Supporting Information

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General:

^{1}H NMR (400 MHz) and ^{13}C NMR (100 MHz) were registered on Varian 400 M spectrometers with $CDCl_3$ as solvent and tetramethylsilane (TMS) as internal standard. Chemical shifts were reported in units (ppm) by assigning TMS resonance in the ^{1}H spectrum as 0.00 ppm and $CDCl_3$ resonance in the ^{13}C spectrum as 77.0 ppm. All coupling constants (J values) were reported in Hertz (Hz). The following abbreviations were used to explain the multiplicities: s = singlet, d = doublet, t = triplet, dd = doublet of doublet, m = multiplet. IR spectra were recorded on a Perkin-Elmer 16 PC FTIR spectrophotometer (KBr disc). High-resolution mass spectra were obtained with a Bruker BioTOF-Q mass spectrometer. Column chromatography was performed on silica gel 200-300 mesh.

All reactions involving Grubbs' second generation catalyst were carried out under an atmosphere of ethylene (1 atm) using standard Schlenk techniques, and the solution of the catalytic reaction was degassed through freeze-pumb-thaw cycle. Toluene was freshly distilled over sodium with the use of diphenyl ketone as an indicator under nitrogen. Dichloromethane was dried by anhydrous calcium chloride and distilled over phosphorus pentoxide. Grubbs' second generation catalyst was synthesized according to literature procedure[1,2] and CuI was purchased from Aladdin Reagent Co., Ltd. Tetraisopropyl titanate was provided by Shanghai Darui Fine Chemicals Co., Ltd. Unsymmetrical diarylacetylenes were prepared by the palladium catalyzed coupling of the corresponding aryl iodides and arylacetylenes. Symmetrical diarylacetylenes were synthesized according to the literature procedures[3]. All other chemicals were purchased commercially and used as received unless indicated otherwise.

Experimental procedures and characterization of products

Typical procedure for the synthesis of 4a

A solution of diarylacetylene **1a** (72.3 mg, 0.125 mmol), Grubbs' second generation catalyst (10 mg, 0.0125 mmol, 10 mol %) and CuI (1.2 mg, 0.00625 mmol, 5 mol %) in dry toluene (5 mL) was stirred at 80 °C for 24 h under 1 atm ethylene pressure (using balloon). After cooling to room temperature, DMAD (89 mg, 0.625 mmol) was added under air conditions and the resulting mixture was stirred at 100 °C for another 24 h in sealed vessel. After cooling to room temperature, the reaction mixture was filtered through a short pad of silica gel eluting with CH_2Cl_2. The volatiles were removed in vacuo. The residue was dissolved in 10 mL dichloromethane and a solution of $FeCl_3$ (4 equiv., 81 mg) in 1 mL nitromethane is added dropwise at 0 °C under nitrogen atmosphere. After the starting material had disappeared by TLC monitoring, the reaction was quenched by the addition of a few drops of methanol and extracted with dichloromethane (3×15 mL). The organic layer was washed with brine, dried over $MgSO_4$, and concentrated. The crude product was purified by silica gel column chromatography (elution with 7:1 petroleum ether-ethyl acetate) to give the final product in 71 % yield.

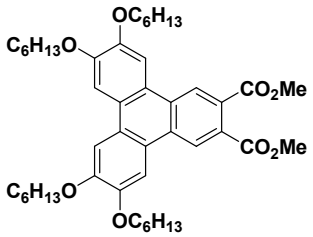
The procedure for the synthesis of 5

4,4'-diiodo-1,1'-biphenyl (406 mg, 1.0mmol), $Pd(PPh_3)_2Cl_2$ (28 mg, 0.04 mmol, 4 mol %), CuI (15 mg, 0.08 mmol, 8 mol%), PPh_3 (21 mg, 0.08 mmol, 8 mol %), and $^{i}Pr_2NH$ (15 mL) were placed in a round-bottomed flask under nitrogen atmosphere. The mixture was stirred at 25 °C for 30 min, and 4-ethynyl-1,2-bis(hexyloxy)benzene (664 mg, 2.2 mmol) was then added. After this mixture had been stirred at 25 °C for additional 16 h, a saturated NH_4Cl solution was added. The mixture was extracted with CH_2Cl_2 (3×20 mL). The combined organic layers were dried with $MgSO_4$ and concentrated under vacuum. The residue was purified by silica gel column chromatography (elution with 2:1 petroleum-dichloromethane) to give the desire product in 76% yield. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.59 (s, 4H), 7.12 (dd, J_1=8.4

Hz，J_2=2.0 Hz，1H), 7.06 (d, *J*=2.0 Hz, 1H), 6.84 (d, *J*=8.4 Hz, 1H), 4.04-4.01（m， 4H），1.86-1.82 (m, 4H), 1.51-1.46 (m, 4H), 1.36-1.33（m, 8H）, 0.91(t, *J*=6.0 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.7, 148.7, 139.7, 131.9, 126.8, 124.9, 122.8, 116.5, 115.2, 113.2, 90.7, 87.6, 69.2, 69.1, 31.6, 29.2, 29.1, 25.7, 25.7, 22.6, 14.0.

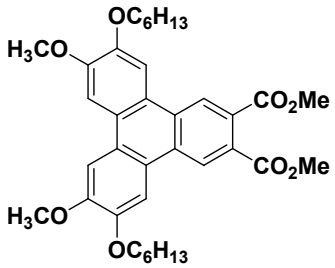
The procedure for the synthesis of 6

A solution of diarylacetylene 5 (94.3 mg, 0.125 mmol), Grubbs' second generation catalyst (21mg, 0.025 mmol, 20 mol %) and CuI (2.4 mg, 0.0125 mmol, 10 mol %) in dry toluene (5 mL) was stirred at 80 °C for 24 h under 1 atm ethylene pressure (using balloon). After cooling to room temperature, DMAD (178 mg, 1.25 mmol) was added under air conditions and the resulting mixture was stirred at 100 °C for another 24 h in sealed vessel. After cooling to room temperature, the reaction mixture was filtered through a short pad of silica gel eluting with CH_2Cl_2. The volatiles were removed in vacuo. The residue is dissolved in 20 mL dichloromethane and a solution of $FeCl_3$ (8 equiv., 162 mg) in 2 mL nitromethane is added dropwise at 0 °C under nitrogen atmosphere. After the starting material had disappeared by TLC monitoring, the reaction was quenched by the addition of a few drops of methanol and extracted with dichloromethane (3×15 mL). The organic layer was washed with brine, dried over $MgSO_4$, and concentrated. The crude product was purified by silica gel column chromatography (elution with 3:1 petroleum-acetone) to give the final product in 38% yield.



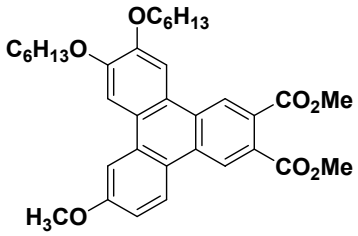
Dimethyl 6,7,10,11-tetrakis(hexyloxy)triphenylene-2,3-dicarboxylate **4a**

4a: 71% Yield. A white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.82 (s, 1H), 7.99 (s, 1H), 7.82 (s, 1H), 4.23-4.27 (m, 4H), 4.01 (s, 3H), 1.92-1.99 (m, 4H), 1.55-1.63 (m, 4H), 1.40-1.42 (m, 8H), 0.92-0.96 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.7, 150.5, 149.3, 130.2, 128.1, 125.1, 124.5, 122.4, 106.9, 106.3, 69.4, 69.4, 52.8, 31.6, 29.3, 29.3, 25.8, 25.8, 22.6, 14.1; IR:(KBr) ν_{max} 2951, 1723, 1615, 1515, 1465, 1387, 1267, 727 cm^{-1}; HRMS (ESI): Calcd for $C_{48}H_{64}O_8$ (M+H$^+$) 745.4674, Found: 745.4651; (M+Na$^+$) 767.4493, Found: 767.4480; Elemental anal. calcd. for $C_{46}H_{64}O_8$: C, 74.36; H, 8.62; O, 17.18; Found: C, 74.25; H, 8.56.



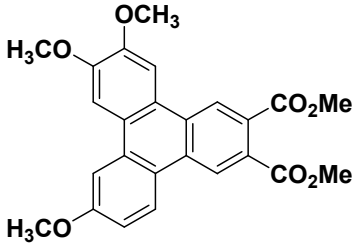
Dimethyl 6,11-bis(hexyloxy)-7,10-dimethoxytriphenylene-2,3-dicarboxylate **4b**

4b: 62% Yield. A pale yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.83 (s, 1H), 7.98 (s, 1H), 7.81 (s, 1H), 4.28 (t, *J*=6.8 Hz, 2H), 4.13 (s, 3H), 4.02 (s, 3H), 1.96-2.03 (m, 2H), 1.57-1.59 (m, 2H), 1.37-1.45 (m, 4H), 0.94 (t, *J*=7.2 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.7, 150.7, 148.8, 130.2, 128.2, 124.9, 124.4, 122.3, 106.1, 104.3, 69.2, 56.2, 52.8, 31.7, 29.2, 25.7, 22.6, 14.1; IR:(KBr) ν_{max} 2998, 1733, 1618, 1518, 1435, 1288, 1264, 727 cm^{-1}; HRMS (ESI): Calcd for $C_{36}H_{44}O_8$ (M+H$^+$) 605.3109, Found: 605.3133; (M+Na$^+$) 627.2928, Found: 627.2944.



Dimethyl 6,7-bis(hexyloxy)-10-methoxytriphenylene-2,3-dicarboxylate **4c**

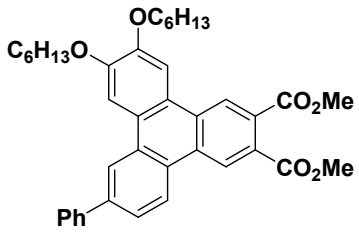
4c: 57% Yield. A pale yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.91 (s, 1H), 8.75 (s, 1H), 8.58 (d, *J*=9.2 Hz, 1H), 7.954 (s, 1H), 7.89 (s, 1H), 7.86 (d, *J*=2.4 Hz, 1H), 7.25-7.28 (m, 1H), 4.23-4.27 (m, 4H), 4.04 (s, 3H), 4.01 (s, 3H), 4.01 (s, 3H), 1.93-2.00 (m, 4H), 1.55-1.60 (m, 4H), 1.40-1.43 (m, 8H), 0.92-0.95 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.9, 168.3, 159.5, 150.3, 149.9, 131.9, 130.4, 130.0, 128.6, 129.0, 125.6, 124.7, 124.4, 124.1, 123.3, 121.8, 114.5, 106.6, 106.3, 105.8, 69.3, 69.2, 55.5, 52.8, 52.7, 31.6, 29.3, 29.2, 25.8, 22.6, 14.0; IR:(KBr) ν_{max} 2950, 1732, 1613, 1516, 1427, 1376, 1288, 724 cm^{-1}; HRMS (ESI): Calcd for $C_{35}H_{42}O_7$ (M+H$^+$) 575.3003, Found: 575.3021; (M+Na$^+$) 597.2823, Found: 597.2852.



Dimethyl 6,7,10-trimethoxytriphenylene-2,3-dicarboxylate **4d**

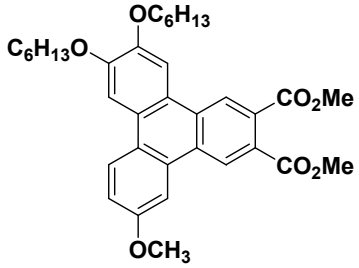
4d: 65% Yield. A pale yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.79 (s, 1H), 8.61 (s, 1H), 8.46 (d, *J*=8.8 Hz, 1H), 7.77-7.74 (m, 3H), 7.22 (dd, J_1=8.8 Hz, J_2=2.4 Hz, 1H), 4.11 (s, 3H), 4.10 (s, 3H), 4.03 (s, 3H), 4.02 (s, 3H), 4.01 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.8, 168.2, 159.6, 150.2, 149.7, 131.7, 130.5, 129.8, 128.7, 128.1, 125.6, 124.7, 124.4, 123.9,123.2, 121.9, 114.6, 105.8, 104.6, 104.3, 56.1, 56.0, 55.5, 52.7, 52.7; IR:(KBr) ν_{max} 3422, 2999, 1724, 1615, 1514, 1471, 1377, 1262, 674 cm^{-1}; HRMS (ESI): Calcd for $C_{25}H_{22}O_7$ (M+H$^+$) 435.1438, Found:435.1430; (M+Na$^+$)

457.1258, Found: 457.1248.



Dimethyl 6,7-bis(hexyloxy)-10-phenyltriphenylene-2,3-dicarboxylate **4e**

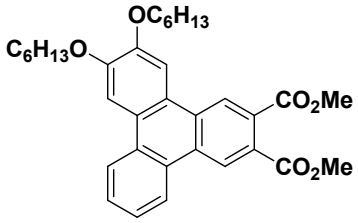
4e: 50% Yield. A pale yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.98 (s, 1H), 8.70 (s, 1H), 8.64 (d, *J*=8.4 Hz, 1H), 8.57 (s, 1H), 7.98 (s, 1H), 7.90 (s, 1H), 7.83 (dd, J_1=8.4 Hz, J_2=1.6 Hz, 1H), 7.79 (d, *J*=7.6 Hz, 2H), 7.56 (t, *J*=7.6 Hz, 2H), 7.46 (t, *J*=7.2 Hz, 1H), 4.22-4.26 (m, 4H), 4.02 (s, 3H), 4.01 (s, 3H), 1.93-2.00 (m, 4H), 1.58-1.62 (m, 4H), 1.40-1.42 (m, 8H), 0.92-0.97 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.9, 168.0, 150.6, 149.9, 141.0, 140.9, 131.1, 130.5, 130.1, 129.8, 128.9, 127.7, 127.5, 126.9, 125.8, 125.2, 125.1, 124.4, 124.0, 121.2, 106.6, 106.2, 69.3, 69.3, 52.8, 52.7, 30.6, 29.3, 29.2, 25.8, 22.6, 14.0; IR:(KBr) ν_{max} 2931, 1725, 1613, 1518, 1465, 1372, 1265, 758 cm^{-1}; HRMS (ESI): Calcd for $C_{40}H_{44}O_6$ ($M+H^+$) 621.3211, Found: 621.3220; ($M+Na^+$) 643.3030, Found: 643.3055.



Dimethyl 6,7-bis(hexyloxy)-11-methoxytriphenylene-2,3-dicarboxylate **4f**

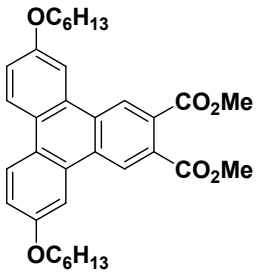
4f: 57% Yield. A pale yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.89 (s, 1H), 8.72 (s, 1H), 8.36 (d, *J*=9.2 Hz, 1H), 7.97 (d, *J*=2.4 Hz, 1H), 7.90 (s, 1H), 7.85 (s, 1H), 7.28 (dd, J_1=9.2 Hz, J_2=2.8 Hz, 1H), 4.23 (t, *J*=6.4 Hz, 4H), 4.03 (s, 3H), 4.02 (s, 3H), 4.01 (s, 3H), 1.93-2.00 (m, 4H), 1.55-1.60 (m, 4H), 1.40-1.44 (m, 8H), 0.93-0.96 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.8, 168.2, 158.4, 150.8, 149.1, 131.7, 129.9,

129.8, 129.3, 127.7, 125.6, 125.1, 124.5, 124.4, 121.7, 117.3, 107.0, 105.8, 69.5, 69.1, 55.6, 52.8, 52.7, 31.6, 31.6, 29.3, 29.2, 25.8, 22.6, 14.0; IR:(KBr) ν_{max} 2951, 1731, 1617, 1511, 1467, 1382, 1266, 723 cm^{-1}; HRMS (ESI): Calcd for $C_{35}H_{42}O_7$ ($M+Na^+$) 597.2823, Found: 597.2825.



Dimethyl 6,7-bis(hexyloxy)triphenylene-2,3-dicarboxylate **4g**

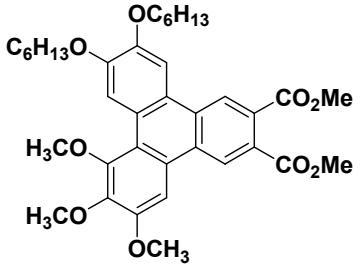
4g: 55% Yield. A pale yellow solid. ^1H NMR (400 MHz, $CDCl_3$) δ 9.06 (s, 1H), 8.77 (s, 1H), 8.67 (d, *J*=8.0 Hz, 1H), 8.5 (d, *J*=8.0 Hz, 1H), 7.98 (d, *J*=11.6 Hz, 2H), 7.63-7.73 (m, 2H), 4.26 (t, *J*=6.8 Hz, 4H), 4.02 (s, 3H), 4.02 (s, 3H), 1.95-1.99 (m, 4H), 1.55-1.60 (m, 4H), 1.40-1.42 (m, 8H), 0.93-0.96 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.9, 168.0, 168.0, 166.8, 150.7, 149.9, 131.3, 130.3, 130.0, 128.2, 127.9, 127.8, 126.6, 125.3, 125.2, 124.0, 123.9, 122.9, 122.9, 69.4, 69.2, 52.8, 52.7, 31.6, 29.3, 29.2, 25.8, 22.6, 14.0; IR:(KBr) ν_{max} 2932, 1736, 1611, 1514, 1452, 1373, 1268, 755 cm^{-1}; HRMS (ESI): Calcd for $C_{34}H_{40}O_6$ ($M+H^+$) 545.2898, Found: 545.2922; ($M+Na^+$) 567.2717, Found: 567.2726.



