Supporting Information

Enantioselective Synthesis of Triarylmethanes via Organocatalytic Transfer Hydrogenation of *para*-Quinone Methides

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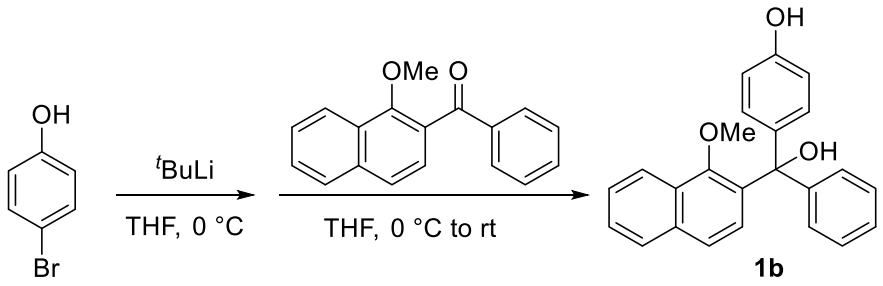
I. General Information

Flash column chromatography was performed over silica gel (200-300 mesh) purchased from Qindao Puke Co., China. All air or moisture sensitive reactions were conducted in oven-dried glassware under nitrogen atmosphere using anhydrous solvents. Anhydrous dichloromethane and tetrahydrofuran were purified by the Innovative® solvent purification system. Anhydrous solvents were purchased from Sigma-Aldrich® and J&K® and used as received. ^{1}H, ^{13}C, ^{19}F and ^{31}P NMR spectra were collected on a Bruker AV 500 MHz or 400 MHz or 300 MHz NMR spectrometer using residue solvent peaks as an internal standard (^{1}H NMR: $CDCl_3$ at 7.26 ppm, acetone-d_6 at 2.05 ppm, ^{13}C NMR: $CDCl_3$ at 77.0 ppm， acetone-d_6 at 205.9 ppm). Mass spectra were collected on an Agilent GC/MS 5975C system or an API QSTAR XL System. Optical rotations were measured on a Shanghai Shenguang® polarimeter with $[\alpha]_D$ values reported in degrees; concentration (c) is in 10 mg/mL. The enantiomeric excesses were determined by chiral HPLC using an Agilent 1200 LC instrument with a Daicel Chiralcel OJ-H column or a Daicel Chiralpak AD-H, IC, AS-H column.

II. Synthesis of Tertiary Alcohol Substrates

All compounds were synthesized according to literature,[1] and the data of **1a**, **1c** – **1p**, **1a'**, **1b'** were consistent with those reported in the literature.



4-(Hydroxy(1-methoxynaphthalen-2-yl)(phenyl)methyl)phenol (1b). At 0 °C, *tert*-butyllithium (1.6 M in pentane, 15.5 mL, 24.8 mmol) was slowly added to a stirred solution of 4-bromophenol (1.30 g, 7.5 mmol) in THF (50 mL). The resulting mixture was stirred at 0 °C for 2 hours. Then a solution of (1-methoxynaphthalen-2-yl)(phenyl)methanone (3.0 mmol, 684 mg) in THF (10 mL) was added and the reaction mixture was kept stirring overnight at room temperature. A saturated aqueous solution of NH_4Cl was added to quench the reaction. The reaction mixture was extracted with EtOAc (3 × 30 mL). The combined organic layers were dried over anhydrous Na_2SO_4, filtered, and concentrated. The residue was purified by silica gel flash chromatography (eluent: hexanes/EtOAc = 15:1 → 10:1) to afford the pure tertiary alcohol **1b** as pale yellow solid in 58% yield (621 mg).

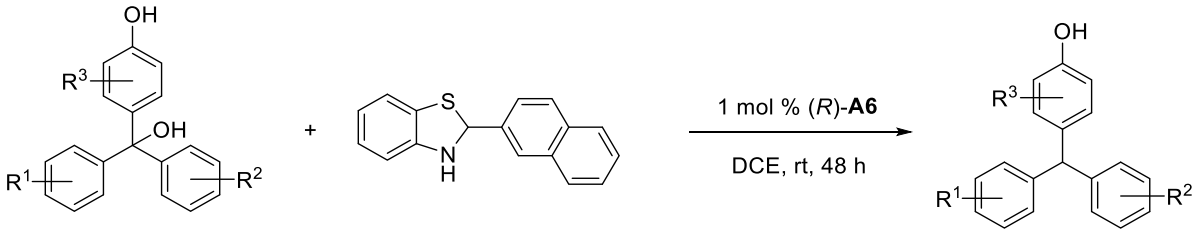
^{1}H NMR (500 MHz, acetone-d_6) δ 8.05 (d, J = 8.2 Hz, 1H), 7.96 – 7.86 (m, 1H), 7.61 – 7.47 (m, 3H), 7.41 – 7.23 (m, 5H), 7.19 – 7.10 (m, 2H), 6.89 – 6.75 (m, 3H), 5.93 (s, 1H), 3.34 (s, 3H), 2.88 (s, 1H).

^{13}C NMR (126 MHz, acetone-d_6) δ 157.1, 154.3, 148.4, 138.71, 137.9, 135.4, 129.9, 128.8, 128.6, 128.5, 128.2, 127.8, 127.6, 126.9, 126.8, 123.5, 122.7, 115.0, 82.4, 61.9.

HRMS (ES+) Calcd for $C_{24}H_{20}O_3Na$ $[M + Na]^+$: 379.1310, Found: 379.1306.

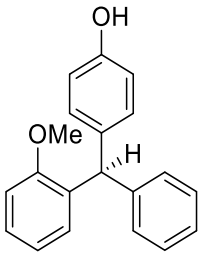
III. Catalytic Asymmetric Synthesis of Triarylmethanes

General Procedure.



At 0 °C or room temperature, to an oven-dried 10-mL vial charged with a solution of the tertiary alcohol **1** (0.3 mmol) and 2-naphthylbenzothiazoline (0.6 mmol) in DCE (2.5 mL) was slowly added a solution of the catalyst (*R*)-**A6** (3.0 mg, 3.0 μmol, 1.0 mol%) in DCE (0.5 mL). The reaction mixture was stirred at room temperature for 48 h (or otherwise noted temperature and time). Next, Na_2CO_3 (212 mg, 2.0 mmol) was added. The mixture was stirred for 10 min and concentrated under reduced pressure. The residue was purified by silica gel flash chromatography to afford the desired product.

Unless noted otherwise, all the racemic products (used for HPLC reference in determining the ee value) were prepared from the same reaction using a simple achiral phosphoric acid as the catalyst.



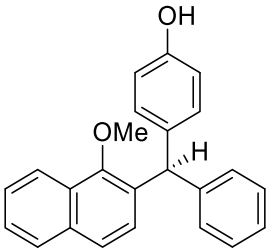
(*R*)-4-((2-Methoxyphenyl)(phenyl)methyl)phenol (2a) was prepared as a pale yellow foam from 4-(hydroxy(2-methoxyphenyl)(phenyl)methyl)phenol (**1a**) (91.9 mg, 0.3 mmol) and 2-naphthlbenzothiazoline (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 91% yield (79.0 mg) and 95% ee. **^{1}H NMR** (400 M Hz, $CDCl_3$) δ 7.32 – 7.12 (m, 4H), 7.11 – 7.02 (m, 2H), 6.98 – 6.90 (m,

2H), 6.90 – 6.79 (m, 3H), 6.75 – 6.64 (m, 2H), 5.85 (s, 1H), 4.06 (brs, 1H), 3.70 (s, 3H).

^{13}C NMR (100 M Hz, $CDCl_3$) δ 157.0, 153.8, 144.2, 136.0, 132.9, 130.5, 130.2, 129.3, 128.0, 127.4, 125.9, 120.2, 114.9, 110.7, 55.6, 48.7.

$[\alpha]_D^{25}$: -2.5 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 6.8 min (minor), 7.2 min (major).

HRMS (CI+) Calcd for $C_{20}H_{18}O_2$ $[M]^+$: 290.1307, Found: 290.1297.



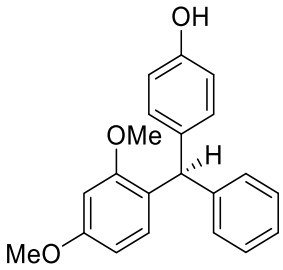
(*R*)-4-((1-Methoxynaphthalen-2-yl)(phenyl)methyl)phenol (2b) was prepared as pale yellow oil from 4-(hydroxy(1-methoxynaphthalen-2-yl)(phenyl)methyl)phenol (**1b**) (106.9 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 97% yield (99.2 mg) and 97% ee .

^{1}H NMR (300 MHz, acetone-d_6) δ 8.21 (s, 1H), 8.05 – 7.95 (m, 1H), 7.88 (d, J = 9.0 Hz, 1H), 7.86 – 7.78 (m, 1H), 7.43 (d, J = 9.0 Hz, 1H), 7.32 – 7.25 (m, 2H), 7.25 – 7.06 (m, 7H), 6.82 – 6.73 (m, 2H), 6.53 (s, 1H), 3.66 (s, 3H).

^{13}C NMR (75 MHz, acetone-d_6) δ 155.6, 155.5, 144.5, 133.8, 133.3, 130.2, 130.1, 129.2, 128.9, 128.7, 127.9, 125.9, 125.8, 125.5, 125.0, 123.2, 115.1, 114.9, 56.1, 46.7.

$[\alpha]_D^{25}$: +5.6 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak IC column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 5.3 min (minor), 8.0 min (major).

HRMS (ES-) Calcd for $C_{24}H_{19}O_2$ $[M - H]^+$: 339.1385, Found: 339.1387.



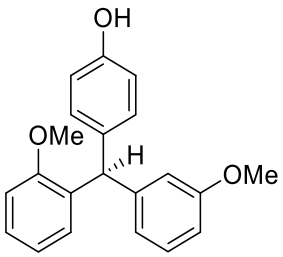
(*R*)-4-((2,4-dimethoxyphenyl)(phenyl)methyl)phenol (2c) was prepared as a yellow oil from 4-((2,4-dimethoxyphenyl)(hydroxy)(phenyl)methyl)phenol (**1c**) (100.9 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 99% yield (95.2 mg) and 95% ee.

^{1}H NMR (300 MHz, acetone-d_6) δ 8.19 (s, 1H), 7.34 – 7.21 (m, 2H), 7.21 – 7.11 (m, 1H), 7.11 – 7.01 (m, 2H), 6.95 – 6.84 (m, 2H), 6.74 (ddd, J = 8.2, 5.4, 2.9 Hz, 3H), 6.54 (d, J = 2.4 Hz, 1H), 6.43 (dd, J = 8.4, 2.5 Hz, 1H), 5.73 (s, 1H), 3.76 (s, 3H), 3.70 (s, 3H).

^{13}C NMR (75 MHz, acetone-d_6) δ 160.1, 158.4, 156.1, 145.5, 135.5, 130.9, 130.7, 129.6, 128.5, 126.2, 125.7, 115.3, 104.5, 98.8, 55.5, 55.1, 48.7.

$[\alpha]_D^{25}$: -11.4 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 10.2 min (major), 10.8 min (minor).

HRMS (CI+) Calcd for $C_{21}H_{20}O_3$ $[M]^+$: 320.1412, Found: 320.1416.



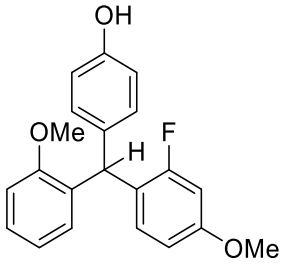
(*S*)-4-((2-methoxyphenyl)(3-methoxyphenyl)methyl)phenol (2d) was prepared as a white foam from 4-(hydroxy(2-methoxyphenyl)(3-methoxyphenyl)methyl)phenol (**1d**) (100.9 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 98% yield (94.5 mg) and 94% ee.

^{1}H NMR (300 MHz, acetone-d_6) δ 8.22 (s, 1H), 7.27 – 7.10 (m, 2H), 6.96 (d, J = 8.2 Hz, 1H), 6.94 – 6.82 (m, 4H), 6.74 (dd, J = 6.7, 4.7 Hz, 3H), 6.68 – 6.57 (m, 2H), 5.80 (s, 1H), 3.72 (s, 3H), 3.70 (s, 3H).

^{13}C NMR (75 MHz, acetone-d_6) δ 160.2, 157.6, 156.2, 146.7, 135.0, 133.3, 130.7, 130.4, 129.4, 128.0, 122.1, 120.5, 115.9, 115.4, 111.2, 55.5, 54.9, 49.1.

$[\alpha]_D^{25}$: -4.2 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 9.4 min (minor), 10.2 min (major).

HRMS (ES-) Calcd for $C_{21}H_{19}O_3$ $[M - H]^+$: 319.1340, Found: 319.1420.



4-((2-Fluoro-4-methoxyphenyl)(2-methoxyphenyl)methyl)phenol (2e) was prepared as a yellow foam from 4-((2-fluoro-4-methoxyphenyl)(hydroxy)(2-methoxyphenyl)methyl)phenol (**1e**) (106.3 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure with 10 mol% of catalyst at 0 ^oC for 72 h (eluent: hexanes/EtOAc = 15:1 → 10:1) in 90% yield (90.4 mg) and 91% ee.

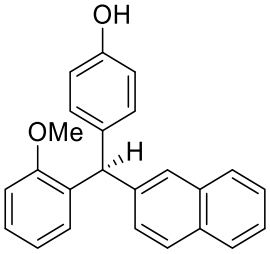
^{1}H NMR (400 M Hz, $CDCl_3$) δ 7.25 – 7.21 (m, 1H), 6.95 (d, J = 8.5 Hz, 2H), 6.89 – 6.82 (m, 3H), 6.79 – 6.72 (m, 3H), 6.63 – 6.57 (m, 2H), 6.01 (s, 1H), 4.91 (s, 1H), 3.78 (s, 3H), 3.72 (s, 3H).

^{13}C NMR (100 M Hz, $CDCl_3$) δ 161.1 (d, J = 244.9 Hz), 159.2 (d, J = 10.9 Hz), 156.9, 153.8, 135.0, 131.9, 130.8 (d, J = 6.1 Hz), 130.2, 129.8, 127.6, 123.2 (d, J = 15.1 Hz), 120.2, 115.0, 110.7, 109.1 (d, J = 2.9 Hz), 101.5 (d, J = 27.8 Hz), 55.6, 55.4, 41.3 (d, J = 2.6 Hz).

^{19}F NMR (376 M Hz, $CDCl_3$) δ -114.19.

$[\alpha]_D^{25}$: -12.8 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 9.4 min (minor), 10.2 min (major).

HRMS (CI+) Calcd for $C_{21}H_{19}FO_3$ $[M]^+$: 338.1318, Found: 338.1313.



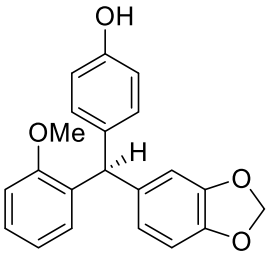
(*S*)-4-((2-Methoxyphenyl)(naphthalen-2-yl)methyl)phenol (2f) was prepared as a pale yellow oil from 4-(hydroxy(2-methoxyphenyl)(naphthalen-2-yl)methyl)phenol (**1f**) (106.9 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 92% yield (93.5 mg) and 94% ee.

^{1}H NMR (300 M Hz, acetone-d_6) δ 8.25 (s, 1H), 7.90 – 7.67 (m, 3H), 7.53 – 7.36 (m, 3H), 7.36 – 7.15 (m, 2H), 7.03 – 6.95 (m, 3H), 6.91 (ddd, *J* = 8.1, 7.4, 1.4 Hz, 2H), 6.84 – 6.76 (m, 2H), 6.03 (s, 1H), 3.70 (s, 3H).

^{13}C NMR (75 M Hz, acetone-d_6) δ 157.4, 156.1, 142.7, 134.7, 133.8, 133.0, 132.5, 130.8, 130.4, 128.6, 127.9, 127.9, 127.8, 127.8, 127.4, 126.2, 125.7, 120.4, 115.3, 111.1, 55.3, 49.2.

$[\alpha]_D^{25}$: +8.0 (*c* = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 10.8 min (minor), 12.1 min (major).

HRMS (CI+) Calcd for $C_{24}H_{20}O_2$ $[M]^+$: 340.1463, Found: 340.1464.



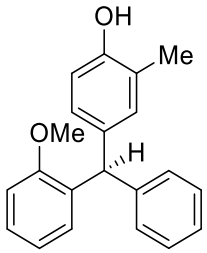
(*S*)-4-(Benzo[*d*][1,3]dioxol-5-yl(2-methoxyphenyl)methyl)phenol (2g) was prepared as a yellow oil from 4-(hydroxy(2-methoxyphenyl)(naphthalen-2-yl)methyl)phenol (**1g**) (106.9 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 99% yield (99.1 mg) and 94% ee.

^{1}H NMR (300 MHz, acetone-d_6) δ 8.20 (s, 1H), 7.20 (ddd, J = 8.3, 6.3, 2.9 Hz, 1H), 7.02 – 6.81 (m, 5H), 6.81 – 6.68 (m, 3H), 6.57 (d, J = 1.7 Hz, 1H), 6.53 (ddd, J = 8.0, 1.7, 0.5 Hz, 1H), 5.92 (s, 2H), 5.77 (s, 1H), 3.71 (s, 3H).

^{13}C NMR (75 MHz, acetone-d_6) δ 157.3, 155.9, 147.8, 146.1, 138.9, 135.1, 133.2, 130.4, 130.1, 127.8, 122.4, 120.3, 115.2, 111.0, 109.9, 107.9, 101.2, 55.3, 48.6.

$[\alpha]_D^{25}$: -6.8 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 12.6 min (minor), 15.2 min (major).

HRMS (CI+) Calcd for $C_{21}H_{18}O_4$ $[M]^+$: 334.1205, Found: 334.1211.



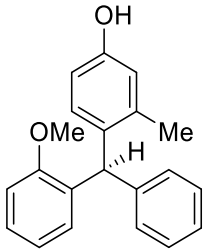
(*R*)-4-((2-Methoxyphenyl)(phenyl)methyl)-2-methylphenol (2h) was prepared as a colorless oil from 4-(hydroxy(2-methoxyphenyl)(phenyl)methyl)-2-methylphenol (**1h**) (96.1 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 81% yield (73.9 mg) and 72% ee.

^{1}H NMR (300 MHz, $CDCl_3$) δ 7.33 – 7.12 (m, 4H), 7.13 – 7.02 (m, 2H), 6.93 – 6.80 (m, 4H), 6.74 (dd, J = 8.2, 2.1 Hz, 1H), 6.62 (d, J = 8.2 Hz, 1H), 5.82 (s, 1H), 4.82 (s, 1H), 3.69 (s, 3H), 2.15 (s, 3H).

^{13}C NMR (75 MHz, $CDCl_3$) δ 157.0, 152.0, 144.3, 135.9, 132.9, 132.0, 130.3, 129.3, 128.0, 127.9, 127.4, 125.8, 123.3, 120.2, 114.5, 110.7, 55.6, 48.7, 15.8.

$[\alpha]_D^{25}$: -12.1 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AS-H column; 5% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 15.9 min (minor), 17.1 min (major).

HRMS (ES-) Calcd for $C_{21}H_{19}O_2$ [M - H]$^+$: 303.1385, Found: 303.1380.



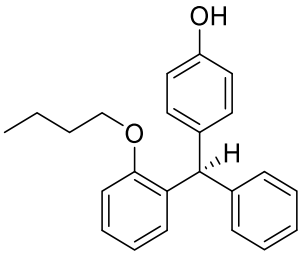
(*R*)-4-((2-Methoxyphenyl)(phenyl)methyl)-3-methylphenol (2i) was prepared as a colorless oil from 4-(hydroxy(2-methoxyphenyl)(phenyl)methyl)-3-methylphenol (**1i**) (96.1 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 99% yield (91.0 mg) and 73% ee.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.30 – 7.14 (m, 4H), 7.09 – 7.00 (m, 2H), 6.85 (t, J = 8.2 Hz, 2H), 6.77 (dd, J = 7.5, 1.7 Hz, 1H), 6.64 (d, J = 8.0 Hz, 2H), 6.53 (dd, J = 8.4, 2.7 Hz, 1H), 5.92 (s, 1H), 4.80 (s, 1H), 3.71 (s, 3H), 2.14 (s, 3H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 157.1, 153.6, 143.6, 138.3, 134.7, 132.5, 130.2, 130.2, 129.5, 128.1, 127.4, 125.9, 120.2, 117.2, 112.0, 110.6, 55.7, 45.6, 19.7.

$[\alpha]_D^{25}$: -12.3 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralcel OJ-H column; 3% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 33.9 min (minor), 38.3 min (major).

HRMS (ES-) Calcd for $C_{21}H_{19}O_2$ [M - H$^+$]: 303.1385, Found: 303.1380.



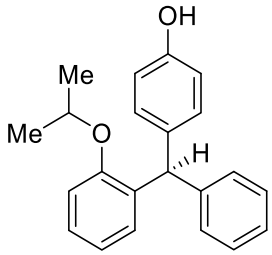
(*R*)-4-((2-Butoxyphenyl)(phenyl)methyl)phenol (2j) was prepared as a colorless oil from 4-((2-butoxyphenyl)(hydroxy)(phenyl)methyl)phenol (**1j**) (104.5 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure with 10 mol% of catalyst at 0 °C for 72 h (eluent: hexanes/EtOAc = 15:1 → 10:1) in 95% yield (94.4 mg) and 94% ee.

^{1}H NMR (300 MHz, $CDCl_3$) δ 7.28 – 7.11 (m, 4H), 7.11 – 7.02 (m, 2H), 6.99 – 6.89 (m, 2H), 6.86 – 6.77 (m, 3H), 6.72 – 6.62 (m, 2H), 5.82 (s, 1H), 5.19 (brs, 1H), 3.82 (t, J = 6.2 Hz, 2H), 1.64 – 1.44 (m, 2H), 1.36 – 1.11 (m, 2H), 0.82 (t, J = 7.4 Hz, 3H).

^{13}C NMR (75 MHz, $CDCl_3$) δ 156.5, 153.6, 144.2, 136.1, 133.2, 130.5, 130.0, 129.3, 128.0, 127.3, 125.8, 119.9, 114.9, 111.4, 67.6, 49.2, 31.2, 19.0, 13.7.

$[\alpha]_D^{25}$: -24.5 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AS-H column; 5% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 10.5 min (minor), 11.2 min (major).

HRMS (ES-) Calcd for $C_{23}H_{23}O_2$ $[M - H]^+$: 331.1698, Found: 331.1699.



(*R*)-4-((2-Isopropoxyphenyl)(phenyl)methyl)phenol (2k) was prepared as a colorless oil from 4-(hydroxy(2-isopropoxyphenyl)(phenyl)methyl)phenol (**1k**) (100.3 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol)

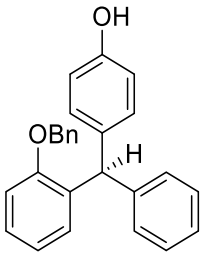
according to the General Procedure with 10 mol% of catalyst at -20 °C for 7 days (eluent: hexanes/EtOAc = 15:1 → 10:1) in 90% yield (86.0 mg) and 92% ee.

^{1}H NMR (300 MHz, $CDCl_3$) δ 7.30 – 7.20 (m, 2H), 7.20 – 7.12 (m, 2H), 7.12 – 7.03 (m, 2H), 7.01 – 6.90 (m, 2H), 6.88 – 6.77 (m, 3H), 6.75 – 6.65 (m, 2H), 5.79 (s, 1H), 5.01 (s, 1H), 4.44 (dt, J = 12.1, 6.0 Hz, 1H), 1.07 (dd, J = 8.4, 6.0 Hz, 6H).

^{13}C NMR (75 MHz, $CDCl_3$) δ 155.3 153.6, 144.2, 136.1, 134.2, 130.6, 130.2, 129.4, 128.0, 127.2, 125.8, 119.9, 114.9, 113.0, 69.9, 49.3, 21.9, 21.8.

$[\alpha]_D^{25}$: -17.3 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralcel OJ-H column; 5% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 17.9 min (major), 20.6 min (minor).

HRMS (ES-) Calcd for $C_{22}H_{21}O_2$ [M - H]$^+$: 317.1542, Found: 317.1541.



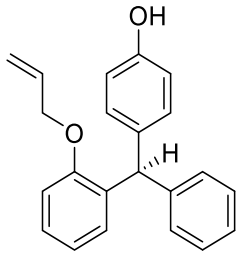
(*R*)-4-((2-(Benzyloxy)phenyl)(phenyl)methyl)phenol (2l) was prepared as a colorless oil from 4-((2-(benzyloxy)phenyl)(hydroxy)(phenyl)methyl)phenol (**1l**) (114.7 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure with 10 mol% of catalyst at 0 °C for 72 h (eluent: hexanes/EtOAc = 15:1 → 10:1) in 86% yield (94.0 mg) and 94% ee.

^{1}H NMR (300 MHz, acetone-d_6) δ 8.31 (s, 1H), 7.35 – 7.11 (m, 9H), 7.12 – 7.00 (m, 3H), 6.95 – 6.81 (m, 4H), 6.80 – 6.72 (m, 2H), 5.88 (s, 1H), 5.04 (s, 2H).

^{13}C NMR (75 MHz, acetone-d_6) δ 156.5, 156.3, 145.0, 138.0, 135.0, 133.8, 130.9, 130.5, 129.8, 128.7, 128.6, 128.0, 127.9, 127.6, 126.4, 120.7, 115.5, 112.5, 69.9, 49.8.

$[\alpha]_D^{25}$: -18.9 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 9.6 min (major), 12.4 min (minor).

HRMS (CI+) Calcd for $C_{26}H_{22}O_2$ $[M]^+$: 366.1620, Found: 366.1629.



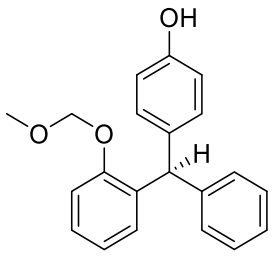
(*R*)-4-((2-(Allyloxy)phenyl)(phenyl)methyl)phenol (2m) was prepared as a colorless oil from 4-((2-(allyloxy)phenyl)(hydroxy)(phenyl)methyl)phenol (**1m**) (99.7 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 98% yield (93.1 mg) and 93% ee.

^{1}H NMR (300 MHz, acetone-d_6) δ 8.20 (s, 1H), 7.29 – 7.23 (m, 2H), 7.23 – 7.13 (m, 2H), 7.13 – 7.05 (m, 2H), 7.01 – 6.82 (m, 5H), 6.81 – 6.71 (m, 2H), 5.98 – 5.79 (m, 2H), 5.26 (dq, f = 17.3, 1.8 Hz, 1H), 5.11 (dq, J = 10.6, 1.6 Hz, 1H), 4.48 (dt, J = 4.6, 1.6 Hz, 2H).

^{13}C NMR (75 MHz, acetone-d_6) δ 156.6, 156.2, 145.1, 135.1, 134.2, 133.9, 130.8, 130.5, 129.8, 1286, 127.9, 126.4, 120.8, 116.3, 115.4, 112.6, 68.9, 49.6.

$[\alpha]_D^{25}$: -17.7 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 2% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 38.1 min (major), 41.8 min (minor).

HRMS (ES-) Calcd for $C_{22}H_{19}O_2$[M - H]$^+$: 315.1385, Found: 315.1382.



(*R*)-4-((2-(Methoxymethoxy)phenyl)(phenyl)methyl)phenol (2n) was prepared as a colorless oil from 4-(hydroxy(2-(methoxymethoxy)phenyl)(phenyl)methyl)phenol (**1n**) (100.9 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg,

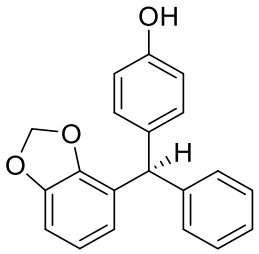
0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 99% yield (95.6 mg) and 92% ee.

^{1}H NMR (400 MHz, acetone-d_6) δ 8.22 (s, 1H), 7.33 – 7.23 (m, 2H), 7.22 – 7.14 (m, 2H), 7.13 – 7.05 (m, 3H), 6.95 – 6.84 (m, 4H), 6.80 – 6.74 (m, 2H), 5.86 (s, 1H), 5.09 (s, 2H), 3.15 (s, 3H).

^{13}C NMR (75 MHz, acetone-d_6) δ 156.2, 155.0, 145.0, 135.0, 134.3, 130.8, 130.5, 129.7, 128.5, 127.8, 126.4, 121.6, 115.4, 114.5, 94.3, 55.5, 49.6.

$[\alpha]_D^{25}$: +3.8 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 7.2 min (major), 7.7 min (minor).

HRMS (ES-) Calcd for $C_{21}H_{19}O_3$ $[M - H]^+$: 319.1334, Found: 319.1334.



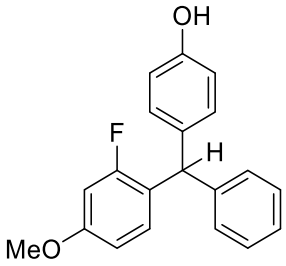
(*R*)-4-(Benzo[*d*][1,3]dioxol-4-yl(phenyl)methyl)phenol (2o) was prepared as a colorless oil from 4-(benzo[*d*][1,3]dioxol-4-yl(hydroxy)(phenyl)methyl)phenol (**1o**) (96.1 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 90% yield (82.1 mg) and 72% ee.

^{1}H NMR (300 MHz, $CDCl_3$) δ 7.33 – 7.17 (m, 3H), 7.17 – 7.08 (m, 2H), 7.05 – 6.93 (m, 2H), 6.82 – 6.68 (m, 4H), 6.53 – 6.39 (m, 1H), 5.87 (s, 2H), 5.58 (s, 1H), 4.89 (s, 1H).

^{13}C NMR (75 MHz, $CDCl_3$) δ 154.0, 147.1, 145.3, 142.9, 134.9, 130.3, 129.1, 128.3, 126.4, 125.8, 122.6, 121.3, 115.1, 106.9, 100.7, 49.6.

$[\alpha]_D^{25}$: -5.2 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 3% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 48.9 min (minor), 53.1 min (major).

HRMS (ES-) Calcd for $C_{20}H_{15}O_3$ [M - H]$^-$: 303.1006, Found: 303.1021.



4-((2-Fluoro-4-methoxyphenyl)(phenyl)methyl)phenol (2p) was prepared as a colorless oil from 4-((2-fluoro-4-methoxyphenyl)(hydroxy)(phenyl)methyl)phenol (**1p**) (97.3 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 80% yield (75.0 mg) (-20 ℃, 10 mol % CPA) and 80% ee.

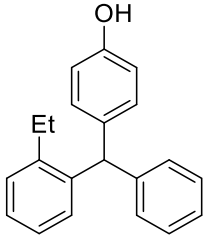
^{1}H NMR (300 MHz, acetone-d_6) δ 8.28 (s, 1H), 7.35 – 7.24 (m, 2H), 7.24 – 7.16 (m, 1H), 7.12 (d, J = 7.3 Hz, 2H), 6.95 (d, J = 8.5 Hz, 2H), 6.87 (dd, J = 10.2, 7.6 Hz, 1H), 6.80 (d, J = 8.0 Hz, 2H), 6.74 – 6.63 (m, 2H), 5.69 (s, 1H), 3.78 (d, J = 1.0 Hz, 3H).

^{13}C NMR (75 MHz, acetone-d_6) δ 161.4 (d, J = 244.9 Hz), 160.1 (d, J = 11.1 Hz), 156.30, 144.1, 134.2, 131.5 (d, J = 6.0 Hz), 130.5, 129.4, 128.6, 126.6, 123.7 (d, J = 15.1 Hz), 115.5, 109.9 (d, J = 3.0 Hz), 101.7 (d, J = 26.1 Hz), 55.4, 48.5 (d, J = 2.4 Hz).

^{19}F NMR (282 MHz, $CDCl_3$) δ -114.29.

$[\alpha]_D^{25}$: -14.2 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak IC column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 5.1 min (minor), 5.8 min (major).

HRMS (ES-) Calcd for $C_{20}H_{16}FO_2$ [M - H]$^+$: 307.1134, Found: 307.1136.



4-((2-Ethylphenyl)(phenyl)methyl)phenol (3a) was prepared as a colorless oil from 4-((2-ethylphenyl)(hydroxy)(phenyl)methyl)phenol (**1a'**) (91.3 mg, 0.3 mmol) and 2-

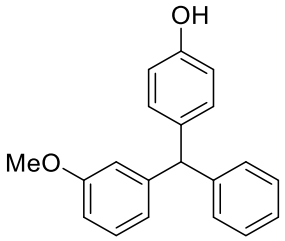
(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 96% yield (83.0 mg) and 55% ee.

^{1}H NMR (400 M Hz, $CDCl_3$) δ 7.27 – 7.15 (m, 5H), 7.10 – 7.03 (m, 3H), 6.90 (d, J = 8.5 Hz, 2H), 6.83 (d, J = 7.6 Hz, 1H), 6.73 – 6.71 (m, 2H), 5.70 (s, 1H), 4.87 (brs, 1H), 2.59 (q, J = 7.5, 2H), 1.12 (t, J = 7.5, 3H).

^{13}C NMR (100 M Hz, $CDCl_3$) δ 153.8, 144.1, 142.2, 141.7, 136.0, 130.7, 129.7, 129.5, 128.5, 128.2, 126.5, 126.1, 125.6, 115.1, 51.7, 25.5, 15.0.

$[\alpha]_D^{25}$: +2.6 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 5.2 min (minor), 5.6 min (major).

HRMS (ES-) Calcd for $C_{21}H_{19}O$ $[M - H]^+$: 287.1441, Found: 287.1434.



4-((3-Methoxyphenyl)(phenyl)methyl)phenol (3b) was prepared as a colorless oil from 4-(hydroxy(3-methoxyphenyl)(phenyl)methyl)phenol (**1b'**) (91.9 mg, 0.3 mmol) and 2-(naphthalen-2-yl)-2,3-dihydrobenzo[*d*]thiazole (158.0 mg, 0.6 mmol) according to the General Procedure (eluent: hexanes/EtOAc = 15:1 → 10:1) in 91% yield (79.1 mg) and 21% ee.

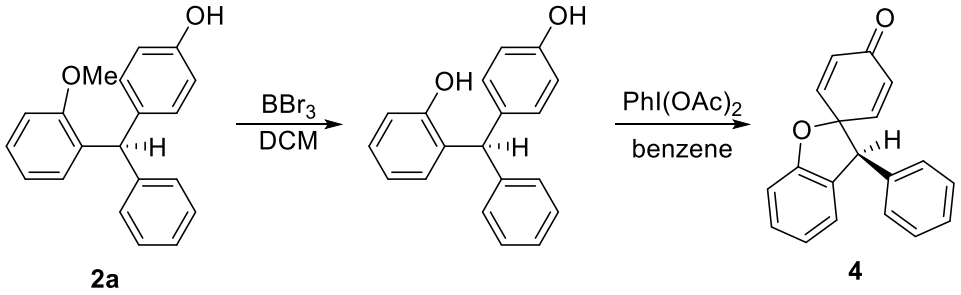
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.32 – 7.14 (m, 4H), 7.14 – 7.05 (m, 2H), 6.95 (d, J = 8.4 Hz, 2H), 6.84 – 6.59 (m, 5H), 5.44 (s, 1H), 5.14 (brs, 1H), 3.72 (s, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 159. 5, 154.0, 145.9, 144.0, 136.0, 130.5, 129.3, 129.2, 128.3, 126.2, 122.0, 115.5, 115.1, 111.2, 55.9, 55.1.

$[\alpha]_D^{25}$: -4.2 (*c* = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 11.6 min (major), 12.4 min (minor).

HRMS (CI-) Calcd for $C_{20}H_{17}O_2$ $[M - H]^+$: 289.1229, Found: 289.1231.

IV. Product Derivatizations



2a **4**

(*S*)-3-Phenyl-3*H*-spiro[benzofuran-2,1'-cyclohexane]-2',5'-dien-4'-one (4). At 0 °C under N_2 atmosphere, to a 10-mL flask equipped with a stir bar were added a solution of **2a** (145.0 mg, 0.5 mmol, 1.0 equiv) in anhydrous CH_2Cl_2 (5 mL) and BBr_3 (1.0 M in CH_2Cl_2, 2.5 mL, 2.5 mmol, 5.0 equiv) dropwise. Then the reaction mixture was stirred at room temperature for 1 h before it was quenched with saturated aqueous $NaHCO_3$ solution. The aqueous layer was separated and extracted with CH_2Cl_2 (3 × 10 mL), then the combined organic layers were concentrated under reduced pressure. The residue was purified by flash column chromatography (eluent: hexanes/EtOAc = 3:1) to give the diol.

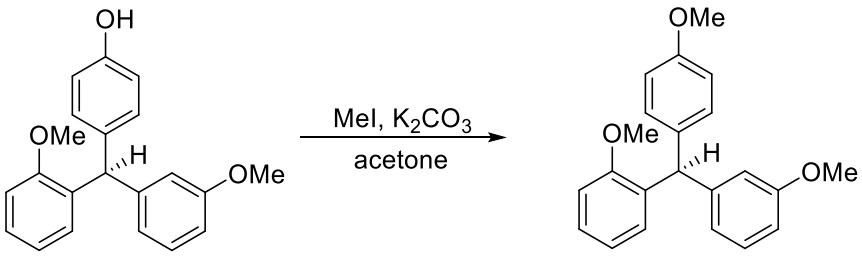
To a 10-mL flask equipped with a stir bar were added the above diol in benzene (5 mL) and (diacetoxyiodo)benzene (161.5 mg, 0.5 mmol, 1.0 equiv) in one portion at room temperature. The reaction mixture was stirred for 30 min and then concentrated under reduced pressure. The residue was purified by flash column chromatography (eluent: hexanes/EtOAc = 10:1) to give dienone **4** as a colorless oil in 52% yield (72.1 mg) and 95% ee over two steps.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.34 – 7.22 (m, 4H), 7.18 – 7.06 (m, 2H), 7.06 – 6.92 (m, 4H), 6.51 (dd, J = 10.3, 3.1 Hz, 1H), 6.28 (dd, J = 10.1, 2.0 Hz, 1H), 5.88 (dd, J = 10.3, 1.9 Hz, 1H), 4.78 (s, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 185.1, 158.4, 147.1, 145.4, 136.6, 129.5, 128.7, 128.6, 128.5, 128.4, 128.4, 128.0, 126.1, 121.8, 110.9, 85.0, 57.8.

$[\alpha]_D^{25}$: -2.2 (c = 1.0, $CHCl_3$). 95% ee, HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 6.5 min (minor), 6.9 min (major).

HRMS (CI+) Calcd for $C_{19}H_{15}O_2$ $[M+H]^+$: 275.1072, Found: 275.1064.



2d **5**

(*S*)-2-((3-Hydroxyphenyl)(4-hydroxyphenyl)methyl)phenol (5). To a 10-mL flask equipped with a stir bar was added a solution of **2d** (96.7 mg, 0.3 mmol, 1.0 equiv) in acetone (3 mL). Then potassium carbonate (103.7 mg, 0.75 mmol, 2.5 equiv) and iodomethane (85.1 mg, 0.5 mmol, 2.0 equiv) were sequentially added. The reaction mixture was stirred under reflux for 10 h and cooled to room temperature. The suspension was filtered through celite and poured into a mixture of EtOAc (10 mL) and brine (10 mL), and washed with EtOAc (2 × 10 mL). The combined organic layers were concentrated under reduced pressure, and the residue was purified by flash column chromatography (eluent: hexanes/EtOAc = 15:1) to afford **5** as a colorless oil in 89% yield (89.2 mg) and 95% ee.

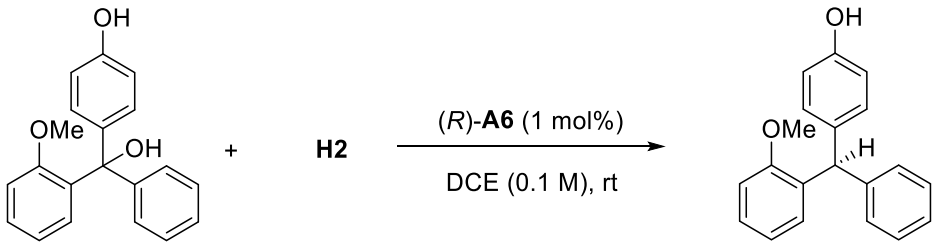
^{1}H NMR (300 MHz, $CDCl_3$) δ 7.26 – 7.16 (m, 2H), 7.09 – 6.98 (m, 2H), 6.95 – 6.87 (m, 3H), 6.87 – 6.79 (m, 2H), 6.76 (dd, J = 8.2, 2.5 Hz, 1H), 6.70 (dd, J = 10.5, 4.8 Hz, 2H), 5.88 (s, 1H), 3.80 (s, 3H), 3.75 (s, 3H), 3.74 (s, 3H).

$[\alpha]_D^{25}$: +4.2 (c = 1.0, $CHCl_3$). HPLC analysis of the product: Daicel Chiralpak AD-H column; 10% *i*-PrOH in hexanes; 1.0 mL/min; retention times: 7.0 min (minor), 7.3 min (major).

This is a known compound. The characterization data are consistent with the literature report.[2]

V. Mechanistic Experiments

(1) Monitoring the ee values during the reaction process.

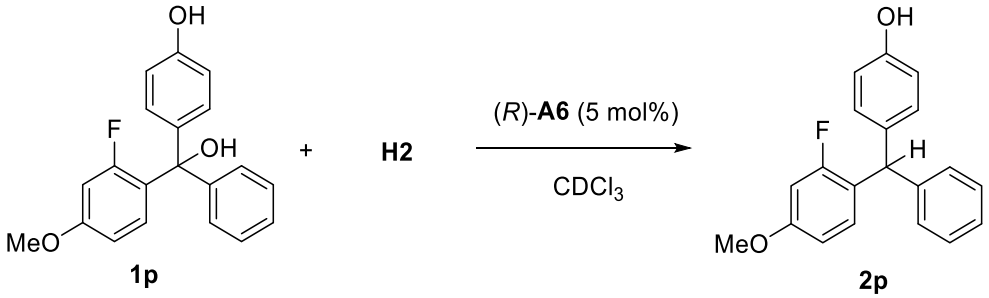


1a 2a

Time (h)	Ee of **1a**(%)	Ee of **2a**(%)
0.1	0	97
0.5	0	97
2.0	0	96
5.0	0	96
8.0	–[a]	96
24.0	–[a]	96

[a] **1a** was consumed at this time point.

(2) Kinetic study: Reaction order in hydride H2.

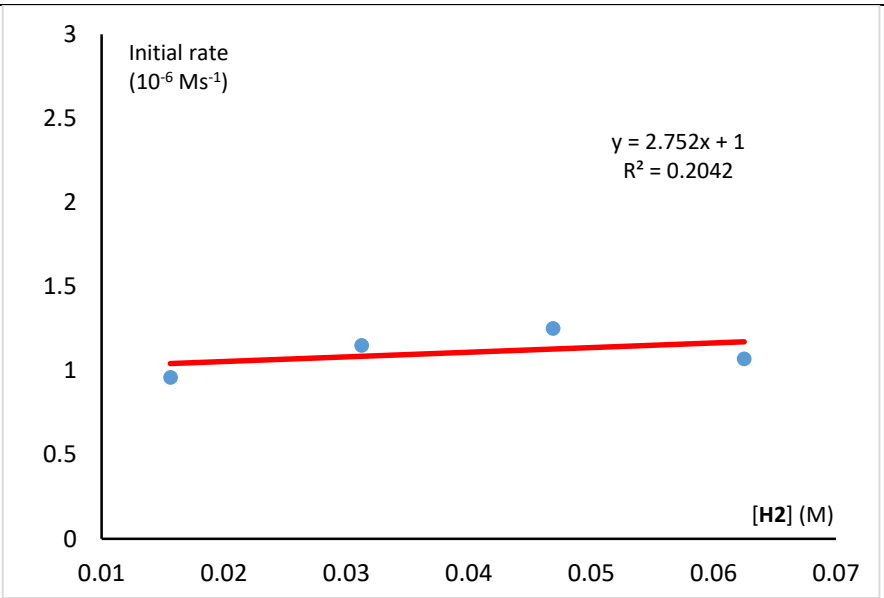


1p 2p

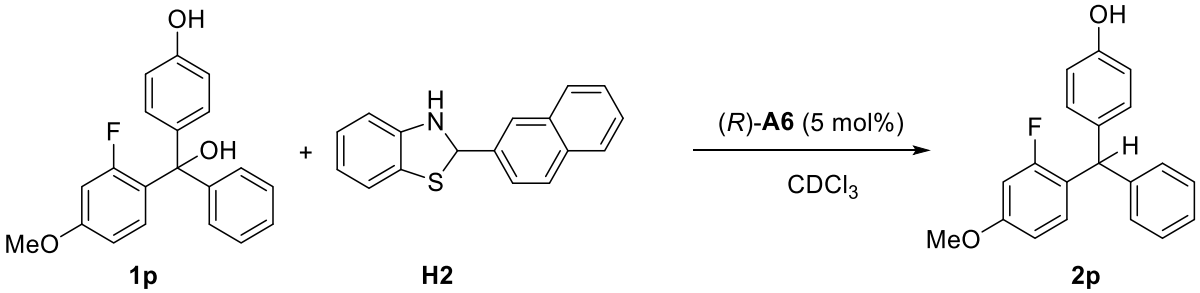
In four oven-dried NMR tubes, each was charged with a solution of substrate **1p** (8.1 mg, 0.0125 mmol, 1 equiv) in $CDCl_3$ (0.3 mL). In other four separate 4-mL vials, each was charged with a solution of (*R*)-**A6** (1.3 mg, 1.25 μmol) and the hydride source **H2** (6.6 mg, 1 equiv; 13.2 mg, 2 equiv; 19.8 mg, 3 equiv; 26.4 mg, 4 equiv) in $CDCl_3$ (1 mL). An aliquot of this solution (0.5 mL) was added to the above NMR tube containing **1p**. Then, the formation of the product was monitored by NMR. The concentration of

product **2p** was determined by ^{19}F NMR. A linear trend representing the first 10% conversion was fitted to determine the initial rates of the reaction. The data indicated zero-order kinetics in hydride **H2**.

[**H2**]	Equiv of **H2**	[**A6**] (M)	Initial rate (M s^{-1})
1.563×10^{-2}	1	1.563×10^{-3}	9.580×10^{-7}
3.126×10^{-2}	2	1.563×10^{-3}	1.147×10^{-6}
4.689×10^{-2}	3	1.563×10^{-3}	1.247×10^{-6}
6.250×10^{-2}	4	1.563×10^{-3}	1.066×10^{-6}



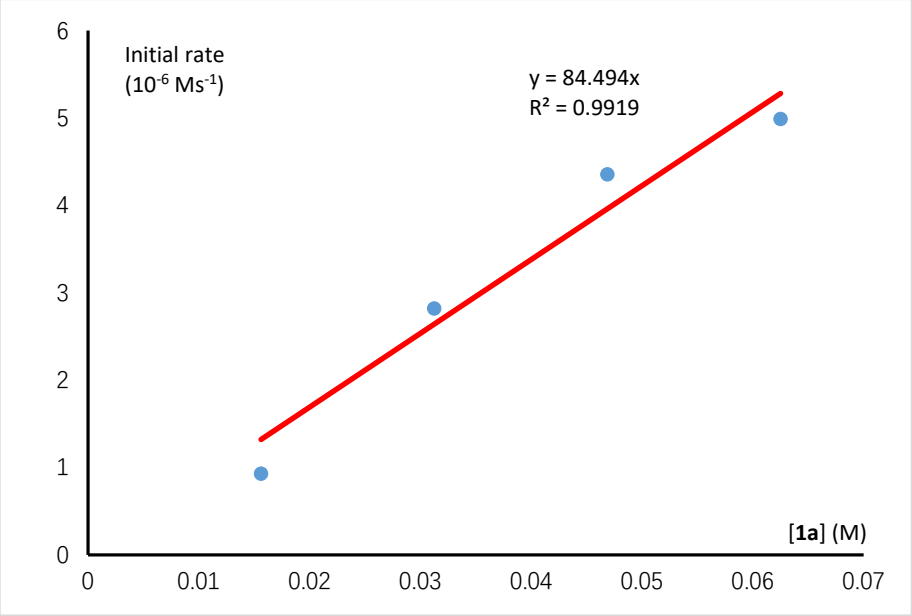
(3) Kinetic study: Reaction order in triarylmethanol.



