

Supporting Information

for

Facile Imidazole Mediated Microwave-Assisted Aromatization Reaction: Synthesis of Benzobicyclo[2.2.2]octadienone Derivatives

Santhosh Kumar Chittimalla,* Chennakesavulu Bandi and Sireesha Putturu

AMRI Singapore Research Centre, 61 Science Park Road, #05-01, Science Park II, Singapore 117525, Singapore. Fax: +65 - 6398 5511. E-mail: santhosh.chittimalla@amriglobal.com; chemcsk@gmail.com

General procedure for the preparation of MOB dimers 3a-3k: To a solution of 2-methoxyphenol (**1**, 1.0 mmol) in methanol (4 mL) was added DAIB (1.3 mmol) and the resulting mixture was stirred for 1 h – 8 h at room temperature. The reaction mixture was concentrated and the residue was purified by column chromatography on silica gel by using a mixture of ethyl acetate and hexanes as eluent to obtain corresponding MOB dimers **3**.

Dimers **3a**, **3c**, **3d**: ^1H and ^{13}C NMR spectral data were identical to those reported in literature. Lai, C.-H.; Shen, Y.-L.; Wang, M.-N.; Rao, N. S. K.; Liao, C.-C. *J. Org. Chem.* **2002**, *67*, 6493-6502.

Dimer **3b**: ^1H and ^{13}C NMR spectral data were identical to those reported in literature. Deffieux, D.; Fabre, I.; Titz, A.; Leger, J.-M.; Quideau, S. *J. Org. Chem.* **2004**, *69* 8731-8738.

Dimer **3g**: ^1H and ^{13}C NMR spectral data were identical to those reported in literature. Nishiyama, A.; Eto, H.; Terada, Y.; Iguchi, M.; Yamamura, S. *Chem. Pharm. Bull.* **1983**, *31*, 2834-2844.

3e: ^1H NMR (400 MHz, CDCl_3) δ 6.21–6.12 (m, 2H), 5.53 (d, $J = 8.0$ Hz, 1H), 3.43 (s, 3H), 3.36 (s, 3H), 3.23–3.18 (m, 1H), 3.17 (s, 3H), 3.13–3.06 (m, 1H), 3.04–3.02 (m, 1H), 3.02 (s, 3H), 2.31–2.15 (m, 2H), 1.94–1.83 (m, 1H), 1.74–1.63 (m, 1H), 1.08–0.98 (m, 6H). ^{13}C NMR (100 MHz, CDCl_3) δ 203.8 (C), 194.7 (C), 142.7 (C), 137.5 (CH), 133.0 (CH), 131.3 (CH), 98.8 (C), 94.9 (C), 58.0 (C), 50.4 (CH_3), 49.6 (CH_3), 48.8 (CH_3), 40.4 (CH), 39.7 (CH), 39.4 (CH), 23.0 (CH_2), 22.3 (CH_2), 12.7 (CH_3), 9.1 (CH_3). MS (ESI): m/z found $\text{C}_{20}\text{H}_{29}\text{O}_6$ [$\text{M} + \text{H}$] $^+$ 365.

3f: ^1H NMR (400 MHz, CDCl_3) δ 5.82 (s, 1H), 5.74 (app dd, $J = 6.4, 1.6$ Hz, 1H), 3.36 (s, 3H), 3.33 (s, 3H), 3.18 (s, 3H), 3.17–3.14 (m, 1H), 3.11–3.05 (m, 2H), 2.99 (dd, $J = 6.8, 1.6$ Hz, 1H), 2.97 (s, 3H), 2.29–2.07 (m, 2H), 1.88–1.68 (m, 2H), 1.04 (t, $J = 7.2$ Hz, 3H), 0.84 (t, $J = 7.2$ Hz, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 202.3 (C), 193.3 (C), 161.4 (C), 142.5 (C), 123.7 (CH), 123.0 (CH), 98.7 (C), 94.7 (C), 57.1 (CH), 50.4 (CH_3), 49.8 (CH_3), 49.4 (CH_3), 48.8 (CH_3), 41.7 (CH), 39.4 (CH), 38.5 (CH), 28.0 (CH_2), 27.8 (CH_2), 11.6 (CH_3), 10.4 (CH_3).

3h: ^1H NMR (300 MHz, CDCl_3) δ 5.85 (d, $J = 0.6$ Hz, 1H), 5.78 (dd, $J = 6.9, 1.5$ Hz, 1H), 3.40 (s, 3H), 3.34 (s, 3H), 3.21 (s, 3H), 3.23–3.18 (m, 1H), 3.16–3.09 (m, 2H), 3.01 (s, 3H), 3.03–2.98 (m, 1H), 2.24–2.05 (m, 2H), 1.83–1.76 (m, 2H), 1.62–1.18 (m, 4H), 0.92 (t, $J = 7.2$ Hz, 3H), 0.79 (t, $J = 7.2$ Hz, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 202.6 (C), 193.3 (C), 160.1 (C), 141.2 (C), 125.1 (CH), 124.1 (CH), 98.8 (C), 94.9 (C), 77.2 (C), 56.9 (CH), 50.5 (CH_3), 49.9 (CH_3), 49.5 (CH_3), 48.8 (CH_3), 41.6 (CH), 39.6 (CH), 38.4 (CH), 37.2 (CH_2), 36.9 (CH_2), 20.9 (CH_2), 19.5 (CH_2), 13.4 (CH_3), 13.3 (CH_3).

3i: ^1H NMR (400 MHz, CDCl_3) δ 7.35 (d, $J = 4.0$ Hz, 1H), 6.18 (app t, $J = 8.0$ Hz, 1H), 5.99 (d, $J = 8.4$ Hz, 1H), 5.24 (s, 1H), 4.99 (s, 1H), 3.79–3.66 (m, 3H), 3.65–3.54 (m, 3H), 3.53–3.48 (m, 2H), 3.47–3.41 (m, 1H), 3.46 (s, 3H), 3.36 (s, 3H), 3.25 (d, $J = 8.0$ Hz, 1H), 3.17 (s, 3H), 3.08 (s, 3H), 3.07–3.03 (m, 1H), 1.28 (s, 3H), 1.17 (s, 3H), 0.75 (s, 3H), 0.71 (s, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 201.2 (C), 193.0 (C), 144.2 (CH), 136.9 (C), 130.3 (CH), 129.8 (CH), 99.5 (CH), 98.6 (C), 95.9 (CH), 94.9 (C), 78.3 (CH_2), 77.59 (CH_2), 77.56 (CH_2), 77.5 (CH_2), 60.7 (C), 50.8 (CH_3), 50.0 (CH_3), 49.2 (CH_3), 48.7 (CH_3), 39.2 (CH), 38.9 (CH), 38.3 (CH), 30.3 (C), 30.1 (C), 23.7 (CH_3), 22.9 (CH_3), 22.0 (CH_3), 21.8 (CH_3).

3j: ^1H NMR (400 MHz, CDCl_3) δ 6.16 (t, $J = 1.2$ Hz, 1H), 6.14 (br s, 1H), 5.02 (d, $J = 1.2$ Hz, 1H), 4.67 (s, 1H), 3.70–3.61 (m, 3H), 3.60–3.55 (m, 1H), 3.54–3.49 (m, 1H), 3.48–3.44 (m, 2H), 3.43–3.37 (m, 1H), 3.40 (s, 3H), 3.36–3.28 (m, 2H), 3.35 (s, 3H), 3.21 (dd, $J = 8.4, 1.6$ Hz, 1H), 3.18 (s, 3H), 3.08 (dd, $J = 6.8, 1.6$ Hz, 1H), 3.02 (s, 3H), 1.14 (s, 3H), 1.10 (s, 3H), 0.73 (s, 3H), 0.66 (s, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 202.1 (C), 194.1 (C), 153.7 (C), 137.9 (C), 128.2 (CH), 125.8 (CH), 99.1 (CH), 98.63 (C), 98.56 (CH), 94.8 (C), 77.8 (CH_2), 77.3 (CH_2), 76.69 (CH_2), 76.65 (CH_2), 52.0 (CH), 50.5 (CH_3), 50.1 (CH_3), 49.8 (CH_3), 48.8 (CH_3), 39.4 (CH), 38.1 (CH), 37.6 (CH), 30.2 (C), 30.0 (C), 23.0 (CH_3), 22.9 (CH_3), 21.7 ($\text{CH}_3 \times 2$).

3k: ^1H NMR (300 MHz, CDCl_3) δ 6.13 (dd, $J = 8.4, 7.2$ Hz, 1H), 5.87 (d, $J = 8.4$ Hz, 1H), 5.45 (d, $J = 4.2$ Hz, 1H), 3.56 (s, 3H), 3.48 (s, 3H), 3.42 (s, 3H), 3.32 (s, 3H), 3.37–3.28 (m, 1H), 3.23–3.17 (m, 1H), 3.16 (s, 3H), 3.04 (s, 3H), 3.02–2.96 (m, 1H). ^{13}C NMR (75 MHz, CDCl_3) δ 201.9 (C), 189.1 (C), 152.2 (C), 130.4 (CH), 129.6 (CH), 110.2 (CH), 98.7 (C), 94.2 (C), 88.6 (C), 77.2 (C), 55.6 (CH_3), 54.2 (CH_3), 50.5 (CH_3), 50.3 (CH_3), 49.2 (CH_3), 48.8 (CH_3), 40.3 (CH), 39.1 (CH), 38.7 (CH).

General procedure for the synthesis of benzobicyclo[2.2.2]octadienone derivatives 4a-4k: A solution of dimer **3** (1.0 equiv) and imidazole (2.5 equiv) in *o*-dichlorobenzene (1 mL for 100 mg of dimer **3**) was sealed and subjected to microwave irradiation [Biotage® microwave synthesizer] at appropriate temperature for an appropriate time to give corresponding benzobicyclo[2.2.2]octadien-one products after purification by flash column chromatography using ethyl acetate/hexanes

4a: ^1H NMR (400 MHz, CDCl_3) δ 6.90 (d, $J = 8.0$ Hz, 1H), 6.78 (d, $J = 8.0$ Hz, 1H), 6.67–6.58 (m, 2H), 4.64 (dd, $J = 6.0, 2.4$ Hz, 1H), 4.28 (dd, $J = 5.6, 2.0$ Hz, 1H), 3.90 (s, 3H), 3.41 (s, 3H), 3.26 (s, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 195.8 (C), 148.3 (C), 143.5 (C), 133.3 (CH), 131.6 (CH), 131.1 (C), 128.8 (C), 121.1 (CH), 114.1 (CH), 91.8 (C), 62.4 (CH_3), 56.8 (CH), 50.4 (CH_3), 49.9 (CH_3), 42.2 (CH). HRMS (ESI⁺): calcd. for $\text{C}_{15}\text{H}_{16}\text{NaO}_5$ [$\text{M} + \text{Na}$] 299.0890; found 299.0899.

4b: ^1H NMR (300 MHz, CDCl_3) δ 7.05 (s, 1H), 6.66 (dd, $J = 6.9, 2.1$ Hz, 1H), 5.70 (br s, 1H), 4.75 (d, $J = 2.1$ Hz, 1H), 4.60 (d, $J = 6.9$ Hz, 1H), 3.87 (s, 3H), 3.41 (s, 3H), 3.27 (s, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 192.6 (C), 149.5 (C), 143.1 (C), 131.83 (C), 131.82 (CH), 127.5 (C), 123.0 (C), 118.1 (CH), 114.8 (C), 91.1 (C), 64.6 (CH), 62.6 (CH_3), 50.6 (CH_3), 50.2 (CH_3), 44.2 (CH).

4c: ^1H NMR (400 MHz, CDCl_3) δ 6.79 (s, 1H), 6.61 (t, $J = 6.4$ Hz, 1H), 6.23 (dd, $J = 7.6, 2.0$ Hz, 1H), 5.58 (s, 1H), 4.56 (dd, $J = 6.4, 1.6$ Hz, 1H), 3.89 (s, 3H), 3.41 (s, 3H), 3.26 (s, 3H), 2.25 (s, 3H), 1.65 (s, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 197.5 (C), 146.1 (C), 142.8 (C), 137.1 (CH), 133.6 (CH), 130.6 (C), 128.9 (C), 123.0 (C), 120.0 (CH), 92.0 (C), 62.4 (CH_3), 60.3 (C), 50.2 (CH_3), 49.9 (CH_3), 41.5 (CH), 15.8 (CH_3), 12.8 (CH_3). MS (APCI): m/z found $\text{C}_{17}\text{H}_{19}\text{O}_5$ [$\text{M} - \text{H}$]⁻ 303.

4d: ^1H NMR (400 MHz, CDCl_3) δ 6.64 (s, 1H), 6.19–6.11 (m, 1H), 4.48 (d, $J = 6.4$ Hz, 1H), 4.20 (d, $J = 1.6$ Hz, 1H), 3.86 (s, 3H), 3.41 (s, 3H), 3.24 (s, 3H), 2.27 (s, 3H), 1.95 (d, $J = 1.6$ Hz, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 194.6 (C), 147.6 (C), 141.9 (C), 141.4 (C), 131.7 (C), 129.7 (C), 126.9 (C), 125.8 (CH), 115.3 (CH), 92.1 (C), 62.4 (CH_3), 59.0 (CH), 50.4 (CH_3), 49.8 (CH_3), 41.8 (CH), 19.8 (CH_3), 18.0 (CH_3). MS (APCI): m/z found $\text{C}_{17}\text{H}_{19}\text{O}_5$ [$\text{M} - \text{H}$] $^-$ 303.

4e: ^1H NMR (400 MHz, CDCl_3) δ 6.79 (s, 1H), 6.66 (dd, $J = 7.6, 6.4$ Hz, 1H), 6.43 (dd, $J = 7.6, 1.6$ Hz, 1H), 5.67 (br s, 1H), 4.55 (dd, $J = 6.4, 1.6$ Hz, 1H), 3.88 (s, 3H), 3.38 (s, 3H), 3.27 (s, 3H), 2.73–2.57 (m, 2H), 2.35–2.25 (m, 1H), 2.15–2.06 (m, 1H), 1.23–1.17 (m, 6H). ^{13}C NMR (100 MHz, CDCl_3) δ 197.4 (C), 145.6 (C), 142.9 (C), 133.7 (CH), 133.4 (CH), 130.0 (C), 129.3 (C), 129.2 (C), 119.3 (CH), 92.3 (C), 62.5 (CH_3), 59.2 (C), 50.14 (CH_3), 50.11 (CH_3), 41.4 (CH), 23.2 (CH_2), 19.0 (CH_2), 14.0 (CH_3), 8.8 (CH_3). MS (ESI): m/z found $\text{C}_{19}\text{H}_{23}\text{O}_5$ [$\text{M} - \text{H}$] $^-$ 331.

4f: ^1H NMR (400 MHz, CDCl_3) δ 6.64 (s, 1H), 6.15–6.10 (m, 1H), 6.02 (br s, 1H), 4.52 (d, $J = 6.4$ Hz, 1H), 4.27 (d, $J = 2.0$ Hz, 1H), 3.85 (s, 3H), 3.39 (s, 3H), 3.23 (s, 3H), 2.58 (q, $J = 7.6$ Hz, 2H), 2.32–2.18 (m, 2H), 1.14 (t, $J = 7.6$ Hz, 3H), 1.04 (t, $J = 7.6$ Hz, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 196.9 (C), 147.7 (C), 147.1 (C), 141.3 (C), 135.9 (C), 132.1 (C), 126.2 (C), 124.1 (CH), 113.9 (CH), 92.3 (C), 62.1 (CH_3), 57.6 (CH), 50.3 (CH_3), 49.7 (CH_3), 41.5 (CH), 26.7 (CH_2), 25.1 (CH_2), 15.6 (CH_3), 11.4 (CH_3).

4g: ^1H NMR (400 MHz, CDCl_3) δ 6.74 (s, 1H), 6.64 (dd, $J = 7.6, 6.8$ Hz, 1H), 6.41 (dd, $J = 7.6, 1.6$ Hz, 1H), 5.59 (br s, 1H), 4.53 (dd, $J = 6.8, 1.6$ Hz, 1H), 3.88 (s, 3H), 3.38 (s, 3H), 3.26 (s, 3H), 2.69–2.49 (m, 2H), 2.26–2.15 (m, 1H), 2.04–1.94 (m, 1H), 1.69–1.53 (m, 4H), 1.21 (t, $J = 7.6$ Hz, 3H), 0.96 (t, $J = 7.6$ Hz, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 197.4 (C), 145.8 (C), 142.9 (C), 134.2 (CH), 133.3 (CH), 130.1 (C), 129.3 (C), 127.7 (C), 120.1 (CH), 92.3 (C), 62.5 (CH_3), 58.9 (C), 50.2 (CH_3), 50.1 (CH_3), 41.4 (CH), 32.3 (CH_2), 28.7 (CH_2), 23.0 (CH_2), 17.7 (CH_2), 15.1 (CH_3), 14.1 (CH_3). MS (APCI): m/z found $\text{C}_{21}\text{H}_{29}\text{O}_5$ [$\text{M} + \text{H}$] $^+$ 361.

4h: ^1H NMR (400 MHz, CDCl_3) δ 6.64 (s, 1H), 6.14 (dd, $J = 6.4, 1.6$ Hz, 1H), 4.49 (d, $J = 6.4$ Hz, 1H), 4.26 (d, $J = 1.6$ Hz, 1H), 3.87 (s, 3H), 3.40 (s, 3H), 3.24 (s, 3H), 2.55 (t, $J = 7.6$ Hz, 2H), 2.28–2.14 (m, 2H), 1.62–1.42 (m, 4H), 0.93 (t, $J = 7.2$ Hz, 3H), 0.85 (t, $J = 7.2$ Hz, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 196.8 (C), 147.5 (C), 145.7 (C), 141.3 (C), 134.7 (C), 131.9 (C), 126.8 (C), 125.4 (CH), 114.5 (CH), 92.3 (C), 62.4 (CH_3), 57.8 (CH), 50.5 (CH_3), 49.8 (CH), 41.7 (CH), 35.9 (CH_2), 34.2 (CH_2), 24.6 (CH_2), 20.2 (CH_2), 13.8 (CH_3), 13.4 (CH_3). HRMS (ESI $^+$): calcd. for $\text{C}_{21}\text{H}_{28}\text{NaO}_5$ [$\text{M} + \text{Na}$] 383.1829; found 383.1837.

4i: ^1H NMR (400 MHz, CDCl_3) δ 7.78 (s, 1H), 7.08 (s, 1H), 6.74 (dd, $J = 7.6, 2.0$ Hz, 1H), 6.63 (t, $J = 7.2$ Hz, 1H), 5.53 (s, 1H), 5.42 (s, 1H), 4.66 (dd, $J = 6.4, 1.6$ Hz, 1H), 3.89 (s, 3H), 3.83–3.73 (m, 4H), 3.72–3.62 (m, 4H), 3.35 (s, 3H), 3.28 (s, 3H), 1.29 (s, 6H), 0.82 (s, 3H), 0.80 (s, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 194.0 (C), 147.6 (C), 144.2 (C), 133.6 (C), 132.8 (CH), 131.2 (CH), 126.9 (C), 121.7 (C), 119.2 (CH), 102.2 (CH), 98.9 (CH), 92.3 (C), 77.6 (CH $_2$), 77.5 (CH $_2$), 77.4 (CH $_2$), 77.3 (CH $_2$), 62.5 (C), 61.5 (CH_3), 50.4 (CH_3), 50.0 (CH_3), 41.2 (CH), 30.34 (C), 30.31 (C), 23.3 (CH_3), 23.0 (CH_3), 21.9 (CH_3), 21.8 (CH_3). MS (ESI): m/z found $\text{C}_{27}\text{H}_{37}\text{O}_9$ [$\text{M} + \text{H}$] $^+$ 505.

4j: ^1H NMR (400 MHz, CDCl_3) δ 7.11 (s, 1H), 6.56 (ddd, $J = 6.0, 1.6, 0.8$ Hz, 1H), 5.58 (br s, 1H), 5.51 (s, 1H), 5.02 (s, 1H), 4.86 (d, $J = 1.6$ Hz, 1H), 4.60 (d, $J = 6.8$ Hz, 1H), 3.83 (s, 3H), 3.79–3.70 (m, 2H), 3.68–3.58 (m, 4H), 3.49–3.42 (m, 2H), 3.39 (s, 3H), 3.24 (s, 3H), 1.28 (s, 3H), 1.23 (s, 3H), 0.79 (s, 3H), 0.73 (s, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 195.8 (C), 147.8 (C), 143.6 (C), 142.2 (C), 131.8 (C), 130.7 (C), 129.8 (CH), 126.9 (C), 112.4 (CH), 99.4 (CH), 98.9 (CH), 91.9 (C), 77.74 (CH_2), 77.70 (CH_2), 77.14 (CH_2), 76.95 (CH_2), 62.3 (CH_3), 52.8 (CH), 50.4 (CH_3), 50.1 (CH_3), 41.8 (CH), 30.2 (C), 30.1 (C), 23.18 (CH_3), 23.16 (CH_3), 21.9 (CH_3), 21.8 (CH_3). MS (ESI): m/z found $\text{C}_{27}\text{H}_{35}\text{O}_9$ $[\text{M} - \text{H}]^-$ 503.

4k: ^1H NMR (300 MHz, CDCl_3) δ 6.83 (s, 1H), 6.81–6.62 (m, 2H), 5.56 (s, 1H), 4.61 (dd, $J = 6.6, 2.1$ Hz, 1H), 3.96 (s, 3H), 3.90 (s, 3H), 3.80 (s, 3H), 3.39 (s, 3H), 3.29 (s, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 195.0 (C), 146.8 (C), 143.1 (C), 137.8 (C), 133.3 (CH), 130.2 (CH), 128.4 (C), 122.3 (C), 100.5 (CH), 91.6 (C), 87.6 (C), 61.3 (CH_3), 56.4 (CH_3), 54.6 (CH_3), 50.3 (CH_3), 50.0 (CH_3), 40.2 (CH). MS (ESI): m/z found $\text{C}_{17}\text{H}_{21}\text{O}_7$ $[\text{M} + \text{H}]^+$ 337.

General procedure for the preparation of bicyclo[2.2.2] system fused MOB derivatives 5a, 5c, 5d and 5g: To a solution of benzobicyclo[2.2.2]octadienone (**4**, 1.0 equiv) in methanol (4 mL for 1 mmol of **4**) was added DAIB (1.3 equiv) at 0 °C and the resulting mixture was stirred for 45 min at room temperature. The reaction mixture was concentrated and the residue was purified by column chromatography on silica gel by using a mixture of ethyl acetate and hexanes as eluent to give corresponding MOBs **5**.

5a: ^1H NMR (300 MHz, CDCl_3) δ 6.87 (d, $J = 9.9$ Hz, 1H), 6.58 (ddd, $J = 8.1, 6.6, 1.5$ Hz, 1H), 6.49 (ddd, $J = 7.2, 5.7, 1.5$ Hz, 1H), 5.93 (d, $J = 9.9$ Hz, 1H), 4.35 (dd, $J = 6.3, 1.8$ Hz, 1H), 4.04 (dd, $J = 5.7, 2.0$ Hz, 1H), 3.34 (s, 3H), 3.32 (s, 3H), 3.30 (s, 3H), 3.13 (s, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 196.8 (C), 193.8 (C), 146.8 (C), 139.2 (CH), 135.0 (C), 134.4 (CH), 128.4 (CH), 125.4 (CH), 92.5 (C), 90.3 (C), 57.03 (CH), 51.1 ($\text{CH}_3 \times 2$), 50.6 (CH_3), 49.8 (CH_3), 44.1 (CH).

5c: ^1H NMR (400 MHz, CDCl_3) δ 6.69 (app d, $J = 1.6$ Hz, 1H), 6.56 (t, $J = 6.4$ Hz, 1H), 6.05 (dd, $J = 6.4, 1.6$ Hz, 1H), 4.26 (dd, $J = 6.4, 2.0$ Hz, 1H), 3.34 (s, 3H), 3.30 (s, 3H), 3.29 (s, 3H), 3.11 (s, 3H), 1.86 (d, $J = 1.6$ Hz, 3H), 1.54 (s, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 197.1 (C), 195.7 (C), 144.9 (C), 136.9 (C), 134.7 (CH), 134.4 (CH), 133.0 (C), 132.0 (CH), 92.6 (C), 90.8 (C), 55.9 (C), 51.1 (CH_3), 50.9 (CH_3), 50.6 (CH_3), 49.7 (CH_3), 43.2 (CH), 15.1 (CH_3), 12.6 (CH_3).

5d: ^1H NMR (400 MHz, CDCl_3) δ 6.14 (dt, $J = 1.6$ Hz, 1H), 5.84 (app t, $J = 1.2$ Hz, 1H), 4.23 (d, $J = 6.4$ Hz, 1H), 3.98 (d, $J = 1.6$ Hz, 1H), 3.34 (s, 3H), 3.33 (s, 3H), 3.30 (s, 3H), 3.17 (s, 3H), 2.09 (d, $J = 1.6$ Hz, 3H), 1.96 (d, $J = 1.6$ Hz, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 195.8 (C), 194.6 (C), 149.4 (C), 146.9 (C), 138.9 (C), 136.2 (C), 126.9 (CH), 123.6 (CH), 92.4 (C), 90.8 (C), 59.1 (CH), 51.3 (CH_3), 51.2 (CH_3), 50.4 (CH_3), 50.0 (CH_3), 43.6 (CH), 20.6 (CH_3), 19.4 (CH_3).

5g: ^1H NMR (400 MHz, CDCl_3) δ 6.60 (s, 1H), 6.58 (t, $J = 6.8$ Hz, 1H), 6.26 (dd, $J = 6.8, 2.0$ Hz, 1H), 4.25 (dd, $J = 6.4, 1.6$ Hz, 1H), 3.29 (s, 3H), 3.28 (s, 3H), 3.10 (s, 6H), 2.30–2.15 (m, 2H), 2.13–2.03 (m, 1H), 1.91–1.80 (m, 1H), 1.62–1.52 (m, 1H), 1.50–1.38 (m, 3H), 1.08 (t, $J = 7.2$ Hz, 3H), 0.90 (t, $J =$

7.2 Hz, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 196.9 (C), 195.5 (C), 145.7 (C), 136.84 (C), 136.77 (C), 134.5 (CH), 131.6 (CH), 131.3 (CH), 92.7 (C), 91.2 (C), 59.6 (C), 51.3 (CH_3), 50.9 (CH_3), 50.8 (CH_3), 49.6 (CH_3), 42.9 (CH), 30.9 (CH_2), 28.3 (CH_2), 21.7 (CH_2), 18.0 (CH_2), 14.9 (CH_3), 13.8 (CH_3).

General procedure for the preparation of benzobicyclo[2.2.2]octadienedione 6: To benzobicyclo[2.2.2]octadienone **4** (500 mg) was added 2 N aqueous H_2SO_4 (10 mL). The reaction mixture was heated to 50 °C for 16 h. The reaction was brought to room temperature and extracted with ethyl acetate. The organic extract was concentrated to give a residue which was purified by column chromatography on silica gel by using a mixture of ethyl acetate and hexanes as eluent to give corresponding benzobicyclo[2.2.2]octadienedione **6**.

6a: ^1H NMR (300 MHz, CDCl_3) δ 7.04 (d, $J = 8.1$ Hz, 1H), 6.97 (d, $J = 8.1$ Hz, 1H), 6.80 (ddd, $J = 7.5, 6.0, 1.8$ Hz, 1H), 6.72 (ddd, $J = 7.8, 6.3, 1.8$ Hz, 1H), 5.83 (br s, 1H), 4.87 (dd, $J = 6.0, 1.8$ Hz, 1H), 4.50 (dd, $J = 6.0, 1.8$ Hz, 1H), 3.85 (s, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 181.8 (C), 181.4 (C), 149.7 (C), 143.8 (C), 132.9 (CH), 130.9 (CH), 126.8 (C), 126.4 (C), 122.5 (CH), 117.0 (CH), 62.9 (CH_3), 55.1 (CH), 50.2 (CH). MS (ESI): m/z found $\text{C}_{13}\text{H}_9\text{O}_4$ [$\text{M} - \text{H}$] $^-$ 229.

6h: ^1H NMR (400 MHz, CDCl_3) δ 6.80 (s, 1H), 6.29–6.23 (m, 1H), 5.72 (br s, 1H), 4.73 (d, $J = 6.4$ Hz, 1H), 4.47 (d, $J = 2.4$ Hz, 1H), 3.81 (s, 3H), 2.65–2.51 (m, 2H), 2.38–2.29 (m, 2H), 1.63–1.48 (m, 4H), 0.95 (t, $J = 7.6$ Hz, 3H), 0.88 (t, $J = 7.6$ Hz, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 183.0 (C), 182.6 (C), 148.9 (C), 147.9 (C), 141.6 (C), 136.2 (C), 127.6 (C), 124.7 (C), 123.0 (CH), 117.2 (CH), 62.8 (CH_3), 56.1 (CH), 49.5 (CH), 36.2 (CH_2), 34.3 (CH_2), 24.5 (CH_2), 20.3 (CH_2), 13.8 (CH_3), 13.5 (CH_3).

General procedure for the preparation of benzoquinoxalinobarralenes 10-13: A solution of benzobicyclo[2.2.2]octadienedione **6** (1.0 equiv) and *o*-phenylenediamine (1.0 equiv) in a mixture of AcOH / MeOH (1:1, 2 mL for 100 mg of **6**) was stirred at room temperature for 15 min. In the case of reaction between **6a** and *o*-phenylenediamine **7-9**, corresponding benzoquinoxalinobarralenes **10-12** precipitated in the reaction mixture which was filtered and washed with cold methanol to give pure products. However, in the case of reaction between **6h** and **7**, column chromatography was performed to give the corresponding benzoquinoxalinobarralene **13**.

10: ^1H NMR (300 MHz, CDCl_3) δ 8.00–7.80 (m, 2H), 7.65–7.55 (m, 2H), 7.20–7.02 (m, 3H), 6.70 (d, $J = 8.1$ Hz, 1H), 6.51 (br s, 1H), 5.59 (dd, $J = 5.7, 1.5$ Hz, 1H), 5.22 (dd, $J = 6.0, 1.5$ Hz, 1H), 3.84 (s, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 158.0 (C), 157.3 (C), 147.5 (C), 143.6 (C), 139.2 (CH), 138.5 (C \times 2), 137.0 (CH), 135.1 (C), 134.6 (C), 129.1 (CH), 129.0 (CH), 128.3 (CH \times 2), 120.8 (CH), 113.1 (CH), 62.6 (CH_3), 51.5 (CH), 46.4 (CH). MS (ESI): m/z found $\text{C}_{19}\text{H}_{15}\text{N}_2\text{O}_2$ [$\text{M} + \text{H}$] $^+$ 303.

11: ^1H NMR (400 MHz, CDCl_3) δ 7.63 (d, $J = 5.6$ Hz, 2H), 7.14 (ddd, $J = 7.2, 6.0, 1.6$ Hz, 1H), 7.07 (d, $J = 8.0$ Hz, 1H), 7.05 (ddd, $J = 7.2, 6.0, 1.6$ Hz, 1H), 6.67 (d, $J = 8.0$ Hz, 1H), 5.87 (br s, 1H), 5.54 (dd, $J = 6.0, 1.6$ Hz, 1H), 5.18 (dd, $J = 6.0, 1.6$ Hz, 1H), 3.89 (s, 3H), 2.42 (s, 6H). ^{13}C NMR (100 MHz, CDCl_3) δ 157.2 (C), 156.4 (C), 147.2 (C), 143.4 (C), 139.3 (CH), 139.1 (C), 138.9 (C), 137.3 (C), 137.2 (C), 137.0 (CH), 135.7 (C), 134.8 (C), 127.8 (CH), 120.7 (CH \times 2), 112.6 (CH), 62.8 (CH_3), 51.6 (CH), 46.6 (CH), 20.14 (CH_3), 20.12 (CH_3). MS (ESI): m/z found $\text{C}_{21}\text{H}_{19}\text{N}_2\text{O}_2$ [$\text{M} + \text{H}$] $^+$ 331.

12: ^1H NMR (400 MHz, $\text{DMSO-}d_6$) δ 9.44 (s, 1H), 8.17 (s, 1H), 8.13 (s, 1H), 7.25–7.15 (s, 2H), 7.08 (d, $J = 8.0$ Hz, 1H), 6.60 (d, $J = 8.0$ Hz, 1H), 5.52 (dd, $J = 5.6, 1.6$ Hz, 1H), 5.27 (dd, $J = 6.0, 1.6$ Hz, 1H), 3.79 (s, 3H). ^{13}C NMR (100 MHz, $\text{DMSO-}d_6$) δ 159.4 (C), 158.9 (C), 148.6 (C), 143.8 (C), 138.9 (CH), 137.2 (CH), 137.1 (C), 134.4 (C), 133.0 (C), 131.5 (C), 131.4 (C), 129.0 (CH), 128.9 (CH), 120.3 (CH), 114.1 (CH), 61.0 (CH_3), 50.1 (CH), 45.3 (CH). HRMS (ESI⁺): calcd. for $\text{C}_{19}\text{H}_{13}\text{Cl}_2\text{N}_2\text{O}_2$ [$\text{M} + \text{H}$] 371.0349; found 371.0359.

13: ^1H NMR (400 MHz, CDCl_3) δ 7.94–7.83 (m, 2H), 7.64–7.57 (m, 2H), 6.59–6.53 (m, 2H), 6.30 (br s, 1H), 5.45 (d, $J = 6.4$ Hz, 1H), 5.19 (d, $J = 1.6$ Hz, 1H), 3.82 (s, 3H), 2.70 (t, $J = 7.6$ Hz, 2H), 2.37–2.30 (m, 2H), 1.71–1.46 (m, 4H), 0.98 (t, $J = 7.2$ Hz, 3H), 0.80 (t, $J = 7.2$ Hz, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 158.5 (C), 158.2 (C), 153.6 (C), 146.9 (C), 141.4 (C), 138.6 (C), 135.2 (C), 134.5 (C), 132.9 (C), 128.84 (CH), 128.75 (CH), 128.7 (CH), 128.3 (CH), 128.2 (CH), 113.6 (CH), 62.6 (CH_3), 52.3 (CH), 46.0 (CH), 35.8 (CH_2), 34.5 (CH_2), 24.7 (CH_2), 20.2 (CH_2), 14.0 (CH_3), 13.7 (CH_3). MS (ESI): m/z found $\text{C}_{25}\text{H}_{27}\text{N}_2\text{O}_2$ [$\text{M} + \text{H}$]⁺ 387.

General procedure for the *O*-alkylation of benzobicyclo[2.2.2]octadienone **4a:** To a solution of benzobicyclo[2.2.2]octadienone **4a** (1.0 equiv) in CH_3CN (2.5 mL for 100 mg) was added alkylating agent MeI (2.5 equiv) or allyl bromide (2.0 equiv) or methyl bromoacetate (2.0 equiv) and stirred at room temperature for 16 h. Reaction mixture was filtered, solvents evaporated and the residue was purified by column chromatography on silica gel by using a mixture of ethyl acetate and hexanes as eluent to give corresponding alkylated products **14** - **16**.

14: ^1H NMR (300 MHz, CDCl_3) δ 6.94 (d, $J = 7.8$ Hz, 1H), 6.74 (d, $J = 7.8$ Hz, 1H), 6.65–6.56 (m, 2H), 4.76–4.70 (m, 1H), 4.28–4.24 (m, 1H), 3.89 (s, 3H), 3.85 (s, 3H), 3.40 (s, 3H), 3.26 (s, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 196.2 (C), 152.1 (C), 145.3 (C), 134.1 (CH), 131.6 (C), 130.9 (CH), 129.2 (C), 120.0 (CH), 110.7 (CH), 92.0 (C), 61.4 (CH_3), 56.8 (CH), 55.9 (CH_3), 50.3 (CH_3), 50.1 (CH_3), 41.8 (CH).

15: ^1H NMR (300 MHz, CDCl_3) δ 6.92 (d, $J = 8.1$ Hz, 1H), 6.75 (d, $J = 8.1$ Hz, 1H), 6.64–6.58 (m, 2H), 6.14–6.01 (m, 1H), 5.42 (ddd, $J = 17.1, 3.0, 1.5$ Hz, 1H), 5.28 (ddd, $J = 10.5, 3.0, 1.5$ Hz, 1H), 4.77–4.72 (m, 1H), 4.59–4.54 (m, 2H), 4.28–4.23 (m, 1H), 3.92 (s, 3H), 3.41 (s, 3H), 3.27 (s, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 196.2 (C), 151.0 (C), 145.7 (C), 134.2 (CH), 133.2 (CH), 131.7 (C), 130.9 (CH), 129.6 (C), 119.9 (CH), 117.5 (CH_2), 112.5 (CH), 92.0 (C), 69.8 (CH_2), 61.4 (CH_3), 56.8 (CH), 50.4 (CH_3), 50.1 (CH_3), 41.8 (CH). MS (APCI): m/z found $\text{C}_{18}\text{H}_{19}\text{O}_5$ [$\text{M} - \text{H}$]⁻ 315.