Dimethyl 6,11-bis(hexyloxy)triphenylene-2,3-dicarboxylate **4h**

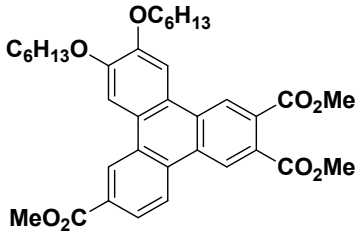
4h: 60% Yield. A pale yellow solid. ^1H NMR (400 MHz, $CDCl_3$) δ 8.87 (s, 1H), 8.43 (d, *J*=9.2 Hz, 1H), 7.97 (d, *J*=2.4 Hz, 1H), 7.29 (dd, J_1=9.2 Hz, J_2=2.4 Hz, 1H), 4.17 (t, *J*=6.8 Hz, 2H), 4.02 (s, 3H), 1.86-1.93 (m, 2H), 1.54-1.61 (m, 2H), 1.39-1.42 (m,

4H), 0.94 (t, *J*=6.8 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.4, 157.9, 131.5, 129.3, 128.8, 124.9, 124.6, 124.4, 117.7, 106.8, 68.3, 52.8, 31.6, 29.3, 25.8, 22.6, 14.1; IR:(KBr) ν_{max} 2945, 1736, 1614, 1495, 1437, 1388, 1235, 731 cm^{-1}; HRMS (ESI): Calcd for $C_{34}H_{40}O_6$ (M+H$^+$) 545.2898, Found: 545.2921; (M+Na$^+$) 567.2717, Found: 567.2728.



Dimethyl 10,11-bis(hexyloxy)-6,7,8-trimethoxytriphenylene-2,3-dicarboxylate **4i**

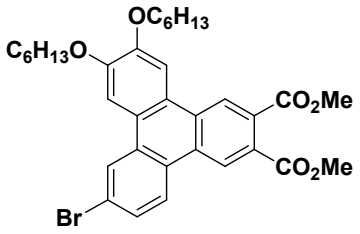
4i: 41% Yield. A pale yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.17 (s, 1H), 8.85 (s, 1H) ,8.78 (s, 1H), 7.98 (s, 1H), 7.89 (s, 1H), 4.28-4.22 (m, 4H), 4.13 (s, 3H), 4.08 (s, 3H), 4.02 (s, 3H), 4.01 (s, *3*H), 3.95 (s, 3H), 1.92-1.99 (m, 4H), 1.54-1.60 (m, 4H), 1.40-1.44 (m, 8H), 0.92-0.96 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.7, 168.5, 152.2, 152.0, 150.1, 148.5, 144.2, 131.4, 130.0, 129.3, 128.0, 125.6, 125.1, 125.0, 124.3, 122.8, 119.5, 110.4, 110.4, 106.8, 101.7, 69.4, 68.9, 61.4, 60.7, 56.1, 52.8, 52.8, 31.6, 31.6, 29.3, 29.2, 25.8, 25.8, 22.6, 14.0. IR:(KBr) ν_{max} 2955, 1725, 1611, 1512, 1438, 1371, 1287, 728 cm^{-1}; HRMS (ESI): Calcd for $C_{37}H_{46}O_9$ (M+H$^+$) 635.3215, Found: 635.3232; (M+Na$^+$) 657.3034, Found: 657.3057.



Trimethyl 10,11-bis(hexyloxy)triphenylene-2,3,7-tricarboxylate **4j**

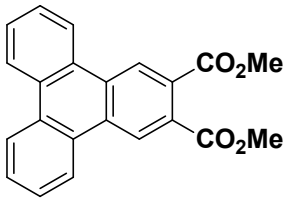
4j: 26% Yield. A pale yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.21 (d, *J*=1.6 Hz, 1H), 9.10 (s, 1H), 8.77 (s, 1H) ,8.73 (d, *J*=8.8 Hz, 1H), 8.25 (dd, J_1=8.4 Hz, J_2=1.2 Hz

1H), 8.07 (s, 1H), 7.98 (s, 1H), 4.25-4.32 (m, 4H), 4.06 (s, 3H), 4.03 (s, 3H), 4.02 (s, 3H), 1.94-2.02 (m, 4H), 1.57-1.64 (m, 4H), 1.37-1.45 (m, 8H), 0.95 (t, *J*=6.8 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.8, 167.7,167.1, 150.9, 150.2, 132.3, 131.2, 131.1, 130.1, 129.4, 129.3, 127.8, 126.5, 125.9, 125.0, 124.1, 124.0, 123.1, 106.5, 106.2, 69.4, 69.3, 52.9, 52.8, 52.5, 31.6, 29.2, 25.8, 22.6, 14.1; IR:(KBr) ν_{max} 2944, 1736, 1614, 1495, 1437, 1388, 1256, 731 cm^{-1}; HRMS (ESI): Calcd for $C_{36}H_{42}O_8$ (M+H$^+$) 625.2772, Found: 625.2789.



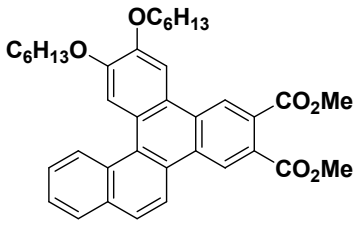
Dimethyl 10-bromo-6,7-bis(hexyloxy)triphenylene-2,3-dicarboxylate **4k**

4k: The reaction of 2k was dissolved in $MoCl_5$ (2.5 equiv., 85 mg) and 10 mL dichloromethane at 0 °C under nitrogen atmosphere. After the reaction was quenched by the addition of a few drops of methanol and extracted with dichloromethane (3×15 mL). The organic layer was washed with brine, dried over $MgSO_4$, and concentrated. The crude product was purified by silica gel column chromatography (elution with 7:1 petroleum ether-ethyl acetate) to give a pale yellow solid (27 % yield). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.95 (s, 1H), 8.72 (s, 1H) , 8.56 (d, *J*=1.6 Hz, 1H), 8.48 (d, *J*=8.8 Hz, 1H), 7.92 (s, 1H), 7.83 (s, 1H), 7.72 (dd, J_1=8.8 Hz, J_2=2.0 Hz, 1H), 4.24-4.28 (m, 4H), 4.02 (s, *3*H), 4.02 (s, *3*H), 1.93-2.01 (m, 4H), 1.58-1.62 (m, 4H), 1.38-1.45 (m, 8H), 0.95 (t, *J*=7.2 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.8, 167.8, 150.8, 150.3, 132.0, 131.2, 130.3, 129.6, 129.5, 128.0, 126.6, 125.7, 125.6, 125.1, 124.1, 124.0, 123.3, 122.9, 106.5, 105.9, 69.4, 69.3, 52.9, 52.8, 31.6, 29.2, 29.2, 25.8, 22.6, 14.1; IR:(KBr) ν_{max} 2952, 1727, 1614, 1535, 1465, 1393, 1269, 734, 593 cm^{-1}; HRMS (ESI): Calcd for $C_{34}H_{39}BrO_6$ (M+H$^+$) 623.2003, Found: 623.2027; (M+Na$^+$) 645.1822, Found: 645.1837.



dimethyl triphenylene-2,3-dicarboxylate **4l**[4]

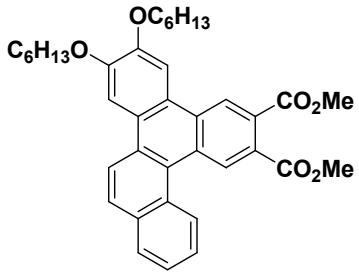
4l: The reaction of 2l was dissolved in $MoCl_5$ (5.0 equiv., 170 mg) and 10 mL dichloromethane at 0 °C under nitrogen atmosphere. After the reaction was quenched by the addition of a few drops of methanol and extracted with dichloromethane (3×15 mL). The organic layer was washed with brine, dried over $MgSO_4$, and concentrated. The crude product was purified by silica gel column chromatography (elution with 7:1 petroleum ether-ethyl acetate) to give a pale yellow solid (18 % yield). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.98 (s, 1H), 8.65 (d, *J*=7.2 Hz, 2H), 7.74-7.68 (m, 2H), 4.02 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.3, 131.4, 130.6, 129.7, 128.6, 128.5, 127.7, 124.9, 123.9, 123.4, 52.8; IR:(KBr) ν_{max} 2925, 1734, 1607, 1539, 1494, 1290, 748 cm^{-1}.



Dimethyl 12,13-bis(hexyloxy)benzo[g]chrysene-2,3-dicarboxylate **4n**

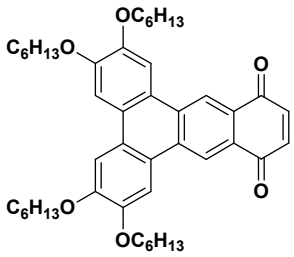
4n: 51% Yield. A pale yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.06 (s, 1H), 8.96-8.98 (m, 1H), 8.85 (s, 1H,), 8.60 (d, *J*= 9.2 Hz, 1H), 8.38 (s, 1H), 8.07 (s, 1H), 8.03-8.05 (m, 1H), 7.99 (d, *J*= 8.8 Hz, 1H), 7.63-7.65 (m, 2H), 4.31 (t, *J*= 6.8 Hz, 2H), 4.19 (t, *J*= 6.8 Hz, 2H), 4.04 (s, 3H), 4.03 (s, 3H), 1.92-2.01 (m, 4H), 1.56-1.63 (m, 4H), 1.37-1.44 (m, 8H), 0.93-0.95 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.9, 168.1, 149.5, 149.3, 133.9, 131.0, 130.1, 129.8, 129.7, 128.5, 128.4, 128.0, 127.8, 127.2 126.5, 126.2, 125.9, 125.8, 125.2, 124.5, 124.0, 120.8, 112.4, 106.5, 69.4, 69.2, 52.9, 52.8, 31.6, 29.2, 29.2, 25.8, 25.8, 22.6, 26.6, 14.1; IR:(KBr) ν_{max} 2956, 1728, 1612, 1508, 1444, 1380, 1201, 753 cm^{-1}; HRMS (ESI): Calcd for $C_{38}H_{42}O_6$ ($M+H^+$)

595.3054, Found: 595.3068; (M+Na^+) 617.2874, Found: 617.2899.



Dimethyl 2,3-bis(hexyloxy)benzo[g]chrysene-12,13-dicarboxylate **4o**

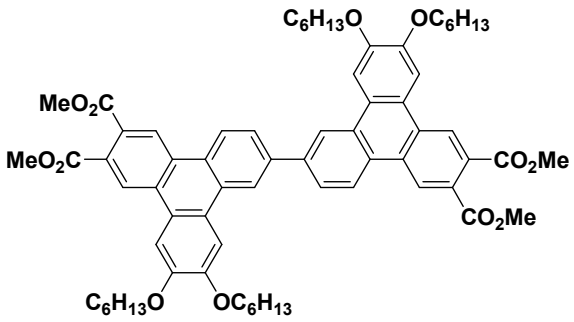
4o: 26% Yield. A pale yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.34(s, 1H), 8.89 (s, 1H), 8.84 (d, *J*=8.4 Hz, 1H), 8.48 (d, *J*=8.8 Hz, 1H), 8.05 (s, 1H), 8.04-8.03 (m, 2H), 7.73-7.61 (m, 3H), 4.31-4.27 (m, 4H), 4.04 (s, 3H), 3.98 (s, 3H), 2.00-1.96 (m, 4H), 1.61-1.55 (m, 4H), 1.42-1.41 (m, 8H), 0.96-0.93 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.9, 167.9, 150.8, 150.1, 137.8, 133.0, 131.8, 130.9, 130.1, 129.7, 129.2, 129.0, 128.8, 128.3, 128.2, 127.9, 126.8, 126.6, 125.9, 125.4, 125.3, 125.2, 124.2, 123.5, 120.5, 106.5, 106.3, 69.4, 69.3, 52.8, 52.7, 31.6, 29.3, 29.2, 25.8, 22.6, 21.4, 14.0; IR:(KBr) ν_{max} 2954, 1727, 1611, 1529, 1468, 1378, 1276, 753 cm^{-1}; HRMS (ESI): Calcd for $C_{38}H_{42}O_6$ (M+H^+) 595.3060, Found: 595.3044; (M+ Na^+) 617.2879, Found: 617.2875.



2,3,6,7-tetrakis(hexyloxy)benzo[f]tetraphene-10,13-dione **4p**

4p: 43% Yield. A red solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ8.88 (s, 1H), 7.86 (s, 1H), 7.69 (s, 1H), 6.99 (s, 1H), 4.26-4.20 (m, 4H), 2.00-1.94 (m, 4H), 1.62-1.58 (m, 4H), 1.44-1.43 (m, 8H), 0.98-0.94 (m, 6H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 185.0, 150.9, 149.5, 139.4, 131.9, 127.9, 125.4, 122.9, 122.2, 106.9, 106.1, 69.4, 69.3, 31.7, 31.7,

29.4, 29.3, 25.9, 22.7, 14.1, 14.0; IR:(KBr) ν_{max} 2955, 1666, 1611, 1515, 1445, 1341, 1269, 673 cm^{-1}; HRMS (ESI): Calcd for $C_{46}H_{60}O_6$ ($M+H^+$) 709.4469, Found: 709.4462.



Tetramethyl10,10',11,11'-tetrakis(hexyloxy)-[2,2'-bitriphenylene]-6,6',7,7'-tetracarboxylate **6**

6: 38% Yield. A pale yellow solid. ^1H NMR (400 MHz, $CDCl_3$) δ 9.06 (s, 1H), 8.80-8.75 (m, 3H), 8.09 (s, 1H), 8.04 (d, *J*=8.8 Hz, 1H), 7.98 (s, 1H), 4.27 (t, *J*=6.0 Hz, 4H), 4.04 (s, 3H), 4.03 (s, 3H), 1.97-1.94 (m, 4H), 1.42-1.37 (m, 10H), 0.97-0.88 (m, 8H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.9, 167.9, 150.7, 150.1, 140.6, 131.2, 130.6, 130.0, 129.9, 127.8, 127.2, 125.9, 125.1, 125.1, 124.5, 124.0, 123.3, 121.6, 106.7, 106.4, 69.4, 69.3, 52.8, 52.7, 31.7, 29.3, 29.3, 25.9, 25.8, 22.6, 22.6, 14.0, 14.0; IR:(KBr) ν_{max} 2951, 1728, 1611, 1516, 1465, 1372, 1265, 726 cm^{-1}; HRMS (ESI): Calcd for $C_{68}H_{72}O_{12}$ ($M+Na^+$) 1110.5391, Found: 1110.5423.

References:

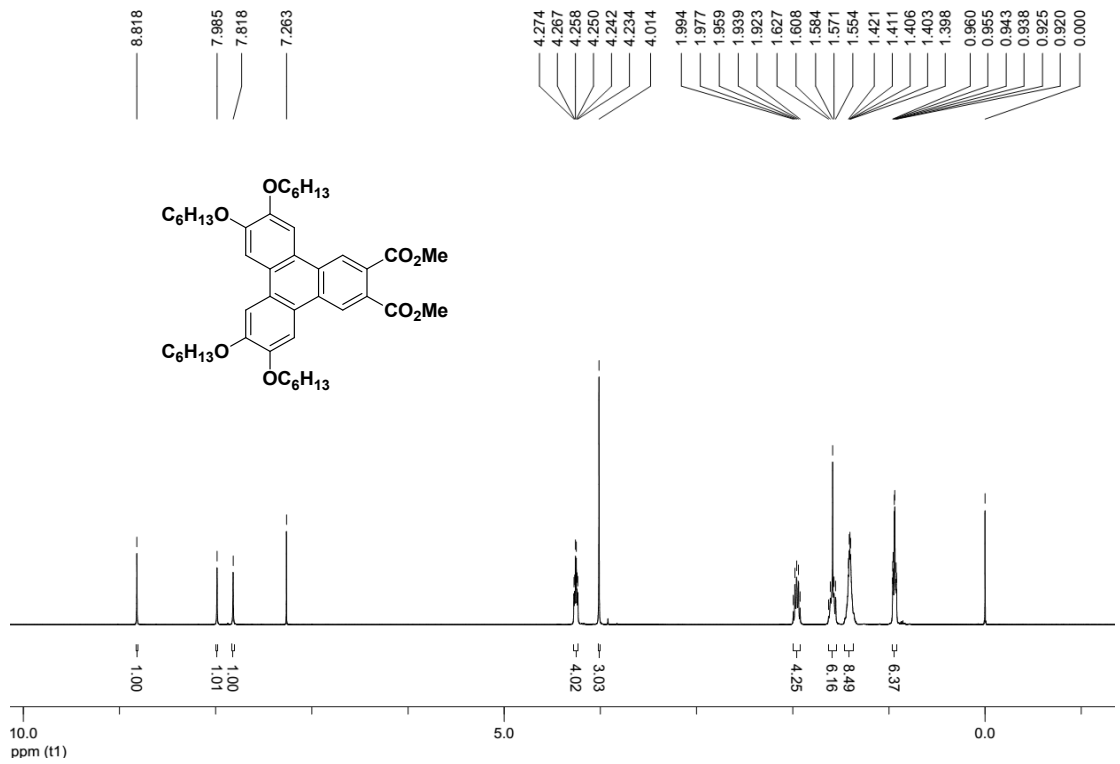
1 Schwab, P.; Grubbs, R. H.; Ziller, J. W. *J. Am. Chem. Soc.* **1996,** *118*, 100.

