Electronic supplementary information

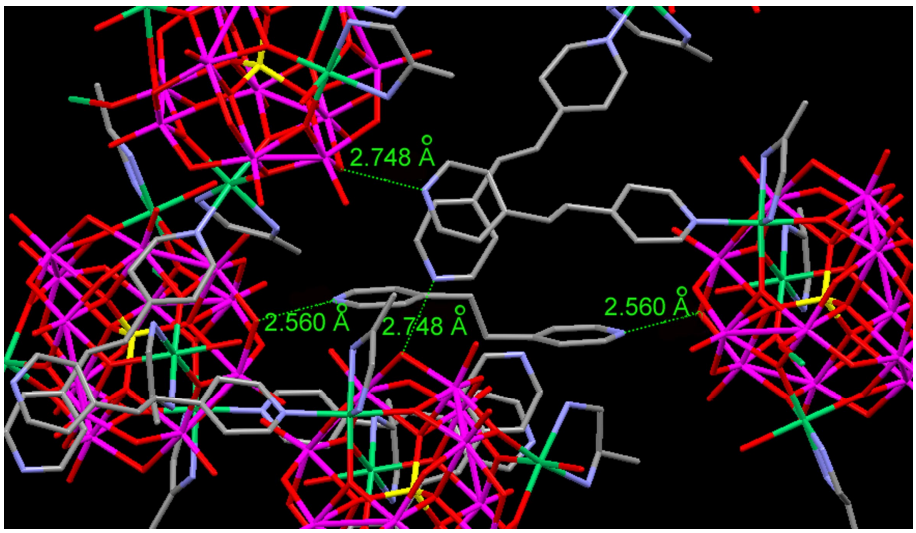

Fig. S1 Possible hydrogen bonding interactions between bpe and bridging O atoms for compound **1**. Hydrogen atoms are omitted for clarity.

