**Supporting Information For** 

## A Layered lodocuprate Basis on a 3D Cationic Supramolecular Network of Dimeric Co(II) Complexes by Offset Face-to-Face Interactions

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## Figure. S1 Thermogravimetric curve











Figure. S4 UV-Vis spectra



Figure. S5 The cation  $[Co(phen)_2(\mu-Cl)]_2^{2+}$  (Cl atom is labled as Cl(1) and Cl(2)) interact with four neighboring cations via OFF interactions depicted by arrows. All atoms in each cation have the same symmetry codes denoted as A, B, C and D respectively. Symmetry codes: A=-x+1, -y, -z; B=x, -y+1/2, z-1/2; C=-x, -y, -z; D=x, -y+1/2, z+1/2. Hydrogen atoms are omitted for clarity.



Figure. S6 The Cu(I) coordination environments with atom labeling (30% probability ellipsoids). Symmetry codes: I(7A): x, -y+3/2, z+1/2; I(8A): x, -y+3/2, z+1/2; I(2A): -x, -y+1, -z.; I(3A): -x, -y+1, -z.



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Figure. S7 EPR spectra

Table S2. Stacking parameters of OFF interactions between adjacent phens

Cg(I)- $Cg(J)$	dc-c (Å)	dπ,π (Å)	α (°)
$Cg(1)-Cg(2)^{a}$	4.816	3.433	0.0
$Cg(3)$ - $Cg(4)^{b}$	4.244	3.511	7.1
$Cg(5)-Cg(6)^{c}$	5.511	3.373	0.0

Cg(I)=plane I;  $\alpha$  = dihedral angle between planes I and J; dc-c = centroid-centroid distance of planes;  $d\pi,\pi$ = stacking distance defined as the centroid  $\rightarrow$  normal to the plane averaged distance; definition of phen:

 $\begin{array}{l} Cg(1) = N(5), N(6), C(1), C(2), C(3) \rightarrow C(11), C(12) \\ Cg(2)^a = N(5), N(6), C(1), C(2), C(3) \rightarrow C(11), C(12); \\ Cg(3) = N(1), N(2), C(37), C(38), C(39) \rightarrow C(47), C(48) \\ Cg(4)^b = N(7), N(8), C(13), C(14), C(15) \rightarrow C(23), C(24); \\ Cg(5) = N(3), N(4), C(25), C(26), C(27) \rightarrow C(35), C(36) \\ Cg(6)^c = N(3), N(4), C(25), C(26), C(27) \rightarrow C(35), C(36); \\ Symmetry codes: a=-x, -y, -z; b= x, -y+1/2, z-1/2; c =-x+1, -y, -z. \end{array}$ 

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Bonds	Bonds-Distances	Bonds	Bonds-Distances
I(1)-I(1')	0.632(8)	I(10)-Cu(9)	2.527(2)
I(1)-Cu(3')	2.487(9)	I(10)-Cu(6)	2.561(2)
I(1)-Cu(3)	2.580(7)	I(11)-Cu(9)	2.561(2)
I(1)-Cu(1)	2.582(7)	I(11)-Cu(4)	2.676(3)
I(1')-Cu(3')	2.506(11)	I(11)-Cu(8)	2.681(4)
I(1')-Cu(1)	2.636(8)	I(11)-Cu(6)	2.915(3)
I(1')-Cu(3)	2.783(9)	Cu(1)-I(2)#1	2.561(3)
I(2)-Cu(1)#1	2.561(3)	Cu(1)-O(1)	2.573(9)
I(2)-Cu(2)	2.564(3)	Cu(1)-Cu(3')	2.741(8)
I(3)-Cu(3)	2.699(4)	Cu(1)-I(3)#1	2.747(3)
I(3)-Cu(3')	2.708(7)	Cu(2)-Cu(3')	2.623(7)
I(3)-Cu(5)	2.733(3)	Cu(2)- $Cu(3)$	2.790(5)
I(3)-Cu(1)#1	2.747(3)	Cu(2)- $Cu(4)$	2.798(4)
I(3)-Cu(1)	2.839(4)	Cu(3)-Cu(3')	0.845(7)
I(3)-Cu(2)	2.920(4)	Cu(3)-Cu(4)	2.667(5)
I(4)-Cu(3')	2,485(7)	Cu(3)- $Cu(5)$	3,025(5)
I(4)-Cu(4)	2,555(3)	Cu(4)- $Cu(8)$	2.306(4)
I(4) - Cu(2)	2.630(3)	Cu(4)- $Cu(5)$	2.500(1) 2.681(4)
I(4) - Cu(3)	2.688(4)	Cu(4)- $Cu(8')$	2.866(11)
I(1) = Cu(3)	2.000(1) 2 470(10)	Cu(5)- $Cu(8')$	1 586(10)
I(5) - Cu(5)	2.470(10)	Cu(5) - Cu(8)	2725(4)
I(5) - Cu(2)	2.073(3) 2 707(3)	Cu(5) - Cu(7)	2.723(4) 2.952(5)
I(5) - Cu(2)	2.707(3) 2.748(4)	Cu(6) - Cu(7') #3	2.932(3) 2 414(8)
I(5)-Cu(4)	2.740(4) 2.791(3)	Cu(6)-U(8)#3	2.717(0) 2.575(2)
I(5)-Cu(5)	2.771(3) 2.627(3)	Cu(6)-I(7)#3	2.373(2) 2 739(3)
I(6)-Cu(4)	2.027(3) 2.608(3)	Cu(0)-1(7)#3	2.737(3) 2.793(5)
I(6)-Cu(4)	2.098(3) 2.904(4)	$Cu(0)-Cu(7)\pi 3$	2.795(3) 2.815(3)
I(6)-Cu(8)	2.904(4) 2.904(10)	Cu(0)-Cu(7)	2.015(3) 1.045(13)
I(6)-Cu(3)	2.904(10) 2.905(5)	Cu(7)-Cu(7)	2.089(12)
I(6)-Cu(7)	2.903(5) 2.909(5)	Cu(7)-Cu(8)	2.005(12)
I(0)-Cu(7)	2.909(3) 2.603(3)	Cu(7)-Cu(6)#2	2.733(0) 2.793(5)
I(7) - Cu(3) I(7) - Cu(7)	2.003(3) 2.670(5)	Cu(7)-Cu(0)#2 Cu(7) $Cu(6)#2$	2.793(3) 2.414(8)
I(7) - Cu(7)	2.070(3)	Cu(7)- $Cu(0)$ #2 Cu(7') $Cu(8')$	2.414(0) 2.502(15)
I(7) - Cu(7) I(7) - Cu(6) # 2	2.707(8) 2.730(3)	Cu(7)- $Cu(8)$	2.505(15) 1 567(11)
I(7) - Cu(0) + 2 I(7) - Cu(8')	2.739(3) 2.745(10)	Cu(8)- $Cu(8)$	1.507(11) 2.627(4)
I(7)-Cu(8) I(8) Cu(7)	2.743(10) 2.555(5)	Cu(0)-Cu(9)	2.027(4) 2.120(0)
I(8) - Cu(7) I(8) - Cu(6) + 2	2.333(3) 2.575(3)	$C_0(1)$ -N(1) $C_0(1)$ N(4)	2.129(9) 2.120(0)
I(8) - Cu(0) + 2 I(8) - Cu(7')	2.373(2) 2.600(7)	$C_0(1)$ -N(4) $C_0(1)$ N(2)	2.130(9) 2.141(0)
I(0) - Cu(7)	2.009(7) 2.205(7)	$C_0(1) - N(2)$ $C_0(1) - N(2)$	2.141(9) 2.142(0)
I(9)-Cu(7)	2.593(7) 2.520(4)	$C_0(1) - N(3)$ $C_0(1) - C_1(1)$	2.142(9) 2.446(2)
I(9)-Cu(8)	2.530(4)	$C_0(1)$ - $C_1(1)$	2.440(3) 2.402(2)
I(9)-Cu(9)	2.3/3(2)	$C_0(1)$ - $C_1(2)$	2.493(3)
I(9)-Cu(7)	2.787(5) 2.957(10)	$C_0(2)$ -N(5) $C_2(2)$ -N(7)	2.110(9) 2.124(10)
I(9)-Cu(8)	2.857(10)	$C_0(2)$ -N(/)	2.134(10)
$C_0(2)$ -IN(0) $C_2(2)$ -C1(1)	2.149(10)	$C_0(2) - IN(0)$	2.149(10) 2.474(2)
$C_0(2)$ - $C_1(1)$	2.4/3(3)	CO(2)-CI(2)	2.474(3)
Co(2)- $CI(2)$	2.4/4(3)	D 1	D 1 4 1
Bonds	Bond-Angles	Bonds	Bond-Angles
I(1')-I(1)-Cu(3')	84.4(13)	Cu(5)-I(5)-Cu(8)	60.32(10)

