

ADVANCED FUNCTIONAL MATERIALS

Supporting Information

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Effect of Spacer Length of Siloxane-Terminated Side
Chains on Charge Transport in Isoindigo-Based Polymer
Semiconductor Thin Films

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Materials and characterizations: All reagents and starting materials were purchased from Sigma Aldrich and used without further purification, unless otherwise noted. ^1H and ^{13}C NMR spectra were recorded using Varian Inova 5300 in deuterated chloroform at 293 K. Size exclusion chromatography (SEC) was performed in trichlorobenzene solution at 180 °C with EcoSEC HT GPC System (Tosoh Bioscience LLC) and the molecular weights calculated using a calibration curve based on polystyrene standards. Thermal gravimetric analyses (TGA) were performed using a Mettler TOLEDO TGA/SDTA851e at a heating rate of 10 °C min⁻¹ under a nitrogen flow (20 mL/min). Differential scanning calorimetry (DSC) measurements were acquired using a TA Q1000 calorimeter. The results shown are for the final sample heating at a rate of 1 °C/min. An indium standard was used to calibrate the instrument and nitrogen was used as the purge gas. 2D-GIXRD images were collected in reflection mode with a planar area detector in a He atmosphere at beamline 11-3 of the Stanford Synchrotron Radiation Lightsource. The sample-detector distance was nominally set to 400 mm, and the incidence angle was 0.12 degrees; the X-ray wavelength was 0.9758 Angstroms. Slits were set to 150 μm and 50 μm in the horizontal and vertical directions, respectively. GIXRD images were calibrated and analyzed using WxDiff software provided by Stefan Mannsfeld (*Adv. Mater.* **2011**, 23, 127). For details about the sample chamber, please see (*Adv. Funct. Mater.* **2010**, 20, 3519).

IID-C₃ (92.0 %): ¹H-NMR (CDCl₃, 500 Hz) δ: 9.10 (d, *J* = 9 Hz, 2H), 7.20 (dd, *J*₁ = 9 Hz, *J*₂ = 2 Hz, 2H), 6.93 (d, *J* = 2 Hz, 2H), 6.03-5.97 (m, 2H), 5.24-5.21 (m, 4H), 4.74-4.72 (m, 4H), ¹³C-NMR (CDCl₃, 500 Hz) δ: 161.2, 140.2, 135.0, 132.7, 131.2, 129.6, 128.6, 116.8, 107.5, 44.0. HRMS (ESI-TOF) Calculated for C₂₂H₁₆Br₂N₂O₂ (M+H)⁺: 500.9632, found: 500.9625.

IID-C₄ (91.4%): ¹H NMR (500 MHz, CDCl₃) δ 9.05 (d, *J* = 8.6 Hz, 2H), 7.17 (dd, *J* = 8.6, 1.8 Hz, 2H), 6.93 (d, *J* = 1.8 Hz, 2H), 5.82 (ddt, *J* = 17.1, 10.2, 6.9 Hz, 2H), 5.16 – 5.04 (m, 4H), 3.84 – 3.77 (m, 4H), 2.65 – 2.30 (m, 4H). ¹³C NMR (126 MHz, CDCl₃) δ 167.95, 145.76, 134.25, 132.79, 131.43, 127.04, 125.50, 120.61, 118.21, 111.58, 39.88, 31.95. HRMS (ESI-TOF) Calculated for C₂₄H₂₀Br₂N₂O₂ (M+H)⁺: 528.9946, found: 528.9957.

IID-C₅ (88.7 %): ¹H-NMR (CDCl₃, 500 Hz) δ 9.06 (d, *J* = 8.6 Hz, 2H), 7.16 (d, *J* = 8.6 Hz, 2H), 6.92 (s, 2H), 5.83 (ddtd, *J* = 16.9, 10.2, 6.6, 0.9 Hz, 2H), 5.12 – 5.01 (m, 4H), 3.74 (t, *J* = 7.5 Hz, 4H), 2.20 – 2.12 (m, 4H), 1.86 – 1.70 (m, 4H). ¹³C NMR (126 MHz, CDCl₃) δ 167.97, 145.87, 137.33, 132.82, 131.45, 127.04, 125.45, 120.62, 116.04, 111.54, 39.95, 31.25, 26.68. HRMS (ESI-TOF) Calculated for C₂₆H₂₄N₂O₂S₂ (M+H)⁺: 557.0259, found: 557.0256.

IID-C₆ (75.5 %): ¹H-NMR (CDCl₃, 500 Hz) δ 9.05 (d, *J* = 8.9 Hz, 2H), 7.16 (dd, *J* = 8.9, 1.9 Hz, 2H), 6.91 (d, *J* = 1.9 Hz, 2H), 5.78 (ddt, *J* = 16.9, 10.1, 6.7 Hz, 2H), 5.07 – 4.94 (m, 4H), 3.73 (t, *J* = 7.4 Hz, 4H), 2.12 (q, *J* = 7.2 Hz, 4H), 1.74 – 1.64 (m, 4H), 1.49 (p, *J* = 7.5 Hz, 4H). ¹³C NMR (126 MHz, CDCl₃) δ 167.94, 145.91, 138.35, 132.84, 131.44, 127.02, 125.41, 120.62, 115.42, 111.54, 40.29, 33.55, 26.99, 26.39. HRMS (ESI-TOF) Calculated for C₂₈H₂₈N₂O₂S₂ (M+H)⁺: 585.0572, found: 585.0576.

IID-C₇ (65.5 %): ¹H-NMR (CDCl₃, 500 Hz) δ 9.06 (d, *J* = 8.6 Hz, 2H), 7.16 (dd, *J* = 8.6, 1.9 Hz, 2H), 6.91 (d, *J* = 1.9 Hz, 2H), 5.79 (ddt, *J* = 16.9, 10.2, 6.7 Hz, 2H), 5.07 – 4.89 (m, 4H),

3.82 – 3.64 (m, 4H), 2.06 (q, $J = 7.0$ Hz, 4H), 1.69 (p, $J = 7.5$ Hz, 4H), 1.43 (dddd, $J = 24.5$, 13.7, 9.2, 5.8 Hz, 8H). ^{13}C NMR (126 MHz, CDCl_3) δ 167.75, 145.75, 138.62, 132.67, 131.23, 126.82, 125.21, 120.45, 114.73, 111.35, 40.24, 33.64, 28.54, 27.28, 26.47. HRMS (ESI-TOF) Calculated for $\text{C}_{30}\text{H}_{32}\text{N}_2\text{O}_2\text{S}_2$ ($\text{M}+\text{H}$) $^+$:613.0885, found:613.0885.

IID-C₈ (76.1 %): ^1H -NMR (CDCl_3 , 500 Hz) δ 9.06 (d, $J = 8.6$ Hz, 2H), 7.16 (dd, $J = 8.6$, 1.9 Hz, 2H), 6.91 (d, $J = 1.9$ Hz, 2H), 5.79 (ddt, $J = 16.9$, 10.1, 6.8 Hz, 2H), 5.12 – 4.84 (m, 4H), 3.72 (t, $J = 7.4$ Hz, 4H), 2.04 (q, $J = 7.0$ Hz, 4H), 1.67 (d, $J = 8.2$ Hz, 4H), 1.42 – 1.34 (m, 12H). ^{13}C NMR (126 MHz, CDCl_3) δ 167.76, 145.78, 138.94, 131.25, 126.81, 125.21, 120.45, 114.48, 111.35, 40.28, 33.72, 28.80, 27.40, 26.90. HRMS (ESI-TOF) Calculated for $\text{C}_{32}\text{H}_{36}\text{N}_2\text{O}_2\text{S}_2$ ($\text{M}+\text{H}$) $^+$:641.1199, found:641.1208.

IID-C₉ (76.0 %): ^1H -NMR (CDCl_3 , 500 Hz) δ 9.06 (d, $J = 8.6$ Hz, 2H), 7.16 (dd, $J = 8.6$, 1.9 Hz 2H), 6.91 (d, $J = 1.9$ Hz, 2H), 5.79 (ddt, $J = 16.8$, 10.1, 6.7 Hz, 2H), 5.09 – 4.81 (m, 4H), 3.71 (t, $J = 7.4$ Hz, 4H), 2.06 – 2.00 (m, 4H), 1.67 (td, $J = 8.2$, 7.6, 3.6 Hz, 4H), 1.48 – 1.14 (m, 16H). ^{13}C NMR (126 MHz, CDCl_3) δ 167.75, 145.78, 139.09, 132.67, 131.24, 126.80, 125.19, 120.44, 114.34, 111.35, 40.30, 33.79, 29.19, 29.02, 28.86, 27.43, 26.99. HRMS (ESI-TOF) Calculated for $\text{C}_{34}\text{H}_{40}\text{N}_2\text{O}_2\text{S}_2$ ($\text{M}+\text{H}$) $^+$:669.1512, found:669.1534.

IID-C₁₀ (86.5 %): ^1H -NMR (CDCl_3 , 500 Hz) δ 9.05 (d, $J = 8.6$ Hz, 2H), 7.15 (dd, $J = 8.6$, 1.9 Hz 2H), 6.90 (d, $J = 1.9$ Hz, 2H), 5.93 – 5.67 (m, 2H), 5.09 – 4.83 (m, 4H), 3.71 (t, $J = 7.4$ Hz, 4H), 2.13 – 1.92 (m, 4H), 1.77 – 1.60 (m, 4H), 1.40 – 1.19 (m, 20H).. ^{13}C NMR (126 MHz, CDCl_3) δ 167.93, 145.97, 139.39, 132.85, 131.43, 126.99, 125.36, 120.63, 114.45, 111.53, 40.50, 34.02, 29.58, 29.47, 29.27, 29.10, 27.62, 27.21. HRMS (ESI-TOF) Calculated for $\text{C}_{36}\text{H}_{44}\text{N}_2\text{O}_2\text{S}_2$ ($\text{M}+\text{H}$) $^+$:697.1825, found:697.1844.

IID-C₁₁ (86.1 %): ^1H -NMR (CDCl_3 , 500 Hz) δ 9.05 (d, $J = 8.5$ Hz, 2H), 7.15 (dd, $J = 8.6$, 1.9 Hz, 2H), 6.90 (d, $J = 1.9$ Hz, 2H), 5.80 (ddt, $J = 17.0$, 10.1, 6.7 Hz, 2H), 5.09 – 4.75 (m, 4H),

3.70 (t, $J = 7.5$ Hz, 4H), 2.02 (q, $J = 7.1$ Hz, 4H), 1.66 (p, $J = 7.6, 7.2$ Hz, 4H), 1.44 – 1.12 (m, 28H). ^{13}C NMR (126 MHz, CDCl_3) δ 167.92, 145.97, 139.45, 132.84, 131.43, 126.98, 125.35, 120.62, 114.40, 111.52, 40.50, 34.06, 29.70, 29.64, 29.51, 29.34, 29.15, 27.63, 27.22. HRMS (ESI-TOF) Calculated for $\text{C}_{38}\text{H}_{48}\text{N}_2\text{O}_2\text{S}_2$ ($\text{M}+\text{H}$) $^+$: 725.2139, found: 725.1249.

IID- C_3Si (65 %): ^1H -NMR (CDCl_3 , 500 Hz) δ 9.08 (d, $J = 8.6$ Hz, 2H), 7.16 (dd, $J = 8.6, 1.9$ Hz, 2H), 6.94 (d, $J = 1.8$ Hz, 2H), 3.72 (t, $J = 7.5$ Hz, 4H), 1.77-1.65 (m, 4H), 0.56 – 0.48 (m, 4H), 0.08 (s, 36H), 0.02 (s, 6H). ^{13}C NMR (126 MHz, CDCl_3) δ 167.96, 146.06, 132.94, 131.39, 127.00, 125.36, 120.64, 111.64, 43.07, 21.38, 15.03, 2.13, -0.04. HRMS (ESI-TOF) Calculated for $(\text{C}_{36}\text{H}_{60}\text{Br}_2\text{N}_2\text{O}_6\text{Si}_6 \text{M}+\text{H})^+$: 945.1495, found: 945.1451.

IID- C_4Si (84.1 %): ^1H -NMR (CDCl_3 , 500 Hz) δ 9.09 (d, $J = 8.6$ Hz, 2H), 7.16 (dd, $J = 8.6, 1.9$ Hz, 2H), 6.93 (d, $J = 1.9$ Hz, 2H), 3.84 – 3.62 (m, 4H), 1.70 (p, $J = 7.5$ Hz, 5H), 1.42 (td, $J = 8.2, 7.3, 3.6$ Hz, 4H), 0.58 – 0.47 (m, 4H), 0.07 (s, 36H), -0.00 (s, 6H). ^{13}C NMR (126 MHz, CDCl_3) δ 167.92, 146.02, 132.86, 131.52, 126.95, 125.34, 120.66, 111.53, 40.24, 30.99, 20.95, 17.54, 2.12, 0.00. HRMS (MALDI) Calculated for $\text{C}_{38}\text{H}_{64}\text{Br}_2\text{N}_2\text{O}_6\text{Si}_6$ ($\text{M}+\text{H}$) $^+$: 973.1804, found: 973.1804.

IID- C_5Si (65.6 %) ^1H NMR (CDCl_3 , 500 Hz) δ 9.08 (d, $J = 8.6$ Hz, 2H), 7.16 (dd, $J = 8.6, 1.9$ Hz, 2H), 6.92 (d, $J = 1.9$ Hz, 2H), 3.83 – 3.64 (m, 4H), 1.67 (d, $J = 7.4$ Hz, 4H), 1.38 (q, $J = 6.2, 4.9$ Hz, 8H), 0.52 – 0.39 (m, 4H), 0.08 (s, 36H), -0.01 (s, 6H). ^{13}C NMR (126 MHz, CDCl_3) δ 167.96, 146.02, 132.89, 131.47, 126.98, 125.37, 120.66, 111.54, 40.52, 30.76, 27.40, 23.13, 17.80, 2.15, -0.02. HRMS (MALDI) Calculated for $\text{C}_{40}\text{H}_{68}\text{Br}_2\text{N}_2\text{O}_6\text{Si}_6$ ($\text{M}+\text{H}$) $^+$: 1001.2131, found: 1001.2118.

IID-C₆Si (69.2 %) ¹H NMR (CDCl₃, 500 Hz) δ 9.07 (d, *J* = 8.6, 2H), 7.21 – 7.10 (dd, *J* = 8.6, 1.9 Hz, 2H), 6.92 (d, *J* = 1.9 Hz, 2H), 3.72 (t, *J* = 7.4 Hz, 4H), 1.67 (s, 4H), 1.45 – 1.25 (m, 12H), 0.47 – 0.36 (m, 4H), 0.08 (s, 36H), -0.01 (d, *J* = 0.8 Hz, 6H). ¹³C NMR (126 MHz, CDCl₃) δ 167.96, 146.01, 132.90, 131.43, 126.98, 125.38, 120.66, 111.54, 40.56, 33.12, 27.63, 26.99, 23.26, 17.82, 2.14, -0.03. HRMS (MALDI) Calculated for C₄₂H₇₂Br₂N₂O₆Si₆ (M+H)⁺:1029.2441, found:1029.2430.

IID-C₇Si (77.9 %) ¹H NMR (CDCl₃, 500 Hz) δ 9.07 (d, *J* = 8.6 Hz, 2H), 7.16 (dd, *J* = 8.6, 1.9 Hz, 2H), 6.92 (d, *J* = 1.9 Hz, 2H), 3.79 – 3.64 (m, 4H), 1.74 – 1.61 (m, 4H), 1.33 (d, *J* = 25.1 Hz, 16H), 0.44 (t, *J* = 7.6 Hz, 4H), 0.07 (s, 36H), -0.01 (s, 6H). ¹³C NMR (126 MHz, CDCl₃) δ 167.96, 146.01, 132.90, 131.46, 126.98, 125.38, 120.66, 111.54, 40.54, 33.37, 29.29, 27.70, 27.24, 23.28, 17.84, 2.14, -0.02. HRMS (MALDI) Calculated C₄₄H₇₆Br₂N₂O₆Si₆ for (M+H)⁺:1057.2744, found: 1057.2745.