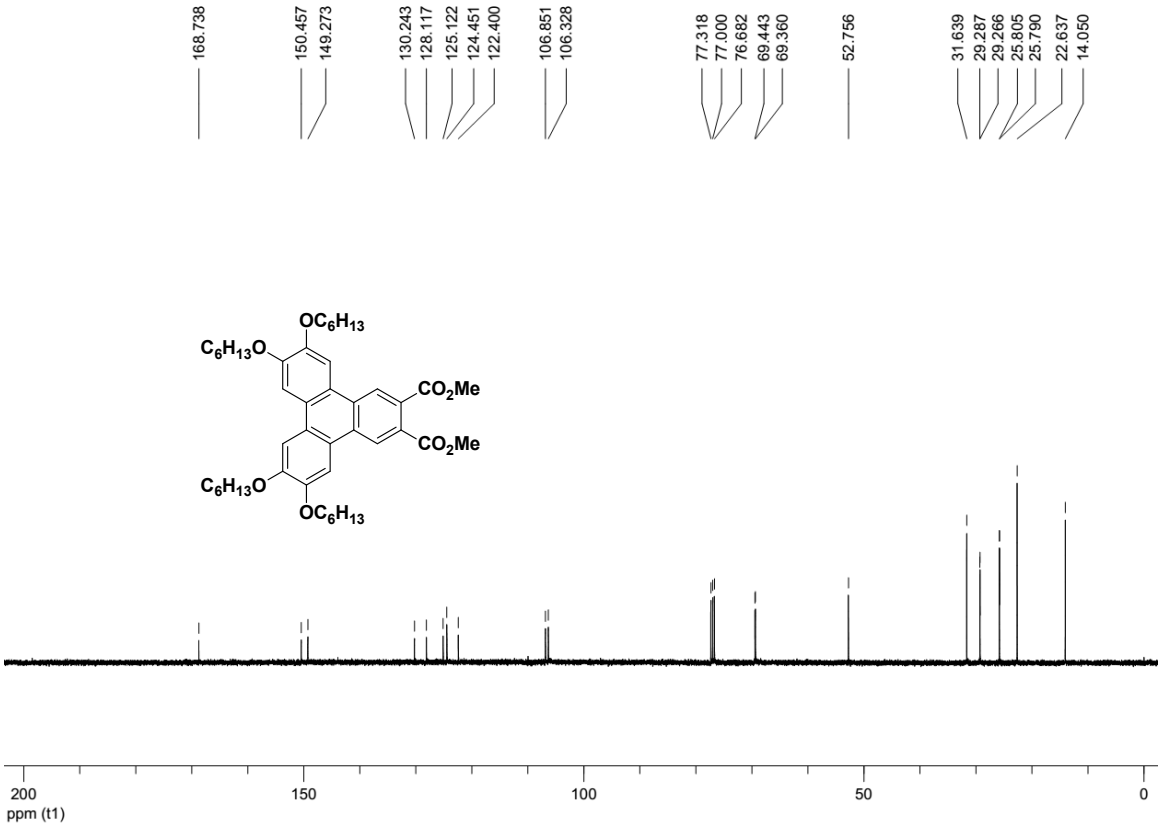
2 Blum, A. P.; Ritter, T.; Grubbs, R. H. *Organometallics.* **2007,** *26*, 2122.

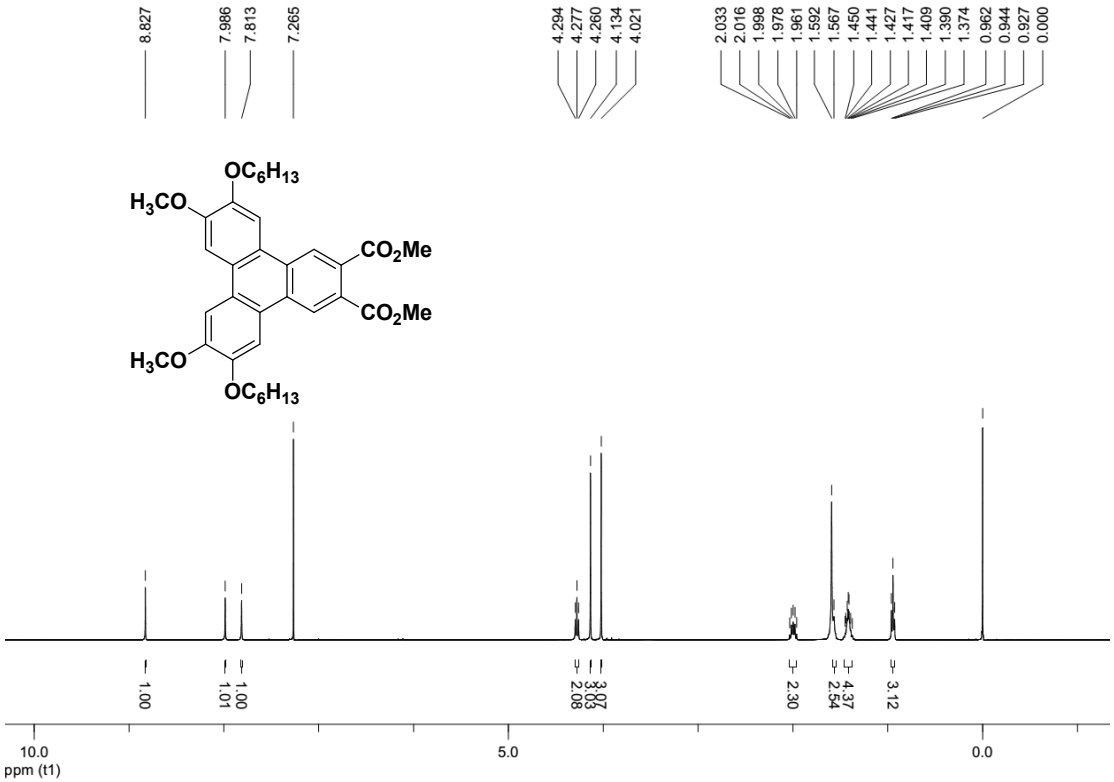
3 Park K.; Bae G.; Moon J.; Choe J.; Song K.; Lee S., *J. Org. Chem.* **2010**, *75*, 6244.