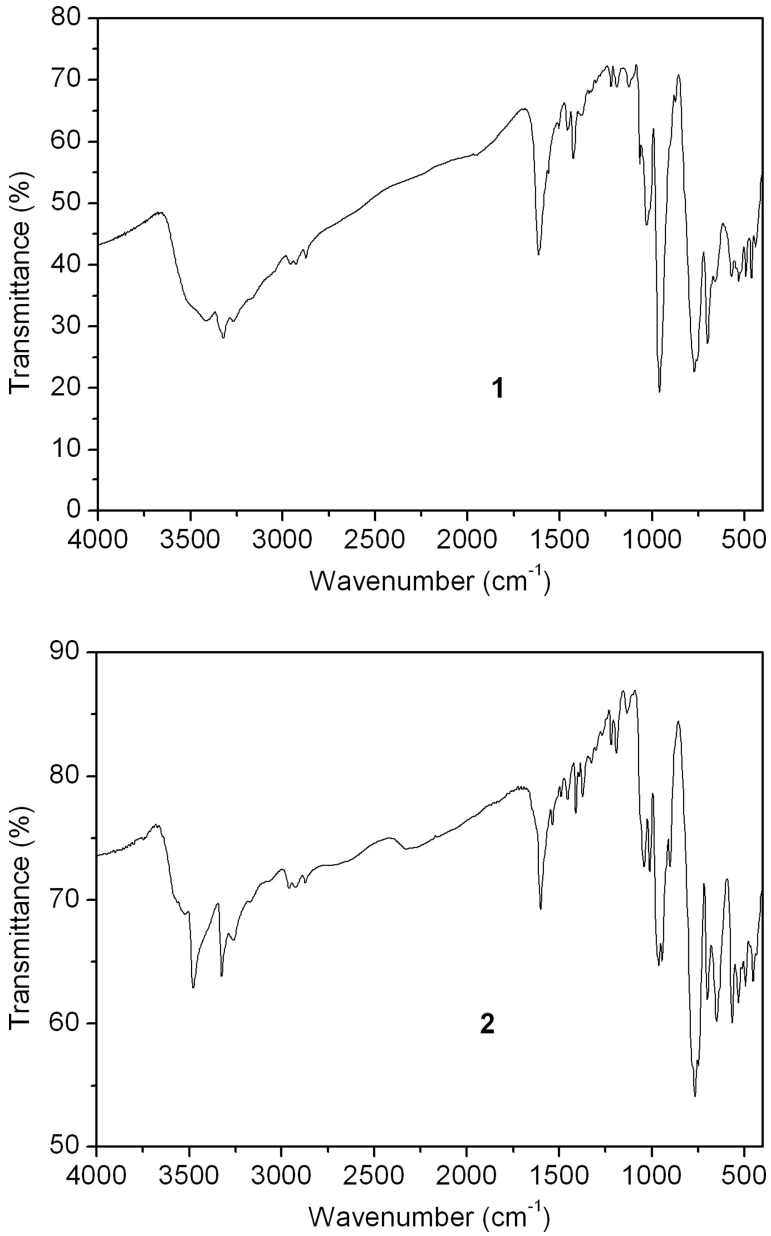

Fig. S2 IR spectra of **1** and **2**.

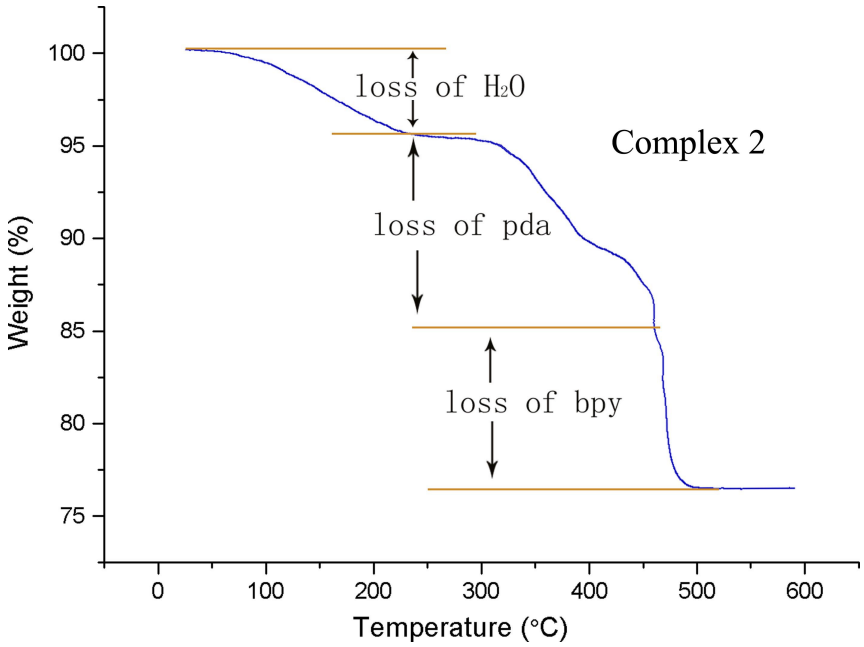

Fig. S3 TGA curve of complex **2**.

Table S1 Selected bond lengths (Å) and angles (°) for **1** and **2**.

