

Supporting Information

**TOTAL SYNTHESIS OF PHENANTHROQUINOLIZIDINE ALKALOID
CRYPTOPLEURINE AND PHENANTHROINDOLIZIDINE ALKALOID
TYLOPHORINE**

Yousuke Yamaoka, * Marie Taniguchi, Ken-ichi Yamada, and Kiyosei Takasu *

*Graduate School of Pharmaceutical Sciences, Kyoto University, Yoshida, Sakyo-ku, Kyoto
606-8501, Japan.*

Fax: +81 75 753 4604; Tel: +81 75 753 4553

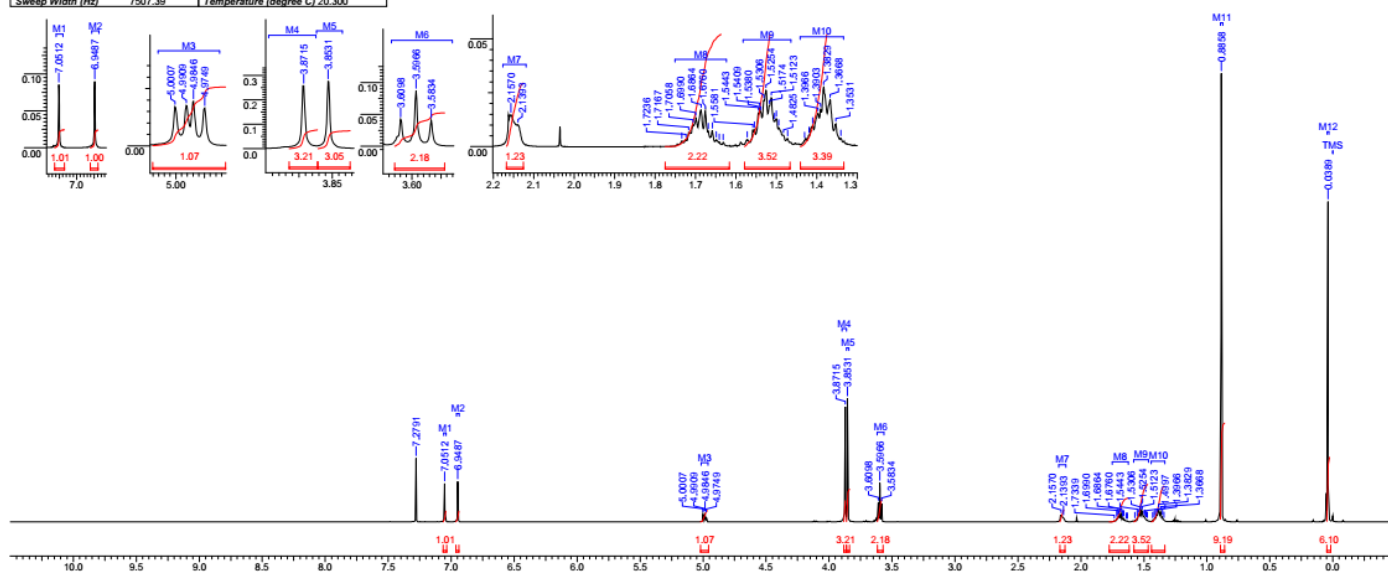
E-mail: yyamaoka@pharm.kyoto-u.ac.jp

kay-t@pharm.kyoto-u.ac.jp

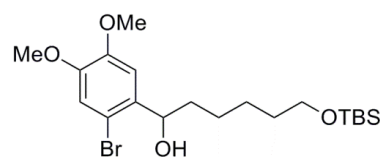
1-(2-Bromo-4,5-dimethoxyphenyl)-6-((*tert*-butyldimethylsilyloxy)hexan-1-ol (SI-1)

MT066_1H

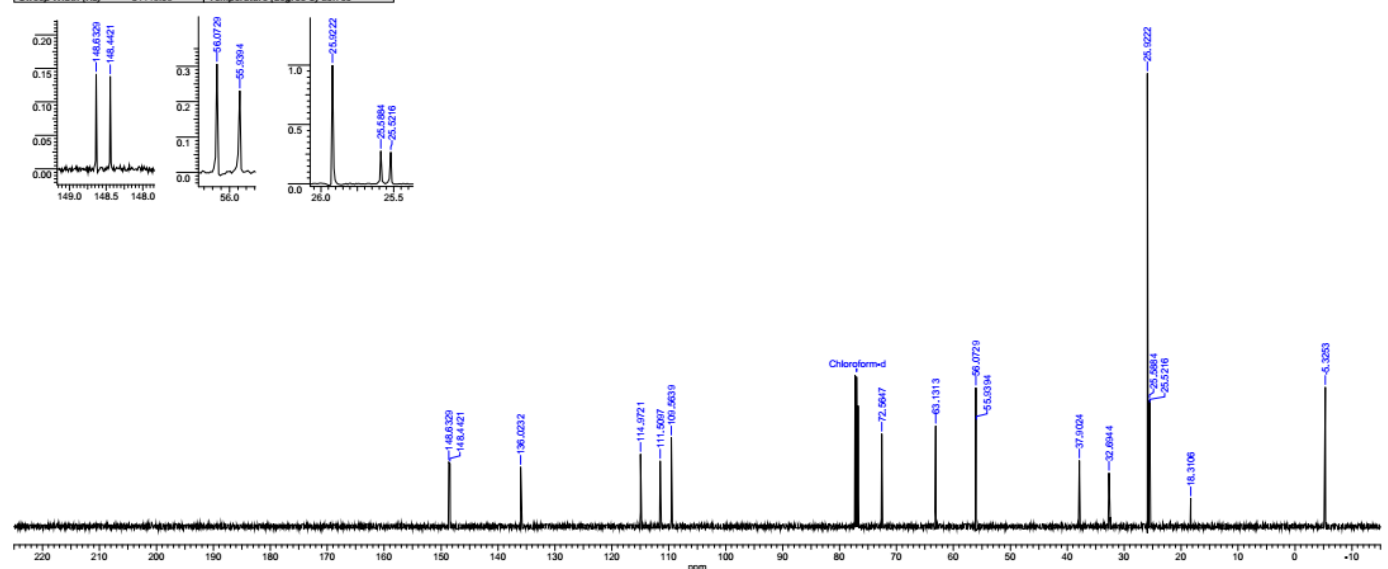
| | | | | | | | | | |
|------------------------|---------|------------------------|----------------------|--------------|---|-----------------|------------------|---------|----------------|
| Acquisition Time (sec) | 3.4918 | Date | 21 May 2014 18:43:08 | File Name | E:\NMR\Kariyach2\for SIMT066\MT0359d_13C_140521-1.sls | Frequency (MHz) | 500.16 | Nucleus | ¹ H |
| Number of Transients | 4 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single pulse.en2 | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 7507.39 | Temperature (degree C) | 20.300 | | | | | | |



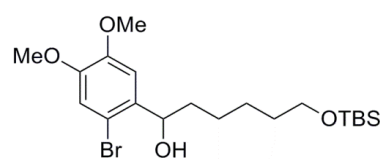
| No. | (ppm) | (Hz) | Height | No. | (ppm) | (Hz) | Height | No. | (ppm) | (Hz) | Height | No. | Multiplet | Shift1 | (ppm) | J (Hz) | Type | Hs | |
|-----|-------|-------|--------|-----|-------|-------|--------|-----|-------|--------|--------|-----|-----------|--------|--------------|--------|------|----|--|
| 1 | 0.04 | 19.5 | 0.7144 | 19 | 1.53 | 763.0 | 0.0262 | 37 | 1.72 | 862.1 | 0.0033 | 1 | M12 | 0.04 | 10.03 - 0.05 | - | s | 6 | |
| 2 | 0.89 | 443.1 | 1.0000 | 20 | 1.53 | 765.5 | 0.0214 | 38 | 1.73 | 867.2 | 0.0027 | 2 | M11 | 0.88 | 10.87 - 0.89 | - | s | 9 | |
| 3 | 1.34 | 670.5 | 0.0039 | 21 | 1.54 | 769.3 | 0.0159 | 39 | 2.14 | 1070.0 | 0.0101 | 3 | M10 | 1.39 | 11.33 - 1.44 | - | m | 3 | |
| 4 | 1.35 | 678.8 | 0.0105 | 22 | 1.54 | 770.7 | 0.0177 | 40 | 2.16 | 1078.9 | 0.0147 | 4 | M9 | 1.52 | 11.46 - 1.58 | - | m | 3 | |
| 5 | 1.37 | 683.6 | 0.0217 | 23 | 1.54 | 772.4 | 0.0157 | 41 | 3.58 | 1792.3 | 0.0409 | 5 | M8 | 1.89 | 11.62 - 1.75 | - | m | 2 | |
| 6 | 1.38 | 691.7 | 0.0274 | 24 | 1.55 | 777.3 | 0.0078 | 42 | 3.60 | 1798.9 | 0.0867 | 6 | M7 | 2.15 | 12.12 - 2.18 | 8.88 | d | 1 | |
| 7 | 1.39 | 695.4 | 0.0173 | 25 | 1.56 | 779.3 | 0.0077 | 43 | 3.61 | 1805.5 | 0.0422 | 7 | M6 | 3.59 | 13.57 - 3.62 | 6.59 | t | 2 | |
| 8 | 1.40 | 698.5 | 0.0153 | 26 | 1.57 | 786.2 | 0.0033 | 44 | 3.85 | 1927.2 | 0.2749 | 8 | M5 | 3.59 | 13.57 - 3.62 | 6.59 | t | 2 | |
| 9 | 1.41 | 705.1 | 0.0097 | 27 | 1.63 | 816.0 | 0.0020 | 45 | 3.87 | 1936.3 | 0.2567 | 9 | M5 | 3.85 | 13.84 - 3.86 | - | s | 3 | |
| 10 | 1.42 | 709.7 | 0.0053 | 28 | 1.64 | 820.8 | 0.0021 | 46 | 4.97 | 2488.2 | 0.0164 | 10 | M4 | 3.88 | 13.86 - 3.90 | - | s | 3 | |
| 11 | 1.43 | 715.1 | 0.0030 | 29 | 1.65 | 824.5 | 0.0032 | 47 | 4.98 | 2493.1 | 0.0194 | 11 | M3 | 4.99 | 14.96 - 5.02 | 8.02 | dd | 1 | |
| 12 | 1.47 | 736.3 | 0.0038 | 30 | 1.66 | 829.4 | 0.0074 | 48 | 4.99 | 2496.3 | 0.0176 | 12 | M3 | 4.99 | 14.96 - 5.02 | 4.87 | dd | 1 | |
| 13 | 1.48 | 741.5 | 0.0054 | 31 | 1.67 | 834.6 | 0.0070 | 49 | 5.00 | 2501.1 | 0.0170 | 13 | M2 | 6.95 | 17.04 - 6.96 | - | s | 1 | |
| 14 | 1.49 | 747.2 | 0.0087 | 32 | 1.68 | 838.3 | 0.0164 | 50 | 6.95 | 3475.5 | 0.0899 | 14 | M1 | 7.05 | 17.04 - 7.06 | - | s | 1 | |
| 15 | 1.50 | 750.1 | 0.0129 | 33 | 1.69 | 843.4 | 0.0171 | 51 | 7.05 | 3526.7 | 0.0857 | | | | | | | | |
| 16 | 1.50 | 752.4 | 0.0118 | 34 | 1.70 | 849.7 | 0.0133 | 52 | 7.28 | 3640.7 | 0.1416 | | | | | | | | |
| 17 | 1.51 | 756.4 | 0.0226 | 35 | 1.71 | 853.2 | 0.0100 | | | | | | | | | | | | |
| 18 | 1.52 | 759.0 | 0.0188 | 36 | 1.72 | 858.6 | 0.0065 | | | | | | | | | | | | |



| | | | | | | | | | |
|------------------------|----------|------------------------|----------------------|--------------|---|-----------------|------------------|---------|-----------------|
| Acquisition Time (sec) | 0.8336 | Date | 21 May 2014 18:43:18 | File Name | E:\NMR\Kariyach2\for SIMT066\MT0359d_13C_140521-1.sls | Frequency (MHz) | 125.77 | Nucleus | ¹³ C |
| Number of Transients | 74 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single pulse.dec | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 31446.06 | Temperature (degree C) | 20.700 | | | | | | |

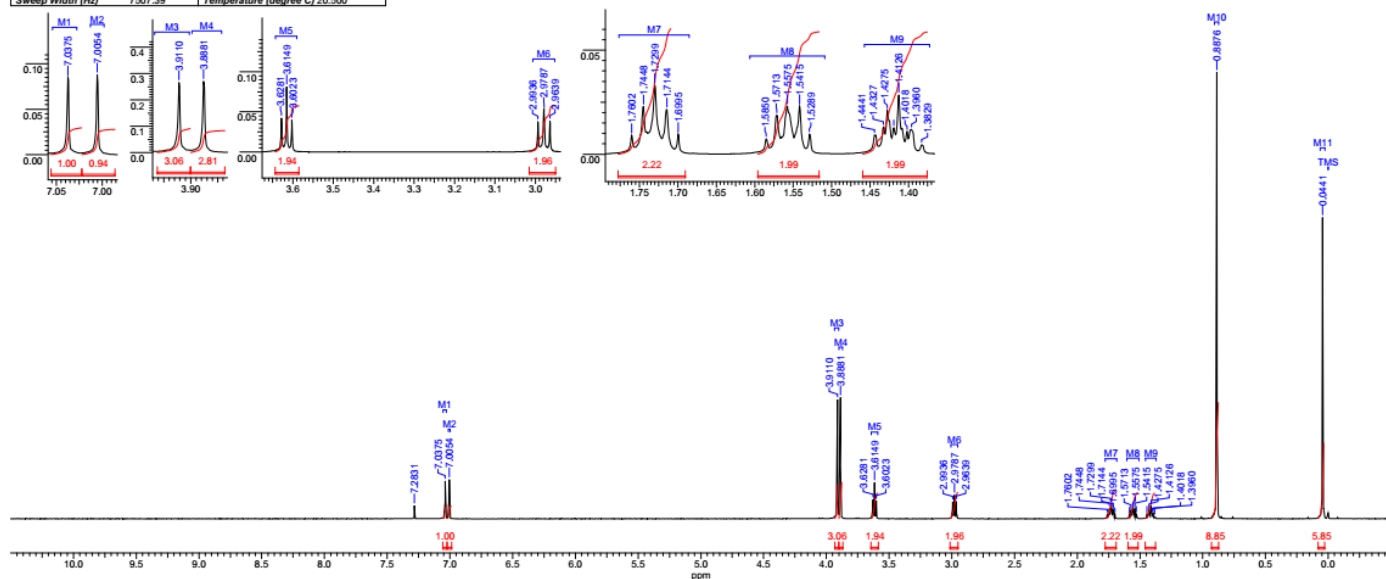


| No. | (ppm) | (Hz) | Height |
|-----|--------|--------|--------|
| 1 | 18.31 | 459.8 | 0.3074 |
| 2 | 25.52 | 639.9 | 0.2686 |
| 3 | 25.92 | 648.2 | 1.0000 |
| 4 | 32.69 | 812.0 | 0.1184 |
| 5 | 37.90 | 947.0 | 0.1455 |
| 6 | 55.94 | 1395.5 | 0.2312 |
| 7 | 56.07 | 1398.3 | 0.3064 |
| 8 | 63.13 | 1584.0 | 0.2218 |
| 9 | 72.56 | 1812.5 | 0.2045 |
| 10 | 109.56 | 2737.8 | 0.1958 |
| 11 | 111.51 | 2804.6 | 0.1447 |
| 12 | 114.97 | 2880.0 | 0.1596 |
| 13 | 136.02 | 3381.6 | 0.1310 |
| 14 | 148.44 | 3689.6 | 0.1380 |
| 15 | 148.63 | 3703.6 | 0.1417 |