Table S1. Selected bond distances and angles (Å, °)

$\begin{split} & [(1)^{+} (1)-Cu(3) & 102.2(14) & Cu(2)^{+} (5)-Cu(8) & 107.51(10) \\ & Cu(3)^{+} (1)-Cu(1) & 19.90(18) & Cu(8)^{+} (5)-Cu(4) & 65.7(2) \\ & (1)^{+} (1)-Cu(1) & 65.4(2) & Cu(2)^{+} (5)-Cu(4) & 61.18(7) \\ & Cu(3)^{+} (1)-Cu(1) & 73.3(2) & Cu(8)^{+} (5)-Cu(4) & 49.21(9) \\ & (1)^{+} (1)^{+} (1)-Cu(1) & 73.3(2) & Cu(8)^{+} (5)-Cu(4) & 40.45(9) \\ & (1)^{+} (1)^{+} (1)^{+}Cu(1) & 73.3(2) & Cu(3)^{+} (6)^{-}Cu(8) & 48.45(9) \\ & (1)^{+} (1)^{+} (1)^{+}Cu(3) & 64.9(12) & Cu(5)^{+} (6)^{-}Cu(8) & 48.45(9) \\ & (1)^{+} (1)^{+} (1)^{+}Cu(3) & 64.9(12) & Cu(5)^{+} (6)^{-}Cu(8) & 32.8(2) \\ & Cu(3)^{+} (1)^{+} (1)^{+}Cu(3) & 64.9(12) & Cu(3)^{+} (6)^{-}Cu(8) & 31.3(2) \\ & Cu(3)^{+} (1)^{+} (1)^{+}Cu(3) & 64.9(12) & Cu(3)^{+} (6)^{-}Cu(8) & 31.3(2) \\ & Cu(3)^{+} (1)^{+} (1)^{+}Cu(3) & 64.9(12) & Cu(3)^{+} (6)^{-}Cu(8) & 31.3(2) \\ & Cu(3)^{+} (1)^{+} (1)^{+}Cu(3) & 67.8(11) & Cu(8)^{+} (6)^{-}Cu(8) & 31.3(2) \\ & Cu(3)^{+} (3)^{+}Cu(5) & 82.76(19) & Cu(8)^{+} (6)^{-}Cu(3) & 94.1(2) \\ & Cu(3)^{+} (3)^{+}Cu(1) & 17.5(9) & Cu(8)^{+} (6)^{-}Cu(7) & 94.1(1) \\ & Cu(3)^{+} (3)^{+}Cu(1) & 17.5(9) & Cu(8)^{+} (6)^{-}Cu(7) & 12.9(2) \\ & Cu(3)^{+} (3)^{+}Cu(1) & 17.5(9) & Cu(8)^{+} (6)^{-}Cu(7) & 12.9(2) \\ & Cu(3)^{+} (3)^{-}Cu(1) & 127.5(9) & Cu(8)^{+} (6)^{-}Cu(7) & 12.9(2) \\ & Cu(3)^{+} (3)^{-}Cu(1) & 129.62(9) & Cu(5)^{+} (7)^{-}Cu(7) & 68.07(12) \\ & Cu(3)^{+} (3)^{-}Cu(1) & 129.62(9) & Cu(5)^{+} (7)^{-}Cu(7) & 128.49(3) \\ & Cu(3)^{+} (3)^{-}Cu(2) & 55.41(15) & Cu(5)^{+} (7)^{-}Cu(7) & 22.4(3) \\ & Cu(3)^{+} (3)^{-}Cu(2) & 55.41(15) & Cu(5)^{+} (7)^{-}Cu(6)^{+}=2 & 28.0(69) \\ & Cu(3)^{+} (3)^{-}Cu(2) & 65.86(8) & Cu(7)^{-} (7)^{-}Cu(8) & 34.4(2) \\ & Cu(3)^{+} (4)^{-}Cu(2) & 65.86(8) & Cu(7)^{-} (7)^{-}Cu(8) & 35.4(2) \\ & Cu(3)^{+} (4)^{-}Cu(2) & 65.28(9) & Cu(5)^{+} (7)^{-}Cu(8) & 85.4(2) \\ & Cu(3)^{+} (4)^{-}Cu(2) & 65.28(9) & Cu(5)^{+} (7)^{-}Cu(8) & 85.4(2) \\ & Cu(3)^{+} (4)^{-}Cu(2) & 65.28(9) & Cu(6)^{+} (7)^{-}Cu(8) & 85.4(2) \\ & Cu(3)^{+} (4)^{-}Cu(2) & 65.28(9) & Cu(3)^{+} (7)^{-}Cu(8) & 85.4(2) \\ & Cu(3)^{+} (4)^{-}Cu(2) & 65$				
$\begin{array}{llllllllllllllllllllllllllllllllllll$	I(1')-I(1)-Cu(3)	102.2(14)	Cu(2)-I(5)-Cu(8)	107.51(10)
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(3')-I(1)-Cu(3)	19.08(18)	Cu(8')-I(5)-Cu(4)	65.7(2)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	I(1')-I(1)-Cu(1)	87.9(13)	Cu(5)-I(5)-Cu(4)	58.72(8)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(3')-I(1)-Cu(1)	65.4(2)	Cu(2)-I(5)-Cu(4)	61.18(7)
	Cu(3)-I(1)-Cu(1)	73.3(2)	Cu(8)-I(5)-Cu(4)	49.21(9)
	I(1)-I(1')-Cu(3')	81.0(13)	Cu(5)-I(6)-Cu(4)	60.45(9)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	I(1)-I(1')-Cu(1)	78.2(12)	Cu(5)-I(6)-Cu(8)	58.79(9)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(3')-I(1')-Cu(1)	64.4(2)	Cu(4)-I(6)-Cu(8)	48.45(9)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	I(1)-I(1')-Cu(3)	64.9(12)	Cu(5)-I(6)-Cu(8')	32.8(2)
$\begin{array}{cccc} {\rm Cu}(1)-{\rm I}(1)-{\rm Cu}(3) & 69.3(2) & {\rm Cu}(8)-{\rm I}(6)-{\rm Cu}(8') & 31.3(2) \\ {\rm Cu}(1)\#1-{\rm I}(2)-{\rm Cu}(2) & 78.66(11) & {\rm Cu}(5)-{\rm I}(6)-{\rm Cu}(3) & 66.09(10) \\ {\rm Cu}(3)-{\rm I}(3)-{\rm Cu}(5) & 67.68(11) & {\rm Cu}(8)-{\rm I}(6)-{\rm Cu}(3) & 90.1(2) \\ {\rm Cu}(3)-{\rm I}(3)-{\rm Cu}(5) & 82.76(19) & {\rm Cu}(8)-{\rm I}(6)-{\rm Cu}(3) & 94.1(2) \\ {\rm Cu}(3)-{\rm I}(3)-{\rm Cu}(1)\#1 & 10.50(12) & {\rm Cu}(8)-{\rm I}(6)-{\rm Cu}(7) & 94.1(2) \\ {\rm Cu}(3)-{\rm I}(3)-{\rm Cu}(1)\#1 & 93.75(19) & {\rm Cu}(8)-{\rm I}(6)-{\rm Cu}(7) & 42.1(2) \\ {\rm Cu}(3)-{\rm I}(3)-{\rm Cu}(1)\#1 & 93.75(19) & {\rm Cu}(8)-{\rm I}(6)-{\rm Cu}(7) & 42.1(2) \\ {\rm Cu}(3)-{\rm I}(3)-{\rm Cu}(1) & 59.17(17) & {\rm Cu}(8)-{\rm I}(6)-{\rm Cu}(7) & 42.1(2) \\ {\rm Cu}(3)-{\rm I}(3)-{\rm Cu}(1) & 59.17(17) & {\rm Cu}(3)-{\rm I}(6)-{\rm Cu}(7) & 84.9(3) \\ {\rm Cu}(3)-{\rm I}(3)-{\rm Cu}(1) & 89.38(9) & {\rm Cu}(5)-{\rm I}(7)-{\rm Cu}(7) & 84.9(3) \\ {\rm Cu}(3)-{\rm I}(3)-{\rm Cu}(2) & 59.39(10) & {\rm Cu}(7)-{\rm I}(7)-{\rm Cu}(7) & 84.9(3) \\ {\rm Cu}(3)-{\rm I}(3)-{\rm Cu}(2) & 55.41(15) & {\rm Cu}(5)-{\rm I}(7)-{\rm Cu}(6)\#2 & 22.62(19) \\ {\rm Cu}(3)-{\rm I}(3)-{\rm Cu}(2) & 55.41(15) & {\rm Cu}(5)-{\rm I}(7)-{\rm Cu}(6)\#2 & 62.15(11) \\ {\rm Cu}(1)\#1-{\rm I}(3)-{\rm Cu}(2) & 69.86(8) & {\rm Cu}(7)-{\rm I}(7)-{\rm Cu}(8) & 45.4(2) \\ {\rm Cu}(3)-{\rm I}(4)-{\rm Cu}(4) & 77.9(2) & {\rm Cu}(7)-{\rm I}(8)-{\rm Cu}(7) & 45.4(2) \\ {\rm Cu}(3)-{\rm I}(4)-{\rm Cu}(2) & 61.80(11) & {\rm Cu}(7)-{\rm I}(8)-{\rm Cu}(7) & 25.51(1) \\ {\rm Cu}(4)-{\rm I}(4)-{\rm Cu}(2) & 61.28(9) & {\rm Cu}(6)\#2-{\rm I}(7)-{\rm Cu}(8) & 45.4(2) \\ {\rm Cu}(3)-{\rm I}(4)-{\rm Cu}(3) & 63.27(11) & {\rm Cu}(7)-{\rm I}(8)-{\rm Cu}(7) & 25.51(12) \\ {\rm Cu}(4)-{\rm I}(4)-{\rm Cu}(2) & 61.28(9) & {\rm Cu}(6)\#2-{\rm I}(7)-{\rm Cu}(8) & 45.4(2) \\ {\rm Cu}(3)-{\rm I}(4)-{\rm Cu}(3) & 63.27(11) & {\rm Cu}(7)-{\rm I}(8)-{\rm Cu}(7) & 25.51(1) \\ {\rm Cu}(4)-{\rm I}(4)-{\rm Cu}(3) & 63.27(11) & {\rm Cu}(7)-{\rm I}(8)-{\rm Cu}(7) & 25.51(1) \\ {\rm Cu}(8)-{\rm I}(5)-{\rm Cu}(2) & 63.31(0) & {\rm Cu}(7)-{\rm I}(9)-{\rm Cu}(8) & 81.7(4) \\ {\rm Cu}(8)-{\rm I}(5)-{\rm Cu}(3) & 63.27(11) & {\rm Cu}(7)-{\rm I}(8)-{\rm Cu}(7) & 25.3(3) \\ {\rm Cu}(3)-{\rm I}(4)-{\rm Cu}(3) & 63.27(1) & {\rm Cu}(7)-{\rm I}(3) & 18.26(6) \\ {\rm Cu}(9)$	Cu(3')-I(1')-Cu(3)	17.38(18)	Cu(4)-I(6)-Cu(8')	61.4(2)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(1)-I(1')-Cu(3)	69.3(2)	Cu(8)-I(6)-Cu(8')	31.3(2)
$\begin{array}{cccc} Cu(3)-I(3)-Cu(3) & 17.97(15) & Cu(4)-I(6)-Cu(3) & 56.69(9) \\ Cu(3)-I(3)-Cu(5) & 67.68(11) & Cu(8)-I(6)-Cu(3) & 100.92(10) \\ Cu(3)-I(3)-Cu(5) & 82.76(19) & Cu(8)-I(6)-Cu(3) & 94.1(2) \\ Cu(3)-I(3)-Cu(1)\#1 & 110.50(12) & Cu(5)-I(6)-Cu(7) & 64.20(11) \\ Cu(3)-I(3)-Cu(1)\#1 & 127.59(9) & Cu(8)-I(6)-Cu(7) & 56.57(12) \\ Cu(3)-I(3)-Cu(1)\#1 & 127.59(9) & Cu(8)-I(6)-Cu(7) & 56.57(12) \\ Cu(3)-I(3)-Cu(1) & 59.17(17) & Cu(3)-I(6)-Cu(7) & 76.57(12) \\ Cu(3)-I(3)-Cu(1) & 59.17(17) & Cu(3)-I(6)-Cu(7) & 84.9(3) \\ Cu(3)-I(3)-Cu(1) & 129.62(9) & Cu(5)-I(7)-Cu(7) & 84.9(3) \\ Cu(3)-I(3)-Cu(2) & 59.39(10) & Cu(7)-I(7)-Cu(7) & 84.9(3) \\ Cu(3)-I(3)-Cu(2) & 55.41(15) & Cu(5)-I(7)-Cu(6)\#2 & 128.06(9) \\ Cu(5)-I(3)-Cu(2) & 55.41(15) & Cu(5)-I(7)-Cu(6)\#2 & 22.62(19) \\ Cu(1)\#1-I(3)-Cu(2) & 69.86(8) & Cu(7)-I(7)-Cu(6)\#2 & 52.62(19) \\ Cu(1)\#1-I(3)-Cu(2) & 108.50(8) & Cu(7)-I(7)-Cu(8) & 34.4(2) \\ Cu(3)-I(4)-Cu(2) & 108.50(8) & Cu(7)-I(7)-Cu(8) & 34.4(2) \\ Cu(3)-I(4)-Cu(2) & 61.61(17) & Cu(7)+I(7)-Cu(8) & 54.6(3) \\ Cu(4)-I(4)-Cu(2) & 61.825(17) & Cu(7)-I(8)-Cu(8) & 54.6(3) \\ Cu(4)-I(4)-Cu(3) & 61.08(11) & Cu(7)-I(8)-Cu(8) & 54.6(3) \\ Cu(4)-I(4)-Cu(3) & 61.25(17) & Cu(7)-I(8)-Cu(7) & 55.51(19) \\ Cu(8)-I(5)-Cu(2) & 69.33(10) & Cu(8)-I(7)-Cu(8) & 81.7(4) \\ Cu(8)+I(5)-Cu(2) & 69.33(10) & Cu(8)-I(9)-Cu(8) & 81.7(4) \\ Cu(8)+I(5)-Cu(2) & 69.33(10) & Cu(8)-I(9)-Cu(9) & 61.93(9) \\ Cu(8)-I(5)-Cu(2) & 69.33(10) & Cu(3)-I(2)-I(3) & 58.20(16) \\ Cu(9)-I(1)-Cu(8) & 51.01(10) & Cu(3)-Cu(2)-I(3) & 58.20(16) \\ Cu(9)-I(1)-Cu(6) & 67.19(8) & Cu(3)-Cu(2)-I(3) & 58.20(16) \\ Cu(9)-I(1)-Cu(6) & 67.19(8) & Cu(3)-Cu(2)-I(3) & 58.20(16) \\ Cu(9)-I(1)-Cu(6) & 67.19(8) & Cu(3)-Cu(3)-I(4) & 42.5(2) \\ I(2)\#1-Cu(1)-I(1) & 13.86(18) & I(1)-Cu(3)-I(4) & 42.5(2) \\ I(2)\#1-Cu(1)-I(1) & 13.86(18) & I(1)-Cu(3)-I(4) & 42.5(2) \\ I(2)\#1-Cu(1)-I(1) & 13.86(18) & I(1)-Cu(3)-I(3) & 110.6(2) \\ I(2)\#1-Cu(1)-I(1) & 13.86(18) & I(1)-Cu(3)-I(3) & 110.6(2) \\ I(2)\#1-Cu(1)-I(1) & 13.86(18) & I(1)-Cu(3)-I(3) & 110.6(2) \\ I(2)\#1-Cu(1)-Cu(3) & 157.3(2) & Cu(4)-Cu(3)-I(3) & 110.6(2) \\ I(2)\#1-Cu$	Cu(1)#1-I(2)-Cu(2)	78.66(11)	Cu(5)-I(6)-Cu(3)	66.09(10)
$\begin{array}{cccc} Cu(3)-I(3)-Cu(5) & 67.68(11) & Cu(8)-I(6)-Cu(3) & 100.92(10) \\ Cu(3)-I(3)-Cu(1)\#1 & 110.50(12) & Cu(8)-I(6)-Cu(3) & 94.1(2) \\ Cu(3)-I(3)-Cu(1)\#1 & 103.75(19) & Cu(4)-I(6)-Cu(7) & 64.20(11) \\ Cu(3)-I(3)-Cu(1)\#1 & 127.59(9) & Cu(8)-I(6)-Cu(7) & 56.57(12) \\ Cu(3)-I(3)-Cu(1) & 59.17(17) & Cu(3)-I(6)-Cu(7) & 56.57(12) \\ Cu(3)-I(3)-Cu(1) & 59.17(17) & Cu(3)-I(6)-Cu(7) & 78.9(9) \\ Cu(5)-I(3)-Cu(1) & 129.62(9) & Cu(5)-I(7)-Cu(7) & 88.9(7) \\ Cu(3)-I(3)-Cu(2) & 59.39(10) & Cu(7)-I(7)-Cu(7) & 88.9(7) \\ Cu(3)-I(3)-Cu(2) & 59.39(10) & Cu(7)-I(7)-Cu(6)\#2 & 128.06(9) \\ Cu(5)-I(3)-Cu(2) & 55.41(15) & Cu(5)-I(7)-Cu(6)\#2 & 128.06(9) \\ Cu(5)-I(3)-Cu(2) & 65.46(8) & Cu(7)-I(7)-Cu(6)\#2 & 62.15(11) \\ Cu(1)\#1-I(3)-Cu(2) & 69.86(8) & Cu(7)-I(7)-Cu(8) & 34.4(2) \\ Cu(3)-I(4)-Cu(4) & 77.9(2) & Cu(5)-I(7)-Cu(8) & 34.4(2) \\ Cu(3)-I(4)-Cu(4) & 