Supplementary Material

# Chloro($\eta^2$,$\eta^2$-cycloocta-1,5-diene){1-[(2-[(*S*)-1-(hydroxymethyl)-3-methylbutyl]amino)-2-oxoethyl]-3-(1-naphthalenylmethyl)benzimidazol-2-ylidene}rhodium(I)

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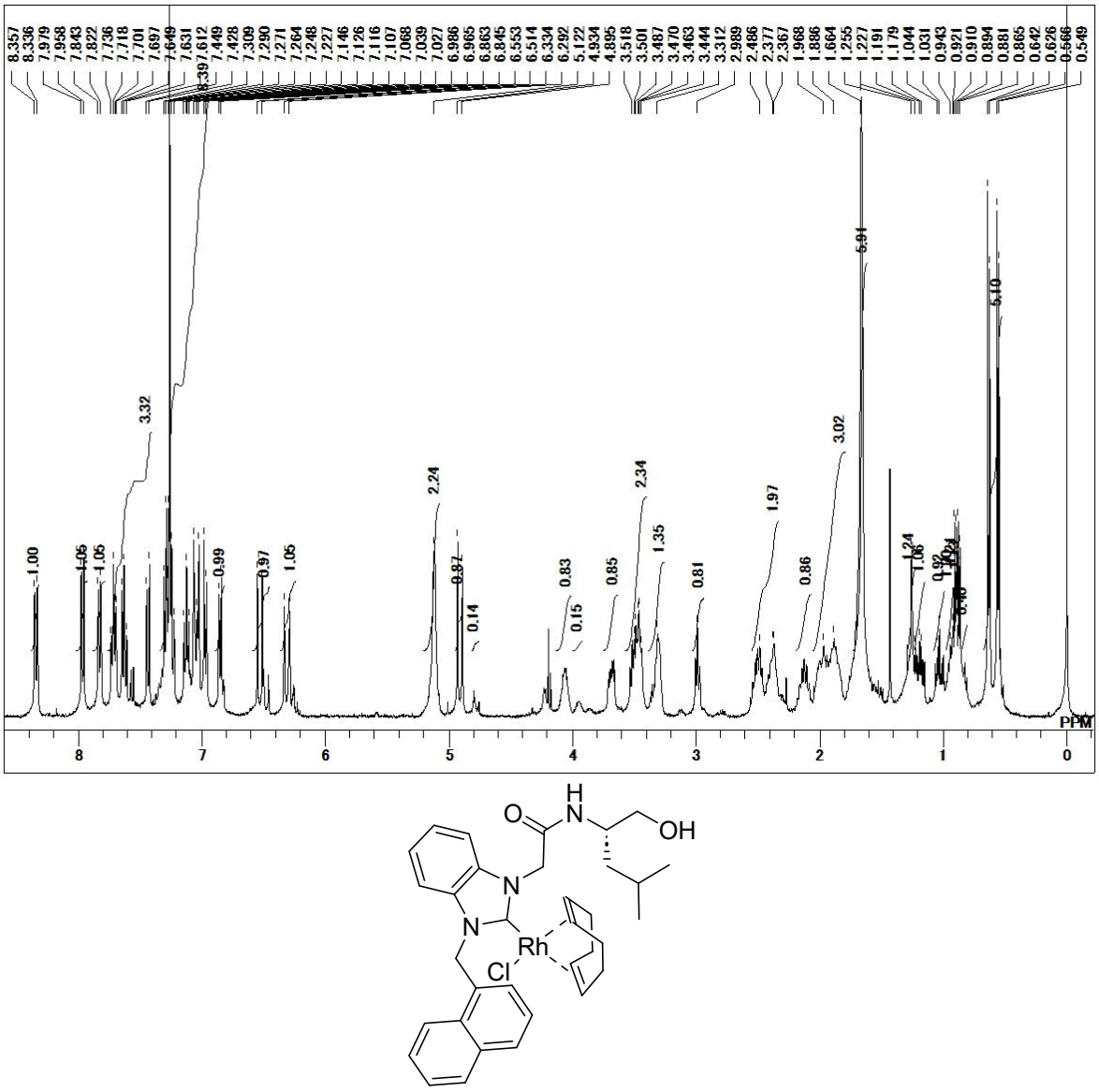
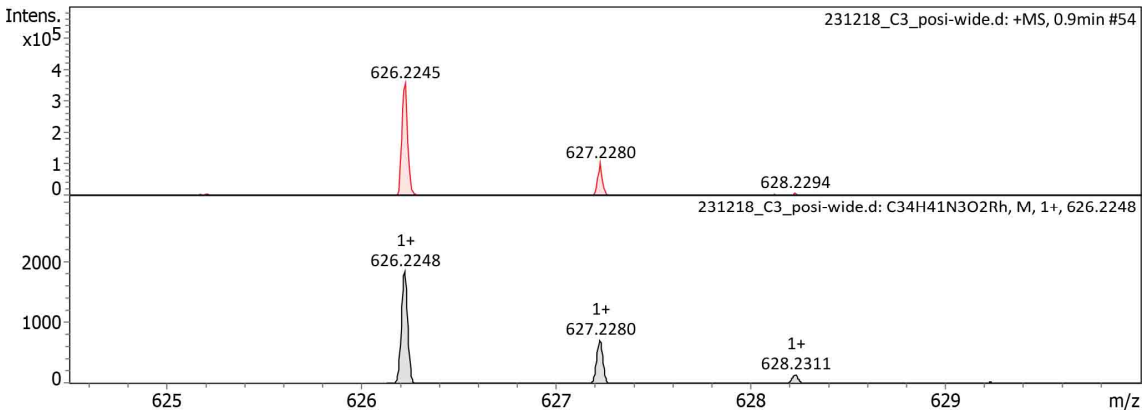
Contents