IID-C₈Si (70.2 %) ¹H NMR (CDCl₃, 500 Hz) δ 9.07 (d, *J* = 8.6 Hz, 2H), 7.23 – 7.12 (dd, *J* = 8.6, 1.9 Hz, 2H), 6.92 (d, *J* = 1.9 Hz, 2H), 3.72 (t, *J* = 7.5 Hz, 4H), 1.68 (t, *J* = 7.2 Hz, 4H), 1.48 – 1.14 (m, 20H), 0.44 (t, *J* = 7.6 Hz, 4H), 0.08 (s, 36H), -0.01 (s, 6H). ¹³C NMR (126 MHz, CDCl₃) δ 167.96, 146.01, 132.90, 131.44, 126.99, 125.38, 120.65, 118.32, 111.55, 40.55, 33.43, 29.51, 27.67, 27.31, 23.29, 17.85, 2.14, 0.00. HRMS (MALDI) Calculated C₄₆H₈₀Br₂N₂O₆Si₆ for (M+H)⁺:1085.3054, found:1085.3059 .

IID-C₉Si (79.6 %) ¹H NMR (CDCl₃, 500 Hz) δ 9.07 (dd, *J* = 8.6, 1.9 Hz, 2H), 7.16 (dd, *J* = 8.6, 1.9, 2H), 6.92 (d, *J* = 1.8 Hz, 2H), 3.72 (t, *J* = 7.5 Hz, 4H), 1.68 (p, *J* = 7.5 Hz, 4H), 1.47 – 1.20 (m, 24H), 0.44 (t, *J* = 7.6 Hz, 4H), 0.07 (s, 36H), -0.01 (d, *J* = 0.6 Hz, 6H). ¹³C NMR (126 MHz, CDCl₃) δ 167.96, 146.01, 132.90, 131.44, 129.29, 128.47, 126.99, 125.38,

120.65, 111.56, 40.54, 33.46, 29.74, 29.60, 29.56, 27.68, 27.29, 23.32, 17.87, 2.13, 0.00.

HRMS (MALDI) $C_{48}H_{84}Br_2N_2O_6Si_6$ Calculated for $(M+H)^+$:1113.3391, found: 1113.3372.

IID- $C_{10}Si$ (62.5 %) ^1H NMR ($CDCl_3$, 500 Hz) δ 9.07 (d, J = 8.6 Hz, 2H), 7.16 (dd, J = 8.6, 1.9 Hz, 2H), 6.92 (d, J = 1.9 Hz, 2H), 3.74 (t, J = 7.5 Hz, 4H), 1.67 (q, J = 7.4 Hz, 4H), 1.40 – 1.13 (m, 28H), 0.44 (t, J = 7.6 Hz, 4H), 0.08 (s, 36H), -0.01 (s, 6H). ^{13}C NMR (126 MHz, $CDCl_3$) δ 167.96, 146.01, 132.90, 131.44, 126.99, 125.38, 120.65, 111.56, 40.54, 33.48, 29.82, 29.79, 29.59, 27.65, 27.28, 23.33, 17.87, 2.13, 0.00. HRMS (MALDI) Calculated $C_{50}H_{88}Br_2N_2O_6Si_6$ for $(M+H)^+$:1141.3690, found:1141.3686.

IID- $C_{11}Si$ (68.2 %) ^1H NMR ($CDCl_3$, 500 Hz) δ 9.09 (d, J = 8.5 Hz, 2H), 7.18 (dd, J = 8.6, 1.9 Hz, 2H), 6.94 (d, J = 1.9 Hz, 2H), 3.74 (t, J = 7.5 Hz, 4H), 1.69 (p, J = 7.5 Hz, 4H), 1.49 – 1.17 (m, 32H), 0.46 (t, J = 7.6 Hz, 4H), 0.10 (s, 36H), 0.01 (s, 6H). ^{13}C NMR (126 MHz, $CDCl_3$) δ 167.96, 146.01, 132.90, 131.43, 126.98, 125.38, 120.65, 111.56, 40.54, 33.51, 29.88, 29.82, 29.63, 29.57, 27.66, 27.27, 23.33, 17.88, 2.14, 0.00. HRMS (MALDI) $C_{52}H_{92}Br_2N_2O_6Si_6$ Calculated for $(M+H)^+$:1169.4001, found: 1169.3999.

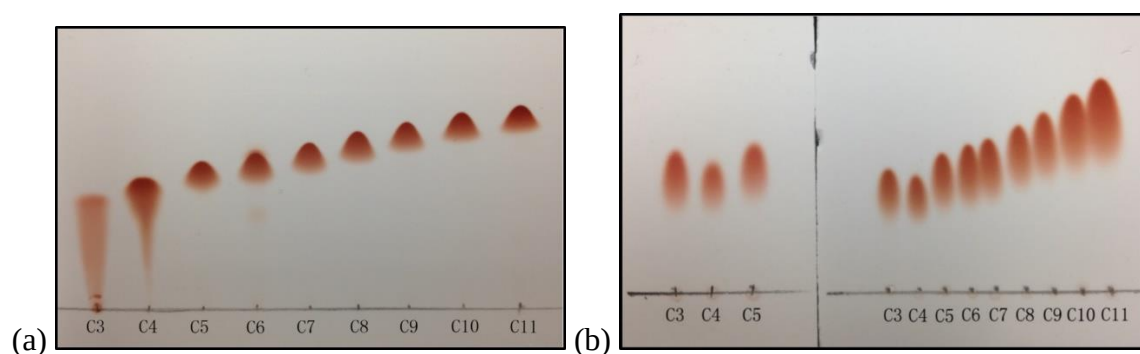


Figure S1. Thin-layer chromatography (TLC) stains of (a) IID- C_n and (b) IID- C_mSi (Due to poor solubility of IID- C_3 and IID- C_4 , both TLC stains show long tails as shown in Figure S1-a. After hydrosilylation reaction, IID- C_m exhibit enhanced solubility as expected. It is unclear why IID- C_4Si appeared to have a lower R_f than that IID- C_3Si .)

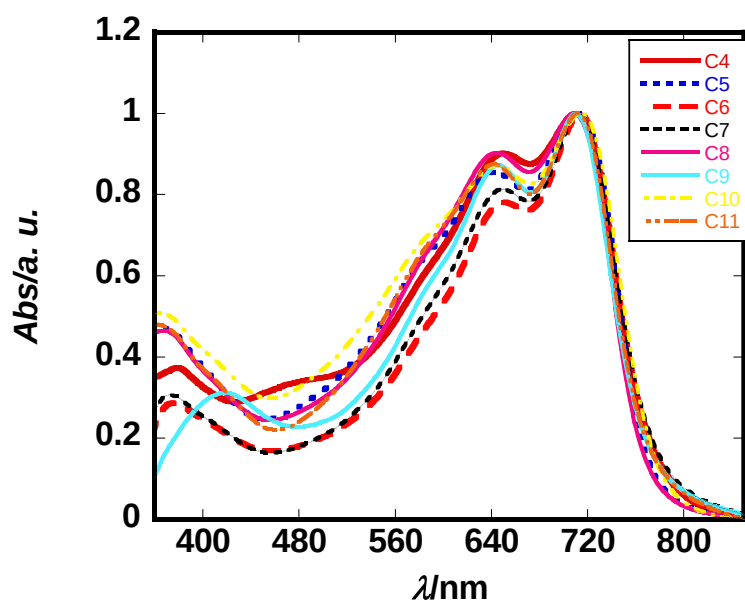


Figure S2. Solid-state absorption spectrum of PII2F-C_mSi films. All films were prepared by spin coating from chloroform.

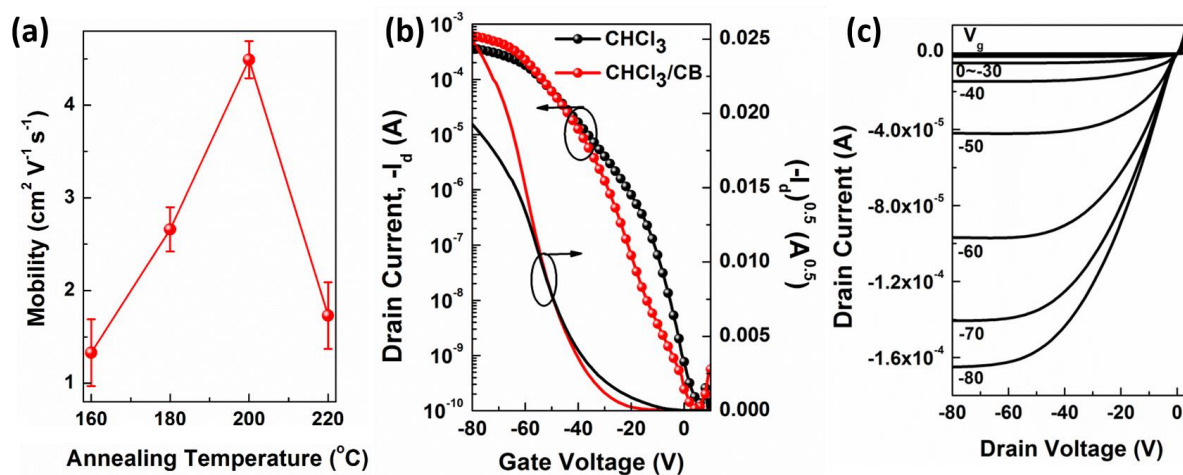


Figure S3. (a) Mobilities under various annealing temperatures for PII2F-C₉Si FETs using chloroform/chlorobenzene (9/1, v/v) as processing solvent. The highest performance was obtained after annealing at 200 °C. (b) Transfer curves of PII2F-C₉Si FETs casted using pure chloroform and chloroform/chlorobenzene (9/1, v/v) with 200 °C thermal annealing. (c) Output curves of mix-solvent spin-coated PII2F-C₉Si FET with 200 °C thermal annealing.

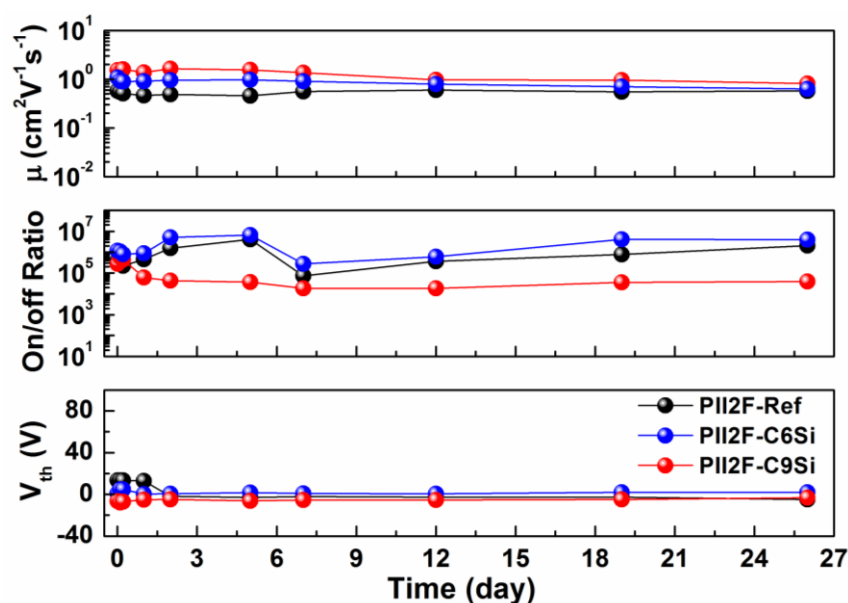


Figure S4. Air-stability testing of FET performance for the PII2F-Ref (black), PII2F-C₆Si (blue), and PII2F-C₉Si (red) thin films, including, hole mobility (μ), on/off current ratio, and threshold voltage (V_{th}). Relative humidity ranges from 40 to 50% in air. All FET parameters for our studied polymers showed stable characteristics during 1 month testing.

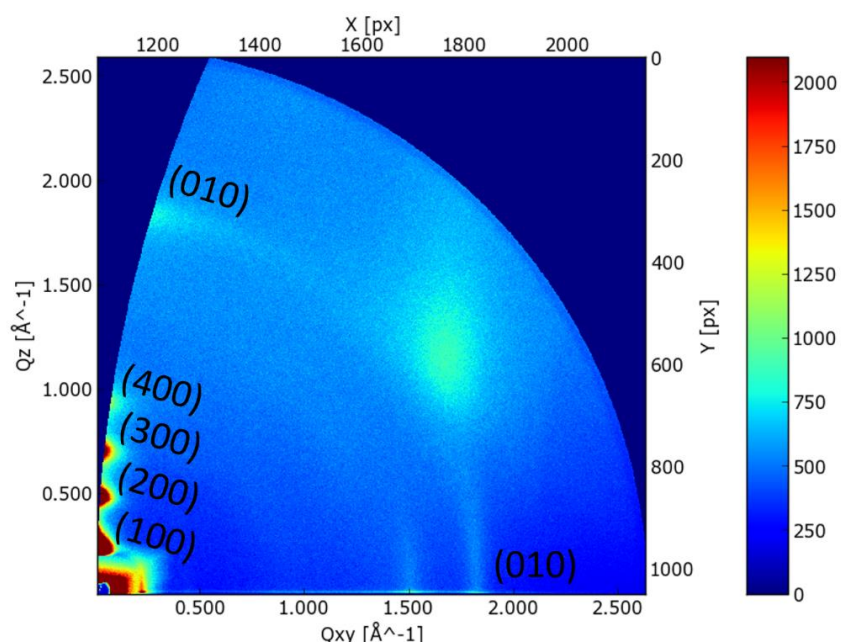


Figure S5. GIXD patterns of PII2F-C₉Si thin film casted from chloroform/chlorobenzene (9/1, v/v) mix-solvent, and annealed at 200 °C for 1 hour under nitrogen atmosphere.

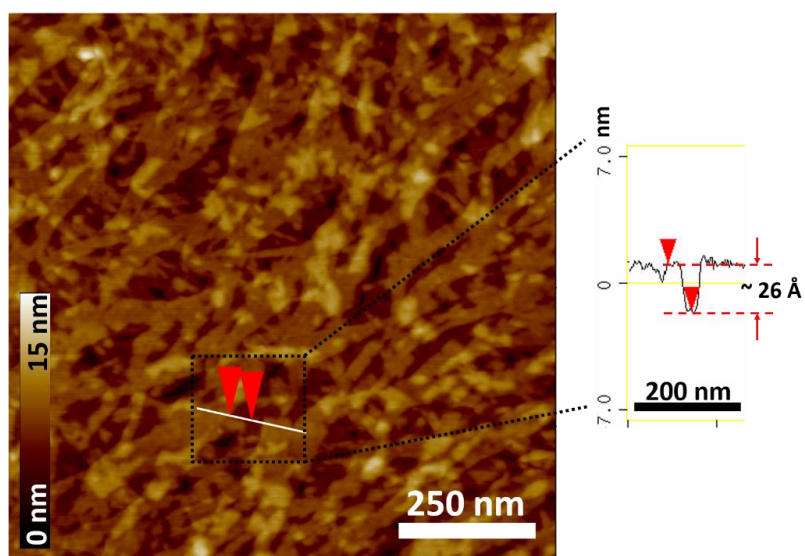


Figure S6. Tapping mode AFM topography of PII2F-C₉Si thin film, which was spin-coated on the OTS-treated Si wafer from chloroform, and annealed at 200 °C for 1 hour under nitrogen atmosphere. The terrace spacing can be obtained from sectional analysis to be 26 Å. This value is close to the out-of-plane lamellar spacing of 25.867 Å obtained from GIXD results.