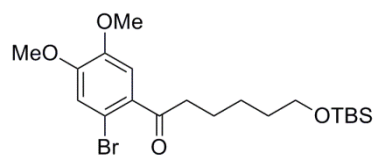


1-(2-Bromo-4,5-dimethoxyphenyl)-6-((*tert*-butyldimethylsilyloxy)hexan-1-one) (9)

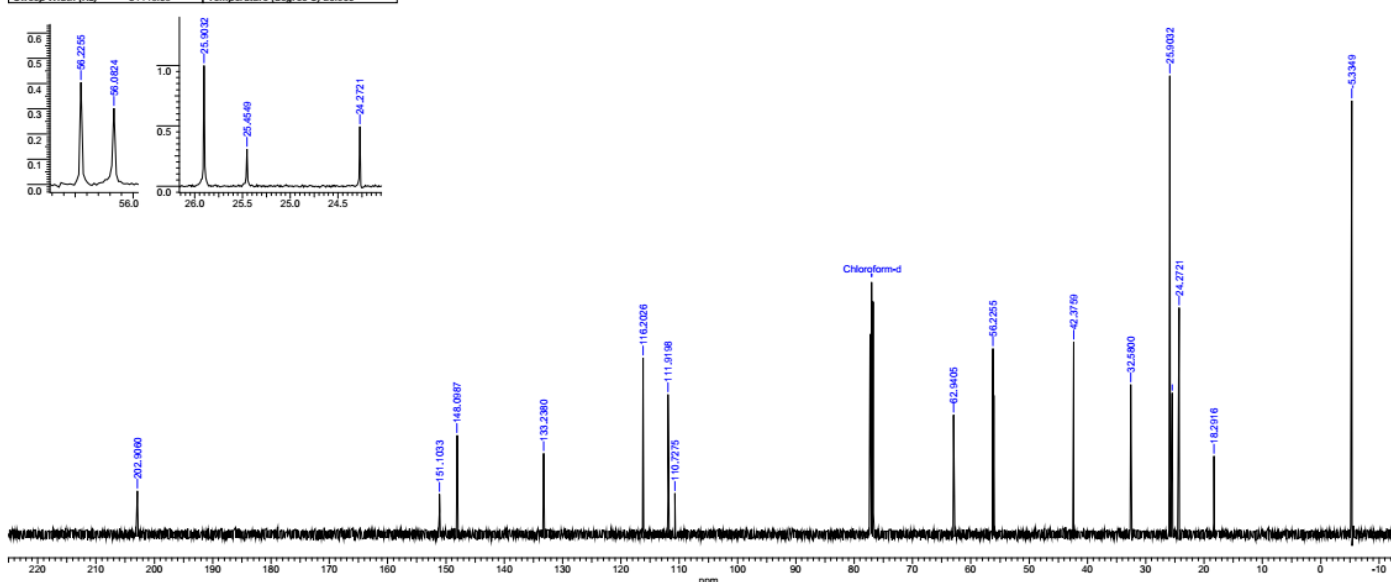
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|------------------------|---------|------------------------|----------------------|--------------|--|-----------------|------------------|---------|----------------|
| Acquisition Time (sec) | 3.4918 | Date | 26 May 2014 21:05:22 | File Name | E:\NMR\lanich2\for SMT067\MT0365c_140526-1_als | Frequency (MHz) | 500.16 | Nucleus | ¹ H |
| Number of Transients | 4 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse.ev2 | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 7507.39 | Temperature (degree C) | 20.500 | | | | | | |



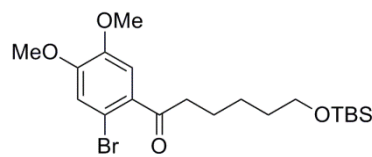
| No. | (ppm) | (Hz) | Height | No. | (ppm) | (Hz) | Height | No. | Multiplet | Shift1 | (ppm) | J (Hz) | Type | H's |
|-----|-------|-------|--------|-----|-------|--------|--------|-----|-----------|--------|---------------|--------|------|-----|
| 1 | 0.04 | 22.1 | 0.6748 | 17 | 1.71 | 857.5 | 0.0214 | 1 | M11 | 0.05 | [0.03 - 0.06] | - | s | 6 |
| 2 | 0.89 | 443.9 | 1.0000 | 18 | 1.73 | 865.2 | 0.0331 | 2 | M10 | 0.89 | [0.87 - 0.91] | - | s | 9 |
| 3 | 1.38 | 681.7 | 0.0045 | 19 | 1.74 | 872.7 | 0.0229 | 3 | M9 | 1.41 | [1.37 - 1.46] | - | m | 2 |
| 4 | 1.40 | 688.2 | 0.0120 | 20 | 1.76 | 890.4 | 0.0991 | 4 | M8 | 1.56 | [1.51 - 1.61] | - | m | 2 |
| 5 | 1.40 | 701.1 | 0.0107 | 21 | 2.99 | 1482.4 | 0.0388 | 5 | M7 | 1.73 | [1.69 - 1.78] | - | m | 2 |
| 6 | 1.41 | 706.5 | 0.0285 | 22 | 2.98 | 1489.9 | 0.0532 | 6 | M6 | 2.98 | [2.95 - 3.01] | - | m | 2 |
| 7 | 1.42 | 709.7 | 0.0126 | 23 | 2.99 | 1497.3 | 0.0379 | 7 | M5 | 3.62 | [3.59 - 3.64] | 6.44 | t | 2 |
| 8 | 1.43 | 714.0 | 0.0209 | 24 | 3.60 | 1801.7 | 0.0400 | 8 | M5 | 3.62 | [3.59 - 3.64] | 6.44 | t | 2 |
| 9 | 1.43 | 716.6 | 0.0131 | 25 | 3.61 | 1808.0 | 0.0814 | 9 | M4 | 3.89 | [3.87 - 3.90] | - | s | 3 |
| 10 | 1.44 | 722.3 | 0.0092 | 26 | 3.63 | 1814.6 | 0.0424 | 10 | M3 | 3.92 | [3.90 - 3.93] | - | s | 3 |
| 11 | 1.53 | 764.7 | 0.0096 | 27 | 3.89 | 1944.7 | 0.2714 | 11 | M2 | 7.01 | [7.00 - 7.01] | - | s | 1 |
| 12 | 1.54 | 771.0 | 0.0230 | 28 | 3.91 | 1956.1 | 0.2669 | 12 | M1 | 7.04 | [7.03 - 7.05] | - | s | 1 |
| 13 | 1.56 | 779.0 | 0.0229 | 29 | 7.01 | 3503.8 | 0.0880 | | | | | | | |
| 14 | 1.57 | 785.9 | 0.0187 | 30 | 7.04 | 3519.9 | 0.0848 | | | | | | | |
| 15 | 1.59 | 792.8 | 0.0073 | 31 | 7.28 | 3642.7 | 0.0291 | | | | | | | |
| 16 | 1.70 | 850.0 | 0.0096 | | | | | | | | | | | |



| | | | | | | | | | |
|------------------------|----------|------------------------|----------------------|--------------|--|-----------------|------------------|---------|-----------------|
| Acquisition Time (sec) | 0.8336 | Date | 26 May 2014 21:05:32 | File Name | E:\NMR\lanich2\for SMT067\MT0365c_13c_140526-1_als | Frequency (MHz) | 125.77 | Nucleus | ¹³ C |
| Number of Transients | 58 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse_dec | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 31445.06 | Temperature (degree C) | 20.900 | | | | | | |

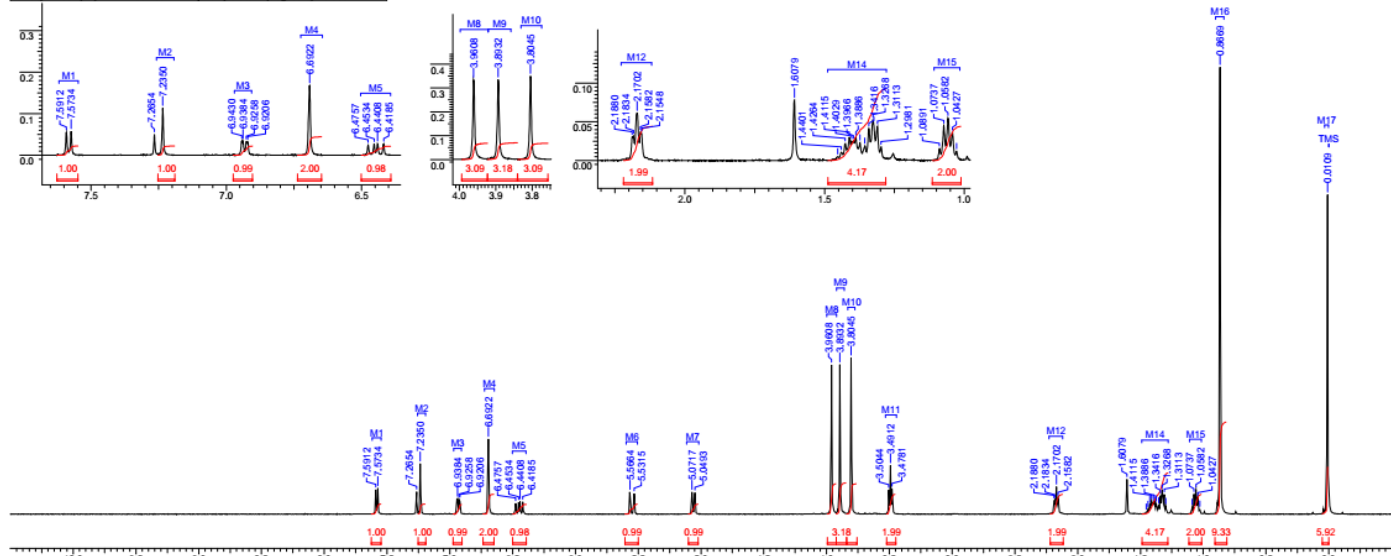


| No. | (ppm) | (Hz) | Height |
|-----|--------|---------|--------|
| 1 | -5.33 | -671.0 | 0.9458 |
| 2 | 18.29 | 2300.5 | 0.1704 |
| 3 | 24.27 | 3052.7 | 0.4943 |
| 4 | 25.45 | 3201.5 | 0.3079 |
| 5 | 25.90 | 3257.8 | 1.0000 |
| 6 | 32.58 | 4097.6 | 0.3261 |
| 7 | 42.38 | 5329.6 | 0.4192 |
| 8 | 56.08 | 7053.5 | 0.3026 |
| 9 | 58.23 | 7371.5 | 0.4050 |
| 10 | 62.94 | 7916.0 | 0.2805 |
| 11 | 110.73 | 13926.2 | 0.0890 |
| 12 | 111.92 | 14076.2 | 0.3250 |
| 13 | 118.20 | 14614.8 | 0.3848 |
| 14 | 133.24 | 16757.3 | 0.1761 |
| 15 | 148.10 | 18626.4 | 0.2156 |
| 16 | 151.10 | 19004.3 | 0.0872 |
| 17 | 202.91 | 25519.5 | 0.0945 |

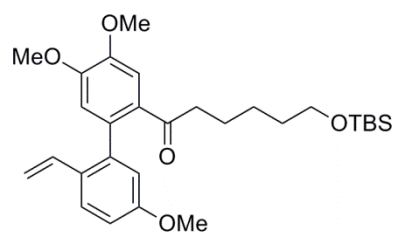


6-((*tert*-Butyldimethylsilyloxy)-1-(4,5,5'-trimethoxy-2'-vinyl-[1,1'-biphenyl]-2-yl)hexan-1-one (5)

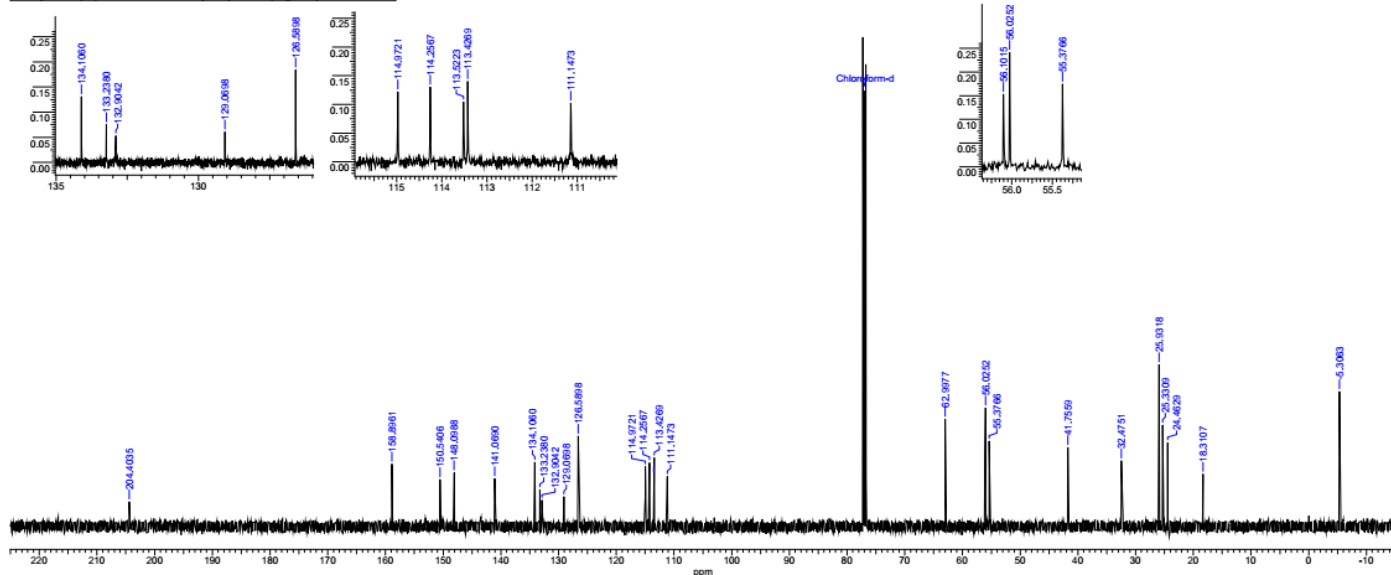
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|------------------------|---------|------------------------|----------------------|--------------|-------------------------------------|-----------------|-------------------|---------|----------------|
| Acquisition Time (sec) | 3.4918 | Date | 10 Jun 2014 21:57:02 | File Name | E:\NMR\lanouch2\for SMT070MT0384e-2 | Frequency (MHz) | 500.16 | Nucleus | ¹ H |
| Number of Transients | 4 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse.exe2 | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 7507.39 | Temperature (degree C) | 20.900 | | | | | | |



