

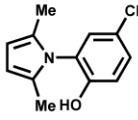
## Supporting Information

### **TiO<sub>2</sub>-coated graphene oxide-molybdate complex as a new separable nanocatalyst for the synthesis of pyrrole derivatives by Paal-Knorr reaction**

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<sup>1</sup>H-NMR (400MHz, CDCl<sub>3</sub>)

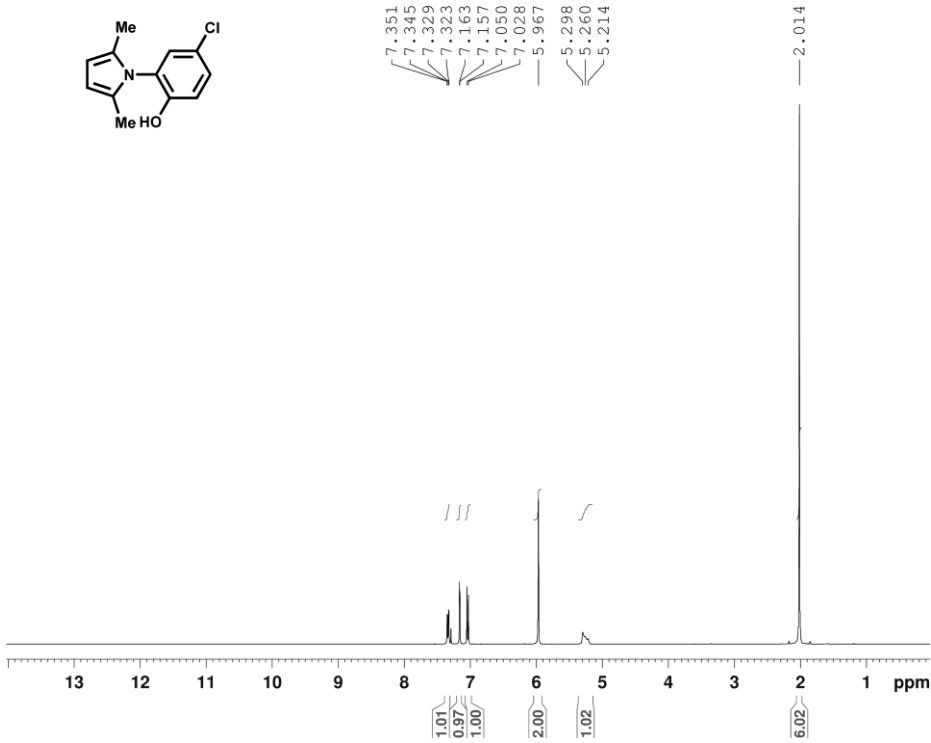


7.351  
7.345  
7.329  
7.323  
7.163  
7.157  
7.100  
7.028  
5.967  
5.298  
5.260  
5.214

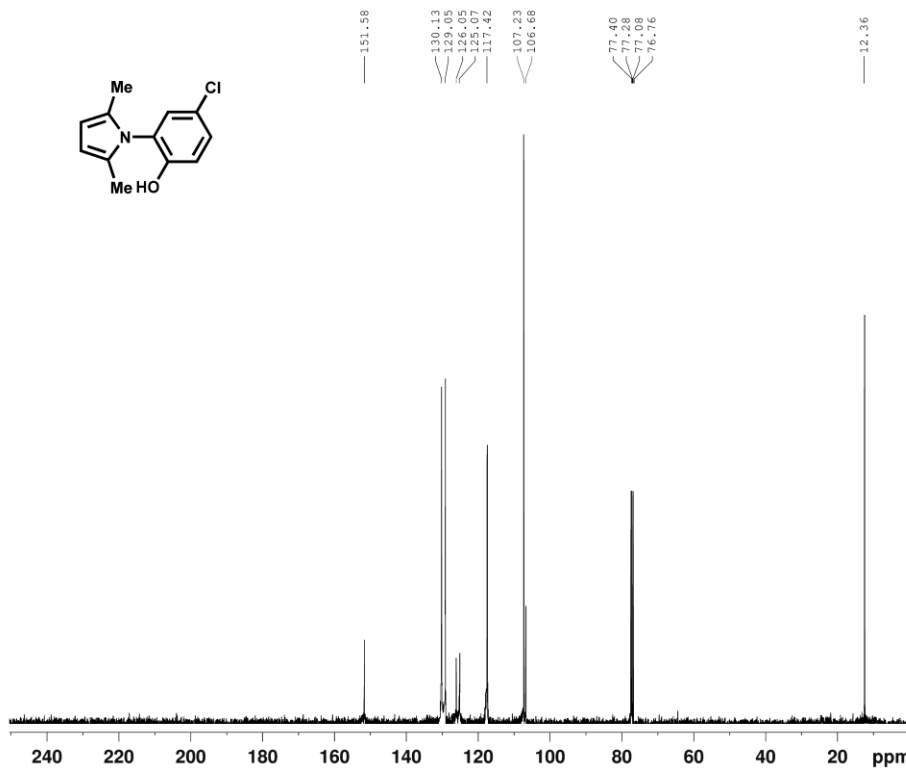
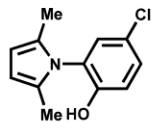