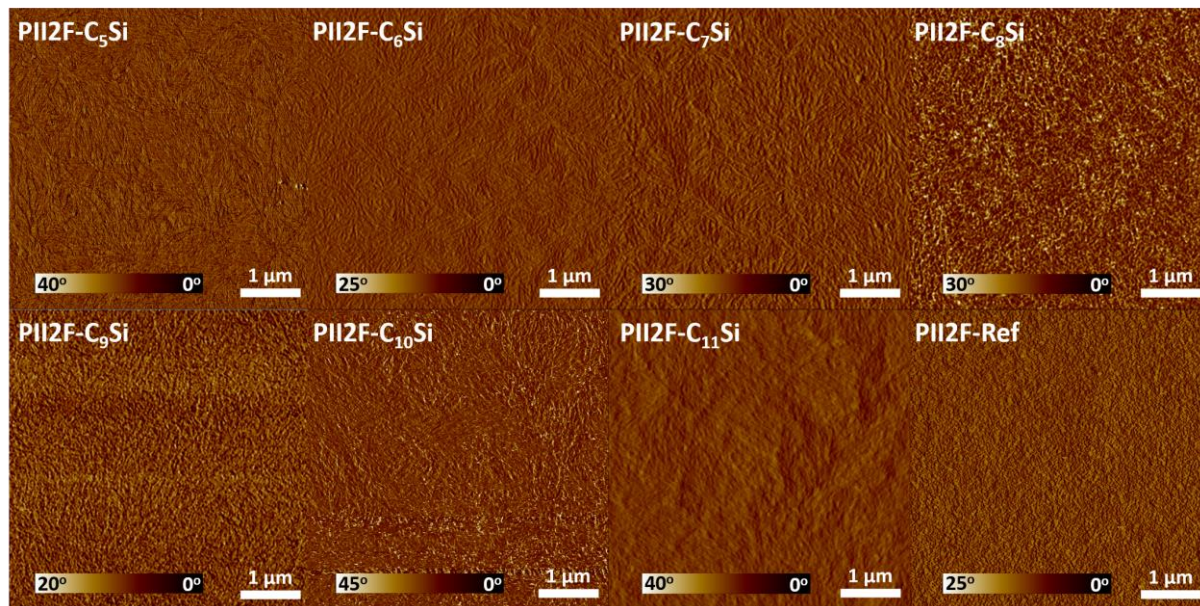
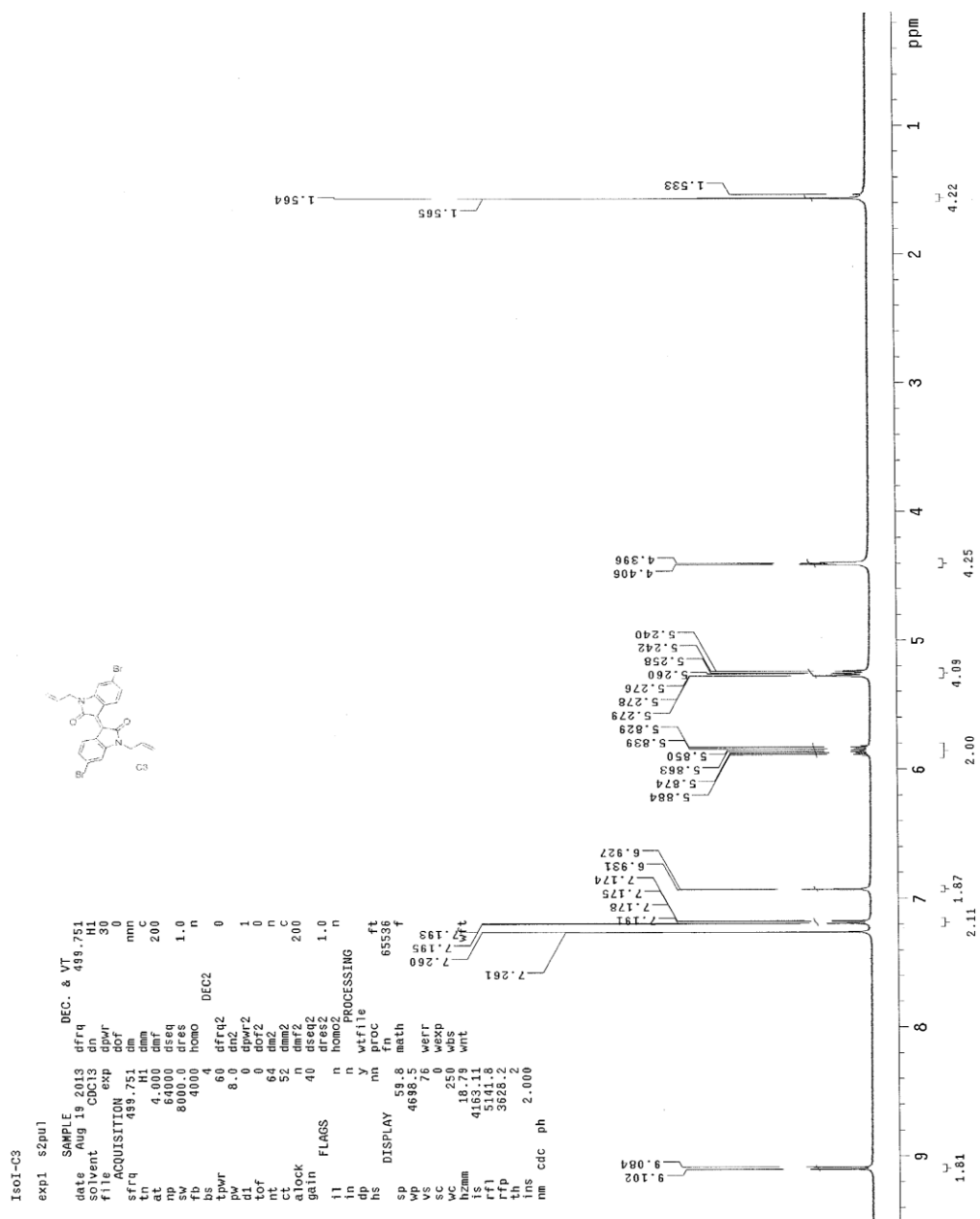
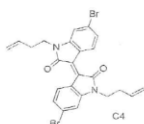
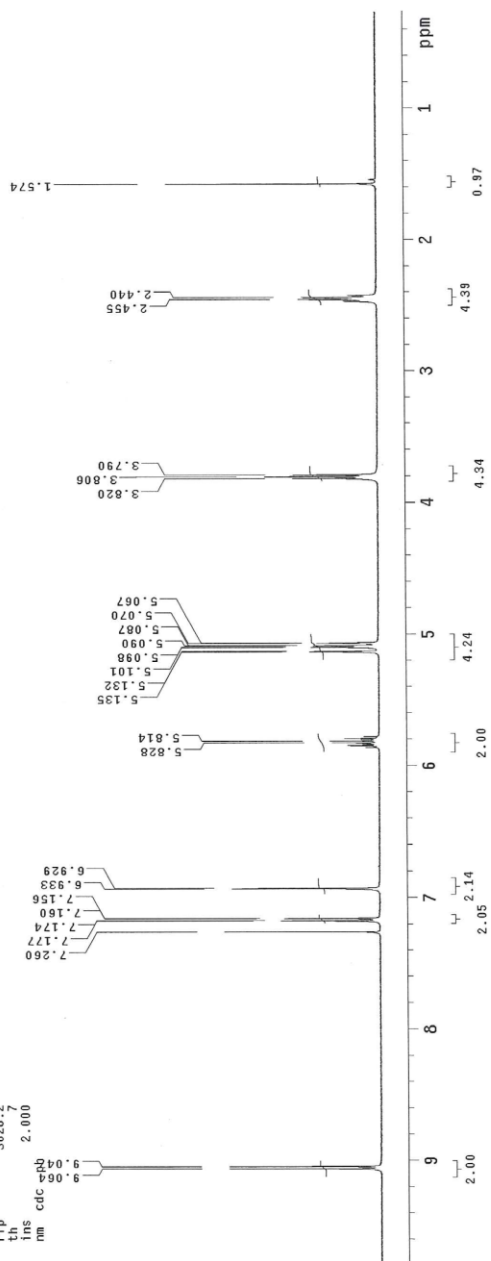


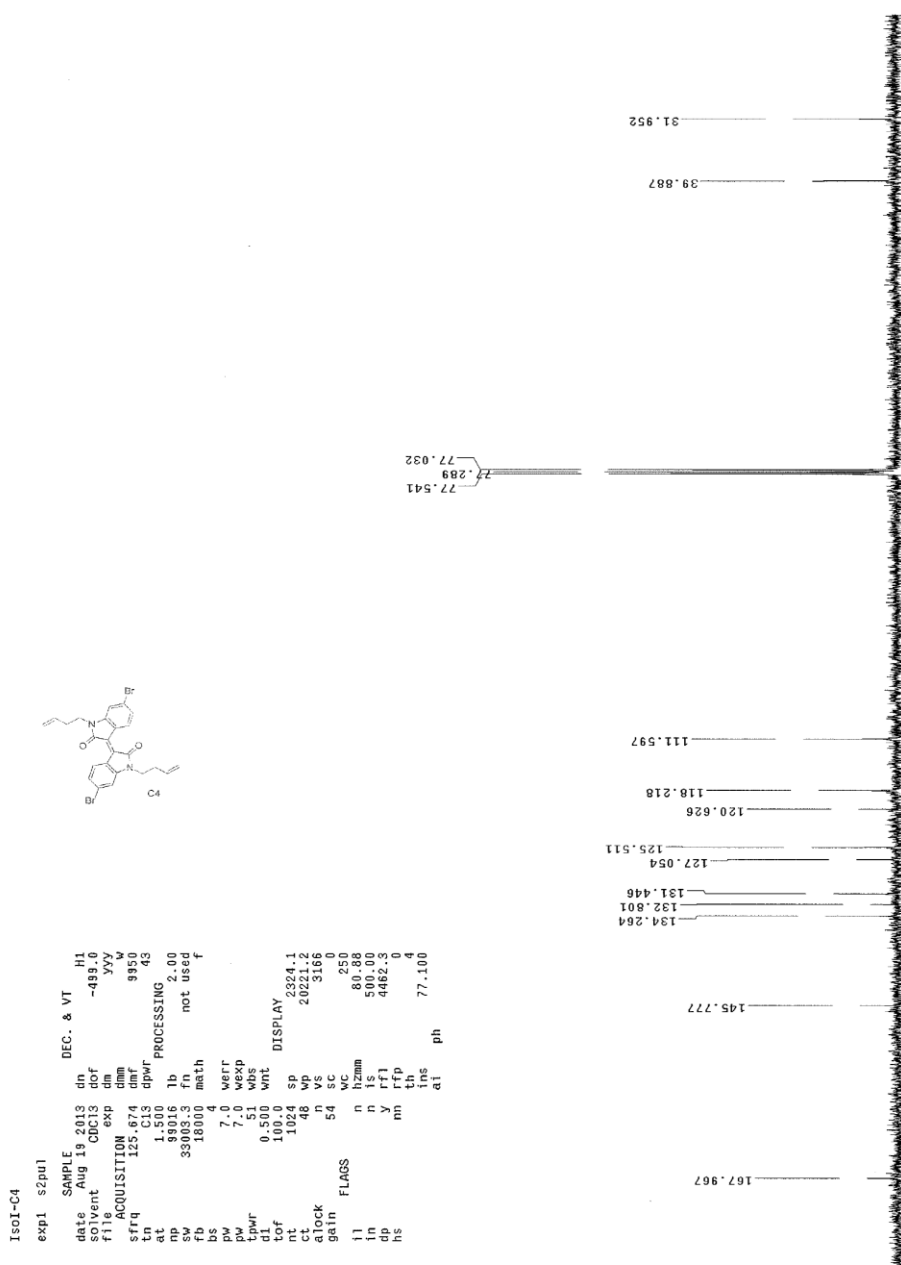
Figure S7. Tapping mode AFM phase images of spin-coated polymer thin films on OTS-treated Si wafer from chloroform solutions. All films were annealed at 200 °C for 1 hour under a nitrogen atmosphere.

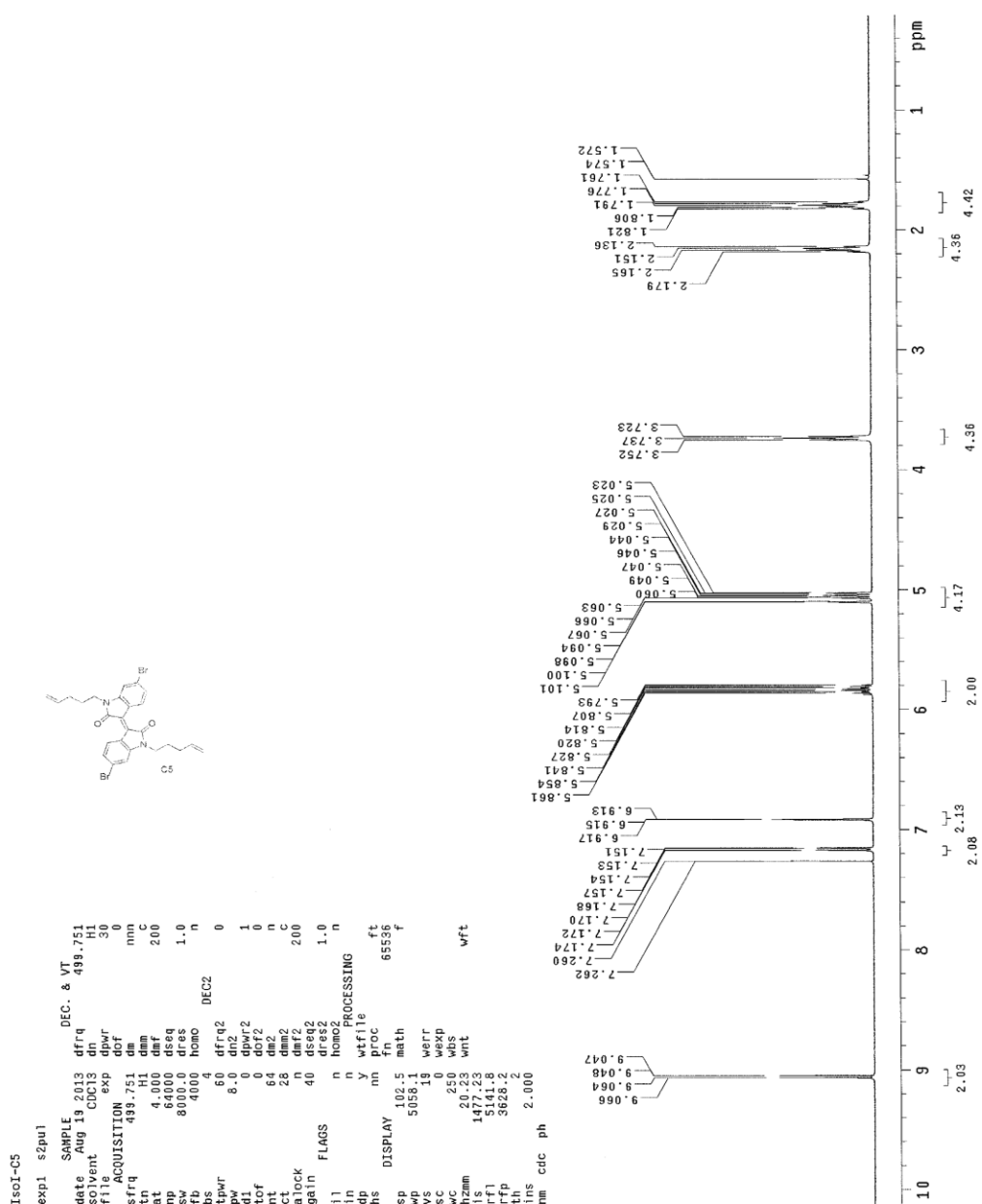
Followings are ^1H and ^{13}C -NMR spectrum of the studied monomers:

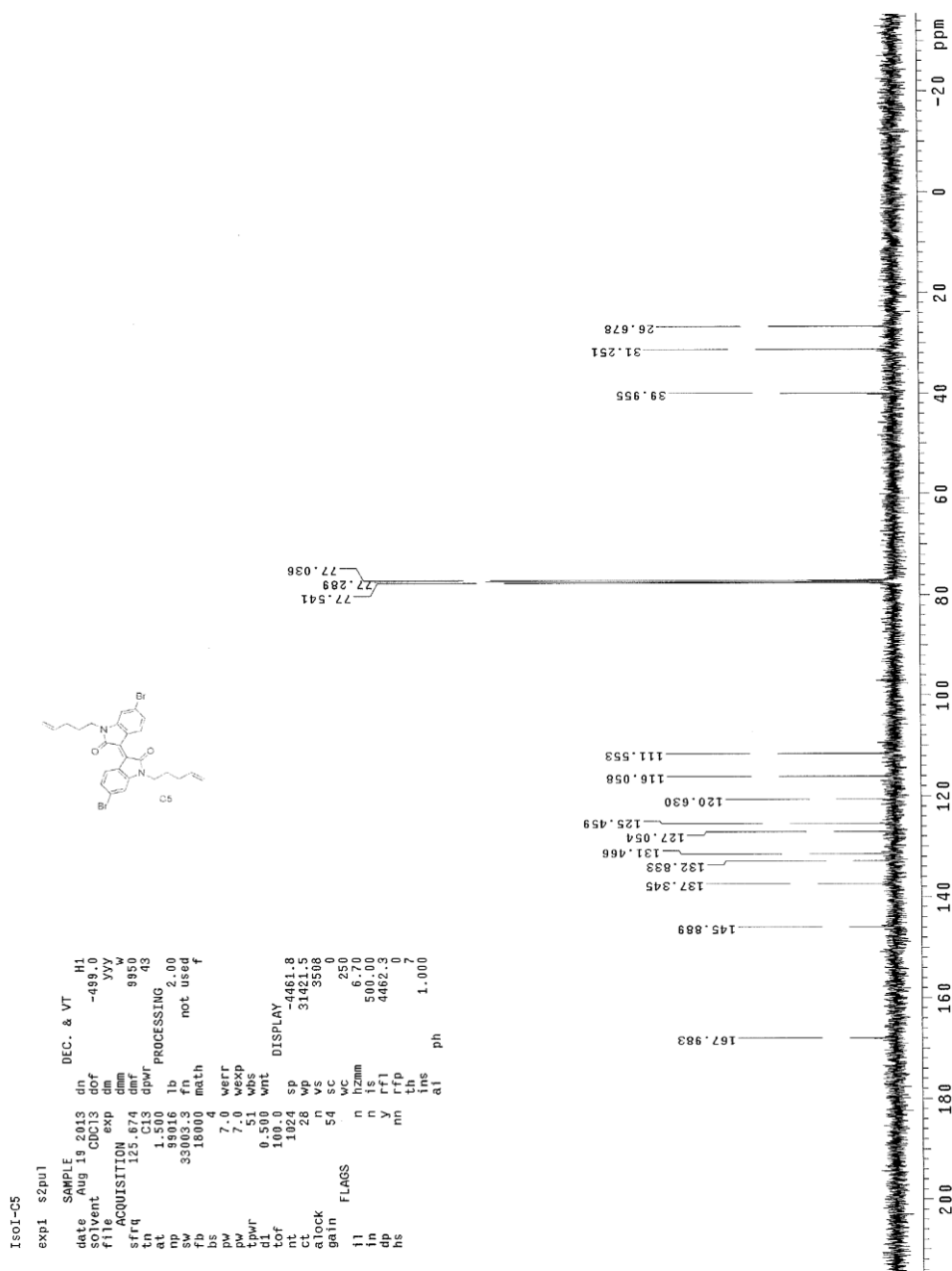


STANDARD PROTON PARAMETERS

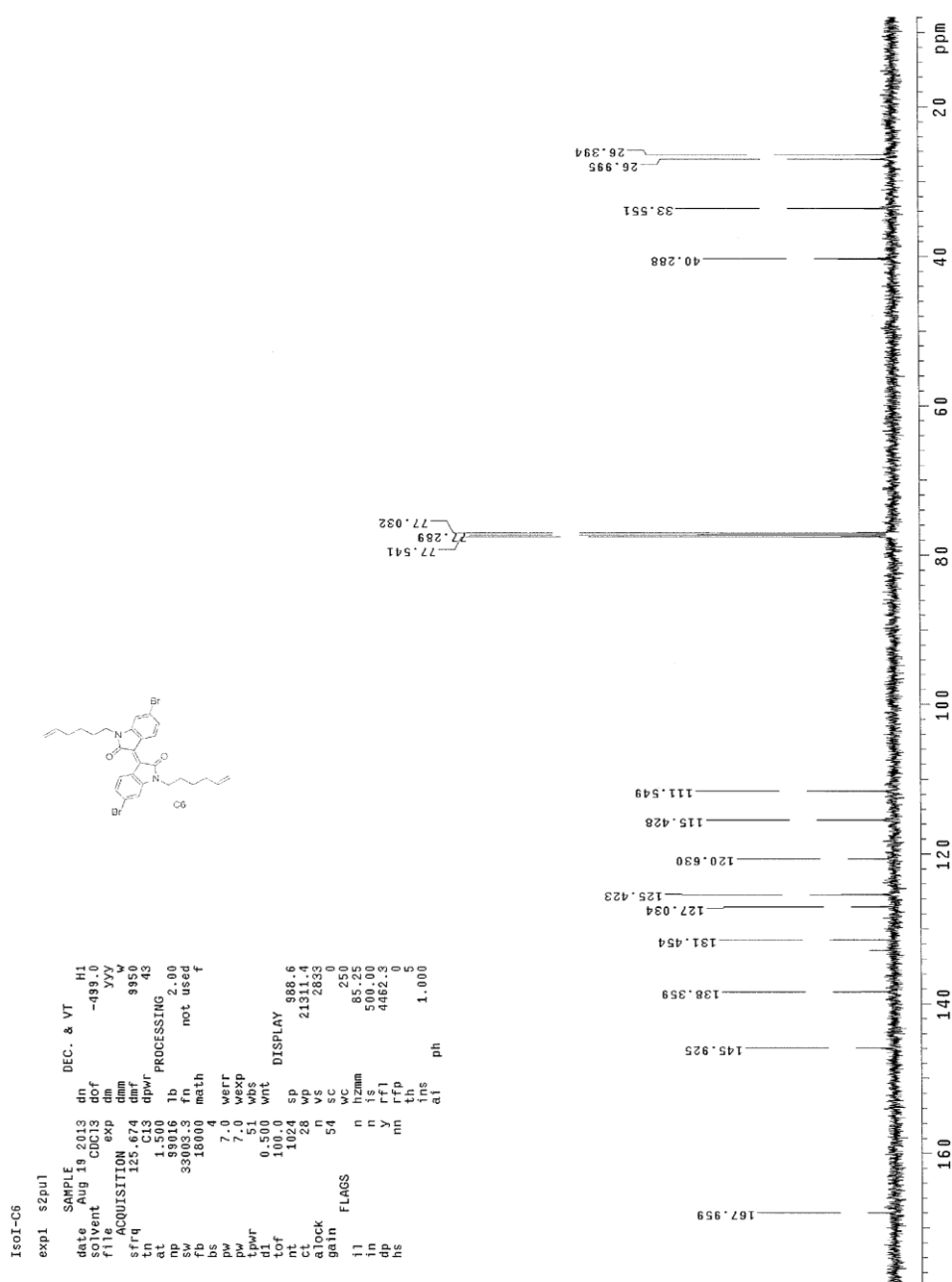
[illegible]