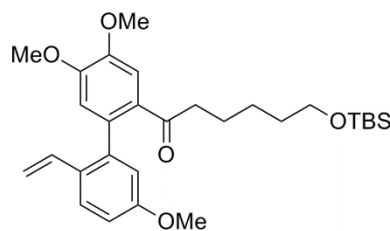
| No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | Multiplet1 | Shift1 | (ppm) | J (Hz) | Type | H's | No. | Multiplet1 | Shift1 | (ppm) | J (Hz) | Type | H's |
|-----|-------|--------|-----|-------|--------|-----|-------|--------|-----|------------|--------|---------------|--------|------|-----|-----|------------|--------|---------------|--------|------|-----|
| 1 | 0.01 | 0.7143 | 18 | 1.43 | 0.0219 | 35 | 5.53 | 0.0456 | 1 | M17 | 0.02 | [0.00 - 0.03] | - | s | 6 | 11 | M7 | 5.07 | [5.02 - 5.11] | 11.17 | d | 1 |
| 2 | 0.87 | 1.0000 | 19 | 1.44 | 0.0106 | 36 | 5.57 | 0.0493 | 2 | M16 | 0.87 | [0.84 - 0.90] | - | s | 9 | 12 | M6 | 5.55 | [5.51 - 5.60] | 17.47 | d | 1 |
| 3 | 1.03 | 0.0117 | 20 | 1.45 | 0.0050 | 37 | 6.42 | 0.0274 | 3 | M15 | 1.06 | [1.02 - 1.11] | - | m | 2 | 13 | M5 | 6.45 | [6.39 - 6.50] | 17.47 | dd | 1 |
| 4 | 1.04 | 0.0360 | 21 | 1.61 | 0.0780 | 38 | 6.44 | 0.0279 | 4 | M14 | 1.38 | [1.28 - 1.49] | - | m | 4 | 14 | M5 | 6.45 | [6.39 - 6.50] | 11.17 | dd | 1 |
| 5 | 1.06 | 0.0549 | 22 | 2.15 | 0.0349 | 39 | 6.45 | 0.0265 | 5 | M12 | 2.17 | [2.12 - 2.23] | - | m | 2 | 15 | M4 | 6.68 | [6.65 - 6.72] | - | s | 2 |
| 6 | 1.07 | 0.0448 | 23 | 2.16 | 0.0368 | 40 | 6.48 | 0.0243 | 6 | M11 | 3.49 | [3.44 - 3.53] | 6.59 | i | 2 | 16 | M3 | 6.94 | [6.91 - 6.97] | 8.74 | dd | 1 |
| 7 | 1.09 | 0.0154 | 24 | 2.17 | 0.0611 | 41 | 6.69 | 0.1679 | 7 | M11 | 3.49 | [3.44 - 3.53] | 6.59 | i | 2 | 17 | M3 | 6.94 | [6.91 - 6.97] | 2.43 | dd | 1 |
| 8 | 1.30 | 0.0176 | 25 | 2.18 | 0.0316 | 42 | 6.92 | 0.0323 | 8 | M10 | 3.80 | [3.77 - 3.83] | - | s | 3 | 18 | M2 | 7.23 | [7.19 - 7.26] | - | s | 1 |
| 9 | 1.31 | 0.0439 | 26 | 2.19 | 0.0302 | 43 | 6.93 | 0.0328 | 9 | M9 | 3.89 | [3.86 - 3.92] | - | s | 3 | 19 | M1 | 7.58 | [7.55 - 7.62] | 8.88 | d | 1 |
| 10 | 1.33 | 0.0525 | 27 | 3.48 | 0.0567 | 44 | 6.94 | 0.0341 | 10 | M8 | 3.96 | [3.92 - 4.00] | - | s | 3 | | | | | | | |
| 11 | 1.34 | 0.0415 | 28 | 3.49 | 0.1092 | 45 | 6.94 | 0.0339 | | | | | | | | | | | | | | |
| 12 | 1.36 | 0.0186 | 29 | 3.50 | 0.0537 | 46 | 7.24 | 0.1132 | | | | | | | | | | | | | | |
| 13 | 1.37 | 0.0229 | 30 | 3.80 | 0.3500 | 47 | 7.27 | 0.0497 | | | | | | | | | | | | | | |
| 14 | 1.39 | 0.0297 | 31 | 3.89 | 0.3343 | 48 | 7.57 | 0.0576 | | | | | | | | | | | | | | |
| 15 | 1.40 | 0.0254 | 32 | 3.96 | 0.3337 | 49 | 7.59 | 0.0547 | | | | | | | | | | | | | | |
| 16 | 1.40 | 0.0247 | 33 | 5.05 | 0.0479 | | | | | | | | | | | | | | | | | |
| 17 | 1.41 | 0.0297 | 34 | 5.07 | 0.0490 | | | | | | | | | | | | | | | | | |



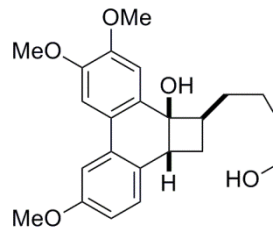
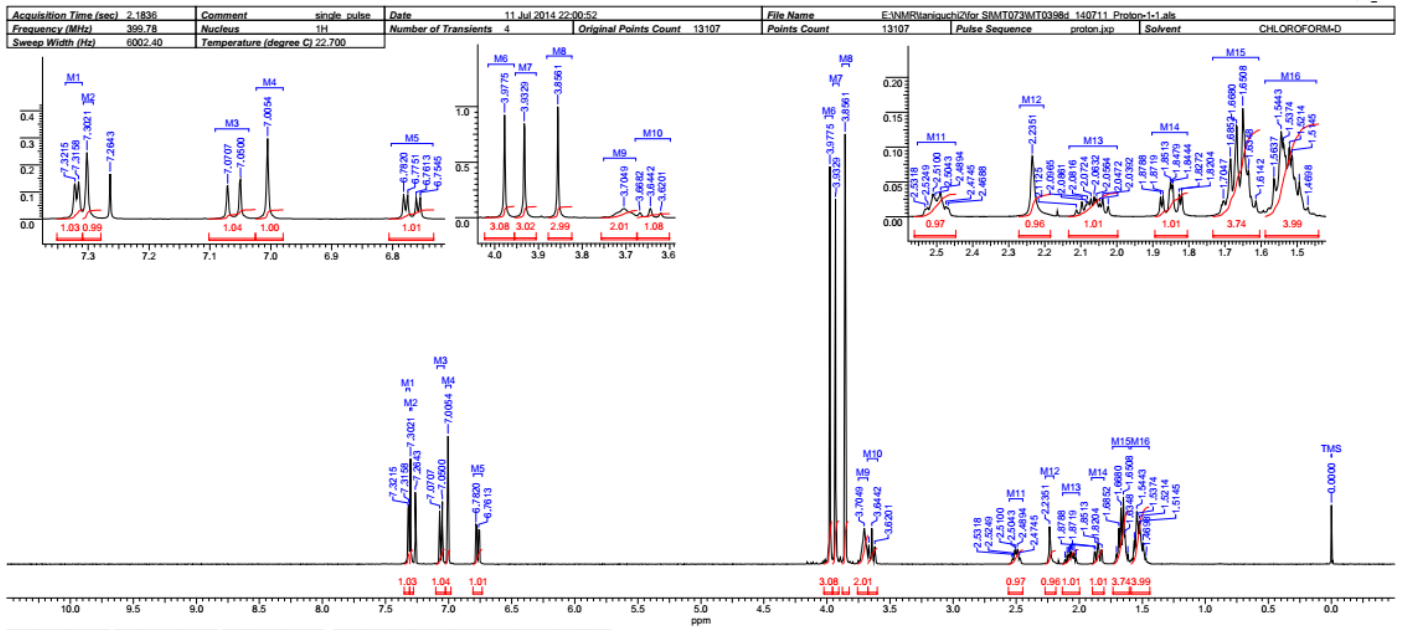
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|------------------------|----------|------------------------|----------------------|--------------|-------------------------------------|-----------------|------------------|---------|-----------------|
| Acquisition Time (sec) | 0.8336 | Date | 10 Jun 2014 21:57:12 | File Name | E:\NMR\lanouch2\for SMT070MT0384e-3 | Frequency (MHz) | 125.77 | Nucleus | ¹³ C |
| Number of Transients | 194 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse_dec | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 31446.06 | Temperature (degree C) | 21.400 | | | | | | |



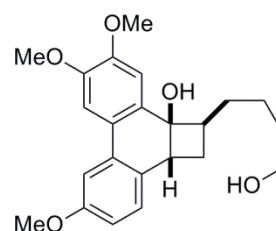
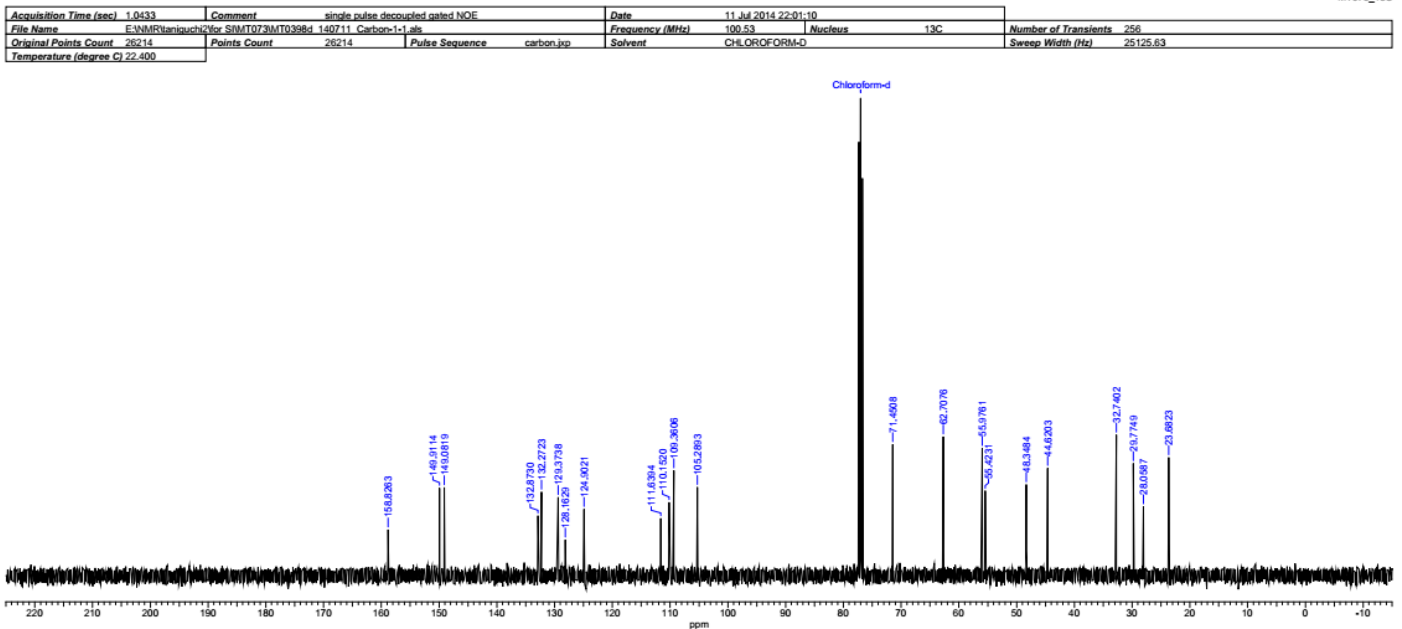
| No. | (ppm) | Height | No. | (ppm) | Height |
|-----|--------|--------|-----|--------|--------|
| 1 | 4.31 | 0.2750 | 14 | 113.52 | 0.1046 |
| 2 | 18.31 | 0.1071 | 15 | 114.26 | 0.1304 |
| 3 | 24.46 | 0.1715 | 16 | 114.97 | 0.1224 |
| 4 | 25.33 | 0.2069 | 17 | 126.59 | 0.1846 |
| 5 | 25.93 | 0.3311 | 18 | 129.07 | 0.0607 |
| 6 | 32.48 | 0.1344 | 19 | 132.90 | 0.0534 |
| 7 | 41.76 | 0.1614 | 20 | 133.24 | 0.0756 |
| 8 | 55.38 | 0.1746 | 21 | 134.11 | 0.1312 |
| 9 | 56.03 | 0.2422 | 22 | 141.07 | 0.0980 |
| 10 | 56.10 | 0.1533 | 23 | 148.10 | 0.1101 |
| 11 | 63.00 | 0.2195 | 24 | 150.54 | 0.0959 |
| 12 | 111.15 | 0.1024 | 25 | 158.90 | 0.1275 |
| 13 | 113.43 | 0.1405 | 26 | 204.40 | 0.0507 |



(2*S**,2*aS**,10*bR**)-2-(4-Hydroxybutyl)-4,5,8-trimethoxy-1,2,2*a*,10*b*-tetrahydrocyclobuta[*l*]phenanthren-2*a*-ol (10)