Compound **1**			
Ge-O(4)	1.764(6)	Mo(8)-O(8)	2.012(7)
Ge-O(16)	1.774(6)	Mo(8)-O(17)	2.085(7)
Ge-O(5)	1.778(6)	Mo(8)-O(4)	2.343(6)
Ge-O(10)	1.789(6)	Mo(8)-Mo(11)	2.5739(13)
Mo(1)-O(23)	1.742(6)	Mo(9)-O(36)	1.678(8)
Mo(1)-O(27)	1.832(7)	Mo(9)-O(6)	1.942(7)
Mo(1)-O(14)	1.862(7)	Mo(9)-O(1)	1.951(7)
Mo(1)-O(22)	1.966(7)	Mo(9)-O(31)	2.009(7)
Mo(1)-O(19)	1.980(7)	Mo(9)-O(20)	2.102(7)
Mo(1)-O(10)	2.351(6)	Mo(9)-O(16)	2.329(6)
Mo(1)-Mo(4)	3.0823(11)	Mo(10)-O(33)	1.660(7)
Mo(2)-O(35)	1.699(7)	Mo(10)-O(2)	1.949(7)
Mo(2)-O(8)	1.828(7)	Mo(10)-O(18)	1.952(6)
Mo(2)-O(13)	1.857(6)	Mo(10)-O(13)	2.029(7)
Mo(2)-O(3)	1.993(7)	Mo(10)-O(17)	2.079(7)
Mo(2)-O(9)	2.000(6)	Mo(10)-O(4)	2.370(7)
Mo(2)-O(4)	2.381(6)	Mo(11)-O(34)	1.677(8)
Mo(2)-Mo(3)	3.0917(13)	Mo(11)-O(12)	1.951(6)
Mo(3)-O(30)	1.704(7)	Mo(11)-O(11)	1.953(7)
Mo(3)-O(32)	1.855(7)	Mo(11)-O(26)	2.039(7)
Mo(3)-O(31)	1.864(7)	Mo(11)-O(37)	2.088(7)
Mo(3)-O(9)	1.975(7)	Mo(11)-O(5)	2.354(7)
Mo(3)-O(3)	1.990(6)	Mo(12)-O(39)	1.684(7)
Mo(3)-O(16)	2.398(6)	Mo(12)-O(21)	1.937(7)
Mo(4)-O(28)	1.684(7)	Mo(12)-O(15)	1.964(7)
Mo(4)-O(25)	1.833(7)	Mo(12)-O(32)	2.014(7)
Mo(4)-O(26)	1.857(7)	Mo(12)-O(20)	2.102(7)
Mo(4)-O(19)	1.994(7)	Mo(12)-O(16)	2.317(6)
Mo(4)-O(22)	2.006(7)	Ni(1)-O(11)	2.044(7)
Mo(4)-O(5)	2.392(6)	Ni(1)-O(18)	2.055(7)
Mo(5)-O(38)	1.682(7)	Ni(1)-N(3)	2.080(9)
Mo(5)-O(18)	1.951(7)	Ni(1)-N(4)	2.080(9)
Mo(5)-O(2)	1.957(6)	Ni(1)-OW1	2.131(8)
Mo(5)-O(27)	2.044(6)	Ni(1)-O(22)	2.140(7)
Mo(5)-O(7)	2.082(7)	Ni(2)-O(15)	2.057(7)
Mo(5)-O(10)	2.330(6)	Ni(2)-O(1)	2.081(7)
Mo(5)-Mo(10)	2.5677(13)	Ni(2)-N(9)	2.093(10)
Mo(6)-O(24)	1.694(7)	Ni(2)-N(8)	2.113(11)
Mo(6)-O(1)	1.938(7)	Ni(2)-N(7)	2.117(10)
Mo(6)-O(6)	1.951(6)	Ni(2)-O(19)	2.138(7)
Mo(6)-O(14)	2.020(6)	Ni(3)-N(5)	2.052(9)