In four oven-dried NMR tubes, each was charged with a solution of the hydride source **H2** (3.3 mg, 0.0125 mmol, 1 equiv) and catalyst **A6** (1.3 mg, 1.25 μmol) in $CDCl_3$ (0.3 mL). In other four separate 4-mL vials, each was charged with **1p** (16.2 mg, 1 equiv;

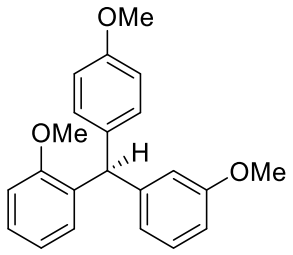
32.4 mg, 2 equiv; 48.6 mg, 3 equiv; 64.8 mg, 4 equiv) in $CDCl_3$ (1 mL). An aliquot of this solution (0.5 mL) was added to the above NMR tube. Then, the formation of the product was monitored by NMR. The concentration of product **2p** was determined by ^{19}F NMR. A linear trend representing the first 10% conversion was fitted to determine the initial rates of the reaction. The data indicated first-order kinetics in triarylmethanol.

[**1p**]	Equiv of **1p**	[**A6**] (M)	Initial rate (M s^{-1})
1.563×10^{-2}	1	1.563×10^{-3}	9.304×10^{-7}
3.126×10^{-2}	2	1.563×10^{-3}	2.821×10^{-6}
4.689×10^{-2}	3	1.563×10^{-3}	4.357×10^{-6}
6.250×10^{-2}	4	1.563×10^{-3}	4.991×10^{-6}



VI. Determination of the Absolute Stereochemistry

The absolute stereochemistry of product derivative **5** was assigned to be *S* based on comparison of the optical rotation value with the literature value of the known compound.[2] The absolute configuration of other products was assumed by analogy.



5

(*S*)-1-Mthoxy-2-((3-methoxyphenyl)(4-methoxyphenyl)methyl)benzene. The literature optical rotation value for (*S*)-**5** in 95% ee was reported to be $[\alpha]_D^{25}$: +0.15 (*c* = 1.44, $CHCl_3$).[2] The measured value of our product in 95% ee is $[\alpha]_D^{25}$: +4.2 (*c* = 1.0, $CHCl_3$).

VII. References

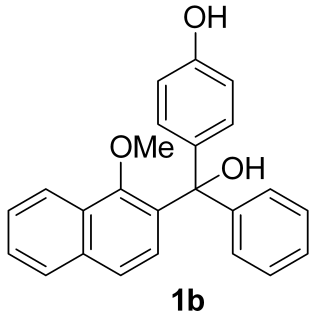
(1) X. Li, M. Duan, Z. Deng, Q. Shao, M. Chen, G. Zhu, K. N. Houk and J. Sun, *Nat. Catal.* 2020, **3**, 1010−1019.

(2) Y. Huang and T. Hayashi, *J. Am. Chem. Soc.* 2015, **137**, 7556−7559.

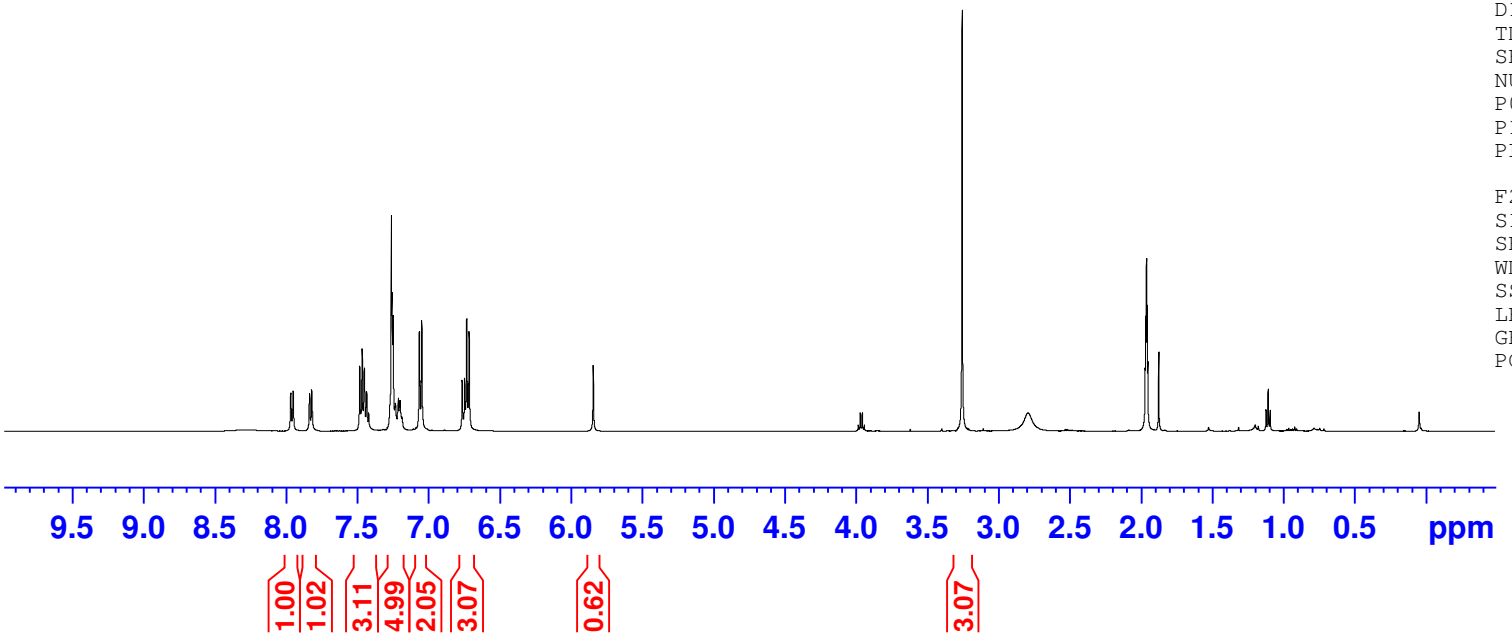
PROTON Acetone {D:\nmrdata} root 15

7.966
7.950
7.835
7.820
7.818
7.483
7.466
7.453
7.450
7.447
7.434
7.432
7.064
7.060
7.051
7.047
6.764
6.746
6.732
6.728
6.718
6.714
5.843

3.253



1b



Current Data Parameters

NAME	1b
EXPNO	10
PROCNO	1

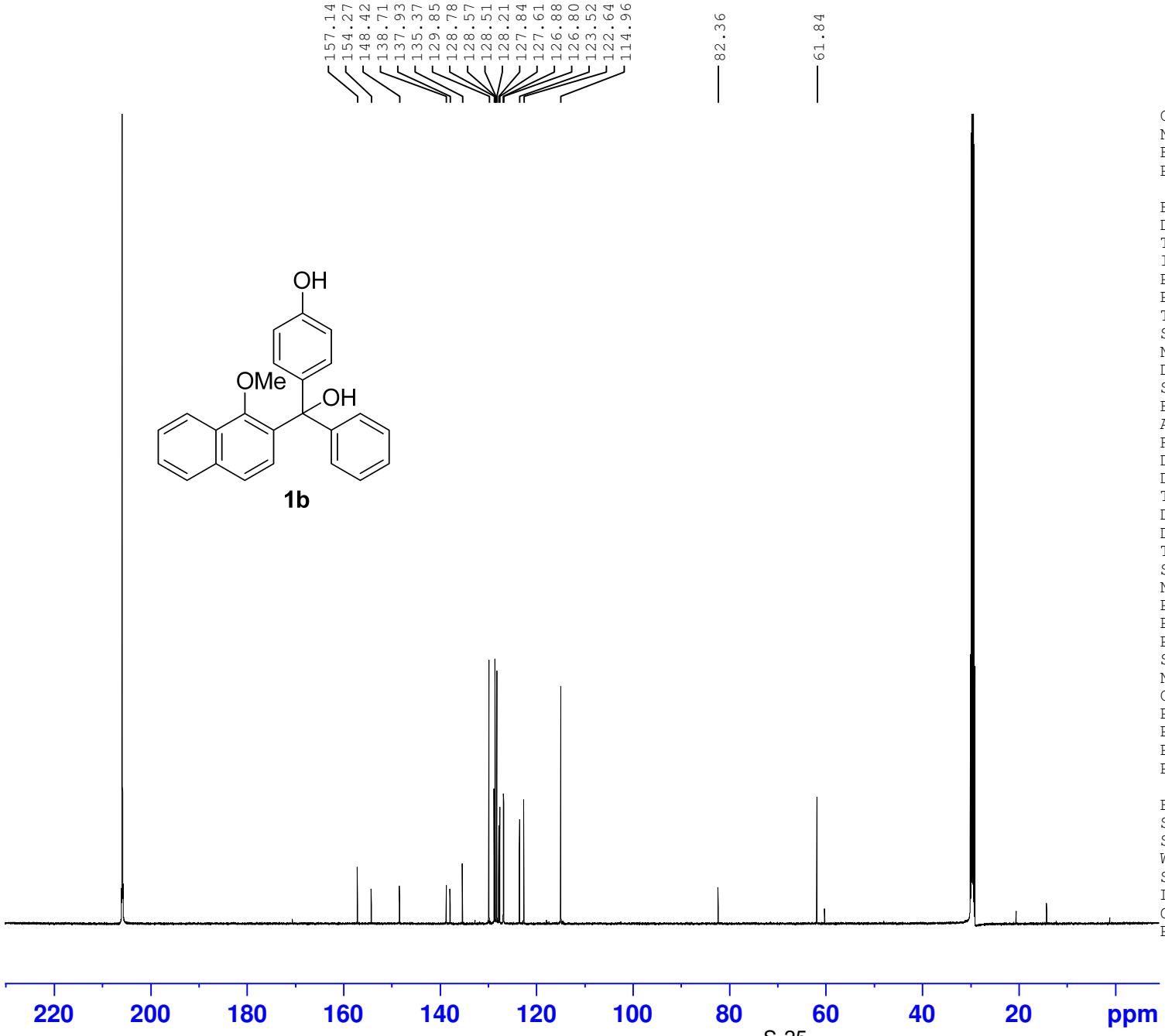
F2 - Acquisition Parameters

Date_	20220403
Time	21.13 h
INSTRUM	Avance
PROBHD	Z167889_0004 (
PULPROG	zg30
TD	65536
SOLVENT	Acetone
NS	2
DS	2
SWH	10000.000 Hz
FIDRES	0.305176 Hz
AQ	3.2767999 sec
RG	53.3333
DW	50.000 usec
DE	22.95 usec
TE	298.2 K
D1	1.00000000 sec
TD0	1
SFO1	500.3030894 MHz
NUC1	1H
P0	4.00 usec
P1	12.00 usec
PLW1	8.41989994 W

F2 - Processing parameters

SI	131072
SF	500.3000542 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

H-1b-c

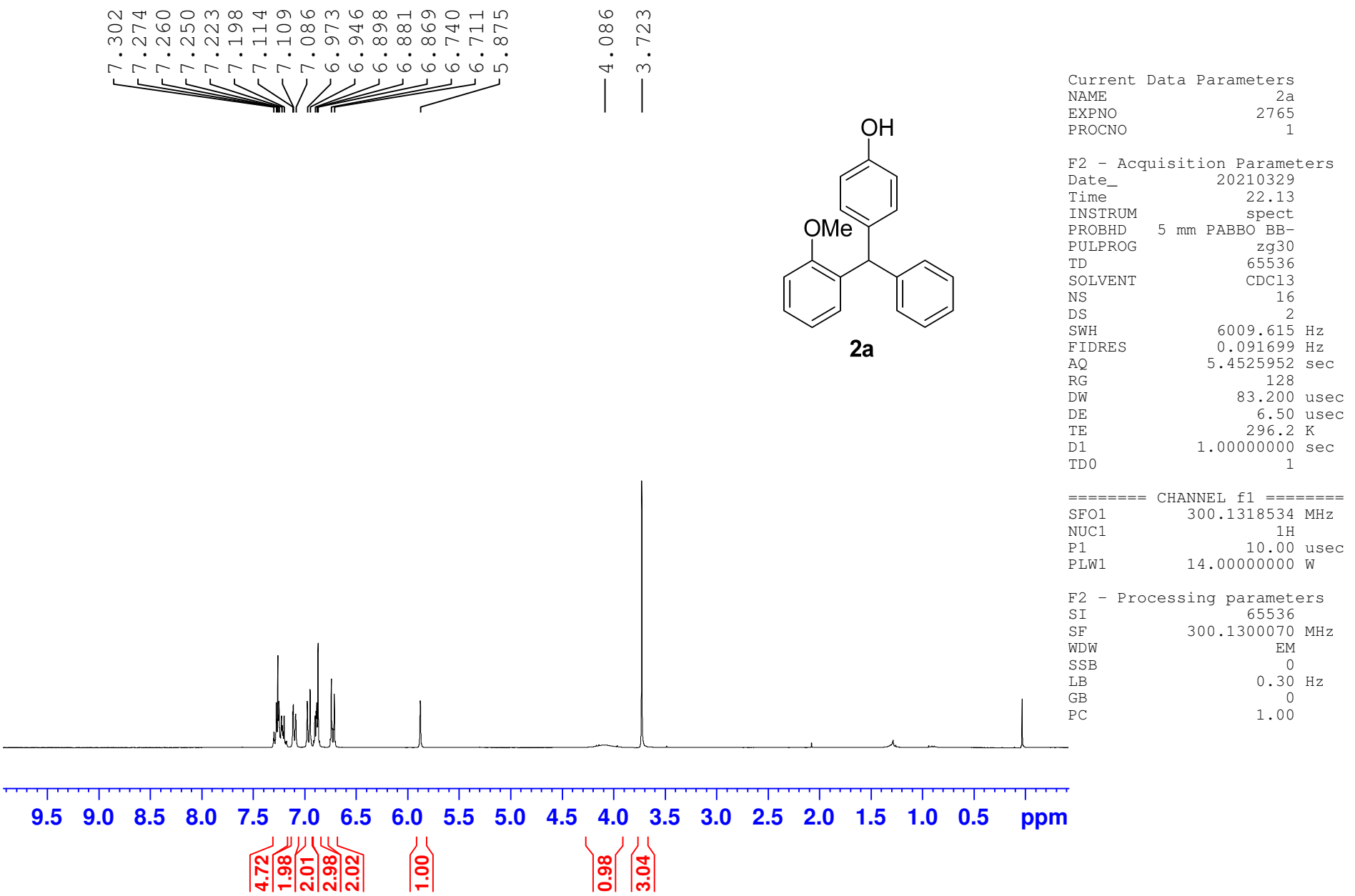



```
Current Data Parameters
NAME                  H-1b
EXPNO                   11
PROCNO                   1

F2 - Acquisition Parameters
Date_              20220403
Time                 21.26 h
INSTRUM              Avance
PROBHD   Z167889_0004 (
PULPROG              zgpg30
TD                    65536
SOLVENT            Acetone
NS                      221
DS                        4
SWH              30120.482 Hz
FIDRES            0.919204 Hz
AQ               1.0878977 sec
RG                  28.7685
DW                   16.600 usec
DE                   18.00 usec
TE                   298.1 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                       1
SFO1           125.8143731 MHz
NUC1                   13C
P0                    3.33 usec
P1                   10.00 usec
PLW1           36.79700089 W
SFO2           500.3020012 MHz
NUC2                   1H
CPDPRG[2           waltz65
PCPD2                80.00 usec
PLW2            8.41989994 W
PLW12           0.18945000 W
PLW13           0.09529100 W

F2 - Processing parameters
SI                    131072
SF             125.8004621 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```

3sjwei 2765 zy-3-10 1h cdcl3




```
Current Data Parameters
NAME                  2a
EXPNO               2765
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210329
Time               22.13
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.091699 Hz
AQ              5.4525952 sec
RG                   128
DW                83.200 usec
DE                 6.50 usec
TE                296.2 K
D1           1.00000000 sec
TD0                    1

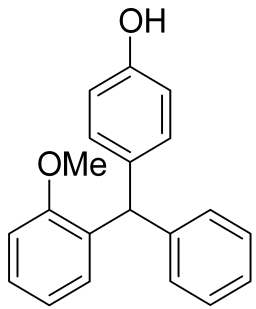
======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                   1H
P1                 10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                 65536
SF          300.1300070 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

3sjwei 2766 zy-3-10 13c cdcl3

157.008
153.647
144.177
136.140
132.866
130.523
130.224
129.326
128.044
127.436
125.920
120.241
114.928
110.672

55.581
48.682



2a


```
Current Data Parameters
NAME       ZY-3-10-c-fr
EXPNO              2766
PROCNO                1

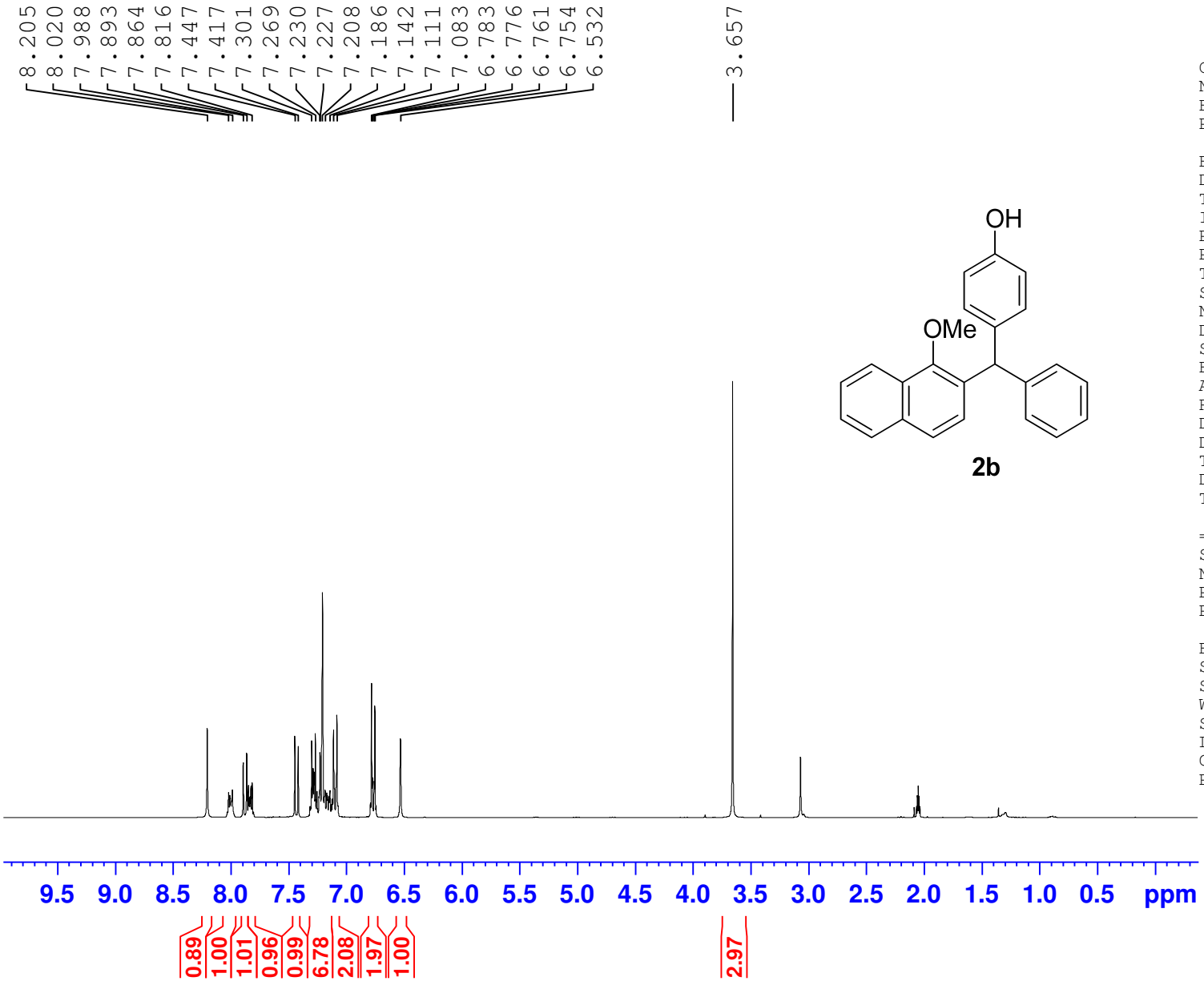
F2 - Acquisition Parameters
Date_          20210329
Time              22.20
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD                65536
SOLVENT           CDCl3
NS                  463
DS                    4
SWH           18028.846 Hz
FIDRES         0.275098 Hz
AQ            1.8175317 sec
RG                  203
DW               27.733 usec
DE                6.50 usec
TE               296.1 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                 9.50 usec
PLW1        34.20000076 W

======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

F2 - Processing parameters
SI                32768
SF           75.4677537 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

3sjwei 2851 zy-3-16 1h acetone




```
Current Data Parameters
NAME       ZY-3-16-h-fr
EXPNO              2852
PROCNO                1

F2 - Acquisition Parameters
Date_          20210401
Time              10.08
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT         Acetone
NS                   16
DS                    2
SWH            6009.615 Hz
FIDRES        0.091699 Hz
AQ            5.4525952 sec
RG                 71.8
DW               83.200 usec
DE                6.50 usec
TE                296.1 K
D1           1.00000000 sec
TD0                   1

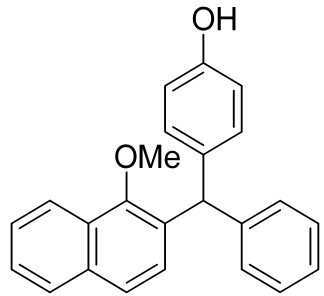
======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                  1H
P1                10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                65536
SF          300.1300049 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```

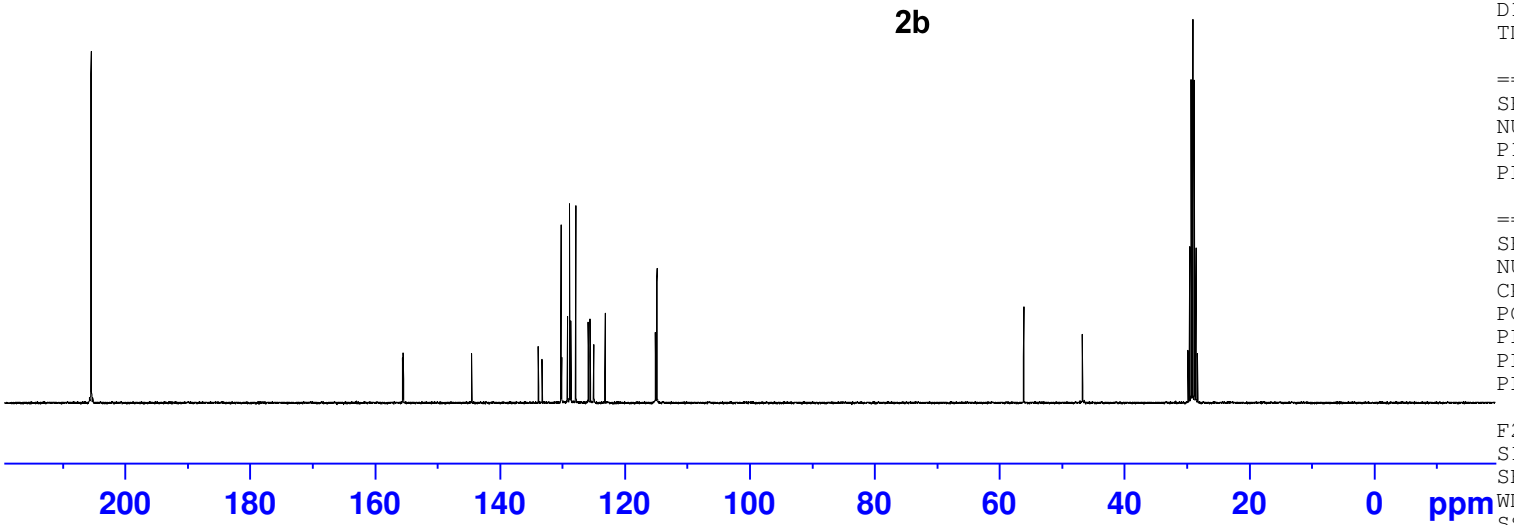
3sjwei 2865 zy-3-16 13c acetone

155.569
155.461
144.519
133.836
133.246
130.216
130.091
129.158
128.843
128.643
127.843
125.856
125.809
125.536
124.960
123.150
115.088
114.854

56.105
46.694



2b




```
Current Data Parameters
NAME                  2b
EXPNO               2865
PROCNO                 1

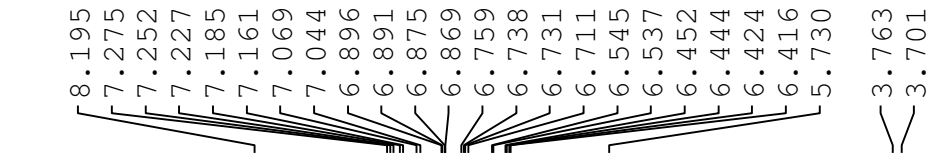
F2 - Acquisition Parameters
Date_           20210402
Time               12.06
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT         Acetone
NS                  600
DS                    4
SWH           18028.846 Hz
FIDRES         0.275098 Hz
AQ            1.8175317 sec
RG                  203
DW               27.733 usec
DE                6.50 usec
TE                296.1 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

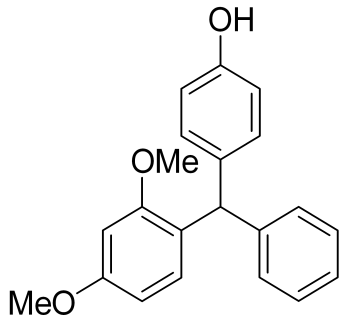
======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                9.50 usec
PLW1        34.20000076 W

======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

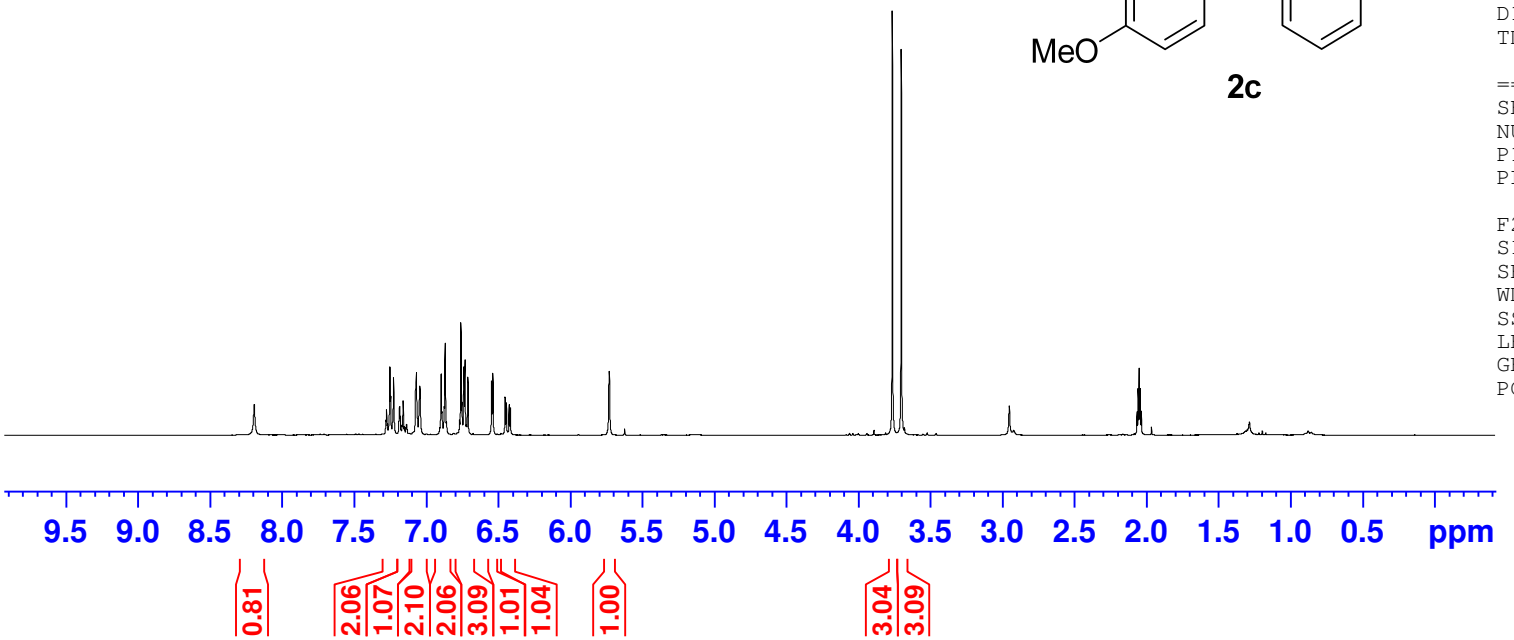
F2 - Processing parameters
SI                32768
SF          75.4677489 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

3sjwei 2305 zy-3-14f 1h acetone





2c



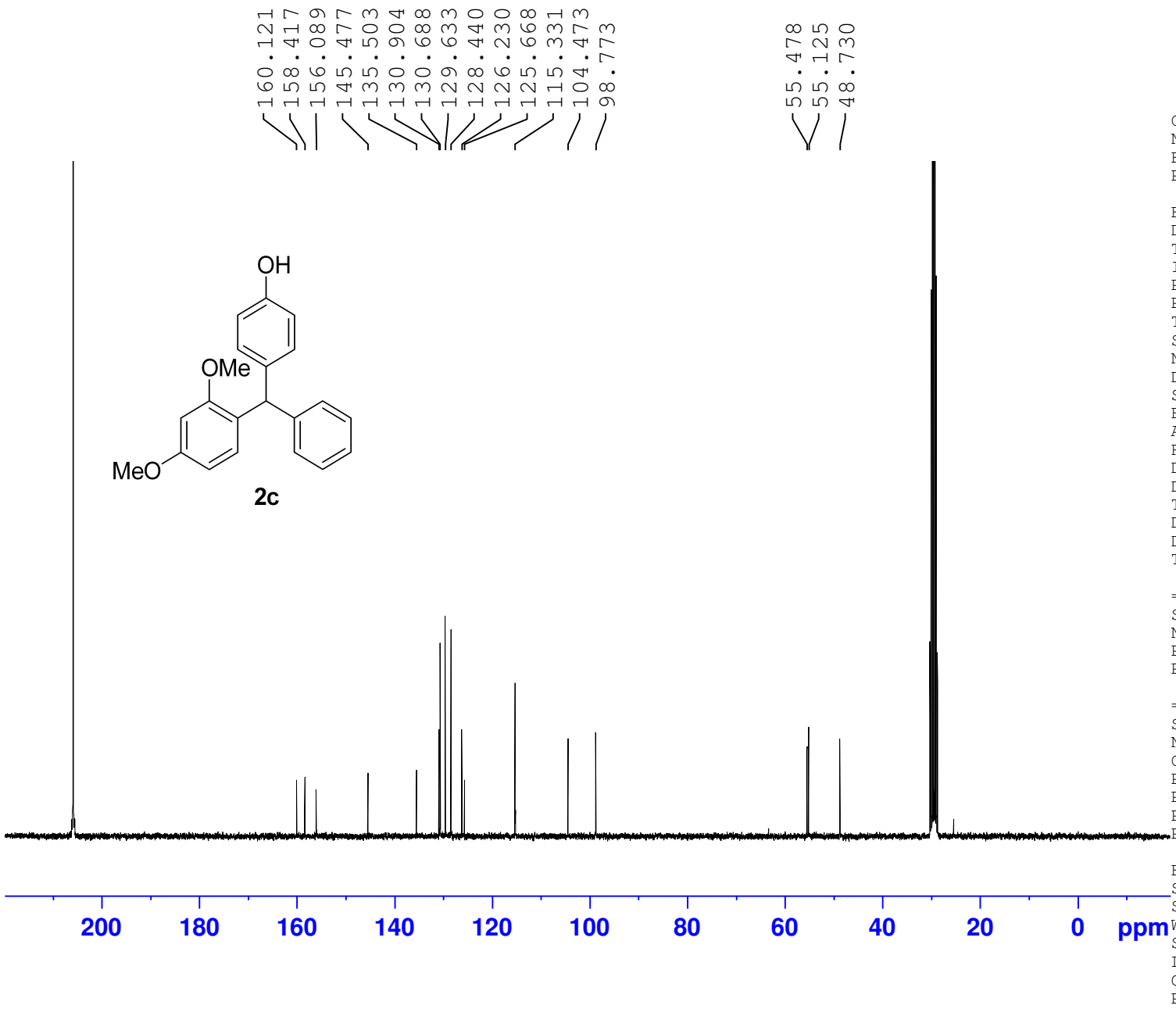

```
Current Data Parameters
NAME                  2c
EXPNO               2305
PROCNO                 1

F2 - Acquisition Parameters
Date_           20201226
Time               10.09
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT          Acetone
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.091699 Hz
AQ              5.4525952 sec
RG                   144
DW                83.200 usec
DE                 6.50 usec
TE                290.2 K
D1           1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                   1H
P1                 10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                 65536
SF          300.1300053 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

3sjwei 2438 zy-3-14f 13c acetone




```
Current Data Parameters
NAME                  2c
EXPNO               2438
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210107
Time               13.31
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT         Acetone
NS                  600
DS                    4
SWH           18028.846 Hz
FIDRES         0.275098 Hz
AQ            1.8175317 sec
RG                  203
DW               27.733 usec
DE                6.50 usec
TE                289.3 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                9.50 usec
PLW1        34.20000076 W

======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

F2 - Processing parameters
SI                32768
SF          75.4677112 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

3sjwei 2585 zy-3-11c 1h acetone

8.224
7.206
7.203
7.199
7.179
7.175
7.149
6.978
6.951
6.917
6.911
6.895
6.889
6.874
6.872
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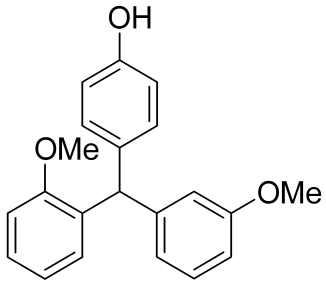
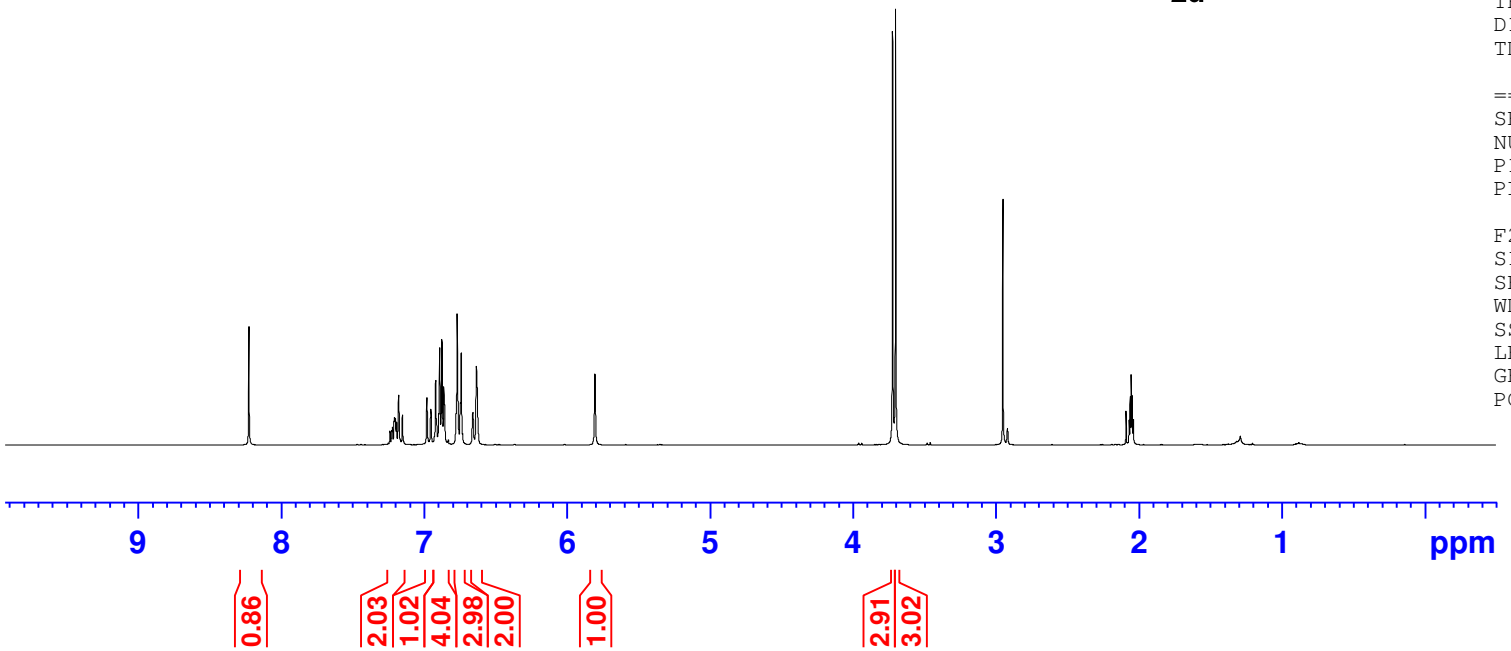
6.655
6.632
5.802
3.719
3.699



2d



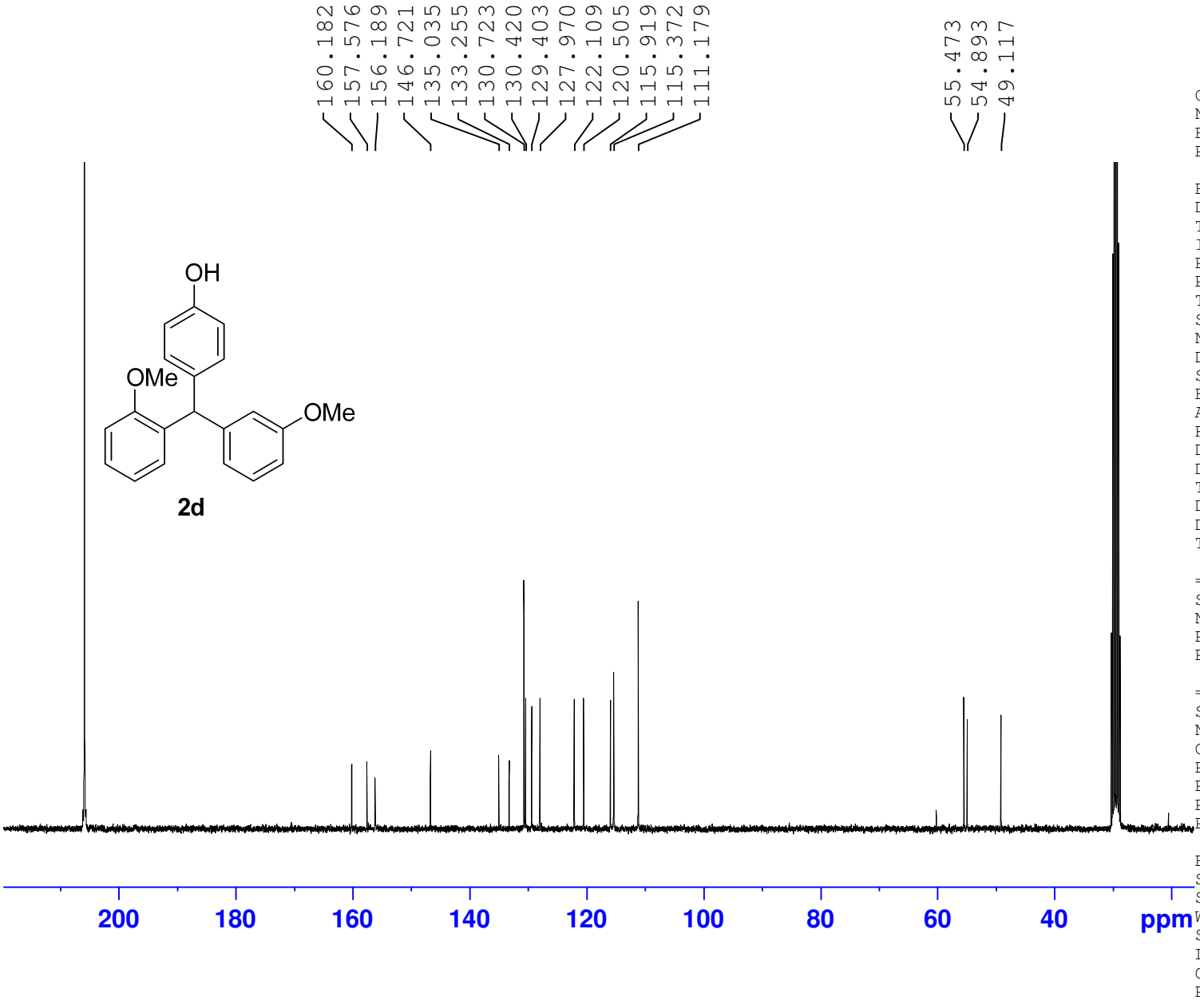

```
Current Data Parameters
NAME      ZY-3-11C-h-fr
EXPNO              2585
PROCNO                1

F2 - Acquisition Parameters
Date_          20210121
Time              10.44
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT         Acetone
NS                   16
DS                    2
SWH            6009.615 Hz
FIDRES        0.091699 Hz
AQ            5.4525952 sec
RG                  144
DW               83.200 usec
DE                6.50 usec
TE               292.0 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                1H
P1                10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                65536
SF          300.1300051 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```

3sjwei 2312 zy-3-11c 13c acetone



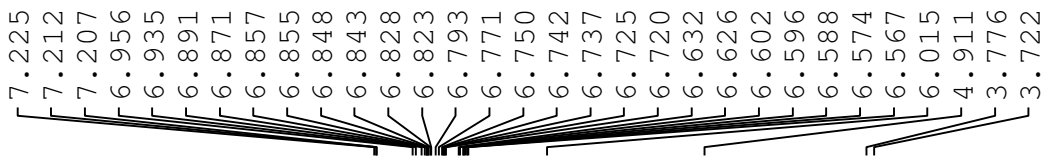

```
Current Data Parameters
NAME                   2d
EXPNO                2312
PROCNO                  1

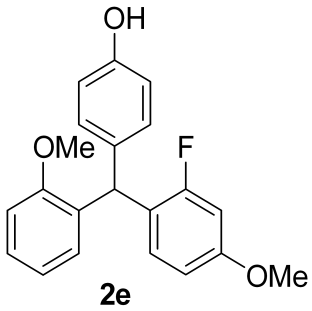
F2 - Acquisition Parameters
Date_           20201226
Time               11.39
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT         Acetone
NS                  600
DS                    4
SWH           18028.846 Hz
FIDRES         0.275098 Hz
AQ            1.8175317 sec
RG                  203
DW               27.733 usec
DE                6.50 usec
TE                291.3 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                9.50 usec
PLW1        34.20000076 W

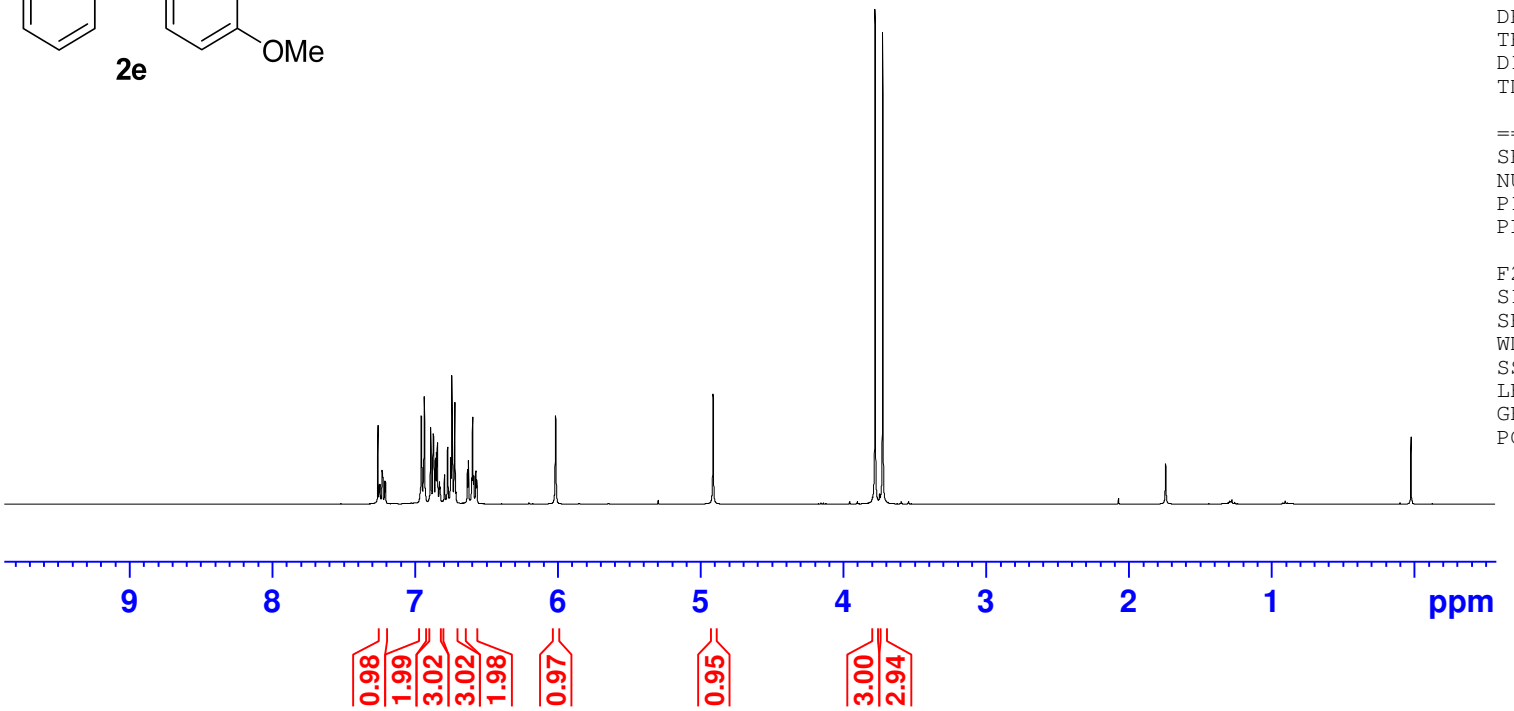
======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

F2 - Processing parameters
SI                32768
SF           75.4677114 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```





2e



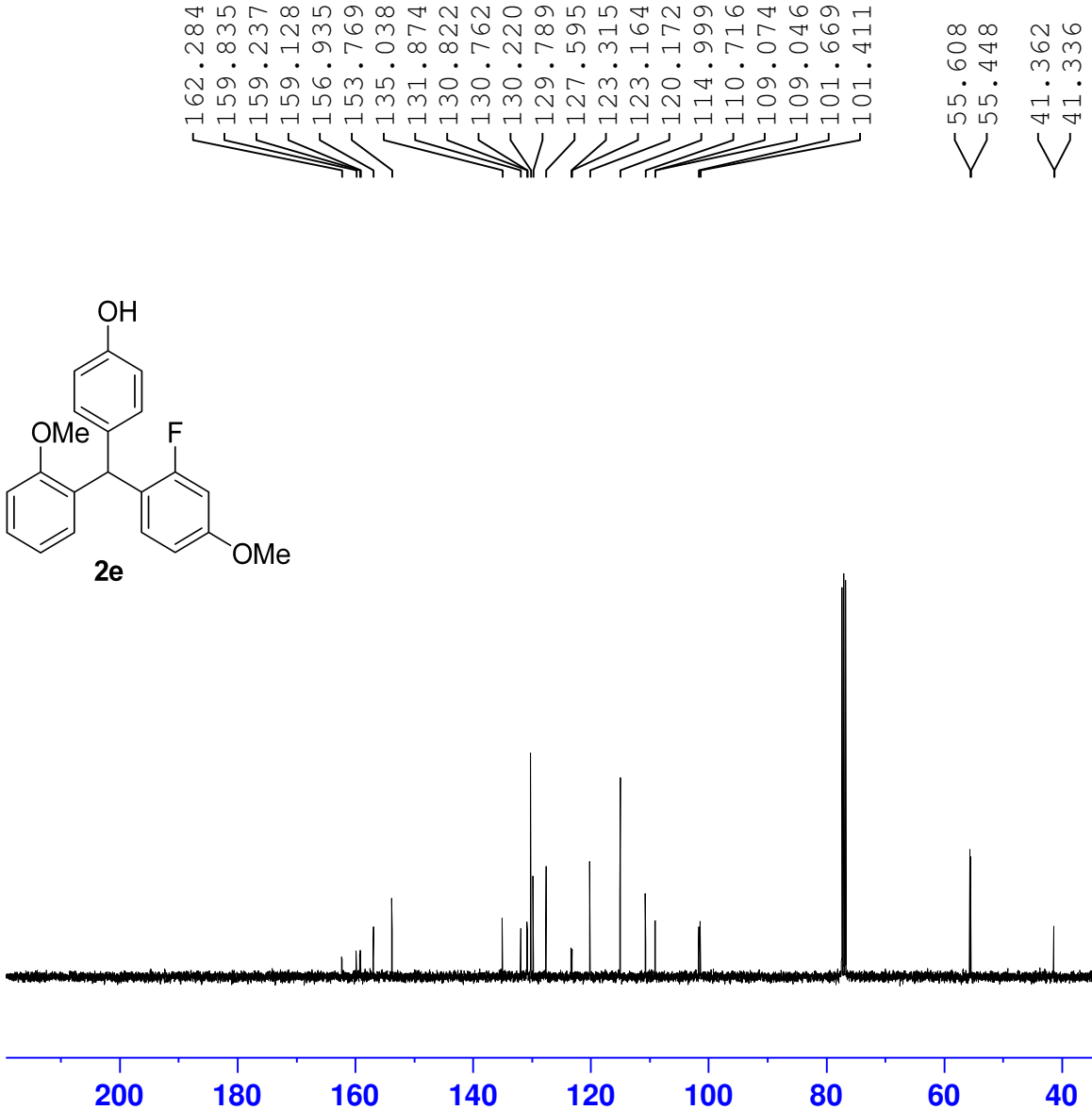