77.9(2) & Cu(7)-I(7)-Cu(8) & 45.4(2) \\ Cu(3)-I(4)-Cu(3) & 18.25(17) & Cu(6)\#2-I(7)-Cu(8) & 45.4(2) \\ Cu(3)-I(4)-Cu(3) & 61.25(11) & Cu(7)-I(8)-Cu(6)\#2 & 65.96(12) \\ Cu(4)-I(4)-Cu(3) & 61.32(11) & Cu(7)-I(8)-Cu(6)\#2 & 65.96(12) \\ Cu(4)-I(4)-Cu(3) & 61.32(11) & Cu(7)-I(8)-Cu(6)\#2 & 65.96(12) \\ Cu(4)-I(4)-Cu(3) & 63.27(11) & Cu(6)\#2-I(8)-Cu(7) & 23.3(3) \\ Cu(2)-I(4)-Cu(3) & 63.27(11) & Cu(6)\#2-I(8)-Cu(7) & 55.51(19) \\ Cu(8)-I(5)-Cu(2) & 102.9(2) & Cu(7)-I(9)-Cu(8) & 81.7(4) \\ Cu(8)-I(5)-Cu(2) & 69.33(10) & Cu(3)-I(9)-Cu(9) & 61.93(9) \\ Cu(8)-I(5)-Cu(2) & 69.33(10) & Cu(3)-I(3) & 103.26(9) \\ Cu(9)-I(1)-Cu(6) & 67.19(8) & Cu(3)-Cu(2)-I(3) & 58.20(16) \\ Cu(9)-I(1)-Cu(6) & 67.19(8) & Cu(3)-Cu(3)-I(1) & 74.3(6) \\ Cu(9)-I(1)-Cu(6) & 61.148(6) & Cu(4)-Cu(2)-I(3) & 58.20(16) \\ Cu(9)-I(1)-Cu(6) & 11.02(8) & I(4)-Cu(2)-I(3) & 58.20(16) \\ Cu(9)-I(1)-Cu(6) & 121.54(9) & Cu(3)-Cu(3)-I(4) & 119.4(6) \\ I(2)\#I-Cu(1)-I(1) & 13.36(17) & Cu(3)-Cu(3)-I(4) & 119.4(6) \\ I(2)\#I-Cu(1)-I(1) & 13.36(18) & I(1)-Cu(3)-I(3) & 106.62) \\ I(2)\#I-Cu(1)-I(1) & 13.36(18) & I(1)-Cu(3)-I(3) & 106.62) \\ I(2)\#I-Cu(1)-I(1) & 13.36(18) & I(1)-Cu(3)-I(3) & 106.92(14) \\ O(1)-Cu(1)-Cu(3) & 95.3(3) & I(1)-Cu(3)-I(3) & 106.92(14) \\ O(1)-Cu$	Cu(3)-I(3)-Cu(3')	17.97(15)	Cu(4)-I(6)-Cu(3)	56.69(9)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(3)-I(3)-Cu(5)	67.68(11)	Cu(8)-I(6)-Cu(3)	100.92(10)
$\begin{array}{cccc} {\rm Cu}(3) \cdot {\rm I}(3) \cdot {\rm Cu}(1)\#1 & 110.50(12) & {\rm Cu}(5) \cdot {\rm I}(6) \cdot {\rm Cu}(7) & 64.20(11) \\ {\rm Cu}(3) \cdot {\rm I}(3) \cdot {\rm Cu}(1)\#1 & 93.75(19) & {\rm Cu}(4) \cdot {\rm I}(6) \cdot {\rm Cu}(7) & 101.41(12) \\ {\rm Cu}(3) \cdot {\rm I}(3) \cdot {\rm Cu}(1) & 67.59(10) & {\rm Cu}(8) \cdot {\rm I}(6) \cdot {\rm Cu}(7) & 42.1(2) \\ {\rm Cu}(3) \cdot {\rm I}(3) \cdot {\rm Cu}(1) & 59.17(17) & {\rm Cu}(3) \cdot {\rm I}(6) \cdot {\rm Cu}(7) & 42.1(2) \\ {\rm Cu}(3) \cdot {\rm I}(3) \cdot {\rm Cu}(1) & 59.17(17) & {\rm Cu}(3) \cdot {\rm I}(6) \cdot {\rm Cu}(7) & 42.1(2) \\ {\rm Cu}(5) \cdot {\rm I}(3) \cdot {\rm Cu}(1) & 89.38(9) & {\rm Cu}(5) \cdot {\rm I}(7) \cdot {\rm Cu}(7) & 84.9(3) \\ {\rm Cu}(3) \cdot {\rm I}(3) \cdot {\rm Cu}(2) & 59.39(10) & {\rm Cu}(7) \cdot {\rm I}(7) \cdot {\rm Cu}(7) & 22.4(3) \\ {\rm Cu}(3) \cdot {\rm I}(3) \cdot {\rm Cu}(2) & 55.41(15) & {\rm Cu}(5) \cdot {\rm I}(7) \cdot {\rm Cu}(6)\#2 & 128.06(9) \\ {\rm Cu}(5) \cdot {\rm I}(3) \cdot {\rm Cu}(2) & 69.86(8) & {\rm Cu}(7) \cdot {\rm I}(7) \cdot {\rm Cu}(8) & 34.4(2) \\ {\rm Cu}(3) \cdot {\rm I}(3) \cdot {\rm Cu}(2) & 108.50(8) & {\rm Cu}(7) \cdot {\rm I}(7) \cdot {\rm Cu}(8) & 34.4(2) \\ {\rm Cu}(3) \cdot {\rm I}(4) \cdot {\rm Cu}(2) & 61.86(8) & {\rm Cu}(7) \cdot {\rm I}(7) \cdot {\rm Cu}(8) & 34.4(2) \\ {\rm Cu}(3) \cdot {\rm I}(4) \cdot {\rm Cu}(2) & 61.8(117) & {\rm Cu}(7) \cdot {\rm I}(7) \cdot {\rm Cu}(8) & 34.4(2) \\ {\rm Cu}(3) \cdot {\rm I}(4) \cdot {\rm Cu}(2) & 61.28(9) & {\rm Cu}(6) \#2 \cdot {\rm I}(7) \cdot {\rm Cu}(8) & 106.0(2) \\ {\rm Cu}(3) \cdot {\rm I}(4) \cdot {\rm Cu}(3) & 61.32(11) & {\rm Cu}(7) \cdot {\rm I}(8) \cdot {\rm Cu}(7) & 55.51(19) \\ {\rm Cu}(4) \cdot {\rm I}(4) \cdot {\rm Cu}(3) & 63.27(11) & {\rm Cu}(6) \#2 \cdot {\rm I}(8) \cdot {\rm Cu}(7) & 55.51(19) \\ {\rm Cu}(8) \cdot {\rm I}(5) \cdot {\rm Cu}(2) & 102.9(2) & {\rm Cu}(7) \cdot {\rm I}(9) \cdot {\rm Cu}(8) & 81.7(4) \\ {\rm Cu}(8) \cdot {\rm I}(5) \cdot {\rm Cu}(2) & 102.9(2) & {\rm Cu}(7) \cdot {\rm I}(9) \cdot {\rm Cu}(9) & 125.7(3) \\ {\rm Cu}(8) \cdot {\rm I}(5) \cdot {\rm Cu}(6) & 67.19(8) & {\rm Cu}(3) \cdot {\rm Cu}(2) - {\rm I}(3) & 114.24(10) \\ {\rm Cu}(9) \cdot {\rm I}(1) \cdot {\rm Cu}(6) & 61.19(10) & {\rm Cu}(3) \cdot {\rm Cu}(2) - {\rm I}(3) & 114.24(10) \\ {\rm Cu}(9) \cdot {\rm I}(1) \cdot {\rm Cu}(6) & 61.19(10) & {\rm Cu}(3) \cdot {\rm Cu}(3) \cdot {\rm I}(4) & 70.9(11) \\ {\rm Cu}(8) \cdot {\rm I}(5) \cdot {\rm Cu}(5) & 35.6(2) & {\rm Cu}(3) \cdot {\rm Cu}(3) \cdot {\rm I}(4) & 73.6(6) \\ {\rm Cu}(9) \cdot {\rm I}(1) \cdot {\rm Cu}(6) & 61.18(6) & {\rm Cu}(3) \cdot {\rm Cu}(3) \cdot {\rm I}(4) &$	Cu(3')-I(3)-Cu(5)	82.76(19)	Cu(8')-I(6)-Cu(3)	94.1(2)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(3)-I(3)-Cu(1)#1	110.50(12)	Cu(5)-I(6)-Cu(7)	64.20(11)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(3')-I(3)-Cu(1)#1	