Mo(6)-O(7)	2.056(7)	Ni(3)-O(2)	2.064(7)
Mo(6)-O(10)	2.320(6)	Ni(3)-N(6)	2.081(9)
Mo(6)-Mo(9)	2.5766(13)	Ni(3)-O(6)	2.094(7)
Mo(7)-O(40)	1.696(7)	Ni(3)-O(3)	2.100(6)
Mo(7)-O(21)	1.943(7)	Ni(3)-O(23)#1	2.159(7)
Mo(7)-O(15)	1.959(8)	Ni(4)-O(12)	2.047(7)
Mo(7)-O(25)	2.023(7)	Ni(4)-N(2)	2.072(9)
Mo(7)-O(37)	2.079(8)	Ni(4)-N(1)	2.073(10)
Mo(7)-O(5)	2.298(6)	Ni(4)-O(21)	2.073(7)
Mo(7)-Mo(12)	2.5763(14)	Ni(4)-O(9)	2.103(6)
Mo(8)-O(29)	1.675(7)	Ni(4)-OW2	2.146(8)
Mo(8)-O(12)	1.949(7)	Mo(8)-O(11)	1.969(7)
O(4)-Ge-O(16)	114.6(3)	O(3)-Mo(3)-O(16)	80.9(2)
O(4)-Ge-O(5)	107.5(3)	O(30)-Mo(3)-Mo(2)	95.5(3)
O(16)-Ge-O(5)	106.9(3)	O(32)-Mo(3)-Mo(2)	127.9(2)
O(4)-Ge-O(10)	107.6(3)	O(31)-Mo(3)-Mo(2)	128.3(2)
O(16)-Ge-O(10)	106.7(3)	O(9)-Mo(3)-Mo(2)	39.23(18)
O(5)-Ge-O(10)	113.8(3)	O(3)-Mo(3)-Mo(2)	39.13(19)
O(23)-Mo(1)-O(27)	99.8(3)	O(16)-Mo(3)-Mo(2)	88.35(15)
O(23)-Mo(1)-O(14)	100.5(3)	O(28)-Mo(4)-O(25)	102.4(3)
O(27)-Mo(1)-O(14)	95.8(3)	O(28)-Mo(4)-O(26)	101.9(4)
O(23)-Mo(1)-O(22)	102.1(3)	O(25)-Mo(4)-O(26)	97.1(3)
O(27)-Mo(1)-O(22)	89.1(3)	O(28)-Mo(4)-O(19)	100.3(4)
O(14)-Mo(1)-O(22)	155.8(3)	O(25)-Mo(4)-O(19)	89.5(3)
O(23)-Mo(1)-O(19)	102.0(3)	O(26)-Mo(4)-O(19)	154.9(3)
O(27)-Mo(1)-O(19)	156.1(3)	O(28)-Mo(4)-O(22)	101.3(3)
O(14)-Mo(1)-O(19)	89.6(3)	O(25)-Mo(4)-O(22)	153.9(3)
O(22)-Mo(1)-O(19)	77.1(3)	O(26)-Mo(4)-O(22)	88.3(3)
O(23)-Mo(1)-O(10)	173.6(3)	O(19)-Mo(4)-O(22)	75.8(3)
O(27)-Mo(1)-O(10)	76.0(2)	O(28)-Mo(4)-O(5)	177.6(3)
O(14)-Mo(1)-O(10)	75.3(2)	O(25)-Mo(4)-O(5)	75.7(3)
O(22)-Mo(1)-O(10)	82.9(2)	O(26)-Mo(4)-O(5)	77.0(3)
O(19)-Mo(1)-O(10)	83.0(2)	O(19)-Mo(4)-O(5)	81.3(3)
O(23)-Mo(1)-Mo(4)	96.3(2)	O(22)-Mo(4)-O(5)	80.7(2)
O(27)-Mo(1)-Mo(4)	128.5(2)	O(28)-Mo(4)-Mo(1)	94.8(3)
O(14)-Mo(1)-Mo(4)	128.7(2)	O(25)-Mo(4)-Mo(1)	128.1(2)
O(22)-Mo(1)-Mo(4)	39.59(19)	O(26)-Mo(4)-Mo(1)	126.8(2)
O(19)-Mo(1)-Mo(4)	39.3(2)	O(19)-Mo(4)-Mo(1)	38.96(19)
O(10)-Mo(1)-Mo(4)	90.17(15)	O(22)-Mo(4)-Mo(1)	38.6(2)
O(35)-Mo(2)-O(8)	102.7(3)	O(5)-Mo(4)-Mo(1)	87.56(15)
O(35)-Mo(2)-O(13)	101.4(3)	O(38)-Mo(5)-O(18)	105.0(3)
O(8)-Mo(2)-O(13)	95.7(3)	O(38)-Mo(5)-O(2)	106.7(3)
O(35)-Mo(2)-O(3)	101.2(3)	O(18)-Mo(5)-O(2)	94.6(3)
O(8)-Mo(2)-O(3)	153.7(3)	O(38)-Mo(5)-O(27)	96.2(3)

