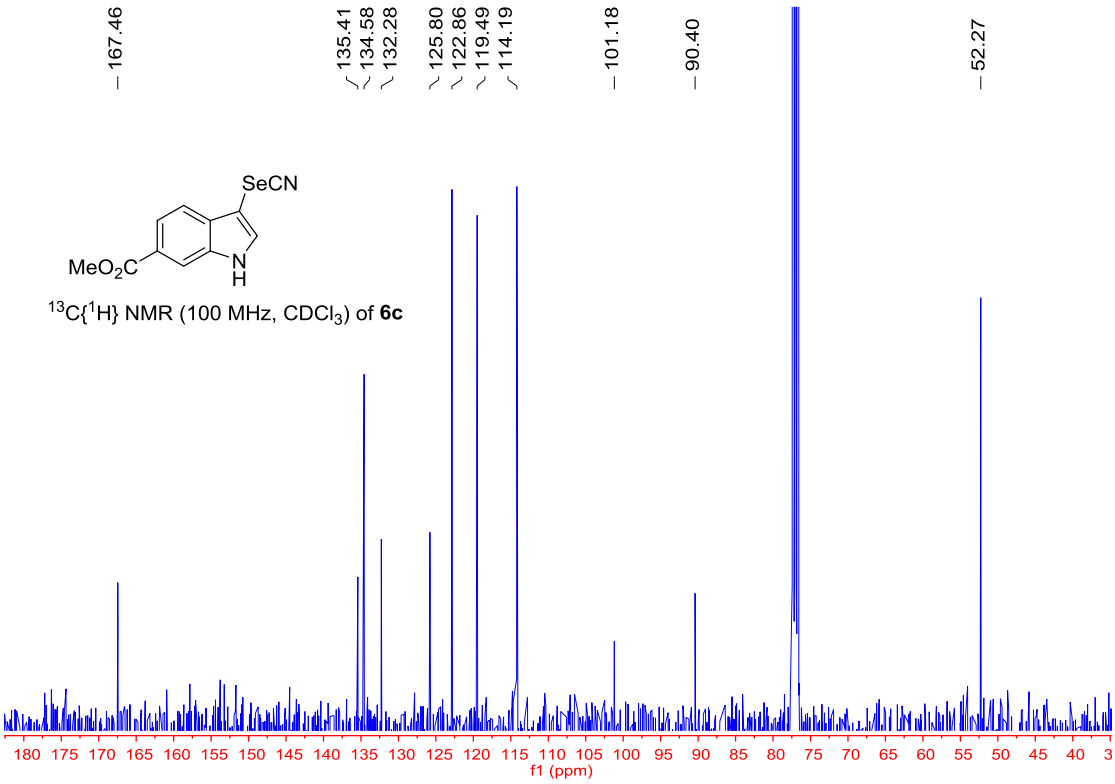
^{1}H NMR (400 MHz, $CDCl_3$) of **6b**



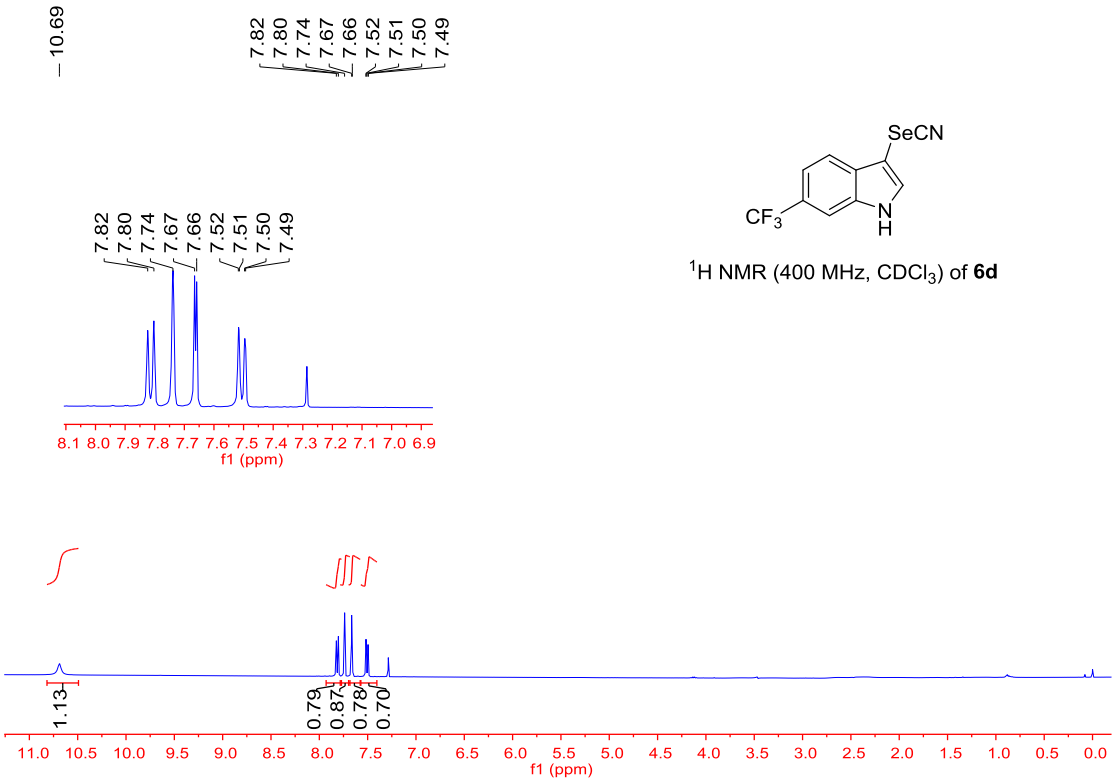
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **6b**



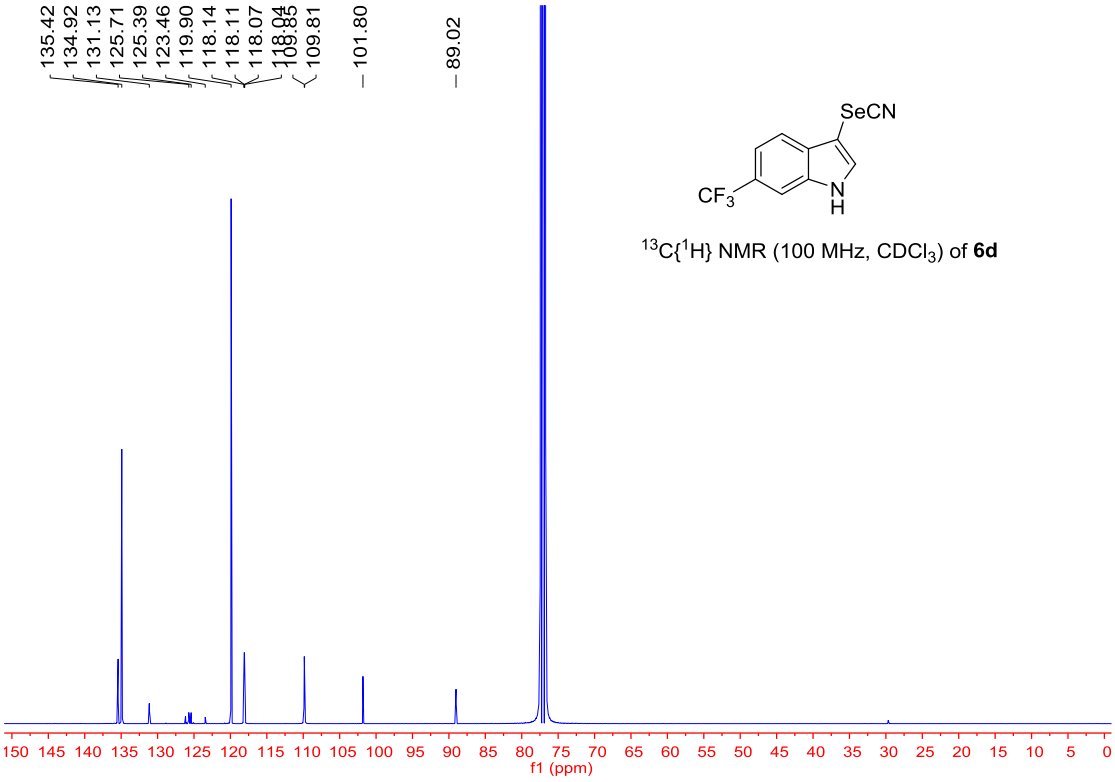
^{1}H NMR (400 MHz, $CDCl_3$) of **6c**



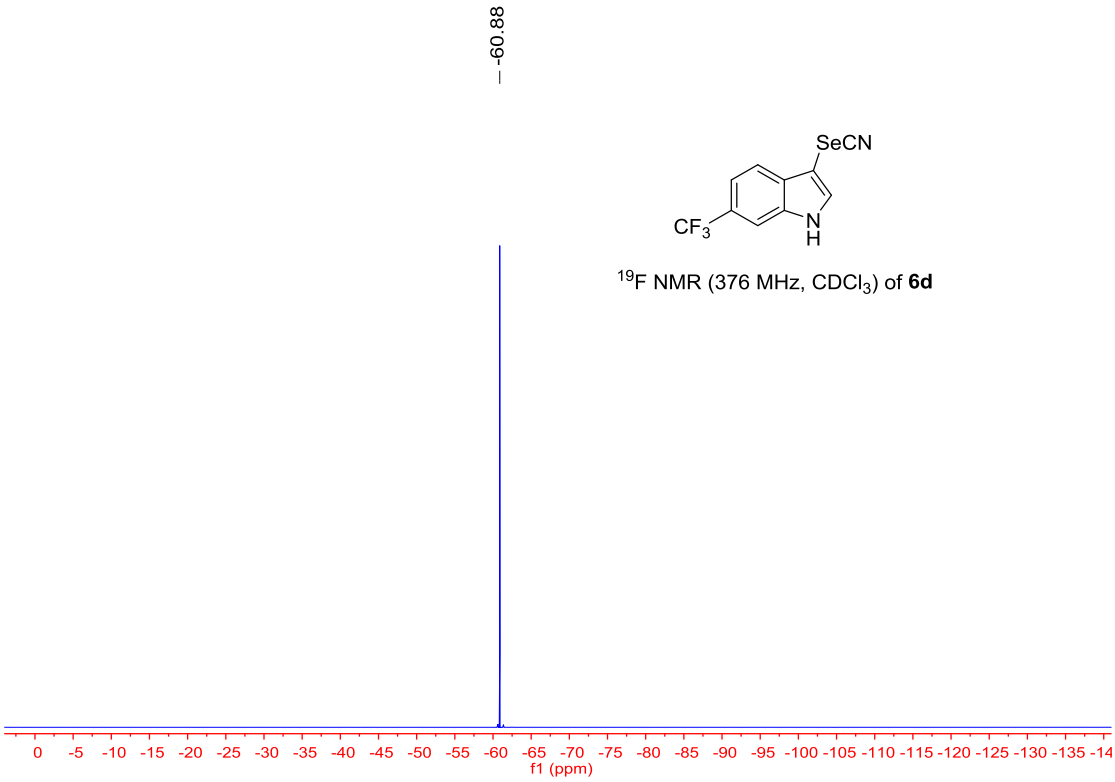
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **6c**



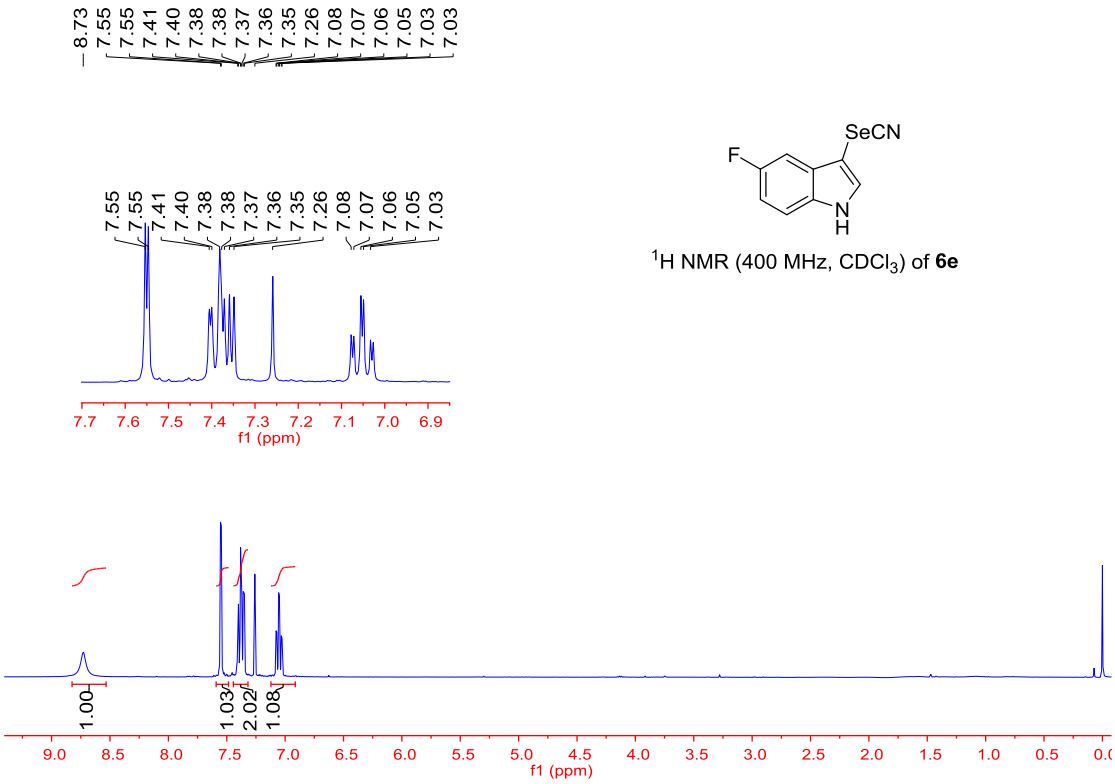
^{1}H NMR (400 MHz, $CDCl_3$) of **6d**



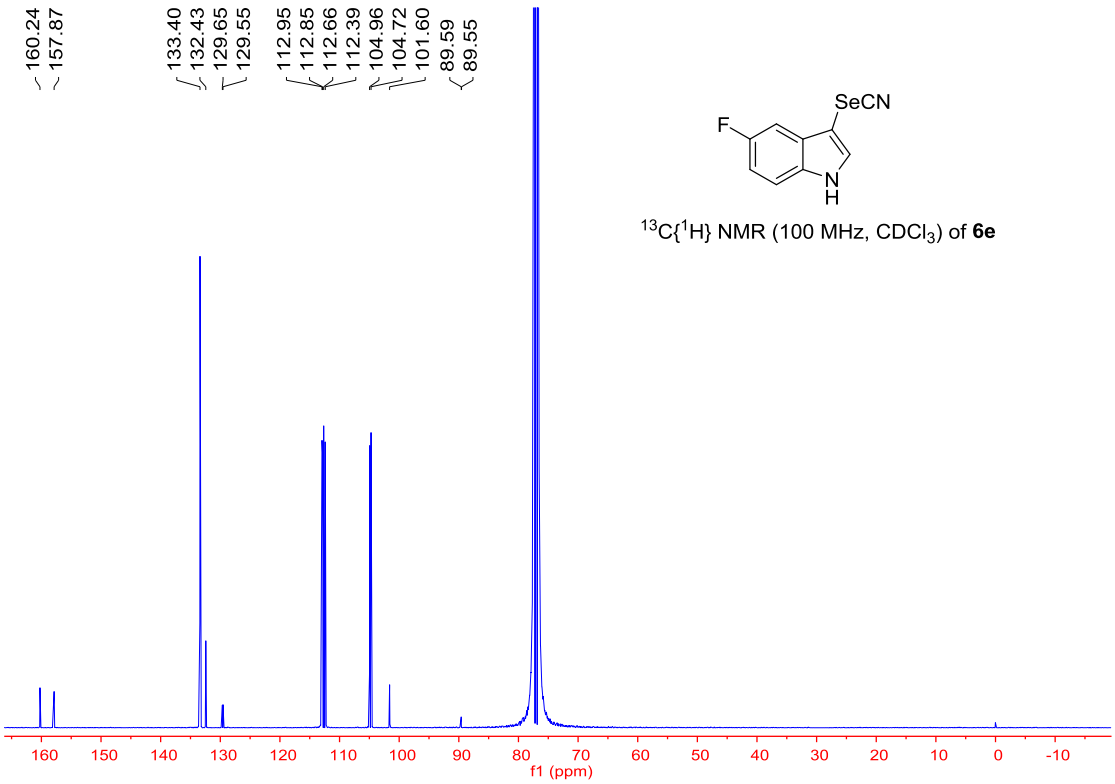
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **6d**



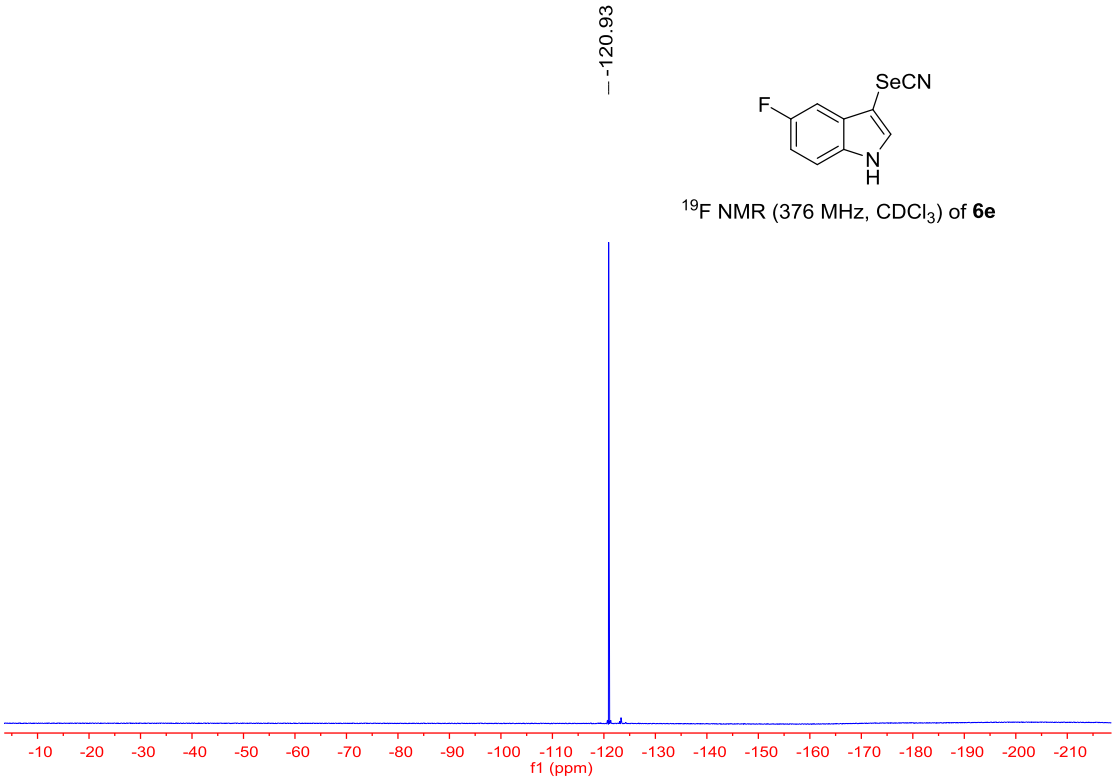
^{19}F NMR (376 MHz, $CDCl_3$) of **6d**



