Supporting Information

A Molecular Breakwater-Like Tetrapod for Organic Solar Cells

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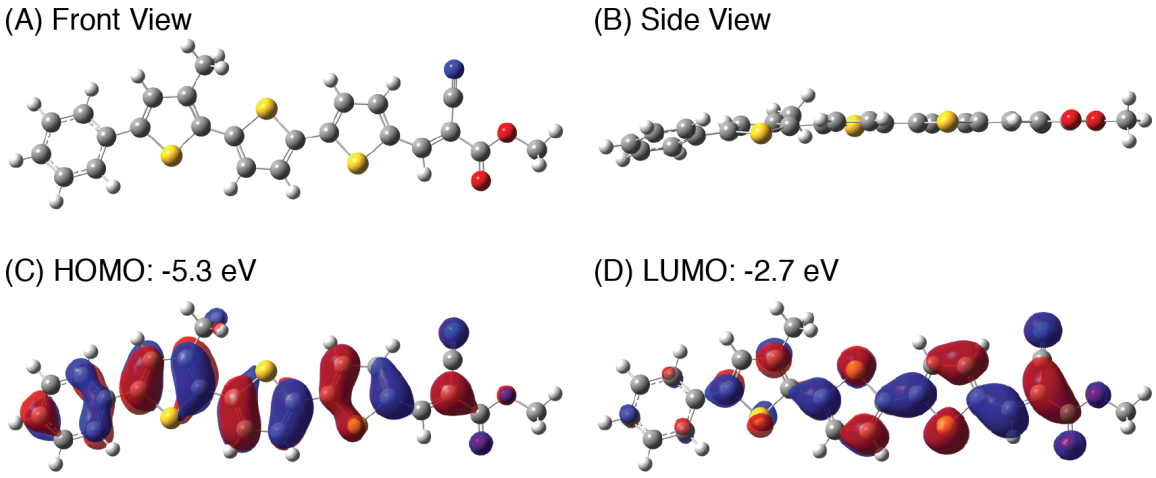


Figure S1. Density functional theory (DFT) calculation results (B3LYP/6-31G*) of **MO**.

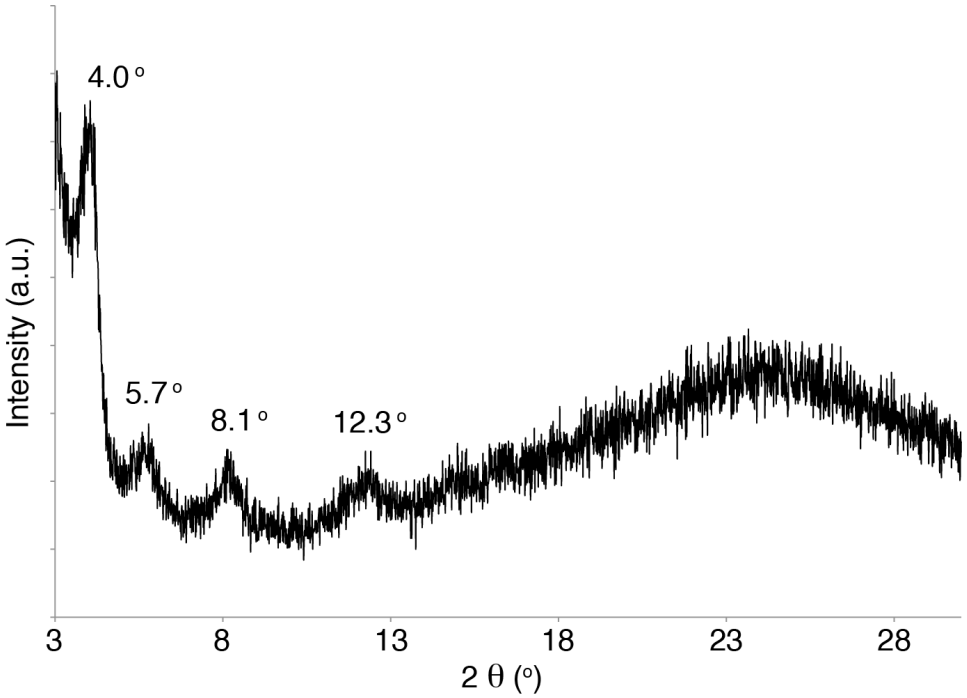


Figure S2. Wide-angle X-ray scattering profiles of **SO** thin films deposited on glass.

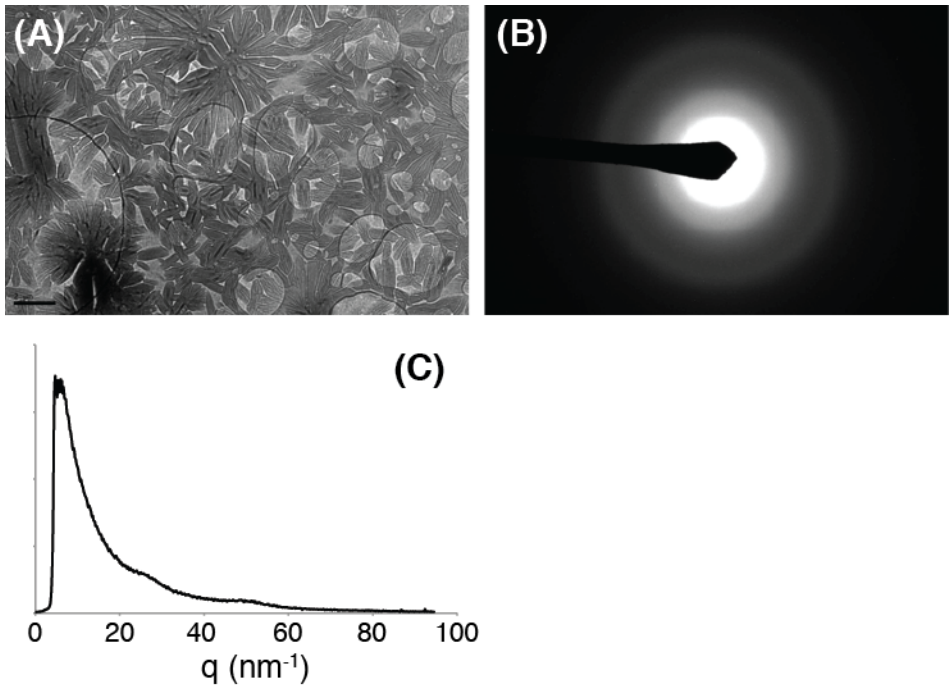


Figure S3. Transmission electron microscopy (TEM) image (A), selected area electron diffraction (SAED) images (B) and azimuthal integration curve of the SAED pattern (C) of as-cast **SO** thin films. Scale bar in A: 2 μm.

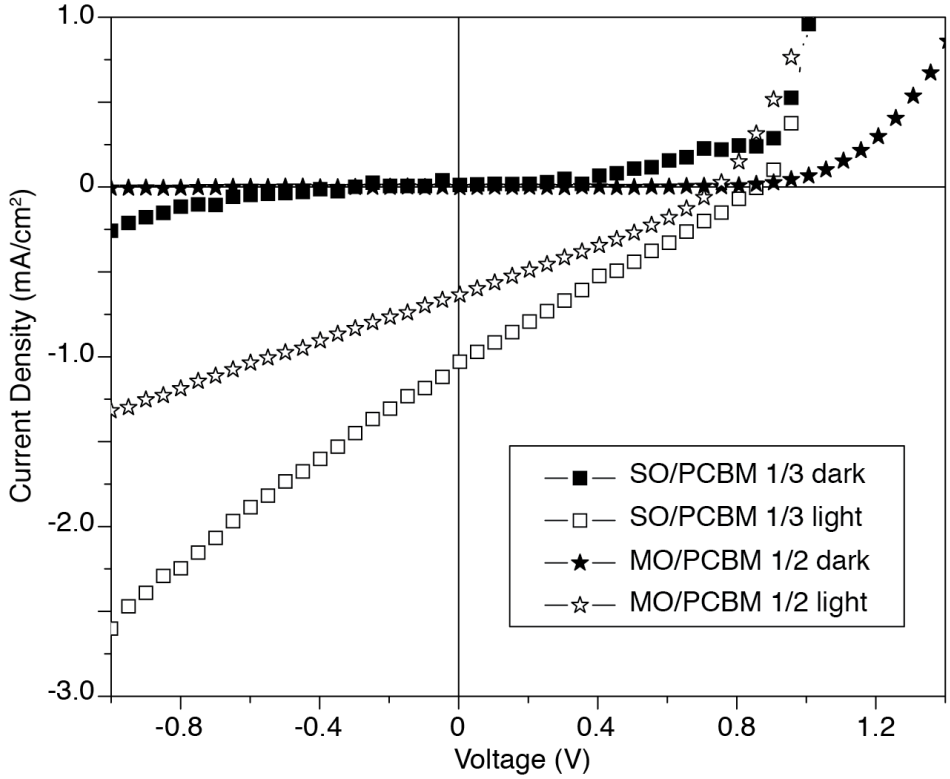


Figure S4. Current density-voltage (I-V) curves of solar cells employing **SO** or **MO** and PCBM in dark and under simulate solar light (100 mW/cm^2).

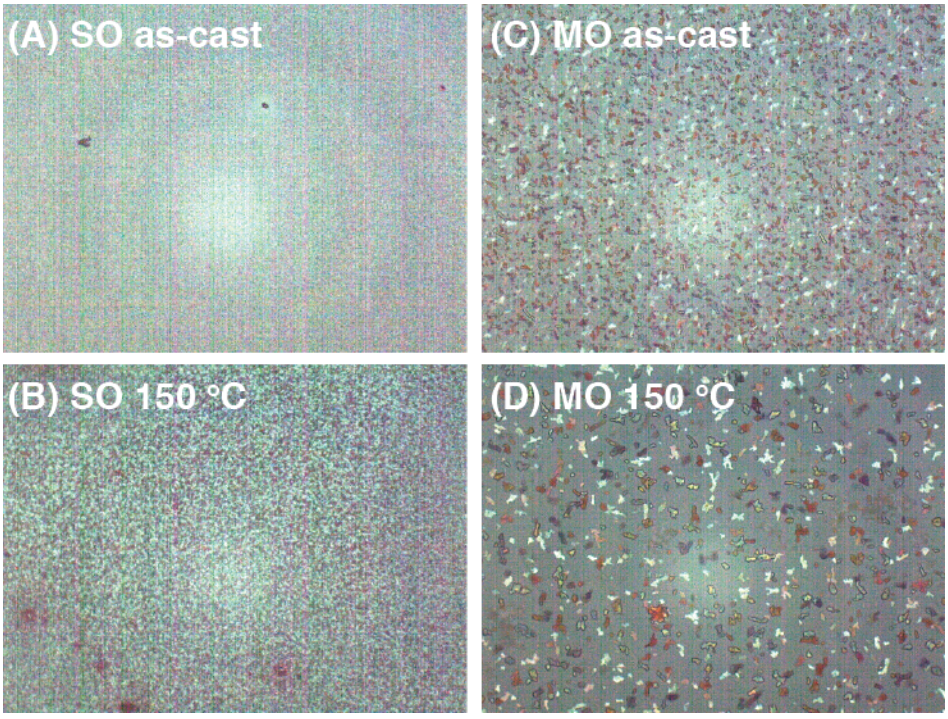


Figure S5. Cross-polarized light micrographs (400× magnificantion) of thin films of **SO** and **MO** under different annealing conditions.

