

SUPPORTING INFORMATION

A simple procedure for the polymer-supported N-heterocyclic carbene silver complex *via* click chemistry: an efficient and recyclable catalyst for the one pot synthesis of propargylamines

Ying He, Meifang Lv, and Chun Cai

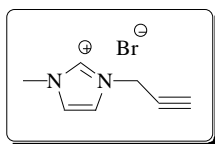
School of Chemical Engineering, Nanjing University Science & Technology, Nanjing 210094,

P.R. China

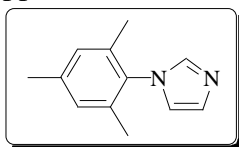
* Corresponding author: Chun Cai. Tel: +86-25-84315514, Fax: +86-25-84315030,

Email: c.cai@mail.njust.edu.cn

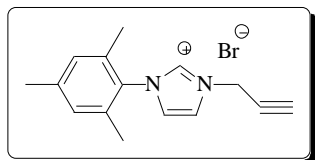
Part of product Characterization



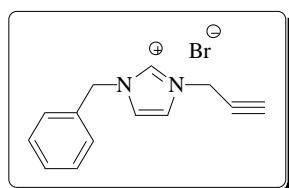
Pale yellow oil; ^1H NMR (500MHz, D_2O): δ = 3.06-3.07 (m, 1H, $\text{C}\equiv\text{CH}$), 3.88 (s, 3H, CH_3), 5.06 (d, 2H, CH_2), 7.45 (m, 1H, ImH), 7.56 (m, 1H, ImH), 8.87 (m, 1H, ImH) ppm; ^{13}C NMR (75MHz, D_2O) δ : 36.2, 39.2, 74.8, 77.8, 122.1, 124.0, 136.2 ppm.



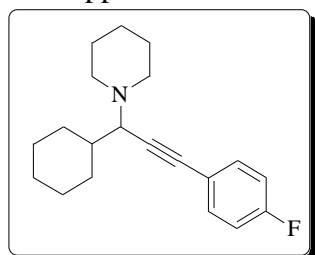
White solid; Mp: 106-108 $^\circ\text{C}$; ^1H NMR (500 MHz, CDCl_3) δ : 7.45 (s, 1H), 7.25-7.28 (d, 1H, $J=15$), 6.99 (s, 1H), 6.91 (s, 1H), 2.36 (s, 3H), 2.01 (s, 6H); ^{13}C NMR (75MHz, CDCl_3) δ : 16.3, 20.0, 119.1, 127.9, 128.5, 132.4, 134.4, 136.5, 137.8 ppm.



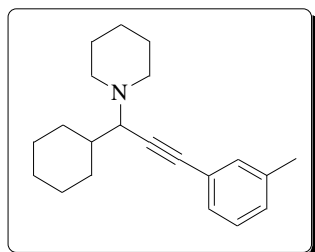
While solid; ^1H NMR (500 MHz, $\text{DMSO-}d_6$) δ : 9.56 (s, 1H), 8.13 (m, 1H), 7.98-7.99 (m, 1H), 7.15 (s, 2H), 5.30-5.31 (s, 2H), 3.90 (s, 1H), 2.34 (s, 3H), 2.02 (s, 6H). ^{13}C NMR (125MHz, $\text{DMSO-}d_6$) δ : 21.1, 24.8, 80.1, 83.5, 127.2, 128.6, 133.5, 135.4, 138.5, 141.8, 144.6.



Pale yellow oil; ^1H NMR (500 MHz, $\text{DMSO-}d_6$) δ : 9.55 (s, 1H), 7.86-7.92 (m, 2H), 7.38-7.49 (m, 5H), 5.52(s, 2H), 5.25-5.26 (d, 2H), 3.86-3.87 (m, 1H); ^{13}C NMR (125MHz, $\text{DMSO-}d_6$) δ : 38.3, 51.5, 75.5, 78.6, 122.2, 127.9, 128.3, 128.5, 134.2, 135.6 ppm.



