

## Supporting information

### Highly diastereoselective synthesis of imidazolidine-dispirooxindoles via three-component [3+2] cycloadditions of isatins, 2-(aminomethyl)pyridine and isatin-based imines

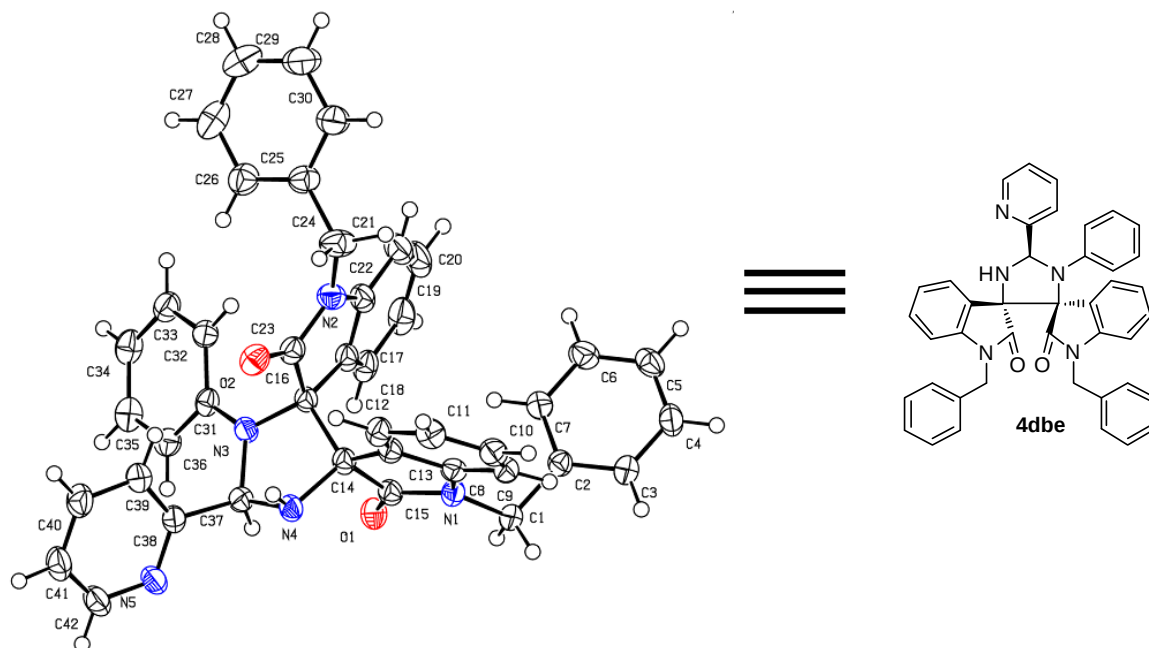
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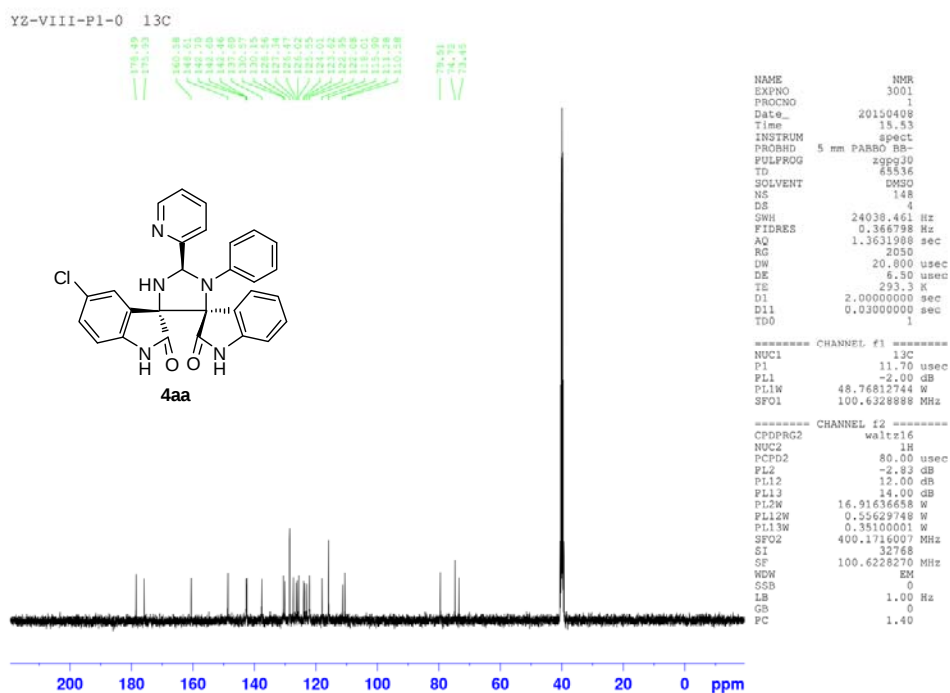
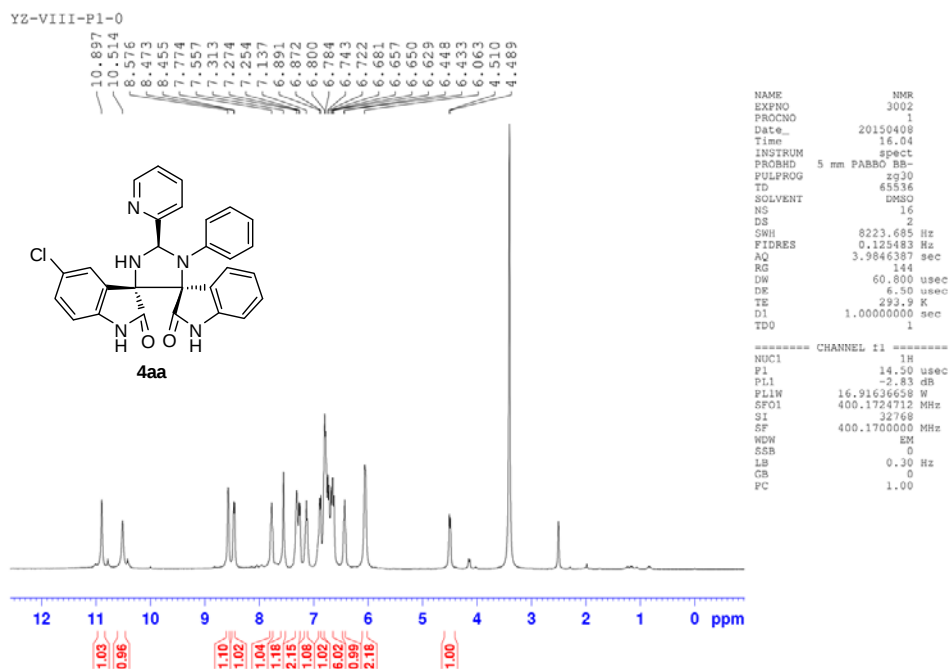
## X-Ray crystal data of compound 4de:



|                                  |                                                                                                                              |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Empirical formula                | $C_{42}H_{33}N_5O_2$                                                                                                         |
| Formula weight                   | 639.73                                                                                                                       |
| Temperature                      | 113(2) K                                                                                                                     |
| Wavelength                       | 0.71073 Å                                                                                                                    |
| Crystal system, space group      | Orthorhombic, $P2(1)2(1)2(1)$                                                                                                |
| Unit cell dimensions             | $a = 10.042(2)$ Å $\alpha = 90^\circ$ .<br>$b = 17.602(4)$ Å $\beta = 90^\circ$ .<br>$c = 18.655(4)$ Å $\gamma = 90^\circ$ . |
| Volume                           | $3297.3(11)$ Å <sup>3</sup>                                                                                                  |
| Z, Calculated density            | 4, 1.289 Mg/m <sup>3</sup>                                                                                                   |
| Absorption coefficient           | $0.081 \text{ mm}^{-1}$                                                                                                      |
| $F(000)$                         | 1344                                                                                                                         |
| Crystal size                     | $0.20 \times 0.18 \times 0.12$ mm                                                                                            |
| Theta range for data collection  | $1.59$ to $27.88^\circ$ .                                                                                                    |
| Limiting indices                 | $-13 \leq h \leq 12$ , $-23 \leq k \leq 23$ , $-24 \leq l \leq 23$                                                           |
| Reflections collected / unique   | 33430 / 7861 [ $R(\text{int}) = 0.0476$ ]                                                                                    |
| Completeness to $\theta = 27.89$ | 99.9%                                                                                                                        |
| Absorption correction            | Semi-empirical from equivalents                                                                                              |
| Max. and min. transmission       | 0.9904 and 0.9840                                                                                                            |
| Refinement method                | Full-matrix least-squares on $F^2$                                                                                           |
| Data / restraints / parameters   | 7861 / 1 / 447                                                                                                               |

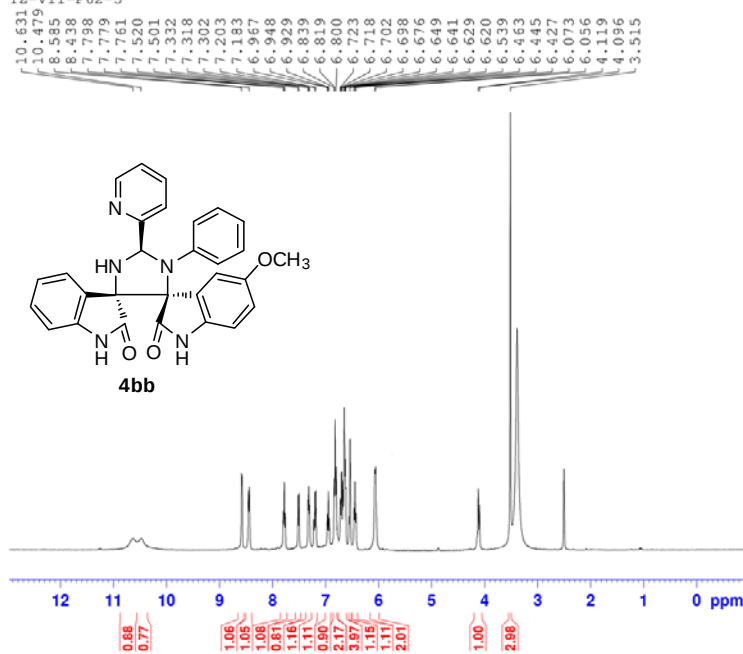
|                                      |                                       |
|--------------------------------------|---------------------------------------|
| Goodness-of-fit on $F^2$             | 1.063                                 |
| Final R indices [ $I > 2\sigma(I)$ ] | $R_1 = 0.0479$ , $wR_2 = 0.1072$      |
| R indices (all data)                 | $R_1 = 0.0558$ , $wR_2 = 0.1123$      |
| Absolute structure parameter         | 0.0(11)                               |
| Extinction coefficient               | 0.0255(13)                            |
| Largest diff. peak and hole          | 0.202 and -0.211 e. $\text{\AA}^{-3}$ |

