Supplementary Materials

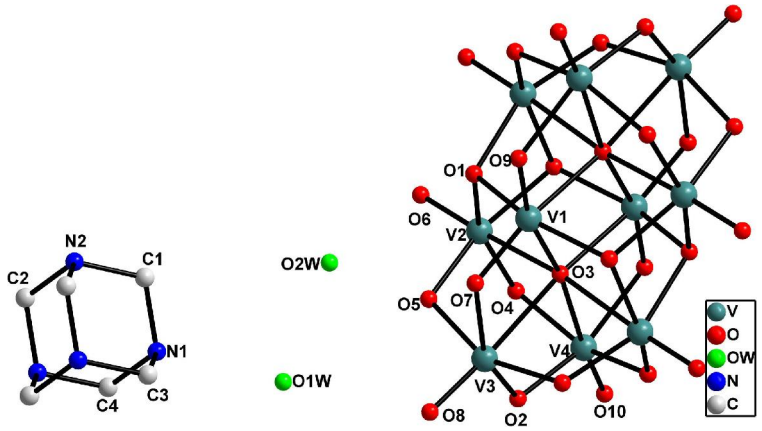

Fig. S1 A view of the asymmetric unit and some symmetry-related atoms in the structure of 1. H atoms are omitted for clarity.

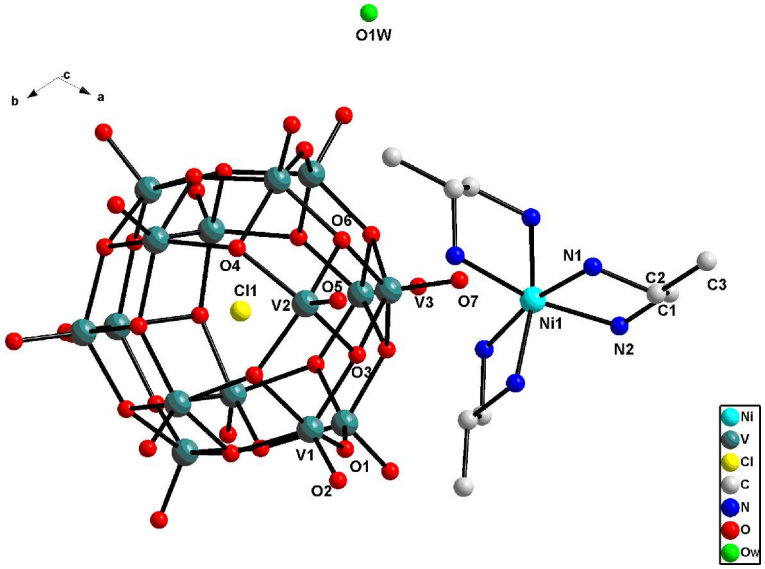

Fig. S2 A view of the asymmetric unit and some symmetry-related atoms in the structure of **2**. H atoms are omitted for clarity.

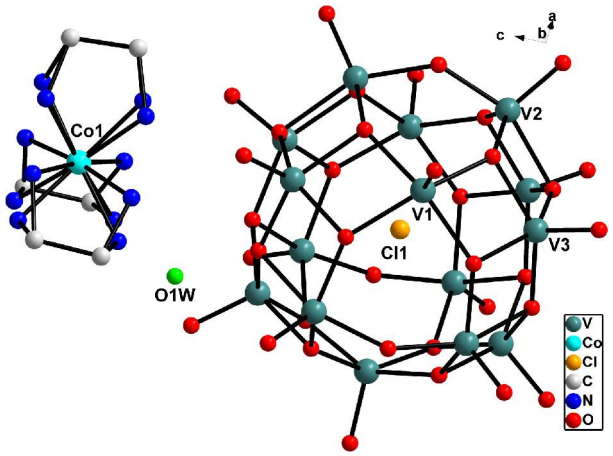

Fig. S3 A view of the asymmetric unit and some symmetry-related atoms in the structure of **3.** The $[Co(en)_3]^{2+}$ is disorder.

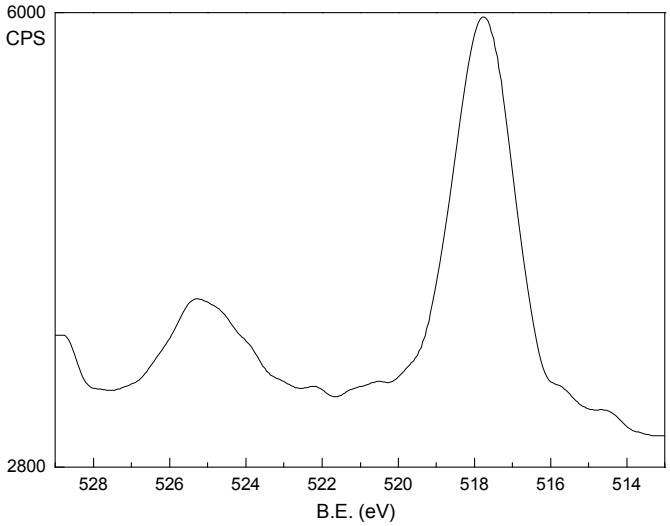

Fig. S4 XPS spectrum for V in compound **1.**

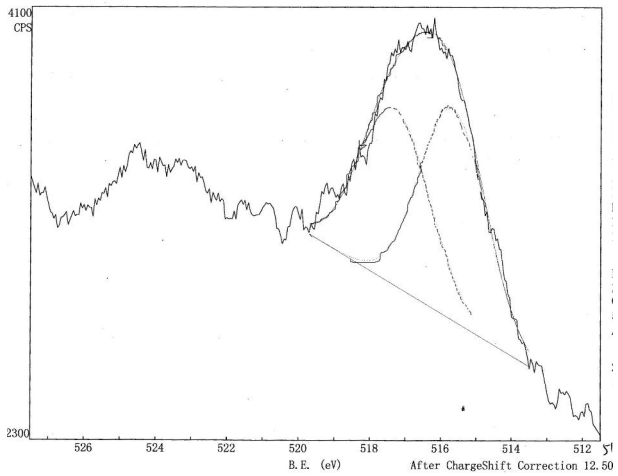

Fig. S5 XPS spectrum for V in compound **2**.

