Supporting Information for:

**Hydroxyl-directed Conjugate Additions of
Carbon Nucleophiles to Cyclopentadienones**

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General Procedures:

All reactions were performed under dry argon atmosphere, in freshly distilled (under nitrogen) solvents. All reagents used are commercially available. Analytical thin-layer chromatography was performed on glass plates precoated with Merck F₂₅₄ silica gel. Visualization was done either with UV light or 5.25 g PMA / 100 mL EtOH. Flash chromatography was performed with hexanes and EtOAc mixtures on silica gel with mesh 170-400 under nitrogen pressure. Preparative thin-layer chromatography was run in glass chamber with hexanes and EtOAc mixed solvents. NMR spectra were recorded on a Varian Gemini 200 (200 MHz) or a Varian Gemini 400 (400 MHz) spectrometer. Mass spectra were recorded in-house using a Kratos MS25A instrument.

Silylation of 3-((tert-butyldimethylsilyloxy)methyl)-4-(hydroxymethyl)-2,5-bis(trimethylsilyl)cyclopentadienone (**4**)

3,4-bis(hydroxymethyl)-2,5-bis(trimethylsilyl)cyclopentadienone (**1**, 79.3 mg, 0.28 mmol) was dissolved in dry DCM (11 mL) and cooled to 0 °C. Imidazole (40.7 mg, 0.60 mmol) and DMAP (1.4 mg, 0.01 mmol) were added with stirring, followed by injecting DMF (0.14 mL). After 15 minutes, TBSCl (45 mg, 0.29 mmol) was added to the reaction mixture, which was then allowed to stand at 0 °C for 4 h. The reaction was quenched with saturated NH₄Cl solution, and extracted with DCM (3 x 5 mL). The combined organic phase was washed with water (5 mL) and brine (5 mL), dried with Na₂SO₄, and concentrated. The residue was purified by flash chromatography on silica gel to give **4** as a yellow oil (61.7 mg, 0.15 mmol, 83%) and unreacted **1** (26.6 mg, 34%).

Addition reactions of 3-((tert-butyldimethylsilyloxy)methyl)-4-(hydroxymethyl)-2,5-bis(trimethylsilyl)cyclopentadienone (**4**) with Grignard reagents

To a THF (0.88 mL) solution of **4** (10.5 mg, 0.026 mmol) at -78 °C was added vinylMgBr (50.0 µL 1 M in THF, 0.05 mmol). The reaction mixture was stirred for 15 minutes at -78 °C. The dry ice-acetone bath was removed and stirring was continued for 1 h at room temperature. The reaction was quenched with saturated NH₄Cl solution, and extracted with EtOAc (3 x 0.5 mL). The combined organic phase was washed with water and brine, dried with Na₂SO₄, evaporated residue and then was purified by preparative TLC to give **6b** as an oil (4.3 mg, 0.015 mmol, 55%).

Characterization Data:

^1H NMR (C_6D_6) δ 4.49 (d, $J = 7.6$ Hz, 2H), 4.48 (s, 2H), 3.14 (t, $J = 7.2$ Hz, 1H), 0.89 (s, 9H), 0.31 (s, 9H), 0.29 (s, 9H), 0.03 (s, 6H).

^{13}C NMR (C_6D_6) δ 215.6, 174.9, 173.2, 136.8, 136.5, 65.3, 63.9, 31.2, 23.7, 5.6, 5.5, 0.0

TLC R_f 0.67 (Hexanes : EtOAc = 5 : 1).

HRMS (FAB) MH^+ calcd. for $\text{C}_{19}\text{H}_{39}\text{O}_3\text{Si}_3$ 399.2207 found 399.2217.

^1H NMR (C_6D_6) δ 5.11 (dq, $J = 8.8, 6.8$ Hz, 1H), 4.75 and 4.52 (ABq, $J = 12.8$ Hz, 2H), 3.85 (d, $J = 8.8$ Hz, 1H), 1.46 (d, $J = 6.8$ Hz, 3H), 0.91 (s, 9H), 0.31 (s, 9H), 0.29 (s, 9H), 0.06 (s, 3H), 0.05 (s, 3H).

^{13}C NMR (C_6D_6) δ 210.1, 172.8, 166.4, 132.6, 129.0, 65.9, 60.7, 25.9, 23.7, 18.4, 0.38, 0.27, -5.16, -5.19.