4 Kaupp, G ., *Liebigs Ann. Chem.* **1973**, 844.

^{1}H and ^{13}C NMR



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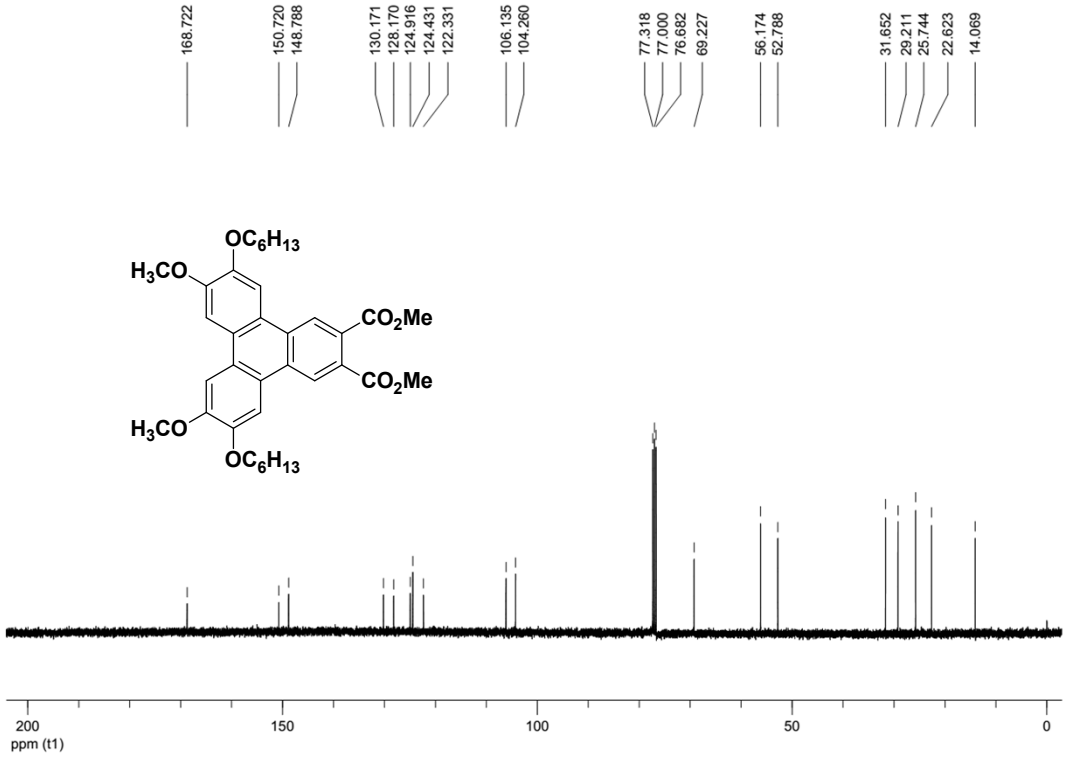
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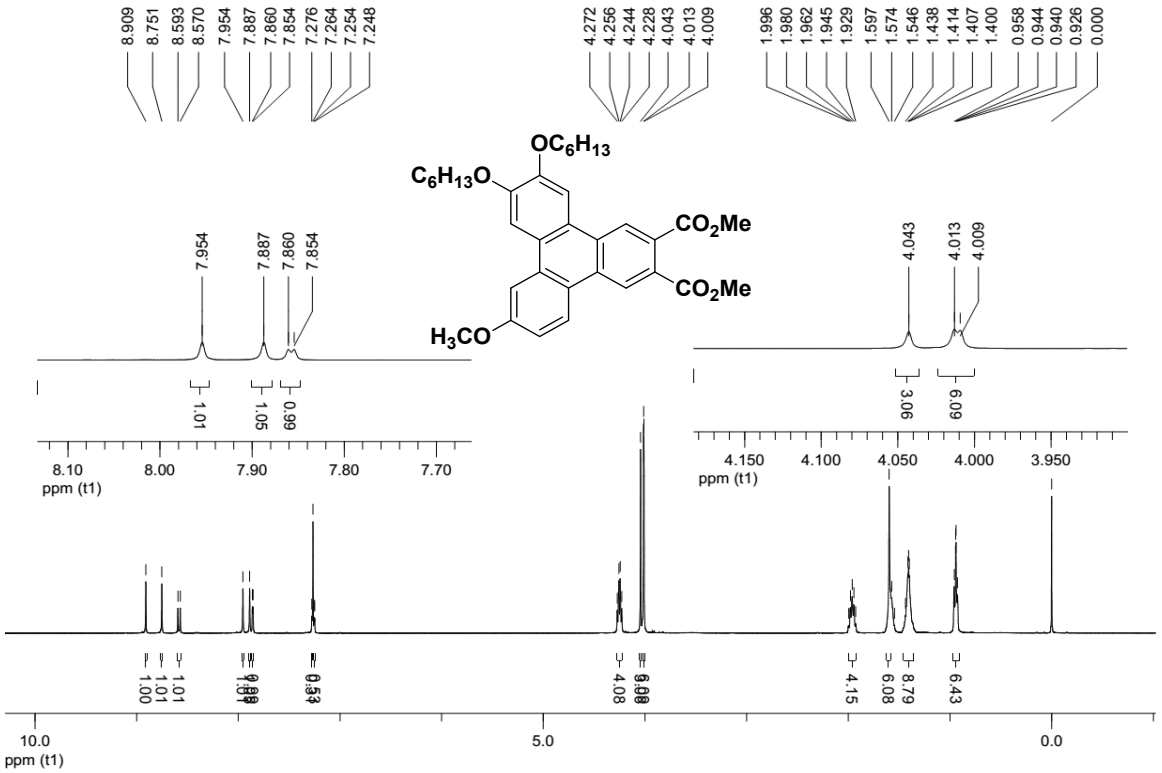
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CO2Me
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6.09
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7.70
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ppm (t1)
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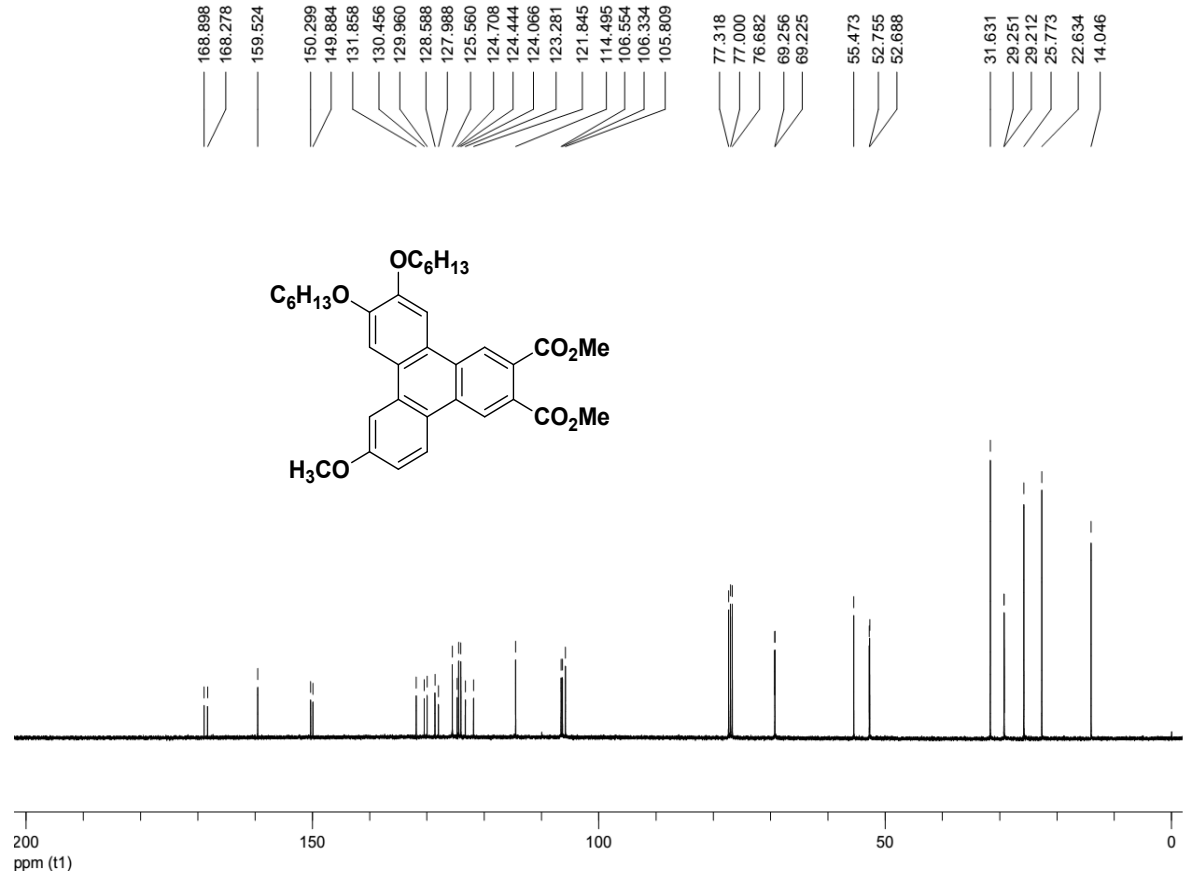
ppm (t1)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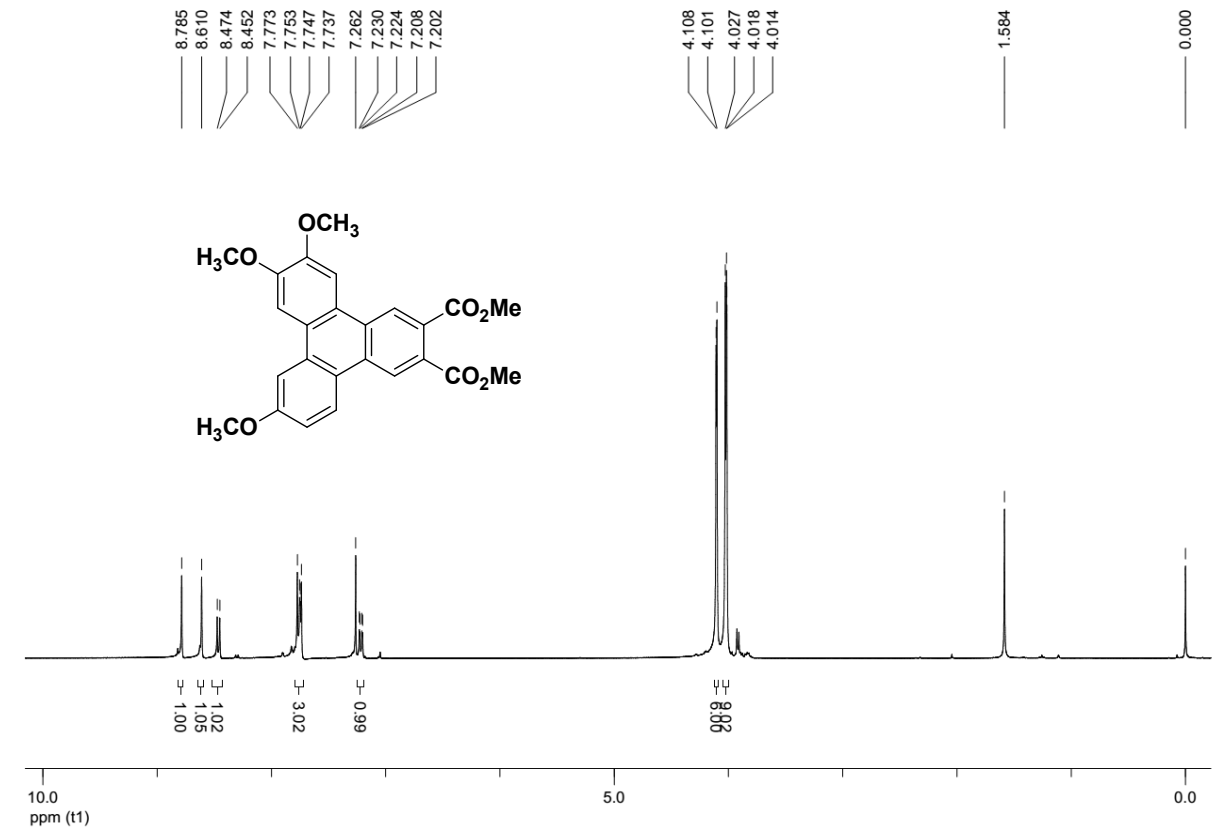
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4.014
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CO2Me
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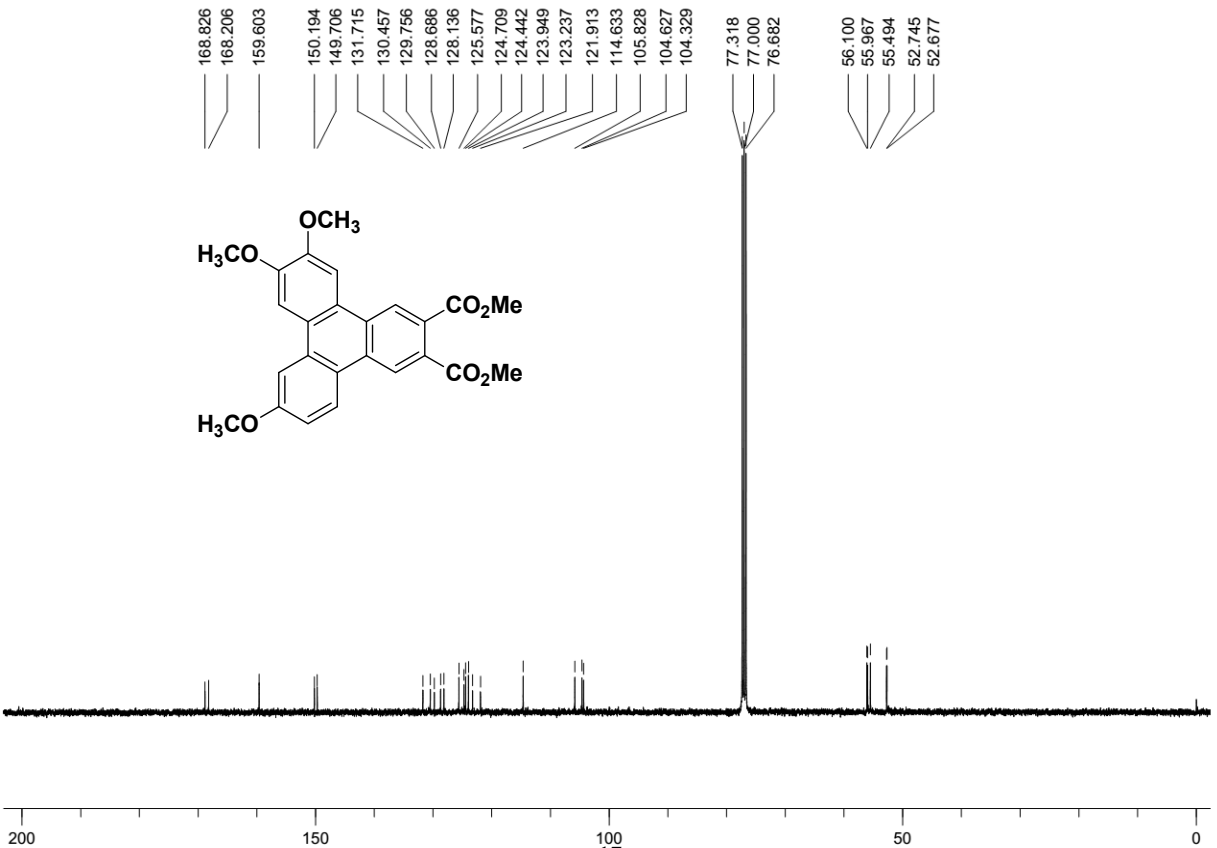