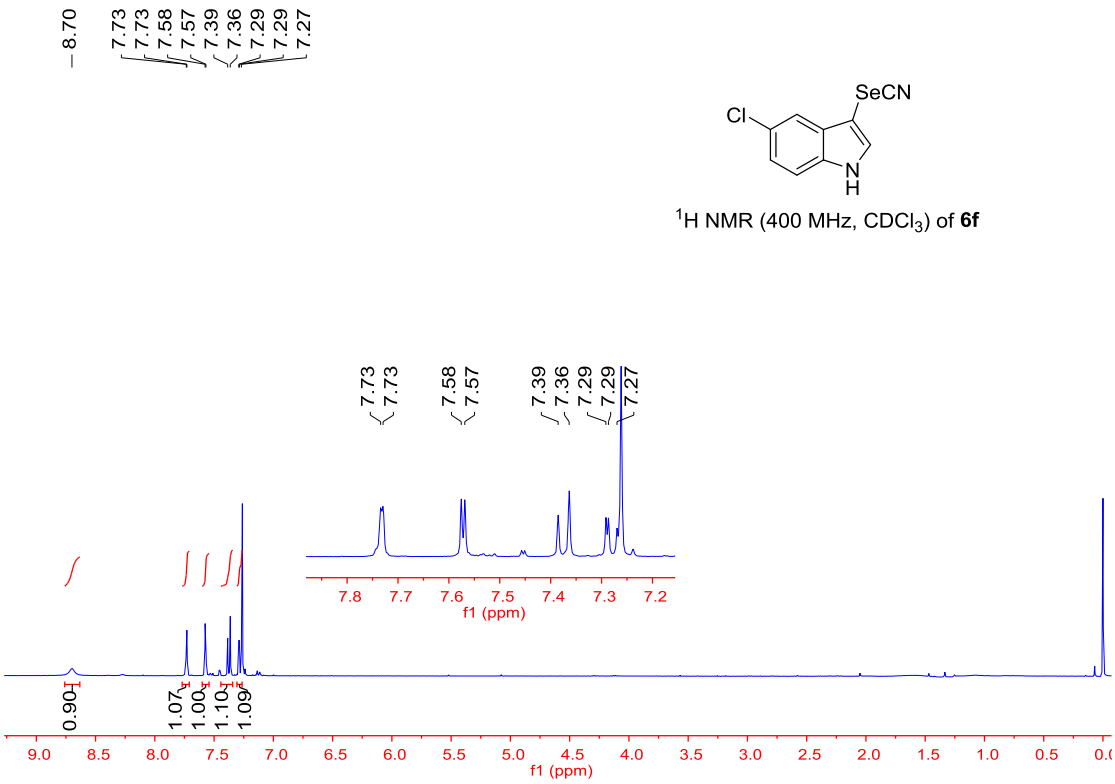
^{1}H NMR (400 MHz, $CDCl_3$) of **6e**



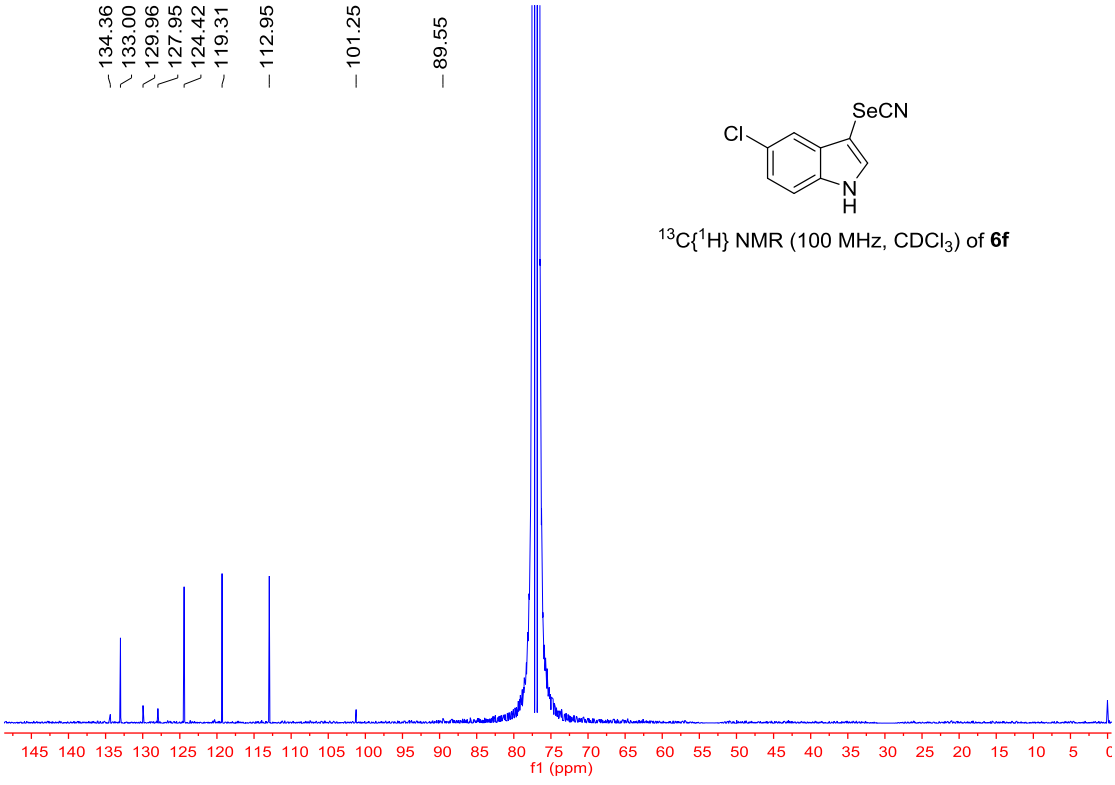
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **6e**



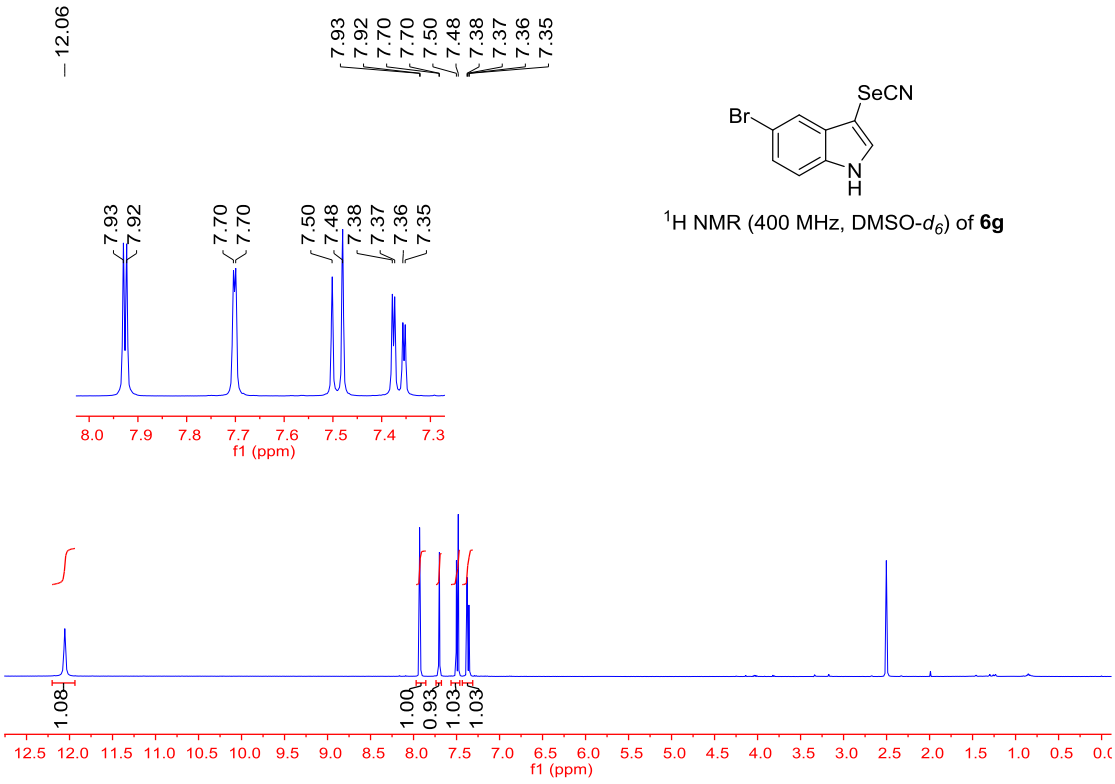
^{19}F NMR (376 MHz, $CDCl_3$) of **6e**



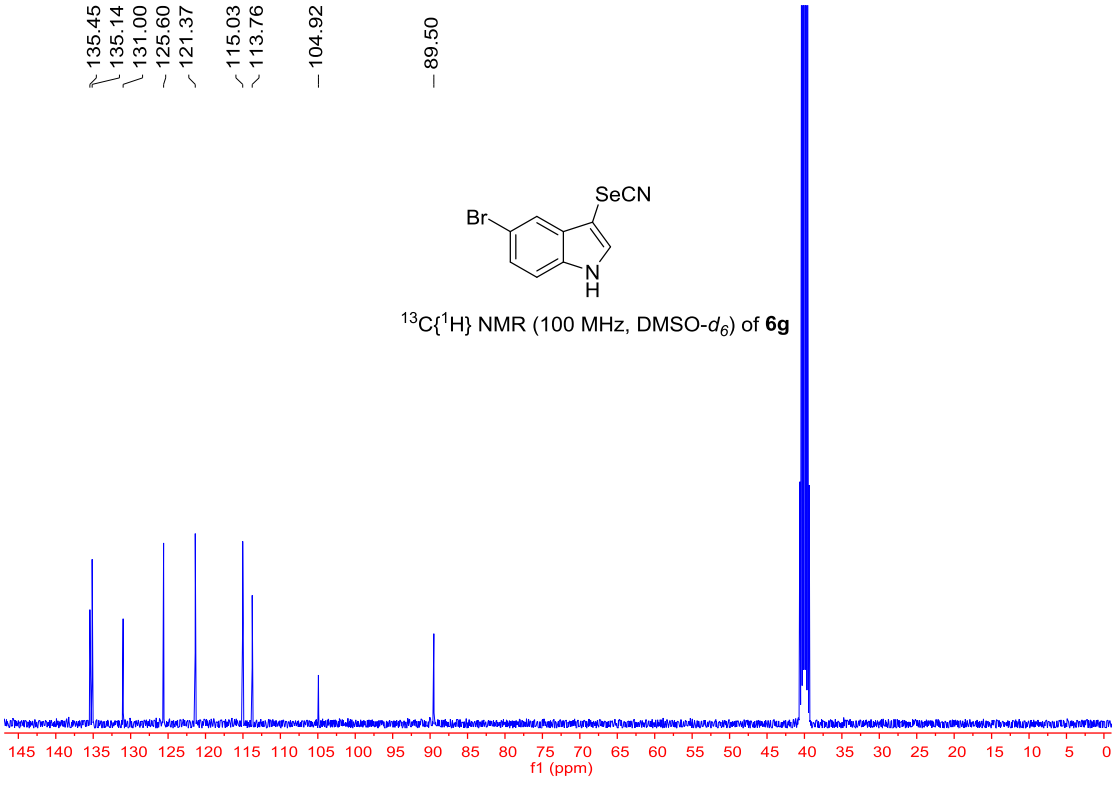
^{1}H NMR (400 MHz, $CDCl_3$) of **6f**



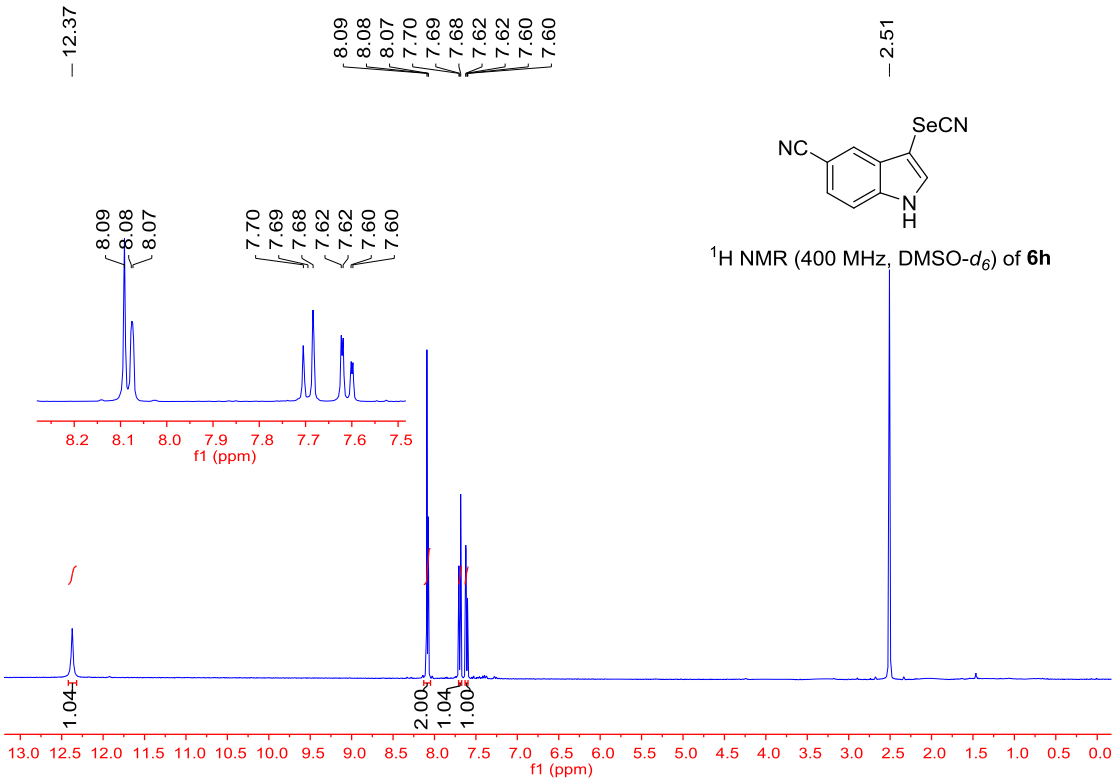
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **6f**