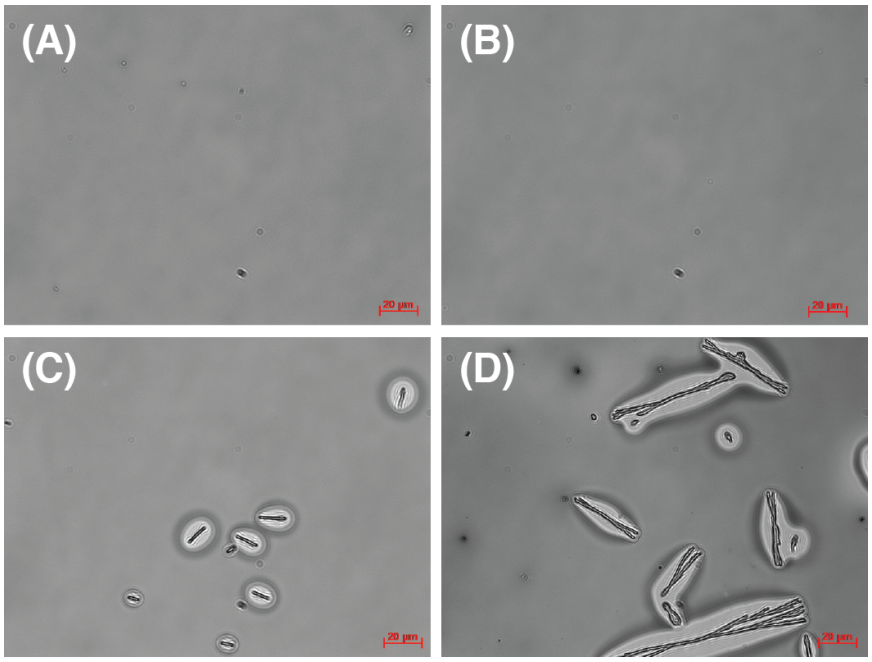


Figure S6. Optical micrographs (400 × magnification) of **SO**/PCBM (1/3) devices after slow cooling from (A) 100 °C, (B) 150 °C, (C) 200 °C and (D) 250 °C. Scale bars in all: 20 μm.

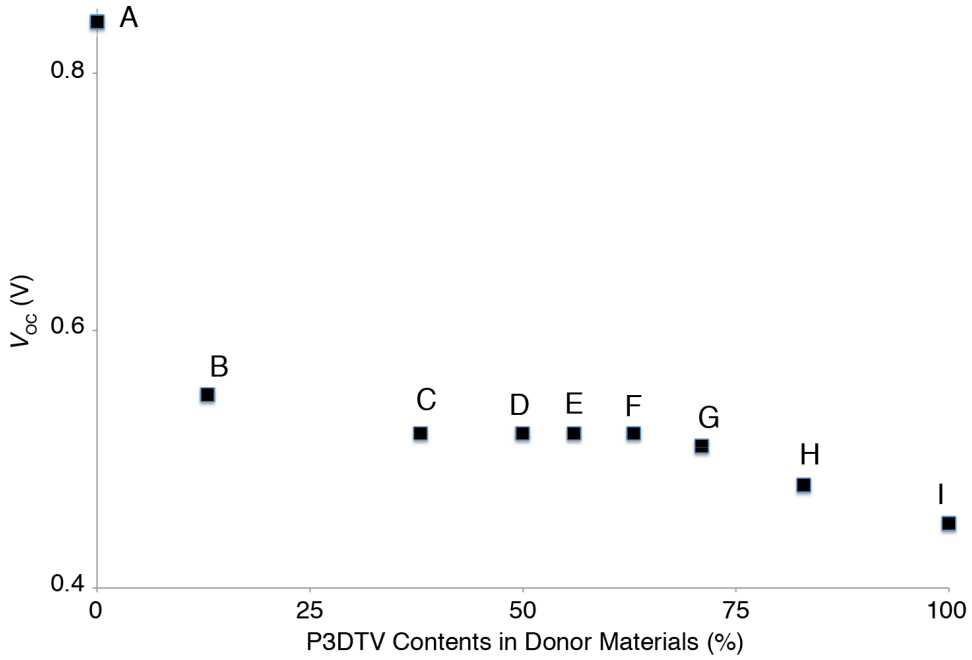


Figure S7. Open circuit voltage (V_{OC}) versus P3DTV contents in donor materials of various solar cell devices. See Table 1 for labeling details.

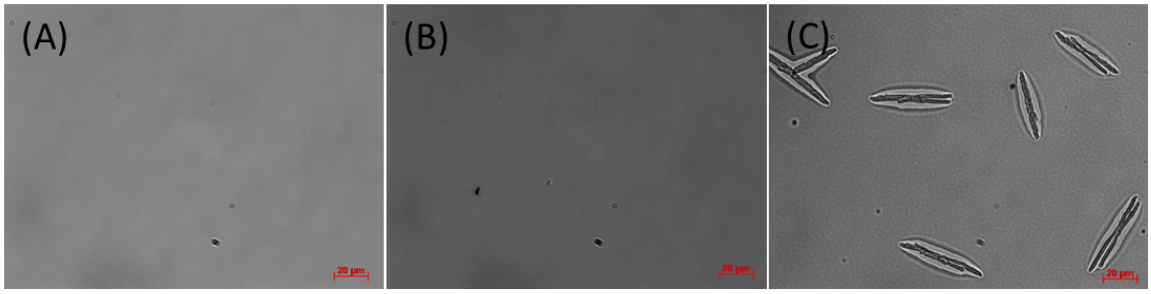
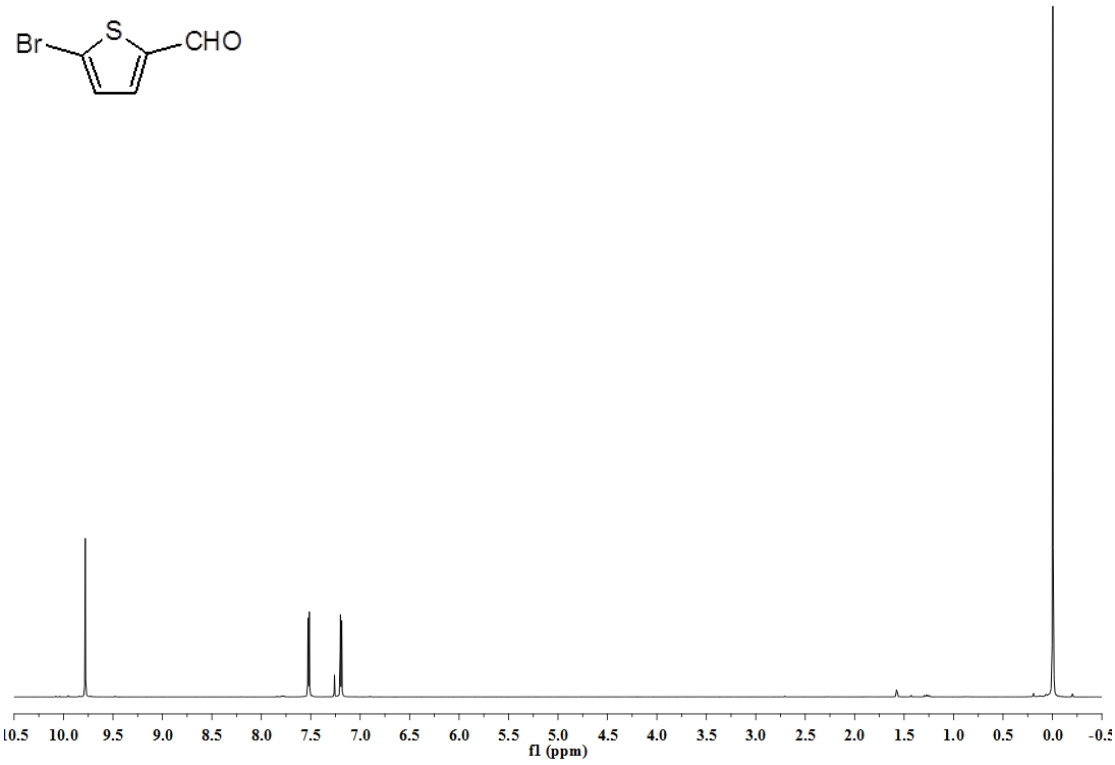
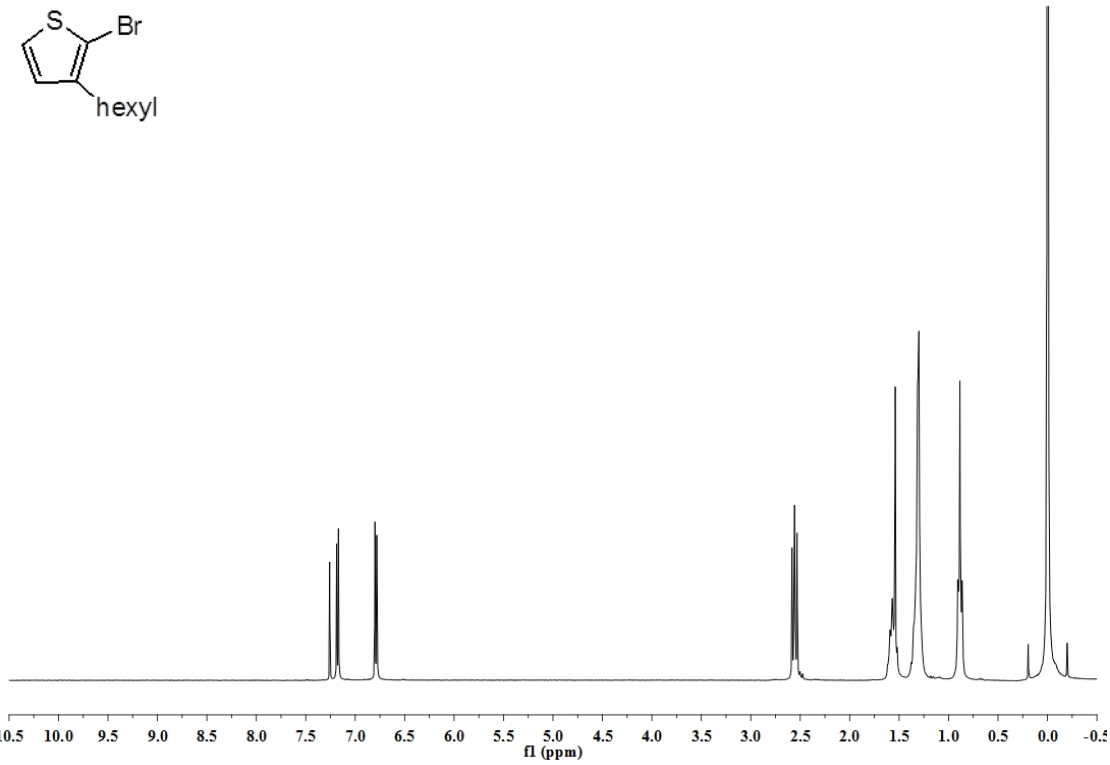