TLC R_f 0.65 (Hexanes : EtOAc = 5 : 1).

HRMS (EI) M^+ calcd. for $\text{C}_{20}\text{H}_{40}\text{O}_3\text{Si}_3$ 412.2285 found 412.2191, $\text{M}^+ - \text{CH}_3$ calcd. for $\text{C}_{19}\text{H}_{37}\text{O}_3\text{Si}_3$ 397.2051 found 397.2013, $\text{M}^+ - \text{C}_4\text{H}_9$ calcd. for $\text{C}_{16}\text{H}_{31}\text{O}_3\text{Si}_3$ 355.1583 found 355.1576.

^1H NMR (C_6D_6) δ 4.27 and 3.98 (ABq, $J = 13.0$ Hz, 2H), 1.32 (s, 3H), 1.13 and 1.05 (ABq, $J = 2.6$ Hz, 2H), 0.29 (s, 9H), 0.25 (s, 9H).

^{13}C NMR (C_6D_6) δ 211.9, 185.3, 133.4, 59.1, 44.4, 37.7, 29.9, 14.3, 0.2, -0.7

TLC R_f 0.34 (Hexanes : EtOAc = 5 : 1).

HRMS (FAB) MH^+ calcd. for $\text{C}_{14}\text{H}_{27}\text{O}_2\text{Si}_2$ 283.1549 found 283.1546.

^1H NMR (C_6D_6) δ 4.52 and 4.29 (ABq, J = 11.6 Hz, 2H), 4.48 and 4.34 (dABq, J = 4.4 and 8.0, 2H), 3.31 (dd, J = 4.4 and 12.8 Hz, 1H), 1.44 (s, 3H), 0.94 (s, 9H), 0.36 (s, 9H), 0.34 (s, 9H), 0.11 (s, 3H), 0.10 (s, 3H).

^{13}C NMR (C_6D_6) δ 155.0, 154.9, 151.3, 149.8, 92.8, 59.0, 57.3, 24.8, 21.9, 17.2, 0.1, 0.0, - 6.5, - 6.6.

TLC R_f 0.57 (Hexanes : EtOAc = 5 : 1).

HRMS (FAB) Both EI and FAB failed to obtain M^+ .

^1H NMR (C_6D_6) δ 4.45 and 4.17 (ABq, J = 11.4 Hz, 2H), 3.40 (m, 2H), 2.36 (s, 1H), 1.18 (s, 3H), 0.93 (s, 9H), 0.38 (s, 9H), 0.20 (s, 9H), 0.06 (s, 3H), 0.04 (s, 3H).

^{13}C NMR (C_6D_6) δ 217.4, 187.7, 150.8, 76.4, 64.1, 60.2, 56.9, 31.5, 25.6, 23.9, 5.6, 5.3, 0.2, 0.0.

TLC R_f 0.30 (Hexanes : EtOAc = 5 : 1).

HRMS (FAB) MH^+ calcd. for $\text{C}_{20}\text{H}_{43}\text{O}_3\text{Si}_3$ 415.2520, found 415.2513.

^1H NMR (C_6D_6) δ 5.41 (m, 1H), 4.98 and 4.92 (dABq, J = 1.6 and 17.2 Hz, 2H), 4.51 and 4.31 (ABq, J = 12 Hz, 2H), 4.50 and 4.35 (dABq, J = 4 and 13.6 Hz, 2H), 3.27 (dd, J = 8 and 4.4 Hz, 1H), 2.85 (dd, J = 2 and 6.8 Hz, 2H), 0.93 (s, 9H), 0.35 (s, 9H), 0.33 (s, 9H), 0.10 (s, 3H), 0.09 (s, 3H).

^{13}C NMR (C_6D_6) δ 154.5, 154.1, 154.0, 133.3, 117.0, 96.3, 59.8, 58.2, 40.0, 25.8, 18.2, 1.0, 0.9, -5.5, -5.6.

TLC R_f 0.54 (Hexanes : EtOAc = 5 : 1).