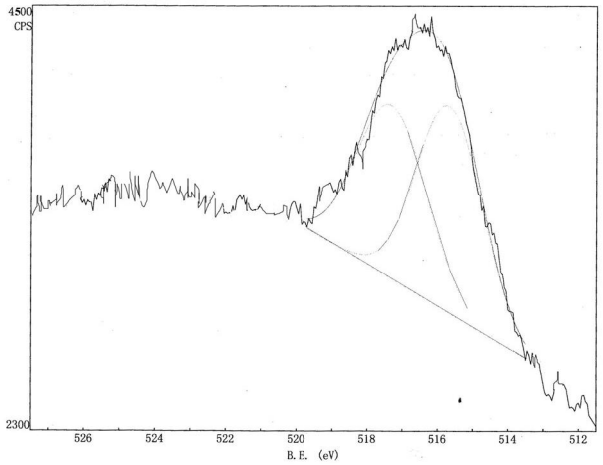

Fig. S6 XPS spectrum for V in compound **3**.

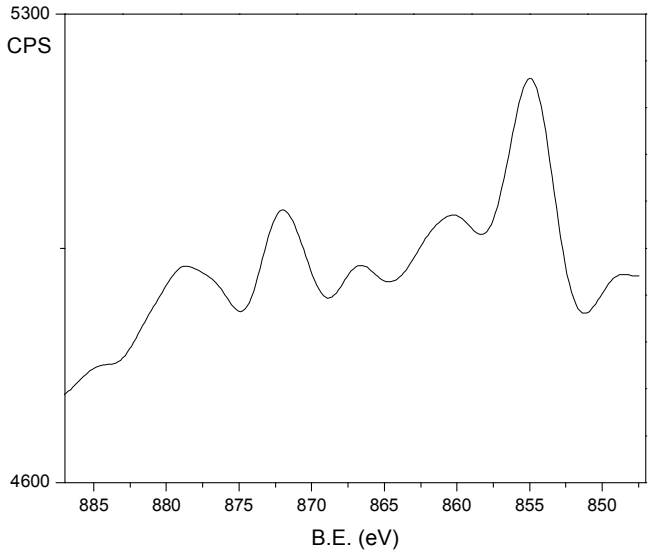

Fig. S7XPS spectrum for Ni in compound **2**.

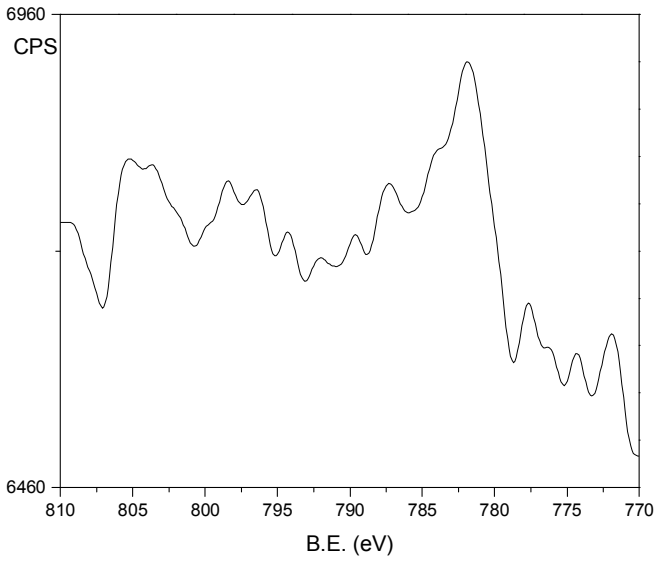

Fig. S8 XPS spectrum for Co in compound **3**.

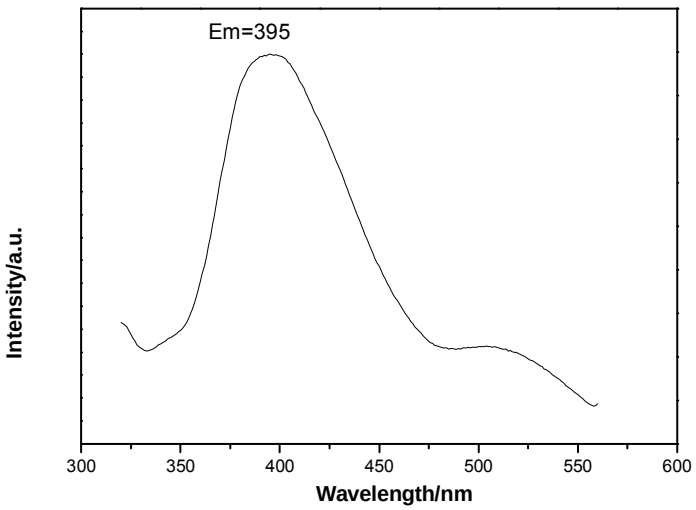

Fig. S9 .Emission spectrum of HTMA ligand in DMF solution at room temperature.

