Electronic Supplementary Information

Synthesis and Characterization of Chromium Complexes 2-$Me_4CpC_6H_4CH_2(R)NHCrCl_2$ and Their Catalytic Properties in Ethylene Homo- and Co-polymerization

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Table S1 Crystal Data and Structure Refinements of Complexes **1**, **5** and **6**

	1	**5**	**6**
empirical formula	$C_{19}H_{25}Cl_2CrN$	$C_{24}H_{27}Cl_2CrN$	$C_{26}H_{31}Cl_2CrN$
M_w	390.30	452.37	480.42
crystal system	Monoclinic	Monoclinic	Orthorhombic
space group	C2/c	P2(1)/c	Pna2(1)
a (Å)	25.969(2)	10.4590(8)	15.3969(7)
b (Å)	9.2271(8)	26.893(2)	18.3161(9)
c (Å)	16.7645(14)	8.5983(6)	8.5618(4)
α (deg)	90	90	90
β (deg)	110.1890(10)	113.7230(10)	90
γ (deg)	90	90	90
V (Å)	3770.3(6)	2214.1(3)	2414.5(2)
Z	8	4	4
*D*calcd (mg m^{-3})	1.375	1.357	1.322
abs. coeff. (mm^{-1})	0.889	0.768	0.708
2θ mas (deg)	1.67-26.39	2.13-26.39	1.73-26.39
transmission range	0.8782-0.8493	0.8936-0.8679	0.9012-0.8772
reflections collected	10485	12593	12947
independent reflections	3838 [*R*(int) = 0.0386]	4521 [*R*(int) = 0.0367]	4864 [*R*(int) = 0.0353]
R_1[a] (wR_2)[b][I> 2σ(I)]	0.0452	0.0457	0.0455
	0.1077	0.1043	0.1128
GOF (F^2)	1.054	1.049	0.999
largest diff. peak	0.693	0.709	0.407
and hole/e $Å^{-3}$	-0.273	-0.265	-0.296

[a] $R_1 = \sum||F_o| - |F_c|| / \sum|F_o|$. [b] $wR_2 = [\sum[w(F_o^2 - F_c^2)^2] / \sum[w(F_o^2)^2]]^{1/2}$

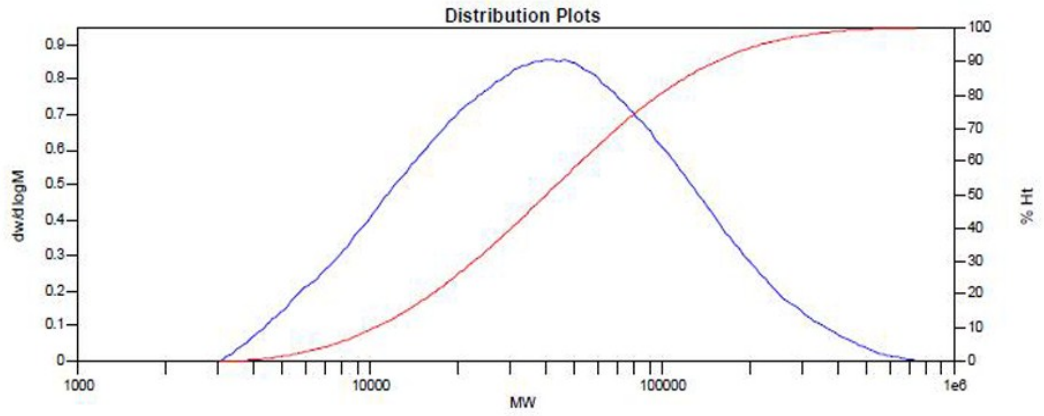

Figure S1 GPC trace for poly(ethylene-co-1-hexene) sample (entry 18, Table 3, Mw = 6.48 ×10^4 g/mol, Mw/Mn = 2.68).

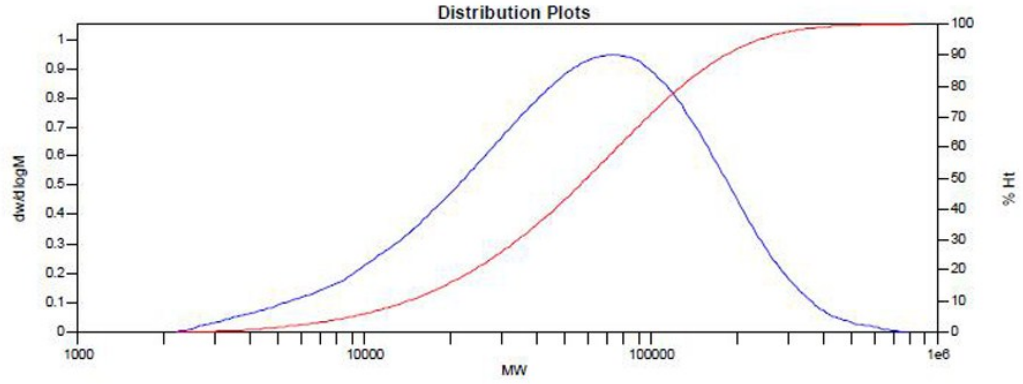

Figure S2 GPC trace for poly(ethylene-co-1-hexene) sample (entry 21, Table 3, Mw = 8.20×10^4 g/mol, Mw/Mn = 2.62).

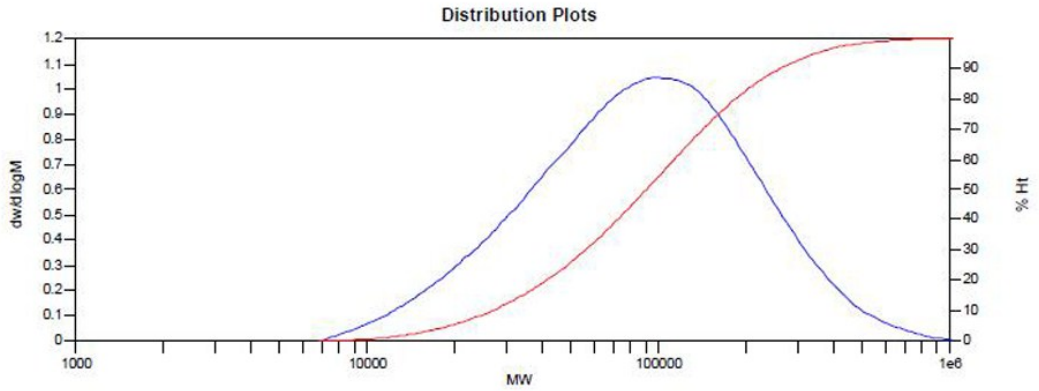

Figure S3 GPC trace for poly(ethylene-co-1-hexene) sample (entry 24, Table 3, Mw = 12.22×10^4 g/mol, Mw/Mn = 2.08).

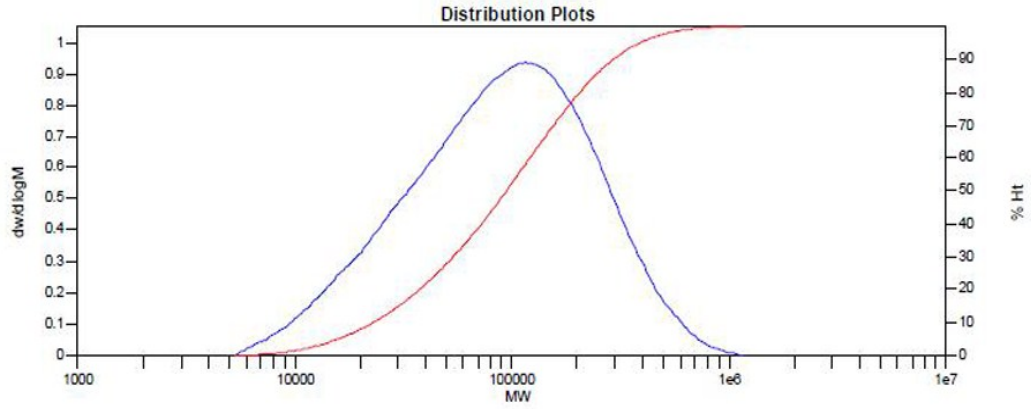

Figure S4 GPC trace for poly(ethylene-co-1-hexene) sample (entry 27, Table 3, Mw = 13.18×10^4 g/mol, Mw/Mn = 2.47).

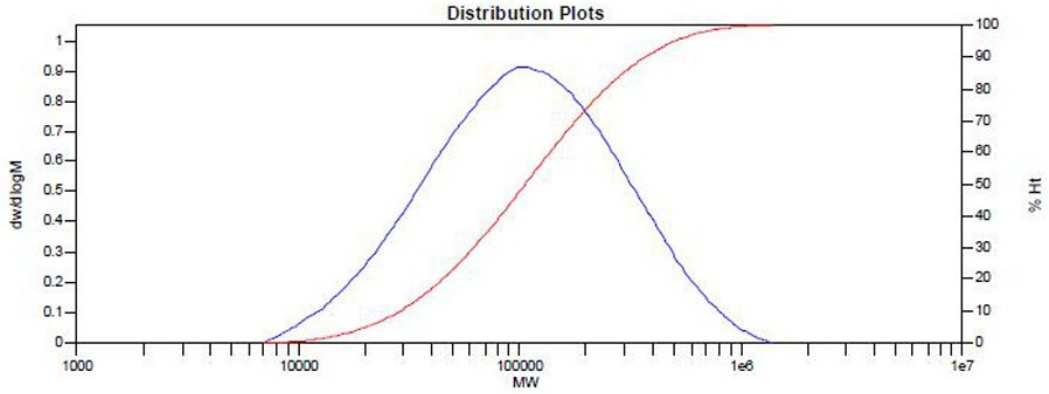

Figure S5 GPC trace for poly(ethylene-co-1-hexene) sample (entry 30, Table 3, Mw = 16.02×10^4 g/mol, Mw/Mn = 2.45).