**Copies of  $^1\text{H}$  NMR and  $^{13}\text{C}$  NMR spectra for imidazolidine-dispirooxindoles**





YZ-VII-P62-3



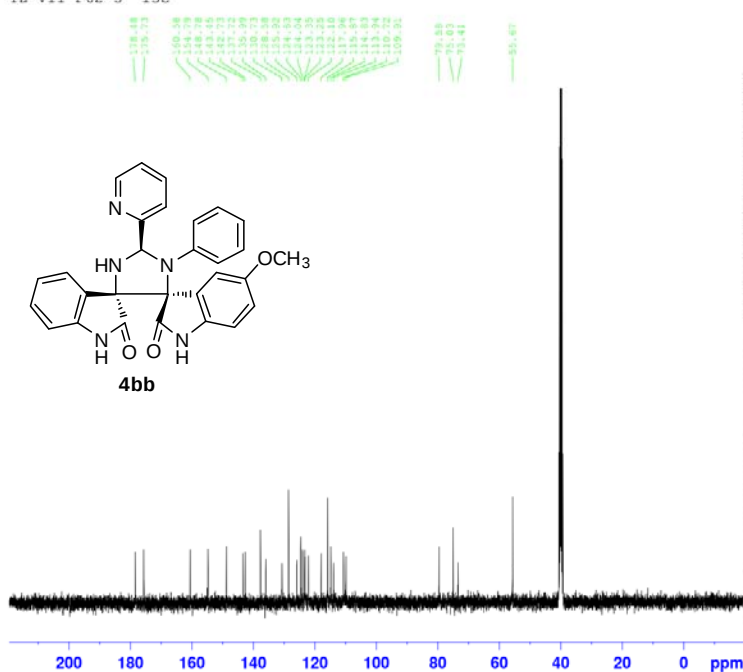
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EXPNO         3016
PROCNO        1
Date_         20150410
Time          16.51
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       DMSO
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            144
DW            60.800 usec
DE            6.50 usec
TE            296.0 K
D1            1.00000000 sec
TD0           1

===== CHANNEL f1 =====
NUC1          1H
P1            14.50 usec
PL1           -2.83 dB
PL1W          16.91636658 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700000 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00

```

YZ-VII-P62-3 13c



```

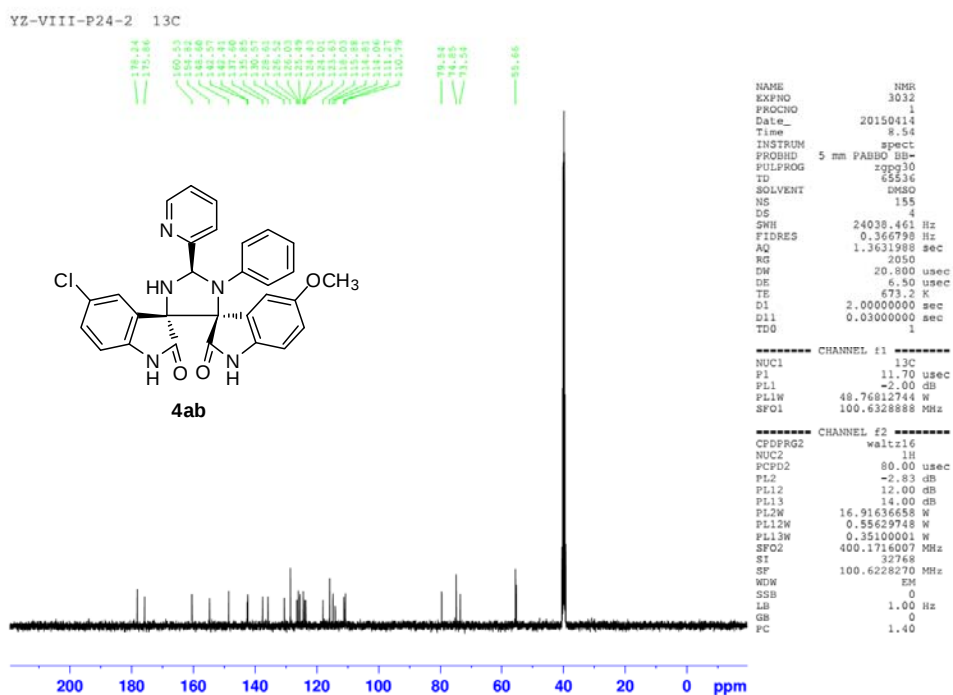
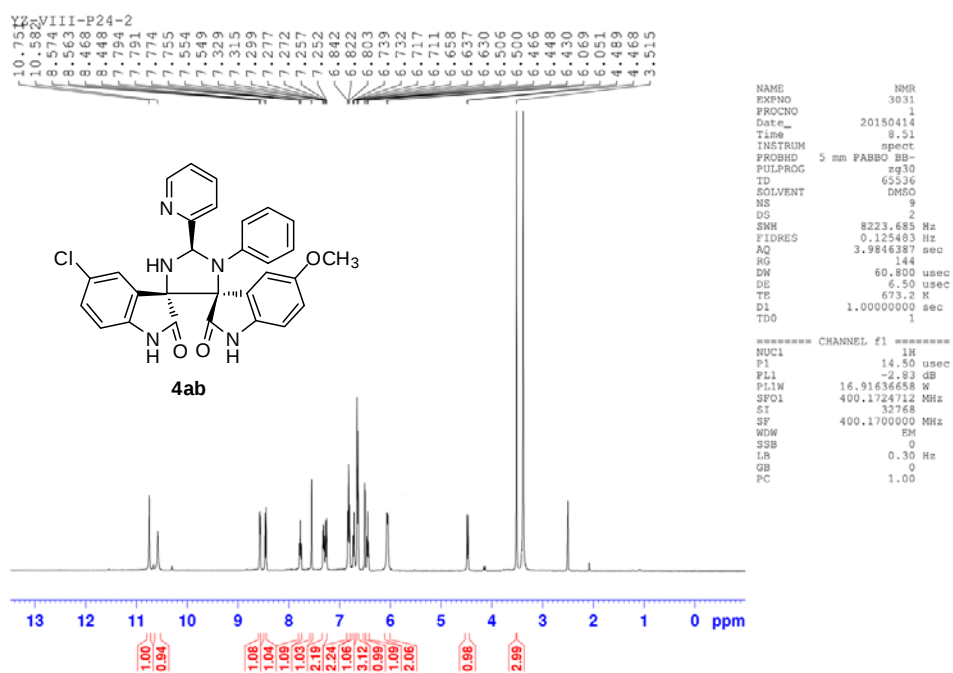
NAME          NMR
EXPNO         3017
PROCNO        1
Date_         20150410
Time          16.57
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            196
DS            4
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            2050
DW            20.800 usec
DE            6.50 usec
TE            296.3 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1

===== CHANNEL f1 =====
NUC1          13C
P1            11.70 usec
PL1           -2.00 dB
PL1W          48.76812744 W
SFO1          100.6328888 MHz

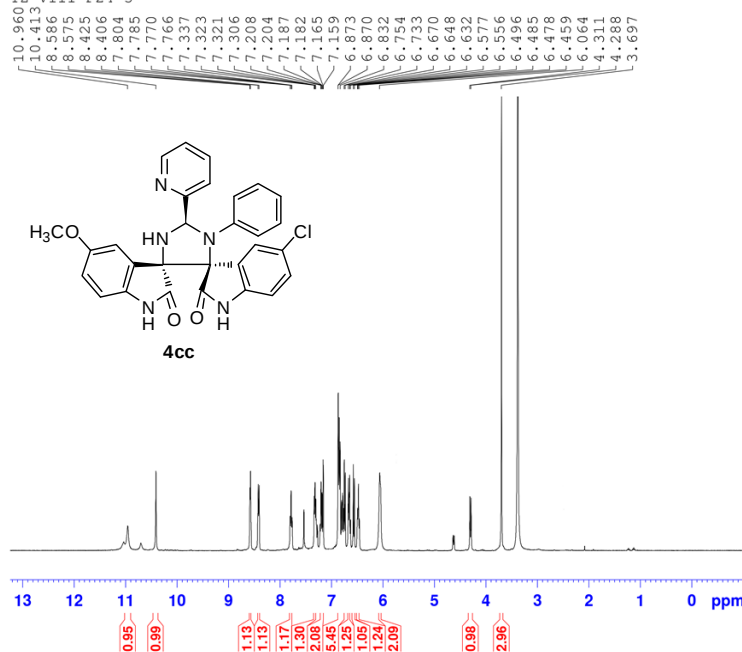
===== CHANNEL f2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           -2.83 dB
PL12          12.00 dB
PL13          14.00 dB
PL2W          16.91636658 W
PL12W         0.55629748 W
PL13W         0.35100001 W
SFO2          400.1716007 MHz
SI            32768
SF            100.6228270 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40

```





YZ-VIII-P24-3



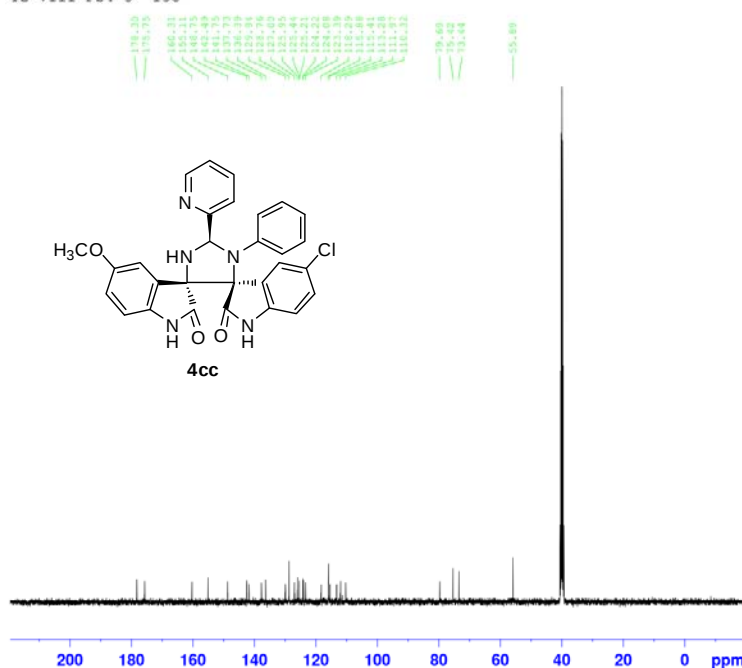
```