Figure S8. Optical micrographs (400 X magnification) of device F containing **SO**/P3DTV/PCBM (1.5/2.5/7.0) blend films: (A) as cast; (B) annealed at 80 °C for 10 min; (C) annealed at 150 °C for 10 min. Scale bars in all: 20 μm.

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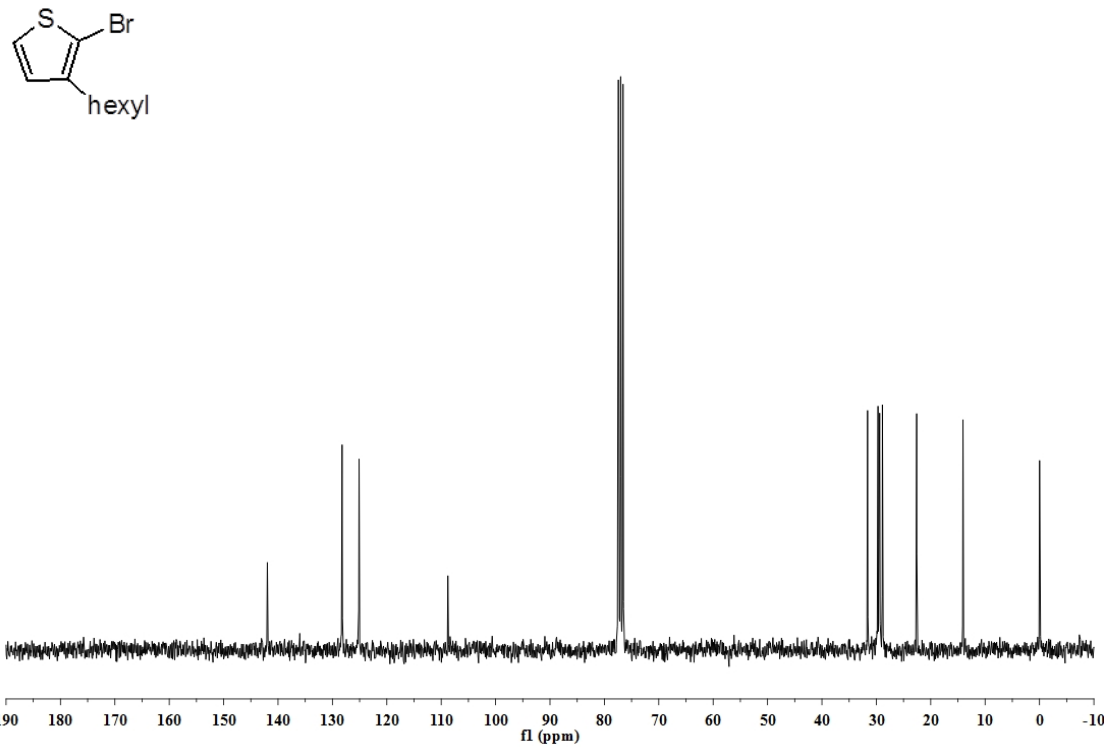
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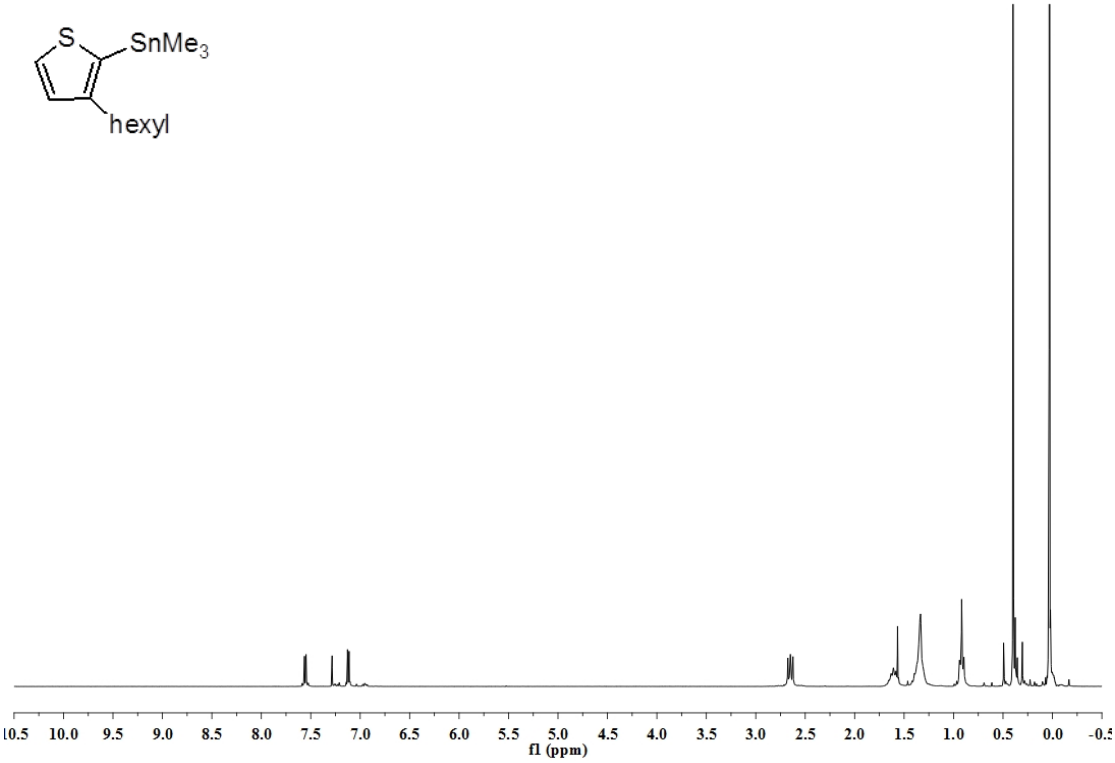
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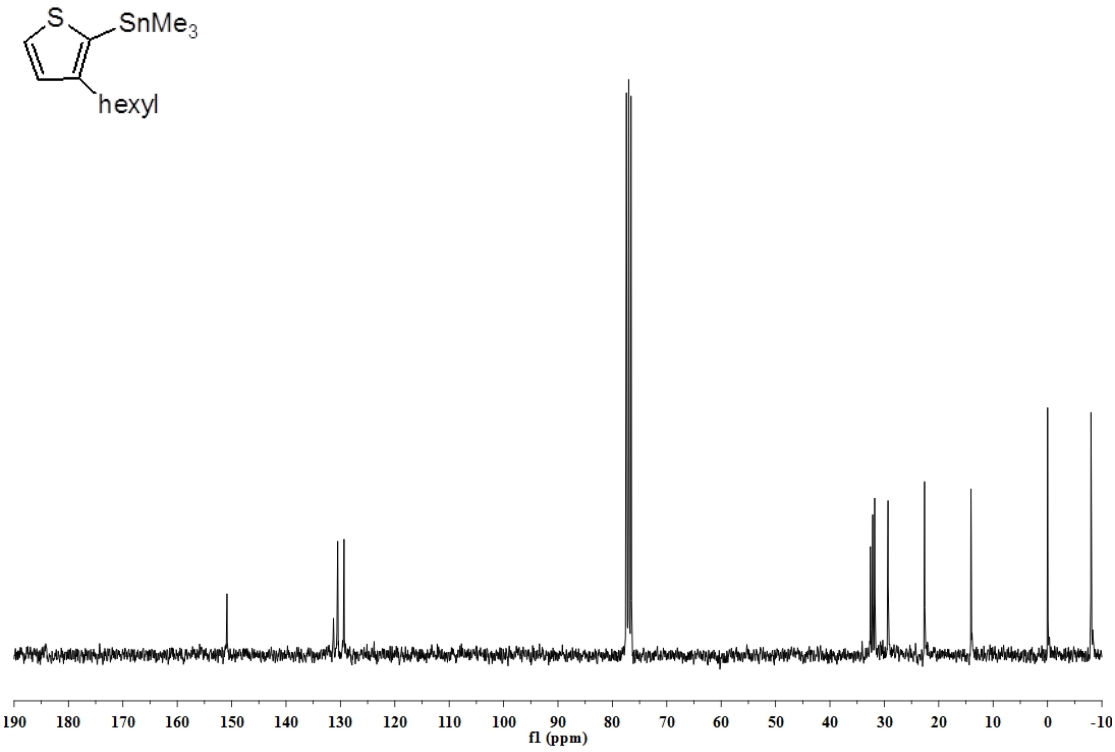
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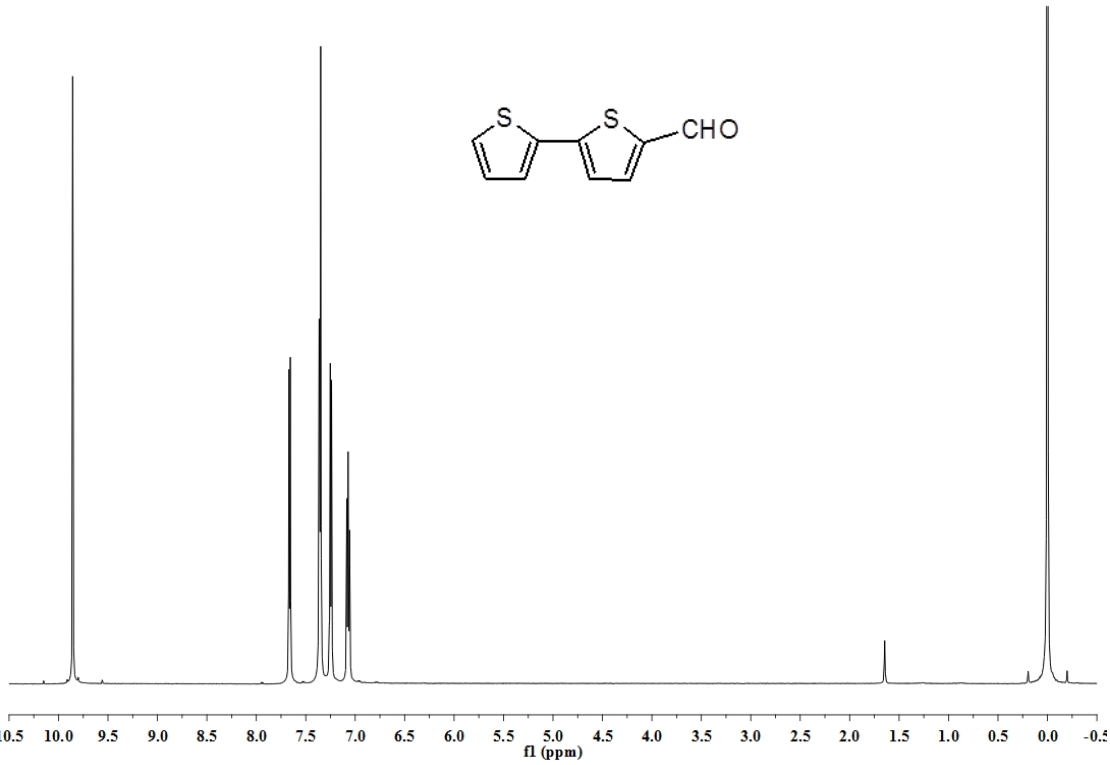