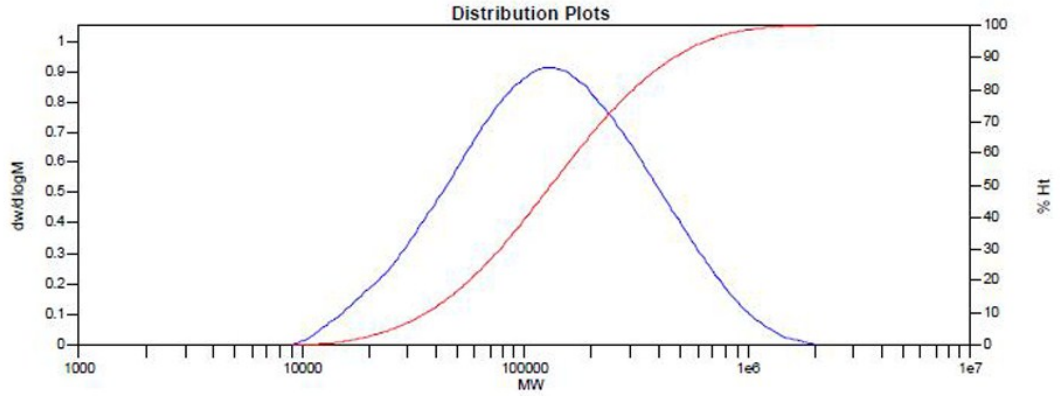

Figure S6 GPC trace for poly(ethylene-co-1-hexene) sample (entry 33, Table 3, Mw = 20.31×10^4 g/mol, Mw/Mn = 2.48).

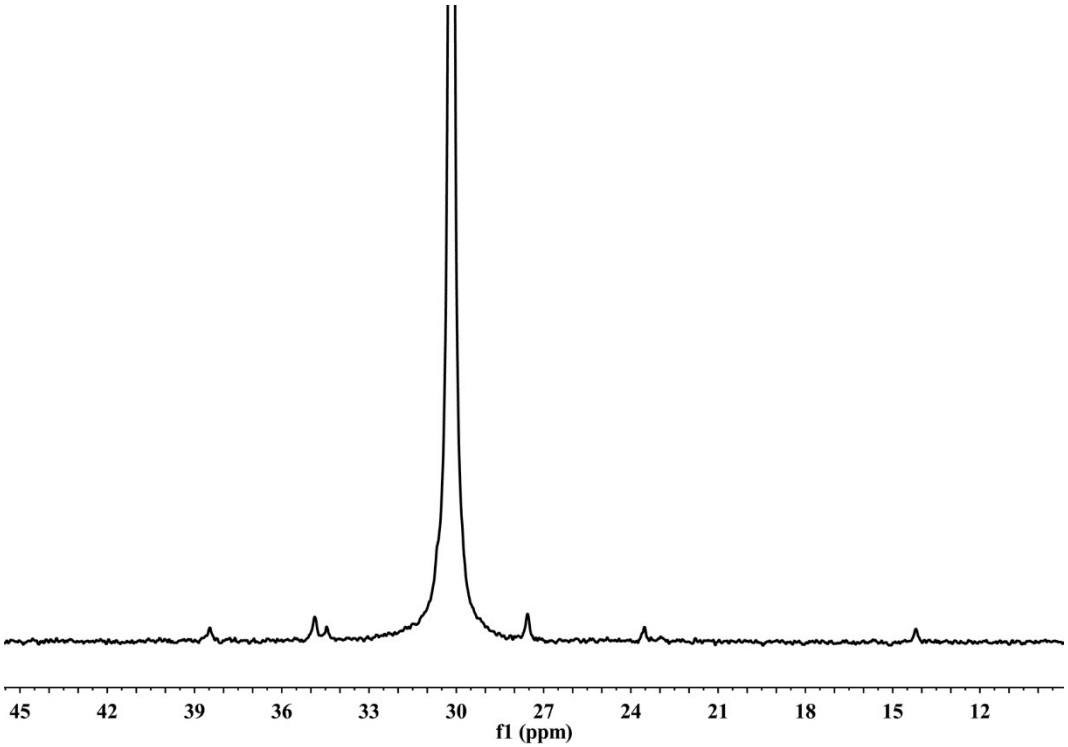

Figure S7 ^{13}C NMR spectra for poly(ethylene-co-1-hexene) sample (entry 21, Table 3).

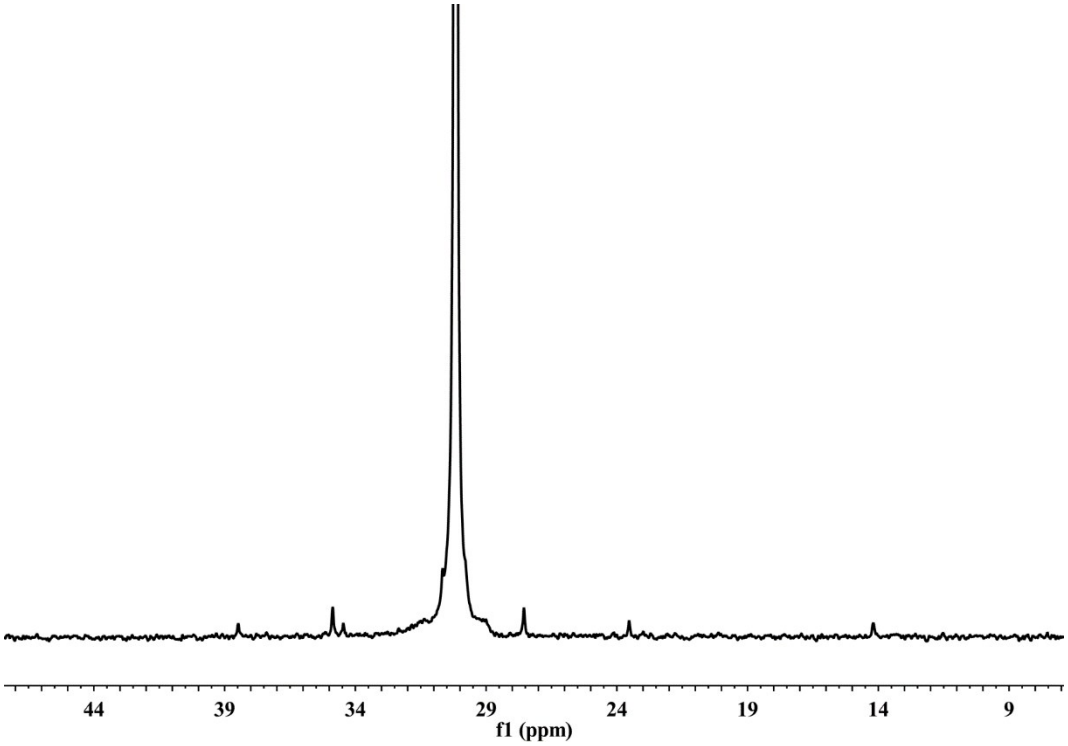

Figure S8 ^{13}C NMR spectra for poly(ethylene-co-1-hexene) sample (entry 24, Table 3).

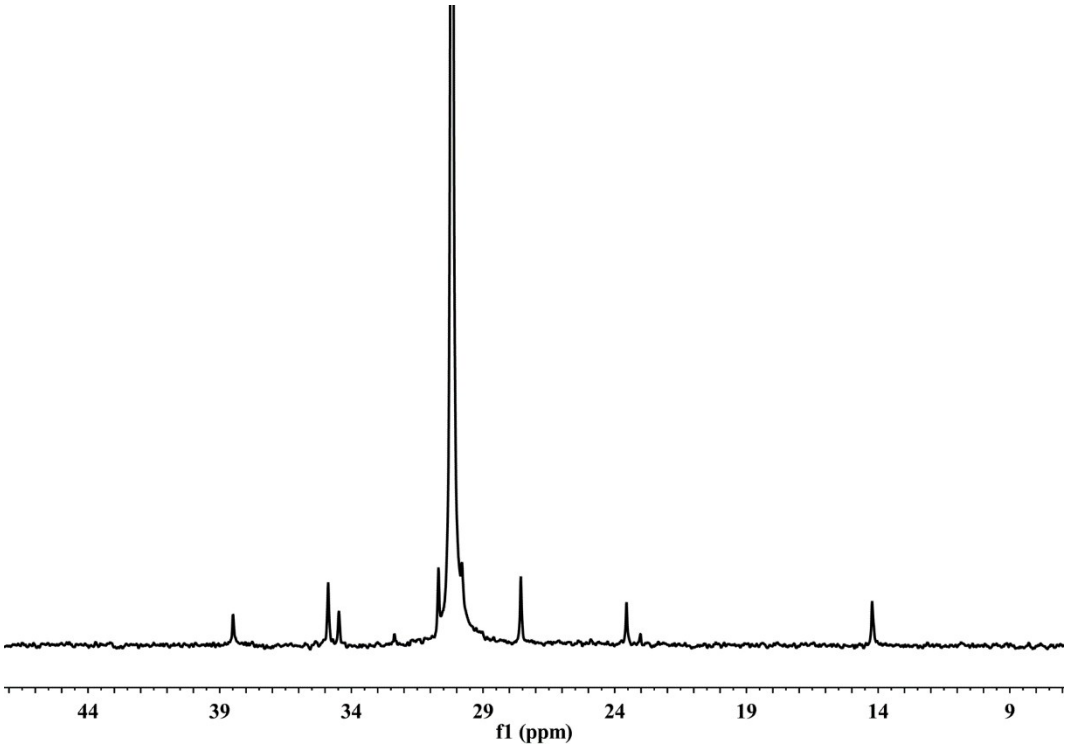

Figure S9 ^{13}C NMR spectra for poly(ethylene-co-1-hexene) sample (entry 27, Table 3).