HRMS (FAB) MH^+ calcd. for $\text{C}_{22}\text{H}_{45}\text{O}_3\text{Si}_3$ 441.2676, found 441.2607, M^+ - H calcd. for $\text{C}_{22}\text{H}_{43}\text{O}_3\text{Si}_3$ 439.2520, found 439.2509, M^+ - OH calcd. for $\text{C}_{22}\text{H}_{43}\text{O}_2\text{Si}_3$ 423.2571, found 423.2451.

^1H NMR (C_6D_6) δ 5.80 (dd, J = 10.0 and 17.6 Hz, 1H), 4.97 (m, 2H), 4.31 and 4.10 (dABq, J = 6.8 and 13.4 Hz, 2H), 1.39 and 1.24 (ABq, J = 2.8 Hz, 2H), 0.29 (s, 9H), 0.21 (s, 9H).

^{13}C NMR (C_6D_6) δ 210.9, 183.9, 134.4, 133.9, 119.7, 59.4, 44.2, 40.9, 31.6, -0.2, -1.2.

TLC R_f 0.38 (Hexanes : EtOAc = 5 : 1).

HRMS (FAB) MH⁺ calcd. for C₁₅H₂₇O₂Si₂ 295.1549, found 295.1546.

¹H NMR (C₆D₆) δ 5.15 (t, *J* = 1.6 Hz, 1H), 4.74 (t, *J* = 1.6 Hz, 1H), 4.11 (d, *J* = 3.6 Hz, 2H), 2.66 (t, *J* = 1.6 Hz, 2H), 0.70 (t, *J* = 3.6 Hz, 1H), 0.33 (s, 9H).

¹³C NMR (C₆D₆) δ 207.8, 174.4, 146.8, 145.4, 109.1, 57.5, 41.3, 0.0.

TLC R_f 0.13 (Hexanes : EtOAc = 5 : 1).

HRMS (FAB) MH⁺ calcd. for C₁₀H₁₇O₂Si 197.0998, found 197.1008.

¹H NMR (C₆D₆) δ 7.05 (5H), 4.21 and 3.87 (dABq, *J* = 5.6 and 13.4 Hz, 2H), 1.67 and 1.46 (ABq, *J* = 2.8 Hz, 2H), 0.34 (s, 9H), -0.04 (s, 9H).

¹³C NMR (CDCl₃) δ 215.0, 187.0, 138.9, 135.8, 130.0, 61.6, 48.7, 43.1, 34.4, 2.0, 0.0

TLC R_f 0.36 (Hexanes : EtOAc = 5 : 1).

HRMS (FAB) MH⁺ calcd. for C₁₉H₂₉O₂Si₂ 345.1706, found 345.1696, M⁺ - OH calcd. for C₁₉H₂₇O₂Si₂ 327.1601, found 327.1309, M⁺ - CH₃ calcd. for C₁₈H₂₅O₂Si₂ 329.1394, found 329.1326.

¹H NMR (C₆D₆) δ 4.74 (q, *J* = 6.4 Hz, 1H), 1.47 (s, 3H), 1.22 (d, *J* = 6.4 Hz, 3H), 1.03 and 1.00 (ABq, *J* = 2.4 Hz, 2H), 0.269 (s, 9H), 0.267 (s, 9H).

¹³C NMR (C₆D₆) δ 211.9, 188.0, 132.7, 67.4, 45.0, 37.7, 30.1, 22.3, 16.4, 0.21, -0.84.

TLC R_f 0.32 (Hexanes : EtOAc = 5 : 1).

HRMS (EI) M⁺ calcd. for C₁₅H₂₈O₂Si₂ 296.1628, found 296.1629, M⁺ - CH₃ calcd. for C₁₄H₂₅O₂Si₂ 281.1394, found 281.1376.

¹H NMR (C₆D₆) δ 5.04 (dq, *J* = 9.6 and 6.8 Hz, 1H), 4.73 and 4.47 (ABq, *J* = 12 Hz, 2H), 4.35 (d, *J* = 9.6 Hz, 1H), 1.49 (d, *J* = 6.8 Hz, 3H), 0.96 (s, 9H), 0.36 (s, 9H), 0.35 (s, 9H), 0.14 (s, 3H), 0.12 (s, 3H).

^{13}C NMR (C_6D_6) not available due to very small sample.

TLC R_f 0.38 (Hexanes : EtOAc = 5 : 1).

