

Structural and Spectroscopic Characterization of Co(II) Bis(Benzenedichlorodithiolate): An Intermediate in Hydrogen Evolution Catalysis

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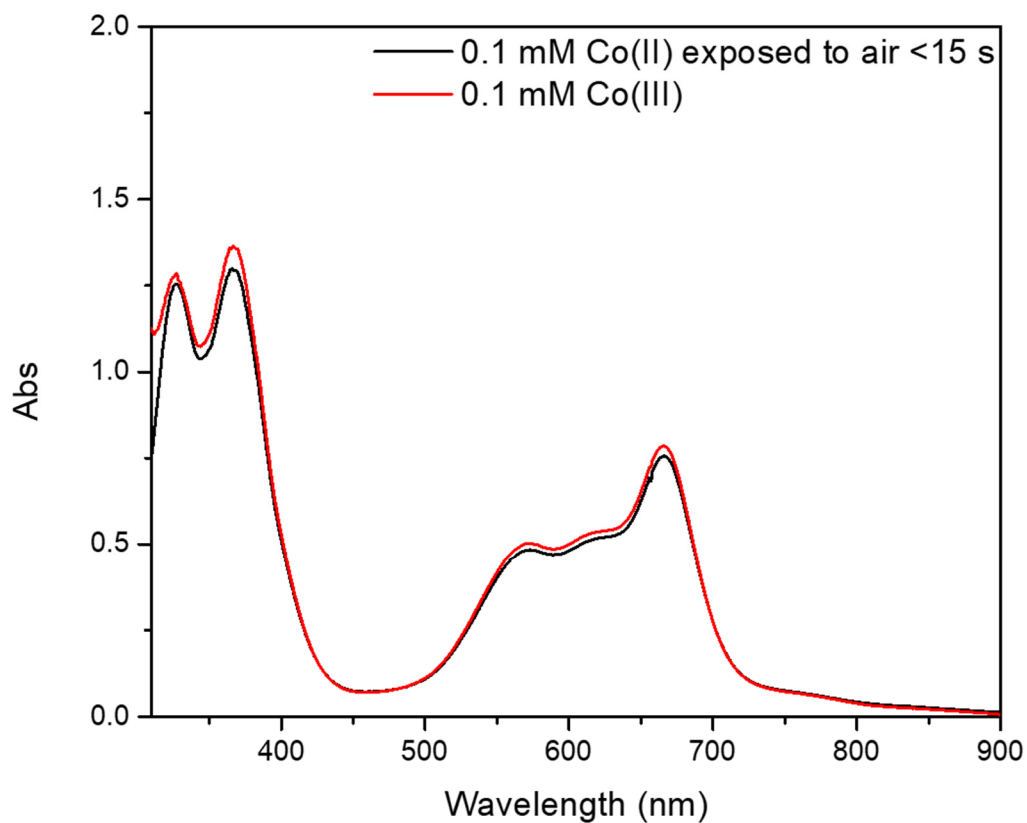


Figure S1: Comparison of the UV-Vis spectra of the product of Co(II) oxidation by ambient air and the authentic $[\text{Co}^{\text{III}}(\text{Cl}_2\text{bdt})_2]$ - starting complex. Both species are 0.1 mM in acetonitrile in the presence of 0.01 M $[\text{TBA}](\text{PF}_6)$. The black spectrum, the oxidized Co(II) complex, was obtained by mixing 0.1 mL anaerobic 1 mM $[\text{TBA}]_2[\text{Co}^{\text{II}}(\text{Cl}_2\text{bdt})_2]$ formed by electrochemical reduction with 0.9 mL acetonitrile under ambient conditions (in air).

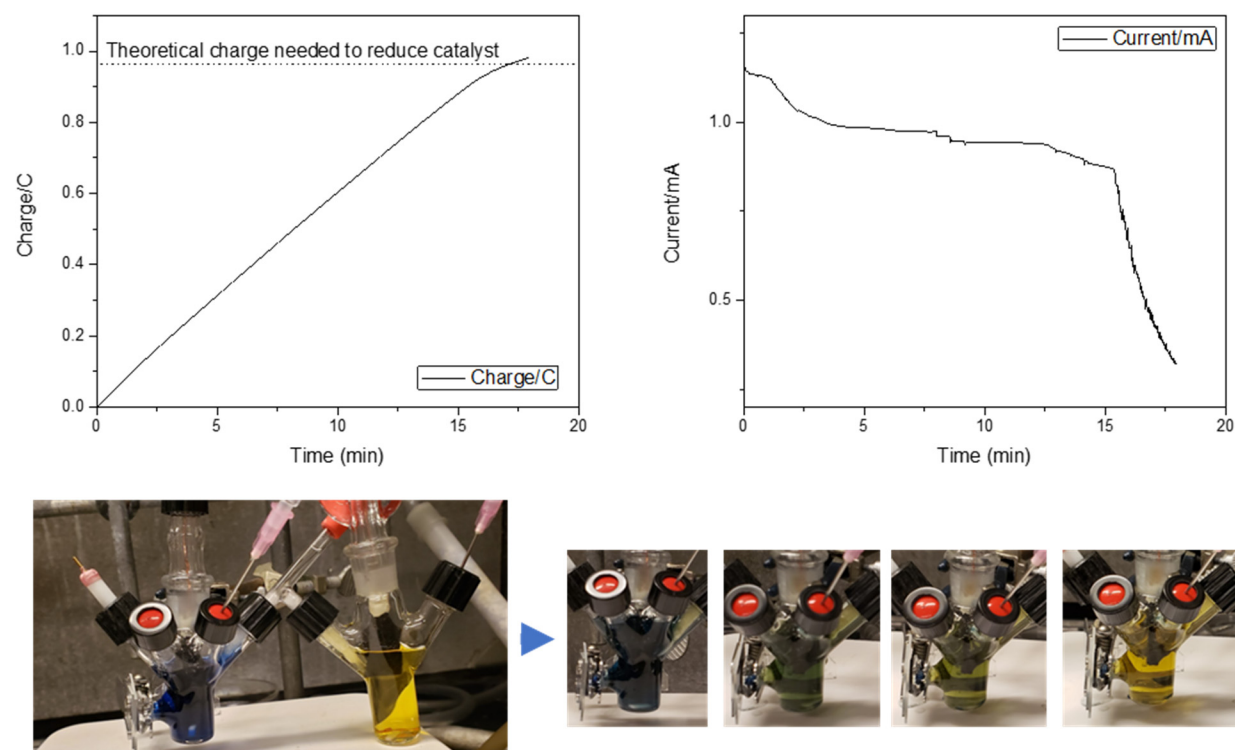


Figure S2: Electrochemical reduction of $[\text{TBA}][\text{Co}^{\text{III}}(\text{Cl}_2\text{bdt})_2]$ to $[\text{TBA}]_2[\text{Co}^{\text{II}}(\text{Cl}_2\text{bdt})_2]$. Experimental conditions: 1 mM $[\text{TBA}][\text{Co}^{\text{III}}(\text{Cl}_2\text{bdt})_2]$, 0.1 M $[\text{TBA}](\text{PF}_6)$, MeCN, under Ar on the Schlenk line (working electrode/reference electrode half-cell), 10 mM Fc (counter electrode half-cell), glass wool salt bridge, Ag wire pseudo-reference electrode, graphitic carbon felt for the working and counter electrodes.

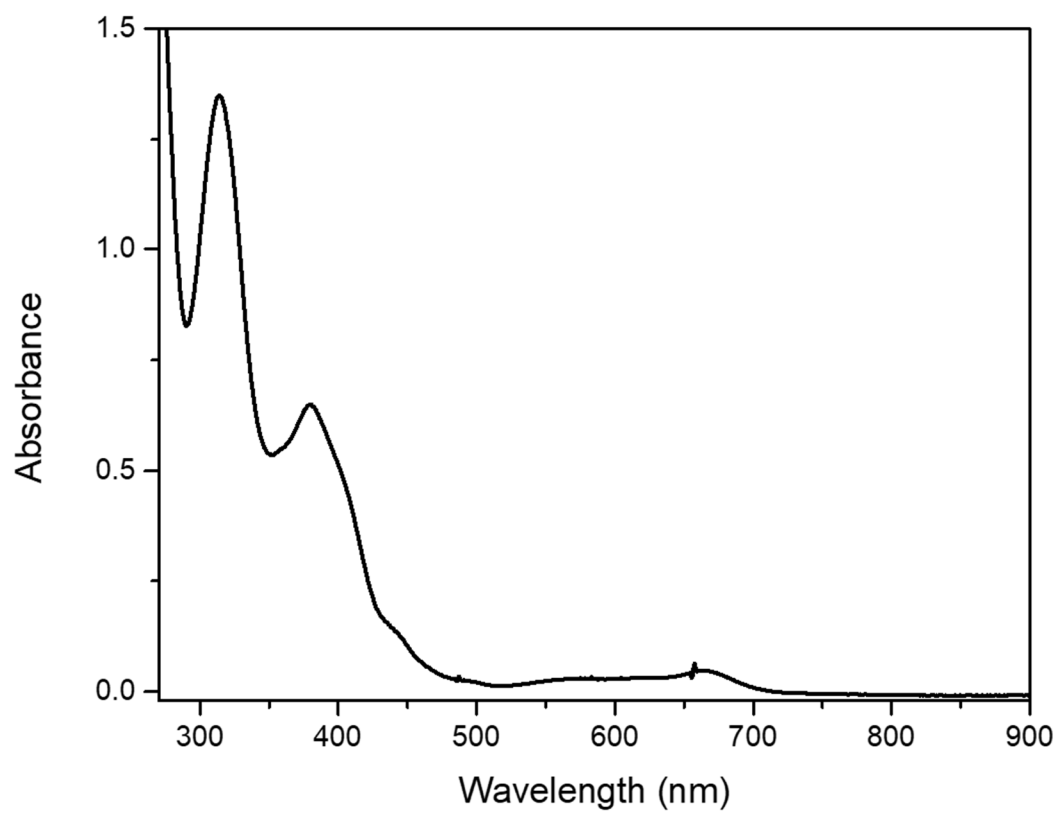


Figure S3: UV-Vis spectrum of electrochemically reduced $[\text{TBA}]_2[\text{Co}^{\text{II}}(\text{Cl}_2\text{bdt})_2]$, 0.1 mM in MeCN, at room temperature.

Table S1: Crystal data and structure refinement for [CoCp₂]₂[Co^{II}(bdt)₂]. One equivalent of butyronitrile is also present but omitted from Figure 2 for clarity.