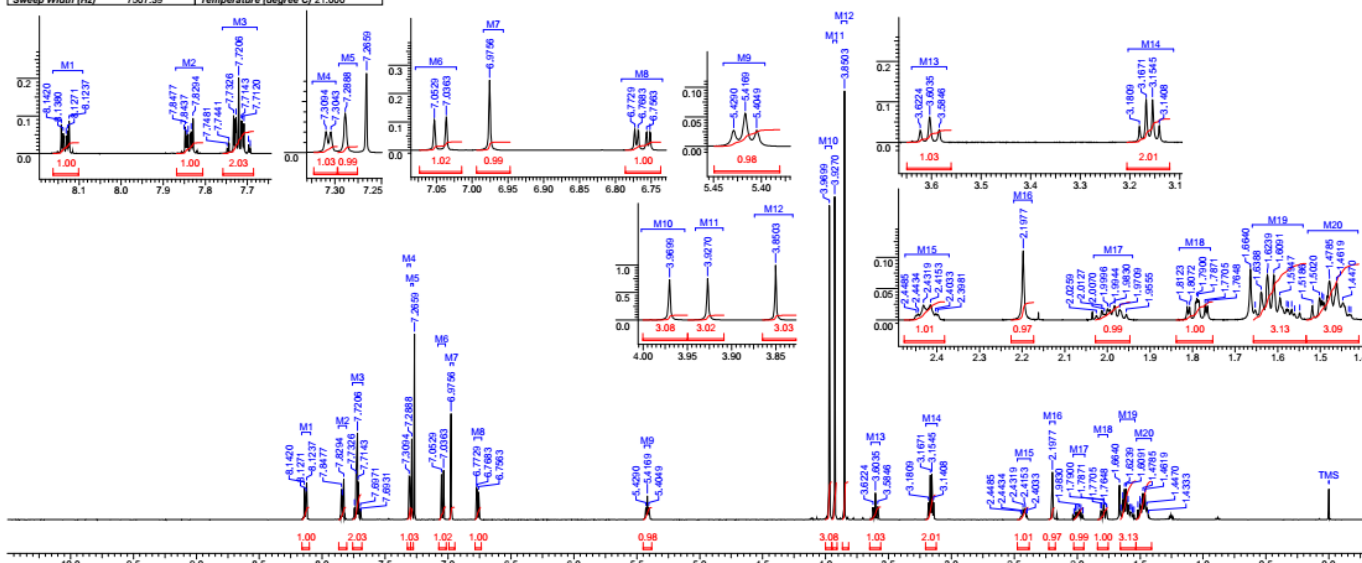


| No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | Multiplet | SHR1 | (ppm) | J (Hz) | Type | H's |
|-----|-------|--------|-----|-------|--------|-------------|-------|--------|-----|-----------|------|-------|--------|------|-----|
| 1 | 1.52 | 0.152 | 1 | M16 | 1.52 | [1.45_1.58] | - | m | 4 | | | | | | |
| 2 | 1.51 | 0.133 | 2 | M15 | 1.67 | [1.61_1.73] | - | m | 3 | | | | | | |
| 3 | 1.49 | 0.0497 | 3 | M14 | 1.85 | [1.80_1.90] | - | m | 1 | | | | | | |
| 4 | 1.51 | 0.0881 | 4 | M13 | 2.07 | [2.00_2.13] | - | m | 1 | | | | | | |
| 5 | 1.52 | 0.0998 | 5 | M12 | 2.24 | [2.20_2.27] | - | s | 1 | | | | | | |
| 6 | 1.54 | 0.1057 | 6 | M11 | 2.50 | [2.45_2.55] | - | m | 1 | | | | | | |
| 7 | 1.54 | 0.1225 | 7 | M10 | 3.64 | [3.60_3.68] | 9.62 | t | 1 | | | | | | |
| 8 | 1.56 | 0.0547 | 8 | M10 | 3.64 | [3.60_3.68] | 9.62 | t | 1 | | | | | | |
| 9 | 1.61 | 0.0225 | 9 | M9 | 3.71 | [3.68_3.75] | - | m | 2 | | | | | | |
| 10 | 1.63 | 0.0662 | 10 | M8 | 3.85 | [3.82_3.88] | - | s | 3 | | | | | | |
| 11 | 1.65 | 0.1563 | 11 | M7 | 3.93 | [3.91_3.95] | - | s | 3 | | | | | | |
| 12 | 1.67 | 0.1309 | 12 | M6 | 3.99 | [3.96_4.02] | - | s | 3 | | | | | | |
| 13 | 1.69 | 0.0830 | 13 | M5 | 6.77 | [6.73_6.80] | 8.24 | dd | 1 | | | | | | |
| 14 | 1.70 | 0.0224 | 14 | M5 | 6.77 | [6.73_6.80] | 2.75 | dd | 1 | | | | | | |
| 15 | 1.82 | 0.0326 | 15 | M4 | 7.00 | [6.98_7.02] | - | s | 1 | | | | | | |
| 16 | 1.83 | 0.0320 | 16 | M3 | 7.06 | [7.04_7.09] | 8.24 | d | 1 | | | | | | |
| 17 | 1.84 | 0.0445 | 17 | M2 | 7.30 | [7.29_7.31] | - | s | 1 | | | | | | |
| 18 | 1.85 | 0.0454 | 18 | M1 | 7.32 | [7.31_7.34] | 2.29 | d | 1 | | | | | | |

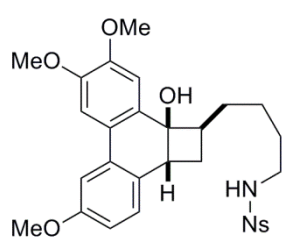


N-(4-((1*S**,2*aR**,10*bS**)-10*b*-Hydroxy-5,8,9-trimethoxy-1,2,2*a*,10*b*-tetrahydrocyclobuta[*l*]phenanthren-1-yl)butyl)-2-nitrobenzenesulfonamide (13)

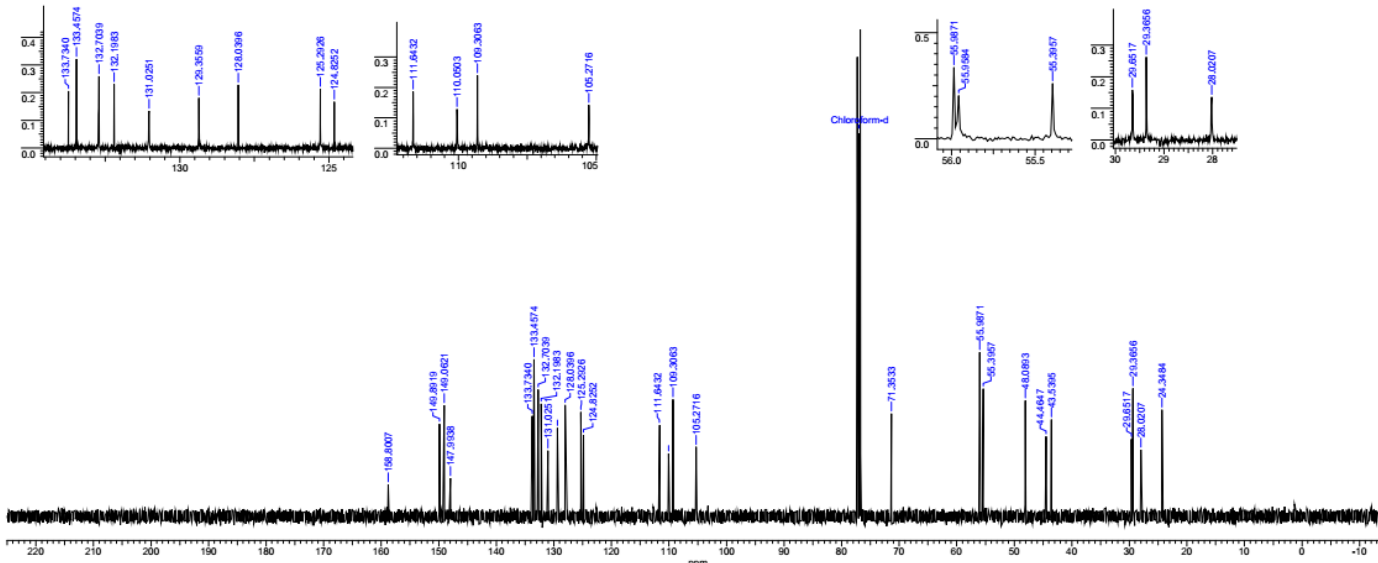
| | | | | | | | | | |
|------------------------|---------|------------------------|----------------------|--------------|---|-----------------|------------------|---------|----------------|
| Acquisition Time (sec) | 3.4918 | Date | 23 Jul 2014 19:40:20 | File Name | E:\NMR\Ritaniuchi2\for SMT07\MT0405c-140723-1.als | Frequency (MHz) | 500.16 | Nucleus | ¹ H |
| Number of Transients | 4 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse.ex2 | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 7507.39 | Temperature (degree C) | 21.000 | | | | | | |



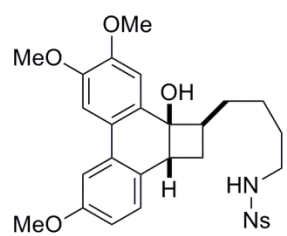
| No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | Multiplet | Shift1 | (ppm) | J (Hz) | Type | Hfs | No. | Multiplet | Shift1 | (ppm) | J (Hz) | Type | Hfs | |
|-----|-------|--------|-----|-------|--------|-----|-------|--------|-----|-------|--------|-----|-----------|--------|---------------|--------|------|-----|-----|-----------|--------|---------------|--------|------|-----|--|
| 1 | 1.43 | 0.087 | 23 | 1.79 | 0.0330 | 45 | 3.18 | 0.0396 | 67 | 7.70 | 0.0250 | 1 | M20 | 1.47 | [1.41 - 1.53] | - | m | 3 | 14 | M10 | 3.98 | [3.95 - 4.00] | - | s | 3 | |
| 2 | 1.43 | 0.089 | 24 | 1.79 | 0.0346 | 46 | 3.58 | 0.0304 | 68 | 7.71 | 0.0803 | 2 | M19 | 1.60 | [1.54 - 1.66] | - | m | 3 | 15 | M9 | 5.42 | [5.40 - 5.44] | 6.01 | t | 1 | |
| 3 | 1.45 | 0.0275 | 25 | 1.81 | 0.0204 | 47 | 3.60 | 0.0621 | 69 | 7.71 | 0.0858 | 3 | M18 | 1.79 | [1.76 - 1.83] | - | m | 1 | 16 | M8 | 5.42 | [5.40 - 5.44] | 6.01 | t | 1 | |
| 4 | 1.46 | 0.0592 | 26 | 1.81 | 0.0209 | 48 | 3.62 | 0.0295 | 70 | 7.71 | 0.0881 | 4 | M17 | 1.99 | [1.94 - 2.03] | - | m | 1 | 17 | M8 | 6.76 | [6.73 - 6.79] | 8.31 | dd | 1 | |
| 5 | 1.48 | 0.0618 | 27 | 1.96 | 0.0092 | 49 | 3.85 | 1.0000 | 71 | 7.72 | 0.2017 | 5 | M16 | 2.20 | [2.18 - 2.22] | - | s | 1 | 18 | M8 | 6.76 | [6.73 - 6.79] | 2.29 | dd | 1 | |
| 6 | 1.49 | 0.0285 | 28 | 1.97 | 0.0168 | 50 | 3.93 | 0.7534 | 72 | 7.73 | 0.0976 | 6 | M15 | 2.42 | [2.37 - 2.47] | - | m | 1 | 19 | M7 | 6.97 | [6.96 - 6.98] | - | s | 1 | |
| 7 | 1.50 | 0.0308 | 29 | 1.98 | 0.0228 | 51 | 3.97 | 0.7326 | 73 | 7.73 | 0.1015 | 7 | M14 | 3.16 | [3.11 - 3.20] | 6.87 | q | 2 | 20 | M6 | 7.05 | [7.02 - 7.08] | 8.31 | d | 1 | |
| 8 | 1.50 | 0.0357 | 30 | 1.99 | 0.0168 | 52 | 5.40 | 0.0272 | 74 | 7.74 | 0.0281 | 8 | M14 | 3.16 | [3.11 - 3.20] | 6.87 | q | 2 | 21 | M5 | 7.29 | [7.28 - 7.30] | - | s | 1 | |
| 9 | 1.52 | 0.0229 | 31 | 2.00 | 0.0182 | 53 | 5.42 | 0.0558 | 75 | 7.75 | 0.0135 | 9 | M14 | 3.16 | [3.11 - 3.20] | 6.87 | q | 2 | 22 | M4 | 7.31 | [7.30 - 7.32] | 2.58 | d | 1 | |
| 10 | 1.55 | 0.0114 | 32 | 2.01 | 0.0097 | 54 | 5.43 | 0.0272 | 76 | 7.83 | 0.0945 | 10 | M13 | 3.60 | [3.57 - 3.64] | 9.45 | t | 1 | 23 | M3 | 7.72 | [7.68 - 7.76] | - | m | 2 | |
| 11 | 1.56 | 0.0102 | 33 | 2.01 | 0.0151 | 55 | 6.75 | 0.0638 | 77 | 7.83 | 0.0584 | 11 | M13 | 3.60 | [3.57 - 3.64] | 9.45 | t | 1 | 24 | M2 | 7.84 | [7.81 - 7.87] | - | m | 1 | |
| 12 | 1.57 | 0.0169 | 34 | 2.03 | 0.0070 | 56 | 6.76 | 0.0643 | 78 | 7.84 | 0.0513 | 12 | M12 | 3.85 | [3.83 - 3.87] | - | s | 3 | 25 | M1 | 8.13 | [8.09 - 8.16] | - | m | 1 | |
| 13 | 1.58 | 0.0166 | 35 | 2.20 | 0.1107 | 57 | 6.77 | 0.0700 | 79 | 7.84 | 0.0454 | 13 | M11 | 3.93 | [3.91 - 3.94] | - | s | 3 | | | | | | | | |
| 14 | 1.58 | 0.0177 | 36 | 2.40 | 0.0086 | 58 | 6.77 | 0.0735 | 80 | 7.85 | 0.0710 | | | | | | | | | | | | | | | |
| 15 | 1.59 | 0.0355 | 37 | 2.40 | 0.0100 | 59 | 6.98 | 0.2476 | 81 | 8.12 | 0.0863 | | | | | | | | | | | | | | | |
| 16 | 1.61 | 0.0717 | 38 | 2.42 | 0.0244 | 60 | 7.04 | 0.1153 | 82 | 8.13 | 0.0607 | | | | | | | | | | | | | | | |
| 17 | 1.62 | 0.0717 | 39 | 2.43 | 0.0235 | 61 | 7.05 | 0.1056 | 83 | 8.13 | 0.0468 | | | | | | | | | | | | | | | |
| 18 | 1.64 | 0.0446 | 40 | 2.44 | 0.0091 | 62 | 7.27 | 0.4332 | 84 | 8.14 | 0.0535 | | | | | | | | | | | | | | | |
| 19 | 1.85 | 0.0183 | 41 | 2.45 | 0.0076 | 63 | 7.29 | 0.1885 | 85 | 8.14 | 0.0755 | | | | | | | | | | | | | | | |
| 20 | 1.86 | 0.0804 | 42 | 3.14 | 0.0405 | 64 | 7.30 | 0.0988 | | | | | | | | | | | | | | | | | | |
| 21 | 1.76 | 0.0229 | 43 | 3.15 | 0.1067 | 65 | 7.31 | 0.1013 | | | | | | | | | | | | | | | | | | |
| 22 | 1.77 | 0.0236 | 44 | 3.17 | 0.1043 | 66 | 7.89 | 0.0139 | | | | | | | | | | | | | | | | | | |



| | | | | | | | | | | | |
|------------------------|-----------------|------------------------|----------------------|-----------------------|---|-----------------|--------|----------------|------------------|---------|--------------|
| Acquisition Time (sec) | 0.8336 | Date | 23 Jul 2014 19:40:28 | File Name | E:\NMR\Ritaniuchi2\for SMT07\MT0405c-13C-140723-1.als | Frequency (MHz) | 125.77 | | | | |
| Nucleus | ¹³ C | Number of Transients | 256 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse_dec | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 31446.06 | Temperature (degree C) | 21.500 | | | | | | | | |