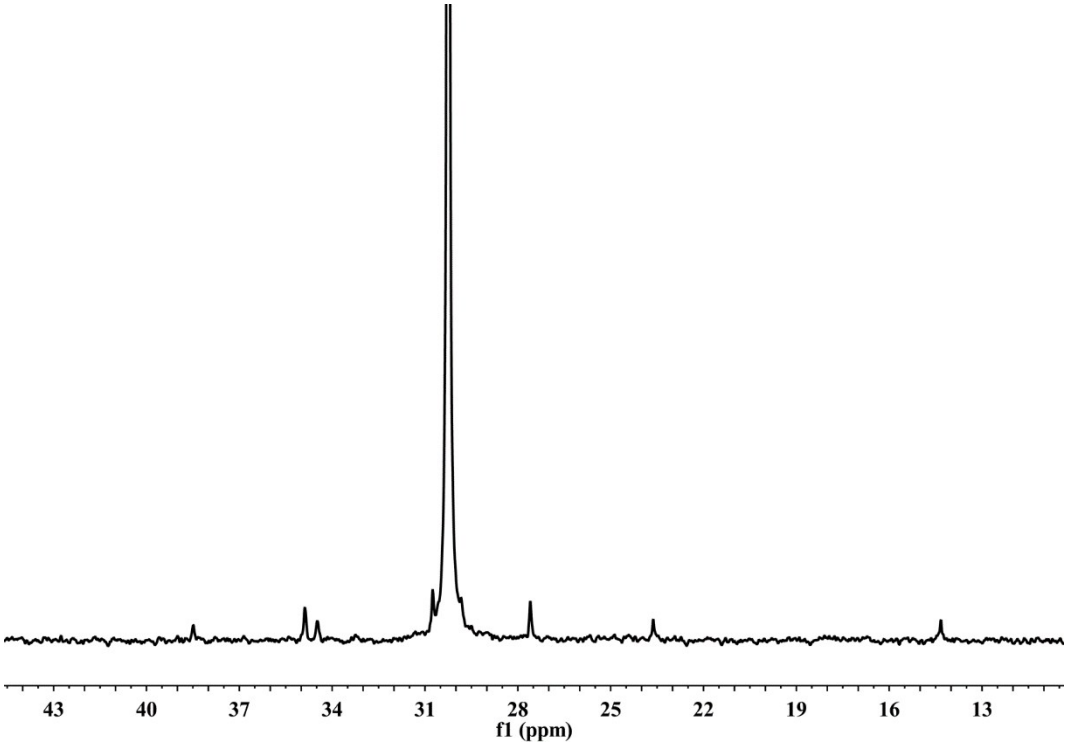

Figure S10 ^{13}C NMR spectra for poly(ethylene-co-1-hexene) sample (entry 30, Table 3).

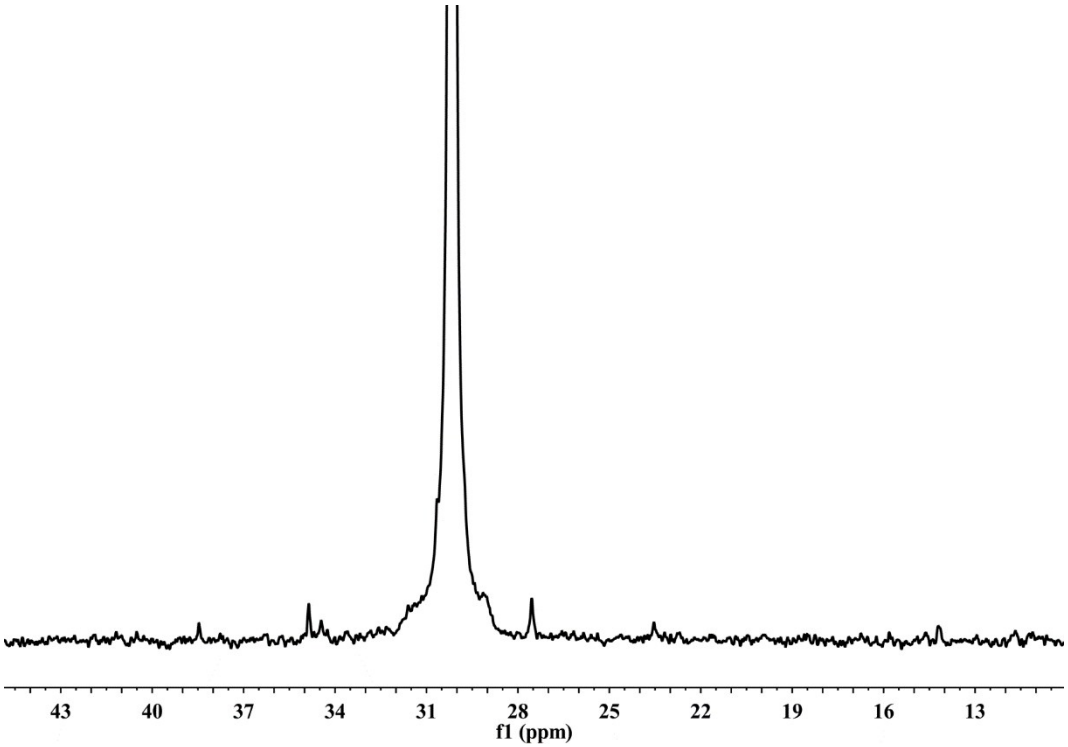

Figure S11 ^{13}C NMR spectra for poly(ethylene-co-1-hexene) sample (entry 33, Table 3).

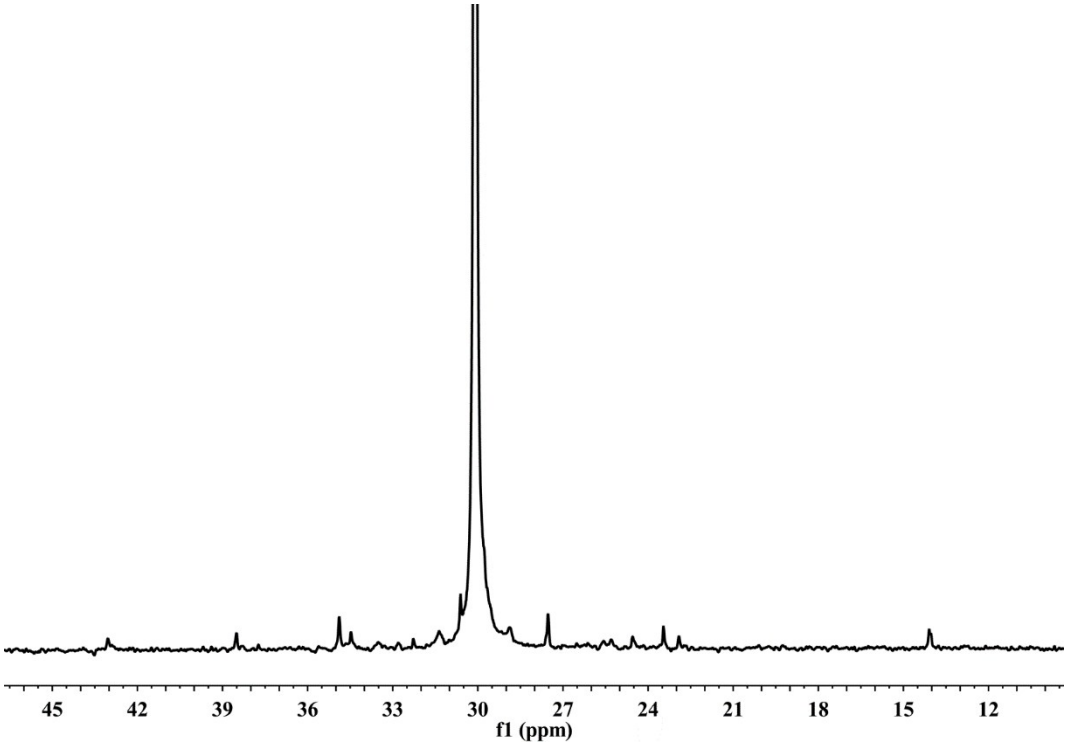

Figure S12 ^{13}C NMR spectra for poly(ethylene-co-1-hexene) sample (entry 36, Table 3).

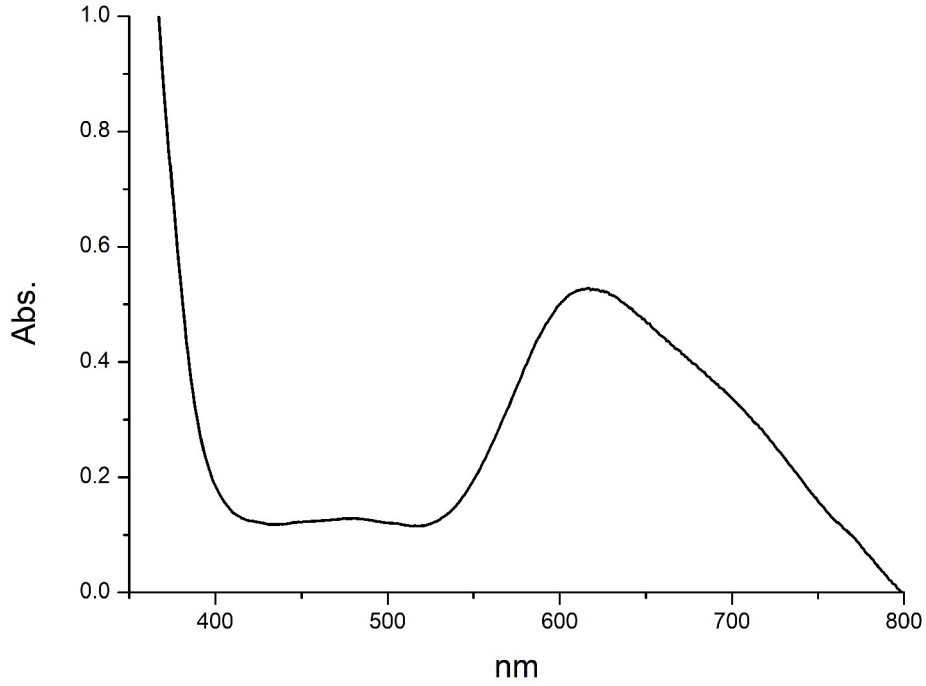

Figure S13 UV/Vis spectra of complex **1**.