**Figure S1. $^1$H NMR of compound 3**




**HRMS (ESI-TOF), m/z: calcd for C34H41N3O2Rh [M-Cl]+, 626.2248, found, 626.2245.**



**An 8:2 mixture of two NHC/Rh complexes**

**Major isomer: 6.53 ppm (d, *J* = 15.4 Hz, 1H, $CH_2CO$)**

**Minor isomer: 6.48 ppm (d, *J* = 15.4 Hz, 1H, $CH_2CO$)**

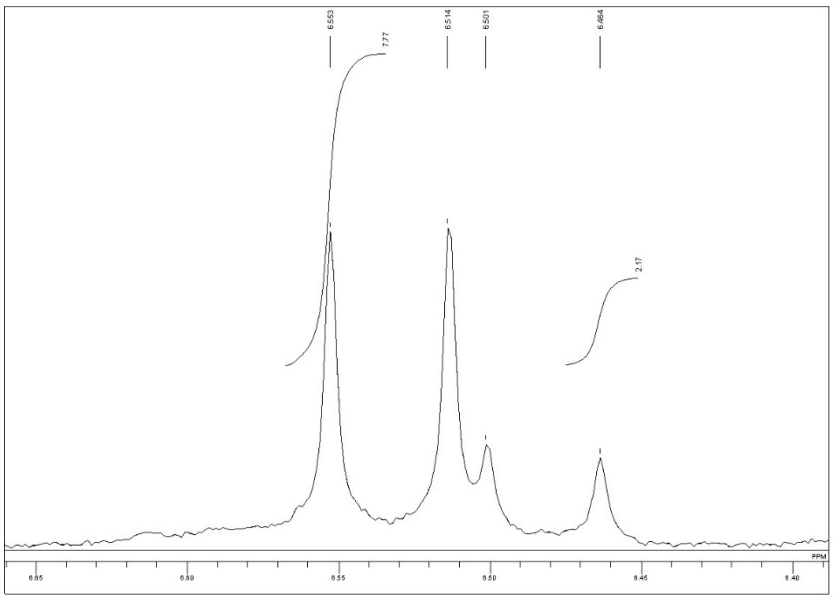
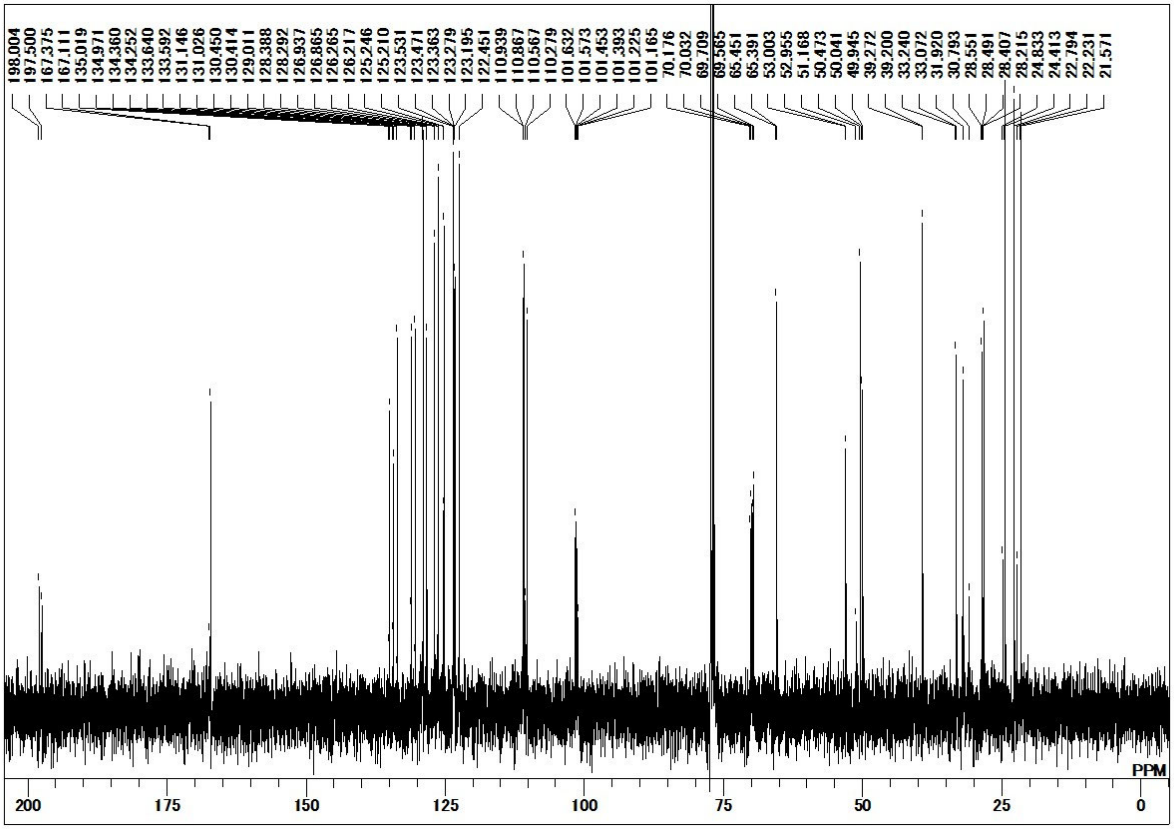
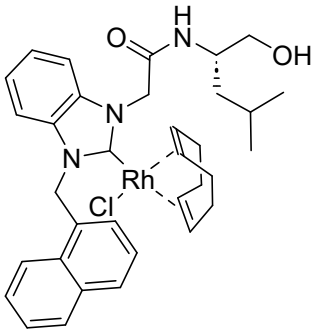
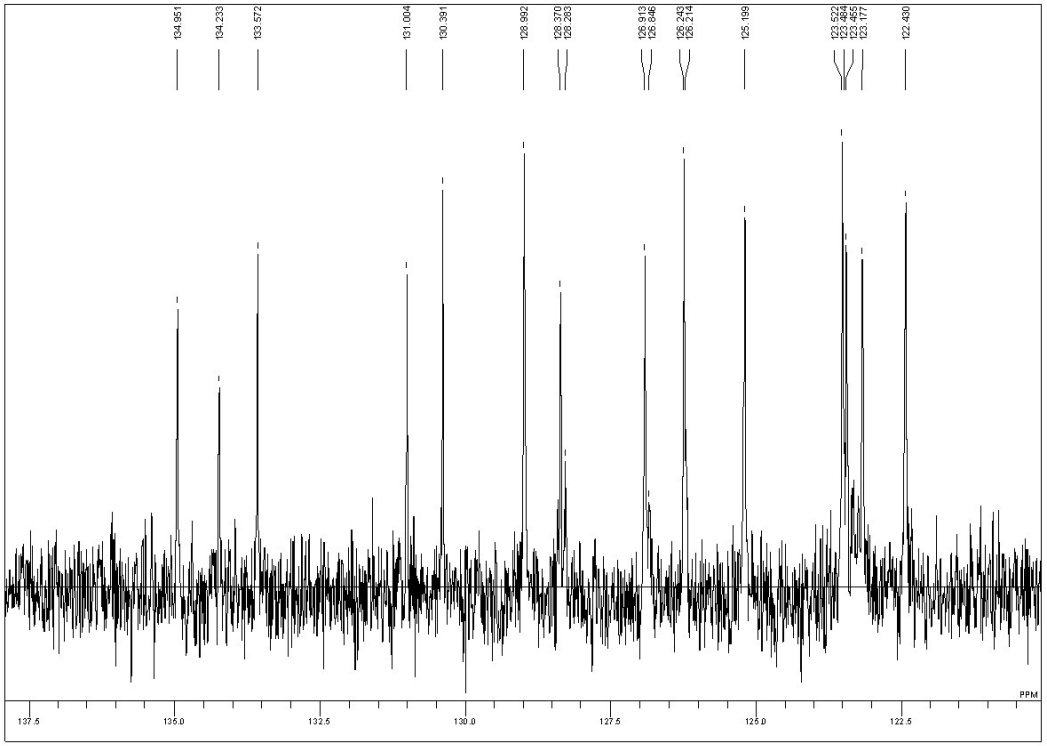