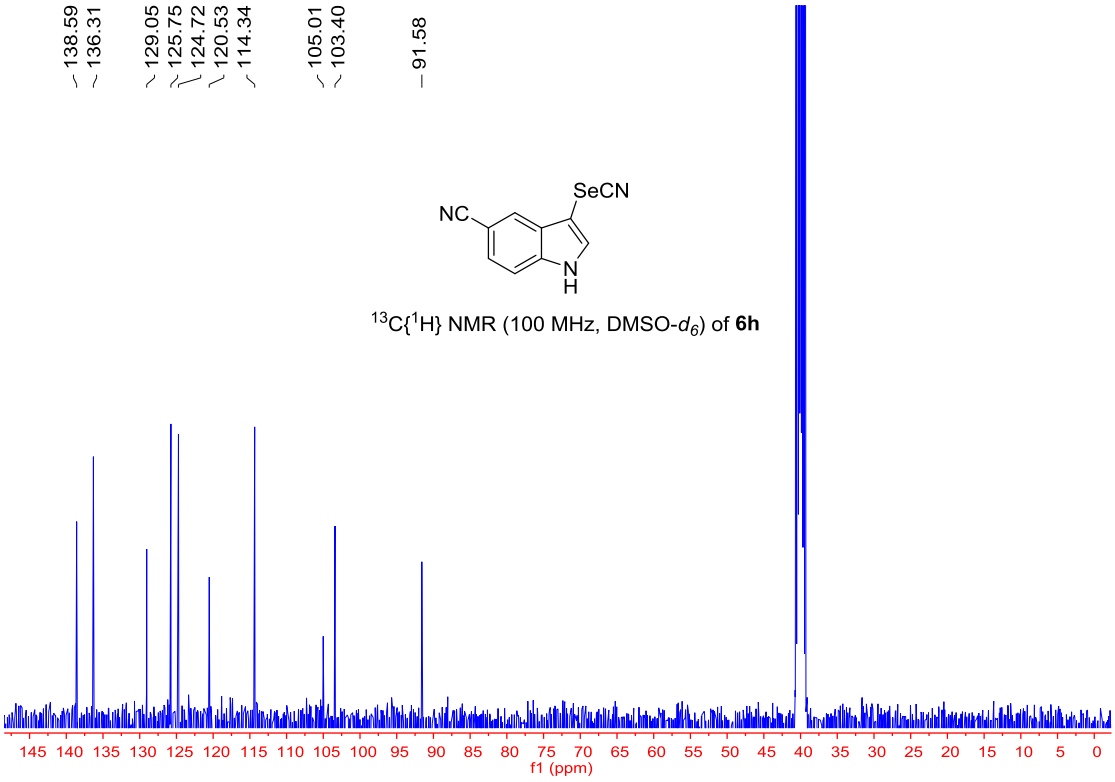


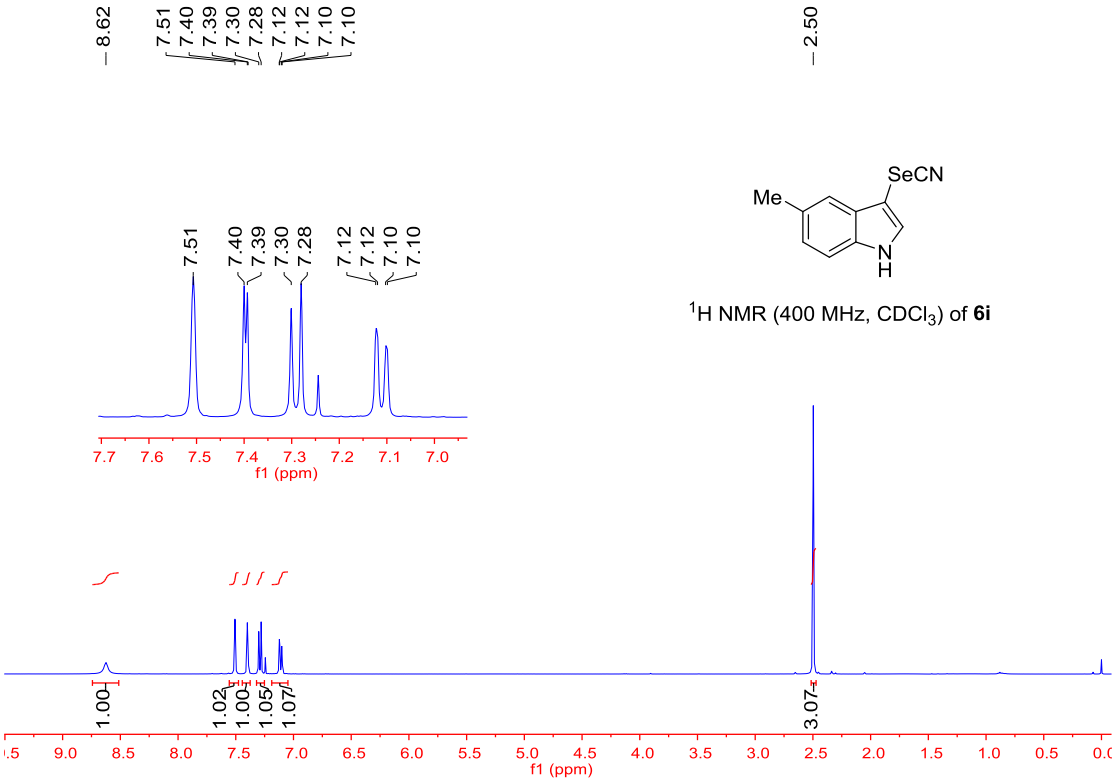
^{1}H NMR (400 MHz, DMSO-d_6) of **6g**



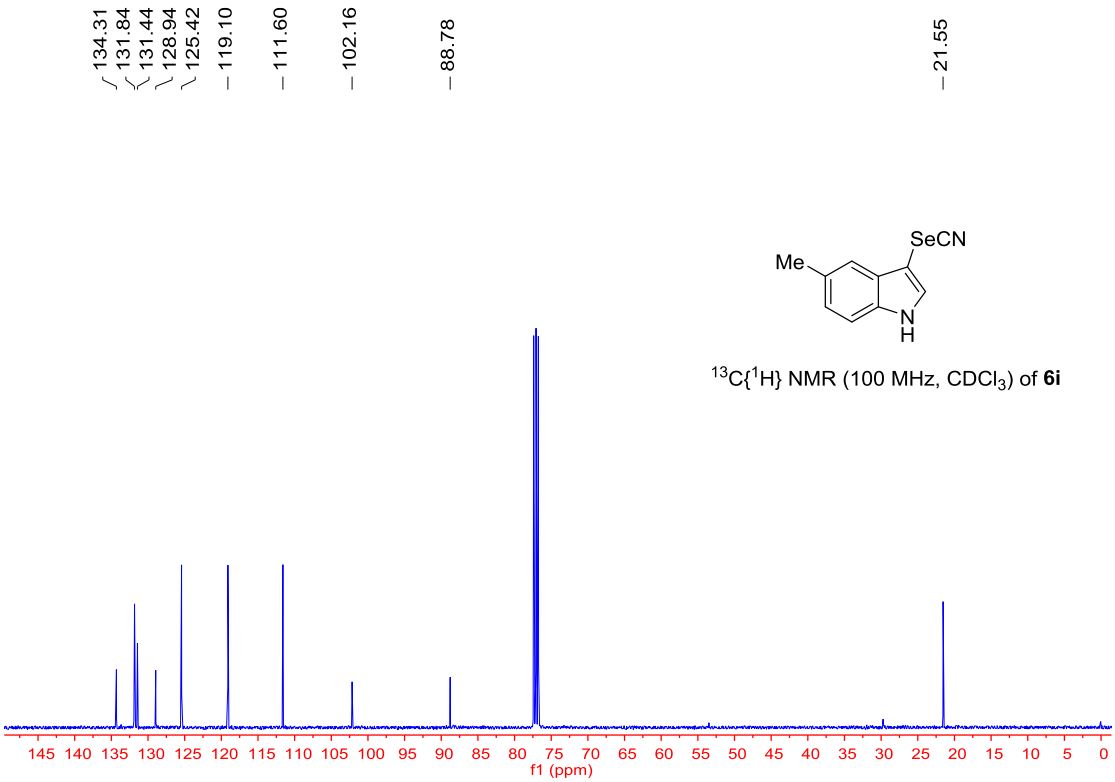
^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6) of **6g**


12.37
8.09
8.08
8.07
7.70
7.69
7.68
7.62
7.62
7.60
7.60
2.51
SeCN
NC
N
H
^{1}H NMR (400 MHz, DMSO-d_6) of **6h**
f1 (ppm)
1.04
2.00
1.04
1.00

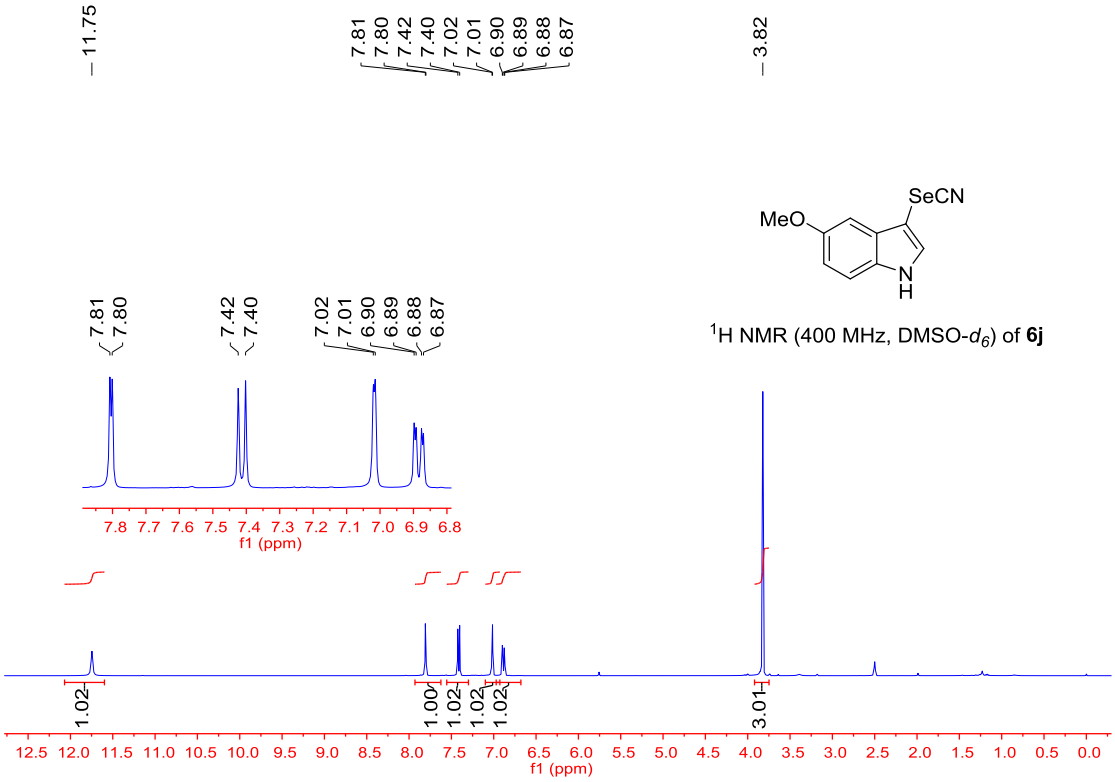

138.59
136.31
129.05
125.75
124.72
120.53
114.34
105.01
103.40
91.58
SeCN
NC
N
H
^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6) of **6h**
f1 (ppm)



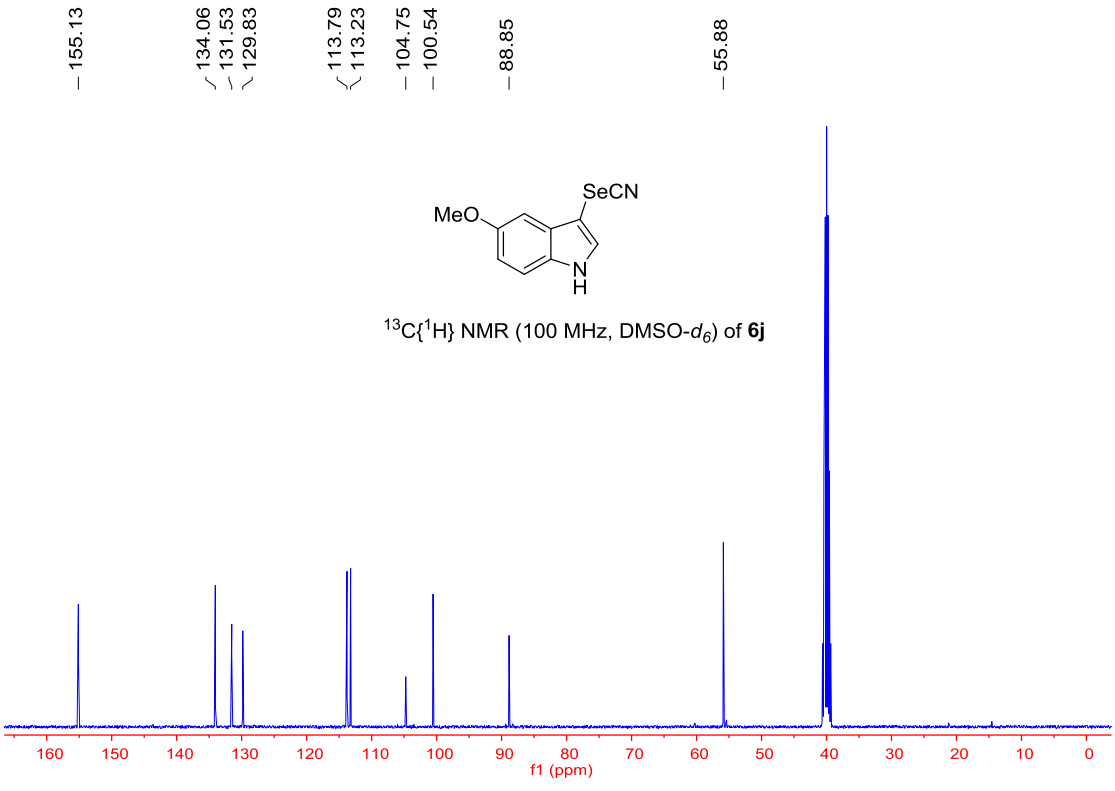
^{1}H NMR (400 MHz, $CDCl_3$) of **6i**



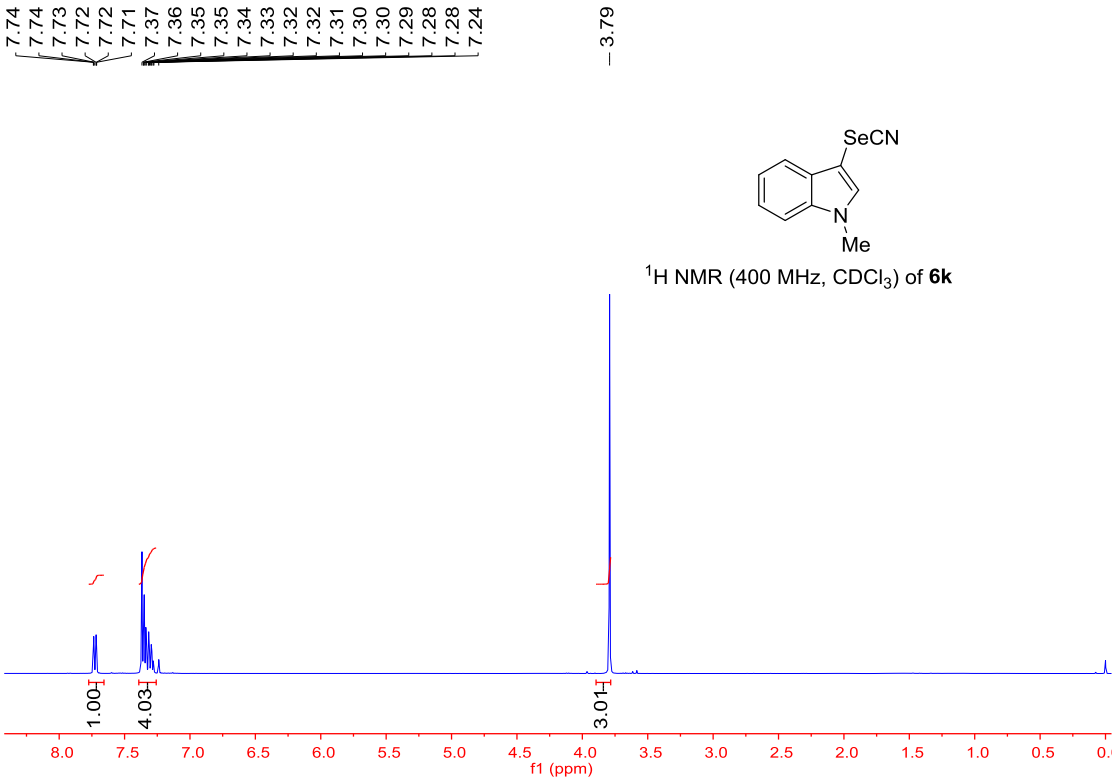
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **6i**



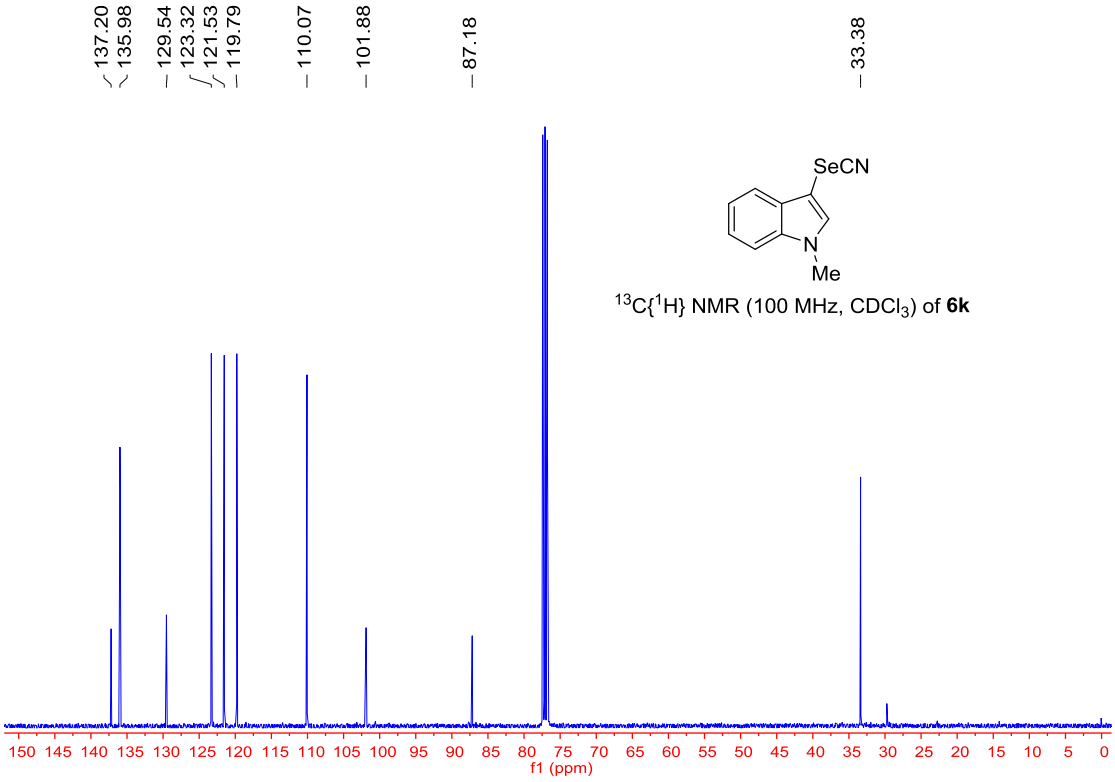
^{1}H NMR (400 MHz, DMSO-d_6) of **6j**



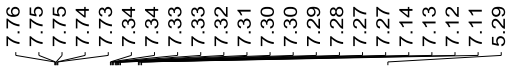
^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6) of **6j**

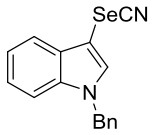


^{1}H NMR (400 MHz, $CDCl_3$) of **6k**

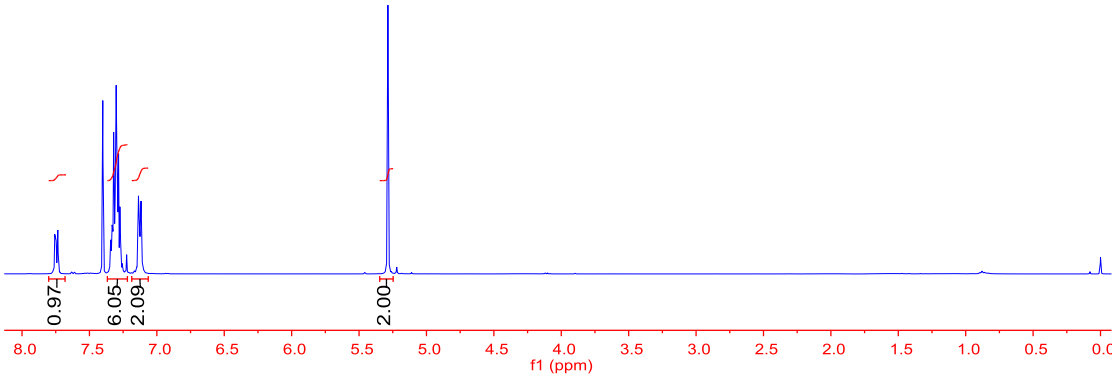


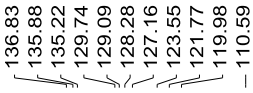
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **6k**