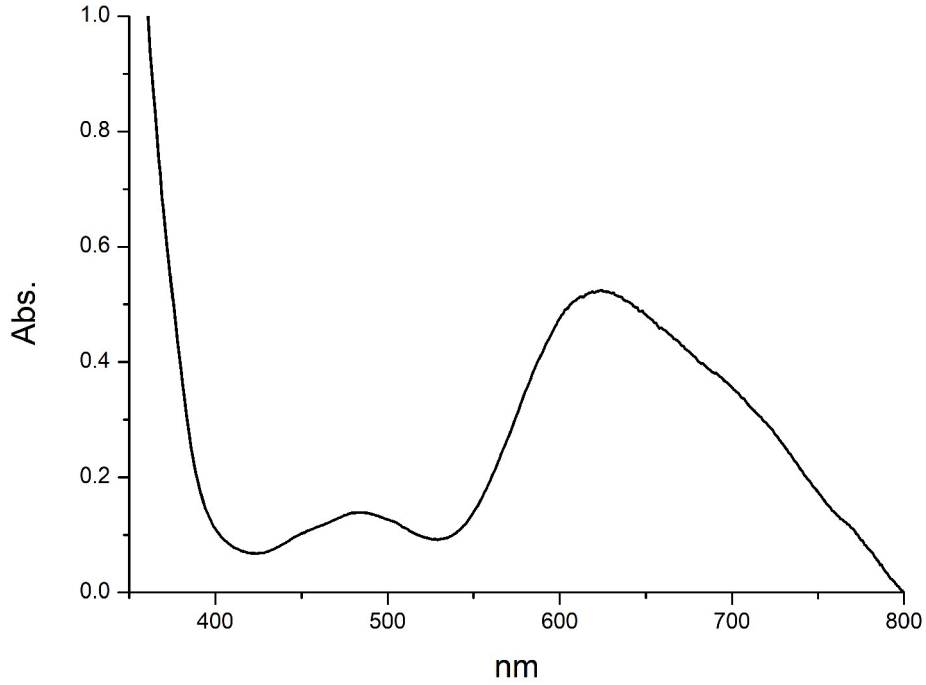

Figure S14 UV/Vis spectra of complex **2**.

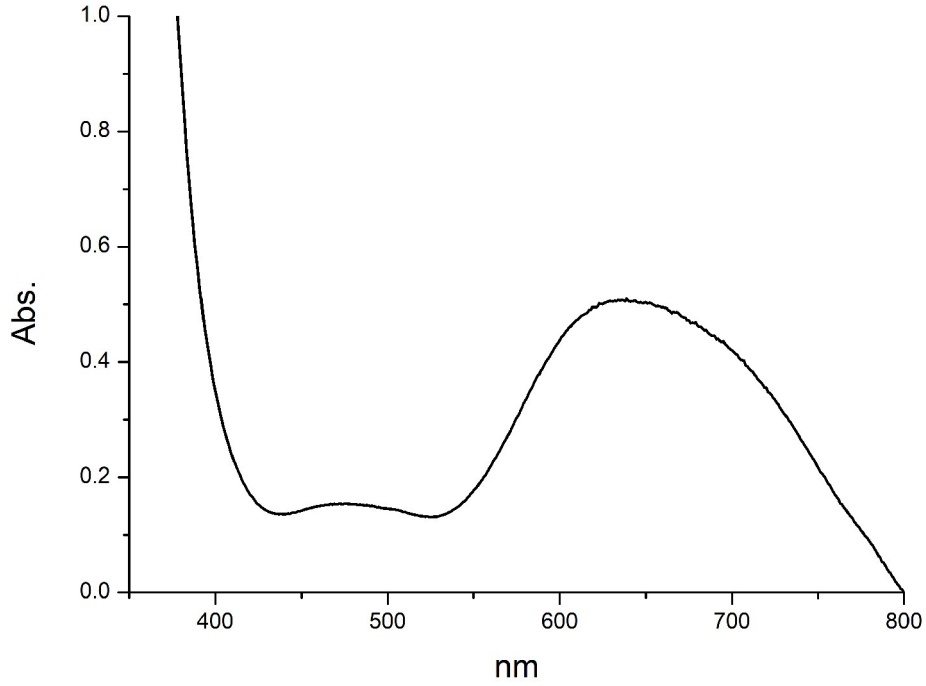

Figure S15 UV/Vis spectra of complex **3**.

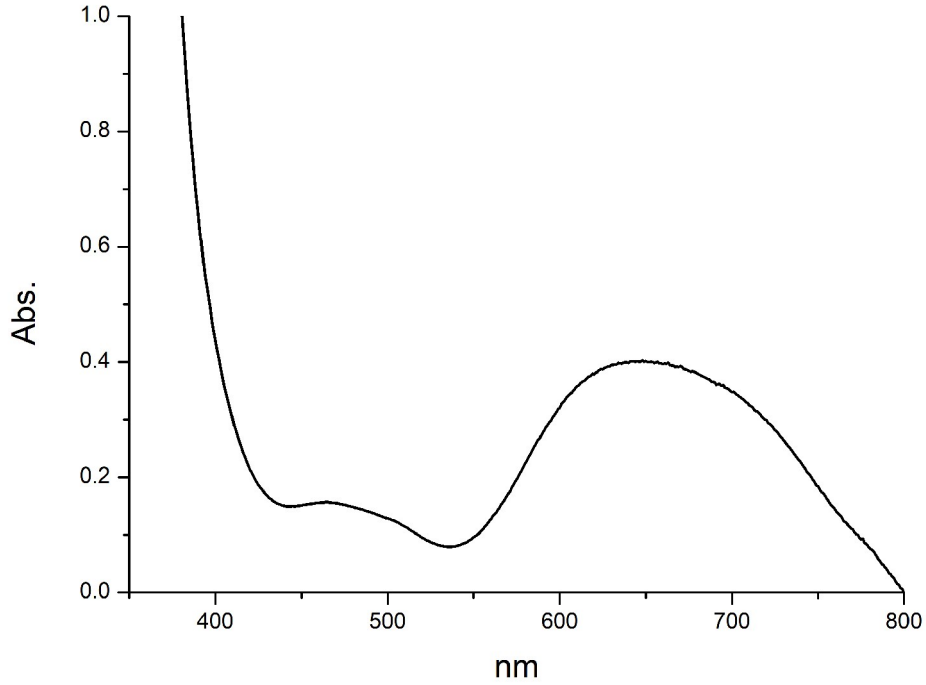

Figure S16 UV/Vis spectra of complex **4**.

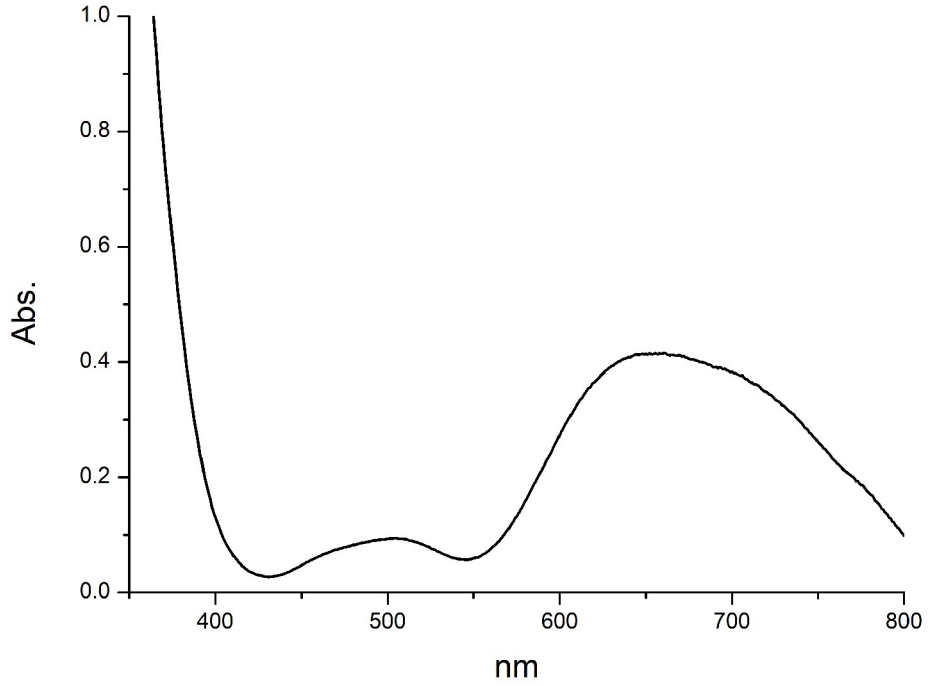

Figure S17 UV/Vis spectra of complex **5**.