NAME Yasooj UN  
EXPNO 90  
PROCNO 1  
Date\_ 20110904  
Time 18.44  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 24  
DS 0  
SWH 8012.820 Hz  
FIDRES 0.122266 Hz  
AQ 4.0894966 sec  
RG 203  
DW 62.400 usec  
DE 6.50 usec  
TE 296.7 K  
D1 6.00000000 sec  
TD0 1

===== CHANNEL f1 =====  
NUC1 1H  
P1 14.00 usec  
PL1 -2.00 dB  
PL1W 11.86359406 W  
SFO1 400.2236020 MHz  
SI 32768  
SF 400.2200000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



<sup>13</sup>C-NMR(100MHz, CDCl<sub>3</sub>)

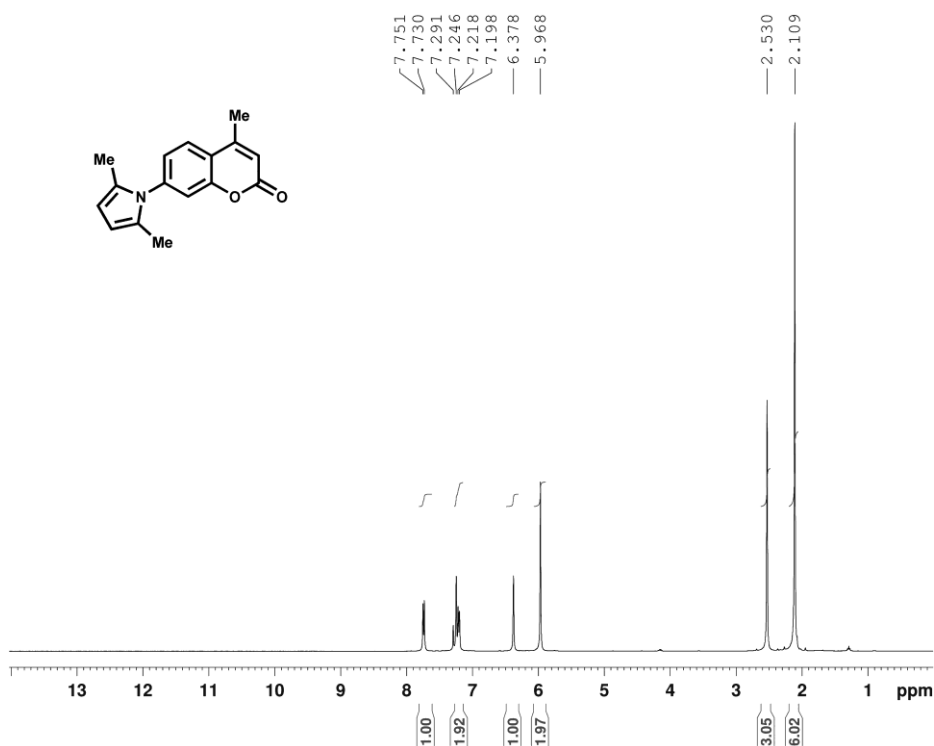


NAME Yasooj UN  
EXPNO 116  
PROCNO 1  
Date\_ 20110929  
Time 17.26  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg  
TD 65536  
SOLVENT CDCl3  
NS 170  
DS 0  
SWH 25252.525 Hz  
FIDRES 0.385323 Hz  
AQ 1.2976629 sec  
RG 2050  
DW 19.800 usec  
DE 6.50 usec  
TE 295.6 K  
D1 3.0000000 sec  
D11 0.0300000 sec  
TD0 1