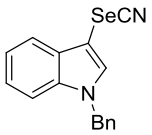




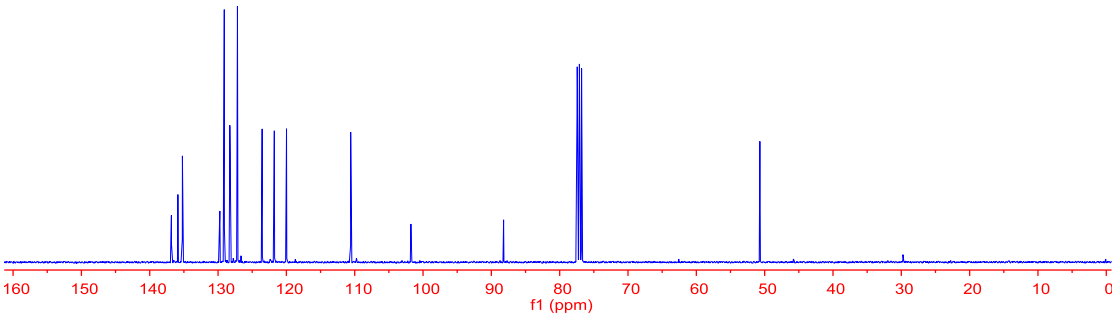
^{1}H NMR (400 MHz, $CDCl_3$) of **6l**

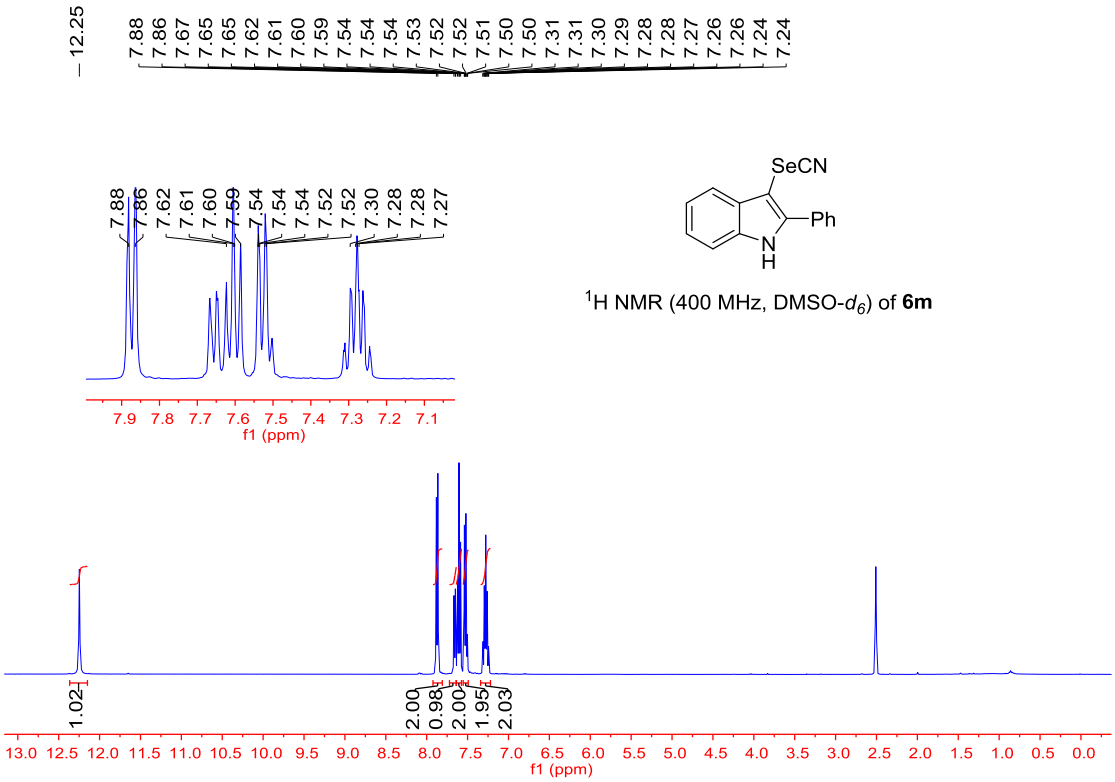




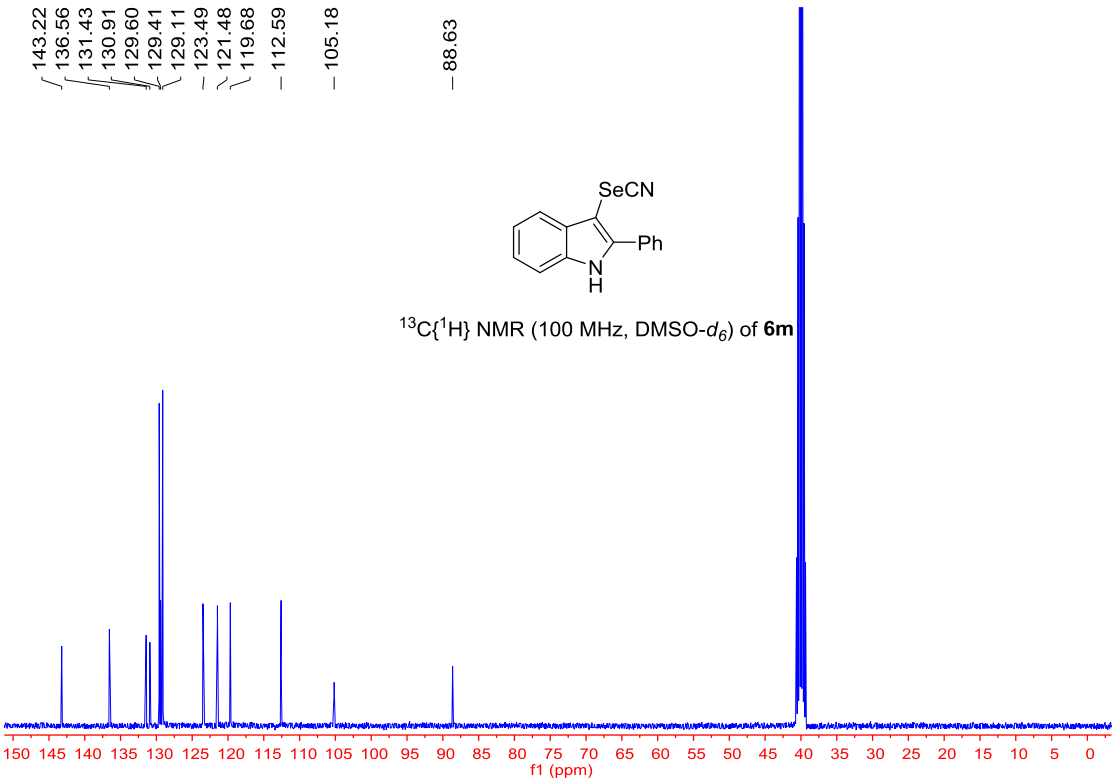


^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **6l**

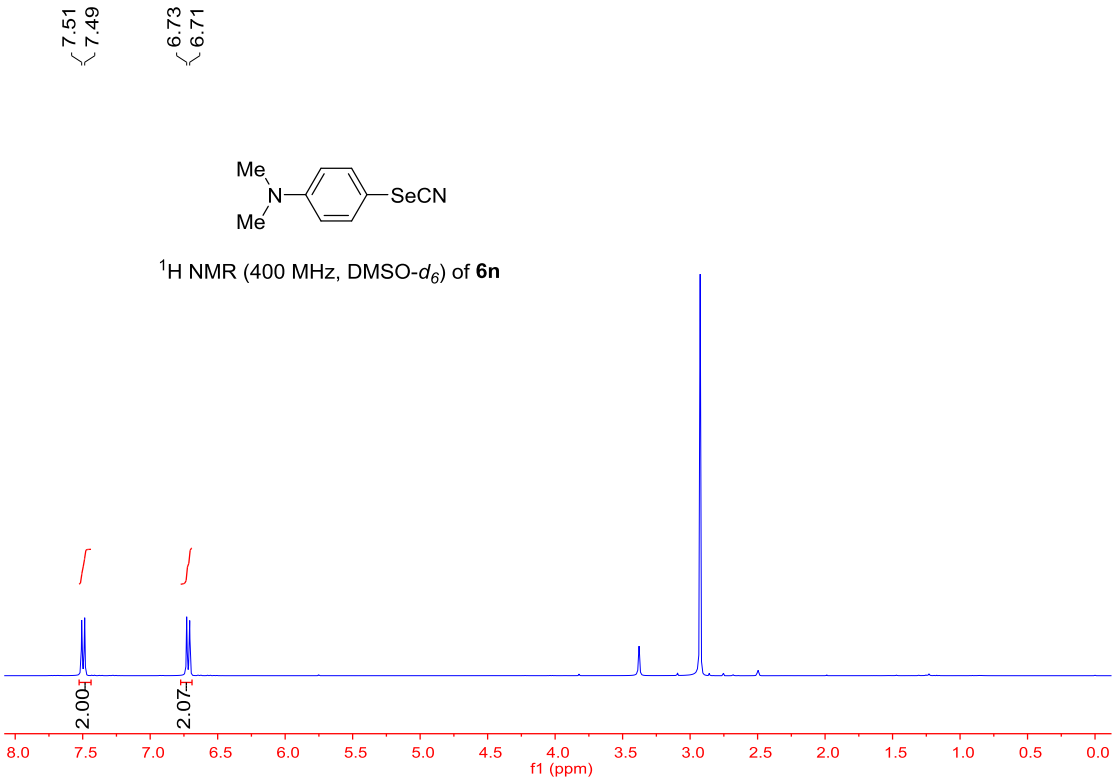




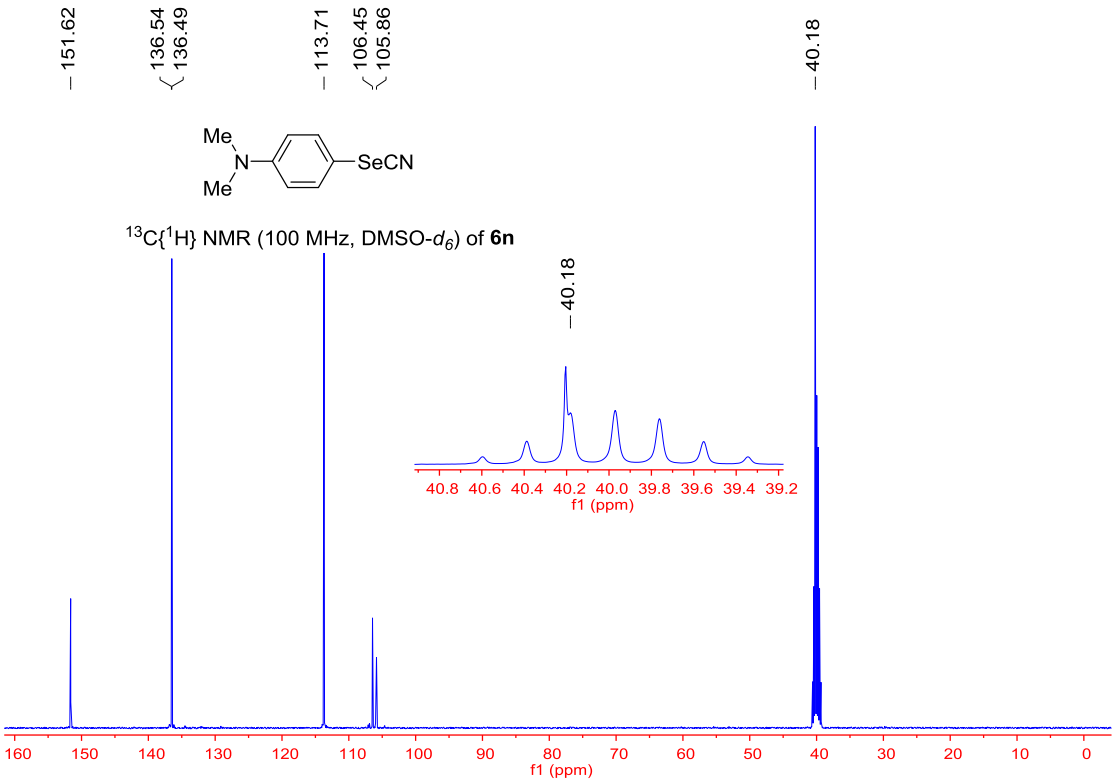
^{1}H NMR (400 MHz, DMSO-d_6) of **6m**



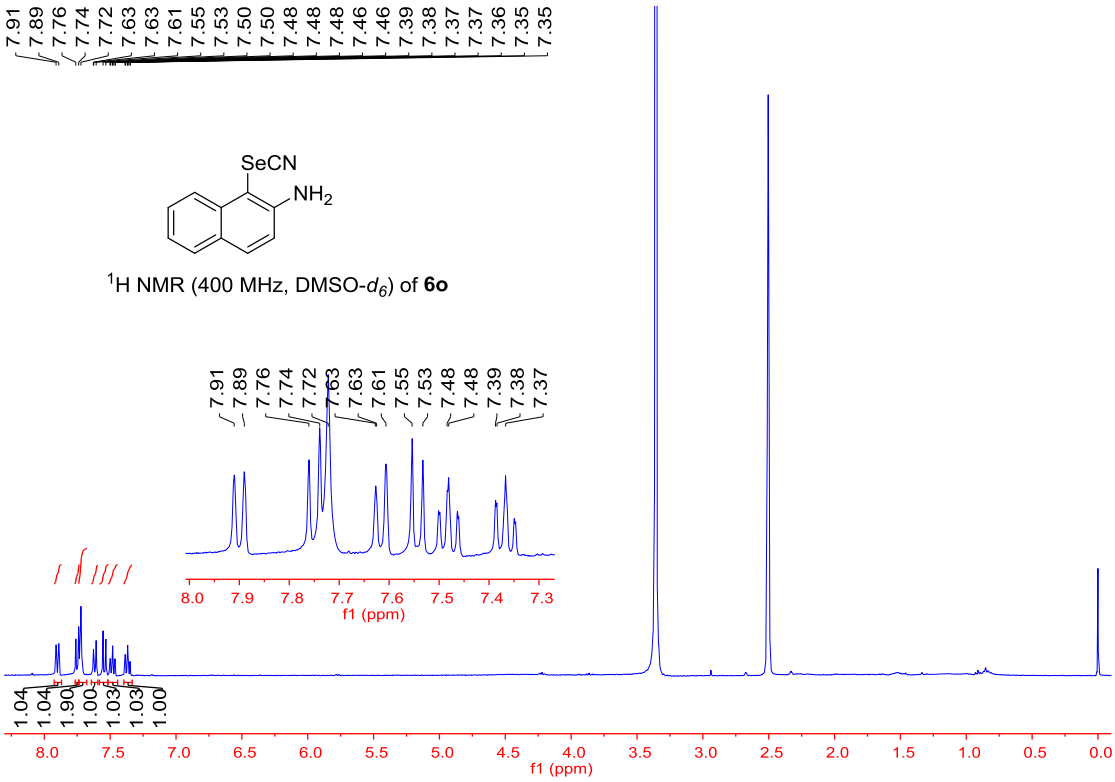
^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6) of **6m**



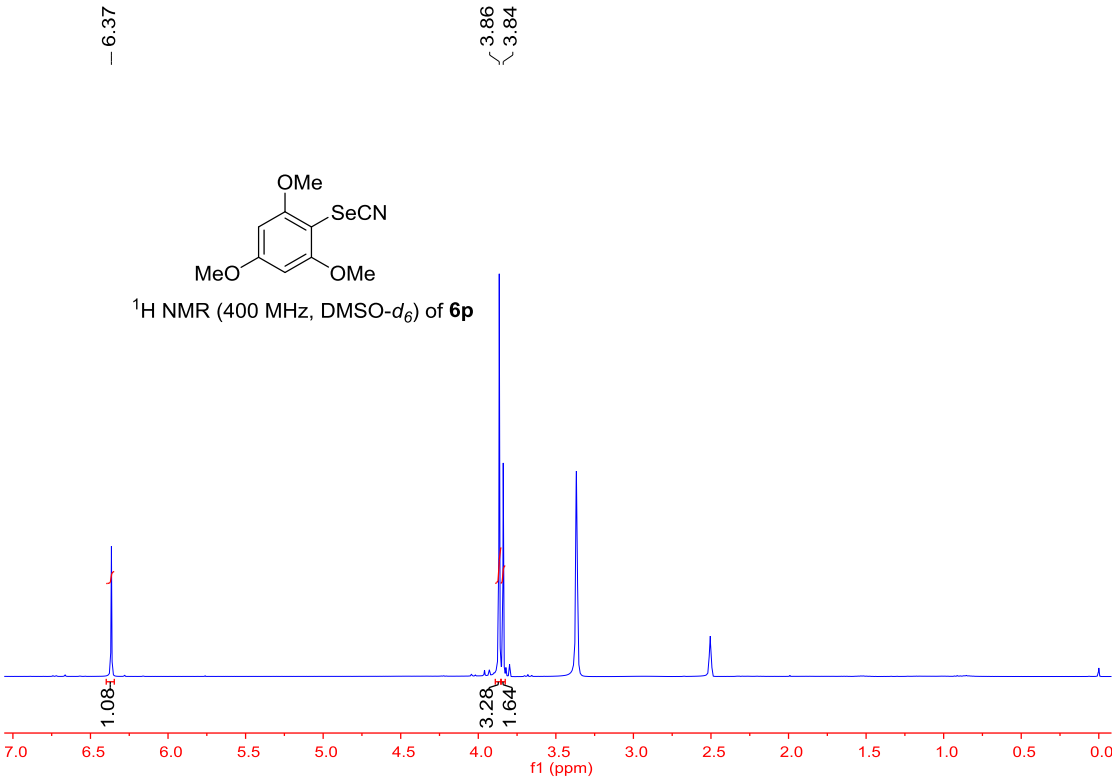
^{1}H NMR (400 MHz, DMSO-d_6) of **6n**



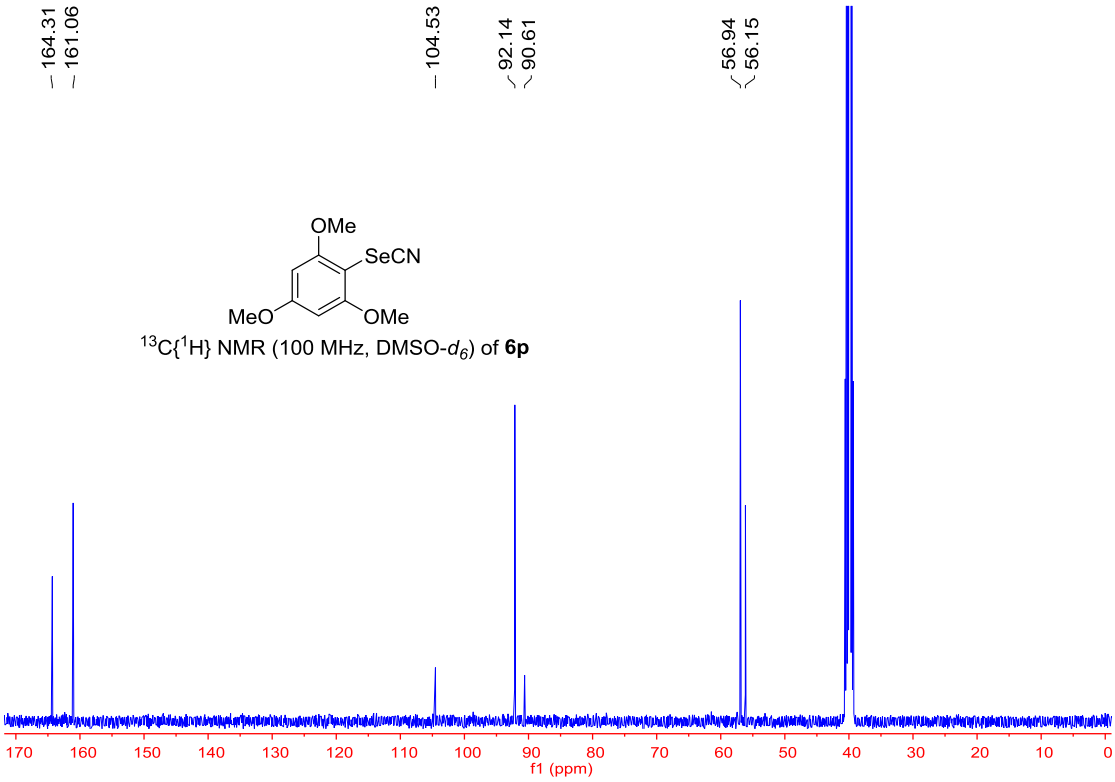
^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6) of **6n**