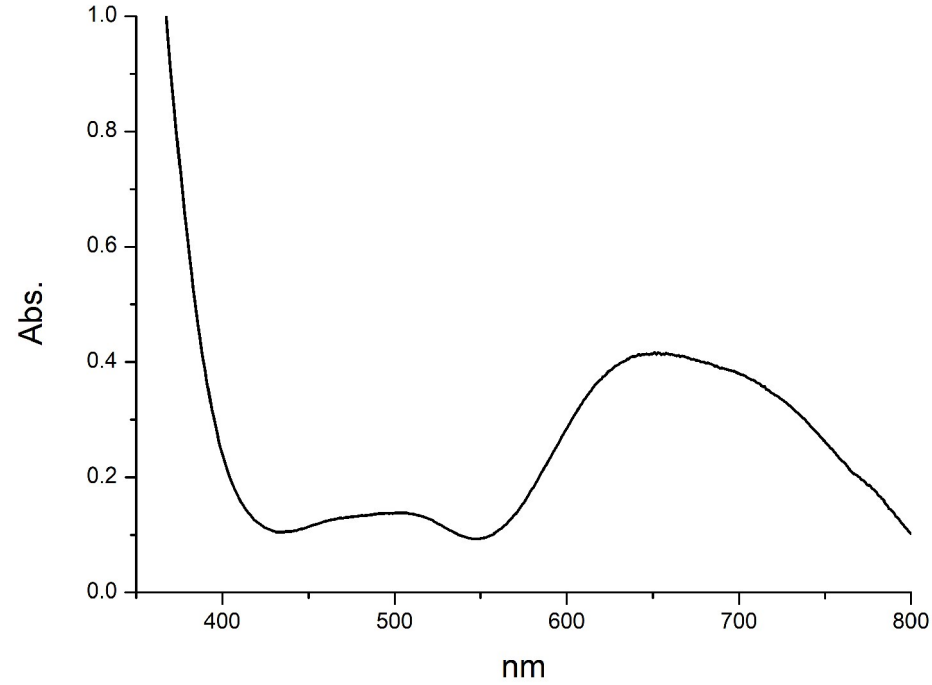

Figure S18 UV/Vis spectra of complex **6**.

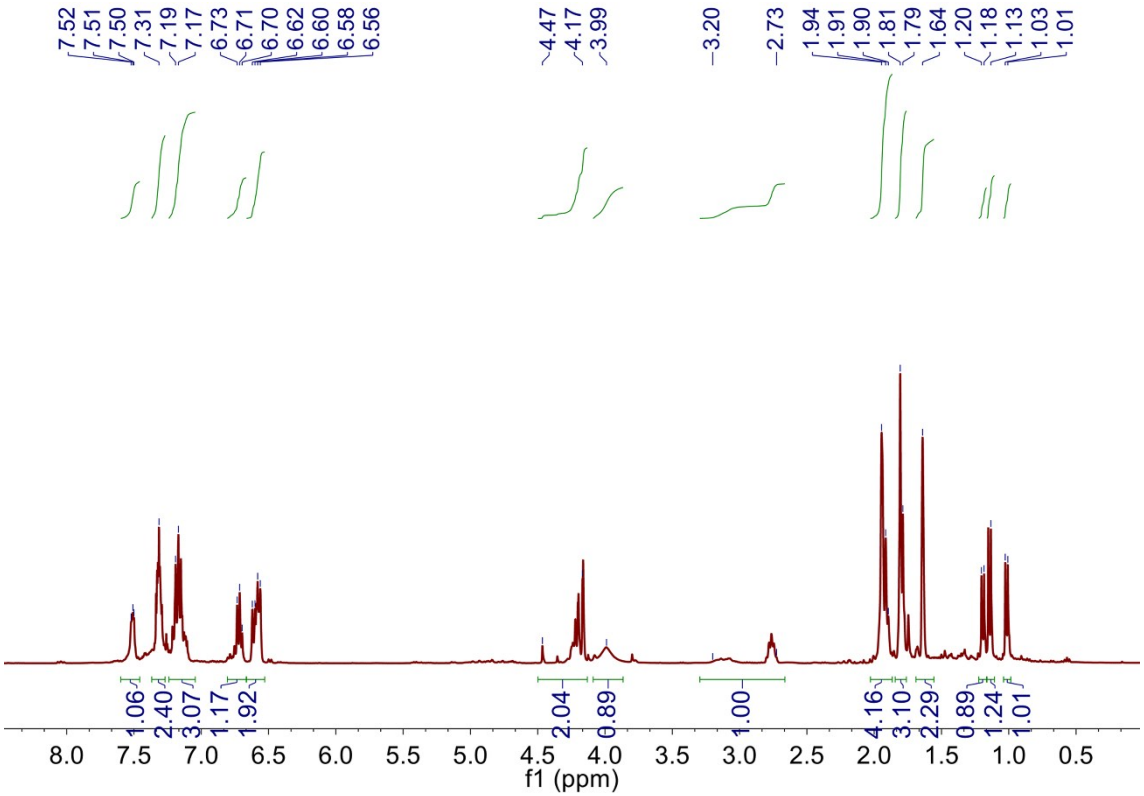

Figure S19 ^{1}H NMR spectrum of H_2**L3** (400 MHz, $CDCl_3$, 25 °C).

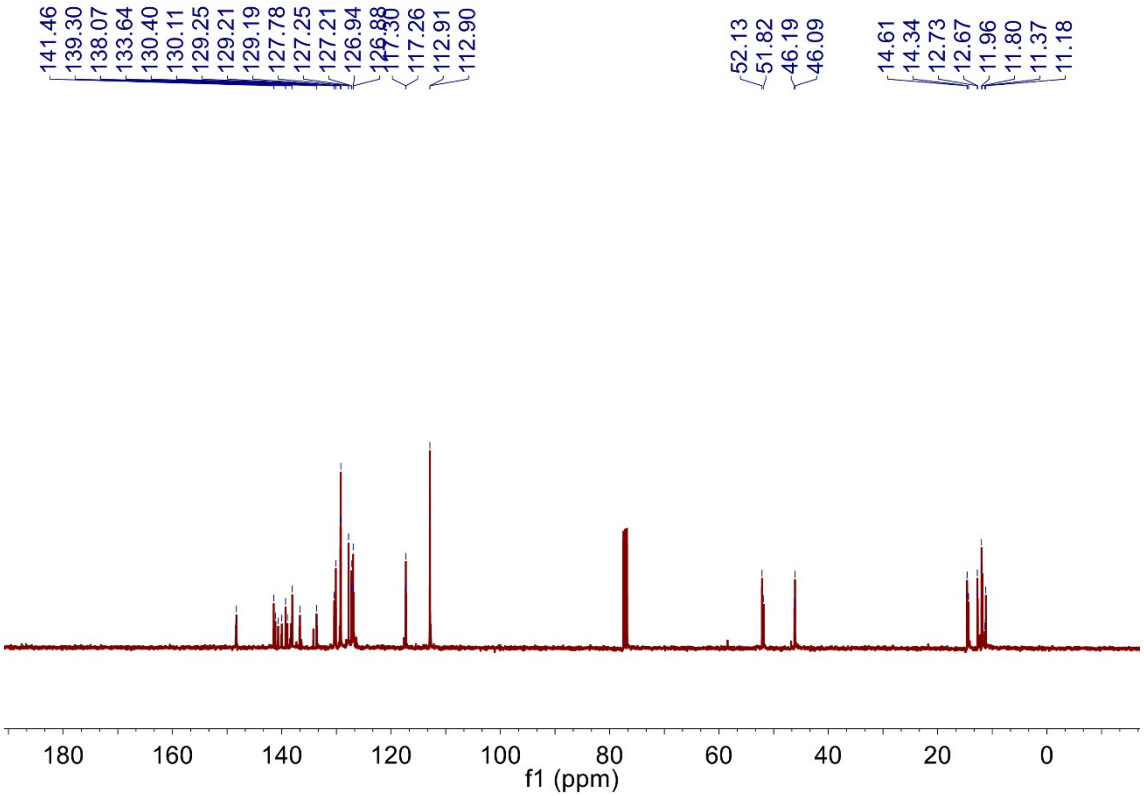

Figure S20 ^{13}C {^{1}H} NMR spectrum of H_2**L3** (100 MHz, $CDCl_3$, 25 °C).