```
Current Data Parameters
NAME                  2eNMR
EXPNO                     1
PROCNO                    1

F2 - Acquisition Parameters
Date_              20201210
Time                  19.40
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       14
DS                        0
SWH                8012.820 Hz
FIDRES            0.122266 Hz
AQ                4.0894465 sec
RG                    45.67
DW                   62.400 usec
DE                    6.50 usec
TE                   296.7 K
D1              1.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1           400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
PLW1           11.99499989 W

F2 - Processing parameters
SI                    65536
SF             400.1300101 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```

LC-1273



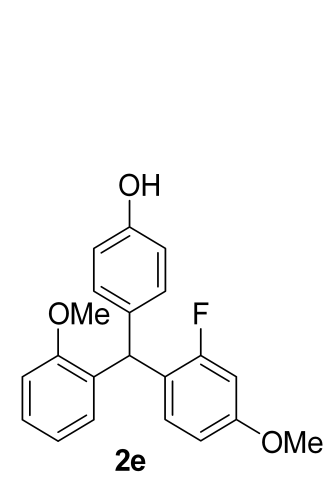

```
Current Data Parameters
NAME                  2eNMR
EXPNO                     2
PROCNO                    1

F2 - Acquisition Parameters
Date_              20201210
Time                  19.43
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                      44
DS                       0
SWH             24038.461 Hz
FIDRES           0.366798 Hz
AQ               1.3631488 sec
RG                  196.92
DW                  20.800 usec
DE                   6.50 usec
TE                  297.3 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
PLW1          46.98899841 W

======== CHANNEL f2 ========
SFO2          400.1316005 MHz
NUC2                   1H
CPDPRG[2           waltz16
PCPD2                90.00 usec
PLW2          11.99499989 W
PLW12          0.34213999 W
PLW13          0.27713001 W

F2 - Processing parameters
SI                   32768
SF            100.6127751 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```



2e


```
Current Data Parameters
NAME                2eNMR
EXPNO                   3
PROCNO                  1

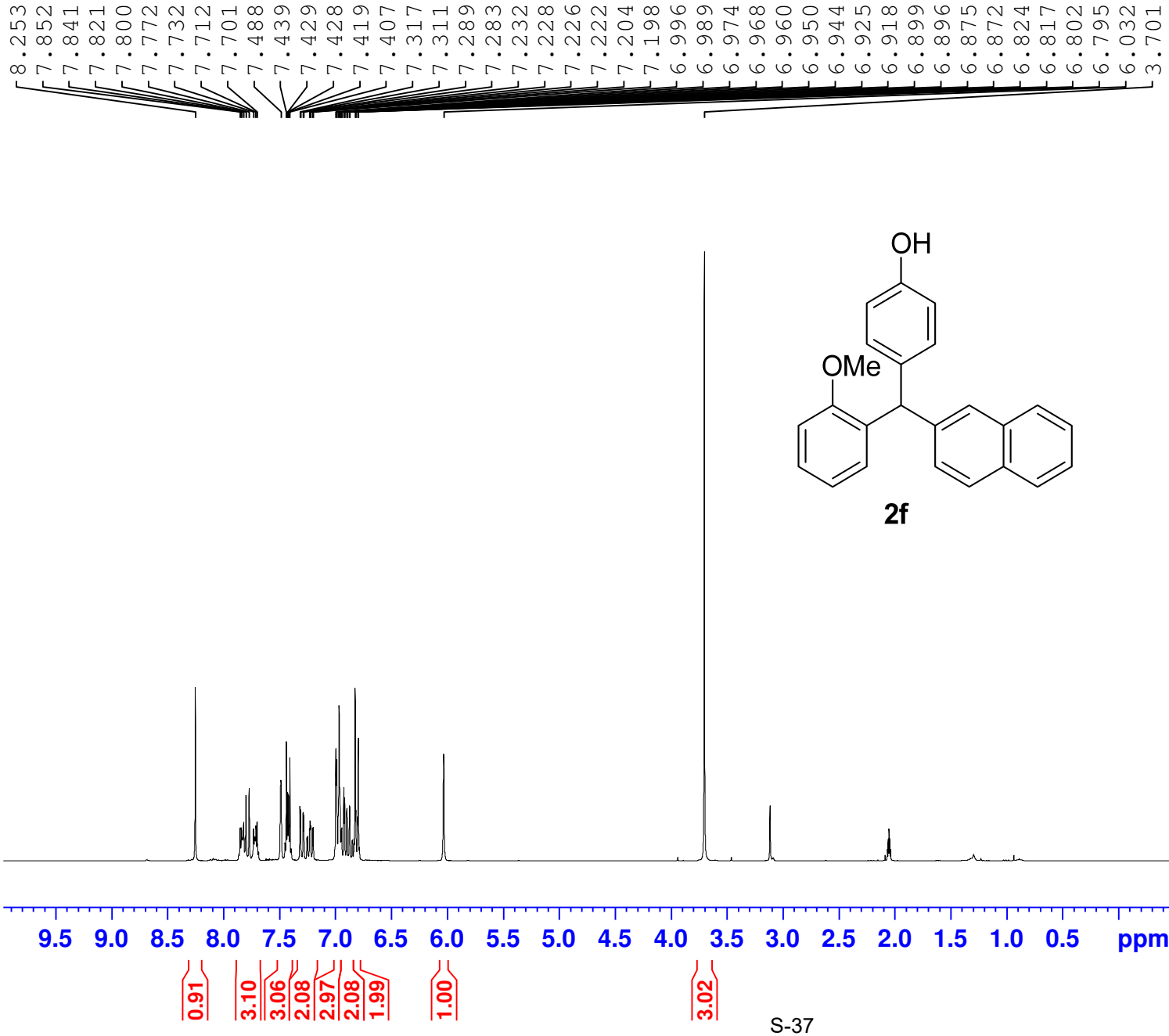
F2 - Acquisition Parameters
Date_            20201210
Time                19.50
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                  65536
SOLVENT             CDCl3
NS                     26
DS                      0
SWH             93750.000 Hz
FIDRES           1.430511 Hz
AQ              0.3495253 sec
RG                 196.92
DW                 5.333 usec
DE                  6.50 usec
TE                 297.3 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         376.4607162 MHz
NUC1                19F
P1                14.70 usec
PLW1         15.99600029 W

======== CHANNEL f2 ========
SFO2         400.1316005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2         11.99499989 W
PLW12         0.34213999 W
PLW13         0.27713001 W

F2 - Processing parameters
SI                  32768
SF           376.4983660 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```

3sjwei 4273 zy-3-22 1h acetone




```
Current Data Parameters
NAME       ZY-3-22-h-fr
EXPNO              4273
PROCNO                1

F2 - Acquisition Parameters
Date_          20210624
Time              12.13
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT         Acetone
NS                   16
DS                    2
SWH            6009.615 Hz
FIDRES        0.091699 Hz
AQ            5.4525952 sec
RG                   64
DW               83.200 usec
DE                6.50 usec
TE               296.1 K
D1           1.00000000 sec
TD0                   1

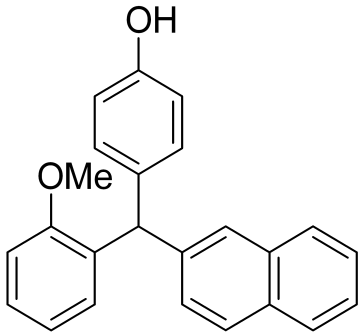
======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                1H
P1                10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                65536
SF          300.1300050 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```

3sjwei 2814 zy-3-22 13c acetone

157.441
156.050
142.688
134.722
133.793
132.966
132.480
130.746
130.417
128.579
127.936
127.892
127.803
127.751
127.418
126.172
125.670
120.428
115.333
111.057

55.293
49.158



2f


```
Current Data Parameters
NAME       ZY-3-22-c-fr
EXPNO              2814
PROCNO                1

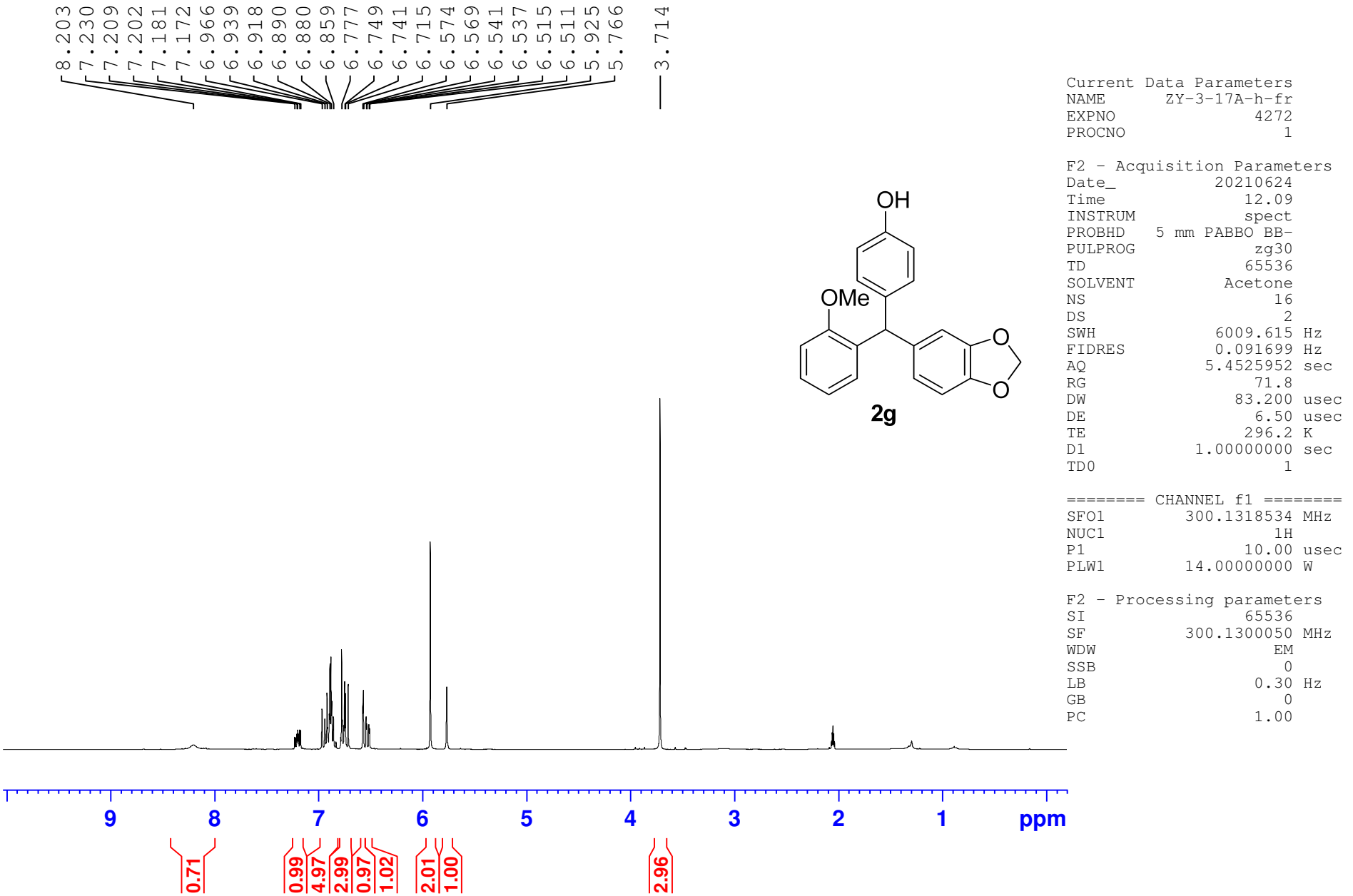
F2 - Acquisition Parameters
Date_          20210330
Time              22.03
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD              65536
SOLVENT         Acetone
NS                  600
DS                    4
SWH           18028.846 Hz
FIDRES         0.275098 Hz
AQ            1.8175317 sec
RG                  203
DW               27.733 usec
DE                6.50 usec
TE               296.1 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                 9.50 usec
PLW1        34.20000076 W

======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

F2 - Processing parameters
SI                32768
SF          75.4677309 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

3sjwei 4272 zy-3-17a 1h acetone




```
Current Data Parameters
NAME      ZY-3-17A-h-fr
EXPNO              4272
PROCNO                1

F2 - Acquisition Parameters
Date_          20210624
Time              12.09
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT         Acetone
NS                   16
DS                    2
SWH            6009.615 Hz
FIDRES        0.091699 Hz
AQ            5.4525952 sec
RG                 71.8
DW               83.200 usec
DE                6.50 usec
TE               296.2 K
D1           1.00000000 sec
TD0                   1

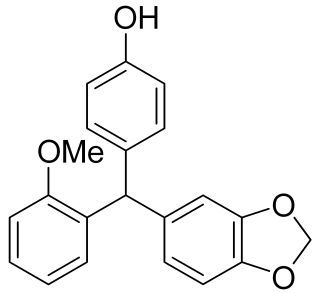
======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                  1H
P1                10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                65536
SF          300.1300050 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```

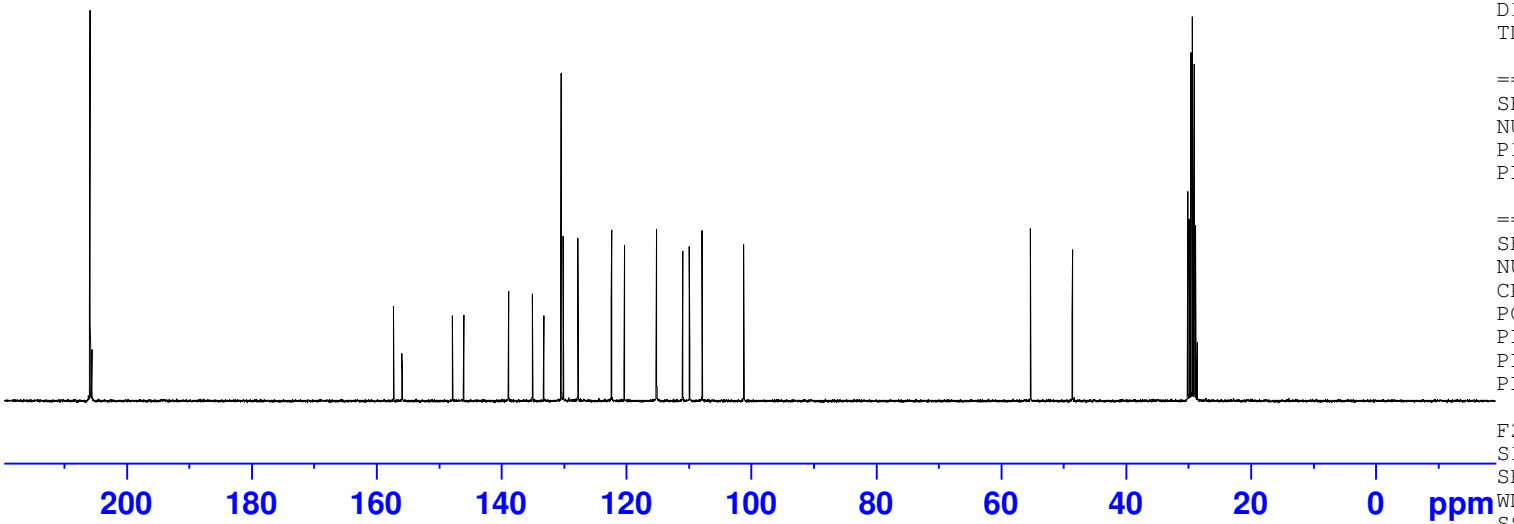
3sjwei 2743 zy-3-17a 13c acetone

157.296
155.923
147.839
146.048
138.852
135.047
133.226
130.440
130.110
127.755
122.383
120.314
115.173
110.961
109.885
107.875
101.188

55.252
48.558



2g




```
Current Data Parameters
NAME                  2g
EXPNO               2743
PROCNO                 1

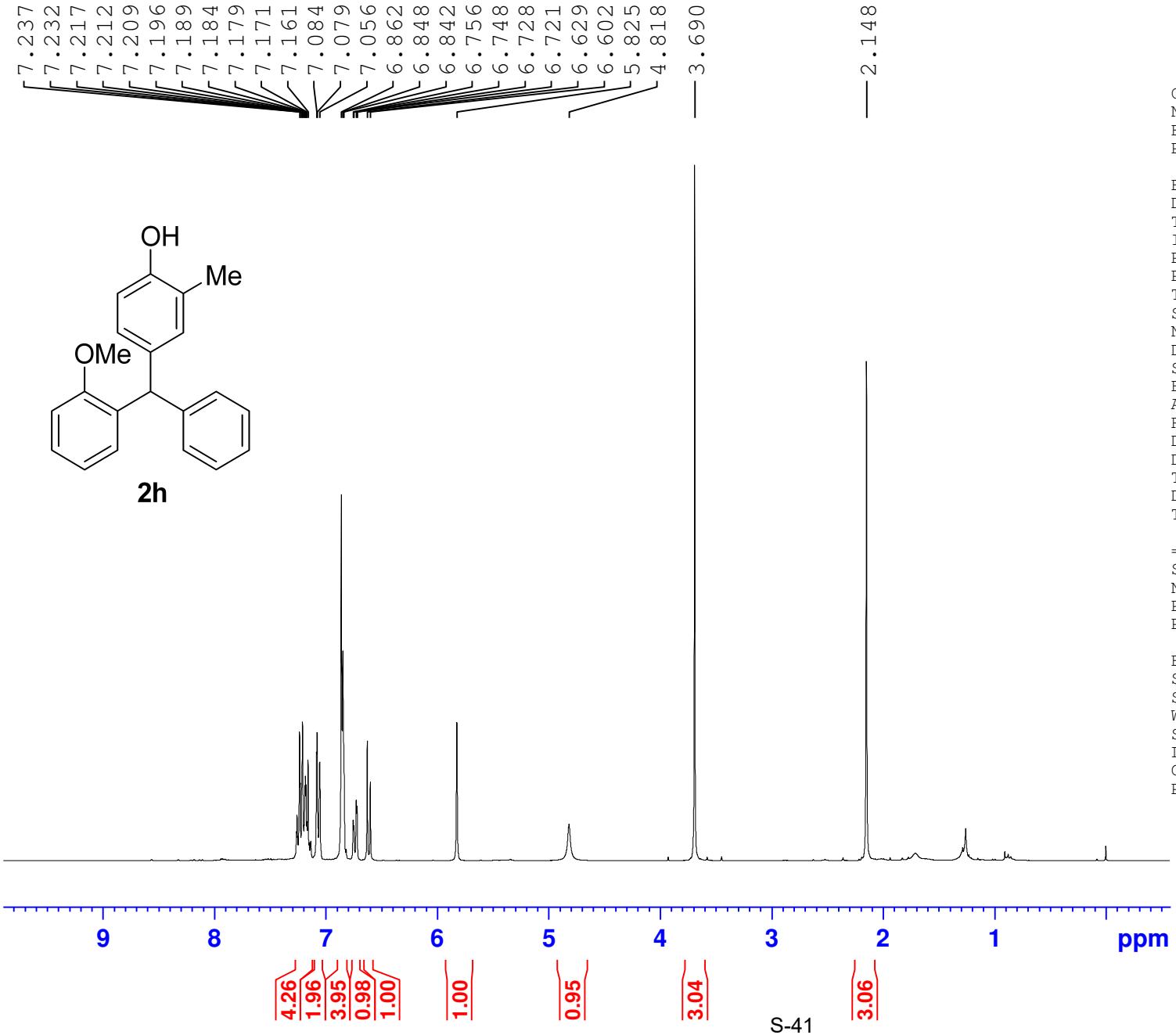
F2 - Acquisition Parameters
Date_           20210318
Time               11.42
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT         Acetone
NS                  600
DS                    4
SWH           18028.846 Hz
FIDRES         0.275098 Hz
AQ            1.8175317 sec
RG                  203
DW               27.733 usec
DE                6.50 usec
TE               292.5 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                9.50 usec
PLW1        34.20000076 W

======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

F2 - Processing parameters
SI                32768
SF           75.4677302 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

3sjwei 4371 zy-3-20d 1h cdcl3




```
Current Data Parameters
NAME      ZY-3-20D-h-fr
EXPNO              4371
PROCNO                1

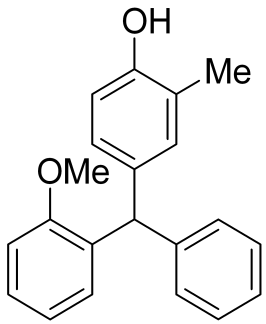
F2 - Acquisition Parameters
Date_          20210701
Time               9.58
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH            6009.615 Hz
FIDRES        0.091699 Hz
AQ            5.4525952 sec
RG                 80.6
DW               83.200 usec
DE                6.50 usec
TE               296.2 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                  1H
P1                10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                65536
SF          300.1300225 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```

3sjwei 4394zy-3-20d 13c cdcl3

156.978
151.986
144.330
135.920
132.931
131.994
130.275
129.301
127.997
127.871
127.352
125.838
123.332
120.213
114.484
110.652
55.586
48.655
15.825



2h


```
Current Data Parameters
NAME      ZY-3-20D-c-fr
EXPNO              4394
PROCNO                1

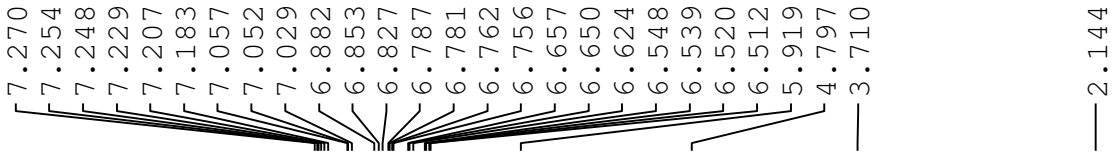
F2 - Acquisition Parameters
Date_          20210702
Time              11.21
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD              65536
SOLVENT          CDCl3
NS                1024
DS                   4
SWH          18028.846 Hz
FIDRES        0.275098 Hz
AQ           1.8175317 sec
RG                 203
DW              27.733 usec
DE               6.50 usec
TE              296.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                  1

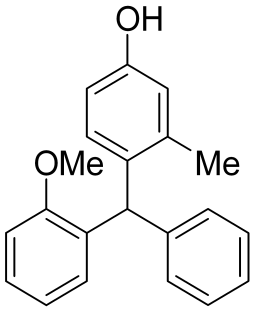
======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                9.50 usec
PLW1        34.20000076 W

======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

F2 - Processing parameters
SI                32768
SF          75.4677566 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

3sjwei 4415 zy-3-17e 1h cdcl3





2i


```
Current Data Parameters
NAME      ZY-3-17E-h-fr
EXPNO              4415
PROCNO                1

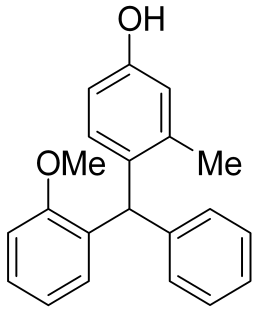
F2 - Acquisition Parameters
Date_          20210703
Time              12.40
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH            6009.615 Hz
FIDRES        0.091699 Hz
AQ            5.4525952 sec
RG                  203
DW               83.200 usec
DE                6.50 usec
TE               296.2 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                1H
P1                10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                65536
SF          300.1300072 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```

3sjwei 4416 zy-3-17e 13c cdcl3

157.043
153.624
143.616
138.305
134.715
132.446
130.191
130.152
129.455
128.062
127.360
125.893
120.219
117.147
112.024
110.583
55.663
45.633
19.700



2i


```
Current Data Parameters
NAME      ZY-3-17E-c-fr
EXPNO              4416
PROCNO                1

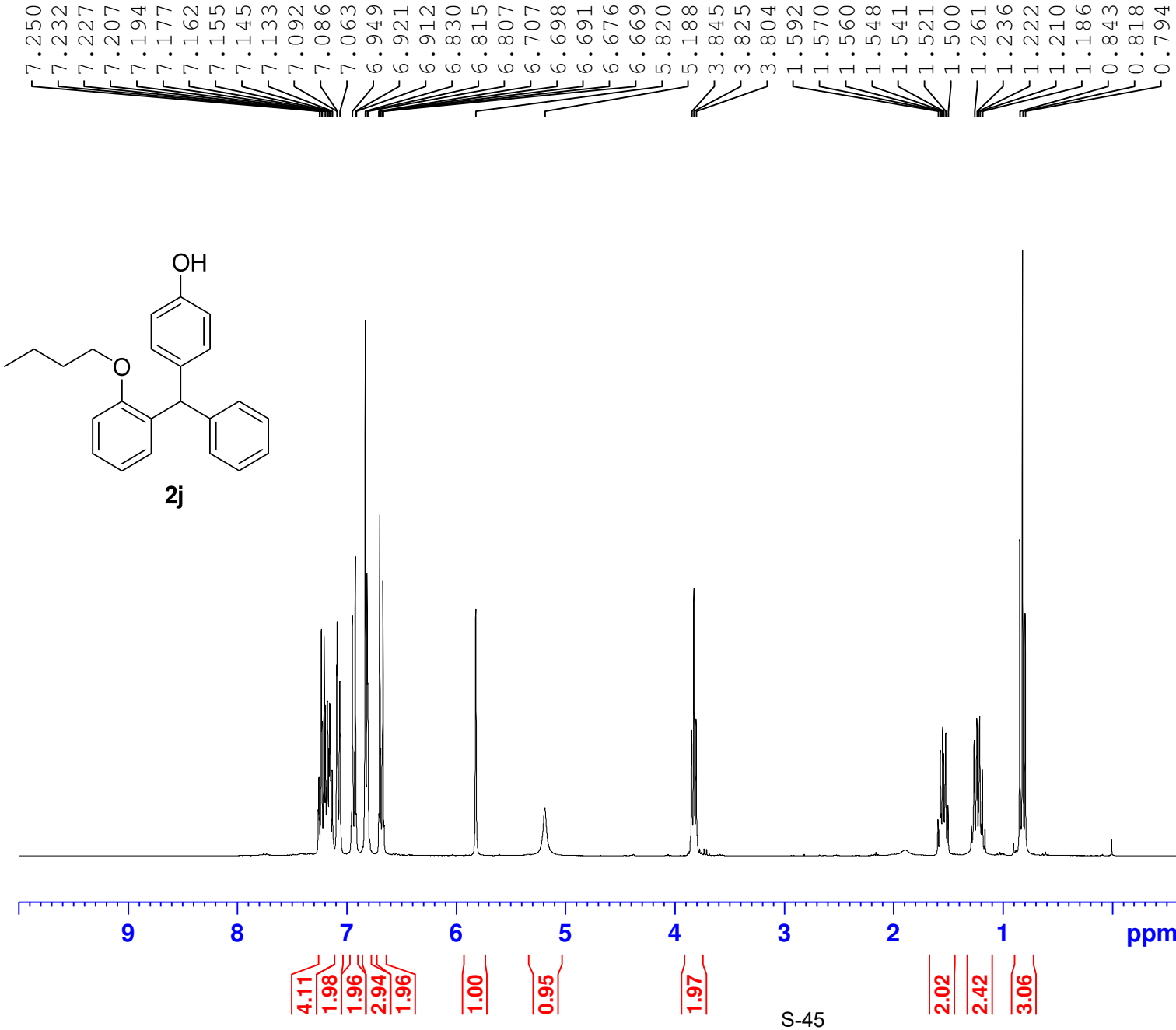
F2 - Acquisition Parameters
Date_          20210703
Time              13.48
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           18028.846 Hz
FIDRES         0.275098 Hz
AQ            1.8175317 sec
RG                  203
DW               27.733 usec
DE                6.50 usec
TE                296.1 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                9.50 usec
PLW1        34.20000076 W

======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

F2 - Processing parameters
SI                32768
SF           75.4677515 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

3sjwei 4386 zy-3-20b 1h cdcl3




```
Current Data Parameters
NAME      ZY-3-20B-h-fr
EXPNO              4386
PROCNO                1

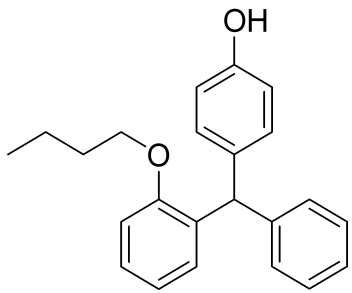
F2 - Acquisition Parameters
Date_          20210702
Time               9.36
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH            6009.615 Hz
FIDRES        0.091699 Hz
AQ            5.4525952 sec
RG                   57
DW               83.200 usec
DE                6.50 usec
TE                296.2 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                1H
P1                10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                65536
SF          300.1300269 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```

3sjwei 4413 zy-3-20b 13c cdcl3

156.478
153.596
144.179
136.057
133.150
130.506
130.040
129.285
127.999
127.338
125.829
119.931
114.905
111.355
67.613
49.168
31.155
18.981
13.702



2j


```
Current Data Parameters
NAME      ZY-3-20B-c-fr
EXPNO              4413
PROCNO                1

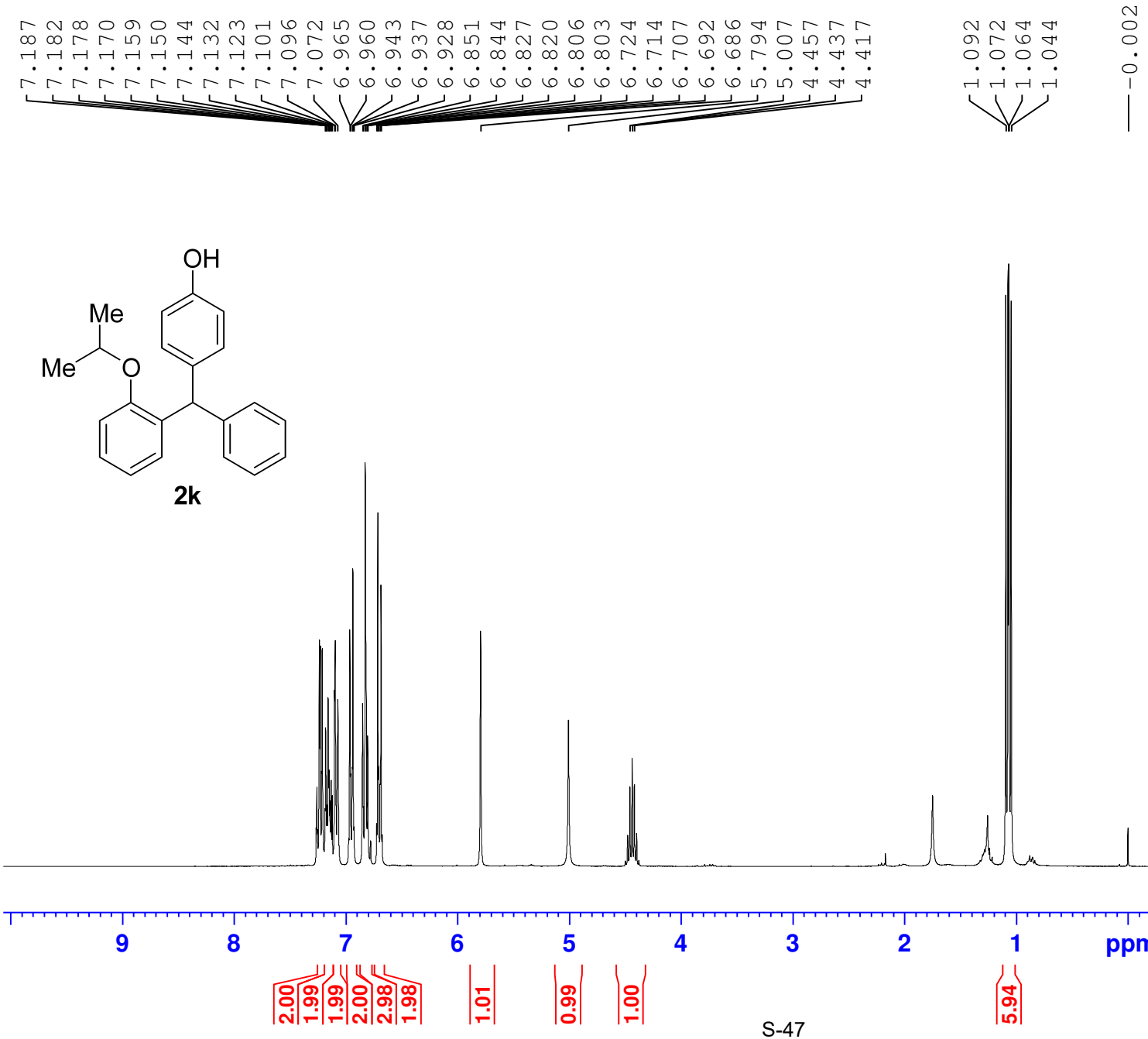
F2 - Acquisition Parameters
Date_          20210703
Time              11.25
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD              65536
SOLVENT          CDCl3
NS                1024
DS                   4
SWH          18028.846 Hz
FIDRES        0.275098 Hz
AQ           1.8175317 sec
RG                 203
DW              27.733 usec
DE               6.50 usec
TE              296.1 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                9.50 usec
PLW1        34.20000076 W

======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                1H
CPDPRG[2        waltz16
PCPD2            90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

F2 - Processing parameters
SI                32768
SF           75.4677585 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

3sjwei 4384 zy-3-17d 1h cdcl3




```
Current Data Parameters
NAME      ZY-3-17D-h-fr
EXPNO              4384
PROCNO                1

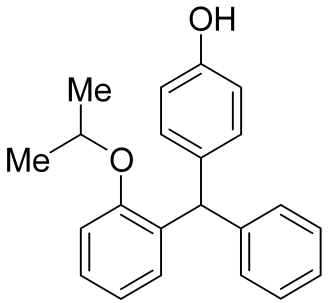
F2 - Acquisition Parameters
Date_          20210702
Time               9.26
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH            6009.615 Hz
FIDRES        0.091699 Hz
AQ            5.4525952 sec
RG                  101
DW               83.200 usec
DE                6.50 usec
TE               296.1 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                1H
P1                10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                65536
SF          300.1300165 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```

3sjwei 4414 zy-3-17d 13c cdcl3

155.270
153.617
144.218
136.082
134.239
130.590
130.167
129.396
127.967
127.196
125.794
119.854
114.861
112.958
69.916
49.298
21.875
21.790



2k


```
Current Data Parameters
NAME      ZY-3-17D-c-fr
EXPNO             4414
PROCNO               1

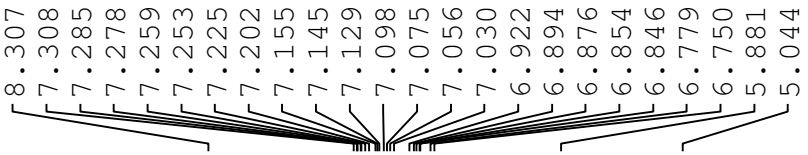
F2 - Acquisition Parameters
Date_         20210703
Time             12.35
INSTRUM          spect
PROBHD   5 mm PABBO BB-
PULPROG        zgpg30
TD              65536
SOLVENT         CDCl3
NS               1024
DS                  4
SWH         18028.846 Hz
FIDRES       0.275098 Hz
AQ           1.8175317 sec
RG                50.8
DW              27.733 usec
DE               6.50 usec
TE              296.2 K
D1          2.00000000 sec
D11         0.03000000 sec
TD0                 1

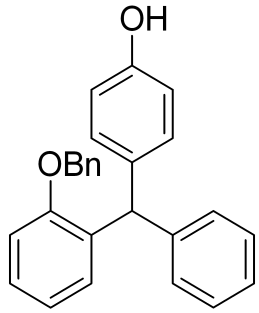
======== CHANNEL f1 ========
SFO1       75.4752949 MHz
NUC1              13C
P1               9.50 usec
PLW1      34.20000076 W

======== CHANNEL f2 ========
SFO2      300.1312005 MHz
NUC2              1H
CPDPRG[2       waltz16
PCPD2            90.00 usec
PLW2      14.00000000 W
PLW12      0.17284000 W
PLW13      0.14000000 W

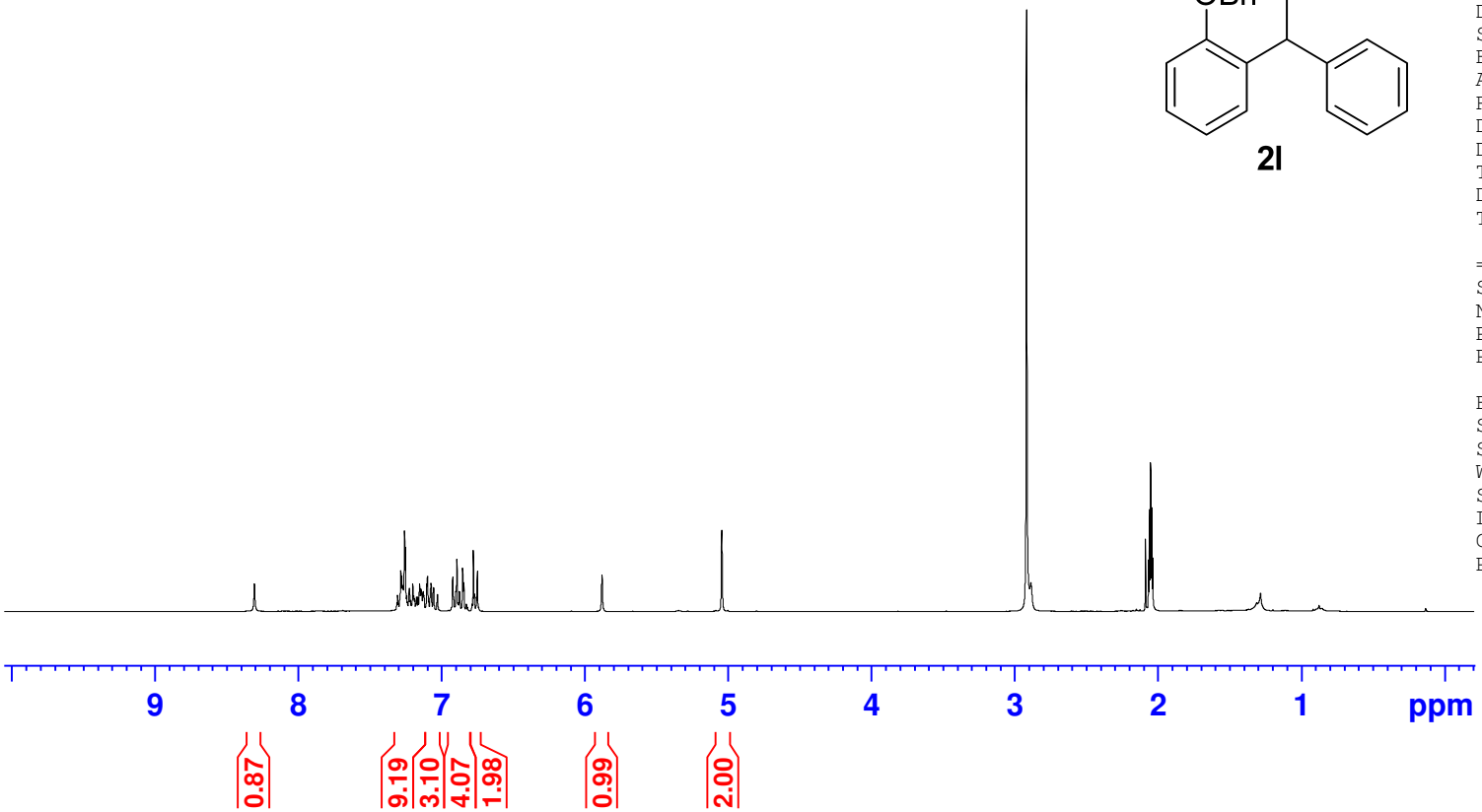
F2 - Processing parameters
SI                32768
SF         75.4677543 MHz
WDW                EM
SSB                 0
LB               1.00 Hz
GB                  0
PC               1.40
```

3sjwei 2712 zy-3-11b 1h acetone





2l




```
Current Data Parameters
NAME                  2l
EXPNO               2712
PROCNO                 1

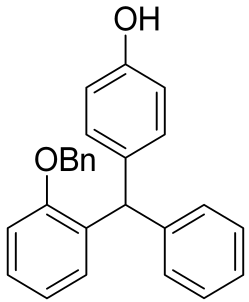
F2 - Acquisition Parameters
Date_           20210317
Time                9.16
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT          Acetone
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.091699 Hz
AQ              5.4525952 sec
RG                   203
DW                83.200 usec
DE                 6.50 usec
TE                291.4 K
D1           1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                   1H
P1                 10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                 65536
SF          300.1300054 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

3sjwei 2327 zy-3-11b 13c acetone

156.535
156.272
145.027
137.963
134.968
133.839
130.862
130.480
129.786
128.685
128.547
127.948
127.923
127.627
126.386
120.736
115.449
112.482
69.941
49.785



2l


```
Current Data Parameters
NAME      ZY-3-11B-c-fr
EXPNO              2327
PROCNO                1

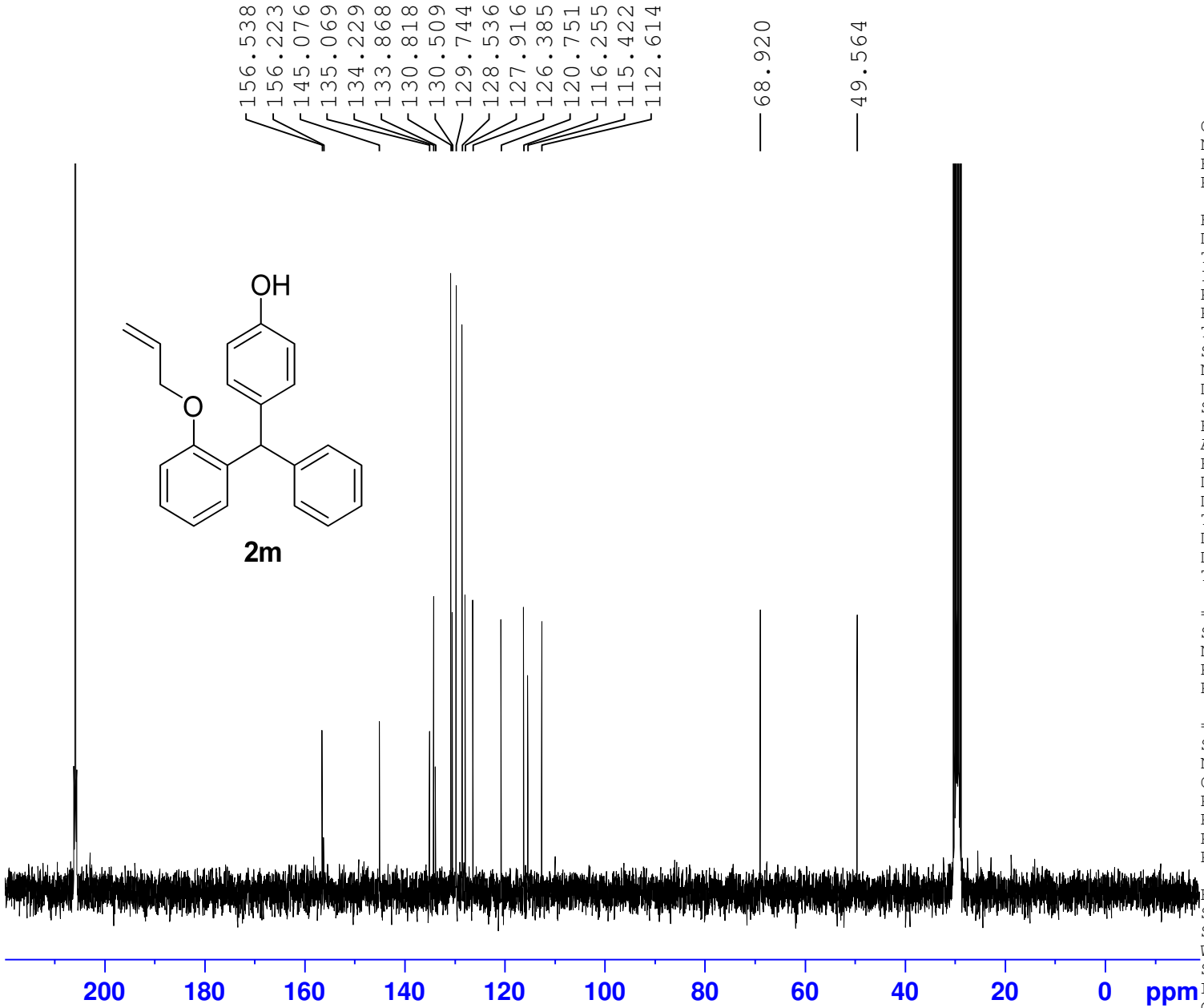
F2 - Acquisition Parameters
Date_          20201228
Time              10.38
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT         Acetone
NS                  600
DS                    4
SWH           18028.846 Hz
FIDRES         0.275098 Hz
AQ            1.8175317 sec
RG                  203
DW               27.733 usec
DE                6.50 usec
TE                291.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                 9.50 usec
PLW1        34.20000076 W

======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

F2 - Processing parameters
SI                32768
SF           75.4677118 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

3sjwei 2439 zy-3-14c 13c acetone