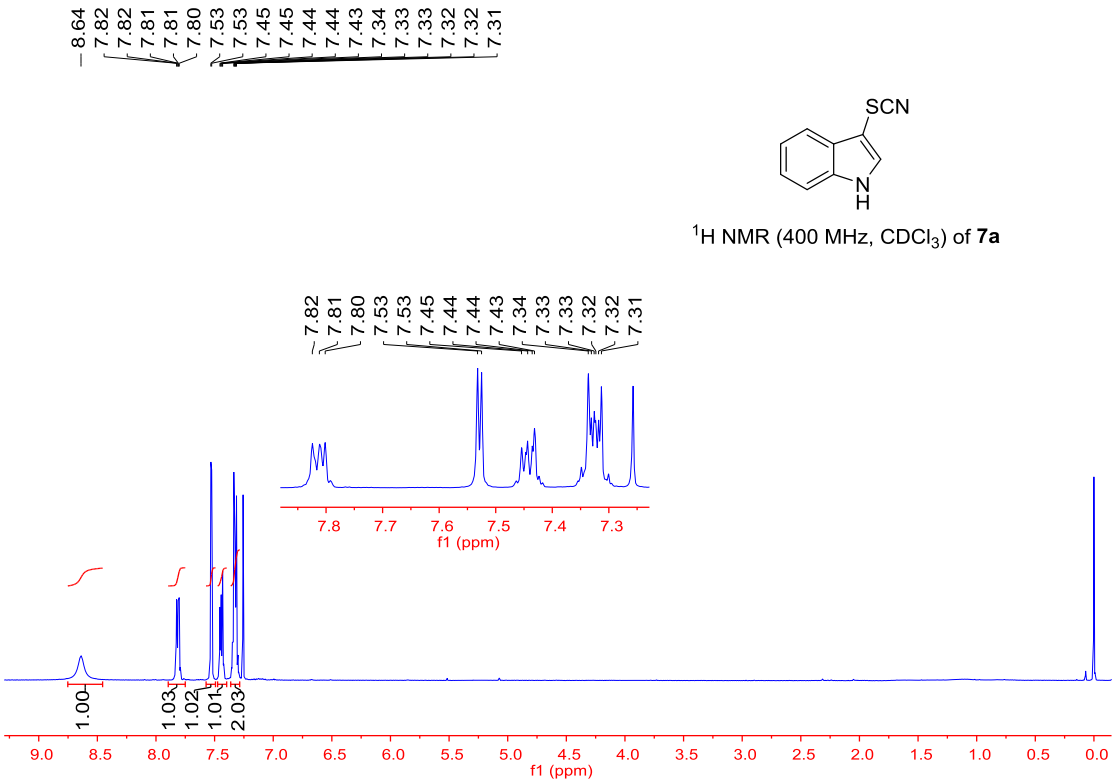
^{1}H NMR (400 MHz, DMSO-d_6) of **6o**



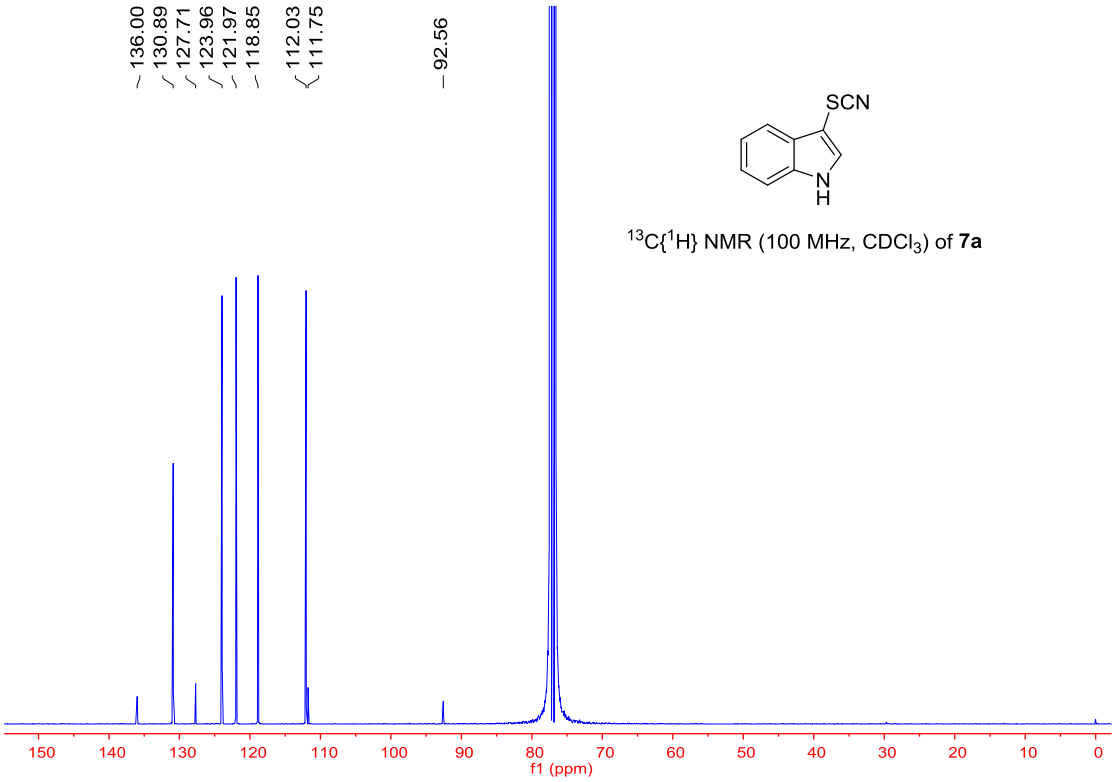
^{1}H NMR (400 MHz, DMSO-d_6) of **6p**



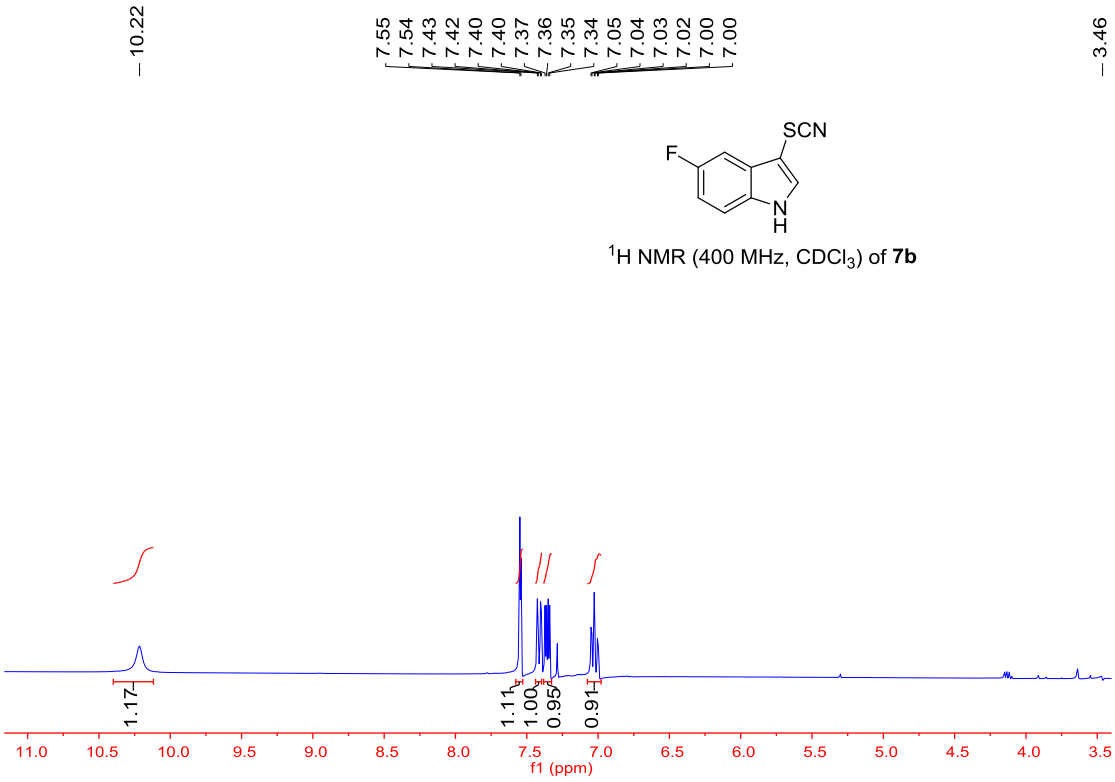
$^{13}C\{^{1}H\}$ NMR (100 MHz, DMSO-d_6) of **6p**



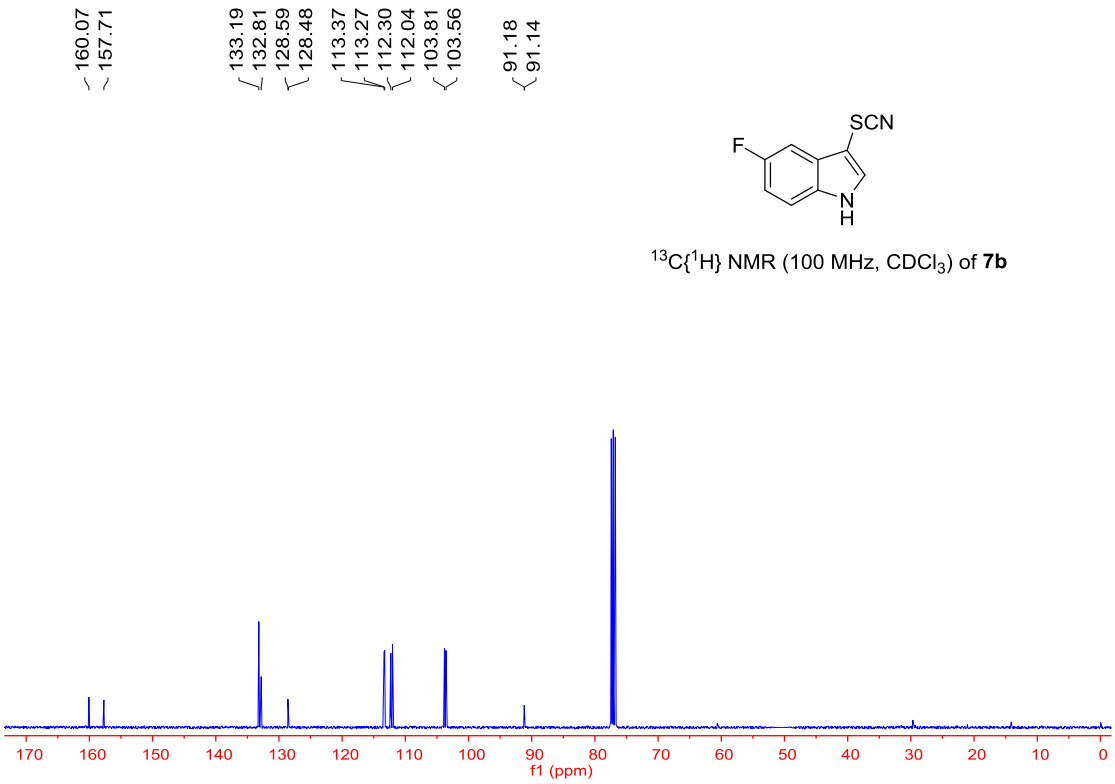
^{1}H NMR (400 MHz, $CDCl_3$) of **7a**



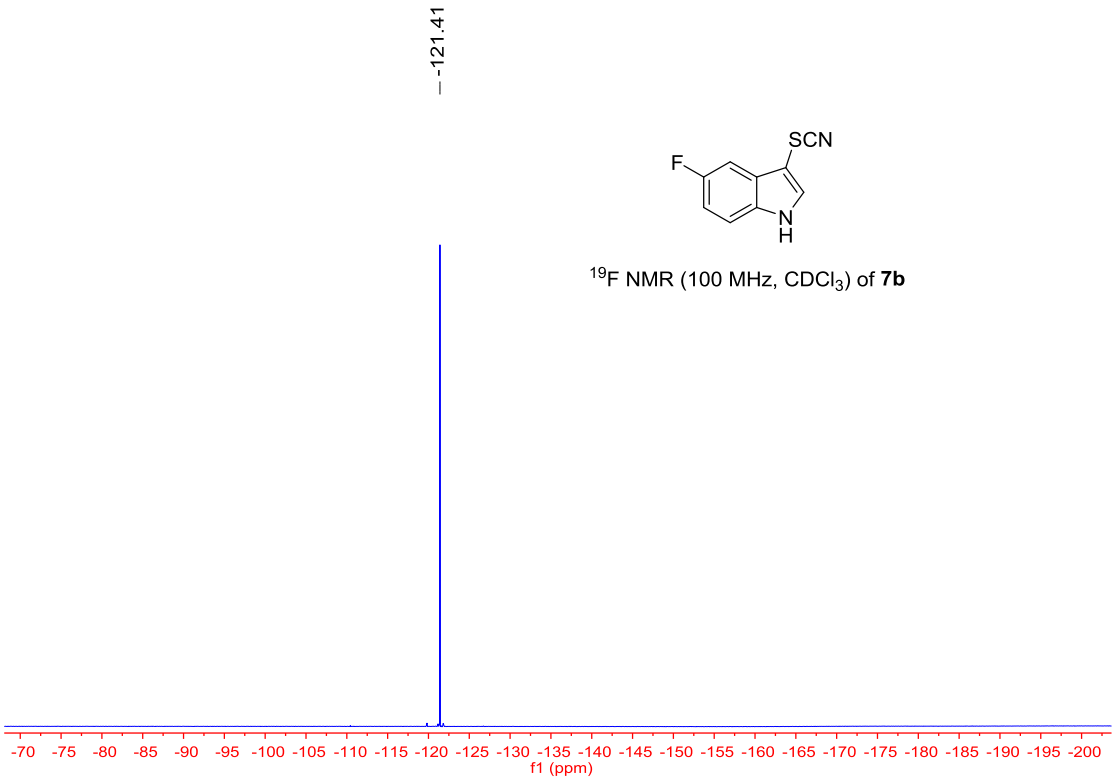
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **7a**



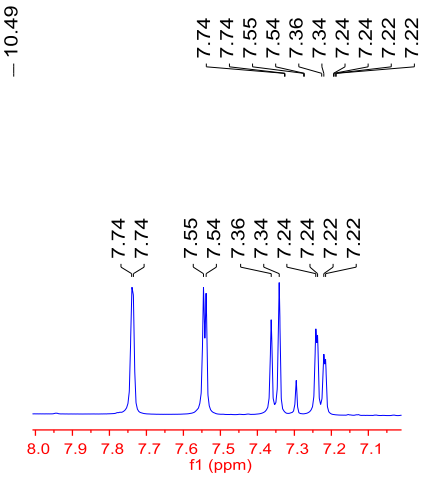
^{1}H NMR (400 MHz, $CDCl_3$) of **7b**

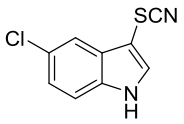


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **7b**

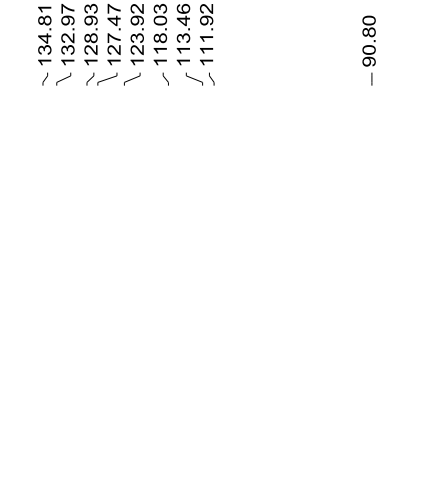


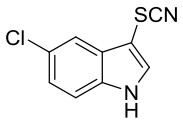
^{19}F NMR (100 MHz, $CDCl_3$) of **7b**