ppm (t1)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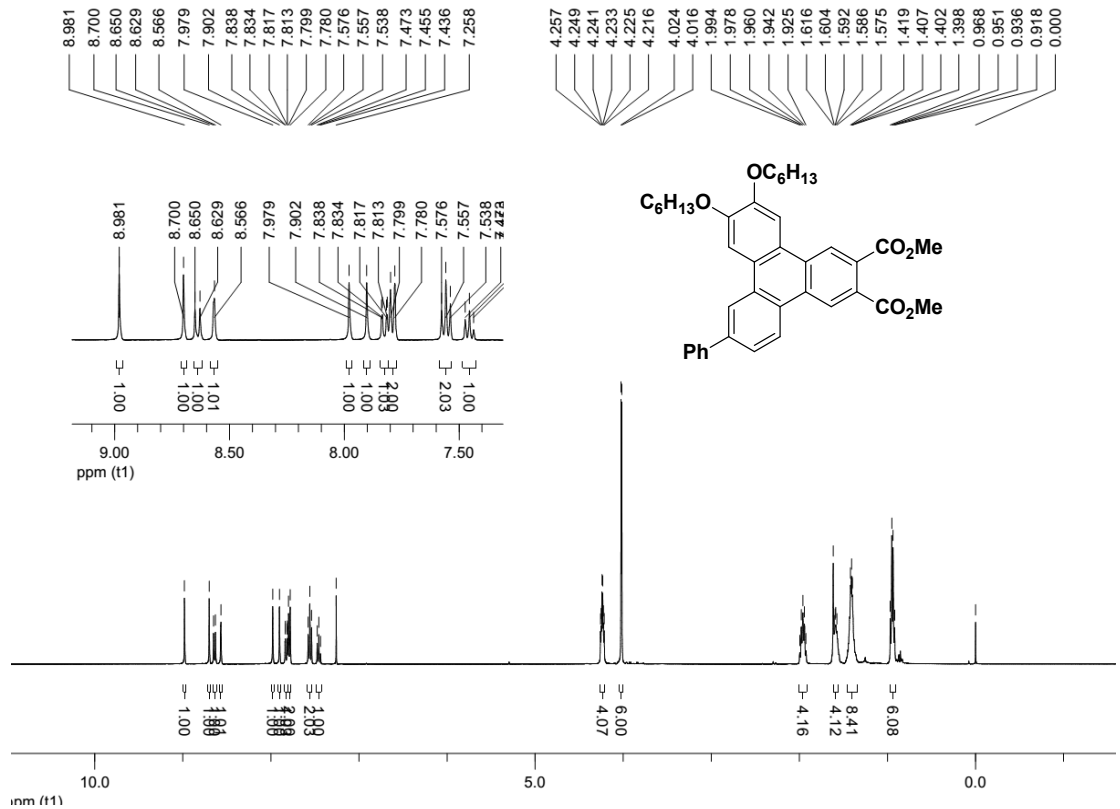
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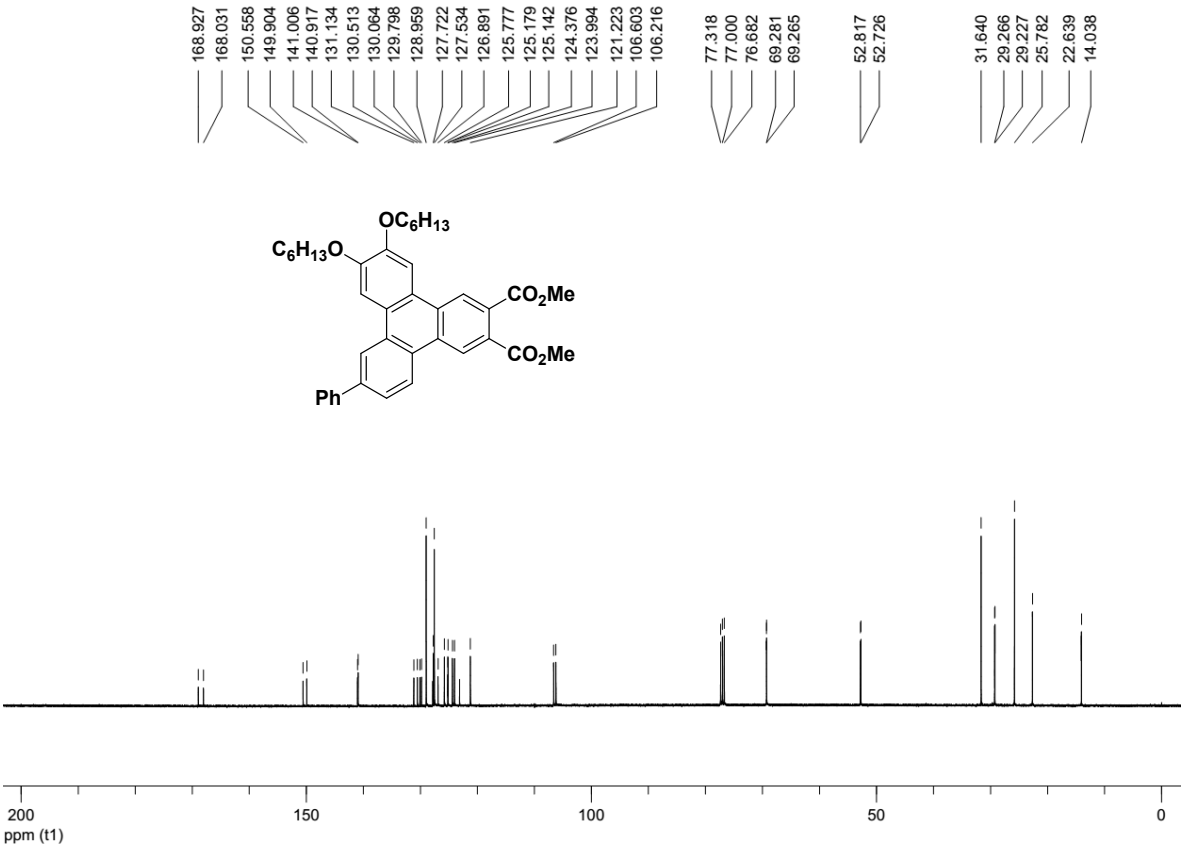
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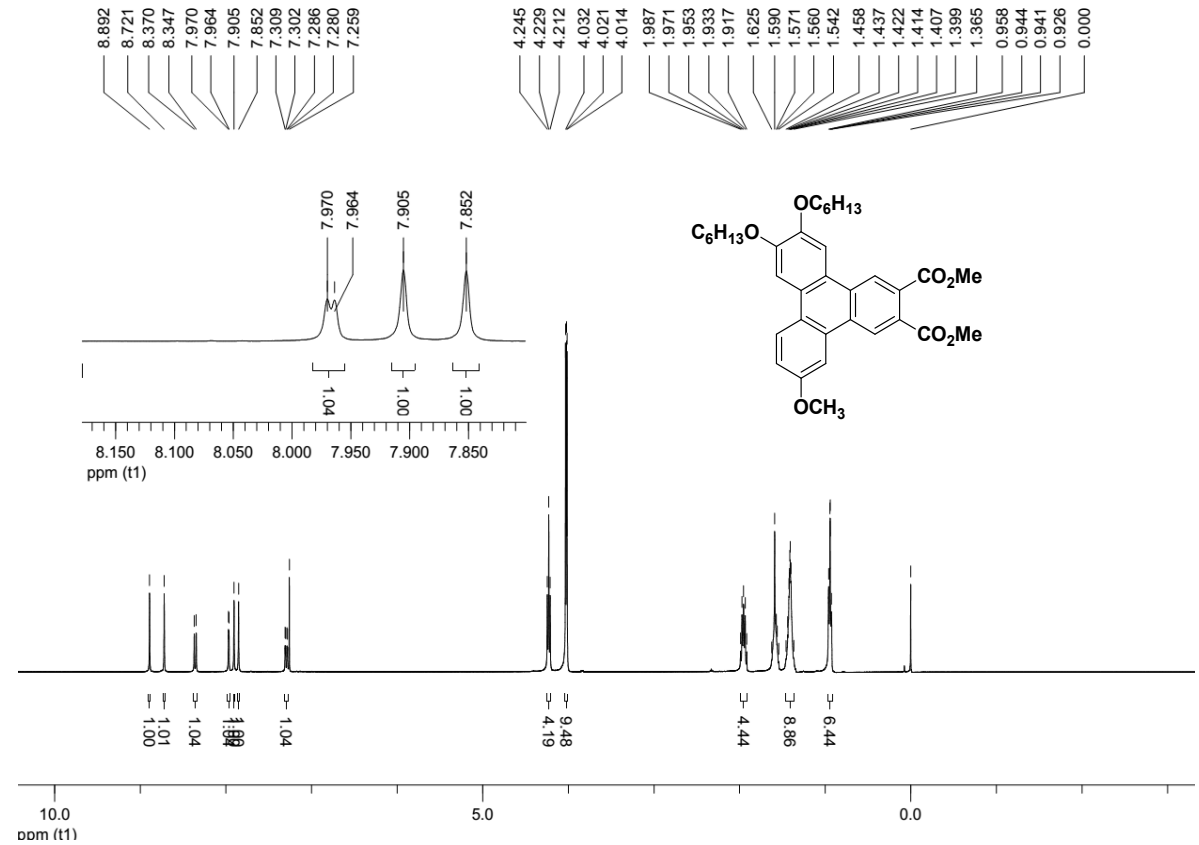
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1.399
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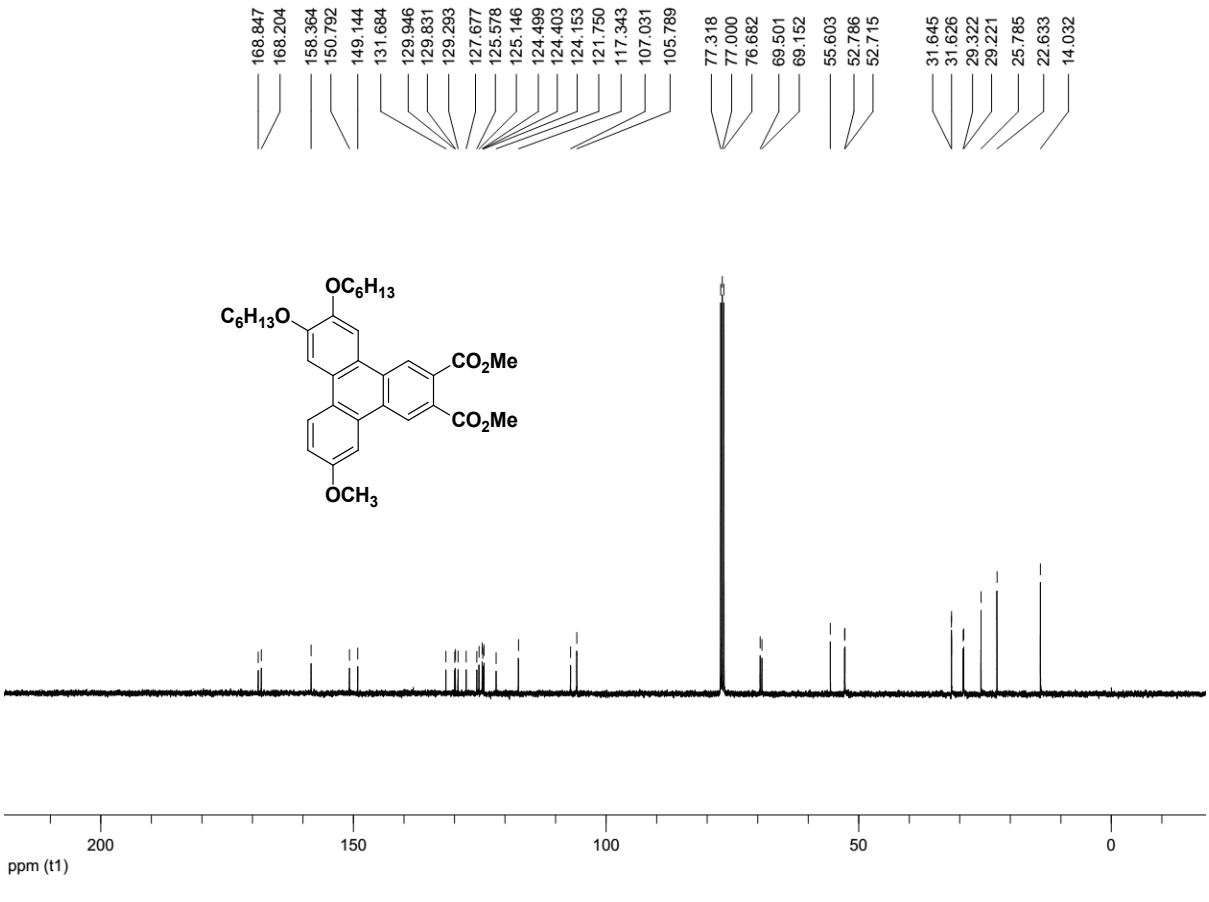
ppm (t1)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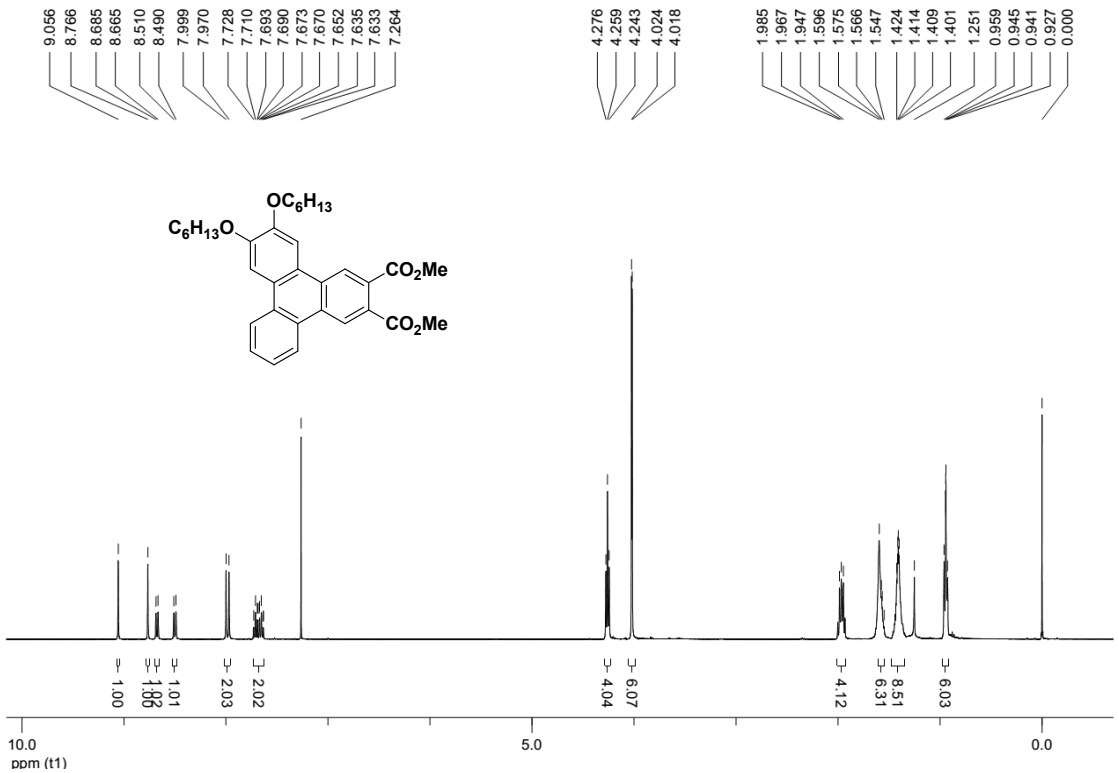
ppm (t1)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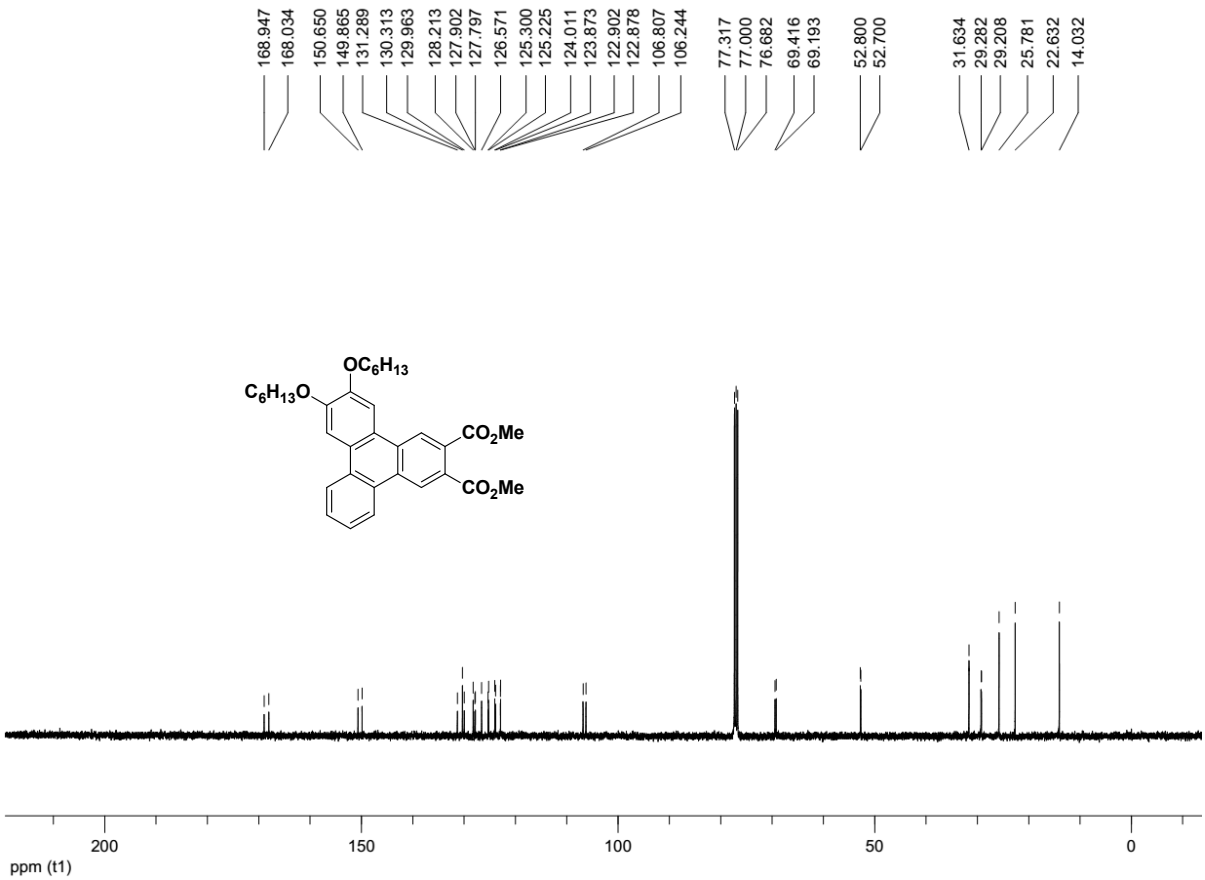
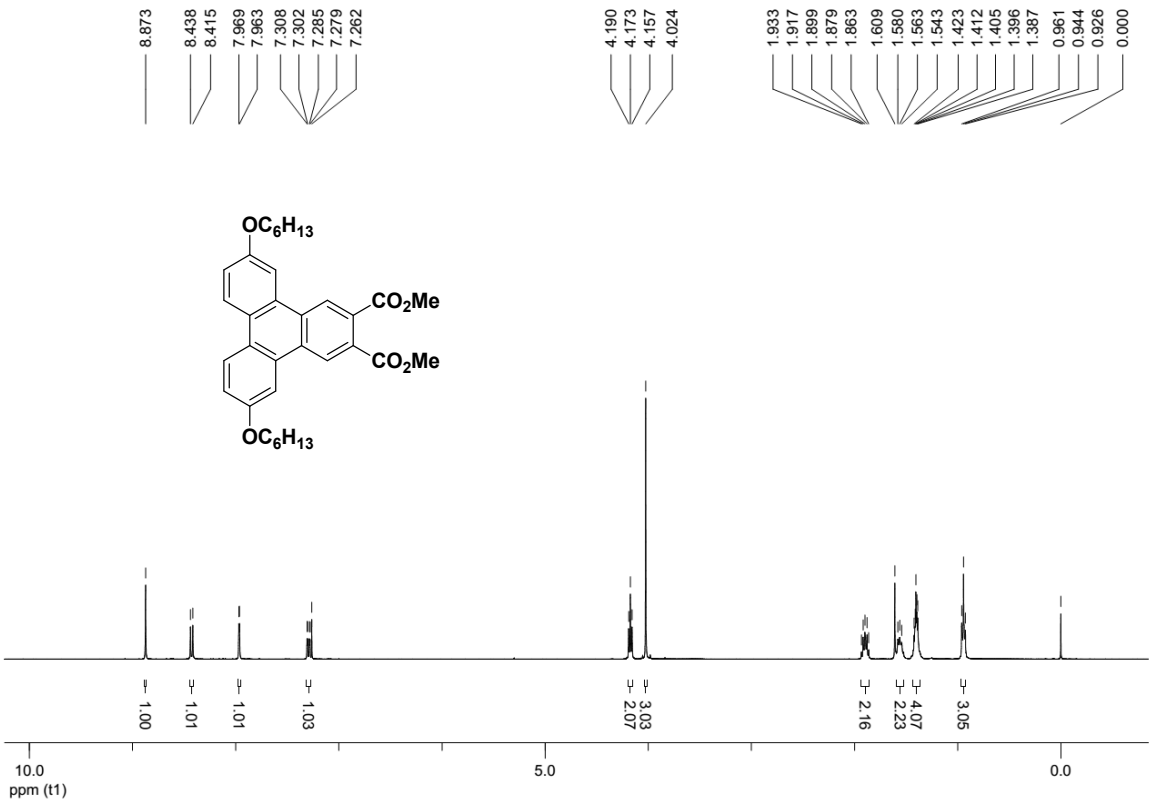
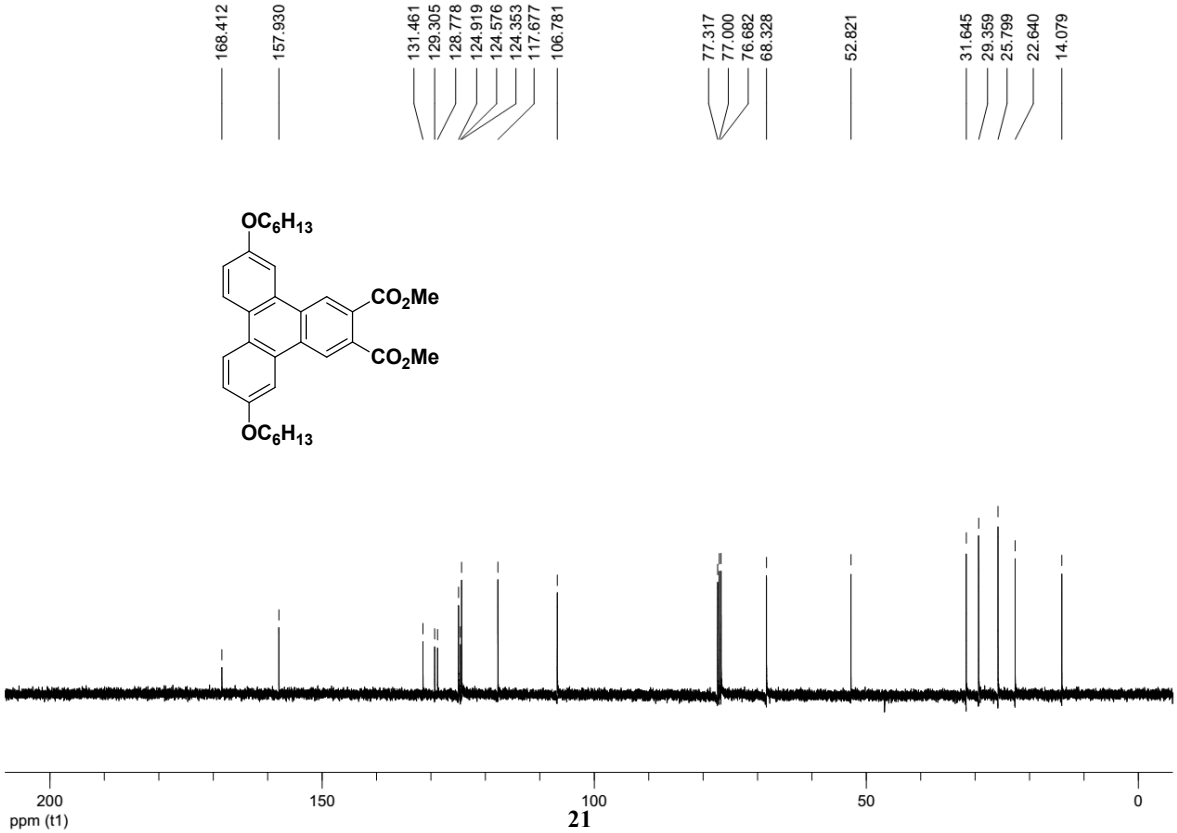
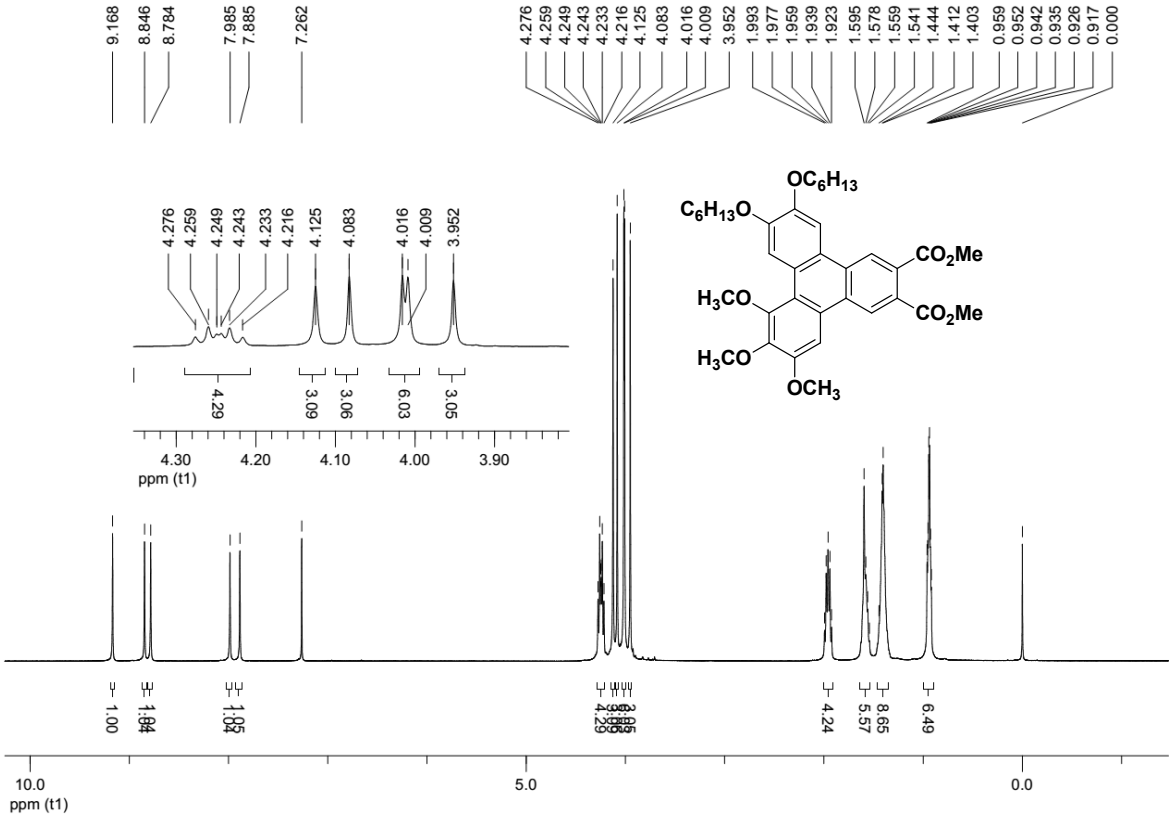
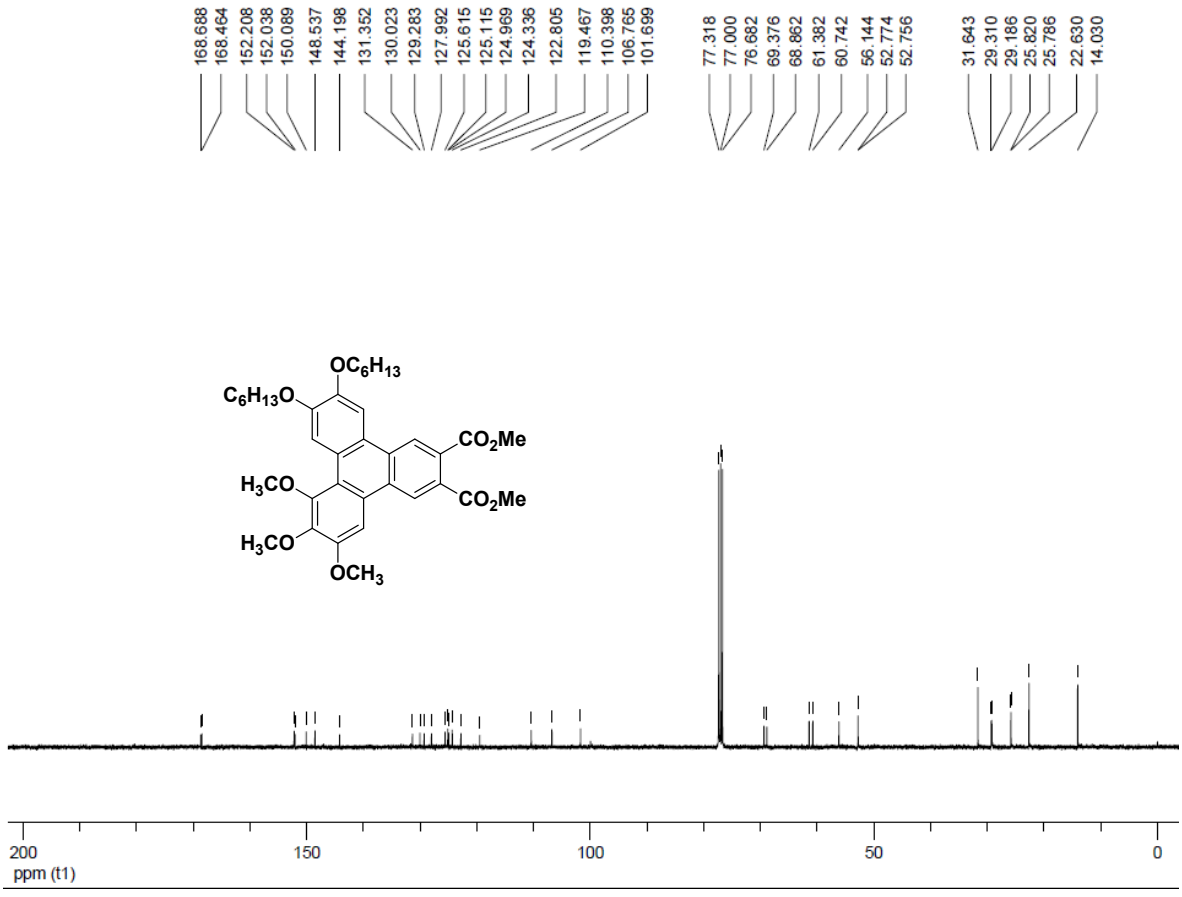
0.0
ppm (t1)