16: ^1H NMR (400 MHz, CDCl_3) δ 6.91 (d, $J = 8.0$ Hz, 1H), 6.67 (d, $J = 8.0$ Hz, 1H), 6.63–6.56 (m, 2H), 4.74 (app dd, $J = 5.2, 1.6$ Hz, 1H), 4.67 (s, 2H), 4.26 (app dd, $J = 5.2, 2.4$ Hz, 1H), 3.96 (s, 3H), 3.79 (s, 3H), 3.40 (s, 3H), 3.26 (s, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 196.1 (C), 169.2 (C), 150.3 (C), 145.9 (C), 134.1 (CH), 132.1 (C), 130.9 (C), 130.8 (CH), 119.9 (CH), 112.6 (CH), 91.9 (C), 66.2 (CH_2), 61.6 (CH_3), 56.9 (CH), 52.2 (CH_3), 50.3 (CH_3), 50.1 (CH_3), 41.8 (CH).

Procedure for Chan-Lam coupling of benzobicyclo[2.2.2]octadienone **4a:** A mixture of compound **4a** (1.0 equiv), phenylboronic acid (1.5 equiv), $\text{Cu}(\text{OAc})_2$ (2.5 equiv), pyridine (2 equiv), 4 Å MS (2.5 times wt/wt of **4a**) was stirred in dry CH_2Cl_2 (4 mL) under oxygen balloon at room temperature for 16

h. The reaction mixture was directly passed through celite. After rinsed with further 10 mL of ethyl acetate, it was concentrated by rotatory evaporation. The residue was purified by column chromatography on silica gel to give product **17**.

17: ^1H NMR (300 MHz, CDCl_3) δ 7.35–7.27 (m, 2H), 7.11–7.02 (m, 1H), 6.98–6.90 (m, 3H), 6.84 (d, $J = 7.8$ Hz, 1H), 6.69–6.59 (m, 2H), 4.82–4.74 (m, 1H), 4.36–4.29 (m, 1H), 3.91 (s, 3H), 3.42 (s, 3H), 3.29 (s, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 195.9 (C), 157.7 (C), 147.9 (C), 147.8 (C), 134.2 (CH), 133.2 (C), 132.3 (C), 130.6 (CH), 129.6 (CH X 2), 122.7 (CH), 120.3 (CH), 120.1 (CH), 117.1 (CH X 2), 91.8 (C), 61.5 (CH_3), 57.2 (CH), 50.4 (CH_3), 50.1 (CH_3), 41.9 (CH). HRMS (APCI $^+$): calcd. for $\text{C}_{21}\text{H}_{21}\text{O}_5$ [$\text{M} + \text{H}$] 353.1384; found 353.1376.

Procedure for hydrogenation reaction of benzobicyclo[2.2.2]octadienone 4a: To a solution of compound **4a** (1.0 equiv) in ethyl acetate (4 mL for 100 mg) was added 10% wet Pd-C (30% wt/wt with respect to compound **4a**). The reaction was stirred under hydrogen balloon for 4 h. Reaction mixture was filtered through a pad of celite to give corresponding hydrogenation product **18** in quantitative yield.

18: ^1H NMR (400 MHz, CDCl_3) δ 6.84–6.78 (m, 2H), 5.80 (br s, 1H), 3.90–3.80 (m, 1H merged with 3.87 singlet), 3.87 (s, 3H), 3.50 (dd, $J = 3.2, 2.4$ Hz, 1H), 3.42 (s, 3H), 3.25 (s, 3H), 2.23–2.05 (m, 1H), 1.74–1.64 (m, 1H), 1.48–1.37 (m, 1H). ^{13}C NMR (100 MHz, CDCl_3) δ 203.4 (C), 148.3 (C), 143.2 (C), 132.5 (C), 128.0 (C), 121.7 (CH), 114.5 (CH), 95.3 (C), 62.2 (CH_3), 51.1 (CH), 50.5 (CH_3), 49.7 (CH_3), 37.1 (CH), 23.7 (CH_2), 19.8 (CH_2). MS (ESI): m/z found $\text{C}_{15}\text{H}_{17}\text{O}_5$ [$\text{M} - \text{H}$] $^-$ 277.

Procedure for bromination of benzobicyclo[2.2.2]octadienone 4a: A solution of the compound **4a** (1.0 mmol) in methylene chloride (5 mL) was treated with NBS (1.0 mmol) at room temperature and allowed to stir for 16 h. The solvent was evaporated and the residue taken up in ethyl acetate and water. The organic extracts were collected, dried over Na_2SO_4 and concentrated under reduced pressure to give the corresponding bromo phenol **19** after column chromatography using ethyl acetate/hexanes.

19: ^1H NMR (400 MHz, CDCl_3) δ 7.27–7.28 (m, 1H), 7.16 (s, 1H), 6.63–6.58 (m, 2H), 5.80 (br s, 1H), 4.65 (dd, $J = 4.4, 2.8$ Hz, 1H), 4.24–4.21 (m, 1H), 3.93 (s, 3H), 3.40 (s, 3H), 3.25 (s, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 195.3 (C), 145.5 (C), 144.0 (C), 133.7 (CH), 131.14 (C), 131.11 (CH), 129.6 (C), 123.6 (CH), 107.7 (C), 91.6 (C), 62.1 (CH_3), 56.4 (CH), 50.4 (CH_3), 50.1 (CH_3), 42.0 (CH). HRMS (ESI $^+$): calcd. for $\text{C}_{15}\text{H}_{14}\text{BrO}_5$ [$\text{M} + \text{H}$] 353.0030; found 353.0033.

Procedure for the Michael type addition of benzobicyclo[2.2.2]octadienone 4a to ethylpropiolate: A solution of the benzobicyclo[2.2.2]octadienone **4a** (1.0 equiv), ethyl propiolate (1.5 equiv), and Et_3N (2.0 equiv) in THF was stirred at room temperature for 16 h. The reaction was diluted with water and extracted with ethyl acetate. The organic extracts were collected, dried over Na_2SO_4 and concentrated under reduced pressure to give the corresponding bromo phenoxyacrylate **20** after column chromatography using ethyl acetate/hexanes.

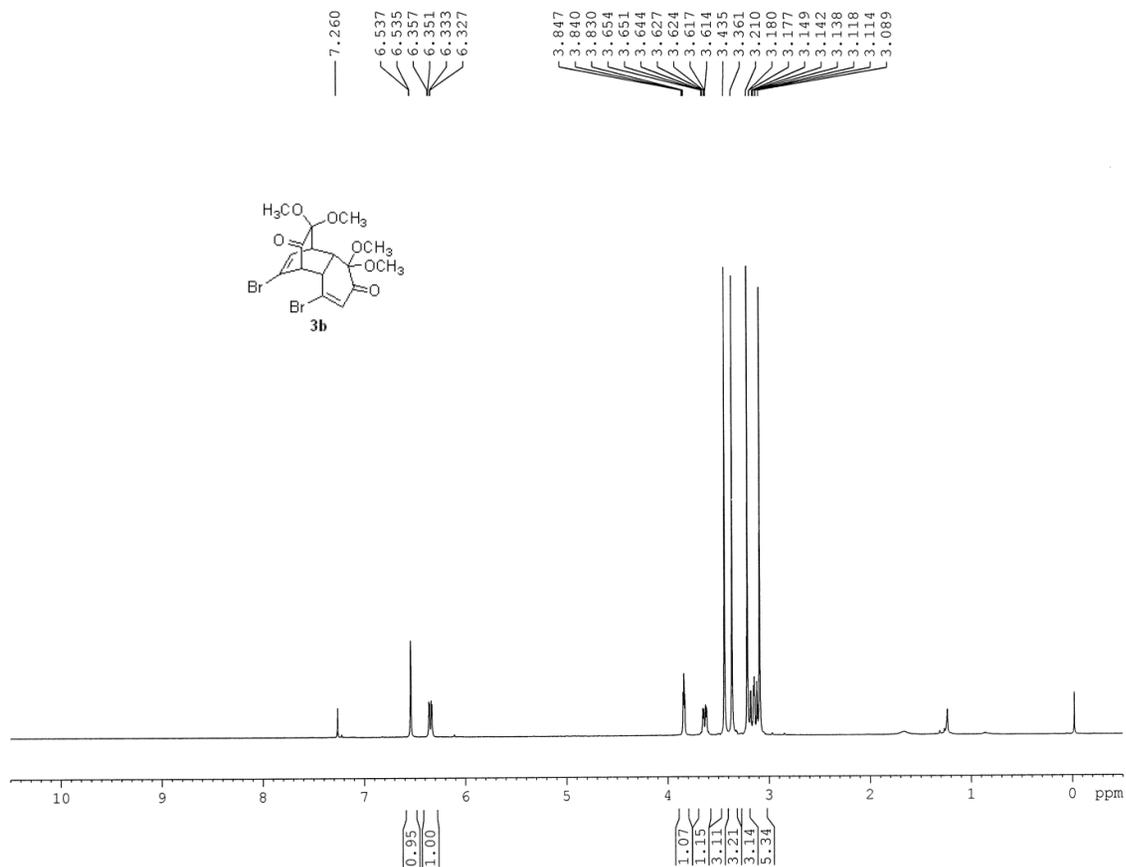
20: ^1H NMR (300 MHz, CDCl_3) δ 7.61 (d, $J = 12.3$ Hz, 1H), 6.66–6.57 (m, 2H), 5.30 (d, $J = 12.3$ Hz, 1H), 4.69 (dd, $J = 5.4, 2.4$ Hz, 1H), 4.33–4.28 (m, 1H), 4.15 (q, $J = 7.2$ Hz, 2H), 3.86 (s, 3H), 3.40 (s, 3H), 3.24 (s, 3H), 1.25 (t, $J = 7.2$ Hz, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 194.7 (C), 166.8 (C), 159.9 (CH), 148.8 (C), 144.5 (C), 136.1 (C), 133.9 (CH), 132.4 (C), 130.5 (CH), 124.3 (CH), 114.3 (C), 101.1 (CH), 91.2 (C), 61.9 (CH_3), 60.1 (CH_2), 56.9 (CH), 50.4 (CH_3), 50.1 (CH_3), 41.9 (CH), 14.2 (CH_3).

Procedure for the intramolecular Heck type Coupling of compound 20: Bromo phenoxyarylate **20** (1.0 equiv) in DMF was degassed using argon balloon. $\text{Pd}(\text{OAc})_2$ (0.4 equiv), PPh_3 (0.8 equiv), and K_2CO_3 (1.0 equiv) were added in sequence. The mixture was then heated at 110 °C overnight and then cooled to room temperature and diluted with water and ethyl acetate. The organic extracts were collected, dried over Na_2SO_4 and concentrated under reduced pressure to give the corresponding benzofuran derivative **21** after column chromatography using ethyl acetate/hexanes.

21: ^1H NMR (300 MHz, CDCl_3) δ 8.22 (s, 1H), 7.62 (s, 1H), 6.69–6.59 (m, 2H), 4.84 (dd, $J = 5.7, 2.4$ Hz, 1H), 4.43 (dd, $J = 5.7, 2.4$ Hz, 1H), 4.39 (q, $J = 7.2$ Hz, 2H), 4.24 (s, 3H), 3.42 (s, 3H), 3.26 (s, 3H), 1.41 (t, $J = 7.2$ Hz, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 196.2 (C), 163.1 (C), 150.7 (CH), 145.9 (C), 141.0 (C), 134.6 (CH), 134.3 (C), 130.7 (CH), 126.2 (C), 125.6 (C), 115.1 (C), 111.9 (CH), 92.0 (C), 60.8 (CH_2), 60.7 (CH_3), 57.7 (CH), 50.5 (CH_3), 49.9 (CH_3), 41.4 (CH), 14.3 (CH_3).

Procedure for vinyl Grignard addition to benzobicyclo[2.2.2]octadienone 14: To a solution of benzobicyclo[2.2.2]octadienone **14** (1.0 equiv) in THF at -78 °C was added vinylmagnesium bromide (1.0 M in THF, 4.0 equiv). The reaction mixture was brought to room temperature and stirred for 16 h. Reaction mixture was quenched with saturated NH_4Cl followed by extraction with ethyl acetate. The organic extracts were collected, dried over Na_2SO_4 and concentrated under reduced pressure to give inseparable mixture of products **22** after column chromatography using ethyl acetate/hexanes.

22: The selected ^1H and ^{13}C NMR data of major and minor isomers presented here was taken from the spectra of isomeric mixture of **22**. Major isomer: ^1H NMR (300 MHz, CDCl_3) δ 6.95 (d, $J = 7.8$ Hz, 1H), 6.70 (d, $J = 7.8$ Hz, 1H), 6.56–6.42 (m, 2H), 6.02 (dd, $J = 17.1, 10.8$ Hz, 1H), 5.50 (dd, $J = 17.1, 2.1$ Hz, 1H), 5.11 (dd, $J = 10.8, 2.1$ Hz, 1H), 4.56 (dd, $J = 6.0, 1.5$ Hz, 1H), 3.87 (s, 3H), 3.85 (s, 3H), 3.57 (dd, $J = 6.3, 1.8$ Hz, 1H), 3.30 (s, 3H), 3.27 (s, 3H). Minor isomer: ^1H NMR (300 MHz, CDCl_3) δ 6.86 (d, $J = 8.1$ Hz, 1H), 6.68 (d, $J = 8.1$ Hz, 1H), 6.64–6.46 (m, 2H), 5.48–5.43 (m, 2H), 4.99 (t, $J = 6.3$ Hz, 1H), 4.56 (dd, $J = 6.0, 1.5$ Hz, 1H), 3.86 (s, 3H), 3.84 (s, 3H), 3.62 (dd, $J = 6.0, 1.8$ Hz, 1H), 3.38 (s, 3H), 3.18 (s, 3H). ^{13}C NMR (75 MHz, CDCl_3) δ 151.0 (C), 144.8 (C), 142.0 (CH major), 141.2 (CH minor), 135.9 (CH minor), 134.6 (CH major), 133.6 (C), 132.2 (C), 131.9 (CH major), 131.8 (CH minor), 121.2 (CH major), 120.1 (CH minor), 112.1 (CH_2 major), 111.7 (CH_2 major), 109.5 (CH minor), 109.4 (CH major), 105.1 (C), 61.50 (C major), 61.49 (CH_3), 55.8 (CH_3 major and minor), 55.61 (C), 55.59 (CH major), 51.41 (CH_3 major), 51.02 (CH_3 major), 50.8 (CH_3 major), 50.6 (CH_3 minor), 42.7 (CH major), 42.3 (CH minor).



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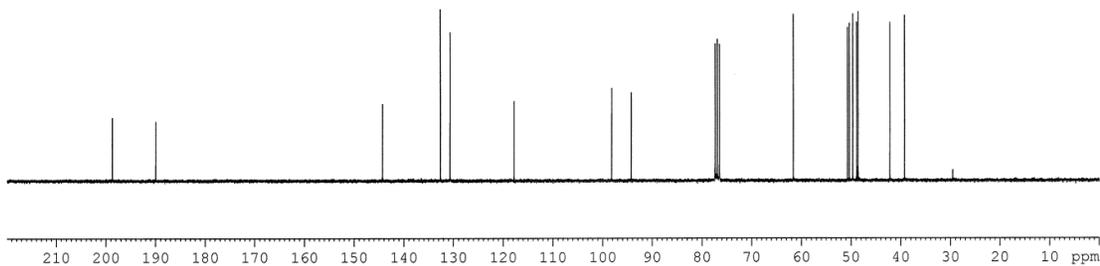
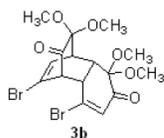
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PL1        -2.00 dB
SFO1      75.4767751 MHz

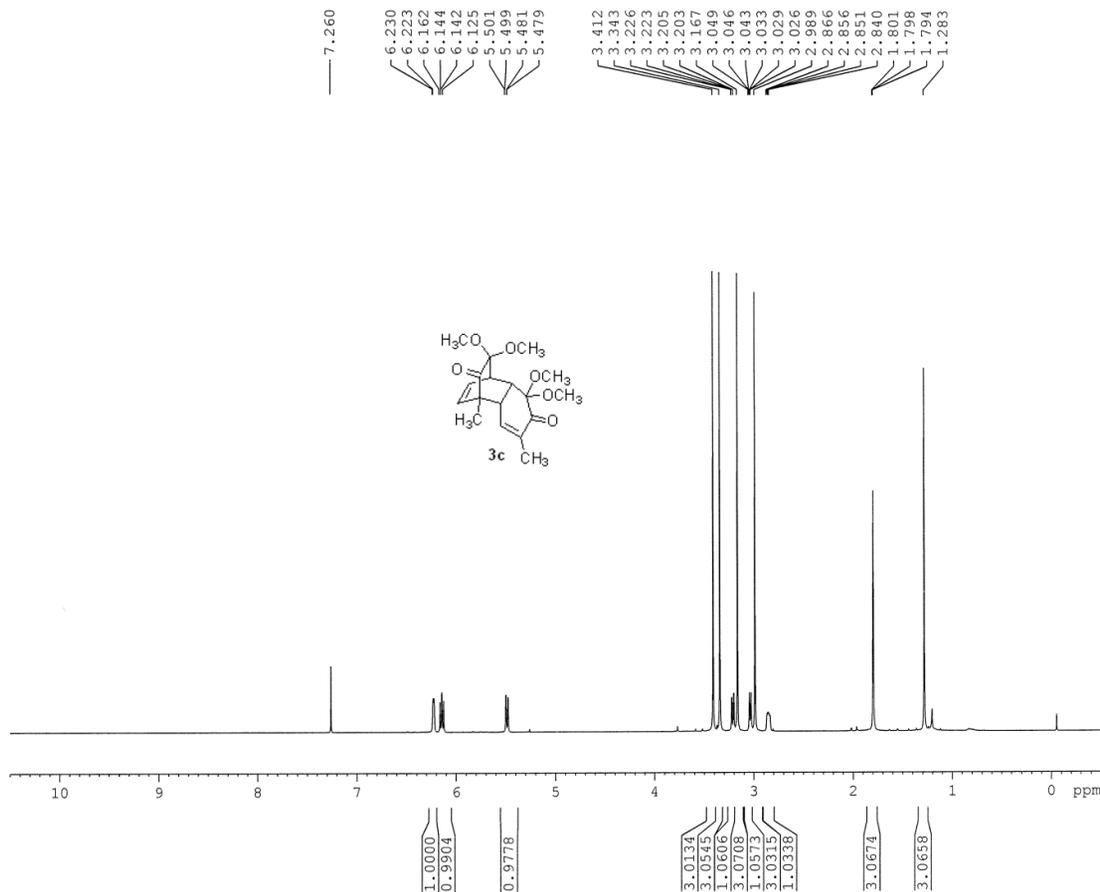
===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2       1H
PCPD2     80.00 usec
PL2         0 dB
PL12       16.33 dB
PL13       16.00 dB
SFO2      300.1315007 MHz

F2 - Processing parameters
SI         131072
SF         75.4677520 MHz
WDW        EM
SSB         0
LB          0.30 Hz
GB          0
PC          1.40
```

AMRI SRC
location; 17



Name _____
Date _____
NB # _____



NAME SG-BCK-6-Me-dimer
 EXPNO 10
 PROCNO 1
 Date_ 20140716
 Time 21.01
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 28.5
 DW 62.400 usec
 DE 6.50 usec
 TE 300.0 K
 D1 1.00000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 10.70 usec
 PL1 -3.00 dB
 PL1W 19.34582710 W
 SFO1 400.1318542 MHz
 SI 32768
 SF 400.1300092 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

AMRI SRC
location; 17



— 204.021
— 195.039

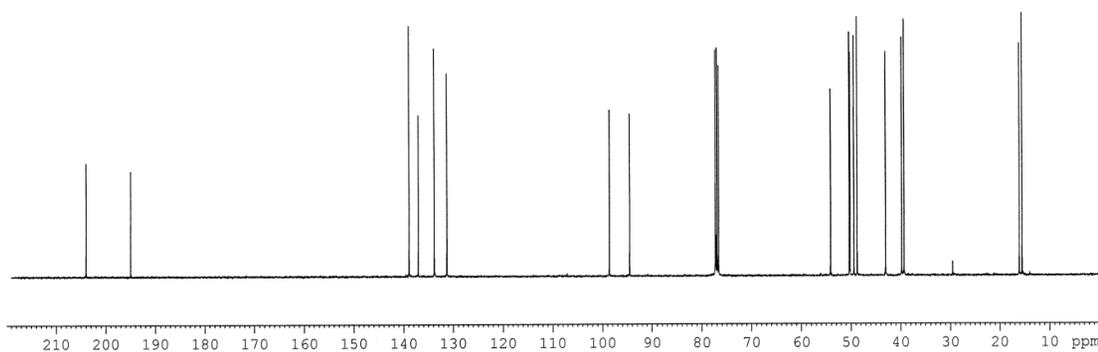
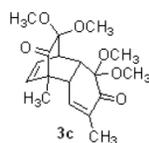
138.972
137.095
133.886
131.339

98.667
94.587

77.319
77.000
76.683

54.145
50.378
50.222
49.462
48.784
43.062
39.817
39.350

16.122
15.557



Name _____
Date _____
NB # _____

```

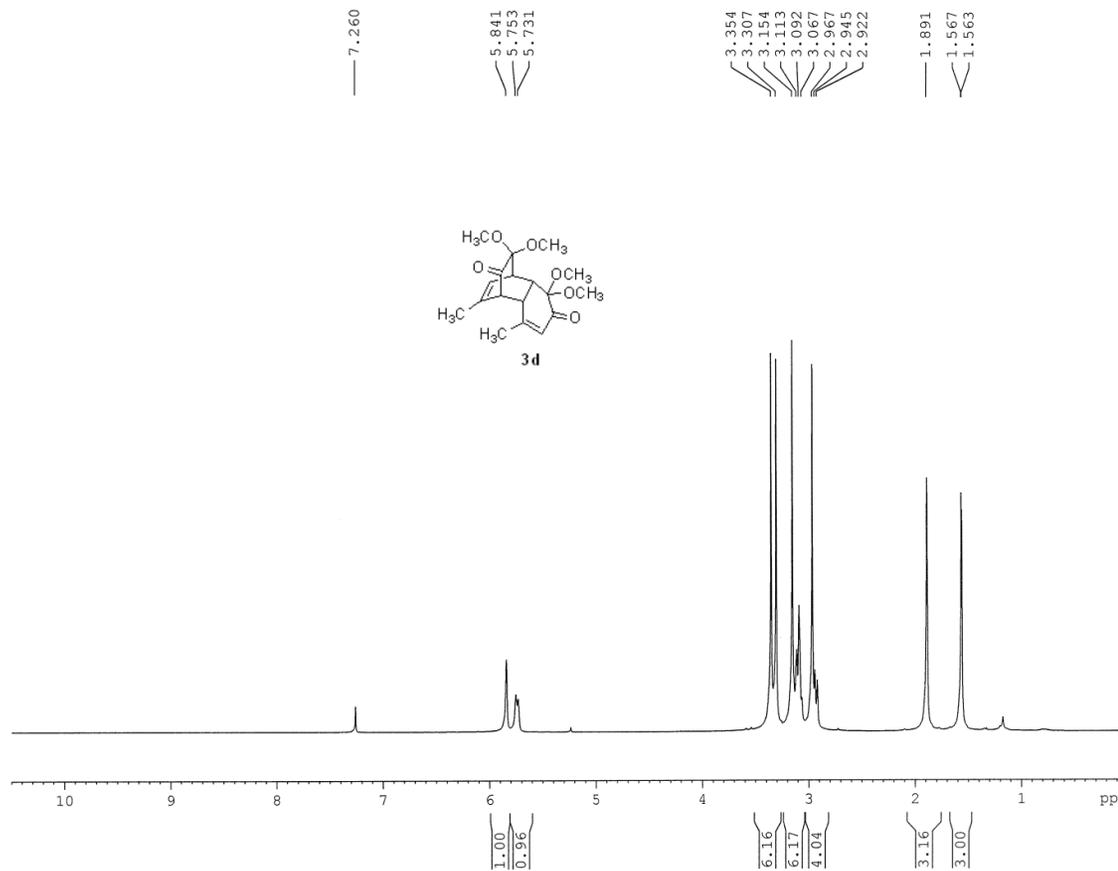
NAME      SG-BCK-6-Me-dimer
EXPNO     11
PROCNO    1
Date_     20140716
Time      22.58
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD         65536
SOLVENT   CDCl3
NS         2000
DS         4
SWH        23980.814 Hz
FIDRES     0.365918 Hz
AQ         1.3664756 sec
RG         14596.5
DW         20.850 usec
DE         6.50 usec
TE         300.0 K
D1         2.00000000 sec
D11        0.03000000 sec
TD0        1
    
```

```

===== CHANNEL f1 =====
NUC1      13C
P1         7.10 usec
PL1        -4.00 dB
PL1W       82.02445221 W
SF01      100.6228298 MHz
    
```

```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2        -3.00 dB
PL12       14.47 dB
PL13       15.06 dB
PL2W       19.34582710 W
PL12W      0.34640750 W
PL13W      0.30240381 W
SF02      400.1316005 MHz
SI         32768
SF         100.6127763 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.40
    
```



```

NAME      SG-BCK-5Me-dimer
EXPNO     10
PROCNO    1
Date_     20140716
Time      2.23
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zg30
TD         32768
SOLVENT   CDC13
NS         16
DS         2
SWH        5995.204 Hz
FIDRES     0.182959 Hz
AQ         2.7329011 sec
RG         57
DW         83.400 usec
DE         6.00 usec
TE         300.0 K
D1         1.00000000 sec
MCREST    0.00000000 sec
MCWRK     0.01500000 sec
  
```

```

===== CHANNEL f1 =====
NUC1      1H
P1        12.20 usec
PL1       0.00 dB
SFO1     300.1319508 MHz
SI        16384
SF        300.1300063 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB         0
PC         1.00
  
```

Name _____

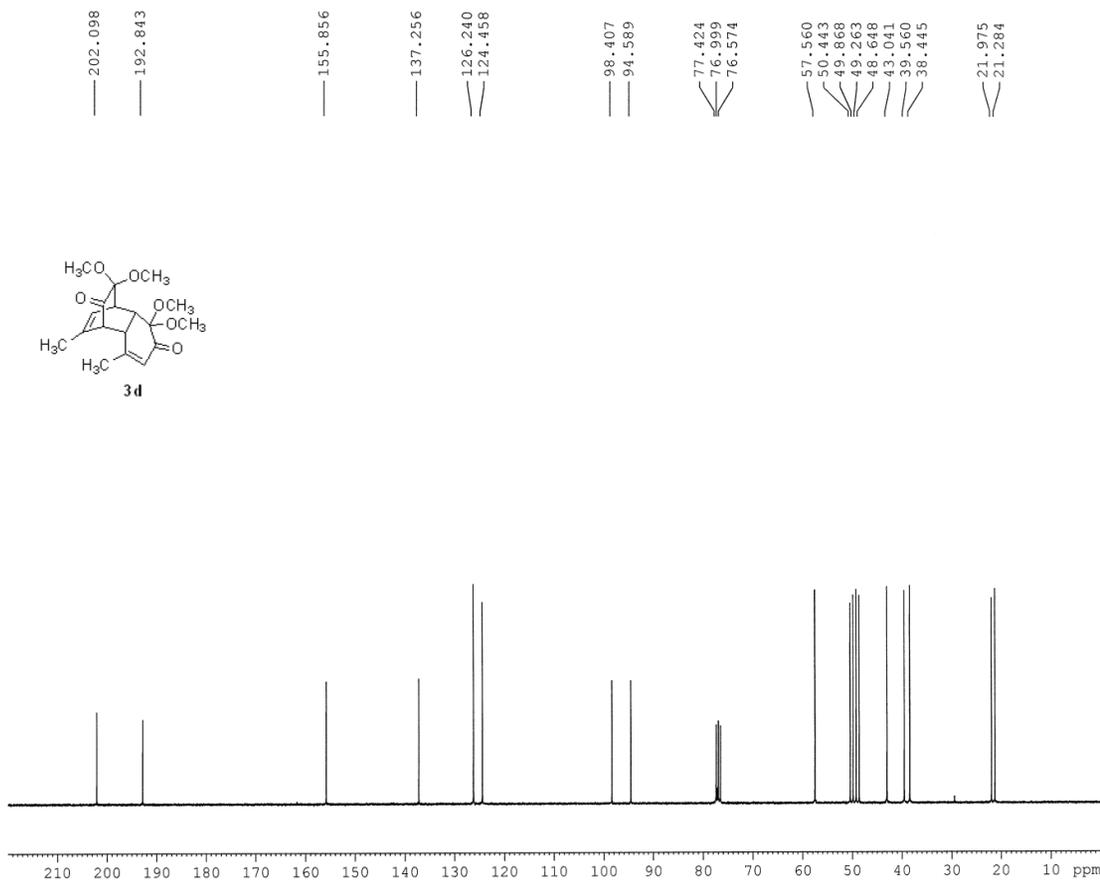
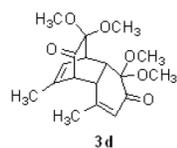
Date _____

NB # _____

AMRI; SRC
location; 15



Name _____
Date _____
NB # _____



```

NAME      SG-BCK-5Me-dimer
EXPNO     1
PROCNO    1
Date_     20140716
Time_     4.05
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zgpg30
TD        65536
SOLVENT   CDCl3
NS        3000
DS        0
SWH       22675.736 Hz
FIDRES    0.346004 Hz
AQ        1.4451188 sec
RG        3251
DW        22.050 usec
DE        6.00 usec
TE        300.0 K
D1        0.5000000 sec
d11       0.0300000 sec
DELTA     0.4000001 sec
MCREST    0.0000000 sec
MCWRK     0.0150000 sec
    
```

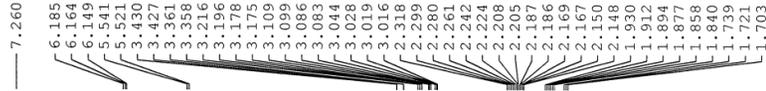
```

===== CHANNEL f1 =====
NUC1      13C
P1        8.00 usec
PL1       -2.00 dB
SFO1     75.4767751 MHz
    
```

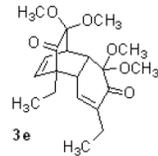
```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2        0.00 dB
PL12     16.33 dB
PL13     16.00 dB
SFO2     300.1315007 MHz
SI        131072
SF        75.4677578 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.40
    