```
Current Data Parameters
NAME      ZY-3-17B-c-fr
EXPNO              2439
PROCNO                1

F2 - Acquisition Parameters
Date_          20210107
Time              14.12
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD              65536
SOLVENT       Acetone
NS                600
DS                  4
SWH         18028.846 Hz
FIDRES       0.275098 Hz
AQ           1.8175317 sec
RG                203
DW             27.733 usec
DE              6.50 usec
TE              289.2 K
D1          2.00000000 sec
D11         0.03000000 sec
TD0                 1

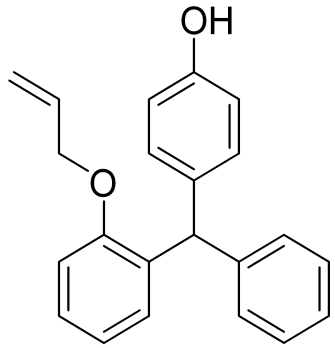
======== CHANNEL f1 ========
SFO1       75.4752949 MHz
NUC1               13C
P1              9.50 usec
PLW1      34.20000076 W

======== CHANNEL f2 ========
SFO2      300.1312005 MHz
NUC2               1H
CPDPRG[2       waltz16
PCPD2          90.00 usec
PLW2      14.00000000 W
PLW12      0.17284000 W
PLW13      0.14000000 W

F2 - Processing parameters
SI                32768
SF         75.4677083 MHz
WDW                EM
SSB                 0
LB              1.00 Hz
GB                  0
PC              1.40
```

3sjwei 4338 zy-3-14c 1h acetone

8.197 7.291 7.268 7.263 7.247 7.243 7.206 7.200 7.190 7.188 7.177 7.107 7.101 7.078 6.974 6.947 6.932 6.910 6.904 6.875 6.871 6.867 6.856 6.854 6.772 6.765 6.750 6.743 5.878 5.868 5.286 5.280 5.229 5.223 5.133 5.127 5.098 5.092 4.491 4.485 4.479 4.475 4.469 4.464



2m

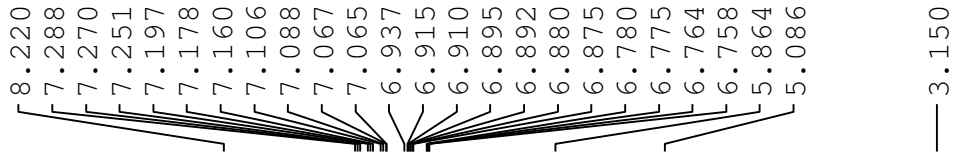

```
Current Data Parameters
NAME      ZY-3-17B-h-fr
EXPNO              4338
PROCNO                1

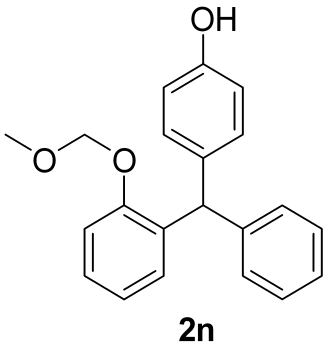
F2 - Acquisition Parameters
Date_          20210629
Time              11.22
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT         Acetone
NS                   16
DS                    2
SWH            6009.615 Hz
FIDRES        0.091699 Hz
AQ            5.4525952 sec
RG                  203
DW               83.200 usec
DE                6.50 usec
TE                296.1 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                  1H
P1                10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                65536
SF          300.1300051 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```

ZY-3-14B



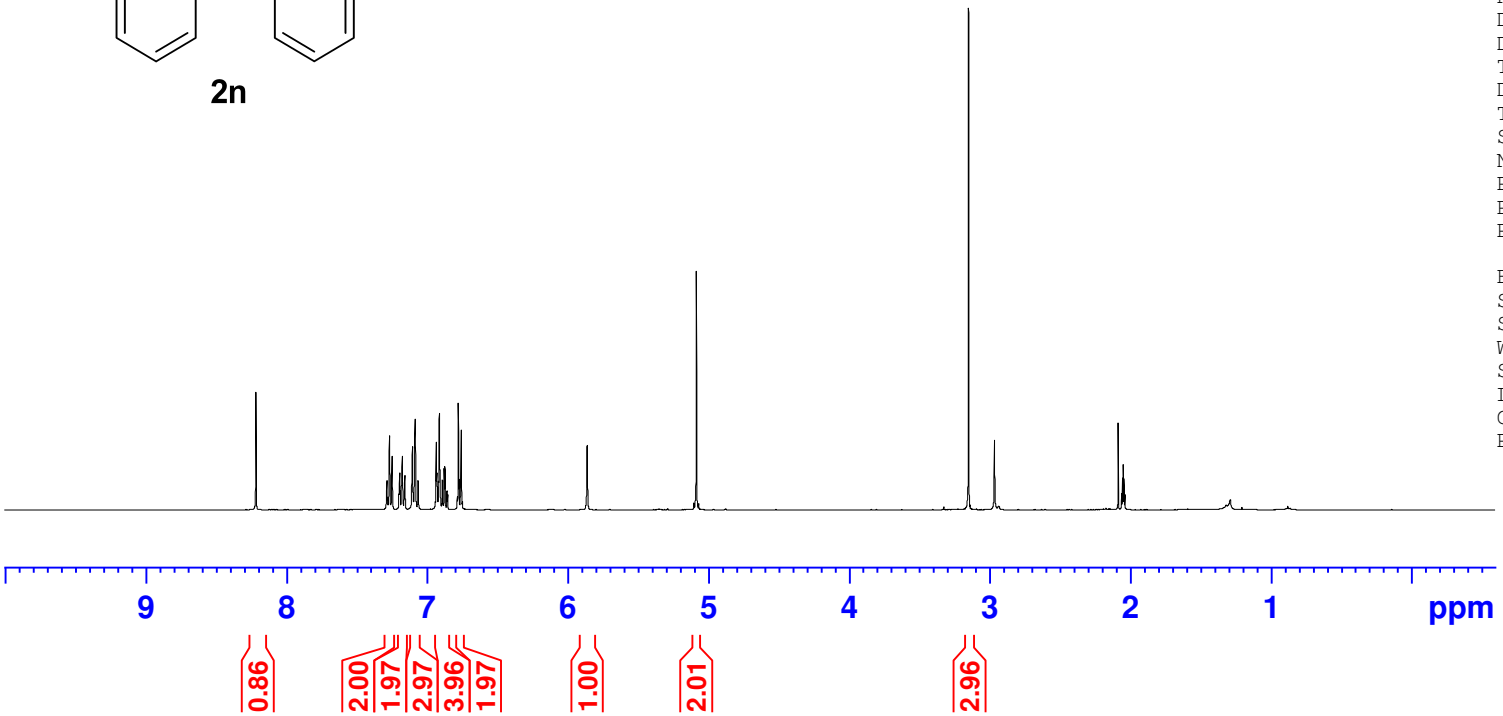


2n

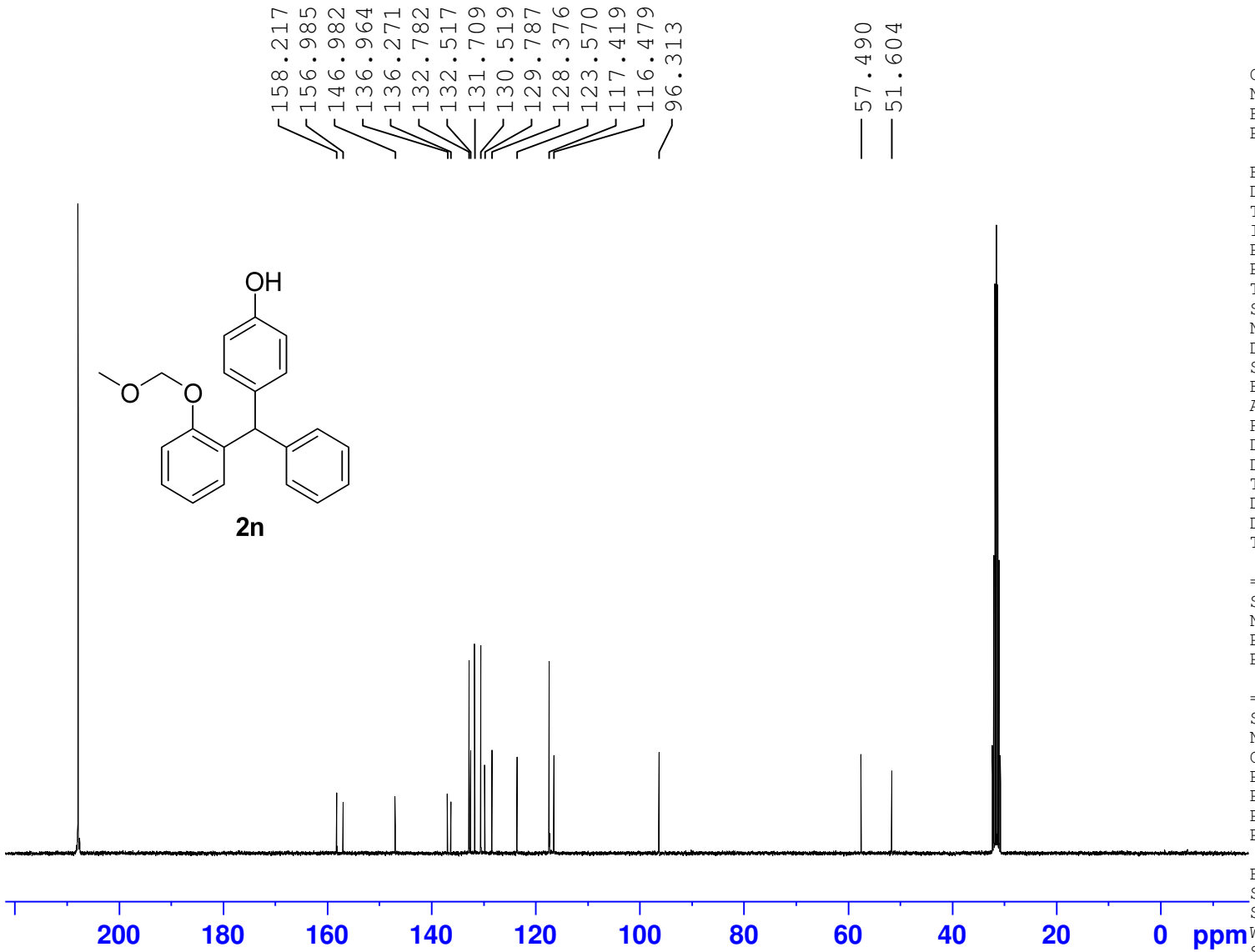
```
Current Data Parameters
NAME                  2n
EXPNO                  8
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210328
Time               11.29 h
INSTRUM           Avance
PROBHD   Z116098_0833 (
PULPROG             zg30
TD                 65536
SOLVENT          Acetone
NS                    16
DS                     2
SWH             8196.722 Hz
FIDRES          0.250144 Hz
AQ             3.9976959 sec
RG                79.7194
DW                61.000 usec
DE                13.54 usec
TE                295.0 K
D1            1.00000000 sec
TD0                    1
SFO1         400.1324708 MHz
NUC1                  1H
P0                 3.33 usec
P1                10.00 usec
PLW1         20.73200035 W

F2 - Processing parameters
SI                 65536
SF          400.1300069 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



3sjwei 2744 zy-3-14b 13c acetone




```
Current Data Parameters
NAME      ZY-3-20A-c-fr
EXPNO              2744
PROCNO                1

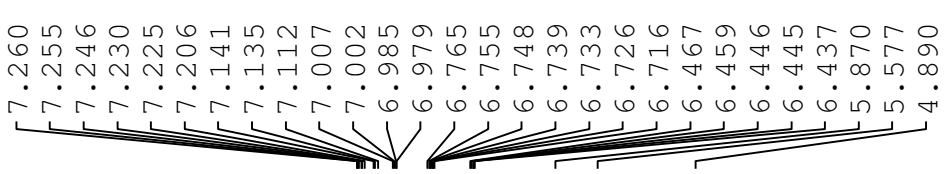
F2 - Acquisition Parameters
Date_          20210318
Time              12.24
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD              65536
SOLVENT       Acetone
NS                600
DS                  4
SWH         18028.846 Hz
FIDRES       0.275098 Hz
AQ           1.8175317 sec
RG                203
DW             27.733 usec
DE              6.50 usec
TE             292.7 K
D1          2.00000000 sec
D11         0.03000000 sec
TD0                 1

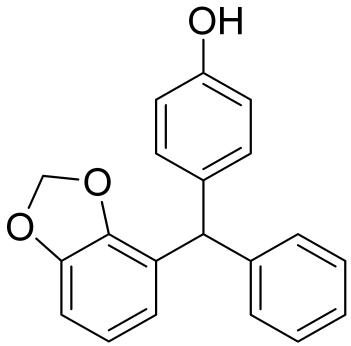
======== CHANNEL f1 ========
SFO1       75.4752949 MHz
NUC1              13C
P1               9.50 usec
PLW1      34.20000076 W

======== CHANNEL f2 ========
SFO2      300.1312005 MHz
NUC2               1H
CPDPRG[2       waltz16
PCPD2           90.00 usec
PLW2      14.00000000 W
PLW12      0.17284000 W
PLW13      0.14000000 W

F2 - Processing parameters
SI                32768
SF         75.4675613 MHz
WDW                EM
SSB                 0
LB               1.00 Hz
GB                  0
PC               1.40
```

3sjwei 4820 zy-4-44e 1h cdcl3





2o

```
Current Data Parameters
NAME       ZY-3-36-h-fr
EXPNO              4820
PROCNO                1

F2 - Acquisition Parameters
Date_          20210723
Time              11.29
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH            6009.615 Hz
FIDRES        0.091699 Hz
AQ           5.4525952 sec
RG                  181
DW               83.200 usec
DE                6.50 usec
TE                296.1 K
D1          1.00000000 sec
TD0                   1

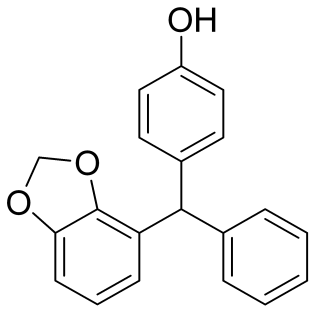
======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                1H
P1                10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                65536
SF          300.1300112 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```

3sjwei 4821 zy-4-44e 13c cdcl3

154.073
147.161
145.294
142.910
134.921
130.388
129.148
128.322
126.420
125.807
122.606
121.363
115.178
106.924
100.696

49.554



2o


```
Current Data Parameters
NAME       ZY-3-36-c-fr
EXPNO              4821
PROCNO                1

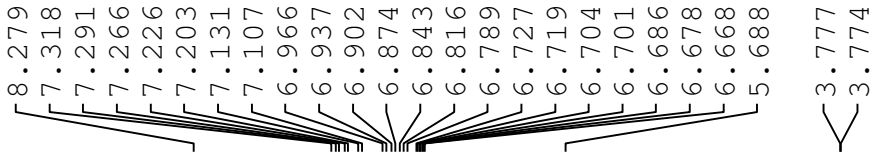
F2 - Acquisition Parameters
Date_          20210723
Time              12.16
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD              65536
SOLVENT          CDCl3
NS                 700
DS                   4
SWH          18028.846 Hz
FIDRES        0.275098 Hz
AQ           1.8175317 sec
RG                 203
DW              27.733 usec
DE                6.50 usec
TE               296.2 K
D1          2.00000000 sec
D11         0.03000000 sec
TD0                  1

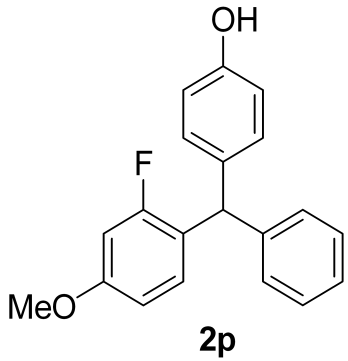
======== CHANNEL f1 ========
SFO1        75.4752949 MHz
NUC1               13C
P1                9.50 usec
PLW1       34.20000076 W

======== CHANNEL f2 ========
SFO2       300.1312005 MHz
NUC2               1H
CPDPRG[2        waltz16
PCPD2             90.00 usec
PLW2       14.00000000 W
PLW12       0.17284000 W
PLW13       0.14000000 W

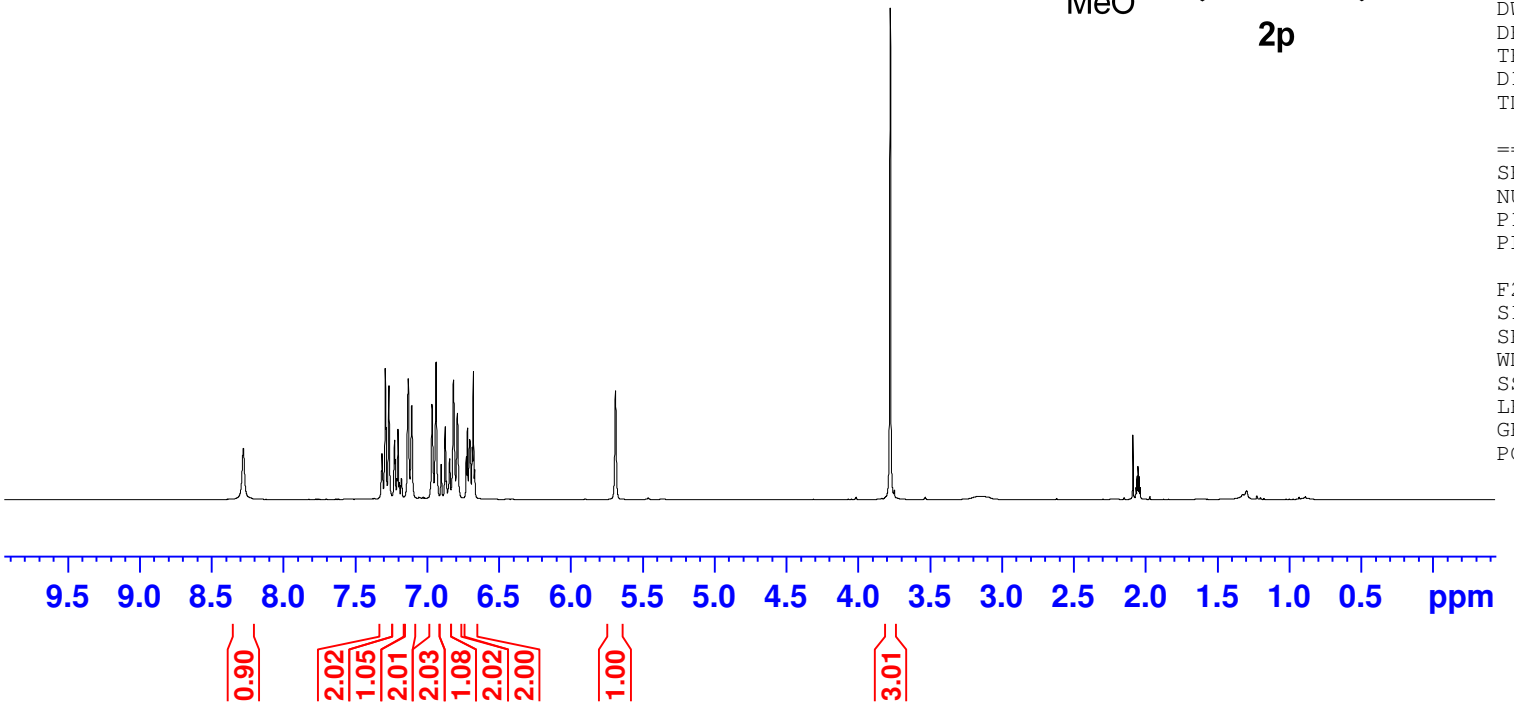
F2 - Processing parameters
SI                32768
SF          75.4677485 MHz
WDW                EM
SSB                 0
LB                1.00 Hz
GB                  0
PC                1.40
```

3sjwei 2935 zy-3-27g 1h acetone





2p




```
Current Data Parameters
NAME                  2p
EXPNO               2935
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210408
Time               11.21
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT          Acetone
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.091699 Hz
AQ              5.4525952 sec
RG                    57
DW                83.200 usec
DE                 6.50 usec
TE                296.2 K
D1           1.00000000 sec
TD0                    1

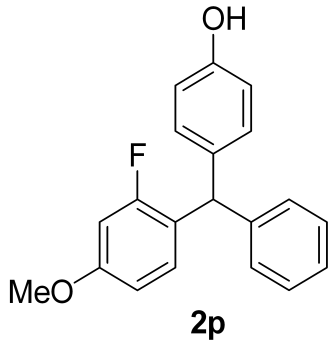
======== CHANNEL f1 ========
SFO1        300.1318534 MHz
NUC1                   1H
P1                 10.00 usec
PLW1        14.00000000 W

F2 - Processing parameters
SI                 65536
SF          300.1300050 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

3sjwei 2936 zy-3-27g 13c acetone

162.983
160.202
160.054
159.738
156.320
144.078
134.150
131.499
131.419
130.473
129.362
128.602
126.587
123.837
123.636
115.501
109.923
109.884
101.870
101.524

55.420
48.473
48.441



2p


```
Current Data Parameters
NAME      ZY-3-27G-c-fr
EXPNO             2936
PROCNO               1

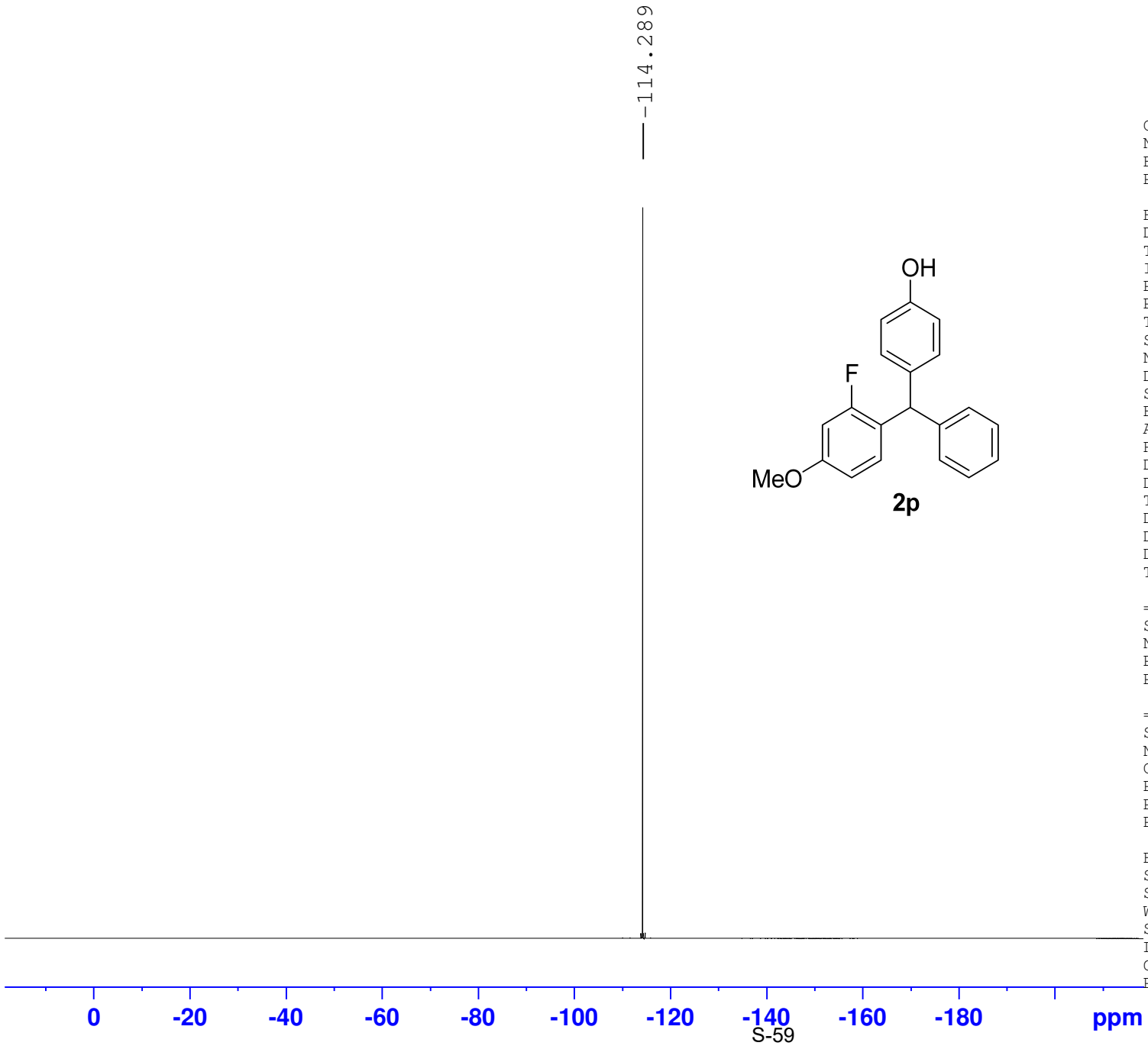
F2 - Acquisition Parameters
Date_         20210408
Time             12.02
INSTRUM          spect
PROBHD   5 mm PABBO BB-
PULPROG        zgpg30
TD              65536
SOLVENT       Acetone
NS                600
DS                  4
SWH         18028.846 Hz
FIDRES       0.275098 Hz
AQ           1.8175317 sec
RG                203
DW             27.733 usec
DE              6.50 usec
TE             296.1 K
D1          2.00000000 sec
D11         0.03000000 sec
TD0                 1

======== CHANNEL f1 ========
SFO1       75.4752949 MHz
NUC1              13C
P1               9.50 usec
PLW1      34.20000076 W

======== CHANNEL f2 ========
SFO2      300.1312005 MHz
NUC2              1H
CPDPRG[2       waltz16
PCPD2           90.00 usec
PLW2      14.00000000 W
PLW12      0.17284000 W
PLW13      0.14000000 W

F2 - Processing parameters
SI                32768
SF         75.4677215 MHz
WDW                EM
SSB                 0
LB               1.00 Hz
GB                  0
PC               1.40
```

3sjwei 2908 zy-3-27g 19f cdcl3



2p

```
Current Data Parameters
NAME            0407sjw
EXPNO              2908
PROCNO                1

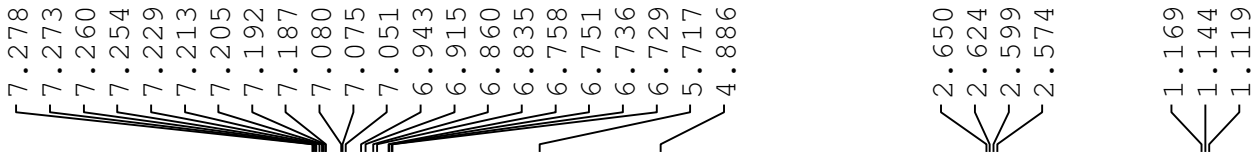
F2 - Acquisition Parameters
Date_          20210407
Time              10.22
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG      zgfhigqn.2
TD               131072
SOLVENT            CDCl3
NS                    16
DS                     4
SWH            66964.289 Hz
FIDRES          0.510897 Hz
AQ              0.9786710 sec
RG                   203
DW                 7.467 usec
DE                 6.50 usec
TE                296.2 K
D1           1.00000000 sec
D11          0.03000000 sec
D12          0.00002000 sec
TD0                   1

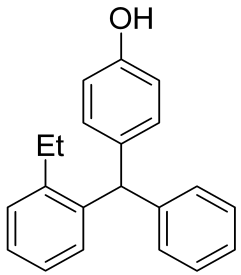
======== CHANNEL f1 ========
SFO1         282.3761148 MHz
NUC1                19F
P1                14.50 usec
PLW1         10.39999962 W

======== CHANNEL f2 ========
SFO2         300.1312005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2         14.00000000 W
PLW12         0.17284000 W

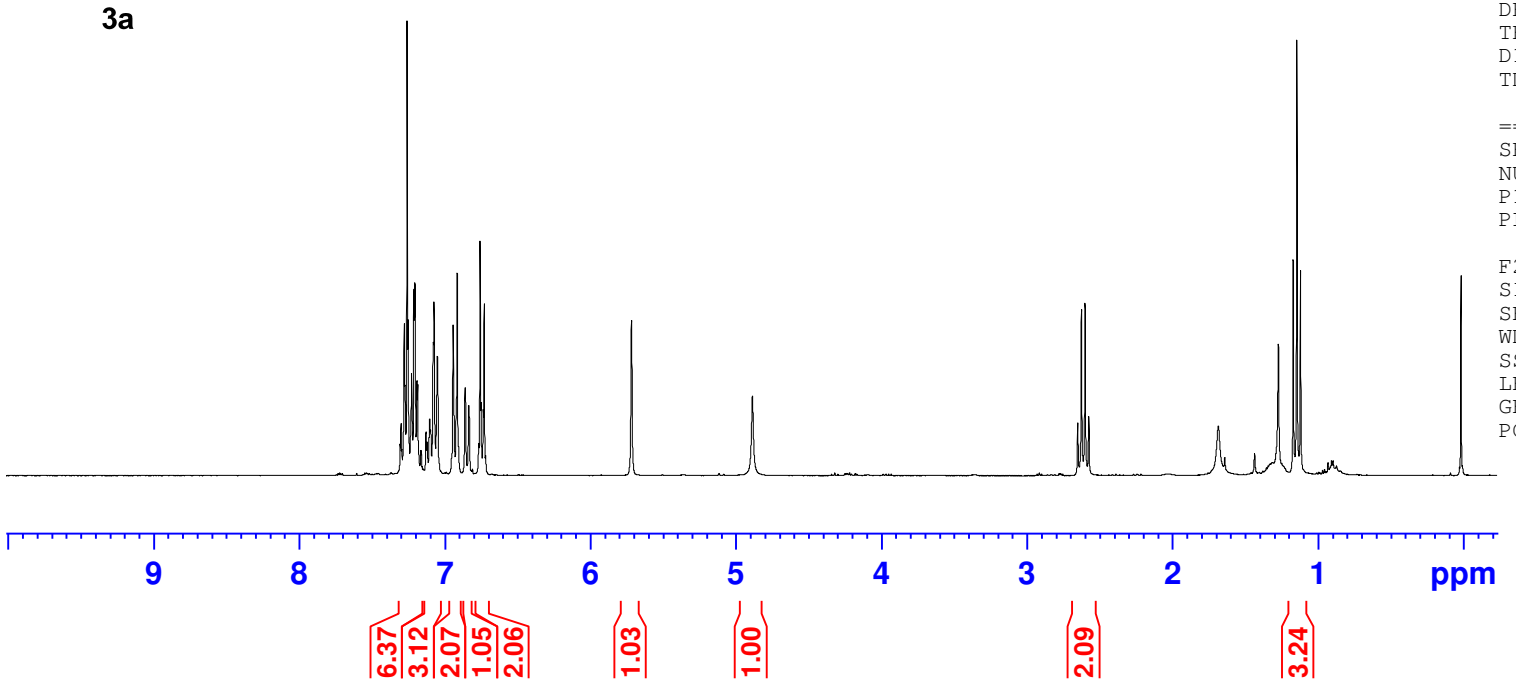
F2 - Processing parameters
SI                 65536
SF           282.4043552 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

3sjwei 4313 h-100-1 1h cdcl3





3a




```
Current Data Parameters
NAME                      3a
EXPNO                      1
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210628
Time                   9.11
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES            0.091699 Hz
AQ                5.4525952 sec
RG                      144
DW                   83.200 usec
DE                    6.50 usec
TE                   296.2 K
D1              1.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1           300.1318534 MHz
NUC1                     1H
P1                   10.00 usec
PLW1           14.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300071 MHz
WDW                      EM
SSB                       0
LB                   0.30 Hz
GB                        0
PC                     1.00
```

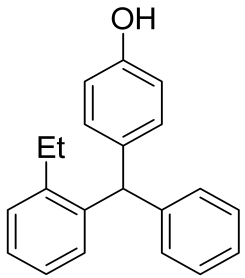
3sjwei 4336 h-100-1 13c cdcl3

153.838
144.140
142.232
141.726
136.065
130.667
129.700
129.479
128.481
128.213
126.483
126.126
125.573
115.080

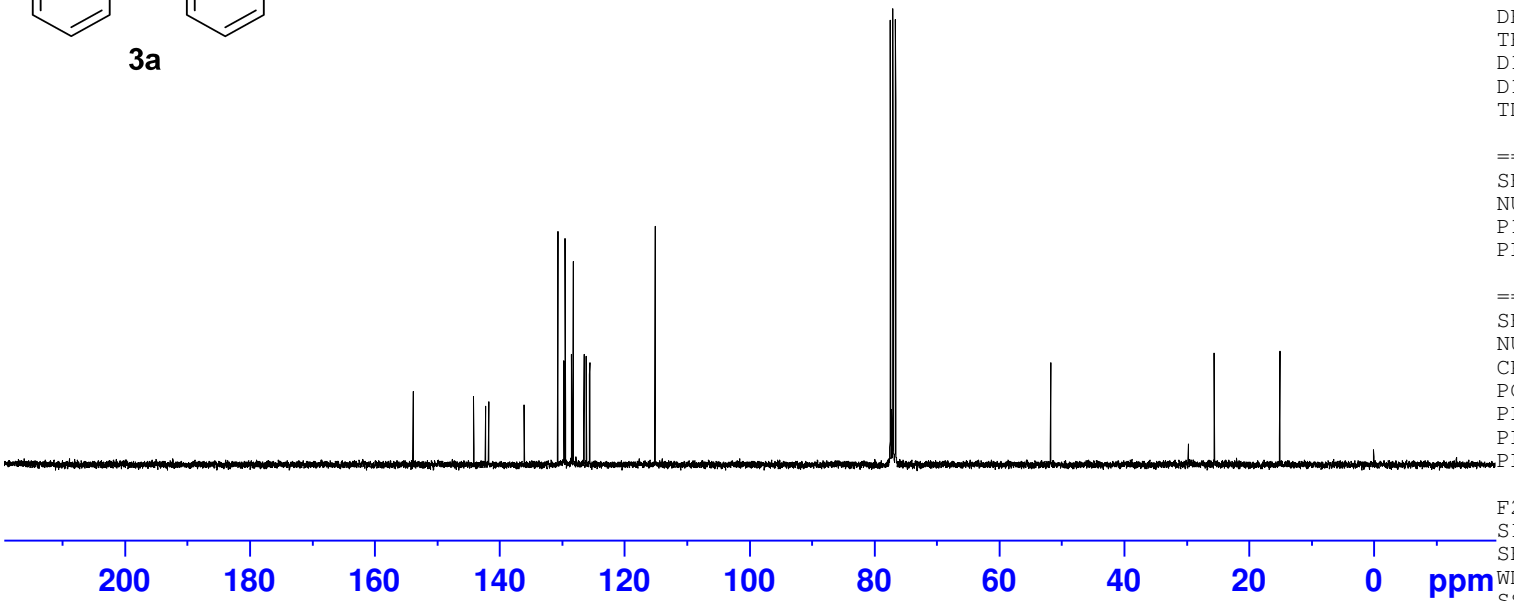
51.733

25.546

15.032



3a




```
Current Data Parameters
NAME                  3a
EXPNO                  2
PROCNO                 1

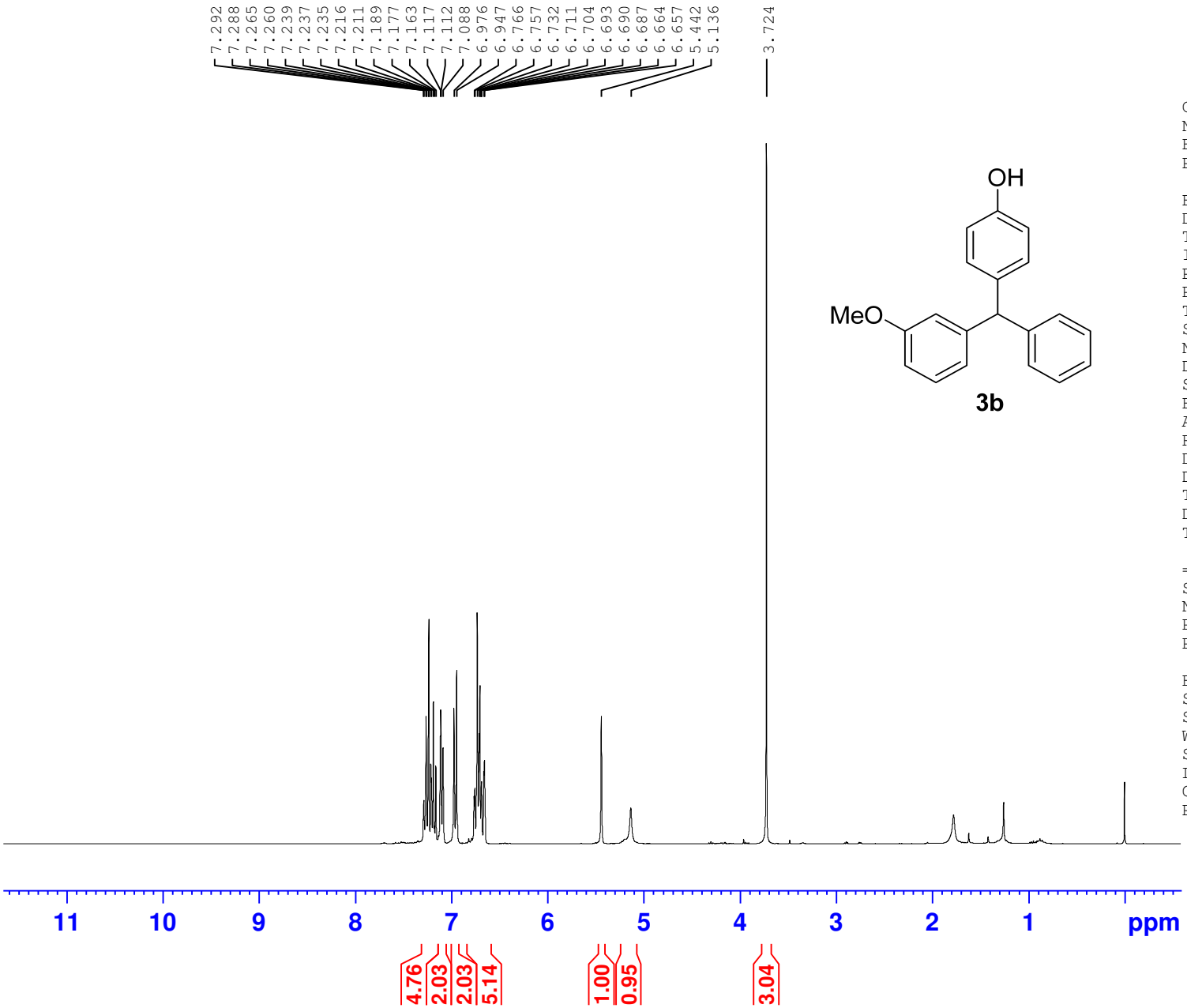
F2 - Acquisition Parameters
Date_           20210629
Time               10.48
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  700
DS                    4
SWH           18028.846 Hz
FIDRES         0.275098 Hz
AQ            1.8175317 sec
RG                  203
DW               27.733 usec
DE                6.50 usec
TE                296.1 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                9.50 usec
PLW1        34.20000076 W

======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

F2 - Processing parameters
SI                32768
SF           75.4677526 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

3sjwei 4314 h-100-2 1h cdcl3




```
Current Data Parameters
NAME                  H-3b
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_             20210628
Time                 9.17
INSTRUM             spect
PROBHD    5 mm PABBO BB-
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH              6009.615 Hz
FIDRES           0.091699 Hz
AQ               5.4525952 sec
RG                    114
DW                 83.200 usec
DE                  6.50 usec
TE                 296.1 K
D1            1.00000000 sec
TD0                     1

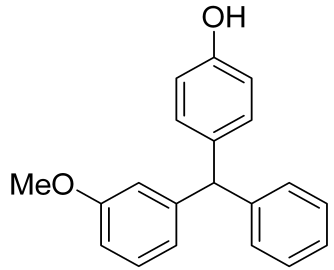
======== CHANNEL f1 ========
SFO1         300.1318534 MHz
NUC1                   1H
P1                 10.00 usec
PLW1         14.00000000 W

F2 - Processing parameters
SI                  65536
SF           300.1300147 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

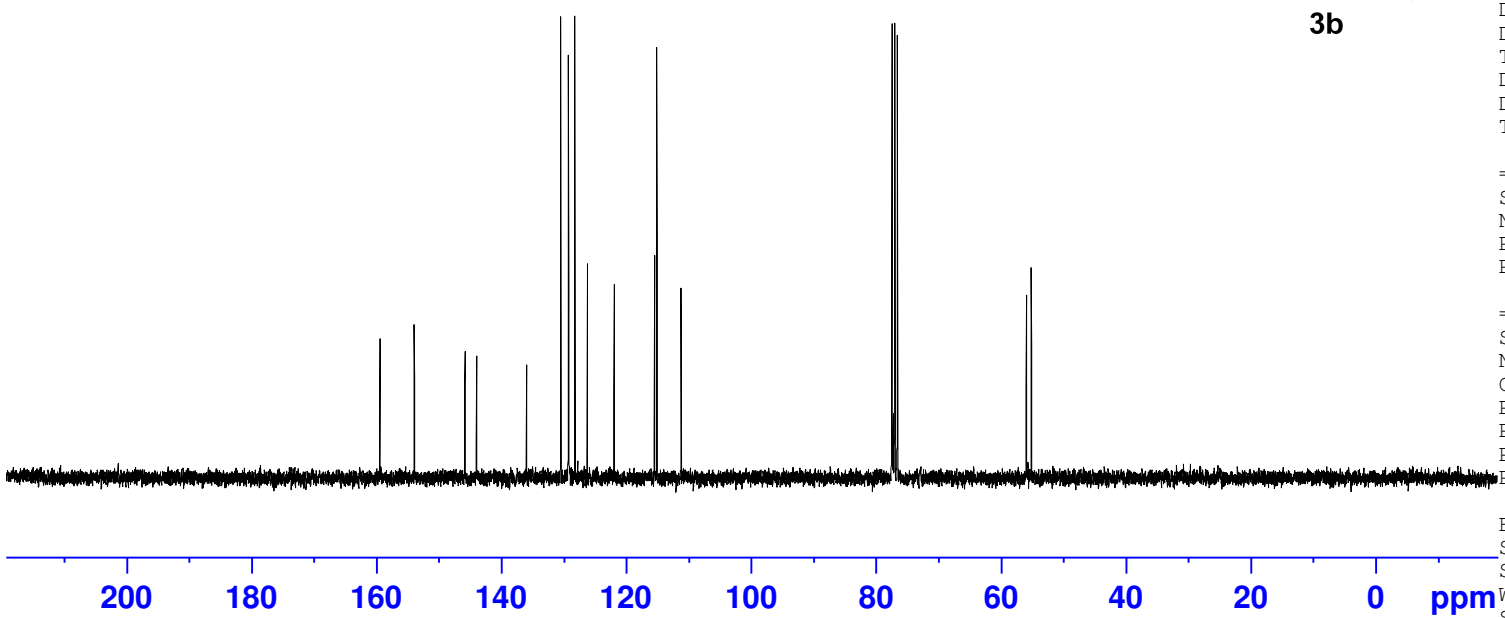
3sjwei 4337 h-100-2 13c cdcl3

159.446
153.947
145.842
143.988
135.965
130.494
129.293
129.179
128.241
126.229
121.951
115.482
115.090
111.239