NAME          NMR
EXPNO         3034
PROCNO        1
Date_         20150414
Time          9.24
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       DMSO
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            128
DW            60.800 usec
DE            6.50 usec
TE            673.2 K
D1            1.00000000 sec
D11           1
TD0           1

===== CHANNEL f1 =====
NUC1          1H
P1            14.50 usec
PL1           -2.83 dB
PL1W          16.91636658 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700000 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00

```

YZ-VIII-P24-3 13C



```

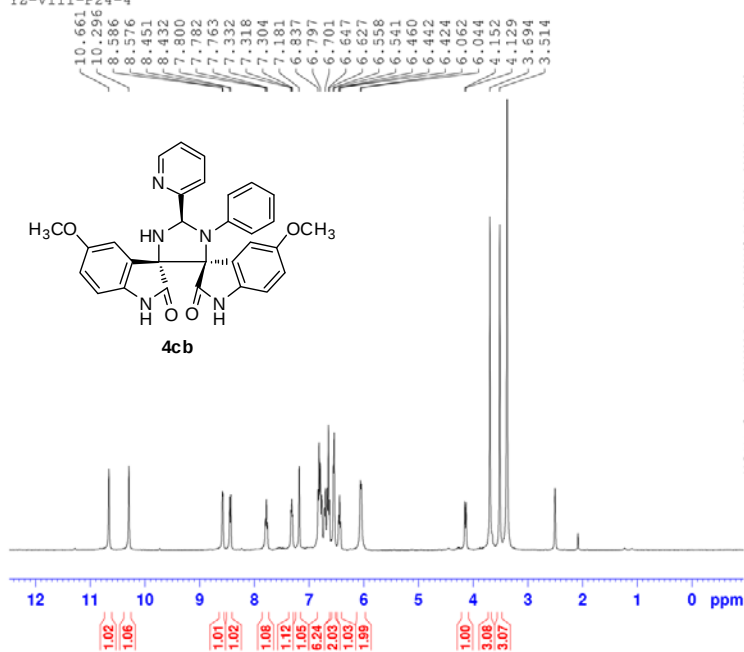
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EXPNO         3033
PROCNO        1
Date_         20150414
Time          9.14
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            263
DS            4
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            2080
DW            20.800 usec
DE            6.50 usec
TE            673.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1

===== CHANNEL f1 =====
NUC1          13C
P1            11.70 usec
PL1           -2.00 dB
PL1W          48.76812744 W
SFO1          100.6228888 MHz

===== CHANNEL f2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           -2.83 dB
PL12          12.00 dB
PL13          14.00 dB
PL1W          16.91636658 W
PL12W         0.55629748 W
PL13W         0.35100001 W
SFO2          400.1716007 MHz
SI            32768
SF            100.6228270 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40

```

YZ-VIII-P24-4

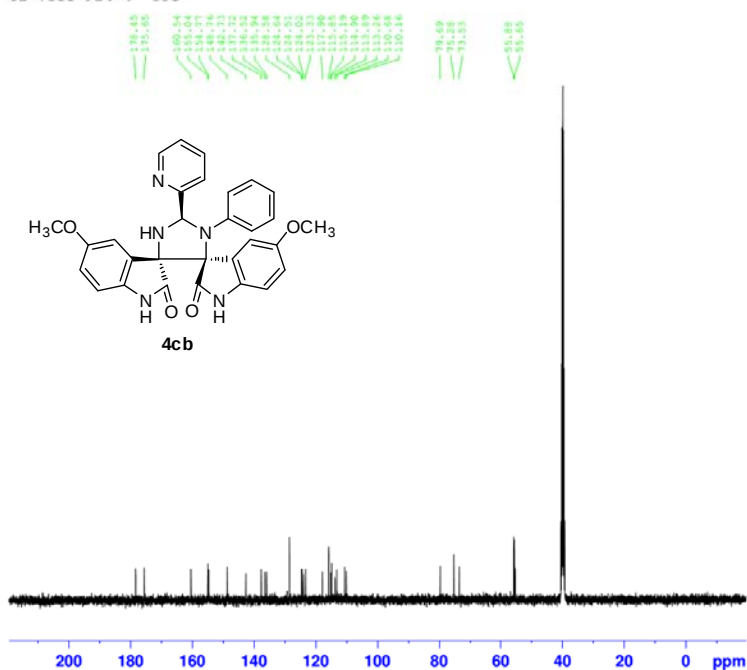


```

NAME          NMR
EXPNO         3027
PROCNO        1
Date_         20150413
Time          16.49
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       DMSO
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            144
DM            60.800 usec
DE            6.50 usec
TE            873.2 K
D1            1.00000000 sec
TD0           1
----- CHANNEL f1 -----
NUC1          1H
P1            14.50 usec
PL1           -2.83 dB
PL1W          16.9163668 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700000 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00

```

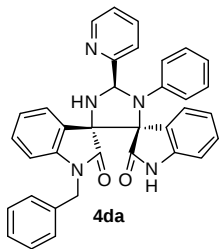
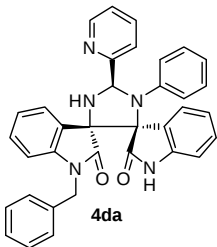
YZ-VIII-P24-4 13c



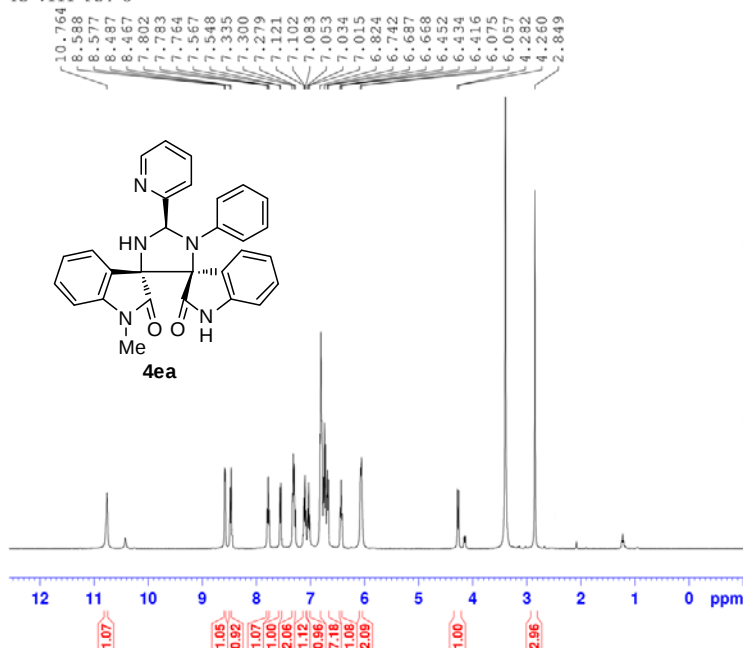
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NAME          NMR
EXPNO         3028
PROCNO        1
Date_         20150413
Time          16.54
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            162
DS            4
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            2050
DM            20.800 usec
DE            6.50 usec
TE            673.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
----- CHANNEL f1 -----
NUC1          13C
P1            11.70 usec
PL1           -2.00 dB
PL1W          48.76812744 W
SFO1          100.6328888 MHz
----- CHANNEL f2 -----
CPDPRG2       waltz16
NUC2          1H
FCPD2         80.00 usec
PL2           -2.83 dB
PL12          12.00 dB
PL13          14.00 dB
PL12W         16.91636658 W
PL13W         0.55629748 W
PL13W         0.35100001 W
SFO2          400.1716007 MHz
SI            32768
SF            100.6228270 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40

```



YZ-VIII-P24-5



```

NAME          NMR
EXPNO         3037
PROCNO        1
Date_         20150414
Time          12.01
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            128
DM            60.800 usec
DE            6.50 usec
TE            273.2 K
D1            1.00000000 sec
TD0           1

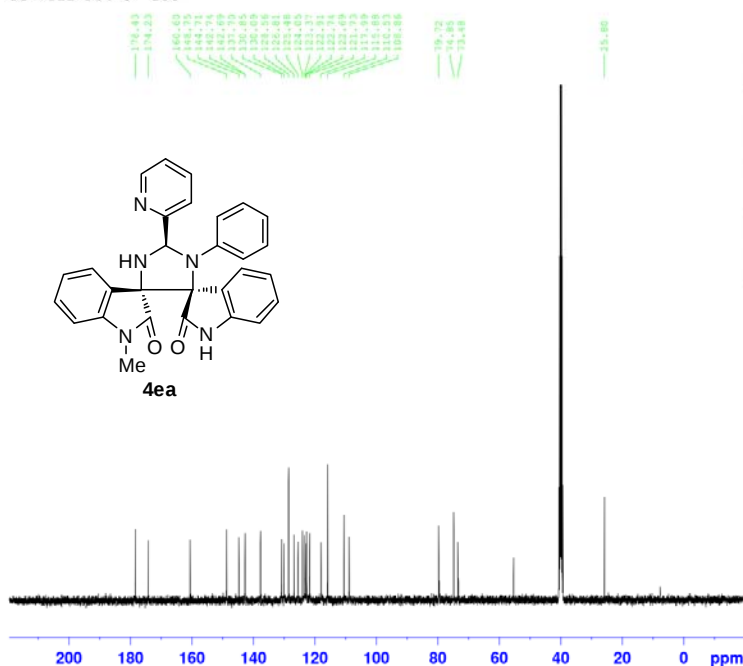
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            14.50 usec
PL1           -2.83 dB
PL1W         16.91636658 W
SF01         400.1724712 MHz
SI            32768
SF           400.1700000 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00

```

YZ-VIII-P24-5 13C



```

NAME          NMR
EXPNO         3038
PROCNO        1
Date_         20150414
Time          12.05
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            364
DS            4
SWH           24038.461 Hz
FIDRES        0.266798 Hz
AQ            1.3631988 sec
RG            2050
DM            20.800 usec
DE            6.50 usec
TE            273.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1