Parameter	Value(s)	
Empirical formula	C ₃₆ H ₃₁ Cl ₄ Co ₃ NS ₄	
Formula weight	924.45	
Temperature	85(2) K	
Wavelength	1.54184 Å	
Crystal system, space group	Monoclinic, P2(1)	
Unit cell dimensions	a = 14.3219(2) Å	alpha = 90°
	b = 14.0160(2) Å	beta = 99.4507(17)°
	c = 18.4173(3) Å	gamma = 90°
Volume	3646.82(11) Å ³	
Z, Calculated density	4, 1.684 Mg/m ³	
Absorption coefficient	15.627 mm ⁻¹	
F(000)	1868	
Crystal size	0.100 x 0.080 x 0.040 mm	
Theta range for data collection	2.432 to 69.427°	
Limiting indices	-17<=h<=17, -16<=k<=17, -22<=l<=22	
Reflections collected / unique	55226 / 12797 [R(int) = 0.0759]	
Completeness to theta = 67.684	99.8 %	
Absorption correction	Semi-empirical from equivalents	
Max. and min. transmission	1.00000 and 0.64347	
Refinement method	Full-matrix least-squares on F ²	
Data / restraints / parameters	12797 / 119 / 924	
Goodness-of-fit on F ²	1.069	
Final R indices [I>2sigma(I)]	R1 = 0.0642, wR2 = 0.1634	
R indices (all data)	R1 = 0.0708, wR2 = 0.1712	
Absolute structure parameter	0.139(6)	
Extinction coefficient	n/a	
Largest diff. peak and hole	0.736 and -0.794 e.Å ⁻³	

Table S2: Atomic coordinates ($\times 10^4$) and equivalent isotropic displacement parameters ($\text{\AA}^2 \times 10^3$) for $[\text{CoCp}_2]_2[\text{Co}^{\text{II}}(\text{bdt})_2]$. $U(\text{eq})$ is defined as one third of the trace of the orthogonalized U_{ij} tensor.

	x	y	z	U(eq)
Co(1)	2370(1)	9893(1)	1294(1)	33(1)
Co(2)	2572(1)	9861(1)	6219(1)	34(1)
Co(3)	1230(2)	399(2)	8290(1)	60(1)
Co(4)	4110(1)	6818(2)	9831(1)	47(1)
Co(5)	1835(1)	2326(1)	3119(1)	41(1)
Co(6)	4635(1)	8843(1)	4546(1)	40(1)
S(1)	2665(2)	11336(2)	942(1)	38(1)
S(2)	848(2)	10116(2)	963(1)	39(1)
S(3)	2101(2)	8444(2)	1645(1)	38(1)
S(4)	3886(2)	9712(2)	1648(1)	35(1)
S(5)	2640(2)	11413(2)	6278(2)	39(1)
S(6)	1203(2)	9923(2)	5503(1)	38(1)
S(7)	2498(2)	8306(2)	6200(1)	37(1)
S(8)	3959(2)	9817(2)	6916(1)	37(1)
Cl(1)	2451(2)	13478(2)	338(2)	58(1)
Cl(2)	-1149(2)	10946(2)	168(2)	51(1)
Cl(3)	2400(2)	6240(2)	2134(2)	52(1)
Cl(4)	5939(2)	8845(2)	2242(2)	47(1)
Cl(5)	2184(2)	13648(2)	6046(2)	57(1)
Cl(6)	-676(2)	10664(2)	4473(2)	51(1)
Cl(7)	2994(2)	6086(2)	6444(2)	49(1)
Cl(8)	5844(2)	9111(2)	7963(2)	45(1)
C(1)	1555(7)	11833(8)	602(5)	35(2)
C(2)	1449(8)	12771(8)	334(6)	42(2)
C(3)	578(8)	13151(8)	43(6)	43(2)
C(4)	-223(8)	12584(9)	5(6)	45(3)
C(5)	-140(7)	11663(9)	268(6)	42(2)
C(6)	734(7)	11263(8)	594(5)	39(2)
C(7)	3221(7)	7959(8)	1967(5)	34(2)
C(8)	3366(8)	7012(8)	2210(6)	40(2)
C(9)	4258(8)	6648(8)	2481(5)	42(2)

C(10)	5044(8)	7226(8)	2500(6)	41(2)
C(11)	4922(7)	8148(8)	2241(6)	38(2)
C(12)	4031(7)	8548(7)	1971(5)	35(2)
C(13)	1594(7)	11819(8)	5724(6)	38(2)
C(14)	1385(8)	12790(8)	5611(7)	45(3)
C(15)	586(8)	13099(9)	5160(6)	43(2)
C(16)	-44(8)	12445(8)	4798(6)	44(3)
C(17)	134(8)	11478(9)	4929(6)	45(3)
C(18)	946(7)	11136(8)	5379(5)	36(2)
C(19)	3533(7)	7924(8)	6763(6)	38(2)
C(20)	3751(8)	6956(8)	6889(6)	40(2)
C(21)	4571(7)	6653(8)	7347(6)	41(2)
C(22)	5208(7)	7324(9)	7678(6)	41(2)
C(23)	5010(7)	8283(7)	7546(5)	36(2)
C(24)	4188(7)	8604(7)	7092(5)	34(2)
C(25)	2342(10)	184(15)	9110(8)	79(5)
C(26)	2611(9)	-42(13)	8427(8)	69(4)
C(27)	2006(10)	-770(12)	8103(7)	63(4)
C(28)	1381(10)	-1007(13)	8595(7)	66(4)
C(29)	1591(11)	-408(13)	9217(7)	71(4)
C(30)	19(11)	1129(13)	8381(8)	71(4)
C(31)	757(12)	1765(13)	8341(10)	84(5)
C(32)	1101(13)	1590(12)	7665(9)	78(4)
C(33)	554(11)	850(12)	7297(8)	72(4)
C(34)	-122(10)	556(13)	7742(8)	69(4)
C(35)	4456(10)	5501(11)	9492(7)	63(4)
C(36)	3676(10)	5441(10)	9859(8)	58(3)
C(37)	3944(11)	5793(11)	10580(8)	65(4)
C(38)	4915(10)	6086(16)	10662(8)	82(5)
C(39)	5215(9)	5890(15)	9987(8)	83(6)
C(40)	3302(13)	7944(10)	10036(8)	71(4)
C(41)	4255(15)	8232(12)	10067(9)	88(6)
C(42)	4512(14)	8015(13)	9369(8)	84(5)
C(43)	3717(10)	7644(10)	8909(7)	58(3)
C(44)	2967(11)	7563(10)	9338(7)	61(3)
C(45)	2397(9)	1629(9)	4073(6)	48(3)

C(46)	1614(9)	1102(9)	3663(6)	48(3)
C(47)	1846(8)	887(9)	2969(6)	45(2)
C(48)	2744(7)	1278(8)	2920(6)	40(2)
C(49)	3080(8)	1743(8)	3601(6)	44(2)
C(50)	1329(9)	3612(9)	3393(7)	53(3)
C(51)	2071(9)	3747(9)	2973(6)	52(3)
C(52)	1807(9)	3289(10)	2282(6)	53(3)
C(53)	895(9)	2863(10)	2270(7)	52(3)
C(54)	609(9)	3074(10)	2960(7)	57(3)
C(55)	4703(9)	7394(9)	4463(7)	53(3)
C(56)	4445(10)	7664(10)	5144(8)	60(3)
C(57)	5174(10)	8244(11)	5525(7)	61(4)
C(58)	5884(9)	8345(10)	5074(6)	54(3)
C(59)	5599(9)	7812(9)	4419(7)	50(3)
C(60)	3413(8)	9591(8)	4401(6)	43(2)
C(61)	4153(8)	10133(9)	4801(6)	46(3)
C(62)	4876(8)	10249(8)	4363(6)	42(2)
C(63)	4566(8)	9764(8)	3688(6)	44(2)
C(64)	3650(8)	9362(8)	3710(6)	43(2)
N(1)	7016(11)	387(11)	5693(8)	80(4)
C(65)	7583(12)	940(14)	5806(8)	78(4)
C(66)	8401(16)	1503(15)	6152(14)	70(6)
C(67)	8132(16)	2509(15)	6139(15)	117(7)
C(68)	8911(12)	3226(14)	6429(9)	84(4)
C(66A)	8260(30)	1680(20)	5730(20)	116(13)
N(2)	8790(40)	1790(20)	2100(20)	138(19)
C(69)	8990(20)	1040(20)	2292(13)	83(8)
C(70)	9250(20)	70(20)	2501(16)	101(9)
C(71)	8520(30)	-640(20)	2360(20)	124(13)
C(72)	8100(30)	-830(30)	1580(20)	117(13)
N(2A)	8790(30)	1810(30)	2130(30)	80(20)
C(69A)	8430(30)	1090(20)	2110(20)	61(11)
C(70A)	7940(30)	170(20)	2070(20)	73(11)
C(71A)	8510(30)	-600(30)	1850(20)	79(11)
C(72A)	9430(30)	-750(40)	2360(30)	93(16)

Table S3: Bond lengths [Å] and angles [deg] for [CoCp₂]₂[Co^{II}(bdt)₂].

Co(1)-S(4)	2.178(3)
Co(1)-S(3)	2.185(3)
Co(1)-S(1)	2.185(3)
Co(1)-S(2)	2.187(3)
Co(2)-S(6)	2.177(3)
Co(2)-S(5)	2.180(3)
Co(2)-S(7)	2.183(3)
Co(2)-S(8)	2.183(3)
Co(3)-C(32)	2.019(18)
Co(3)-C(33)	2.025(15)
Co(3)-C(25)	2.031(15)
Co(3)-C(31)	2.038(18)
Co(3)-C(27)	2.041(15)
Co(3)-C(34)	2.043(15)
Co(3)-C(29)	2.043(16)
Co(3)-C(30)	2.044(16)
Co(3)-C(26)	2.048(14)
Co(3)-C(28)	2.051(18)
Co(4)-C(42)	2.008(16)
Co(4)-C(44)	2.025(15)
Co(4)-C(40)	2.027(14)
Co(4)-C(36)	2.031(14)
Co(4)-C(41)	2.032(16)
Co(4)-C(37)	2.032(15)
Co(4)-C(39)	2.033(15)
Co(4)-C(38)	2.036(15)
Co(4)-C(35)	2.036(15)
Co(4)-C(43)	2.055(14)
Co(5)-C(54)	2.024(12)
Co(5)-C(49)	2.028(11)
Co(5)-C(53)	2.033(12)
Co(5)-C(48)	2.036(11)
Co(5)-C(47)	2.037(12)
Co(5)-C(50)	2.037(12)
Co(5)-C(46)	2.038(12)
Co(5)-C(51)	2.045(13)
Co(5)-C(52)	2.045(13)
Co(5)-C(45)	2.055(11)
Co(6)-C(58)	2.015(12)
Co(6)-C(61)	2.018(11)
Co(6)-C(60)	2.020(11)
Co(6)-C(57)	2.023(12)
Co(6)-C(56)	2.028(13)
Co(6)-C(63)	2.031(11)
Co(6)-C(59)	2.038(12)
Co(6)-C(62)	2.039(11)
Co(6)-C(55)	2.040(13)
Co(6)-C(64)	2.044(11)