Colorless liquid; ^1H NMR (500 MHz, CDCl_3) δ : 7.42-7.44 (m, 2H), 6.99-7.02 (m, 2H), 3.11-3.13 (d, 1H, $J=10$), 2.62-2.66 (m, 2H), 2.41 (m, 2H), 2.03-2.11 (m, 2H), 1.70-1.76 (m, 2H), 1.57-1.76 (m, 6H), 1.45-1.47 (m, 2H), 1.20-1.28 (m, 2H), 0.96-1.05 (m, 2H); ^{13}C NMR (75MHz, CDCl_3) δ : 23.7, 25.1, 25.3, 25.8, 29.5, 30.3, 38.6, 49.8, 63.4, 84.1, 86.3, 114.3, 114.5, 118.8, 132.4, 132.5, 160.1, 162.1 ppm.

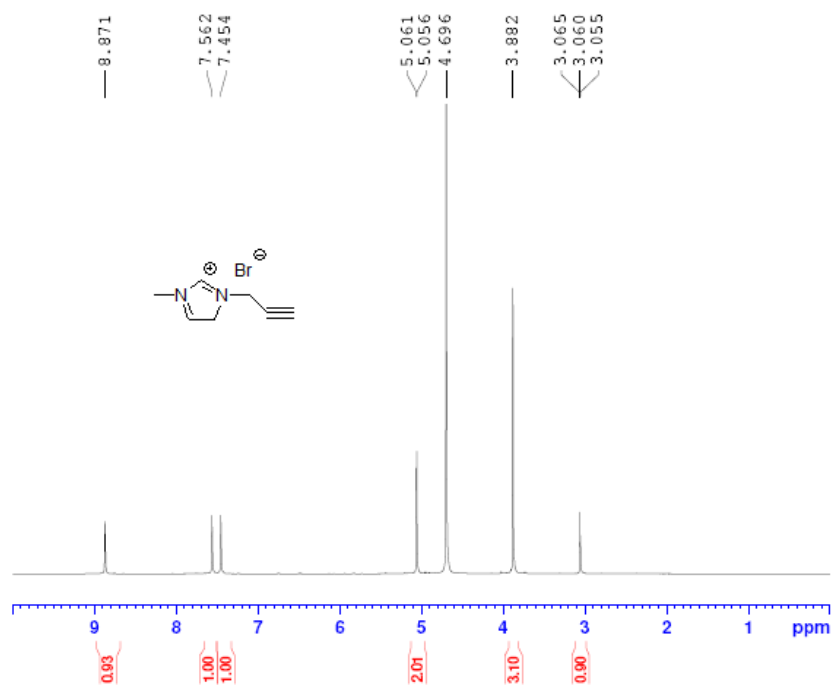


Colorless liquid; ^1H NMR (500 MHz, CDCl_3) δ : 7.10-7.28 (m, 4H, aromatic), 3.11-3.13 (d, 1H, $J=10$), 2.62-2.67 (m, 2H), 2.40-2.43 (m, 2H), 2.34 (s, 3H), 2.11-2.13 (m, 1H), 2.04-2.06 (m, 1H), 1.76-1.79 (m, 2H), 1.68-1.70 (m, 1H), 1.62-1.65 (m, 3H),

1.57-1.59 (m, 2H), 1.45-1.47 (m, 2H), 1.20-1.31 (m, 3H), 0.96-1.05 (m, 2H); ^{13}C
NMR (75MHz, CDCl_3) δ : 20.2, 23.7, 25.1, 25.3, 25.8, 29.5, 30.4, 38.6, 49.8, 63.4,
85.3, 86.4, 122.6, 127.1, 127.5, 127.8, 131.3, 136.9 ppm.