```

AMRI; SRC AV400
location; 18



Name _____
Date _____
NB # _____

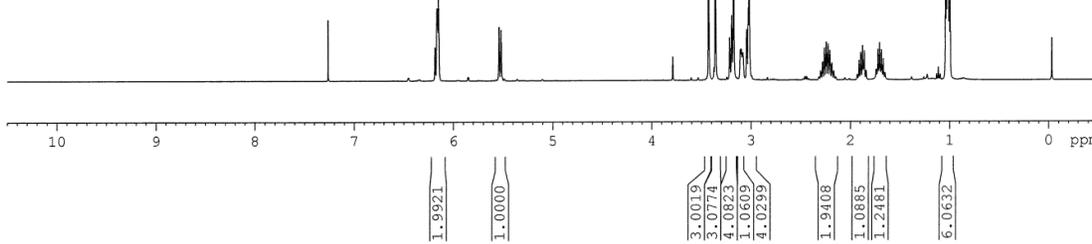


Current Data Parameters
NAME SG-6Et-Dimer
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20140726
Time 2.26
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 50.8
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SFO1 400.2330885 MHz

F2 - Processing parameters
SI 32768
SF 400.2300118 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



AMRI; SRC AV400
location; 18



— 203.839
— 194.739

— 142.705
— 137.500
— 133.022
— 131.318

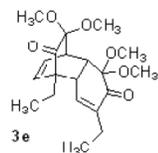
— 98.760
— 94.881

— 77.320
— 77.002
— 76.684

— 58.004
— 50.414
— 50.110
— 49.615
— 48.827
— 40.370
— 39.661
— 39.381

— 23.034
— 22.318

— 12.664
— 9.055



Name _____
Date _____
NB # _____

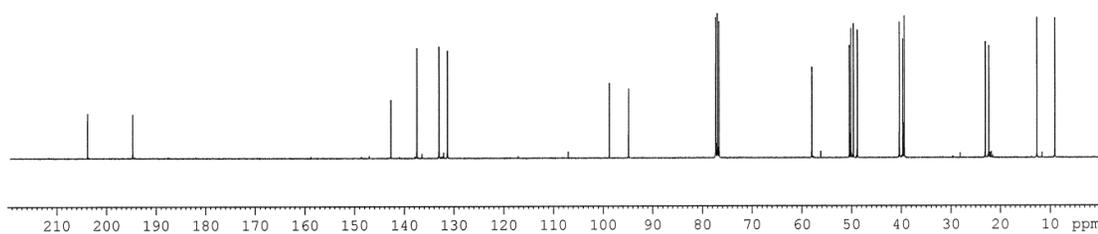
Current Data Parameters
NAME SG-6Et-Dimer
EXPNO 11
PROCNO 1

F2 - Acquisition Parameters
Date_ 20140726
Time 5.09
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 5000
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 114
DW 20.800 usec
DE 6.50 usec
TE 300.0 K
D1 0.5000000 sec
D11 0.0300000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 8.60 usec
PL1 -1.00 dB
PL1W 44.58811569 W
SFO1 100.6479769 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 15.47 dB
PL13 15.72 dB
PL2W 14.33185768 W
PL12W 0.25662708 W
PL13W 0.24227159 W
SFO2 400.2316009 MHz

F2 - Processing parameters
SI 32768
SF 100.6379187 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

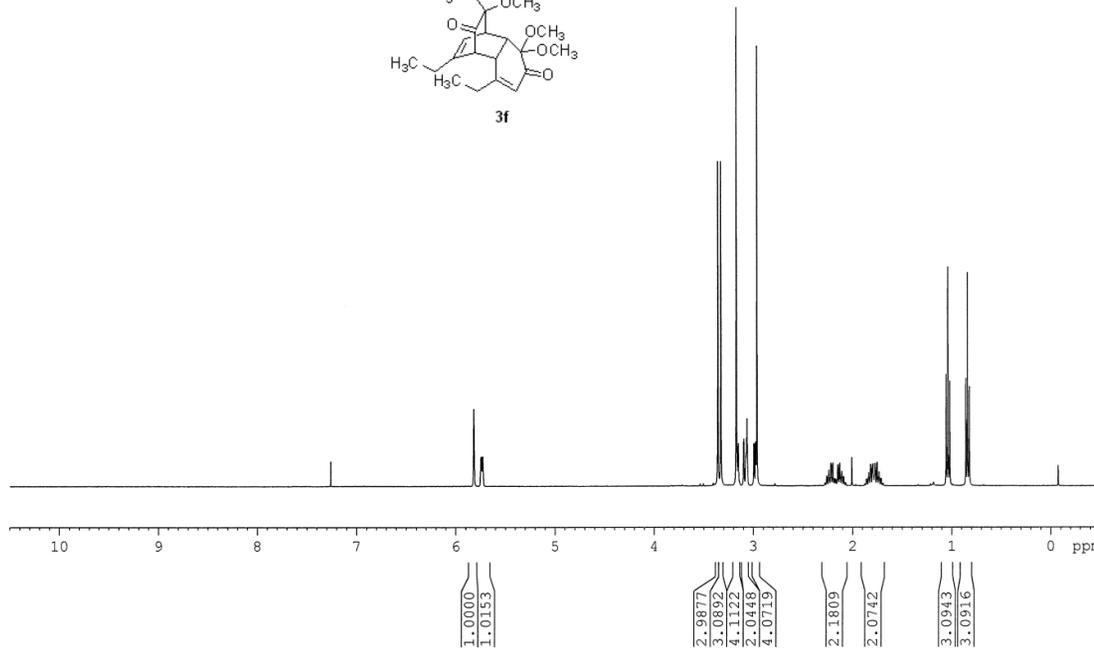
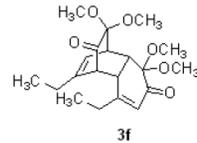


AMRI; SRC AV400
location; 18



Name _____
Date _____
NB # _____

7.260
5.819
5.750
5.746
5.734
5.729
3.360
3.330
3.175
3.159
3.153
3.102
3.098
3.080
3.077
3.072
3.066
3.061
2.998
2.994
2.981
2.977
2.965
2.281
2.278
2.263
2.260
2.241
2.221
2.219
2.203
2.200
2.191
2.184
2.182
2.168
2.152
2.150
2.131
2.112
2.092
2.090
2.072
1.861
1.857
1.842
1.839
1.820



Current Data Parameters
NAME SG-5Et-Dimer
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20140725
Time 21.07
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 32
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SFO1 400.2330885 MHz

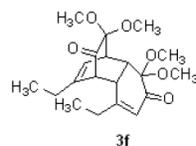
F2 - Processing parameters
SI 32768
SF 400.2300115 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI; SRC AV400
location; 18



202.274
193.307
161.432
142.471
123.696
123.002
98.691
94.725
77.321
77.003
76.684
57.086
50.410
49.843
49.400
48.772
41.679
39.402
38.465
28.033
27.843
11.581
10.429

Name _____
Date _____
NB# _____



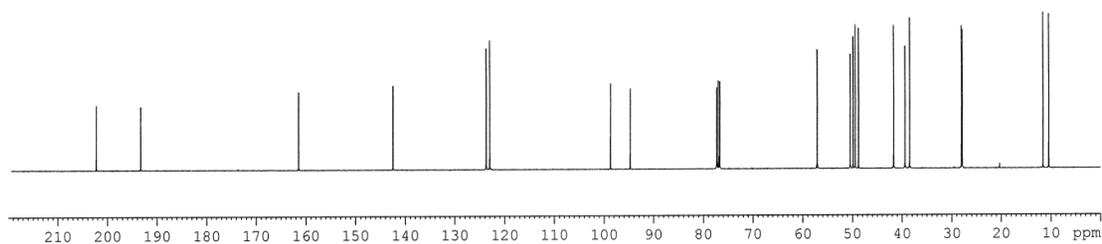
Current Data Parameters
NAME SG-5Et-Dimer
EXPNO 11
PROCNO 1

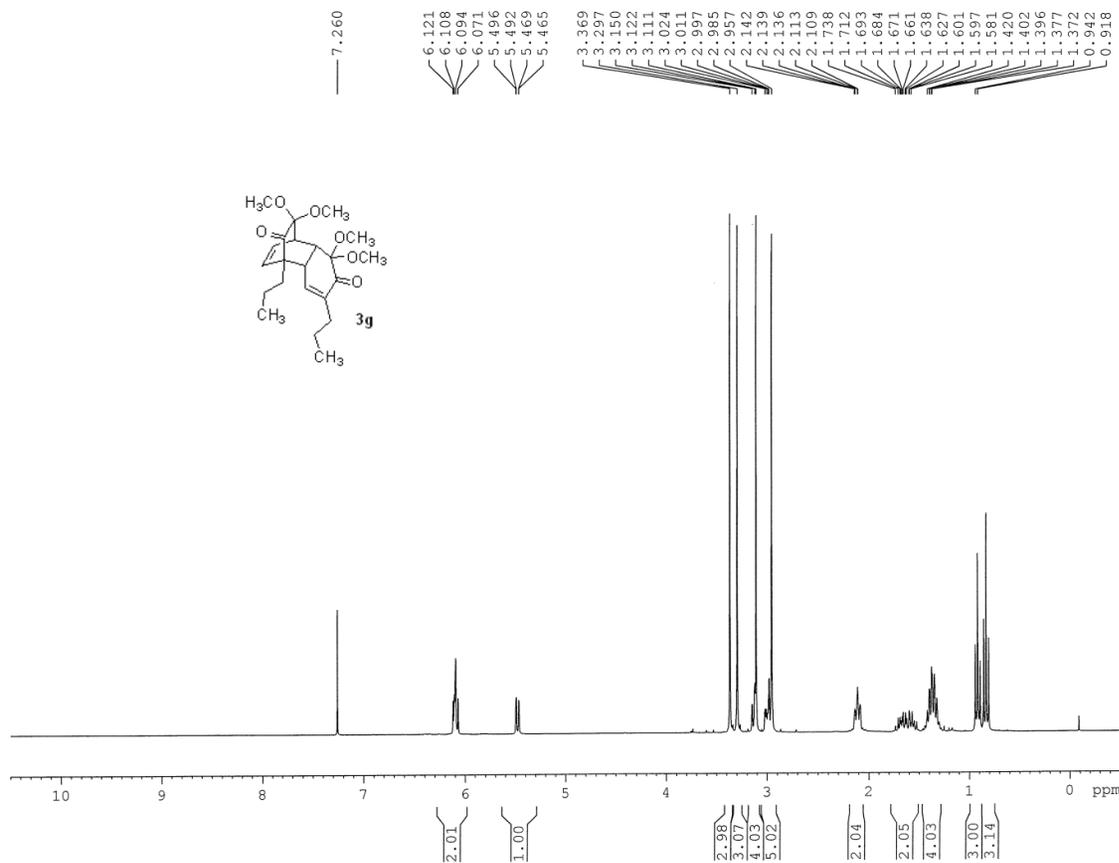
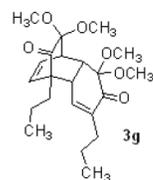
F2 - Acquisition Parameters
Date 20140725
Time 23.50
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 5000
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 161
DW 20.800 usec
DE 6.50 usec
TE 300.0 K
D1 0.50000000 sec
D11 0.03000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 13C
P1 8.60 usec
PL1 -1.00 dB
PL1W 44.58811569 W
SFO1 100.6479769 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 15.47 dB
PL13 15.72 dB
PL2W 14.33185768 W
PL12W 0.25662708 W
PL13W 0.24227159 W
SFO2 400.2316009 MHz

F2 - Processing parameters
SI 32768
SF 100.6379242 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40





Current Data Parameters
 NAME SG-BCK-6Pr-Dimer
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20141008
 Time_ 23.36
 INSTRUM spect
 PROBHD 5 mm QNP 1H/13
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 5995.204 Hz
 FIDRES 0.182959 Hz
 AQ 2.7329011 sec
 RG 35.9
 DW 83.400 usec
 DE 6.00 usec
 TE 300.0 K
 D1 1.00000000 sec
 MCREST 0 sec
 MCWRK 0.01500000 sec

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.20 usec
 PL1 0 dB
 SFO1 300.1319508 MHz

F2 - Processing parameters
 SI 16384
 SF 300.1300063 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

Name _____

Date _____

NB # _____

AMRI; SRC
location; 15



— 203.813
— 194.594

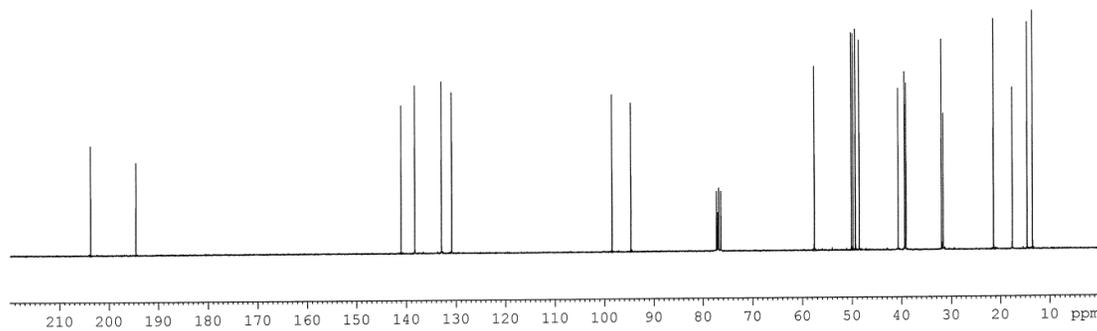
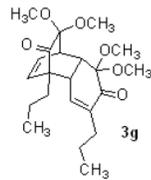
141.135
138.398
133.020
130.970

98.569
94.759

77.425
77.199
77.000
76.575

57.678
50.265
49.937
49.445
48.675
40.806
39.479
39.218
32.062
31.728

21.514
17.730
14.687
13.596



Name _____
Date _____
NB # _____

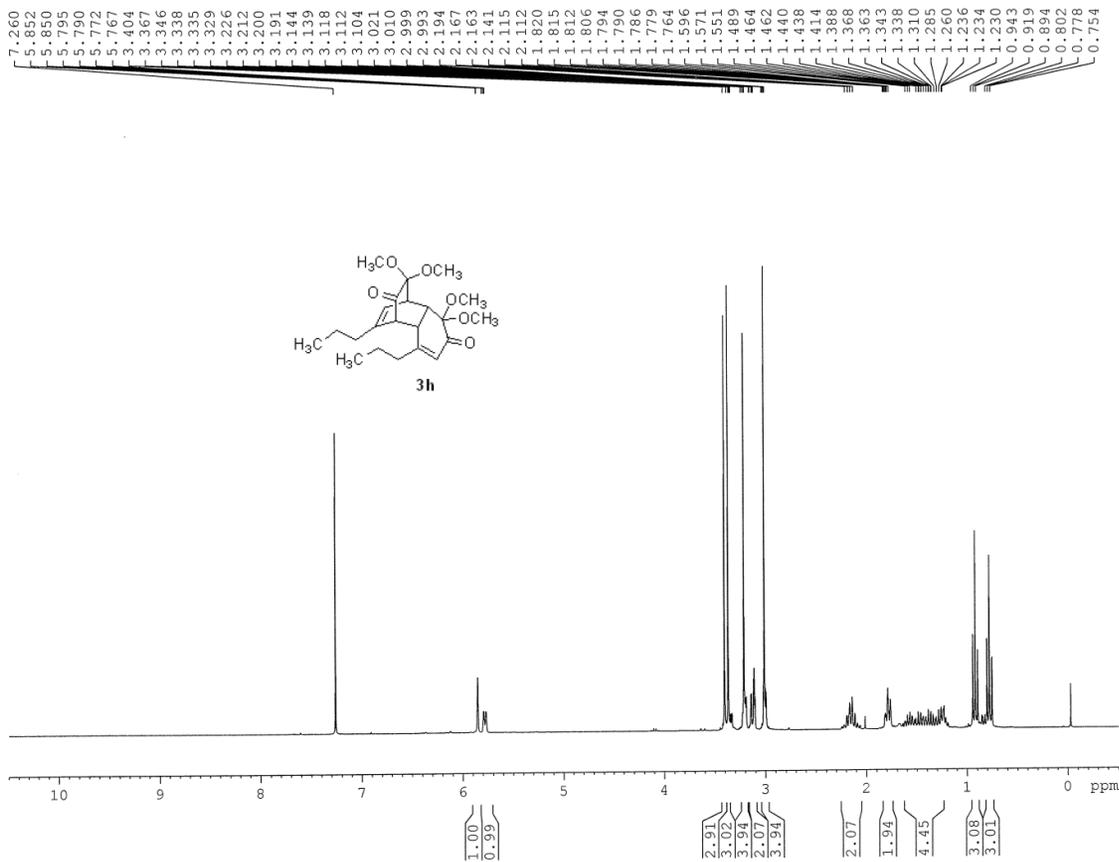
Current Data Parameters
NAME SG-BCK-6Pr-Dimer
EXFNO 11
PROCNO 1

F2 - Acquisition Parameters
Date_ 20141009
Time 0.43
INSTRUM spect
PROBHD 5 mm QNP 1H/13
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 2000
DS 0
SWH 22675.736 Hz
FIDRES 0.346004 Hz
AQ 1.4451188 sec
RG 1625.5
DW 22.050 usec
DE 6.00 usec
TE 300.0 K
D1 0.5000000 sec
d11 0.0300000 sec
DELTA 0.4000001 sec
MCREST 0 sec
MCWRK 0.0150000 sec

===== CHANNEL f1 =====
NUC1 13C
P1 8.00 usec
PL1 -2.00 dB
SF01 75.4767751 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 0 dB
PL12 16.33 dB
PL13 16.00 dB
SF02 300.1315007 MHz

F2 - Processing parameters
SI 131072
SF 75.4677575 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.40



Current Data Parameters
 NAME SG-BCK-G-5-nPr-Dimer
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20141014
 Time 20:09
 INSTRUM spect
 PROBHD 5 mm QNP 1H/13
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 5995.204 Hz
 FIDRES 0.182959 Hz
 AQ 2.7329011 sec
 RG 181
 DW 83.400 usec
 DE 6.00 usec
 TE 300.0 K
 D1 1.00000000 sec
 MCREST 0 sec
 MCWRK 0.01500000 sec

----- CHANNEL f1 -----
 NUC1 1H
 P1 12.20 usec
 PL1 0 dB
 SF01 300.1319508 MHz
 F2 - Processing parameters
 SI 16384
 SF 300.1300063 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

Name _____

Date _____

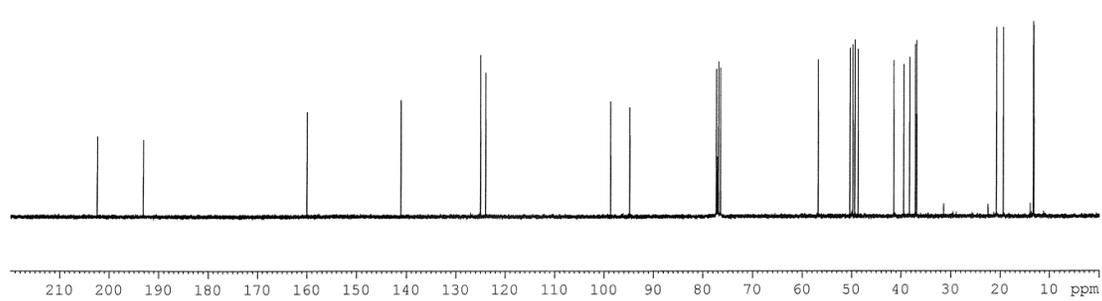
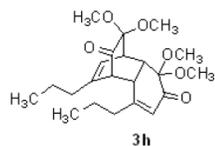
NB # _____

AMRI; SRC
location; 15



202.559
193.272
160.105
141.234
125.137
124.093
98.805
94.927
77.424
77.202
77.001
76.576
56.913
50.496
49.899
49.494
48.827
41.554
39.553
38.384
37.225
36.942
20.903
19.485
13.424
13.304

Name _____
Date _____
NB # _____



```

Current Data Parameters
NAME      SG-BCK-G-5-nPr-Dimer
EXPNO     11
PROCNO    1

F2 - Acquisition Parameters
Date_     20141014
Time_     21.34
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zgpg30
TD         65536
SOLVENT   CDC13
NS         2500
DS         0
SWH        22675.736 Hz
FIDRES     0.346004 Hz
AQ         1.4451188 sec
RG         13004
DW         22.050 usec
DE         6.00 usec
TE         300.0 K
D1         0.5000000 sec
d11        0.0300000 sec
DELTA     0.40000001 sec
MCREST    0 sec
MCWRK     0.01500000 sec

===== CHANNEL f1 =====
NUC1       13C
P1         8.00 usec
PL1        -2.00 dB
SFO1       75.4767751 MHz

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2       1H
PCPD2     80.00 usec
PL2        0 dB
PL12       16.33 dB
PL13       16.00 dB
SFO2       300.1315007 MHz

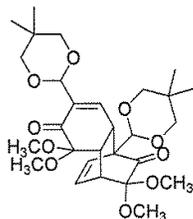
F2 - Processing parameters
SI         131072
SF         75.4677514 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.40
    
```

AMRI SRC
location; 17

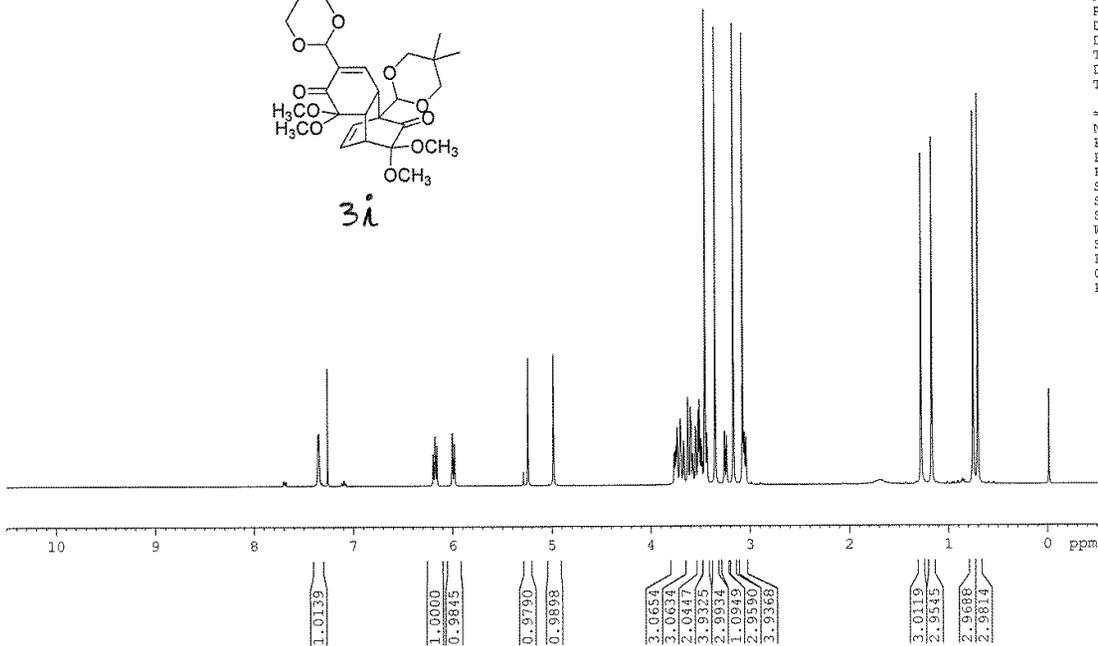


7.356
7.346
7.260
6.195
6.175
6.157
6.001
5.980
5.243
4.987
3.769
3.759
3.749
3.739
3.706
3.675
3.669
3.631
3.603
3.597
3.581
3.554
3.528
3.527
3.514
3.499
3.487
3.456
3.437
3.355
3.261
3.241
3.172
3.079
3.062
3.045
1.279
1.172
0.752
0.706

NAME SG-SIR-6-KETAL-2-OMe-DIM
EXPNO 10
PROCNO 1
Date_ 20140725
Time_ 20.07
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 57
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.0000000 sec
TD0 1

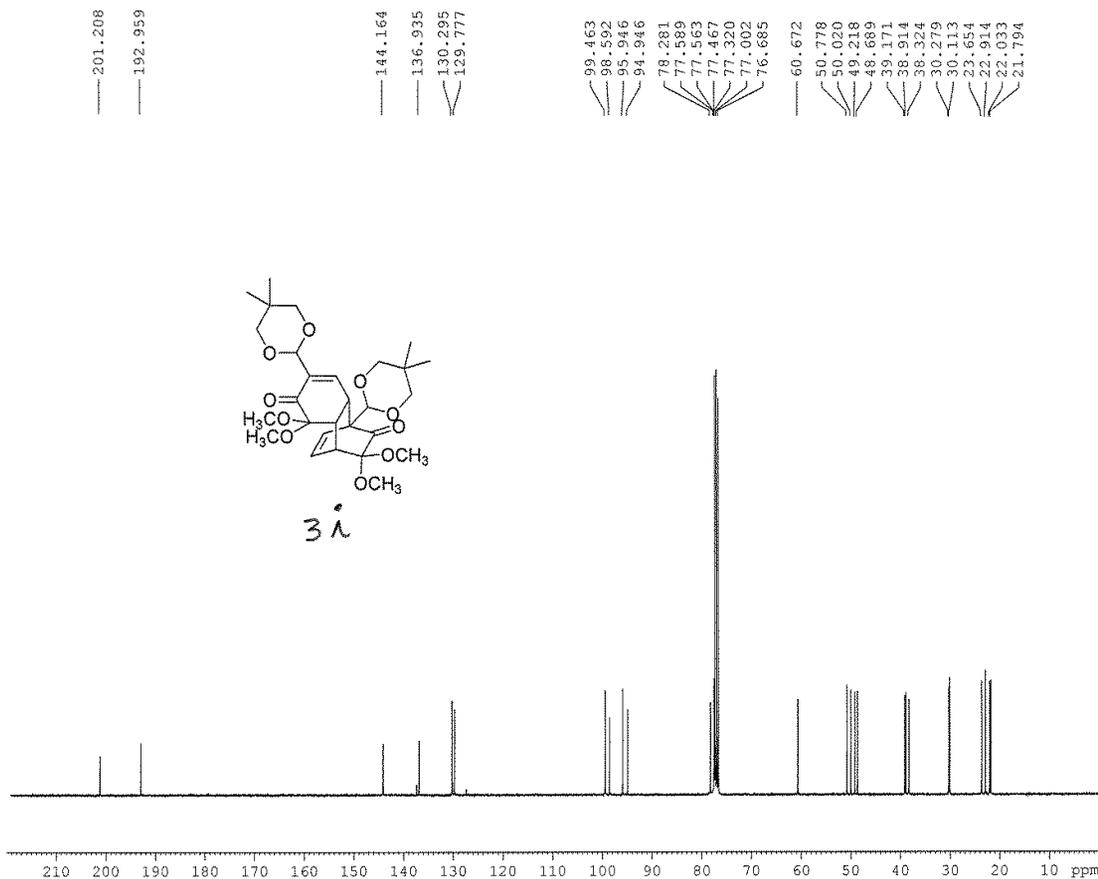


3i



===== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -3.00 dB
PL1W 19.34582710 W
SF01 400.1318542 MHz
SI 32768
SF 400.1300094 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI SRC location; 17



Name _____
Date _____
NB # _____

```

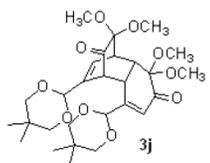
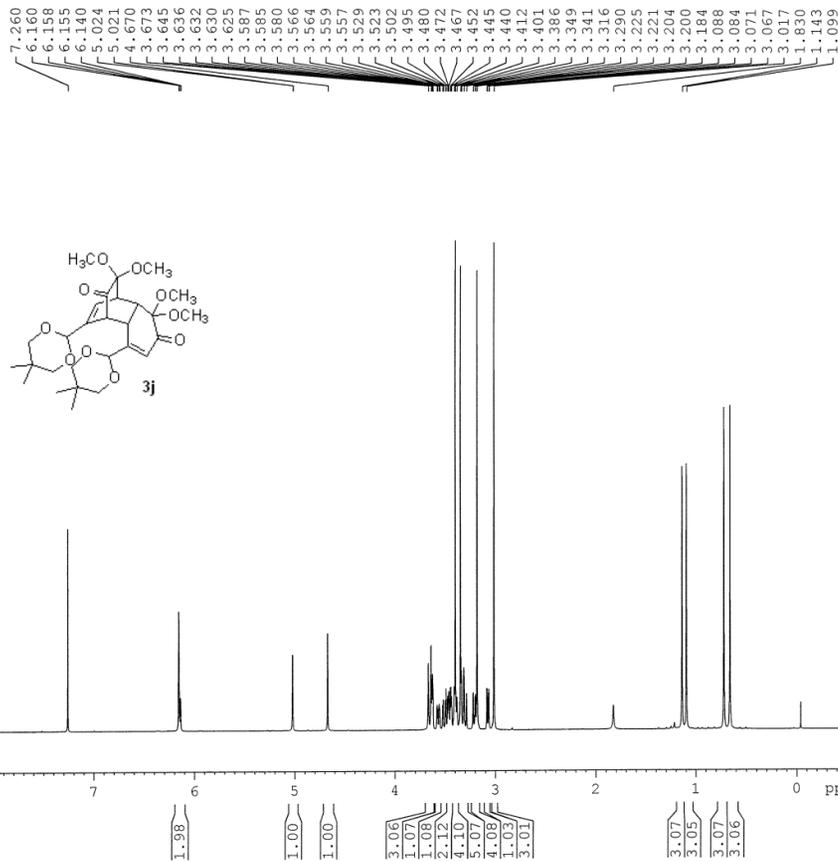
NAME      SG-SIR-6-KETAL-2-Ome-DIM
EXPNO     11
PROCNO    1
Date_     20140726
Time      0.57
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD        65536
SOLVENT   CDCl3
NS        5000
DS        4
SWH       23980.814 Hz
FIDRES    0.365918 Hz
AQ        1.3664756 sec
RG        18390.4
DW        20.850 usec
DE        6.50 usec
TE        300.2 K
D1        2.00000000 sec
D11       0.03000000 sec
TDO       1
  
```

```

===== CHANNEL f1 =====
NUC1      13C
P1        7.10 usec
PL1       -4.00 dB
PL1W     82.02445221 W
SF01     100.6228298 MHz
  
```

```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       +3.00 dB
PL12     14.47 dB
PL13     15.06 dB
PL2W     19.34582710 W
PL12W    0.34640750 W
PL13W    0.30240381 W
SF02     400.1316005 MHz
SI        32768
SF        100.6127717 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40
  
```



Current Data Parameters
 NAME SG-BCK-5Ketal-dimer
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20140930
 Time 20:23
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 28.5
 DW 62.400 usec
 DE 6.50 usec
 TE 300.0 K
 D1 1.00000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 10.70 usec
 PL1 -3.00 dB
 PL1W 19.34582710 W
 SFO1 400.1318542 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300095 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

Name _____

Date _____

NB # _____

AMRI SRC
location; 17

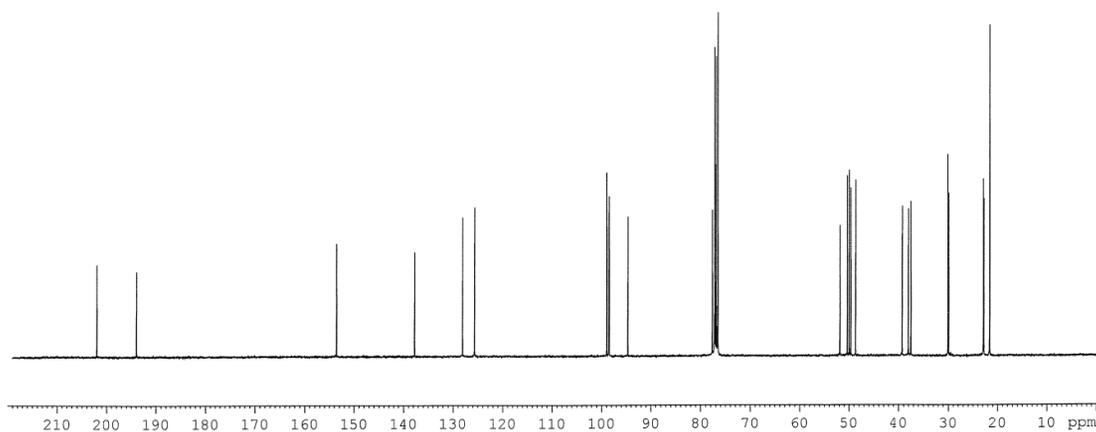
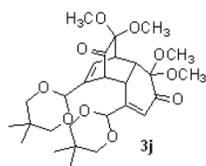


— 202.117
— 194.069

— 153.686
— 137.865
— 128.207
— 125.776

99.068
98.632
98.556
94.761
77.793
77.319
77.282
77.202
77.001
76.685
76.652

51.974
50.464
50.100
49.753
48.791
39.372
38.148
37.611
30.206
30.023
22.897
22.872
21.720



Name _____
Date _____
NB # _____

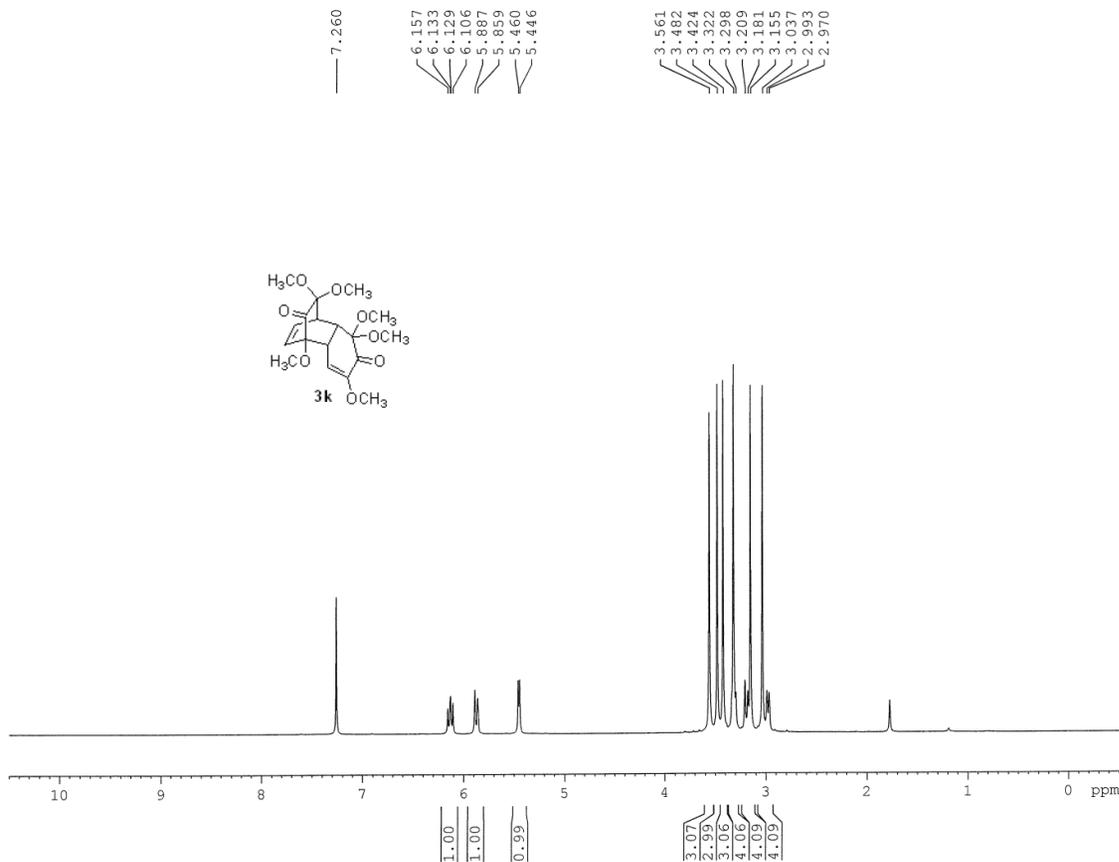
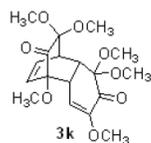
Current Data Parameters
NAME SG-BCK-5Ketal-dimer
EXPNO 11
PROCNO 1

F2 - Acquisition Parameters
Date_ 20140930
Time 22.20
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 2000
DS 4
SWH 23980.814 Hz
FIDRES 0.365918 Hz
AQ 1.3664756 sec
RG 13004
DW 20.850 usec
DE 6.50 usec
TE 300.0 K
D1 2.0000000 sec
D11 0.0300000 sec
TD0 1

----- CHANNEL f1 -----
NUC1 13C
P1 7.10 usec
PL1 -4.00 dB
PL1W 82.02445221 W
SF01 100.6228298 MHz

----- CHANNEL f2 -----
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -3.00 dB
PL12 14.47 dB
PL13 15.06 dB
PL2W 19.34582710 W
PL12W 0.34640750 W
PL13W 0.30240381 W
SF02 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127756 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



Current Data Parameters
 NAME SG-BCK-6OMe-Dimer
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date 20141006
 Time 20.09
 INSTRUM spect
 PROBHD 5 mm QNP 1H/13
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 5995.204 Hz
 FIDRES 0.182959 Hz
 AQ 2.7329011 sec
 RG 71.8
 DW 83.400 usec
 DE 6.00 usec
 TE 300.0 K
 D1 1.00000000 sec
 MCREST 0 sec
 MCWRK 0.01500000 sec

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.20 usec
 PL1 0 dB
 SFO1 300.1319508 MHz

F2 - Processing parameters
 SI 16384
 SF 300.1300067 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

Name _____

Date _____

NB # _____

AMRI; SRC
location; 15



— 201.854

— 189.096

— 152.152

∨ 130.416
∨ 129.616

— 110.194

— 98.715

— 94.175

— 88.584

∨ 77.421

∨ 77.196

∨ 76.886

∨ 76.572

∨ 55.359

∨ 54.183

∨ 50.495

∨ 50.280

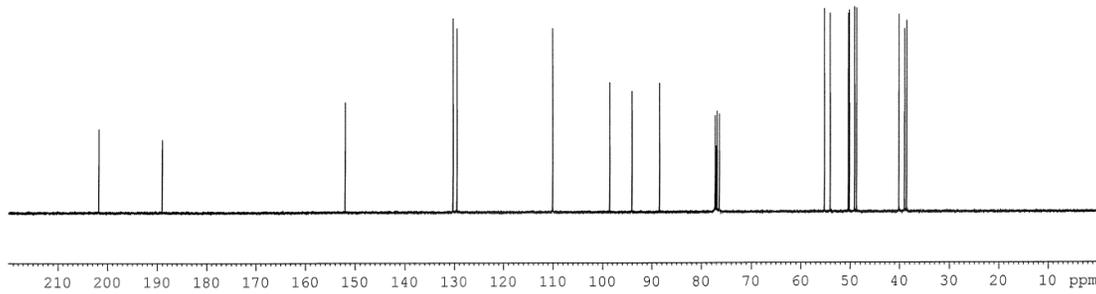
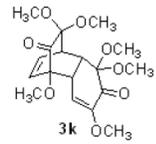
∨ 49.235

∨ 48.833

∨ 40.266

∨ 39.125

∨ 38.715



Name _____
Date _____
NB # _____

```

Current Data Parameters
NAME      SG-BCK-6OMe-Dimer
EXPNO     11
PROCNO    1

F2 - Acquisition Parameters
Date_     20141008
Time      21.17
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zgpg30
TD         65536
SOLVENT   CDCl3
NS         2000
DS         0
SWH        22675.736 Hz
FIDRES     0.346004 Hz
AQ         1.4451188 sec
RG         2298.8
DW         22.050 usec
DE         6.00 usec
TE         300.0 K
D1         0.50000000 sec
d11        0.03000000 sec
DELTA     0.40000001 sec
MCREST    0 sec
MCWRK     0.01500000 sec

===== CHANNEL f1 =====
NUC1       13C
P1         8.00 usec
PL1        -2.00 dB
SFO1       75.4767751 MHz

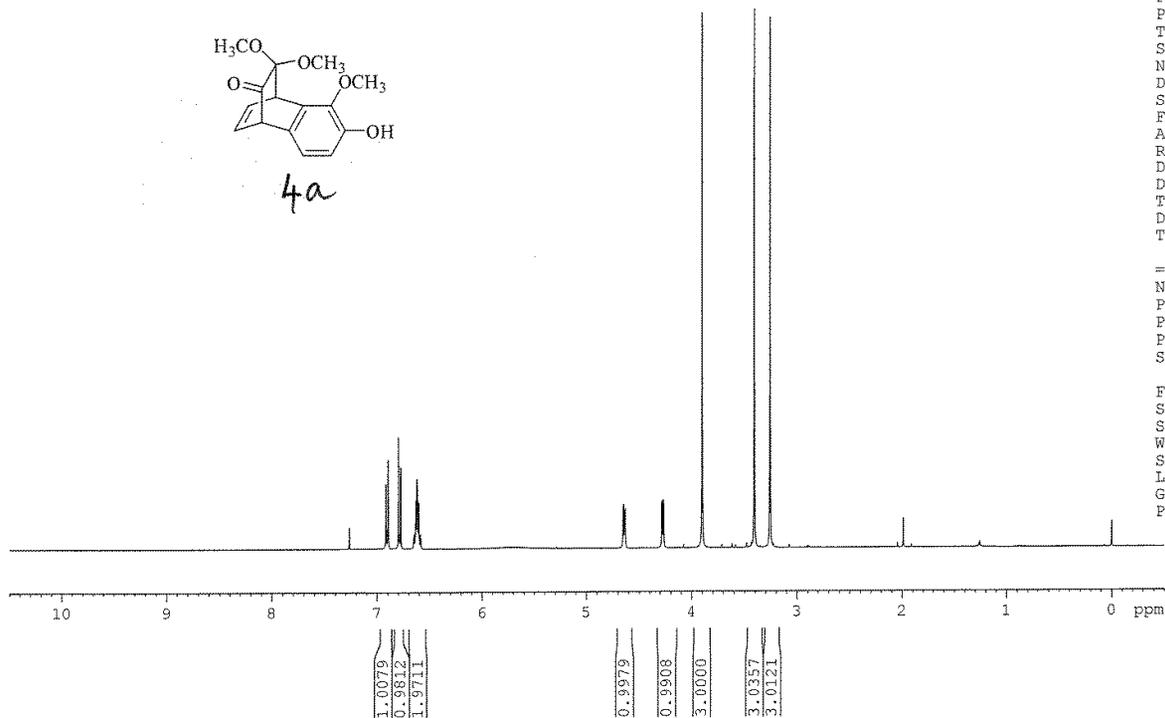
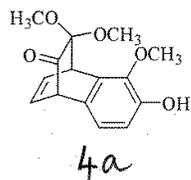
===== CHANNEL f2 =====
CPDPRG2    waltz16
NUC2       1H
PCPD2      80.00 usec
PL2        0 dB
PL12       16.33 dB
PL13       16.00 dB
SFO2       300.1315007 MHz

F2 - Processing parameters
SI         131072
SF         75.4677560 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.40
    