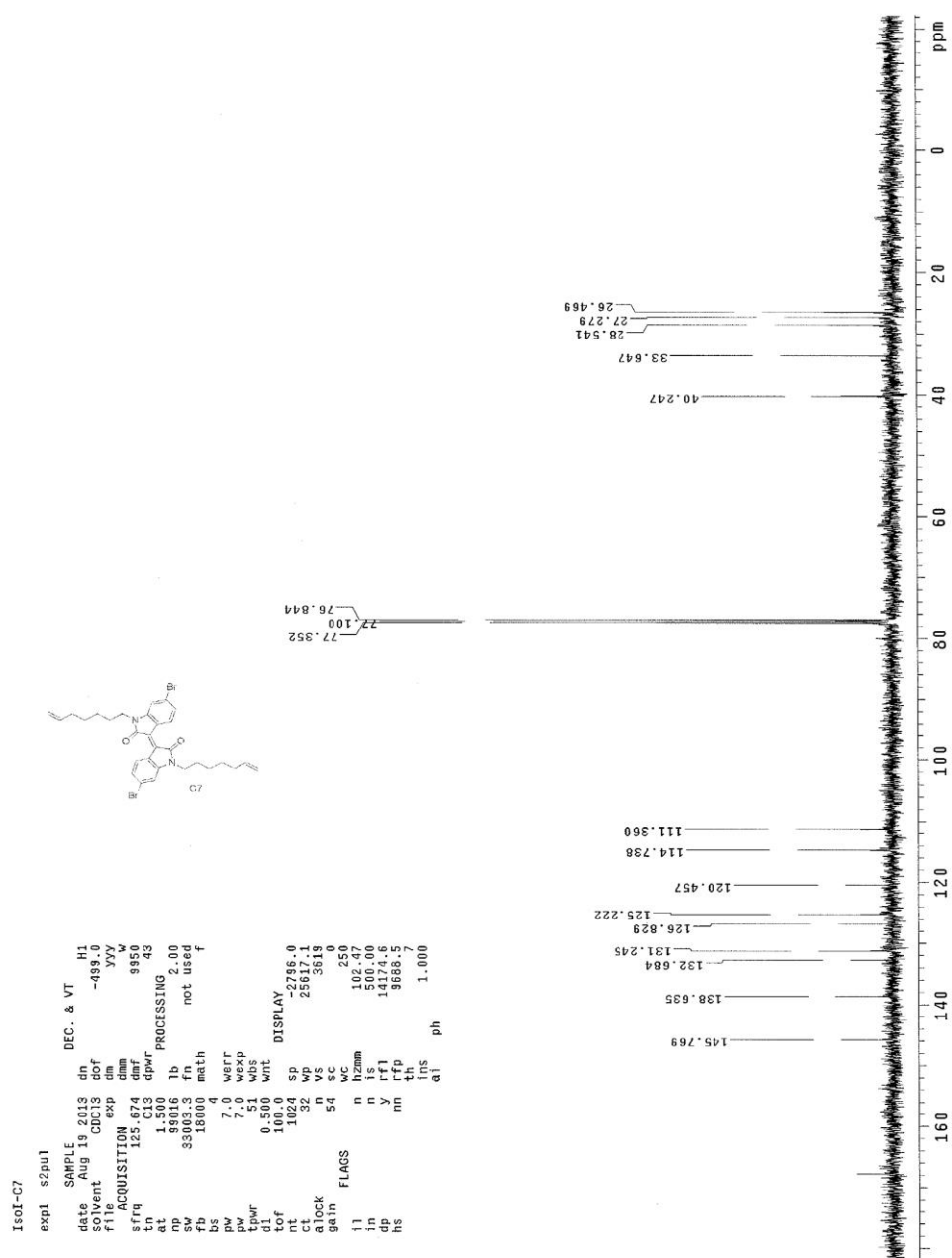


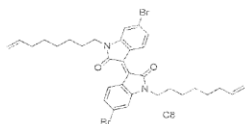


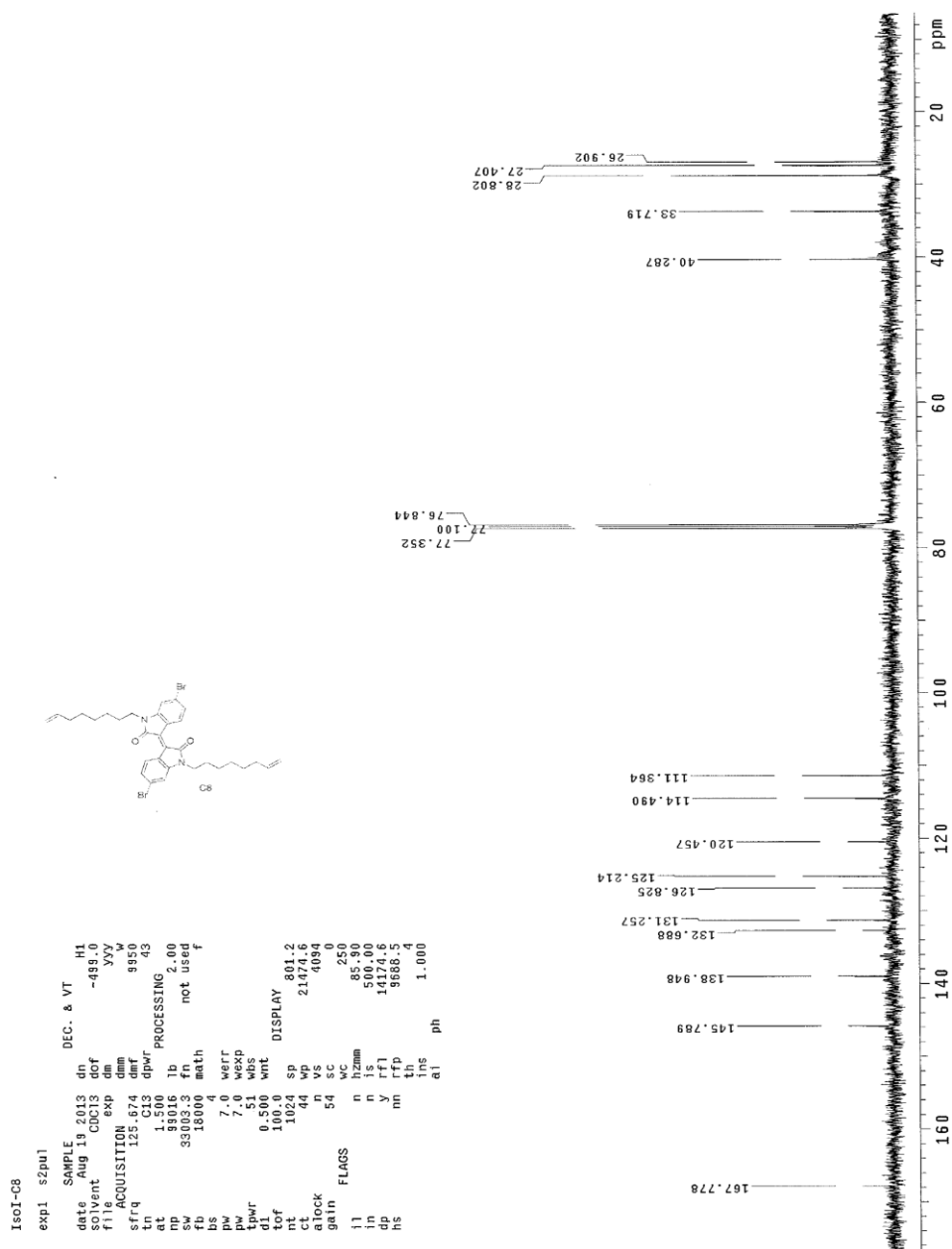






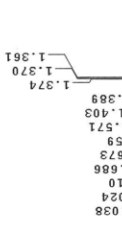


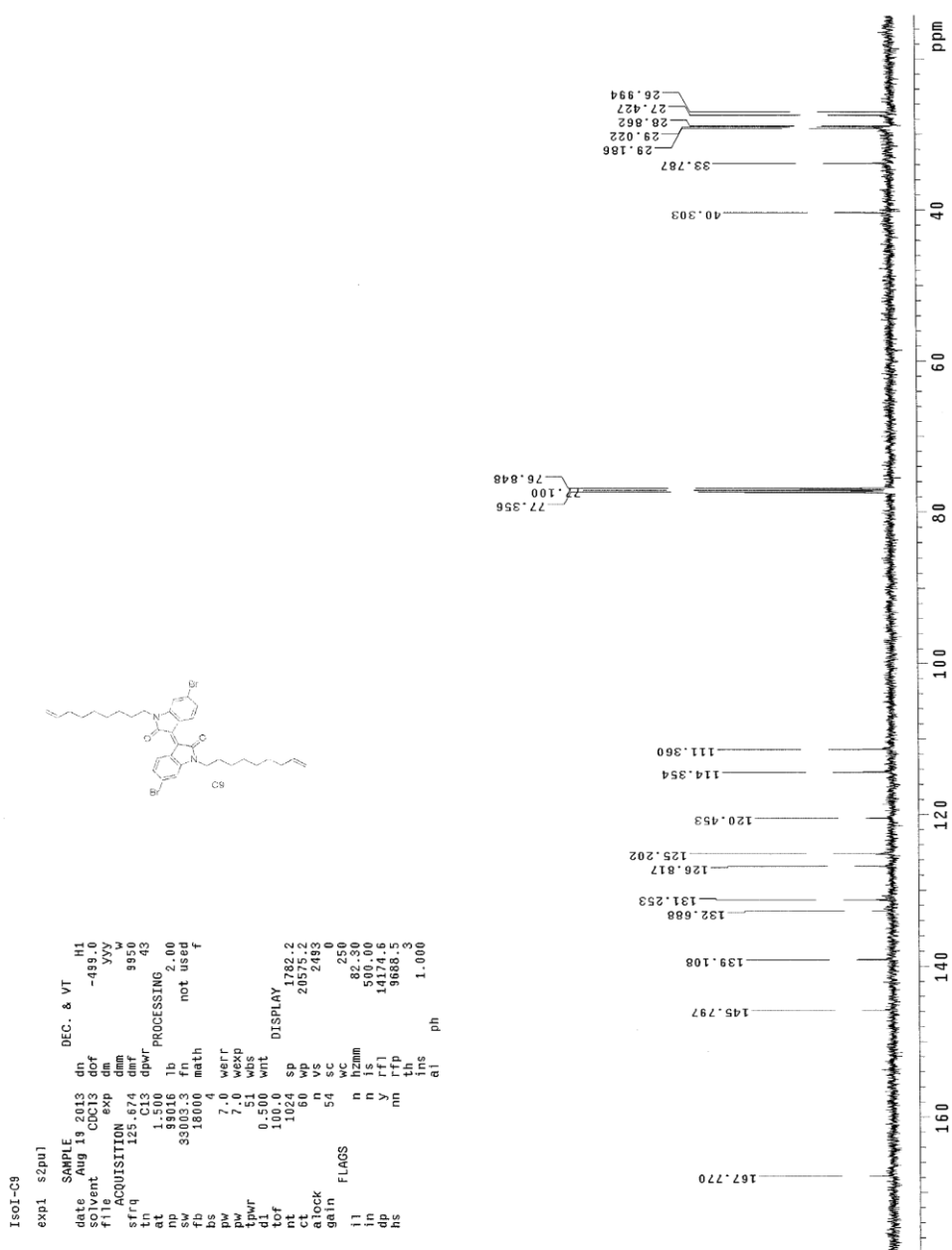




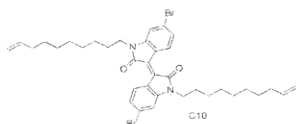
exp1 s2pu1

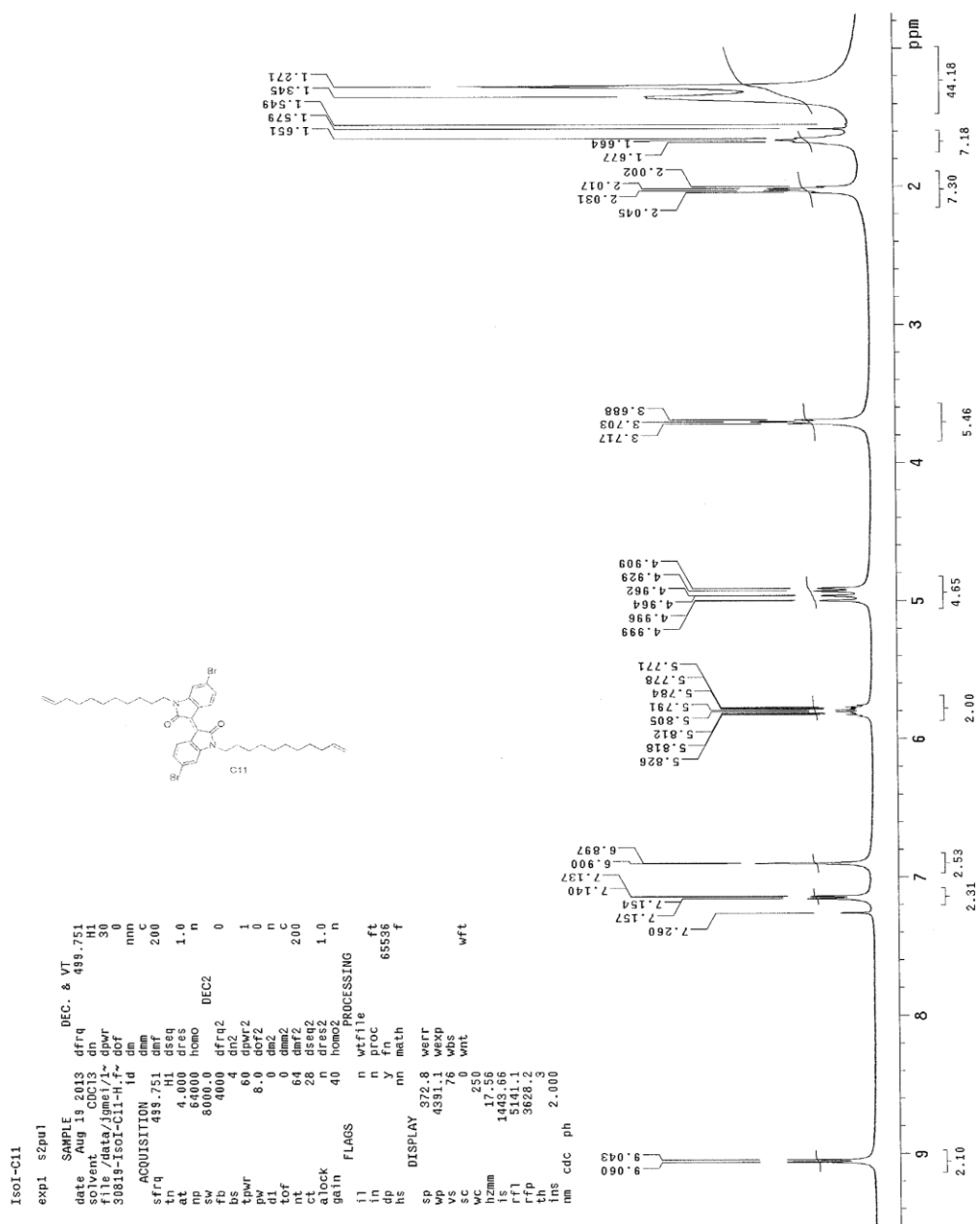
Chemical structure of compound C9, a phthalimide derivative. It features a central phthalimide core with two 10-undecyloxy chains (HO-(CH₂)₁₀-O-) attached to the nitrogen atoms and two bromine atoms (Br) at the 4 and 5 positions of the phthalimide ring system.