HRMS (EI) M^+ calcd. for $\text{C}_{21}\text{H}_{44}\text{O}_3\text{Si}_3$ 428.2598, found 428.2555, $\text{M}^+ - \text{H}_2\text{O}$ calcd. for $\text{C}_{21}\text{H}_{42}\text{O}_2\text{Si}_3$ 410.2493, found 410.2482.

^1H NMR (C_6D_6) δ 4.37 and 4.08 (ABq, J = 11.2 Hz, 2H), 3.84 (dq, J = 4.8 and 6.4 Hz, 1H), 2.70 and 1.89 (ABq, J = 17.6 Hz, 2H), 2.69 (d, J = 4.8 Hz, 1H), 0.98 (d, J = 6.4 Hz, 3H), 0.89 (s, 9H), 0.85 (s, 3H), 0.36 (s, 9H), 0.02 (s, 3H), 0.00 (s, 3H).

^{13}C NMR (C_6D_6) δ 210.6, 183.9, 144.7, 70.2, 58.3, 53.8, 45.2, 25.7, 23.3, 18.1, 18.0, -0.2, -5.6, -5.8.

TLC R_f 0.15 (Hexanes : EtOAc = 5 : 1).

HRMS (EI) MH^+ calcd. for $\text{C}_{18}\text{H}_{37}\text{O}_3\text{Si}_2$ 356.2203, found 356.2206.

^1H NMR (C_6D_6) δ 5.52 (m, 1H), 4.97 (m, 2H), 4.96 (dq, J = 8.8 and 6.8 Hz, 1H), 4.66 and 4.55 (ABq, J = 11.6 Hz, 2H), 3.84 (d, J = 8.8 Hz, 1H), 2.86 (m, 2H), 1.54 (d, J = 6.8 Hz, 3H), 0.95 (s, 9H), 0.33 (s, 9H), 0.32 (s, 9H), 0.13 (s, 3H), 0.11 (s, 3H).

^{13}C NMR (C_6D_6) δ 158.2, 155.9, 152.1, 151.4, 133.4, 116.9, 95.7, 66.3, 60.7, 40.0, 25.8, 23.8, 18.2, 1.12, 1.11, -5.34, -5.37.

TLC R_f 0.29 (Hexanes : EtOAc = 10 : 1).

HRMS (EI) M^+ calcd. for $\text{C}_{23}\text{H}_{46}\text{O}_3\text{Si}_3$ 454.2755, found 454.2757.

^1H NMR (C_6D_6) δ 5.32 (m, 1H), 5.00 (m, 2H), 4.94 (dq, J = 12 and 6.8 Hz, 1H), 4.69 and 4.43 (ABq, J = 12 Hz, 2H), 4.43 (d, J = 12 Hz, 1H), 2.82 (d, J = 7.2, 2H), 1.48 (d, J = 6.8 Hz, 3H), 0.96 (s, 9H), 0.34 (s, 9H), 0.33 (s, 9H), 0.13 (s, 3H), 0.11 (s, 3H).

^{13}C NMR (C_6D_6) δ 157.9, 155.7, 151.9, 151.2, 133.2, 116.8, 95.3, 66.1, 60.6, 40.0, 25.8, 24.0, 18.2, 1.13, 0.99, -5.4, -5.5.

TLC R_f 0.21 (Hexanes : EtOAc = 10 : 1).

HRMS (EI) M^+ calcd. for $\text{C}_{23}\text{H}_{46}\text{O}_3\text{Si}_3$ 454.2755, found 454.2766.

^1H NMR (C_6D_6) δ 6.20 and 6.16 (ABq, $J = 10$ Hz, 1H), 4.89 (m, 2H), 4.79 (q, $J = 6.4$ Hz, 1H), 1.50 and 1.10 (ABq, $J = 2.8$ Hz, 2H), 1.22 (d, $J = 6.4$ Hz, 3H), 0.27 (s, 9H), 0.22 (s, 9H).

^{13}C NMR (C_6D_6) δ 211.2, 186.8, 135.4, 133.2, 118.3, 67.8, 44.2, 40.2, 31.3, 23.0, 0.01, -0.91.

TLC R_f 0.51 (Hexanes : EtOAc = 5 : 1).