**Figure S2. $^{13}C\{^{1}H\}$ NMR of compound 3**

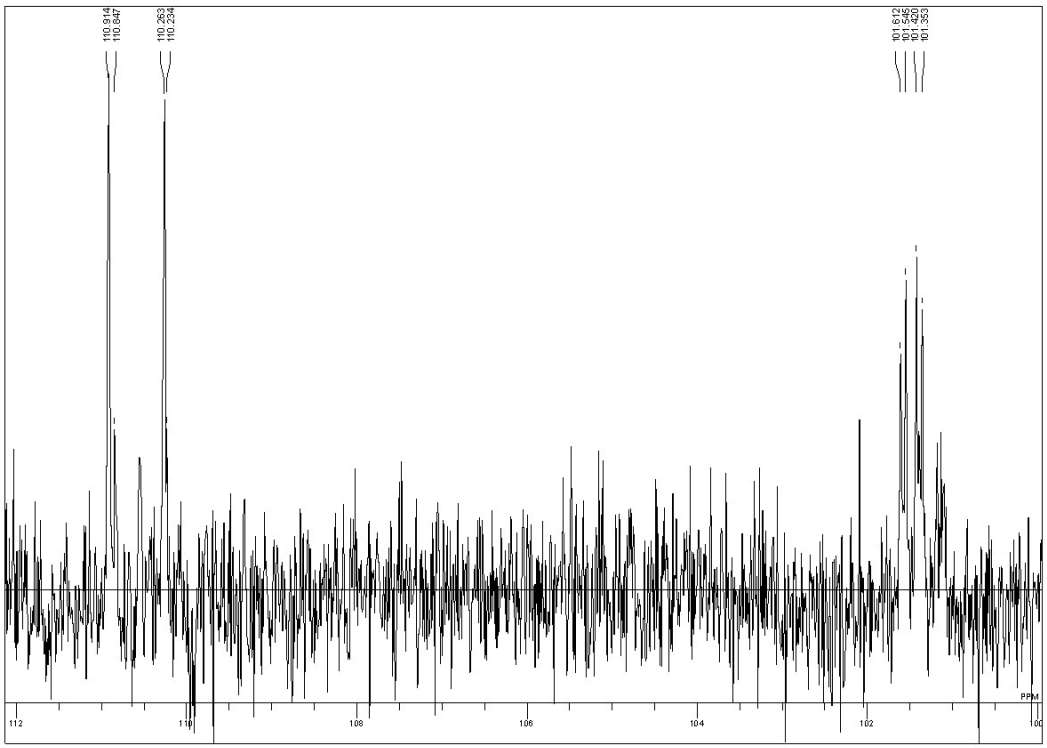


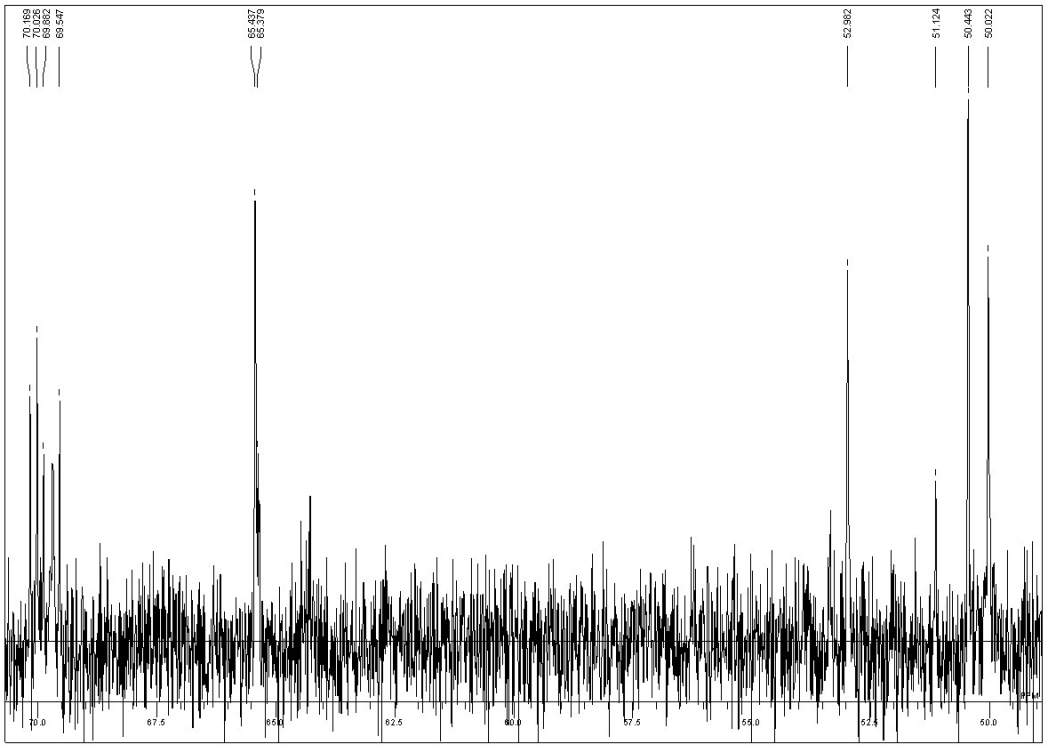