55.923
55.110



3b




```
Current Data Parameters
NAME                   3b
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20210629
Time               11.01
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  156
DS                    4
SWH           18028.846 Hz
FIDRES         0.275098 Hz
AQ            1.8175317 sec
RG                  203
DW               27.733 usec
DE                6.50 usec
TE                296.1 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         75.4752949 MHz
NUC1                13C
P1                9.50 usec
PLW1        34.20000076 W

======== CHANNEL f2 ========
SFO2        300.1312005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        14.00000000 W
PLW12        0.17284000 W
PLW13        0.14000000 W

F2 - Processing parameters
SI                 32768
SF          75.4677546 MHz
WDW                   EM
SSB                    0
LB                 1.00 Hz
GB                     0
PC                  1.40
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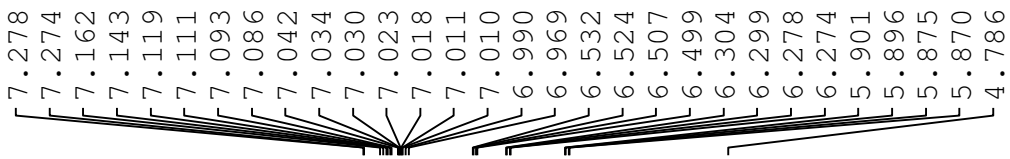
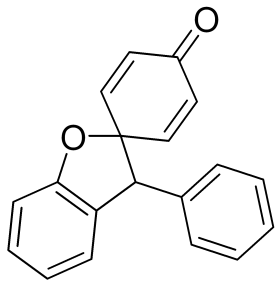
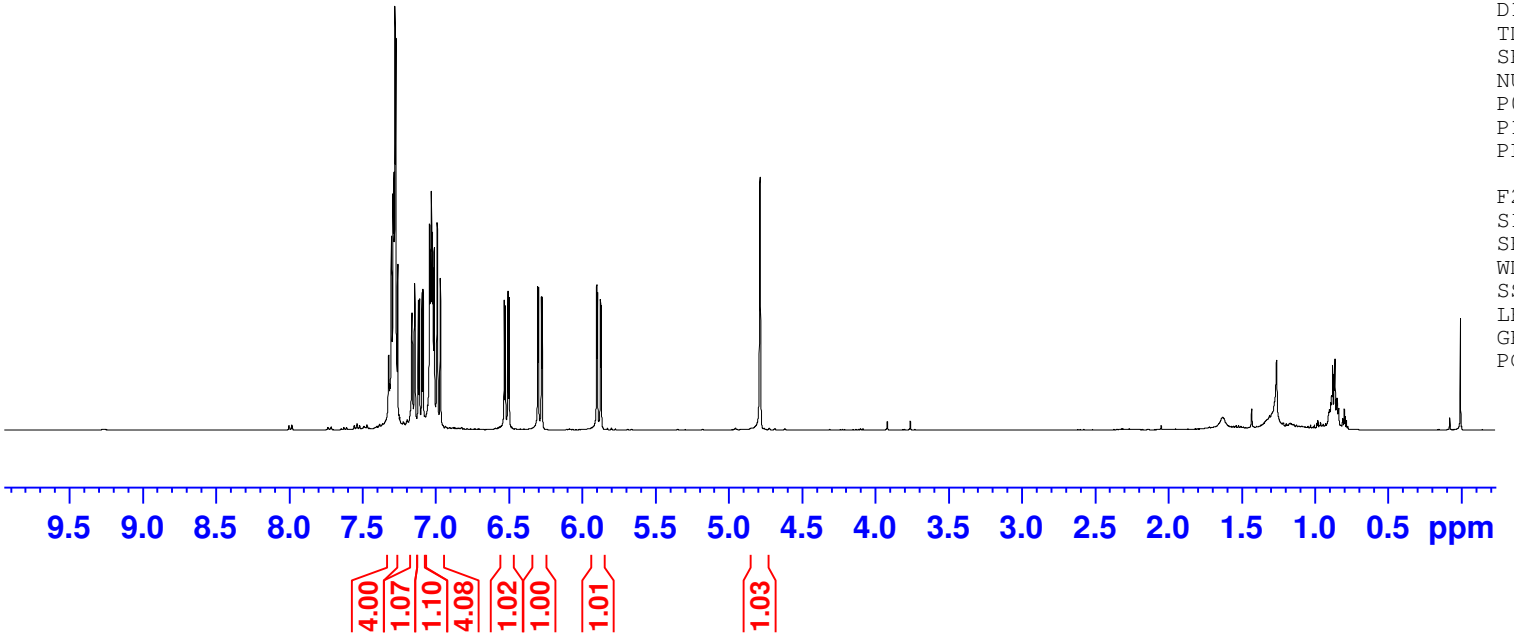
H-4





4

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Current Data Parameters
NAME                      4
EXPNO                     1
PROCNO                    1

F2 - Acquisition Parameters
Date_              20220224
Time                 23.59 h
INSTRUM              Avance
PROBHD   Z116098_0833 (
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                      16
DS                       2
SWH               8196.722 Hz
FIDRES            0.250144 Hz
AQ               3.9976959 sec
RG                     101
DW                61.000 usec
DE                 13.54 usec
TE                 294.8 K
D1             1.00000000 sec
TD0                      1
SFO1          400.1324708 MHz
NUC1                    1H
P0                 3.33 usec
P1                10.00 usec
PLW1          20.73200035 W

F2 - Processing parameters
SI                   65536
SF            400.1300097 MHz
WDW                     EM
SSB                      0
LB                0.30 Hz
GB                       0
PC                1.00
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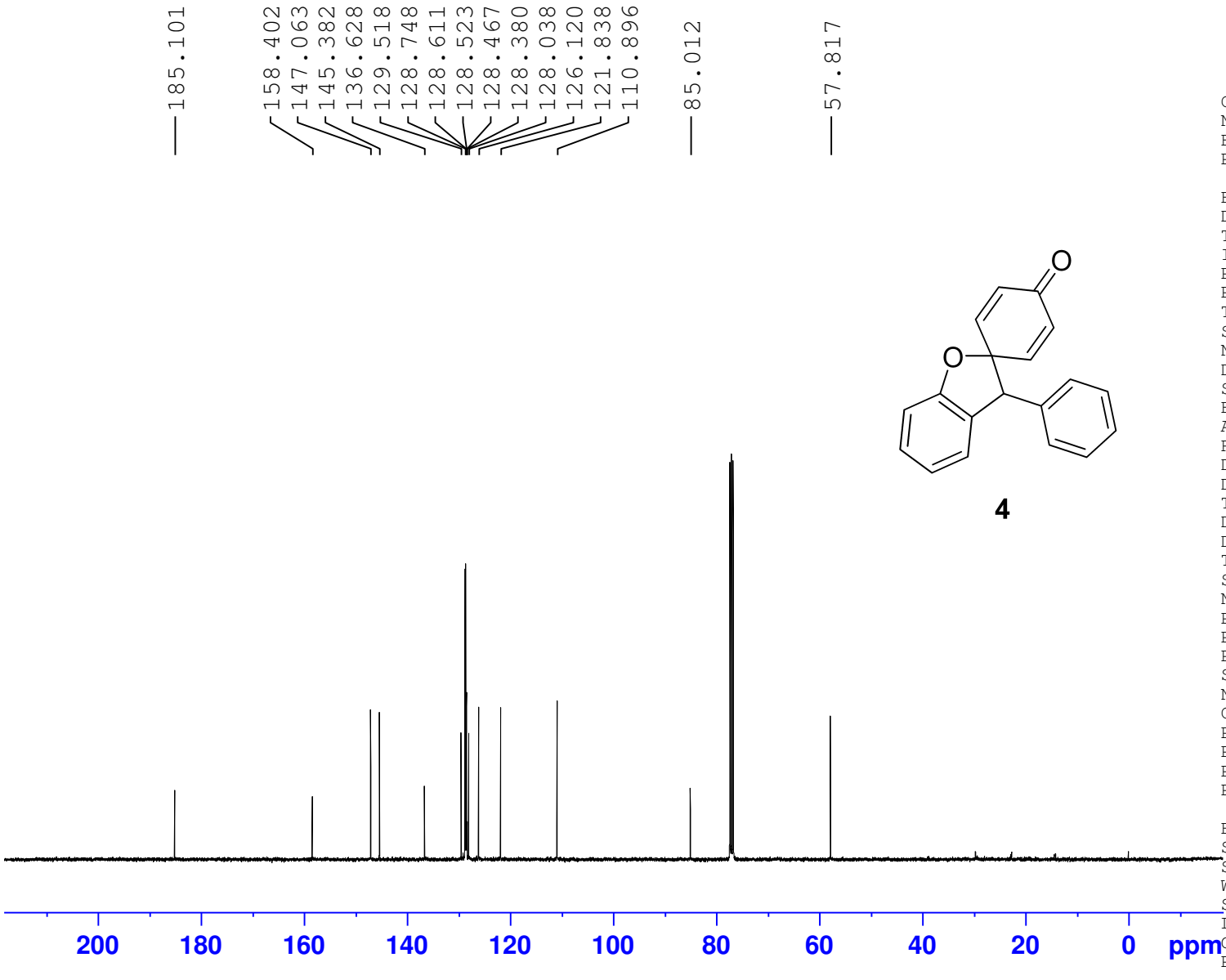


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Current Data Parameters
NAME                   4
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20220225
Time                0.59 h
INSTRUM           Avance
PROBHD   Z116098_0833 (
PULPROG           zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           23809.523 Hz
FIDRES         0.726609 Hz
AQ            1.3762560 sec
RG              50.1934
DW               21.000 usec
DE                6.50 usec
TE                295.3 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1
SFO1        100.6228298 MHz
NUC1                13C
P0                 3.33 usec
P1                10.00 usec
PLW1        87.89900208 W
SFO2        400.1316005 MHz
NUC2                1H
CPDPRG[2        waltz65
PCPD2             90.00 usec
PLW2        20.73200035 W
PLW12        0.25595000 W
PLW13        0.12874000 W

F2 - Processing parameters
SI                32768
SF          100.6127748 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
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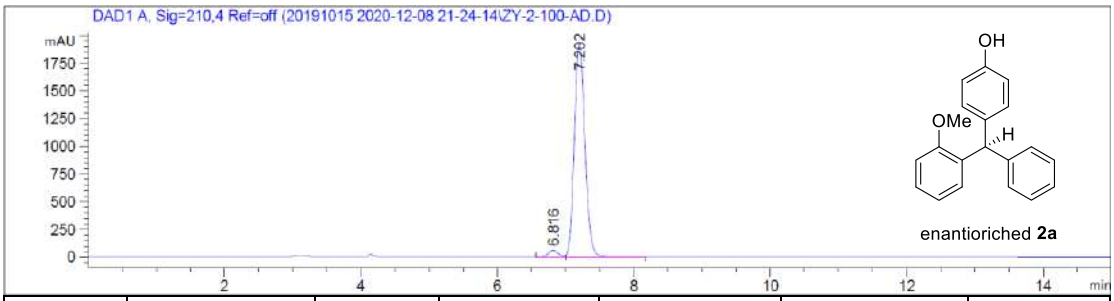
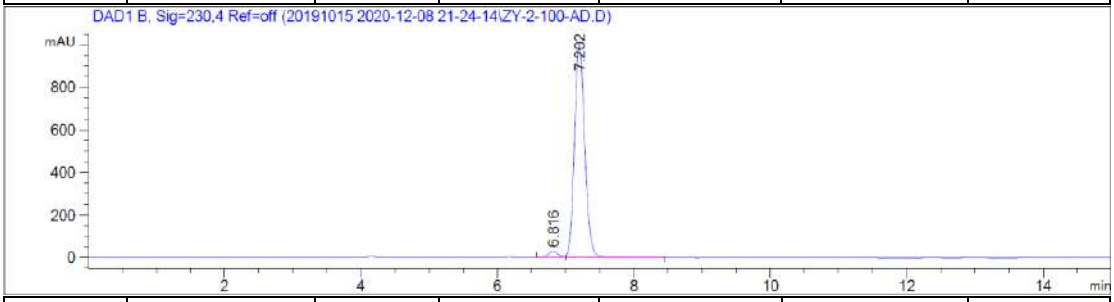
Sample Name: ZY-2-100-AD

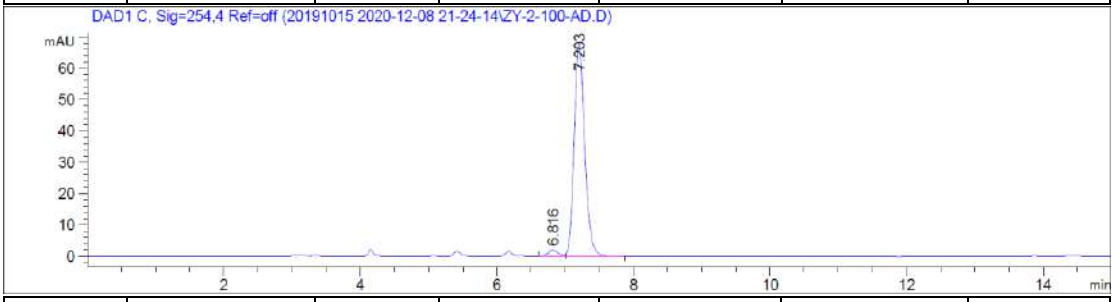
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



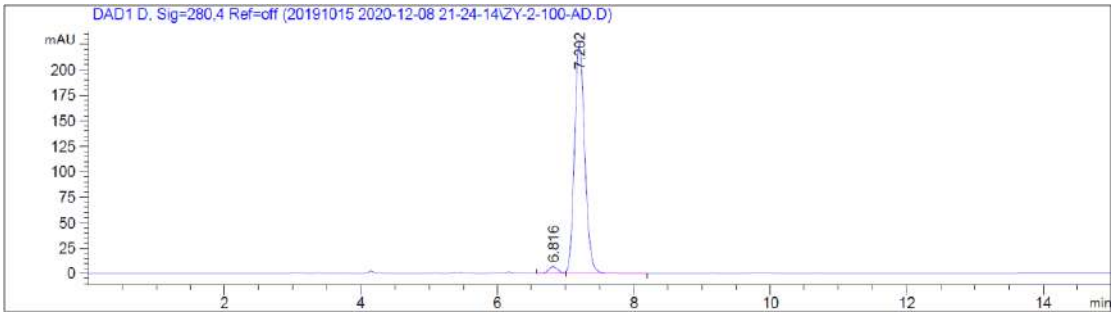
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.816	BV E	0.1486	590.01245	62.21909	2.7954
2	7.202	VB R	0.1663	2.05162e4	1925.77307	97.2046



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.816	BV E	0.1485	282.20193	29.79965	2.6523
2	7.202	VB R	0.1583	1.03577e4	1004.88098	97.3477



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.816	BV E	0.1490	19.64244	2.02745	2.6527
2	7.203	VB R	0.1617	720.82404	67.96582	97.3473



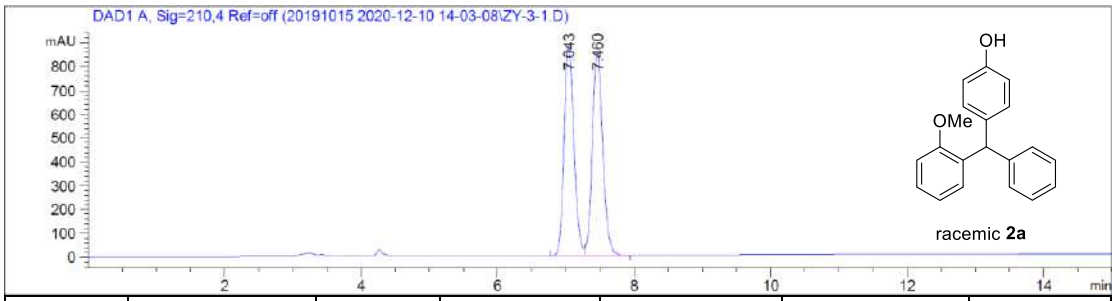
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.816	BV E	0.1482	62.98121	6.66518	2.6264
2	7.202	VB R	0.1583	2335.01733	226.37990	97.3736

==========

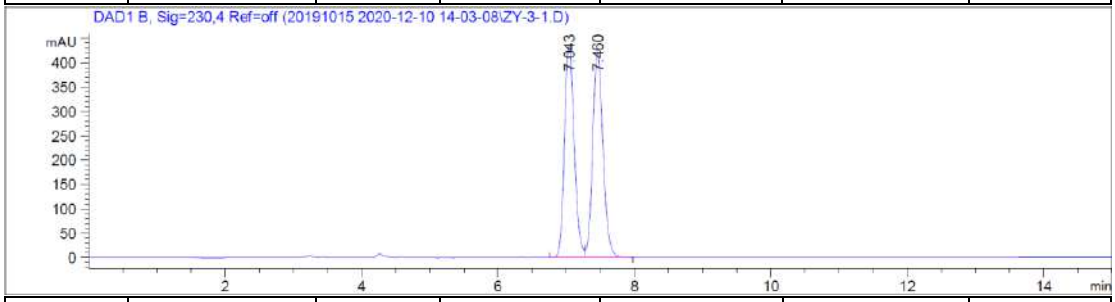
End of Report

Sample Name: ZY-3-1

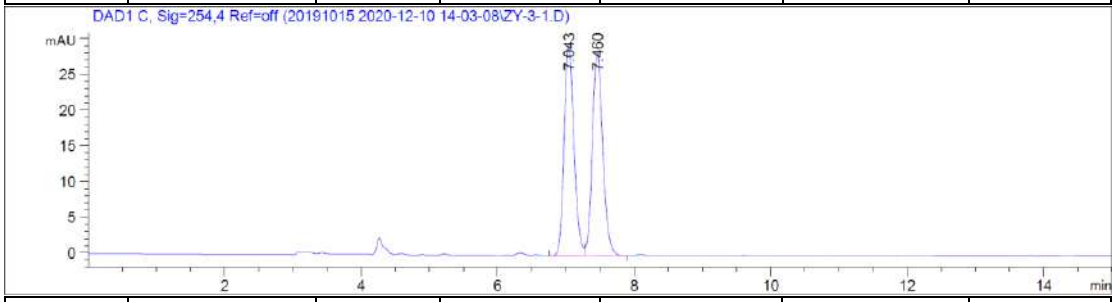
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



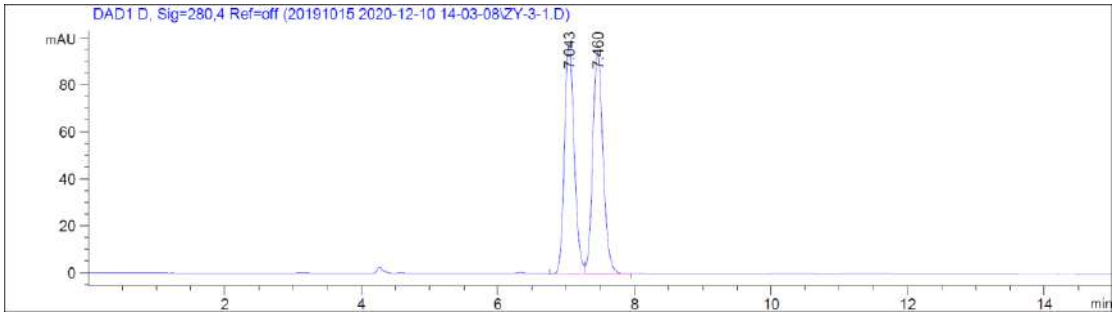
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.043	BV	0.1554	8952.45020	889.76105	49.5614
2	7.460	VB	0.1644	9110.90430	854.25543	50.4386



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.043	BV	0.1545	4371.23242	437.88336	49.5849
2	7.460	VB	0.1635	4444.42285	419.89978	50.4151



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.043	BV	0.1554	298.91614	29.71475	49.5837
2	7.460	VB	0.1644	303.93555	28.50640	50.4163



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.043	BV	0.1544	980.23279	98.25383	49.5884
2	7.460	VB	0.1634	996.50458	94.20515	50.4116

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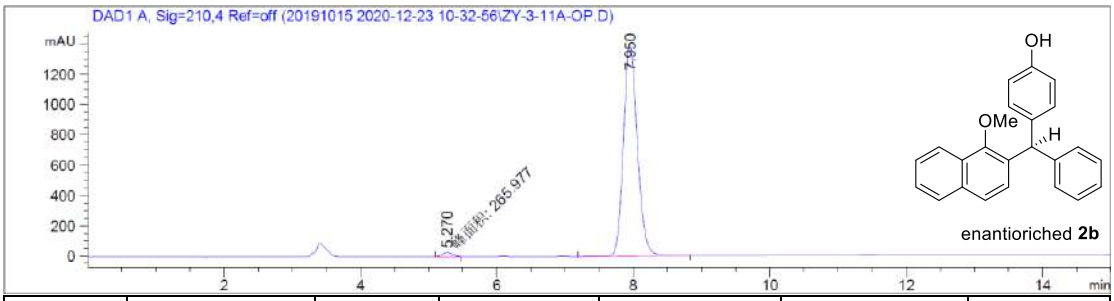
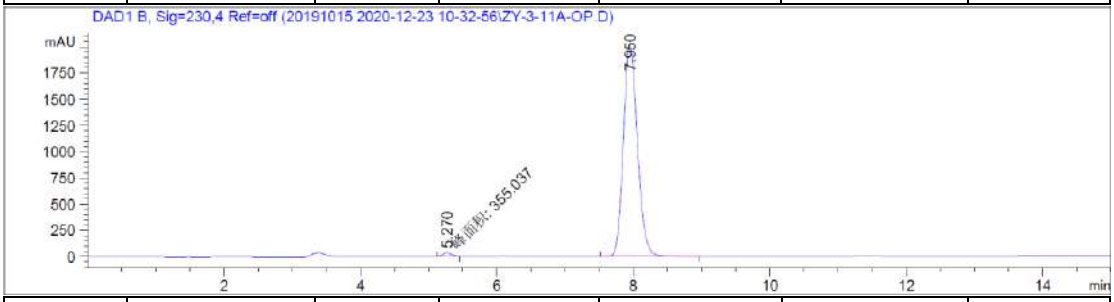
End of Report

Sample Name: ZY-3-11-A-OP

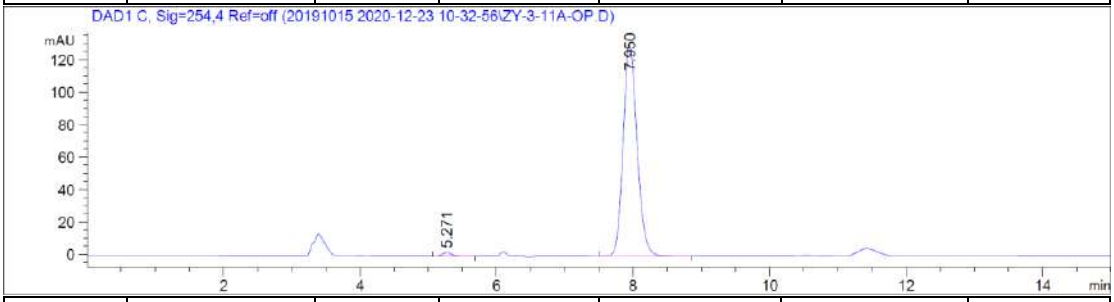
HPLC Condition: IC, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



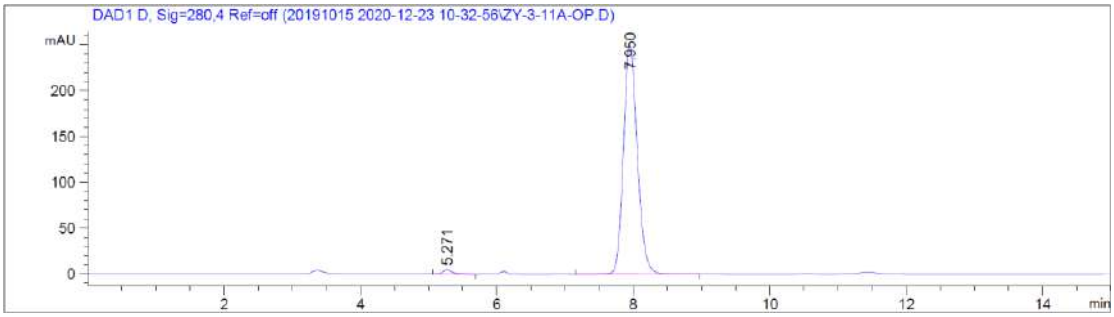
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.270	MM	0.1655	265.97672	26.78060	1.3158
2	7.950	BB	0.2218	1.99482e4	1403.64111	98.6842



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.270	MM	0.1549	355.03702	38.19352	1.1976
2	7.950	BB	0.2244	2.92910e4	2028.79395	98.8024



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.271	MM	0.1587	26.32790	2.50296	1.3899
2	7.950	BB	0.2200	1867.89063	131.25491	98.6101



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.271	MM	0.1559	48.37151	4.70643	1.3307
2	7.950	BB	0.2178	3586.61963	252.43233	98.6693

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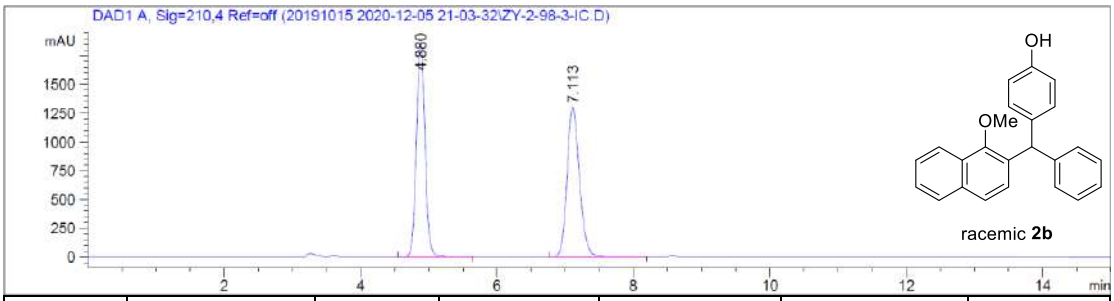
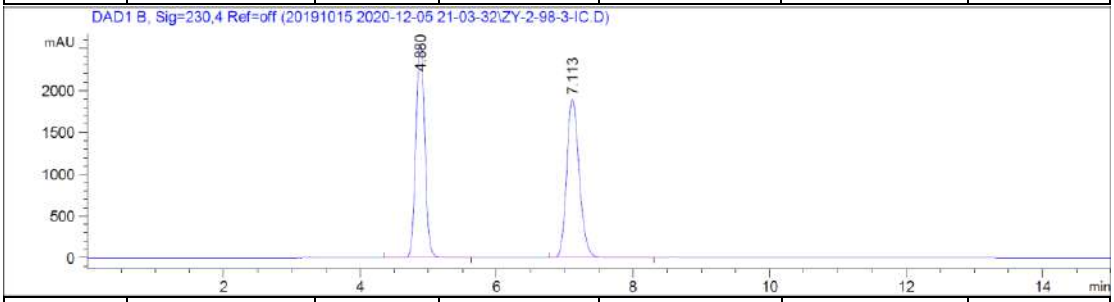
End of Report

Sample Name: ZY-2-98-3-IC

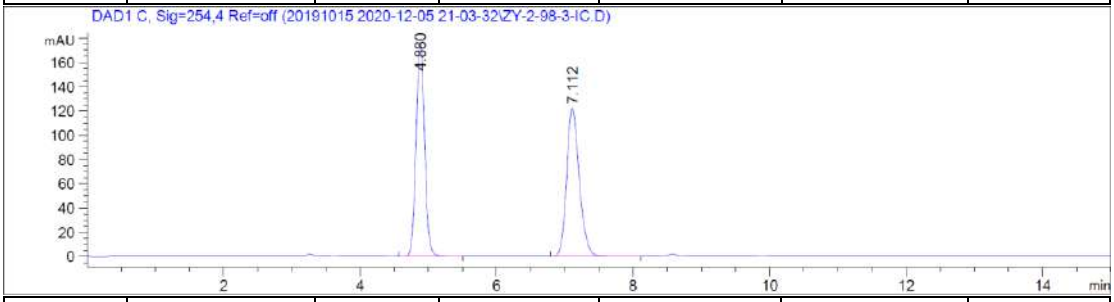
HPLC Condition: IC, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



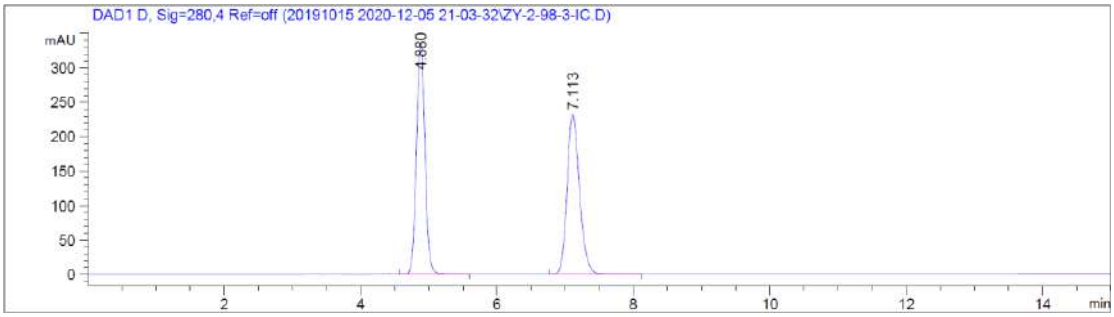
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	4.880	BB	0.1364	1.63047e4	1857.90283	49.6542
2	7.113	BB	0.1960	1.65319e4	1303.12830	50.3458



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	4.880	BB	0.1427	2.33184e4	2550.04712	48.9153
2	7.113	BB	0.1999	2.43525e4	1895.78113	51.0847



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	4.880	BB	0.1337	1531.11902	175.61201	49.2676
2	7.112	BB	0.1967	1576.64453	122.06750	50.7324



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	4.880	BB	0.1334	2918.97363	335.77252	49.6272
2	7.113	BB	0.1946	2962.82275	232.55891	50.3728

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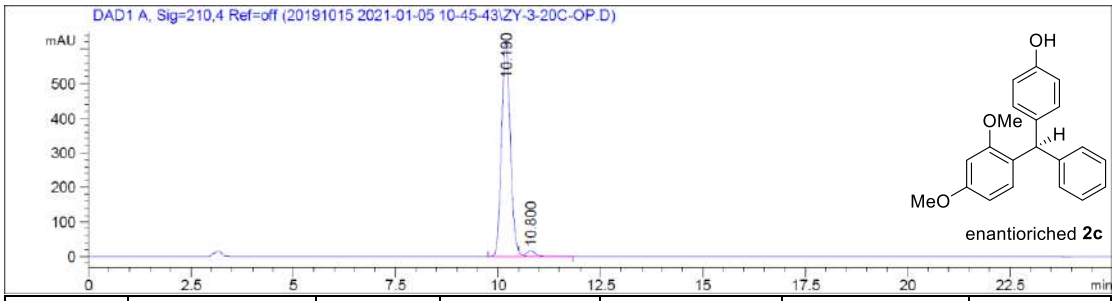
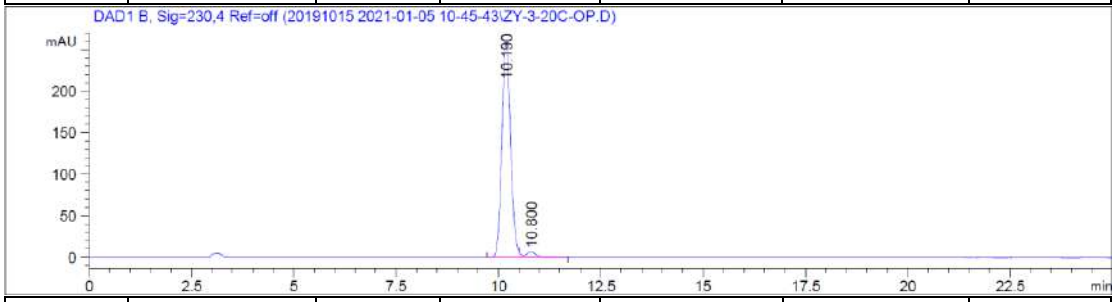
End of Report

Sample Name: ZY-3-20C-OP

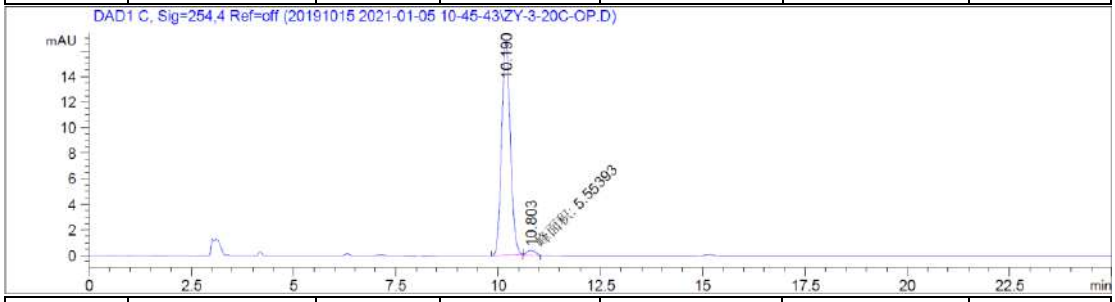
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



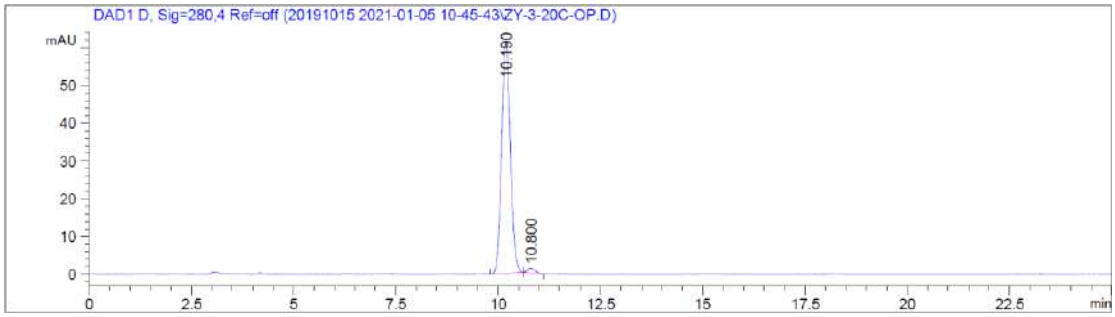
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.190	BV R	0.2340	9342.05469	619.12823	97.3020
2	10.800	VB E	0.2468	259.04095	16.01011	2.6980



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.190	BV R	0.2332	3867.48706	257.52954	97.3148
2	10.800	VB E	0.2471	106.71386	6.58278	2.6852



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.190	BB	0.2318	247.18417	16.59198	97.8025
2	10.803	MM	0.2385	5.55393	3.88084e-1	2.1975



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.190	BB	0.2313	905.01959	60.93407	98.2187
2	10.800	BB	0.2161	16.41350	1.22673	1.7813

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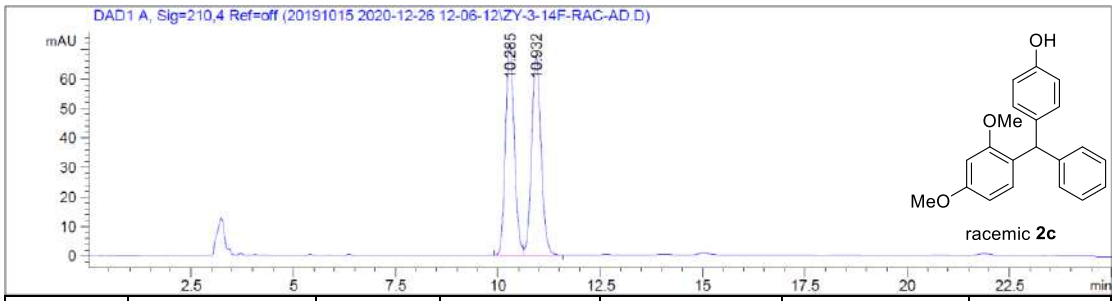
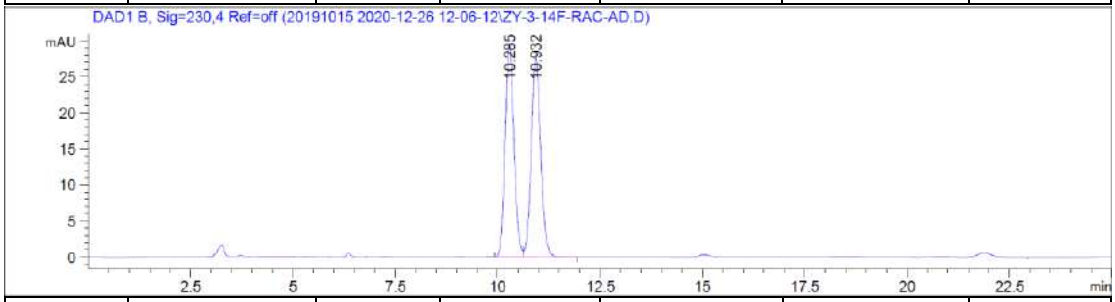
End of Report

Sample Name: ZY-3-14F-RAC-AD

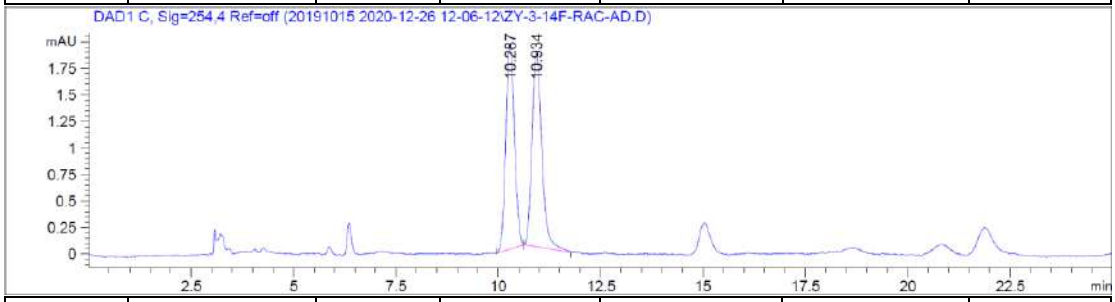
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



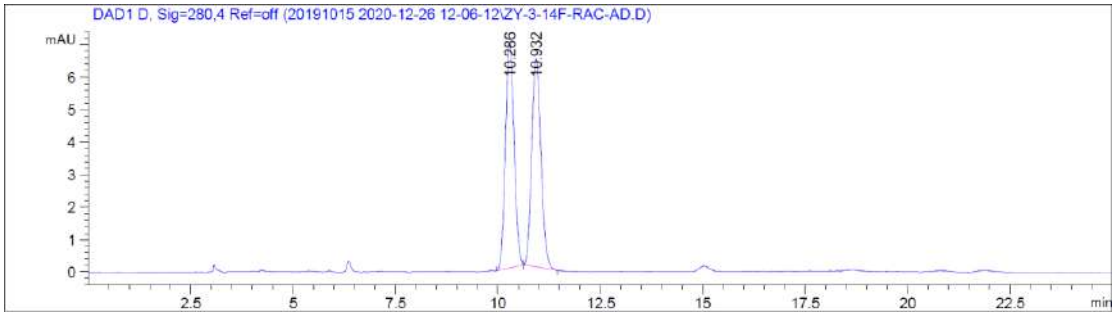
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.285	BV	0.2327	1073.14343	71.66335	49.7490
2	10.932	VB	0.2507	1083.97266	67.01147	50.2510



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.285	BV	0.2326	440.86221	29.46138	49.6099
2	10.932	VB	0.2515	447.79480	27.57064	50.3901



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.287	BB	0.2276	28.48153	1.93583	48.1568
2	10.934	BB	0.2543	30.66177	1.82212	51.8432



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.286	BB	0.2292	101.87984	6.94383	50.1728
2	10.932	BB	0.2420	101.17817	6.41356	49.8272

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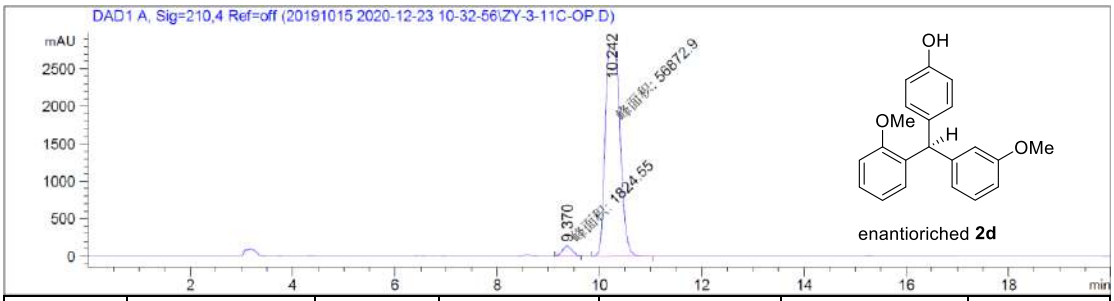
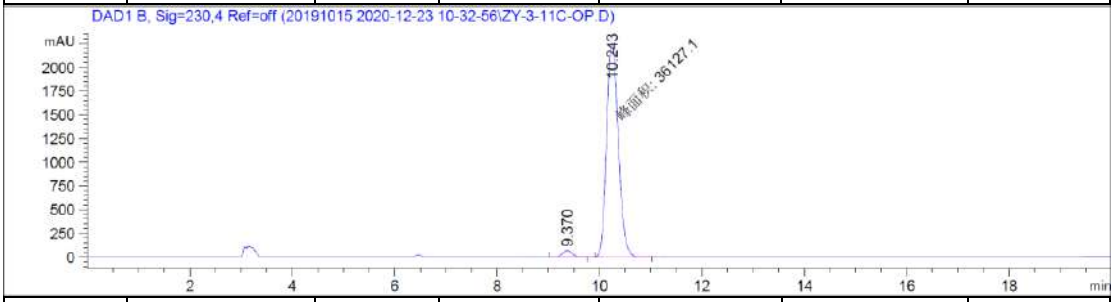
End of Report

Sample Name: ZY-3-11C-OP

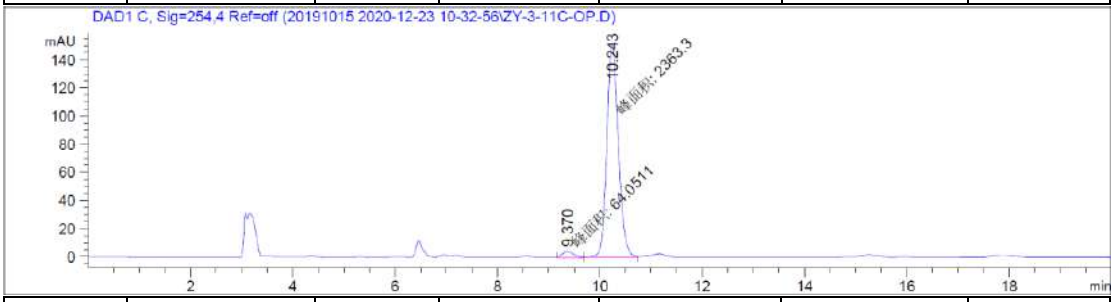
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



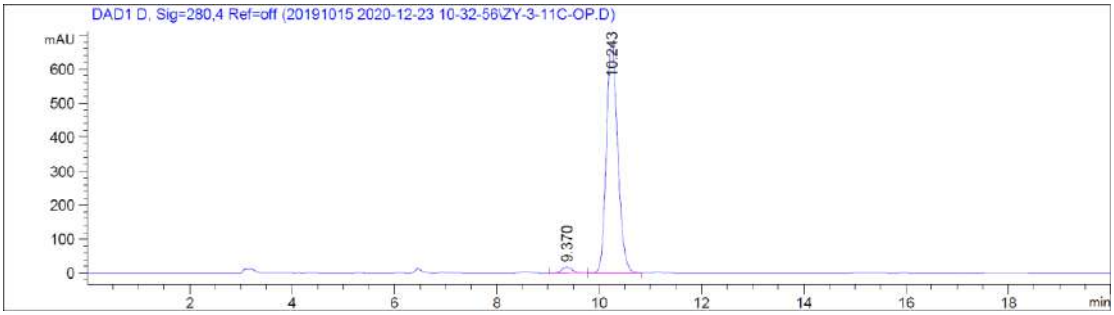
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	9.370	MM	0.2268	1824.55432	134.05116	3.1084
2	10.242	MM	0.3334	5.68729e4	2843.00684	96.8916



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	9.370	BB	0.2139	895.95898	65.35371	2.4200
2	10.243	MM	0.2673	3.61271e4	2252.58008	97.5800