O(13)-Mo(2)-O(3)	90.2(3)	O(18)-Mo(5)-O(27)	85.1(3)
O(35)-Mo(2)-O(9)	100.0(3)	O(2)-Mo(5)-O(27)	156.3(3)
O(8)-Mo(2)-O(9)	89.4(3)	O(38)-Mo(5)-O(7)	95.5(3)
O(13)-Mo(2)-O(9)	156.3(3)	O(18)-Mo(5)-O(7)	158.0(3)
O(3)-Mo(2)-O(9)	75.8(3)	O(2)-Mo(5)-O(7)	87.1(3)
O(35)-Mo(2)-O(4)	177.0(3)	O(27)-Mo(5)-O(7)	84.7(3)
O(8)-Mo(2)-O(4)	75.1(3)	O(38)-Mo(5)-O(10)	164.7(3)
O(13)-Mo(2)-O(4)	76.9(3)	O(18)-Mo(5)-O(10)	85.1(3)
O(3)-Mo(2)-O(4)	81.4(2)	O(2)-Mo(5)-O(10)	83.5(2)
O(9)-Mo(2)-O(4)	82.1(2)	O(27)-Mo(5)-O(10)	72.9(2)
O(35)-Mo(2)-Mo(3)	94.1(3)	O(7)-Mo(5)-O(10)	73.3(2)
O(8)-Mo(2)-Mo(3)	127.7(2)	O(38)-Mo(5)-Mo(10)	99.8(2)
O(13)-Mo(2)-Mo(3)	129.1(2)	O(18)-Mo(5)-Mo(10)	48.89(19)
O(3)-Mo(2)-Mo(3)	39.06(18)	O(2)-Mo(5)-Mo(10)	48.8(2)
O(9)-Mo(2)-Mo(3)	38.66(19)	O(27)-Mo(5)-Mo(10)	133.79(19)
O(4)-Mo(2)-Mo(3)	88.90(16)	O(7)-Mo(5)-Mo(10)	135.74(19)
O(30)-Mo(3)-O(32)	101.3(3)	O(10)-Mo(5)-Mo(10)	95.48(15)
O(30)-Mo(3)-O(31)	101.8(3)	O(24)-Mo(6)-O(1)	106.4(3)
O(32)-Mo(3)-O(31)	95.9(3)	O(24)-Mo(6)-O(6)	104.8(3)
O(30)-Mo(3)-O(9)	101.2(3)	O(1)-Mo(6)-O(6)	94.3(3)
O(32)-Mo(3)-O(9)	88.9(3)	O(24)-Mo(6)-O(14)	98.0(3)
O(31)-Mo(3)-O(9)	155.0(3)	O(1)-Mo(6)-O(14)	85.1(3)
O(30)-Mo(3)-O(3)	102.2(3)	O(6)-Mo(6)-O(14)	156.3(3)
O(32)-Mo(3)-O(3)	154.3(3)	O(24)-Mo(6)-O(7)	95.4(3)
O(31)-Mo(3)-O(3)	89.4(3)	O(1)-Mo(6)-O(7)	157.1(3)
O(9)-Mo(3)-O(3)	76.4(3)	O(6)-Mo(6)-O(7)	86.7(3)
O(30)-Mo(3)-O(16)	176.1(3)	O(14)-Mo(6)-O(7)	84.9(3)
O(32)-Mo(3)-O(16)	76.1(2)	O(24)-Mo(6)-O(10)	166.6(3)
O(31)-Mo(3)-O(16)	75.8(3)	O(1)-Mo(6)-O(10)	83.4(3)
O(9)-Mo(3)-O(16)	81.6(2)	O(6)-Mo(6)-O(10)	83.0(2)