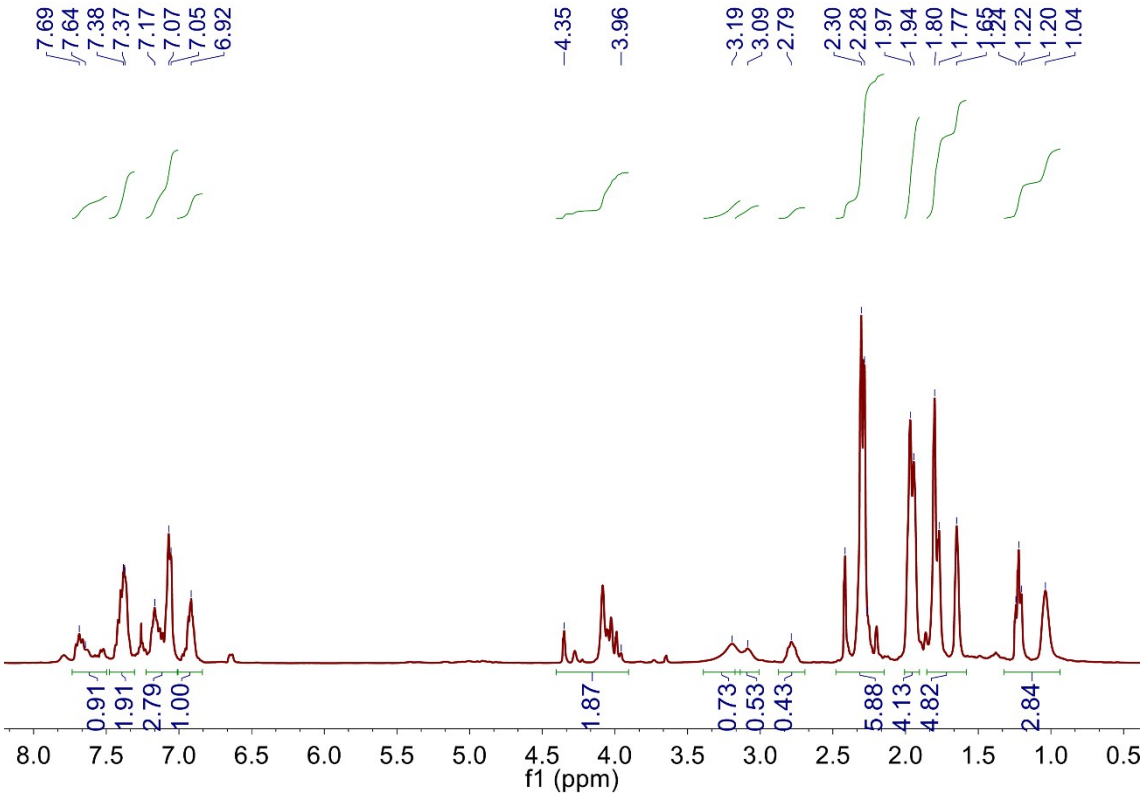

Figure S21 ^{1}H NMR spectrum of H_2**L5** (400 MHz, $CDCl_3$, 25 °C).

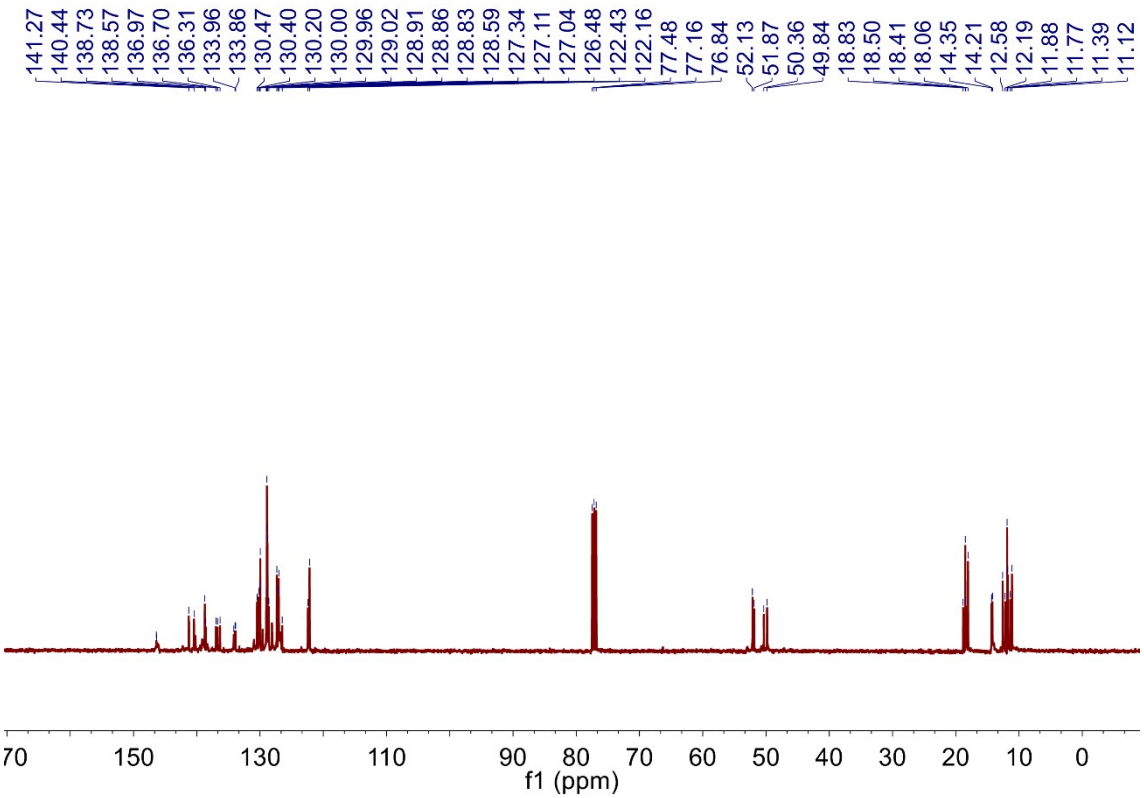

Figure S22 ^{13}C {^{1}H} NMR spectrum of H_2**L5** (100 MHz, $CDCl_3$, 25 °C).

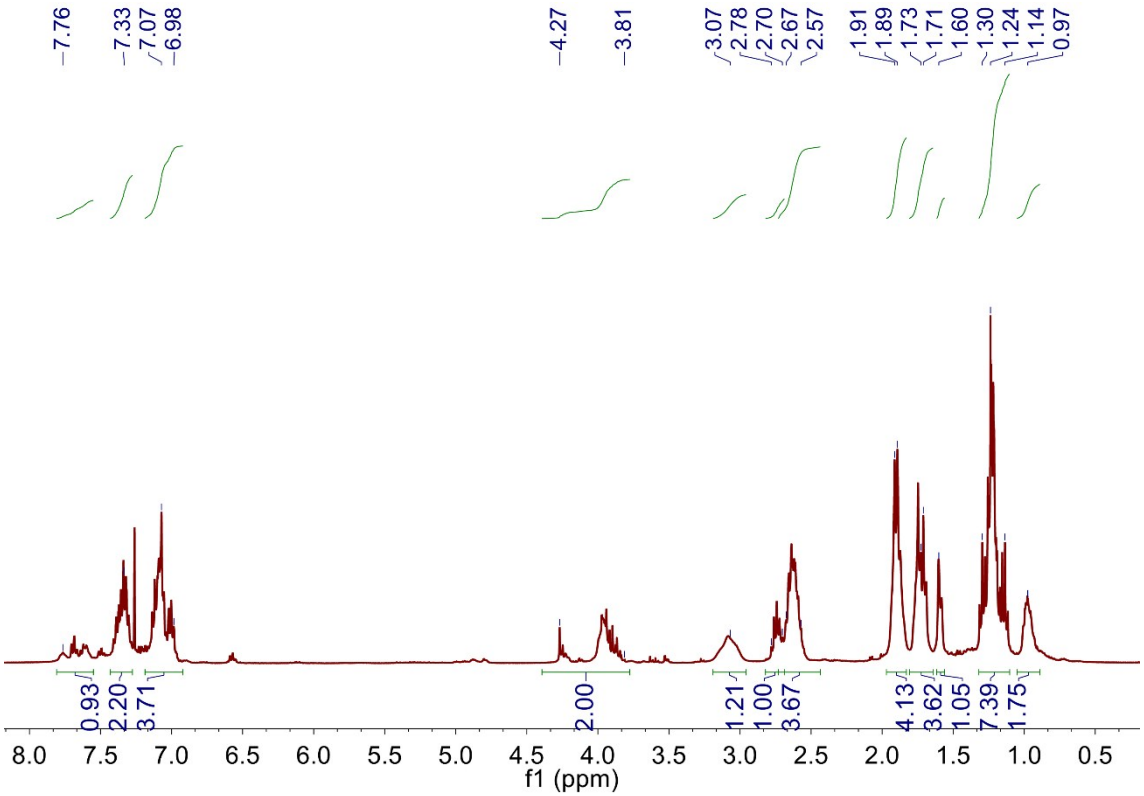

Figure S23 ^{1}H NMR spectrum of H_2**L6** (400 MHz, $CDCl_3$, 25 °C).

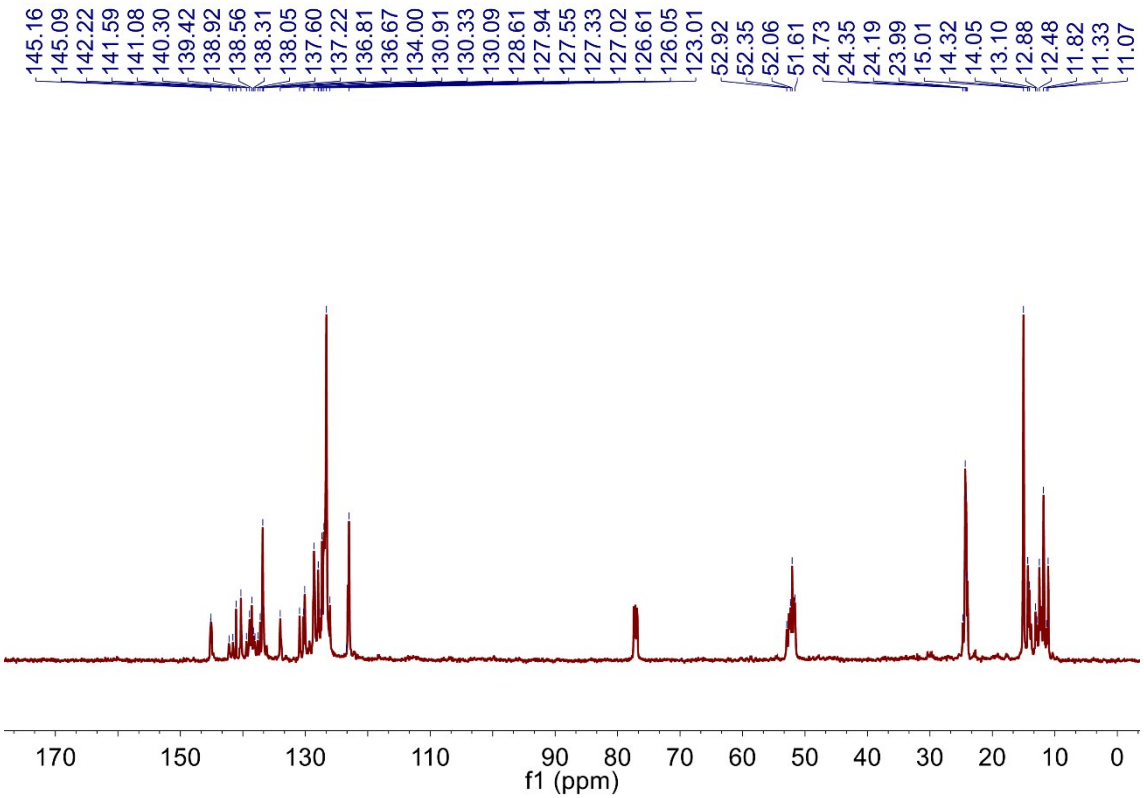

Figure S24 ^{13}C {^{1}H} NMR spectrum of H_2**L6** (100 MHz, $CDCl_3$, 25 °C).