```

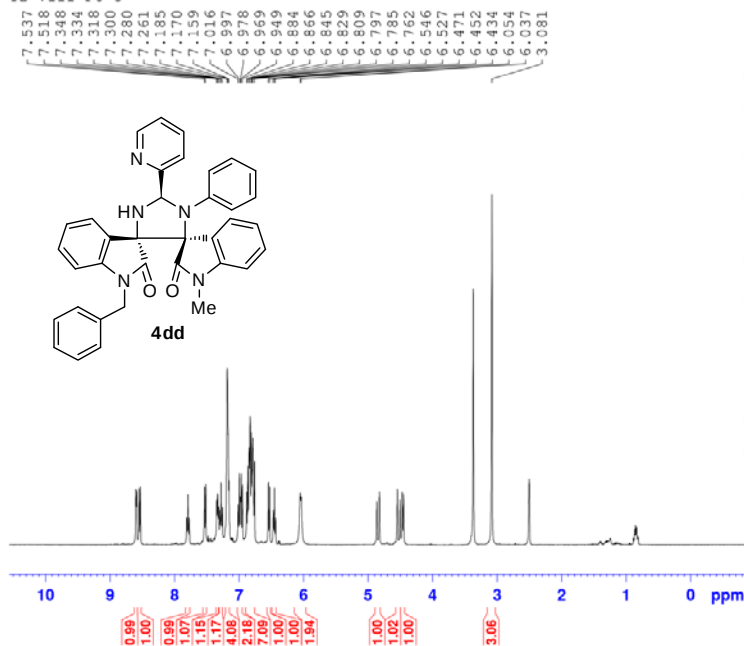
```

===== CHANNEL f1 =====
NUC1          13C
P1            11.70 usec
PL1           -2.00 dB
PL1W         48.76812744 W
SF01         100.6328888 MHz

===== CHANNEL f2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           -2.83 dB
PL12         12.00 dB
PL13         14.00 dB
PL2W         16.91636658 W
PL12W        0.55629748 W
PL13W        0.35100001 W
SF02         400.1716007 MHz
SI            32768
SF           100.6228270 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40

```

YZ-VIII-P8-3



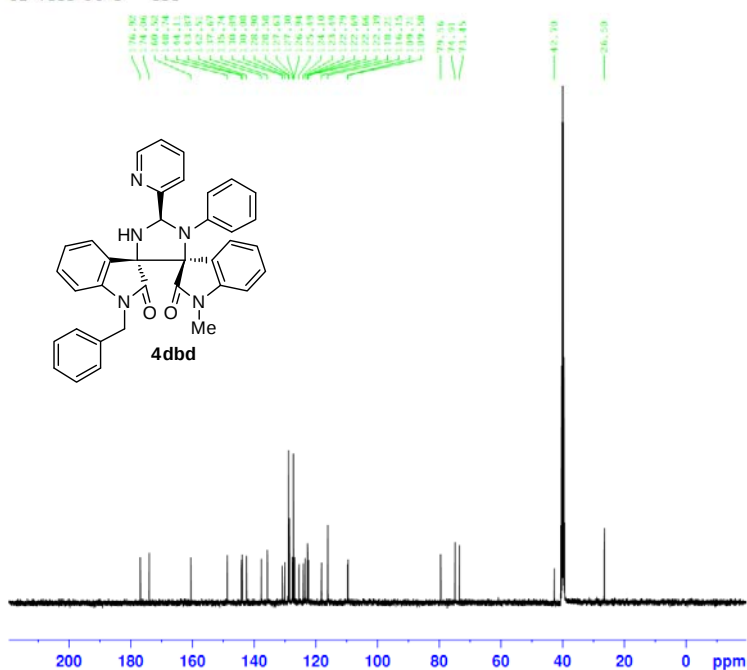
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NAME          NMR
EXPNO         2903
PROCNO        1
Date_         20150126
Time          11.11
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       DMSO
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            80.6
DM            60.800 usec
DE            8.00 usec
TE            293.3 K
D1            1.00000000 sec
TD0           1

----- CHANNEL f1 -----
NUC1          1H
P1            14.50 usec
PL1           -2.83 dB
PL1W          16.9163668 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700000 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00

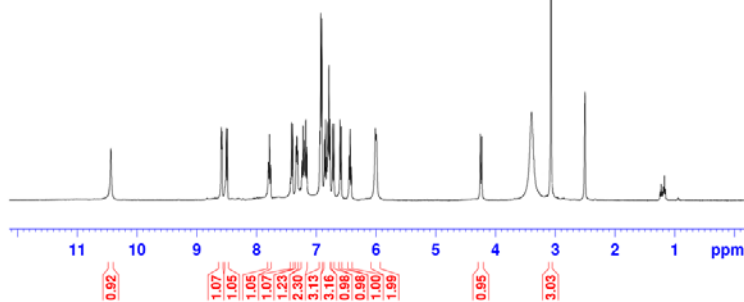
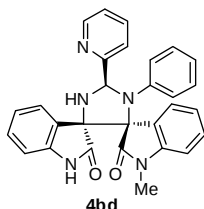
```

YZ-VIII-P8-3 13C



YZ-VIII-PP8-2

10.536  
8.592  
8.581  
8.510  
8.490  
7.804  
7.785  
7.766  
7.415  
7.396  
7.341  
7.327  
7.311  
7.241  
7.223  
7.201  
7.178  
7.159  
6.936  
6.906  
6.865  
6.846  
6.810  
6.790  
6.771  
6.729  
6.706  
6.607  
6.557  
6.452  
6.433  
6.415  
6.071  
5.994  
4.254  
4.231  
3.071



```

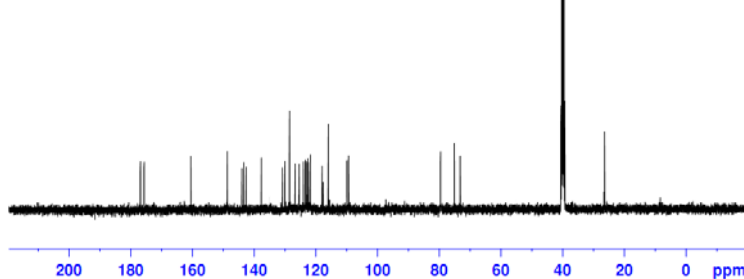
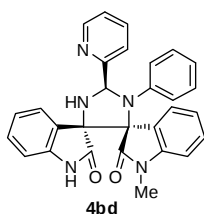
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EXPNO     2891
PROCNO    1
Date_     20150123
Time      10.26
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zg30
TD         65536
SOLVENT   DMSO
NS         8
DS         2
SWH        8223.685 Hz
FIDRES     0.125483 Hz
AQ         3.9846387 sec
RG         90.5
DM         60.800 usec
DE         8.00 usec
TE         292.3 K
D1         1.00000000 sec
TDO        1

===== CHANNEL f1 =====
NUC1       1H
P1         14.50 usec
PL1        -2.83 dB
PL1W       16.9163658 W
SFO1       400.1724712 MHz
SI         32768
SF         400.1700000 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00

```

YZ-VIII-PP8-2 13C

176.81  
175.71  
169.25  
168.71  
164.21  
162.41  
162.41  
159.56  
158.56  
156.43  
154.87  
154.30  
153.30  
152.45  
152.45  
151.23  
149.95  
149.38  
79.02  
75.19  
71.36  
25.43



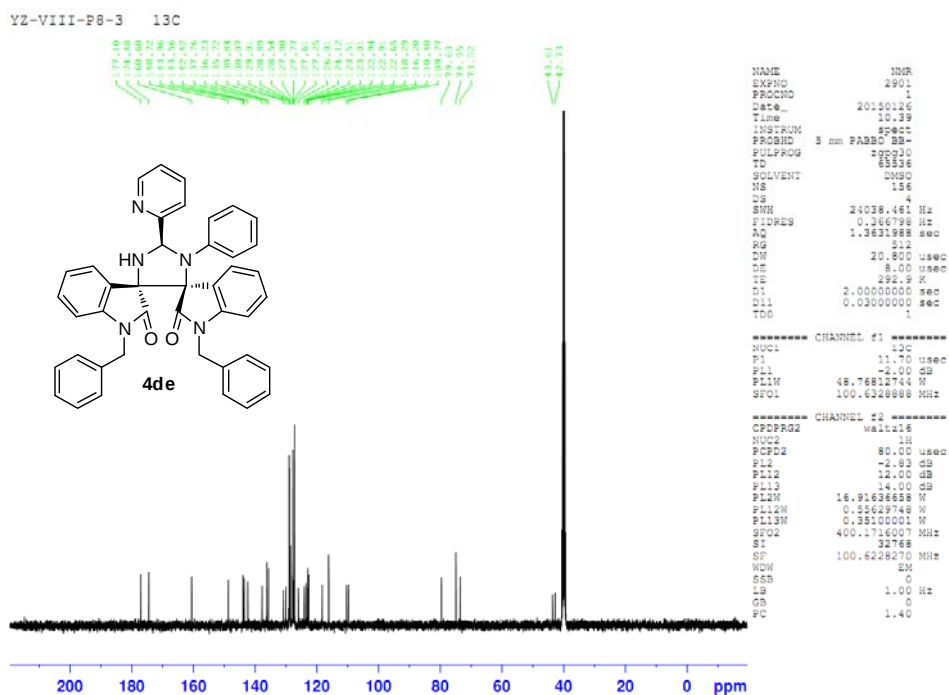
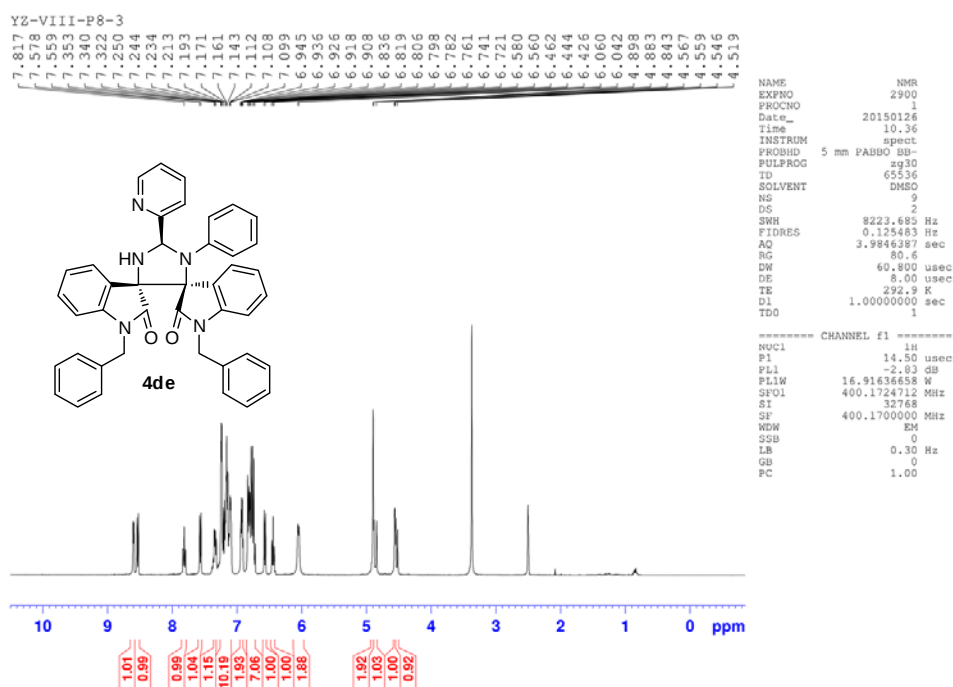
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NAME      NMR
EXPNO     2890
PROCNO    1
Date_     20150123
Time      10.11
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD         65536
SOLVENT   DMSO
NS         211
DS         4
SWH        24038.461 Hz
FIDRES     0.366798 Hz
AQ         1.3631988 sec
RG         512
DM         20.800 usec
DE         8.00 usec
TE         292.1 K
D1         2.00000000 sec
D11        0.03000000 sec
TDO        1

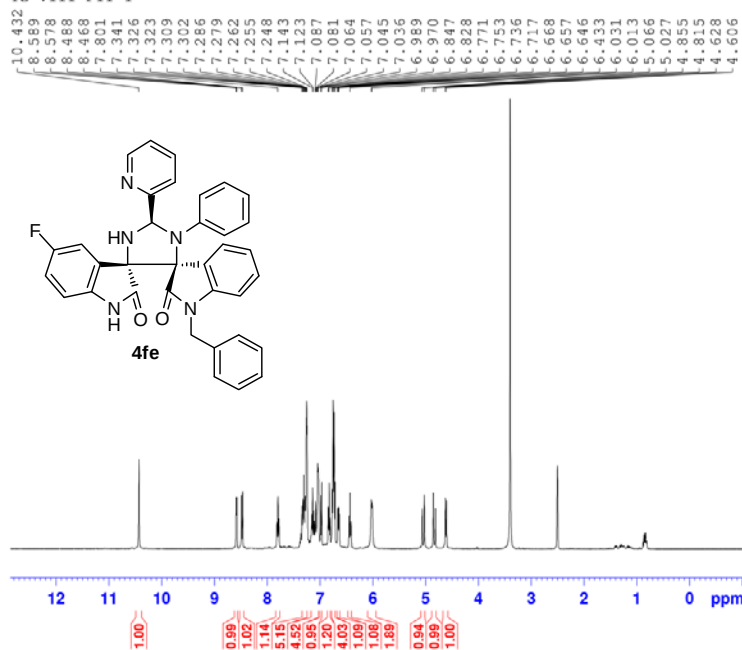
===== CHANNEL f1 13C =====
NUC1       13C
P1         11.70 usec
PL1        -2.00 dB
PL1W       48.7681274 W
SFO1       100.6228888 MHz

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2       1H
PCPD2     80.00 usec
PL2        -2.83 dB
PL12       12.00 dB
PL13       14.00 dB
PL2W       16.9163658 W
SFO2       400.1716007 MHz
SI         32768
SF         100.6228270 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.40