Symmetry transformations used to generate equivalent atoms:
#1 -x+1/2,y+1/2,-z+1/2 #2 -x+1/2,y-1/2,-z+1/2
#3 -x,-y,-z #4 -x,y,-z+1/2

Compound **2**

Ge-O(11)	1.767(7)	Mo(4)-Mo(9)	2.5788(14)
Ge-O(9)	1.776(7)	Mo(5)-O(34)	1.681(7)
Ge-O(6)	1.780(7)	Mo(5)-O(14)	1.940(7)
Ge-O(12)	1.785(6)	Mo(5)-O(5)	1.954(7)
Ni(1)-N(5)	2.063(10)	Mo(5)-O(33)	2.019(7)
Ni(1)-O(4)	2.074(7)	Mo(5)-O(31)	2.075(7)
Ni(1)-O(3)	2.077(7)	Mo(5)-O(6)	2.361(6)
Ni(1)-N(11)	2.094(10)	Mo(5)-Mo(6)	2.5774(14)
Ni(1)-N(6)	2.112(10)	Mo(6)-O(37)	1.670(7)
Ni(1)-O(18)	2.184(8)	Mo(6)-O(14)	1.945(8)

Ni(2)-O(2)	2.063(7)	Mo(6)-O(5)	1.947(7)
Ni(2)-N(7)	2.080(9)	Mo(6)-O(24)	2.042(7)
Ni(2)-O(14)	2.082(7)	Mo(6)-O(26)	2.061(7)
Ni(2)-N(8)	2.085(9)	Mo(6)-O(11)	2.328(7)
Ni(2)-N(9)	2.111(9)	Mo(7)-O(38)	1.700(8)
Ni(2)-O(13)	2.216(7)	Mo(7)-O(33)	1.848(7)
Ni(3)-N(2)	2.063(10)	Mo(7)-O(16)	1.864(7)
Ni(3)-N(1)	2.072(10)	Mo(7)-O(13)	1.986(7)
Ni(3)-O(1)	2.074(7)	Mo(7)-O(18)	1.989(7)
Ni(3)-O(8)	2.085(8)	Mo(7)-O(6)	2.421(7)
Ni(3)-O(10)	2.090(7)	Mo(7)-Mo(10)	3.0804(14)
Ni(3)-O(20)#1	2.187(7)	Mo(8)-O(35)	1.675(7)
Ni(4)-N(4)	2.059(10)	Mo(8)-O(8)	1.940(7)
Ni(4)-O(7)	2.063(7)	Mo(8)-O(4)	1.956(7)
Ni(4)-N(3)	2.078(10)	Mo(8)-O(28)	2.016(8)
Ni(4)-O(5)	2.082(8)	Mo(8)-O(15)	2.108(7)
Ni(4)-O(17)	2.109(7)	Mo(8)-O(9)	2.317(7)
Ni(4)-O(23)#2	2.201(7)	Mo(9)-O(30)	1.677(7)
Mo(1)-O(20)	1.719(7)	Mo(9)-O(7)	1.959(7)
Mo(1)-O(2)	1.934(7)	Mo(9)-O(3)	1.982(7)
Mo(1)-O(1)	1.954(7)	Mo(9)-O(39)	2.015(8)
Mo(1)-O(21)	2.028(7)	Mo(9)-O(15)	2.087(7)
Mo(1)-O(32)	2.110(7)	Mo(9)-O(9)	2.337(7)
Mo(1)-O(12)	2.254(7)	Mo(10)-O(22)	1.693(8)
Mo(1)-Mo(2)	2.5832(14)	Mo(10)-O(36)	1.831(7)
Mo(2)-O(25)	1.663(7)	Mo(10)-O(21)	1.832(7)
Mo(2)-O(1)	1.956(7)	Mo(10)-O(13)	1.992(7)
Mo(2)-O(2)	1.991(7)	Mo(10)-O(18)	1.999(7)
Mo(2)-O(19)	2.007(7)	Mo(10)-O(12)	2.408(7)
Mo(2)-O(26)	2.059(7)	Mo(11)-O(29)	1.700(8)
Mo(2)-O(11)	2.336(7)	Mo(11)-O(24)	1.824(7)
Mo(3)-O(40)	1.671(8)	Mo(11)-O(19)	1.833(7)
Mo(3)-O(4)	1.939(7)	Mo(11)-O(17)	2.003(7)
Mo(3)-O(8)	1.971(8)	Mo(11)-O(10)	2.015(7)
Mo(3)-O(36)	2.012(8)	Mo(11)-O(11)	2.393(7)
Mo(3)-O(32)	2.065(7)	Mo(11)-Mo(12)	3.0922(15)
Mo(3)-O(12)	2.357(6)	Mo(12)-O(27)	1.694(7)
Mo(3)-Mo(8)	2.5739(17)	Mo(12)-O(28)	1.835(7)
Mo(4)-O(23)	1.707(7)	Mo(12)-O(39)	1.869(7)
Mo(4)-O(3)	1.941(7)	Mo(12)-O(10)	1.986(7)
Mo(4)-O(7)	1.958(7)	Mo(12)-O(17)	1.989(7)
Mo(4)-O(16)	2.025(8)	Mo(12)-O(9)	2.386(7)
Mo(4)-O(31)	2.107(7)	Mo(4)-O(6)	2.245(7)
O(11)-Ge-O(9)	115.0(3)	N(4)-Ni(4)-O(7)	174.5(3)