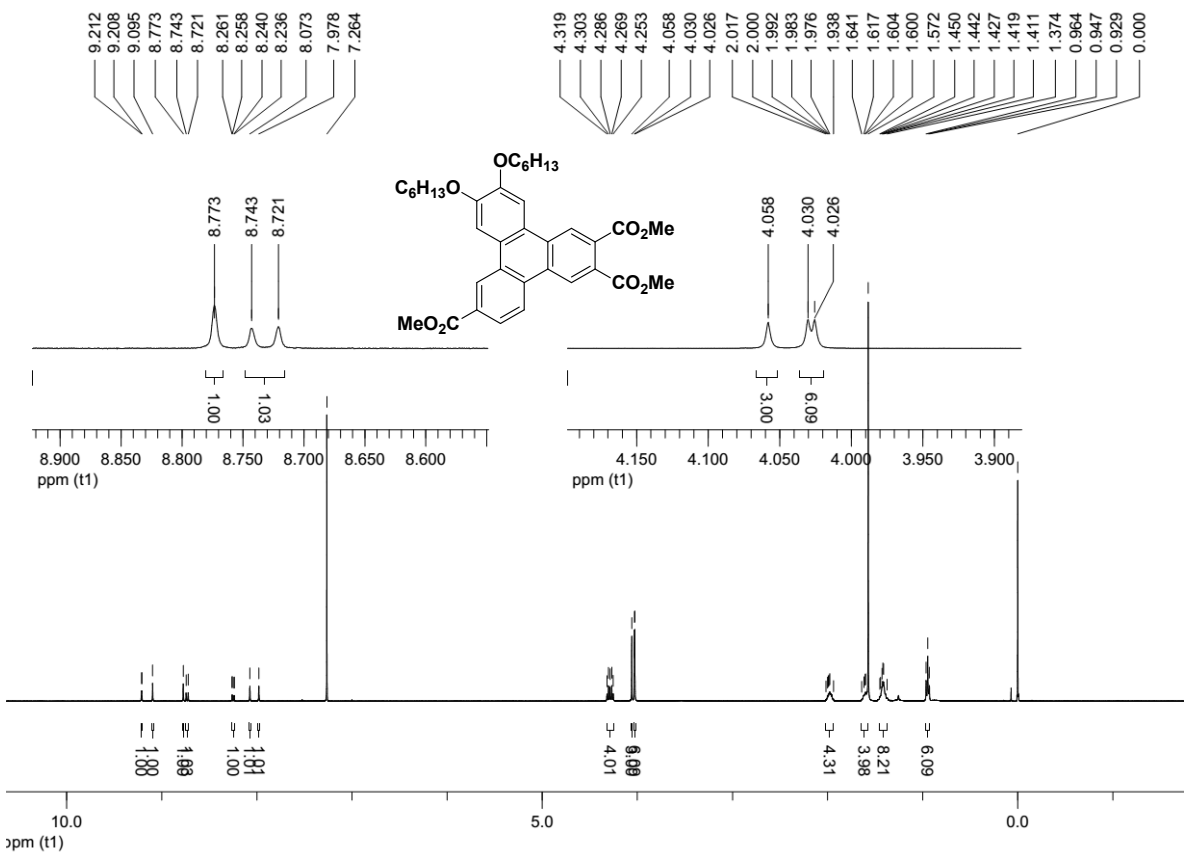

168.947
168.034
150.650
149.865
131.289
130.313
129.963
128.213
127.902
127.797
126.571
125.300
125.225
124.011
123.873
122.902
122.878
106.807
106.244
77.317
77.000
76.682
69.416
69.193
52.800
52.700
31.634
29.282
29.208
25.781
22.632
14.032
OC6H13
C6H13O
CO2Me
CO2Me
200
150
100
50
0
ppm (t1)

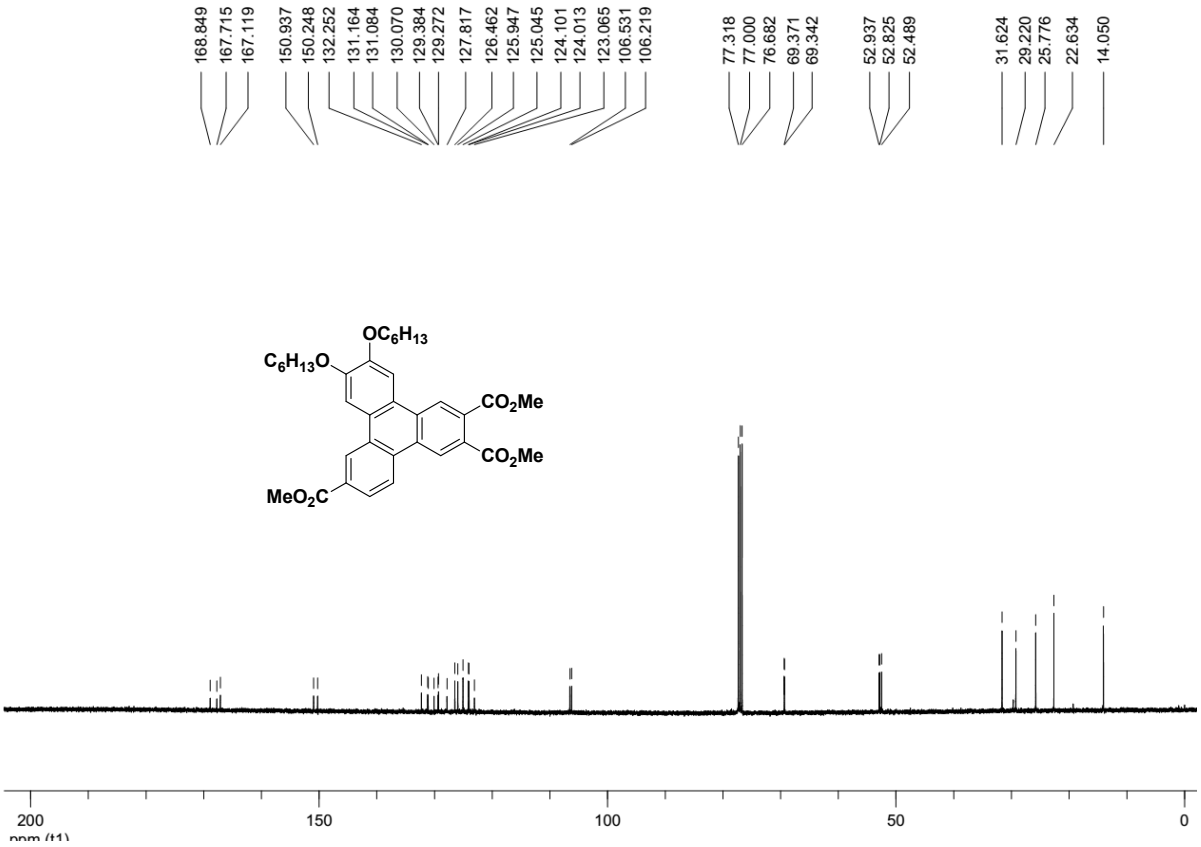

8.873
8.438
8.415
7.969
7.963
7.308
7.302
7.285
7.279
7.262
4.190
4.173
4.157
4.024
1.933
1.917
1.899
1.879
1.863
1.609
1.580
1.563
1.543
1.423
1.412
1.405
1.396
1.387
0.961
0.944
0.926
0.000
OC6H13
CO2Me
CO2Me
OC6H13
1.00
1.01
1.01
1.03
3.03
2.07
2.16
2.23
4.07
3.05
10.0
ppm (t1)
5.0
0.0

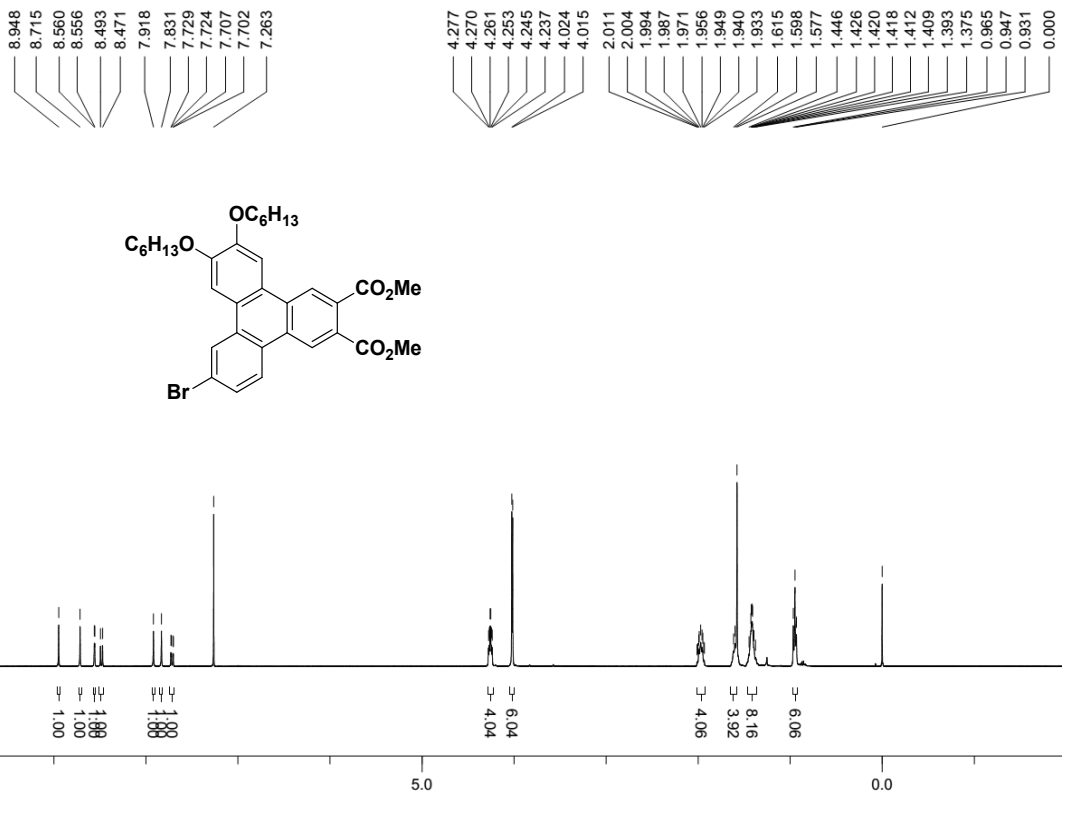

168.412
157.930
131.461
129.305
128.778
124.919
124.576
124.353
117.677
106.781
77.317
77.000
76.682
68.328
52.821
31.645
29.359
25.799
22.640
14.079
OC6H13
CO2Me
CO2Me
OC6H13
200
ppm (t1)
150
100
50
0

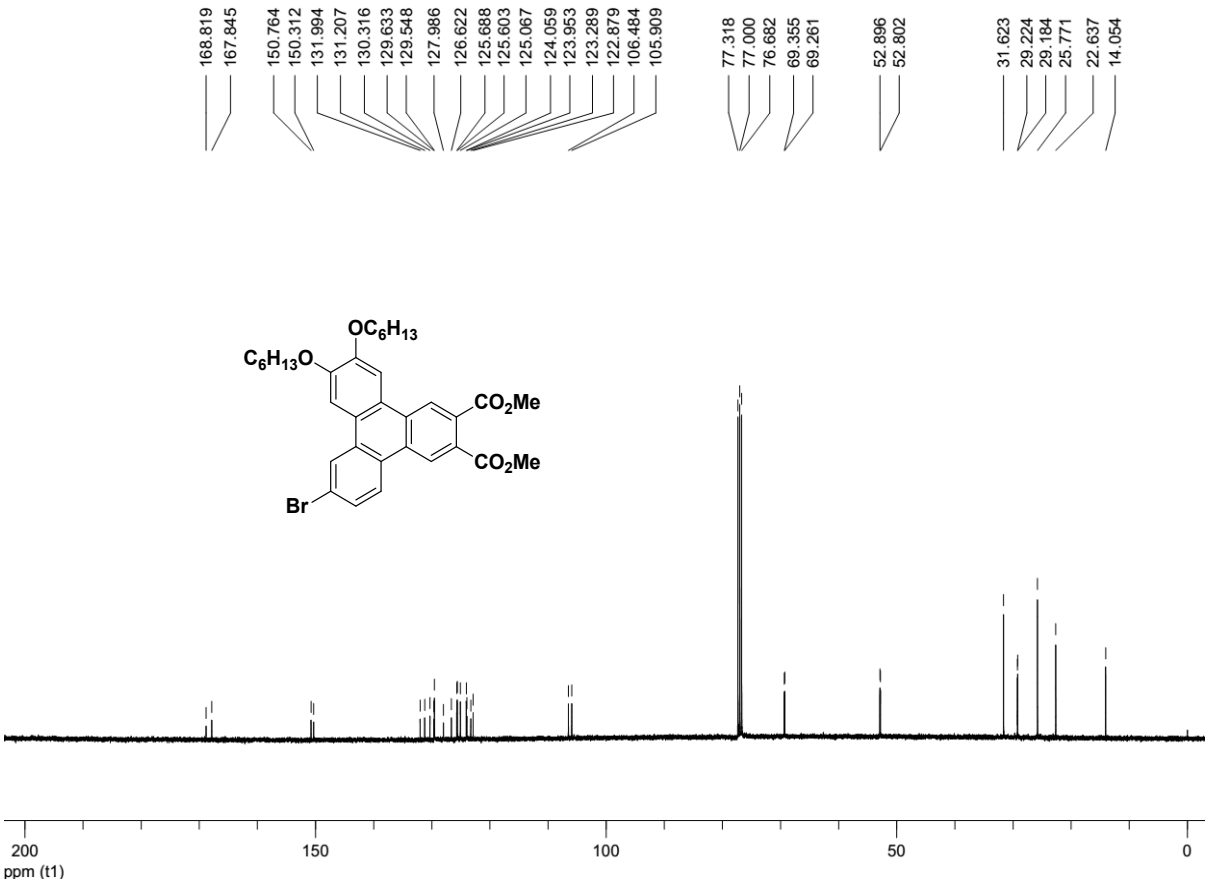

9.168
8.846
8.784
7.985
7.885
7.262
4.276
4.259
4.249
4.243
4.233
4.216
4.125
4.083
4.016
4.009
3.952
1.993
1.977
1.959
1.939
1.923
1.595
1.578
1.559
1.541
1.444
1.412
1.403
0.959
0.952
0.942
0.935
0.926
0.917
0.000
OC6H13
C6H13O
CO2Me
H3CO
CO2Me
H3CO
OCH3
4.29
3.09
3.06
6.03
3.06
4.30
4.20
4.10
4.00
3.90
ppm (t1)
1.00
1.04
1.05
4.24
5.57
8.66
9.49
10.0
5.0
0.0
ppm (t1)

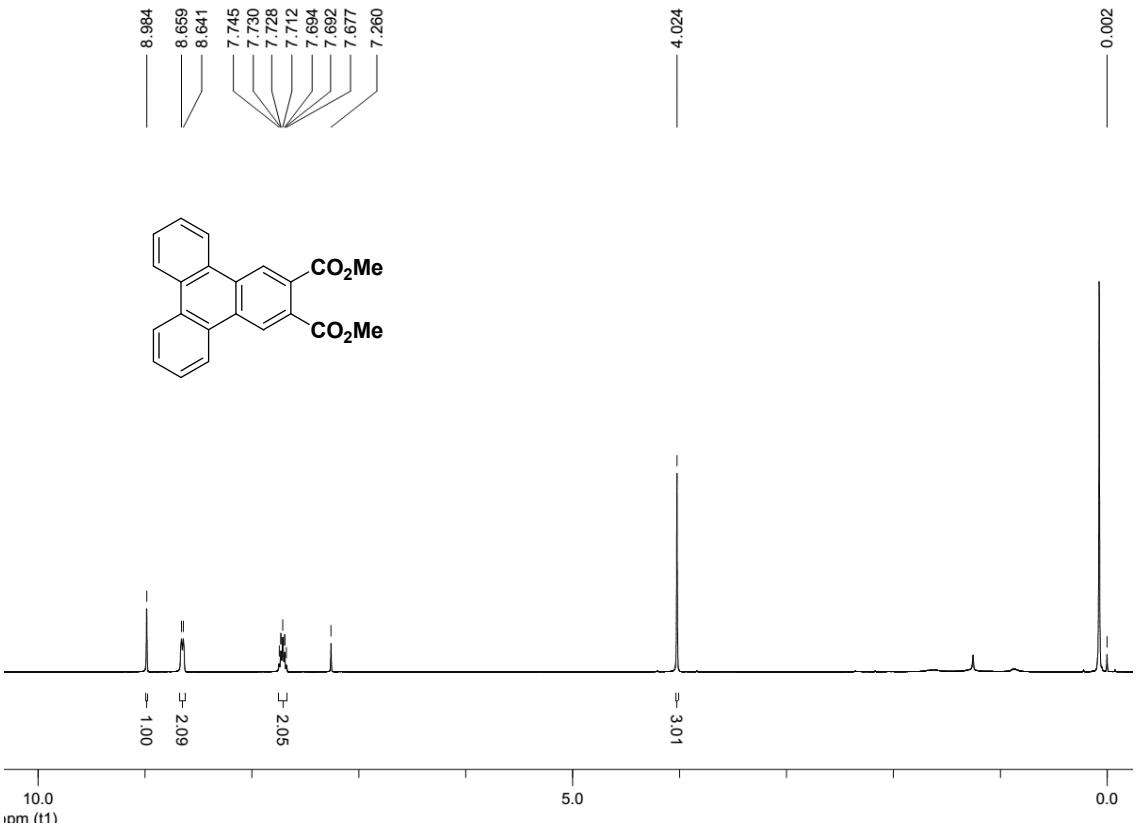

168.688
168.464
152.208
152.038
150.089
148.537
144.198
131.352
130.023
129.283
127.992
125.615
125.115
124.969
124.336
122.805
119.467
110.398
106.765
101.699
77.318
77.000
76.682
69.376
68.862
61.382
60.742
56.144
52.774
52.756
31.643
29.310
29.186
25.820
25.786
22.630
14.030
OC6H13
C6H13O
CO2Me
H3CO
CO2Me
H3CO
OCH3
200
150
100
50
0
ppm (t1)