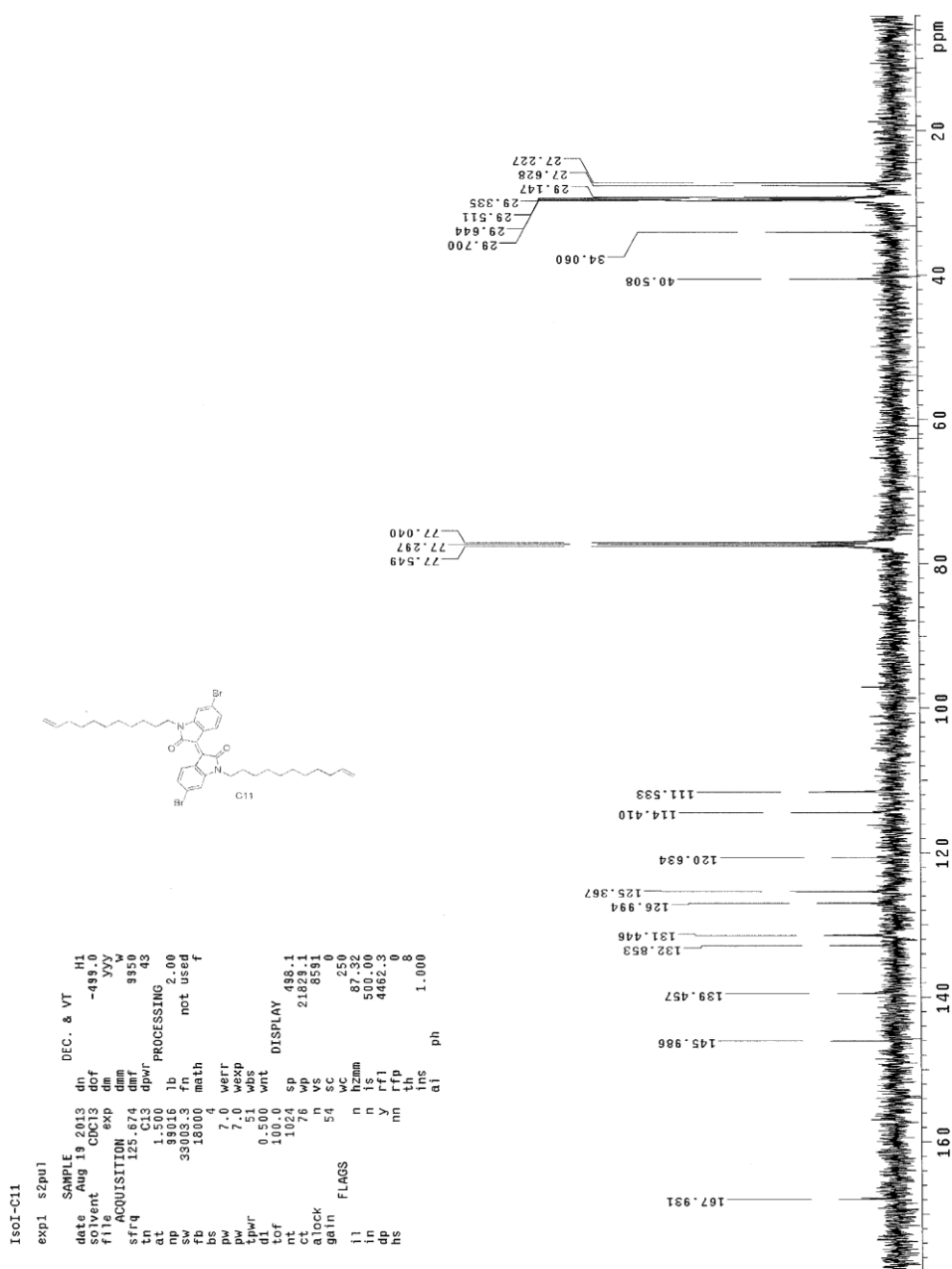




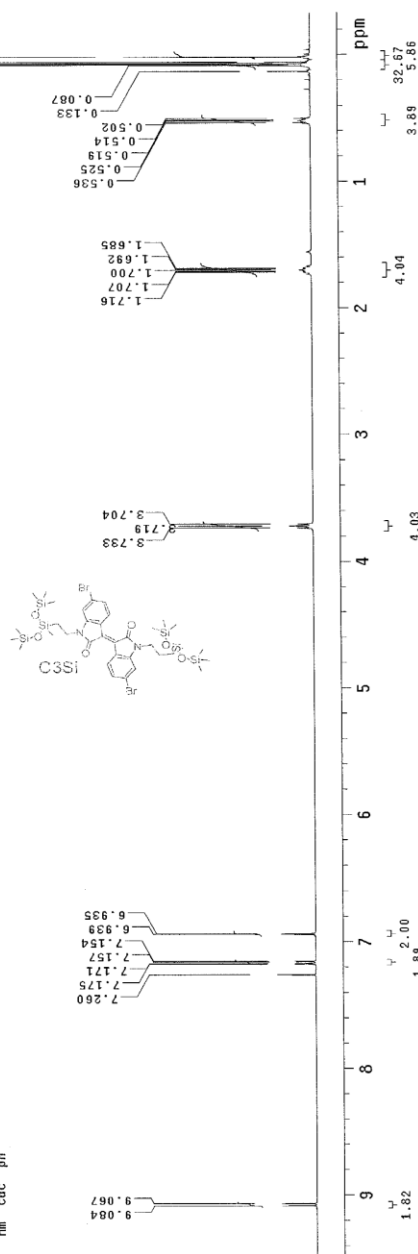


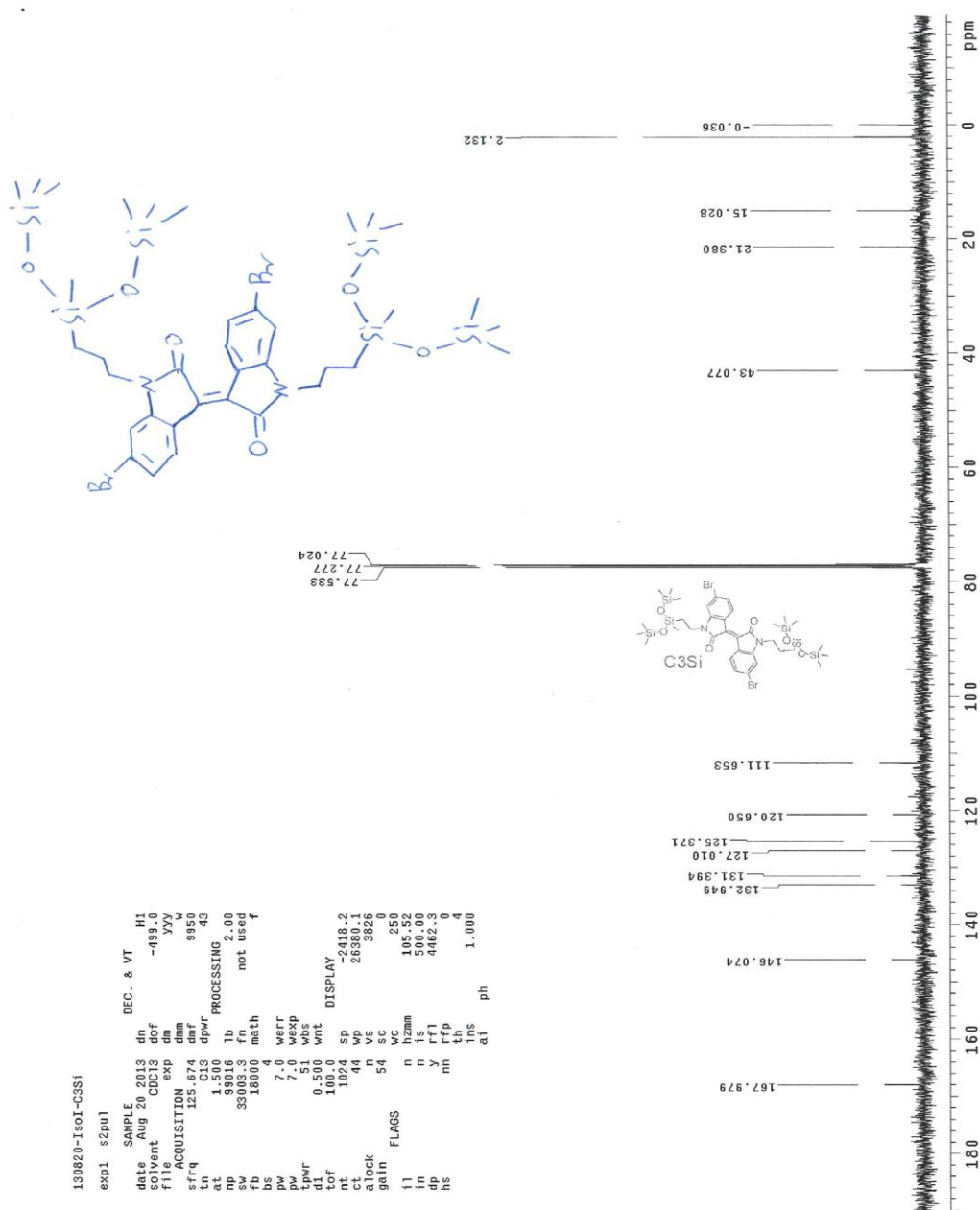


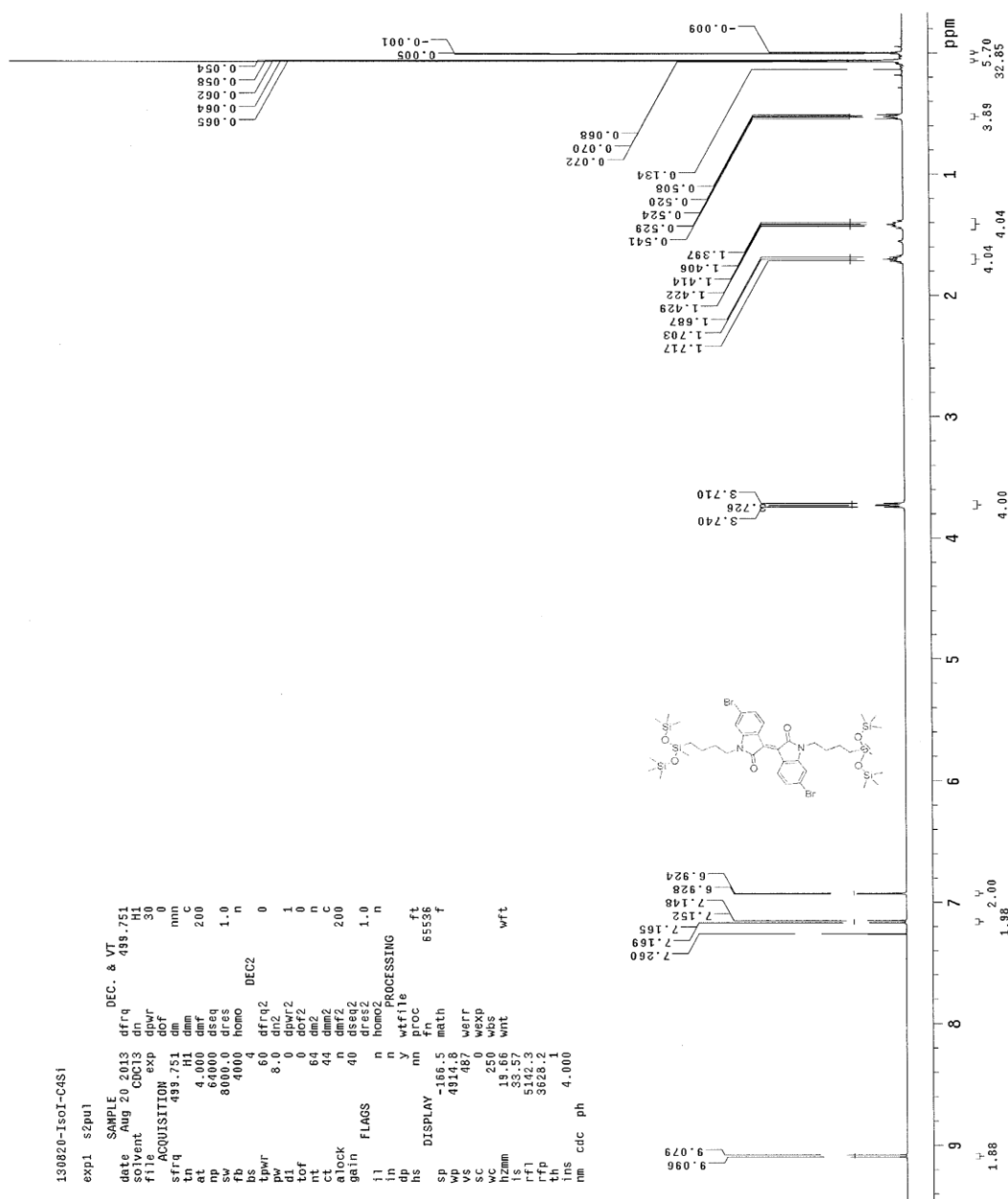


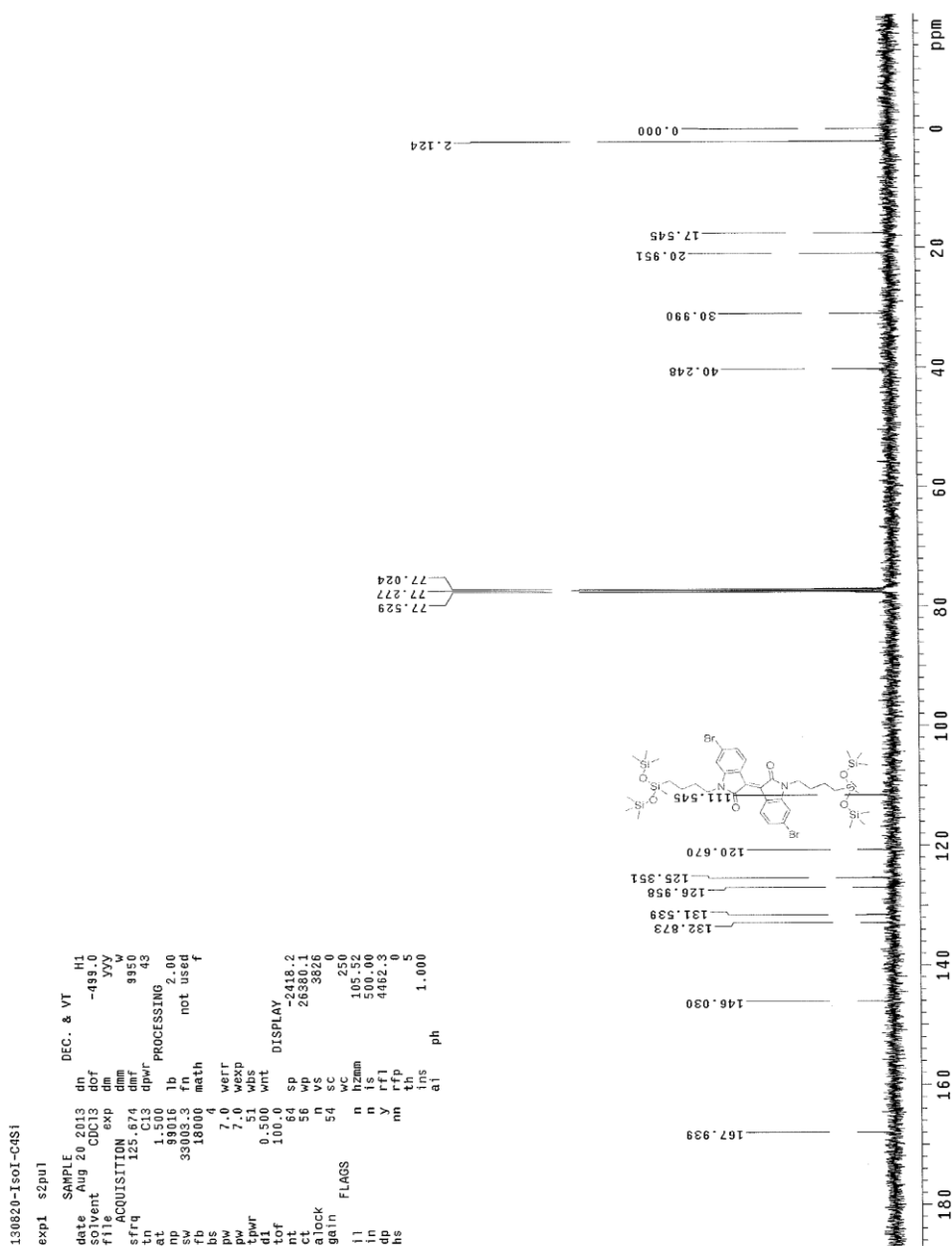


exp1 s2pu1

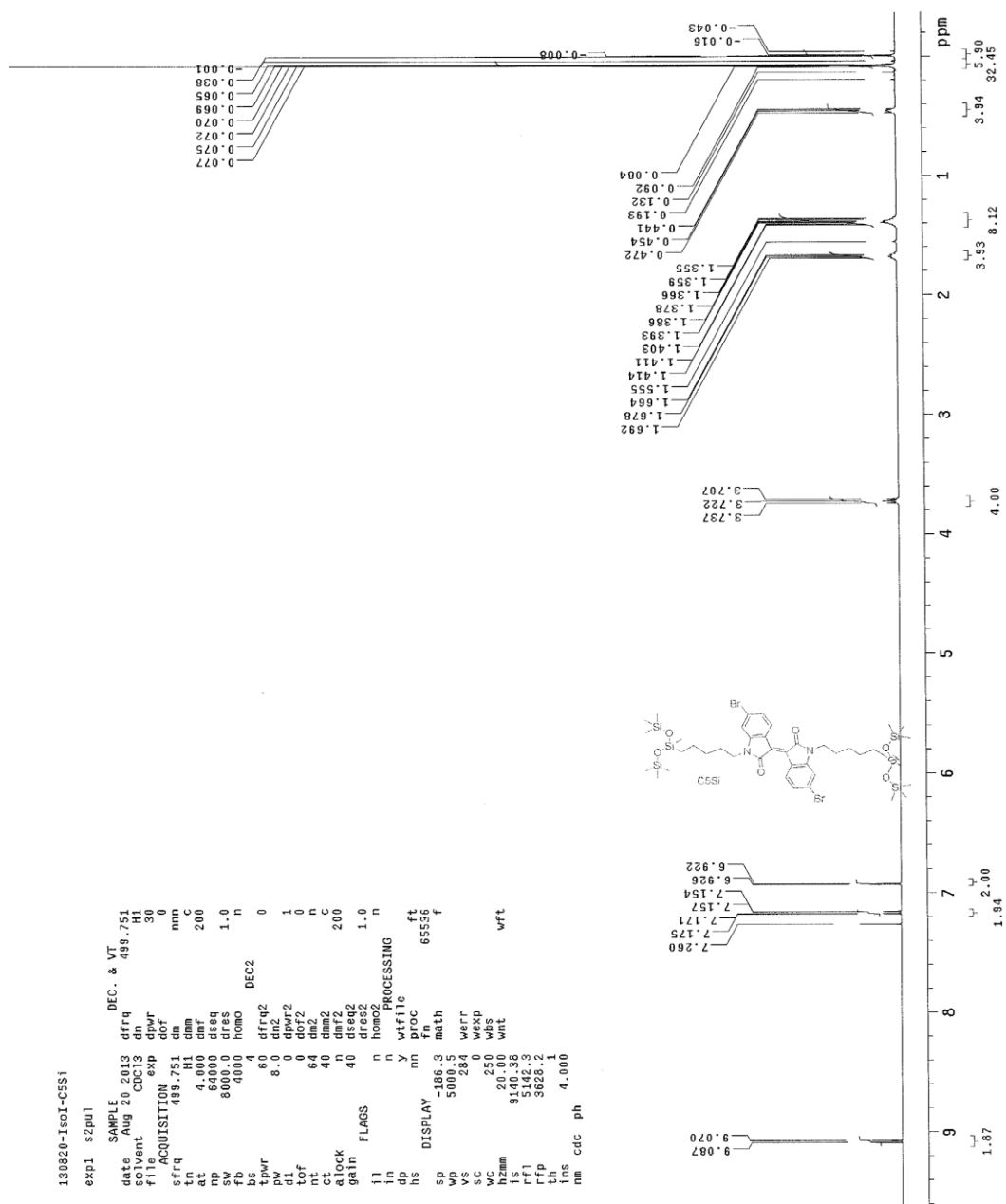
[illegible]

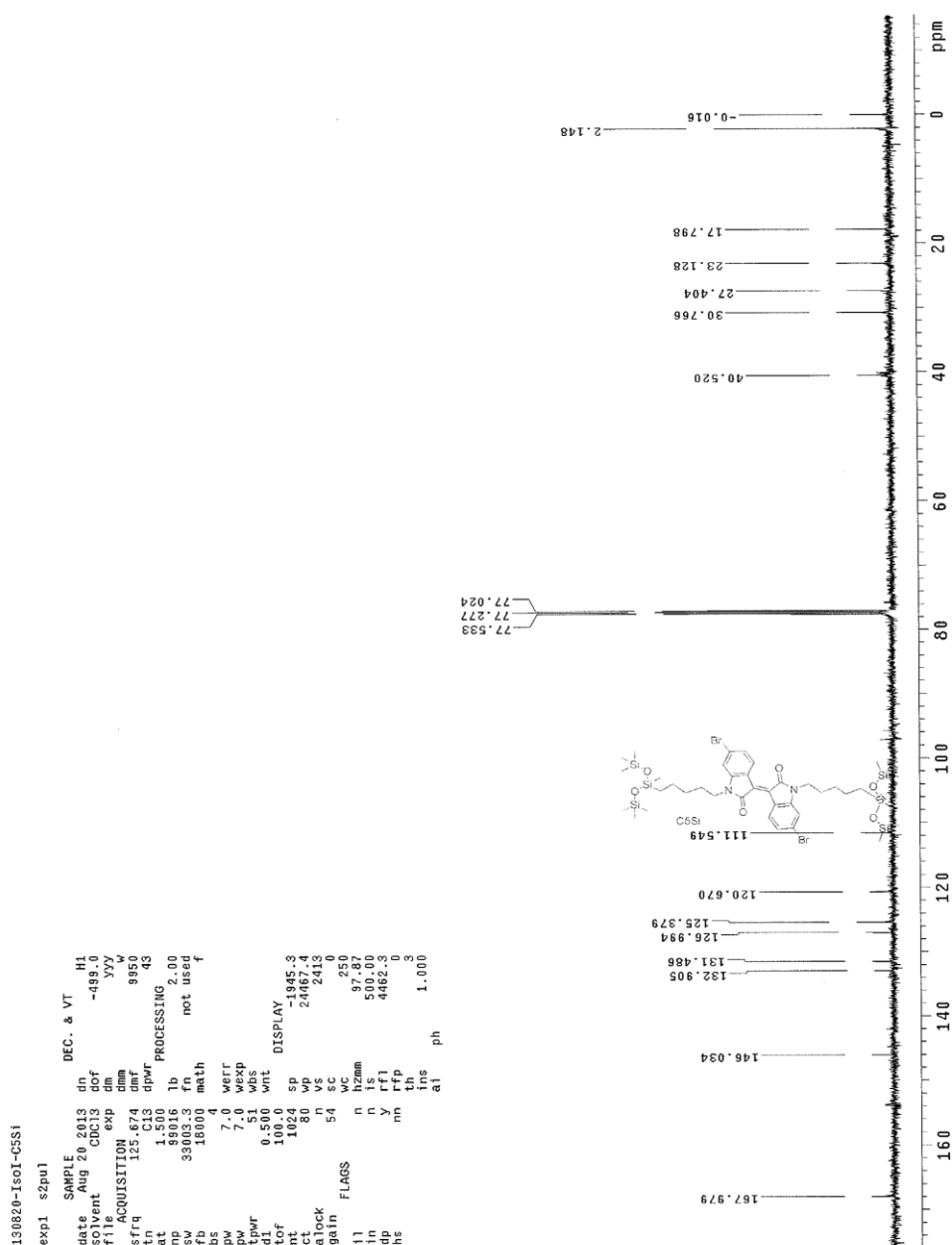






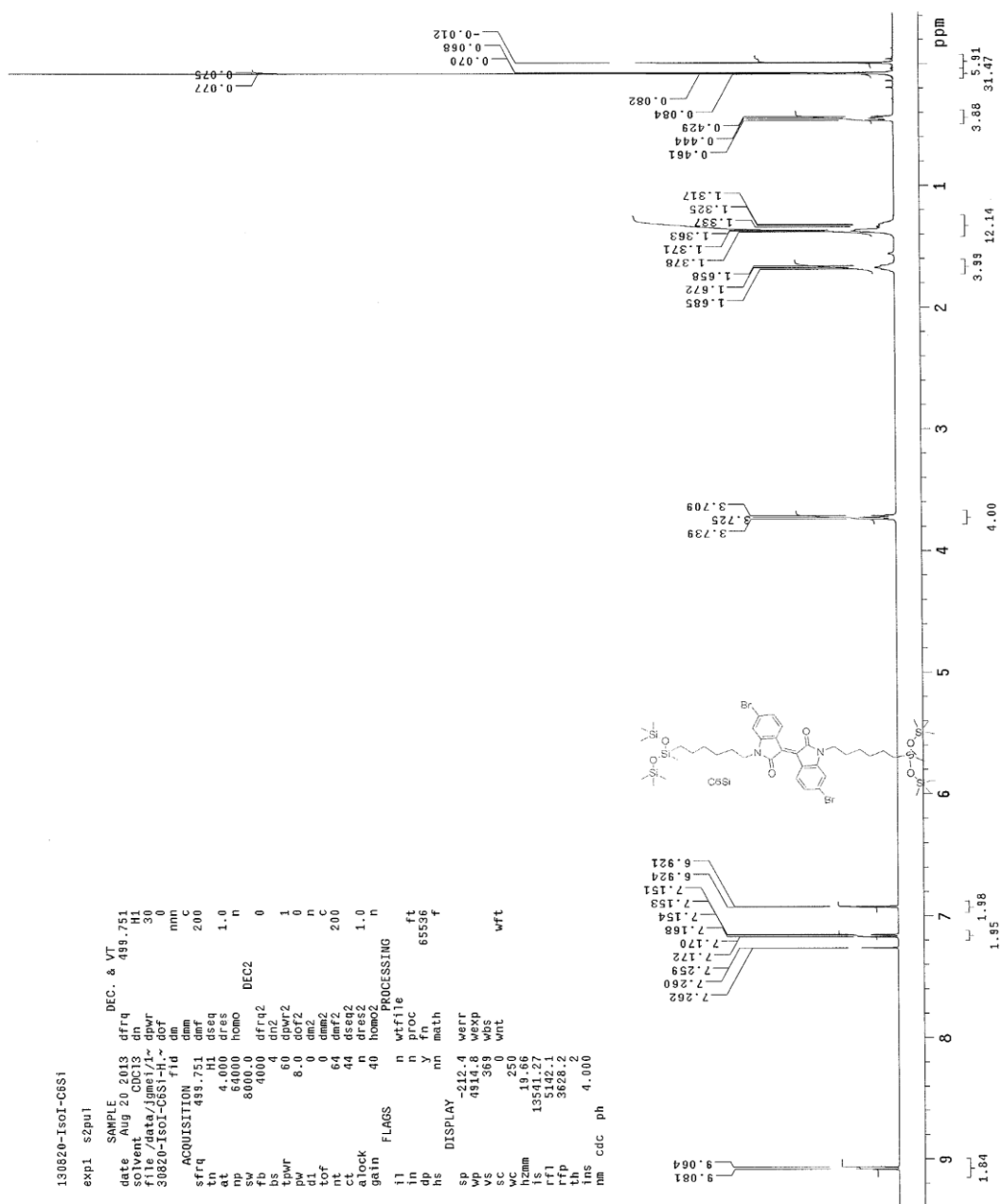
exp1 s2pu1

[illegible]