```

AMRI SRC
location; 17



7.264
6.916
6.896
6.796
6.776
6.653
6.647
6.639
6.634
6.629
6.621
6.616
6.607
6.602
6.588
6.584
4.652
4.646
4.637
4.632
4.285
4.280
4.271
4.266
3.898
3.407
3.257



Current Data Parameters
NAME SG-SIR-6-GD
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20131003
Time 2.27
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 40.3
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1

==== CHANNEL f1 =====
NUC1 1H
P1 10.50 usec
PL1 -3.00 dB
PL1W 19.34582710 W
SFO1 400.1318542 MHz

F2 - Processing parameters
SI 32768
SF 400.1300077 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

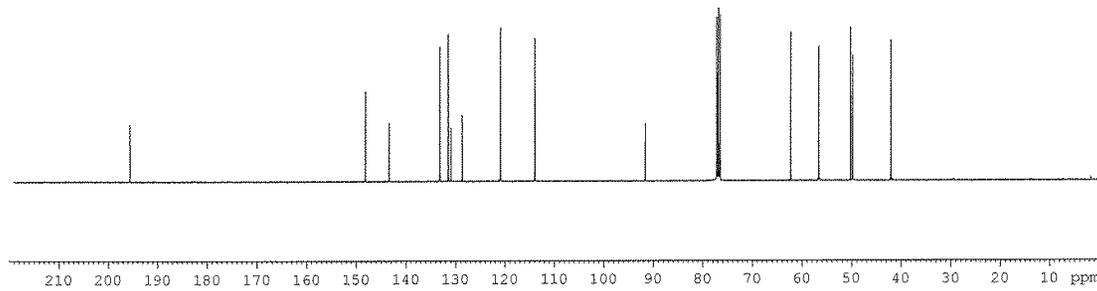
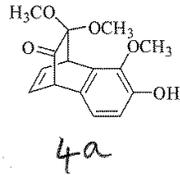
AMRI SRC
location; 17



195.795

148.298
143.528
133.309
131.627
131.065
128.811
121.065
114.059

91.763
77.319
77.001
76.882
62.409
56.797
50.378
49.961
42.169



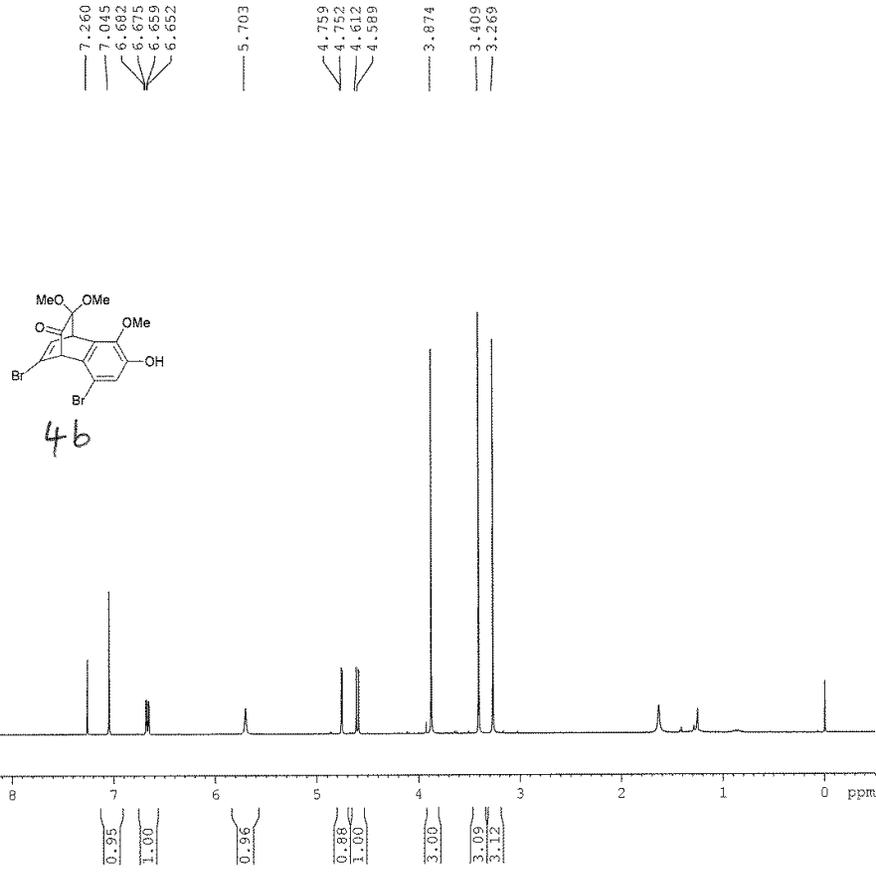
Current Data Parameters
NAME SG-SIR-C-GD
EXPNO 11
PROCNO 1

F2 - Acquisition Parameters
Date 20131003
Time 5.21
INSTRUM spect
PROBHD 5 mm PABBO SB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 3000
DS 4
SWH 23980.814 Hz
FIDRES 0.365918 Hz
AQ 1.3664756 sec
RG 6502
EW 20.850 usec
DE 6.50 usec
TE 300.0 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 7.10 usec
PL1 -4.00 dB
PL1W 82.02445221 W
SFO1 100.6229298 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PE2 -3.00 dB
PL12 14.64 dB
PL13 15.06 dB
PL2W 19.34582710 W
PL12W 2.33310971 W
PL13W 0.30240381 W
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127754 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
EC 1.40



```

NAME      SG-BCK-5Br-Dimer-Ar
EXPNO     30
PROCNO    1
Date_     20140823
Time      12.18
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zg30
TD         32768
SOLVENT   CDCl3
NS         16
DS         2
SWH        5995.204 Hz
FIDRES     0.182959 Hz
AQ         2.7329011 sec
RG         512
DN         83.400 usec
DE         6.00 usec
TE         300.0 K
D1         1.00000000 sec
MCREST    0.00000000 sec
MCWRK     0.01500000 sec
  
```

```

===== CHANNEL f1 =====
NUC1      1H
P1        12.20 usec
PL1       0.00 dB
SFO1     300.1319508 MHz
SI        16384
SF        300.1300063 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```

Name _____
 Date _____
 NB # _____

AMRI; SRC
location; 15



Name _____

Date _____

NB # _____

```

NAME      SG-BCK-5Br-Dimer-Ar
EXPNO     31
PROCNO    1
Date_     20140823
Time      14.00
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zgpg30
TD         65536
SOLVENT   CDCl3
NS         3000
DS         0
SWH       22675.736 Hz
FIDRES    0.346004 Hz
AQ         1.4451188 sec
RG         1824.6
DW         22.050 usec
DE         6.00 usec
TE         300.0 K
D1         0.50000000 sec
d11        0.03000000 sec
DELTA     0.40000001 sec
MCREST    0.00000000 sec
MCWRRK    0.01500000 sec
    
```

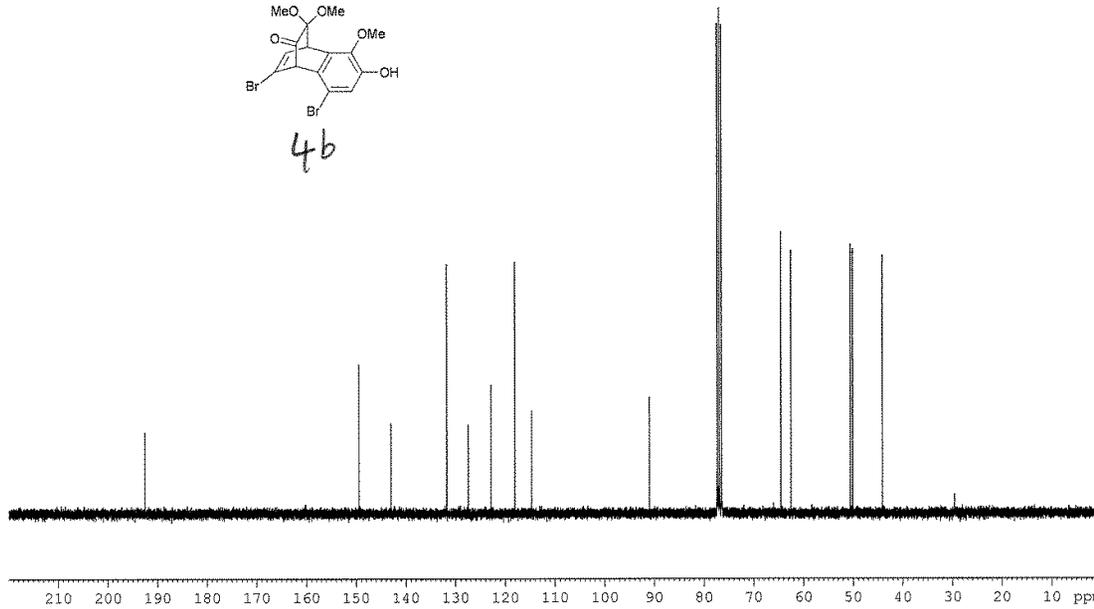
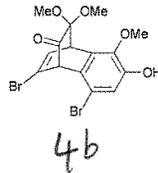
```

===== CHANNEL f1 =====
NUC1      13C
P1        8.00 usec
PL1       -2.00 dB
SFO1      75.4767751 MHz
    
```

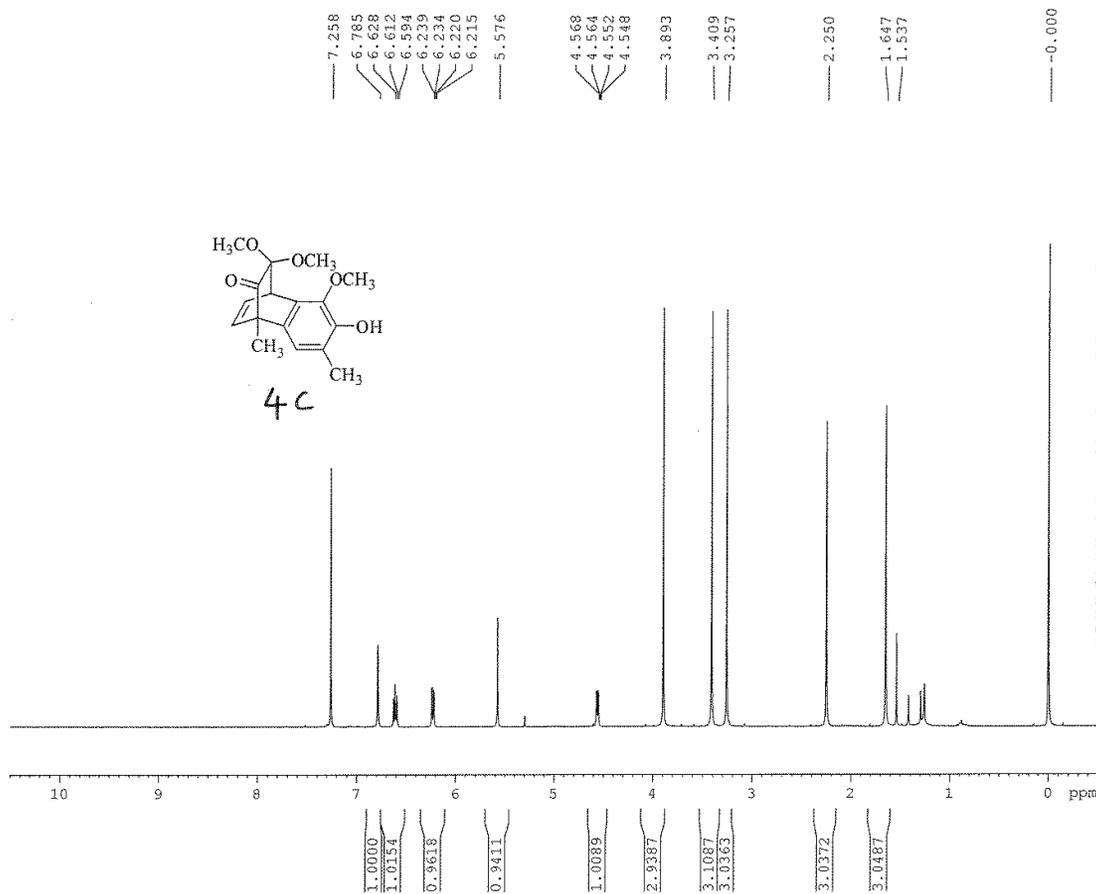
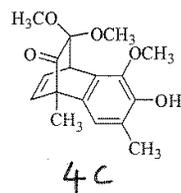
```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2       1H
PCPD2     80.00 usec
PL2        0.00 dB
PL12       16.33 dB
PL13       16.00 dB
SFO2      300.1315007 MHz
SI         131072
SF         75.4677500 MHz
WDW        EM
SSB         0
LB         0.30 Hz
GB          0
PC          1.40
    
```

192.589
149.483
143.073
131.834
131.818
127.484
122.953
118.124
114.764
91.077
77.823
77.000
76.576
64.609
62.600
50.637
50.194
44.195



AMRI SRC
location; 17



Current Data Parameters
NAME SG-SIR-6-OMe-2-Me-SPOT-2
EXFNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20131001
Time 12.45
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 322.5
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD 1

==== CHANNEL f1 =====
NUC1 1H
P1 10.50 usec
PL1 -3.00 dB
PL1W 19.34582710 W
SFO1 400.1318542 MHz

F2 - Processing parameters
SI 32768
SF 400.1300101 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI; SRC AV400
location; 18



197.487

146.077
142.790
137.066
133.566
130.605
128.890
123.047
119.997

91.994

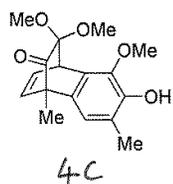
77.316
77.200
76.998
76.681

62.429
60.340

50.243
49.922

41.474

15.772
12.844



Name _____
Date _____
NB # _____

```

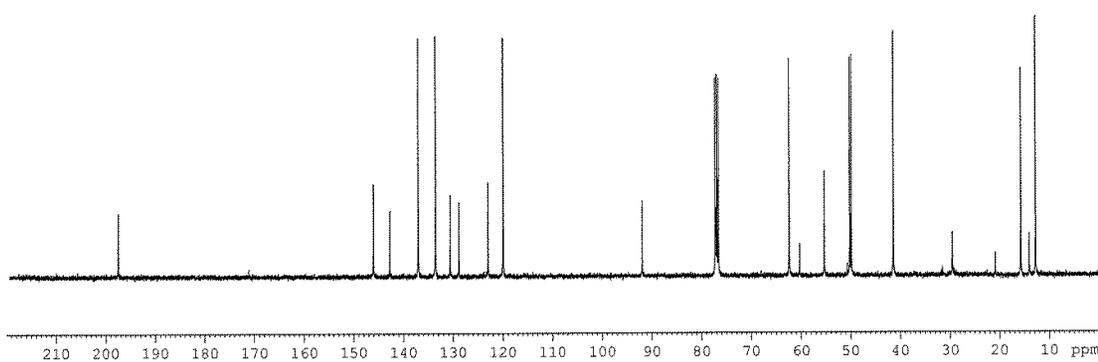
NAME      SG-SIR-7-6Me-2OMe-D
EXPNO     11
PROCNO    1
Date_     20131004
Time      0.30
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD        65536
SOLVENT   CDCl3
NS        2000
DS        4
SWH       24038.461 Hz
FIDRES    0.366798 Hz
AQ        1.3631988 sec
RG        128
DM        20.800 usec
DE        6.50 usec
TE        300.0 K
D1        0.50000000 sec
D11       0.03000000 sec
TDO       1
  
```

```

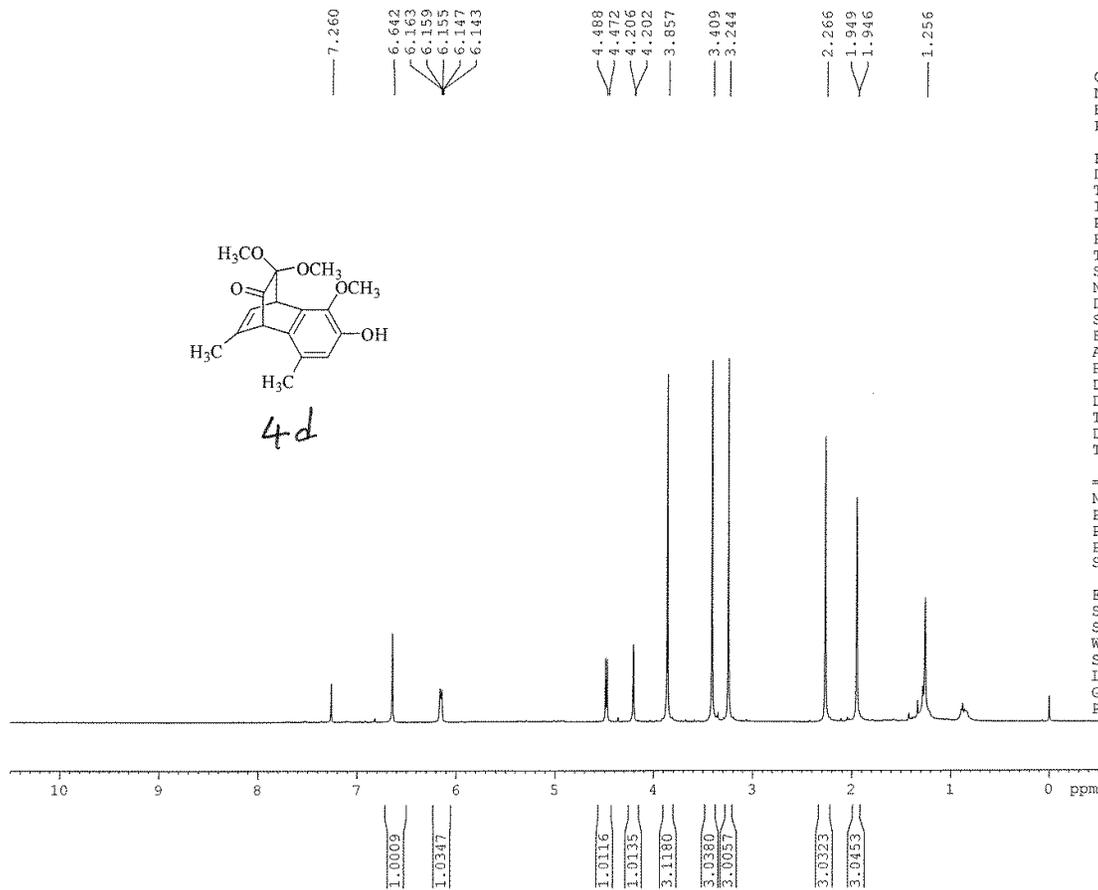
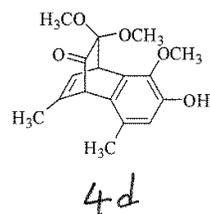
===== CHANNEL f1 =====
NUC1      13C
P1        8.50 usec
PL1       -1.00 dB
PL1W      44.56811569 W
SFO1      100.6479769 MHz
  
```

```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       -2.00 dB
PL12      15.56 dB
PL13      15.72 dB
PL2W      14.33185768 W
PL12W     0.25136364 W
PL13W     0.24227159 W
SFO2      400.2316003 MHz
SI        32769
SF        100.6379224 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40
  
```



AMRI; SRC AV400
location; 18



Current Data Parameters
NAME SG-SIR-10-5Me-20Me-D
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20131004
Time 18.36
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 50.8
DW 62.400 usec
DE 6.00 usec
TE 300.1 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====
NUC1 1H
P1 10.60 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SFO1 400.2330885 MHz

F2 - Processing parameters
SI 32768
SF 400.2300120 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI; SRC AV400
location; 18



196.426

147.571

141.889

141.390

131.683

129.714

126.972

125.822

115.326

92.145

77.320

77.003

76.685

62.418

59.022

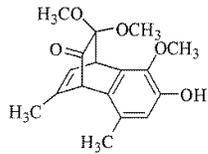
50.443

49.845

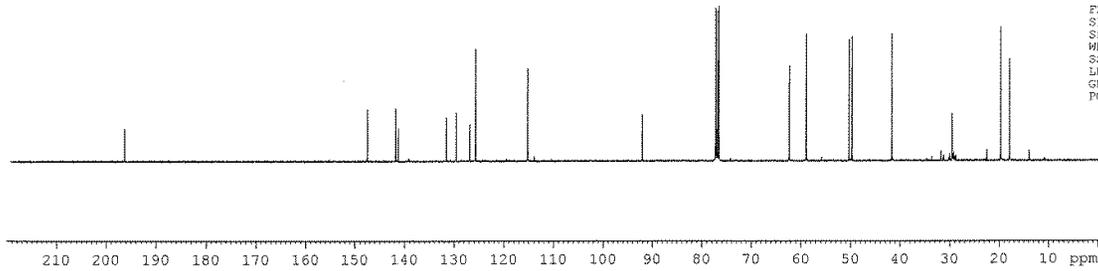
41.763

19.843

18.047



4d



Current Data Parameters
NAME SG-SIR-10-5Me-2OMe-D
EXPNO 11
PROCNO 1

F2 - Acquisition Parameters
Date 20131004
Time 20.14
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 3000
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.5631988 sec
RG 144
DW 20.800 usec
DE 6.50 usec
TE 300.0 K
D1 0.50000000 sec
D11 0.03000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -1.00 dB
PL1W 44.58811569 W
SFO1 100.6479769 MHz

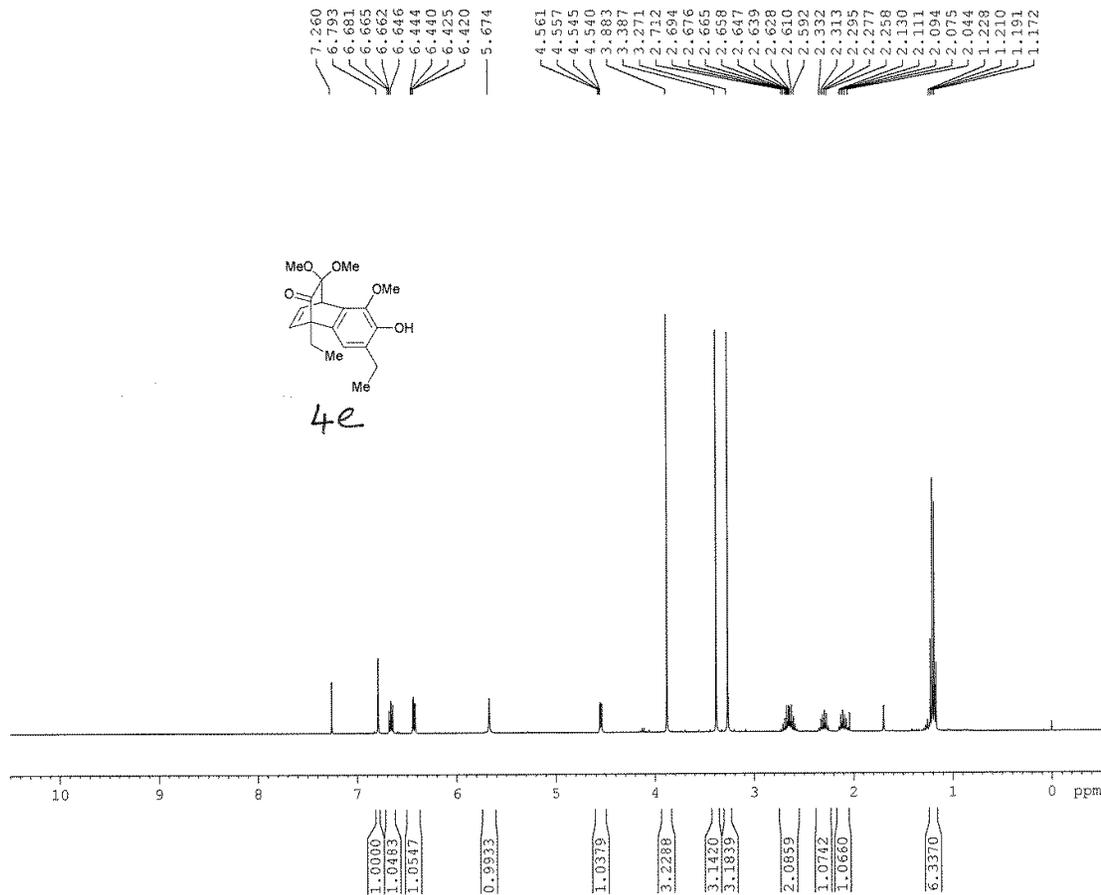
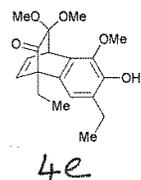
===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 15.56 dB
PL13 15.72 dB
PL2W 14.33185768 W
PL12W 0.25136364 W
PL13W 0.24227159 W
SFO2 400.2316009 MHz

F2 - Processing parameters
SI 32768
SF 100.6379189 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

AMRI SRC
location; 17



Name _____
Date _____
NB # _____



NAME SG-BCK-6Et-Dimer-ARm
EXPNO 10
PROCNO 1
Date_ 20140901
Time_ 20.15
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 35.9
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1

==== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -3.00 dB
PL1W 19.34582710 W
SFO1 400.1318542 MHz
SI 32768
SF 400.1300094 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI SRC location; 17



197.416

145.649
142.899
133.730
133.436
130.017
129.346
129.189
119.253

92.290

77.317
76.299
76.681

62.517
59.201

50.135
50.110

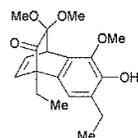
41.384

23.217

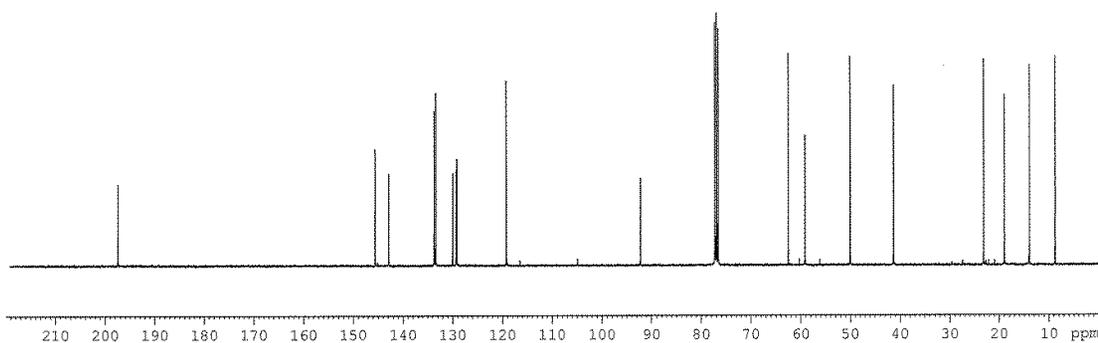
19.032

14.000

8.821



4e



Name _____
Date _____
NB # _____

```

NAME      SG-BCK-6Et-Dimer-ARm
EXFNO     11
PROCNO    1
Date      20140901
Time      22.41
INSTRUM   spect
PROBHD    5 mm FAPBO BB-
PULPROG   zgpg30
TD        65336
SOLVENT   CDCl3
NS        2500
DS        4
SWH       23980.814 Hz
FIDRES    0.365918 Hz
AQ        1.3664756 sec
RG        20642.5
DW        20.850 usec
DE        6.50 usec
TE        300.0 K
D1        2.00000000 sec
D11       0.03000000 sec
TD0       1
    
```

```

===== CHANNEL f1 =====
NUC1      13C
P1        7.18 usec
PL1       -4.00 dB
PL1W      82.02445221 W
SFO1      100.6228298 MHz
    
```

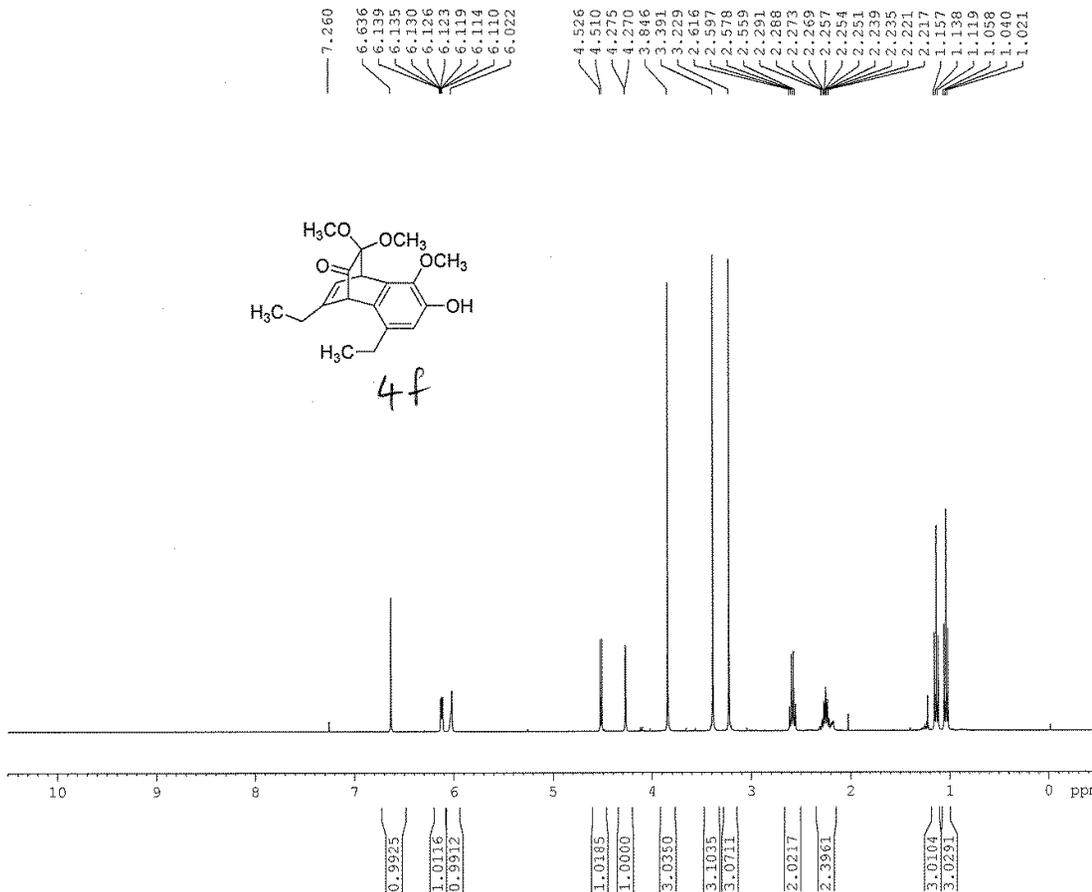
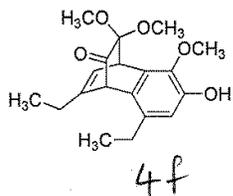
```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       -3.00 dB
PL12      14.47 dB
PL13      15.06 dB
PL2W      19.34582710 W
PL12W     0.34640750 W
PL13W     0.30240381 W
SFO2      400.1316005 MHz
SI        32768
SF        100.6127742 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40
    
```

AMRI; SRC AV400
location; 18



Name _____
Date _____
NB # _____



NAME SG-SIR-5Et-Arm
EXPNO 10
PROCNO 1
Date_ 20140817
Time_ 2.29
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 22.6
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1

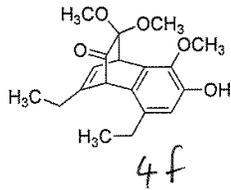
===== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SF01 400.2330885 MHz
SI 32768
SF 400.2300111 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI; SRC AV400
location; 18



196.920

147.675
147.085
141.331
135.931
132.091
126.210
124.090
113.939
92.259
77.317
76.999
76.681
62.103
57.578
50.279
49.728
41.504
26.727
25.118
15.598
11.367

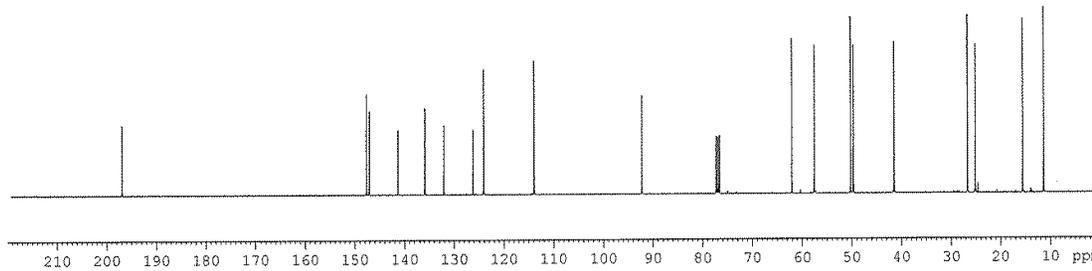


Name _____
Date _____
NB # _____

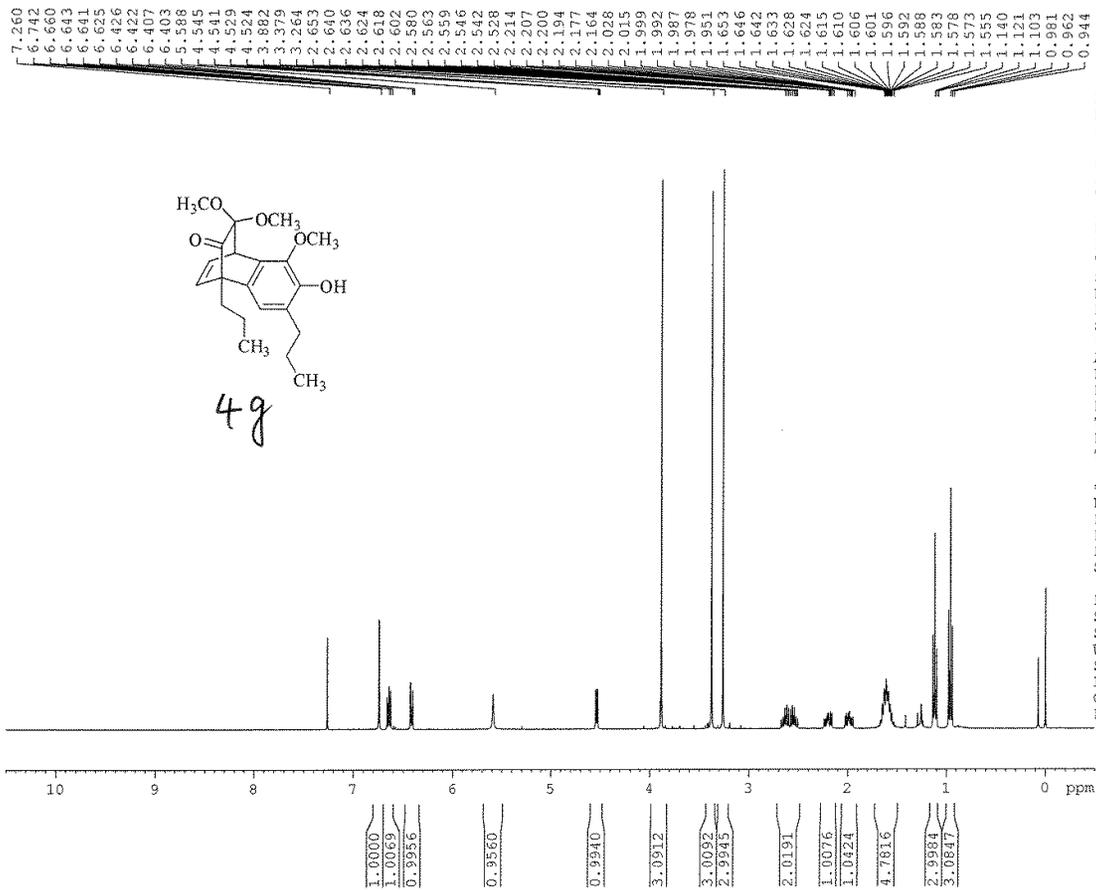
NAME SG-SIR-5St-Arm
EXPNO 11
PROCNO 1
Date_ 20140817
Time 5.11
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 5000
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 101
DW 20.800 usec
DE 6.50 usec
TE 300.0 K
D1 0.50000000 sec
D11 0.03000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 13C
P1 8.60 usec
PL1 -1.00 dB
PL1W 44.58811569 W
SF01 100.6479769 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 15.47 dB
PL13 15.72 dB
PL2W 14.33185768 W
PL12W 0.25662708 W
PL13W 0.24227159 W
SF02 400.2316009 MHz
SI 32768
SF 100.6379302 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



AMRI; SRC AV400
location; 18



Current Data Parameters
NAME SG-SIR-6Pr-2OMe-22-D
EXENO 20
PROCNO 1

F2 - Acquisition Parameters
Date 20131130
Time 8.21
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 90.5
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 1H
P1 10.60 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SFO1 400.2330885 MHz

F2 - Processing parameters
SI 32768
SF 400.2300121 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI; SRC AV400
location; 18