HRMS (FAB) MH^+ calcd. for $\text{C}_{16}\text{H}_{29}\text{O}_2\text{Si}_2$ 309.1706, found 309.1694, $\text{M}^+ - \text{OH}$ calcd. for $\text{C}_{16}\text{H}_{27}\text{OSi}_2$ 291.1601, found 291.1574.

^1H NMR (C_6D_6) δ 6.90 and 7.40 (5H), 4.77 (q, $J = 6.8$ Hz, 1H), 1.61 and 1.32 (ABq, $J = 3.2$ Hz, 2H), 1.15 (d, $J = 6.8$ Hz, 3H), 0.37 (s, 9H), -0.05 (s, 9H).

^{13}C NMR (C_6D_6) δ 211.8, 187.2, 137.6, 133.4, 132.1, 129.6, 128.8, 68.2, 46.7, 40.8, 32.1, 23.4, 0.22, -2.19.

^{13}C NMR (CD_3OD) δ 215.8, 191.9, 138.4, 134.1, 133.6, 131.1, 129.7, 128.8, 128.4, 68.3, 43.4, 33.4, 22.7, 0.56, -2.04.

TLC R_f 0.52 (Hexanes : EtOAc = 5 : 1).

HRMS (EI) M^+ calcd. for $\text{C}_{20}\text{H}_{30}\text{O}_2\text{Si}_2$ 358.1784, found 358.1782.

N3P19
 Archive directory: /export/home/hxs77/vnmr-sys/data
 Sample directory: hxs77_27Nov2005-19:34:20
 File: PROTON
 Pulse Sequence: szput

Cc1c(C(=O)O)cc(C(=O)OC)cc1C

4

7.160
 4.481
 4.500
 3.158
 3.140
 3.124
 0.886
 0.307
 0.291
 0.030

11.05
 2.63
 24.66
 46.08
 15.58

ppm

```
Archive directory: /export/home/hxs77/vnmrsys/data
Sample directory: N3P19_27Nov2005
File: CARBON
Pulse Sequence: s2pu1
```

C[C@H](O)C1=C(C(=O)OC1Si(C)(C)C)C(C)=C(C1=CC=CC=C1)C1=CC=CC=C1

5

```
Archive directory: /export/home/mxz35/vnmrSYS/data
Sample directory: mxz35_22dec2005
File: PROTON
Pulse Sequence: szpu}
```

```
Archive directory: /export/home/mxz35/vnmr/sys/data
Sample directory: N3P3-rxn2,C6D6_22Dec2005
File: CARBON
Pulse Sequence: s2pu1
```

N3P76-1-3_08Apr2006
Archive directory: /export/home/hxs77/vnmrsys/data
Sample directory: N3P76-1-3_08Apr2006
File: CARBON
Pulse Sequence: s2pu]

The figure displays a ¹³C NMR spectrum of compound 8. The x-axis represents the chemical shift in ppm, ranging from 0 to 220. The spectrum shows several sharp peaks corresponding to different carbon environments in the molecule. Key peaks are labeled with their chemical shifts: 217.424, 187.735, 150.783, 133.855, 133.733, 133.619, 133.487, 133.375, 133.146, 132.894, 76.391, 64.063, 60.196, 56.908, 31.467, 31.444, 25.631, 23.854, 5.622, 5.264, and 0.160. A reference peak at 0.000 is also present. To the right of the spectrum, the chemical structure of compound 8 is shown, which is a substituted cyclopentenone derivative.

Chemical structure of compound 8:

O=C1C(=C(C)C1OC(=O)C)OC(=O)C

Peak labels (ppm):

- 217.424
- 187.735
- 150.783
- 133.855
- 133.733
- 133.619
- 133.487
- 133.375
- 133.146
- 132.894
- 76.391
- 64.063
- 60.196
- 56.908
- 31.467
- 31.444
- 25.631
- 23.854
- 5.622
- 5.264
- 0.160
- 0.000

```
Archive directory: /export/home/mx235/vnmr/sys/data
Sample directory: mx235_13dec2005-21:45:36
File: PROTON
Pulse Sequence: s2pu1
```

9

N3P23-TXn4-2
 Archive directory: /export/home/mx35/vmrays/data
 Sample directory: mx35_120ec2805-16-38:49
 File: PROTON
 Pulse Sequence: szpu1