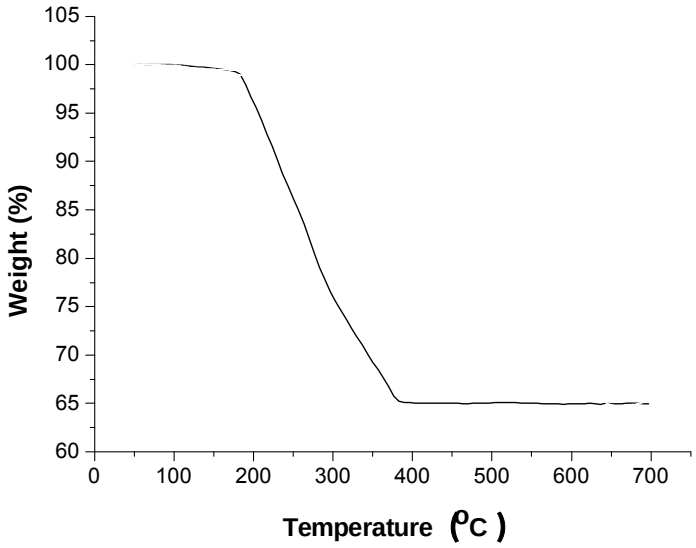

Fig. S10 TG curve for compound **1**

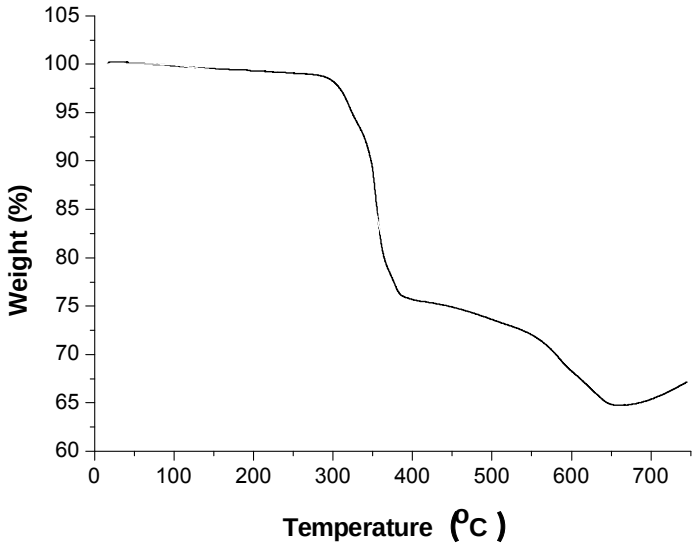

Fig. S11 TG curve for compound **2**

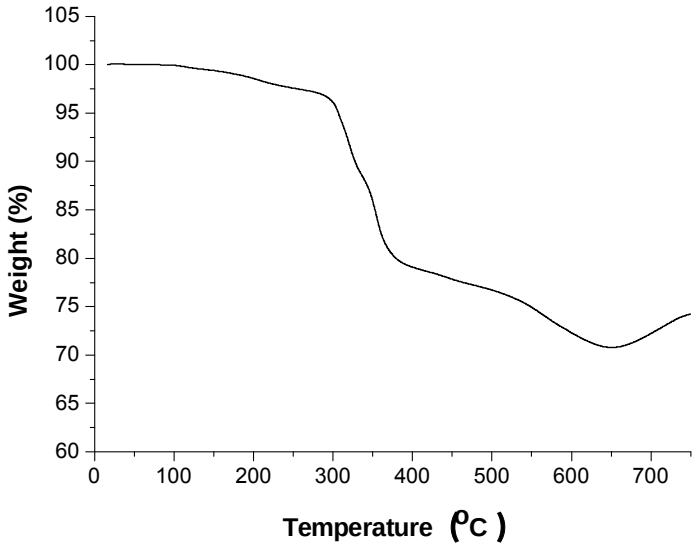

Fig. S12 TG curve for compound **3**

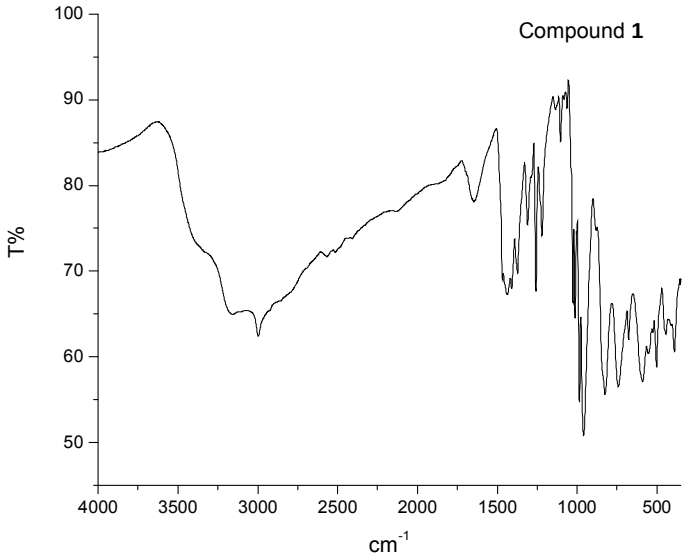

Fig. S13 IR spectrum for compound **1**.

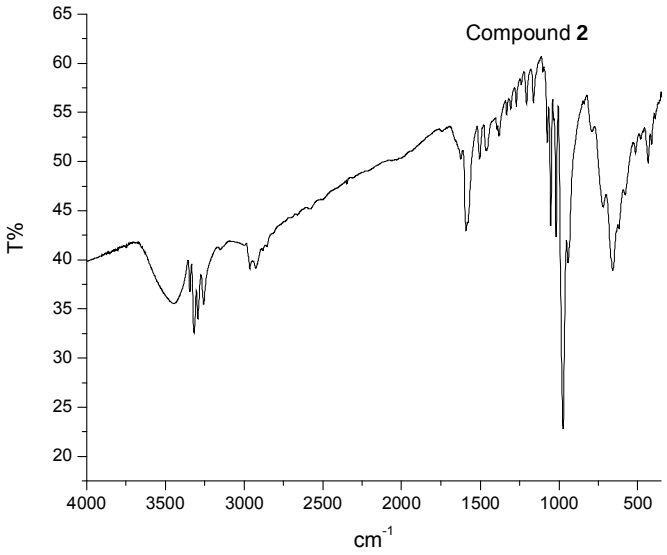

Fig. S14 IR spectrum for compound **2**.

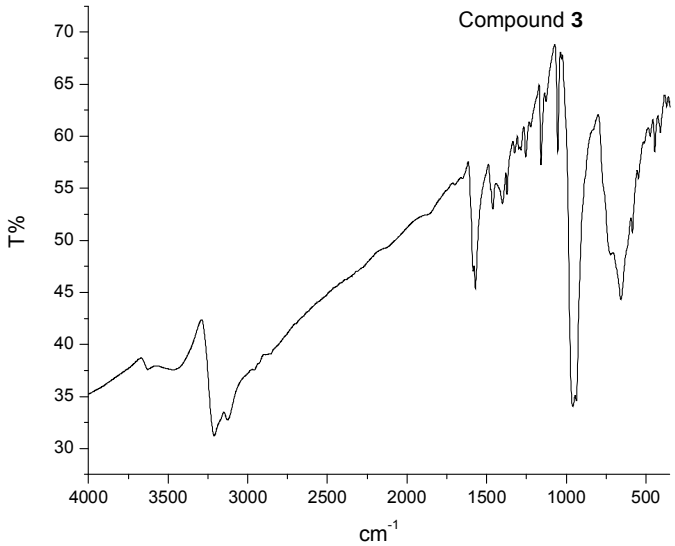

Fig. S15 IR spectrum for compound **3**.