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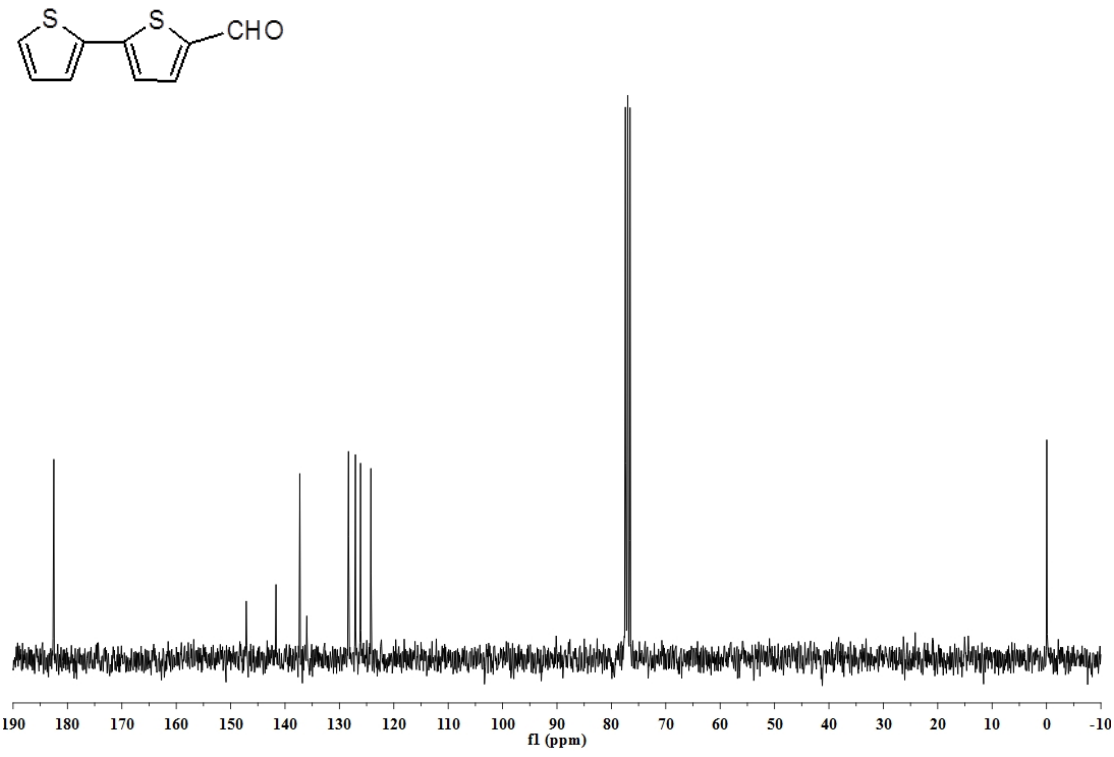
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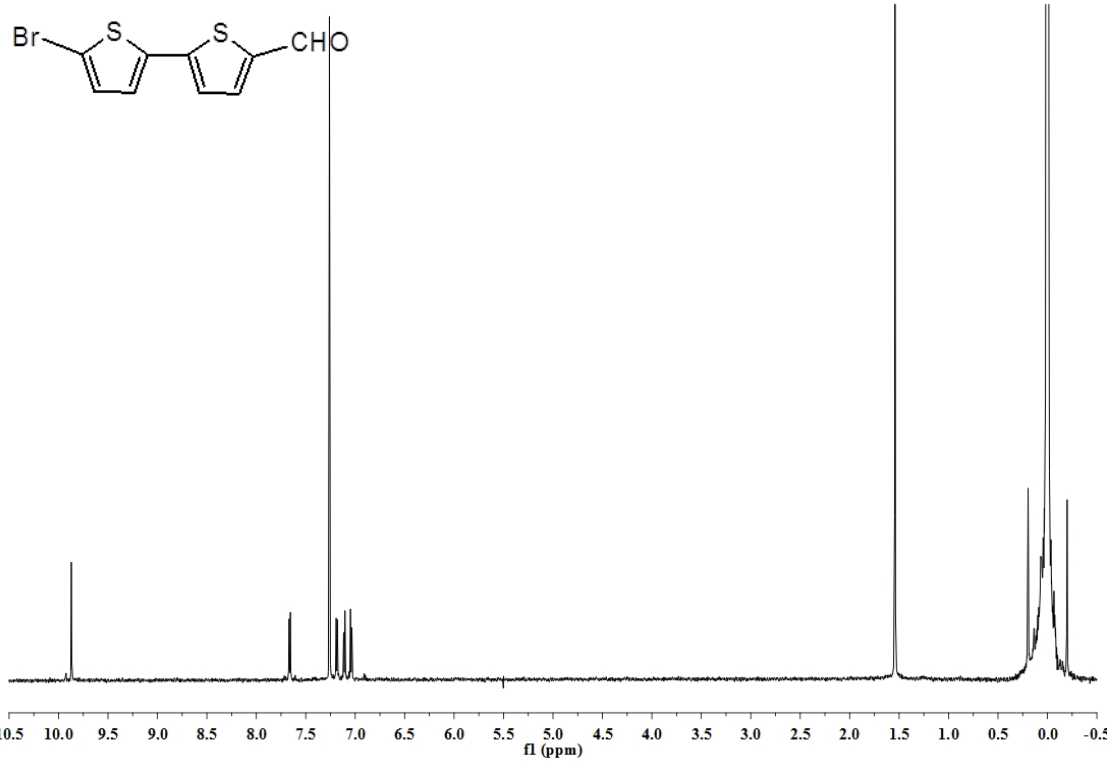
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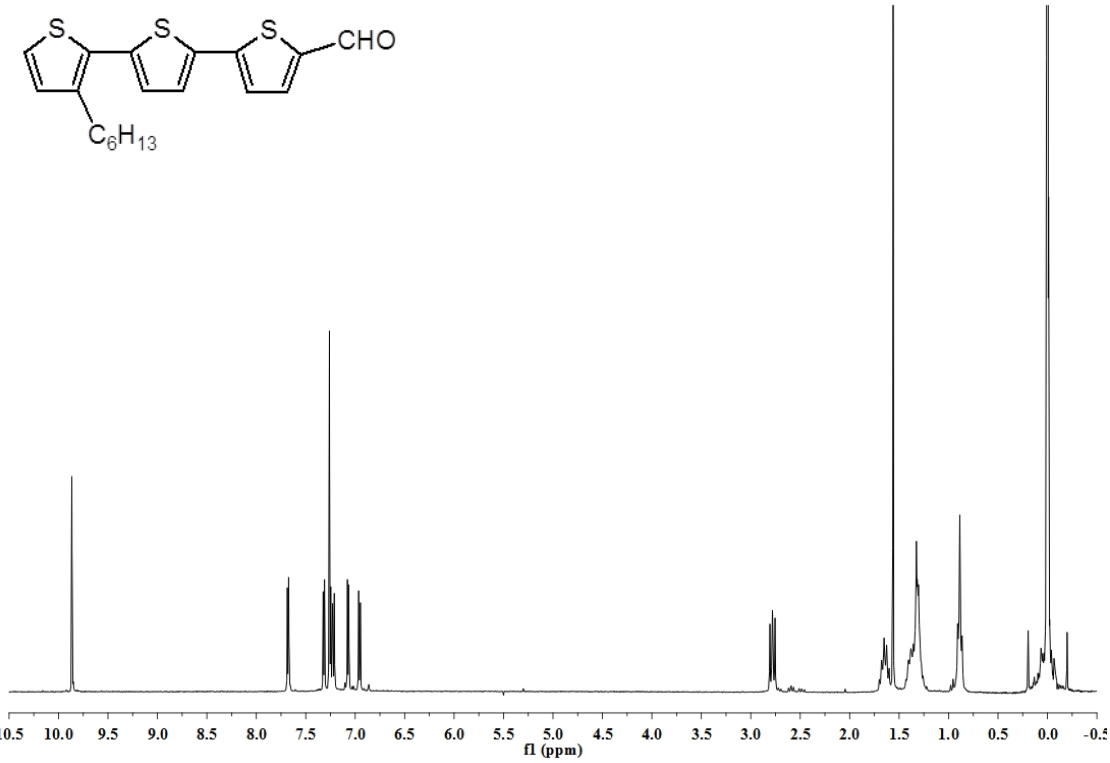
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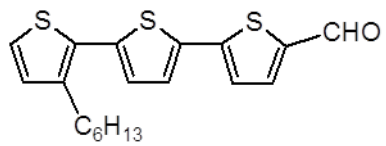
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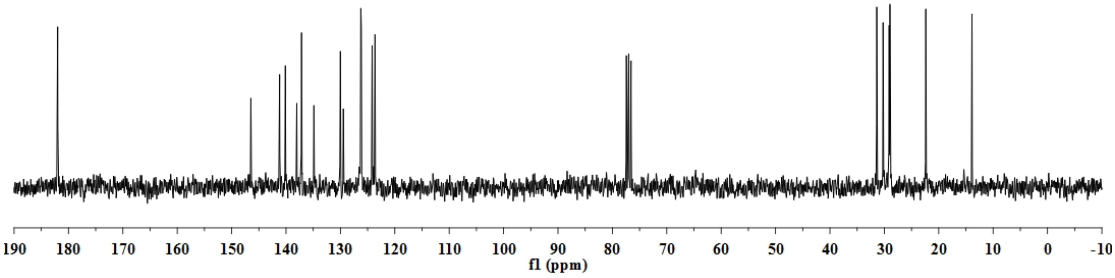
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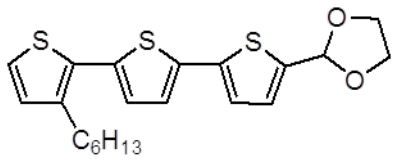
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O
O
C6H13