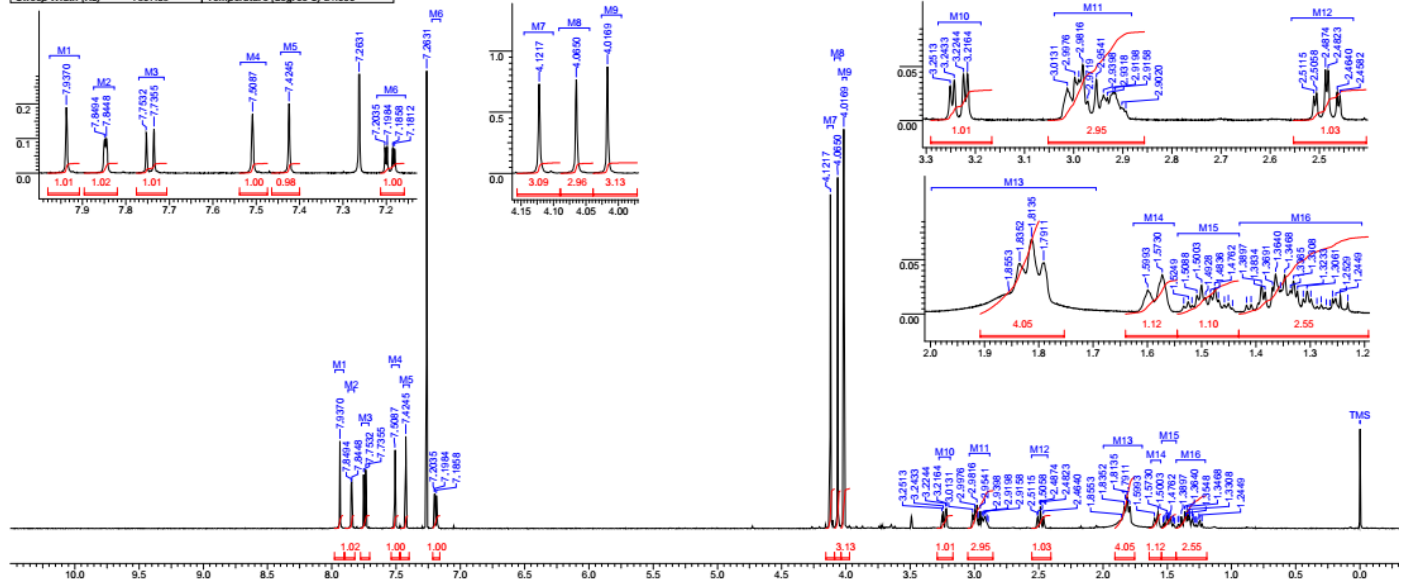


| No. | (ppm) | Height | No. | (ppm) | Height |
|-----|--------|--------|-----|--------|--------|
| 1 | 24.35 | 0.2183 | 15 | 111.64 | 0.1866 |
| 2 | 28.02 | 0.1364 | 16 | 124.83 | 0.1670 |
| 3 | 29.37 | 0.2621 | 17 | 125.29 | 0.2135 |
| 4 | 29.65 | 0.1582 | 18 | 128.04 | 0.2283 |
| 5 | 43.54 | 0.1985 | 19 | 129.36 | 0.1808 |
| 6 | 44.46 | 0.1636 | 20 | 131.03 | 0.1344 |
| 7 | 48.09 | 0.2376 | 21 | 132.20 | 0.2306 |
| 8 | 55.40 | 0.2616 | 22 | 132.70 | 0.2599 |
| 9 | 55.98 | 0.2037 | 23 | 133.46 | 0.3219 |
| 10 | 55.99 | 0.3389 | 24 | 133.73 | 0.2059 |
| 11 | 71.35 | 0.2105 | 25 | 147.99 | 0.0781 |
| 12 | 105.27 | 0.1421 | 26 | 149.06 | 0.2279 |
| 13 | 109.31 | 0.2401 | 27 | 149.89 | 0.1893 |
| 14 | 110.05 | 0.1284 | 28 | 158.80 | 0.0650 |

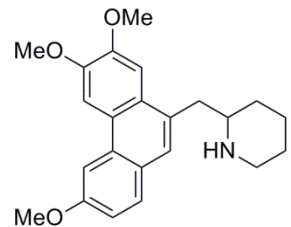


2-((3,6,7-Trimethoxyphenanthren-9-yl)methyl)piperidine (11)

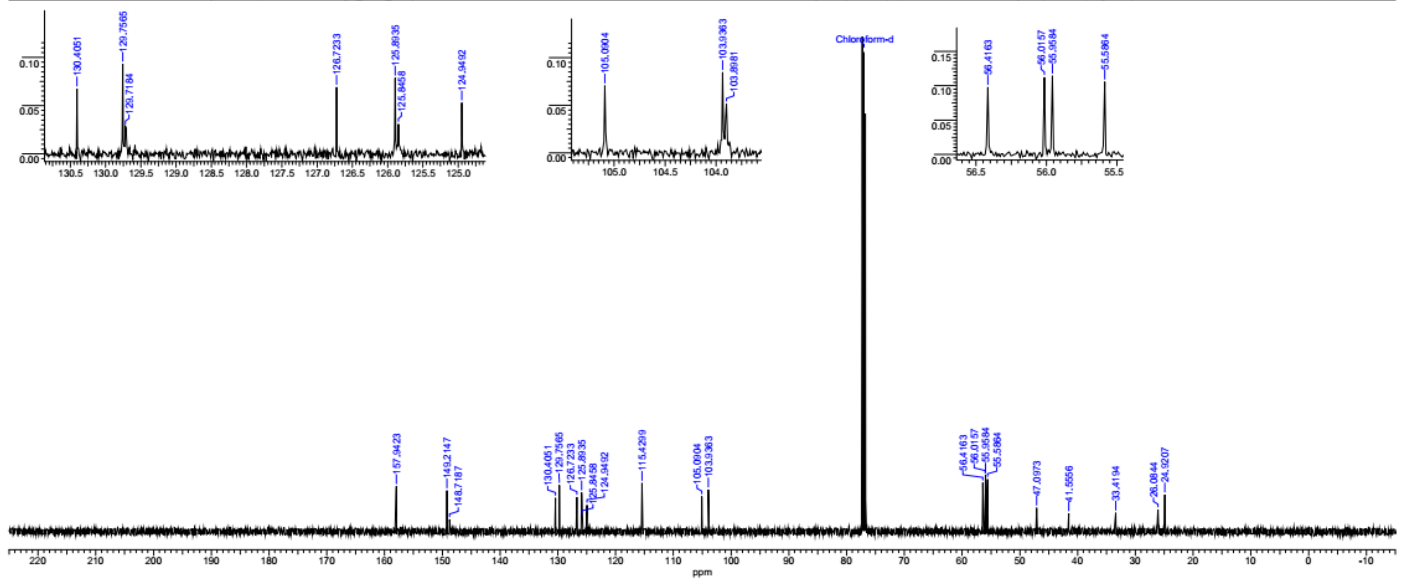
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|------------------------|---------|------------------------|----------------------|--------------|---|-----------------|------------------|---------|----------------|
| Acquisition Time (sec) | 3.4918 | Date | 18 Jul 2014 22:07:50 | File Name | E:\NMR\Vanisuch2\for SIMT07\SMT0404h 140718-1-als | Frequency (MHz) | 500.16 | Nucleus | ¹ H |
| Number of Transients | 4 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse.ec2 | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 7507.39 | Temperature (degree C) | 21.000 | | | | | | |



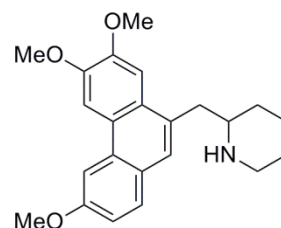
| No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | Multiplet | Shift1 | (ppm) | J (Hz) | Type | H's | No. | Multiplet | Shift1 | (ppm) | J (Hz) | Type | H's |
|-----|-------|--------|-----|-------|--------|-----|-------|--------|-----|-------|--------|-----|-----------|--------|---------------|--------|------|-----|-----|-----------|--------|---------------|--------|------|-----|
| 1 | 1.23 | 0.0101 | 21 | 1.41 | 0.0087 | 41 | 2.46 | 0.0231 | 61 | 3.24 | 0.0374 | 1 | M16 | 1.32 | [1.20 - 1.43] | - | m | 2 | 11 | M9 | 4.01 | [4.00 - 4.03] | - | s | 3 |
| 2 | 1.24 | 0.0175 | 22 | 1.42 | 0.0083 | 42 | 2.46 | 0.0262 | 62 | 3.25 | 0.0319 | 2 | M15 | 1.49 | [1.43 - 1.54] | - | m | 1 | 12 | M8 | 4.07 | [4.04 - 4.09] | - | s | 3 |
| 3 | 1.25 | 0.0144 | 23 | 1.44 | 0.0052 | 43 | 2.48 | 0.0462 | 63 | 4.02 | 0.8724 | 3 | M14 | 1.59 | [1.55 - 1.63] | - | m | 1 | 13 | M7 | 4.12 | [4.10 - 4.15] | - | s | 3 |
| 4 | 1.26 | 0.0138 | 24 | 1.45 | 0.0098 | 44 | 2.49 | 0.0472 | 64 | 4.07 | 0.7670 | 4 | M13 | 1.85 | [1.69 - 2.00] | - | m | 3 | 14 | M6 | 7.19 | [7.16 - 7.22] | 8.74 | dd | 1 |
| 5 | 1.26 | 0.0054 | 25 | 1.46 | 0.0084 | 45 | 2.51 | 0.0255 | 65 | 4.12 | 0.7299 | 5 | M12 | 2.49 | [2.43 - 2.56] | 11.89 | td | 1 | 15 | M6 | 7.19 | [7.16 - 7.22] | 2.43 | dd | 1 |
| 6 | 1.27 | 0.0060 | 26 | 1.47 | 0.0126 | 46 | 2.51 | 0.0229 | 66 | 7.18 | 0.0714 | 6 | M12 | 2.49 | [2.43 - 2.56] | 11.89 | td | 1 | 16 | M5 | 7.42 | [7.40 - 7.44] | - | s | 1 |
| 7 | 1.28 | 0.0085 | 27 | 1.48 | 0.0239 | 47 | 2.89 | 0.0089 | 67 | 7.19 | 0.0717 | 7 | M12 | 2.49 | [2.43 - 2.56] | 2.86 | td | 1 | 17 | M4 | 7.51 | [7.48 - 7.54] | - | s | 1 |
| 8 | 1.29 | 0.0070 | 28 | 1.48 | 0.0173 | 48 | 2.90 | 0.0119 | 68 | 7.20 | 0.0754 | 8 | M11 | 2.96 | [2.88 - 3.04] | - | m | 3 | 18 | M3 | 7.74 | [7.71 - 7.77] | 8.88 | d | 1 |
| 9 | 1.30 | 0.0138 | 29 | 1.49 | 0.0153 | 49 | 2.92 | 0.0259 | 69 | 7.20 | 0.0747 | 9 | M10 | 3.23 | [3.19 - 3.28] | 13.48 | dd | 1 | 19 | M2 | 7.85 | [7.83 - 7.87] | 2.29 | d | 1 |
| 10 | 1.31 | 0.0211 | 30 | 1.50 | 0.0285 | 50 | 2.92 | 0.0258 | 70 | 7.26 | 1.0000 | 10 | M10 | 3.23 | [3.19 - 3.28] | 4.01 | dd | 1 | 20 | M1 | 7.94 | [7.91 - 7.98] | - | s | 1 |
| 11 | 1.31 | 0.0138 | 31 | 1.51 | 0.0172 | 51 | 2.93 | 0.0210 | 71 | 7.42 | 0.2011 | 11 | | | | | | | | | | | | | |
| 12 | 1.32 | 0.0207 | 32 | 1.52 | 0.0080 | 52 | 2.94 | 0.0235 | 72 | 7.51 | 0.1715 | 12 | | | | | | | | | | | | | |
| 13 | 1.33 | 0.0304 | 33 | 1.52 | 0.0114 | 53 | 2.95 | 0.0378 | 73 | 7.74 | 0.1283 | 13 | | | | | | | | | | | | | |
| 14 | 1.34 | 0.0217 | 34 | 1.53 | 0.0073 | 54 | 2.97 | 0.0180 | 74 | 7.75 | 0.1175 | 14 | | | | | | | | | | | | | |
| 15 | 1.35 | 0.0359 | 35 | 1.57 | 0.0361 | 55 | 2.98 | 0.0517 | 75 | 7.84 | 0.1003 | 15 | | | | | | | | | | | | | |
| 16 | 1.35 | 0.0216 | 36 | 1.60 | 0.0222 | 56 | 2.99 | 0.0382 | 76 | 7.85 | 0.0965 | 16 | | | | | | | | | | | | | |
| 17 | 1.36 | 0.0367 | 37 | 1.79 | 0.0472 | 57 | 3.00 | 0.0398 | 77 | 7.94 | 0.1905 | 17 | | | | | | | | | | | | | |
| 18 | 1.37 | 0.0243 | 38 | 1.81 | 0.0688 | 58 | 3.01 | 0.0300 | | | | | | | | | | | | | | | | | |
| 19 | 1.38 | 0.0201 | 39 | 1.84 | 0.0466 | 59 | 3.22 | 0.0433 | | | | | | | | | | | | | | | | | |
| 20 | 1.39 | 0.0259 | 40 | 1.86 | 0.0190 | 60 | 3.22 | 0.0429 | | | | | | | | | | | | | | | | | |



| | | | | | |
|------------------------|---|----------------------|----------------------------------|------------------------|----------------------|
| Acquisition Time (sec) | 0.8336 | Comment | single pulse decoupled gated NOE | Date | 19 Jul 2014 18:19:54 |
| File Name | E:\NMR\Vanisuch2\for SIMT07\SMT0404h 13C-2 140718-1-als | Frequency (MHz) | 125.77 | Nucleus | ¹³ C |
| Points Count | 26214 | Pulse Sequence | single_pulse_dec | Solvent | CHLOROFORM-D |
| | | Number of Transients | 1200 | Original Points Count | 26214 |
| | | Sweep Width (Hz) | 31446.06 | Temperature (degree C) | 23.400 |