Table S1 Bond lengths and angles for **1**-**3.**

Compound **1**			
V(1)-O(7)	1.689(3)	V(2)-O(6)	1.611(2)
V(1)-O(9)	1.695(3)	V(2)-O(4)	1.799(2)
V(1)-O(1)#1	1.9298(19)	V(2)-O(5)	1.901(2)
V(1)-O(1)	1.9298(19)	V(2)-O(1)#3	1.9553(19)
V(1)-O(3)	2.099(3)	V(2)-O(1)	2.023(2)
V(1)-O(3)#2	2.138(2)	V(2)-O(3)	2.2525(7)
V(1)-V(4)#2	3.0741(15)	V(2)-V(2)#3	3.0174(16)
V(1)-V(3)	3.0850(16)	V(2)-V(4)	3.1125(9)
V(1)-V(2)#2	3.1454(7)	V(2)-V(1)#2	3.1454(7)
V(1)-V(2)#3	3.1454(7)	V(4)-O(10)	1.603(3)
V(3)-O(8)	1.603(3)	V(4)-O(2)	1.861(3)
V(3)-O(2)	1.796(3)	V(4)-O(4)	1.891(2)
V(3)-O(5)#1	1.908(2)	V(4)-O(4)#1	1.891(2)
V(3)-O(5)	1.908(2)	V(4)-O(9)#2	2.004(3)
V(3)-O(7)	2.063(3)	V(4)-O(3)	2.320(3)
V(3)-O(3)	2.315(3)	V(4)-V(1)#2	3.0741(15)
V(3)-V(4)	3.0665(11)	V(4)-V(2)#1	3.1125(9)
O(1)-V(2)#3	1.9553(19)	O(3)-V(2)#1	2.2524(7)
O(3)-V(1)#2	2.138(2)	O(9)-V(4)#2	2.004(3)
N(1)-C(4)	1.471(4)	C(2)-N(2)#4	1.488(4)
N(1)-C(1)	1.474(4)	C(2)-H(2A)	0.9700
N(1)-C(3)	1.482(4)	C(2)-H(2B)	0.9700
N(2)-C(2)	1.488(4)	C(3)-N(1)#4	1.482(4)
N(2)-C(4)#4	1.497(4)	C(3)-H(3A)	0.9700
N(2)-C(1)	1.492(4)	C(3)-H(3B)	0.9700

C(1)-H(1A)	0.9700	C(4)-N(2)#4	1.497(4)
C(1)-H(1B)	0.9700	C(4)-H(4A)	0.9700
C(4)-H(4B)	0.9700		

O(7)-V(1)-O(9)	107.99(14)	O(7)-V(3)-V(4)	122.44(8)
O(7)-V(1)-O(1)#1	97.45(6)	O(3)-V(3)-V(4)	48.65(7)
O(9)-V(1)-O(1)#1	96.32(6)	O(8)-V(3)-V(1)	130.59(13)
O(7)-V(1)-O(1)	97.45(6)	O(2)-V(3)-V(1)	125.21(9)
O(9)-V(1)-O(1)	96.32(6)	O(5)#1-V(3)-V(1)	78.80(6)
O(1)#1-V(1)-O(1)	156.43(11)	O(5)-V(3)-V(1)	78.80(6)
O(7)-V(1)-O(3)	87.47(12)	O(7)-V(3)-V(1)	30.92(8)
O(9)-V(1)-O(3)	164.54(12)	O(3)-V(3)-V(1)	42.86(6)
O(1)#1-V(1)-O(3)	81.26(6)	V(4)-V(3)-V(1)	91.52(3)
O(1)-V(1)-O(3)	81.26(6)	O(10)-V(4)-O(2)	104.16(16)
O(7)-V(1)-O(3)#2	165.95(12)	O(10)-V(4)-O(4)	102.15(6)
O(9)-V(1)-O(3)#2	86.06(12)	O(2)-V(4)-O(4)	90.08(6)
O(1)#1-V(1)-O(3)#2	80.56(6)	O(10)-V(4)-O(4)#1	102.15(6)
O(1)-V(1)-O(3)#2	80.56(6)	O(2)-V(4)-O(4)#1	90.08(6)
O(3)-V(1)-O(3)#2	78.47(11)	O(4)-V(4)-O(4)#1	154.89(12)
O(7)-V(1)-V(4)#2	145.13(10)	O(10)-V(4)-O(9)#2	100.28(15)
O(9)-V(1)-V(4)#2	37.14(9)	O(2)-V(4)-O(9)#2	155.56(12)
O(1)#1-V(1)-V(4)#2	89.08(6)	O(4)-V(4)-O(9)#2	84.77(6)
O(1)-V(1)-V(4)#2	89.08(6)	O(4)#1-V(4)-O(9)#2	84.77(6)
O(3)-V(1)-V(4)#2	127.39(8)	O(10)-V(4)-O(3)	174.97(14)
O(3)#2-V(1)-V(4)#2	48.92(7)	O(2)-V(4)-O(3)	80.87(11)
O(7)-V(1)-V(3)	38.88(10)	O(4)-V(4)-O(3)	77.62(6)
O(9)-V(1)-V(3)	146.87(9)	O(4)#1-V(4)-O(3)	77.62(6)

O(1)#1-V(1)-V(3)	90.11(6)	O(9)#2-V(4)-O(3)	74.69(10)
O(1)-V(1)-V(3)	90.11(6)	O(10)-V(4)-V(3)	136.53(12)
O(3)-V(1)-V(3)	48.60(7)	O(2)-V(4)-V(3)	32.37(9)
O(3)#2-V(1)-V(3)	127.07(7)	O(4)-V(4)-V(3)	83.38(6)
V(4)#2-V(1)-V(3)	175.99(3)	O(4)#1-V(4)-V(3)	83.38(6)
O(7)-V(1)-V(2)#2	133.66(2)	O(9)#2-V(4)-V(3)	123.19(8)
O(9)-V(1)-V(2)#2	84.17(7)	O(3)-V(4)-V(3)	48.50(6)
O(1)#1-V(1)-V(2)#2	36.21(5)	O(10)-V(4)-V(1)#2	130.98(12)
O(1)-V(1)-V(2)#2	126.21(6)	O(2)-V(4)-V(1)#2	124.86(9)
O(3)-V(1)-V(2)#2	85.02(5)	O(4)-V(4)-V(1)#2	79.68(6)
O(3)#2-V(1)-V(2)#2	45.713(15)	O(4)#1-V(4)-V(1)#2	79.68(6)
V(4)#2-V(1)-V(2)#2	60.044(18)	O(9)#2-V(4)-V(1)#2	30.70(8)
V(3)-V(1)-V(2)#2	117.63(2)	O(3)-V(4)-V(1)#2	43.99(7)
O(7)-V(1)-V(2)#3	133.66(2)	V(3)-V(4)-V(1)#2	92.49(3)
O(9)-V(1)-V(2)#3	84.17(7)	O(10)-V(4)-V(2)#1	133.742(18)
O(1)#1-V(1)-V(2)#3	126.21(6)	O(2)-V(4)-V(2)#1	82.47(6)
O(1)-V(1)-V(2)#3	36.22(5)	O(4)-V(4)-V(2)#1	123.81(7)
O(3)-V(1)-V(2)#3	85.02(5)	O(4)#1-V(4)-V(2)#1	31.59(6)
O(3)#2-V(1)-V(2)#3	45.713(15)	O(9)#2-V(4)-V(2)#1	80.68(6)
V(4)#2-V(1)-V(2)#3	60.044(18)	O(3)-V(4)-V(2)#1	46.197(16)
V(3)-V(1)-V(2)#3	117.63(2)	V(3)-V(4)-V(2)#1	61.655(19)
V(2)#2-V(1)-V(2)#3	91.10(3)	V(1)#2-V(4)-V(2)#1	61.11(2)
O(6)-V(2)-O(4)	103.46(10)	O(10)-V(4)-V(2)	133.741(17)
O(6)-V(2)-O(5)	100.81(10)	O(2)-V(4)-V(2)	82.47(6)
O(4)-V(2)-O(5)	93.19(10)	O(4)-V(4)-V(2)	31.59(6)
O(6)-V(2)-O(1)#3	101.13(10)	O(4)#1-V(4)-V(2)	123.82(7)
O(4)-V(2)-O(1)#3	92.28(9)	O(9)#2-V(4)-V(2)	80.68(6)