```



YZ-VIII-P11-1

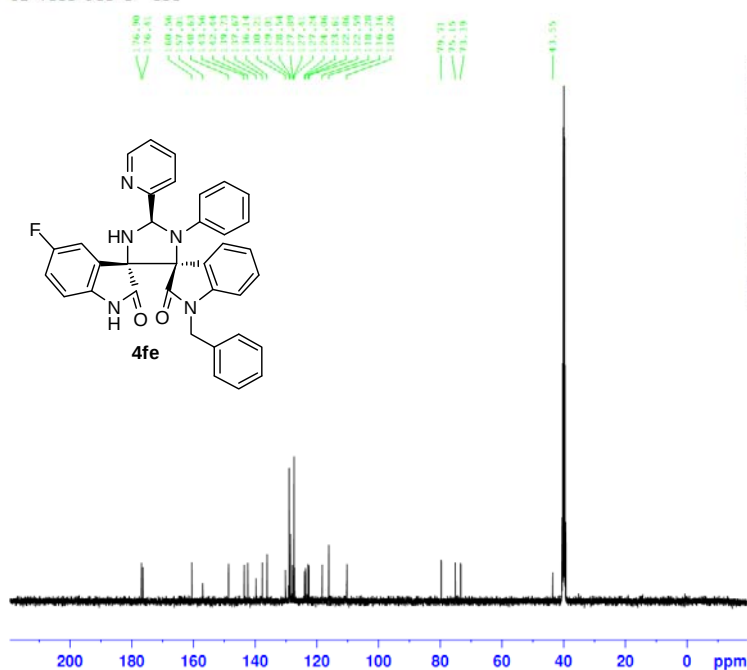


```

NAME          NMR
EXPNO         2909
PROCNO        1
Date_         20150128
Time          11.33
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            8
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            90.5
DN            60.800 usec
DE            8.00 usec
TE            291.8 K
D1            1.00000000 sec
TDO           1
===== CHANNEL f1 =====
NUC1           1H
P1            14.50 usec
PL1           -2.83 dB
PL1W          16.91636658 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700000 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00

```

YZ-VIII-P11-1 13C



```

NAME          NMR
EXPNO         2910
PROCNO        1
Date_         20150128
Time          11.38
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            4
DS            4
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            512
DN            20.800 usec
DE            8.00 usec
TE            292.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TDO           1
===== CHANNEL f1 =====
NUC1           13C
P1            11.70 usec
PL1           -2.00 dB
PL1W          48.76812744 W
SFO1          100.6228888 MHz
===== CHANNEL f2 =====
CPDPRG2       waltz16
NUC2           1H
PCPD2         80.00 usec
PL2           -2.83 dB
PL12          12.00 dB
PL13          14.00 dB
PL1W          16.91636658 W
PL12W         0.55629748 W
PL13W         0.35100001 W
SFO2          400.1716007 MHz
SI            32768
SF            100.62288270 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40

```

YZ-VIII-P11-2

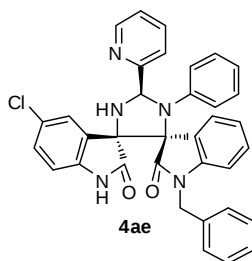
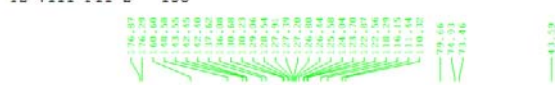


```

NAME      NMR
EXPNO     2880
PROCNO    1
Date_     20150121
Time      18.00
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zg30
TD         65536
SOLVENT   DMSO
NS         16
DS         2
SWH        8223.685 Hz
FIDRES     0.125483 Hz
AQ         3.9846387 sec
RG         114
DW         60.800 usec
DE         8.00 usec
TE         291.2 K
D1         1.00000000 sec
TD0        1
===== CHANNEL f1 =====
NUC1       1H
P1         14.50 usec
PL1        -2.83 dB
PL1W       16.91636658 W
SFO1       400.1724712 MHz
SI         32768
SF         400.1700000 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00

```

YZ-VIII-P11-2 13C



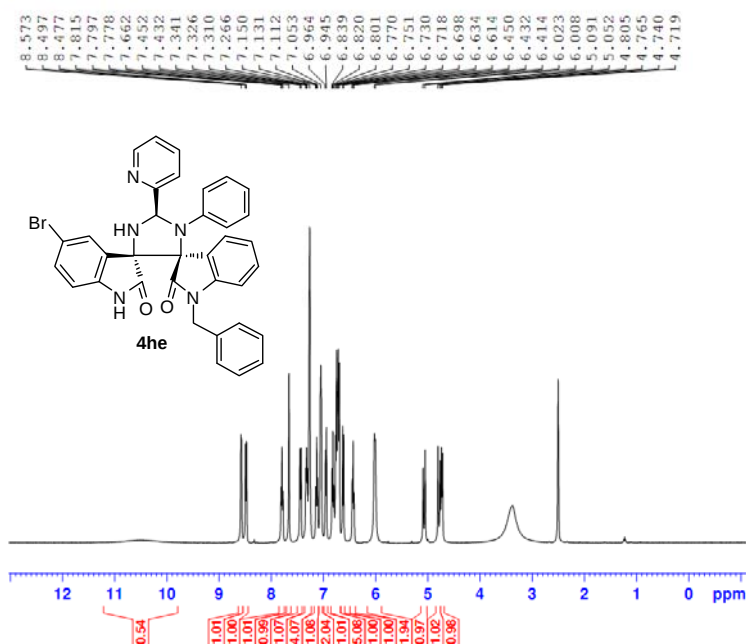
```

NAME      NMR
EXPNO     2881
PROCNO    1
Date_     20150121
Time      19.07
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD         65536
SOLVENT   DMSO
NS         112
DS         4
SWH        24038.461 Hz
FIDRES     0.366798 Hz
AQ         1.3631988 sec
RG         813
DW         20.800 usec
DE         8.00 usec
TE         291.5 K
D1         2.00000000 sec
D11        0.03000000 sec
TD0        1
===== CHANNEL f1 =====
NUC1       13C
P1         11.70 usec
PL1        -2.00 dB
PL1W       48.76812744 W
SFO1       100.6328888 MHz
===== CHANNEL f2 =====
CPCPRG2   waltz16
NUC2       1H
P2         80.00 usec
PL2        -2.83 dB
PL2W       12.00 dB
PL13       14.00 dB
PL12W      16.91636658 W
PL12W      0.85629748 W
PL13W      0.35100001 W
SFO2       400.1716007 MHz
SI         32768
SF         100.6228270 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.40