S(1)-C(1)	1.754(10)
S(2)-C(6)	1.743(12)
S(3)-C(7)	1.753(10)
S(4)-C(12)	1.738(11)
S(5)-C(13)	1.762(11)
S(6)-C(18)	1.747(11)
S(7)-C(19)	1.747(11)
S(8)-C(24)	1.751(11)
Cl(1)-C(2)	1.742(12)
Cl(2)-C(5)	1.745(11)
Cl(3)-C(8)	1.744(11)
Cl(4)-C(11)	1.754(11)
Cl(5)-C(14)	1.759(12)
Cl(6)-C(17)	1.742(12)
Cl(7)-C(20)	1.745(11)
Cl(8)-C(23)	1.750(10)
C(1)-C(2)	1.404(16)
C(1)-C(6)	1.419(15)
C(2)-C(3)	1.381(16)
C(3)-C(4)	1.389(17)
C(3)-H(3)	0.9500
C(4)-C(5)	1.376(18)
C(4)-H(4)	0.9500
C(5)-C(6)	1.413(15)
C(7)-C(8)	1.406(15)
C(7)-C(12)	1.422(14)
C(8)-C(9)	1.390(16)
C(9)-C(10)	1.382(16)
C(9)-H(9)	0.9500
C(10)-C(11)	1.378(16)
C(10)-H(10)	0.9500
C(11)-C(12)	1.408(15)
C(13)-C(14)	1.402(16)
C(13)-C(18)	1.410(15)
C(14)-C(15)	1.368(16)
C(15)-C(16)	1.379(17)
C(15)-H(15)	0.9500
C(16)-C(17)	1.393(17)
C(16)-H(16)	0.9500
C(17)-C(18)	1.396(15)
C(19)-C(20)	1.403(15)
C(19)-C(24)	1.404(15)
C(20)-C(21)	1.394(15)
C(21)-C(22)	1.380(16)
C(21)-H(21)	0.9500
C(22)-C(23)	1.387(16)
C(22)-H(22)	0.9500
C(23)-C(24)	1.402(14)
C(25)-C(29)	1.40(2)
C(25)-C(26)	1.412(19)
C(25)-H(25)	0.9500
C(26)-C(27)	1.41(2)
C(26)-H(26)	0.9500

C(27)-C(28)	1.414(19)
C(27)-H(27)	0.9500
C(28)-C(29)	1.41(2)
C(28)-H(28)	0.9500
C(29)-H(29)	0.9500
C(30)-C(31)	1.39(2)
C(30)-C(34)	1.411(19)
C(30)-H(30)	0.9500
C(31)-C(32)	1.43(2)
C(31)-H(31)	0.9500
C(32)-C(33)	1.41(2)
C(32)-H(32)	0.9500
C(33)-C(34)	1.43(2)
C(33)-H(33)	0.9500
C(34)-H(34)	0.9500
C(35)-C(36)	1.400(19)
C(35)-C(39)	1.41(2)
C(35)-H(35)	0.9500
C(36)-C(37)	1.41(2)
C(36)-H(36)	0.9500
C(37)-C(38)	1.43(2)
C(37)-H(37)	0.9500
C(38)-C(39)	1.41(2)
C(38)-H(38)	0.9500
C(39)-H(39)	0.9500
C(40)-C(44)	1.40(2)
C(40)-C(41)	1.41(3)
C(40)-H(40)	0.9500
C(41)-C(42)	1.43(2)
C(41)-H(41)	0.9500
C(42)-C(43)	1.40(2)
C(42)-H(42)	0.9500
C(43)-C(44)	1.438(19)
C(43)-H(43)	0.9500
C(44)-H(44)	0.9500
C(45)-C(49)	1.420(17)
C(45)-C(46)	1.447(18)
C(45)-H(45)	0.9500
C(46)-C(47)	1.405(16)
C(46)-H(46)	0.9500
C(47)-C(48)	1.415(15)
C(47)-H(47)	0.9500
C(48)-C(49)	1.425(15)
C(48)-H(48)	0.9500
C(49)-H(49)	0.9500
C(50)-C(54)	1.41(2)
C(50)-C(51)	1.427(18)
C(50)-H(50)	0.9500
C(51)-C(52)	1.420(17)
C(51)-H(51)	0.9500
C(52)-C(53)	1.433(18)
C(52)-H(52)	0.9500
C(53)-C(54)	1.428(18)

C(53)-H(53)	0.9500
C(54)-H(54)	0.9500
C(55)-C(56)	1.416(19)
C(55)-C(59)	1.424(18)
C(55)-H(55)	0.9500
C(56)-C(57)	1.42(2)
C(56)-H(56)	0.9500
C(57)-C(58)	1.422(18)
C(57)-H(57)	0.9500
C(58)-C(59)	1.421(18)
C(58)-H(58)	0.9500
C(59)-H(59)	0.9500
C(60)-C(64)	1.407(16)
C(60)-C(61)	1.410(17)
C(60)-H(60)	0.9500
C(61)-C(62)	1.423(16)
C(61)-H(61)	0.9500
C(62)-C(63)	1.422(16)
C(62)-H(62)	0.9500
C(63)-C(64)	1.434(16)
C(63)-H(63)	0.9500
C(64)-H(64)	0.9500
N(1)-C(65)	1.116(19)
C(65)-C(66A)	1.44(2)
C(65)-C(66)	1.47(2)
C(66)-C(67)	1.46(2)
C(66)-H(66B)	0.9900
C(66)-H(66A)	0.9900
C(67)-C(66A)	1.41(2)
C(67)-C(68)	1.53(3)
C(67)-H(67A)	0.9900
C(67)-H(67B)	0.9900
C(67)-H(67C)	0.9900
C(67)-H(67D)	0.9900
C(68)-H(68A)	0.9800
C(68)-H(68B)	0.9800
C(68)-H(68C)	0.9800
C(66A)-H(66C)	0.9900
C(66A)-H(66D)	0.9900
N(2)-C(69)	1.13(3)
C(69)-C(70)	1.44(2)
C(70)-C(71)	1.44(2)
C(70)-H(70A)	0.9900
C(70)-H(70B)	0.9900
C(71)-C(72)	1.49(3)
C(71)-H(71A)	0.9900
C(71)-H(71B)	0.9900
C(72)-H(72A)	0.9800
C(72)-H(72B)	0.9800
C(72)-H(72C)	0.9800
N(2A)-C(69A)	1.13(3)
C(69A)-C(70A)	1.46(2)
C(70A)-C(71A)	1.45(2)

C(70A)-H(70C)	0.9900
C(70A)-H(70D)	0.9900
C(71A)-C(72A)	1.51(3)
C(71A)-H(71C)	0.9900
C(71A)-H(71D)	0.9900
C(72A)-H(72D)	0.9800
C(72A)-H(72E)	0.9800
C(72A)-H(72F)	0.9800
S(4)-Co(1)-S(3)	91.08(11)
S(4)-Co(1)-S(1)	87.94(11)
S(3)-Co(1)-S(1)	178.95(12)
S(4)-Co(1)-S(2)	178.08(14)
S(3)-Co(1)-S(2)	89.94(11)
S(1)-Co(1)-S(2)	91.04(11)
S(6)-Co(2)-S(5)	91.08(11)
S(6)-Co(2)-S(7)	89.63(11)
S(5)-Co(2)-S(7)	177.97(13)
S(6)-Co(2)-S(8)	178.65(13)
S(5)-Co(2)-S(8)	88.30(11)
S(7)-Co(2)-S(8)	91.03(11)
C(32)-Co(3)-C(33)	40.7(7)
C(32)-Co(3)-C(25)	122.3(8)
C(33)-Co(3)-C(25)	156.8(7)
C(32)-Co(3)-C(31)	41.4(6)
C(33)-Co(3)-C(31)	68.7(7)
C(25)-Co(3)-C(31)	109.3(8)
C(32)-Co(3)-C(27)	124.7(6)
C(33)-Co(3)-C(27)	106.9(5)
C(25)-Co(3)-C(27)	67.9(6)
C(31)-Co(3)-C(27)	163.1(6)
C(32)-Co(3)-C(34)	68.8(8)
C(33)-Co(3)-C(34)	41.2(6)
C(25)-Co(3)-C(34)	161.4(6)
C(31)-Co(3)-C(34)	68.0(7)
C(27)-Co(3)-C(34)	120.1(6)
C(32)-Co(3)-C(29)	157.1(7)
C(33)-Co(3)-C(29)	161.0(7)
C(25)-Co(3)-C(29)	40.1(7)
C(31)-Co(3)-C(29)	121.4(7)
C(27)-Co(3)-C(29)	68.1(5)
C(34)-Co(3)-C(29)	124.2(7)
C(32)-Co(3)-C(30)	68.5(7)
C(33)-Co(3)-C(30)	68.4(6)
C(25)-Co(3)-C(30)	125.8(6)
C(31)-Co(3)-C(30)	39.9(7)
C(27)-Co(3)-C(30)	155.3(7)
C(34)-Co(3)-C(30)	40.4(5)
C(29)-Co(3)-C(30)	108.0(6)
C(32)-Co(3)-C(26)	108.4(7)
C(33)-Co(3)-C(26)	120.9(6)
C(25)-Co(3)-C(26)	40.5(6)
C(31)-Co(3)-C(26)	126.8(7)

C(27)-Co(3)-C(26)	40.2(6)
C(34)-Co(3)-C(26)	155.7(5)
C(29)-Co(3)-C(26)	67.9(6)
C(30)-Co(3)-C(26)	163.0(6)
C(32)-Co(3)-C(28)	161.2(6)
C(33)-Co(3)-C(28)	124.1(6)
C(25)-Co(3)-C(28)	67.6(7)
C(31)-Co(3)-C(28)	155.6(6)
C(27)-Co(3)-C(28)	40.4(5)
C(34)-Co(3)-C(28)	106.7(7)
C(29)-Co(3)-C(28)	40.3(6)
C(30)-Co(3)-C(28)	120.7(6)
C(26)-Co(3)-C(28)	67.7(6)
C(42)-Co(4)-C(44)	69.3(7)
C(42)-Co(4)-C(40)	68.9(7)
C(44)-Co(4)-C(40)	40.4(6)
C(42)-Co(4)-C(36)	156.2(6)
C(44)-Co(4)-C(36)	105.8(6)
C(40)-Co(4)-C(36)	123.3(6)
C(42)-Co(4)-C(41)	41.4(6)
C(44)-Co(4)-C(41)	68.9(8)
C(40)-Co(4)-C(41)	40.8(8)
C(36)-Co(4)-C(41)	160.5(6)
C(42)-Co(4)-C(37)	162.2(7)
C(44)-Co(4)-C(37)	119.5(6)
C(40)-Co(4)-C(37)	106.9(5)
C(36)-Co(4)-C(37)	40.6(6)
C(41)-Co(4)-C(37)	124.3(6)
C(42)-Co(4)-C(39)	108.9(8)
C(44)-Co(4)-C(39)	161.1(6)
C(40)-Co(4)-C(39)	157.9(7)
C(36)-Co(4)-C(39)	67.8(7)
C(41)-Co(4)-C(39)	123.0(9)
C(37)-Co(4)-C(39)	68.1(7)
C(42)-Co(4)-C(38)	125.0(8)
C(44)-Co(4)-C(38)	155.9(5)
C(40)-Co(4)-C(38)	121.5(6)
C(36)-Co(4)-C(38)	68.9(7)
C(41)-Co(4)-C(38)	107.8(8)
C(37)-Co(4)-C(38)	41.3(7)
C(39)-Co(4)-C(38)	40.5(6)
C(42)-Co(4)-C(35)	121.7(6)
C(44)-Co(4)-C(35)	123.3(6)
C(40)-Co(4)-C(35)	159.7(7)
C(36)-Co(4)-C(35)	40.3(6)
C(41)-Co(4)-C(35)	158.2(7)
C(37)-Co(4)-C(35)	68.2(6)
C(39)-Co(4)-C(35)	40.5(6)
C(38)-Co(4)-C(35)	68.7(7)
C(42)-Co(4)-C(43)	40.4(6)
C(44)-Co(4)-C(43)	41.3(5)
C(40)-Co(4)-C(43)	68.2(5)
C(36)-Co(4)-C(43)	120.8(6)