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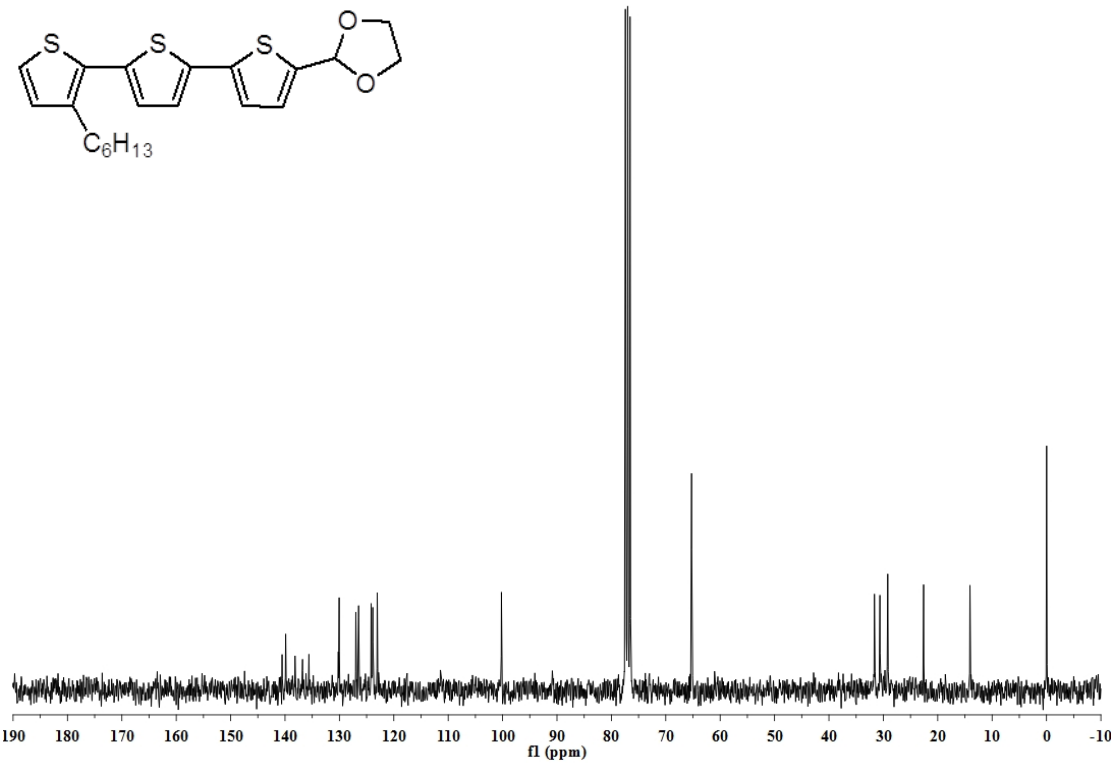
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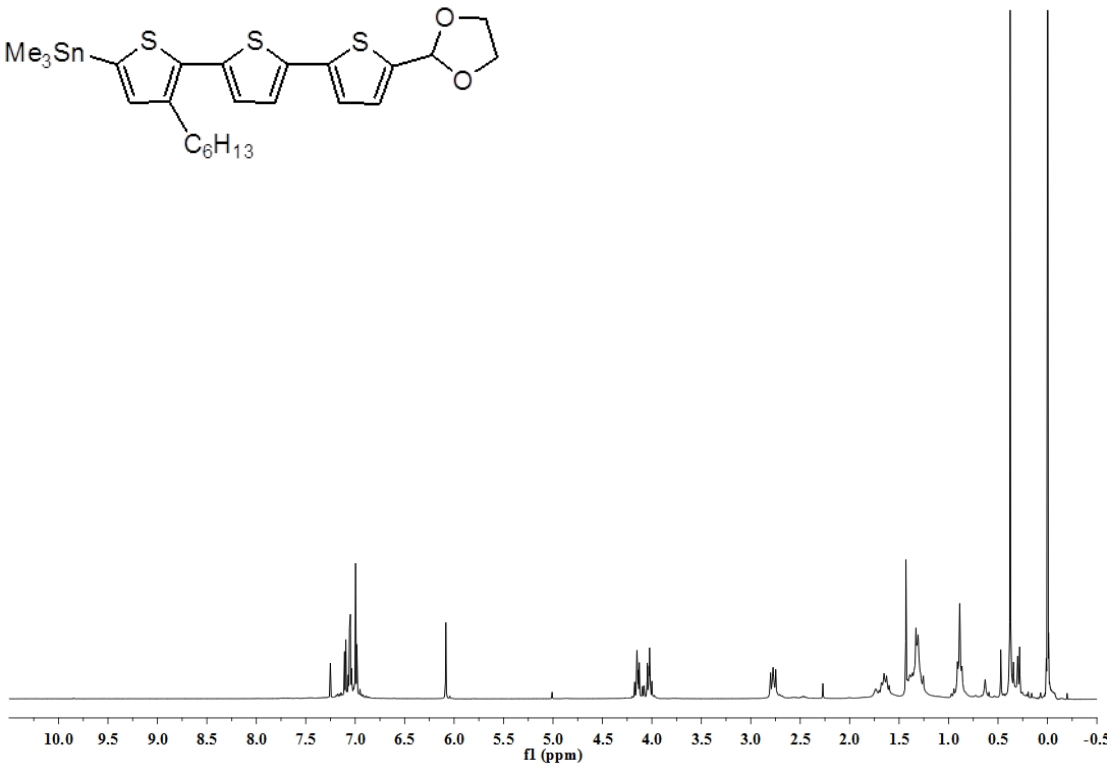
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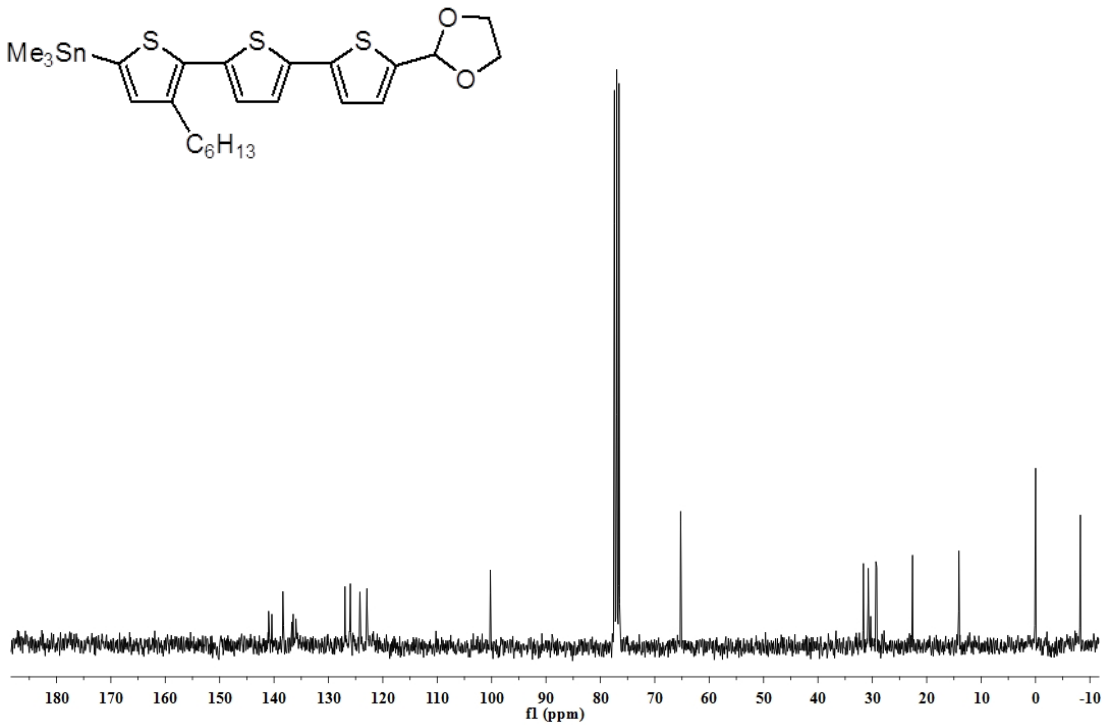
f1 (ppm)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S
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O
O
C6H13
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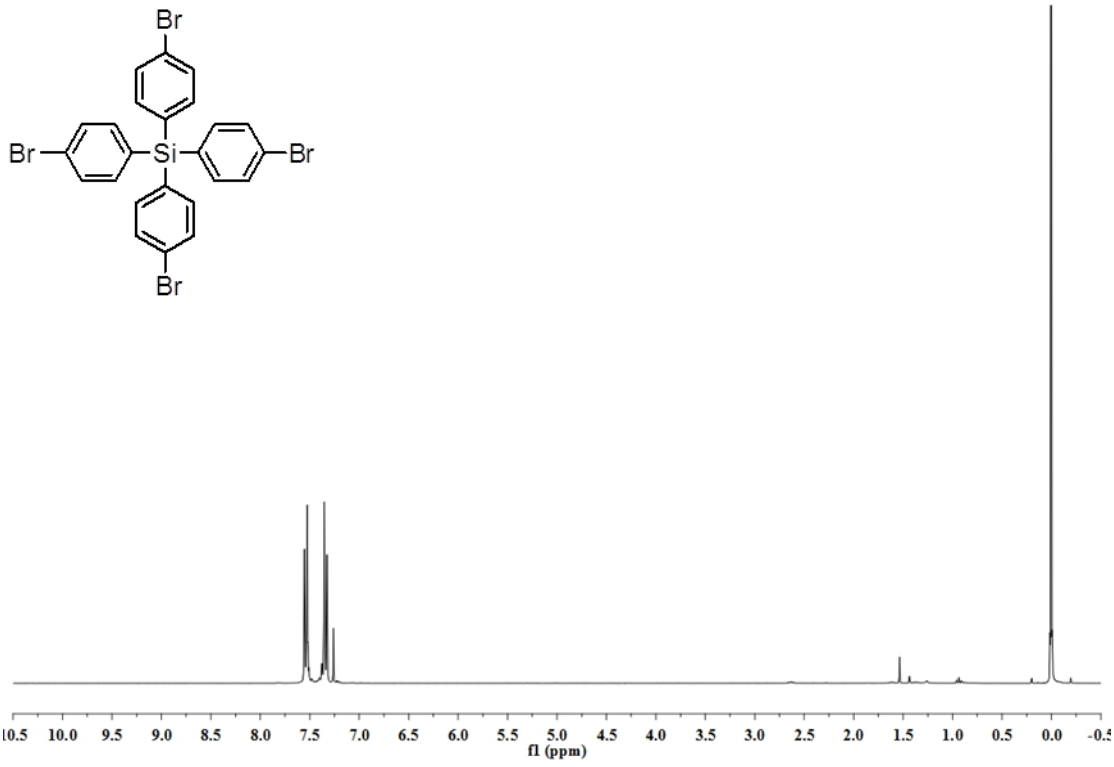
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Br
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Br
Br