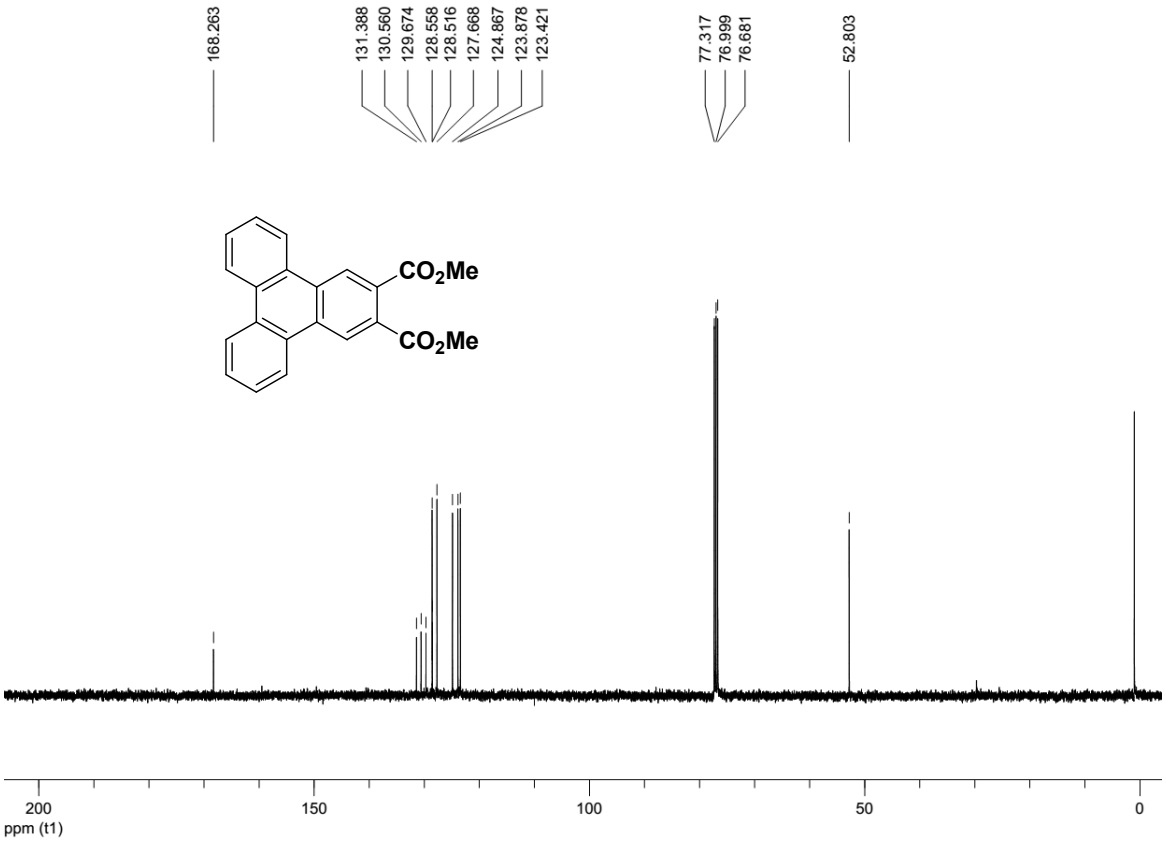

9.212
9.208
9.095
8.773
8.743
8.721
8.261
8.258
8.240
8.236
8.073
7.978
7.264
4.319
4.303
4.286
4.269
4.253
4.058
4.030
4.026
2.017
2.000
1.992
1.983
1.976
1.938
1.641
1.617
1.604
1.600
1.572
1.450
1.442
1.427
1.419
1.411
1.374
0.964
0.947
0.929
0.000
OC6H13
C6H13O
CO2Me
CO2Me
MeO2C
8.773
8.743
8.721
4.058
4.030
4.026
1.00
1.03
3.00
6.09
8.900 8.850 8.800 8.750 8.700 8.650 8.600
ppm (t1)
4.150 4.100 4.050 4.000 3.950 3.900
ppm (t1)
1.00
1.03
1.00
1.01
4.01
4.13
3.98
8.21
6.09
10.0
5.0
0.0
ppm (t1)

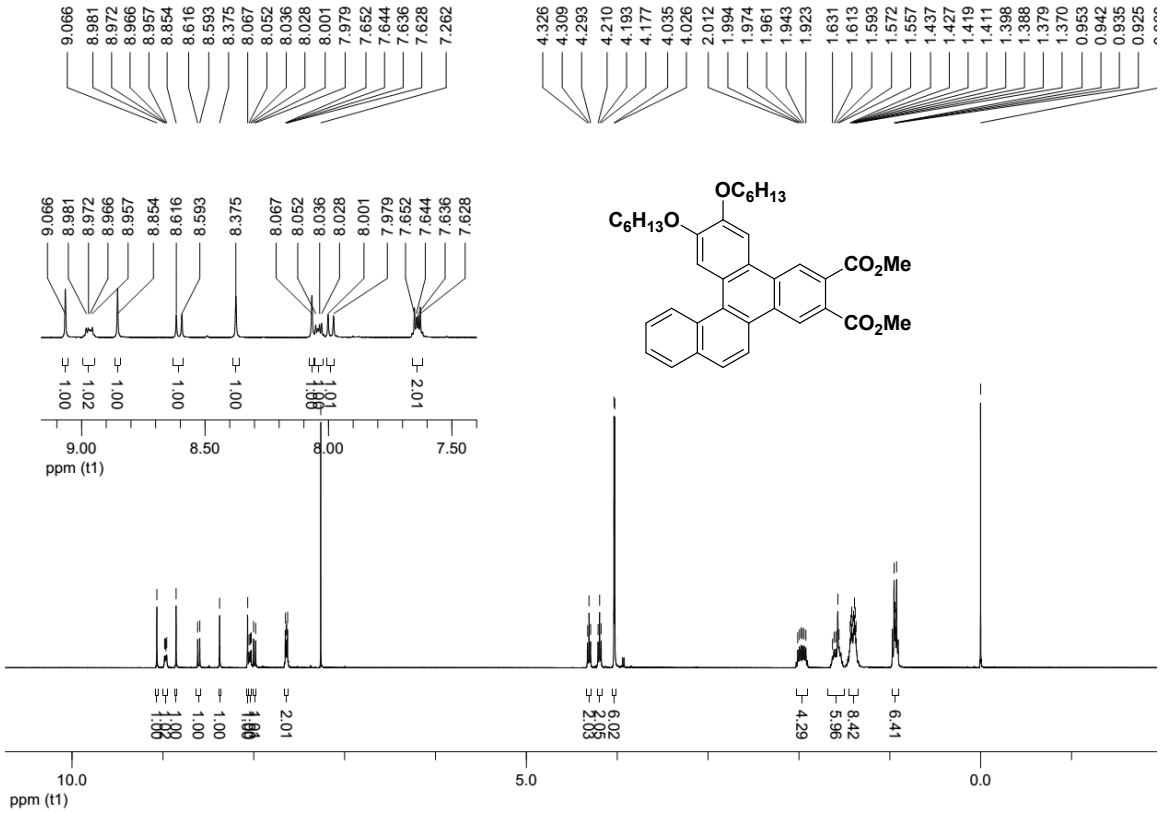

168.849
167.715
167.119
150.937
150.248
132.252
131.164
131.084
130.070
129.384
129.272
127.817
126.462
125.947
125.045
124.101
124.013
123.065
106.531
106.219
77.318
77.000
76.682
69.371
69.342
52.937
52.825
52.489
31.624
29.220
25.776
22.634
14.050
OC6H13
C6H13O
CO2Me
CO2Me
MeO2C
200
150
100
50
0
ppm (t1)

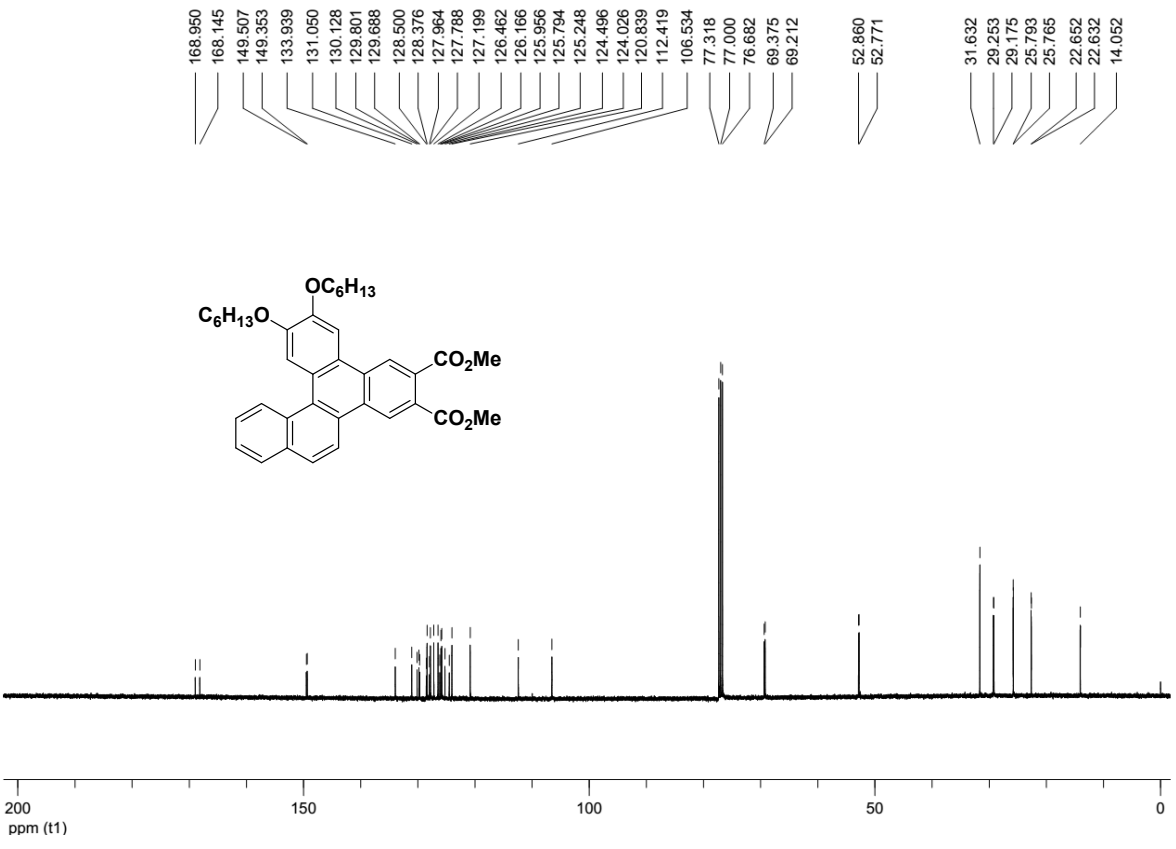

8.948
8.715
8.560
8.556
8.493
8.471
7.918
7.831
7.729
7.724
7.707
7.702
7.263
4.277
4.270
4.261
4.253
4.245
4.237
4.024
4.015
2.011
2.004
1.994
1.987
1.971
1.956
1.949
1.940
1.933
1.615
1.598
1.577
1.446
1.426
1.420
1.418
1.412
1.409
1.393
1.375
0.965
0.947
0.931
0.000
OC6H13
C6H13O
CO2Me
CO2Me
Br
1.00
1.00
4.04
6.04
4.06
8.16
3.92
6.06
10.0
5.0
0.0
ppm (t1)

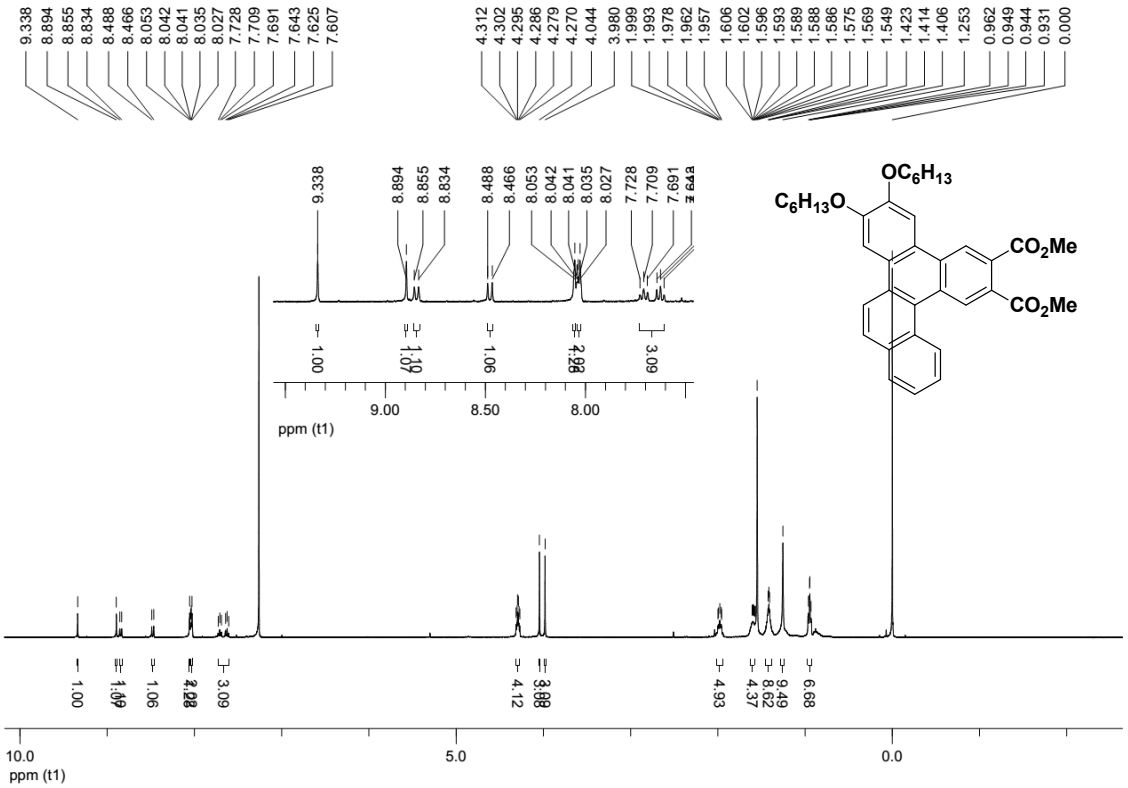

168.819
167.845
150.764
150.312
131.994
131.207
130.316
129.633
129.548
127.986
126.622
125.688
125.603
125.067
124.059
123.953
123.289
122.879
106.484
105.909
77.318
77.000
76.682
69.355
69.261
52.896
52.802
31.623
29.224
29.184
25.771
22.637
14.054
OC6H13
C6H13O
CO2Me
CO2Me
Br
200
150
100
50
0
ppm (t1)

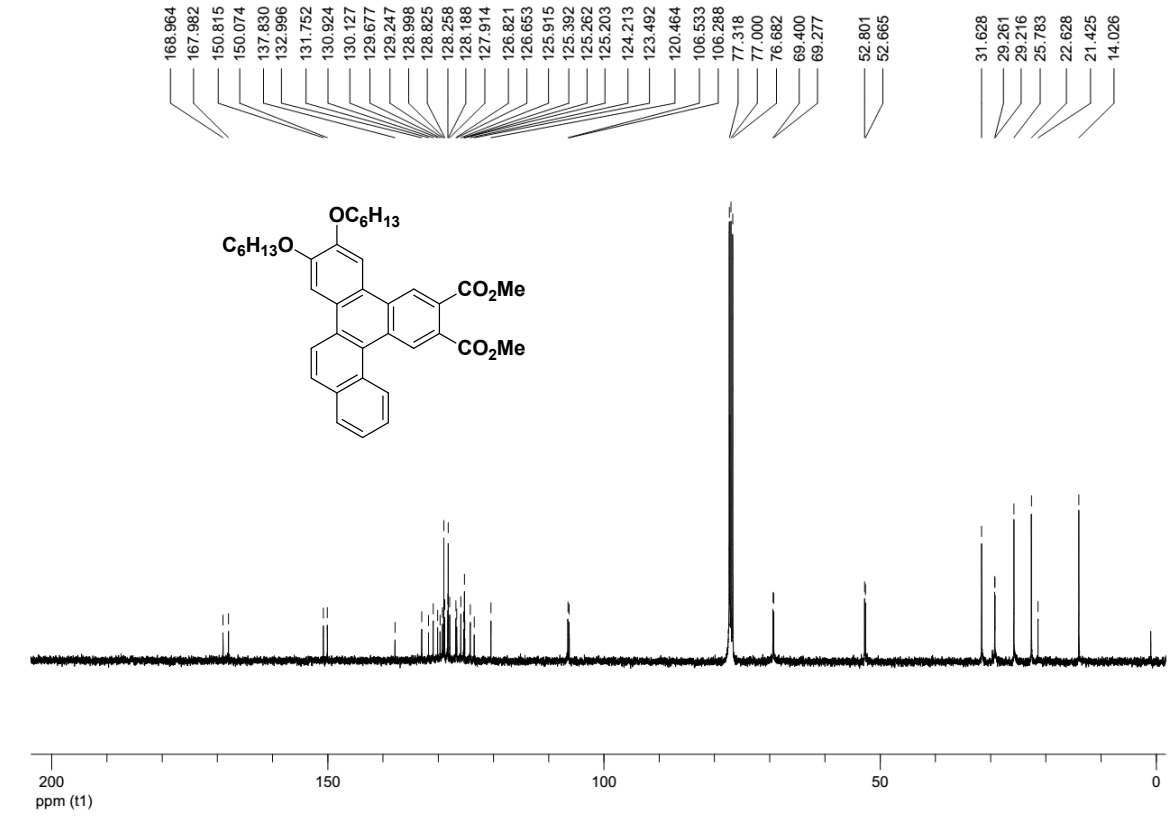

8.984
8.659
8.641
7.745
7.730
7.728
7.712
7.694
7.692
7.677
7.260
4.024
0.002
CO2Me
CO2Me
1.00
2.09
2.05
3.01
10.0
5.0
0.0
ppm (t1)