**134.9-122.4 ppm**




**110.9-101.4 ppm**



**70.1-50.0 ppm**




**53.0-21.5 ppm**

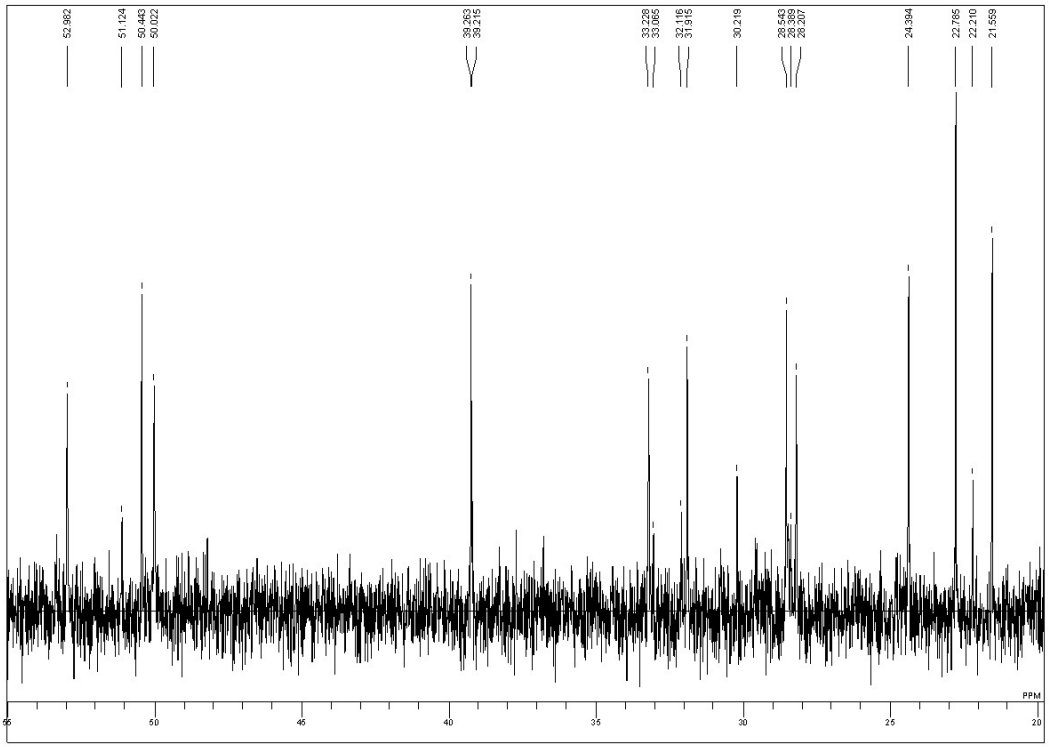
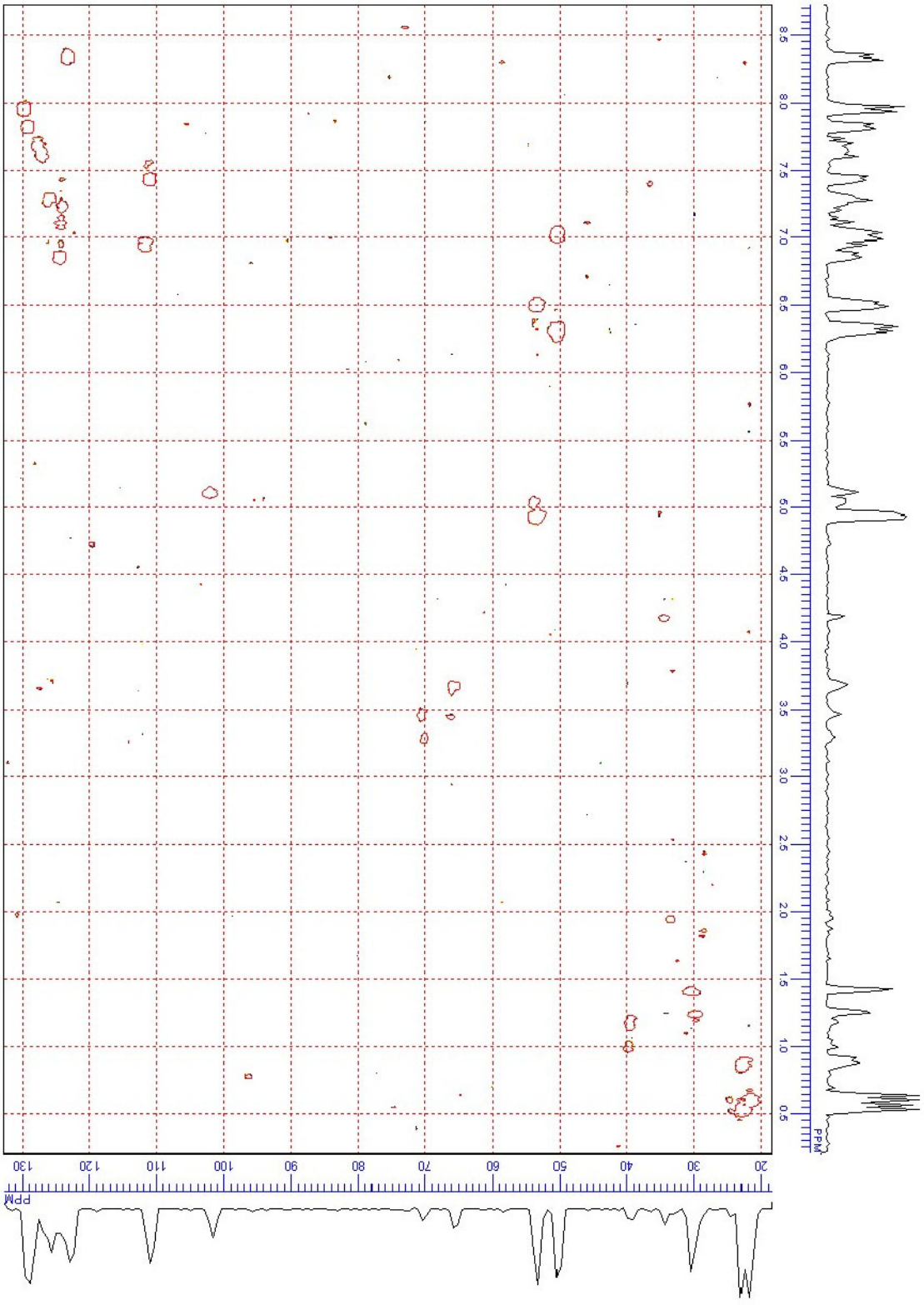
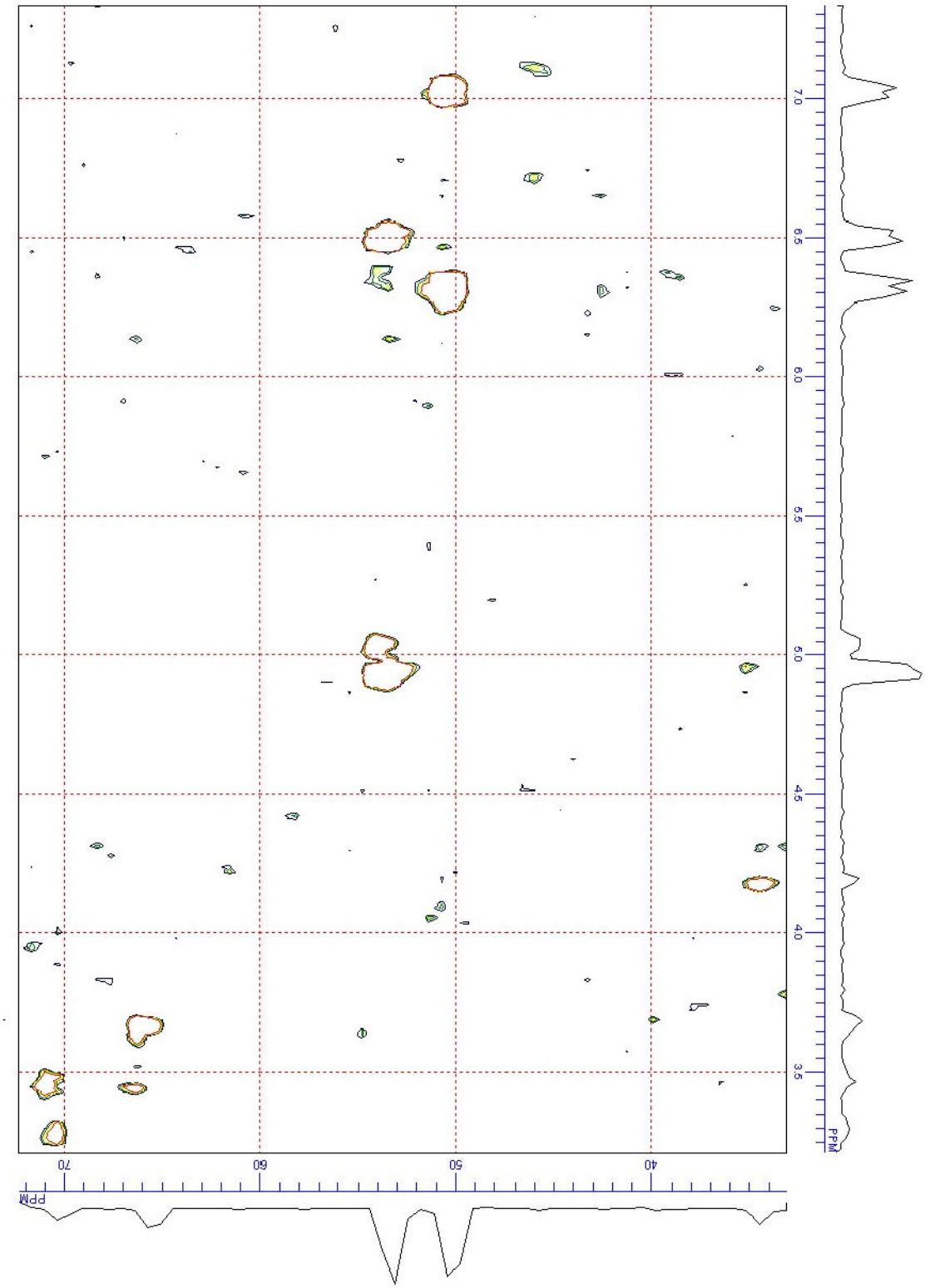