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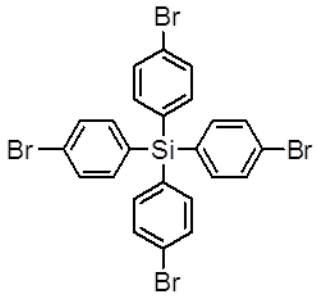
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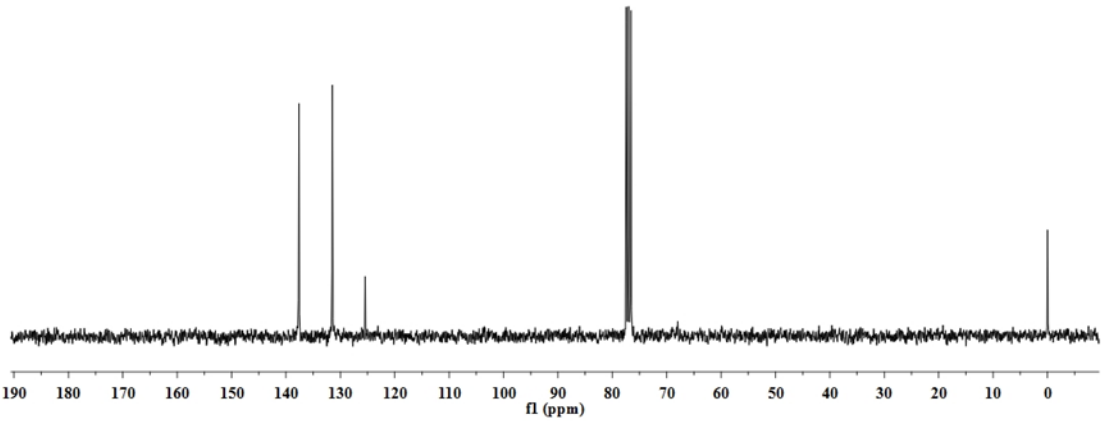
Br
Br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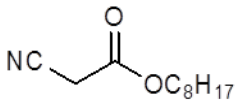
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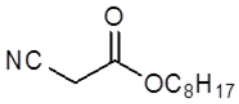
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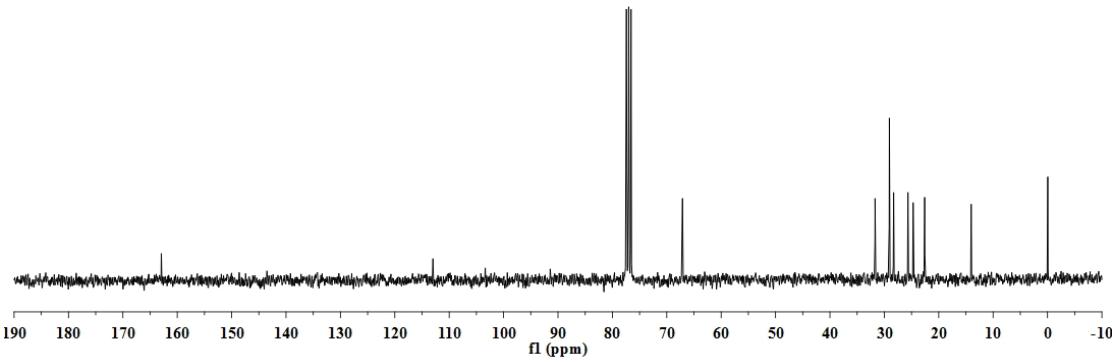
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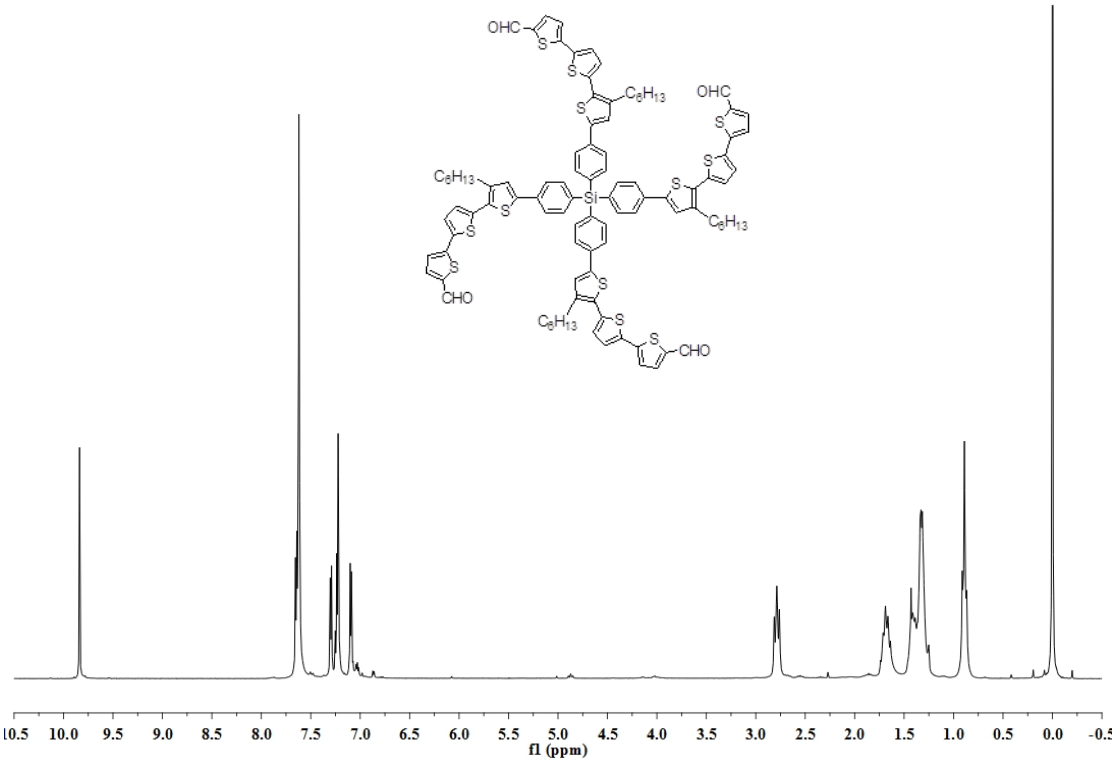
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C6H13