N3P29-rxn4_12Dec2005
 Archive directory: /export/home/mx35/vnmr sys/data
 Sample directory: N3P29-rxn4_12Dec2005
 File: CARBON
 Pulse Sequence: szpu1

```
Archive directory: /export/home/mxz35/vnmr.sys/data
Sample directory: mxz35_15Dec2005-13:13:45
File:          PROTON
Pulse sequence: s2pu1
```

N3P34-RXN2_08Apr2006
 Archive directory: /export/home/hxs77/vnmr sys/data
 Sample directory: N3P34-RXN2_08Apr2006
 File: CARBON
 Pulse Sequence: szpul

220
 200
 180
 160
 140
 120
 100
 80
 60
 40
 20
 0 ppm

214.975
 186.963
 138.859
 135.838
 129.980
 138.859
 129.980
 79.495
 79.381
 79.182
 78.862
 78.641
 61.629
 48.699
 43.100
 34.373
 1.960
 0.000

6c
O=C1C(=C(C1)C(=O)O)C2(C)C(C2)C3=CC=CC=C3

NSP07-2

Archive directory: /export/home/hns77/nmr/psys/data
 Sample directory: hns77_18apr2006-21:54:55
 File: PROTON
 Pulse Sequence: szpu1

N3P07-2_10Apr2006
 Archive directory: /export/home/hxs77/vnmrSYS/data
 Sample directory: N3P07-2_10Apr2006
 File: CARBON
 Pulse Sequence: zgpg30

```
Archive directory: /export/home/hxs77/vnmr/sys/data
Sample directory: hxs77_10Apr2006-21:41:37
File: PROTON
Pulse Sequence: s2pu1
```

NSP08-4
 Archive directory: /export/home/hx577/chemsys/data
 Sample directory: hx577_10Apr2006-21:47:31
 File: PROTON
 Pulse Sequence: szpul

mx35_25Feb2005
 Data saved in:
 chm400:/export/home/mxz35/vnmr/sys/data
 Archive directory: /export/home/mxz35/vnmr/sys/data
 Sample directory: mx35_25Feb2005
 File: PROTON
 Pulse Sequence: szpu1

14 - 1st diastereomer

mx235_25feb2005
 Data saved in:
 chem400:/export/home/mx235/vnmr/sv/data
 Archive directory: /export/home/mx235/vnmr/sv/data
 Sample directory: mx235_25feb2005
 File: PROTON
 Pulse Sequence: szpu1

14 - 1st diastereomer

```
Archive directory: /export/home/mx35/vnmr/sys/data
Sample directory: N2p18-2_07Mar2005
File: CARBON
Pulse Sequence: s2pu1
```

mx35_25Feb2005-17:02:23
 Data saved in:
 chem400:/export/home/mx35/vnmr/sv/data
 Archive directory: /export/home/mx35/vnmr/sv/data
 Sample directory: mx35_25Feb2005-17:02:23
 File: PROTON
 Pulse Sequence: szpu1

mx235_13May2005
 Data saved in:
 chem400:/export/home/mx235/vnmr/sys/data
 Archive directory: /export/home/mx235/vnmr/sys/data
 Sample directory: mx235_13May2005
 File: PROTON
 Pulse Sequence: szpu1

Archive directory: /export/home/mx35/vmrsvs/data
Sample directory: N2P23-cyclopropane_28Apr2005
File: gHMQC

Pulse Sequence: ghmqc
Solvent: C6D6
Temp: 25.0 C / 298.1 K
INNOVA-400 "chem400"

```
Relax. delay 1.000 sec
Acq. time 0.166 sec
Width 6395.9 Hz
2D width 12791.8 Hz
4D resolution 12086.7 Hz
2 x 128 increments
OBSERVE H1, 399.7468401 MHz
DECODE C13, 100.5539199 MHz
Power 93 dB
on during acquisition
off during acquisition
M0 during acquisition
DATA PROCESSING
Gauss approximation 0.074 sec
F1 DATA PROCESSING
Gauss approximation 0.014 sec
F1 size 2048 x 2048
TOTAL time 21 min., 22 sec
```

Archive directory: /export/home/mxz35/vmr/sys/data
Sample directory: N2P23-cyclopropane_28Apr2005
File: CHM03