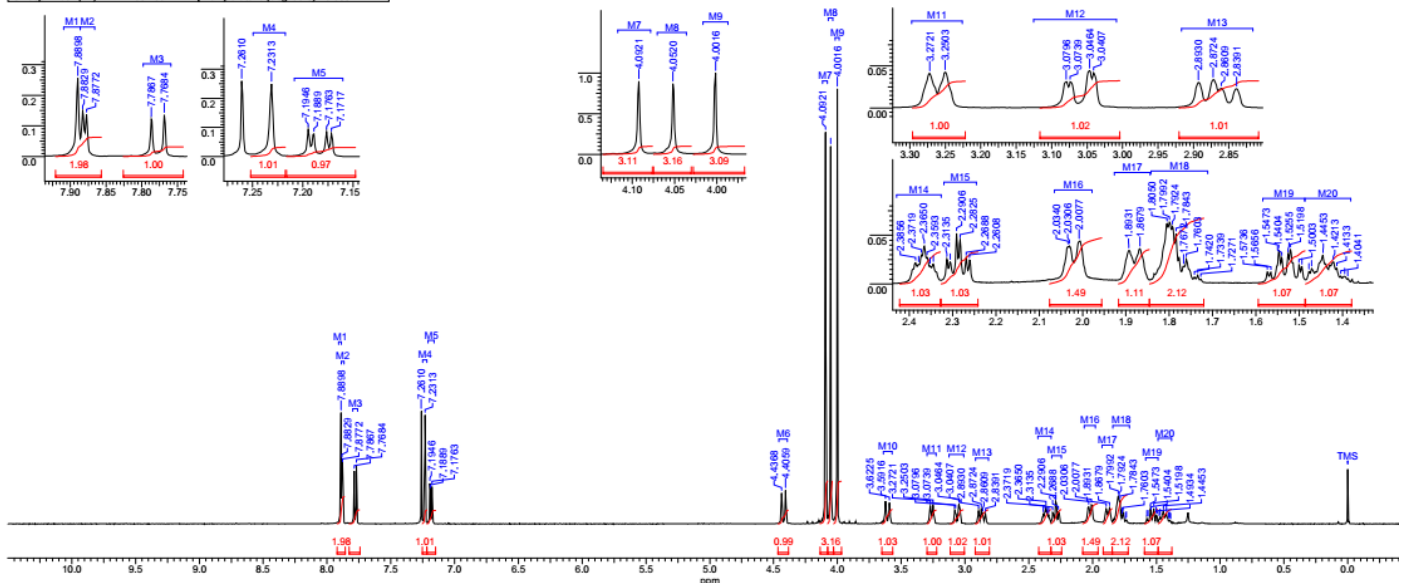


| No. | (ppm) | Height | No. | (ppm) | Height |
|-----|--------|--------|-----|--------|--------|
| 1 | 24.92 | 0.0742 | 13 | 115.43 | 0.0977 |
| 2 | 26.08 | 0.0441 | 14 | 124.95 | 0.0530 |
| 3 | 33.42 | 0.0377 | 15 | 125.85 | 0.0310 |
| 4 | 41.56 | 0.0362 | 16 | 125.89 | 0.0786 |
| 5 | 47.10 | 0.0477 | 17 | 126.72 | 0.0693 |
| 6 | 55.59 | 0.1056 | 18 | 129.72 | 0.0286 |
| 7 | 55.96 | 0.1144 | 19 | 129.76 | 0.0933 |
| 8 | 56.02 | 0.1121 | 20 | 130.41 | 0.0877 |
| 9 | 56.42 | 0.0961 | 21 | 148.72 | 0.0242 |
| 10 | 103.90 | 0.0516 | 22 | 149.21 | 0.0827 |
| 11 | 103.94 | 0.0847 | 23 | 157.94 | 0.0914 |
| 12 | 105.09 | 0.0705 | | | |

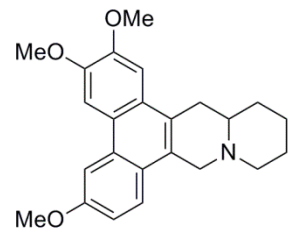


(±)-Cryptopleurine (2)

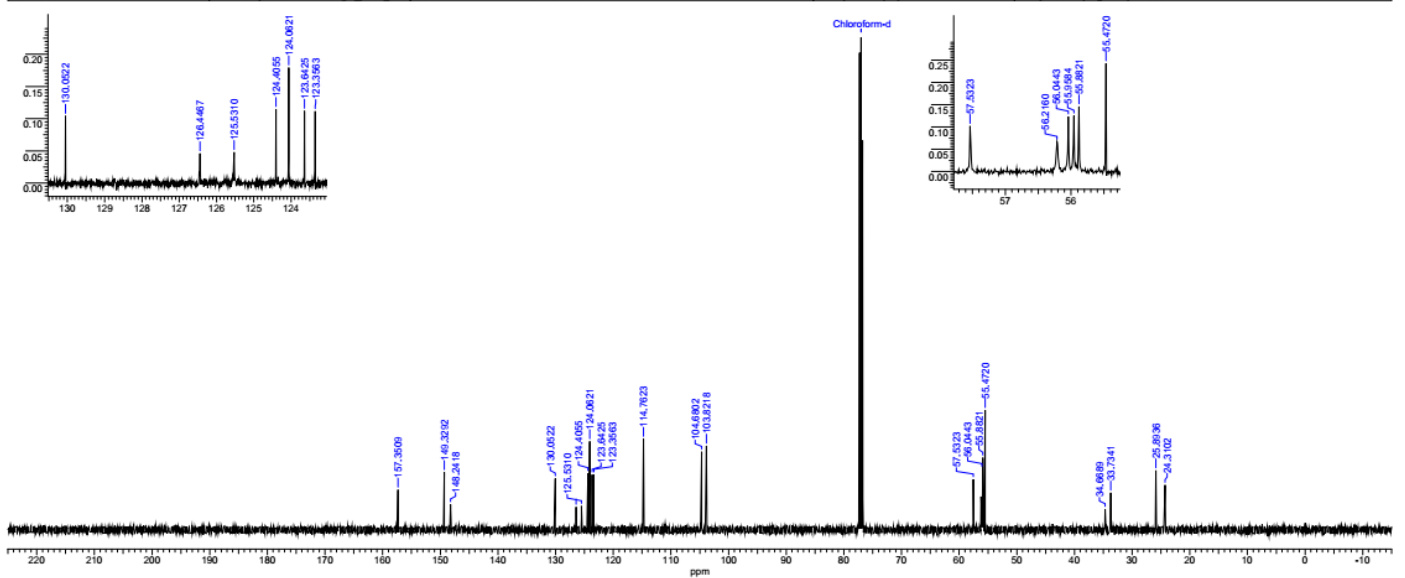
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|------------------------|----------------|------------------------|--------------|-----------------------|----------------------|--------------|---|-----------------|------------------|
| Acquisition Time (sec) | 1.7459 | Comment | single pulse | Date | 04 Aug 2014 19:23:00 | File Name | E-NMRtanpuchi2for SIMT080MT0418f 140804-1.a | Frequency (MHz) | 500.16 |
| Nucleus | ¹ H | Number of Transients | 8 | Original Points Count | 13107 | Points Count | 13107 | Pulse Sequence | single_pulse.ex2 |
| Sweep Width (Hz) | 7507.39 | Temperature (degree C) | 23.300 | | | | | Solvent | CHLOROFORM-D |



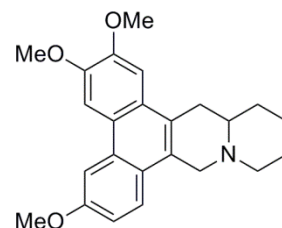
| No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height | No. | (ppm) | Height |
|-----|-------|--------|-----|-------|--------|-----|-------|--------|-----|-------|--------|-----|-------|--------|-----|-------|--------|---------------|-------|--------|-----|-------|--------|------|---------------|--------|-----|-------|--------|-----|-------|---------------|------|-------|--------|-----|-------|--------|
| 1 | 1.39 | 0.0055 | 19 | 1.74 | 0.0070 | 37 | 2.34 | 0.0203 | 55 | 3.62 | 0.0524 | 14 | M11 | 3.26 | 14 | M11 | 3.26 | [3.23 - 3.30] | 10.88 | d | 1 | 17 | M8 | 4.05 | [4.04 - 4.07] | - | s | 3 | 21 | M5 | 7.18 | [7.16 - 7.21] | 2.58 | dd | 1 | | | |
| 2 | 1.39 | 0.0078 | 20 | 1.76 | 0.0254 | 38 | 2.35 | 0.0184 | 56 | 4.00 | 1.0000 | 15 | M10 | 3.61 | 15 | M10 | 3.61 | [3.57 - 3.64] | 15.47 | d | 1 | 18 | M7 | 4.10 | [4.08 - 4.12] | - | s | 3 | 22 | M4 | 7.23 | [7.22 - 7.25] | - | s | 1 | | | |
| 3 | 1.40 | 0.0081 | 21 | 1.77 | 0.0182 | 39 | 2.36 | 0.0272 | 57 | 4.05 | 0.8679 | 16 | M9 | 4.00 | 16 | M9 | 4.00 | [3.99 - 4.02] | - | s | 3 | 19 | M6 | 4.43 | [4.39 - 4.46] | 15.47 | d | 1 | 20 | M5 | 7.18 | [7.16 - 7.21] | 8.88 | dd | 1 | | | |
| 4 | 1.41 | 0.0162 | 22 | 1.78 | 0.0516 | 40 | 2.36 | 0.0390 | 58 | 4.09 | 0.9005 | 17 | M8 | 4.05 | 17 | M8 | 4.05 | [4.04 - 4.07] | - | s | 3 | 21 | M5 | 7.18 | [7.16 - 7.21] | 2.58 | dd | 1 | 22 | M3 | 7.78 | [7.76 - 7.80] | 9.16 | d | 1 | | | |
| 5 | 1.42 | 0.0224 | 23 | 1.79 | 0.0587 | 41 | 2.37 | 0.0298 | 59 | 4.41 | 0.0771 | 18 | M7 | 4.10 | 18 | M7 | 4.10 | [4.08 - 4.12] | - | s | 3 | 19 | M6 | 4.43 | [4.39 - 4.46] | 15.47 | d | 1 | 23 | M4 | 7.23 | [7.22 - 7.25] | - | s | 1 | | | |
| 6 | 1.45 | 0.0294 | 24 | 1.80 | 0.0533 | 42 | 2.38 | 0.0202 | 60 | 4.44 | 0.0710 | 19 | M6 | 4.43 | 19 | M6 | 4.43 | [4.39 - 4.46] | 15.47 | d | 1 | 20 | M5 | 7.18 | [7.16 - 7.21] | 8.88 | dd | 1 | 24 | M2 | 7.88 | [7.87 - 7.89] | 2.86 | d | 1 | | | |
| 7 | 1.47 | 0.0158 | 25 | 1.80 | 0.0617 | 43 | 2.39 | 0.0216 | 61 | 7.17 | 0.0790 | 20 | M5 | 7.18 | 20 | M5 | 7.18 | [7.16 - 7.21] | 8.88 | dd | 1 | 21 | M5 | 7.18 | [7.16 - 7.21] | 2.58 | dd | 1 | 25 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |
| 8 | 1.48 | 0.0127 | 26 | 1.87 | 0.0362 | 44 | 2.84 | 0.0228 | 62 | 7.18 | 0.0853 | 21 | M5 | 7.18 | 21 | M5 | 7.18 | [7.16 - 7.21] | 8.88 | dd | 1 | 22 | M4 | 7.23 | [7.22 - 7.25] | - | s | 1 | 26 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |
| 9 | 1.49 | 0.0177 | 27 | 1.89 | 0.0344 | 45 | 2.86 | 0.0232 | 63 | 7.19 | 0.0773 | 22 | M4 | 7.23 | 22 | M4 | 7.23 | [7.22 - 7.25] | - | s | 1 | 23 | M3 | 7.78 | [7.76 - 7.80] | 9.16 | d | 1 | 27 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |
| 10 | 1.50 | 0.0196 | 28 | 2.01 | 0.0439 | 46 | 2.87 | 0.0334 | 64 | 7.19 | 0.0928 | 23 | M3 | 7.78 | 23 | M3 | 7.78 | [7.76 - 7.80] | 9.16 | d | 1 | 24 | M2 | 7.88 | [7.87 - 7.89] | 2.86 | d | 1 | 28 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |
| 11 | 1.52 | 0.0352 | 29 | 2.03 | 0.0390 | 47 | 2.89 | 0.0302 | 65 | 7.23 | 0.2498 | 24 | M2 | 7.88 | 24 | M2 | 7.88 | [7.87 - 7.89] | 2.86 | d | 1 | 25 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 29 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |
| 12 | 1.53 | 0.0304 | 30 | 2.03 | 0.0382 | 48 | 3.04 | 0.0418 | 66 | 7.26 | 0.2595 | 25 | M1 | 7.90 | 25 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 26 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 30 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |
| 13 | 1.54 | 0.0267 | 31 | 2.26 | 0.0245 | 49 | 3.05 | 0.0442 | 67 | 7.77 | 0.1354 | 26 | M1 | 7.90 | 26 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 27 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 31 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |
| 14 | 1.55 | 0.0342 | 32 | 2.27 | 0.0270 | 50 | 3.07 | 0.0308 | 68 | 7.79 | 0.1216 | 27 | M1 | 7.90 | 27 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 28 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 32 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |
| 15 | 1.57 | 0.0120 | 33 | 2.28 | 0.0452 | 51 | 3.08 | 0.0308 | 69 | 7.88 | 0.1365 | 28 | M1 | 7.90 | 28 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 29 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 33 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |
| 16 | 1.57 | 0.0123 | 34 | 2.29 | 0.0520 | 52 | 3.25 | 0.0425 | 70 | 7.88 | 0.1472 | 29 | M1 | 7.90 | 29 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 30 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 34 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |
| 17 | 1.73 | 0.0050 | 35 | 2.31 | 0.0227 | 53 | 3.27 | 0.0409 | 71 | 7.89 | 0.2558 | 30 | M1 | 7.90 | 30 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 31 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 35 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |
| 18 | 1.73 | 0.0089 | 36 | 2.31 | 0.0255 | 54 | 3.59 | 0.0488 | | | | 32 | M1 | 7.90 | 32 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 33 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | 36 | M1 | 7.90 | [7.89 - 7.91] | - | s | 1 | | | |



| | | | | | | | | | |
|------------------------|-----------------|------------------------|----------------------------------|-----------------------|----------------------|--------------|---|-----------------|------------------|
| Acquisition Time (sec) | 0.8336 | Comment | single pulse decoupled gated NOE | Date | 04 Aug 2014 20:16:30 | File Name | E-NMRtanpuchi2for SIMT080MT0418f 13C 140804-1.a | Frequency (MHz) | 125.77 |
| Nucleus | ¹³ C | Number of Transients | 1100 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse_dec |
| Sweep Width (Hz) | 31446.06 | Temperature (degree C) | 23.800 | | | | | Solvent | CHLOROFORM-D |



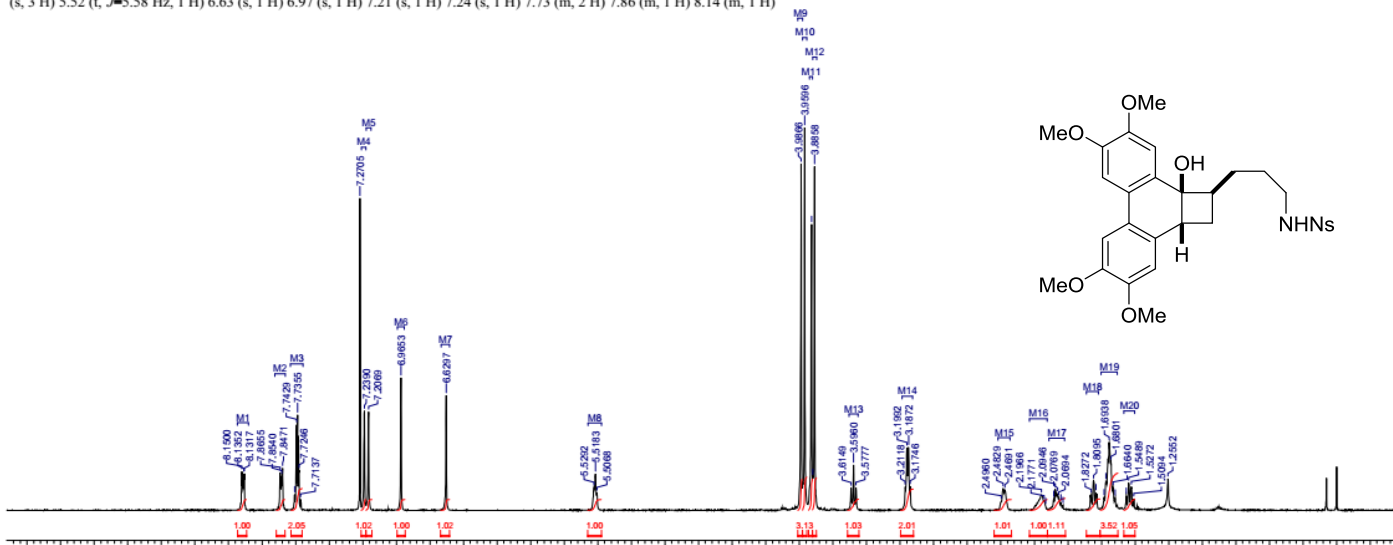
| No. | (ppm) | Height | No. | (ppm) | Height |
|-----|--------|--------|-----|--------|--------|
| 1 | 24.31 | 0.0907 | 13 | 114.76 | 0.1841 |
| 2 | 25.89 | 0.1200 | 14 | 123.36 | 0.1117 |
| 3 | 33.73 | 0.0748 | 15 | 123.64 | 0.1119 |
| 4 | 34.67 | 0.0416 | 16 | 124.06 | 0.1793 |
| 5 | 55.47 | 0.2427 | 17 | 124.41 | 0.1147 |
| 6 | 55.88 | 0.1461 | 18 | 125.33 | 0.0461 |
| 7 | 55.96 | 0.1258 | 19 | 126.45 | 0.0461 |
| 8 | 56.04 | 0.1233 | 20 | 130.05 | 0.1041 |
| 9 | 56.22 | 0.0672 | 21 | 148.24 | 0.0515 |
| 10 | 57.53 | 0.1020 | 22 | 149.33 | 0.1163 |
| 11 | 103.82 | 0.1702 | 23 | 157.35 | 0.0808 |
| 12 | 104.68 | 0.1580 | | | |