Part of the NMR characterization datas

(1) ^1H NMR



```

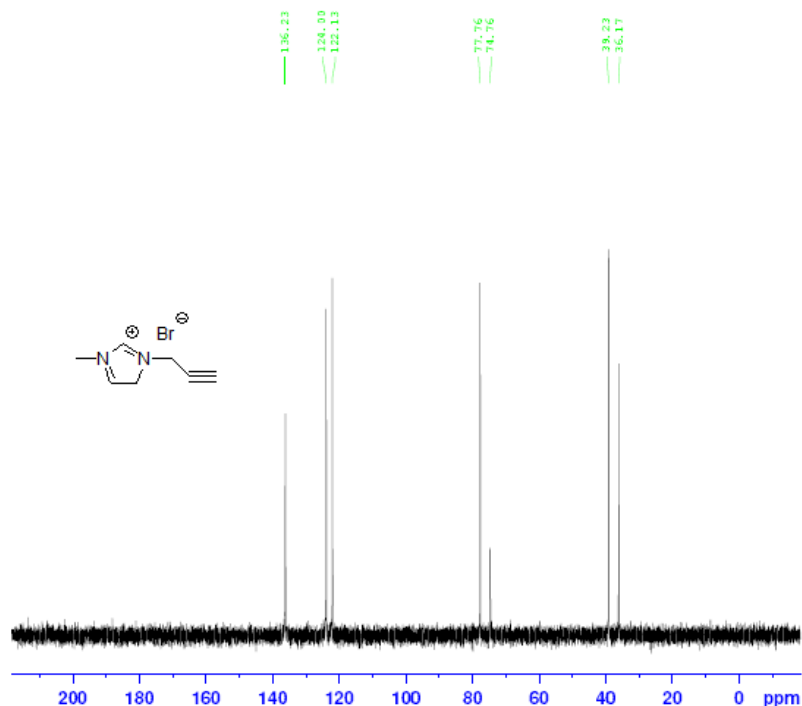
Current Data Parameters
NAME          HY
EXPNO        22
PROCNO       1

F2 - Acquisition Parameters
Date_        20110226
Time         16.30
INSTRUM      spect
PROBHD       5 mm F4BBO BB-
PULPROG      zg30
TD           65536
SOLVENT      D2O
NS           16
DS           4
SWH          10330.578 Hz
FIDRES       0.157632 Hz
AQ           3.1719823 sec
RG           28.5
DE           48.400 usec
TE           6.50 usec
TE          294.2 K
D1           1.0000000 sec

===== CHANNEL f1 =====
NUC1          1H
P1            11.50 usec
PLW1         16.96400070 W
SFO1         500.0330679 MHz

F2 - Processing parameters
SI            65536
SF            500.0300000 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
    
```