C(41)-Co(4)-C(43)	68.4(6)
C(37)-Co(4)-C(43)	155.8(6)
C(39)-Co(4)-C(43)	125.3(6)
C(38)-Co(4)-C(43)	161.6(6)
C(35)-Co(4)-C(43)	107.7(5)
C(54)-Co(5)-C(49)	162.0(5)
C(54)-Co(5)-C(53)	41.2(5)
C(49)-Co(5)-C(53)	155.4(5)
C(54)-Co(5)-C(48)	155.9(5)
C(49)-Co(5)-C(48)	41.1(4)
C(53)-Co(5)-C(48)	119.4(5)
C(54)-Co(5)-C(47)	121.2(6)
C(49)-Co(5)-C(47)	68.6(5)
C(53)-Co(5)-C(47)	106.3(5)
C(48)-Co(5)-C(47)	40.7(4)
C(54)-Co(5)-C(50)	40.8(6)
C(49)-Co(5)-C(50)	124.8(5)
C(53)-Co(5)-C(50)	69.2(5)
C(48)-Co(5)-C(50)	161.3(5)
C(47)-Co(5)-C(50)	157.1(5)
C(54)-Co(5)-C(46)	107.8(5)
C(49)-Co(5)-C(46)	69.0(5)
C(53)-Co(5)-C(46)	123.6(5)
C(48)-Co(5)-C(46)	68.7(4)
C(47)-Co(5)-C(46)	40.3(5)
C(50)-Co(5)-C(46)	122.2(5)
C(54)-Co(5)-C(51)	68.6(6)
C(49)-Co(5)-C(51)	107.3(5)
C(53)-Co(5)-C(51)	69.0(5)
C(48)-Co(5)-C(51)	123.7(5)
C(47)-Co(5)-C(51)	160.3(5)
C(50)-Co(5)-C(51)	40.9(5)
C(46)-Co(5)-C(51)	158.0(5)
C(54)-Co(5)-C(52)	68.9(5)
C(49)-Co(5)-C(52)	120.2(5)
C(53)-Co(5)-C(52)	41.2(5)
C(48)-Co(5)-C(52)	105.9(5)
C(47)-Co(5)-C(52)	123.4(5)
C(50)-Co(5)-C(52)	68.8(5)
C(46)-Co(5)-C(52)	160.2(5)
C(51)-Co(5)-C(52)	40.6(5)
C(54)-Co(5)-C(45)	125.3(5)
C(49)-Co(5)-C(45)	40.7(5)
C(53)-Co(5)-C(45)	161.8(5)
C(48)-Co(5)-C(45)	68.8(4)
C(47)-Co(5)-C(45)	68.5(5)
C(50)-Co(5)-C(45)	108.3(5)
C(46)-Co(5)-C(45)	41.4(5)
C(51)-Co(5)-C(45)	121.7(5)
C(52)-Co(5)-C(45)	156.2(5)
C(58)-Co(6)-C(61)	120.6(5)
C(58)-Co(6)-C(60)	157.7(5)
C(61)-Co(6)-C(60)	40.9(5)

C(58)-Co(6)-C(57)	41.3(5)
C(61)-Co(6)-C(57)	105.1(5)
C(60)-Co(6)-C(57)	121.9(5)
C(58)-Co(6)-C(56)	69.1(6)
C(61)-Co(6)-C(56)	121.5(5)
C(60)-Co(6)-C(56)	107.7(5)
C(57)-Co(6)-C(56)	40.9(6)
C(58)-Co(6)-C(63)	121.4(5)
C(61)-Co(6)-C(63)	68.7(4)
C(60)-Co(6)-C(63)	68.7(5)
C(57)-Co(6)-C(63)	156.9(6)
C(56)-Co(6)-C(63)	161.2(6)
C(58)-Co(6)-C(59)	41.0(5)
C(61)-Co(6)-C(59)	157.8(5)
C(60)-Co(6)-C(59)	160.2(5)
C(57)-Co(6)-C(59)	69.0(5)
C(56)-Co(6)-C(59)	68.8(5)
C(63)-Co(6)-C(59)	108.0(5)
C(58)-Co(6)-C(62)	104.7(5)
C(61)-Co(6)-C(62)	41.1(5)
C(60)-Co(6)-C(62)	69.1(5)
C(57)-Co(6)-C(62)	119.9(6)
C(56)-Co(6)-C(62)	156.8(5)
C(63)-Co(6)-C(62)	40.9(4)
C(59)-Co(6)-C(62)	122.0(5)
C(58)-Co(6)-C(55)	69.0(6)
C(61)-Co(6)-C(55)	158.7(5)
C(60)-Co(6)-C(55)	123.9(5)
C(57)-Co(6)-C(55)	68.8(6)
C(56)-Co(6)-C(55)	40.7(5)
C(63)-Co(6)-C(55)	124.8(5)
C(59)-Co(6)-C(55)	40.9(5)
C(62)-Co(6)-C(55)	159.8(5)
C(58)-Co(6)-C(64)	159.2(5)
C(61)-Co(6)-C(64)	68.6(4)
C(60)-Co(6)-C(64)	40.5(4)
C(57)-Co(6)-C(64)	159.1(5)
C(56)-Co(6)-C(64)	124.1(6)
C(63)-Co(6)-C(64)	41.2(4)
C(59)-Co(6)-C(64)	124.2(5)
C(62)-Co(6)-C(64)	69.2(4)
C(55)-Co(6)-C(64)	109.5(5)
C(1)-S(1)-Co(1)	105.4(4)
C(6)-S(2)-Co(1)	105.4(4)
C(7)-S(3)-Co(1)	105.3(4)
C(12)-S(4)-Co(1)	105.6(4)
C(13)-S(5)-Co(2)	105.5(4)
C(18)-S(6)-Co(2)	105.5(3)
C(19)-S(7)-Co(2)	105.2(4)
C(24)-S(8)-Co(2)	105.1(3)
C(2)-C(1)-C(6)	118.8(9)
C(2)-C(1)-S(1)	122.5(8)
C(6)-C(1)-S(1)	118.7(8)

C(3)-C(2)-C(1)	122.4(10)
C(3)-C(2)-Cl(1)	118.3(9)
C(1)-C(2)-Cl(1)	119.3(8)
C(2)-C(3)-C(4)	119.1(11)
C(2)-C(3)-H(3)	120.5
C(4)-C(3)-H(3)	120.5
C(5)-C(4)-C(3)	119.7(10)
C(5)-C(4)-H(4)	120.1
C(3)-C(4)-H(4)	120.1
C(4)-C(5)-C(6)	122.8(11)
C(4)-C(5)-Cl(2)	118.7(8)
C(6)-C(5)-Cl(2)	118.5(9)
C(5)-C(6)-C(1)	117.1(10)
C(5)-C(6)-S(2)	123.5(9)
C(1)-C(6)-S(2)	119.4(8)
C(8)-C(7)-C(12)	117.9(9)
C(8)-C(7)-S(3)	123.5(8)
C(12)-C(7)-S(3)	118.5(8)
C(9)-C(8)-C(7)	122.7(10)
C(9)-C(8)-Cl(3)	118.1(8)
C(7)-C(8)-Cl(3)	119.1(8)
C(10)-C(9)-C(8)	119.4(10)
C(10)-C(9)-H(9)	120.3
C(8)-C(9)-H(9)	120.3
C(11)-C(10)-C(9)	119.0(10)
C(11)-C(10)-H(10)	120.5
C(9)-C(10)-H(10)	120.5
C(10)-C(11)-C(12)	123.4(10)
C(10)-C(11)-Cl(4)	117.6(8)
C(12)-C(11)-Cl(4)	118.9(8)
C(11)-C(12)-C(7)	117.5(9)
C(11)-C(12)-S(4)	123.0(8)
C(7)-C(12)-S(4)	119.5(8)
C(14)-C(13)-C(18)	118.9(10)
C(14)-C(13)-S(5)	122.7(9)
C(18)-C(13)-S(5)	118.5(8)
C(15)-C(14)-C(13)	122.3(11)
C(15)-C(14)-Cl(5)	118.5(9)
C(13)-C(14)-Cl(5)	119.2(9)
C(14)-C(15)-C(16)	119.9(11)
C(14)-C(15)-H(15)	120.0
C(16)-C(15)-H(15)	120.0
C(15)-C(16)-C(17)	118.4(10)
C(15)-C(16)-H(16)	120.8
C(17)-C(16)-H(16)	120.8
C(16)-C(17)-C(18)	123.2(11)
C(16)-C(17)-Cl(6)	117.8(9)
C(18)-C(17)-Cl(6)	119.0(9)
C(17)-C(18)-C(13)	117.2(10)
C(17)-C(18)-S(6)	123.3(9)
C(13)-C(18)-S(6)	119.5(8)
C(20)-C(19)-C(24)	118.1(9)
C(20)-C(19)-S(7)	122.6(9)