O(5)-V(2)-O(1)#3	155.45(9)	O(3)-V(4)-V(2)	46.197(16)
O(6)-V(2)-O(1)	99.59(10)	V(3)-V(4)-V(2)	61.656(18)
O(4)-V(2)-O(1)	156.25(9)	V(1)#2-V(4)-V(2)	61.11(2)
O(5)-V(2)-O(1)	87.99(9)	V(2)#1-V(4)-V(2)	92.34(3)
O(1)#3-V(2)-O(1)	77.63(9)	V(1)-O(1)-V(2)#3	108.11(9)
O(6)-V(2)-O(3)	175.11(10)	V(1)-O(1)-V(2)	107.19(9)
O(4)-V(2)-O(3)	81.25(9)	V(2)#3-O(1)-V(2)	98.63(9)
O(5)-V(2)-O(3)	80.05(9)	V(3)-O(2)-V(4)	113.94(15)
O(1)#3-V(2)-O(3)	77.17(9)	V(1)-O(3)-V(1)#2	101.53(11)
O(1)-V(2)-O(3)	75.60(9)	V(1)-O(3)-V(2)#1	93.92(6)
O(6)-V(2)-V(2)#3	90.04(8)	V(1)#2-O(3)-V(2)#1	91.49(6)
O(4)-V(2)-V(2)#3	133.79(7)	V(1)-O(3)-V(2)	93.92(6)
O(5)-V(2)-V(2)#3	127.83(7)	V(1)#2-O(3)-V(2)	91.49(6)
O(1)#3-V(2)-V(2)#3	41.53(6)	V(2)#1-O(3)-V(2)	170.89(13)
O(1)-V(2)-V(2)#3	39.84(6)	V(1)-O(3)-V(3)	88.54(9)
O(3)-V(2)-V(2)#3	85.68(7)	V(1)#2-O(3)-V(3)	169.94(13)
O(6)-V(2)-V(4)	136.76(8)	V(2)#1-O(3)-V(3)	87.78(6)
O(4)-V(2)-V(4)	33.40(7)	V(2)-O(3)-V(3)	87.78(6)
O(5)-V(2)-V(4)	84.01(7)	V(1)-O(3)-V(4)	171.38(13)
O(1)#3-V(2)-V(4)	87.51(6)	V(1)#2-O(3)-V(4)	87.09(9)
O(1)-V(2)-V(4)	123.61(6)	V(2)#1-O(3)-V(4)	85.78(6)
O(3)-V(2)-V(4)	48.03(7)	V(2)-O(3)-V(4)	85.78(6)
V(2)#3-V(2)-V(4)	120.89(2)	V(3)-O(3)-V(4)	82.84(9)
O(6)-V(2)-V(1)#2	136.26(8)	V(2)-O(4)-V(4)	115.00(10)
O(4)-V(2)-V(1)#2	78.85(7)	V(2)-O(5)-V(3)	112.47(10)
O(5)-V(2)-V(1)#2	122.82(7)	V(1)-O(7)-V(3)	110.20(14)
O(1)#3-V(2)-V(1)#2	35.67(6)	V(1)-O(9)-V(4)#2	112.16(14)

O(1)-V(2)-V(1)#2	80.61(6)	C(4)-N(1)-C(1)	109.4(3)
O(3)-V(2)-V(1)#2	42.80(6)	C(4)-N(1)-C(3)	108.9(2)
V(2)#3-V(2)-V(1)#2	62.136(19)	C(1)-N(1)-C(3)	109.0(2)
V(4)-V(2)-V(1)#2	58.84(3)	C(2)-N(2)-C(4)#4	109.0(2)
O(8)-V(3)-O(2)	104.20(16)	C(2)-N(2)-C(1)	109.4(2)
O(8)-V(3)-O(5)#1	101.18(6)	C(4)#4-N(2)-C(1)	109.0(3)
O(2)-V(3)-O(5)#1	92.26(7)	N(1)-C(1)-N(2)	110.1(2)
O(8)-V(3)-O(5)	101.18(6)	N(1)-C(1)-H(1A)	109.6
O(2)-V(3)-O(5)	92.26(7)	N(2)-C(1)-H(1A)	109.6
O(5)#1-V(3)-O(5)	155.33(12)	N(1)-C(1)-H(1B)	109.6
O(8)-V(3)-O(7)	99.66(15)	N(2)-C(1)-H(1B)	109.6
O(2)-V(3)-O(7)	156.14(12)	H(1A)-C(1)-H(1B)	108.2
O(5)#1-V(3)-O(7)	83.05(7)	N(2)-C(2)-N(2)#4	109.4(3)
O(5)-V(3)-O(7)	83.05(7)	N(2)-C(2)-H(2A)	109.8
O(8)-V(3)-O(3)	173.45(14)	N(2)#4-C(2)-H(2A)	109.8
O(2)-V(3)-O(3)	82.35(11)	N(2)-C(2)-H(2B)	109.8
O(5)#1-V(3)-O(3)	78.30(6)	N(2)#4-C(2)-H(2B)	109.8
O(5)-V(3)-O(3)	78.30(6)	H(2A)-C(2)-H(2B)	108.2
O(7)-V(3)-O(3)	73.79(10)	N(1)#4-C(3)-N(1)	110.9(3)
O(8)-V(3)-V(4)	137.90(13)	N(1)#4-C(3)-H(3A)	109.5
O(2)-V(3)-V(4)	33.70(9)	N(1)-C(3)-H(3A)	109.5
O(5)#1-V(3)-V(4)	85.20(6)	N(1)#4-C(3)-H(3B)	109.5
O(5)-V(3)-V(4)	85.20(6)	N(1)-C(3)-H(3B)	109.5
N(2)#4-C(4)-H(4A)	109.6	H(3A)-C(3)-H(3B)	108.0
N(1)-C(4)-H(4B)	109.6	N(1)-C(4)-N(2)#4	110.3(2)
N(2)#4-C(4)-H(4B)	109.6	N(1)-C(4)-H(4A)	109.6
H(4A)-C(4)-H(4B)	108.1		