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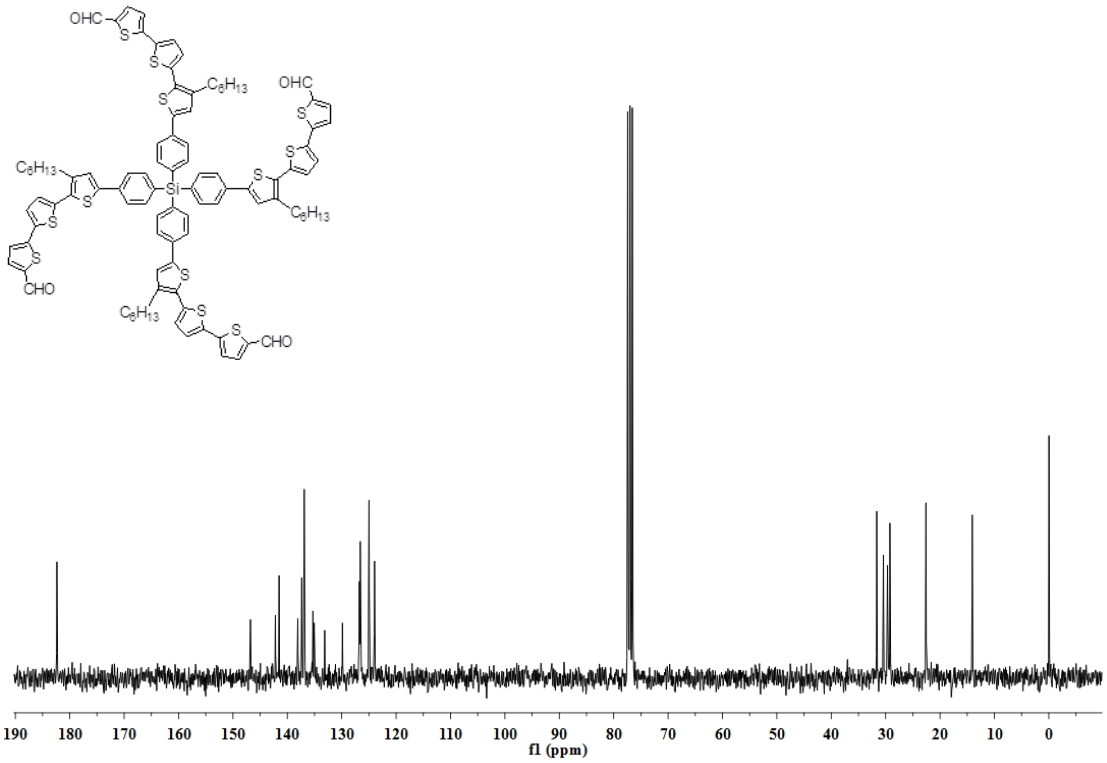
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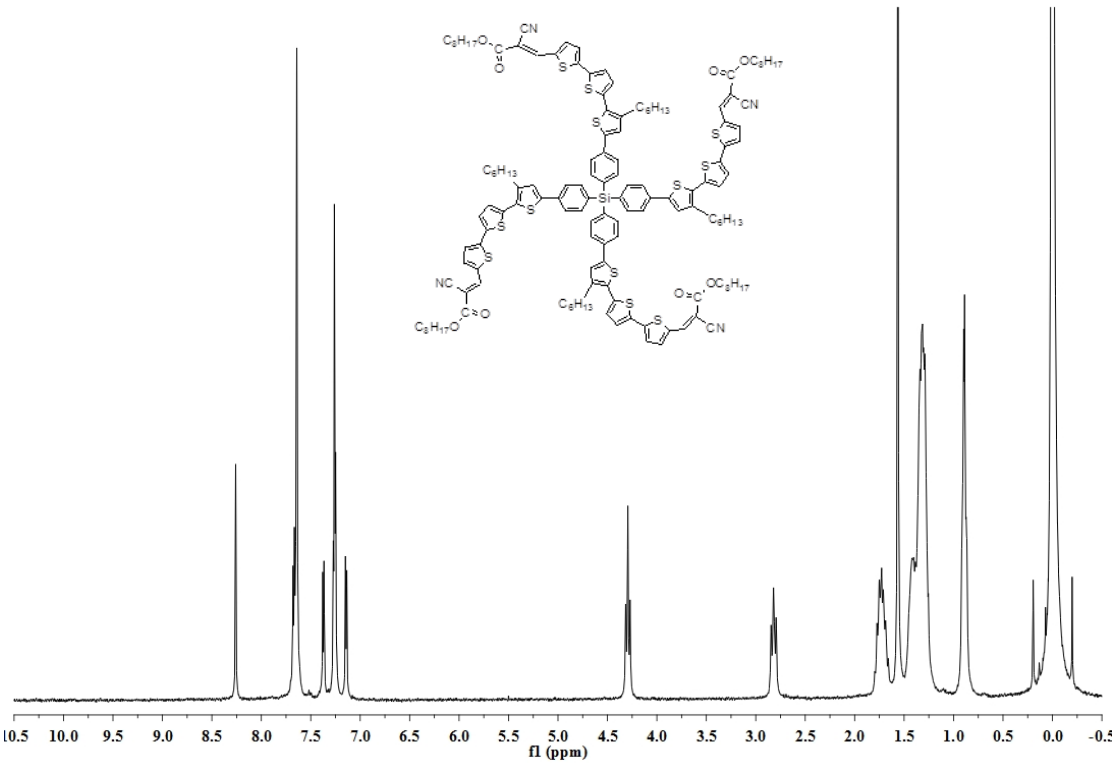
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S
S
C_6H_{13}
O
OC_8H_{17}
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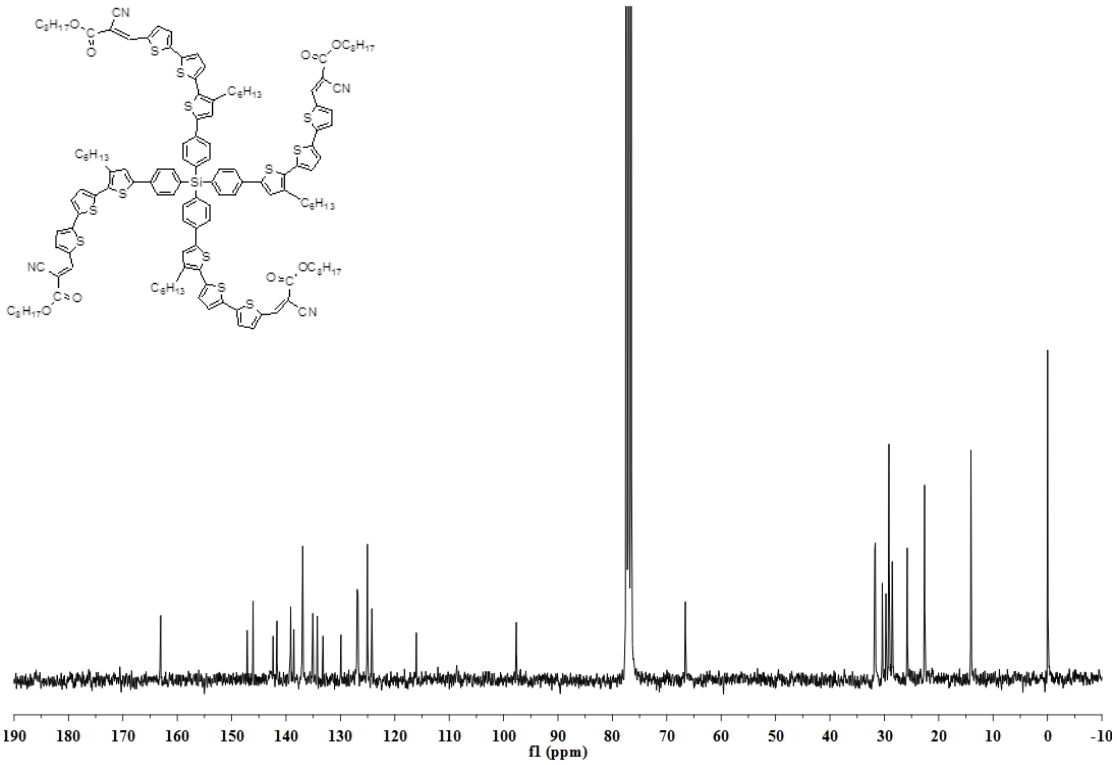
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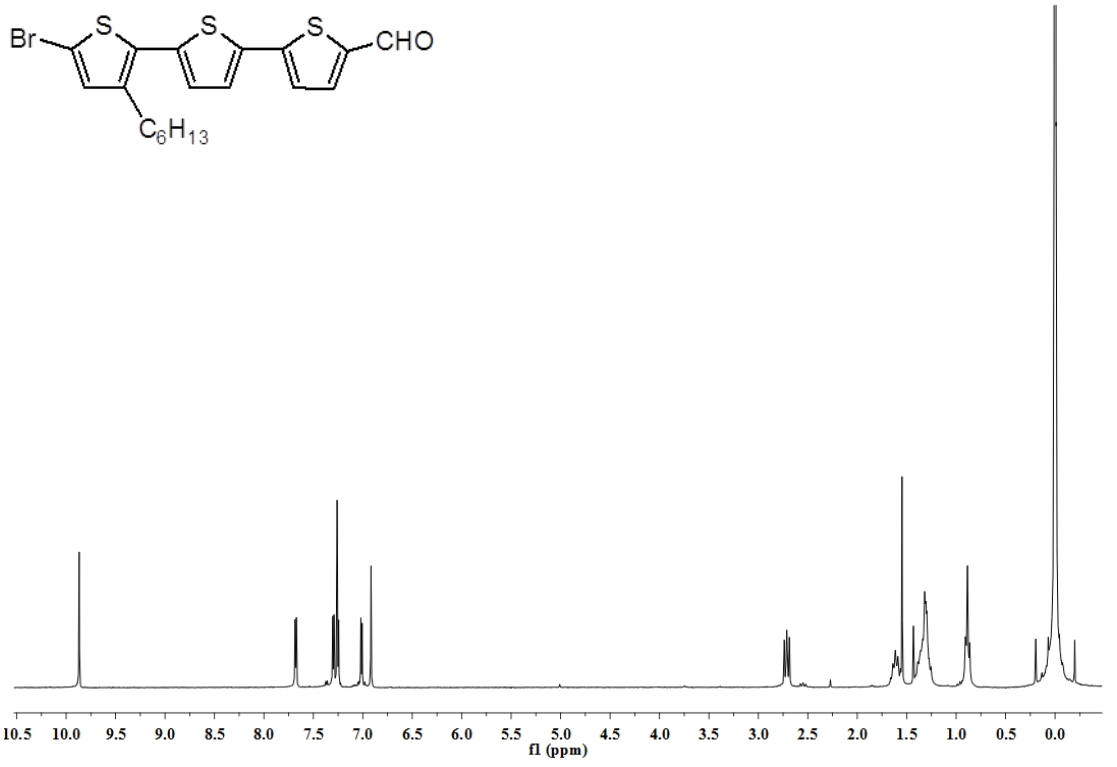
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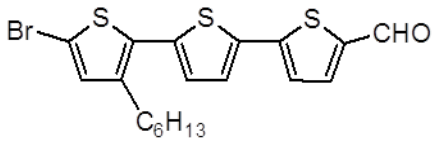
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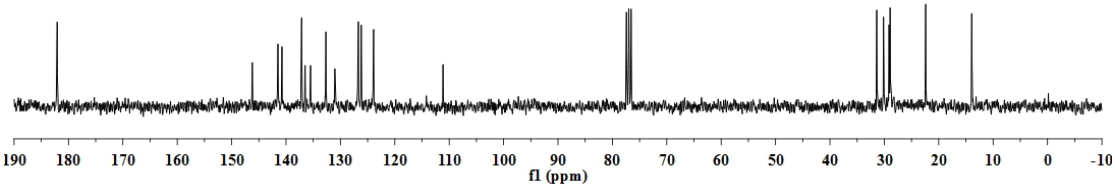