93.75(19)	Cu(4)-I(6)-Cu(7)	101.41(12)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(5)-I(3)-Cu(1)#1	127.59(9)	Cu(8)-I(6)-Cu(7)	56.57(12)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(3)-I(3)-Cu(1)	67.59(10)	Cu(8')-I(6)-Cu(7)	42.1(2)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(3')-I(3)-Cu(1)	59.17(17)	Cu(3)-I(6)-Cu(7)	129.99(12)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(5)-I(3)-Cu(1)	129.62(9)	Cu(5)-I(7)-Cu(7)	68.07(12)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(1)#1-I(3)-Cu(1)	89.38(9)	Cu(5)-I(7)-Cu(7')	84.9(3)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(3)-I(3)-Cu(2)	59.39(10)	Cu(7)-I(7)-Cu(7')	22.4(3)
$\begin{array}{cccc} Cu(5)-I(3)-Cu(2) & 65.46(8) & Cu(7)-I(7)-Cu(6)\#2 & 62.15(11) \\ Cu(1)\#1-I(3)-Cu(2) & 69.86(8) & Cu(7)-I(7)-Cu(6)\#2 & 52.62(19) \\ Cu(1)-I(3)-Cu(2) & 108.50(8) & Cu(5)-I(7)-Cu(8') & 34.4(2) \\ Cu(3')-I(4)-Cu(4) & 77.9(2) & Cu(7)-I(7)-Cu(8') & 45.4(2) \\ Cu(3')-I(4)-Cu(2) & 61.61(17) & Cu(7')-I(7)-Cu(8') & 45.4(2) \\ Cu(3')-I(4)-Cu(2) & 65.28(9) & Cu(6)\#2-I(7)-Cu(8') & 106.0(2) \\ Cu(3')-I(4)-Cu(3) & 18.25(17) & Cu(7)-I(8)-Cu(6)\#2 & 65.96(12) \\ Cu(3')-I(4)-Cu(3) & 61.08(11) & Cu(7)-I(8)-Cu(6)\#2 & 65.96(12) \\ Cu(3')-I(4)-Cu(3) & 63.27(11) & Cu(6)\#2-I(8)-Cu(7') & 23.3(3) \\ Cu(2)-I(4)-Cu(3) & 63.27(11) & Cu(6)\#2-I(8)-Cu(7') & 55.51(19) \\ Cu(8')-I(5)-Cu(2) & 102.9(2) & Cu(7')-I(9)-Cu(8) & 81.7(4) \\ Cu(8')-I(5)-Cu(2) & 69.33(10) & Cu(8)-I(9)-Cu(9) & 125.7(3) \\ Cu(9)-I(10)-Cu(6) & 67.19(8) & Cu(3')-Cu(2)-I(3) & 58.20(16) \\ Cu(9)-I(11)-Cu(4) & 111.02(8) & I(4)-Cu(2)-I(3) & 114.24(10) \\ Cu(9)-I(11)-Cu(4) & 111.02(8) & I(4)-Cu(2)-I(3) & 56.36(10) \\ Cu(9)-I(11)-Cu(6) & 61.48(6) & Cu(3')-Cu(2)-I(3) & 56.36(10) \\ Cu(9)-I(11)-Cu(6) & 171.06(8) & Cu(3')-Cu(3)-I(1) & 74.3(6) \\ Cu(8')-I(1)-Cu(6) & 121.54(9) & Cu(3')-Cu(3)-I(1) & 74.3(6) \\ Cu(8)-I(11)-Cu(6) & 121.54(9) & Cu(3')-Cu(3)-I(4) & 119.4(6) \\ I(2)\#1-Cu(1)-I(1) & 13.03(17) & Cu(3)-Cu(3)-I(4) & 108.25(18) \\ I(2)\#1-Cu(1)-I(1) & 13.86(18) & I(1)-Cu(3)-I(4) & 57.01(10) \\ O(1)-Cu(1)-I(1') & 13.86(18) & I(1)-Cu(3)-I(3) & 81.6(6) \\ I(1)-Cu(1)-I(1') & 13.86(18) & I(1)-Cu(3)-I(3) & 110.6(2) \\ I(2)\#1-Cu(1)-Cu(3') & 95.6(2) & Cu(3')-Cu(3)-I(1) & 62.4(6) \\ \end{array}$	Cu(3')-I(3)-Cu(2)	55.41(15)	Cu(5)-I(7)-Cu(6)#2	128.06(9)
$\begin{array}{cccc} Cu(1)\#1-I(3)-Cu(2) & 69.86(8) & Cu(7)-I(7)-Cu(6)\#2 & 52.62(19) \\ Cu(1)-I(3)-Cu(2) & 108.50(8) & Cu(5)-I(7)-Cu(8) & 34.4(2) \\ Cu(3')-I(4)-Cu(4) & 77.9(2) & Cu(7)-I(7)-Cu(8) & 45.4(2) \\ Cu(3')-I(4)-Cu(2) & 61.61(17) & Cu(7')-I(7)-Cu(8) & 54.6(3) \\ Cu(4)-I(4)-Cu(2) & 65.28(9) & Cu(6)\#2-I(7)-Cu(8) & 106.0(2) \\ Cu(3')-I(4)-Cu(3) & 18.25(17) & Cu(7)-I(8)-Cu(7') & 23.3(3) \\ Cu(2)-I(4)-Cu(3) & 61.08(11) & Cu(7)-I(8)-Cu(7') & 23.3(3) \\ Cu(2)-I(4)-Cu(3) & 63.27(11) & Cu(6)\#2-I(8)-Cu(7') & 55.51(19) \\ Cu(8')-I(5)-Cu(5) & 35.6(2) & Cu(7')-I(8)-Cu(7') & 55.51(19) \\ Cu(8')-I(5)-Cu(2) & 102.9(2) & Cu(7')-I(9)-Cu(8) & 81.7(4) \\ Cu(8')-I(5)-Cu(2) & 69.33(10) & Cu(8)-I(9)-Cu(9) & 61.93(9) \\ Cu(8')-I(5)-Cu(2) & 69.33(10) & Cu(8)-I(9)-Cu(7) & 21.6(3) \\ Cu(9)-I(10)-Cu(6) & 67.19(8) & Cu(3')-Cu(2)-I(3) & 58.20(16) \\ Cu(9)-I(11)-Cu(4) & 111.02(8) & I(4)-Cu(2)-I(3) & 114.24(10) \\ Cu(9)-I(11)-Cu(6) & 61.48(6) & Cu(4')-Cu(2)-I(3) & 103.26(9) \\ Cu(4)-I(11)-Cu(6) & 171.06(8) & Cu(3')-Cu(3)-Cu(4) & 119.4(6) \\ I(2)\#1-Cu(1)-O(1) & 62.8(2) & I(1)-Cu(3)-Cu(4) & 119.4(6) \\ I(2)\#1-Cu(1)-O(1) & 62.8(2) & I(1)-Cu(3)-Cu(4) & 119.4(6) \\ I(2)\#1-Cu(1)-I(1) & 113.03(17) & Cu(3')-Cu(3)-I(4) & 67.2(6) \\ O(1)-Cu(1)-I(1) & 58.1(2) & I(1)-Cu(3)-I(4) & 57.01(10) \\ O(1)-Cu(1)-I(1) & 13.86(18) & I(1)-Cu(3)-I(3) & 81.6(6) \\ I(1)-Cu(1)-I(1') & 13.86(18) & I(1)-Cu(3)-I(3) & 110.6(2) \\ I(2)\#1-Cu(1)-Cu(3') & 157.3(2) & Cu(4)-Cu(3)-I(3) & 110.9(2) \\ I(2)\#1-Cu(1)-Cu(3') & 95.5(2) & Cu(3')-Cu(3)-I(1') & 62.4(6) \\ \end{array}$	Cu(5)-I(3)-Cu(2)	65.46(8)	Cu(7)-I(7)-Cu(6)#2	62.15(11)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(1)#1-I(3)-Cu(2)	69.86(8)	Cu(7')-I(7)-Cu(6)#2	52.62(19)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(1)-I(3)-Cu(2)	108.50(8)	Cu(5)-I(7)-Cu(8')	34.4(2)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(3')-I(4)-Cu(4)	77.9(2)	Cu(7)-I(7)-Cu(8')	45.4(2)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(3')-I(4)-Cu(2)	