O(11)-Ge-O(6)	108.1(3)	N(4)-Ni(4)-N(3)	82.4(4)
O(9)-Ge-O(6)	106.3(3)	O(7)-Ni(4)-N(3)	92.6(3)
O(11)-Ge-O(12)	106.1(3)	N(4)-Ni(4)-O(5)	95.2(3)
O(9)-Ge-O(12)	107.3(3)	O(7)-Ni(4)-O(5)	89.6(3)
O(6)-Ge-O(12)	114.3(3)	N(3)-Ni(4)-O(5)	174.9(3)
N(5)-Ni(1)-O(4)	179.2(3)	N(4)-Ni(4)-O(17)	90.6(3)
N(5)-Ni(1)-O(3)	91.4(3)	O(7)-Ni(4)-O(17)	91.8(3)
O(4)-Ni(1)-O(3)	88.3(3)	N(3)-Ni(4)-O(17)	90.5(3)
N(5)-Ni(1)-N(11)	93.6(4)	O(5)-Ni(4)-O(17)	94.1(3)
O(4)-Ni(1)-N(11)	87.1(3)	N(4)-Ni(4)-O(23)#2	88.1(3)
O(3)-Ni(1)-N(11)	94.3(3)	O(7)-Ni(4)-O(23)#2	89.3(3)
N(5)-Ni(1)-N(6)	82.7(4)	N(3)-Ni(4)-O(23)#2	87.3(3)
O(4)-Ni(1)-N(6)	97.6(4)	O(5)-Ni(4)-O(23)#2	88.1(3)
O(3)-Ni(1)-N(6)	173.3(4)	O(17)-Ni(4)-O(23)#2	177.6(3)
N(11)-Ni(1)-N(6)	89.3(4)	O(20)-Mo(1)-O(2)	106.4(3)
N(5)-Ni(1)-O(18)	89.3(3)	O(20)-Mo(1)-O(1)	101.8(3)
O(4)-Ni(1)-O(18)	90.0(3)	O(2)-Mo(1)-O(1)	96.2(3)
O(3)-Ni(1)-O(18)	91.1(3)	O(20)-Mo(1)-O(21)	98.0(3)
N(11)-Ni(1)-O(18)	173.8(3)	O(2)-Mo(1)-O(21)	86.0(3)
N(6)-Ni(1)-O(18)	85.6(4)	O(1)-Mo(1)-O(21)	158.6(3)
O(2)-Ni(2)-N(7)	92.2(3)	O(20)-Mo(1)-O(32)	91.2(3)
O(2)-Ni(2)-O(14)	88.0(3)	O(2)-Mo(1)-O(32)	160.8(3)
N(7)-Ni(2)-O(14)	179.1(3)	O(1)-Mo(1)-O(32)	87.4(3)
O(2)-Ni(2)-N(8)	172.6(3)	O(21)-Mo(1)-O(32)	84.0(3)
N(7)-Ni(2)-N(8)	82.0(4)	O(20)-Mo(1)-O(12)	164.3(3)
O(14)-Ni(2)-N(8)	97.7(3)	O(2)-Mo(1)-O(12)	87.5(3)