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	9.370	MM	0.2444	64.05114	4.36738	2.6387
2	10.243	MM	0.2601	2363.29907	151.45750	97.3613



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	9.370	BB	0.2143	249.03212	18.12770	2.3309
2	10.243	BB	0.2396	1.04350e4	678.00787	97.6691

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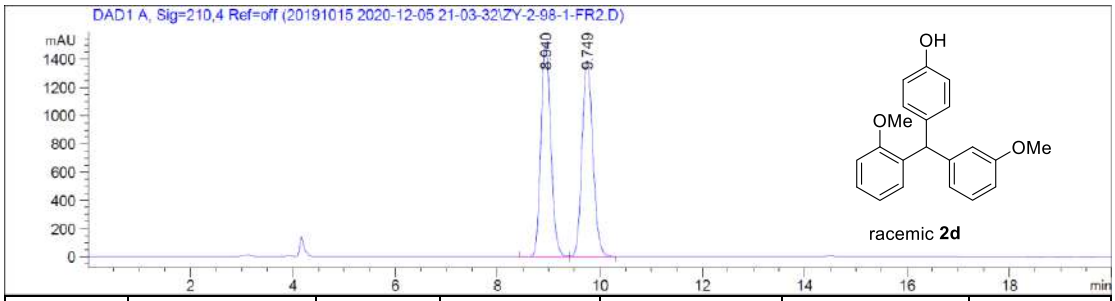
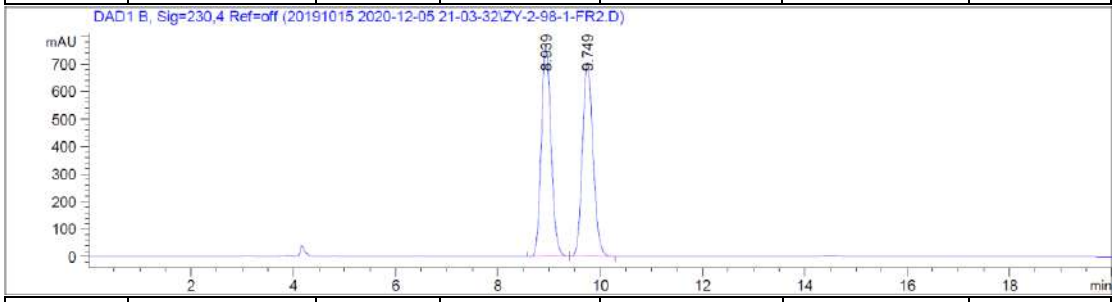
End of Report

Sample Name: ZY-2-98-1-FR2

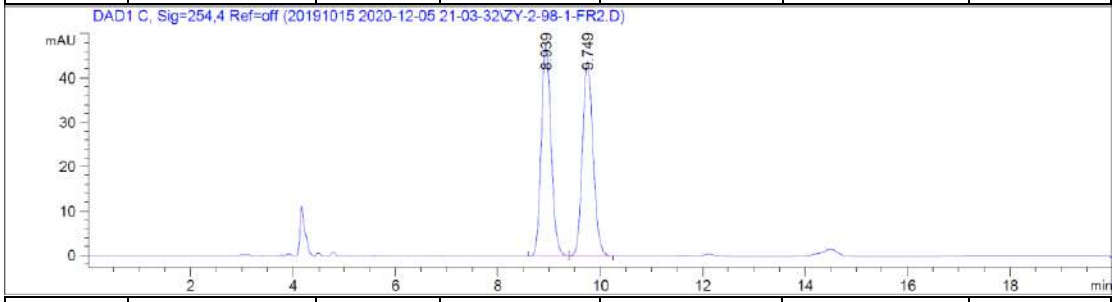
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



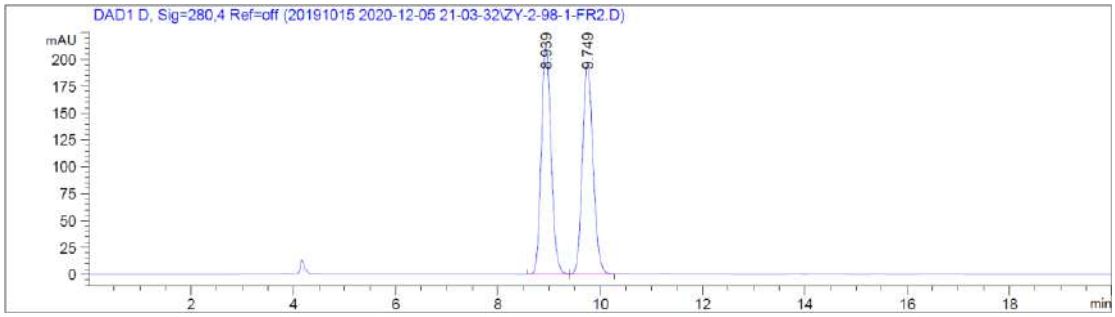
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	8.940	BB	0.2110	2.04182e4	1517.06946	50.0016
2	9.749	BB	0.2273	2.04168e4	1390.70215	49.9984



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	8.939	BB	0.2044	1.02243e4	772.43768	50.1112
2	9.749	BB	0.2248	1.01789e4	703.43292	49.8888



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	8.939	BB	0.2046	636.05731	47.99541	50.1200
2	9.749	BB	0.2251	633.01184	43.67675	49.8800



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	8.939	BB	0.2041	2837.89307	214.85518	50.1348
2	9.749	BB	0.2244	2822.62964	195.56131	49.8652

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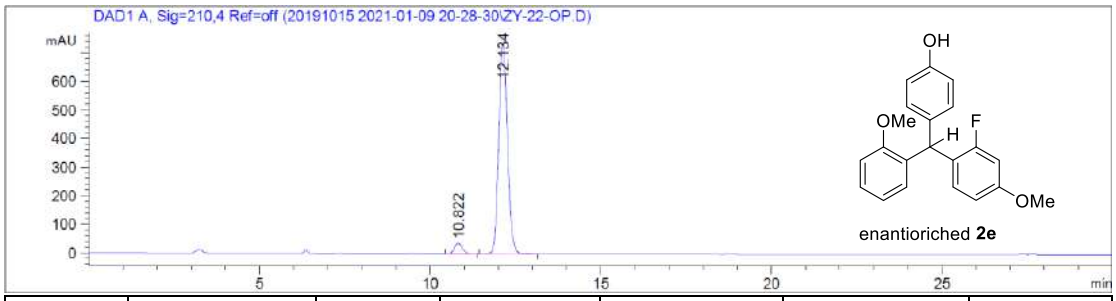
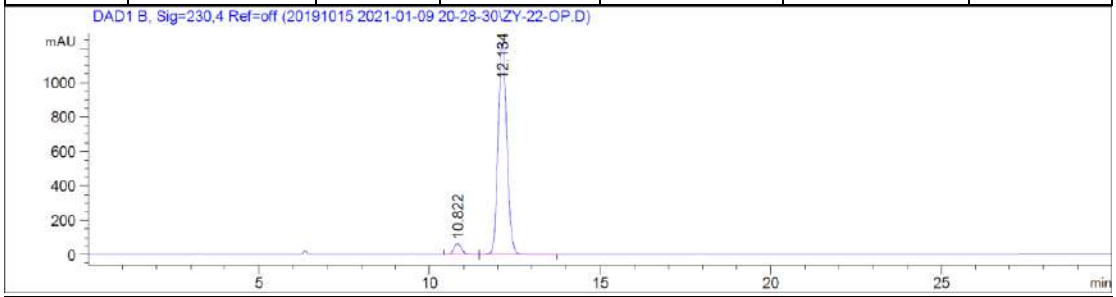
End of Report

Sample Name: ZY-22-OP

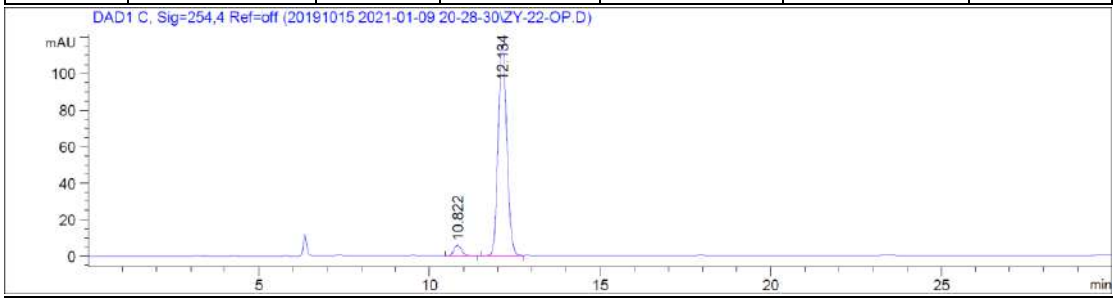
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



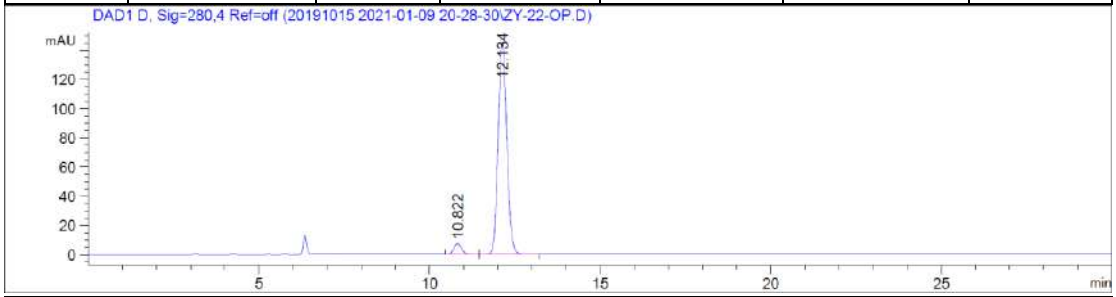
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.822	BB	0.2423	586.58917	37.55013	4.3005
2	12.134	BB	0.2744	1.30534e4	737.82520	95.6995



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.822	BB	0.2419	990.62653	63.52700	4.3266
2	12.134	BB	0.2759	2.19053e4	1228.98096	95.6734



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.822	BB	0.2428	92.52348	5.90566	4.3328
2	12.134	BB	0.2740	2042.89392	115.71703	95.6672



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.822	BB	0.2420	114.69584	7.35059	4.2827
2	12.134	BB	0.2742	2563.40625	145.06633	95.7173

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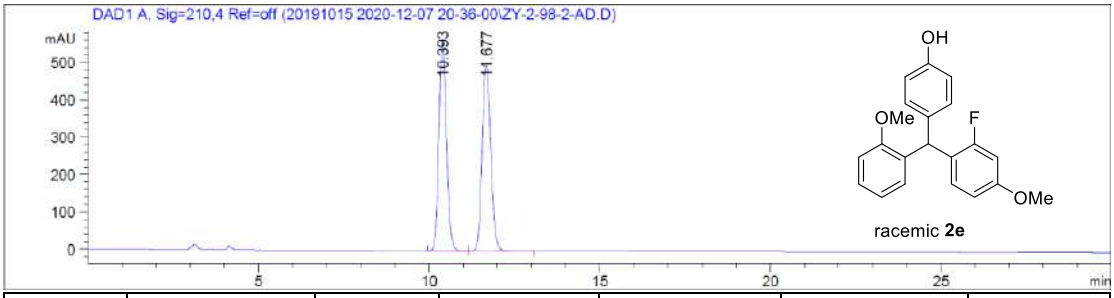
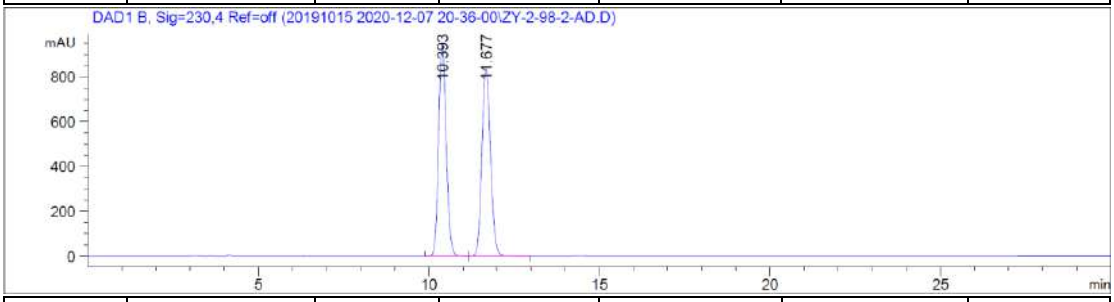
End of Report

Sample Name: ZY-2-98-2-AD

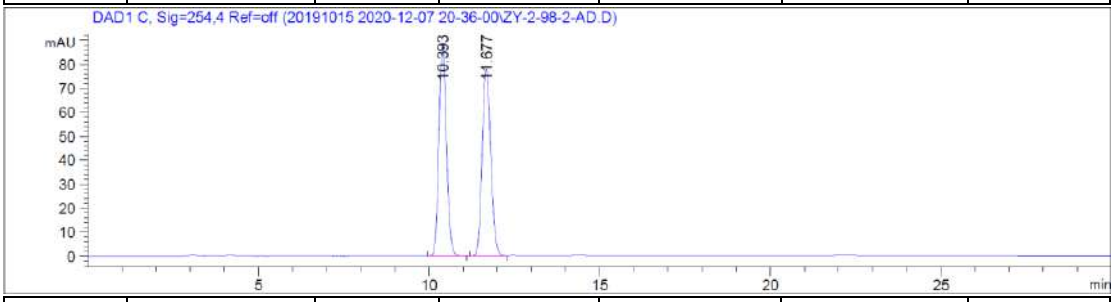
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



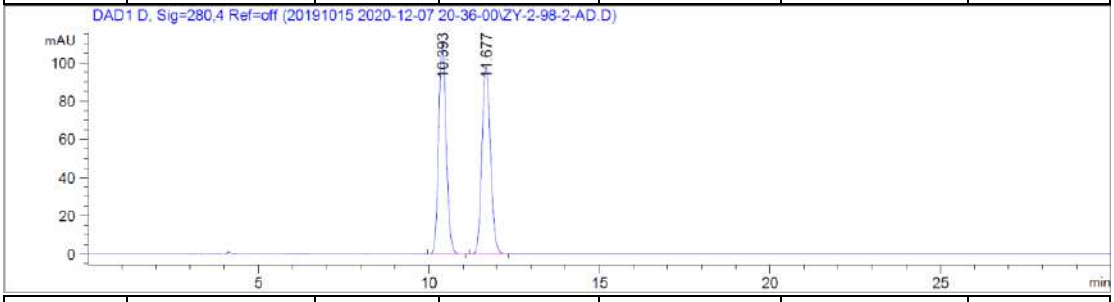
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.393	BB	0.2376	8641.09668	561.37610	49.9415
2	11.677	BB	0.2693	8661.33008	497.07239	50.0585



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.393	BB	0.2383	1.45945e4	944.27094	49.9222
2	11.677	BB	0.2719	1.46400e4	837.80542	50.0778



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.393	BB	0.2378	1359.56445	88.22533	50.0003
2	11.677	BB	0.2691	1359.54639	78.11201	49.9997



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.393	BB	0.2375	1700.31592	110.50617	49.9847
2	11.677	BB	0.2689	1701.35669	97.83540	50.0153

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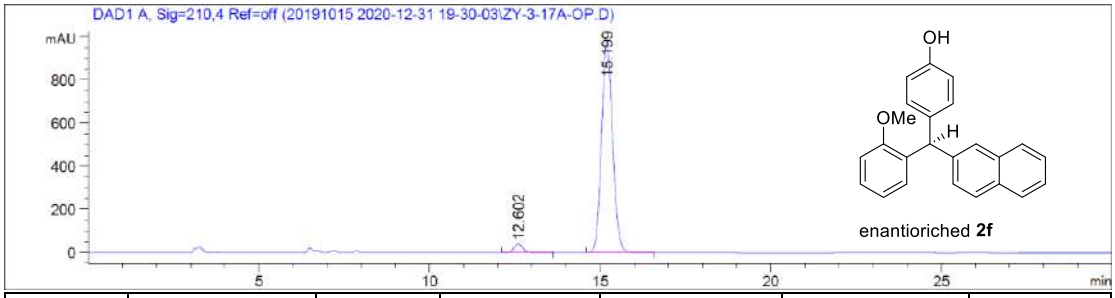
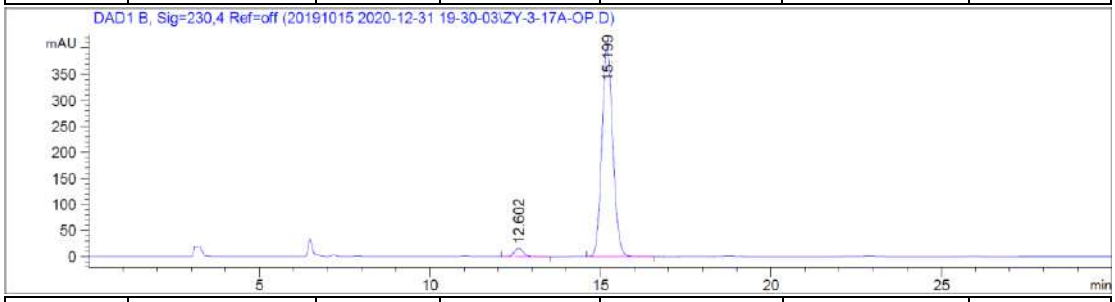
End of Report

Sample Name: ZY-3-17A-OP

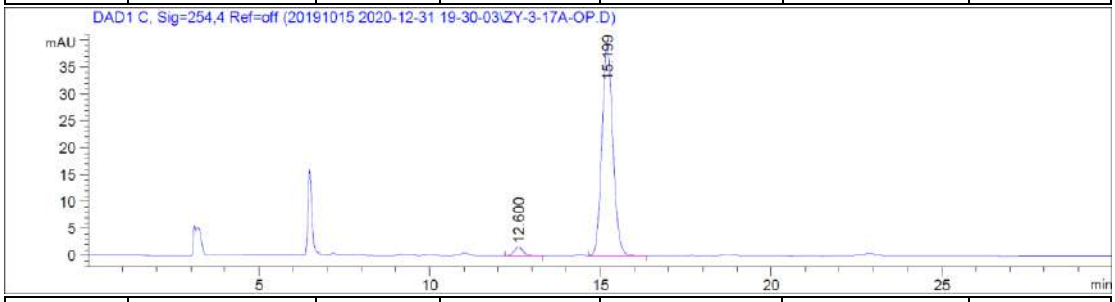
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



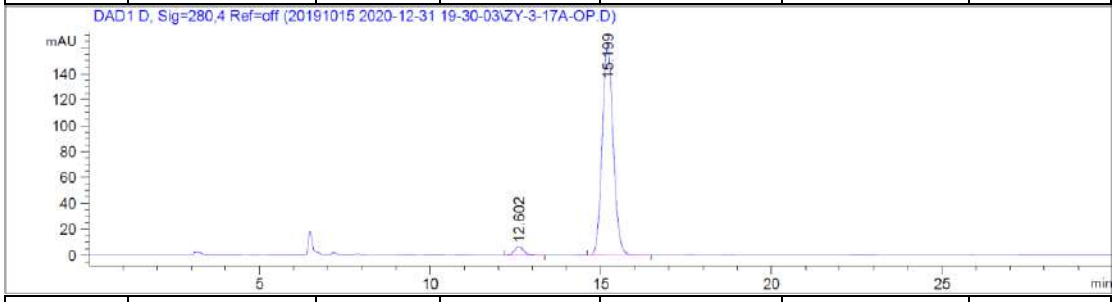
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.602	BB	0.2852	736.61407	39.57317	3.2139
2	15.199	BB	0.3503	2.21834e4	979.32196	96.7861



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.602	BB	0.2832	292.14078	15.83707	3.1148
2	15.199	BB	0.3474	9086.96387	405.63663	96.8852



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.600	BB	0.2802	28.90778	1.56013	3.1742
2	15.199	BB	0.3483	881.79071	39.22271	96.8258



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.602	BB	0.2809	117.24777	6.36561	3.1035
2	15.199	BB	0.3472	3660.61816	163.52097	96.8965

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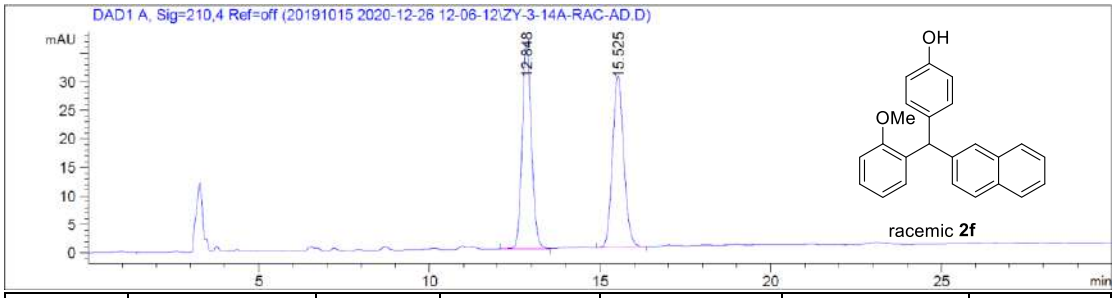
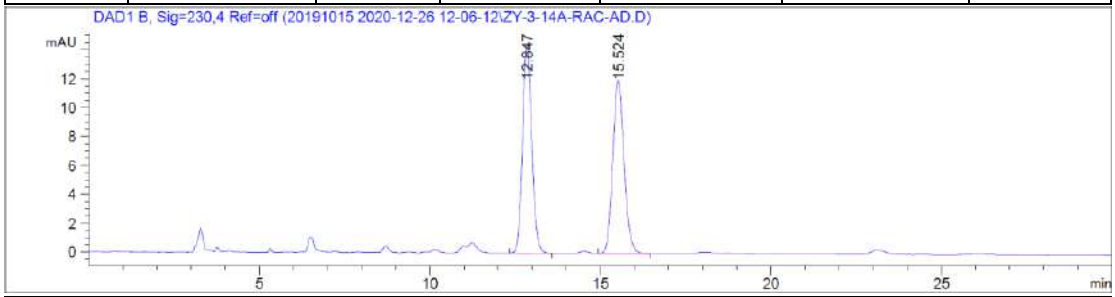
End of Report

Sample Name: ZY-3-14A-RAC-AD

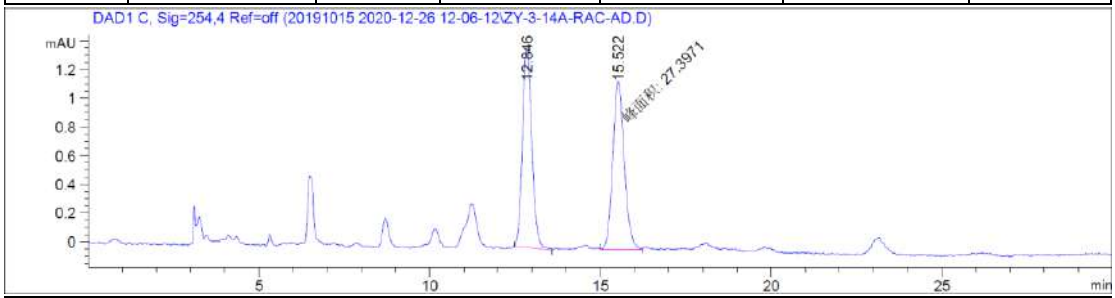
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



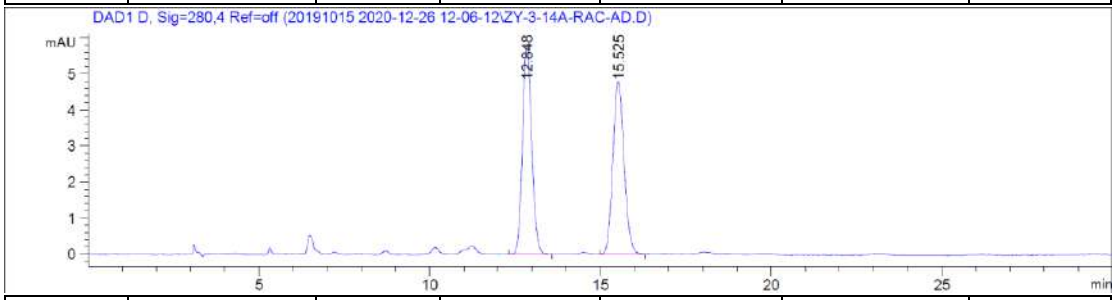
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.848	BB	0.2912	685.55109	36.15486	50.0227
2	15.525	BB	0.3555	684.92987	29.87740	49.9773



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.847	BB	0.2925	273.56375	14.47244	49.8943
2	15.524	BB	0.3562	274.72287	11.95163	50.1057



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.846	BB	0.2934	26.73645	1.40897	49.3898
2	15.522	MM	0.3898	27.39708	1.17152	50.6102



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.848	BB	0.2922	109.85551	5.82083	49.9694
2	15.525	BB	0.3507	109.98984	4.81104	50.0306

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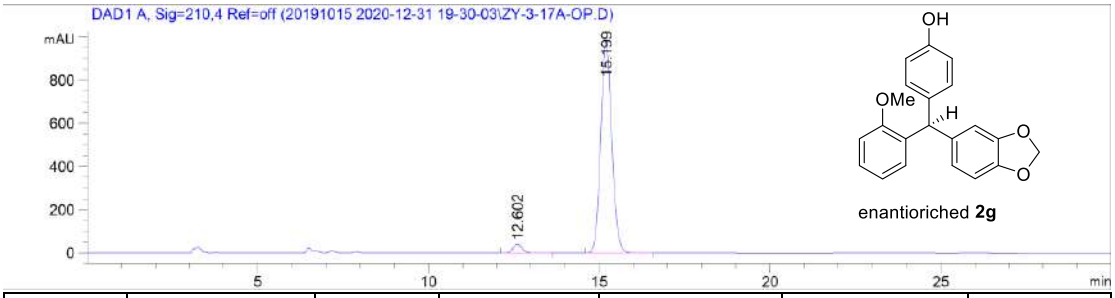
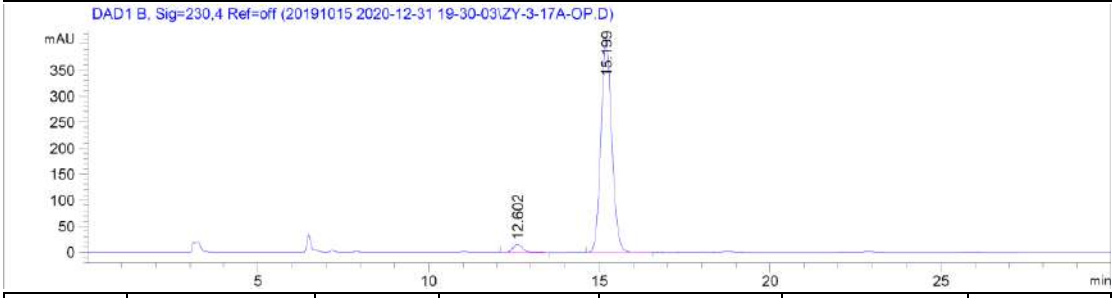
End of Report

Sample Name: ZY-3-17A-OP

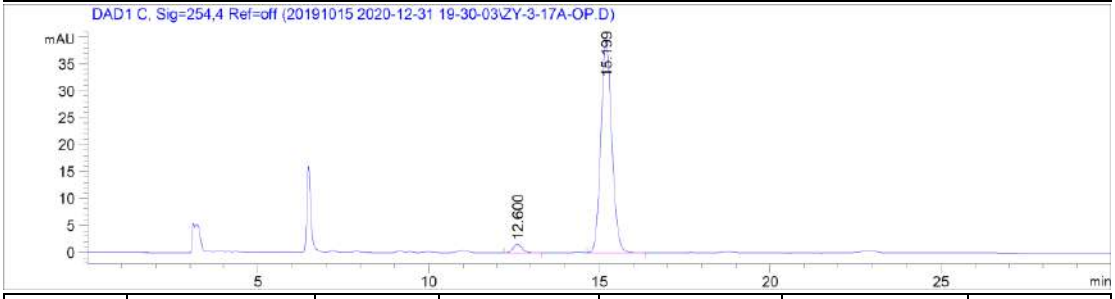
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



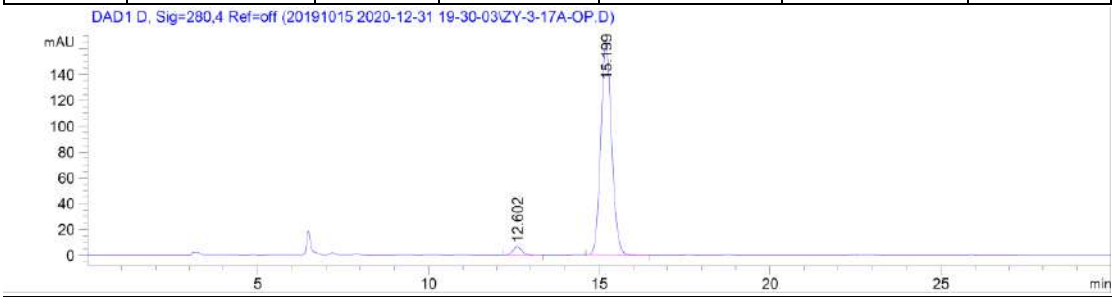
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.602	BB	0.2852	736.6141	39.5732	3.2139
2	15.199	BB	0.3503	22183.3711	979.3220	96.7861



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.602	BB	0.2832	292.1408	15.8371	3.1148
2	15.199	BB	0.3474	9086.9639	405.6366	96.8852



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.600	BB	0.2802	28.9078	1.5601	3.1742
2	15.199	BB	0.3483	881.7907	39.2227	96.8258



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.602	BB	0.2809	117.2478	6.3656	3.1035
2	15.199	BB	0.3472	3660.6182	163.5210	96.8965

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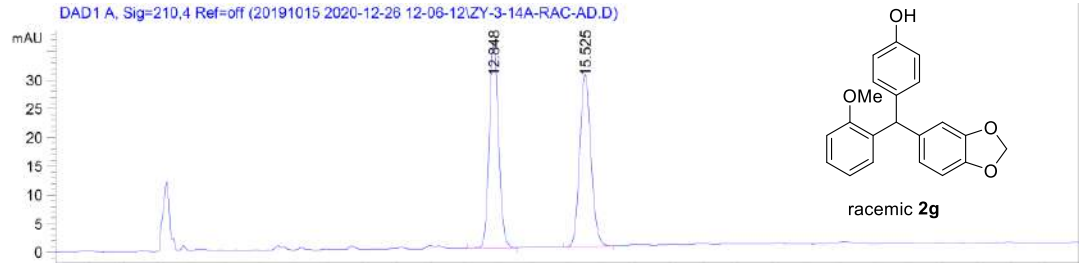
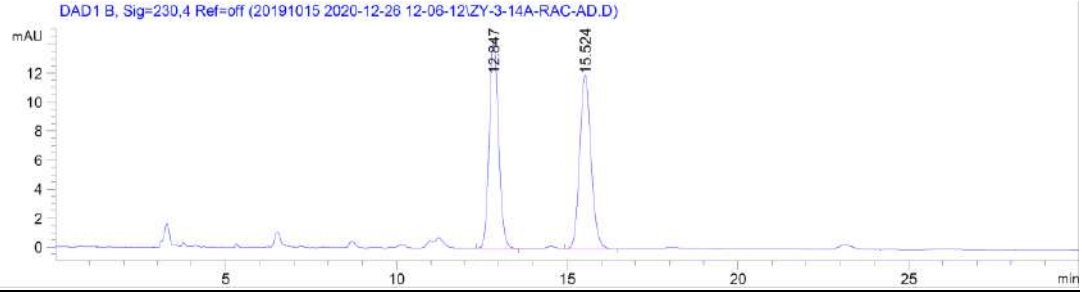
End of Report

Sample Name: ZY-3-14A-RAC-AD

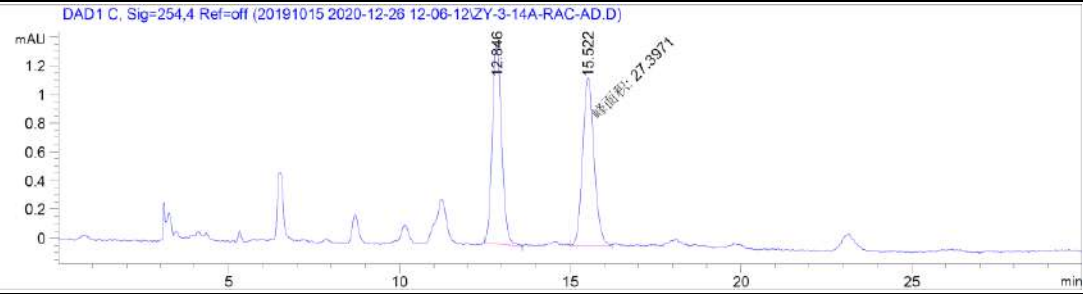
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



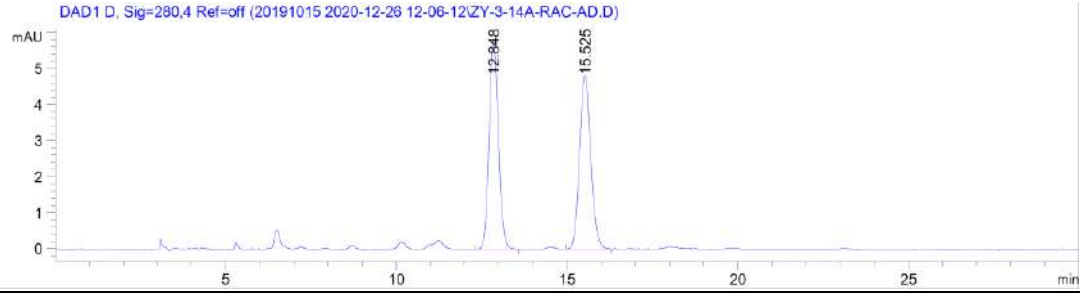
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.848	BB	0.2912	685.5511	36.1549	50.0227
2	15.525	BB	0.3555	684.9299	29.8774	49.9773



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.847	BB	0.2925	273.5638	14.4724	49.8943
2	15.524	BB	0.3562	274.7229	11.9516	50.1057



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.846	BB	0.2934	26.7365	1.4090	49.3898
2	15.522	MM	0.3898	27.3971	1.1715	50.6102

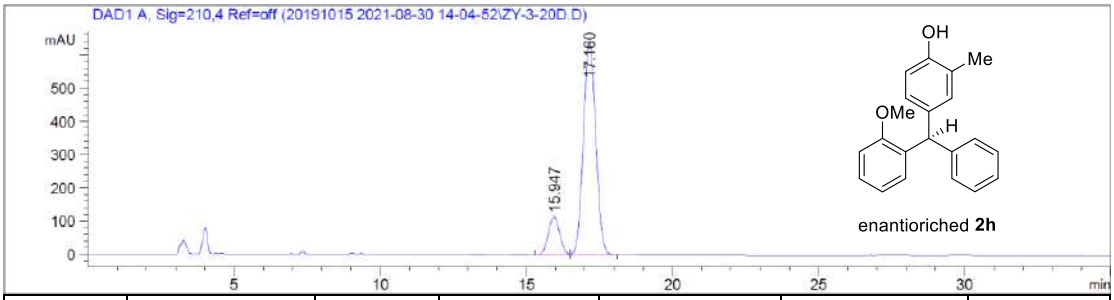


Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	12.848	BB	0.2922	109.8555	5.8208	49.9694
2	15.525	BB	0.3507	109.9898	4.8110	50.0306

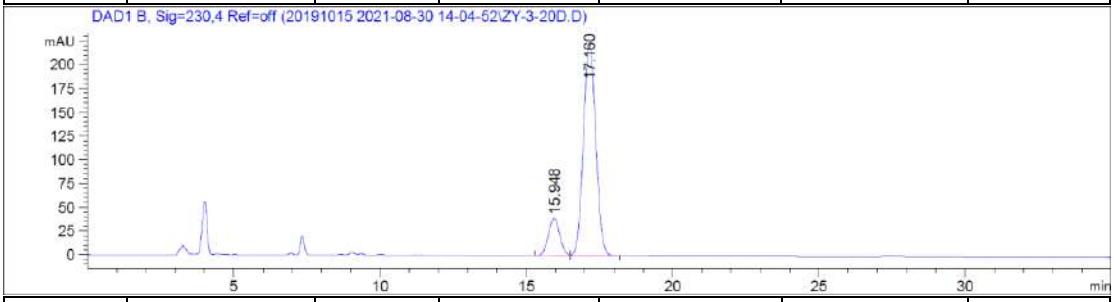
End of Report

Sample Name: ZY-3-20D

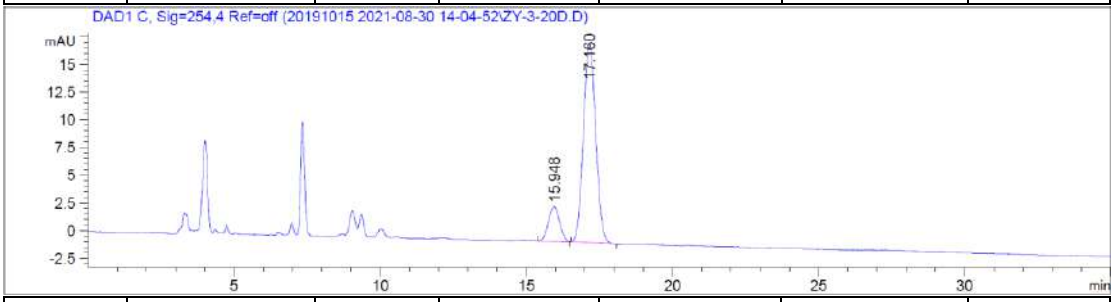
HPLC Condition: AS-H, *n*-Hexane/*i*PrOH = 95:5, 1.0 mL/min



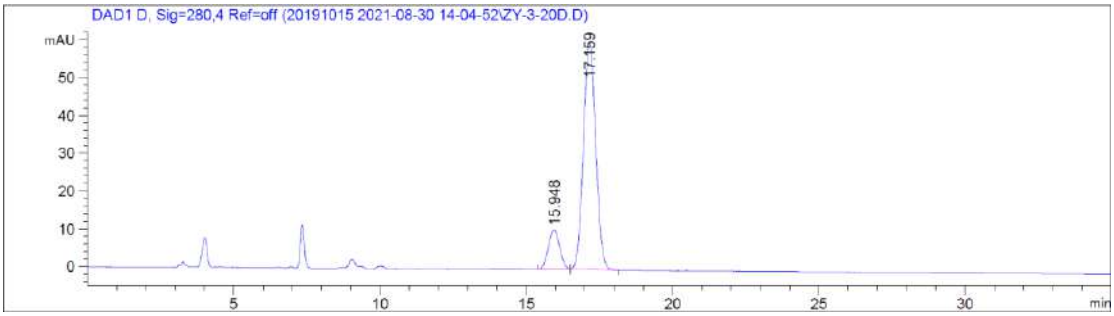
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	15.947	BV	0.4270	3125.80420	115.04440	14.2046
2	17.160	VB	0.4607	1.88797e4	639.03503	85.7954



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	15.948	BV	0.4244	1072.16809	39.53857	14.0500
2	17.160	VB	0.4589	6558.90625	223.15750	85.9500



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	15.948	BB	0.3856	83.49376	3.14639	13.7111
2	17.160	BB	0.4558	525.45789	17.93337	86.2889



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	15.948	BB	0.4164	278.60953	10.47220	13.7281
2	17.159	BB	0.4575	1750.87817	59.81373	86.2719

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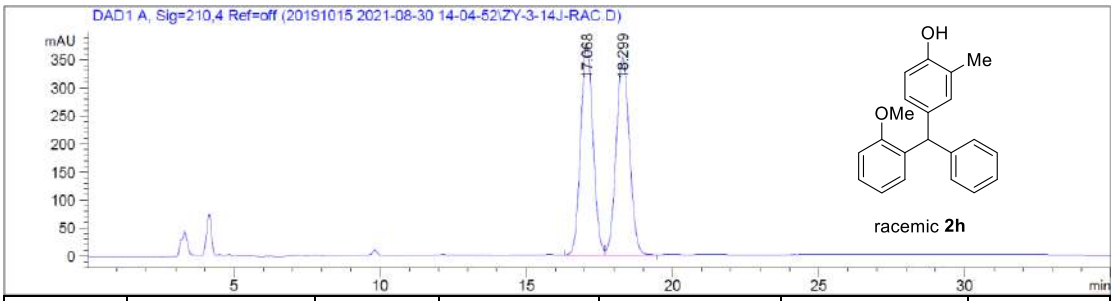
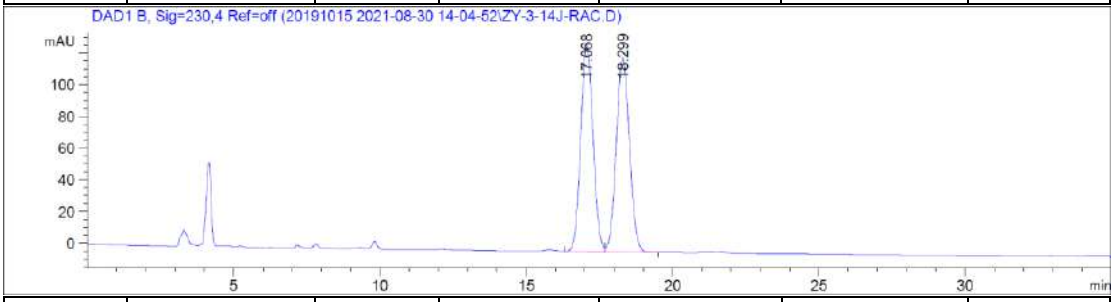
End of Report

Sample Name: ZY-3-14J-RAC

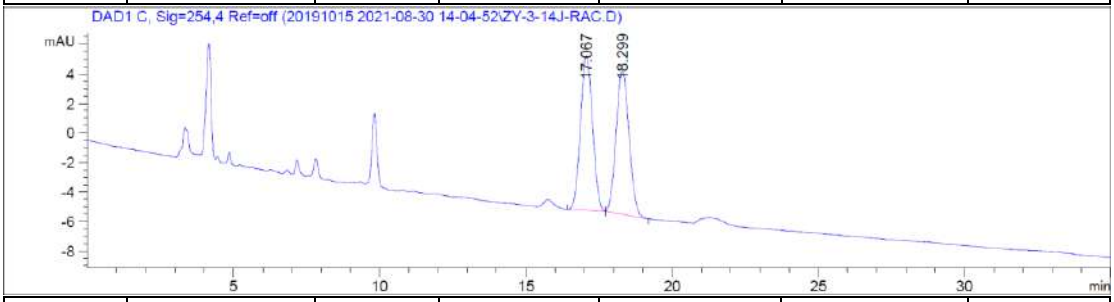
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 95:5, 1.0 mL/min



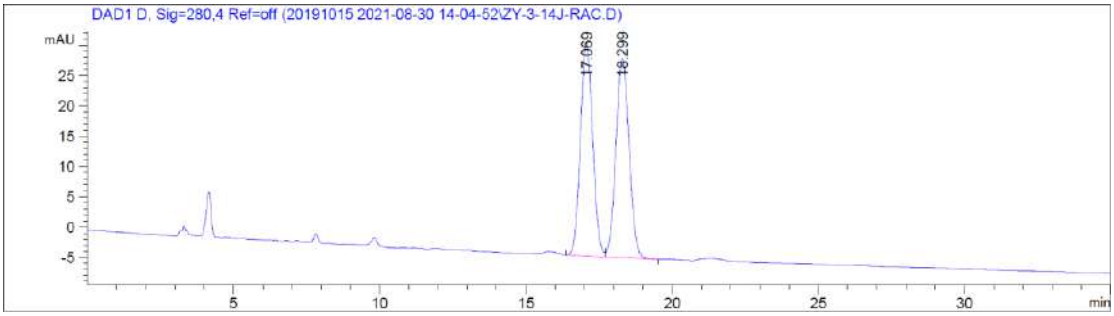
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	17.068	BV	0.4580	1.10661e4	377.47095	49.8983
2	18.299	VB	0.4914	1.11112e4	352.84641	50.1017



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	17.068	BV	0.4565	3832.57886	131.32774	49.9236
2	18.299	VB	0.4876	3844.31250	122.66351	50.0764



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	17.067	BB	0.4467	299.42065	10.43759	49.9474
2	18.299	BB	0.4691	300.05179	9.74954	50.0526



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	17.069	BV	0.4560	1025.98181	35.20587	49.8863
2	18.299	VB	0.4874	1030.65845	32.90413	50.1137

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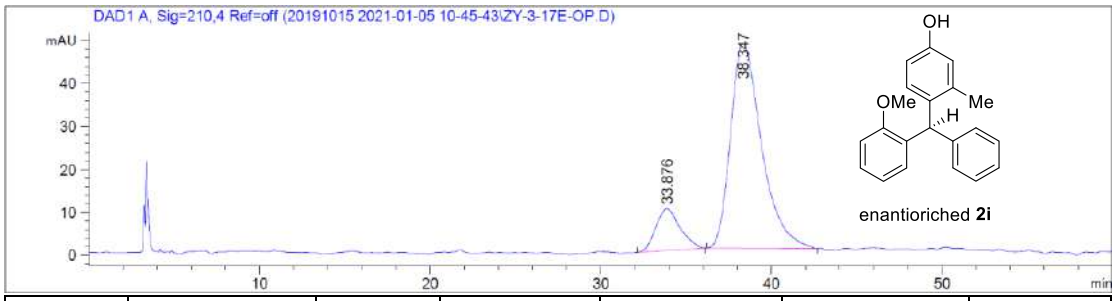
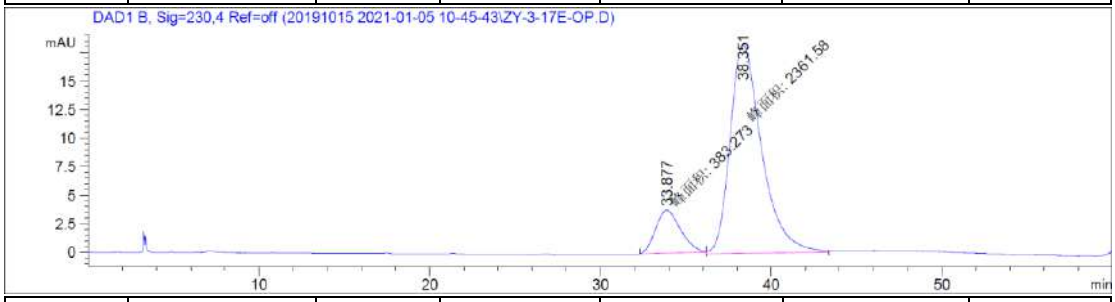
End of Report

Sample Name: ZY-3-17E-OP

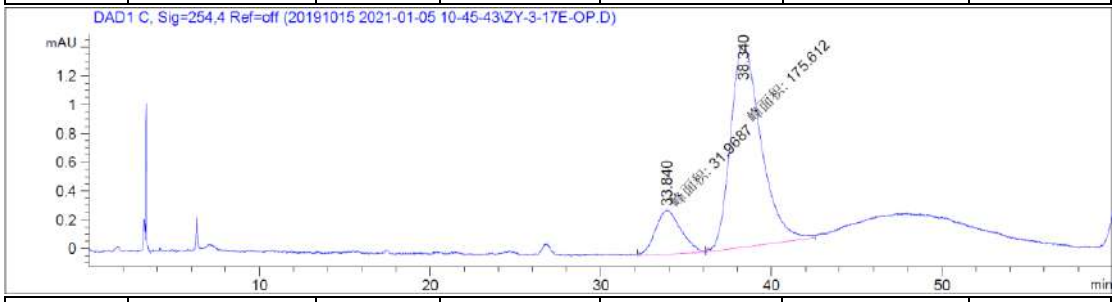
HPLC Condition: OJ-H, *n*-Hexane/*i*PrOH = 97:3, 1.0 mL/min



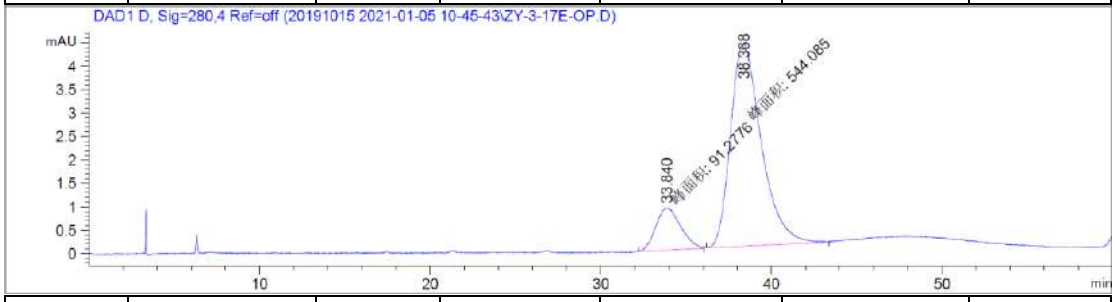
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	33.876	BB	1.1648	952.43854	9.72294	13.6279
2	38.347	BB	1.7096	6036.47217	47.72588	86.3721



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	33.877	MM	1.6918	383.27335	3.77589	13.9633
2	38.351	MM	2.1512	2361.57959	18.29624	86.0367



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	33.840	MM	1.7368	31.96872	3.06784e-1	15.4006
2	38.340	MM	2.0766	175.61186	1.40947	84.5994



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	33.840	MM	1.6819	91.27763	9.04523e-1	14.3662
2	38.368	MM	2.0932	544.08484	4.33221	85.6338

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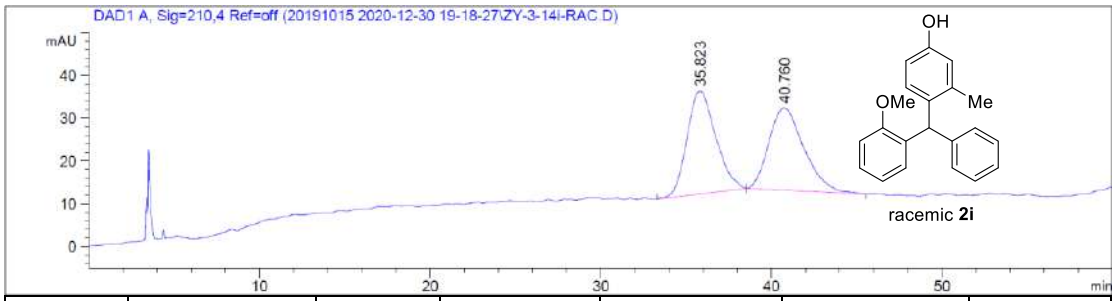