N-(3-((1*S**,2*aR**,10*bS**)-10*b*-hydroxy-4,5,8,9-tetramethoxy-1,2,2*a*,10*b*-tetrahydrocyclobuta[*l*]phenanthren-1-yl)propyl)-2-nitrobenzenesulfonamide (16)

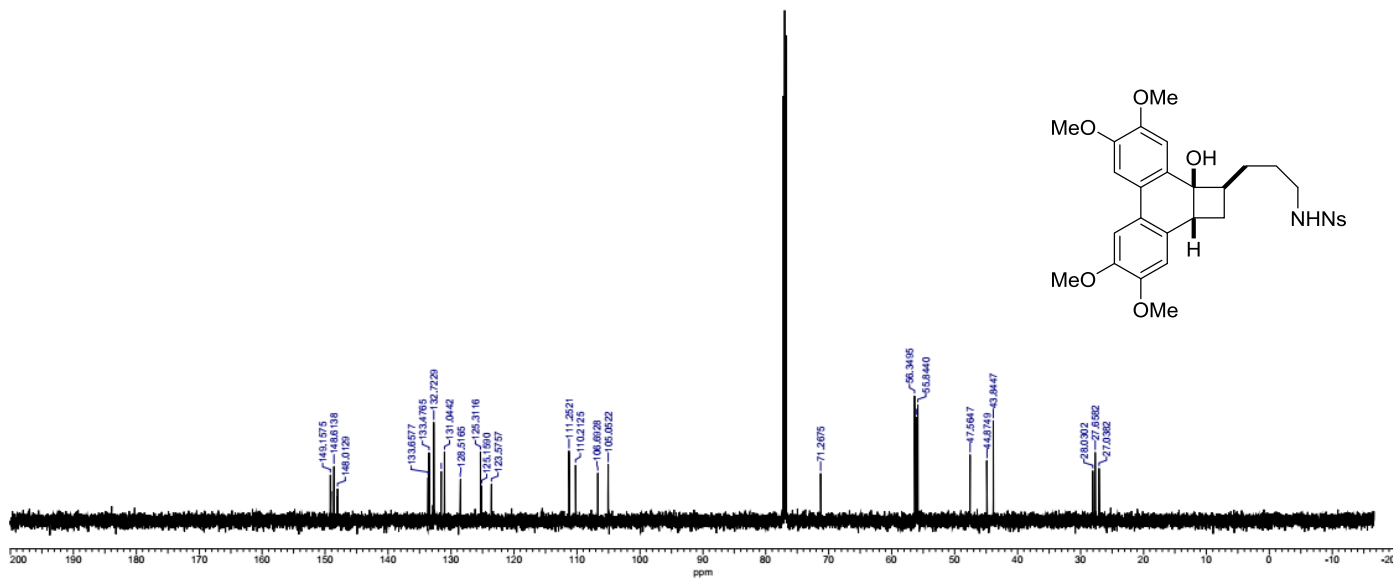
| | | | | | | | | | |
|------------------------|---------|------------------------|----------------------|--------------|------------------------------------|-----------------|------------------|---------|----------------|
| Acquisition Time (sec) | 3.4918 | Date | 11 Dec 2017 22:51:42 | File Name | W4573mouse-pc/nmr/yamaka41-2-1.als | Frequency (MHz) | 500.16 | Nucleus | ¹ H |
| Number of Transients | 4 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse.ec2 | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 7507.39 | Temperature (degree C) | 19.200 | | | | | | |

¹H NMR (500 MHz, CHLOROFORM-D) δ ppm 1.54 (m, 1 H) 1.69 (m, 3 H) 1.81 (m, 1 H) 2.08 (m, 1 H) 2.18 (m, 1 H) 2.48 (m, 1 H) 3.19 (q, *J*=6.30 Hz, 2 H) 3.60 (t, *J*=9.31 Hz, 1 H) 3.89 (s, 3 H) 3.91 (s, 3 H) 3.96 (s, 3 H) 3.99 (s, 3 H) 5.52 (t, *J*=5.58 Hz, 1 H) 6.63 (s, 1 H) 6.97 (s, 1 H) 7.21 (s, 1 H) 7.24 (s, 1 H) 7.73 (m, 2 H) 7.86 (m, 1 H) 8.14 (m, 1 H)



| No. | (ppm) | (Hz) | Height | No. | (ppm) | (Hz) | Height | No. | (ppm) | (Hz) | Height | No. | (ppm) | (Hz) | Height | No. | (ppm) | (Hz) | Height | No. | (ppm) | (Hz) | Height |
|-----|-------|-------|--------|-----|-------|--------|--------|-----|-------|--------|--------|-----|-------|--------|--------|-----|---------------|-------|------------|-----|---------------|-------|------------|
| 1 | 1.28 | 627.8 | 0.0623 | 18 | 1.83 | 913.9 | 0.0401 | 35 | 3.20 | 1600.1 | 0.1629 | 52 | 7.27 | 3638.4 | 0.8154 | 1 | (1.50 - 1.58) | 1.652 | 3.22682e+5 | 11 | (3.94 - 3.98) | 3.133 | 9.55402e+5 |
| 2 | 1.51 | 754.9 | 0.0200 | 19 | 1.83 | 916.5 | 0.0400 | 36 | 3.21 | 1608.4 | 0.0670 | 53 | 7.71 | 3858.1 | 0.6284 | 2 | (1.63 - 1.75) | 3.516 | 1.87224e+6 | 12 | (3.98 - 4.01) | 3.014 | 9.19335e+5 |
| 3 | 1.53 | 763.8 | 0.0672 | 20 | 2.04 | 1019.3 | 0.0170 | 37 | 3.58 | 1796.4 | 0.0591 | 54 | 7.72 | 3863.3 | 0.1945 | 2 | (1.78 - 1.88) | 1.878 | 3.25214e+5 | 13 | (3.97 - 5.58) | 0.997 | 3.04479e+5 |
| 4 | 1.53 | 765.5 | 0.0595 | 21 | 2.05 | 1027.2 | 0.0201 | 38 | 3.60 | 1798.6 | 0.1183 | 55 | 7.73 | 3865.5 | 0.1934 | 4 | (2.02 - 2.15) | 1.112 | 3.59105e+5 | 14 | (6.60 - 6.67) | 0.816 | 3.09705e+5 |
| 5 | 1.55 | 774.7 | 0.0711 | 22 | 2.07 | 1035.0 | 0.0333 | 39 | 3.61 | 1808.0 | 0.0581 | 56 | 7.74 | 3869.0 | 0.2494 | 5 | (2.15 - 2.29) | 1.004 | 3.08308e+5 | 15 | (8.93 - 6.99) | 0.996 | 3.03810e+5 |
| 6 | 1.57 | 783.3 | 0.0371 | 23 | 2.08 | 1038.8 | 0.0438 | 40 | 3.69 | 1843.5 | 0.8690 | 57 | 7.74 | 3872.7 | 0.2233 | 8 | (2.42 - 2.55) | 1.007 | 3.07031e+5 | 16 | (7.18 - 7.23) | 1.006 | 3.09888e+5 |
| 7 | 1.65 | 824.5 | 0.0324 | 24 | 2.09 | 1043.4 | 0.0485 | 41 | 3.60 | 1850.7 | 0.0861 | 58 | 7.76 | 3880.1 | 0.0407 | 7 | (3.15 - 3.25) | 2.089 | 6.12749e+5 | 17 | (7.23 - 7.28) | 1.022 | 3.11799e+5 |
| 8 | 1.68 | 832.3 | 0.0598 | 25 | 2.09 | 1047.8 | 0.0546 | 42 | 3.71 | 1955.2 | 0.7473 | 59 | 7.85 | 3924.8 | 0.1007 | 8 | (3.58 - 3.61) | 1.201 | 3.14402e+5 | 18 | (7.78 - 7.79) | 2.055 | 6.22804e+5 |
| 9 | 1.68 | 840.3 | 0.1288 | 26 | 2.11 | 1054.0 | 0.0289 | 43 | 3.98 | 1985.5 | 1.0200 | 60 | 7.85 | 3928.3 | 0.0996 | 9 | (3.87 - 3.90) | 3.072 | 9.36759e+5 | 19 | (7.83 - 7.88) | 1.006 | 3.09811e+5 |
| 10 | 1.69 | 847.2 | 0.1788 | 27 | 2.17 | 1084.0 | 0.0107 | 44 | 3.99 | 1993.9 | 0.9046 | 61 | 7.86 | 3930.0 | 0.0728 | 10 | (3.90 - 3.93) | 2.084 | 9.30081e+5 | 20 | (8.12 - 8.18) | 1.006 | 3.04979e+5 |
| 11 | 1.70 | 850.9 | 0.1382 | 28 | 2.18 | 1088.9 | 0.0236 | 45 | 5.51 | 2754.3 | 0.0458 | 62 | 7.86 | 3932.0 | 0.0751 | | | | | | | | |
| 12 | 1.72 | 859.5 | 0.0751 | 29 | 2.20 | 1098.6 | 0.0480 | 46 | 5.52 | 2765.0 | 0.0953 | 63 | 7.87 | 3934.8 | 0.0982 | | | | | | | | |
| 13 | 1.73 | 866.1 | 0.0239 | 30 | 2.47 | 1235.0 | 0.0527 | 47 | 5.52 | 2765.3 | 0.0599 | 64 | 8.13 | 4007.2 | 0.0596 | | | | | | | | |
| 14 | 1.79 | 893.0 | 0.0428 | 31 | 2.48 | 1241.8 | 0.0965 | 48 | 6.63 | 3315.5 | 0.2999 | 65 | 8.14 | 4008.9 | 0.0948 | | | | | | | | |
| 15 | 1.79 | 895.6 | 0.0480 | 32 | 2.50 | 1248.4 | 0.0235 | 49 | 6.67 | 3483.8 | 0.3465 | 66 | 8.14 | 4010.9 | 0.0776 | | | | | | | | |
| 16 | 1.81 | 903.9 | 0.0741 | 33 | 3.17 | 1587.8 | 0.0930 | 50 | 7.21 | 3804.6 | 0.2596 | 67 | 8.15 | 4074.0 | 0.0850 | | | | | | | | |
| 17 | 1.81 | 909.0 | 0.0770 | 34 | 3.19 | 1594.1 | 0.1649 | 51 | 7.24 | 3820.7 | 0.2590 | 68 | 8.15 | 4076.3 | 0.1011 | | | | | | | | |

| | | | | | | | | | |
|------------------------|----------|------------------------|----------------------|--------------|---------------------------------------|-----------------|------------------|---------|-----------------|
| Acquisition Time (sec) | 0.8336 | Date | 11 Dec 2017 22:52:14 | File Name | W4573mouse-pc/nmr/yamaka41-2-13-1.als | Frequency (MHz) | 125.77 | Nucleus | ¹³ C |
| Number of Transients | 61 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse_dec | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 31446.06 | Temperature (degree C) | 19.400 | | | | | | |

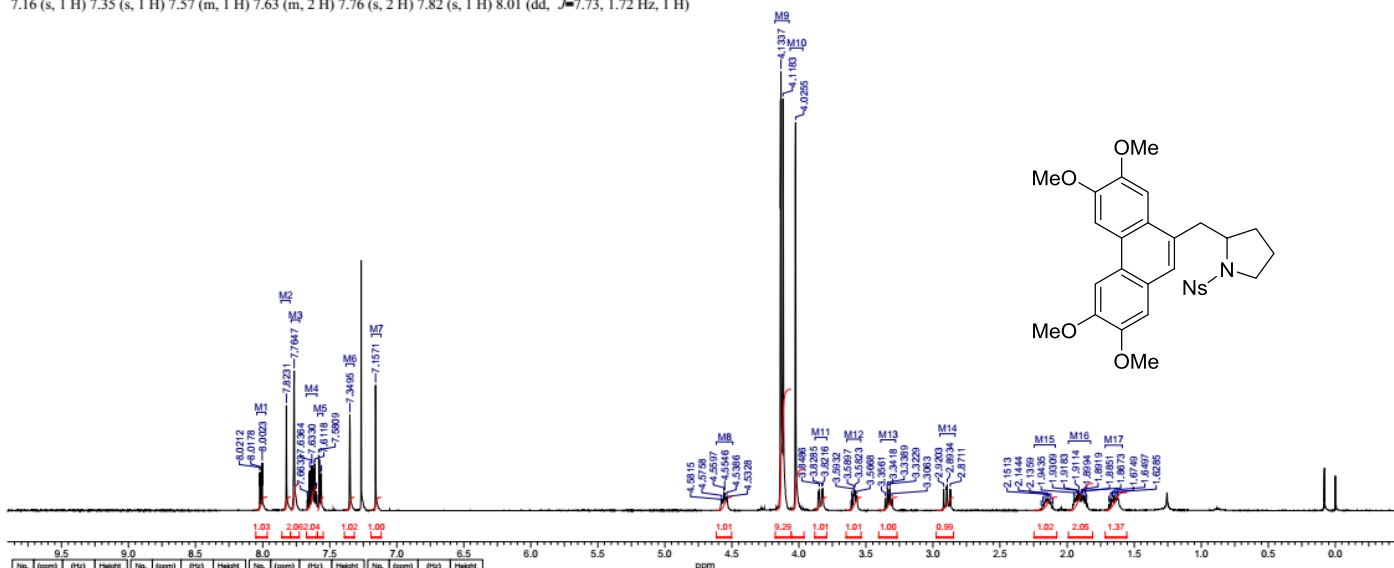


| No. | (ppm) | (Hz) | Height | No. | (ppm) | (Hz) | Height |
|-----|--------|---------|--------|-----|--------|---------|--------|
| 1 | 27.04 | 3490.6 | 0.1025 | 16 | 123.58 | 15542.1 | 0.0713 |
| 2 | 27.68 | 3478.6 | 0.1337 | 17 | 125.16 | 15741.3 | 0.0880 |
| 3 | 28.03 | 3525.4 | 0.0979 | 18 | 125.31 | 15760.4 | 0.1346 |
| 4 | 43.84 | 5514.4 | 0.1960 | 19 | 128.52 | 16163.5 | 0.0809 |
| 5 | 44.87 | 5643.9 | 0.1175 | 20 | 131.04 | 16481.4 | 0.1346 |
| 6 | 47.56 | 5882.2 | 0.1294 | 21 | 131.57 | 16547.4 | 0.0964 |
| 7 | 55.84 | 7023.5 | 0.2268 | 22 | 132.72 | 16692.6 | 0.1925 |
| 8 | 55.99 | 7041.5 | 0.1447 | 23 | 133.48 | 16787.3 | 0.1334 |
| 9 | 56.10 | 7055.9 | 0.2024 | 24 | 133.66 | 16810.1 | 0.0843 |
| 10 | 56.35 | 7087.1 | 0.2445 | 25 | 148.01 | 18615.6 | 0.0624 |
| 11 | 71.27 | 8963.3 | 0.0625 | 26 | 148.06 | 18621.6 | 0.0466 |
| 12 | 105.05 | 13212.4 | 0.1101 | 27 | 148.61 | 18691.2 | 0.1065 |
| 13 | 106.69 | 13418.8 | 0.0928 | 28 | 149.09 | 18751.1 | 0.0576 |
| 14 | 110.21 | 13861.4 | 0.1087 | 29 | 149.16 | 18759.5 | 0.0899 |
| 15 | 111.25 | 13992.2 | 0.1368 | | | | |