C(24)-C(19)-S(7)	119.3(8)
C(21)-C(20)-C(19)	122.4(10)
C(21)-C(20)-Cl(7)	118.0(8)
C(19)-C(20)-Cl(7)	119.6(8)
C(22)-C(21)-C(20)	119.4(10)
C(22)-C(21)-H(21)	120.3
C(20)-C(21)-H(21)	120.3
C(21)-C(22)-C(23)	118.8(10)
C(21)-C(22)-H(22)	120.6
C(23)-C(22)-H(22)	120.6
C(22)-C(23)-C(24)	122.9(10)
C(22)-C(23)-Cl(8)	117.5(8)
C(24)-C(23)-Cl(8)	119.6(8)
C(23)-C(24)-C(19)	118.4(9)
C(23)-C(24)-S(8)	122.4(8)
C(19)-C(24)-S(8)	119.2(8)
C(29)-C(25)-C(26)	108.8(14)
C(29)-C(25)-Co(3)	70.4(9)
C(26)-C(25)-Co(3)	70.4(8)
C(29)-C(25)-H(25)	125.6
C(26)-C(25)-H(25)	125.6
Co(3)-C(25)-H(25)	125.1
C(27)-C(26)-C(25)	107.5(12)
C(27)-C(26)-Co(3)	69.6(8)
C(25)-C(26)-Co(3)	69.1(8)
C(27)-C(26)-H(26)	126.2
C(25)-C(26)-H(26)	126.2
Co(3)-C(26)-H(26)	126.6
C(26)-C(27)-C(28)	108.0(12)
C(26)-C(27)-Co(3)	70.2(9)
C(28)-C(27)-Co(3)	70.1(9)
C(26)-C(27)-H(27)	126.0
C(28)-C(27)-H(27)	126.0
Co(3)-C(27)-H(27)	125.3
C(29)-C(28)-C(27)	107.9(14)
C(29)-C(28)-Co(3)	69.5(10)
C(27)-C(28)-Co(3)	69.4(10)
C(29)-C(28)-H(28)	126.0
C(27)-C(28)-H(28)	126.0
Co(3)-C(28)-H(28)	126.6
C(25)-C(29)-C(28)	107.7(12)
C(25)-C(29)-Co(3)	69.4(10)
C(28)-C(29)-Co(3)	70.1(9)
C(25)-C(29)-H(29)	126.1
C(28)-C(29)-H(29)	126.1
Co(3)-C(29)-H(29)	125.9
C(31)-C(30)-C(34)	109.0(13)
C(31)-C(30)-Co(3)	69.8(9)
C(34)-C(30)-Co(3)	69.8(8)
C(31)-C(30)-H(30)	125.5
C(34)-C(30)-H(30)	125.5
Co(3)-C(30)-H(30)	126.5
C(30)-C(31)-C(32)	108.0(14)

C(30)-C(31)-Co(3)	70.3(10)
C(32)-C(31)-Co(3)	68.6(9)
C(30)-C(31)-H(31)	126.0
C(32)-C(31)-H(31)	126.0
Co(3)-C(31)-H(31)	126.7
C(33)-C(32)-C(31)	107.5(15)
C(33)-C(32)-Co(3)	69.9(10)
C(31)-C(32)-Co(3)	70.0(11)
C(33)-C(32)-H(32)	126.2
C(31)-C(32)-H(32)	126.2
Co(3)-C(32)-H(32)	125.5
C(32)-C(33)-C(34)	108.2(13)
C(32)-C(33)-Co(3)	69.5(10)
C(34)-C(33)-Co(3)	70.1(9)
C(32)-C(33)-H(33)	125.9
C(34)-C(33)-H(33)	125.9
Co(3)-C(33)-H(33)	126.1
C(30)-C(34)-C(33)	107.3(15)
C(30)-C(34)-Co(3)	69.8(9)
C(33)-C(34)-Co(3)	68.7(9)
C(30)-C(34)-H(34)	126.4
C(33)-C(34)-H(34)	126.4
Co(3)-C(34)-H(34)	126.6
C(36)-C(35)-C(39)	107.7(12)
C(36)-C(35)-Co(4)	69.7(8)
C(39)-C(35)-Co(4)	69.6(9)
C(36)-C(35)-H(35)	126.2
C(39)-C(35)-H(35)	126.2
Co(4)-C(35)-H(35)	126.1
C(35)-C(36)-C(37)	108.5(13)
C(35)-C(36)-Co(4)	70.1(9)
C(37)-C(36)-Co(4)	69.7(8)
C(35)-C(36)-H(36)	125.7
C(37)-C(36)-H(36)	125.7
Co(4)-C(36)-H(36)	126.0
C(36)-C(37)-C(38)	108.0(12)
C(36)-C(37)-Co(4)	69.6(8)
C(38)-C(37)-Co(4)	69.5(9)
C(36)-C(37)-H(37)	126.0
C(38)-C(37)-H(37)	126.0
Co(4)-C(37)-H(37)	126.4
C(39)-C(38)-C(37)	106.4(14)
C(39)-C(38)-Co(4)	69.6(9)
C(37)-C(38)-Co(4)	69.2(8)
C(39)-C(38)-H(38)	126.8
C(37)-C(38)-H(38)	126.8
Co(4)-C(38)-H(38)	125.9
C(35)-C(39)-C(38)	109.4(13)
C(35)-C(39)-Co(4)	69.9(8)
C(38)-C(39)-Co(4)	69.9(9)
C(35)-C(39)-H(39)	125.3
C(38)-C(39)-H(39)	125.3
Co(4)-C(39)-H(39)	126.5

C(44)-C(40)-C(41)	109.2(12)
C(44)-C(40)-Co(4)	69.7(8)
C(41)-C(40)-Co(4)	69.8(10)
C(44)-C(40)-H(40)	125.4
C(41)-C(40)-H(40)	125.4
Co(4)-C(40)-H(40)	126.7
C(40)-C(41)-C(42)	107.0(14)
C(40)-C(41)-Co(4)	69.4(8)
C(42)-C(41)-Co(4)	68.4(9)
C(40)-C(41)-H(41)	126.5
C(42)-C(41)-H(41)	126.5
Co(4)-C(41)-H(41)	127.2
C(43)-C(42)-C(41)	108.6(15)
C(43)-C(42)-Co(4)	71.6(8)
C(41)-C(42)-Co(4)	70.2(9)
C(43)-C(42)-H(42)	125.7
C(41)-C(42)-H(42)	125.7
Co(4)-C(42)-H(42)	124.0
C(42)-C(43)-C(44)	107.6(12)
C(42)-C(43)-Co(4)	68.0(9)
C(44)-C(43)-Co(4)	68.3(8)
C(42)-C(43)-H(43)	126.2
C(44)-C(43)-H(43)	126.2
Co(4)-C(43)-H(43)	129.1
C(40)-C(44)-C(43)	107.4(14)
C(40)-C(44)-Co(4)	69.9(9)
C(43)-C(44)-Co(4)	70.5(8)
C(40)-C(44)-H(44)	126.3
C(43)-C(44)-H(44)	126.3
Co(4)-C(44)-H(44)	125.0
C(49)-C(45)-C(46)	106.9(9)
C(49)-C(45)-Co(5)	68.6(6)
C(46)-C(45)-Co(5)	68.7(7)
C(49)-C(45)-H(45)	126.5
C(46)-C(45)-H(45)	126.5
Co(5)-C(45)-H(45)	127.7
C(47)-C(46)-C(45)	107.7(10)
C(47)-C(46)-Co(5)	69.8(7)
C(45)-C(46)-Co(5)	69.9(7)
C(47)-C(46)-H(46)	126.1
C(45)-C(46)-H(46)	126.1
Co(5)-C(46)-H(46)	125.8
C(46)-C(47)-C(48)	109.2(10)
C(46)-C(47)-Co(5)	69.9(7)
C(48)-C(47)-Co(5)	69.6(7)
C(46)-C(47)-H(47)	125.4
C(48)-C(47)-H(47)	125.4
Co(5)-C(47)-H(47)	126.6
C(47)-C(48)-C(49)	107.5(9)
C(47)-C(48)-Co(5)	69.7(6)
C(49)-C(48)-Co(5)	69.2(6)
C(47)-C(48)-H(48)	126.3
C(49)-C(48)-H(48)	126.3

Co(5)-C(48)-H(48)	126.4
C(45)-C(49)-C(48)	108.7(10)
C(45)-C(49)-Co(5)	70.7(6)
C(48)-C(49)-Co(5)	69.8(6)
C(45)-C(49)-H(49)	125.7
C(48)-C(49)-H(49)	125.7
Co(5)-C(49)-H(49)	125.5
C(54)-C(50)-C(51)	107.7(11)
C(54)-C(50)-Co(5)	69.1(7)
C(51)-C(50)-Co(5)	69.8(7)
C(54)-C(50)-H(50)	126.2
C(51)-C(50)-H(50)	126.2
Co(5)-C(50)-H(50)	126.4
C(52)-C(51)-C(50)	108.3(11)
C(52)-C(51)-Co(5)	69.7(7)
C(50)-C(51)-Co(5)	69.3(7)
C(52)-C(51)-H(51)	125.9
C(50)-C(51)-H(51)	125.9
Co(5)-C(51)-H(51)	126.8
C(51)-C(52)-C(53)	108.1(11)
C(51)-C(52)-Co(5)	69.7(7)
C(53)-C(52)-Co(5)	69.0(7)
C(51)-C(52)-H(52)	126.0
C(53)-C(52)-H(52)	126.0
Co(5)-C(52)-H(52)	127.0
C(54)-C(53)-C(52)	107.1(11)
C(54)-C(53)-Co(5)	69.1(7)
C(52)-C(53)-Co(5)	69.9(7)
C(54)-C(53)-H(53)	126.5
C(52)-C(53)-H(53)	126.5
Co(5)-C(53)-H(53)	126.2
C(50)-C(54)-C(53)	108.9(12)
C(50)-C(54)-Co(5)	70.1(7)
C(53)-C(54)-Co(5)	69.7(7)
C(50)-C(54)-H(54)	125.6
C(53)-C(54)-H(54)	125.6
Co(5)-C(54)-H(54)	126.2
C(56)-C(55)-C(59)	108.0(13)
C(56)-C(55)-Co(6)	69.2(8)
C(59)-C(55)-Co(6)	69.5(8)
C(56)-C(55)-H(55)	126.0
C(59)-C(55)-H(55)	126.0
Co(6)-C(55)-H(55)	126.9
C(57)-C(56)-C(55)	108.3(12)
C(57)-C(56)-Co(6)	69.3(8)
C(55)-C(56)-Co(6)	70.1(7)
C(57)-C(56)-H(56)	125.9
C(55)-C(56)-H(56)	125.8
Co(6)-C(56)-H(56)	126.3
C(56)-C(57)-C(58)	107.9(12)
C(56)-C(57)-Co(6)	69.8(7)
C(58)-C(57)-Co(6)	69.1(7)
C(56)-C(57)-H(57)	126.0