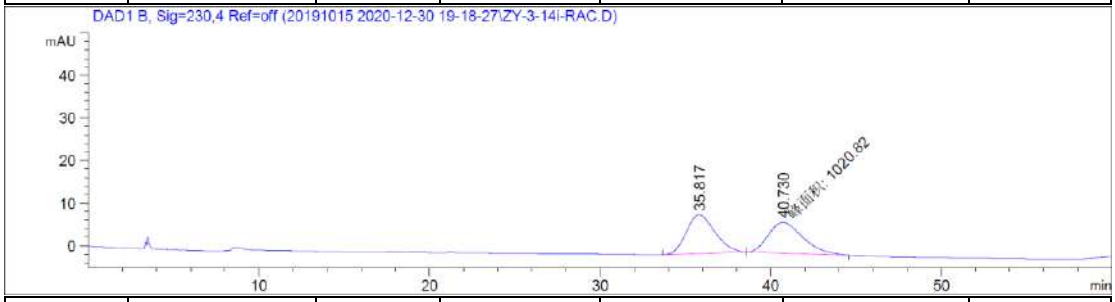
End of Report

Sample Name: ZY-3-14i-RAC

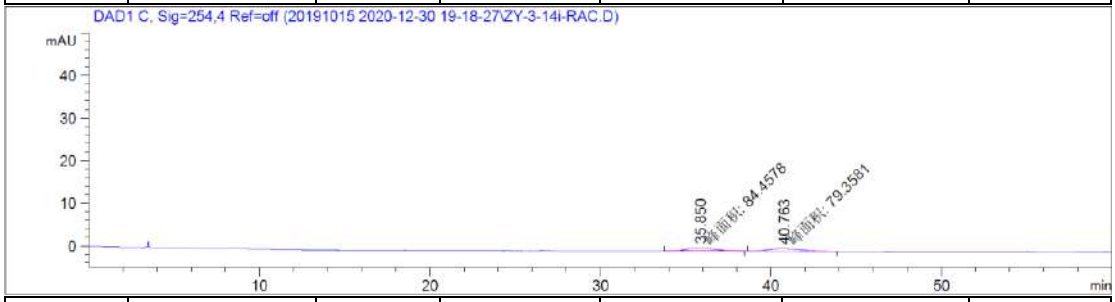
HPLC Condition: OJ-H, *n*-Hexane/*i*PrOH = 97:3, 1.0 mL/min



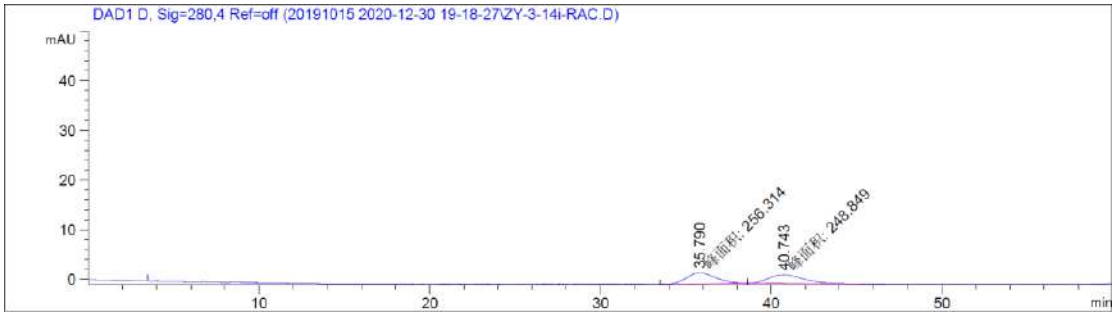
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	35.823	BB	1.4055	2812.57861	24.03111	50.5028
2	40.760	BB	1.6850	2756.57837	19.29266	49.4972



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	35.817	MM	1.3728	1055.29187	9.07401	50.8302
2	40.730	MM	2.3517	1020.82098	7.23458	49.1698



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	35.850	MM	1.9442	84.45784	7.24015e-1	51.5565
2	40.763	MM	2.2906	79.35810	5.77418e-1	48.4435



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	35.790	MM	1.9408	256.31396	2.20109	50.7389
2	40.743	MM	2.3827	248.84872	1.74068	49.2611

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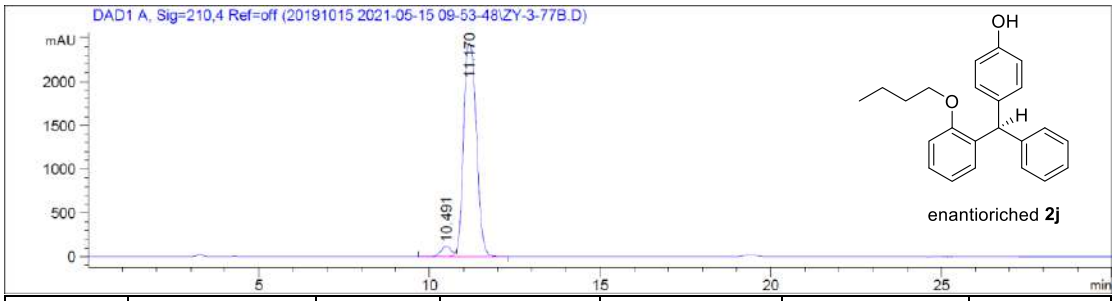
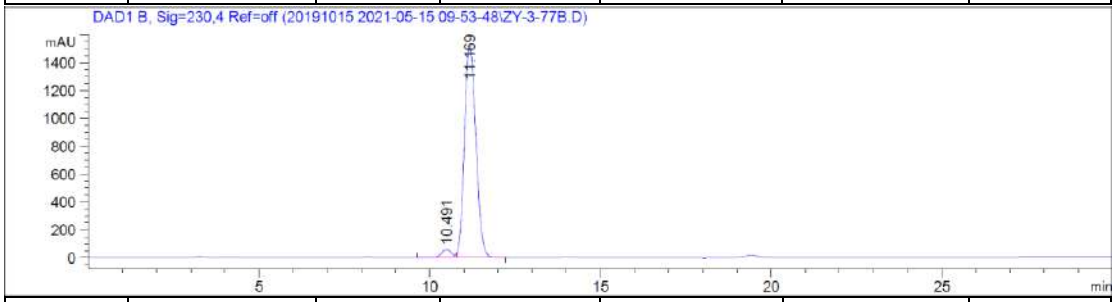
End of Report

Sample Name: ZY-3-77B

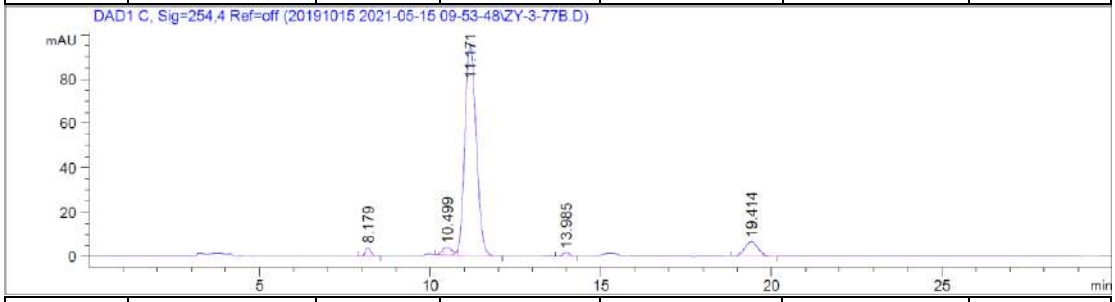
HPLC Condition: AS-H, *n*-Hexane/*i*PrOH = 95:5, 1.0 mL/min



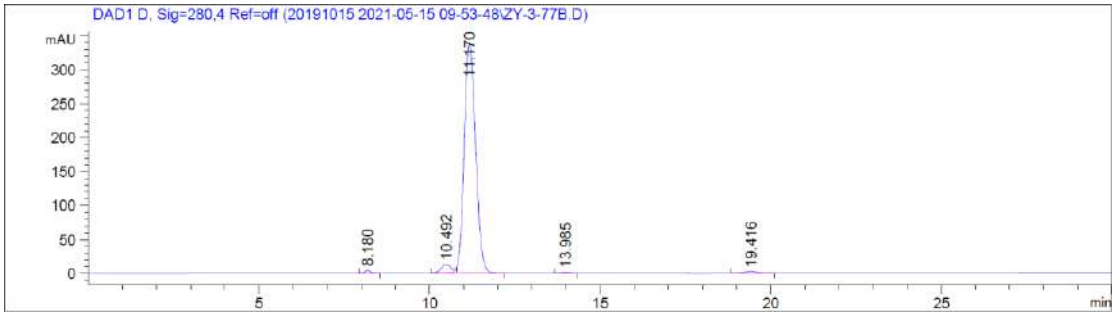
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.491	BV	0.3104	2374.31006	119.21545	3.5965
2	11.170	VB	0.4164	6.36427e4	2439.17334	96.4035



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.491	BV	0.3173	1199.04834	58.95060	3.2370
2	11.169	VB	0.3672	3.58431e4	1530.84192	96.7630



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	33.840	MM	1.7368	31.96872	3.06784e-1	15.4006
2	38.340	MM	2.0766	175.61186	1.40947	84.5994



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	33.840	MM	1.6819	91.27763	9.04523e-1	14.3662
2	38.368	MM	2.0932	544.08484	4.33221	85.6338

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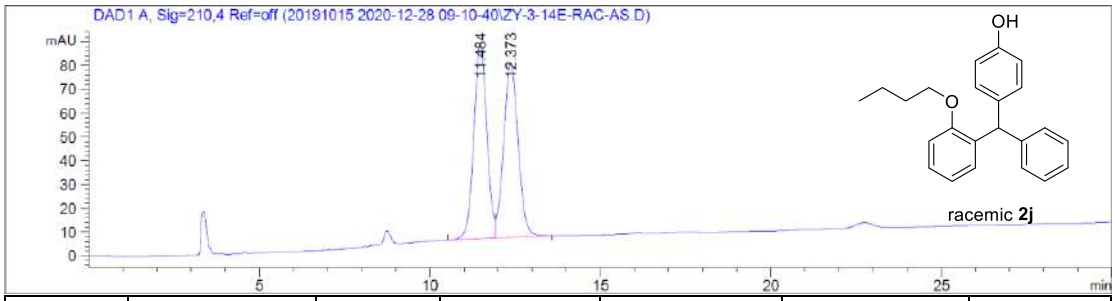
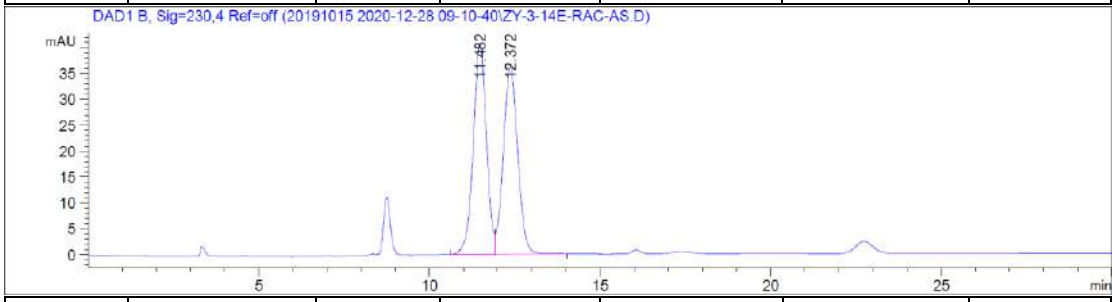
End of Report

Sample Name: ZY-3-14E-RAC-AS

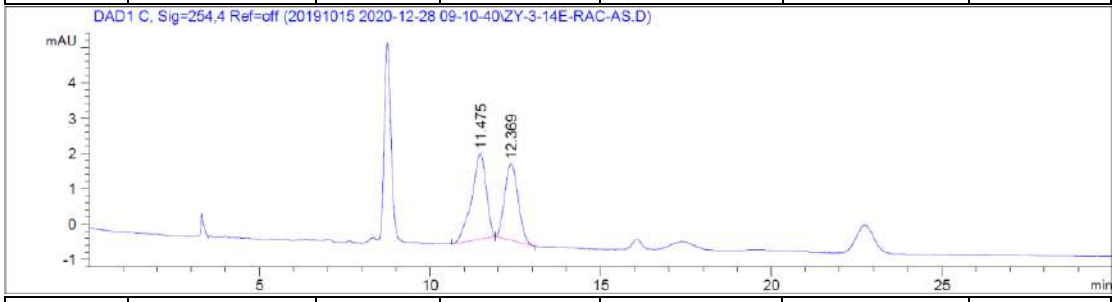
HPLC Condition: AS-H, *n*-Hexane/*i*PrOH = 95:5, 1.0 mL/min



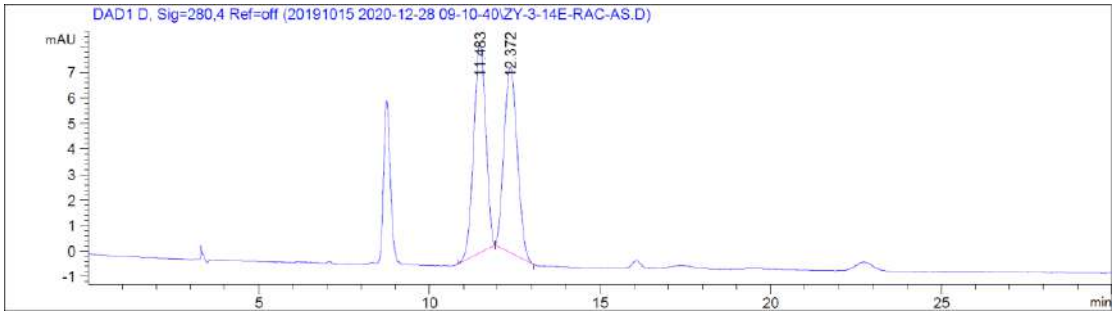
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.484	BV	0.4099	2174.42871	82.40327	50.0900
2	12.373	VB	0.4567	2166.61206	73.33400	49.9100



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	11.482	BV	0.4130	1092.74768	40.73401	50.8041
2	12.372	VB	0.4519	1058.15710	36.10718	49.1959



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	11.475	BB	0.4333	71.72451	2.42370	54.7111
2	12.369	BB	0.4178	59.37233	2.16617	45.2889



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	11.483	BB	0.3845	202.33882	8.23983	50.6805
2	12.372	BB	0.4279	196.90494	7.27178	49.3195

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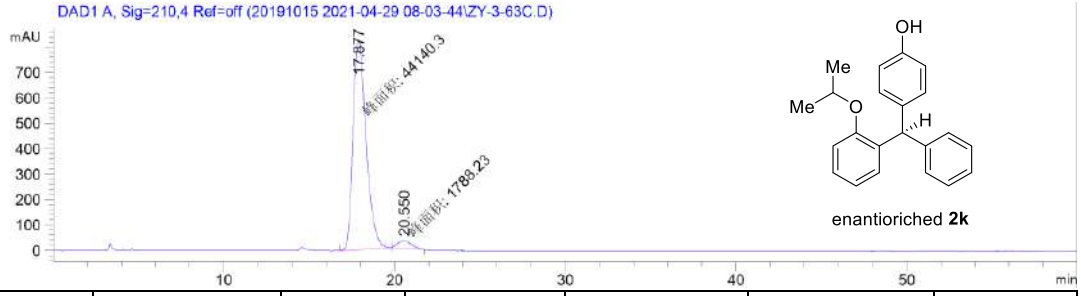
End of Report

Sample Name: ZY-3-63C

HPLC Condition: OJ-H, *n*-Hexane/*i*PrOH = 95:5, 1.0 mL/min



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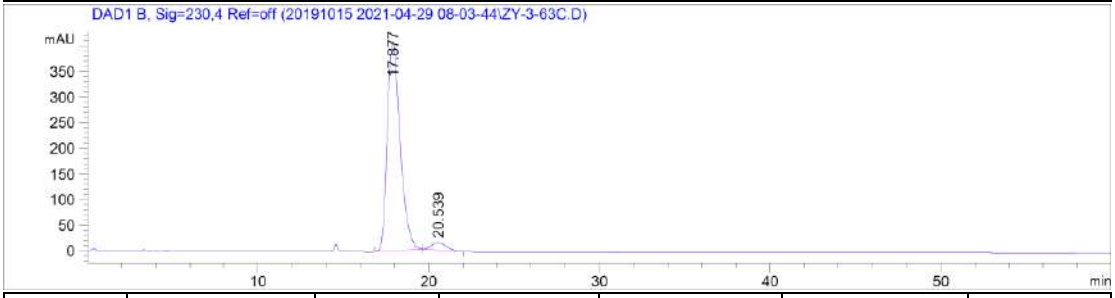
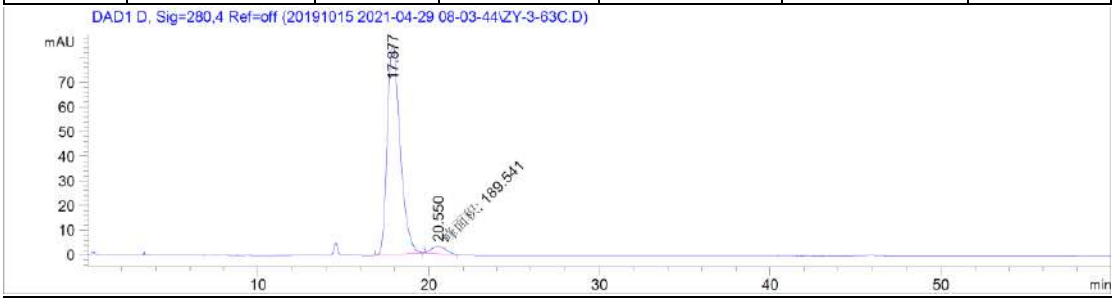
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	17.877	BV R	0.8222	44867.2891	833.2604	94.3494
2	20.538	VB E	0.9998	2687.1086	38.3364	5.6506



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	17.877	MM	0.8744	21467.5938	409.2059	95.9378
2	20.563	MM	0.9903	908.9843	15.2979	4.0622



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	17.877	MM	0.8806	4522.0562	85.5881	95.3451
2	20.550	MM	1.0660	220.7724	3.4516	4.6549

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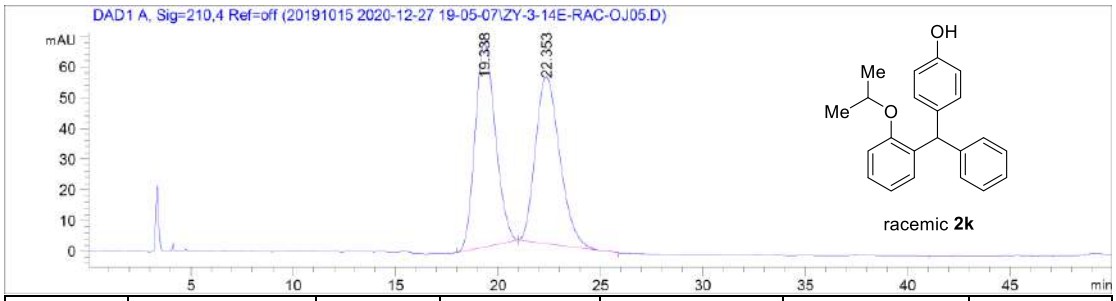
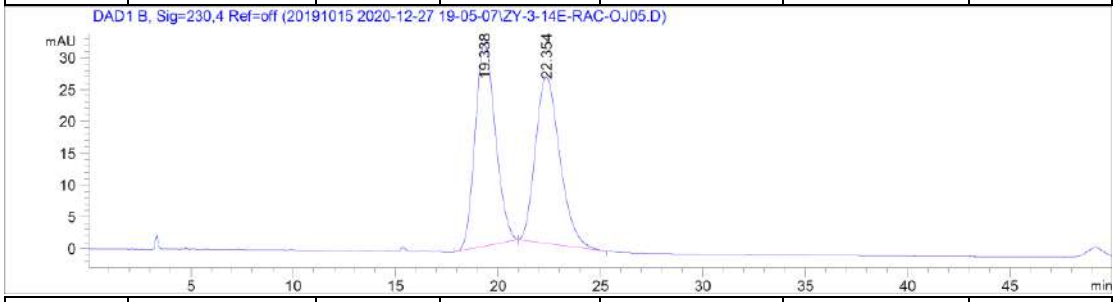
End of Report

Sample Name: ZY-3-14E-RAC-OJ05

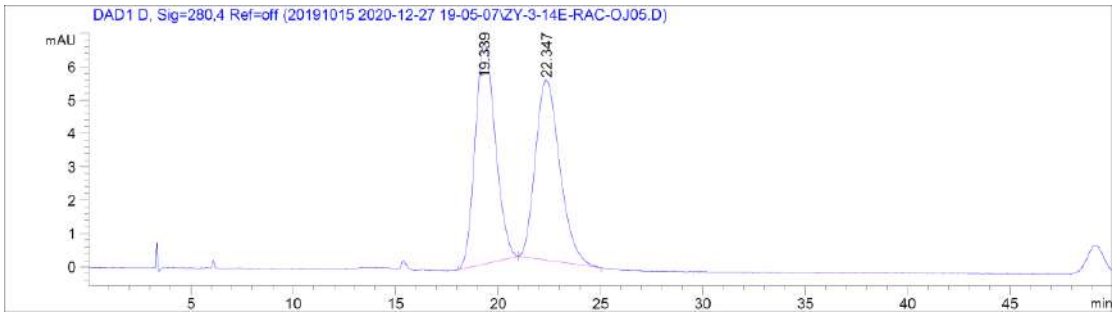
HPLC Condition: OJ-H, *n*-Hexane/*i*PrOH = 95:5, 1.0 mL/min



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	19.338	BB	1.0443	4569.6001	66.4468	50.4073
2	22.353	BB	1.2384	4495.7534	54.2761	49.5927



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	19.338	BB	1.0394	2193.3406	31.8525	50.3123
2	22.354	BB	1.2270	2166.1118	26.1341	49.6877



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	19.339	BB	0.9100	455.7922	6.6137	50.4191
2	22.347	BB	0.9812	448.2145	5.4063	49.5809

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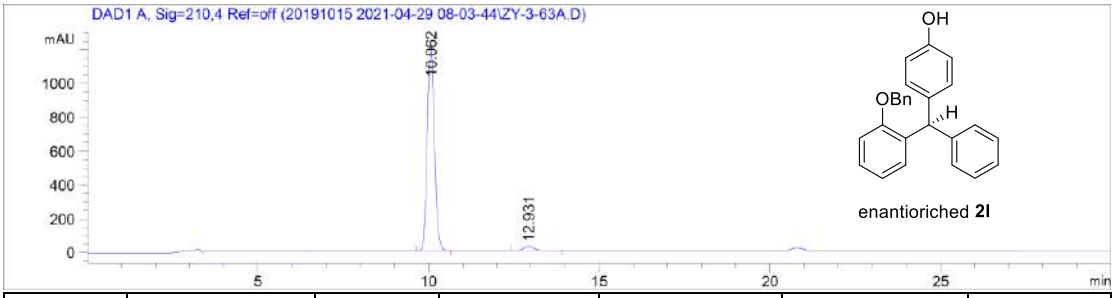
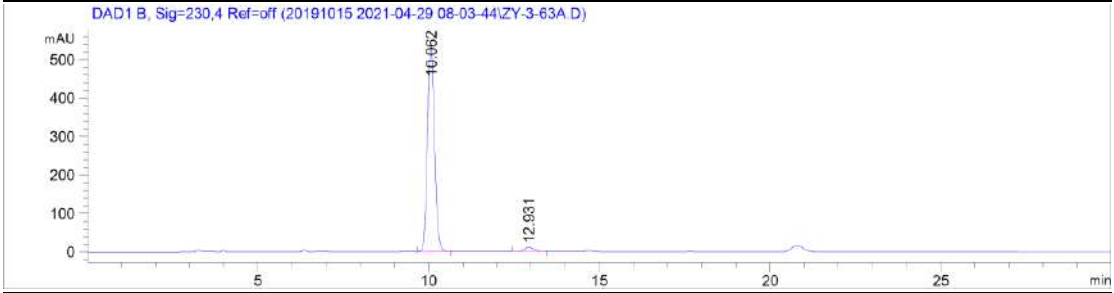
End of Report

Sample Name: ZY-3-63A

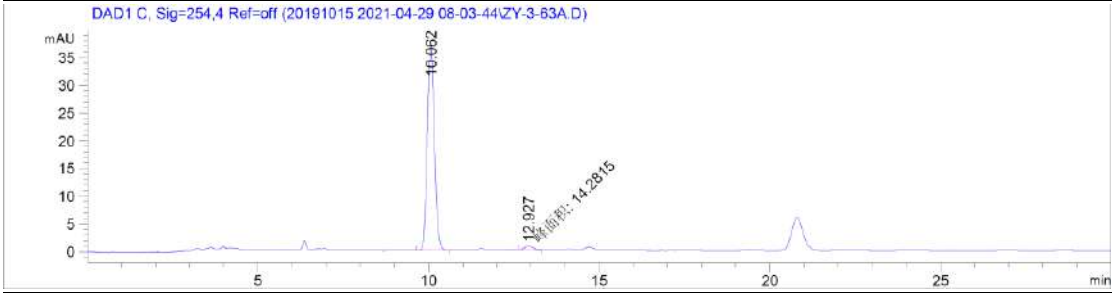
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



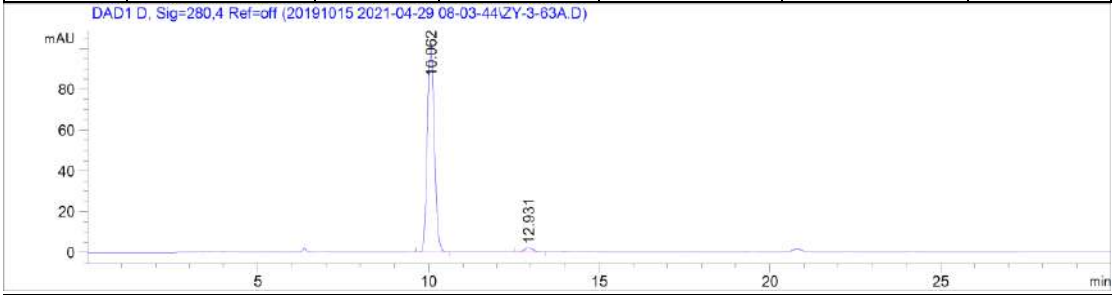
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.062	BB	0.2221	17583.5762	1235.3546	97.4699
2	12.931	BB	0.2894	456.4344	24.2669	2.5301



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.062	BB	0.2161	7696.9731	547.3279	97.6427
2	12.931	BB	0.2812	185.8224	10.2670	2.3573



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.062	BB	0.2166	533.2460	37.7956	97.3916
2	12.927	MM	0.3185	14.2815	0.7472	2.6084



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	10.062	BB	0.2158	1455.4727	103.6647	97.6672
2	12.931	BB	0.2758	34.7650	1.9333	2.3328

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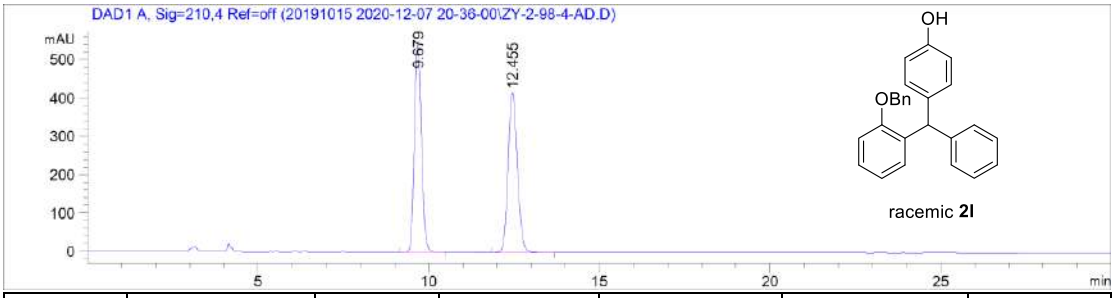
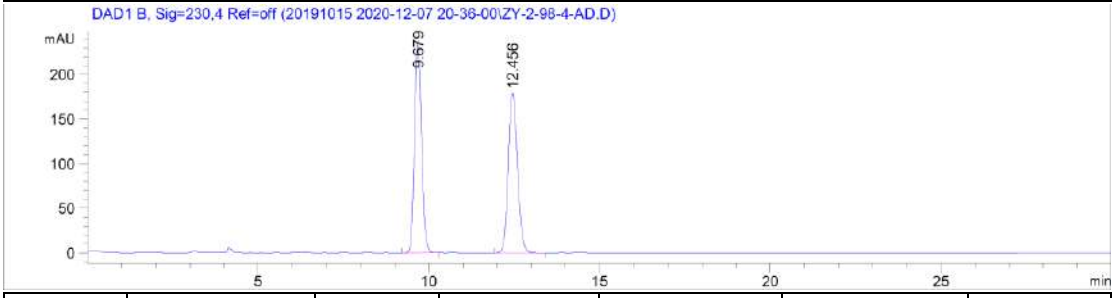
End of Report

Sample Name: ZY-2-98-4-AD

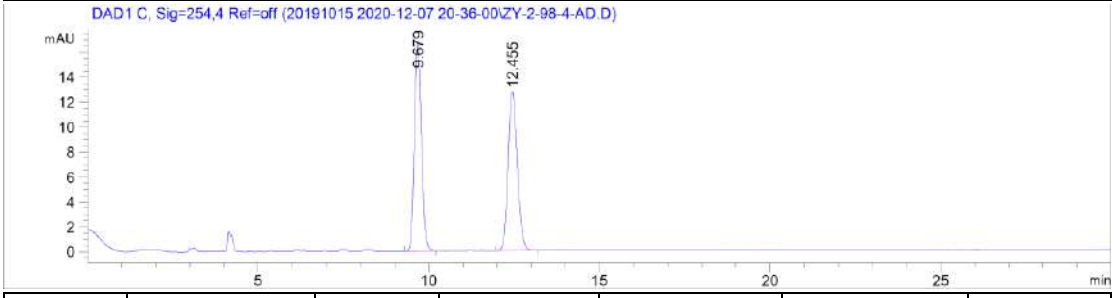
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



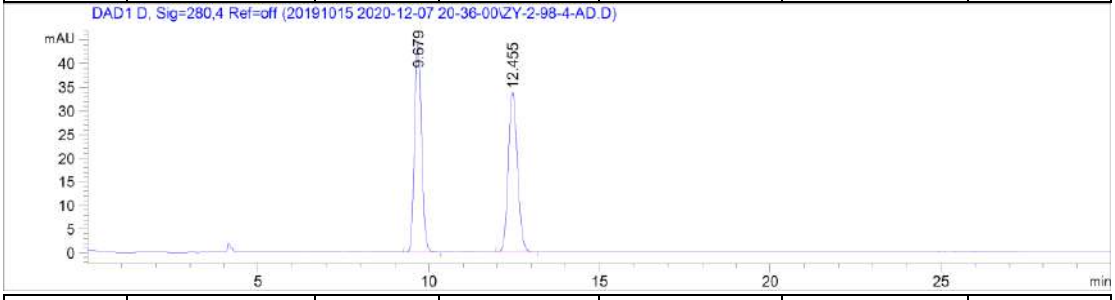
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	9.679	BB	0.2208	7852.4209	549.3751	50.0300
2	12.455	BB	0.2920	7843.0083	415.8658	49.9700



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	9.679	BB	0.2202	3383.4609	237.5130	50.0924
2	12.456	BB	0.2913	3370.9749	179.3143	49.9076



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	9.679	BB	0.2208	240.6578	16.8354	50.0069
2	12.455	BB	0.2922	240.5918	12.7446	49.9931



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	9.679	BB	0.2200	636.7500	44.7397	50.1126
2	12.455	BB	0.2911	633.8894	33.7470	49.8874

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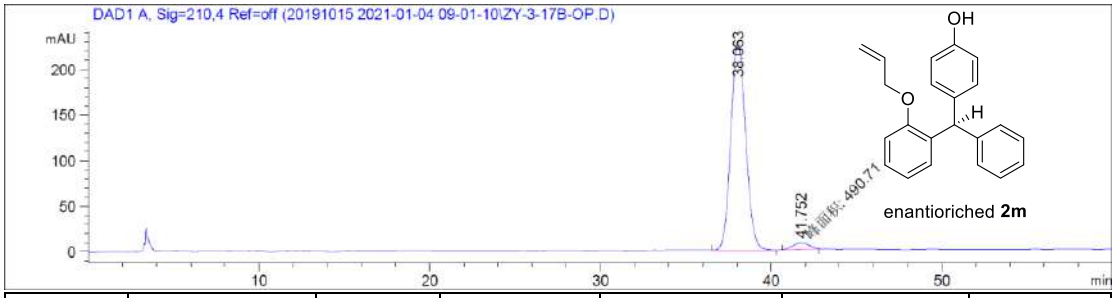
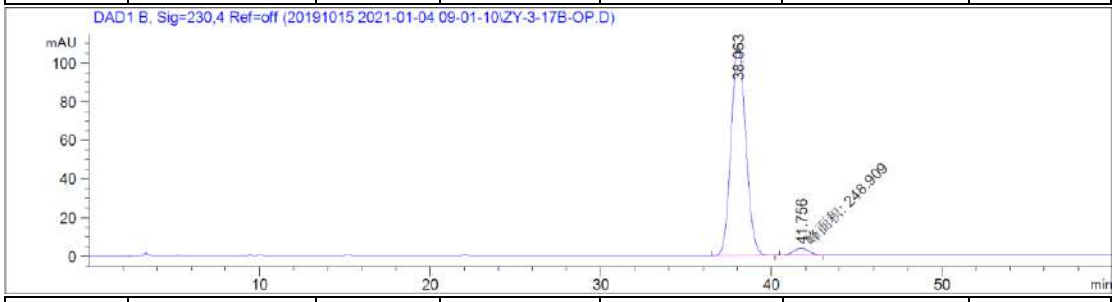
End of Report

Sample Name: ZY-3-17B-OP

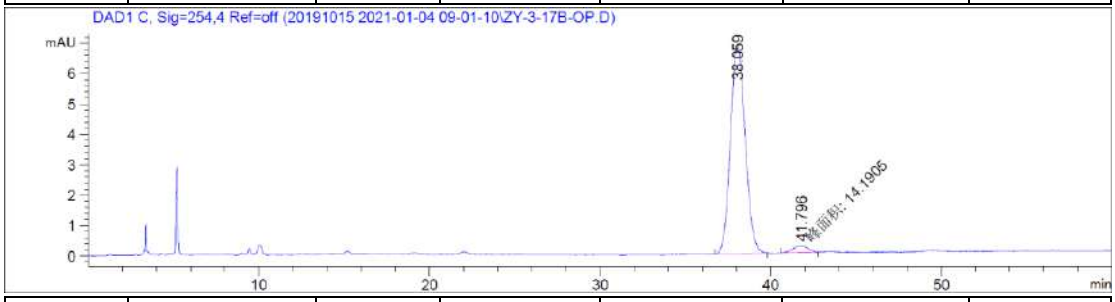
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 98:2, 1.0 mL/min



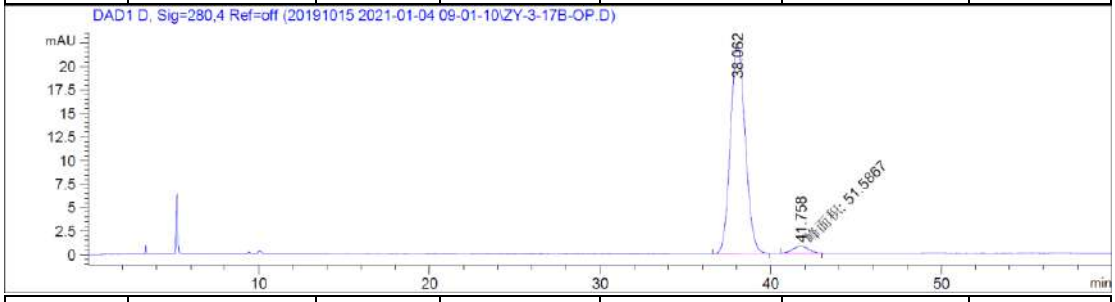
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	38.063	BB	0.9357	1.37772e4	228.42215	96.5607
2	41.752	MM	1.0517	490.70984	7.77647	3.4393



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	38.063	BB	0.9310	6562.68311	109.22298	96.3458
2	41.756	MM	1.1114	248.90862	3.73283	3.6542



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	38.059	BB	0.8511	413.73688	6.88525	96.6839
2	41.796	MM	1.0227	14.19045	2.31252e-1	3.3161



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	38.062	BB	0.9168	1345.50513	22.39890	96.3076
2	41.758	MM	1.1115	51.58670	7.73512e-1	3.6924

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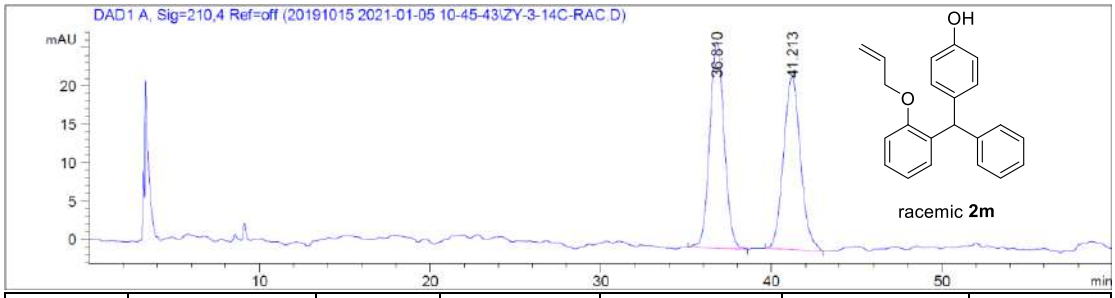
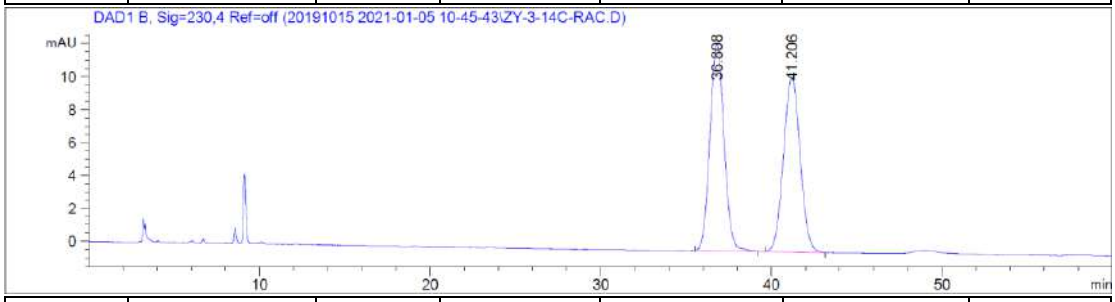
End of Report

Sample Name: ZY-3-14C-RAC

HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 98:2, 1.0 mL/min



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	36.810	BB	0.8944	1593.09363	26.92028	50.3670
2	41.213	BB	1.0150	1569.87842	22.63893	49.6330



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	36.808	BB	0.8598	726.21100	12.53623	50.1900
2	41.206	BB	0.9591	720.71173	10.62924	49.8100

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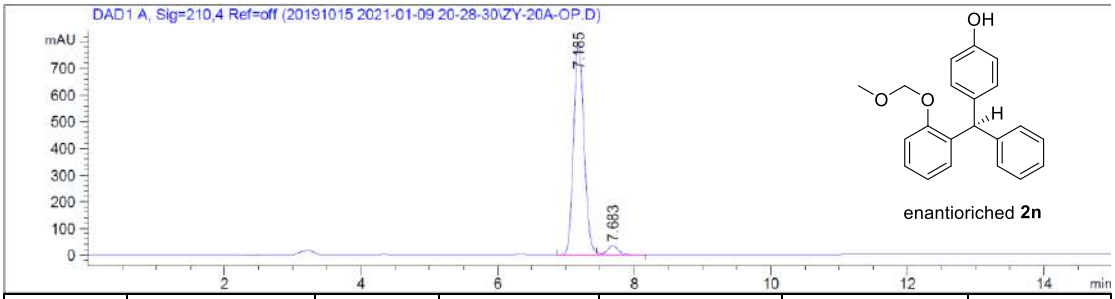
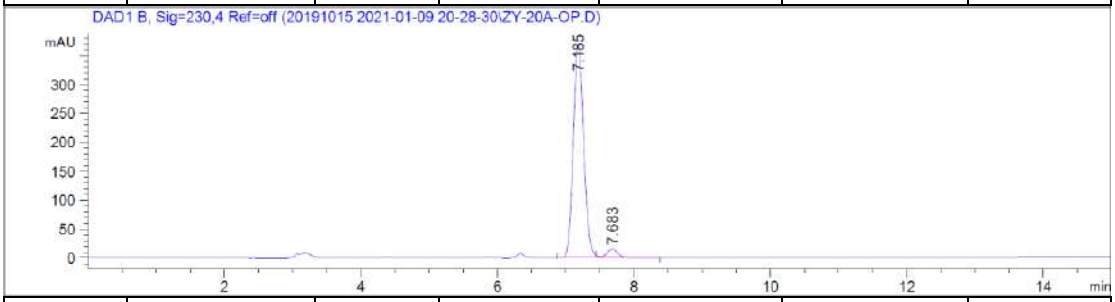
End of Report

Sample Name: ZY-20A-OP

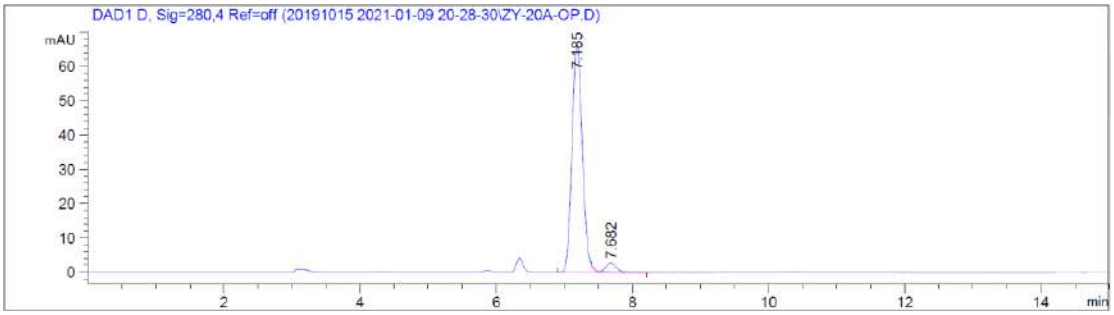
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.185	BV R	0.1631	8425.76465	798.68640	95.7242
2	7.683	VB E	0.1729	376.35834	33.54863	4.2758



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.185	BV R	0.1623	3877.86304	369.98395	95.7708
2	7.683	VB E	0.1733	171.24657	15.21723	4.2292



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.185	BV R	0.1622	702.45844	67.04858	95.7347
2	7.682	VB E	0.1743	31.29650	2.76006	4.2653

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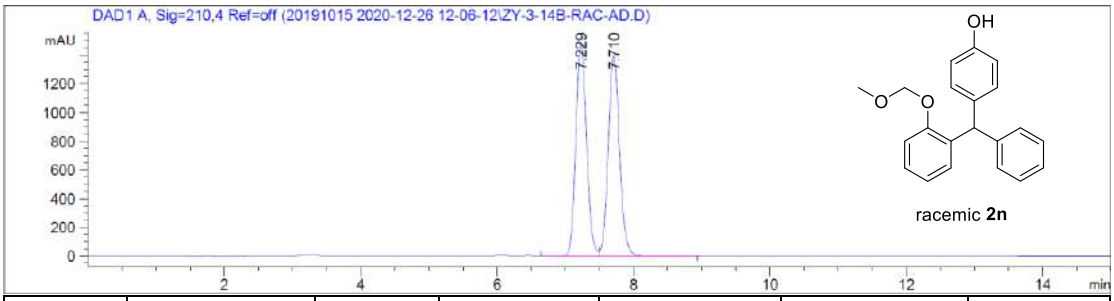
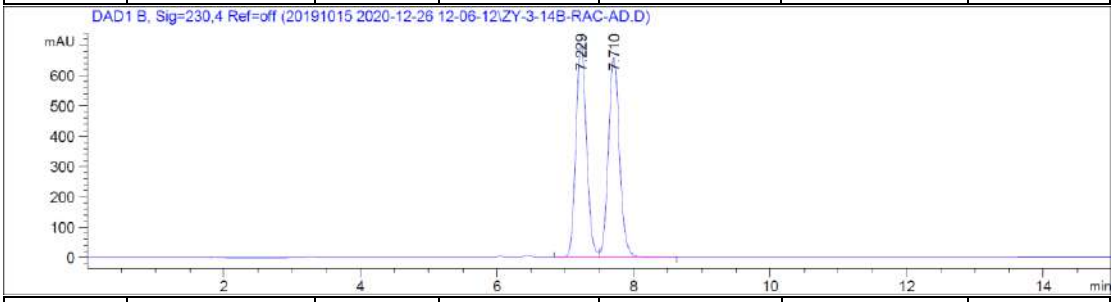
End of Report

Sample Name: ZY-3-14B-RAC-AD

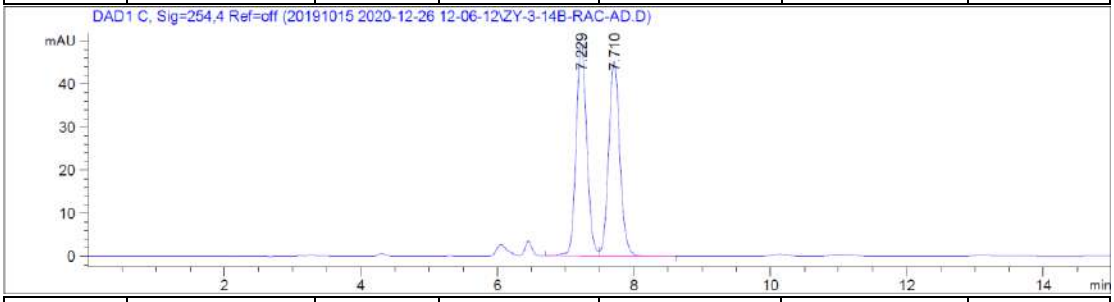
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



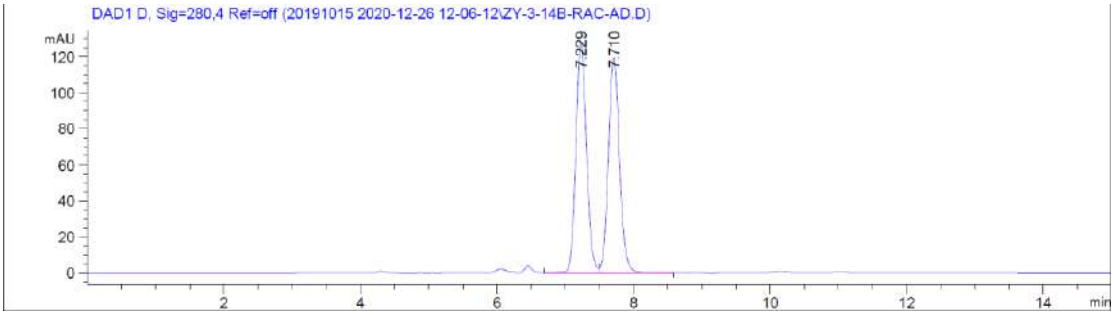
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.229	BV	0.1682	1.60506e4	1483.36365	49.7606
2	7.710	VB	0.1816	1.62050e4	1394.02820	50.2394



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.229	BV	0.1661	7499.49316	704.84589	49.8325
2	7.710	VB	0.1755	7549.90625	659.56598	50.1675



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.229	BV	0.1677	531.86938	49.36599	50.6365
2	7.710	VB	0.1759	518.49872	45.19087	49.3635



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.229	BV	0.1664	1365.73108	128.07768	49.9536
2	7.710	VB	0.1754	1368.26807	119.64544	50.0464

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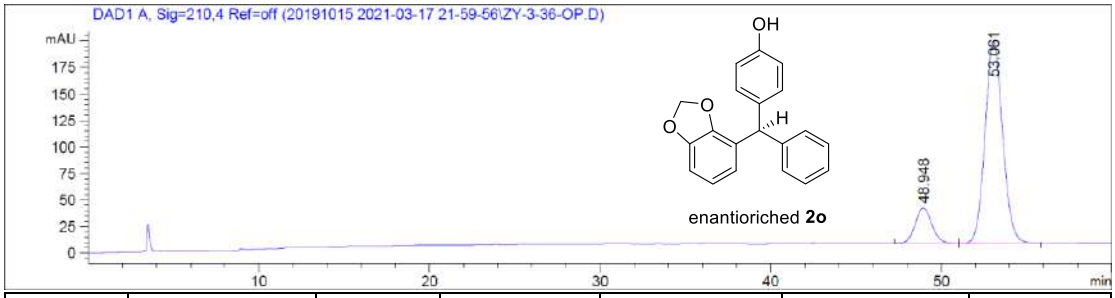
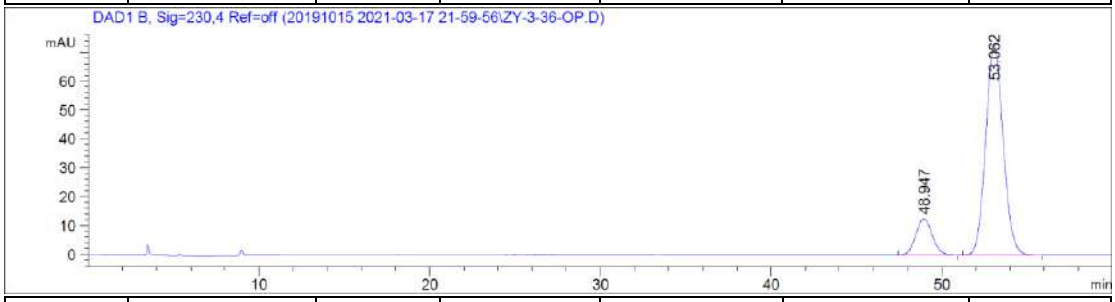
End of Report

Sample Name: ZY-3-36-OP

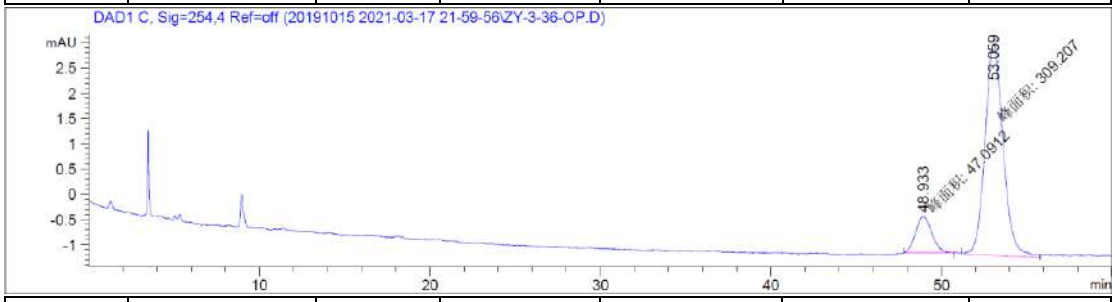
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 97:3, 1.0 mL/min



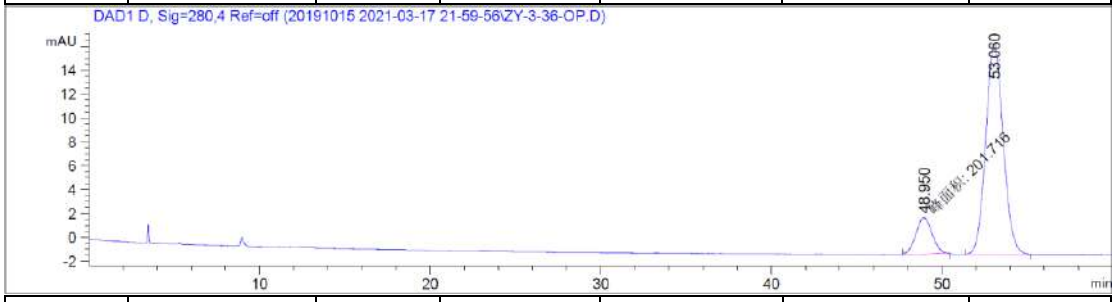
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	48.948	BB	1.0406	2261.69409	33.29111	14.2503