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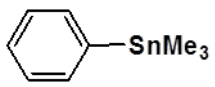
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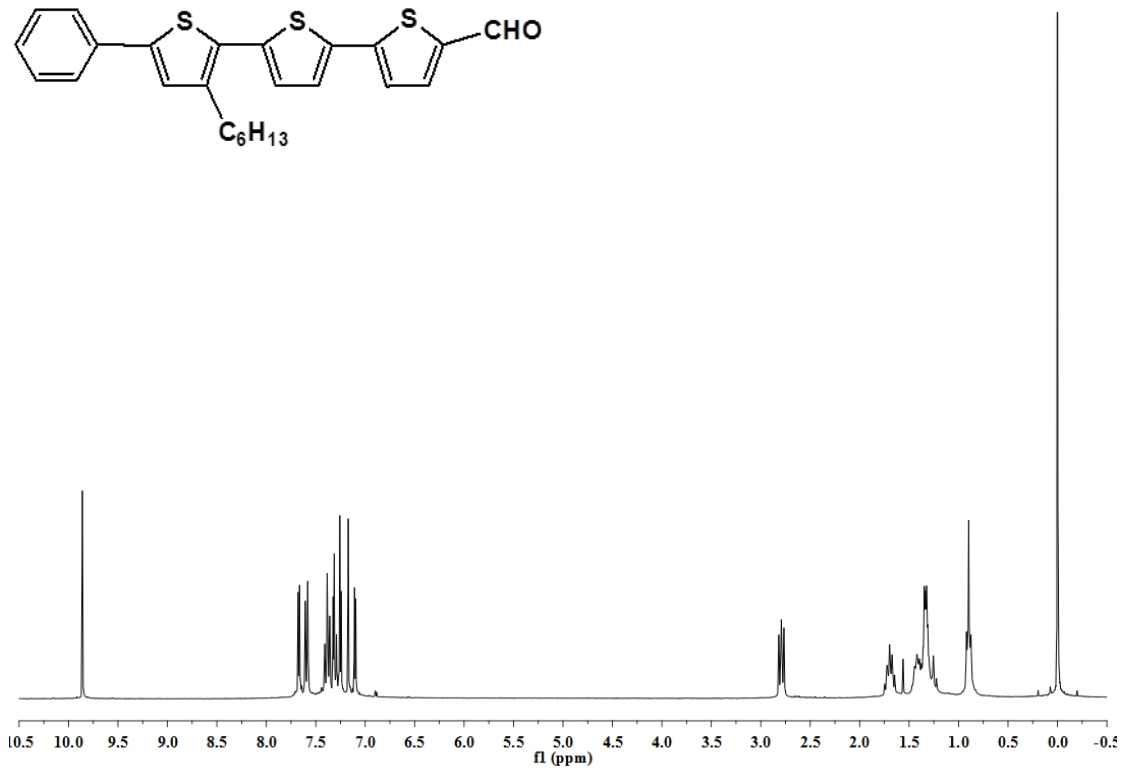
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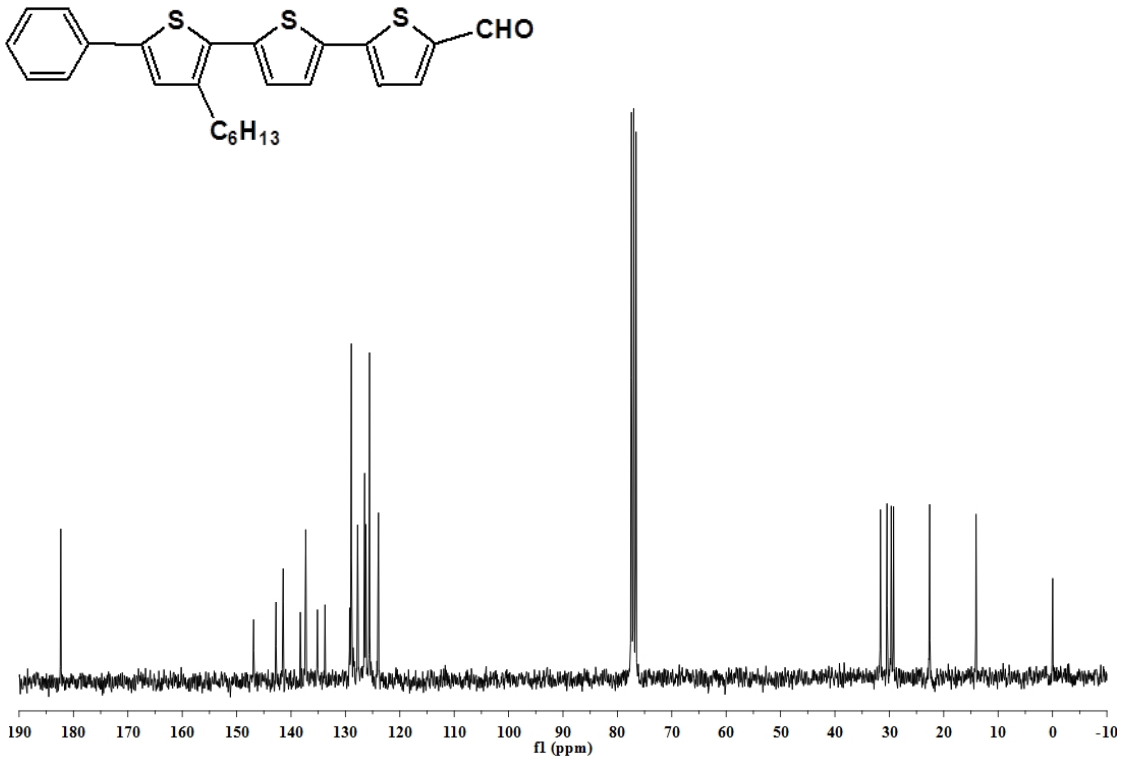
f1 (ppm)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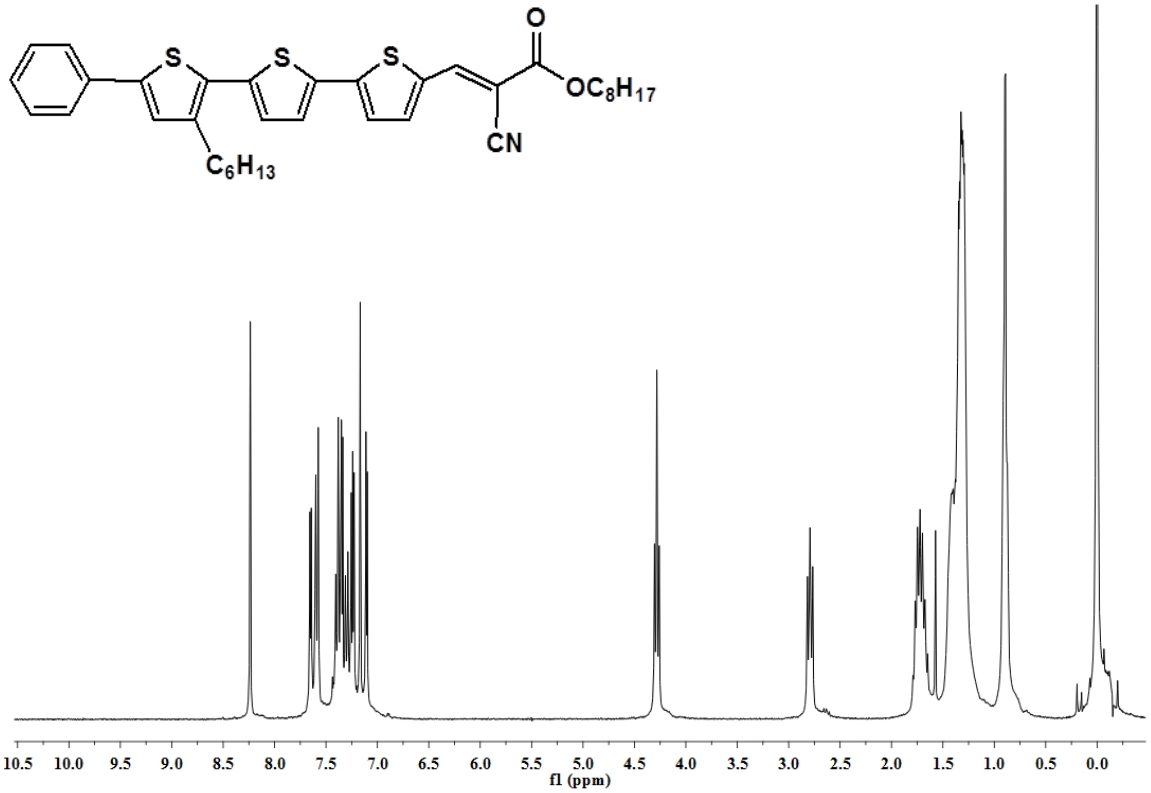
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CN
C6H13
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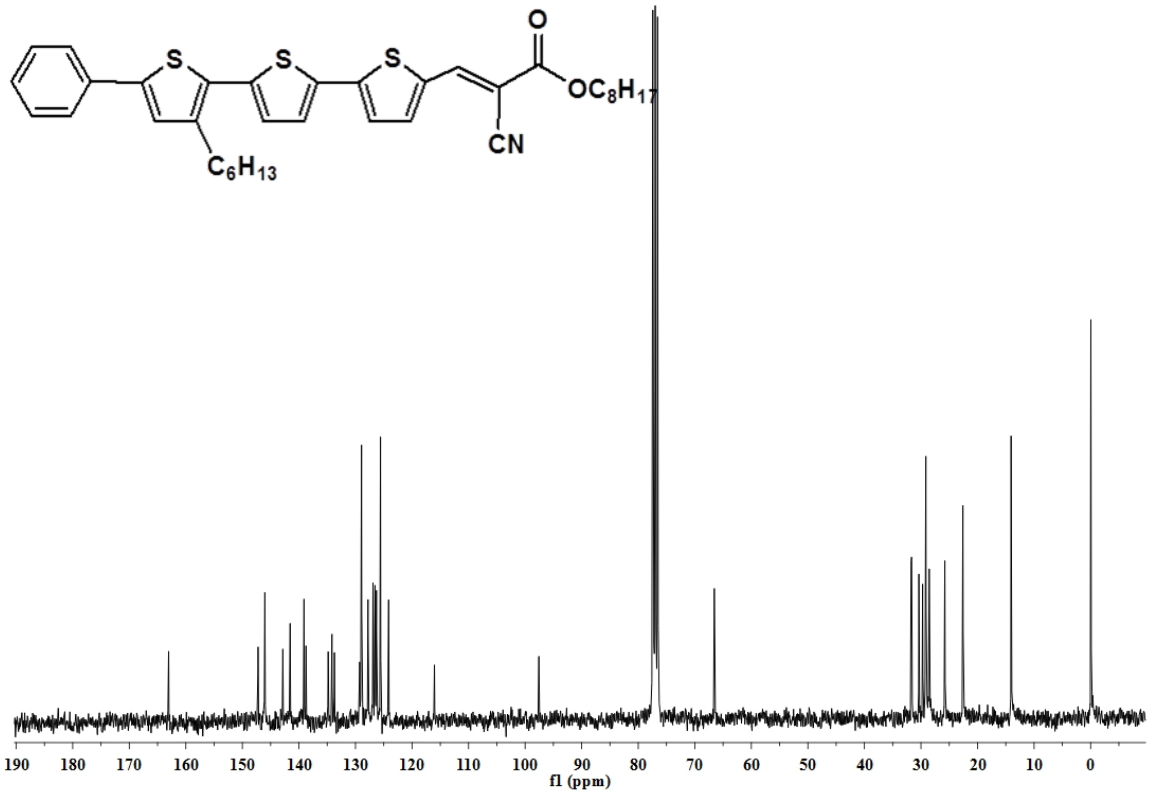
f1 (ppm)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S
S
OC8H17
CN
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f1 (ppm)