Supporting information

for

Bis(imino)-6,7-dihydro-5*H*-quinoline-cobalt complexes as highly active catalysts for the formation of vinyl-terminated PE waxes; steps towards inhibiting deactivation pathways through targeted ligand design

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Table S1 Crystal data and structure refinement for **Co1** and **Co4**

	Co1·CH_2Cl_2	**Co4**·$2CH_2Cl_2$
Crystal color	brown	yellow
Empirical formula	$C_{32}H_{31}Cl_2CoN_3·CH_2Cl_2$	$C_{34}H_{35}Cl_2CoN_3·2CH_2Cl_2$
Formula weight	672.35	785.33
T (K)	170(10)	220(13)
Wavelength (Å)	1.54184	1.54184
Crystal system	monoclinic	monoclinic
Space group	P21/c	C2/c
a /Å	8.8111(2)	36.8374(6)
b/Å	14.2113(3)	12.2282(2)
c/Å	25.8363(4)	17.1691(2)
α/°	90	90
β/°	95.520(2)	91.4370(10)
γ/°	90	90
Volume/Å^3	3220.15(11)	7731.5(2)
Z	4	8
ρ_{calcg}/cm^3	1.387	1.349
μ/mm^{-1}	7.437	7.514
F(000)	1388.0	3240.0
Crystal size/mm^3	0.15 × 0.1 × 0.08	0.15 × 0.08 × 0.03
Θ range (°)	6.874 to 150.922	4.8 to 150.932
Limiting indices	-10 ≤ h ≤ 10 -17 ≤ k ≤ 16 -32 ≤ l ≤ 32	-46 ≤ h ≤ 46 -14 ≤ k ≤ 15 -21 ≤ l ≤ 16
No. of rflns collected	22545	32855
No. unique rflns [R(int)]	6376(0.0347)	7691(0.0561)
Completeness to θ (%)	99.98	99.75
Goodness of fit on F^2	0.955	1.076
Final R indices [I > 2σ(I)]	R1 = 0.0495 wR2 = 0.1303	R1 = 0.0657 wR2 = 0.1963
R indices (all data)	R1 = 0.0584 wR2 = 0.1364	R1 = 0.0849 wR2 = 0.2216
Largest diff peak and hole (e Å^{-3})	0.93/-0.65	1.18/-0.85

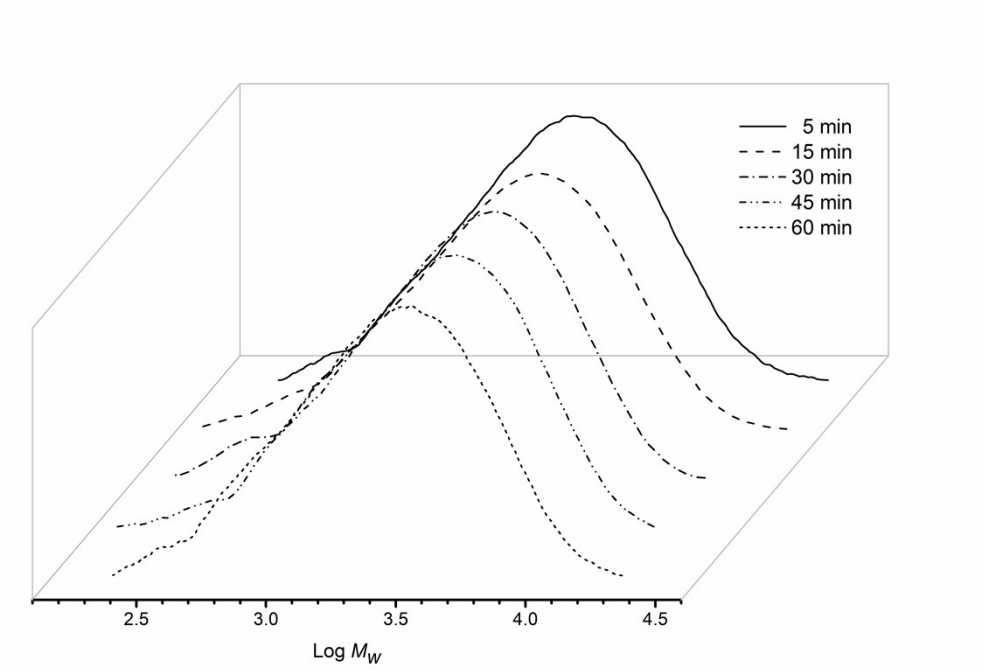

Fig. S1 GPC traces of the polyethylene generated using **Co4**/MAO over different run times (entries 7 and 10 – 13, Table 2)