```



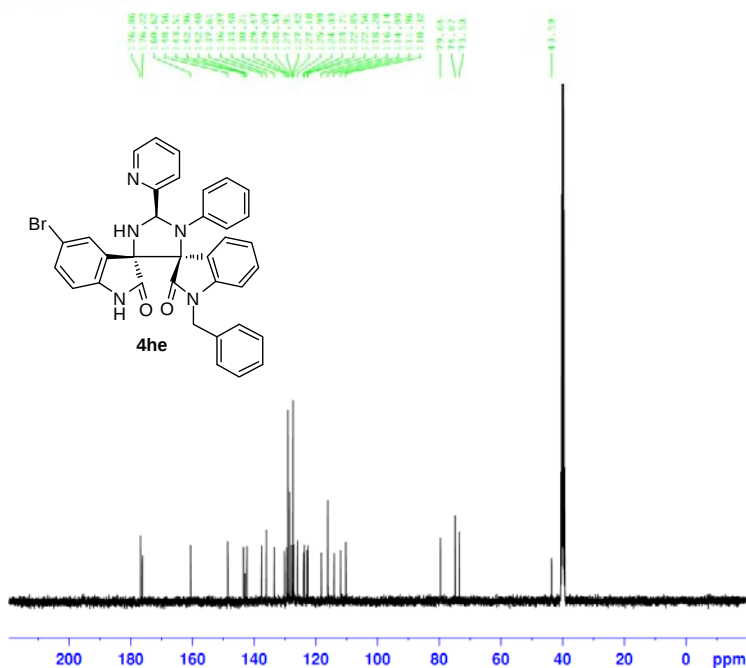
YZ-VIII-PP11-3



NAME NMR  
EXPNO 2878  
PROCNO 1  
Date\_ 20130711  
Time 10.00  
INSTRUM spect  
PROBHD 5 mm F4BBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT DMSO  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125493 Hz  
AQ 3.9846387 sec  
RG 114  
DN 60.800 usec  
DE 8.00 usec  
TE 292.1 K  
D1 1.00000000 sec  
D11 1

===== CHANNEL f1 =====  
NUC1 1H  
P1 14.20 usec  
PL1 -2.83 dB  
PL1W 16.91636658 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

YZ-VIII-PP11-3 13C

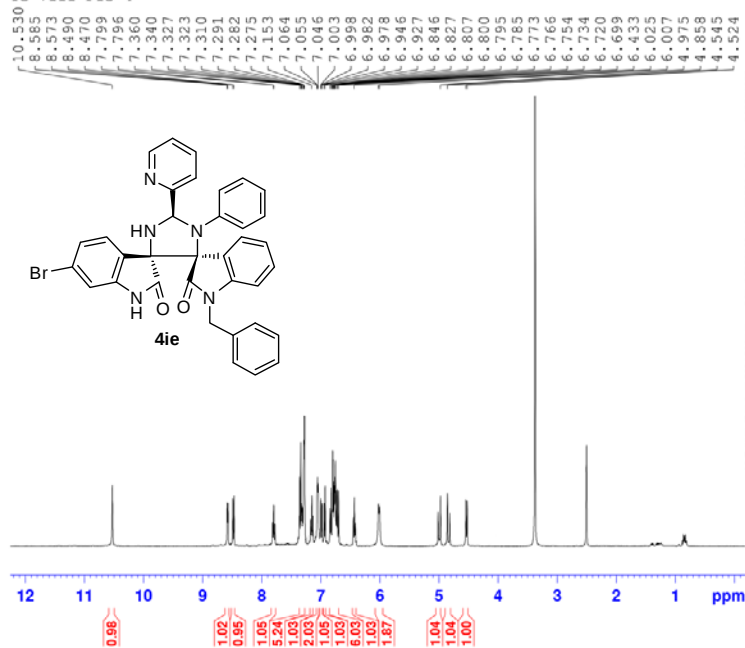


NAME NMR  
EXPNO 2879  
PROCNO 1  
Date\_ 20130711  
Time 10.05  
INSTRUM spect  
PROBHD 5 mm F4BBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT DMSO  
NS 391  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 512  
DN 20.800 usec  
DE 8.00 usec  
TE 292.4 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
D12 1

===== CHANNEL f1 =====  
NUC1 13C  
P1 11.70 usec  
PL1 -2.00 dB  
PL1W 48.76812744 W  
SFO1 100.6326888 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -2.83 dB  
PL12 12.00 dB  
PL13 14.00 dB  
PL2W 16.91636658 W  
PL12W 0.55629748 W  
PL13W 0.55100001 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228270 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

YZ-VIII-P12-4



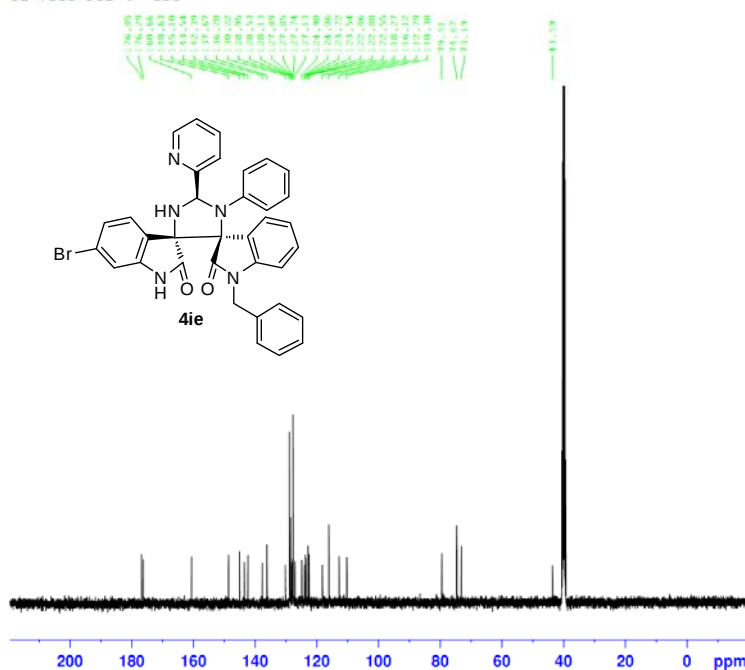
```

NAME      NMR
EXPNO     2912
PROCNO    1
Date_     20150128
Time      12.09
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD         65536
SOLVENT   DMSO
NS         9
DS         2
SWH        8223.685 Hz
FIDRES     0.125483 Hz
AQ         3.9846387 sec
RG         90.5
DM         60.800 usec
DE         8.00 usec
TE         292.5 K
D1         1.00000000 sec
TD0        1

===== CHANNEL f1 =====
NUC1       1H
P1         14.50 usec
PL1        -2.83 dB
PL1W       16.9163668 W
SFO1       400.1724712 MHz
SI         32768
SF         400.1700000 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00

```

YZ-VIII-P12-4 13C



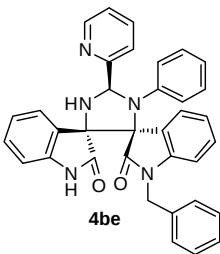
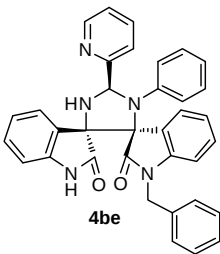
```

NAME      NMR
EXPNO     2911
PROCNO    1
Date_     20150128
Time      11.49
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD         65536
SOLVENT   DMSO
NS         9
DS         4
SWH        24039.461 Hz
FIDRES     0.366798 Hz
AQ         1.3631988 sec
RG         312
DM         20.800 usec
DE         8.00 usec
TE         292.6 K
D1         2.00000000 sec
D11        0.03000000 sec
TD0        1

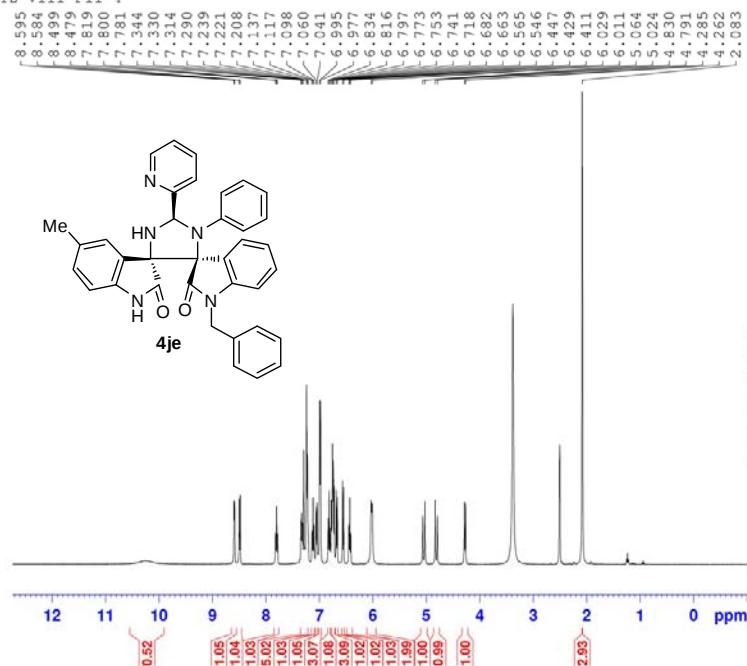
===== CHANNEL f1 =====
NUC1       13C
P1         11.70 usec
PL1        -2.00 dB
PL1W       48.76912744 W
SFO1       100.6328888 MHz

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2       1H
PCPD2     80.00 usec
PL2        -2.83 dB
PL12       12.00 dB
PL13       14.00 dB
PL1W       16.9163668 W
PL12W      0.58629748 W
PL13W      0.35100001 W
SFO2       400.1716007 MHz
SI         32768
SF         100.6228270 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.40