Pulse Sequence: gHMQC

Solvent: C6D6
Temp. 25.0 C / 298.1 K
INOVA-400 "chem400"

```

Relax. delay 1.000 sec
Acq. time 0.160 sec
Width 6385.9 Hz
2048pts/6385.9 Hz
2048/6385.9=0.319167
2 x 128 increments
OBSERVE H1, 399.7466401 MHz
DECOUPLE C13, 100.5533199 MHz
Power 35.0 dB
on during acquisition
V40 amp. modulated
DATA PROCESSING
Gauss apodization 0.074 sec
F1 DATA PROCESSING
F1 Gauss apodization 0.014 sec
FT size 2048 x 2048
Total time 21 min, 22 sec

```

HMOC

Archive directory: /export/home/mxz35/vnmrsvs/data
Sample directory: N2P23-cyclopropane_28Apr2005
File: ghmoc

Pulse Sequence: ghmoc

Solvent: CSD5
Temp: 25.0 C / 298.1 K
INOVA-400 "chem400"

Relax. delay: 1.000 sec
Acq. time: 0.160 sec
Width: 6395.9 Hz
ZD Width: 17086.7 Hz
2 repetitions
2 x 321000 points
OBSERVE H1: 399.7466401 MHz
DECOUPLE C13: 100.5639193 MHz
Power: 35 dB
on during acquisition
off during delay
1240 - nuc. acq. delay
DATA ACQUISITION
Gauss apodization: 0.074 sec
F1 DATA PROCESSING
Gauss apodization: 0.014 sec
F1 size: 2048 x 2048
Total time: 21 min, 22 sec

11b

N2P19_14Mar2005-21:45:16
Archive directory: /export/home/mxz35/vnmr/sys/data
Sample directory: N2P19_14Mar2005-21:45:16
File: CARBON
Pulse Sequence: s2pul1

```
Archive directory: /export/home/mx235/vmr/sys/data
Sample directory: N2P19_16Mar2005-13:11:26
File: gHMQC
```

File: gnmqs

Pulse Sequence: gnmqc

Solvent: C6D6
Temp. 25.0 C / 298.1 K

INOVA-400 "chem400"