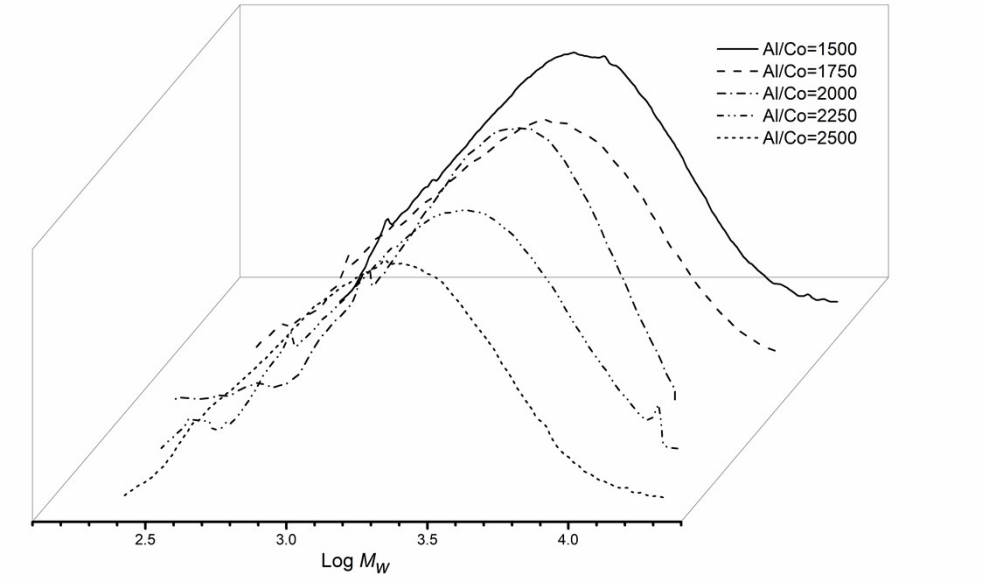

Fig. S2 GPC traces of the polyethylene produced using **Co4**/MMAO at different Al:Co molar ratios (entries 3 and 6 – 9, Table 3).

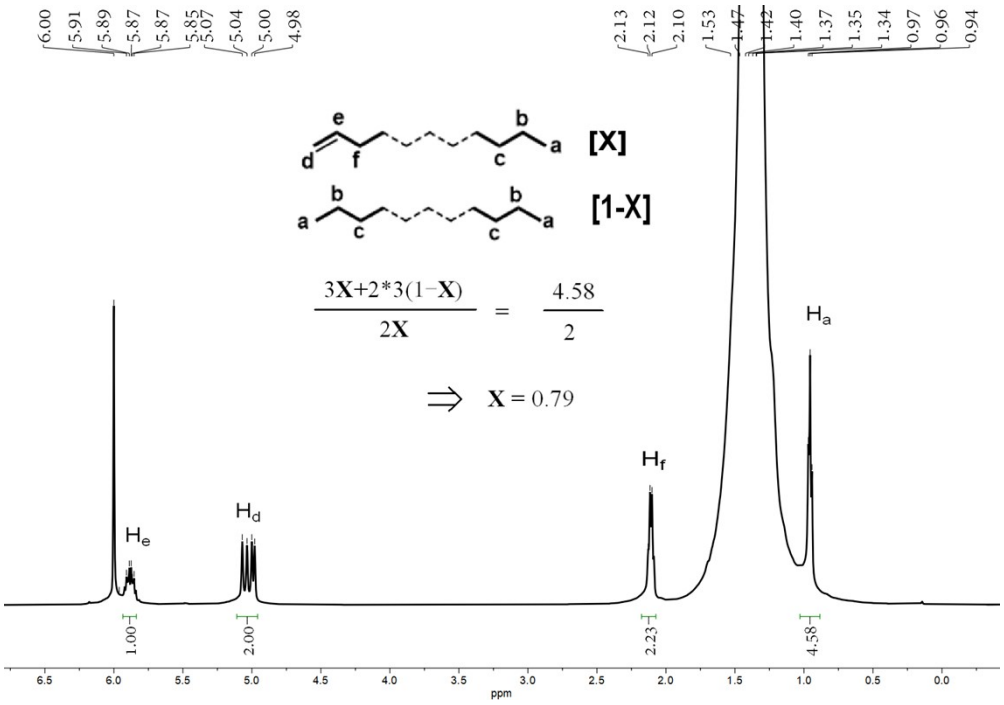

Fig. S3 ^{1}H NMR spectrum of the polyethylene wax generated using **Co4**/MAO (entry 7, Table 2); recorded in tetrachloroethane-d_2 (δH 6.0).