C(58)-C(57)-H(57)	126.0
Co(6)-C(57)-H(57)	126.7
C(59)-C(58)-C(57)	108.0(13)
C(59)-C(58)-Co(6)	70.3(7)
C(57)-C(58)-Co(6)	69.7(7)
C(59)-C(58)-H(58)	126.0
C(57)-C(58)-H(58)	126.0
Co(6)-C(58)-H(58)	125.6
C(58)-C(59)-C(55)	107.7(11)
C(58)-C(59)-Co(6)	68.6(7)
C(55)-C(59)-Co(6)	69.6(7)
C(58)-C(59)-H(59)	126.1
C(55)-C(59)-H(59)	126.1
Co(6)-C(59)-H(59)	127.2
C(64)-C(60)-C(61)	108.8(10)
C(64)-C(60)-Co(6)	70.7(6)
C(61)-C(60)-Co(6)	69.5(6)
C(64)-C(60)-H(60)	125.6
C(61)-C(60)-H(60)	125.6
Co(6)-C(60)-H(60)	125.8
C(60)-C(61)-C(62)	108.7(9)
C(60)-C(61)-Co(6)	69.6(6)
C(62)-C(61)-Co(6)	70.3(6)
C(60)-C(61)-H(61)	125.7
C(62)-C(61)-H(61)	125.7
Co(6)-C(61)-H(61)	126.0
C(63)-C(62)-C(61)	106.8(10)
C(63)-C(62)-Co(6)	69.2(6)
C(61)-C(62)-Co(6)	68.7(6)
C(63)-C(62)-H(62)	126.6
C(61)-C(62)-H(62)	126.6
Co(6)-C(62)-H(62)	127.0
C(62)-C(63)-C(64)	108.6(10)
C(62)-C(63)-Co(6)	69.9(6)
C(64)-C(63)-Co(6)	69.9(6)
C(62)-C(63)-H(63)	125.7
C(64)-C(63)-H(63)	125.7
Co(6)-C(63)-H(63)	126.1
C(60)-C(64)-C(63)	107.1(10)
C(60)-C(64)-Co(6)	68.8(6)
C(63)-C(64)-Co(6)	68.9(6)
C(60)-C(64)-H(64)	126.5
C(63)-C(64)-H(64)	126.5
Co(6)-C(64)-H(64)	127.4
N(1)-C(65)-C(66A)	164(2)
N(1)-C(65)-C(66)	163(2)
C(67)-C(66)-C(65)	108.8(19)
C(67)-C(66)-H(66B)	109.9
C(65)-C(66)-H(66B)	109.9
C(67)-C(66)-H(66A)	109.9
C(65)-C(66)-H(66A)	109.9
H(66B)-C(66)-H(66A)	108.3
C(66A)-C(67)-C(68)	125(2)

C(66)-C(67)-C(68)	116.9(19)
C(66)-C(67)-H(67A)	108.1
C(68)-C(67)-H(67A)	108.1
C(66)-C(67)-H(67B)	108.1
C(68)-C(67)-H(67B)	108.1
H(67A)-C(67)-H(67B)	107.3
C(66A)-C(67)-H(67C)	106.1
C(68)-C(67)-H(67C)	106.1
C(66A)-C(67)-H(67D)	106.1
C(68)-C(67)-H(67D)	106.1
H(67C)-C(67)-H(67D)	106.3
C(67)-C(68)-H(68A)	109.5
C(67)-C(68)-H(68B)	109.5
H(68A)-C(68)-H(68B)	109.5
C(67)-C(68)-H(68C)	109.5
H(68A)-C(68)-H(68C)	109.5
H(68B)-C(68)-H(68C)	109.5
C(67)-C(66A)-C(65)	113(2)
C(67)-C(66A)-H(66C)	109.0
C(65)-C(66A)-H(66C)	109.0
C(67)-C(66A)-H(66D)	109.0
C(65)-C(66A)-H(66D)	109.0
H(66C)-C(66A)-H(66D)	107.8
N(2)-C(69)-C(70)	177(3)
C(71)-C(70)-C(69)	117(3)
C(71)-C(70)-H(70A)	107.9
C(69)-C(70)-H(70A)	107.9
C(71)-C(70)-H(70B)	107.9
C(69)-C(70)-H(70B)	107.9
H(70A)-C(70)-H(70B)	107.2
C(70)-C(71)-C(72)	117(3)
C(70)-C(71)-H(71A)	108.0
C(72)-C(71)-H(71A)	108.0
C(70)-C(71)-H(71B)	108.0
C(72)-C(71)-H(71B)	108.0
H(71A)-C(71)-H(71B)	107.2
C(71)-C(72)-H(72A)	109.5
C(71)-C(72)-H(72B)	109.5
H(72A)-C(72)-H(72B)	109.5
C(71)-C(72)-H(72C)	109.5
H(72A)-C(72)-H(72C)	109.5
H(72B)-C(72)-H(72C)	109.5
N(2A)-C(69A)-C(70A)	179(5)
C(71A)-C(70A)-C(69A)	113(3)
C(71A)-C(70A)-H(70C)	109.0
C(69A)-C(70A)-H(70C)	109.0
C(71A)-C(70A)-H(70D)	109.0
C(69A)-C(70A)-H(70D)	109.0
H(70C)-C(70A)-H(70D)	107.8
C(70A)-C(71A)-C(72A)	113(3)
C(70A)-C(71A)-H(71C)	108.9
C(72A)-C(71A)-H(71C)	108.9
C(70A)-C(71A)-H(71D)	108.9

C(72A)-C(71A)-H(71D)	108.9
H(71C)-C(71A)-H(71D)	107.7
C(71A)-C(72A)-H(72D)	109.5
C(71A)-C(72A)-H(72E)	109.5
H(72D)-C(72A)-H(72E)	109.5
C(71A)-C(72A)-H(72F)	109.5
H(72D)-C(72A)-H(72F)	109.5
H(72E)-C(72A)-H(72F)	109.5

Table S4: Anisotropic displacement parameters ($\text{\AA}^2 \times 10^3$) for $[\text{CoCp}_2]_2[\text{Co}^{\text{II}}(\text{bdt})_2]$. The anisotropic displacement factor exponent takes the form: $-2 \pi^2 [h^2 a^{*2} U_{11} + \dots + 2 h k a^* b^* U_{12}]$

	U11	U22	U33	U23	U13	U12
Co(1)	29(1)	36(1)	34(1)	-3(1)	1(1)	3(1)
Co(2)	32(1)	32(1)	37(1)	0(1)	2(1)	2(1)
Co(3)	52(1)	84(2)	46(1)	-20(1)	16(1)	-3(1)
Co(4)	42(1)	58(1)	43(1)	-10(1)	14(1)	-9(1)
Co(5)	41(1)	43(1)	38(1)	-2(1)	2(1)	4(1)
Co(6)	46(1)	38(1)	36(1)	6(1)	10(1)	8(1)
S(1)	32(1)	38(1)	42(1)	2(1)	-3(1)	2(1)
S(2)	31(1)	41(1)	42(1)	-3(1)	3(1)	2(1)
S(3)	32(1)	39(1)	41(1)	-2(1)	3(1)	-2(1)
S(4)	30(1)	34(1)	39(1)	1(1)	0(1)	2(1)
S(5)	32(1)	33(1)	50(1)	0(1)	1(1)	0(1)
S(6)	35(1)	34(1)	43(1)	-2(1)	-1(1)	3(1)
S(7)	35(1)	34(1)	41(1)	-3(1)	-1(1)	2(1)
S(8)	34(1)	32(1)	43(1)	1(1)	1(1)	1(1)
Cl(1)	45(1)	49(2)	72(2)	16(1)	-11(1)	-5(1)
Cl(2)	32(1)	57(2)	61(2)	2(1)	3(1)	2(1)
Cl(3)	50(1)	44(2)	61(2)	4(1)	6(1)	-12(1)
Cl(4)	32(1)	42(1)	64(2)	6(1)	-1(1)	2(1)
Cl(5)	42(1)	36(1)	89(2)	-5(1)	0(1)	2(1)
Cl(6)	41(1)	42(2)	63(2)	-6(1)	-9(1)	5(1)
Cl(7)	46(1)	35(1)	62(2)	-7(1)	-7(1)	2(1)
Cl(8)	37(1)	40(1)	54(1)	1(1)	-6(1)	-2(1)
C(1)	34(5)	40(6)	31(4)	-2(4)	2(4)	4(4)
C(2)	41(6)	43(6)	41(5)	-3(5)	-1(4)	-2(5)
C(3)	47(6)	36(6)	43(5)	4(4)	3(5)	6(5)
C(4)	37(6)	51(7)	44(5)	-3(5)	-1(5)	10(5)
C(5)	29(5)	57(7)	38(5)	-2(5)	1(4)	3(5)
C(6)	38(5)	41(6)	35(5)	-10(4)	0(4)	8(5)
C(7)	34(5)	36(5)	32(4)	-2(4)	4(4)	-2(4)
C(8)	43(6)	39(6)	38(5)	1(4)	7(4)	-1(5)
C(9)	57(6)	31(5)	36(5)	1(4)	2(5)	1(5)
C(10)	35(5)	42(6)	41(5)	2(5)	-3(4)	5(5)
C(11)	38(5)	35(5)	39(5)	3(4)	1(4)	-1(4)
C(12)	40(5)	32(5)	31(4)	-5(4)	6(4)	-5(4)
C(13)	35(5)	41(6)	41(5)	4(4)	12(4)	4(4)
C(14)	37(6)	39(6)	59(7)	-1(5)	11(5)	-2(5)
C(15)	41(6)	39(6)	50(6)	2(5)	10(5)	7(5)
C(16)	37(5)	39(6)	55(6)	4(5)	4(5)	10(5)
C(17)	37(5)	51(7)	46(6)	-4(5)	6(4)	3(5)
C(18)	32(5)	38(6)	36(5)	-1(4)	5(4)	0(4)
C(19)	37(5)	37(6)	38(5)	5(4)	6(4)	4(4)
C(20)	41(6)	33(5)	43(5)	-5(4)	4(4)	1(4)
C(21)	40(5)	34(6)	46(5)	-6(4)	2(4)	7(4)