Compound **2**

Ni(1)-N(1)	2.112(7)	V(3)-O(7)	1.577(9)
Ni(1)-N(1)#1	2.112(7)	V(3)-O(6)#5	1.987(5)
Ni(1)-N(1)#2	2.112(7)	V(3)-O(6)	1.987(5)
Ni(1)-N(2)#2	2.117(8)	V(3)-O(3)#5	2.024(6)
Ni(1)-N(2)#1	2.117(7)	V(3)-O(3)	2.024(6)
Ni(1)-N(2)	2.117(7)	V(3)-V(2)#5	3.0197(14)
V(1)-O(2)	1.606(6)	C(1)-C(2)	1.455(13)
V(1)-O(1)	1.822(3)	C(1)-N(1)	1.501(11)
V(1)-O(6)#3	1.895(6)	C(1)-C(3)	1.517(12)
V(1)-O(3)	1.898(6)	C(2)-N(2)	1.481(13)
V(1)-O(4)#3	2.043(6)	O(1)-V(1)#5	1.822(3)
V(1)-V(2)#3	2.940(2)	O(4)-V(2)#4	1.887(6)
V(1)-V(2)	2.9402(19)	O(4)-V(1)#4	2.043(5)
V(2)-O(5)	1.598(5)	O(6)-V(1)#4	1.895(6)
V(2)-O(4)#3	1.887(6)	V(2)-O(6)	1.917(5)
V(2)-O(4)	1.895(6)	V(2)-V(1)#4	2.939(2)
V(2)-O(3)	1.911(6)	V(2)-V(3)	3.0197(14)
N(1)-Ni(1)-N(1)#1	92.0(3)	O(7)-V(3)-O(6)#5	105.4(3)
N(1)-Ni(1)-N(1)#2	92.0(3)	O(7)-V(3)-O(6)	105.4(3)
N(1)#1-Ni(1)-N(1)#2	92.0(3)	O(6)#5-V(3)-O(6)	95.6(3)
N(1)-Ni(1)-N(2)#2	97.3(3)	O(7)-V(3)-O(3)#5	106.1(3)
N(1)#1-Ni(1)-N(2)#2	168.4(3)	O(6)#5-V(3)-O(3)#5	76.7(2)
N(1)#2-Ni(1)-N(2)#2	80.8(3)	O(6)-V(3)-O(3)#5	148.5(2)
N(1)-Ni(1)-N(2)#1	168.4(3)	O(7)-V(3)-O(3)	106.1(3)
N(1)#1-Ni(1)-N(2)#1	80.8(3)	O(6)#5-V(3)-O(3)	148.5(2)
N(1)#2-Ni(1)-N(2)#1	97.3(3)	O(6)-V(3)-O(3)	76.7(2)
N(2)#2-Ni(1)-N(2)#1	91.1(3)	O(3)#5-V(3)-O(3)	94.0(3)
N(1)-Ni(1)-N(2)	80.8(3)	O(7)-V(3)-V(2)#5	114.25(4)
N(1)#1-Ni(1)-N(2)	97.3(3)	O(6)#5-V(3)-V(2)#5	38.50(16)
N(1)#2-Ni(1)-N(2)	168.4(3)	O(6)-V(3)-V(2)#5	124.60(18)
N(2)#2-Ni(1)-N(2)	91.1(3)	O(3)#5-V(3)-V(2)#5	38.53(16)
N(2)#1-Ni(1)-N(2)	91.1(3)	O(3)-V(3)-V(2)#5	123.43(18)
O(2)-V(1)-O(1)	103.6(4)	O(7)-V(3)-V(2)	114.24(4)
O(2)-V(1)-O(6)#3	110.9(3)	O(6)#5-V(3)-V(2)	124.60(18)
O(1)-V(1)-O(6)#3	90.5(3)	O(6)-V(3)-V(2)	38.50(16)
O(2)-V(1)-O(3)	111.7(3)	O(3)#5-V(3)-V(2)	123.43(18)
O(1)-V(1)-O(3)	90.1(3)	O(3)-V(3)-V(2)	38.53(16)
O(6)#3-V(1)-O(3)	135.9(3)	V(2)#5-V(3)-V(2)	131.51(8)
O(2)-V(1)-O(4)#3	104.9(3)	C(2)-C(1)-N(1)	108.0(7)
O(1)-V(1)-O(4)#3	151.5(3)	C(2)-C(1)-C(3)	111.3(8)
O(6)#3-V(1)-O(4)#3	79.6(2)	N(1)-C(1)-C(3)	113.5(8)

O(3)-V(1)-O(4)#3	79.2(2)	C(1)-C(2)-N(2)	109.0(7)
O(2)-V(1)-V(2)#3	113.0(2)	C(1)-N(1)-Ni(1)	108.8(5)
O(1)-V(1)-V(2)#3	125.6(3)	C(2)-N(2)-Ni(1)	108.5(5)
O(6)#3-V(1)-V(2)#3	39.82(16)	V(1)#5-O(1)-V(1)	139.8(5)
O(3)-V(1)-V(2)#3	110.57(18)	V(1)-O(3)-V(2)	101.0(3)
O(4)#3-V(1)-V(2)#3	39.82(16)	V(1)-O(3)-V(3)	137.8(3)
O(2)-V(1)-V(2)	113.7(3)	V(2)-O(3)-V(3)	100.2(3)
O(1)-V(1)-V(2)	125.1(3)	V(2)#4-O(4)-V(2)	140.2(3)
O(6)#3-V(1)-V(2)	110.65(17)	V(2)#4-O(4)-V(1)#4	96.8(2)
O(3)-V(1)-V(2)	39.65(17)	V(2)-O(4)-V(1)#4	96.5(2)
O(4)#3-V(1)-V(2)	39.59(16)	V(1)#4-O(6)-V(2)	100.9(2)
V(2)#3-V(1)-V(2)	74.41(6)	V(1)#4-O(6)-V(3)	137.5(3)
O(5)-V(2)-O(4)#3	106.5(3)	V(2)-O(6)-V(3)	101.3(3)
O(5)-V(2)-O(4)	107.1(3)	O(5)-V(2)-V(1)	112.0(2)
O(4)#3-V(2)-O(4)	93.6(3)	O(4)#3-V(2)-V(1)	43.62(17)
O(5)-V(2)-O(3)	106.7(3)	O(4)-V(2)-V(1)	128.08(17)
O(4)#3-V(2)-O(3)	82.9(2)	O(3)-V(2)-V(1)	39.31(18)
O(4)-V(2)-O(3)	145.6(2)	O(6)-V(2)-V(1)	114.88(17)
O(5)-V(2)-O(6)	107.4(3)	V(1)#4-V(2)-V(1)	133.83(6)
O(4)#3-V(2)-O(6)	145.5(2)	O(5)-V(2)-V(3)	116.9(2)
O(4)-V(2)-O(6)	82.9(2)	O(4)#3-V(2)-V(3)	115.36(17)
O(3)-V(2)-O(6)	81.1(2)	O(4)-V(2)-V(3)	114.55(16)
O(5)-V(2)-V(1)#4	112.8(2)	O(3)-V(2)-V(3)	41.26(19)
O(4)#3-V(2)-V(1)#4	128.18(17)	O(6)-V(2)-V(3)	40.18(17)
O(4)-V(2)-V(1)#4	43.66(17)	V(1)#4-V(2)-V(3)	74.76(5)
O(3)-V(2)-V(1)#4	115.01(19)	V(1)-V(2)-V(3)	75.72(5)
O(6)-V(2)-V(1)#4	39.28(16)		