**Figure S3. HMQC-NMR of compound 3**




7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
PPM
70
60
50
40
PPM

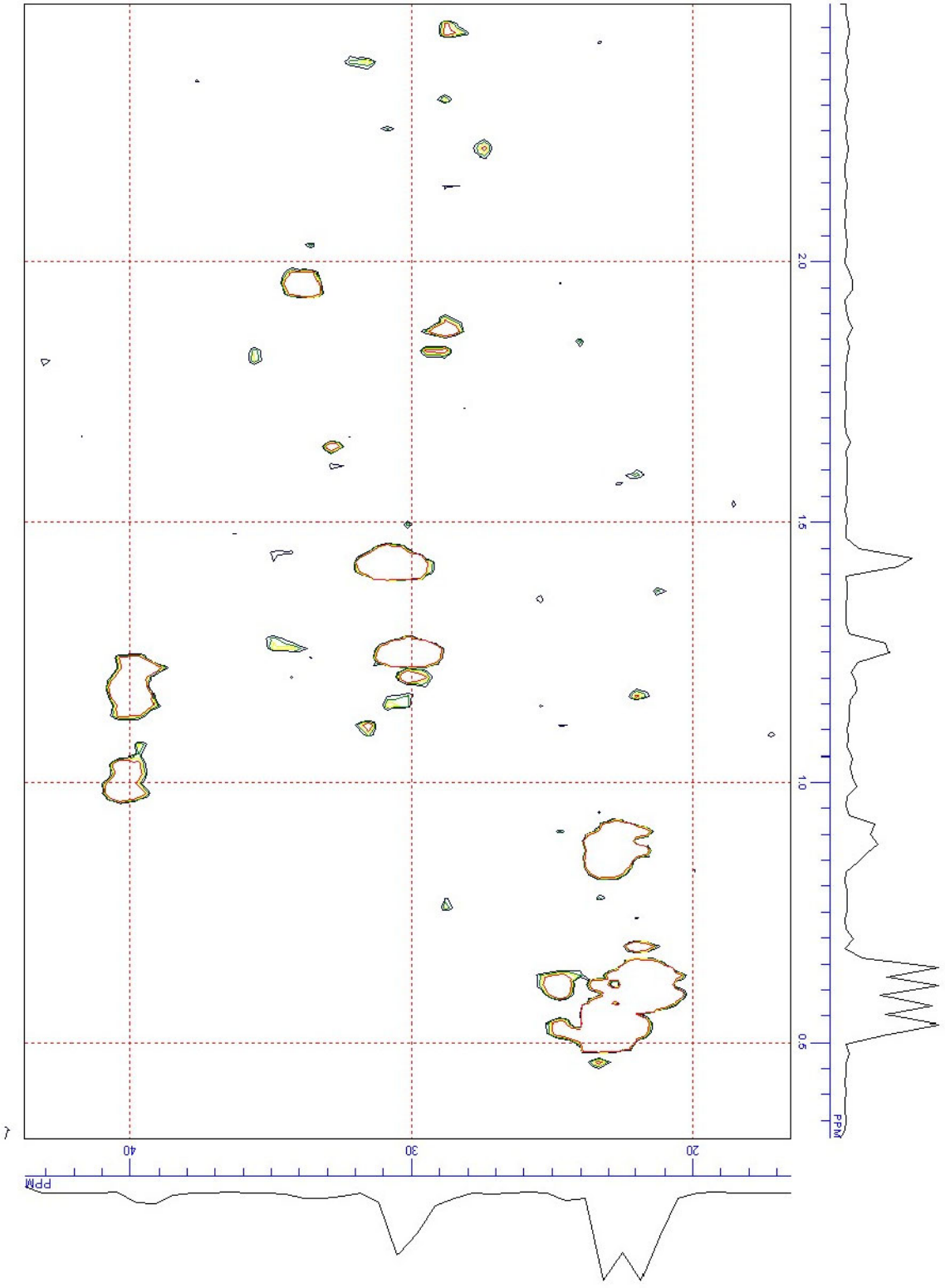
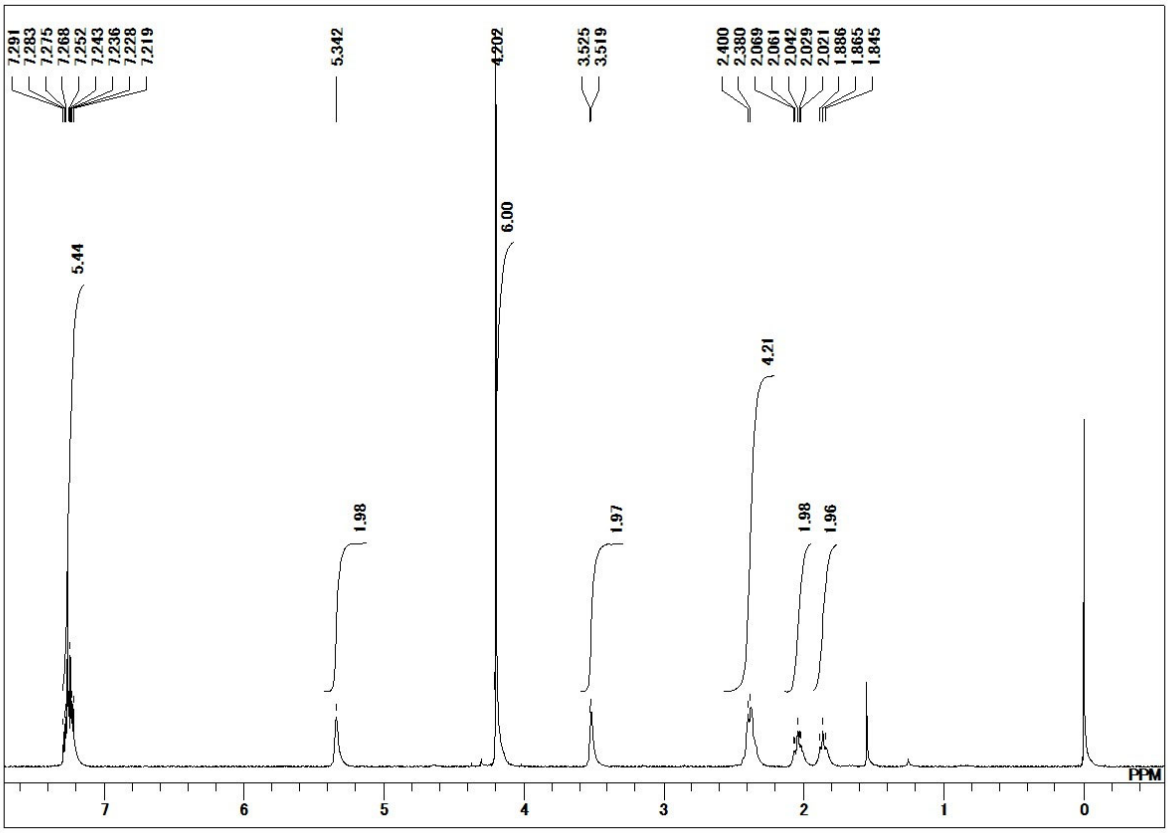
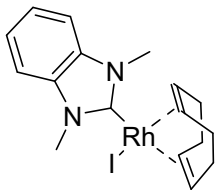