C(22)	35(5)	46(6)	39(5)	-2(5)	1(4)	10(5)
C(23)	34(5)	32(5)	40(5)	-2(4)	3(4)	2(4)
C(24)	32(5)	36(6)	34(4)	-2(4)	3(4)	-3(4)
C(25)	49(7)	129(16)	56(7)	-26(9)	4(6)	-12(8)
C(26)	47(7)	103(12)	63(7)	-17(8)	22(6)	-12(8)
C(27)	61(8)	93(11)	38(6)	-2(6)	13(6)	10(8)
C(28)	50(7)	91(11)	57(7)	-5(7)	8(6)	3(7)
C(29)	69(9)	104(13)	45(6)	-12(7)	19(6)	7(8)
C(30)	73(9)	87(11)	58(7)	-22(8)	26(7)	-2(8)
C(31)	88(11)	77(11)	97(12)	-44(10)	45(10)	-7(9)
C(32)	97(12)	61(9)	85(10)	-9(8)	41(9)	3(9)
C(33)	82(10)	84(11)	54(7)	-10(7)	23(7)	25(9)
C(34)	59(8)	84(11)	66(8)	-26(8)	13(6)	10(8)
C(35)	61(8)	75(10)	51(7)	-8(6)	8(6)	21(7)
C(36)	62(8)	46(7)	66(8)	-6(6)	14(6)	9(6)
C(37)	78(9)	61(9)	60(7)	6(6)	21(7)	20(7)
C(38)	49(7)	146(17)	49(7)	4(9)	-1(6)	23(9)
C(39)	35(7)	145(17)	66(8)	-17(10)	1(6)	26(8)
C(40)	122(13)	42(7)	60(8)	5(6)	46(8)	18(8)
C(41)	146(16)	69(10)	59(8)	-21(7)	43(9)	-61(11)
C(42)	111(13)	90(12)	59(8)	-14(8)	39(9)	-54(10)
C(43)	73(8)	57(8)	48(6)	-7(6)	21(6)	-6(7)
C(44)	76(9)	58(8)	54(7)	2(6)	28(7)	17(7)
C(45)	60(7)	46(7)	36(5)	-4(5)	1(5)	11(5)
C(46)	50(6)	48(7)	50(6)	3(5)	18(5)	4(5)
C(47)	38(5)	47(7)	47(6)	-10(5)	3(5)	-4(5)
C(48)	36(5)	41(6)	43(5)	2(4)	6(4)	1(4)
C(49)	47(6)	42(6)	38(5)	-4(5)	-9(5)	4(5)
C(50)	64(7)	50(7)	44(6)	0(5)	10(5)	13(6)
C(51)	62(7)	40(6)	49(6)	7(5)	-1(5)	6(6)
C(52)	52(6)	58(8)	46(6)	0(5)	2(5)	7(6)
C(53)	47(6)	60(8)	46(6)	-7(5)	-5(5)	7(6)
C(54)	53(7)	63(8)	56(7)	14(6)	18(6)	20(6)
C(55)	63(7)	41(6)	59(7)	13(5)	24(6)	14(6)
C(56)	65(8)	53(8)	65(8)	22(6)	22(7)	19(7)
C(57)	73(8)	66(9)	45(6)	18(6)	15(6)	32(7)
C(58)	60(7)	56(8)	44(6)	9(5)	1(5)	19(6)
C(59)	56(7)	46(6)	49(6)	15(5)	12(5)	9(5)
C(60)	44(6)	42(6)	46(5)	5(5)	10(5)	11(5)
C(61)	56(7)	45(6)	36(5)	-2(5)	8(5)	14(5)
C(62)	44(6)	38(6)	41(5)	7(4)	3(4)	3(5)
C(63)	52(6)	38(6)	42(5)	2(5)	4(5)	2(5)
C(64)	47(6)	39(6)	42(5)	-3(4)	4(5)	0(5)
N(1)	93(9)	71(9)	73(8)	12(7)	4(7)	10(6)
C(65)	77(9)	102(11)	56(8)	1(8)	18(7)	2(7)
C(66)	64(13)	108(13)	47(13)	-4(13)	37(11)	7(10)
C(67)	110(15)	99(12)	150(20)	14(12)	36(14)	-4(10)
C(68)	81(10)	110(12)	67(9)	-1(9)	29(8)	10(9)
C(66A)	150(30)	130(20)	70(20)	1(17)	10(20)	-50(20)
N(2)	210(40)	130(20)	100(30)	27(19)	100(30)	-20(20)
C(69)	89(19)	124(18)	35(11)	7(11)	10(12)	-54(16)
C(70)	120(20)	112(19)	77(16)	-7(15)	25(15)	-50(16)
C(71)	110(20)	100(20)	160(30)	-30(20)	30(20)	-33(19)

C(72)	100(20)	100(30)	160(30)	-40(20)	30(19)	-20(20)
N(2A)	50(20)	68(19)	110(40)	20(20)	-50(30)	-16(15)
C(69A)	60(20)	70(17)	50(20)	9(16)	-18(18)	-18(15)
C(70A)	90(20)	78(19)	50(20)	13(16)	18(18)	-35(15)
C(71A)	120(30)	80(20)	50(20)	-15(18)	37(18)	-50(20)
C(72A)	90(30)	100(40)	100(30)	20(30)	50(20)	-30(20)

Table S5: Hydrogen coordinates ($\times 10^4$) and isotropic displacement parameters ($\text{\AA}^2 \times 10^3$) for $[\text{CoCp}_2]_2[\text{Co}^{\text{II}}(\text{bdt})_2]$.

	x	y	z	U(eq)
H(3)	528	13791	-129	51
H(4)	-826	12830	-202	54
H(9)	4328	6009	2652	50
H(10)	5658	6992	2688	49
H(15)	466	13763	5098	52
H(16)	-588	12649	4468	53
H(21)	4690	5992	7429	49
H(22)	5771	7132	7991	49
H(25)	2626	659	9443	94
H(26)	3110	246	8222	83
H(27)	2016	-1054	7636	76
H(28)	904	-1484	8521	79
H(29)	1277	-407	9634	86
H(30)	-332	1088	8775	85
H(31)	990	2232	8699	101
H(32)	1606	1916	7496	93
H(33)	622	589	6832	86
H(34)	-582	67	7630	83
H(35)	4471	5314	8998	75
H(36)	3068	5203	9655	69
H(37)	3550	5829	10947	78
H(38)	5283	6359	11088	99
H(39)	5833	6002	9881	99
H(40)	2947	8000	10426	85
H(41)	4648	8517	10475	106
H(42)	5120	8107	9238	101
H(43)	3680	7476	8406	69
H(44)	2357	7299	9178	73
H(45)	2445	1855	4564	58
H(46)	1045	932	3833	58
H(47)	1461	535	2593	54
H(48)	3065	1238	2509	48
H(49)	3664	2075	3720	53
H(50)	1320	3843	3877	63
H(51)	2644	4084	3129	62
H(52)	2170	3269	1895	63
H(53)	546	2507	1878	63
H(54)	30	2883	3105	68
H(55)	4342	7004	4099	63
H(56)	3879	7486	5316	72
H(57)	5186	8517	5999	73
H(58)	6451	8706	5190	65
H(59)	5944	7746	4023	60

H(60)	2847	9409	4570	52
H(61)	4167	10381	5283	55
H(62)	5455	10586	4495	50
H(63)	4909	9715	3290	53
H(64)	3275	9008	3329	51
H(66B)	8603	1291	6666	84
H(66A)	8937	1411	5881	84
H(67A)	7614	2583	6431	141
H(67B)	7872	2683	5624	141
H(67C)	7864	2291	6573	141
H(67D)	7627	2880	5831	141
H(68A)	9526	2901	6509	126
H(68B)	8788	3497	6894	126
H(68C)	8919	3739	6068	126
H(66C)	8909	1428	5901	139
H(66D)	8215	1850	5206	139
H(70A)	9773	-119	2241	122
H(70B)	9503	67	3035	122
H(71A)	7999	-454	2624	149
H(71B)	8782	-1250	2580	149
H(72A)	7652	-324	1396	175
H(72B)	7771	-1447	1539	175
H(72C)	8607	-849	1276	175
H(70C)	7784	24	2561	88
H(70D)	7345	221	1719	88
H(71C)	8643	-466	1346	95
H(71D)	8131	-1198	1819	95
H(72D)	9557	-206	2695	140
H(72E)	9947	-819	2076	140
H(72F)	9390	-1335	2651	140

Table S6: Torsion angles [deg] for [CoCp₂]₂[Co^{II}(bdt)₂].

Co(1)-S(1)-C(1)-C(2)	178.8(8)
Co(1)-S(1)-C(1)-C(6)	-1.7(8)
C(6)-C(1)-C(2)-C(3)	-1.8(15)
S(1)-C(1)-C(2)-C(3)	177.7(9)
C(6)-C(1)-C(2)-Cl(1)	-179.8(8)
S(1)-C(1)-C(2)-Cl(1)	-0.3(13)
C(1)-C(2)-C(3)-C(4)	-0.8(17)
Cl(1)-C(2)-C(3)-C(4)	177.2(8)
C(2)-C(3)-C(4)-C(5)	1.1(16)
C(3)-C(4)-C(5)-C(6)	1.3(17)
C(3)-C(4)-C(5)-Cl(2)	-176.6(8)
C(4)-C(5)-C(6)-C(1)	-3.9(15)
Cl(2)-C(5)-C(6)-C(1)	174.0(7)
C(4)-C(5)-C(6)-S(2)	177.4(8)
Cl(2)-C(5)-C(6)-S(2)	-4.7(12)
C(2)-C(1)-C(6)-C(5)	4.0(14)
S(1)-C(1)-C(6)-C(5)	-175.5(7)
C(2)-C(1)-C(6)-S(2)	-177.2(8)
S(1)-C(1)-C(6)-S(2)	3.3(11)
Co(1)-S(2)-C(6)-C(5)	175.5(8)
Co(1)-S(2)-C(6)-C(1)	-3.2(8)
Co(1)-S(3)-C(7)-C(8)	-176.5(8)
Co(1)-S(3)-C(7)-C(12)	2.2(8)
C(12)-C(7)-C(8)-C(9)	2.9(15)
S(3)-C(7)-C(8)-C(9)	-178.4(8)
C(12)-C(7)-C(8)-Cl(3)	-174.2(7)
S(3)-C(7)-C(8)-Cl(3)	4.6(12)
C(7)-C(8)-C(9)-C(10)	-1.6(16)
Cl(3)-C(8)-C(9)-C(10)	175.5(8)
C(8)-C(9)-C(10)-C(11)	-0.7(16)
C(9)-C(10)-C(11)-C(12)	1.5(16)
C(9)-C(10)-C(11)-Cl(4)	-177.6(8)
C(10)-C(11)-C(12)-C(7)	-0.2(15)
Cl(4)-C(11)-C(12)-C(7)	179.0(7)
C(10)-C(11)-C(12)-S(4)	179.9(8)
Cl(4)-C(11)-C(12)-S(4)	-0.9(12)
C(8)-C(7)-C(12)-C(11)	-2.0(13)
S(3)-C(7)-C(12)-C(11)	179.2(7)
C(8)-C(7)-C(12)-S(4)	177.9(7)
S(3)-C(7)-C(12)-S(4)	-0.9(11)
Co(1)-S(4)-C(12)-C(11)	179.0(8)
Co(1)-S(4)-C(12)-C(7)	-1.0(8)
Co(2)-S(5)-C(13)-C(14)	-178.7(8)
Co(2)-S(5)-C(13)-C(18)	0.8(8)
C(18)-C(13)-C(14)-C(15)	-1.8(16)
S(5)-C(13)-C(14)-C(15)	177.8(9)
C(18)-C(13)-C(14)-Cl(5)	179.5(8)
S(5)-C(13)-C(14)-Cl(5)	-1.0(13)
C(13)-C(14)-C(15)-C(16)	-0.2(17)