===== CHANNEL f1 =====  
NUC1 13C  
P1 9.00 usec  
PL1 -0.90 dB  
PL1W 42.02801895 W  
SFO1 100.6479784 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 -2.00 dB  
PL12 14.16 dB  
PL13 17.90 dB  
PL2W 11.86359406 W  
PL12W 0.28722104 W  
PL13W 0.12139934 W  
SFO2 400.2216009 MHz  
SI 32768  
SF 100.6353990 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

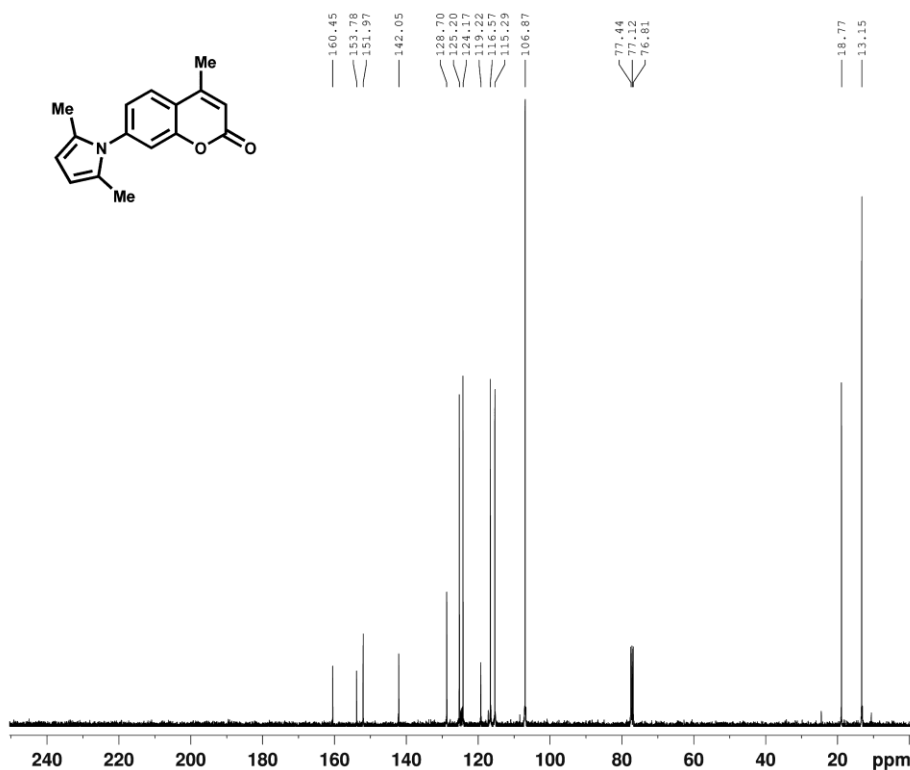
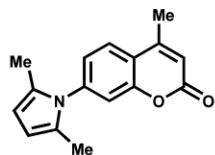
<sup>1</sup>H-NMR (400MHz, CDCl<sub>3</sub>)



NAME Yasooj UN  
EXPNO 89  
PROCNO 1  
Date\_ 20110904  
Time 18.36  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
FULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 24  
DS 0  
SWH 8012.820 Hz  
FIDRES 0.122266 Hz  
AQ 4.0894966 sec  
RG 203  
DW 62.400 usec  
DE 6.50 usec  
TE 296.7 K  
D1 6.00000000 sec  
TD0 1