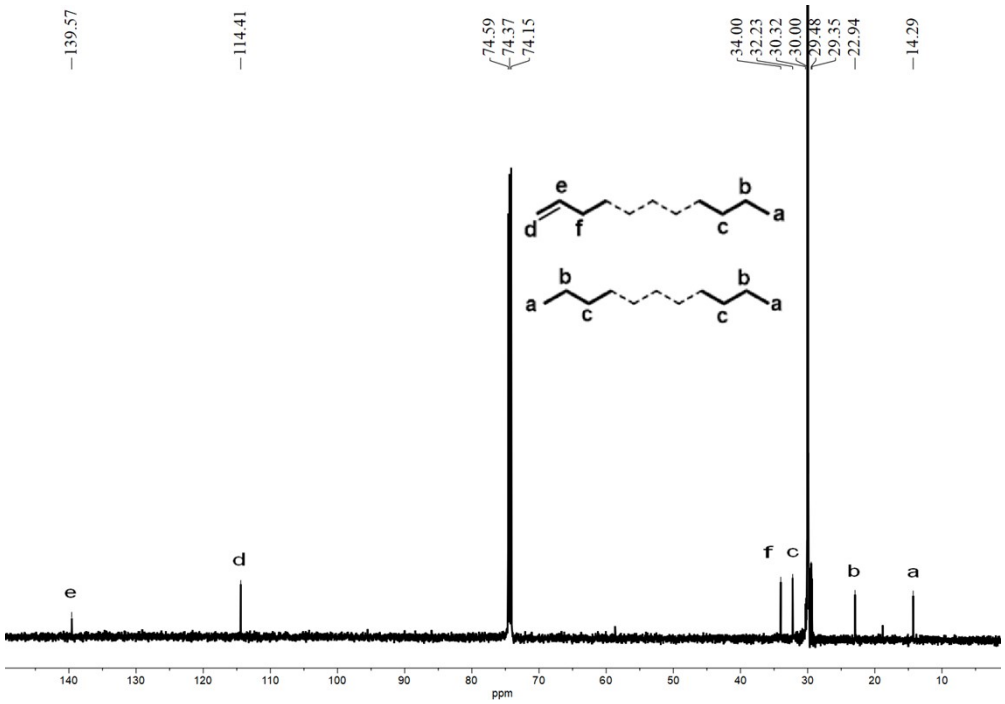

Fig. S4 ^{13}C NMR spectrum of the polyethylene sample generated using **Co4**/MAO (entry 7, Table 2); recorded in tetrachloroethane-d_2 (δC 74.37).