61.61(17)	Cu(7')-I(7)-Cu(8')	54.6(3)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(4)-I(4)-Cu(2)	65.28(9)	Cu(6)#2-I(7)-Cu(8')	106.0(2)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(3')-I(4)-Cu(3)	18.25(17)	Cu(7)-I(8)-Cu(6)#2	65.96(12)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(4)-I(4)-Cu(3)	61.08(11)	Cu(7)-I(8)-Cu(7')	23.3(3)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(2)-I(4)-Cu(3)	63.27(11)	Cu(6)#2-I(8)-Cu(7')	55.51(19)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(8')-I(5)-Cu(5)	35.6(2)	Cu(7')-I(9)-Cu(8)	81.7(4)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(8')-I(5)-Cu(2)	102.9(2)	Cu(7')-I(9)-Cu(9)	125.7(3)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(5)-I(5)-Cu(2)	69.33(10)	Cu(8)-I(9)-Cu(9)	61.93(9)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(8')-I(5)-Cu(8)	34.4(2)	Cu(7')-I(9)-Cu(7)	21.6(3)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(9)-I(10)-Cu(6)	67.19(8)	Cu(3')-Cu(2)-I(3)	58.20(16)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(9)-I(11)-Cu(4)	111.02(8)	I(4)-Cu(2)-I(3)	114.24(10)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(9)-I(11)-Cu(8)	60.10(9)	I(5)-Cu(2)-I(3)	103.26(9)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Cu(4)-I(11)-Cu(8)	51.01(10)	Cu(3)-Cu(2)-I(3)	56.36(10)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(9)-I(11)-Cu(6)	61.48(6)	Cu(4)-Cu(2)-I(3)	97.09(11)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cu(4)-I(11)-Cu(6)	171.06(8)	Cu(3')-Cu(3)-I(1)	74.3(6)
I(2)#1-Cu(1)-O(1) $62.8(2)$ I(1)-Cu(3)-Cu(4) $142.5(2)$ I(2)#1-Cu(1)-I(1) $113.03(17)$ Cu(3')-Cu(3)-I(4) $67.2(6)$ O(1)-Cu(1)-I(1) $58.1(2)$ I(1)-Cu(3)-I(4) $108.25(18)$ I(2)#1-Cu(1)-I(1') $118.8(2)$ Cu(4)-Cu(3)-I(4) $57.01(10)$ O(1)-Cu(1)-I(1') $70.3(3)$ Cu(3')-Cu(3)-I(3) $81.6(6)$ I(1)-Cu(1)-I(1') $13.86(18)$ I(1)-Cu(3)-I(3) $110.6(2)$ I(2)#1-Cu(1)-Cu(3') $157.3(2)$ Cu(4)-Cu(3)-I(3) $106.05(14)$ O(1)-Cu(1)-Cu(3') $96.3(3)$ I(4)-Cu(3)-I(3) $119.99(15)$ I(1)-Cu(1)-Cu(3') $55.6(2)$ Cu(3')-Cu(3)-I(1') $62.4(6)$	Cu(8)-I(11)-Cu(6)	121.54(9)	Cu(3')-Cu(3)-Cu(4)	119.4(6)
I(2)#1-Cu(1)-I(1)113.03(17)Cu(3')-Cu(3)-I(4) $67.2(6)$ O(1)-Cu(1)-I(1) $58.1(2)$ I(1)-Cu(3)-I(4) $108.25(18)$ I(2)#1-Cu(1)-I(1') $118.8(2)$ Cu(4)-Cu(3)-I(4) $57.01(10)$ O(1)-Cu(1)-I(1') $70.3(3)$ Cu(3')-Cu(3)-I(3) $81.6(6)$ I(1)-Cu(1)-I(1') $13.86(18)$ I(1)-Cu(3)-I(3) $110.6(2)$ I(2)#1-Cu(1)-Cu(3') $157.3(2)$ Cu(4)-Cu(3)-I(3) $106.05(14)$ O(1)-Cu(1)-Cu(3') $96.3(3)$ I(4)-Cu(3)-I(3) $119.99(15)$ I(1)-Cu(1)-Cu(3') $55.6(2)$ Cu(3')-Cu(3)-I(1') $62.4(6)$	I(2)#1-Cu(1)-O(1)	62.8(2)	I(1)-Cu(3)-Cu(4)	142.5(2)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	I(2)#1-Cu(1)-I(1)	113.03(17)	Cu(3')-Cu(3)-I(4)	67.2(6)
I(2)#1-Cu(1)-I(1')118.8(2)Cu(4)-Cu(3)-I(4) $57.01(10)$ O(1)-Cu(1)-I(1')70.3(3)Cu(3')-Cu(3)-I(3) $81.6(6)$ I(1)-Cu(1)-I(1')13.86(18)I(1)-Cu(3)-I(3) $110.6(2)$ I(2)#1-Cu(1)-Cu(3')157.3(2)Cu(4)-Cu(3)-I(3) $106.05(14)$ O(1)-Cu(1)-Cu(3')96.3(3)I(4)-Cu(3)-I(3) $119.99(15)$ I(1)-Cu(1)-Cu(3')55.6(2)Cu(3')-Cu(3)-I(1') $62.4(6)$	O(1)-Cu(1)-I(1)	58.1(2)	I(1)-Cu(3)-I(4)	108.25(18)
$\begin{array}{ccccccc} O(1)-Cu(1)-I(1') & 70.3(3) & Cu(3')-Cu(3)-I(3) & 81.6(6) \\ I(1)-Cu(1)-I(1') & 13.86(18) & I(1)-Cu(3)-I(3) & 110.6(2) \\ I(2)\#1-Cu(1)-Cu(3') & 157.3(2) & Cu(4)-Cu(3)-I(3) & 106.05(14) \\ O(1)-Cu(1)-Cu(3') & 96.3(3) & I(4)-Cu(3)-I(3) & 119.99(15) \\ I(1)-Cu(1)-Cu(3') & 55.6(2) & Cu(3')-Cu(3)-I(1') & 62.4(6) \\ \end{array}$	I(2)#1-Cu(1)-I(1')	118.8(2)	Cu(4)-Cu(3)-I(4)	57.01(10)
I(1)-Cu(1)-I(1')13.86(18)I(1)-Cu(3)-I(3)110.6(2)I(2)#1-Cu(1)-Cu(3')157.3(2)Cu(4)-Cu(3)-I(3)106.05(14)O(1)-Cu(1)-Cu(3')96.3(3)I(4)-Cu(3)-I(3)119.99(15)I(1)-Cu(1)-Cu(3')55.6(2)Cu(3')-Cu(3)-I(1')62.4(6)	O(1)-Cu(1)-I(1')	70.3(3)	Cu(3')-Cu(3)-I(3)	81.6(6)
I(2)#1-Cu(1)-Cu(3')157.3(2) $Cu(4)-Cu(3)-I(3)$ 106.05(14) $O(1)-Cu(1)-Cu(3')$ 96.3(3) $I(4)-Cu(3)-I(3)$ 119.99(15) $I(1)-Cu(1)-Cu(3')$ 55.6(2) $Cu(3')-Cu(3)-I(1')$ 62.4(6)	I(1)-Cu(1)-I(1')	13.86(18)	I(1)-Cu(3)-I(3)	110.6(2)
O(1)-Cu(3')96.3(3)I(4)-Cu(3)-I(3)119.99(15)I(1)-Cu(1)-Cu(3')55.6(2)Cu(3')-Cu(3)-I(1')62.4(6)	I(2)#1-Cu(1)-Cu(3')	157.3(2)	Cu(4)-Cu(3)-I(3)	106.05(14)
I(1)-Cu(3)-Cu(3') 55.6(2) $Cu(3')-Cu(3)-I(1')$ 62.4(6)	O(1)-Cu(1)-Cu(3')	96.3(3)	I(4)-Cu(3)-I(3)	119.99(15)
	I(1)-Cu(1)-Cu(3')	55.6(2)	Cu(3')-Cu(3)-I(1')	62.4(6)