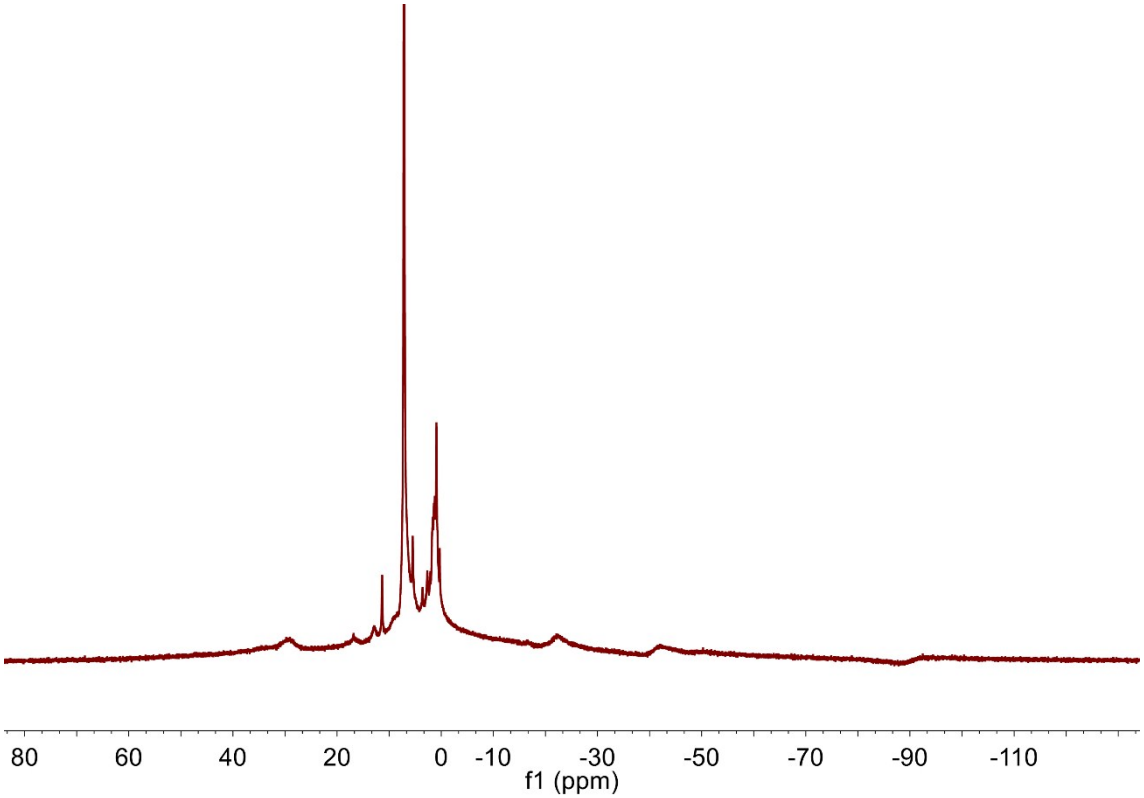

Figure S25 ^{1}H NMR spectrum of complex **1** (400 MHz, C_6D_6, 25 °C).

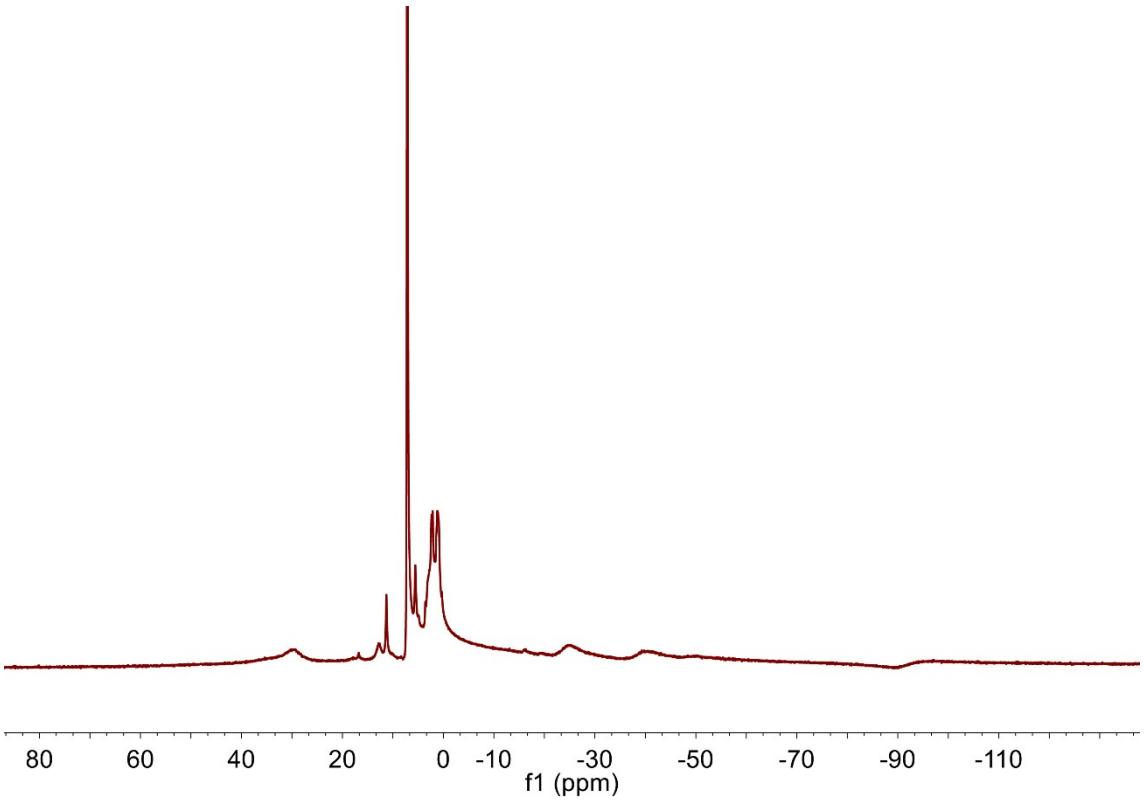

Figure S26 ^{1}H NMR spectrum of complex **2** (400 MHz, C_6D_6, 25 °C).

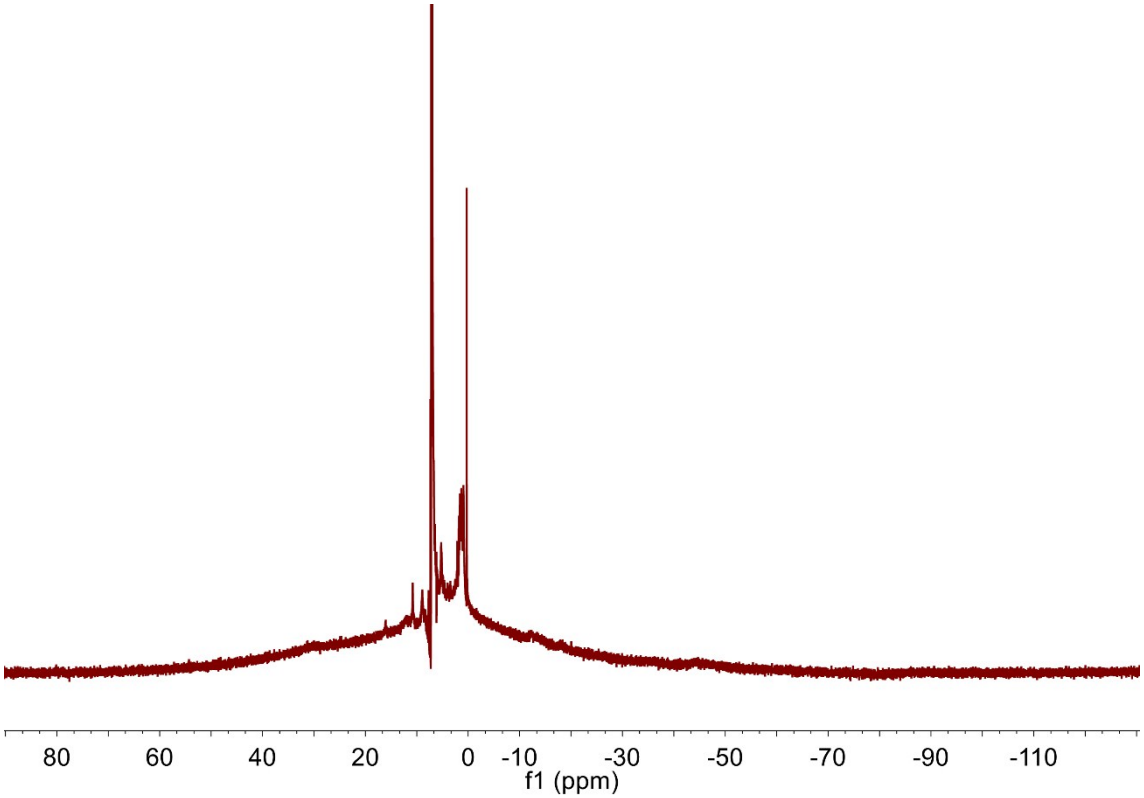

Figure S27 ^{1}H NMR spectrum of complex **3** (400 MHz, C_6D_6, 25 °C).