Compound **3**

V(1)-O(6)	1.607(13)	Co(1)-N(1)#7	1.952(10)
V(1)-O(1)#1	1.972(6)	Co(1)-N(1)#5	1.952(10)
V(1)-O(1)#2	1.972(6)	Co(1)-N(1)#6	1.953(10)
V(1)-O(1)	1.972(6)	Co(1)-N(1)#4	1.953(10)
V(1)-O(1)#3	1.972(6)	Co(1)-N(1)	1.953(10)
V(1)-V(3)#1	2.9924(17)	Co(1)-N(1)#3	1.953(10)
V(1)-V(3)	2.9925(17)	Co(1)-N(2)#3	1.974(9)
V(2)-O(5)	1.597(8)	Co(1)-N(2)	1.974(9)
V(2)-O(4)	1.842(5)	Co(1)-N(2)#4	1.974(9)
V(2)-O(1)#4	1.895(7)	Co(1)-N(2)#6	1.974(9)
V(2)-O(1)	1.895(7)	Co(1)-N(2)#5	1.974(9)
V(2)-O(2)	2.055(7)	Co(1)-N(2)#7	1.974(9)
V(2)-V(3)#5	2.9337(17)	C(1)-N(1)#3	1.493(14)
V(2)-V(3)	2.9338(17)	C(1)-N(1)	1.493(14)
V(3)-O(3)	1.614(6)	C(1)-C(2)	1.511(15)

V(3)-O(2)#6	1.893(2)	C(2)-N(2)	1.536(13)
V(3)-O(2)	1.893(2)	C(2)-N(2)#3	1.536(13)
V(3)-O(1)	1.925(5)	O(2)-V(3)#5	1.893(2)
V(3)-O(1)#3	1.925(5)	O(4)-V(2)#1	1.842(5)
V(3)-V(2)#6	2.9337(17)		
O(6)-V(1)-O(1)#1	105.97(16)	N(1)#5-Co(1)-N(2)#3	173.2(4)
O(6)-V(1)-O(1)#2	105.97(16)	N(1)#6-Co(1)-N(2)#3	94.0(4)
O(1)#1-V(1)-O(1)#2	78.3(3)	N(1)#4-Co(1)-N(2)#3	129.6(4)
O(6)-V(1)-O(1)	105.97(16)	N(1)-Co(1)-N(2)#3	84.5(4)
O(1)#1-V(1)-O(1)	93.0(3)	N(1)#3-Co(1)-N(2)#3	69.2(4)
O(1)#2-V(1)-O(1)	148.1(3)	N(1)#7-Co(1)-N(2)	173.2(4)
O(6)-V(1)-O(1)#3	105.97(16)	N(1)#5-Co(1)-N(2)	133.2(5)
O(1)#1-V(1)-O(1)#3	148.1(3)	N(1)#6-Co(1)-N(2)	129.6(4)
O(1)#2-V(1)-O(1)#3	93.0(3)	N(1)#4-Co(1)-N(2)	94.0(4)
O(1)-V(1)-O(1)#3	78.3(3)	N(1)-Co(1)-N(2)	69.2(4)
O(6)-V(1)-V(3)#1	114.15(5)	N(1)#3-Co(1)-N(2)	84.5(4)
O(1)#1-V(1)-V(3)#1	39.26(16)	N(2)#3-Co(1)-N(2)	40.2(6)
O(1)#2-V(1)-V(3)#1	39.26(16)	N(1)#7-Co(1)-N(2)#4	129.6(4)
O(1)-V(1)-V(3)#1	123.31(18)	N(1)#5-Co(1)-N(2)#4	84.5(4)
O(1)#3-V(1)-V(3)#1	123.31(18)	N(1)#6-Co(1)-N(2)#4	173.2(4)
O(6)-V(1)-V(3)	114.15(5)	N(1)#4-Co(1)-N(2)#4	69.2(4)
O(1)#1-V(1)-V(3)	123.31(18)	N(1)-Co(1)-N(2)#4	94.0(4)
O(1)#2-V(1)-V(3)	123.31(18)	N(1)#3-Co(1)-N(2)#4	133.2(4)
O(1)-V(1)-V(3)	39.26(16)	N(2)#3-Co(1)-N(2)#4	90.4(4)
O(1)#3-V(1)-V(3)	39.26(16)	N(2)-Co(1)-N(2)#4	56.4(6)
V(3)#1-V(1)-V(3)	131.70(10)	N(1)#7-Co(1)-N(2)#6	84.5(4)
O(5)-V(2)-O(4)	104.3(5)	N(1)#5-Co(1)-N(2)#6	129.6(4)
O(5)-V(2)-O(1)#4	112.09(16)	N(1)#6-Co(1)-N(2)#6	69.2(4)
O(4)-V(2)-O(1)#4	89.8(2)	N(1)#4-Co(1)-N(2)#6	173.2(4)
O(5)-V(2)-O(1)	112.10(16)	N(1)-Co(1)-N(2)#6	133.2(4)
O(4)-V(2)-O(1)	89.8(2)	N(1)#3-Co(1)-N(2)#6	94.0(4)
O(1)#4-V(2)-O(1)	134.4(3)	N(2)#3-Co(1)-N(2)#6	56.4(6)
O(5)-V(2)-O(2)	102.5(4)	N(2)-Co(1)-N(2)#6	90.4(4)
O(4)-V(2)-O(2)	153.2(4)	N(2)#4-Co(1)-N(2)#6	109.4(5)
O(1)#4-V(2)-O(2)	80.11(16)	N(1)#7-Co(1)-N(2)#5	94.0(4)
O(1)-V(2)-O(2)	80.11(16)	N(1)#5-Co(1)-N(2)#5	69.2(4)
O(5)-V(2)-V(3)#5	111.8(3)	N(1)#6-Co(1)-N(2)#5	133.2(4)
O(4)-V(2)-V(3)#5	126.1(2)	N(1)#4-Co(1)-N(2)#5	84.5(4)
O(1)#4-V(2)-V(3)#5	40.20(15)	N(1)-Co(1)-N(2)#5	129.6(5)
O(1)-V(2)-V(3)#5	110.74(17)	N(1)#3-Co(1)-N(2)#5	173.2(4)
O(2)-V(2)-V(3)#5	39.93(6)	N(2)#3-Co(1)-N(2)#5	109.4(5)
O(5)-V(2)-V(3)	111.8(3)	N(2)-Co(1)-N(2)#5	90.4(4)
O(4)-V(2)-V(3)	126.1(2)	N(2)#4-Co(1)-N(2)#5	40.2(6)