(2) ^{13}C NMR



```

Current Data Parameters
NAME          HY
EXPNO        23
PROCNO       1

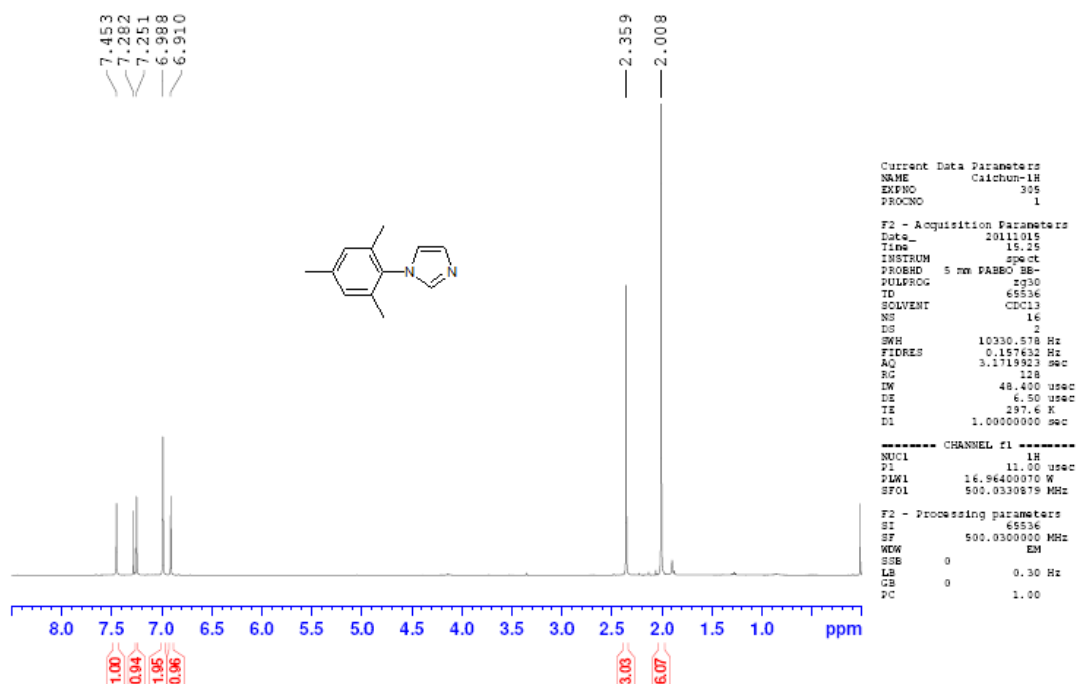
F2 - Acquisition Parameters
Date_        20110226
Time         16.45
INSTRUM      spect
PROBHD       5 mm F4BBO BB-
PULPROG      zg30
TD           65536
SOLVENT      D2O
NS           89
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DE           16.800 usec
TE           6.50 usec
TE          295.7 K
D1           2.0000000 sec
D11          0.0300000 sec

===== CHANNEL f1 =====
NUC1          13C
P1            9.60 usec
PLW1         125.85870361 W
SFO1         125.7452160 MHz

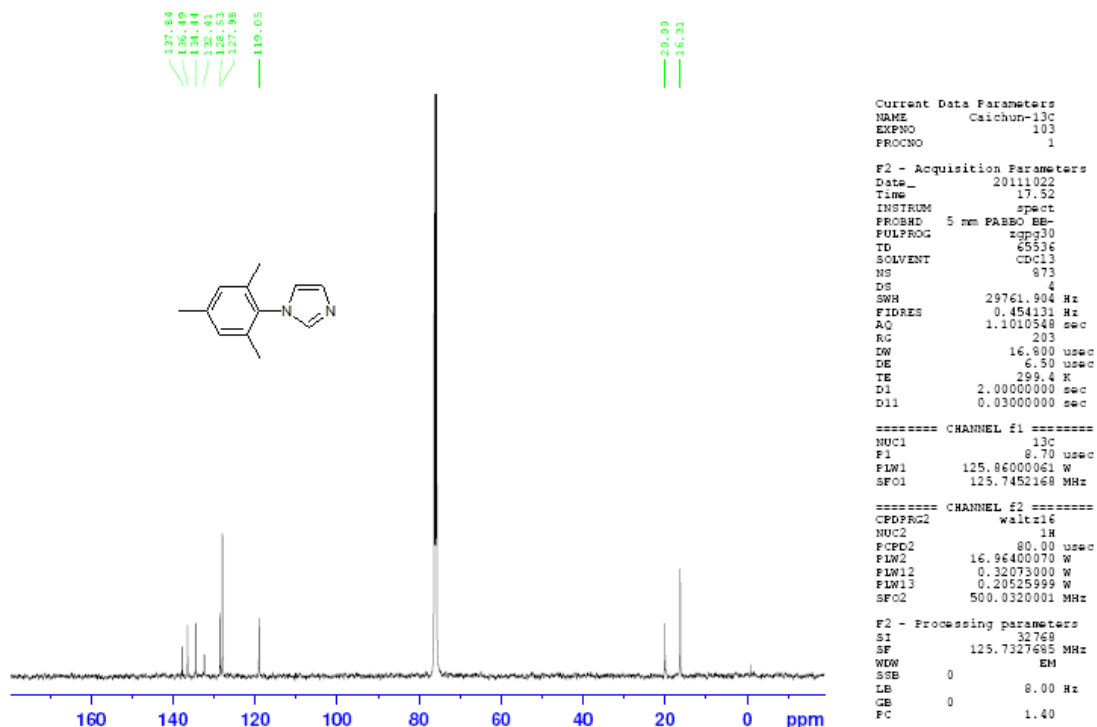
===== CHANNEL f2 =====
CPDPRG2      waltz16
NUC2          1H
F2PRG2       80.00 usec
PLW2         16.96364975 W
PLW12        0.35036379 W
PLW13        0.35036379 W
SFO2         500.0320001 MHz

F2 - Processing parameters
SI            32768
SF            125.7326440 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
    
```