40
30
20
PPM
2.0
1.5
1.0
0.5
PPM

**Figure S4. $^{1}$H NMR of compound 4**




**HRMS (ESI-TOF), m/z: calcd for C17H22N2Rh [M-I]+, 357.0832, found, 357.0832.**

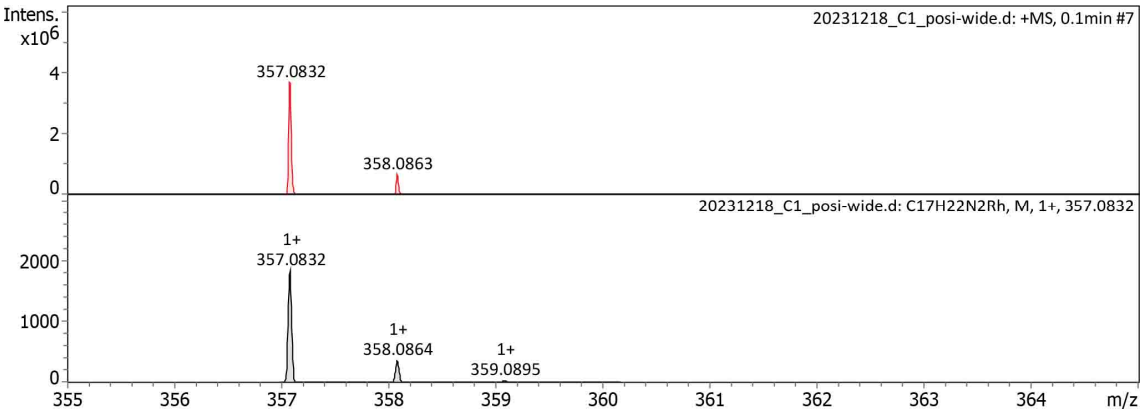


**Figure S5. $^{13}C\{^{1}H\}$ NMR of compound 4**