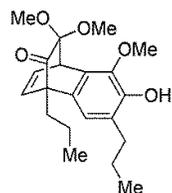
197.383

145.780
142.923
134.156
133.313
130.065
129.274
127.734
120.077

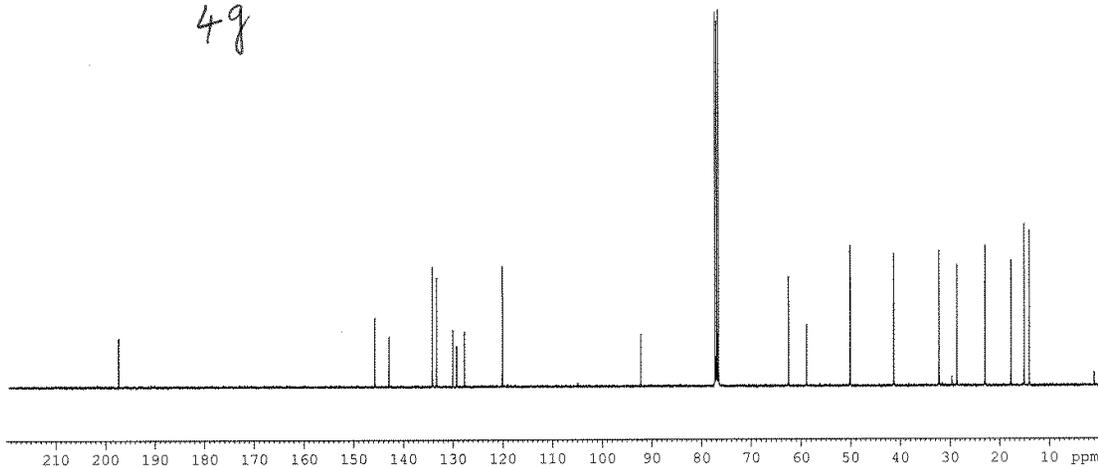
92.268
77.318
77.000
76.683

62.548
58.938
50.187
50.132
41.360

32.264
28.653
22.962
17.715
15.081
14.061



4g



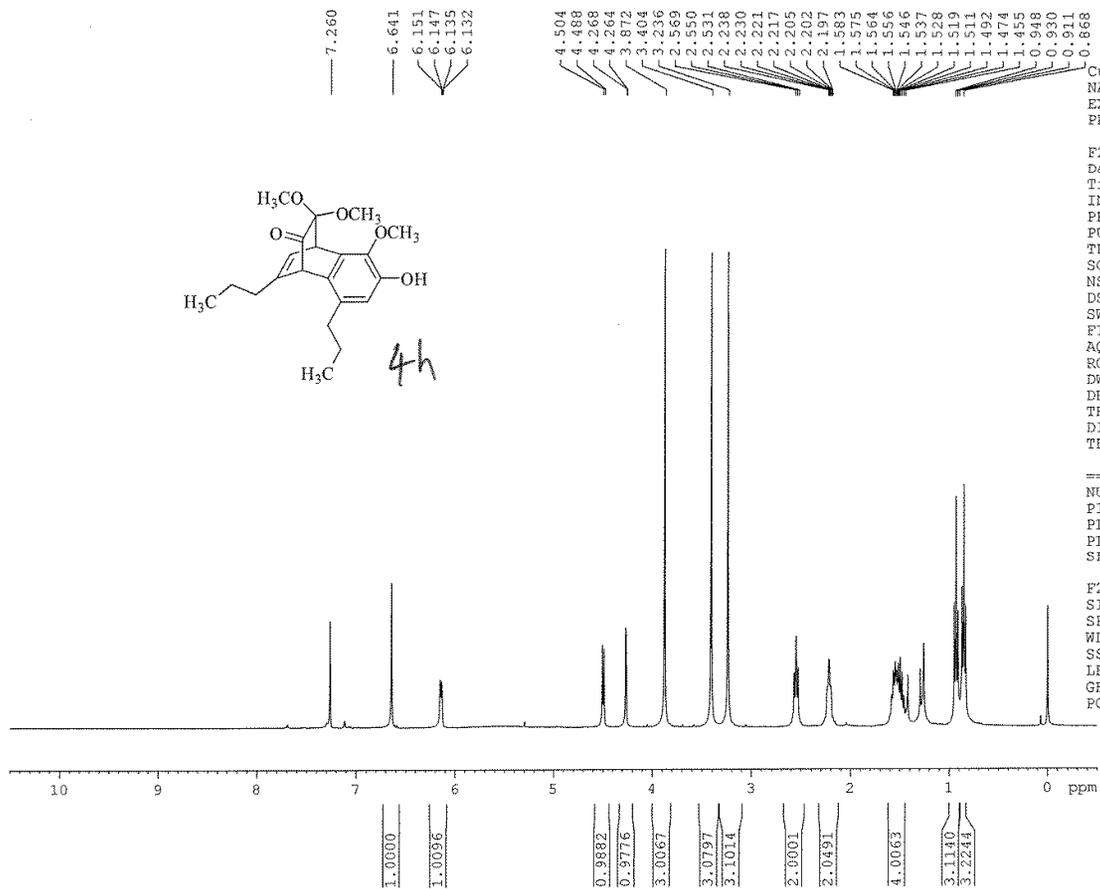
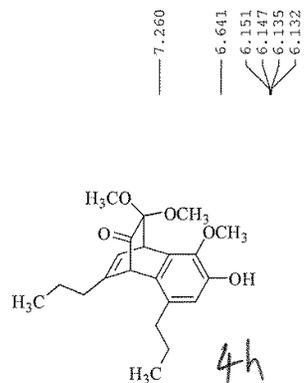
Name _____
Date _____
NB # _____

NAME SG-SIR-6Pr-2OMe-22-D
EXPNO 21
PROCNO 1
Date_ 20131130
Time 11.36
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 6000
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 161
DW 20.800 usec
DE 6.50 usec
TE 300.0 K
D1 0.50000000 sec
D11 0.03000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -1.00 dB
PL1W 44.58811569 W
SFO1 100.6479769 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 15.56 dB
PL13 15.72 dB
PL2W 14.33185768 W
PL12W 0.25136364 W
PL13W 0.24227159 W
SFO2 400.2316009 MHz
SI 32768
SF 100.6379161 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

AMRI; SRC AV400
location; 18



7.260
6.641
6.151
6.147
6.135
6.132
4.504
4.488
4.268
4.264
3.872
3.404
3.236
2.569
2.550
2.531
2.238
2.230
2.221
2.217
2.205
2.202
2.197
1.583
1.576
1.564
1.556
1.536
1.537
1.528
1.519
1.511
1.492
1.474
1.455
0.948
0.930
0.911
0.868

Current Data Parameters
 NAME SG-SIR-5Pr-2OMe-21-D
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20131113
 Time_ 21.07
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 90.5
 DW 62.400 usec
 DE 6.00 usec
 TE 300.0 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 10.60 usec
 PL1 -2.00 dB
 PLLW 14.33185768 W
 SFO1 400.2330885 MHz

F2 - Processing parameters
 SI 32768
 SF 400.2300120 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

AMRI; SRC AV400
location; 18



196.774

147.476
145.654
141.348
134.667
131.933
126.787
125.401
114.461

92.331

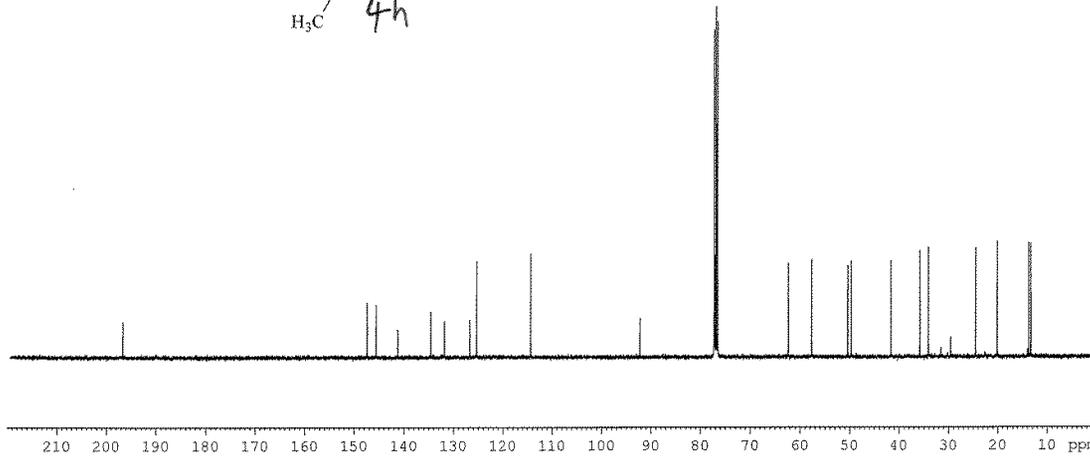
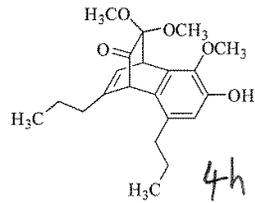
77.318
77.001
76.683

62.437
57.784

50.502
49.803

41.746
35.868
34.183

24.576
20.245
13.845
13.443



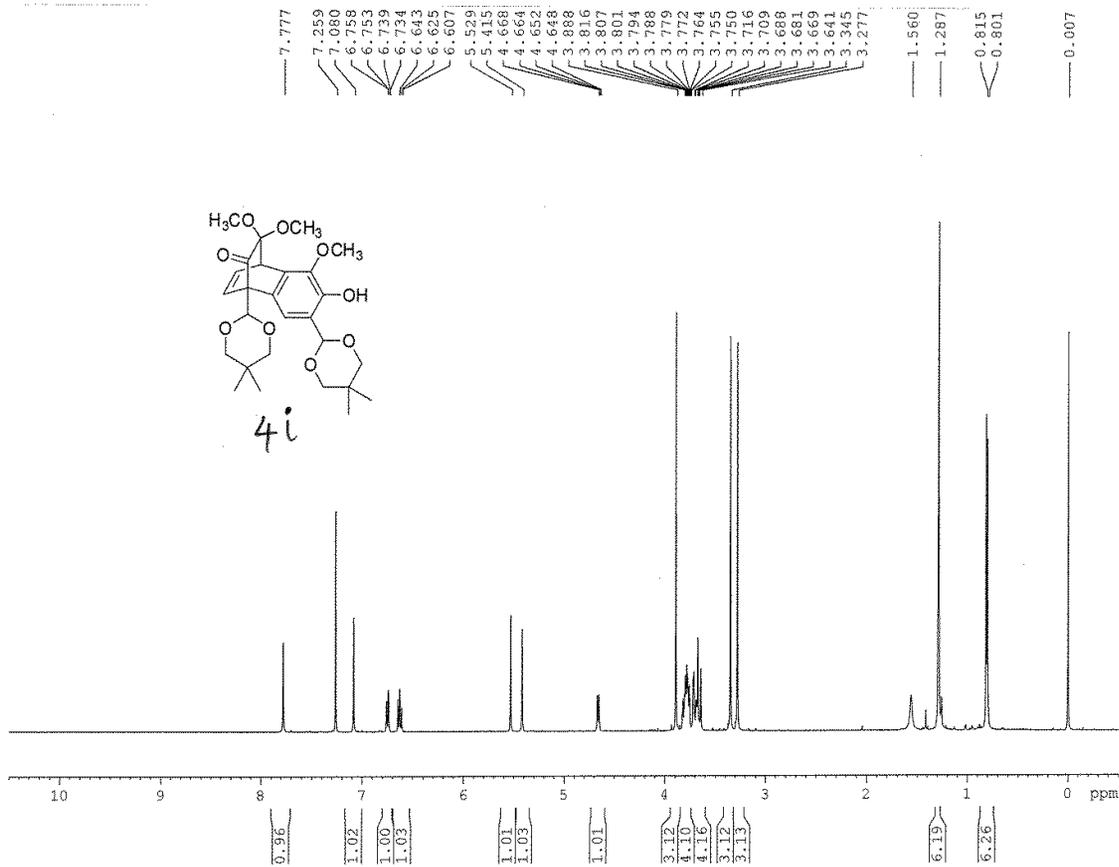
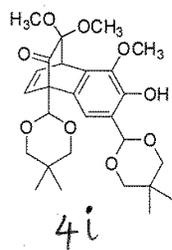
Current Data Parameters
NAME SG-SIR-5Pr-20Ma-21-D
EXPNO 11
PROCNO 1

F2 - Acquisition Parameters
Date_ 20131113
Time 22.46
INSTRUM spect
PROBHD 5 mm PABBO B9-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 3000
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 151
RW 20.800 usec
DE 6.50 usec
TE 300.0 K
D1 0.5000000 sec
D11 0.0300000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -1.00 dB
PLLW 44.58811569 W
SFO1 100.6479769 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PE2 -2.00 dB
PL12 15.56 dB
PL13 15.72 dB
PL2W 14.33185768 W
PE12W 3.28138364 W
PL13W 0.24227159 W
SFO2 400.2316009 MHz

F2 - Processing parameters
SI 32768
SF 100.6379157 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



Current Data Parameters
 NAME SG-SIR-6Kti-20Me-23-D
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date 20131125
 Time 18.48
 INSTRUM spect
 PROBD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 228.1
 DR 62.400 usec
 DE 6.50 usec
 TE 300.0 K
 D1 1.00000000 sec
 TDO 1

CHANNEL f1
 NUC1 1H
 P1 10.50 usec
 PL1 -3.00 dB
 PL1W 13.34582710 W
 SFO1 400.1318542 MHz

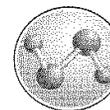
F2 - Processing parameters
 SI 32768
 SF 400.1300096 MHz
 MDW RM
 SSR 0
 LB 0.30 Hz
 GB 0
 PC 1.00

Name _____

Date _____

NB # _____

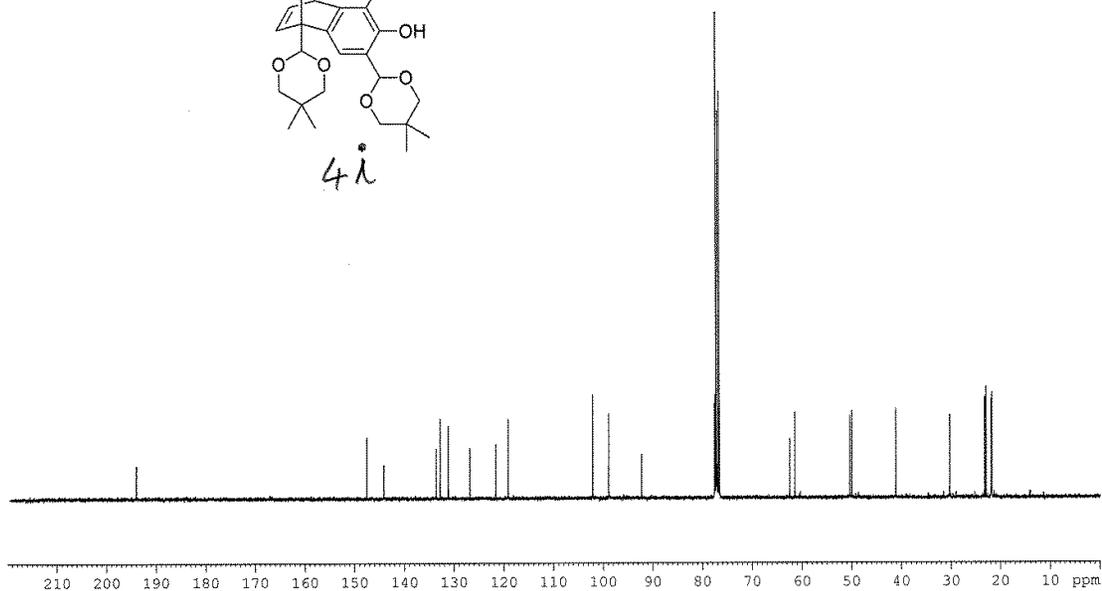
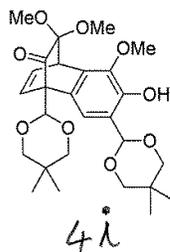
AMRI; SRC AV400
location; 18



AMRI

194.007

147.589
144.196
133.637
132.830
131.229
126.887
121.676
119.191
102.175
98.956
92.346
77.648
77.537
77.319
77.002
76.684
62.522
61.487
50.438
50.022
41.155
30.335
30.311
23.261
22.975
21.949
21.803



Name _____
Date _____
NB # _____

NAME SG-BCK-6KETAL-ARM
EXPNO 11
PROCNO 1
Date_ 20140820
Time 22.28
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 2500
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 101
DW 20.800 usec
DE 6.50 usec
TE 300.0 K
D1 0.50000000 sec
D11 0.03000000 sec
TD0 1

----- CHANNEL f1 -----
NUC1 13C
P1 8.60 usec
PL1 -1.00 dB
PL1W 44.58611569 W
SF01 100.6479769 MHz
----- CHANNEL f2 -----
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 15.47 dB
PL13 15.72 dB
PL2W 14.33185768 W
PL12W 0.25662798 W
PL13W 0.24227159 W
SF02 400.2316009 MHz
SI 32768
SF 100.6379168 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

AMRI; SRC AV400
location; 18

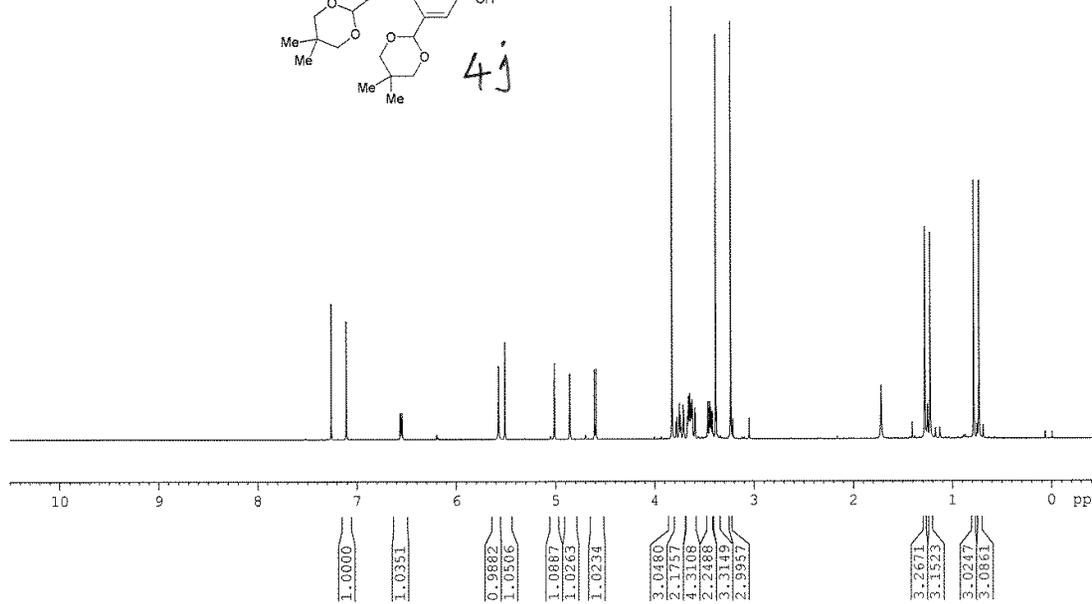
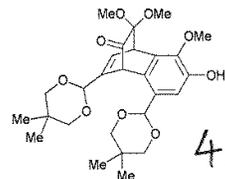


Name _____

Date _____

NB # _____

7.260
7.109
6.568
6.566
6.564
6.562
6.552
6.549
6.548
6.545
5.577
5.514
5.016
5.016
4.861
4.857
4.613
4.596
3.829
3.788
3.781
3.760
3.754
3.745
3.718
3.711
3.675
3.668
3.662
3.662
3.641
3.633
3.628
3.601
3.594
3.468
3.451
3.441
3.433
3.424
3.389
3.238
1.281
1.228
0.787
0.734



NAME SG-ECK-5-Ketal-Ar
EXPNO 10
PROCNO 1
Date_ 20140731
Time_ 0.15
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 71.8
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SFO1 400.2330885 MHz
SI 32768
SF 400.2300120 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

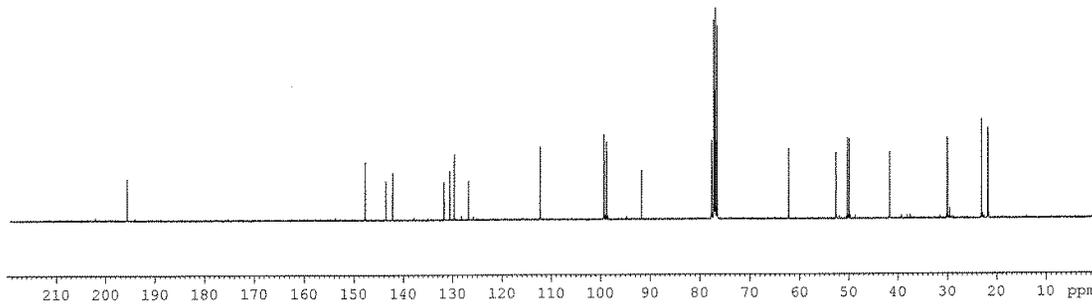
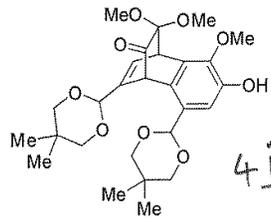
AMRI; SRC AV400
location; 18



Name _____
Date _____
NB # _____

195.782

147.796
143.648
142.248
131.832
130.695
129.778
126.889
112.376
99.402
98.882
91.857
77.742
77.692
77.319
77.133
77.001
76.853
76.684
62.289
52.768
50.403
50.060
41.802
30.202
30.108
23.183
23.162
21.922
21.835



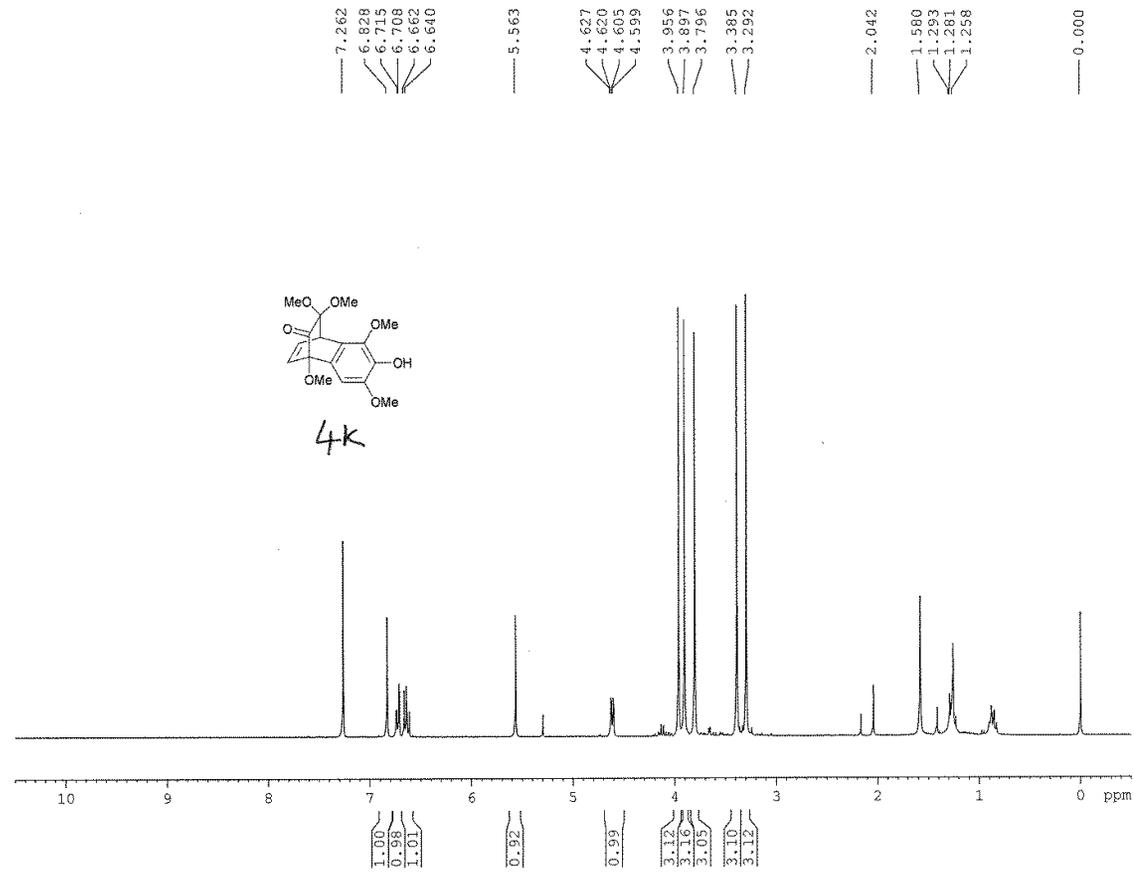
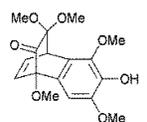
Current Data Parameters
NAME SG-BCK-5-Ketal-Ar
EXFNO 11
PROCNO 1

F2 - Acquisition Parameters
Date_ 20140731
Time 2.25
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 4000
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 161
DW 20.800 usec
DE 6.50 usec
TE 300.6 K
D1 0.5000000 sec
D11 0.0300000 sec
TDO 1

==== CHANNEL f1 =====
NUC1 13C
P1 8.60 usec
PL1 -1.00 dB
PL1W 44.59811569 W
SE01 100.6479769 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 15.47 dB
PL13 15.72 dB
PL2W 14.33185768 W
PL12W 0.25662708 W
PL13W 0.24227159 W
SFO2 400.2316009 MHz

F2 - Processing parameters
SI 32768
SF 100.6379180 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



```

NAME      SG-BCK-6OMe-Ar-dimer
EXPNO     10
PROCNO    1
Date_     20140729
Time      17.04
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zg30
TD         32768
SOLVENT   CDCl3
NS         16
DS         2
SWH        5995.204 Hz
FIDRES     0.182959 Hz
AQ         2.7329011 sec
RG         574.7
DW         83.400 usec
DE         6.00 usec
TE         300.0 K
D1         1.00000000 sec
MCREST    0.00000000 sec
MCWRK     0.01500000 sec
  
```

```

===== CHANNEL f1 =====
NUC1      1H
F1        12.20 usec
PL1       0.00 dB
SF01      300.1319508 MHz
SI        16384
SF        300.1300059 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```

Name _____
 Date _____
 NB # _____

AMRI; SRC
location; 15



Name _____
Date _____
NB # _____

```

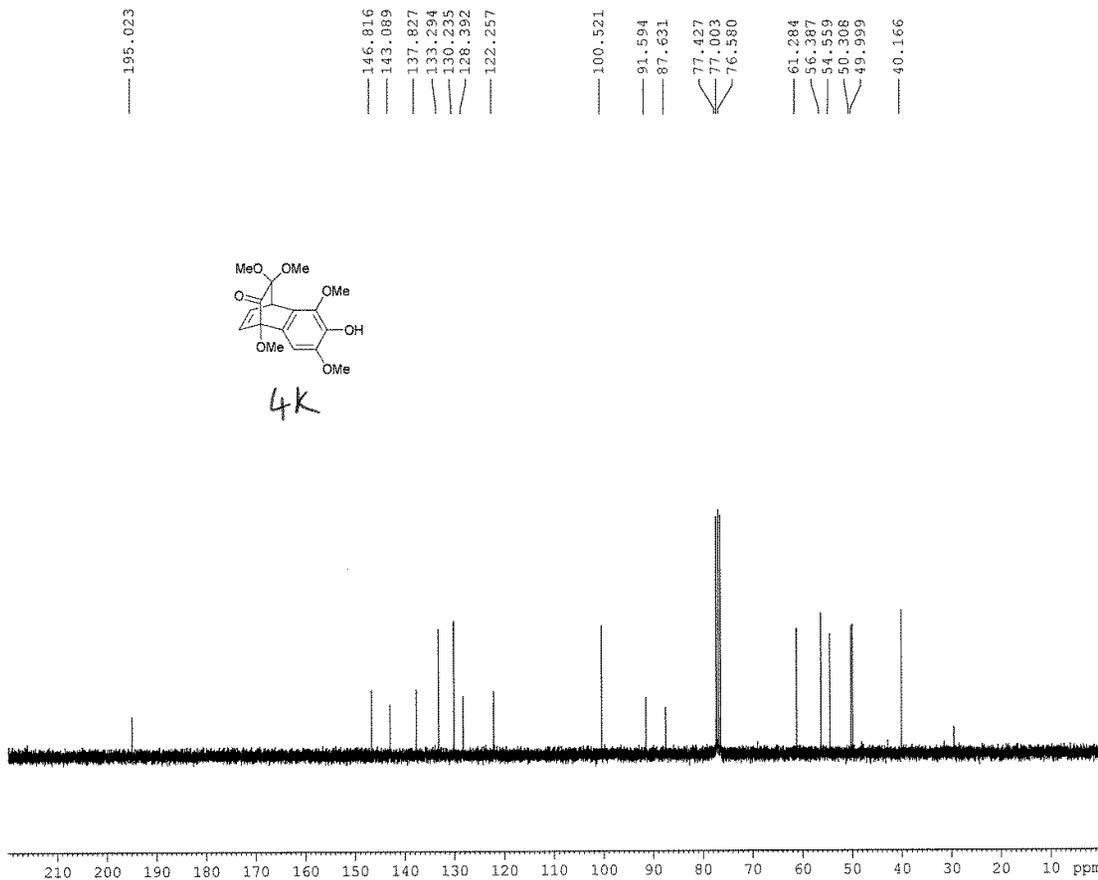
NAME      SG-BCK-6-OMe-Dimer-Ar
EXPNO     10
PROCNO    1
Date_     20140730
Time_     0.11
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zgpg30
TD         65536
SOLVENT   CDCl3
NS         512
DS         0
SWH        22675.736 Hz
FIDRES     0.346004 Hz
AQ         1.4451188 sec
RG         1625.5
DW         22.050 usec
DE         6.00 usec
TE         300.0 K
D1         0.50000000 sec
d11        0.03000000 sec
DELTA     0.40000001 sec
MCREST    0.00000000 sec
MCWRK     0.01500000 sec
    
```

```

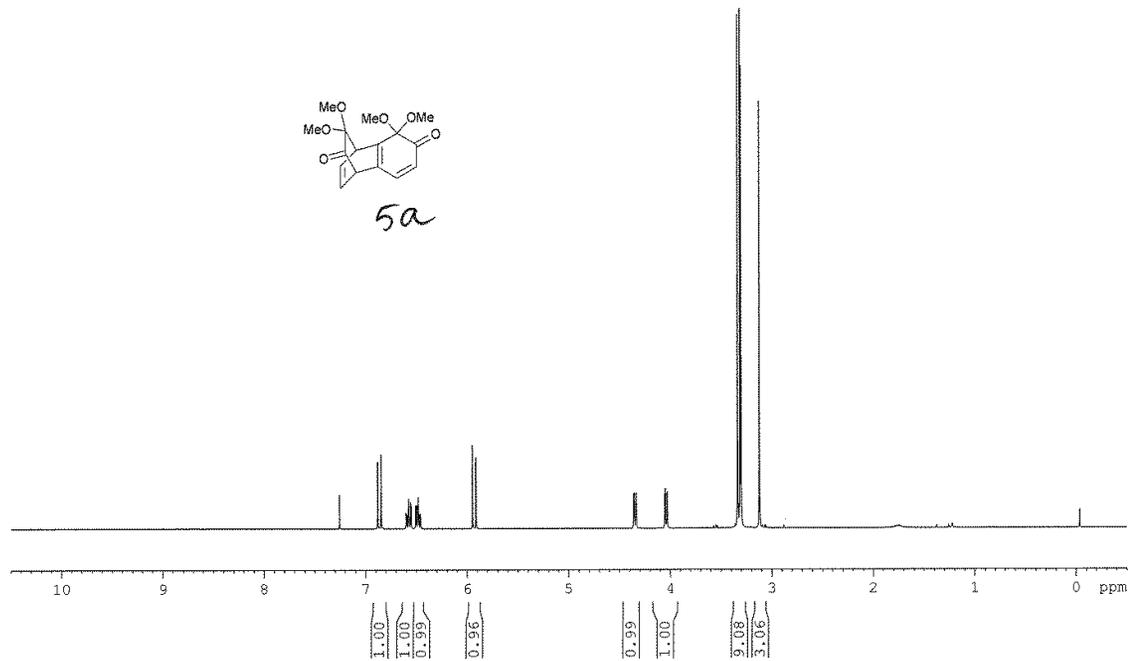
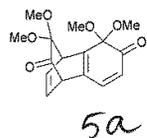
===== CHANNEL f1 =====
NUC1      13C
P1        8.00 usec
PL1       -2.00 dB
SF01      75.4767751 MHz
    
```

```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2        0.00 dB
PL12      16.33 dB
PL13      16.00 dB
SFO2      300.1315007 MHz
SI         131072
SF         75.4677503 MHz
WDW        EM
SSB         0
LB         0.30 Hz
GB          0
PC          1.40
    
```



7.260
6.882
6.849
6.803
6.698
6.560
6.575
6.559
6.553
6.509
6.504
6.490
6.485
6.481
6.467
6.461
5.948
5.916
4.364
4.358
4.343
4.338
4.056
4.051
4.037
4.032
3.338
3.315
3.304
3.125



```

NAME      SG-BCK-ArGD-DAIB
EXPNO     20
PROCNO    1
Date_     20140823
Time      8.35
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zg30
TD         32768
SOLVENT   CDCl3
NS         16
DS         2
SWH        5995.204 Hz
FIDRES     0.182959 Hz
AQ         2.7329011 sec
RG         90.5
DW         83.400 usec
DE         6.00 usec
TE         300.0 K
D1         1.00000000 sec
MCREST    0.00000000 sec
MCWRK     0.01500000 sec
    
```

```

===== CHANNEL f1 =====
NUC1      1H
P1        12.20 usec
PL1       0.00 dB
SFO1     300.1319508 MHz
SI        16384
SF        300.1300063 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
    
```

Name _____

Date _____

NB # _____

AMRI; SRC
location; 15



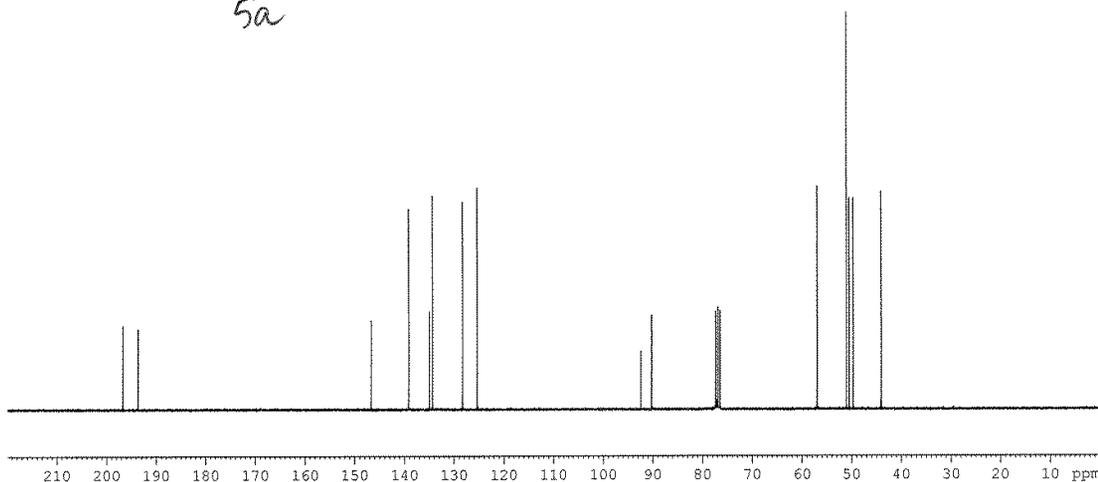
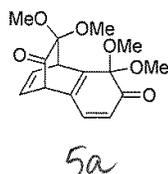
196.787
193.752

146.772
139.217
135.039
134.388
128.358
125.417

92.522
90.323

77.423
76.999
76.575

57.032
51.090
50.588
49.781
44.120



Name _____
Date _____
NB # _____

NAME SG-BCK-ArgD-DAIB
EXPO 21
PROCNO 1
Date 20140823
Time 9.59
INSTRUM spect
PROBHD 5 mm QNP 1H/13
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 2500
DS 0
SWH 22675.736 Hz
FIDRES 0.346004 Hz
AQ 1.4451188 sec
RG 4597.6
DW 22.050 usec
DE 6.00 usec
TE 300.0 K
D1 0.50000000 sec
d11 0.03000000 sec
DELTA 0.40000001 sec
MCREST 0.00000000 sec
MCWRR 0.01500000 sec

===== CHANNEL f1 =====
NUC1 13C
P1 8.00 usec
PL1 -2.00 dB
SFO1 75.4767751 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 0.00 dB
PL12 16.33 dB
PL13 16.00 dB
SFO2 300.1315007 MHz
SI 131072
SF 75.4677536 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.40

AMRI; SRC AV400
location; 18



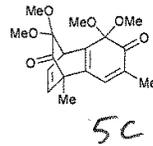
Name _____
Date _____
NB # _____

7.260
6.698
6.694
6.575
6.559
6.542
6.059
6.055
6.042
6.038

4.277
4.272
4.261
4.256

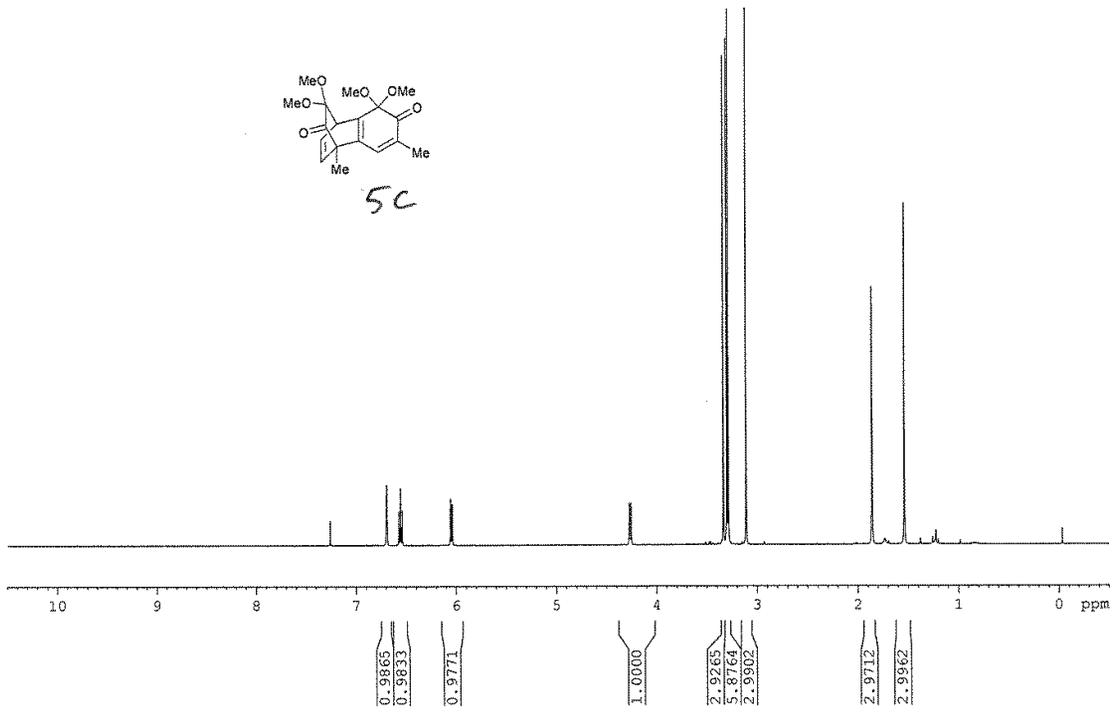
3.339
3.304
3.289
3.113

1.862
1.858
1.539



NAME SG-BCK-6Me-dimer-ARM-DAIB
EXPNO 10
PROCNO 1
Date_ 20140829
Time 18.16
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 45.2
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SFO1 400.2530895 MHz
SI 32768
SF 400.2300116 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



AMRI; SRC AV400
location; 18



197.107
195.730

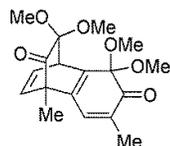
144.921
136.938
134.742
134.353
132.874
132.035

92.584
90.757

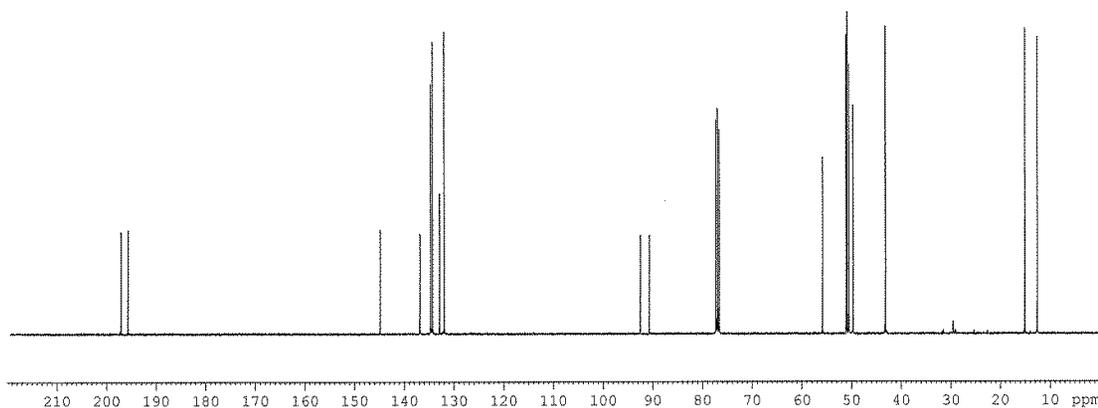
77.318
77.000
76.682

55.904
51.121
50.889
50.574
49.726
43.205

15.097
12.640



SC



Name _____
Date _____
NB # _____