O(2)-Ni(2)-N(9)	92.9(3)	O(1)-Mo(1)-O(12)	83.7(3)
N(7)-Ni(2)-N(9)	94.4(4)	O(21)-Mo(1)-O(12)	75.1(3)
O(14)-Ni(2)-N(9)	86.4(3)	O(32)-Mo(1)-O(12)	74.2(2)
N(8)-Ni(2)-N(9)	92.1(4)	O(20)-Mo(1)-Mo(2)	99.1(2)
O(2)-Ni(2)-O(13)	90.6(3)	O(2)-Mo(1)-Mo(2)	49.8(2)
N(7)-Ni(2)-O(13)	90.2(3)	O(1)-Mo(1)-Mo(2)	48.7(2)
O(14)-Ni(2)-O(13)	88.9(3)	O(21)-Mo(1)-Mo(2)	135.49(19)
N(8)-Ni(2)-O(13)	84.8(3)	O(32)-Mo(1)-Mo(2)	136.1(2)
N(9)-Ni(2)-O(13)	174.1(3)	O(12)-Mo(1)-Mo(2)	95.58(16)
N(2)-Ni(3)-N(1)	82.7(4)	O(25)-Mo(2)-O(1)	106.2(3)
N(2)-Ni(3)-O(1)	92.4(3)	O(25)-Mo(2)-O(2)	104.2(3)
N(1)-Ni(3)-O(1)	174.4(3)	O(1)-Mo(2)-O(2)	94.3(3)
N(2)-Ni(3)-O(8)	174.6(3)	O(25)-Mo(2)-O(19)	99.2(3)
N(1)-Ni(3)-O(8)	94.7(3)	O(1)-Mo(2)-O(19)	85.0(3)
O(1)-Ni(3)-O(8)	89.9(3)	O(2)-Mo(2)-O(19)	155.8(3)
N(2)-Ni(3)-O(10)	91.4(3)	O(25)-Mo(2)-O(26)	96.0(3)
N(1)-Ni(3)-O(10)	90.8(4)	O(1)-Mo(2)-O(26)	157.0(3)
O(1)-Ni(3)-O(10)	92.0(3)	O(2)-Mo(2)-O(26)	85.7(3)

O(8)-Ni(3)-O(10)	93.4(3)	O(19)-Mo(2)-O(26)	85.8(3)
N(2)-Ni(3)-O(20)#1	86.8(3)	O(25)-Mo(2)-O(11)	168.1(3)
N(1)-Ni(3)-O(20)#1	88.8(3)	O(1)-Mo(2)-O(11)	83.3(3)
O(1)-Ni(3)-O(20)#1	88.3(3)	O(2)-Mo(2)-O(11)	81.7(3)
O(8)-Ni(3)-O(20)#1	88.4(3)	O(19)-Mo(2)-O(11)	74.2(3)
O(10)-Ni(3)-O(20)#1	178.2(3)	O(26)-Mo(2)-O(11)	74.0(3)
Symmetry transformations used to generate equivalent atoms:			
#1 -x+1,-y+1,-z+1	#2 -x,-y+1,-z	#3 -x,-y+2,-z+1	