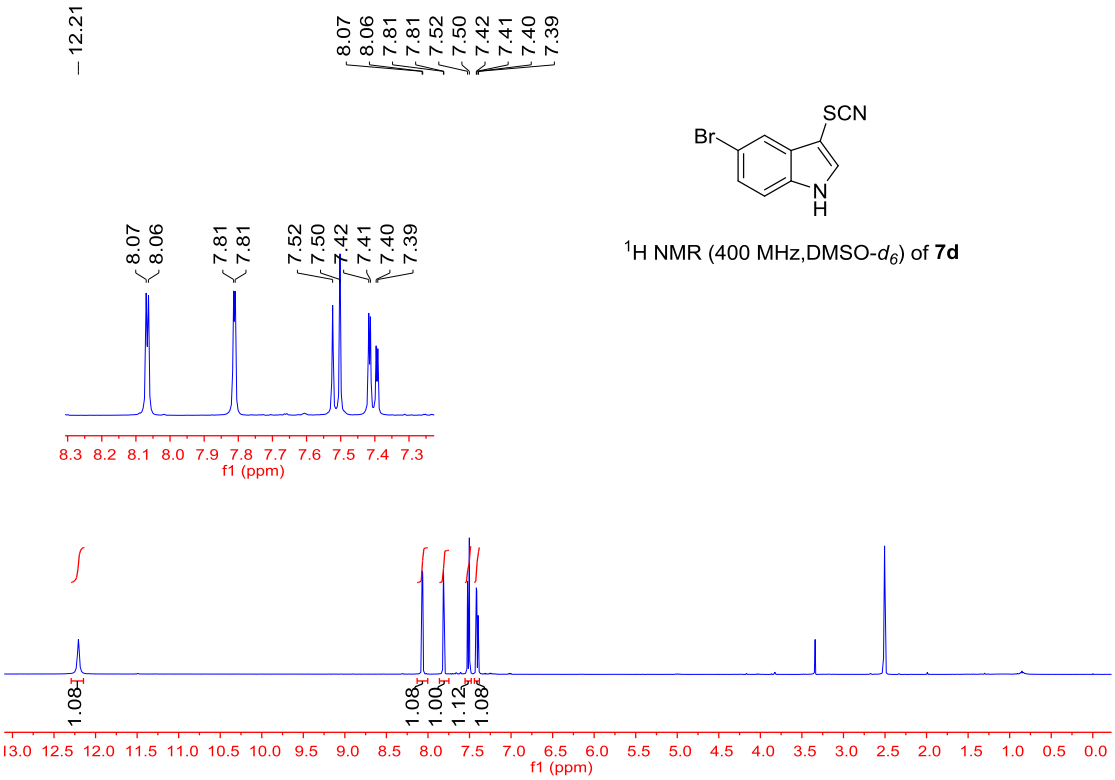


^{1}H NMR (400 MHz, $CDCl_3$) of **7c**

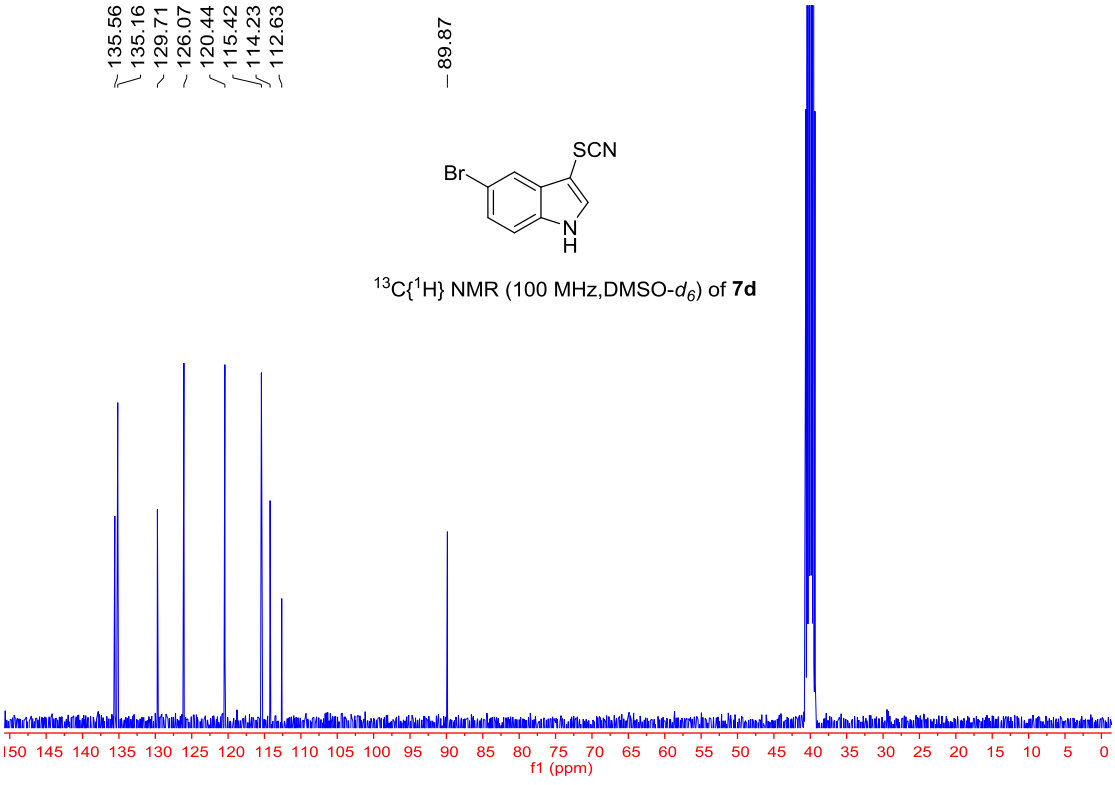




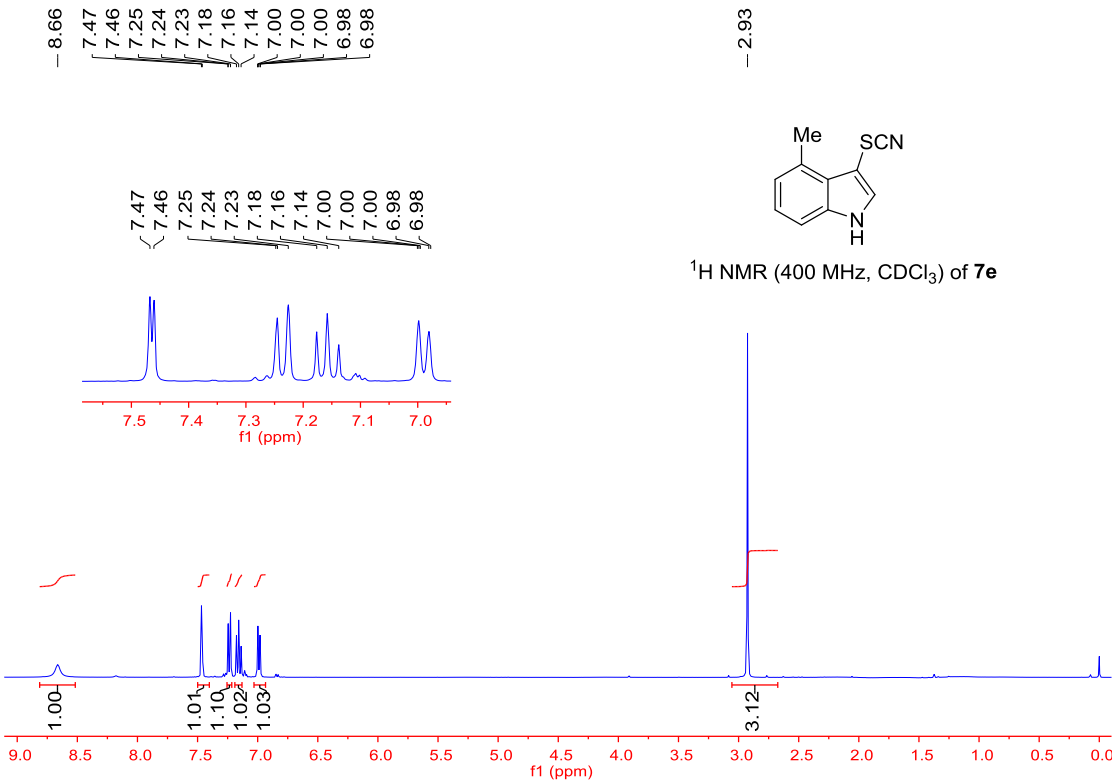
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **7c**



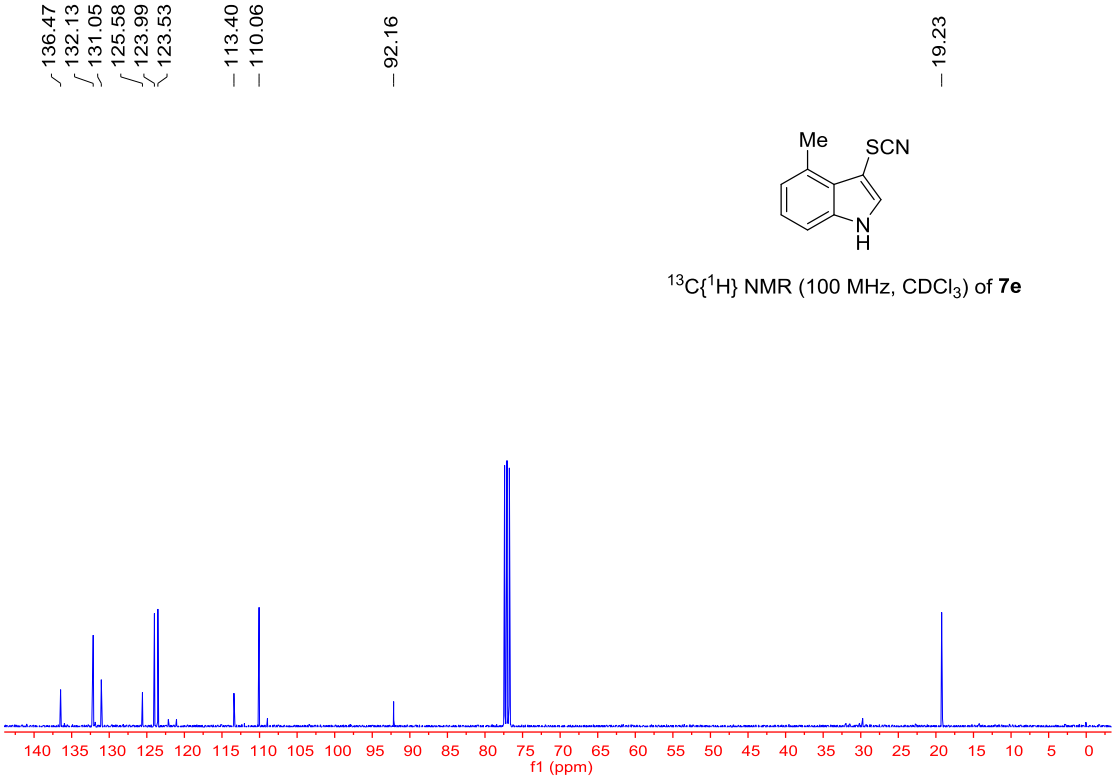
^{1}H NMR (400 MHz,DMSO-d_6) of **7d**



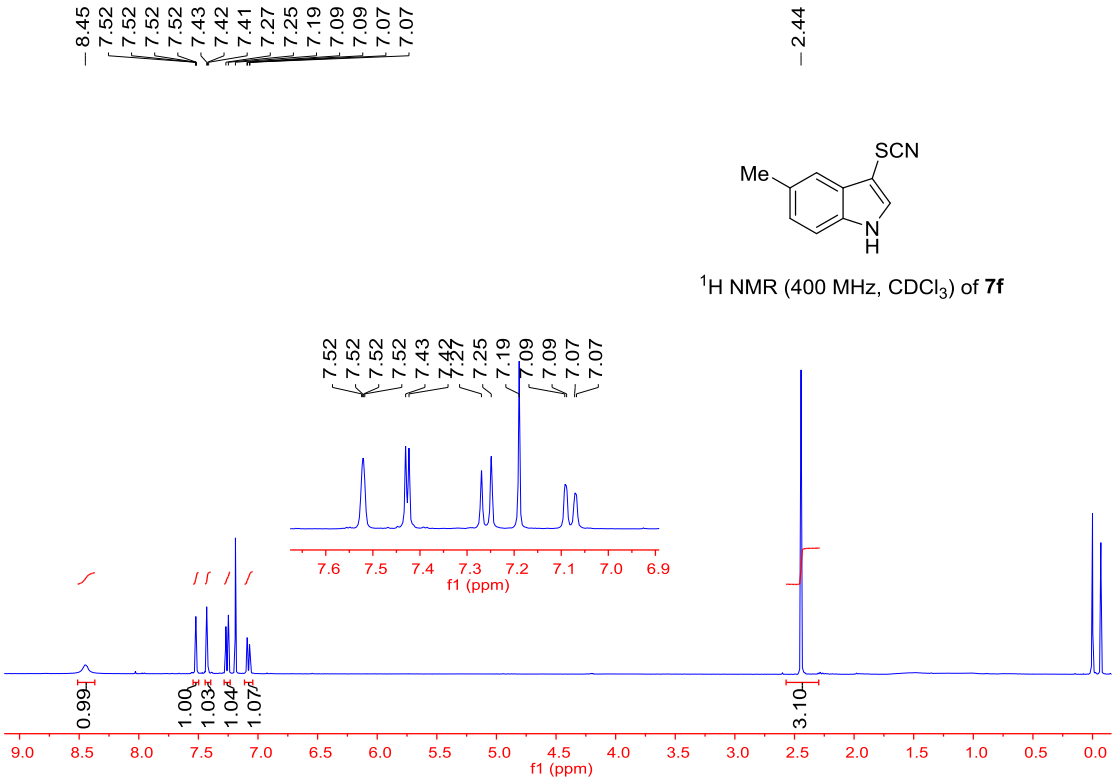
^{13}C{^{1}H} NMR (100 MHz,DMSO-d_6) of **7d**



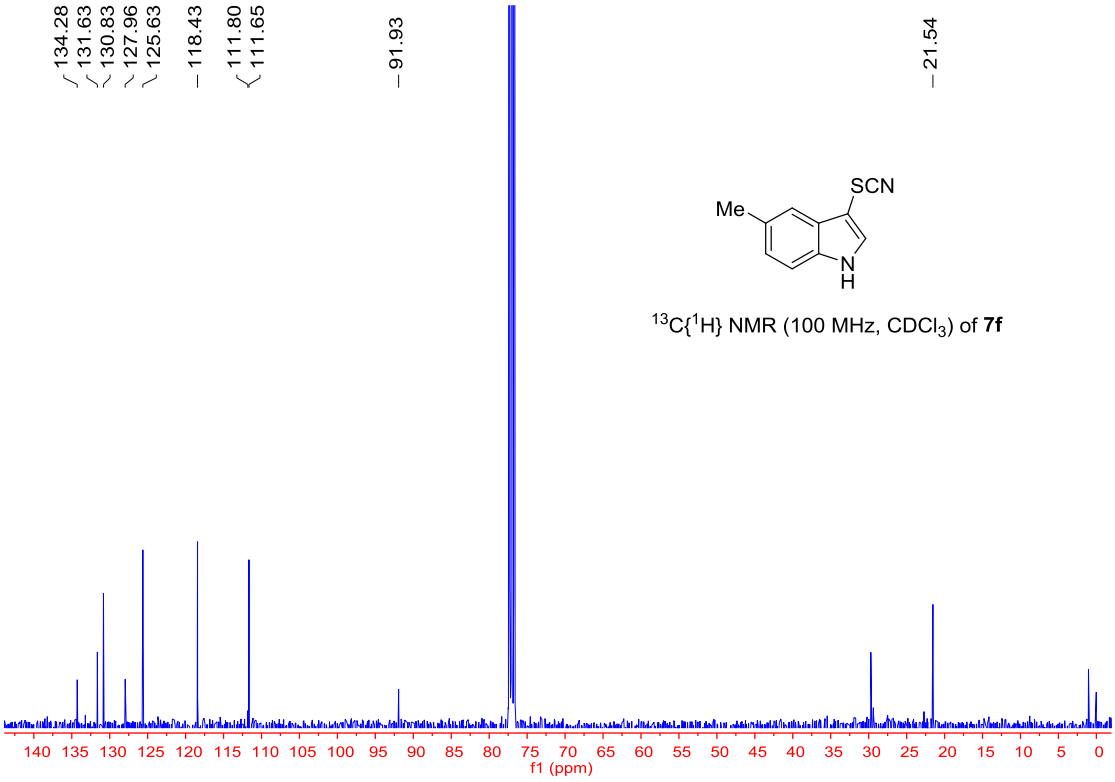
^{1}H NMR (400 MHz, $CDCl_3$) of **7e**



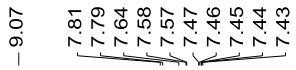
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) of **7e**

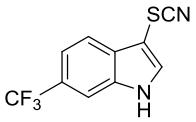


^{1}H NMR (400 MHz, $CDCl_3$) of **7f**

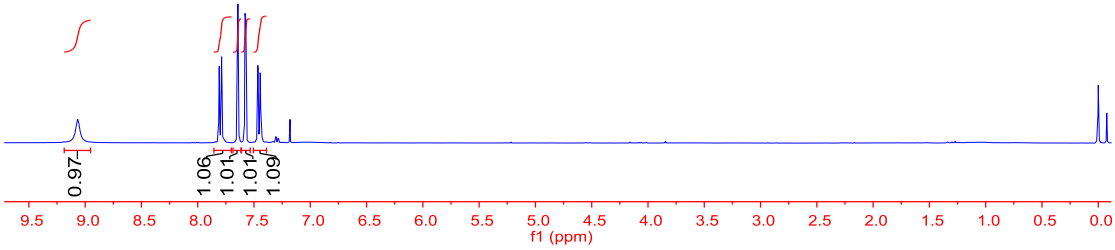


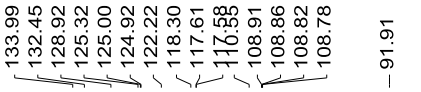
$^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$) of **7f**