Cl(5)-C(14)-C(15)-C(16)	178.6(9)
C(14)-C(15)-C(16)-C(17)	2.7(16)
C(15)-C(16)-C(17)-C(18)	-3.4(17)
C(15)-C(16)-C(17)-Cl(6)	179.4(8)
C(16)-C(17)-C(18)-C(13)	1.5(16)
Cl(6)-C(17)-C(18)-C(13)	178.6(8)
C(16)-C(17)-C(18)-S(6)	-176.4(9)
Cl(6)-C(17)-C(18)-S(6)	0.8(13)
C(14)-C(13)-C(18)-C(17)	1.1(14)
S(5)-C(13)-C(18)-C(17)	-178.4(8)
C(14)-C(13)-C(18)-S(6)	179.1(8)
S(5)-C(13)-C(18)-S(6)	-0.5(11)
Co(2)-S(6)-C(18)-C(17)	177.7(8)
Co(2)-S(6)-C(18)-C(13)	-0.1(9)
Co(2)-S(7)-C(19)-C(20)	-179.5(8)
Co(2)-S(7)-C(19)-C(24)	-1.1(9)
C(24)-C(19)-C(20)-C(21)	2.5(16)
S(7)-C(19)-C(20)-C(21)	-179.1(8)
C(24)-C(19)-C(20)-Cl(7)	-175.9(8)
S(7)-C(19)-C(20)-Cl(7)	2.5(13)
C(19)-C(20)-C(21)-C(22)	-1.6(16)
Cl(7)-C(20)-C(21)-C(22)	176.9(8)
C(20)-C(21)-C(22)-C(23)	0.1(16)
C(21)-C(22)-C(23)-C(24)	0.3(16)
C(21)-C(22)-C(23)-Cl(8)	-178.9(8)
C(22)-C(23)-C(24)-C(19)	0.7(15)
Cl(8)-C(23)-C(24)-C(19)	179.8(8)
C(22)-C(23)-C(24)-S(8)	-178.7(8)
Cl(8)-C(23)-C(24)-S(8)	0.4(12)
C(20)-C(19)-C(24)-C(23)	-2.0(14)
S(7)-C(19)-C(24)-C(23)	179.5(7)
C(20)-C(19)-C(24)-S(8)	177.4(8)
S(7)-C(19)-C(24)-S(8)	-1.0(12)
Co(2)-S(8)-C(24)-C(23)	-177.9(7)
Co(2)-S(8)-C(24)-C(19)	2.7(9)
C(29)-C(25)-C(26)-C(27)	1(2)
Co(3)-C(25)-C(26)-C(27)	-59.2(12)
C(29)-C(25)-C(26)-Co(3)	60.2(12)
C(25)-C(26)-C(27)-C(28)	-1.3(19)
Co(3)-C(26)-C(27)-C(28)	-60.2(11)
C(25)-C(26)-C(27)-Co(3)	58.9(12)
C(26)-C(27)-C(28)-C(29)	1.1(18)
Co(3)-C(27)-C(28)-C(29)	-59.1(11)
C(26)-C(27)-C(28)-Co(3)	60.2(11)
C(26)-C(25)-C(29)-C(28)	0(2)
Co(3)-C(25)-C(29)-C(28)	59.9(12)
C(26)-C(25)-C(29)-Co(3)	-60.2(13)
C(27)-C(28)-C(29)-C(25)	-0.5(19)
Co(3)-C(28)-C(29)-C(25)	-59.5(12)
C(27)-C(28)-C(29)-Co(3)	59.0(11)
C(34)-C(30)-C(31)-C(32)	0(2)
Co(3)-C(30)-C(31)-C(32)	58.4(13)
C(34)-C(30)-C(31)-Co(3)	-58.9(12)

C(30)-C(31)-C(32)-C(33)	1(2)
Co(3)-C(31)-C(32)-C(33)	60.1(12)
C(30)-C(31)-C(32)-Co(3)	-59.5(14)
C(31)-C(32)-C(33)-C(34)	-1(2)
Co(3)-C(32)-C(33)-C(34)	59.6(11)
C(31)-C(32)-C(33)-Co(3)	-60.2(13)
C(31)-C(30)-C(34)-C(33)	0(2)
Co(3)-C(30)-C(34)-C(33)	-58.7(11)
C(31)-C(30)-C(34)-Co(3)	58.9(13)
C(32)-C(33)-C(34)-C(30)	0.2(19)
Co(3)-C(33)-C(34)-C(30)	59.4(12)
C(32)-C(33)-C(34)-Co(3)	-59.2(12)
C(39)-C(35)-C(36)-C(37)	0.2(18)
Co(4)-C(35)-C(36)-C(37)	-59.3(10)
C(39)-C(35)-C(36)-Co(4)	59.5(12)
C(35)-C(36)-C(37)-C(38)	0.4(17)
Co(4)-C(36)-C(37)-C(38)	-59.1(12)
C(35)-C(36)-C(37)-Co(4)	59.5(10)
C(36)-C(37)-C(38)-C(39)	-1(2)
Co(4)-C(37)-C(38)-C(39)	-60.0(13)
C(36)-C(37)-C(38)-Co(4)	59.2(10)
C(36)-C(35)-C(39)-C(38)	-1(2)
Co(4)-C(35)-C(39)-C(38)	58.8(14)
C(36)-C(35)-C(39)-Co(4)	-59.5(10)
C(37)-C(38)-C(39)-C(35)	1(2)
Co(4)-C(38)-C(39)-C(35)	-58.8(13)
C(37)-C(38)-C(39)-Co(4)	59.8(12)
C(44)-C(40)-C(41)-C(42)	0(2)
Co(4)-C(40)-C(41)-C(42)	58.3(13)
C(44)-C(40)-C(41)-Co(4)	-58.7(10)
C(40)-C(41)-C(42)-C(43)	3(2)
Co(4)-C(41)-C(42)-C(43)	61.7(13)
C(40)-C(41)-C(42)-Co(4)	-58.9(12)
C(41)-C(42)-C(43)-C(44)	-4(2)
Co(4)-C(42)-C(43)-C(44)	56.8(11)
C(41)-C(42)-C(43)-Co(4)	-60.8(13)
C(41)-C(40)-C(44)-C(43)	-2.1(17)
Co(4)-C(40)-C(44)-C(43)	-60.8(10)
C(41)-C(40)-C(44)-Co(4)	58.7(12)
C(42)-C(43)-C(44)-C(40)	3.8(17)
Co(4)-C(43)-C(44)-C(40)	60.4(10)
C(42)-C(43)-C(44)-Co(4)	-56.6(12)
C(49)-C(45)-C(46)-C(47)	1.6(13)
Co(5)-C(45)-C(46)-C(47)	59.8(8)
C(49)-C(45)-C(46)-Co(5)	-58.1(8)
C(45)-C(46)-C(47)-C(48)	-1.2(14)
Co(5)-C(46)-C(47)-C(48)	58.7(8)
C(45)-C(46)-C(47)-Co(5)	-59.9(8)
C(46)-C(47)-C(48)-C(49)	0.3(13)
Co(5)-C(47)-C(48)-C(49)	59.1(8)
C(46)-C(47)-C(48)-Co(5)	-58.8(9)
C(46)-C(45)-C(49)-C(48)	-1.5(13)
Co(5)-C(45)-C(49)-C(48)	-59.6(8)

C(46)-C(45)-C(49)-Co(5)	58.2(8)
C(47)-C(48)-C(49)-C(45)	0.8(13)
Co(5)-C(48)-C(49)-C(45)	60.2(8)
C(47)-C(48)-C(49)-Co(5)	-59.4(8)
C(54)-C(50)-C(51)-C(52)	-0.1(14)
Co(5)-C(50)-C(51)-C(52)	58.9(9)
C(54)-C(50)-C(51)-Co(5)	-59.0(9)
C(50)-C(51)-C(52)-C(53)	-0.2(14)
Co(5)-C(51)-C(52)-C(53)	58.5(9)
C(50)-C(51)-C(52)-Co(5)	-58.7(8)
C(51)-C(52)-C(53)-C(54)	0.4(14)
Co(5)-C(52)-C(53)-C(54)	59.3(9)
C(51)-C(52)-C(53)-Co(5)	-58.9(8)
C(51)-C(50)-C(54)-C(53)	0.3(14)
Co(5)-C(50)-C(54)-C(53)	-59.1(9)
C(51)-C(50)-C(54)-Co(5)	59.4(8)
C(52)-C(53)-C(54)-C(50)	-0.4(15)
Co(5)-C(53)-C(54)-C(50)	59.4(9)
C(52)-C(53)-C(54)-Co(5)	-59.8(9)
C(59)-C(55)-C(56)-C(57)	-0.2(14)
Co(6)-C(55)-C(56)-C(57)	-59.0(9)
C(59)-C(55)-C(56)-Co(6)	58.8(8)
C(55)-C(56)-C(57)-C(58)	0.7(14)
Co(6)-C(56)-C(57)-C(58)	-58.7(8)
C(55)-C(56)-C(57)-Co(6)	59.4(9)
C(56)-C(57)-C(58)-C(59)	-1.0(14)
Co(6)-C(57)-C(58)-C(59)	-60.1(8)
C(56)-C(57)-C(58)-Co(6)	59.1(9)
C(57)-C(58)-C(59)-C(55)	0.9(13)
Co(6)-C(58)-C(59)-C(55)	-58.8(8)
C(57)-C(58)-C(59)-Co(6)	59.7(8)
C(56)-C(55)-C(59)-C(58)	-0.5(13)
Co(6)-C(55)-C(59)-C(58)	58.2(8)
C(56)-C(55)-C(59)-Co(6)	-58.7(8)
C(64)-C(60)-C(61)-C(62)	-0.4(13)
Co(6)-C(60)-C(61)-C(62)	59.6(8)
C(64)-C(60)-C(61)-Co(6)	-60.0(8)
C(60)-C(61)-C(62)-C(63)	-0.2(12)
Co(6)-C(61)-C(62)-C(63)	59.0(8)
C(60)-C(61)-C(62)-Co(6)	-59.2(8)
C(61)-C(62)-C(63)-C(64)	0.7(12)
Co(6)-C(62)-C(63)-C(64)	59.3(8)
C(61)-C(62)-C(63)-Co(6)	-58.6(7)
C(61)-C(60)-C(64)-C(63)	0.8(13)
Co(6)-C(60)-C(64)-C(63)	-58.5(8)
C(61)-C(60)-C(64)-Co(6)	59.2(8)
C(62)-C(63)-C(64)-C(60)	-0.9(13)
Co(6)-C(63)-C(64)-C(60)	58.4(8)
C(62)-C(63)-C(64)-Co(6)	-59.3(8)
N(1)-C(65)-C(66)-C(67)	-130(7)
C(65)-C(66)-C(67)-C(68)	-176.0(18)
C(68)-C(67)-C(66A)-C(65)	154(2)
N(1)-C(65)-C(66A)-C(67)	123(7)

C(69)-C(70)-C(71)-C(72)	64(5)
C(69A)-C(70A)-C(71A)-C(72A)	60(5)