----- CHANNEL f1 -----  
NUC1 1H  
P1 14.00 usec  
PL1 -2.00 dB  
PL1W 11.86359406 W  
SFO1 400.2236020 MHz  
SI 32768  
SF 400.2200000 MHz  
WDM EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

<sup>13</sup>C NMR (100MHz, CDCl<sub>3</sub>)

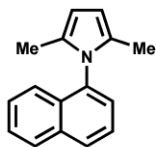


NAME Yasooj UN  
EXPNO 112  
PROCNO 1  
Date\_ 20110929  
Time 16.37  
INSTRUM spect  
PROBHD 5 mm FABBO BB-  
PULPROG zgpg  
TD 65536  
SOLVENT CDCl3  
NS 160  
DS 0  
SWH 25252.525 Hz  
FIDRES 0.385323 Hz  
AQ 1.2976629 sec  
RG 2050  
DW 19.800 usec  
DE 6.50 usec  
TE 295.5 K  
D1 3.00000000 sec  
D11 0.03000000 sec  
TD0 1

===== CHANNEL f1 =====  
NUC1 13C  
P1 9.00 usec  
PL1 -0.90 dB  
PL1W 42.02801895 W  
SFO1 100.6479784 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 -2.00 dB  
PL12 14.16 dB  
PL13 17.90 dB  
PL2W 11.86359406 W  
PL12W 0.28722104 W  
PL13W 0.12139934 W  
SFO2 400.2216009 MHz  
SI 32768  
SF 100.6353990 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

<sup>1</sup>H NMR(400MHz, CDCl<sub>3</sub>)

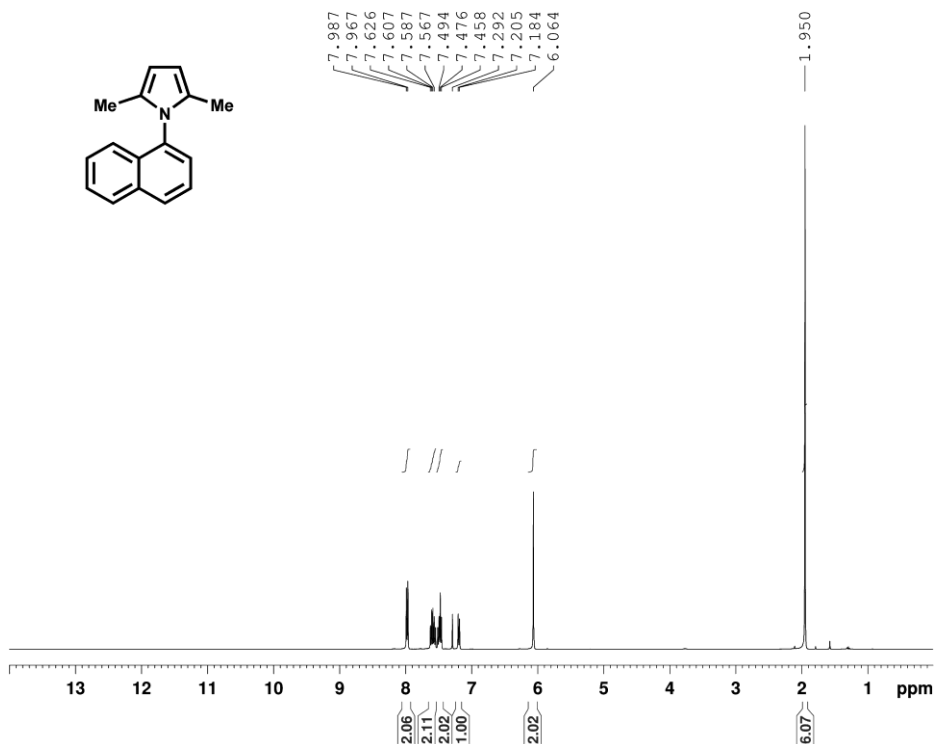


7.987  
7.967  
7.626  
7.607  
7.587  
7.567  
7.494  
7.476  
7.458  
7.292  
7.205  
7.184  
6.064