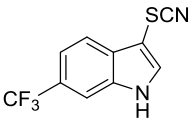




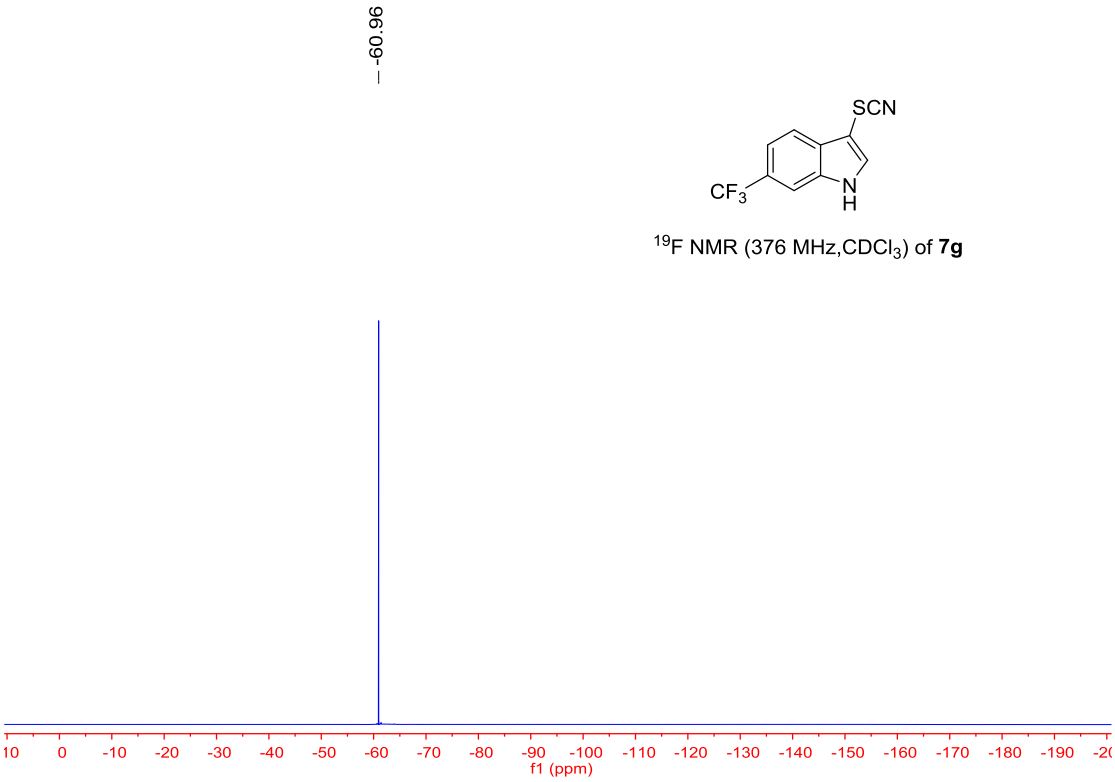
^{1}H NMR (400 MHz,$CDCl_3$) of **7g**



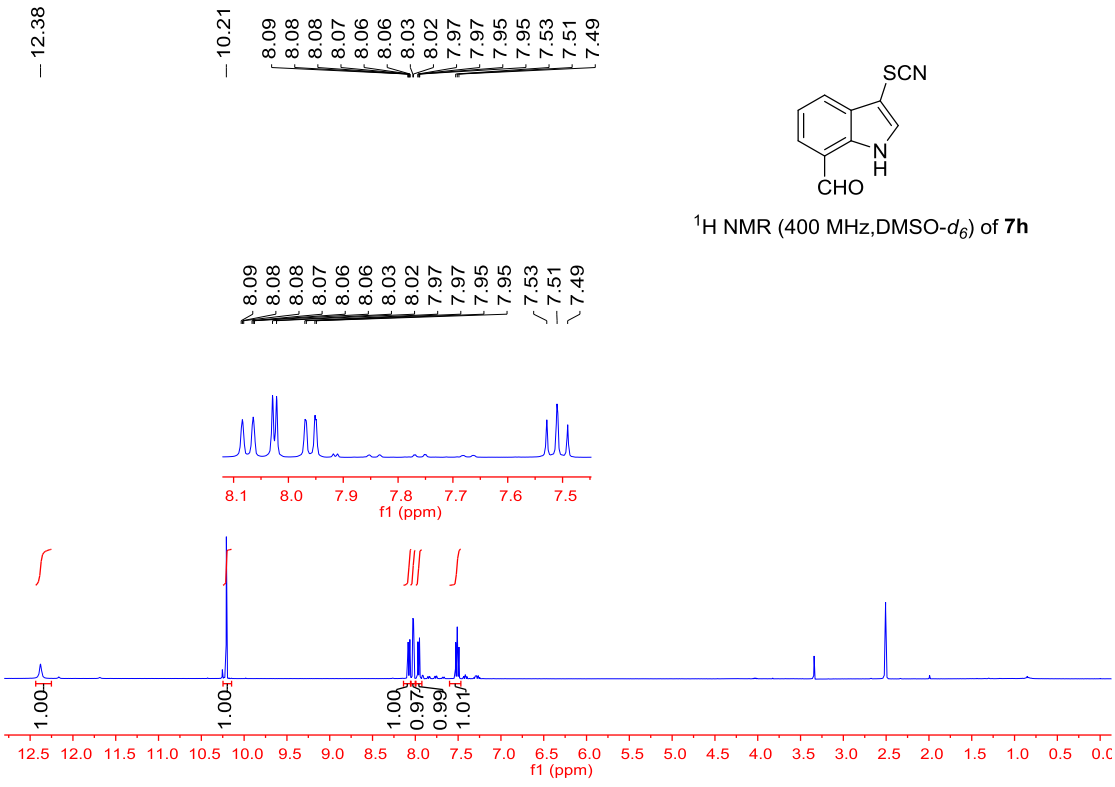




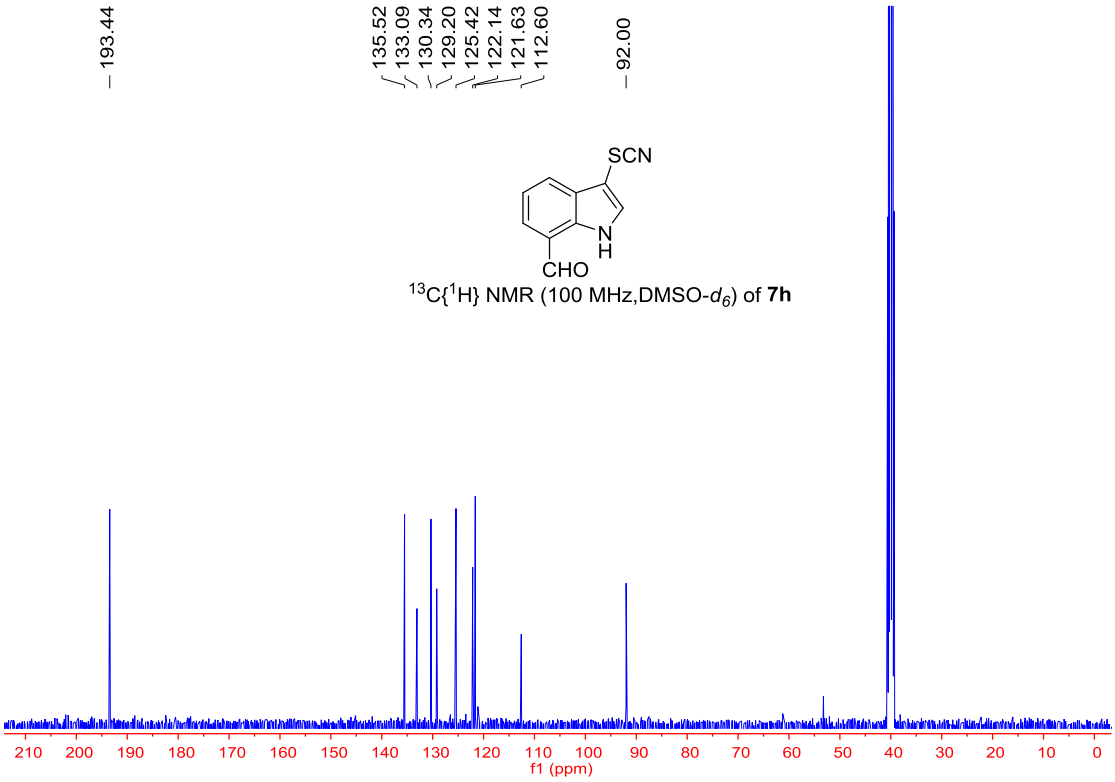
^{13}C{^{1}H} NMR (100 MHz,$CDCl_3$) of **7g**



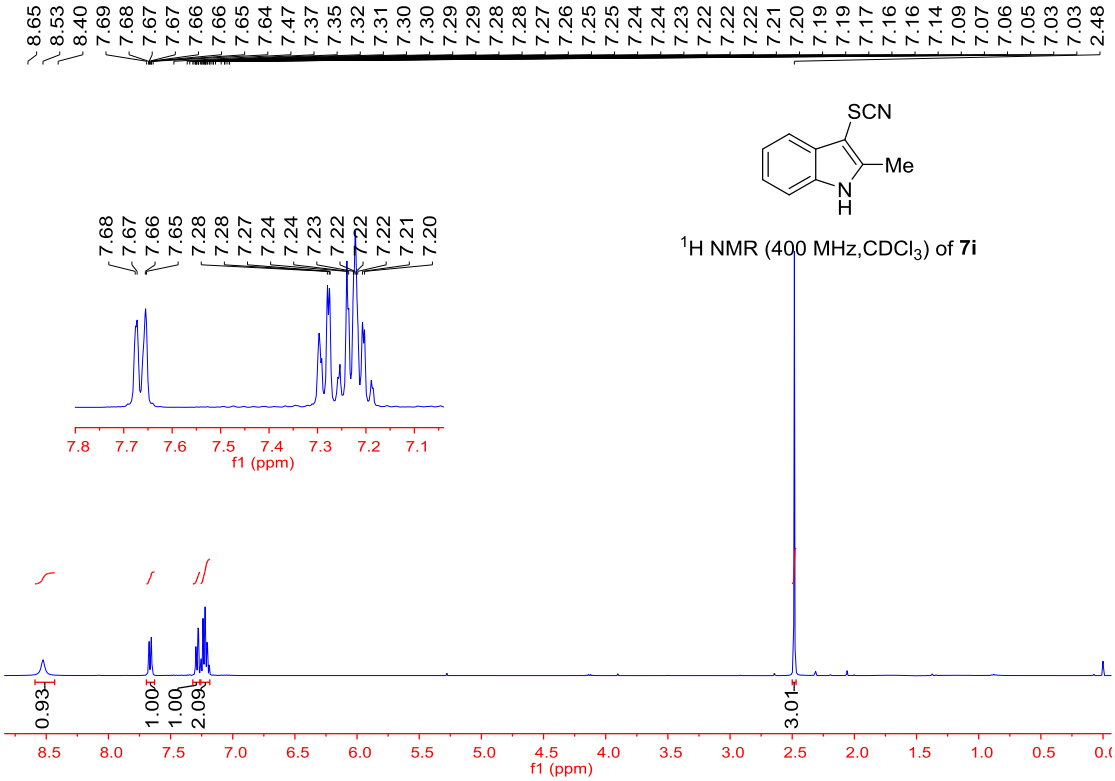
^{19}F NMR (376 MHz,$CDCl_3$) of **7g**



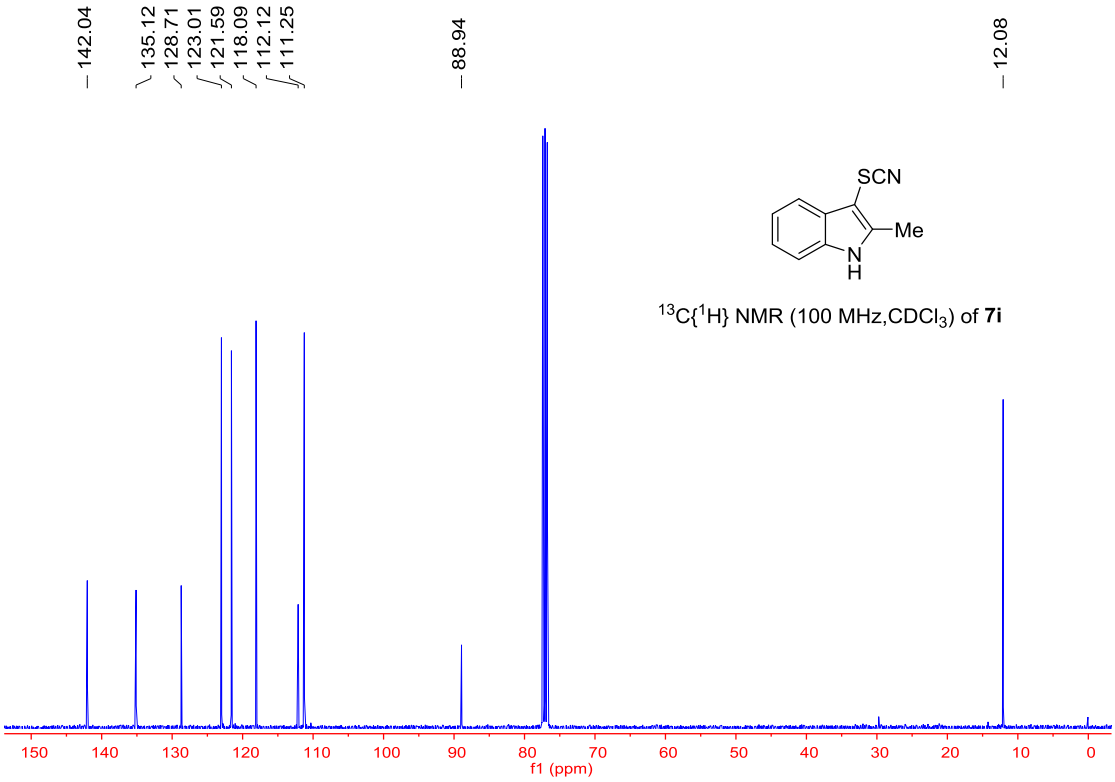
^{1}H NMR (400 MHz,DMSO-d_6) of **7h**



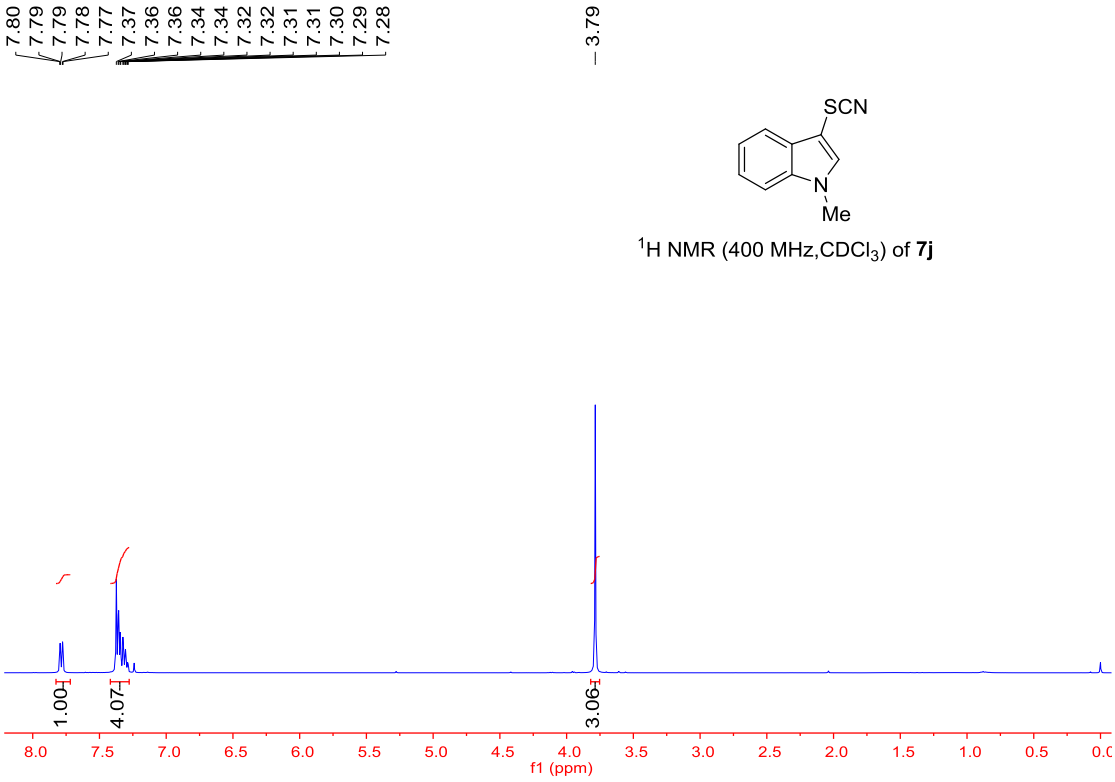
$^{13}C\{^{1}H\}$ NMR (100 MHz,DMSO-d_6) of **7h**



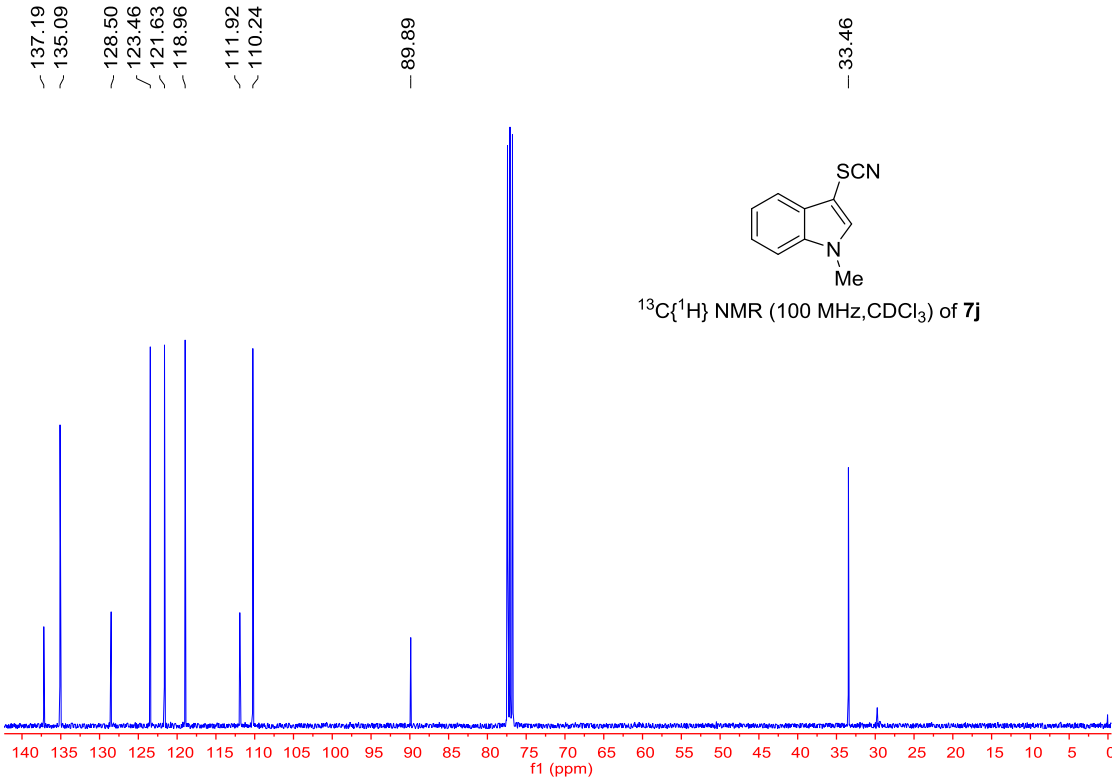
^{1}H NMR (400 MHz,$CDCl_3$) of **7i**



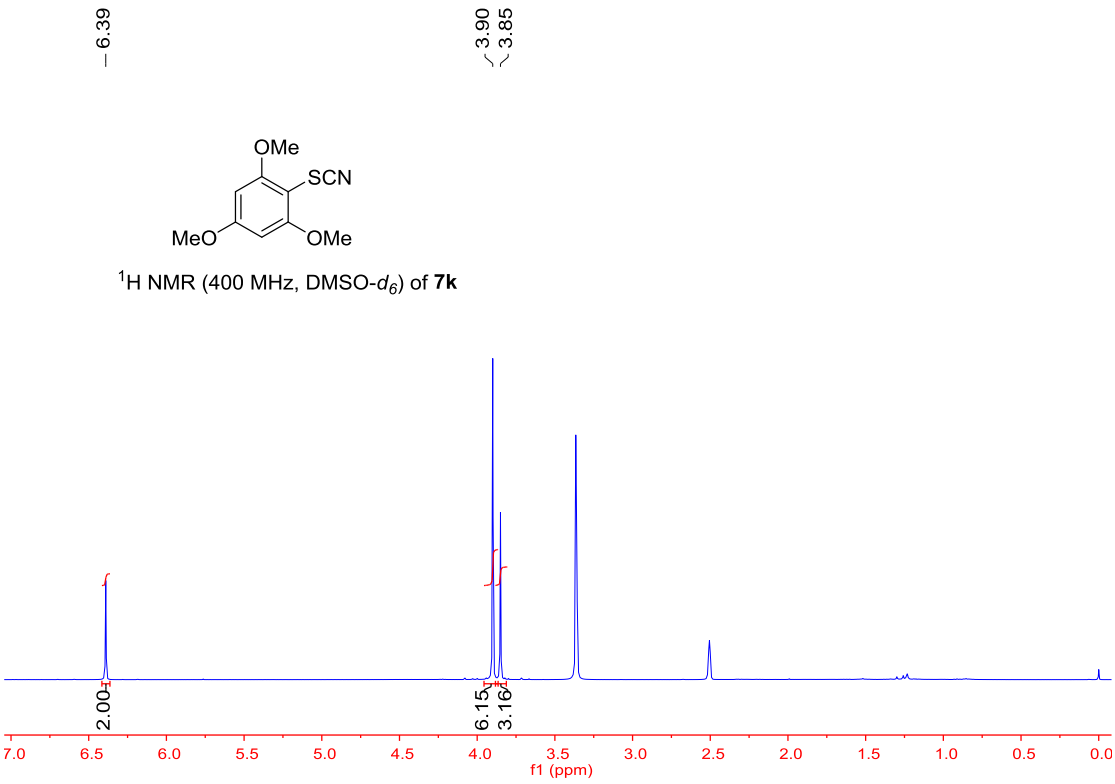
$^{13}C\{^{1}H\}$ NMR (100 MHz,$CDCl_3$) of **7i**