```

NAME      SG-BCK-6Me-dimer-APm-DAIB
EXPNO     21
PROCNO    1
Date_     20140830
Time_     8.32
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD        65536
SOLVENT   CDCl3
NS        3000
DS        4
SWH       24038.461 Hz
FIDRES    0.366798 Hz
AQ        1.3631988 sec
RG        101
DW        20.800 usec
DE        6.50 usec
TE        300.0 K
D1        0.50000000 sec
D11       0.03000000 sec
TDO       1
  
```

```

----- CHANNEL f1 -----
NUC1      13C
P1        8.60 usec
PL1       -1.00 dB
PL1W     44.58811569 W
SF01     100.6479769 MHz
  
```

```

----- CHANNEL f2 -----
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       -2.00 dB
PL12     15.47 dB
PL13     15.72 dB
PL2W     14.33185768 W
PL12W    0.25662708 W
PL13W    0.24227159 W
SF02     400.2316089 MHz
SI        32768
SF        100.6379203 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40
  
```

AMRI; SRC AV400
location; 18

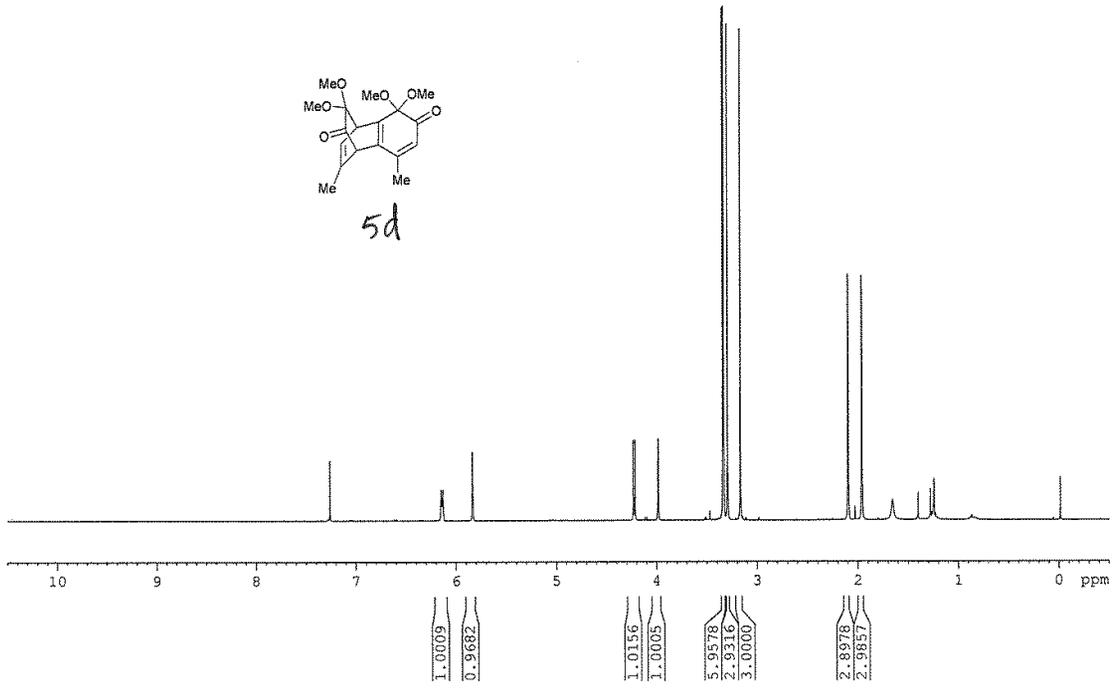
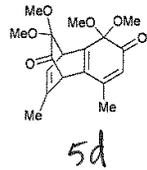


Name _____

Date _____

NB # _____

7.260
6.151
6.147
6.142
6.135
6.131
6.127
5.839
5.836
5.832
4.233
4.217
3.987
3.983
3.342
3.333
3.296
3.168
2.098
2.094
1.961
1.957



NAME SG-BCK-5Me-dimer-ARM-DAIB
EXPNO 10
PROCNO 1
Date_ 20140829
Time 18.09
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 80.6
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1
==== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SFO1 400.2530985 MHz
SI 32768
SF 400.2300117 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI; SRC AV400
location; 18



Name _____
Date _____
NB # _____

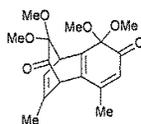
195.858
194.574

149.394
146.982
138.882
136.186
126.879
123.550

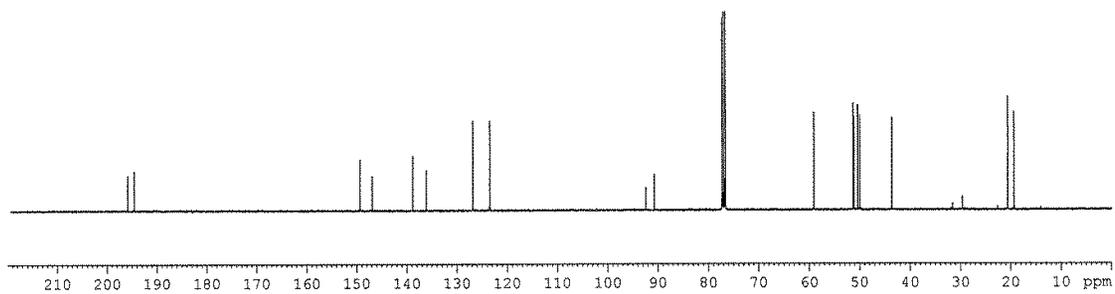
92.424
90.759
77.317
77.000
76.682

59.130
51.306
51.155
50.424
50.032
49.629

20.611
19.392



sd



```

NAME      SG-BCK-5Me-dimer-ARm-DAIB
EXPNO     21
PROCNO    1
Date_     20140830
Time      5.07
INSTRUM   spect
PROBHD    5 mm F4BBO BB-
PULPROG   zgpg30
TD        65536
SOLVENT   CDCl3
NS        3000
DS        4
SWH       24038.461 Hz
FIDRES    0.366798 Hz
AQ        1.3631988 sec
RG        101
DW        20.800 usec
DE        6.50 usec
TE        300.0 K
D1        0.50000000 sec
D11       0.03000000 sec
TD0       1
  
```

```

***** CHANNEL f1 *****
NUC1      13C
P1        0.60 usec
PL1       -1.00 dB
PL1W     44.58811569 W
SFO1     100.6479769 MHz
  
```

```

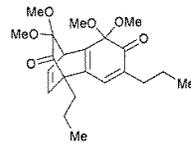
***** CHANNEL f2 *****
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       -2.00 dB
PL12     15.47 dB
PL13     15.72 dB
PL2W     14.33185768 W
PL12W    0.25662708 W
PL13W    0.24227159 W
SFO2     400.2316009 MHz
SI        32768
SF        100.6379171 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40
  
```

AMRI; SRC AV400
location; 18



7.260
6.601
6.583
6.566
6.269
6.264
6.251
6.246
4.265
4.261
4.249
4.245
3.344
3.285
3.280
3.104
2.253
2.251
2.243
2.240
2.235
2.232
2.223
2.221
2.215
2.212
2.205
2.202
2.131
2.119
2.100
2.095
2.088
2.083
2.065
2.053
1.892
1.881
1.862
1.856
1.851
1.846
1.827
1.816
1.619
1.600
1.585
1.583
1.579
1.567
1.553
1.549
1.484
1.482
1.465
1.447
1.428
1.409
1.402
1.400
1.391
1.094
1.076
1.058
0.917
0.899
0.881

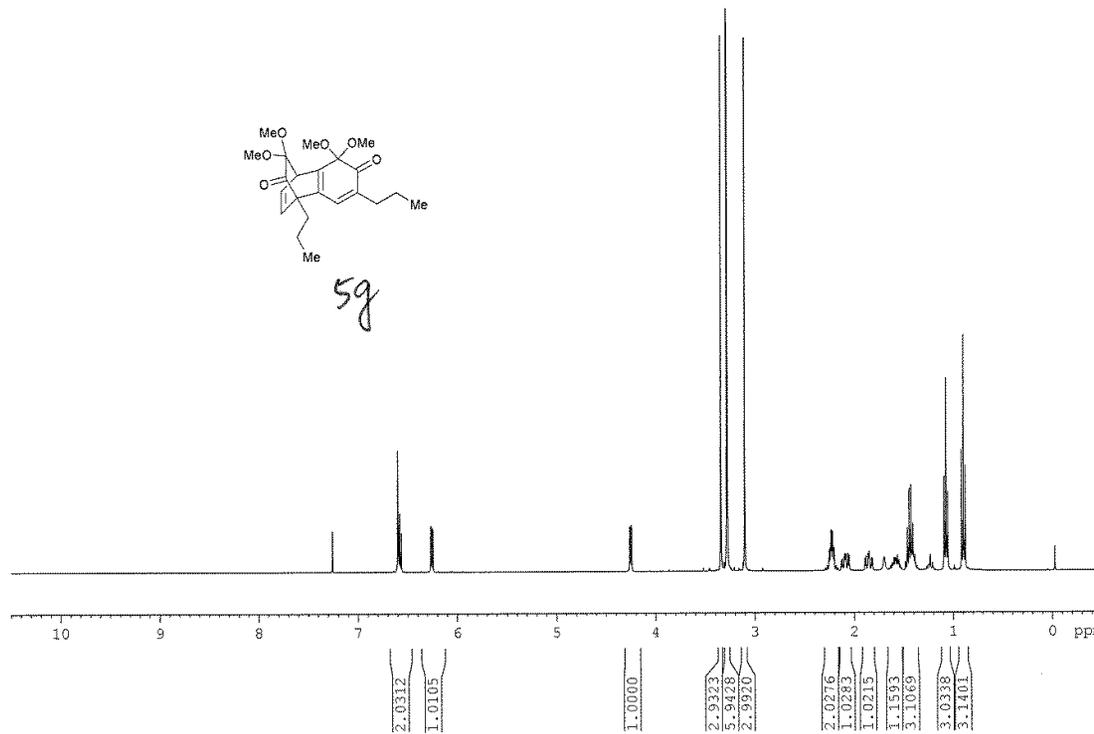
Name _____
Date _____
NB # _____



5g

NAME SG-BCK-6Pr-Ardimer-DAIB
EXPNO 10
PROCNO 1
Date_ 20140829
Time_ 21.07
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 45.2
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SFO1 400.2330885 MHz
SI 32768
SF 400.2300116 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



AMRI; SRC AV400
location; 18



196.966
195.451

145.684
136.835
136.771
134.546
131.593
131.316

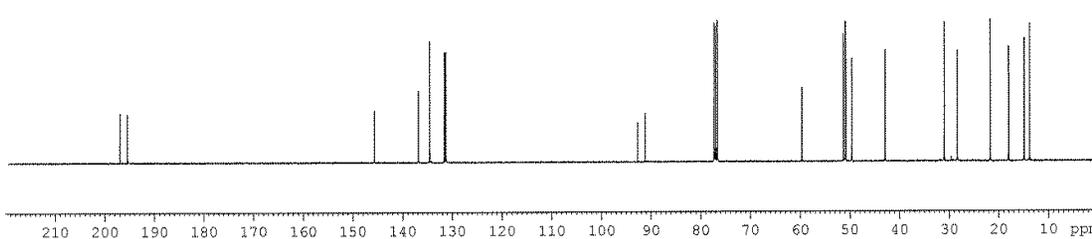
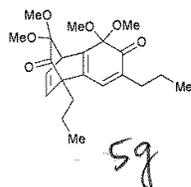
92.675
91.221

77.318
77.001
76.683

59.649
51.256
50.893
50.780
49.593
42.891

30.956
28.331

21.677
17.983
14.871
13.783



Name _____
Date _____
NB # _____

```

NAME      SG-BCK-6Pr-Ardimer-DAIB
EXPNO     11
PROCNO    1
Date_     20140829
Time      22.31
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TB        65536
SOLVENT   CDCl3
NS        2560
DS        4
SWH       24039.461 Hz
FIDRES    0.366798 Hz
AQ        1.3631988 sec
RG        101
DM        20.800 usec
DE        6.50 usec
TE        300.0 K
D1        0.50000000 sec
D11       0.03000000 sec
TD0       1
  
```

```

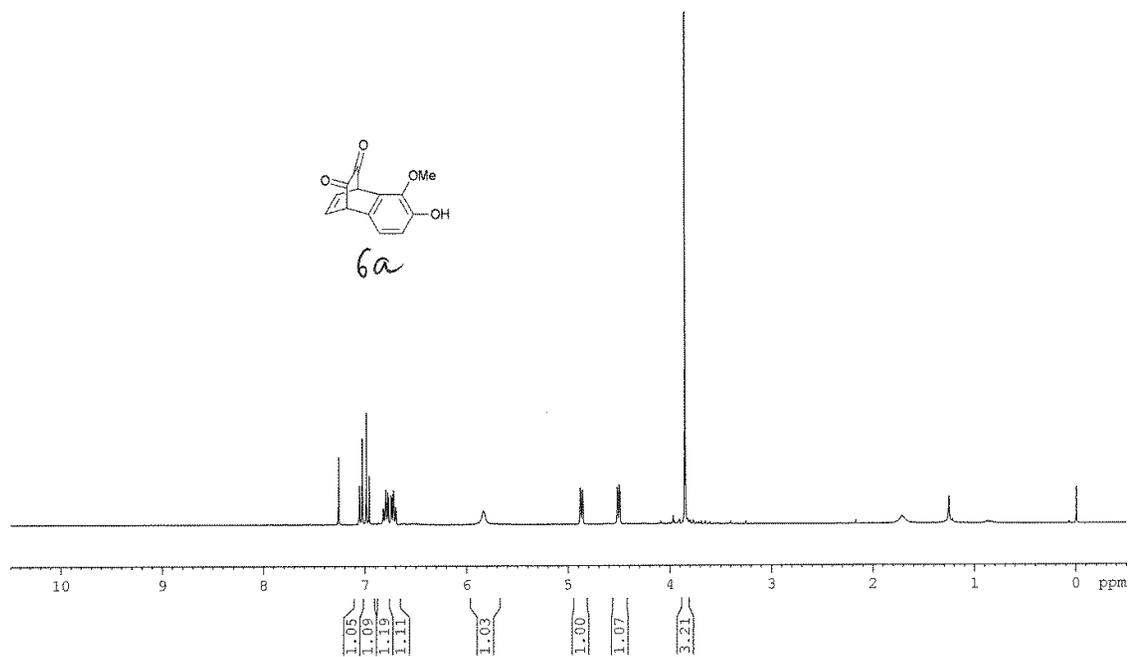
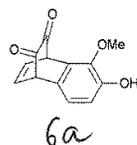
===== CHANNEL f1 =====
NUC1      13C
P1        8.60 usec
PL1       -1.00 dB
PL1W      44.58811569 W
SFO1      100.6479769 MHz
  
```

```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       -2.00 dB
PL12      16.47 dB
PL13      15.72 dB
PL2W      14.33185768 W
PL12W     0.25662708 W
PL13W     0.24227159 W
SFO2      400.2316009 MHz
SI        32768
SF        100.6379184 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40
  
```



7.260
7.053
7.026
6.864
6.857
6.821
6.815
6.801
6.796
6.790
6.776
6.770
6.745
6.738
6.724
6.719
6.714
6.699
6.693
5.832
4.881
4.875
4.861
4.855
4.516
4.510
4.496
4.490
3.846



```

NAME      SG-BCK-ArGD-dione
EXPNO     10
PROCNO    1
Date_     20140711
Time      20.10
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zg30
TD         32768
SOLVENT   CDCl3
NS         16
DS         2
SWH        5995.204 Hz
FIDRES     0.182959 Hz
AQ         2.7329011 sec
RG         406.4
DW         83.400 usec
DE         6.00 usec
TE         300.0 K
D1         1.00000000 sec
MCREST     0.00000000 sec
MCWRK     0.01500000 sec
  
```

```

===== CHANNEL f1 =====
NUC1      1H
P1        12.20 usec
FL1       0.00 dB
SFO1     300.1319508 MHz
SI        16384
SF        300.1300063 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```

Name _____

Date _____

NB # _____

AMRI; SRC
location; 15



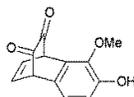
181.832
181.446

149.726
143.752

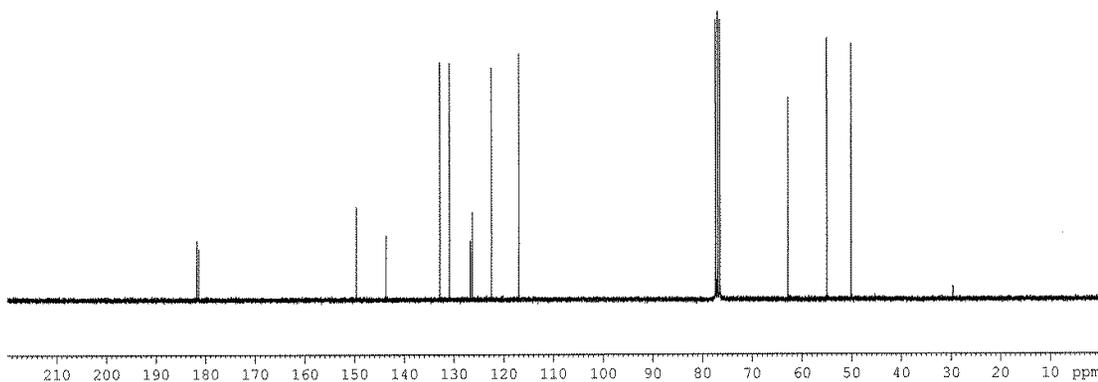
132.905
130.963
126.779
126.398
122.520
116.982

77.425
77.002
76.578

62.865
55.073
50.160



6a



Name _____
Date _____
NB # _____

```

NAME      SG-BCK-ArGD-dione
EXFNO     11
PROCNO    1
Date      20140711
Time      22.58
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zgpg30
TD        65536
SOLVENT   CDCl3
NS        5000
DS        0
SWH       22675.736 Hz
FIDRES    0.346004 Hz
AQ        1.4451188 sec
RG        2580.3
DW        22.050 usec
DE        6.00 usec
TE        300.0 K
D1        0.50000000 sec
d11       0.03000000 sec
DELTA     0.40000001 sec
MCREST    0.00000000 sec
MCWRRK    0.01500000 sec
    
```

```

===== CHANNEL f1 =====
NUC1      13C
P1        8.00 usec
PL1       -2.00 dB
SF01      75.4767751 MHz
    
```

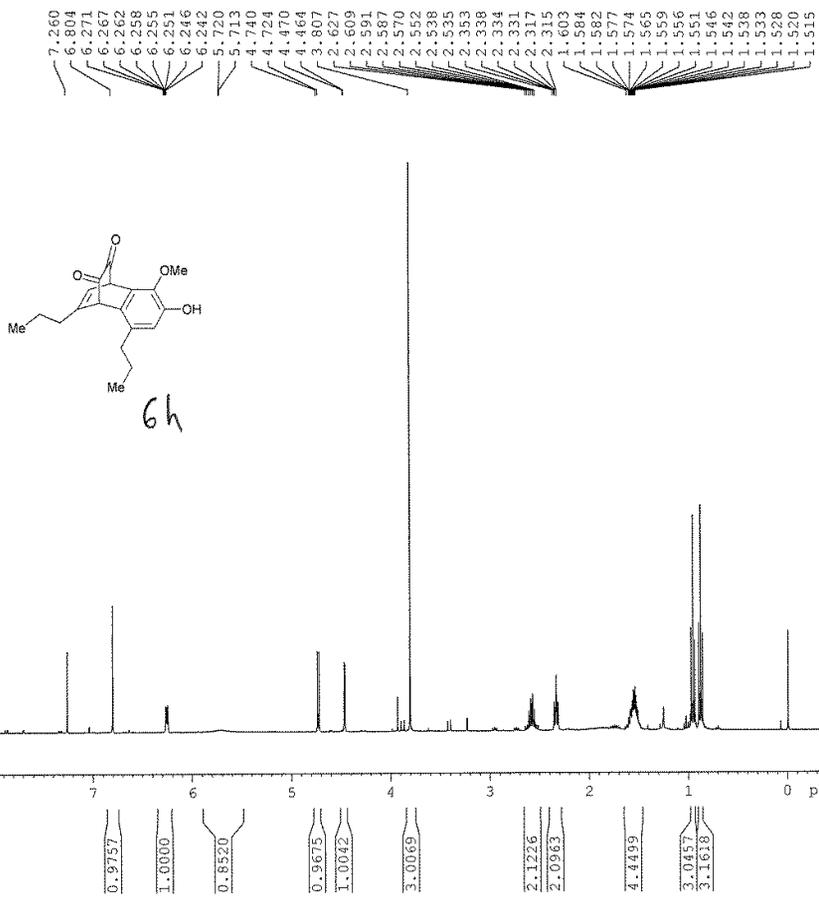
```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       0.00 dB
PL12      16.33 dB
PL13      16.00 dB
SF02      300.1315007 MHz
SI        131072
SF        75.4677510 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.40
    
```

AMRI; SRC AV400
location; 18



Name _____
Date _____
NB # _____



NAME SG-BCK-5Pr-Dione
EXPNO 10
PROCNO 1
Date_ 20140823
Time_ 4.40
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 90.5
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 1.0000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SFO1 400.2330885 MHz
SI 32768
SF 400.2300119 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI; SRC AV400
location; 18



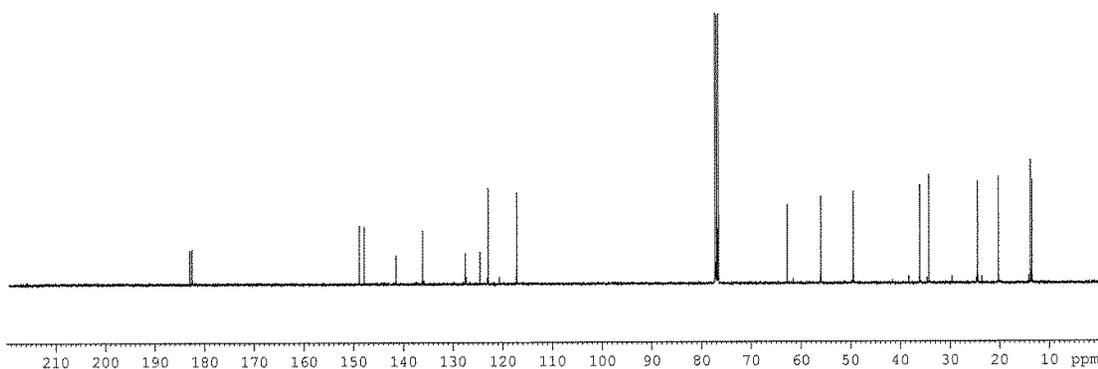
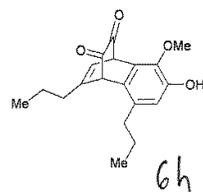
183.037
182.566

148.938
147.947
141.581
136.189
127.621
124.669
123.010
117.252

77.318
77.001
76.683

62.840
56.075
49.536

36.161
34.326
24.494
20.278
13.835
13.531

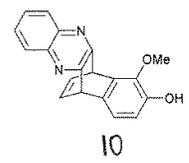
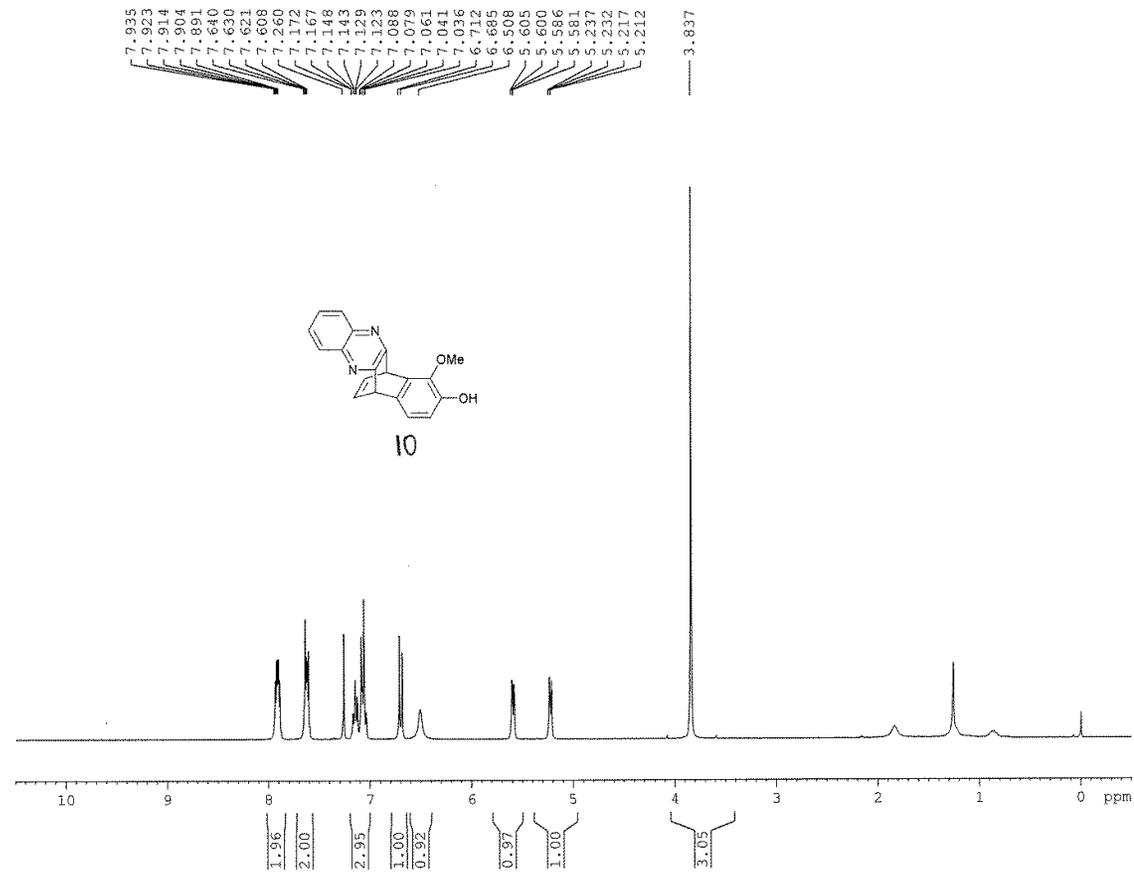


Name _____
Date _____
NB # _____

NAME SG-BCK-5Pr-Dione
EXPNO 11
PROCNO 1
Date_ 20140823
Time_ 6.02
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 2500
DS 4
SWH 24029.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 101
DW 20.800 usec
DE 6.50 usec
TE 300.0 K
D1 0.50000000 sec
D11 0.03000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 13C
P1 8.60 usec
PL1 -1.00 dB
PL1W 44.58811569 W
SFO1 100.6479769 MHz

===== CHANNEL f2 =====
CPDPRG2 waitz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 15.47 dB
PL13 15.72 dB
PL2W 14.33185768 W
PL12W 0.25662708 W
PL13W 0.24227159 W
SFO2 400.2316009 MHz
SI 32768
SF 100.6379167 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



```

NAME      5G-BCK-ArGD-dione-phenylenediamine
EXPNO     1
PROCNO    1
Date_     20140712
Time      1.18
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zgpg
TD         32768
SOLVENT   CDCl3
NS        16
DS         2
SWH        5995.204 Hz
FIDRES     0.102950 Hz
AQ         2.7529011 sec
RG         322.5
DM         83.400 usec
DE         6.00 usec
TE         300.0 K
D1         1.00000000 sec
MCREST7   0.00000000 sec
MCRMW     0.01500000 sec

===== CHANNEL f1 =====
NUC1       13C
P1         12.20 usec
PL1        0.00 dB
SFO1       300.1319508 MHz
ST         16394
SF         300.1300053 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00
  
```

Name _____
Date _____
NB # _____

AMRI; SRC
location; 15

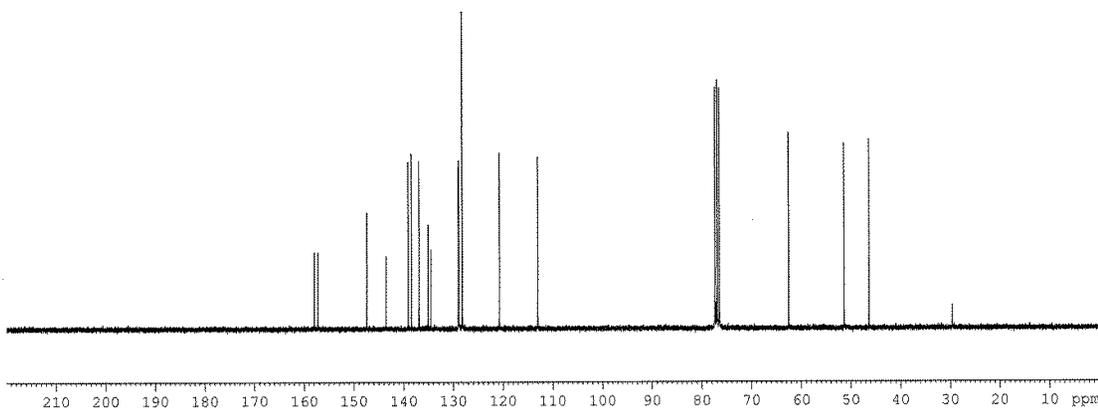
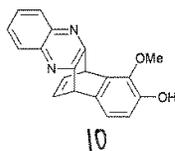


158.036
157.299
147.484
143.613
139.159
138.525
136.968
135.126
134.586
129.054
128.957
128.286
120.818
113.065

77.424
77.000
76.576

62.592

51.459
46.437



Name _____
Date _____
NB # _____

NAME SG-BCK-ArGO-dione-phenylenediamine
EXPNO 11
PROCNO 1
Date_ 20140712
Time 4.06
INSTRUM spect
PROBHD 5 mm QNP 1H/13
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 5000
DS 0
SWH 22875.736 Hz
FIDRES 0.346004 Hz
AQ 1.445188 sec
RG 3824.6
DN 22.050 usec
DE 6.00 usec
TE 300.0 K
D1 0.5900000 sec
d11 0.0300000 sec
DELTA 0.40000001 sec
MCBREST 0.0000000 sec
MCWRK 0.0150000 sec

***** CHANNEL f1 *****
NUC1 13C
P1 8.00 usec
PL1 -2.00 dB
SFO1 75.4767751 MHz

***** CHANNEL f2 *****
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 0.00 dB
PL12 16.33 dB
PL13 16.00 dB
SFO2 300.1315007 MHz
SI 131072
SF 75.4677511 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.40

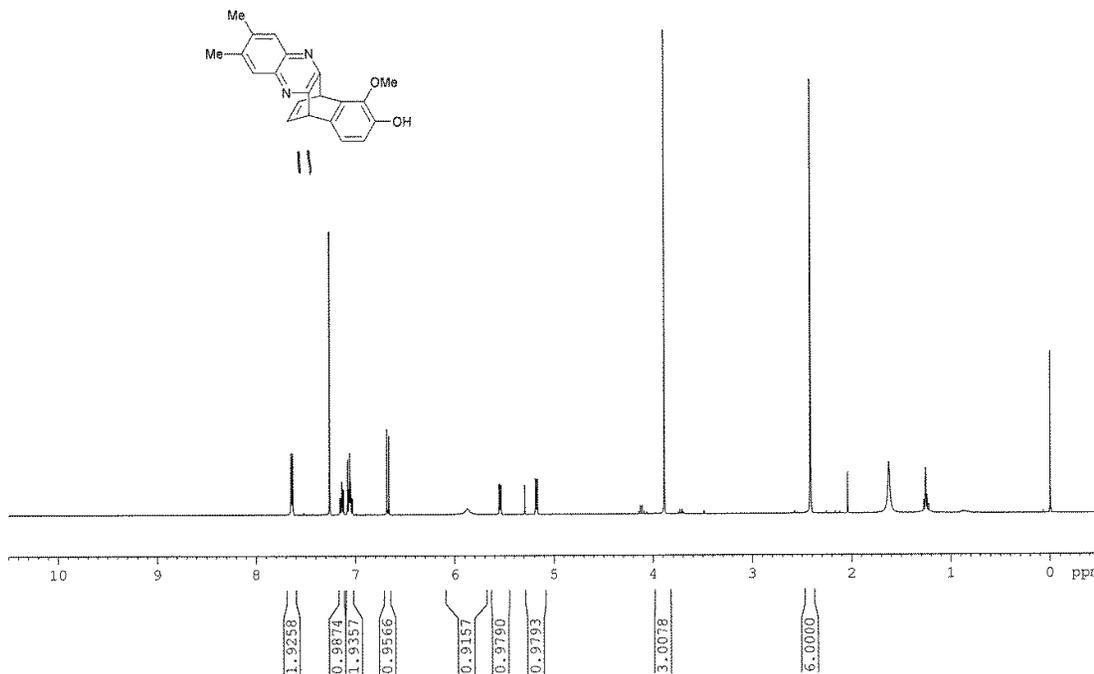
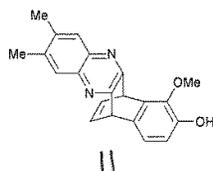
AMRI SRC
location; 17



Name _____
Date _____
NB # _____

7.647
7.633
7.260
7.156
7.152
7.143
7.138
7.134
7.123
7.119
7.078
7.067
7.064
7.058
7.053
7.049
7.046
7.035
7.031
6.684
6.664
5.873
5.556
5.552
5.541
5.537
5.188
5.184
5.173
5.169
3.890