```



YZ-VIII-P11-4

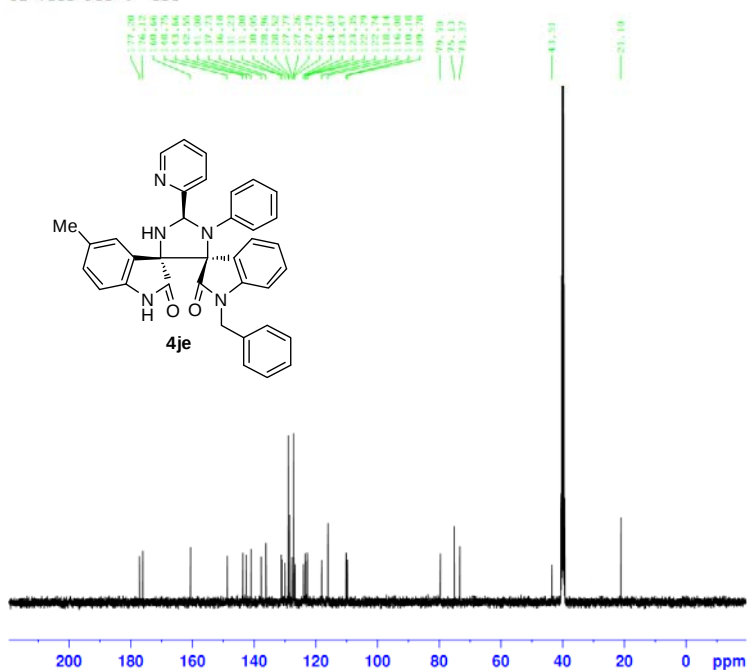


```

NAME      NMR
EXPNO     2870
PROCNO     1
Date_     20150120
Time       11.19
INSTRUM    spect
PROBHD     5 mm PABBO BB-
PULPROG    zg30
TD         65536
SOLVENT    DMSO
NS         5
DS         2
SWH         8223.685 Hz
FIDRES     0.125483 Hz
AQ         3.9846387 sec
RG         144
DW         60.800 usec
DE         8.00 usec
TE         292.7 K
D1         1.00000000 sec
TD0        1
===== CHANNEL f1 =====
NUC1       1H
P1         14.50 usec
PL1        -2.83 dB
PL1W       16.91636658 W
SFO1       400.1724712 MHz
SI         32768
SF         400.1700000 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00

```

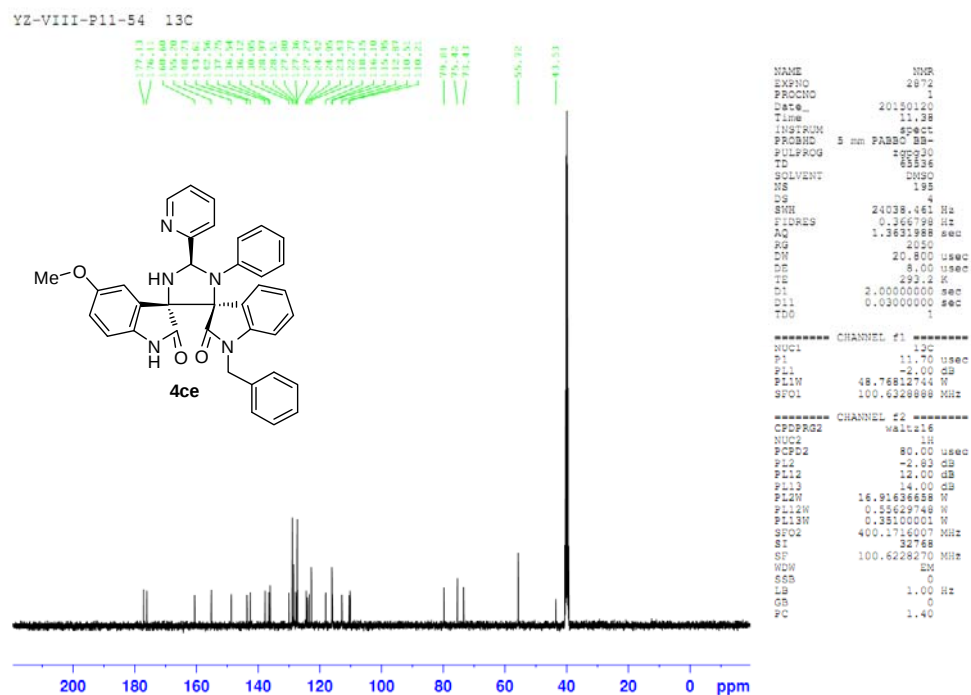
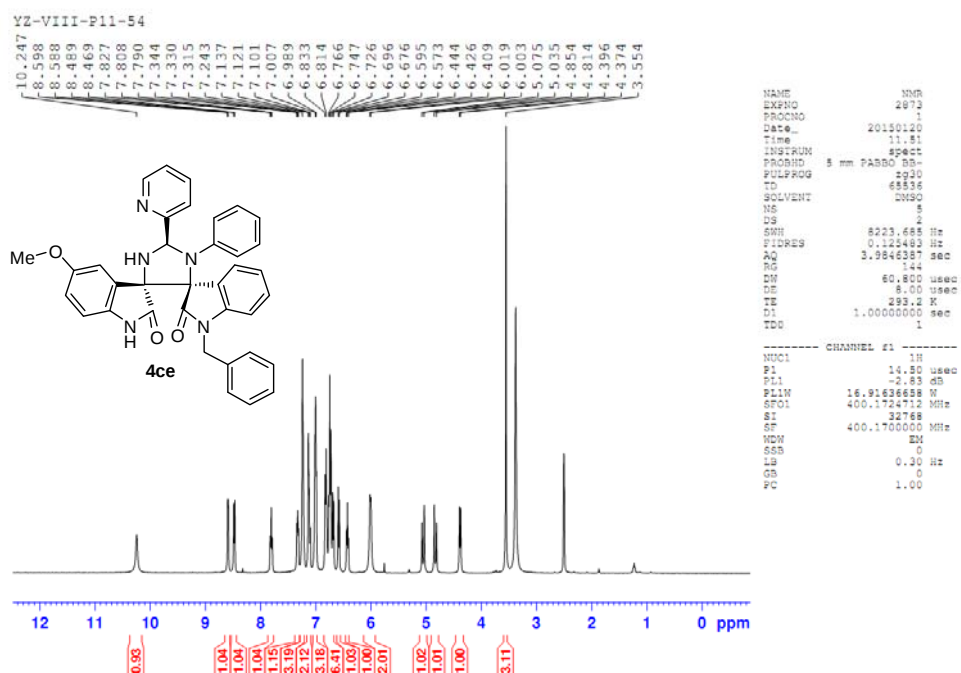
YZ-VIII-P11-4 13C



```

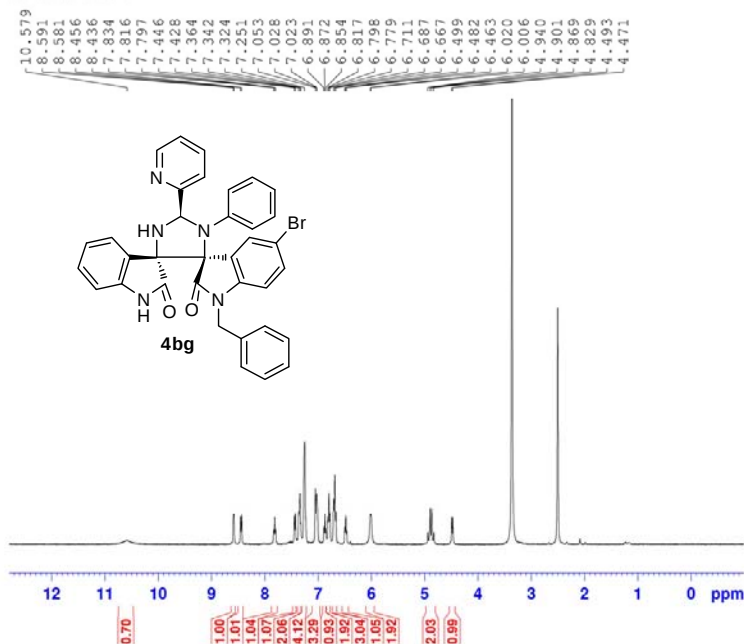
NAME      NMR
EXPNO     2871
PROCNO     1
Date_     20150120
Time       11.22
INSTRUM    spect
PROBHD     5 mm PABBO BB-
PULPROG    zgpg30
TD         65536
SOLVENT    DMSO
NS         4
DS         4
SWH         24038.461 Hz
FIDRES     0.366798 Hz
AQ         1.3631988 sec
RG         2080
DW         20.800 usec
DE         8.00 usec
TE         292.8 K
D1         2.00000000 sec
D11        0.03000000 sec
TD0        1
===== CHANNEL f1 =====
NUC1       13C
P1         11.70 usec
PL1        -2.00 dB
PL1W       48.76812744 W
SFO1       100.6328888 MHz
===== CHANNEL f2 =====
PCPD2      Waltz16
NUC2       1H
PCPD2      80.00 usec
PL2        -2.83 dB
PL12       12.00 dB
PL13       14.00 dB
PL2W       16.91636668 W
PL12W      0.55629748 W
PL13W      0.35100001 W
SFO2       400.1716007 MHz
SI         32768
SF         100.6228270 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.40

```





YZ-VIII-P15-2



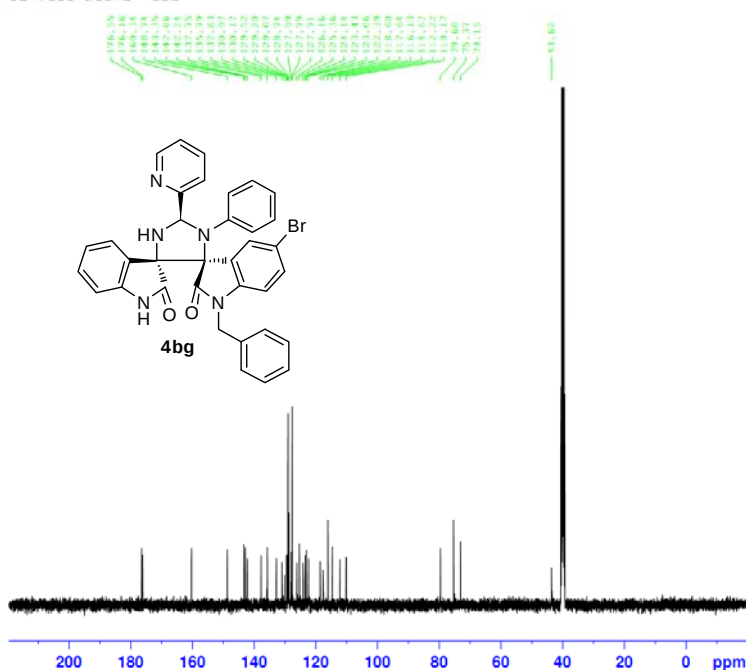
```

NAME          NMR
EXPNO         2846
PROCNO        1
Date_         20150113
Time          21.39
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       DMSO
NS            9
DS            2
SWH           8223.685 Hz
FIDRES       0.125483 Hz
AQ           3.9846387 sec
RG           128
DN           60.800 usec
DE           8.00 usec
TE           291.9 K
D1           1.00000000 sec
TD0          1

===== CHANNEL f1 =====
NUC1          1H
P1            14.50 usec
PL1          -2.83 dB
PL1W         16.91636658 W
SFO1         400.1724712 MHz
SI           32768
SF           400.1700000 MHz
WDW           EM
SSB           0
LB           0.30 Hz
GB           0
PC           1.00