Relax. delay 1.000 sec
Acc. + 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10000 10500 11000 11500 12000 12500 13000 13500 14000 14500 15000 15500 16000 16500 17000 17500 18000 18500 19000 19500 20000 20500 21000 21500 22000 22500 23000 23500 24000 24500 25000 25500 26000 26500 27000 27500 28000 28500 29000 29500 30000 30500 31000 31500 32000 32500 33000 33500 34000 34500 35000 35500 36000 36500 37000 37500 38000 38500 39000 39500 40000 40500 41000 41500 42000 42500 43000 43500 44000 44500 45000 45500 46000 46500 47000 47500 48000 48500 49000 49500 50000 50500 51000 51500 52000 52500 53000 53500 54000 54500 55000 55500 56000 56500 57000 57500 58000 58500 59000 59500 60000 60500 61000 61500 62000 62500 63000 63500 64000 64500 65000 65500 66000 66500 67000 67500 68000 68500 69000 69500 70000 70500 71000 71500 72000 72500 73000 73500 74000 74500 75000 75500 76000 76500 77000 77500 78000 78500 79000 79500 80000 80500 81000 81500 82000 82500 83000 83500 84000 84500 85000 85500 86000 86500 87000 87500 88000 88500 89000 89500 90000 90500 91000 91500 92000 92500 93000 93500 94000 94500 95000 95500 96000 96500 97000 97500 98000 98500 99000 99500 100000 100500 101000 101500 102000 102500 103000 103500 104000 104500 105000 105500 106000 106500 107000 107500 108000 108500 109000 109500 110000 110500 111000 111500 112000 112500 113000 113500 114000 114500 115000 115500 116000 116500 117000 117500 118000 118500 119000 119500 120000 120500 121000 121500 122000 122500 123000 123500 124000 124500 125000 125500 126000 126500 127000 127500 128000 128500 129000 129500 130000 130500 131000 131500 132000 132500 133000 133500 134000 134500 135000 135500 136000 136500 137000 137500 138000 138500 139000 139500 140000 140500 141000 141500 142000 142500 143000 143500 144000 144500 145000 145500 146000 146500 147000 147500 148000 148500 149000 149500 150000 150500 151000 151500 152000 152500 153000 153500 154000 154500 155000 155500 156000 156500 157000 157500 158000 158500 159000 159500 160000 160500 161000 161500 162000 162500 163000 163500 164000 164500 165000 165500 166000 166500 167000 167500 168000 168500 169000 169500 170000 170500 171000 171500 172000 172500 173000 173500 174000 174500 175000 175500 176000 176500 177000 177500 178000 178500 179000 179500 180000 180500 181000 181500 182000 182500 183000 183500 184000 184500 185000 185500 186000 186500 187000 187500 188000 188500 189000 189500 190000 190500 191000 191500 192000 192500 193000 193500 194000 194500 195000 195500 196000 196500 197000 197500 198000 198500 199000 199500 200000 200500 201000 201500 202000 202500 203000 203500 204000 204500 205000 205500 206000 206500 207000 207500 208000 208500 209000 209500 210000 210500 211000 211500 212000 212500 213000 213500 214000 214500 215000 215500 216000 216500 217000 217500 218000 218500 219000 219500 220000 220500 221000 221500 222000 222500 223000 223500 224000 224500 225000 225500 226000 226500 227000 227500 228000 228500 229000 229500 230000 230500 231000 231500 232000 232500 233000 233500 234000 234500 235000 235500 236000 236500 237000 237500 238000 238500 239000 239500 240000 240500 241000 241500 242000 242500 243000 243500 244000 244500 245000 245500 246000 246500 247000 247500 248000 248500 249000 249500 250000 250500 251000 251500 252000 252500 253000 253500 254000 254500 255000 255500 256000 256500 257000 257500 258000 258500 259000 259500 260000 260500 261000 261500 262000 262500 263000 263500 264000 264500 265000 265500 266000 266500 267000 267500 268000 268500 269000 269500 270000 270500 271000 271500 272000 272500 273000 273500 274000 274500 275000 275500 276000 276500 277000 277500 278000 278500 279000 279500 280000 280500 281000 281500 282000 282500 283000 283500 284000 284500 285000 285500 286000 286500 287000 287500 288000 288500 289000 289500 290000 290500 291000 291500 292000 292500 293000 293500 294000 294500 295000 295500 296000 296500 297000 297500 298000 298500 299000 299500 300000 300500 301000 301500 302000 302500 303000 303500 304000 304500 305000 305500 306000 306500 307000 3075

Width 6395.9 Hz

8 repetitions

OBSERVE M1, 399.7499766 MHZ

Power 35 dB

off during delay

W40_4110C MODULATED
DATA_PROCESSING

GAUSS approximation U.0/4 sec
F1 DATA PROCESSING

Gauss apodization 0.022 sec
FT size 2048 x 4096

Total time 1 hr, 5 min, 33 sec

N2P19

Archive directory: /export/home/mx235/vnmr/sys/data
Sample directory: N2P19_16Mar2005-13:11:26
F10: ghmoc

Pulse Sequence: ghmoc

Solvent: C6D6
Temp: 25.0 C / 298.1 K
INOVA-400 "chem400"

Relax. delay 1.000 sec
Acq. time 0.160 sec
Width 6395.9 Hz
20 Width 17086.7 Hz
2 repetition increments
2.000 increments
OBSERVE H1 399.749766 MHz
DECOUPLE C13, 100.5247390 MHz
Power 35 dB
on during acquisition
off during delay
V10 PNUC acoulated
V10 PNUC acoulated
DAT PROCESSING
Gauss apodization 0.074 sec
F1 DATA PROCESSING
Gauss apodization 0.022 sec
F1 size 2048 x 4096
Total time 1 hr, 5 min, 33 sec

```
Archive directory: /export/home/mxz35/vmr/sys/data
Sample directory: N2P19_14Mar2005
File: gcOSY
```

Solvent: C6D6
Temp. 25.0 C / 298.1 K
INOVA-400 "chem400"

```
Relax. delay 1.000 sec
Acq. time 0.160 sec
Width 6395.9 Hz
20 Width 6395.9 Hz
2 repetitions
128 increments
OBSERVE H1, 399.749976 MHz
DATA PROCESSING
Sq. sine bell 0.000 sec
F1 DATA PROCESSING
Sq. sine bell 0.020 sec
F1 size 2048 x 2048
Total time 5 min, 21 sec
```