2.419



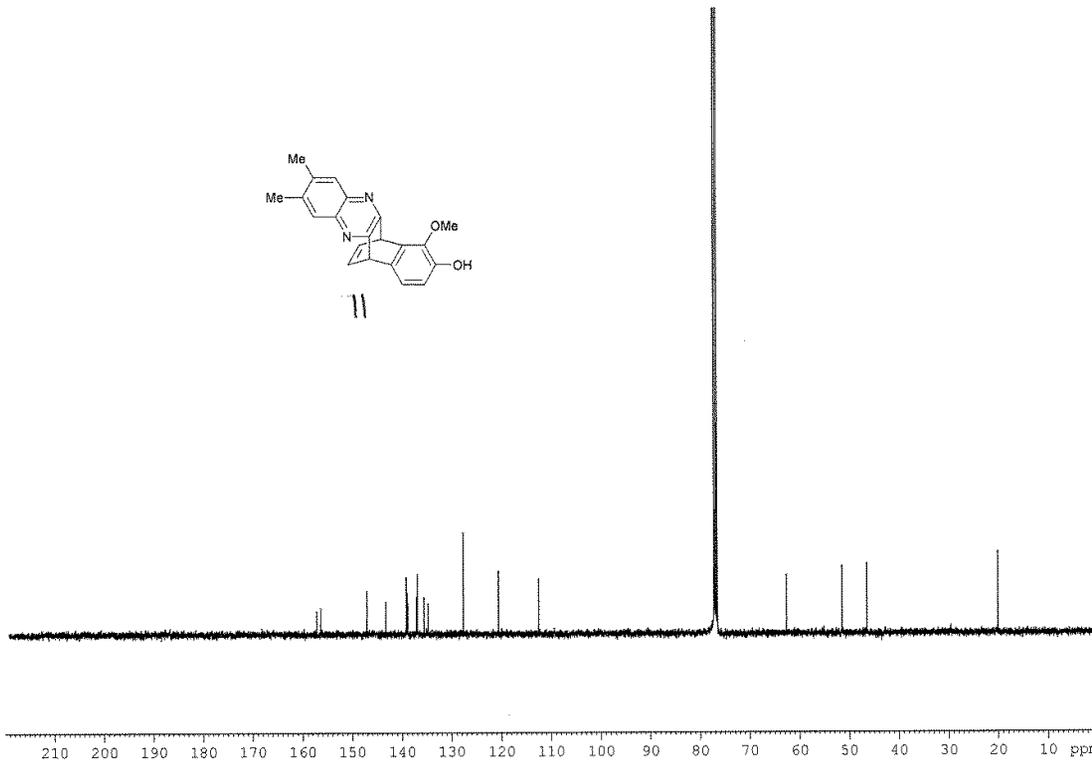
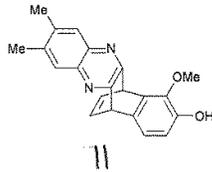
NAME SG-BCK-ArgD-diMedianiline
EXPNO 10
PROCNO 1
Date_ 20140714
Time_ 23.04
INSTRUM spect
PROBHD 5 mm F4BBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 228.1
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -3.00 dB
PL1W 19.3458210 W
SFO1 400.1318542 MHz
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI SRC location; 17



157.236
 156.419
 147.153
 143.385
 139.262
 139.065
 138.959
 137.254
 137.240
 137.013
 135.690
 134.938
 127.775
 120.721
 112.598
 77.319
 77.001
 76.884
 62.760
 51.575
 46.550
 20.138
 20.116



Name _____
Date _____
NB # _____

```

NAME      SG-BCK-ArGD-diMedianiline
EXPNO     11
PROCNO    1
Date_     20140715
Time_     1.01
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD        65536
SOLVENT   CDCl3
NS        2000
DS        4
SWH       23980.814 Hz
FIDRES    0.365918 Hz
AQ        1.3664756 sec
RG        18390.4
DW        20.850 usec
DE        6.50 usec
TE        300.0 K
D1        2.00000000 sec
D11       0.03000000 sec
TD0       1
  
```

```

===== CHANNEL f1 =====
NUC1      13C
P1        7.10 usec
PL1       -4.00 dB
PL1W     82.02445221 W
SFO1     100.6228298 MHz
  
```

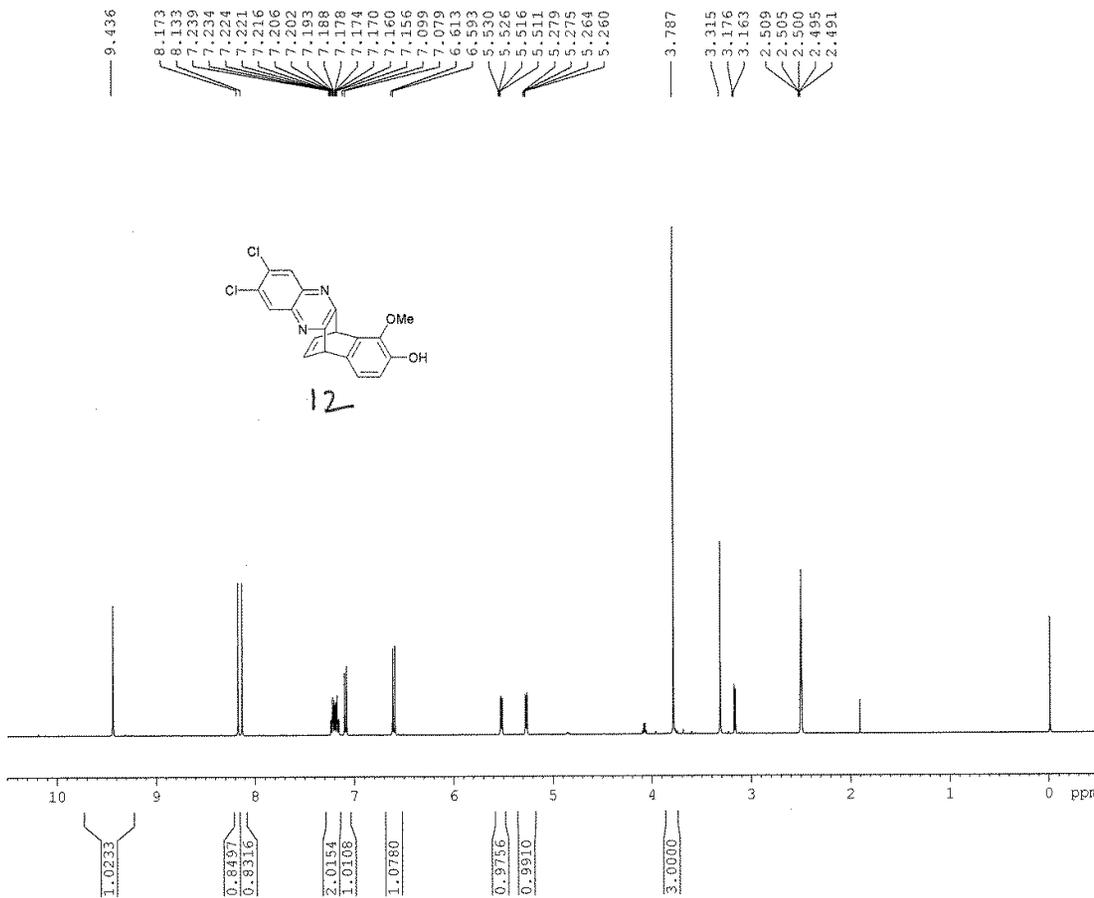
```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       -3.00 dB
PL12     14.47 dB
PL13     15.06 dB
PL2W     19.34582710 W
PL12W    0.34640750 W
PL13W    0.30240381 W
SFO2     400.1316005 MHz
SI        32768
SF        100.6127699 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40
  
```

AMRI SRC
location; 17



Name _____
Date _____
NB # _____



NAME SG-BCK-ArGD-d1Cl-dianiline
 EXPNO 10
 PROCNO 1
 Date_ 20140715
 Time_ 3.22
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT DMSO
 NS 16
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 181
 DW 62.400 usec
 DE 6.50 usec
 TE 300.0 K
 D1 1.0000000 sec
 TDO 1

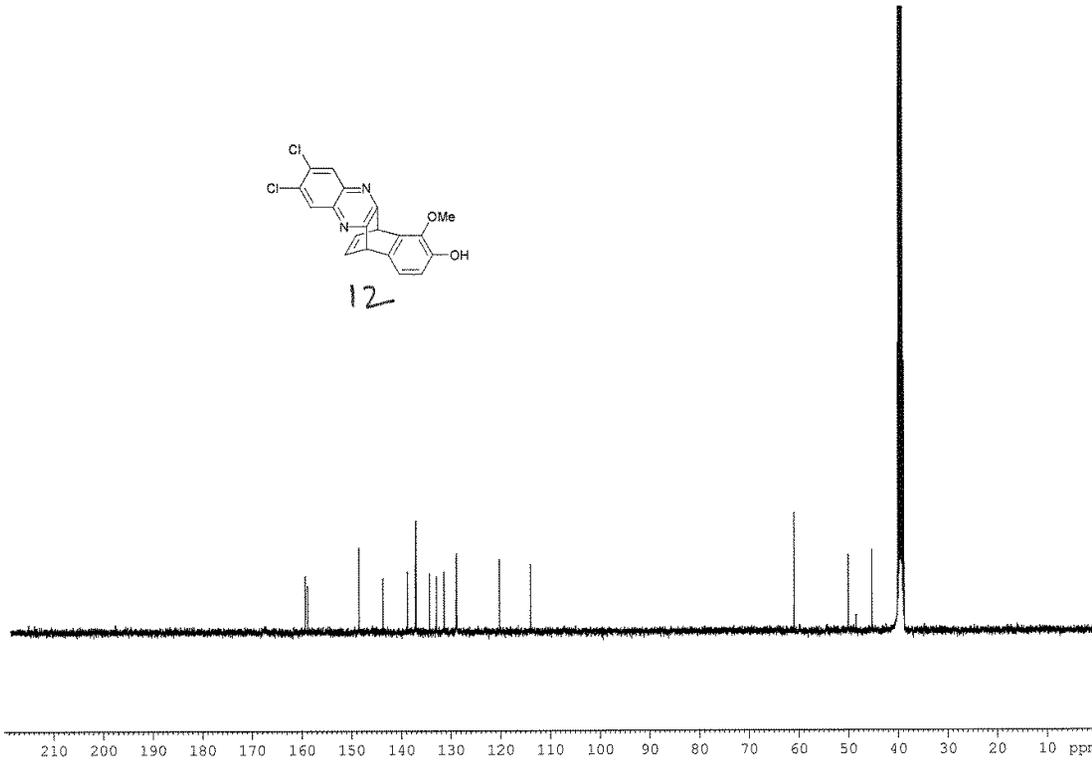
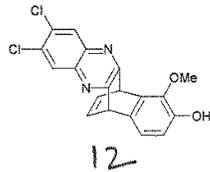
===== CHANNEL f1 =====
 NUC1 1H
 P1 10.70 usec
 PL1 -3.00 dB
 PL1W 19.34582710 W
 SF01 400.1310542 MHz
 SI 32768
 SF 400.1300031 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

AMRI SRC location; 17



159.405
158.938
148.574
143.767
138.855
137.236
137.132
134.398
132.985
131.504
131.437
129.024
128.921
120.334
114.056

61.020
50.134
45.345
40.149
39.841
38.732
38.323
39.315
39.106
38.898



Name _____
Date _____
NB # _____

```

NAME      SG-BCK-ArGD-diCl-dianiline
EXENO     11
PROCNO    1
Date_     20140715
Time_     5.19
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD        65536
SOLVENT   DMSO
NS        2000
DS        4
SWH       23980.814 Hz
FIDRES    0.365918 Hz
AQ        1.3664756 sec
RG        9195.2
Dw        20.850 usec
DE        6.50 usec
TE        300.0 K
D1        2.0000000 sec
D11       0.030000000 sec
TDO       1
    
```

```

***** CHANNEL f1 *****
NUC1      13C
P1        7.10 usec
PL1       -4.00 dB
PL1W      82.02445221 W
SFO1      100.6228298 MHz
    
```

```

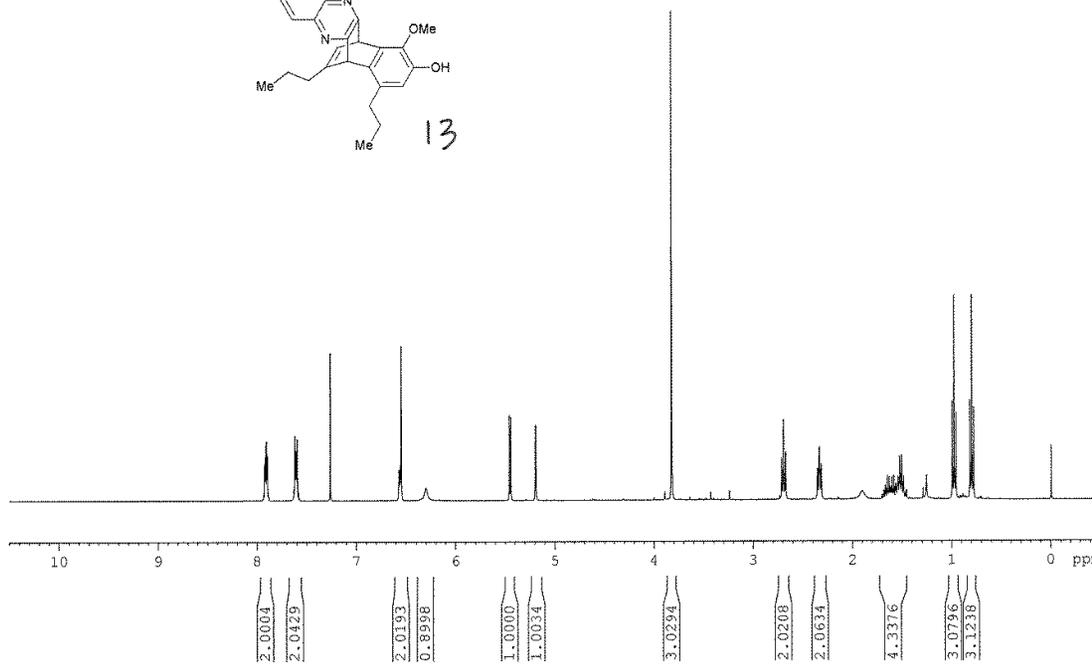
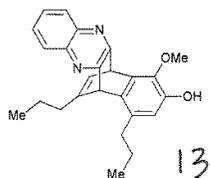
***** CHANNEL f2 *****
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       -3.00 dB
PL12      14.47 dB
PL13      15.06 dB
PL2W      19.34582710 W
PL12W     0.34640750 W
PL13W     0.30240381 W
SFO2      400.1316005 MHz
SI        32768
SF        100.6128179 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40
    
```

AMRI; SRC AV400
location; 18



Name _____
Date _____
NB # _____

7.923
7.917
7.912
7.905
7.899
7.894
7.630
7.619
7.612
7.607
7.605
7.600
7.594
7.260
6.576
6.572
6.568
6.564
6.561
6.557
6.549
6.299
5.460
5.444
5.196
5.192
3.824
2.714
2.695
2.675
2.355
2.352
2.337
2.333
2.318
2.314
1.685
1.669
1.667
1.651
1.632
1.621
1.613
1.602
1.594
1.584
1.565
1.559
1.549
1.543
1.541
1.530
1.525
1.506
1.488
1.470
1.457



```

NAME      SG-BCK-5-Pr-Dione-Phdiamine
EXNO      10
PROCNO    1
Date_     20140823
Time      8.38
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zg30
TD        65536
SOLVENT   CDC13
NS        16
DS        2
SWH       6013.820 Hz
FIDRES    0.122266 Hz
AQ        4.0894966 sec
RG        71.8
DW        62.400 usec
DE        6.00 usec
TE        300.0 K
D1        1.0000000 sec
TDO       1
===== CHANNEL f1 =====
NUC1      1H
P1        10.70 usec
PL1       -2.00 dB
PL1W      14.33185768 #
SFO1      400.2330885 MHz
SI        32768
SF        400.2300118 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```

AMRI; SRC AV400
location; 18



Name _____
Date _____
NB # _____

158.511
158.244
152.579
146.784
141.385
138.604
135.151
134.472
132.853
128.840
128.750
128.717
128.291
128.240
113.638

77.319
77.001
76.883

62.892

52.314

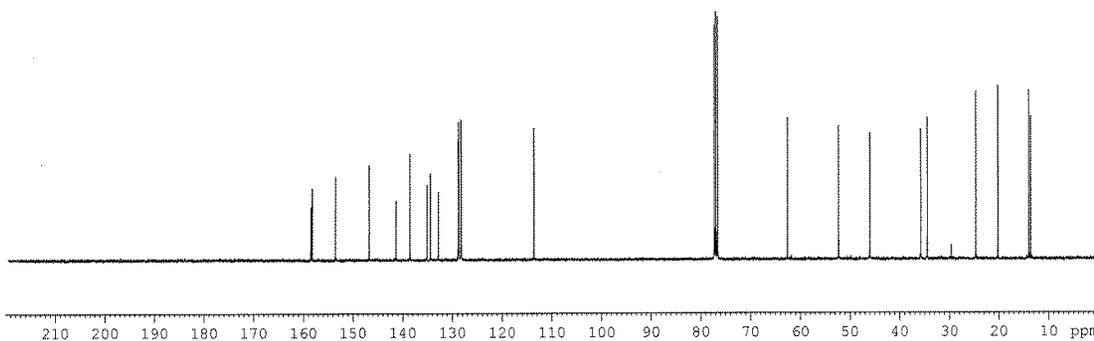
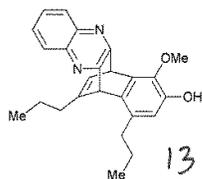
45.995

35.770
34.476

24.657

20.210

14.014
13.653



```

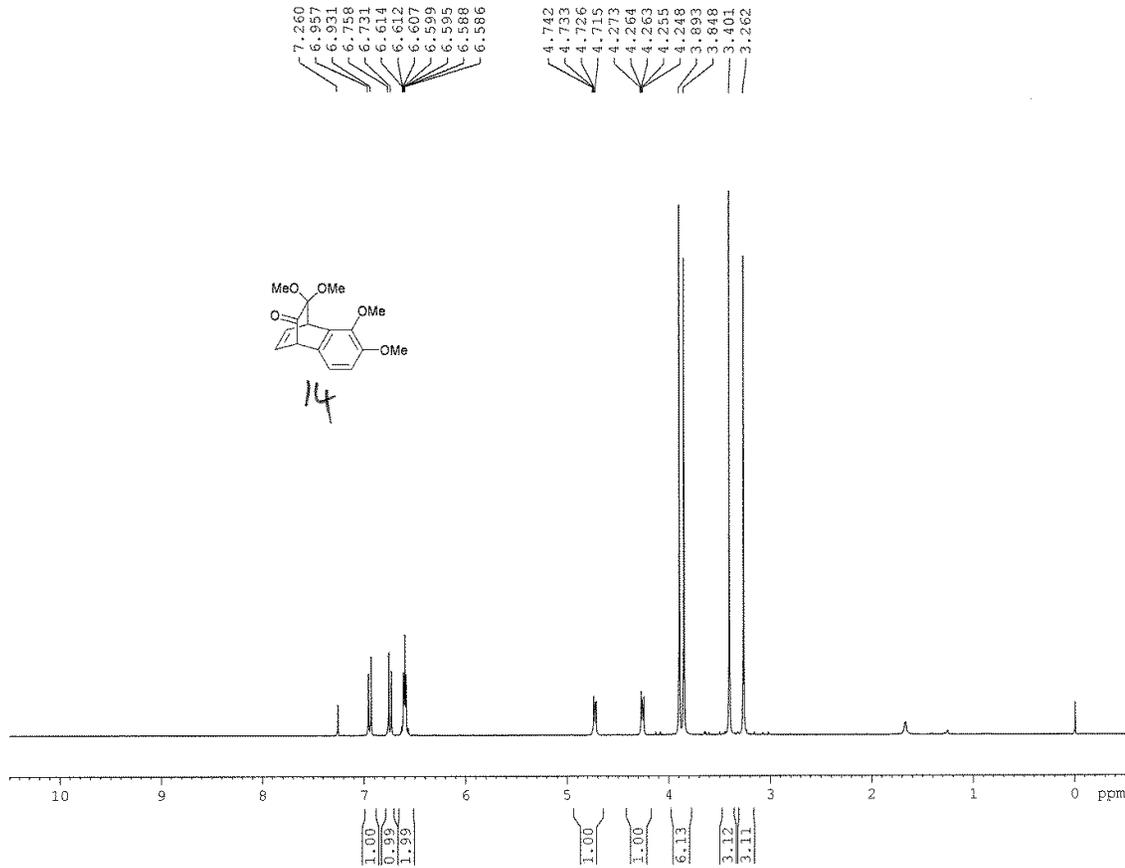
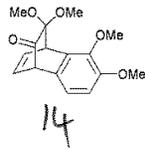
NAME      SG-BCK-5-Pr-Dione-Phdiamine
EXPNO     11
PROCNO    1
Date_     20140823
Time      9.44
INSTRUM   spect
PROBHD    5 mm F4BBO BB-
PULPROG   zgpg30
TD         65536
SOLVENT   CDCl3
NS         2000
DS         4
SWH        24038.461 Hz
FIDRES     0.366798 Hz
AQ         1.3631988 sec
RG         101
DW         20.800 usec
DE         6.50 usec
TE         300.0 K
D1         0.50000000 sec
D11        0.03000000 sec
TDO        1
  
```

```

===== CHANNEL f1 =====
NUC1      13C
P1        8.60 usec
PL1       -1.80 dB
PL1W      44.58811569 W
SFO1      100.6479769 MHz
  
```

```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       -2.00 dB
PL12      15.47 dB
PL13      15.72 dB
PL2W      14.33189768 W
PL12W     0.25662708 W
PL13W     0.24227159 W
SFO2      400.2316009 MHz
SI         32768
SF         100.6379178 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.40
  
```



```

NAME      SG-BCK-ArGD-MeI
EXPNO     10
PROCNO    1
Date_     20140726
Time      1.08
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
FULPROG   zg30
TD         32768
SOLVENT   CDCl3
NS         16
DS         2
SWH        5995.204 Hz
FIDRES     0.182959 Hz
AQ         2.7329011 sec
RG         181
DW         83.400 usec
DE         6.00 usec
TE         300.0 K
D1         1.00000000 sec
MCREST    0.00000000 sec
MCWRK     0.01500000 sec
    
```

```

===== CHANNEL f1 =====
NUC1      1H
F1        12.20 usec
F11       0.00 dB
SFO1      300.1319508 MHz
SI        16384
SF        300.1300063 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
    
```

Name _____

Date _____

NB # _____

AMRI; SRC
location; 15



Name _____
Date _____
NB # _____

NAME SG-BCK-ArGD-MeI
EXPNO 11
PROCNO 1
Date_ 20140726
Time_ 2.33
INSTRUM spect
PROBHD 5 mm QNP 1H/13
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 2500
DS 0
SWH 22675.736 Hz
FIDRES 0.346004 Hz
AQ 1.4451188 sec
RG 1824.6
DW 22.050 usec
DE 6.00 usec
TE 300.0 K
D1 0.50000000 sec
d11 0.03000000 sec
DELTA 0.40000001 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec

==== CHANNEL f1 =====
NUC1 13C
P1 8.00 usec
PL1 -2.00 dB
SFO1 75.4767751 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 0.00 dB
PL12 16.33 dB
PL13 16.00 dB
SFO2 300.1315007 MHz
SI 131072
SF 75.4677532 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.40

196.206

152.059

145.323

134.105

131.593

130.914

129.226

120.014

110.678

91.953

77.424

77.000

76.576

61.391

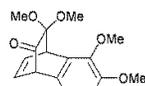
56.770

53.666

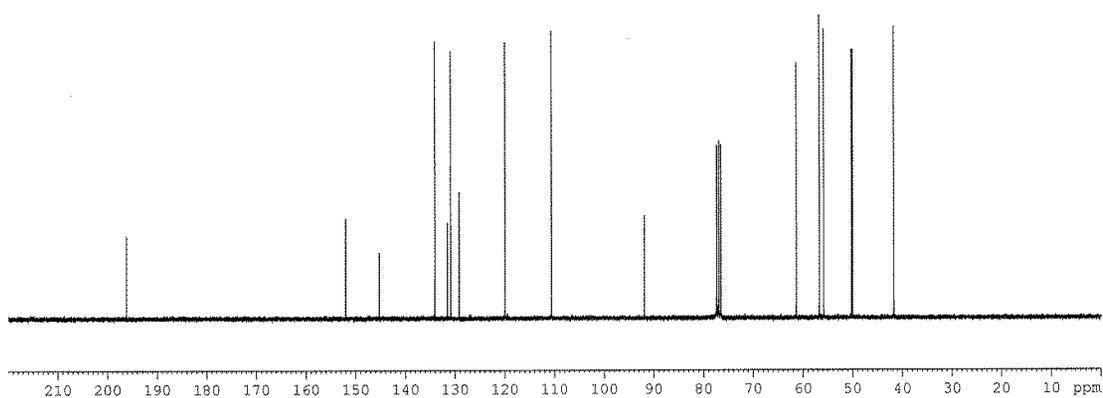
50.297

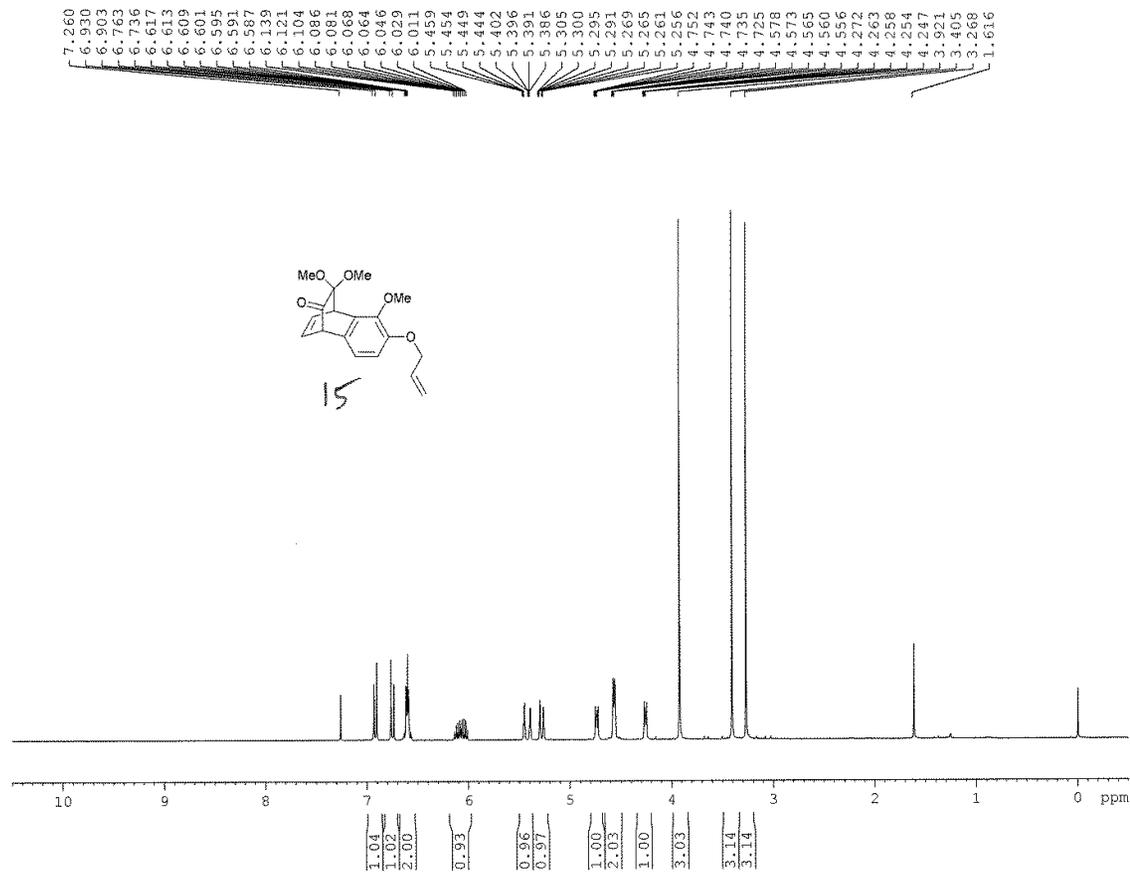
50.081

41.764



14





```

NAME      SG-BCK-ArGD-Allyl
EXPNO     10
PROCNO    1
Date_     20140725
Time      18.26
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zg30
TD         32768
SOLVENT   CDC13
NS         16
DS         2
SWH        5995.204 Hz
FIDRES     0.182959 Hz
AQ         2.7329011 sec
RG         181
DW         83.400 usec
DE         6.00 usec
TE         300.0 K
D1         1.00000000 sec
MCREST     0.00000000 sec
MCWRK     0.01500000 sec
  
```

```

===== CHANNEL f1 =====
NUC1      1H
P1         12.20 usec
PL1        0.00 dB
SFO1      300.1319598 MHz
SI         16384
SF         300.1300061 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00
  
```

Name _____

Date _____

NB # _____

AMRI; SRC
location; 15

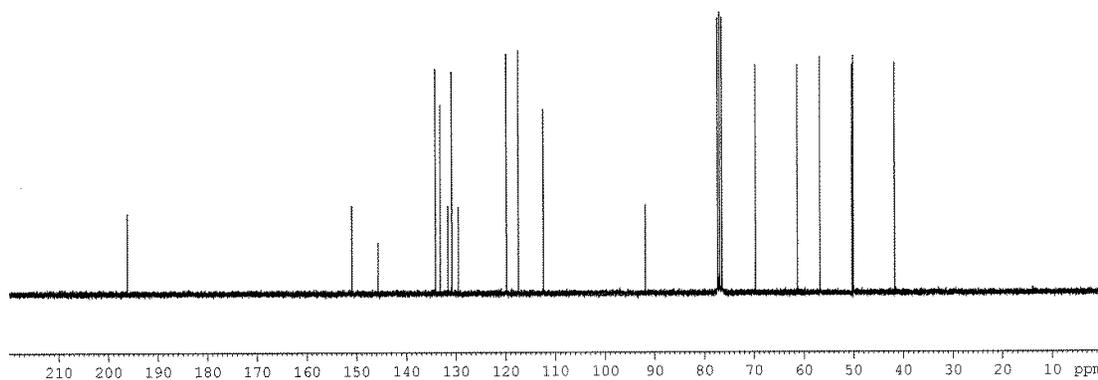
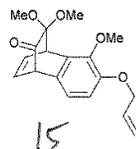


Name _____
Date _____
NB # _____

196.235

151.031
145.736
134.168
133.218
131.690
130.886
129.588
119.924
117.507
112.478

91.975
77.422
76.998
76.575
69.782
61.352
56.834
50.350
50.107
41.796



```

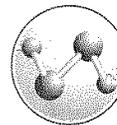
NAME      SG-BCK-ArGD-Allyl
EXPNO     31
PROCNO    1
Date_     20140729
Time_     21.34
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zgpg30
TD         65536
SOLVENT   CDCl3
NS         2500
DS         0
SWH        22675.736 Hz
FIDRES     0.346004 Hz
AQ         1.4451188 sec
RG         2896.3
DW         22.050 usec
DE         6.00 usec
TE         300.0 K
D1         0.50000000 sec
d11        0.03000000 sec
DELTA     0.40000001 sec
MCREST    0.00000000 sec
MCWRK     0.01500000 sec
    
```

```

===== CHANNEL f1 =====
NUC1      13C
P1         8.00 usec
PL1       -2.00 dB
SF01      75.4767751 MHz
    
```

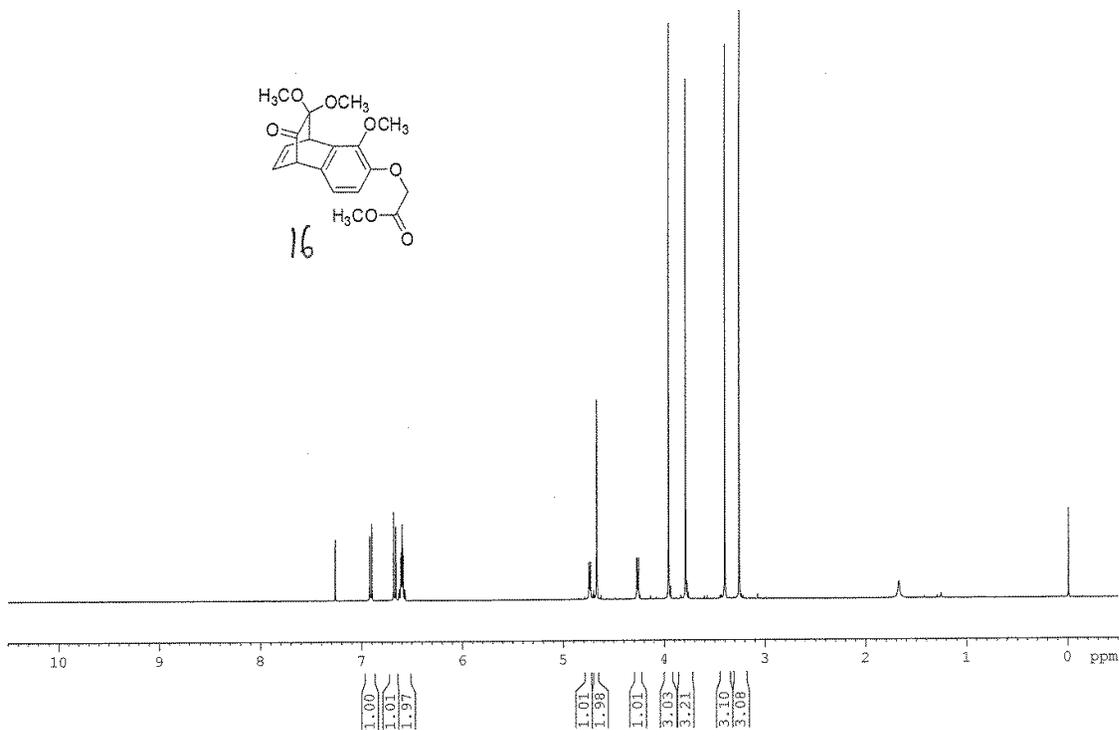
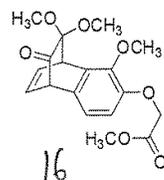
```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2       1H
PCPD2     80.00 usec
PL2        0.00 dB
PL12      16.33 dB
PL13      16.00 dB
SFO2      300.1315007 MHz
SI         131072
SF         75.4677510 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.40
    