```

YZ-VIII-P15-2 13C



```

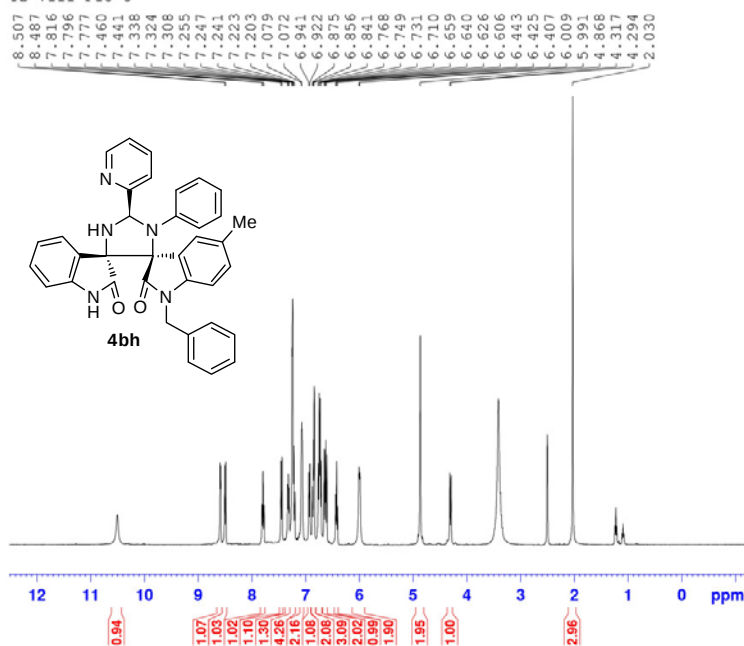
NAME          NMR
EXPNO         2855
PROCNO        1
Date_         20150116
Time          10.28
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            85536
SOLVENT       DMSO
NS            4
DS            4
SWH           24038.461 Hz
FIDRES       0.366798 Hz
AQ           1.3631988 sec
RG           2050
DN           20.800 usec
DE           8.00 usec
TE           291.6 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0          1

===== CHANNEL f1 =====
NUC1          13C
P1            11.70 usec
PL1          -2.00 dB
PL1W         48.76812744 W
SFO1         100.6328888 MHz

===== CHANNEL f2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2          -2.83 dB
PL12         12.00 dB
PL13         14.00 dB
PL2W         16.91636658 W
PL12W        0.55629748 W
PL13W        0.35100001 W
SFO2         400.1710007 MHz
SI           32768
SF           100.6228270 MHz
WDW           EM
SSB           0
LB           1.00 Hz
GB           0
PC           1.40

```

YZ-VIII-P15-3

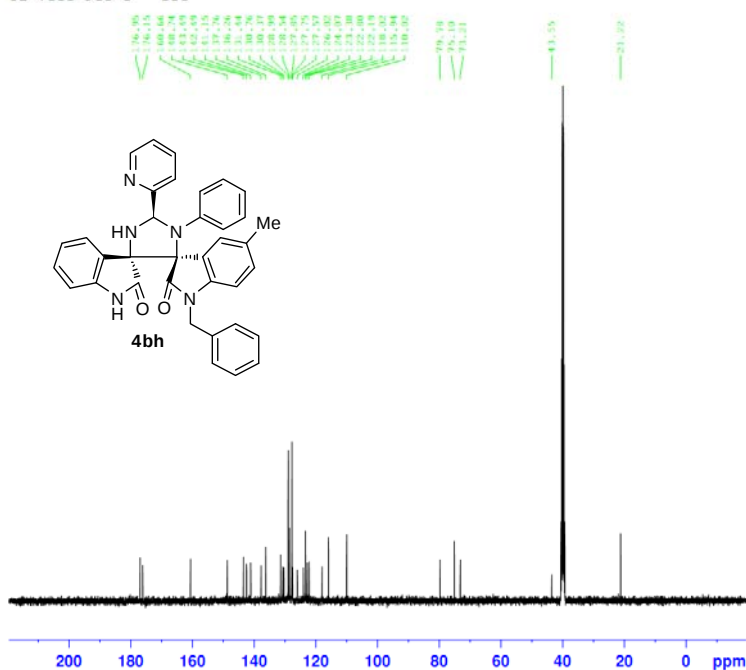


```

NAME          NMR
EXPNO         2862
PROCNO        1
DATE_         20150119
Time          11.12
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            128
DW            60.800 usec
DE            8.00 usec
TE            291.2 K
D1            1.00000000 sec
TD0           1
===== CHANNEL f1 =====
NUC1          1H
P1            14.50 usec
PL1           -2.83 dB
PL1W          16.91636658 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700000 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00

```

YZ-VIII-P15-3 13C

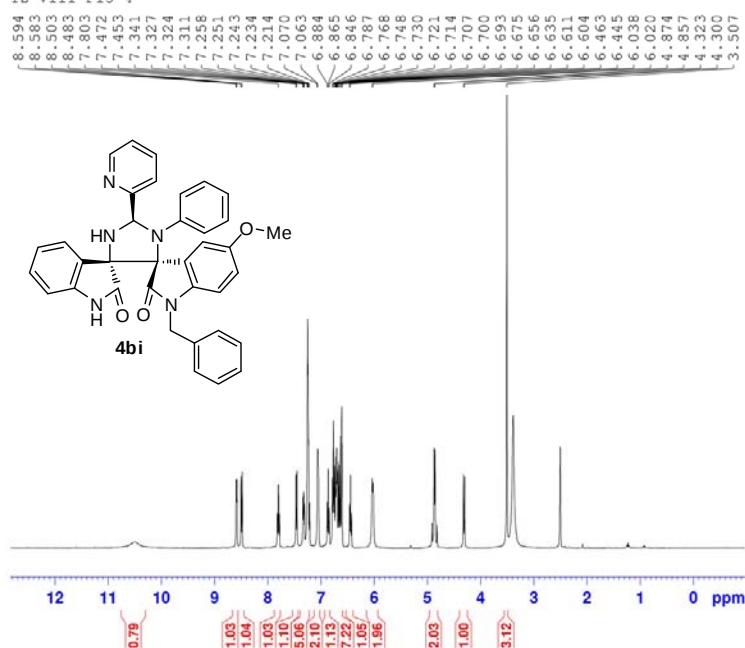


```

NAME          NMR
EXPNO         2863
PROCNO        1
DATE_         20150119
Time          11.18
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            199
DS            4
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631968 sec
RG            2050
DW            20.800 usec
DE            8.00 usec
TE            291.9 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
===== CHANNEL f1 =====
NUC1          13C
P1            11.70 usec
PL1           -2.00 dB
PL1W          48.76812744 W
SFO1          100.6229888 MHz
===== CHANNEL f2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           -2.83 dB
PL12          12.00 dB
PL13          14.00 dB
PL2W          16.91636658 W
PL12W         0.59629748 W
PL13W         0.35100001 W
SFO2          400.1716007 MHz
SI            32768
SF            100.6228270 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40

```

YZ-VIII-P15-4

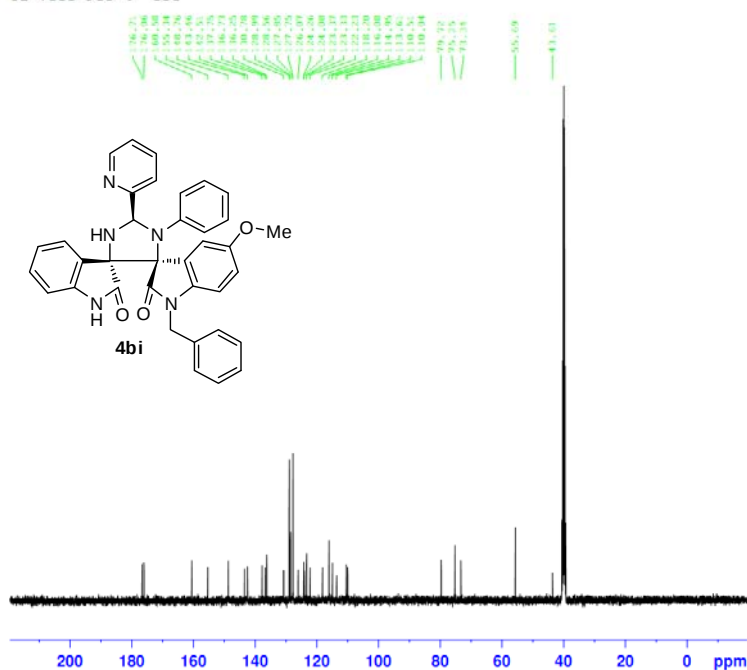


```

NAME      NMR
EXPNO     2864
PROCNO    1
Date_     20150119
Time      12.54
INSTRUM   spect
PROBHD    5 mm PABBO BBO-
PULPROG   zg30
TD         65536
SOLVENT   DMSO
NS         16
DS         2
SWH        8223.685 Hz
FIDRES     0.125483 Hz
AQ         3.9846387 sec
RG         144
DW         60.800 usec
DE         8.00 usec
TE         293.3 K
D1         1.0000000 sec
TDO        1
===== CHANNEL f1 =====
NUC1       1H
P1         14.50 usec
PL1        -2.03 dB
PL1W       16.91636658 W
SFO1       400.1724712 MHz
SI         32768
SF         400.1700000 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00

```

YZ-VIII-P15-4 13C



```

NAME      NMR
EXPNO     2865
PROCNO    1
Date_     20150119
Time      12.56
INSTRUM   spect
PROBHD    5 mm PABBO BBO-
PULPROG   zgpg30
TD         65536
SOLVENT   DMSO
NS         181
DS         4
SWH        24038.46 Hz
FIDRES     0.364798 Hz
AQ         1.3631988 sec
RG         2080
DW         20.800 usec
DE         8.00 usec
TE         293.4 K
D1         2.0000000 sec
D11        0.0300000 sec
TDO        1
===== CHANNEL f1 13C =====
NUC1       13C
P1         11.70 usec
PL1        -2.00 dB
PL1W       48.76812744 W
SFO1       100.6328888 MHz
===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2       1H
PCPD2      80.00 usec
PL2        -2.83 dB
PL12       12.00 dB
PL13       14.00 dB
PL2W       16.91636658 W
PL12W      0.35829748 W
PL13W      0.35100001 W
SFO2       400.1716007 MHz
SI         32768
SF         100.6228270 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.40

```