O(1)#4-V(2)-V(3)	110.74(17)	N(2)#6-Co(1)-N(2)#5	90.4(4)
O(1)-V(2)-V(3)	40.20(15)	N(1)#7-Co(1)-N(2)#7	69.2(4)
O(2)-V(2)-V(3)	39.93(6)	N(1)#5-Co(1)-N(2)#7	94.0(4)
V(3)#5-V(2)-V(3)	74.64(7)	N(1)#6-Co(1)-N(2)#7	84.5(4)
O(3)-V(3)-O(2)#6	106.3(2)	N(1)#4-Co(1)-N(2)#7	133.2(4)
O(3)-V(3)-O(2)	106.3(2)	N(1)-Co(1)-N(2)#7	173.2(4)
O(2)#6-V(3)-O(2)	92.6(4)	N(1)#3-Co(1)-N(2)#7	129.6(5)
O(3)-V(3)-O(1)	107.7(2)	N(2)#3-Co(1)-N(2)#7	90.4(4)
O(2)#6-V(3)-O(1)	145.5(2)	N(2)-Co(1)-N(2)#7	109.4(5)
O(2)-V(3)-O(1)	83.6(3)	N(2)#4-Co(1)-N(2)#7	90.4(4)
O(3)-V(3)-O(1)#3	107.7(2)	N(2)#6-Co(1)-N(2)#7	40.2(6)
O(2)#6-V(3)-O(1)#3	83.6(3)	N(2)#5-Co(1)-N(2)#7	56.4(6)
O(2)-V(3)-O(1)#3	145.5(2)	N(1)#3-C(1)-N(1)	59.0(9)
O(1)-V(3)-O(1)#3	80.6(4)	N(1)#3-C(1)-C(2)	103.4(7)
O(3)-V(3)-V(2)#6	112.10(5)	N(1)-C(1)-C(2)	103.4(7)
O(2)#6-V(3)-V(2)#6	44.18(19)	C(1)-C(2)-N(2)	104.0(7)
O(2)-V(3)-V(2)#6	128.10(19)	C(1)-C(2)-N(2)#3	104.0(7)
O(1)-V(3)-V(2)#6	114.87(17)	N(2)-C(2)-N(2)#3	52.4(8)
O(1)#3-V(3)-V(2)#6	39.45(19)	C(1)-N(1)-Co(1)	109.4(6)
O(3)-V(3)-V(2)	112.10(5)	C(2)-N(2)-Co(1)	108.7(6)
O(2)#6-V(3)-V(2)	128.10(19)	V(2)-O(1)-V(3)	100.4(2)
O(2)-V(3)-V(2)	44.18(19)	V(2)-O(1)-V(1)	139.8(3)
O(1)-V(3)-V(2)	39.45(19)	V(3)-O(1)-V(1)	100.3(3)
O(1)#3-V(3)-V(2)	114.87(17)	V(3)#5-O(2)-V(3)	140.0(3)
V(2)#6-V(3)-V(2)	134.55(8)	V(3)#5-O(2)-V(2)	95.90(19)
O(3)-V(3)-V(1)	117.0(2)	V(3)-O(2)-V(2)	95.90(19)
O(2)#6-V(3)-V(1)	115.78(18)	V(2)#1-O(4)-V(2)	136.2(7)
O(2)-V(3)-V(1)	115.78(18)	N(1)#6-Co(1)-N(1)#4	111.4(6)
O(1)-V(3)-V(1)	40.41(18)	N(1)#7-Co(1)-N(1)	111.4(6)
O(1)#3-V(3)-V(1)	40.41(18)	N(1)#5-Co(1)-N(1)	91.5(4)
V(2)#6-V(3)-V(1)	75.58(4)	N(1)#6-Co(1)-N(1)	91.5(4)
V(2)-V(3)-V(1)	75.58(4)	N(1)#4-Co(1)-N(1)	53.5(6)
N(1)#7-Co(1)-N(1)#5	53.5(6)	N(1)#7-Co(1)-N(1)#3	91.5(4)
N(1)#7-Co(1)-N(1)#6	44.2(7)	N(1)#5-Co(1)-N(1)#3	111.4(6)
N(1)#5-Co(1)-N(1)#6	91.5(4)	N(1)#6-Co(1)-N(1)#3	53.5(6)
N(1)#7-Co(1)-N(1)#4	91.5(4)	N(1)#4-Co(1)-N(1)#3	91.5(4)
N(1)#5-Co(1)-N(1)#4	44.2(7)	N(1)-Co(1)-N(1)#3	44.2(7)
N(1)#7-Co(1)-N(2)#3	133.2(5)		

Symmetry transformations used to generate equivalent atoms: #1 x,-y,z; #2 -x,-y,-z+1; #3 -x,y,-z+1; #4 -x+1,y,-z for **1.** #1 -y+1,x-y,z; #2 -x+y+1,-x+1,z; #3 -y+1,x-y+1,z; #4 -x+y,-x+1,z; #5 x,y,-z+3/2 for **2.** #1 x,y,-z+1/2; #2 -y+1,-x+1,-z+1/2; #3 -y+1,-x+1,z; #4 x,x-y+1,z; #5 -y+1,x-y+1,z; #6 -x+y,-x+1,z; #7 -x+y,y,z for **3.**