```



AMRI

7.260
6.918
6.898
6.679
6.659
6.609
6.604
6.602
6.595
6.589
6.588
6.582
4.748
4.742
4.735
4.728
4.688
4.573
4.567
4.560
4.559
4.554
3.927
3.789
3.399
3.257



Current Data Parameters
NAME SG-ECK-ARGD-MeBrAc
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20140730
Time_ 21.06
INSTRUM spect
PROBHD 5 mm FASPC BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0834966 sec
RG 90.5
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1

==== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SFO1 400.2330885 MHz

F2 - Processing parameters
SI 32768
SF 400.2300118 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

Name _____

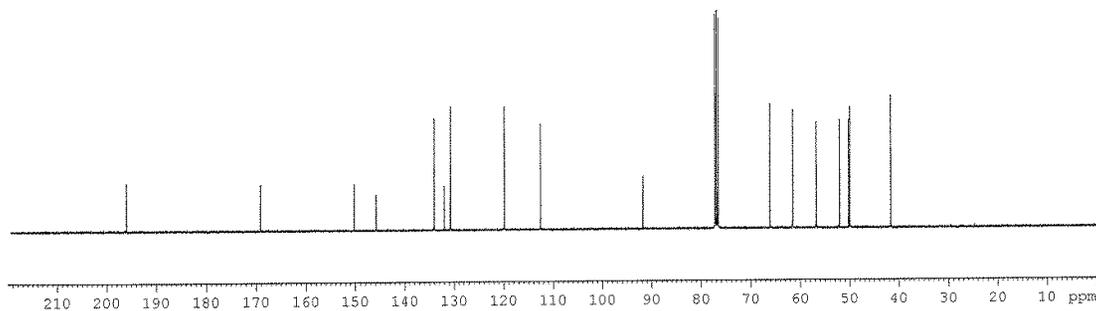
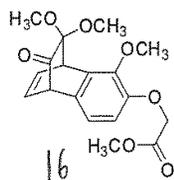
Date _____

NB # _____

AMRI; SRC AV400
location; 18



196.068
169.191
150.267
145.909
134.101
132.104
130.860
130.798
119.943
112.609
91.858
77.321
77.003
76.686
66.177
61.592
56.873
52.166
50.331
50.112
41.794



Name _____
Date _____
NB # _____

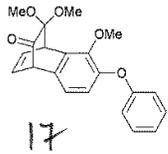
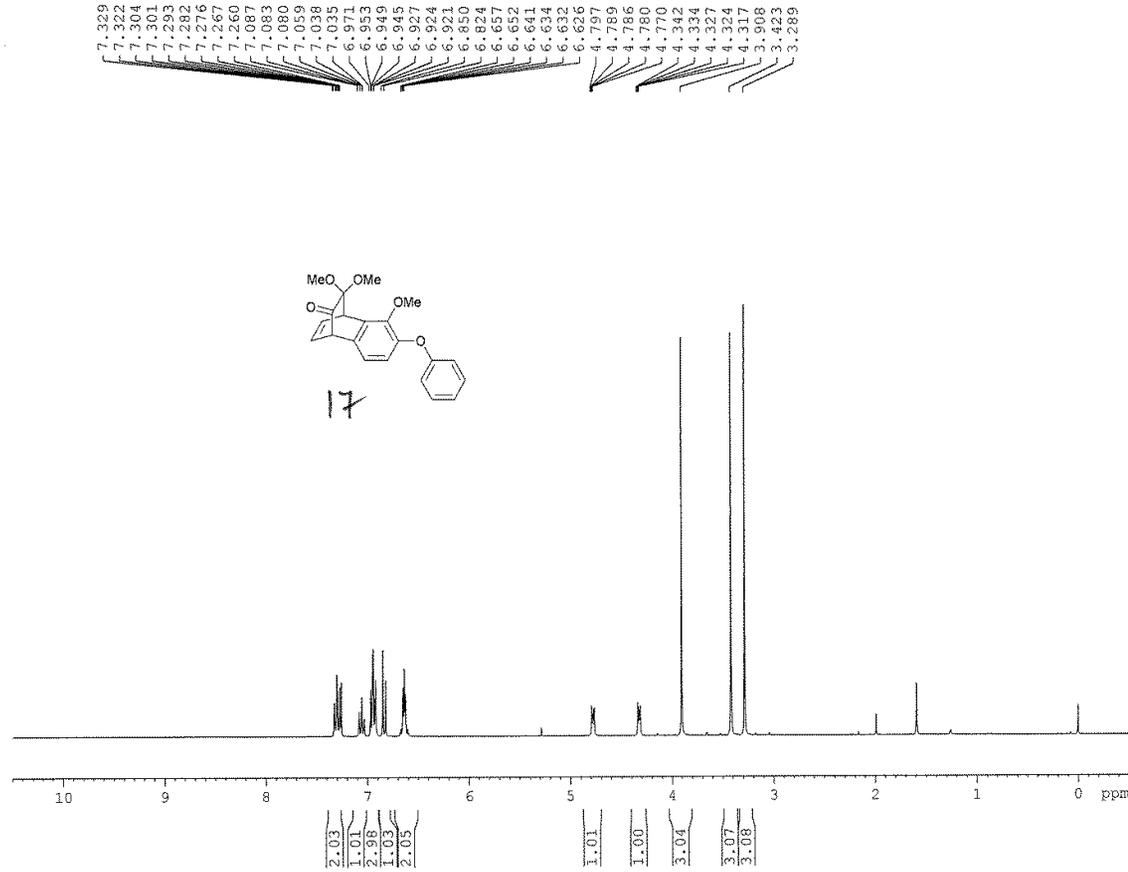
Current Data Parameters
NAME SG-BCK-ARGD-MeErAc
EXPNO 11
PROCNO 1

F2 - Acquisition Parameters
Date_ 20140730
Time_ 22.28
INSTPRM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 2500
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 144
DM 20.800 usec
DE 6.50 usec
TE 300.0 K
D1 0.50000000 sec
D11 0.03000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 8.60 usec
PL1 -1.00 dB
FL1W 44.58811569 W
SFO1 100.6279769 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 15.47 dB
PL13 15.72 dB
PL2W 14.33185168 W
FL12W 0.25662708 W
FL13W 0.24227159 W
SFO2 400.2316009 MHz

F2 - Processing parameters
SI 32768
SF 100.6279179 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



```

NAME      SG-BCK-ArGD-chanlam-Ph
EXPNO     20
PROCNO    1
Date_     20140722
Time      20.09
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zg30
TD         32768
SOLVENT   CDCl3
NS         16
DS         2
SWH        5995.204 Hz
FIDRES     0.182959 Hz
AQ         2.7329011 sec
RG         181
DW         83.400 usec
DE         6.00 usec
TE         300.0 K
D1         1.00000000 sec
MCREST     0.60000000 sec
MCWRK     0.01500000 sec

```

```

===== CHANNEL f1 =====
NUC1      1H
PL        12.20 usec
PL1       0.00 dB
SFO1     300.1319508 MHz
SI        16384
SF        300.1300063 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00

```

Name _____
Date _____
NB # _____

AMRI; SRC
location; 15



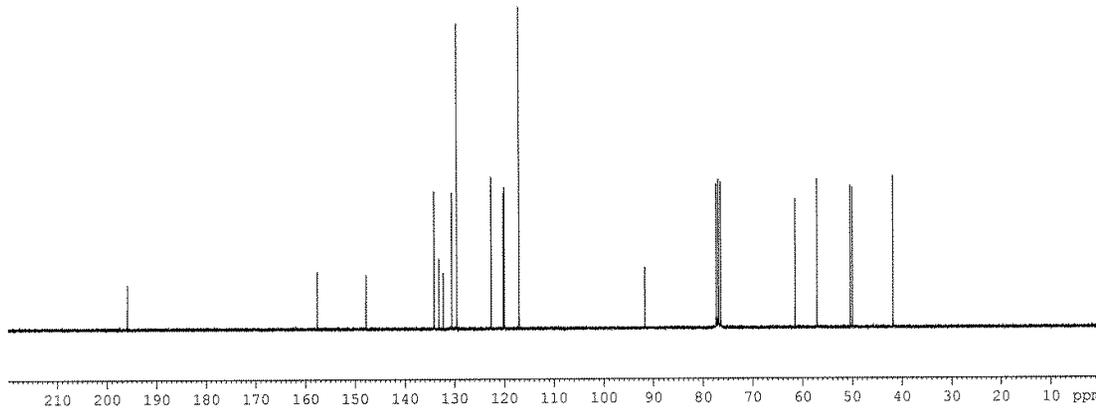
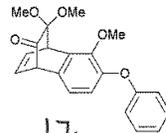
195.948

157.678
147.904
147.848
134.168
133.213
132.332
130.634
129.618
122.729
120.278
120.080
117.107

91.776

77.419
76.896
76.572

61.543
57.169
50.438
50.056
41.864



Name _____
Date _____
NB # _____

```

NAME      SG-BCK-ArGD-chanlam-Ph
EXPNO     21
PROCNO    1
Date_     20140722
Time_     21.51
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zgpg30
TD        65536
SOLVENT   CDCl3
NS        3000
DS        0
SWH       22675.736 Hz
FIDRES    0.346004 Hz
AQ        1.4451188 sec
RG        2048
DW        22.050 usec
DE        6.00 usec
TE        300.0 K
D1        0.50000000 sec
d11       0.03000000 sec
DELTA     0.40000001 sec
MCREST    0.00000000 sec
MCWRK     0.01500000 sec
    
```

```

===== CHANNEL f1 =====
NUC1      13C
P1        8.00 usec
PL1       -2.00 dB
SF01     75.4767751 MHz
    
```

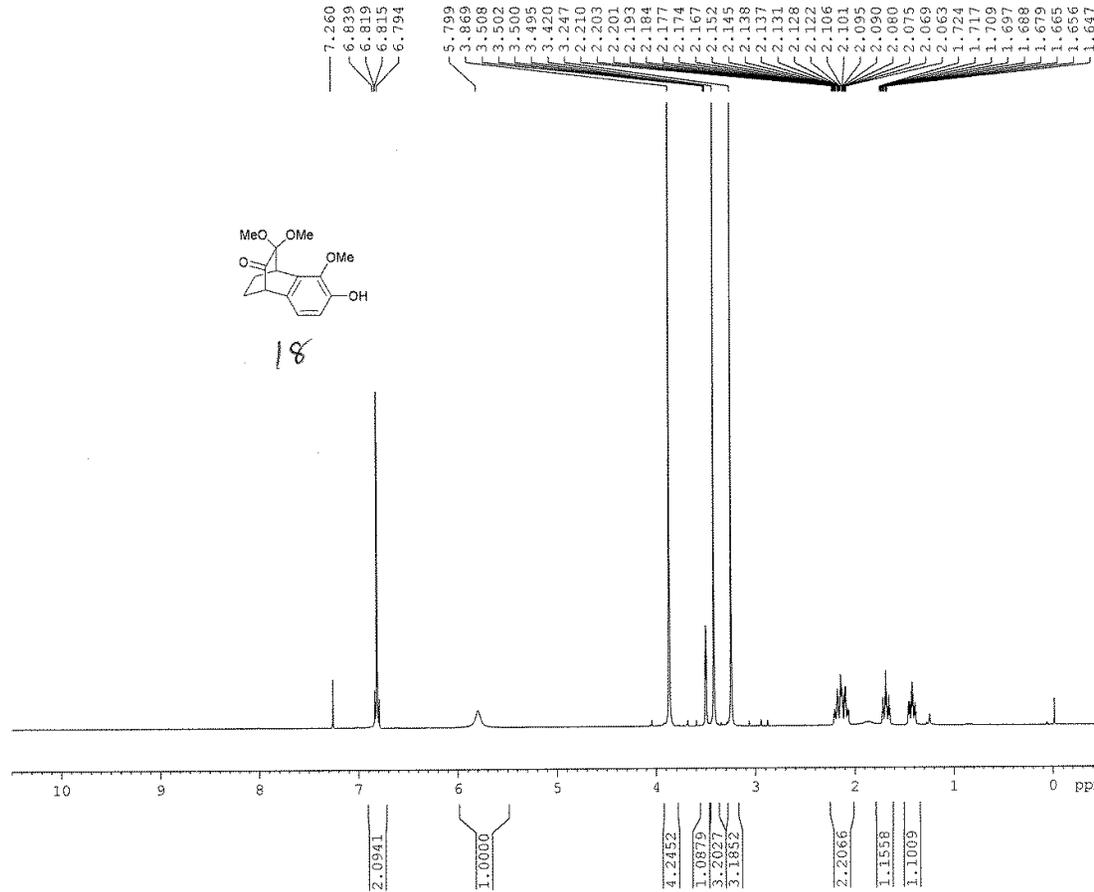
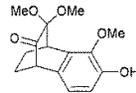
```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       0.00 dB
PL12     16.33 dB
PL13     16.00 dB
SF02     300.1315007 MHz
SI        131072
SF        75.4677518 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.40
    
```

AMRI; SRC AV400
location; 18



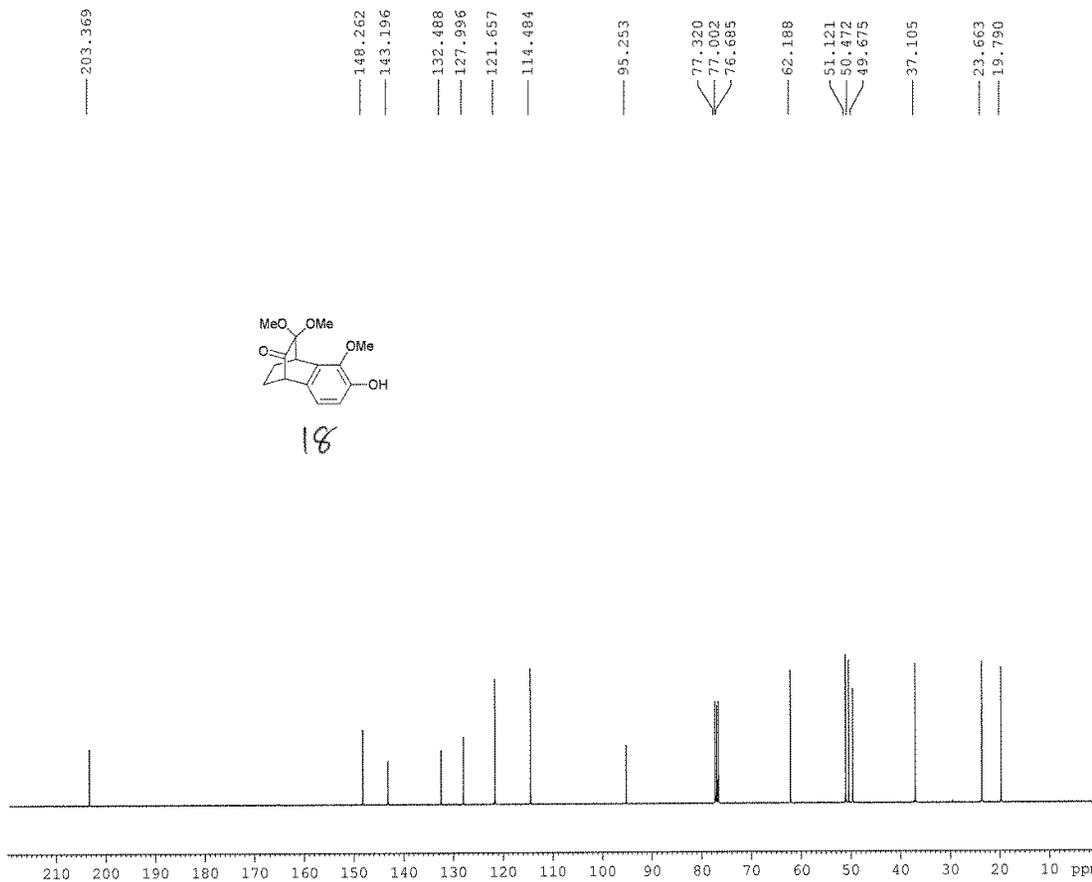
Name _____
Date _____
NB # _____



NAME SG-BCK-ArGD-PdC
EXPNO 10
PROCNO 1
Date_ 20140830
Time_ 0.18
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 50.8
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -2.00 dB
PL1W 14.33185768 W
SFO1 400.2330885 MHz
SI 32768
SF 400.2300116 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI; SRC AV400
location; 18



Name _____
Date _____
NB # _____

NAME SG-BCK-ArGD-PdC
EXPNO 12
PROCNO 1
Date_ 20140830
Time_ 1.42
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 2560
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 101
DW 20.800 usec
DE 6.50 usec
TE 300.0 K
D1 0.50000000 sec
D11 0.03000000 sec
TDO 1

----- CHANNEL f1 -----
NUC1 13C
P1 8.60 usec
PL1 -1.00 dB
PL1W 44.58811569 W
SF01 100.6479769 MHz

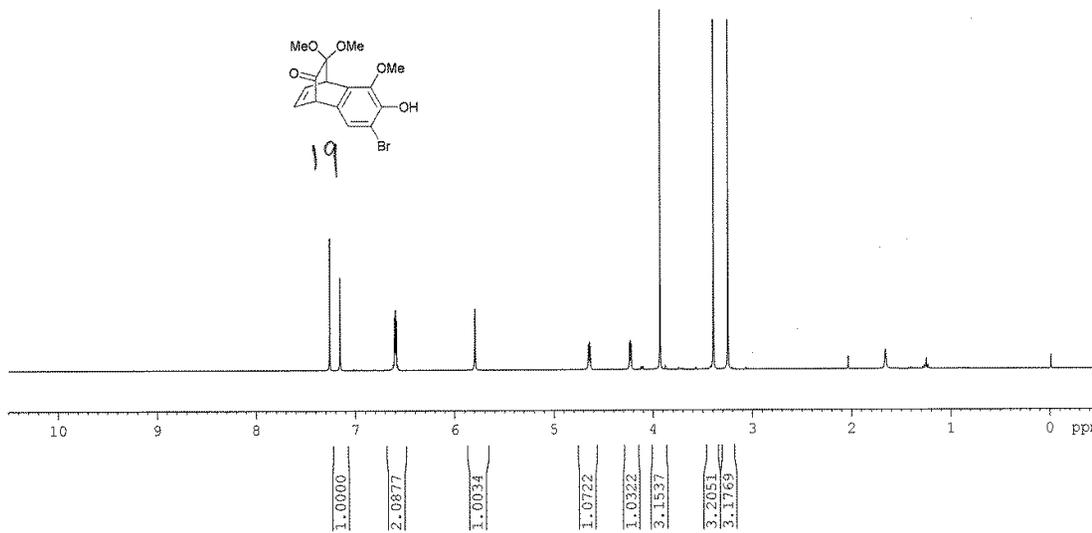
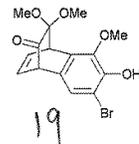
----- CHANNEL f2 -----
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 15.47 dB
PL13 15.72 dB
PL2W 14.33185768 W
PL12W 0.25662708 W
PL13W 0.24227159 W
SFO2 400.2316009 MHz
SI 32768
SF 100.6379210 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

AMRI SRC
location; 17



Name _____
Date _____
NB # _____

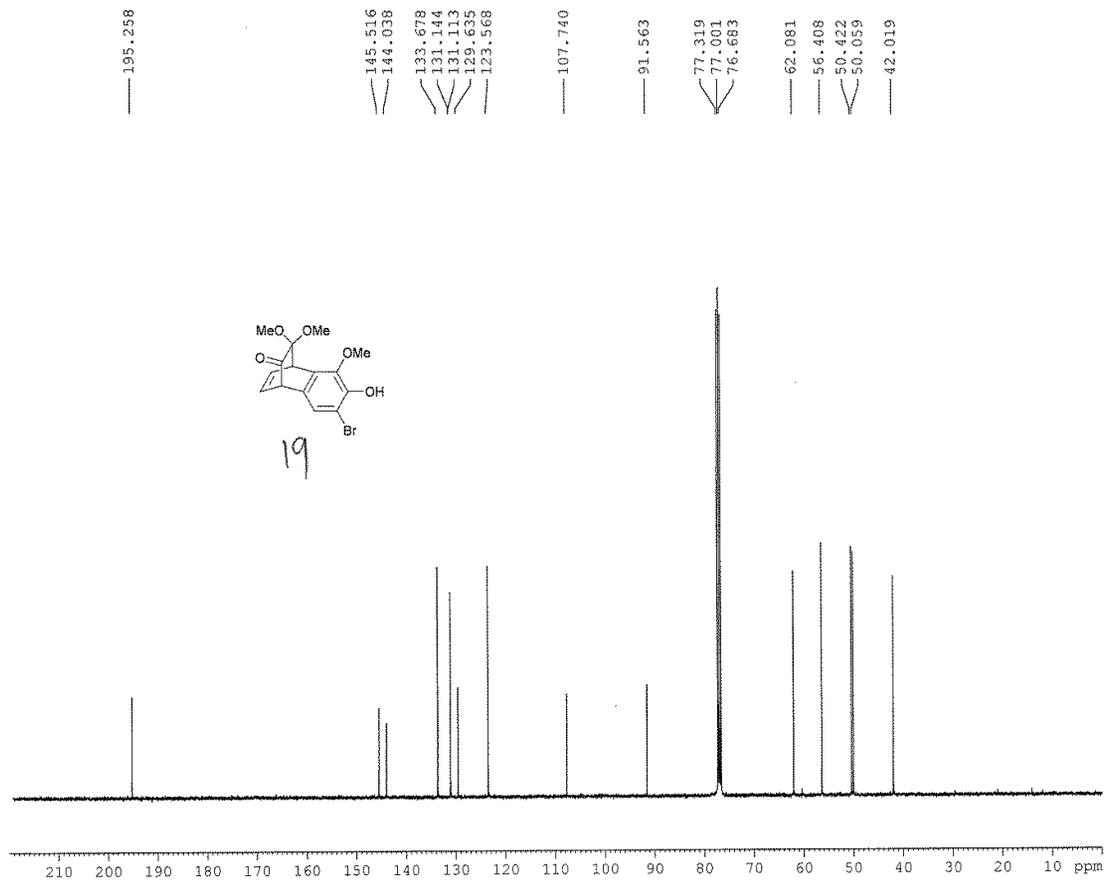
7.260
7.157
6.610
6.604
6.600
6.597
6.590
5.799
4.658
4.651
4.647
4.638
4.244
4.235
4.231
4.225
3.933
3.396
3.251



NAME SG-BCK-ArGD-NBS
EXPNO 10
PROCNO 1
Date_ 20140902
Time 20.07
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 71.8
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1

==== CHANNEL f1 =====
NUC1 1H
P1 10.70 usec
PL1 -3.00 dB
PL1W 19.34582710 W
SFO1 400.1318542 MHz
SI 32768
SF 400.1300093 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

AMRI SRC
location; 17



Name _____
Date _____
NB # _____

NAME SG-ECK-ArCO-NBS
EXFNO 11
PROCNO 1
Date_ 20140902
Time 23.02
INSTRUM spect
PROBHD 5 mm PABBO B5-
PULPROG zgpg30
TD 6536
SOLVENT CDCl3
NS 3000
DS 4
SWH 23980.814 Hz
FIDRES 0.365918 Hz
AQ 1.3664756 sec
RG 14596.5
DW 20.850 usec
DE 6.50 usec
TE 300.0 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

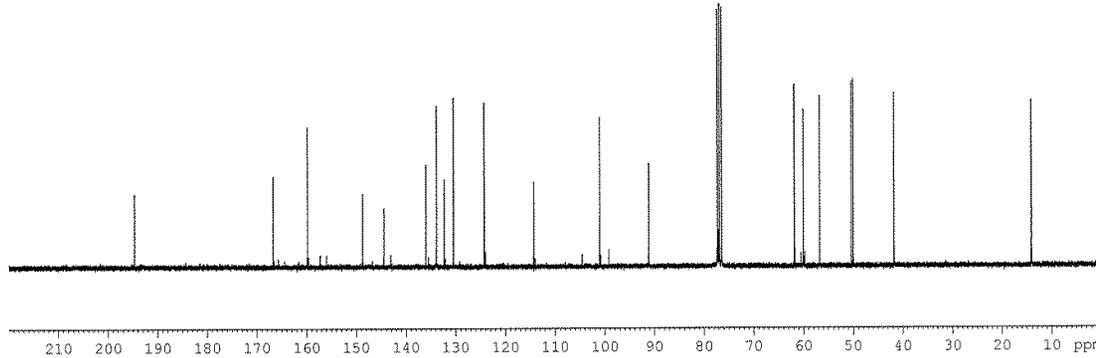
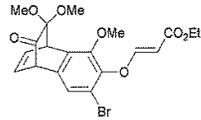
----- CHANNEL f1 -----
NUC1 13C
P1 7.15 usec
PL1 -4.00 dB
PL1W 82.02445221 W
SFO1 100.6228298 MHz

----- CHANNEL f2 -----
CFDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -3.00 dB
PL12 14.47 dB
PL13 15.06 dB
PL2W 19.34582710 W
PL12W 0.34640750 W
PL13W 0.30240391 W
SFO2 400.1316005 MHz
SI 32768
SF 100.6127725 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

AMRI; SRC
location; 15



194.730
166.793
159.880
148.830
144.510
136.051
133.895
132.394
130.505
124.336
114.346
101.122
91.212
77.420
76.996
76.573
61.943
60.118
56.862
50.441
50.100
41.879
14.222



Name _____
Date _____
NB # _____

```

NAME      SG-BCK-BrArgD-Ethylpropiolate
EXENO     11
PROCNO    1
Date_     20140904
Time_     3.31
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zgpg30
TD        65536
SOLVENT   CDCl3
NS        3500
DS        9
SWH        22675.736 Hz
FIDRES    0.346004 Hz
AQ        1.4451188 sec
RG        4591.6
DW        22.050 usec
DE        6.00 usec
TE        300.0 K
D1        0.50000000 sec
d11       0.03000000 sec
DELTA     0.40000001 sec
MCREST    0.00000000 sec
PCWRK     0.01500000 sec
    
```

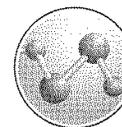
```

===== CHANNEL f1 =====
NUC1      13C
P1        8.00 usec
PL1       -2.00 dB
SFO1     75.4767751 MHz

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       0.00 dB
PL12     16.33 dB
PL13     16.00 dB
SFO2     300.1315007 MHz
SI        131072
SF        75.4677512 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
FC        1.40
    
```

8.22
7.62
7.26
6.69
6.68
6.66
6.65
6.64
6.64
6.63
6.62
6.61
6.60
4.86
4.85
4.84
4.83
4.45
4.44
4.43
4.43
4.42
4.41
4.39
4.36
4.24
3.42
3.26

1.44
1.41
1.39



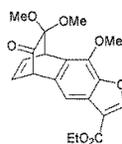
AMRI

```

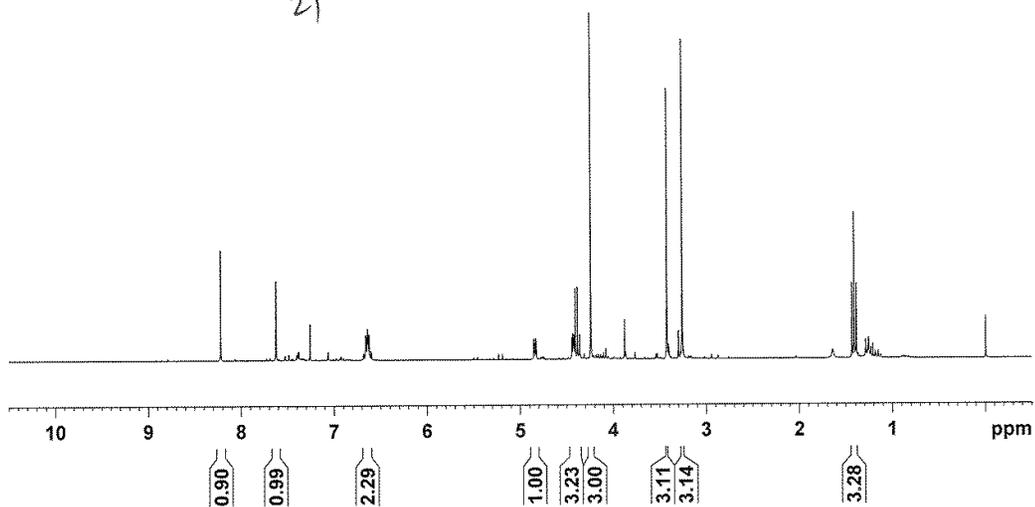
NAME      SG-BCK-F-ArgD-Furan- 1
EXPNO     10
PROCNO    1
Date_     20140905
Time      20.08
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zg30
TD        32768
SOLVENT   CDCl3
NS        16
DS        2
SWH       5995.204 Hz
FIDRES    0.182959 Hz
AQ        2.7329011 sec
RG        181
DW        83.400 usec
DE        6.00 usec
TE        300.0 K
D1        1.00000000 sec
MCREST    0.00000000 sec
MCWRK     0.01500000 sec
  
```

```

===== CHANNEL f1 =====
NUC1      1H
P1        12.20 usec
PL1       0.00 dB
SFO1     300.1319508 MHz
SI        16384
SF        300.1300063 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```

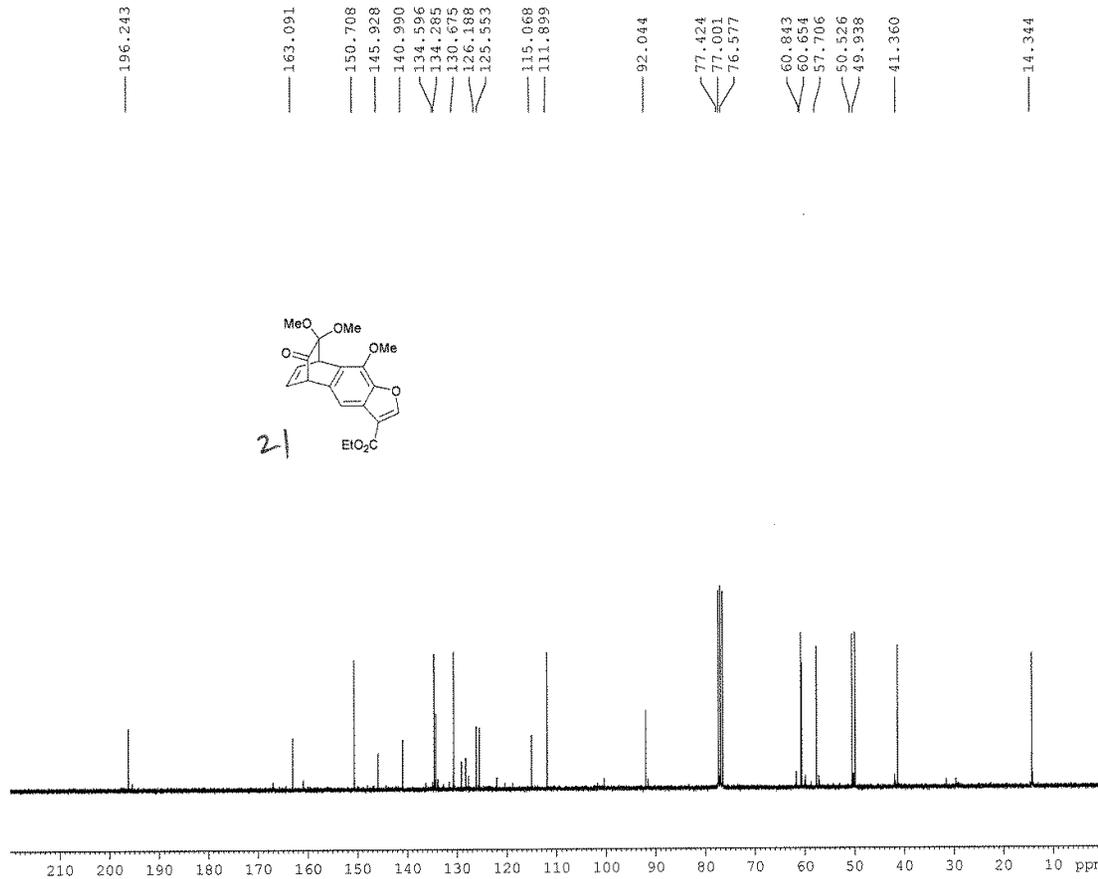


21



Name _____
Date _____
NB # _____

AMRI; SRC
location; 15



Name _____
Date _____
NB # _____

```

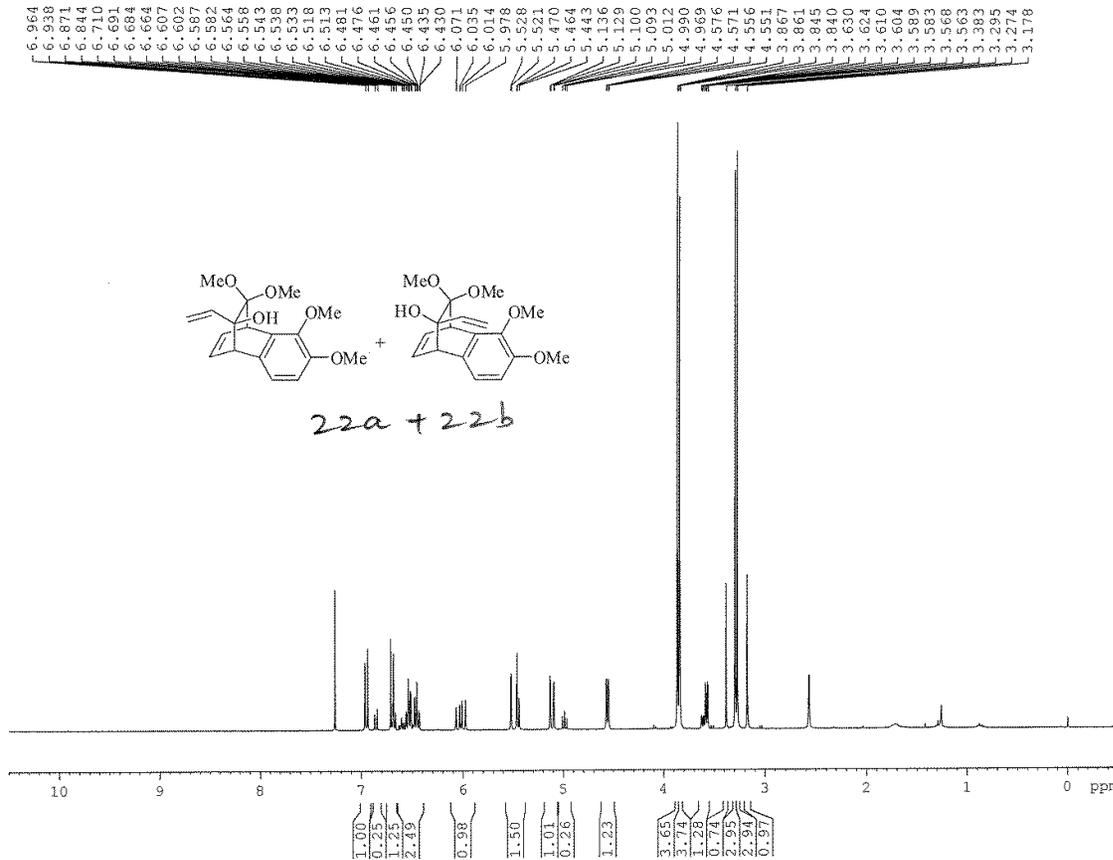
NAME      SG-BCK-F-ArGD-Furan- 1
EXPNO     11
PROCNO    1
Date_     20140905
Time_     21.50
INSTRUM   spect
PROBHD    5 mm QNP 1H/13
PULPROG   zgpg30
TD        65536
SOLVENT   CDCl3
NS        3000
DS        0
SWH       22675.736 Hz
FIDRES    0.346004 Hz
AQ        1.4451188 sec
RG        4096
DW        22.050 usec
DE        6.00 usec
TE        300.0 K
DI        0.50000000 sec
d11       0.03000000 sec
DELTA     0.40000001 sec
MCREST    0.00000000 sec
MCWRK     0.01500000 sec
    
```

```

===== CHANNEL f1 =====
NUC1      13C
P1        8.00 usec
PL1       -2.00 dB
SF01      75.4767751 MHz
    
```

```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       0.00 dB
PL12      16.33 dB
PL13      16.00 dB
SF02      300.1315007 MHz
SI        131072
SF        75.4677512 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.40
    
```



Current Data Parameters
 NAME SG-5CK-MeArGD-VHgr- 1
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20140904
 Time_ 20.08
 INSTRUM spect
 PROBED 5 mm QNP 1H/13
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 4789.272 Hz
 FIDRES 0.146157 Hz
 AQ 3.4210291 sec
 RG 128
 DW 194.400 usec
 DE 6.00 usec
 TE 300.0 K
 D1 1.00000000 sec
 MCREST 0 sec
 MCWRR 0.01500000 sec

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.20 usec
 PL1 0 dB
 SFO1 300.1319508 MHz

F2 - Processing parameters
 SI 16384
 SF 300.1300063 MHz
 HDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

Name _____
 Date _____
 NB # _____

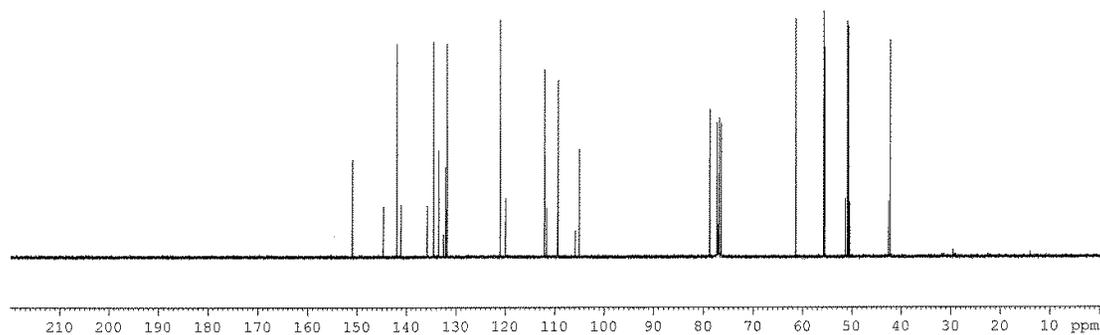
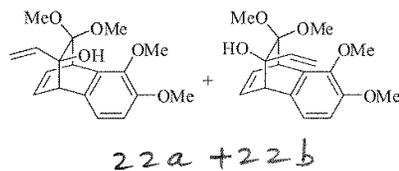
AMRI; SRC
location; 15



151.027
144.810
142.048
141.222
135.903
134.605
133.563
132.203
131.913
131.876
131.176
130.074
122.141
117.715
109.496
109.415
105.130

78.904
77.426
77.302
76.578
61.501
61.488
55.816
55.612
55.595
51.409
51.019
50.789
50.560
42.666
42.327

Name _____
Date _____
NB # _____



Current Data Parameters
NAME SG-BCK-MeArgD-VmGr- 1
EXPNO 12
PROCNO 1

F2 - Acquisition Parameters
Date_ 20140905
Time 1.37
INSTRUM spect
PROBHD 5 mm QNP 1H/13
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 3000
DS 0
SWH 22675.736 Hz
FIDRES 0.346004 Hz
AQ 1.4451186 sec
RG 4597.6
DM 22.050 usec
DE 6.00 usec
TE 300.0 K
D1 0.5000000 sec
d11 0.0300000 sec
DELTA 0.4000001 sec
MCRSST 0 sec
MCWRK 0.0150000 sec

===== CHANNEL f1 =====
NUC1 13C
P1 8.00 usec
PL1 -2.00 dB
SFO1 75.4767751 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL12 0 dB
PL13 16.33 dB
PL14 16.00 dB
SFO2 300.1315007 MHz

F2 - Processing parameters
SI 131072
SF 75.4677532 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.40