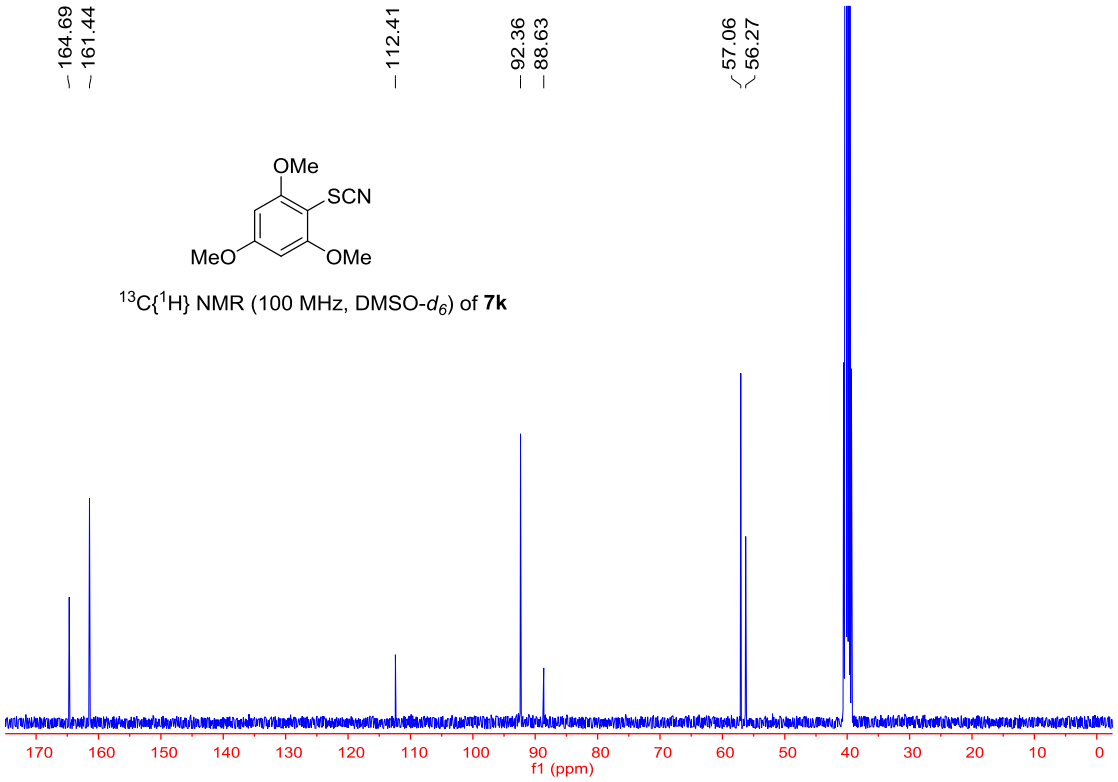
^{1}H NMR (400 MHz,$CDCl_3$) of **7j**



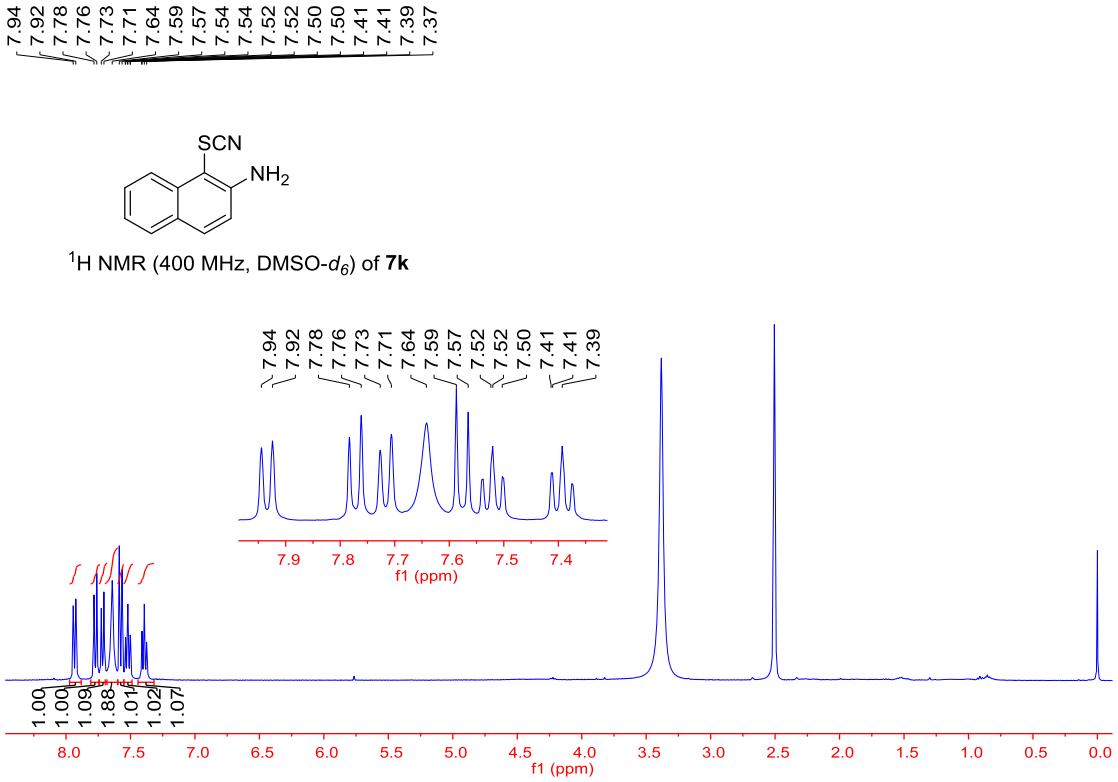
$^{13}C\{^{1}H\}$ NMR (100 MHz,$CDCl_3$) of **7j**



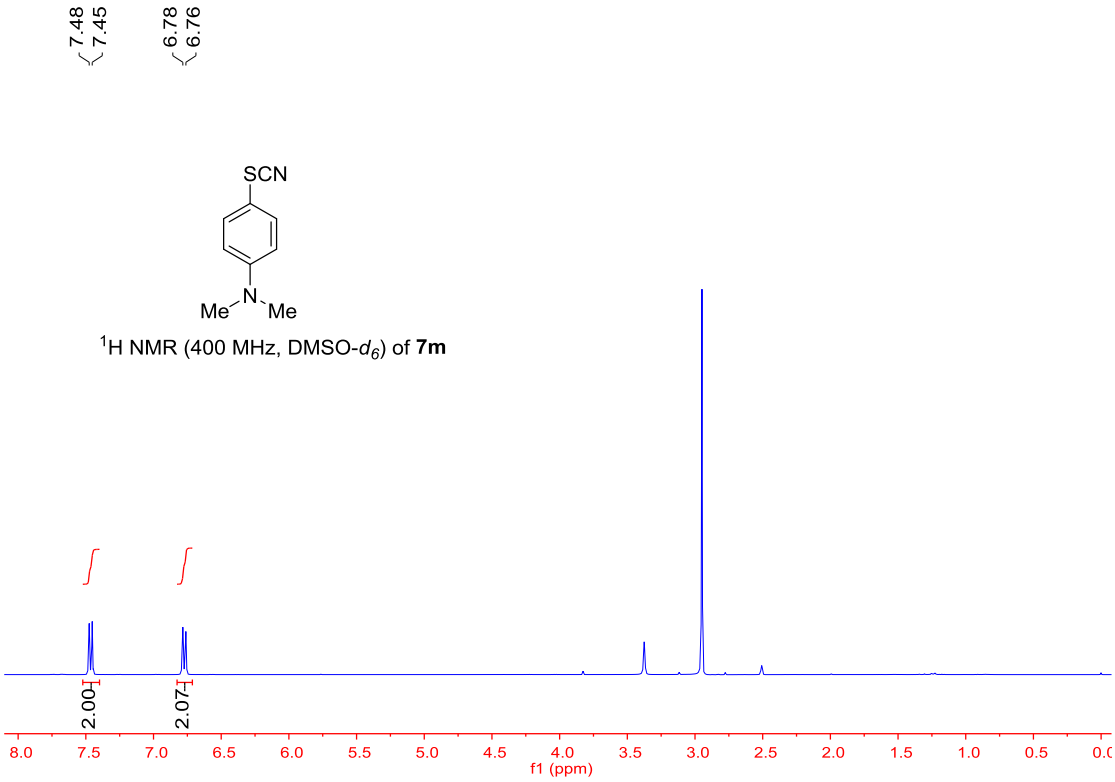
^{1}H NMR (400 MHz, DMSO-d_6) of **7k**



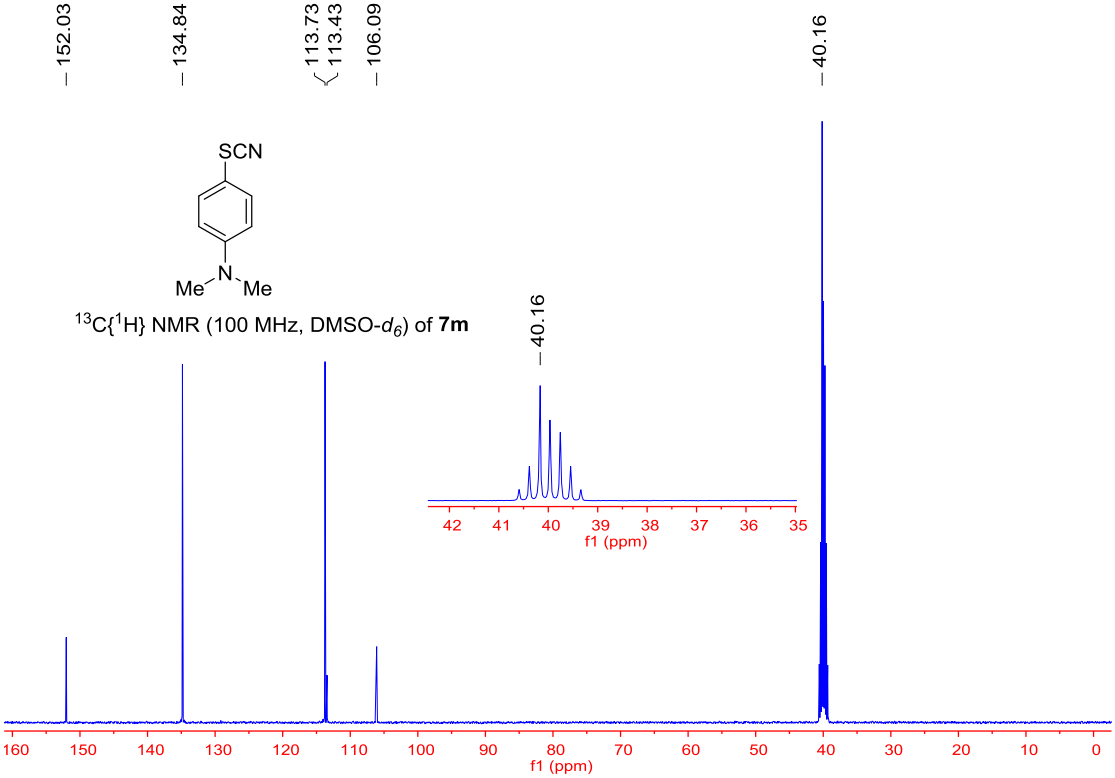
$^{13}C\{^{1}H\}$ NMR (100 MHz, DMSO-d_6) of **7k**



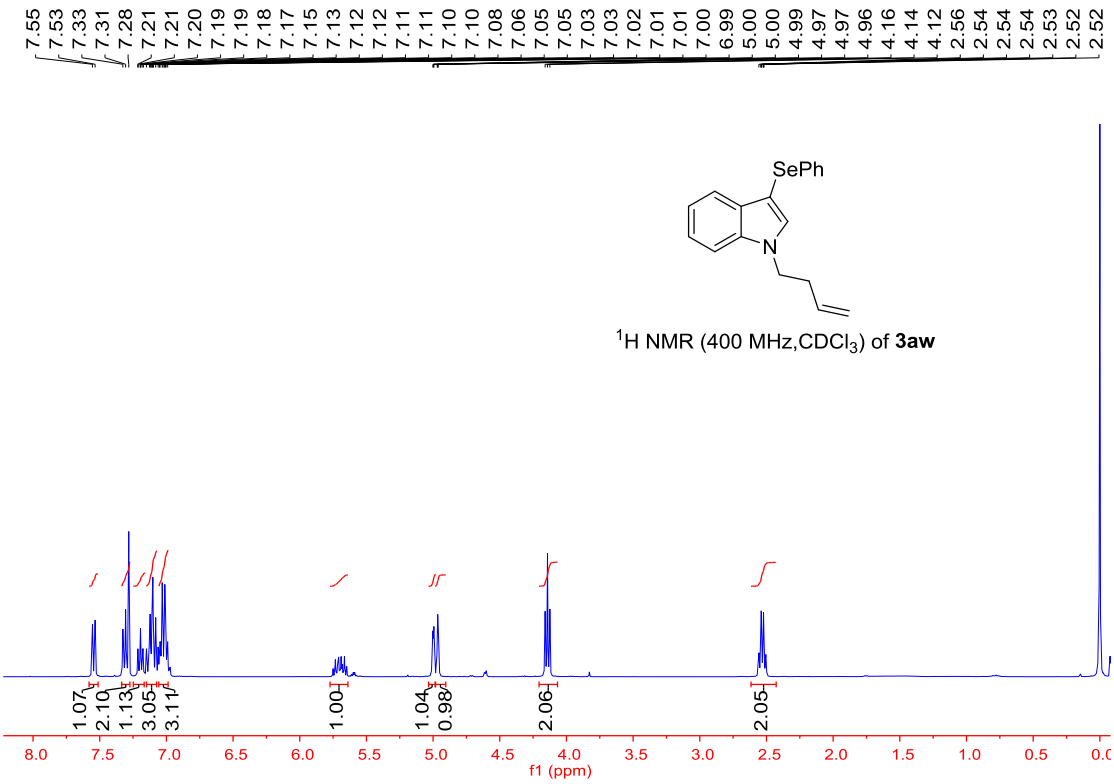
^{1}H NMR (400 MHz, DMSO-d_6) of **7k**



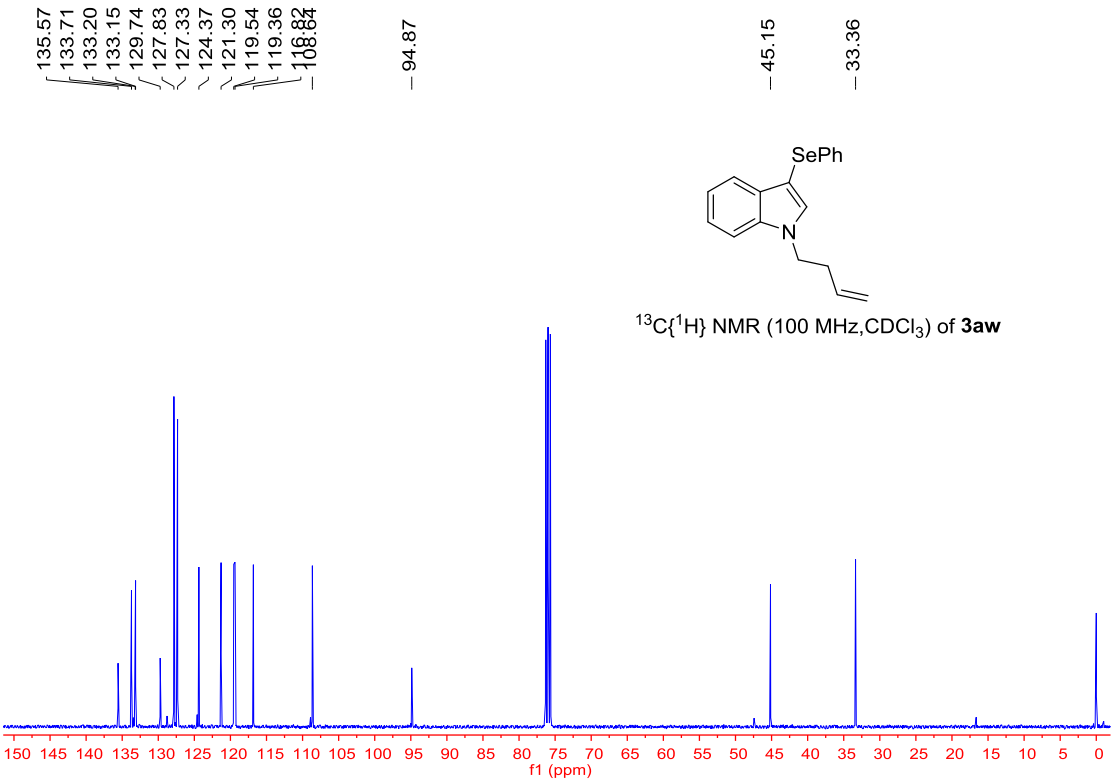
^{1}H NMR (400 MHz, DMSO-d_6) of **7m**



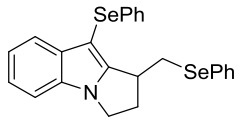
^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6) of **7m**



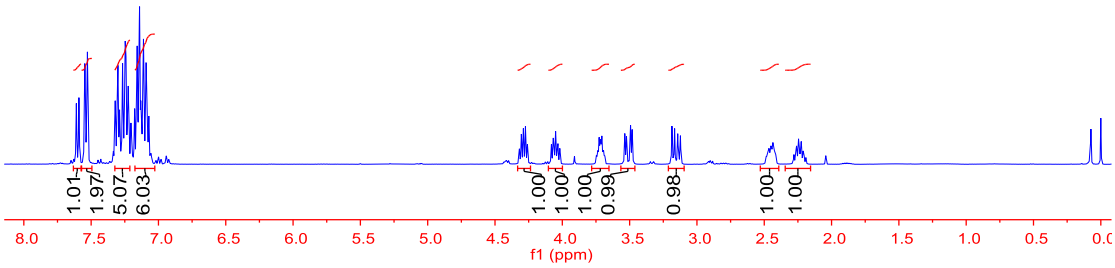
^{1}H NMR (400 MHz,$CDCl_3$) of **3aw**

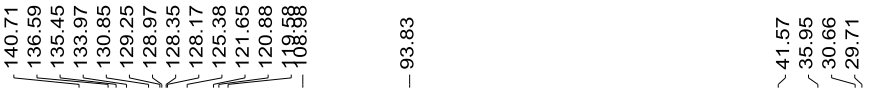


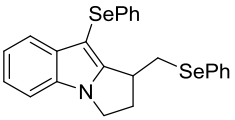
^{13}C{^{1}H} NMR (100 MHz,$CDCl_3$) of **3aw**



^{1}H NMR (400 MHz,$CDCl_3$) of **3aw'**







^{13}C{^{1}H} NMR (100 MHz,$CDCl_3$) of **3aw'**