2	53.061	BB	1.1094	1.36095e4	190.07077	85.7497



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	48.947	BB	0.9879	854.16492	12.68053	14.0870
2	53.062	BB	1.1004	5209.34326	73.00858	85.9130



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	48.933	MM	1.0996	47.09122	7.13791e-1	13.2168
2	53.059	MM	1.2366	309.20654	4.16731	86.7832



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	48.950	MM	1.1004	201.71555	3.05521	13.7991
2	53.060	BB	0.9988	1260.08740	17.69543	86.2009

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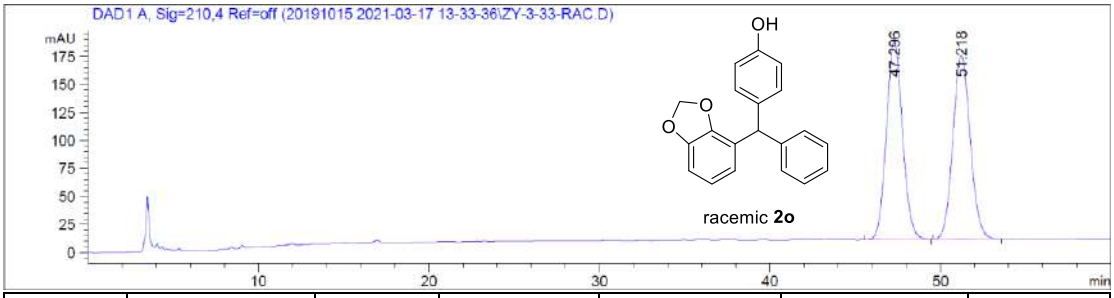
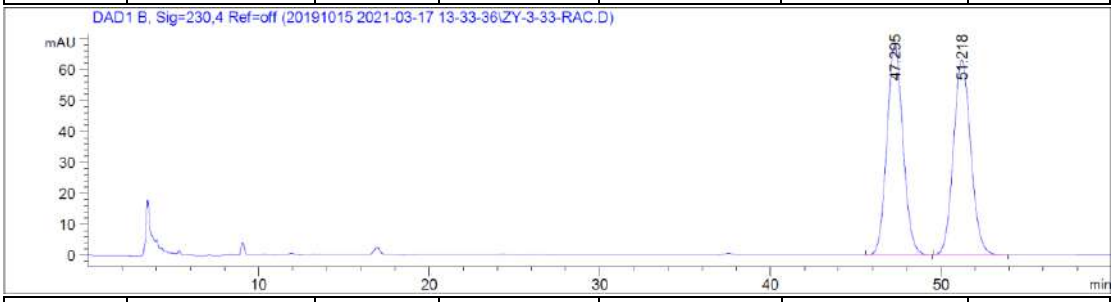
End of Report

Sample Name: ZY-3-33-RAC

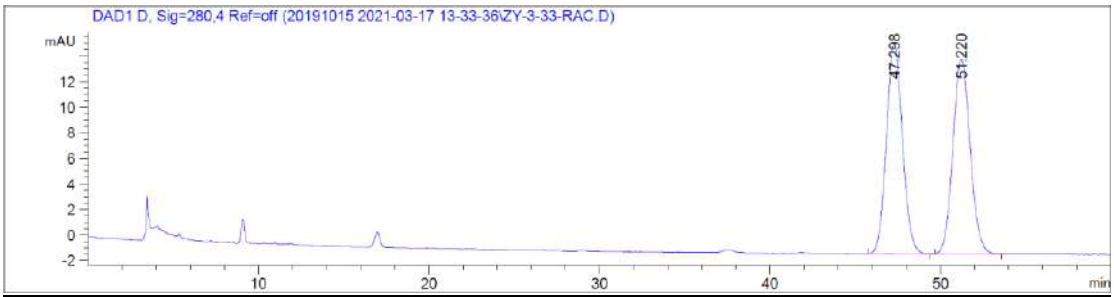
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 97:3, 1.0 mL/min



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	47.296	BB	1.0156	1.16347e4	176.82660	50.1208
2	51.218	BB	1.0906	1.15786e4	163.82613	49.8792



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	47.295	BB	1.0136	4459.22461	67.95474	50.0513
2	51.218	BB	1.0863	4450.07568	62.98092	49.9487



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	47.298	BB	0.9671	1080.63562	16.47881	50.1100
2	51.220	BB	1.0563	1075.89246	15.26414	49.8900

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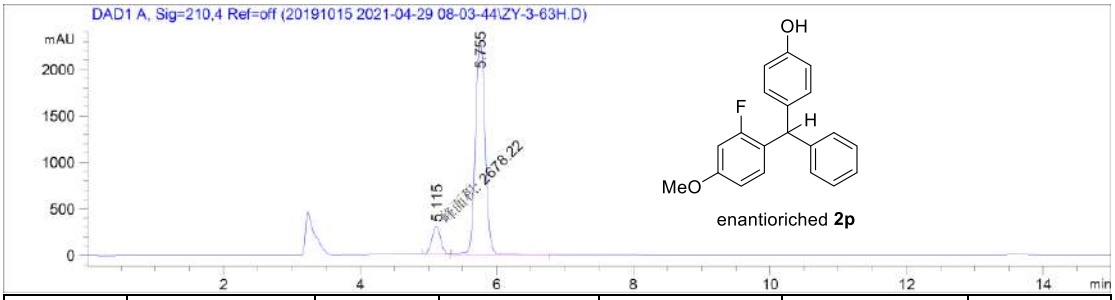
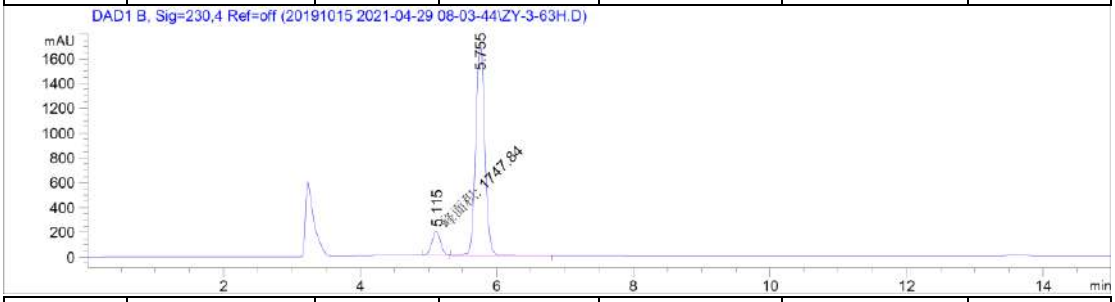
End of Report

Sample Name: ZY-3-63H

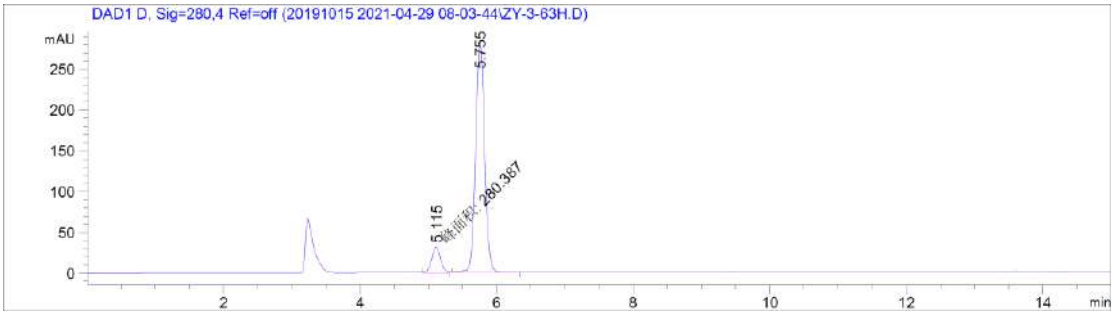
HPLC Condition: IC, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.115	MM	0.1464	2678.22046	304.79419	10.2911
2	5.755	VB	0.1607	2.33464e4	2294.65039	89.7089



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.115	MM	0.1479	1747.8446	196.9044	9.6457
2	5.755	VB	0.1471	16372.6396	1718.7126	90.3543



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.115	MM	0.1484	280.38669	31.48812	9.7006
2	5.755	BB	0.1439	2610.01416	282.31747	90.2994

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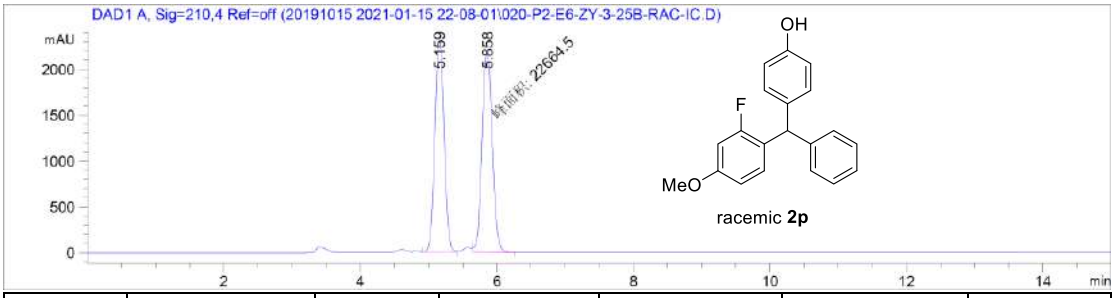
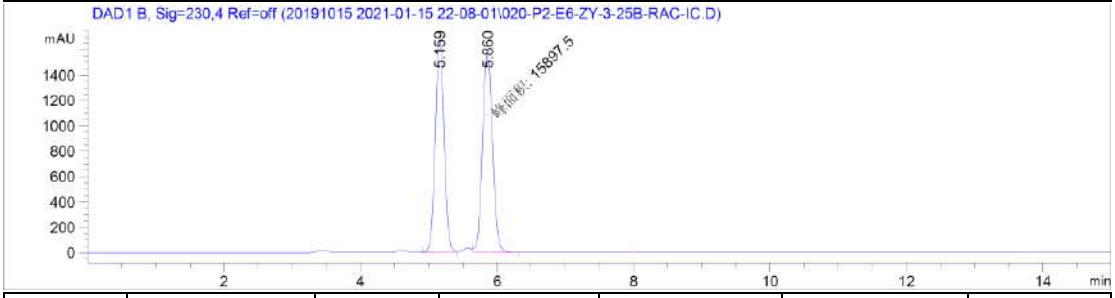
End of Report

Sample Name: ZY-3-25B-RAC-IC

HPLC Condition:IC, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.159	BB	0.1493	2.14976e4	2294.12085	48.6789
2	5.858	BB	0.1724	2.26645e4	2191.39648	51.3211



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.159	BB	0.1394	1.47525e4	1664.59436	48.1322
2	5.860	MM	0.1680	1.58975e4	1577.47314	51.8678

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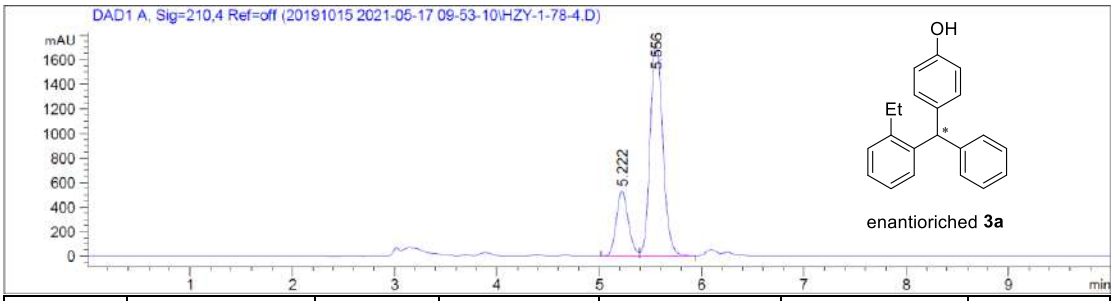
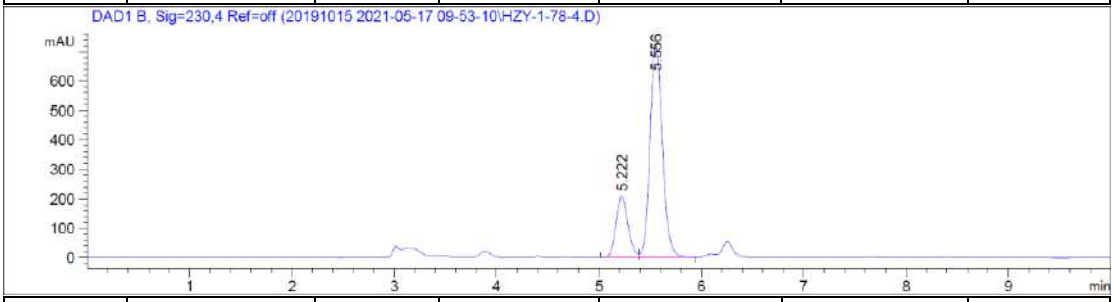
End of Report

Sample Name: HZY-78-4

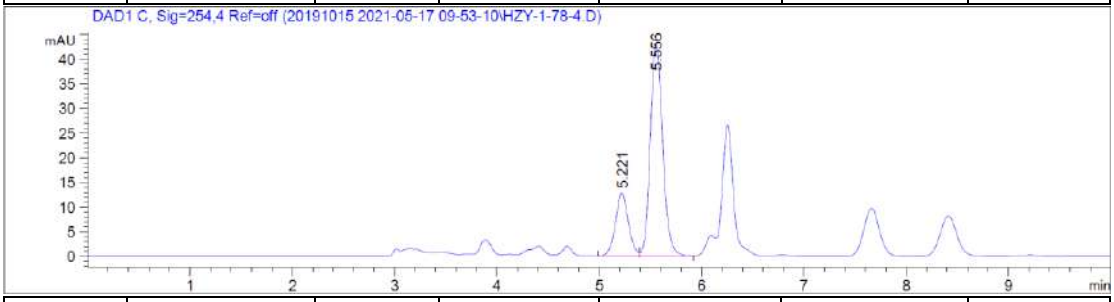
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



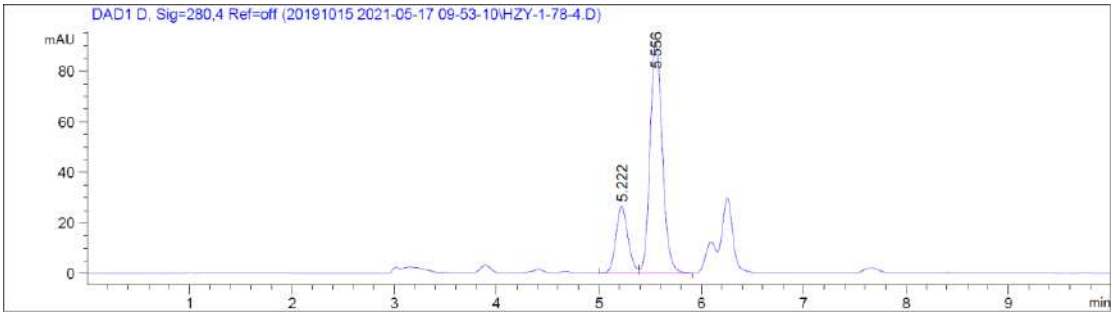
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.222	BV	0.1273	4340.01611	531.20300	22.5670
2	5.556	VB	0.1341	1.48916e4	1736.12561	77.4330



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.222	BV	0.1270	1698.98254	208.72832	21.9123
2	5.556	VB	0.1273	6054.56982	726.33545	78.0877



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.221	BV	0.1340	111.96350	12.80879	23.6484
2	5.556	VB	0.1298	361.48630	43.10047	76.3516



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.222	BV	0.1281	216.92642	26.33897	22.2301
2	5.556	VB	0.1271	758.89691	91.17204	77.7699

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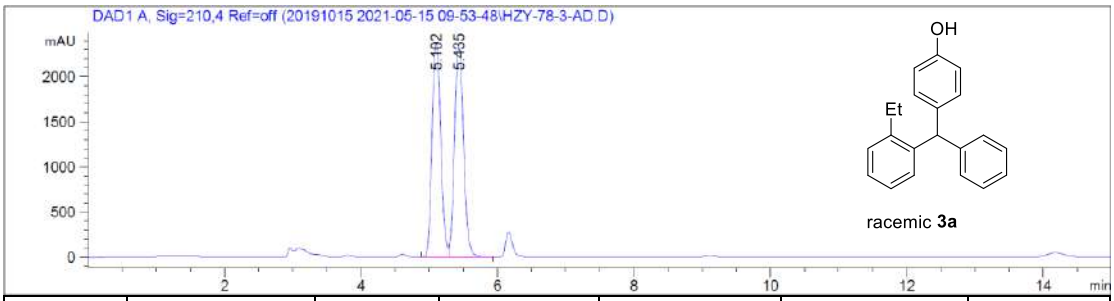
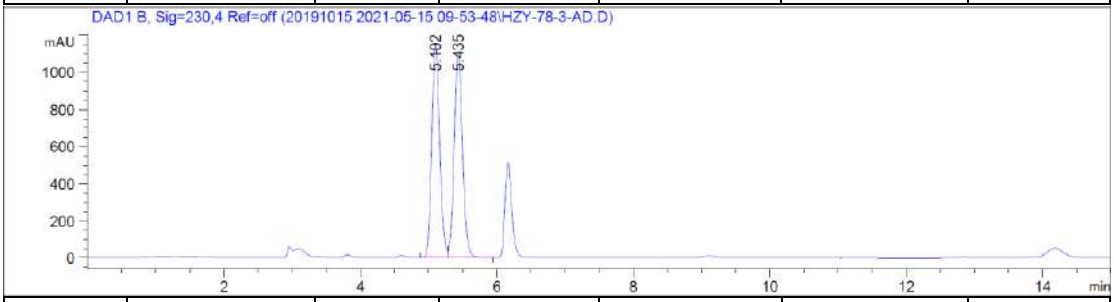
End of Report

Sample Name: HZY-78-3-AD

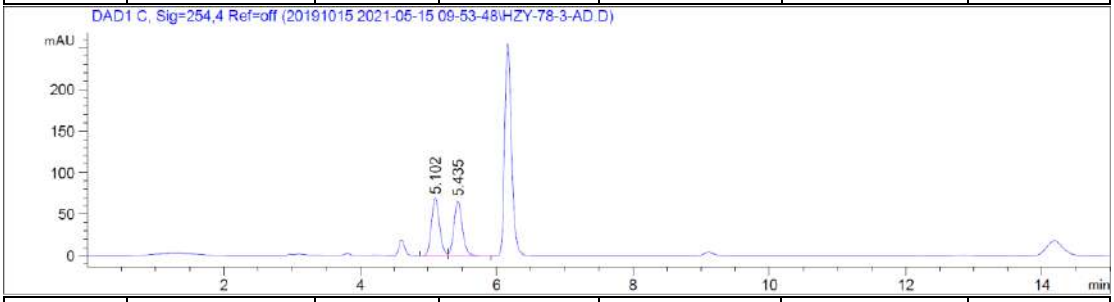
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.102	BV	0.1383	2.07781e4	2368.49829	49.3622
2	5.435	VB	0.1450	2.13150e4	2323.19263	50.6378



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.102	BV	0.1228	9158.38574	1151.05310	49.6581
2	5.435	VB	0.1276	9284.49121	1109.41479	50.3419



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	5.102	BV	0.1249	560.44818	68.92804	50.1392
2	5.435	VB	0.1287	557.33630	65.90250	49.8608

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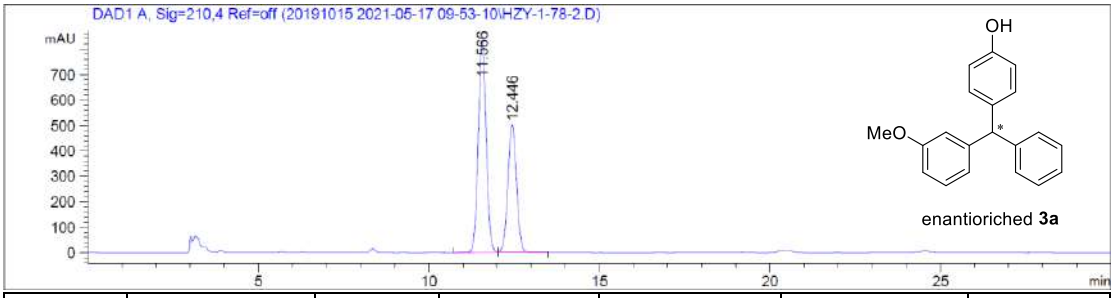
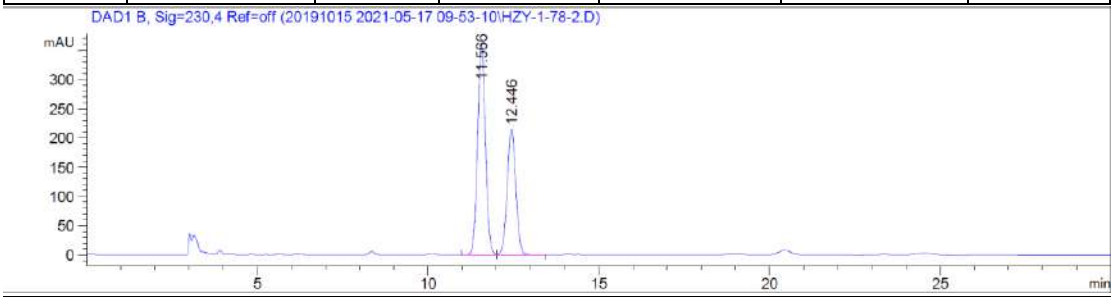
End of Report

Sample Name: HZY-78-2

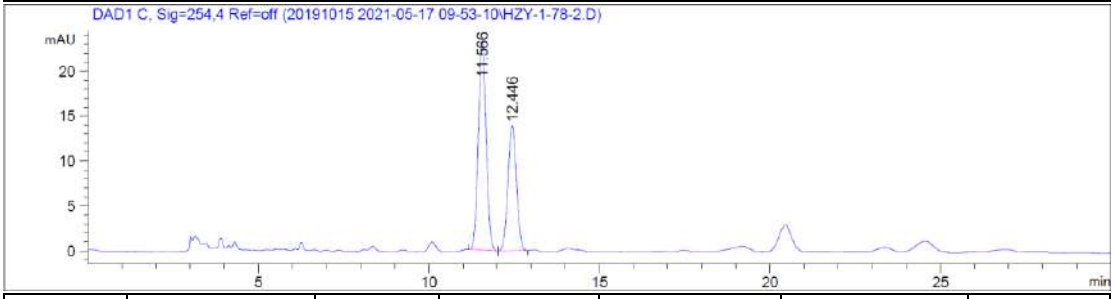
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



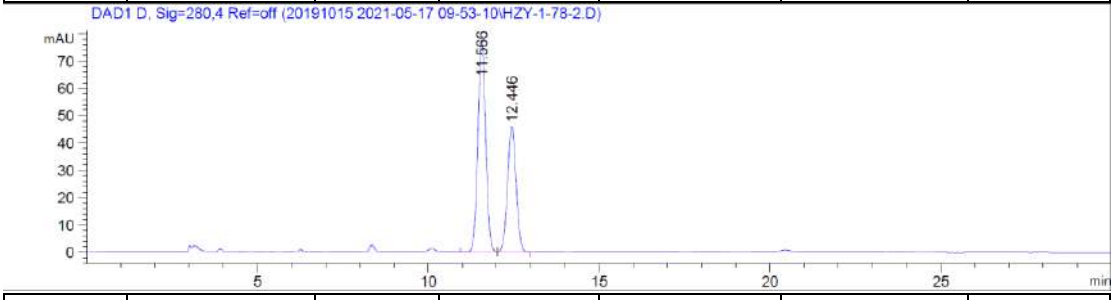
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	11.566	BV	0.2519	1.35230e4	830.65979	60.3630
2	12.446	VB	0.2768	8879.83691	500.83841	39.6370



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	11.566	BV	0.2504	5822.87646	360.64517	60.5607
2	12.446	VB	0.2760	3792.06421	214.76630	39.4393



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	11.566	BB	0.2485	370.61157	23.17851	60.4316
2	12.446	BB	0.2718	242.66315	13.89307	39.5684



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	11.566	BB	0.2497	1242.76318	77.25826	60.7319
2	12.446	BB	0.2720	803.54694	45.95408	39.2681

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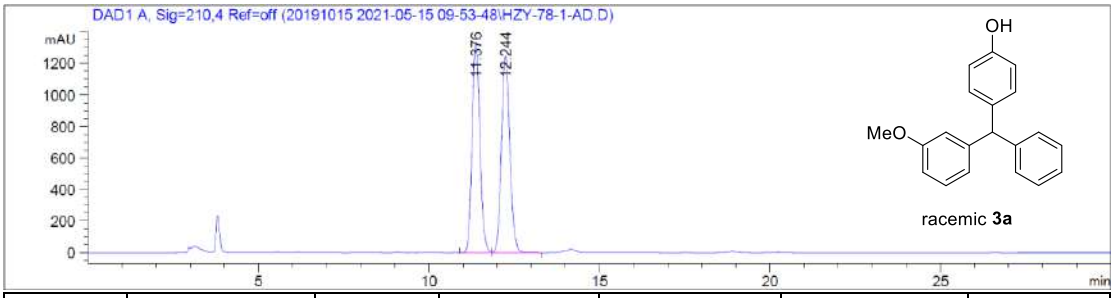
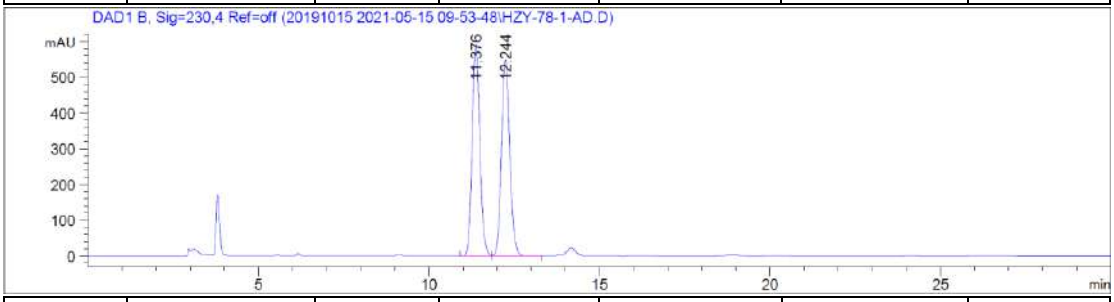
End of Report

Sample Name: HZY-78-1-AD

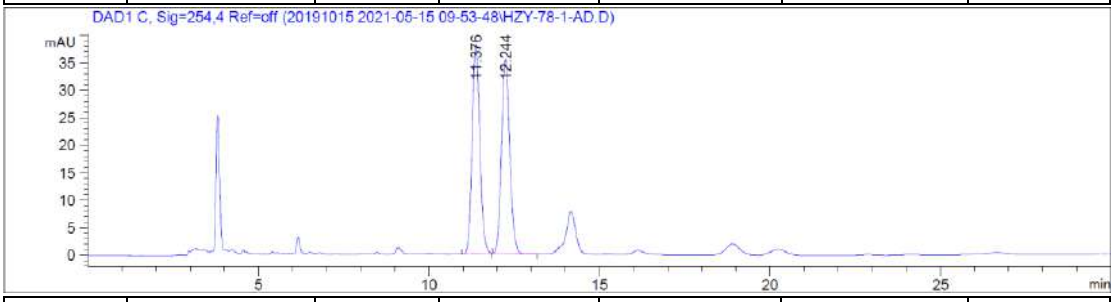
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



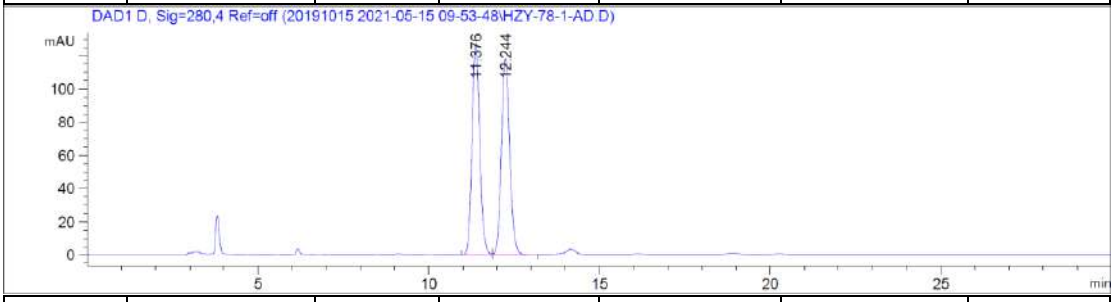
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	11.376	BV	0.2480	2.12902e4	1335.20349	49.8787
2	12.244	VB	0.2663	2.13937e4	1246.17883	50.1213



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	11.376	BV	0.2430	9271.21484	590.96375	49.9534
2	12.244	VB	0.2614	9288.49707	549.01782	50.0466



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	11.376	BB	0.2427	596.80231	38.09967	50.0044
2	12.244	BB	0.2609	596.69635	35.36130	49.9956



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	11.376	BV	0.2428	1992.06067	127.15501	49.9526
2	12.244	VB	0.2592	1995.84131	118.10190	50.0474

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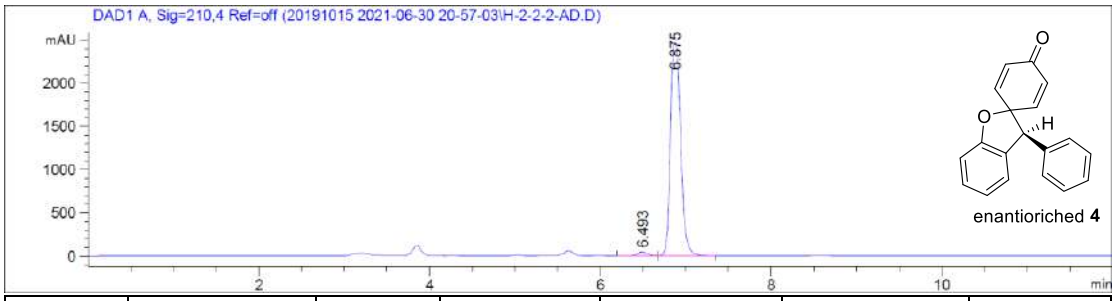
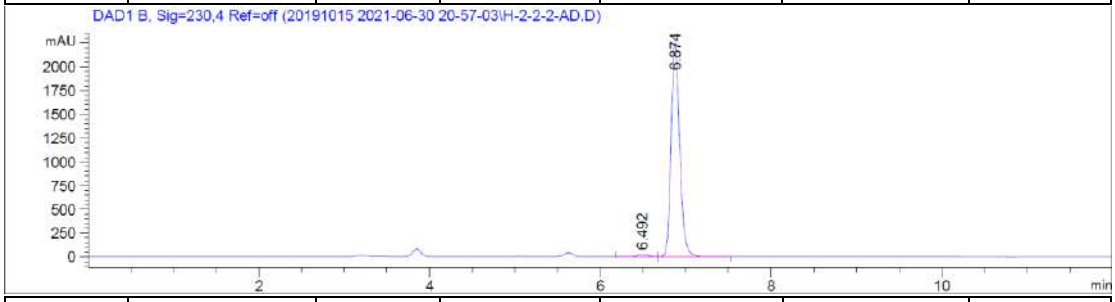
End of Report

Sample Name: H-2-2-2-AD

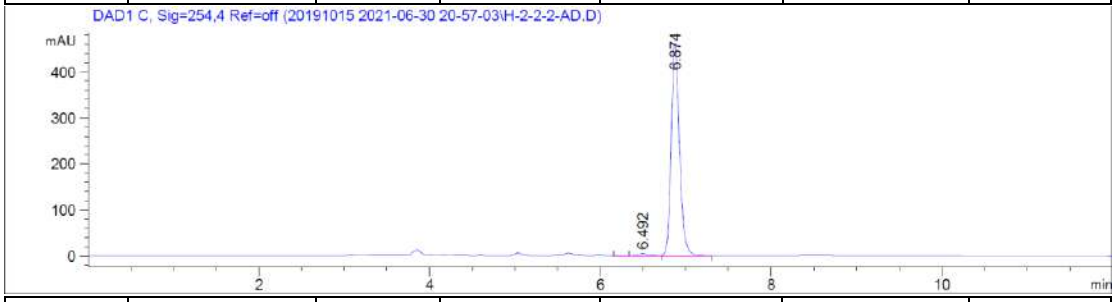
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



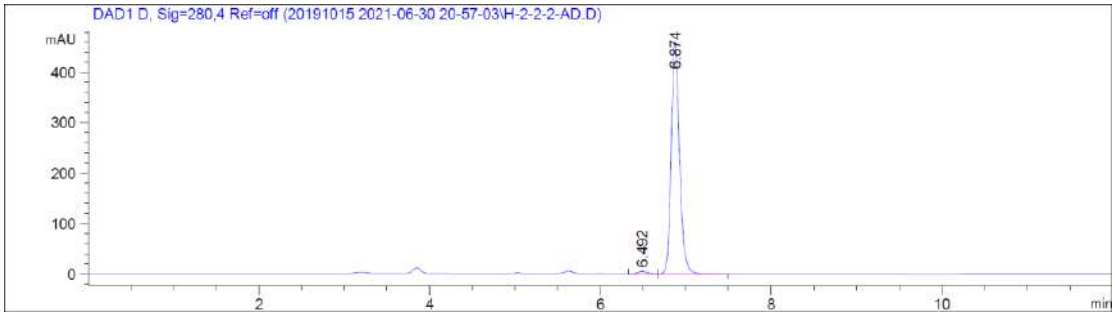
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.493	BV	0.1272	342.39667	41.11284	1.6334
2	6.875	VB	0.1315	2.06203e4	2468.64502	98.3666



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.492	BV	0.1291	221.84389	26.11909	1.3815
2	6.874	VB	0.1100	1.58358e4	2251.95825	98.6185



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.492	VV E	0.1271	40.14545	4.82439	1.2638
2	6.874	VB R	0.1029	3136.53101	463.71606	98.7362



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.492	BV	0.1219	37.14614	4.71374	1.1812
2	6.874	VB	0.1028	3107.59082	460.01584	98.8188

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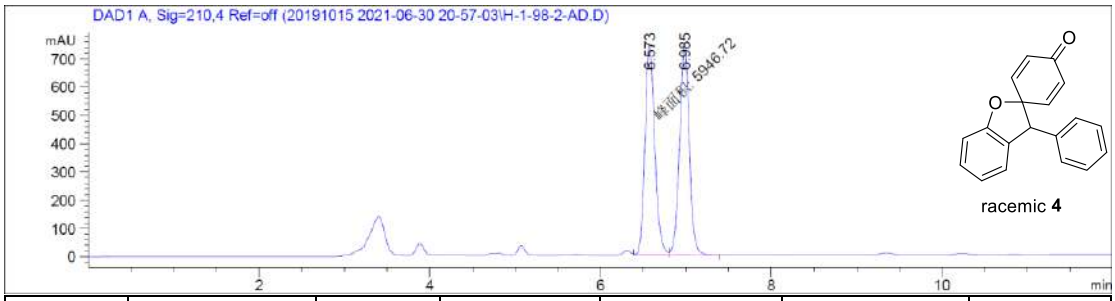
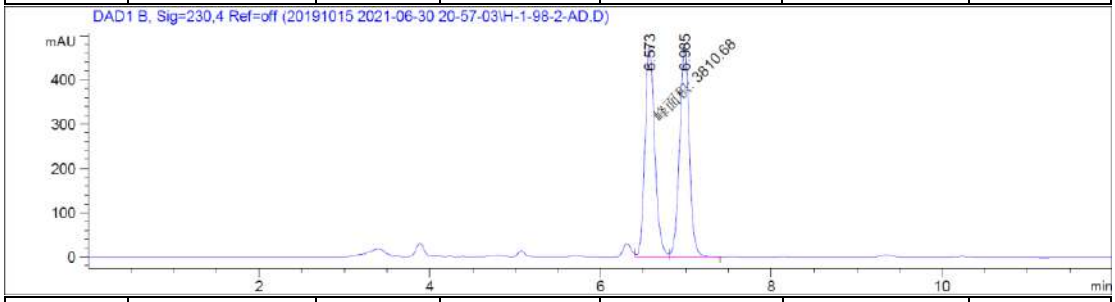
End of Report

Sample Name: H-1-98-2-AD

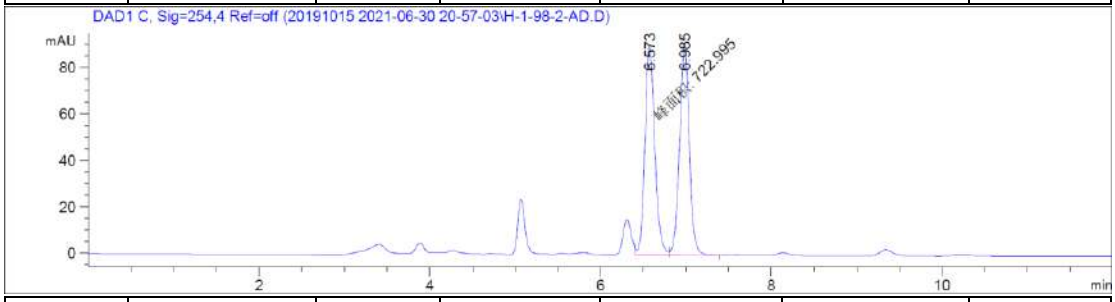
HPLC Condition: AD-H, *n*-Hexane/*i*PrOH = 90:10, 1.0 mL/min



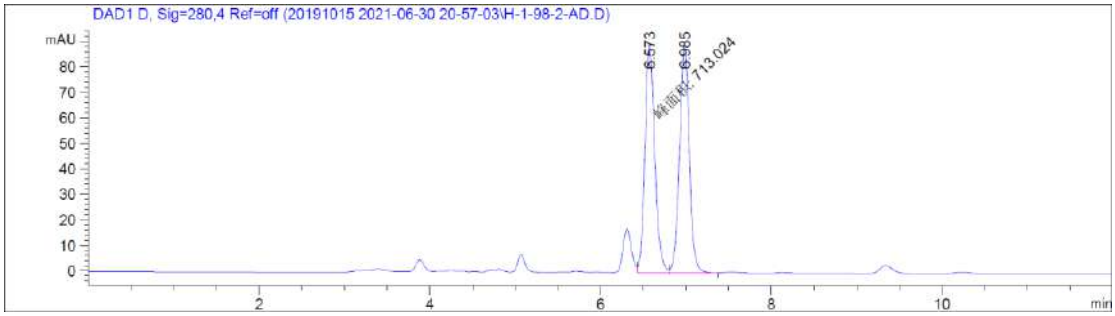
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.573	FM	0.1327	5946.71582	746.99255	49.8516
2	6.985	VB	0.1207	5982.11963	752.72308	50.1484



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.573	FM	0.1327	3810.67871	478.47952	49.8759
2	6.985	VB	0.1206	3829.63501	482.69070	50.1241



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.573	FM	0.1331	722.99530	90.53700	49.9336
2	6.985	VB	0.1205	724.91943	91.45164	50.0664



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	6.573	FM	0.1325	713.02374	89.70702	49.8344
2	6.985	VB	0.1205	717.76385	90.51783	50.1656

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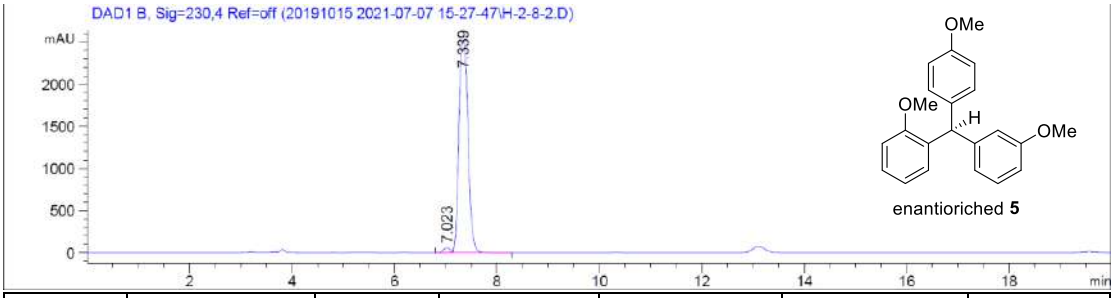
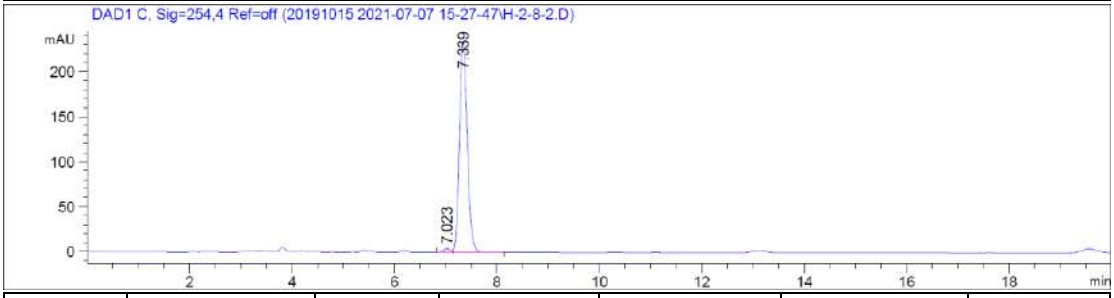
End of Report

Sample Name: H-2-8-2

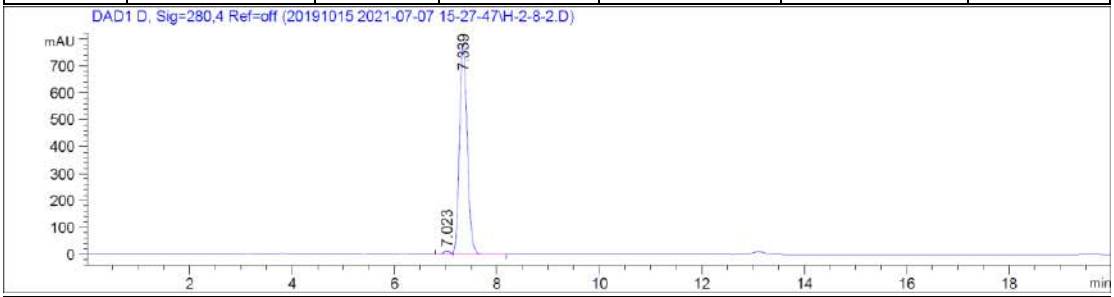
HPLC Condition: IC, *n*-Hexane/*i*PrOH = 99:1, 1.0 mL/min



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.023	BV E	0.1440	522.21185	57.49771	1.6462
2	7.339	VB R	0.1967	3.12006e4	2516.34229	98.3538



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.023	BV E	0.1409	34.70954	3.85847	1.3897
2	7.339	VB R	0.1627	2462.95703	234.10666	98.6103



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.023	BV E	0.1438	116.59512	12.85111	1.3958
2	7.339	VB R	0.1627	8236.53027	783.35315	98.6042

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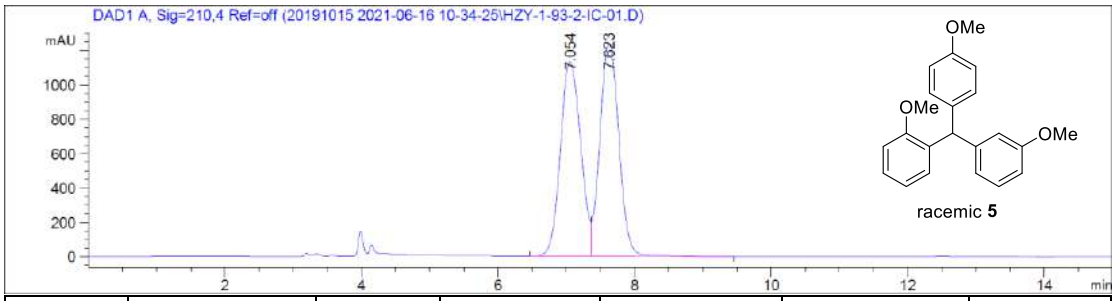
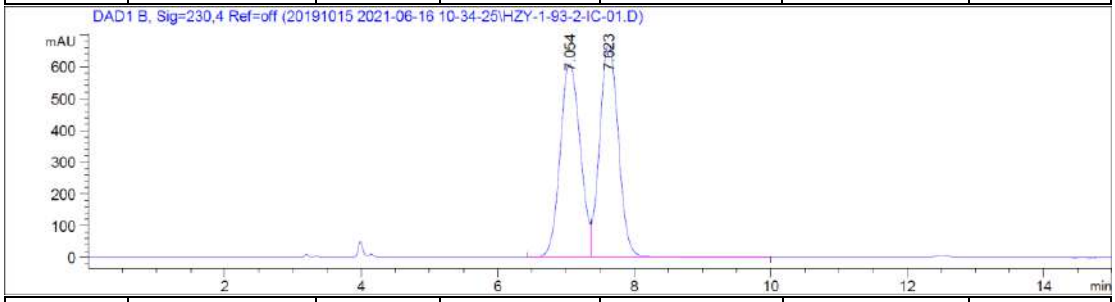
End of Report

Sample Name: HZY-1-93-2-IC-01

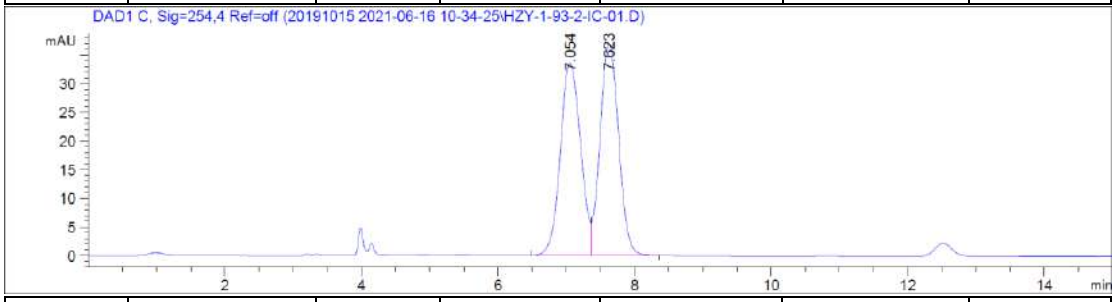
HPLC Condition: IC, *n*-Hexane/*i*PrOH = 99:1, 1.0 mL/min



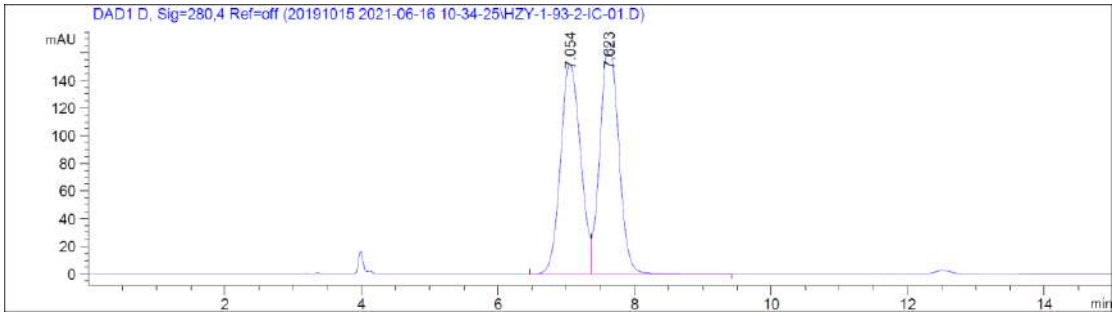
Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.054	BV	0.3286	2.33066e4	1129.93005	49.3647
2	7.623	VB	0.3049	2.39065e4	1240.12537	50.6353



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.054	BV	0.3242	1.24612e4	610.34900	49.3406
2	7.623	VB	0.2978	1.27942e4	672.92419	50.6594



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.054	BV	0.3265	692.49707	33.59140	49.8080
2	7.623	VB	0.2961	697.83691	36.99153	50.1920



Peak	RetTime[min]	Type	Width[min]	Area[mAu*s]	Height[mAU]	Area[%]
1	7.054	BV	0.3217	3093.00244	151.78897	49.3599
2	7.623	VB	0.2971	3173.22681	167.43469	50.6401

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End of Report