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I(1')-Cu(1)-Cu(3')	55.5(2)	I(1)-Cu(3)-I(1')	12.82(19)
I(2)#1-Cu(1)-I(3)#1	107.82(11)	Cu(4)-Cu(3)-I(1')	142.1(2)
O(1)-Cu(1)-I(3)#1	165.5(3)	I(4)-Cu(3)-I(1')	97.91(19)
I(1)-Cu(1)-I(3)#1	121.85(15)	I(3)-Cu(3)-I(1')	111.4(2)
I(1')-Cu(1)-I(3)#1	108.32(18)	Cu(3')-Cu(3)-Cu(2)	69.9(6)
Cu(3')-Cu(1)-I(3)#1	94.35(19)	I(1)-Cu(3)-Cu(2)	144.2(2)
I(2)#1-Cu(1)-I(3)	115.56(12)	Cu(4)-Cu(3)-Cu(2)	61.65(12)
O(1)-Cu(1)-I(3)	103.4(2)	I(4)-Cu(3)-Cu(2)	57.38(10)
I(1)-Cu(1)-I(3)	106.31(17)	I(3)-Cu(3)-Cu(2)	64.25(11)
I(1')-Cu(1)-I(3)	111.6(2)	I(1')-Cu(3)-Cu(2)	132.1(2)
Cu(3')-Cu(1)-I(3)	58.04(16)	Cu(3')-Cu(3)-I(6)	177.1(7)
I(3)#1-Cu(1)-I(3)	90.62(9)	I(1)-Cu(3)-I(6)	107.61(19)
I(2)-Cu(2)-Cu(3')	119.3(2)	Cu(4)-Cu(3)-I(6)	57.74(11)
I(2)-Cu(2)-I(4)	113.84(11)	I(4)-Cu(3)-I(6)	109.93(14)
Cu(3')-Cu(2)-I(4)	56.45(16)	I(3)-Cu(3)-I(6)	99.64(13)
I(2)-Cu(2)-I(5)	113.85(11)	I(1')-Cu(3)-I(6)	119.2(2)
Cu(3')-Cu(2)-I(5)	126.2(2)	Cu(2)-Cu(3)-I(6)	108.17(14)
I(4)-Cu(2)-I(5)	108.44(11)	Cu(3')-Cu(3)-Cu(5)	127.0(6)
I(2)-Cu(2)-Cu(3)	136.20(15)	I(1)-Cu(3)-Cu(5)	146.4(2)
Cu(3')-Cu(2)-Cu(3)	17.60(17)	Cu(4)-Cu(3)-Cu(5)	55.78(11)
I(4)-Cu(2)-Cu(3)	59.35(10)	I(4)-Cu(3)-Cu(5)	104.44(13)
I(5)-Cu(2)-Cu(3)	108.67(13)	I(3)-Cu(3)-Cu(5)	56.70(9)
I(2)-Cu(2)-Cu(4)	160.15(16)	I(1')-Cu(3)-Cu(5)	157.7(2)
Cu(3')-Cu(2)-Cu(4)	71.4(2)	Cu(2)- $Cu(3)$ - $Cu(5)$	63.36(11)
I(4)-Cu(2)-Cu(4)	56.05(8)	I(6)-Cu(3)-Cu(5)	52.53(10)
I(5)-Cu(2)-Cu(4)	60.89(9)	Cu(3)-Cu(3')-I(4)	94.6(6)
Cu(3)- $Cu(2)$ - $Cu(4)$	57.00(12)	Cu(3)-Cu(3')-I(1)	86.7(6)
I(2)-Cu(2)-I(3)	102.76(10)	I(4)-Cu(3')-I(1)	118.3(3)
I(6)-Cu(4)-Cu(2)	114.11(12)	Cu(3)-Cu(3')-I(1')	100.2(7)
I(5)-Cu(4)-Cu(2)	57.93(8)	I(4)-Cu(3')-I(1')	111.5(3)
Cu(8)-Cu(4)-Cu(8')	33.1(2)	I(1)-Cu(3')-I(1')	14.53(18)
I(4)-Cu(4)-Cu(8')	149.4(2)	Cu(3)-Cu(3')-Cu(2)	92.5(6)
Cu(3)-Cu(4)-Cu(8')	100.4(2)	I(4)-Cu(3')-Cu(2)	61.94(17)
I(11)-Cu(4)-Cu(8')	97.7(2)	I(1)-Cu(3')-Cu(2)	1/9.1(4)
Cu(5)-Cu(4)-Cu(8')	33.0(2)	$I(1^{\circ})-Cu(3^{\circ})-Cu(2)$	166.3(4)
I(6)-Cu(4)-Cu(8)	62.8(2) 51.8(2)	Cu(3)-Cu(3)-I(3)	80.4(6)
I(5)-Cu(4)-Cu(8)	51.8(2)	I(4)-Cu(3')-I(3) I(1), Cu(2'), I(2)	12/.8(3)
Cu(2)- $Cu(4)$ - $Cu(8)$	91.3(2)	I(1)-Cu(3)-I(3) I(1)-Cu(2)-I(2)	113.3(3) 120.6(2)
Cu(8) - Cu(5) - I(7)	//./(4) 82 2(4)	I(1)-Cu(3)-I(3) Cu(2)-Cu(2')-I(3)	120.0(3)
U(8) - U(5) - I(6)	05.2(4)	Cu(2)- $Cu(3)$ - $I(3)Cu(2)$ $Cu(2)$ $Cu(1)$	106.0(7)
$\Gamma(7)$ -Cu(3)- $\Gamma(0)$	100.44(11) 65 1(4)	U(3)-U(3)-U(1)	100.0(7) 158 7(4)
U(8) - U(5) - I(5)	113 20(11)	I(4)-Cu(3)-Cu(1) I(1) Cu(3') Cu(1)	130.7(4) 58 0(2)
I(7) = Cu(5) = I(5) I(6) = Cu(5) = I(5)	113.20(11) 118.08(10)	I(1) - Cu(3) - Cu(1) I(1) - Cu(3) - Cu(1)	50.9(2)
$C_{u}(8')-C_{u}(5)-C_{u}(4)$	79 9(4)	$\Gamma(1) - Cu(3) - Cu(1)$	121 2(3)
I(7)-Cu(5)-Cu(4)	156 33(14)	I(3)-Cu(3')-Cu(1)	6279(17)
I(7)-Cu(5)-Cu(4)	$61 \ 10(9)$	$\Gamma(3) = Cu(3) = Cu(1)$ $\Gamma(4) = \Gamma(4)$	$168\ 20(18)$
I(5)-Cu(5)-Cu(4)	62.80(9)	Cu(8)-Cu(4)-Cu(3)	128 39(18)
Cu(8')-Cu(5)-Cu(8)	30 0(4)	I(4)-Cu(4)-Cu(3)	61 91(11)
I(7)-Cu(5)-Cu(8)	106 26(13)	Cu(8)-Cu(4)-I(11)	64 62(11)
I(6)-Cu(5)-Cu(8)	65.70(11)	I(4)-Cu(4)-I(11)	110.56(10)
I(5)-Cu(5)-Cu(8)	61.17(10)	Cu(3)-Cu(4)-I(11)	146.30(15)
Cu(4)-Cu(5)-Cu(8)	50.49(10)	Cu(8)-Cu(4)-Cu(5)	65.74(13)
	× /		× /