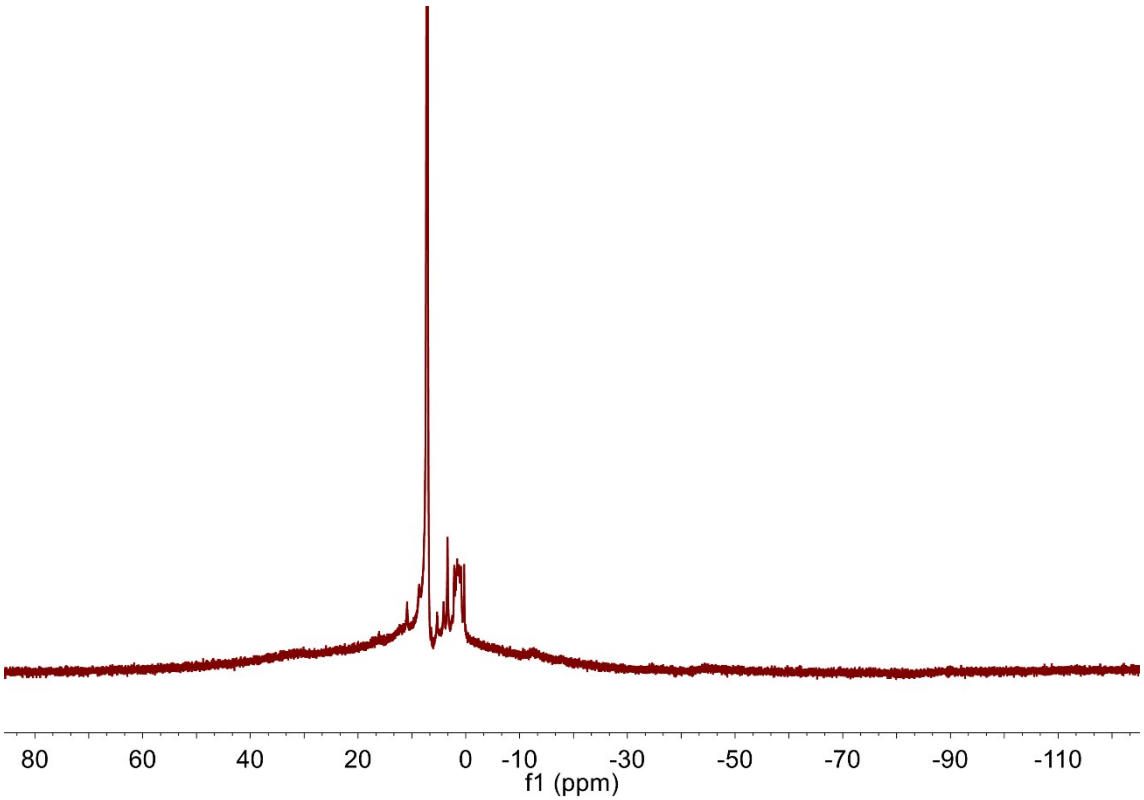

Figure S28 ^{1}H NMR spectrum of complex **4** (400 MHz, C_6D_6, 25 °C).

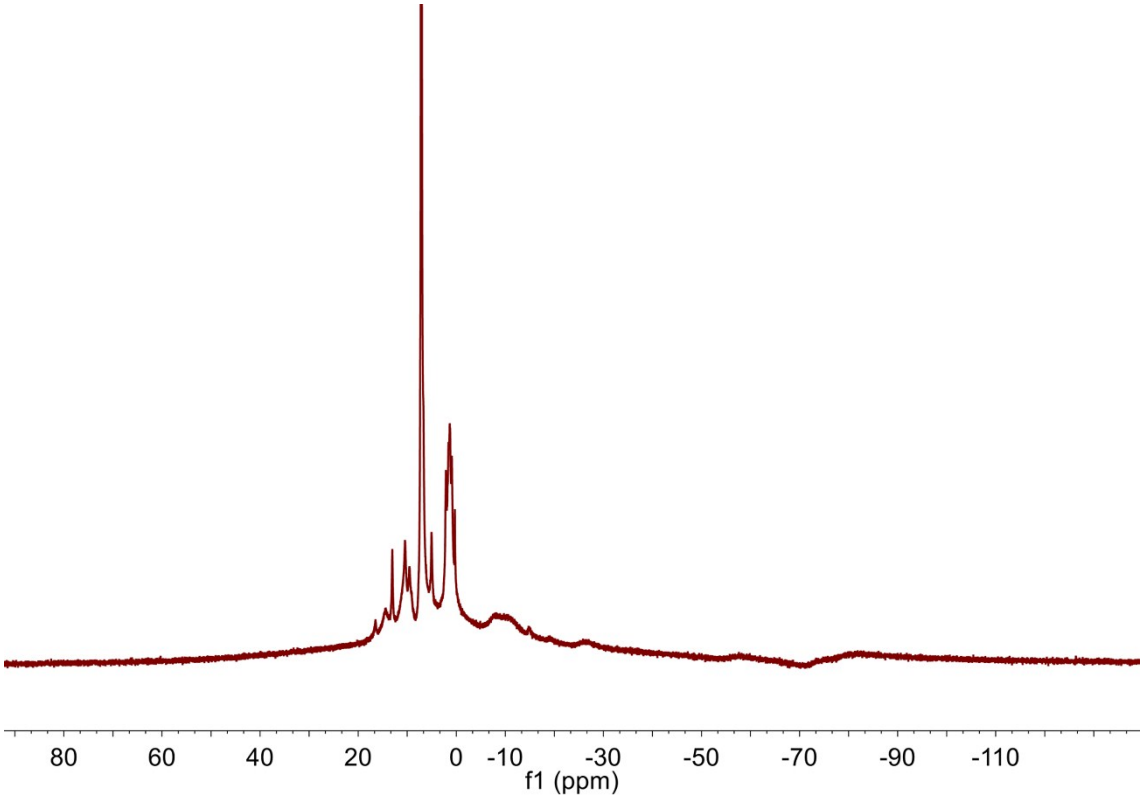

Figure S29 ^{1}H NMR spectrum of complex **5** (400 MHz, C_6D_6, 25 °C).

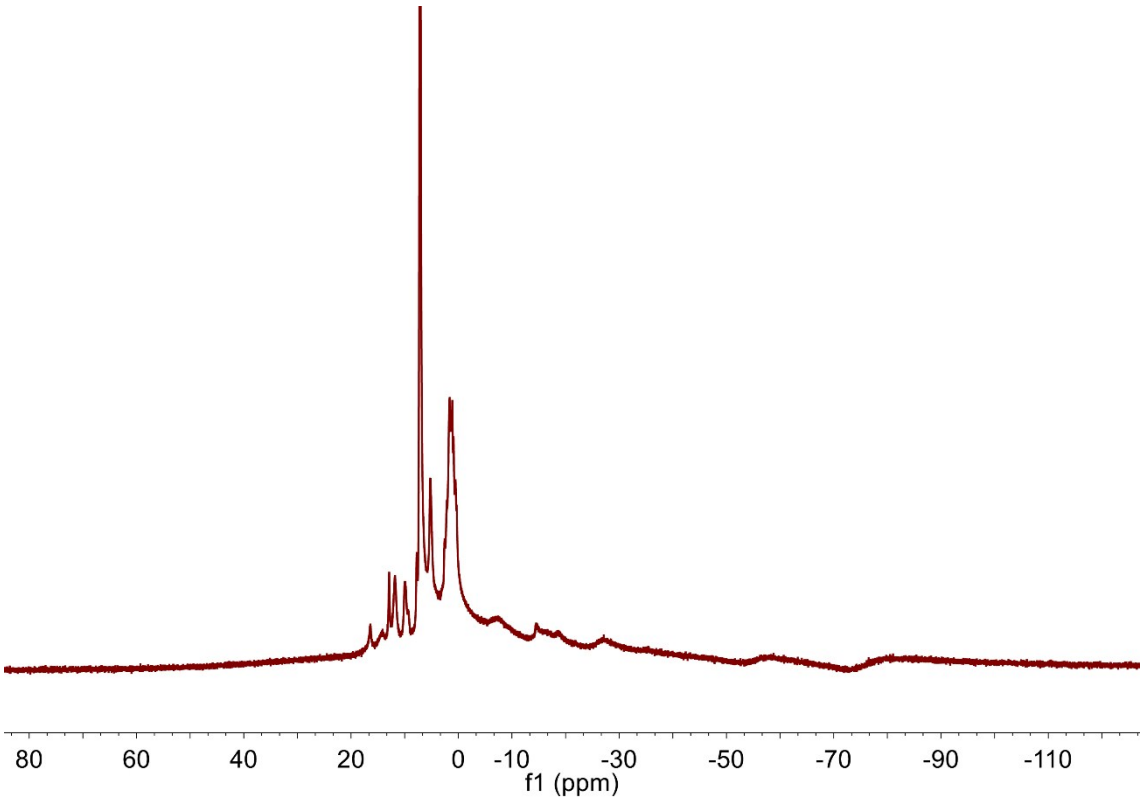

Figure S30 ^{1}H NMR spectrum of complex **6** (400 MHz, C_6D_6, 25 °C).