exp1 s2pu1

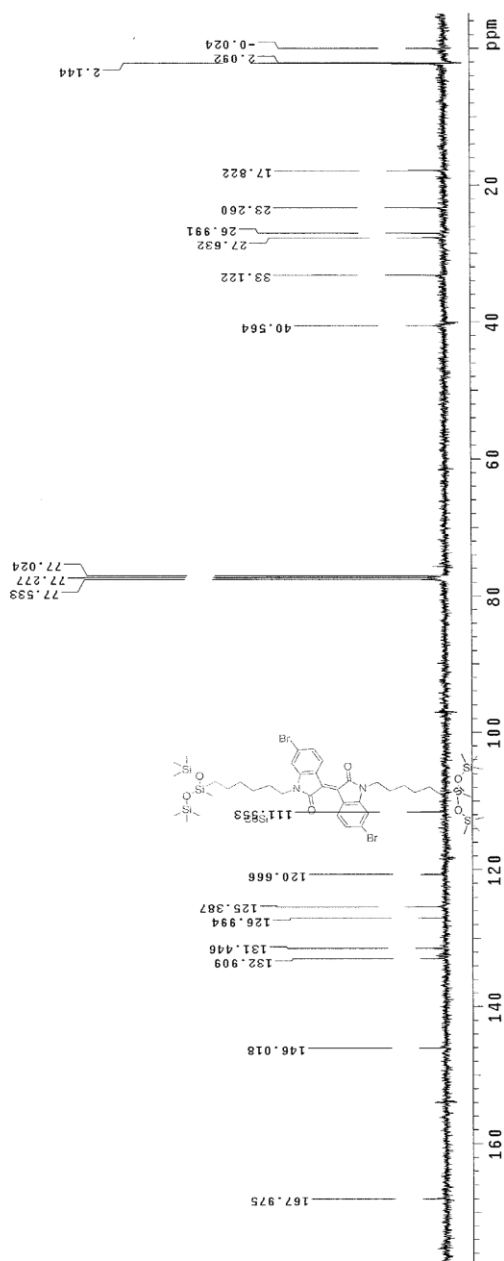
SAMPLE	date	Aug 20 2013	dfrq	DEC. & VT
solvent	CDC13	dn	H1	499.751
file /data/jgml/r/~	dpwr	30	H1	30
30820-Isot-CESI-H~	dm	mm	0	mm
ACQUISITION fid	dm	mm	0	mm
acq	dm	mm	200	dm
nsfrq	499.751	nmf	200	nmf
at	H1	dseq	1.0	n
sw	64000	dres	1.0	n
sw	64000	homo	DEC2	0
sw	64000	dfrq2	0	0
tpwr	60	dpwr2	1	1
pw	8.0	dof2	0	0
id1	0	dm2	c	c
for	0	dm2	200	200
ct	44	dres2	1.0	1.0
alack	0	dres2	1.0	1.0
gain	40	homo2	n	n
ll	n	wffile	PROCESSING	ft
ins	y	n proc	65596	f
ins	nm	math	wft	wft
DISPLAY	nm	math	wft	wft
ssp	-212.4	werr	wt	wt
wp	4914.8	wexp	wt	wt
vss	360	wint	wt	wt
wc	360	wnt	wt	wt
zmm	250	wnt	wt	wt
hzmm	19.66	wnt	wt	wt
is	13541.27	wnt	wt	wt
rfl	5142.1	wnt	wt	wt
thp	3626.2	wnt	wt	wt
ins	4.000	wnt	wt	wt
cdc	ph	wnt	wt	wt

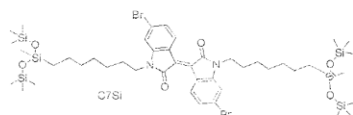
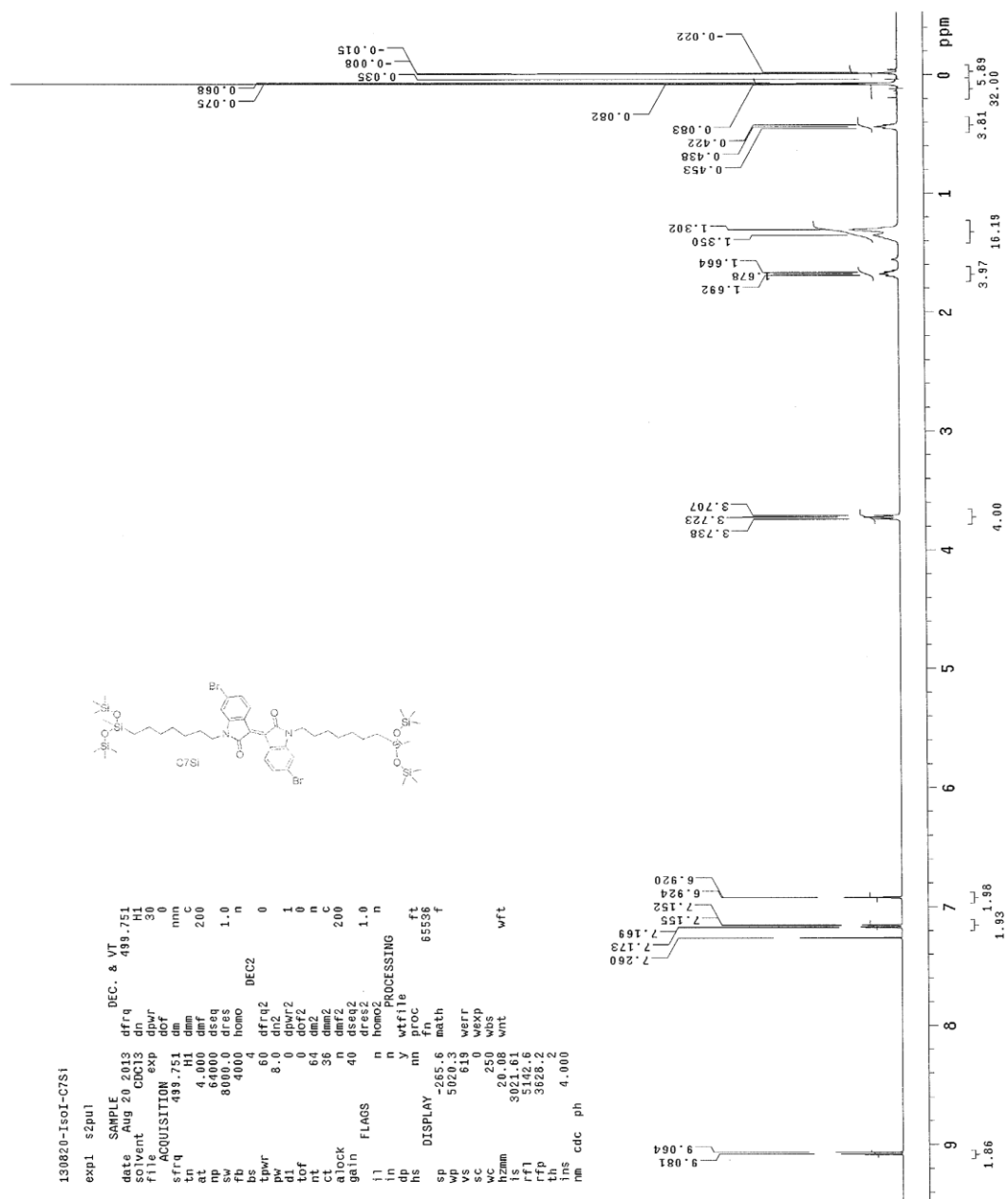


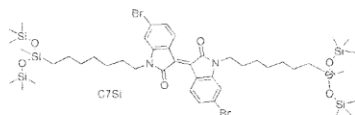
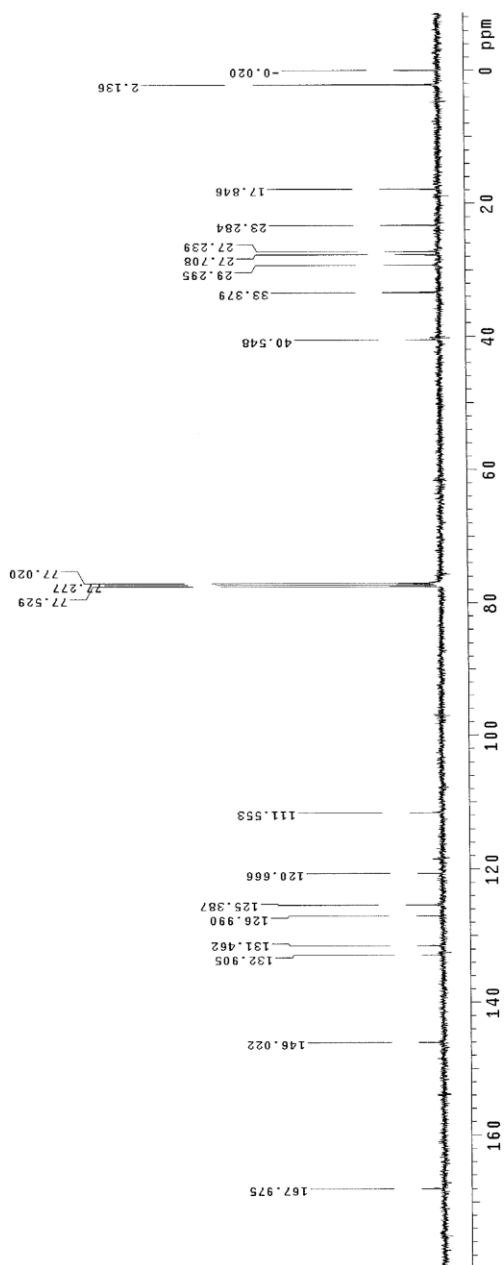
130820-Isol-C6S1

exp1 s2pul

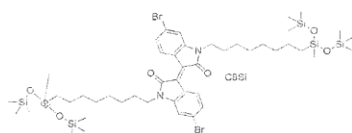
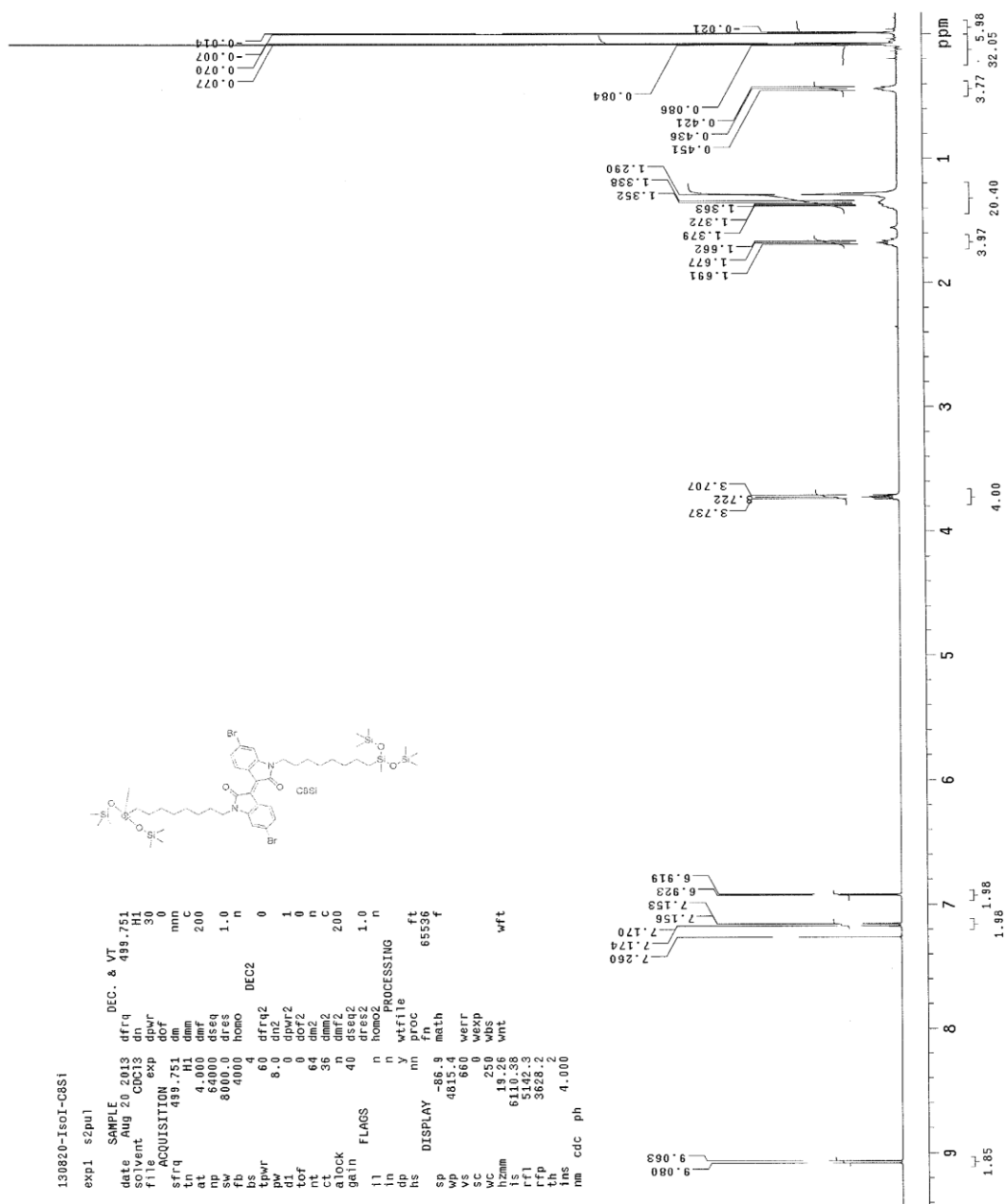
SAMPLE
 date Aug 20 2013 dn H1
 solvent CDCl3 dof -495.0
 rf1 ACQUISITION exp dm 333
 sf1 125.674 dmf 9850
 tn C13 dpr 43
 at 1.500
 np 38015
 pw 33015
 bs 18000 math not used
 f
 4
 7.0 weff
 pw 7.0 weff
 tpwr 51
 wbs 0.50
 tcf 100.0 wnt
 nt 1024 sp
 ct 88 wp -646.6
 23001.0
 n vs 2724
 54 sc 2500
 n hzmm 92.00
 n ls 500.00
 y rfl 4462.3
 nm
 th 3
 lns 1.000
 at ph