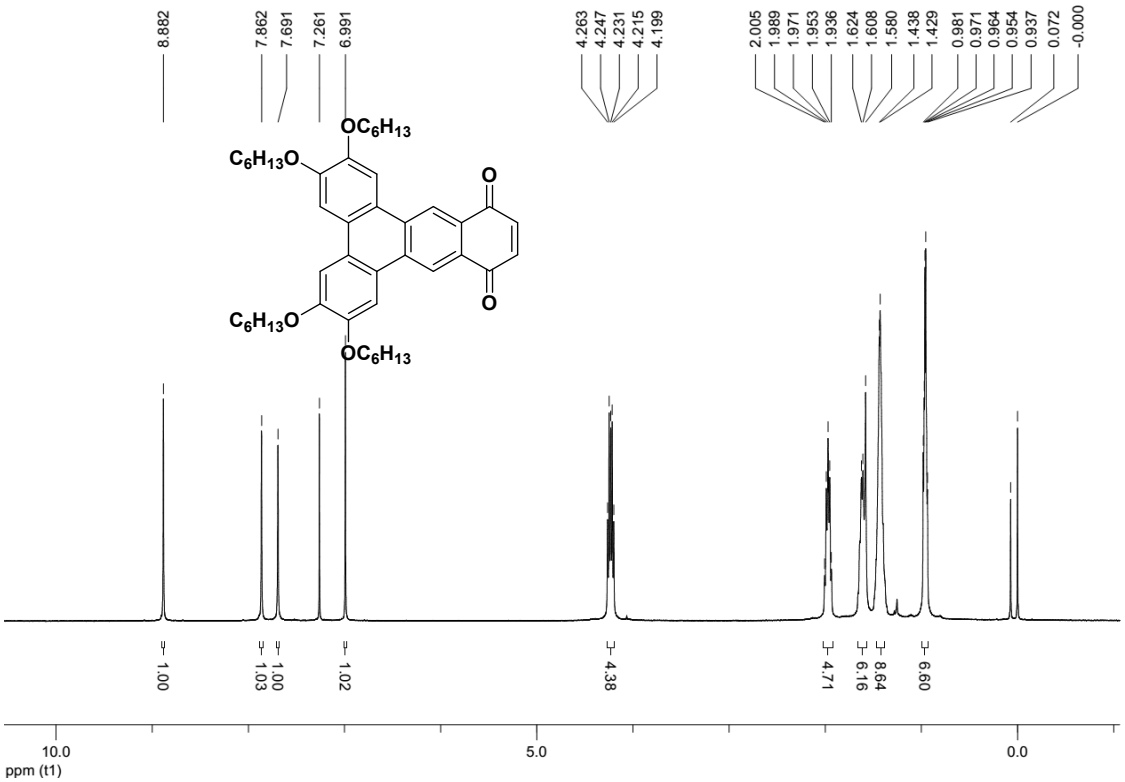

168.263
131.388
130.560
129.674
128.558
128.516
127.668
124.867
123.878
123.421
77.317
76.999
76.681
52.803
CO2Me
CO2Me
200
150
100
50
0
ppm (t1)

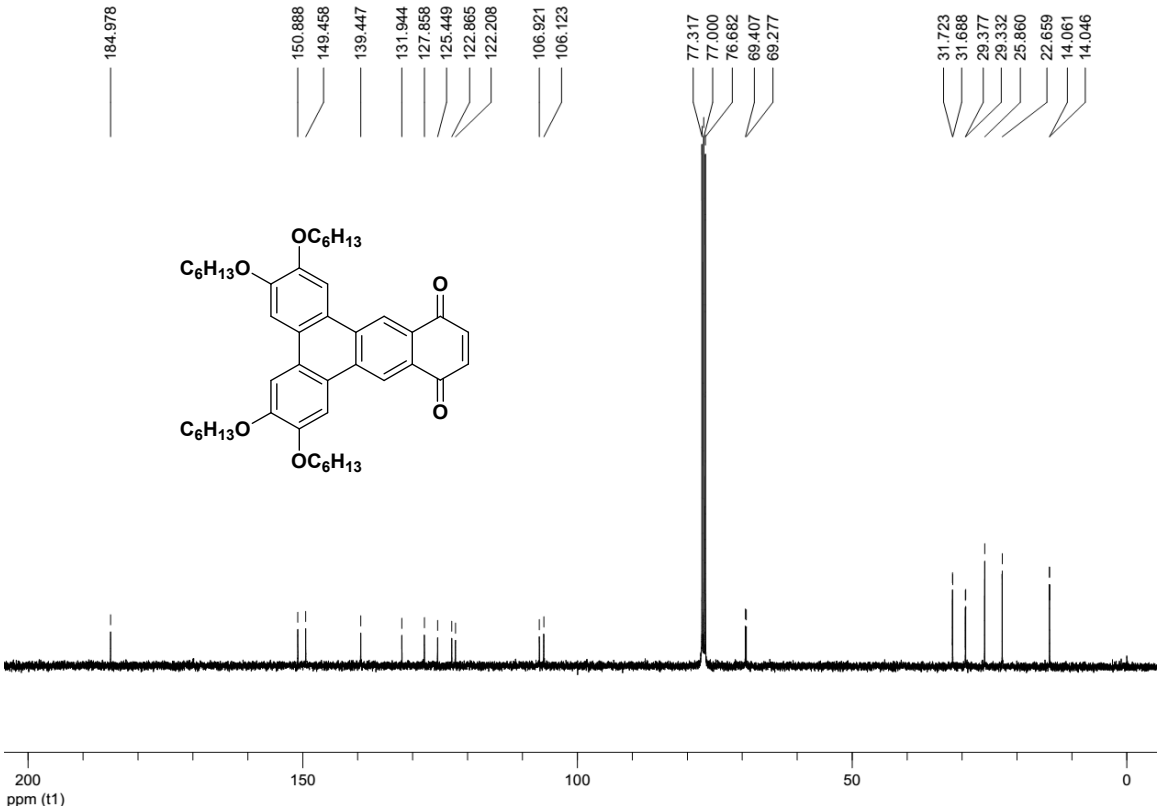

9.066
8.981
8.972
8.966
8.957
8.854
8.616
8.593
8.375
8.067
8.052
8.036
8.028
8.001
7.979
7.652
7.644
7.636
7.628
7.262
4.326
4.309
4.293
4.210
4.193
4.177
4.035
4.026
2.012
1.994
1.974
1.961
1.943
1.923
1.631
1.613
1.593
1.572
1.557
1.437
1.427
1.419
1.411
1.398
1.388
1.379
1.370
0.953
0.942
0.935
0.925
OC6H13
C6H13O
CO2Me
CO2Me
1.00
1.02
1.00
1.00
1.00
2.01
9.00
8.50
8.00
7.50
ppm (t1)
1.00
1.00
2.01
6.02
4.29
5.96
8.12
9.41
10.0
5.0
0.0
ppm (t1)

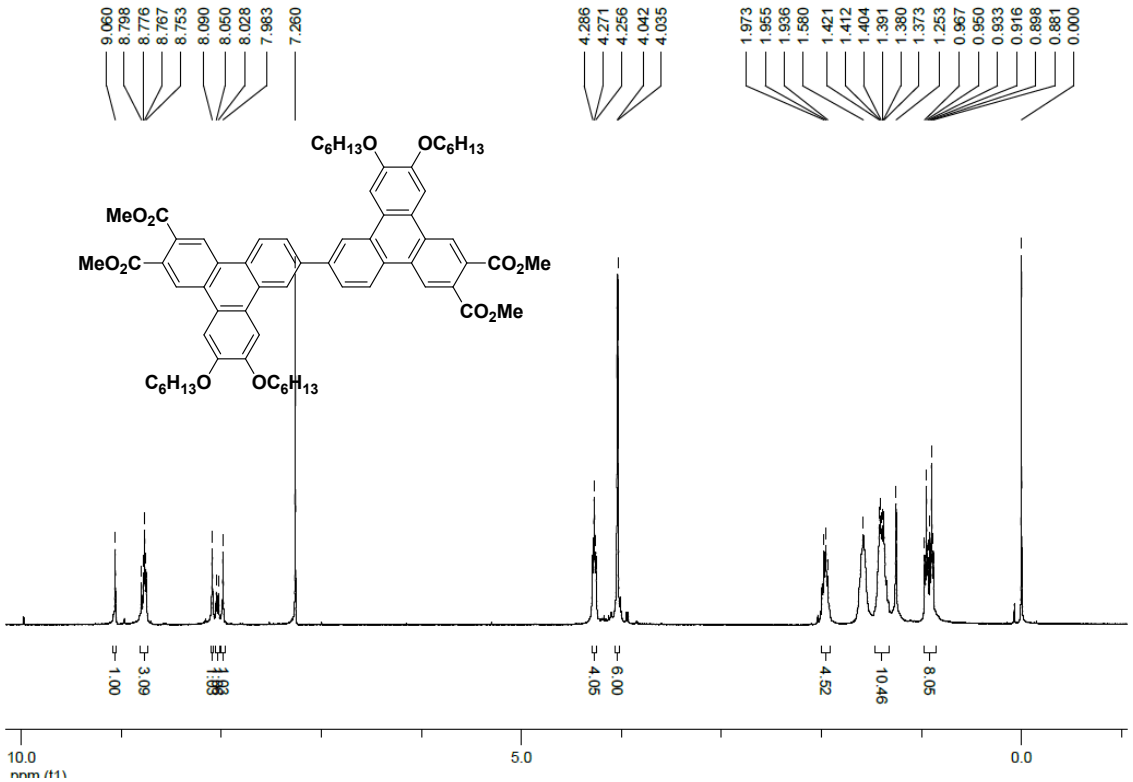

168.950
168.145
149.507
149.353
133.939
131.050
130.128
129.801
129.688
128.500
128.376
127.964
127.788
127.199
126.462
126.166
125.956
125.794
125.248
124.496
124.026
120.839
112.419
106.534
77.318
77.000
76.682
69.375
69.212
52.860
52.771
31.632
29.253
29.175
25.793
25.765
22.652
22.632
14.052
OC6H13
C6H13O
CO2Me
CO2Me
200
150
100
50
0
ppm (t1)

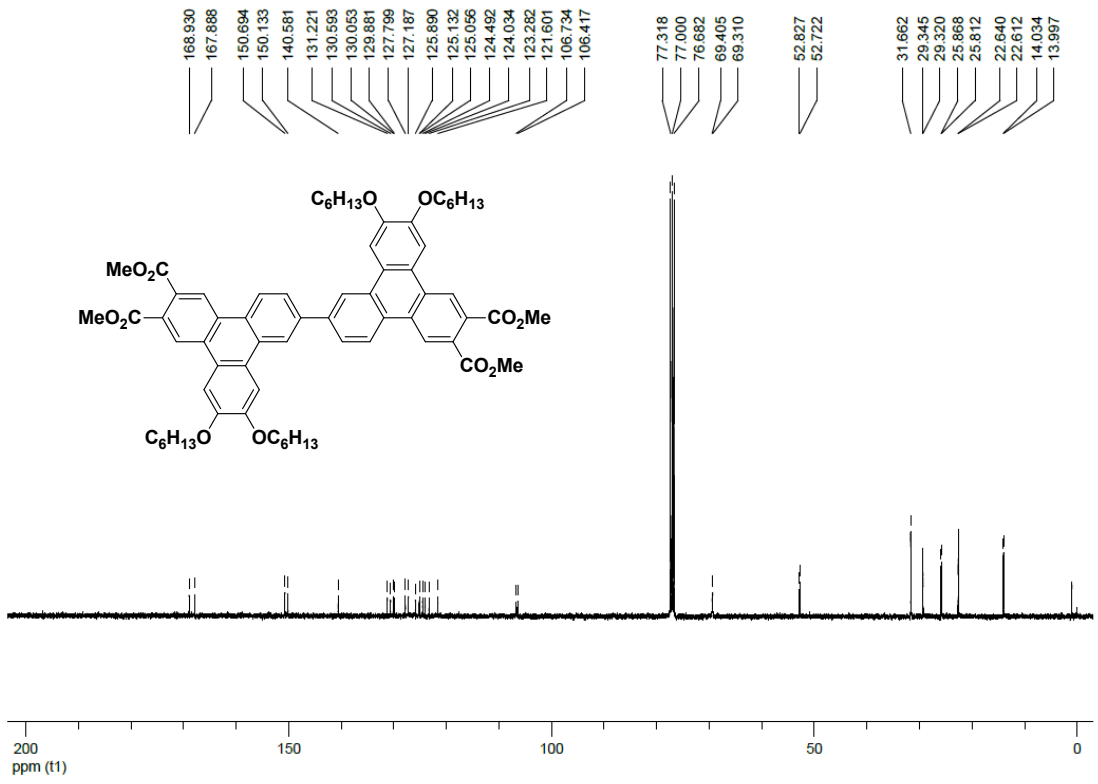

9.338
8.894
8.855
8.834
8.488
8.466
8.053
8.042
8.041
8.035
8.027
7.728
7.709
7.691
7.643
7.625
7.607
4.312
4.302
4.295
4.286
4.279
4.270
4.044
3.980
1.999
1.993
1.978
1.962
1.957
1.606
1.602
1.596
1.593
1.589
1.588
1.586
1.575
1.569
1.549
1.423
1.414
1.406
1.253
0.962
0.949
0.944
0.931
0.000
OC6H13
C6H13O
CO2Me
CO2Me
1.00
1.09
1.06
3.09
4.12
4.63
4.37
6.49
9.68
9.00
8.50
8.00
ppm (t1)
10.0
5.0
0.0
ppm (t1)


168.964
167.982
150.815
150.074
137.830
132.996
131.752
130.924
130.127
129.677
129.247
128.998
128.825
128.258
128.188
127.914
126.821
126.653
125.915
125.392
125.262
125.203
124.213
123.492
120.464
106.533
106.288
77.318
77.000
76.682
69.400
69.277
52.801
52.665
31.628
29.261
29.216
25.783
22.628
21.425
14.026
OC6H13
C6H13O
CO2Me
CO2Me
200
150
100
50
0
ppm (t1)


8.882
7.862
7.691
7.261
6.991
4.263
4.247
4.231
4.215
4.199
2.005
1.989
1.971
1.953
1.936
1.624
1.608
1.580
1.438
1.429
0.981
0.971
0.964
0.954
0.937
0.072
-0.000
OC6H13
C6H13O
O
O
C6H13O
OC6H13
1.00
1.03
1.00
1.02
4.38
4.71
9.19
8.94
6.60
10.0
5.0
0.0
ppm (t1)


184.978
150.888
149.458
139.447
131.944
127.858
125.449
122.865
122.208
106.921
106.123
77.317
77.000
76.682
69.407
69.277
31.723
31.688
29.377
29.332
25.860
22.659
14.061
14.046
OC6H13
C6H13O
O
O
C6H13O
OC6H13
200
150
100
50
0
ppm (t1)


9.060
8.798
8.776
8.767
8.753
8.090
8.050
8.028
7.983
7.260
4.286
4.271
4.256
4.042
4.035
1.973
1.955
1.936
1.580
1.421
1.412
1.404
1.391
1.380
1.373
1.253
0.967
0.950
0.933
0.916
0.898
0.881
0.000
C6H13O
OC6H13
MeO2C
MeO2C
CO2Me
CO2Me
C6H13O
OC6H13
1.00
3.09
4.05
6.00
4.52
10.46
8.05
10.0
5.0
0.0


168.930
167.888
150.694
150.133
140.581
131.221
130.593
130.053
129.881
127.799
127.187
125.890
125.132
125.056
124.492
124.034
123.282
121.601
106.734
106.417
77.318
77.000
76.682
69.405
69.310
52.827
52.722
31.662
29.345
29.320
25.868
25.812
22.640
22.612
14.034
13.997
C6H13O
OC6H13
MeO2C
MeO2C
CO2Me
CO2Me
C6H13O
OC6H13
200
150
100
50
0
ppm (t1)

POM image of compound 4a

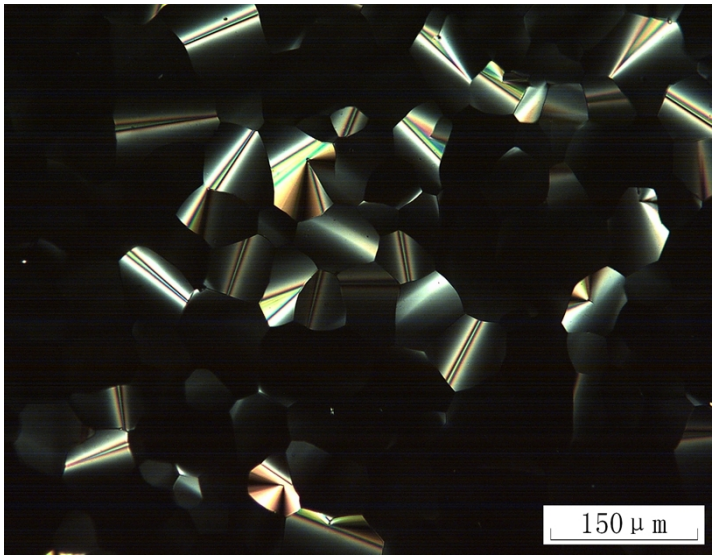


Figure 1 POM image of compound 4a at 150 °C.