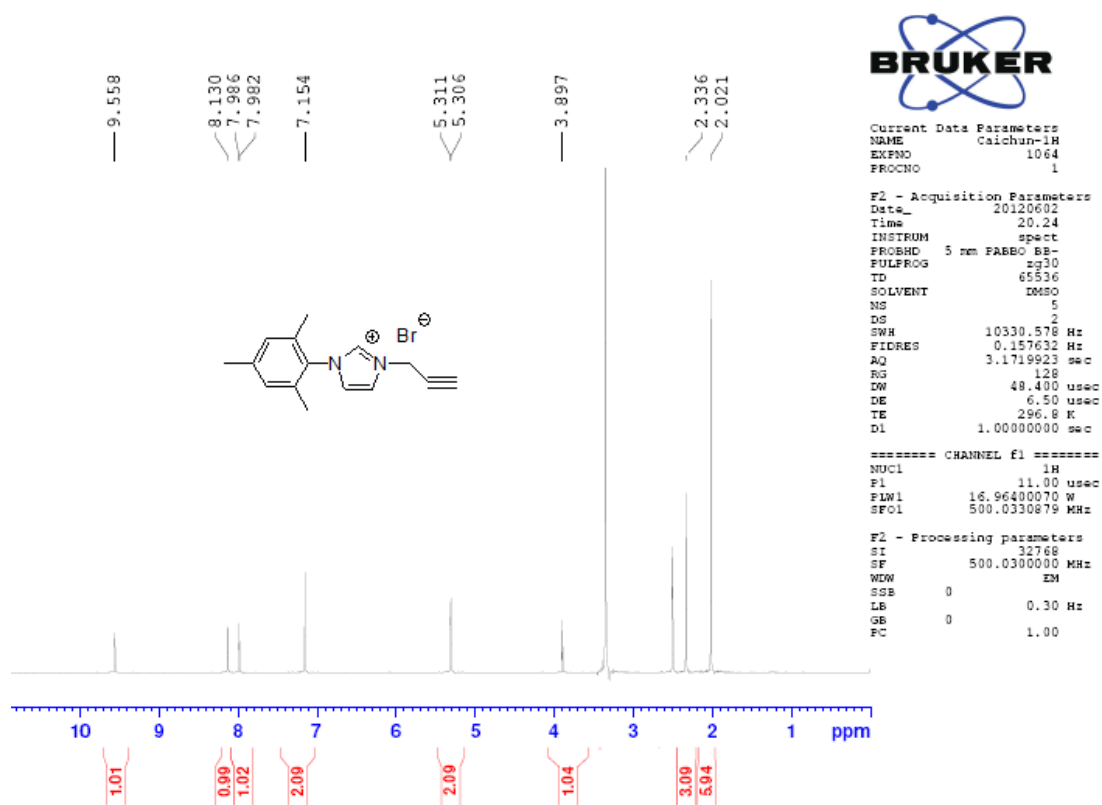
(3) ^1H NMR



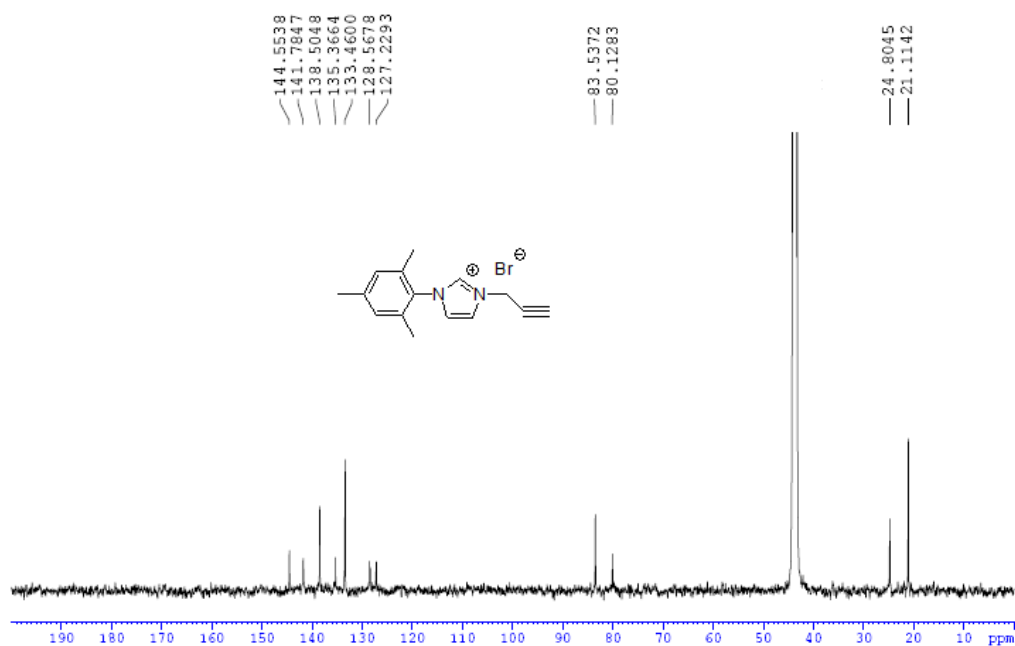
(4) ^{13}C NMR