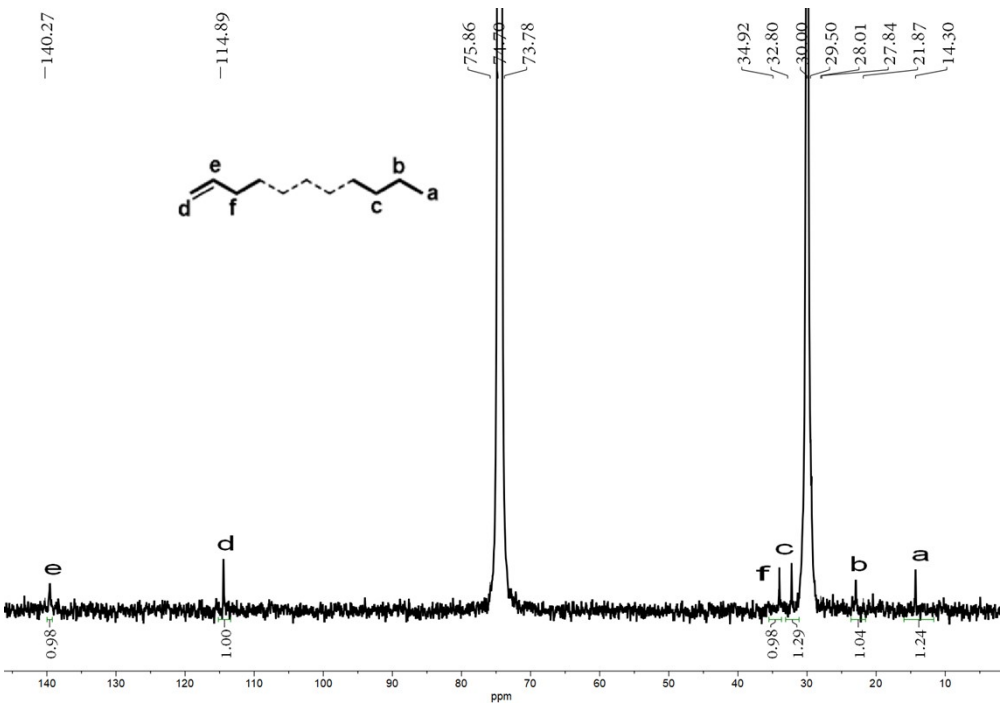

Fig. S5 Inverse-gated decoupled ^{13}C NMR spectrum of the polyethylene wax generated using **Co4**/MAO (entry 7, Table 2); recorded in tetrachloroethane-d_2 (δC 74.70).

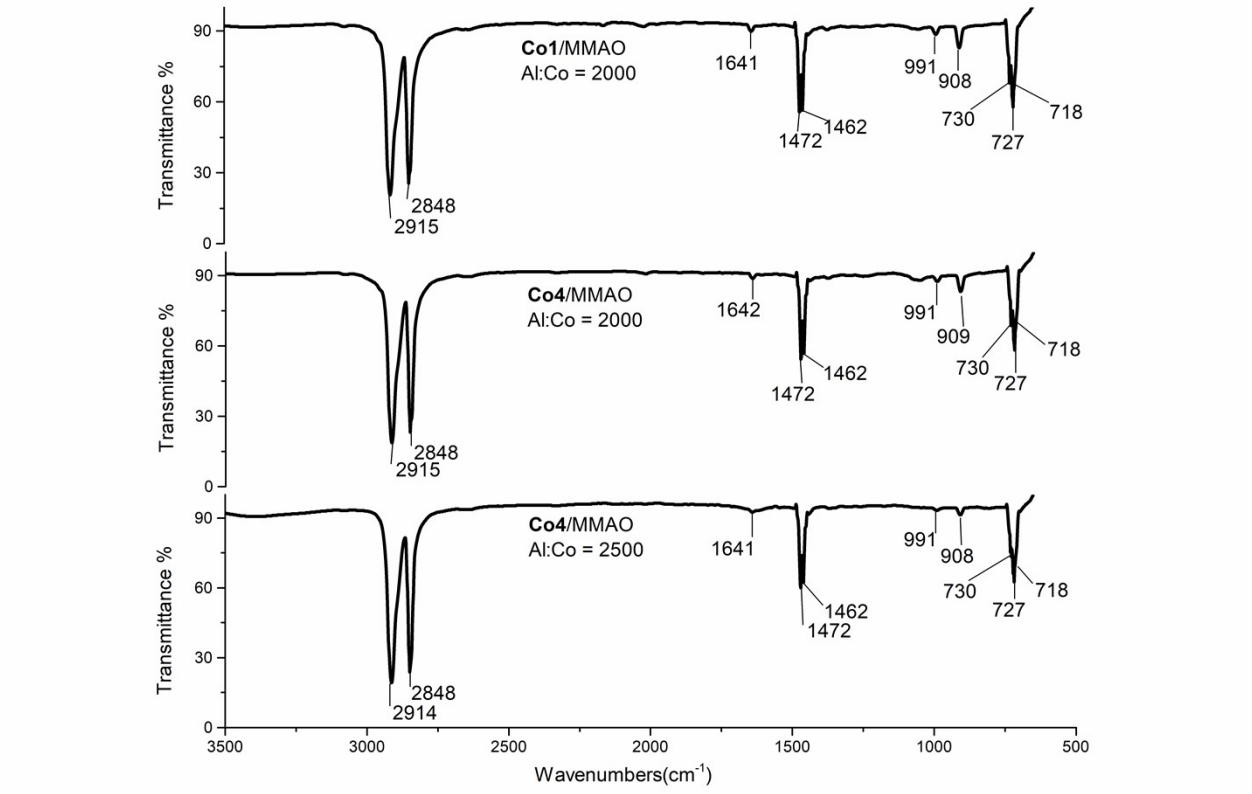

Fig. S6 FT-IR spectra of the polyethylene generated using **Co1**/MMAO (top, entry 15, Table 3) and **Co4**/MMAO (middle, entry 3, Table 3 and bottom, entry 9, Table 3)