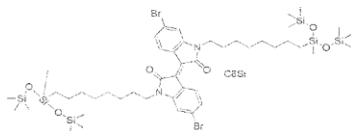
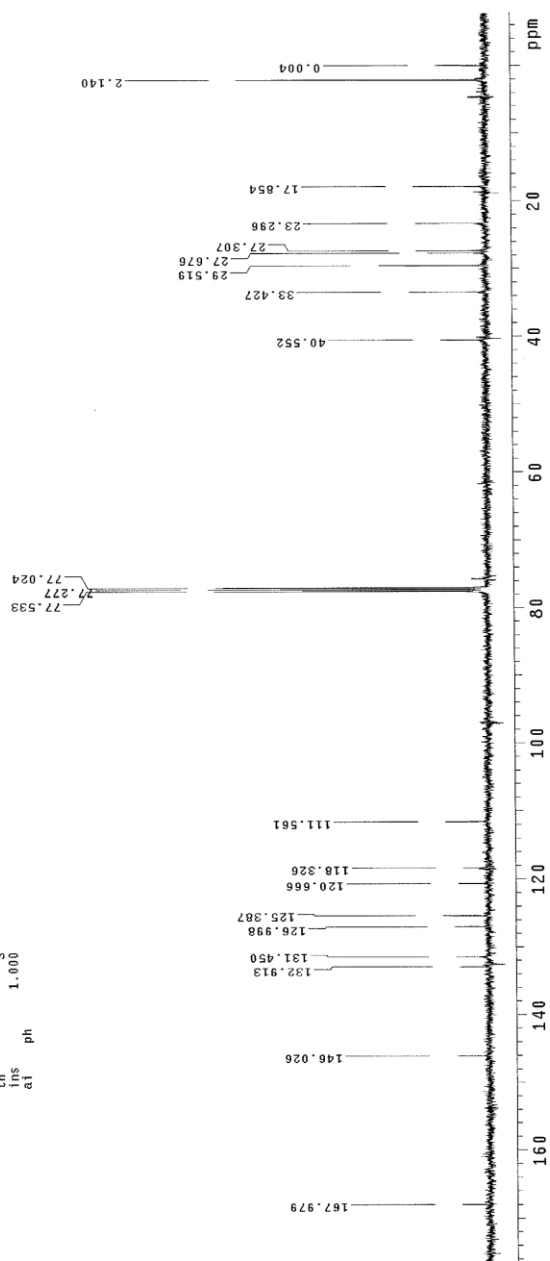


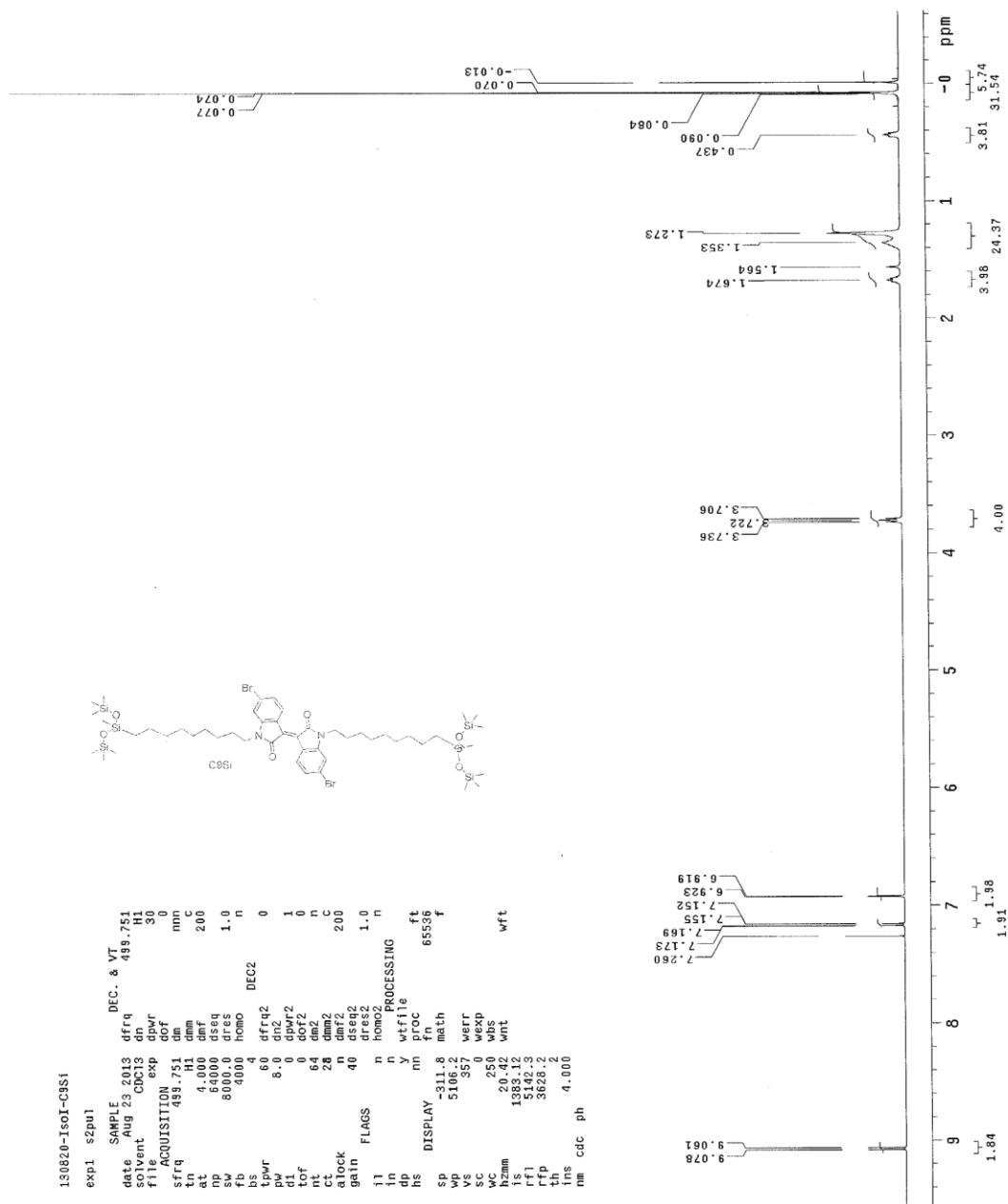


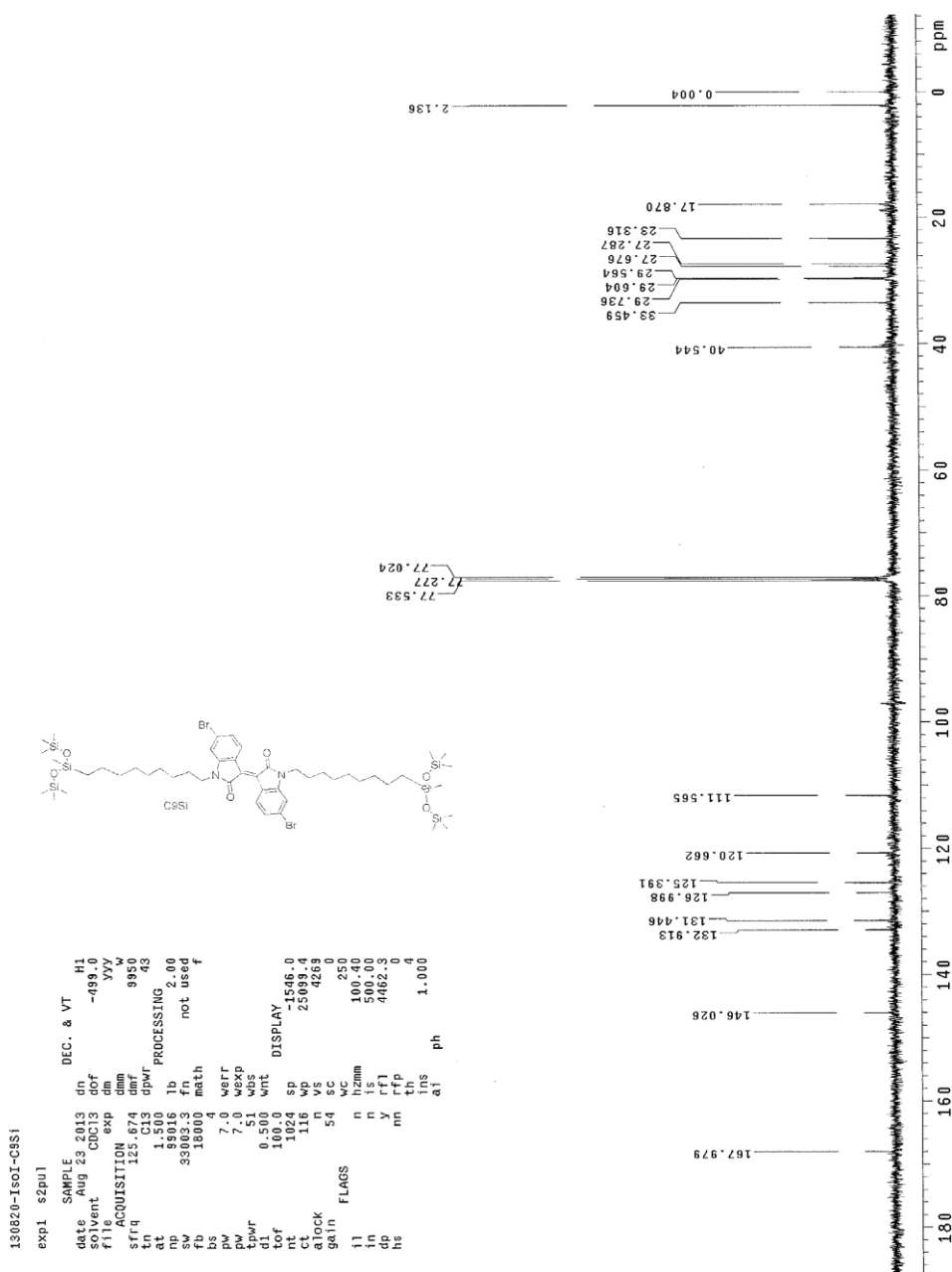


exp1 s2pu1

[illegible]

[illegible]

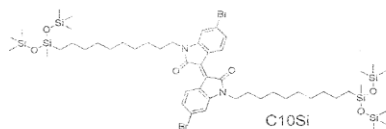
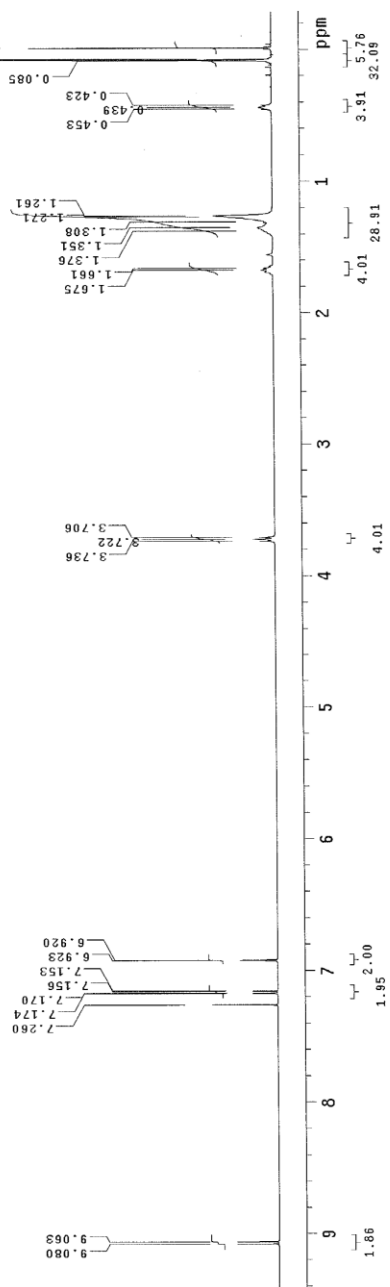




130620-IsoI-C10Si

exp1 s2pu1

SAMPLE
 date Aug 20 2013 dfrq 495.751
 solvent CDCl3 dn H1
 file /data/jgmei/1~dpwr 30
 130620-IsoI-C10Si-H-1 dot
 nm 0
 C
 ACQUISITION
 sfrq 495.751 dmf 200
 tn H1 dseq 1.0
 at 4.000 dres 1.0
 sp 8000 homo DEC2
 fb 4000 dfrq2 0
 bs 4 dn2 1
 tpwr 60 dpwr2 0
 pw 8.0 dorf2 0
 ti 0 dm2 0
 tf 64 dm2 200
 nt 48 dseq2 1.0
 ct alock n dres2
 gain 40 homo2
 PROCESSING
 fl n vfile
 in y fn 65536
 hs nm math f
 DISPLAY
 sp 146.5 wfft
 vs 4868.4 wexp
 sc 324 wbs
 wc 250 wnt
 hzmm 591.57
 fl 5142.3
 rfp 3628.2
 th 1
 ins 4.000
 nm cdc ph

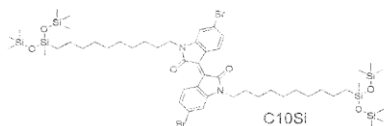
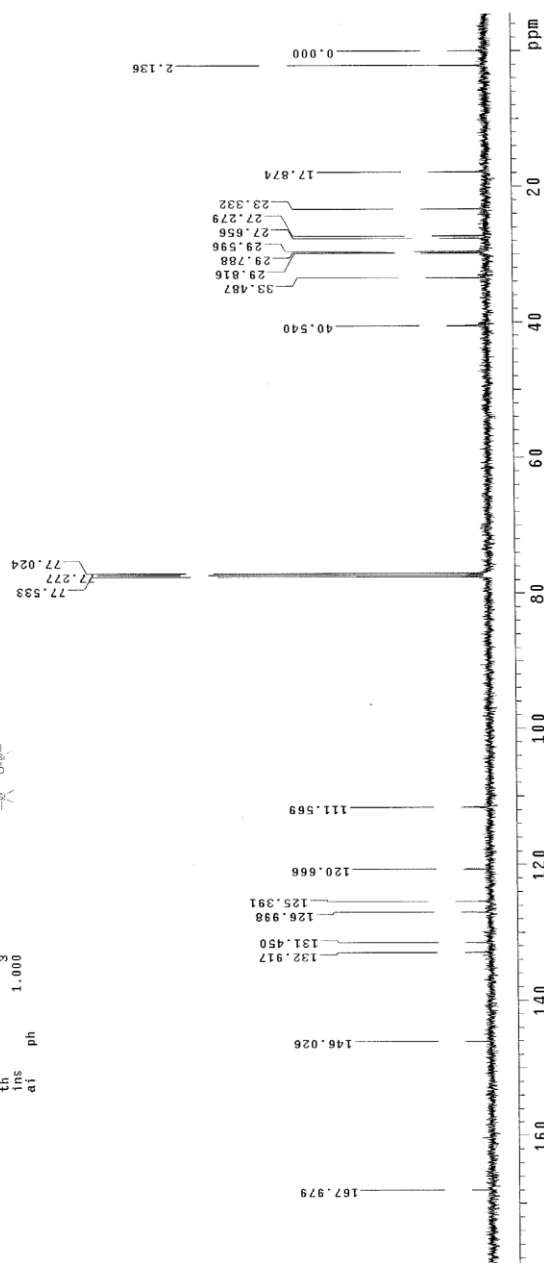


130820-IsoI-C10Si

exp1 s2pu1

SAMPLE
 date Aug 20 2013 dn H1
 solvent CDCl3 dof -499.0
 file ACQUISITION exp dm yyy
 sfreq 125.674 dm 950
 tn C13 dpr 43
 at 1.500 PROCESSING
 np 98016 lb 2.00
 sw 33083.3 fn not used
 lb 18000 math
 pw 7.0 werr
 pv 7.0 wexp
 tpwr 51 wbs
 dl 0.500 wnt
 tof 19024
 ct 84 sp
 gain 54 vs
 alock 54 sc
 flags n hzmm
 l 1 n 250
 m 1 n 500.00
 dp y rfi 4462.3
 ns m rfp 0
 th 3
 ins 1.000
 al ph

DISPLAY
 -700.0
 23273.9
 3081



exp1 s2pul

[illegible]