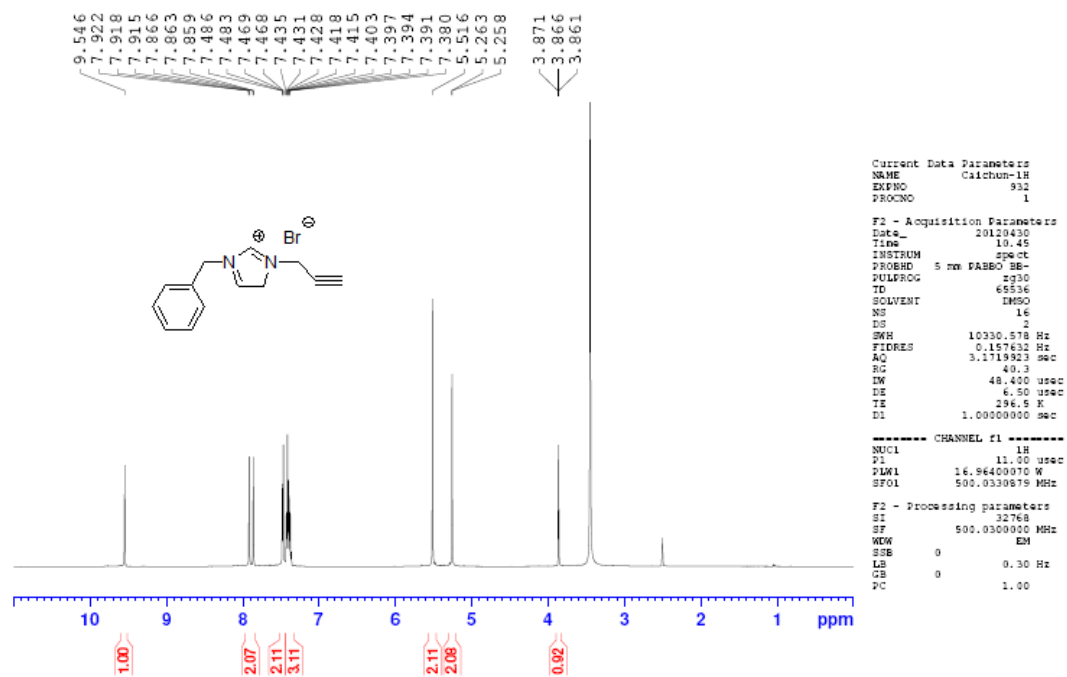
(5) ^1H NMR



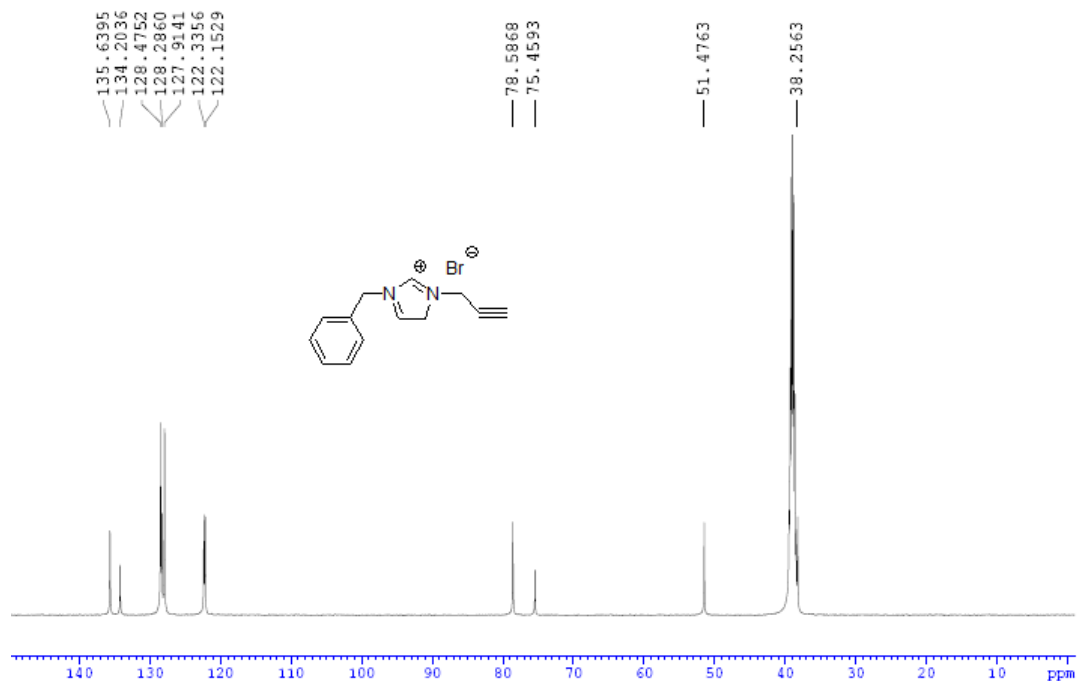
(6) ^{13}C NMR