(±)-1-((2-Nitrophenyl)sulfonyl)-2-((2,3,6,7-tetramethoxyphenanthren-9-yl)methyl)pyrrolidine (17)

| | | | | | | | | | |
|------------------------|---------|------------------------|----------------------|--------------|---|-----------------|-------------------|---------|----------------|
| Acquisition Time (sec) | 3.4918 | Date | 13 Dec 2017 17:08:24 | File Name | \\4573mouse-cdm\m\yamaoka\43ppp-1-1.als | Frequency (MHz) | 500.16 | Nucleus | ¹ H |
| Number of Transients | 4 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse.exe2 | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 7507.39 | Temperature (degree C) | 18.900 | | | | | | |

¹H NMR (500 MHz, CHLOROFORM-D) δ ppm 1.65 (m, 1 H) 1.90 (m, 2 H) 2.15 (m, 1 H) 2.90 (dd, *J*=13.46, 11.17 Hz, 1 H) 3.33 (m, 1 H) 3.59 (m, 1 H) 3.84 (dd, *J*=13.46, 3.44 Hz, 1 H) 4.03 (s, 3 H) 4.13 (m, 9 H) 4.56 (m, 1 H) 7.16 (s, 1 H) 7.35 (s, 1 H) 7.57 (m, 1 H) 7.63 (m, 2 H) 7.76 (s, 2 H) 7.82 (s, 1 H) 8.01 (dd, *J*=7.73, 1.72 Hz, 1 H)

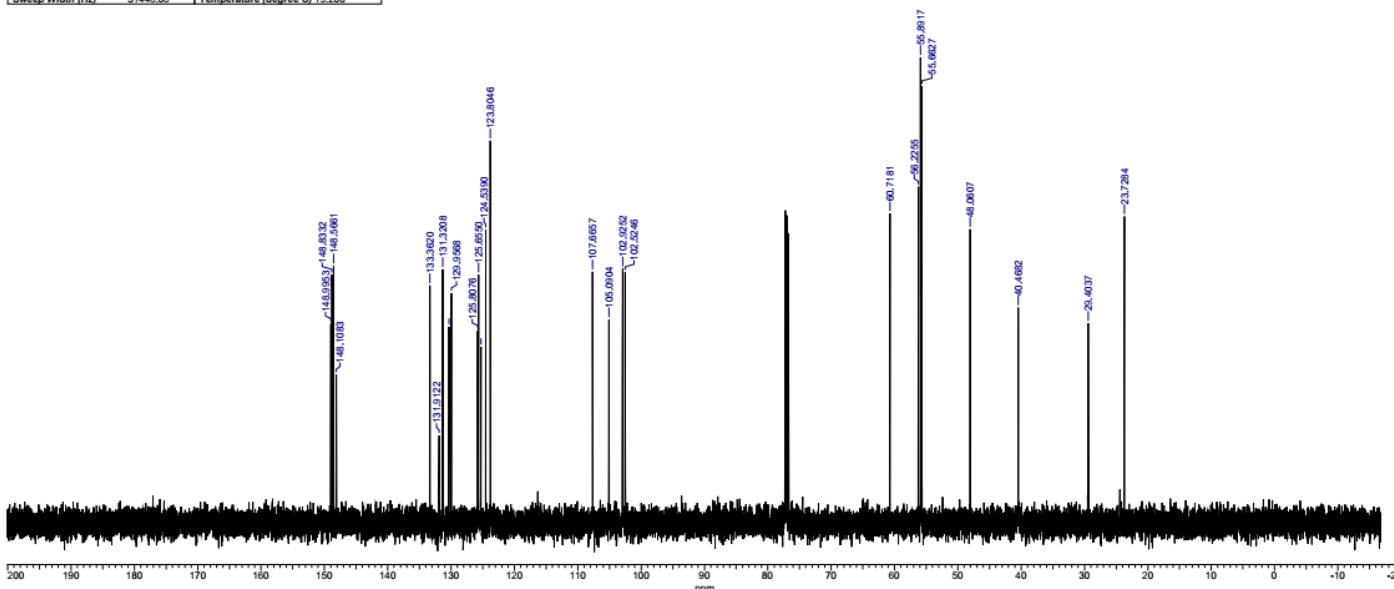


| No. | (ppm) | (Hz) | Height | No. | (ppm) | (Hz) | Height |
|-----|-------|--------|--------|------|--------|--------|--------|
| 1 | 8.14 | 0.0271 | 25 | 1.94 | 866.6 | 0.0252 | 49 |
| 2 | 8.15 | 0.0280 | 26 | 1.94 | 872.0 | 0.0280 | 50 |
| 3 | 8.17 | 0.0243 | 27 | 1.96 | 879.2 | 0.0229 | 51 |
| 4 | 8.24 | 0.0257 | 29 | 1.96 | 878.3 | 0.0229 | 52 |
| 5 | 8.24 | 0.0258 | 29 | 2.12 | 1083.4 | 0.0089 | 53 |
| 6 | 8.25 | 0.0242 | 30 | 2.12 | 1081.4 | 0.0207 | 54 |
| 7 | 8.26 | 0.0257 | 31 | 2.14 | 1098.3 | 0.0249 | 55 |
| 8 | 8.28 | 0.0243 | 32 | 2.14 | 1077.8 | 0.0271 | 56 |
| 9 | 8.27 | 0.0277 | 33 | 2.15 | 1076.0 | 0.0244 | 57 |
| 10 | 8.29 | 0.0135 | 34 | 2.16 | 1078.3 | 0.0231 | 58 |
| 11 | 8.25 | 0.0190 | 35 | 2.16 | 1080.6 | 0.0232 | 59 |
| 12 | 8.25 | 0.0219 | 36 | 2.17 | 1083.3 | 0.0190 | 60 |
| 13 | 8.26 | 0.0246 | 37 | 2.18 | 1089.0 | 0.0133 | 61 |
| 14 | 8.27 | 0.0238 | 38 | 2.19 | 1096.0 | 0.0040 | 62 |
| 15 | 8.27 | 0.0277 | 39 | 2.27 | 1436.0 | 0.0485 | 63 |
| 16 | 8.28 | 0.0208 | 40 | 2.29 | 1447.2 | 0.0589 | 64 |
| 17 | 8.28 | 0.0279 | 41 | 2.30 | 1449.3 | 0.0593 | 65 |
| 18 | 8.29 | 0.0215 | 42 | 2.32 | 1480.8 | 0.0486 | 66 |
| 19 | 8.29 | 0.0236 | 43 | 3.31 | 1853.7 | 0.0259 | 67 |
| 20 | 8.30 | 0.0206 | 44 | 3.32 | 1862.0 | 0.0483 | 68 |
| 21 | 8.31 | 0.0243 | 45 | 3.34 | 1870.0 | 0.0519 | 69 |
| 22 | 8.32 | 0.0233 | 46 | 3.34 | 1871.4 | 0.0540 | 70 |
| 23 | 8.32 | 0.0239 | 47 | 3.36 | 1878.8 | 0.0273 | 71 |
| 24 | 8.33 | 0.0235 | 48 | 3.57 | 1784.0 | 0.0318 | 72 |

| No. | (ppm) | Value | Absolute Value |
|-----|---------------|-------|----------------|
| 1 | [1.55 - 1.72] | 1.368 | 3.83857e+5 |
| 2 | [1.81 - 1.99] | 2.053 | 5.76046e+5 |
| 3 | [2.08 - 2.25] | 1.018 | 2.85593e+5 |
| 4 | [2.85 - 2.98] | 0.991 | 2.77972e+5 |
| 5 | [3.27 - 3.41] | 1.005 | 2.81903e+5 |
| 6 | [3.54 - 3.65] | 1.013 | 2.84094e+5 |
| 7 | [3.79 - 3.88] | 1.012 | 2.84021e+5 |
| 8 | [3.96 - 4.06] | 3.145 | 8.82310e+5 |
| 9 | [4.06 - 4.18] | 9.287 | 2.60515e+6 |
| 10 | [4.50 - 4.62] | 1.008 | 2.82857e+5 |
| 11 | [7.12 - 7.19] | 1.000 | 2.80525e+5 |
| 12 | [7.32 - 7.39] | 1.016 | 2.85049e+5 |
| 13 | [7.55 - 7.59] | 1.005 | 2.81903e+5 |
| 14 | [7.59 - 7.67] | 2.038 | 5.71582e+5 |
| 15 | [7.73 - 7.79] | 2.056 | 5.76708e+5 |
| 16 | [7.79 - 7.86] | 1.058 | 2.96799e+5 |
| 17 | [7.97 - 8.05] | 1.035 | 2.90233e+5 |

| No. | Multiplet | Shift | (ppm) | J (Hz) | Type | H's | No. | Multiplet | Shift | (ppm) | J (Hz) | Type | H's |
|-----|-----------|-------|---------------|--------|------|-----|-----|-----------|-------|---------------|--------|------|-----|
| 1 | M17 | 1.85 | [1.59 - 1.72] | - | m | 1 | 11 | M9 | 4.13 | [4.07 - 4.18] | - | m | 9 |
| 2 | M16 | 1.91 | [1.82 - 1.99] | - | m | 2 | 12 | M8 | 4.56 | [4.49 - 4.62] | - | m | 1 |
| 3 | M15 | 2.17 | [2.09 - 2.24] | - | m | 1 | 13 | M7 | 7.15 | [7.12 - 7.19] | - | s | 1 |
| 4 | M14 | 2.89 | [2.84 - 2.95] | 13.46 | dd | 1 | 14 | M6 | 7.35 | [7.32 - 7.38] | - | s | 1 |
| 5 | M14 | 2.89 | [2.84 - 2.95] | 11.17 | dd | 1 | 15 | M5 | 7.57 | [7.55 - 7.59] | - | m | 1 |
| 6 | M13 | 3.33 | [3.28 - 3.39] | - | m | 1 | 16 | M4 | 7.64 | [7.59 - 7.68] | - | m | 2 |
| 7 | M12 | 3.59 | [3.54 - 3.64] | - | m | 1 | 17 | M3 | 7.76 | [7.72 - 7.79] | - | s | 2 |
| 8 | M11 | 3.84 | [3.79 - 3.88] | 13.46 | dd | 1 | 18 | M2 | 7.83 | [7.80 - 7.86] | - | s | 1 |
| 9 | M11 | 3.84 | [3.79 - 3.88] | 3.44 | dd | 1 | 19 | M1 | 8.01 | [7.98 - 8.04] | 7.73 | dd | 1 |
| 10 | M10 | 4.02 | [3.97 - 4.07] | - | s | 3 | 20 | M1 | 8.01 | [7.98 - 8.04] | 1.72 | dd | 1 |

| | | | | | | | | | |
|------------------------|----------|------------------------|----------------------|--------------|--|-----------------|------------------|---------|-----------------|
| Acquisition Time (sec) | 0.8336 | Date | 13 Dec 2017 17:08:38 | File Name | \\4573mouse-cdm\m\yamaoka\43ppp-13-1.als | Frequency (MHz) | 125.77 | Nucleus | ¹³ C |
| Number of Transients | 33 | Original Points Count | 26214 | Points Count | 26214 | Pulse Sequence | single_pulse_dec | Solvent | CHLOROFORM-D |
| Sweep Width (Hz) | 31446.06 | Temperature (degree C) | 19.200 | | | | | | |



| No. | (ppm) | (Hz) | Height | No. | (ppm) | (Hz) | Height |
|-----|--------|---------|--------|-----|--------|---------|--------|
| 1 | 23.73 | 2984.3 | 0.6578 | 16 | 124.54 | 15663.3 | 0.6286 |
| 2 | 28.40 | 3698.1 | 0.4279 | 17 | 125.30 | 15759.2 | 0.3774 |
| 3 | 40.47 | 5086.7 | 0.4617 | 18 | 125.66 | 15830.0 | 0.5322 |
| 4 | 48.06 | 6044.6 | 0.6299 | 19 | 125.81 | 15822.8 | 0.4117 |
| 5 | 55.68 | 7000.7 | 0.9376 | 20 | 129.96 | 16344.7 | 0.4923 |
| 6 | 55.81 | 7018.7 | 0.8124 | 21 | 130.34 | 16392.7 | 0.4203 |
| 7 | 55.89 | 7029.5 | 1.0000 | 22 | 131.32 | 16516.2 | 0.5441 |
| 8 | 56.23 | 7071.5 | 0.7217 | 23 | 131.91 | 16590.6 | 0.1865 |
| 9 | 60.72 | 7636.5 | 0.6641 | 24 | 133.36 | 16772.9 | 0.5095 |
| 10 | 102.52 | 12894.5 | 0.5377 | 25 | 148.11 | 18627.6 | 0.3172 |
| 11 | 102.93 | 12944.9 | 0.5450 | 26 | 148.57 | 18685.2 | 0.5515 |
| 12 | 105.09 | 13217.2 | 0.4356 | 27 | 148.80 | 18715.1 | 0.4754 |
| 13 | 107.67 | 13541.1 | 0.5387 | 28 | 148.83 | 18718.7 | 0.5327 |
| 14 | 123.80 | 15570.9 | 0.8206 | 29 | 149.00 | 18739.1 | 0.4264 |
| 15 | 123.82 | 15573.3 | 0.6060 | | | | |