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	1=0=(1)		110.00
Cu(8')-Cu(5)-I(3)	170.7(4)	I(4)-Cu(4)-Cu(5)	119.33(12)
I(7)-Cu(5)-I(3)	98.61(9)	Cu(3)-Cu(4)-Cu(5)	68.90(12)
I(6)-Cu(5)-I(3)	106.09(10)	I(11)-Cu(4)-Cu(5)	129.98(12)
I(5)-Cu(5)-I(3)	109.37(11)	Cu(8)-Cu(4)-I(6)	70.45(13)
Cu(4)-Cu(5)-I(3)	104.68(11)	I(4)-Cu(4)-I(6)	121.35(12)
Cu(8)-Cu(5)-I(3)	155.13(14)	Cu(3)-Cu(4)-I(6)	65.56(12)
Cu(8')-Cu(5)-Cu(7)	42.9(4)	I(11)-Cu(4)-I(6)	98.75(9)
I(7)-Cu(5)-Cu(7)	57.04(11)	Cu(5)-Cu(4)-I(6)	58.45(9)
I(6)-Cu(5)-Cu(7)	62.55(12)	Cu(8)-Cu(4)-I(5)	64.44(12)
I(5)-Cu(5)-Cu(7)	107.94(14)	I(4)-Cu(4)-I(5)	108.12(10)
Cu(4)-Cu(5)-Cu(7)	100.74(13)	Cu(3)-Cu(4)-I(5)	109.82(12)
Cu(8)-Cu(5)-Cu(7)	57.90(13)	I(11)-Cu(4)-I(5)	103.73(10)
I(3)-Cu(5)-Cu(7)	141.40(14)	Cu(5)-Cu(4)-I(5)	58.49(9)
Cu(8')-Cu(5)-Cu(3)	131.9(4)	I(6)-Cu(4)-I(5)	112.62(10)
I(7)-Cu(5)-Cu(3)	141.52(13)	Cu(8)-Cu(4)-Cu(2)	118.72(15)
I(6)-Cu(5)-Cu(3)	61.38(10)	I(4)-Cu(4)-Cu(2)	58.67(8)
I(5)-Cu(5)-Cu(3)	102.99(12)	Cu(3)-Cu(4)-Cu(2)	61.35(13)
Cu(4)-Cu(5)-Cu(3)	55.32(11)	I(11)-Cu(4)-Cu(2)	146.35(14)
Cu(8)-Cu(5)-Cu(3)	102.21(13)	Cu(5)-Cu(4)-Cu(2)	67.88(11)
N(1)-Co(1)-N(4)	165.5(4)	N(8)-Co(2)-N(6)	93.6(4)
N(1)-Co(1)-N(2)	77.8(3)	N(5)-Co(2)-Cl(1)	94.3(3)
N(4)-Co(1)-N(2)	91.8(4)	N(7)-Co(2)-Cl(1)	93.2(3)
N(1)-Co(1)-N(3)	91.4(3)	N(8)-Co(2)-Cl(1)	95.4(3)
N(4)-Co(1)-N(3)	78.8(3)	N(6)-Co(2)-Cl(1)	168.7(3)
N(2)-Co(1)-N(3)	92.0(3)	N(5)-Co(2)-Cl(2)	90.8(3)
N(1)-Co(1)-Cl(1)	96.9(3)	N(7)-Co(2)-Cl(2)	175.0(3)
N(4)-Co(1)-Cl(1)	94.0(3)	N(8)-Co(2)-Cl(2)	97.1(3)
N(2)-Co(1)-Cl(1)	95.2(3)	N(6)-Co(2)-Cl(2)	87.4(3)
N(3)-Co(1)-Cl(1)	170.0(3)	Cl(1)-Co(2)-Cl(2)	84.69(10)
N(1)-Co(1)-Cl(2)	96.1(3)	Co(1)-Cl(1)-Co(2)	95.80(10)
N(4)-Co(1)-Cl(2)	94.4(3)	Co(2)-Cl(2)-Co(1)	94.58(10)
N(2)-Co(1)-Cl(2)	173.8(3)	N(5)-Co(2)-N(7)	93.8(4)
N(3)-Co(1)-Cl(2)	88.7(3)	N(5)-Co(2)-N(8)	168.0(4)
Cl(1)-Co(1)-Cl(2)	84.85(10)	N(7)-Co(2)-N(8)	78.7(4)
N(1)-Co(1)-N(3)	91.4(3)	N(5)-Co(2)-N(6)	77.7(4)
N(4)-Co(1)-N(3)	78.8(3)	N(7)-Co(2)-N(6)	95.4(4)
N(2)-Co(1)-N(3)	92.0(3)	N(1)-Co(1)-N(4)	165.5(4)
N(1)-Co(1)-Cl(1)	96.9(3)	N(1)-Co(1)-N(2)	77.8(3)
N(4)-Co(1)-Cl(1)	94.0(3)	N(4)-Co(1)-N(2)	91.8(4)
$N(2) C_{2}(1) C_{1}(1)$			
N(2)-CO(1)-CI(1)	95.2(3)		
Symmetry transformation	95.2(3) is used to generate eq	uivalent atoms: #1	x,-y+1/2,z+1/2

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