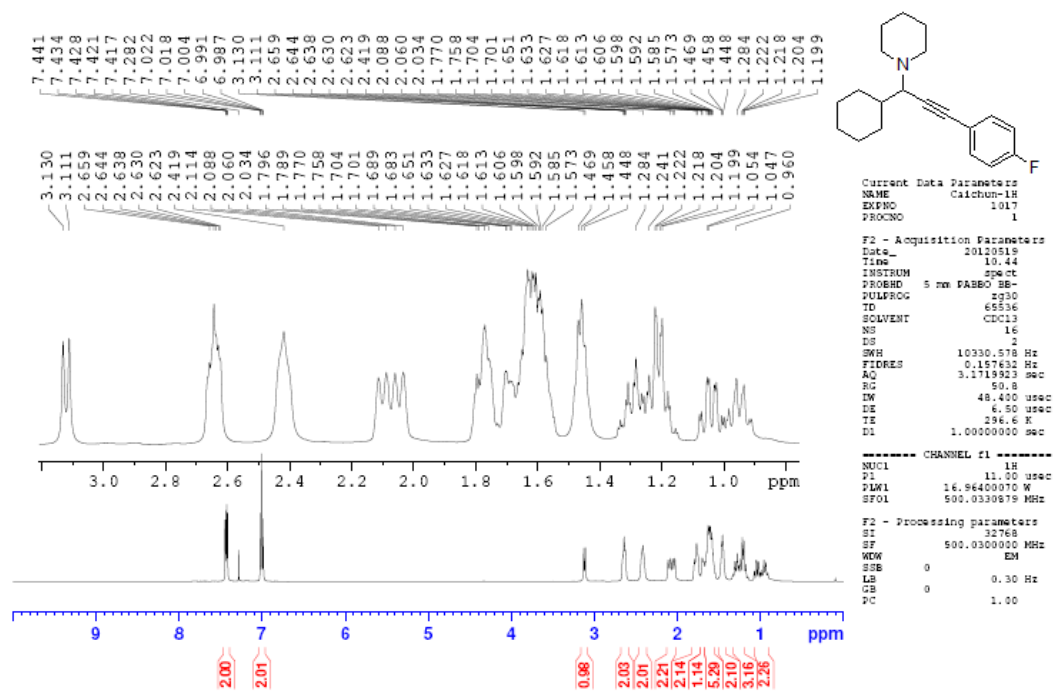
(7) ^1H NMR



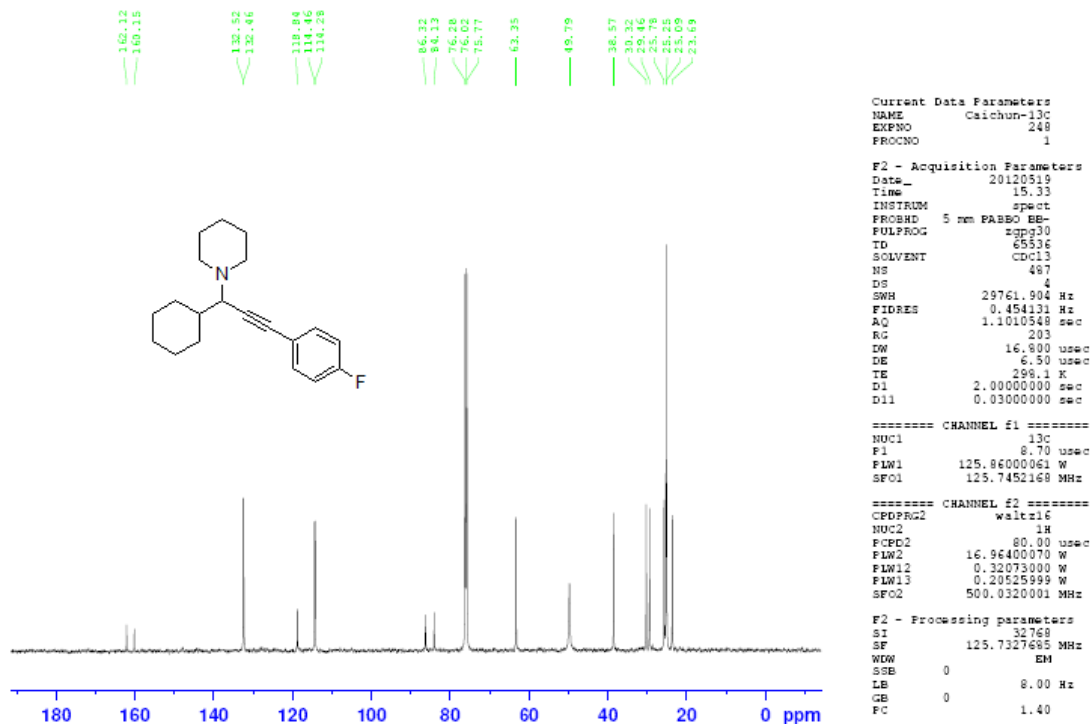