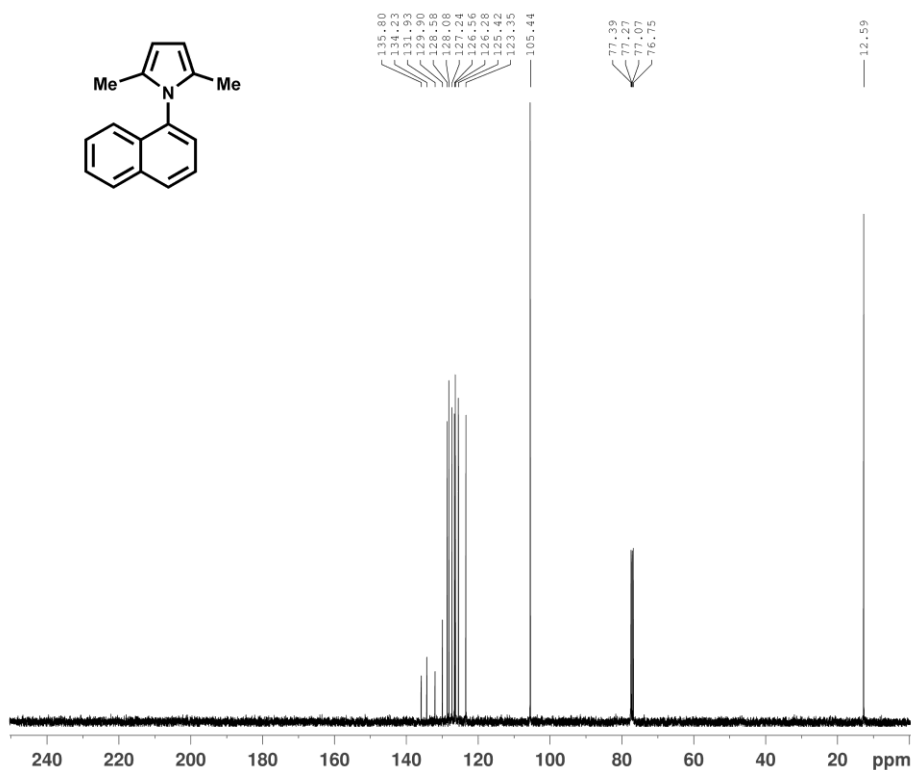
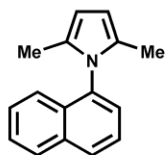


NAME Yasooj UN  
EXPNO 87  
PROCNO 1  
Date\_ 20110904  
Time 18.15  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 24  
DS 0  
SWH 8012.820 Hz  
FIDRES 0.122266 Hz  
AQ 4.0894966 sec  
RG 1440  
DW 62.400 usec  
DE 6.50 usec  
TE 296.7 K  
D1 6.00000000 sec  
TD0 1

===== CHANNEL f1 =====  
NUC1 1H  
P1 14.00 usec  
PL1 -2.00 dB  
PL1W 11.86359406 W  
SFO1 400.2236020 MHz  
SI 32768  
SF 400.2200000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



<sup>13</sup>C-NMR (100MHz)



NAME Yasooj UN  
EXPNO 115  
PROCNO 1  
Date\_ 20110929  
Time 17.12  
INSTRUM spect  
PROBHD 5 mm FABBO BB-  
PULPROG zgpg  
TD 65536  
SOLVENT CDCl3  
NS 140  
DS 0  
SWH 25252.525 Hz  
FIDRES 0.385323 Hz  
AQ 1.2976629 sec  
RG 2050  
DW 19.800 usec  
DE 6.50 usec  
TE 295.6 K  
D1 3.00000000 sec  
D11 0.03000000 sec  
TD0 1

===== CHANNEL f1 =====  
NUC1 13C  
P1 9.00 usec  
PL1 -0.90 dB  
PL1W 42.02801895 W  
SFO1 100.6479784 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 -2.00 dB  
PL12 14.16 dB  
PL13 17.90 dB  
PL2W 11.86359406 W  
PL12W 0.28722104 W  
PL13W 0.12139934 W  
SFO2 400.2216009 MHz  
SI 32768  
SF 100.6353990 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40