(8) ^{13}C NMR



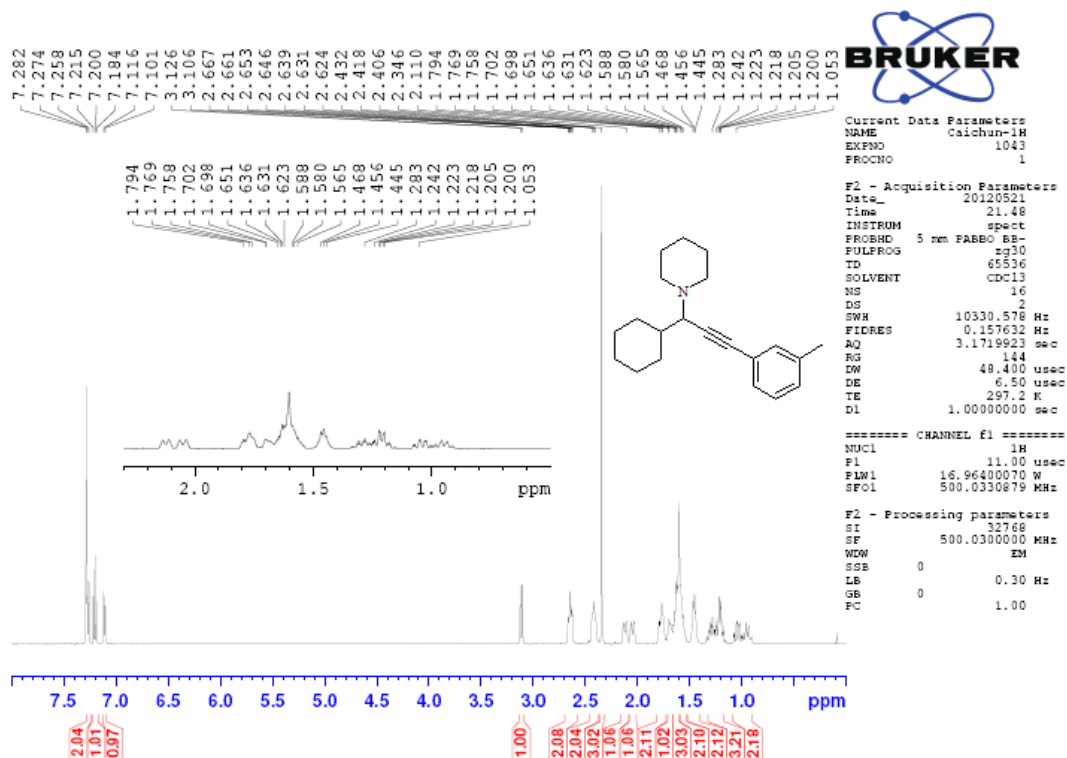
(9) ¹H NMR



(10) ¹³C NMR



(11) ¹H NMR



(12) ¹³C NMR

