Electronic Supplementary Information for:

A Novel 2-D coordination polymers from unprecedented $[Ag]_7$ chains and two 3-D Silver-Organic Frameworks Constructed by Methylenediisophthalic acid (H_4MDIP) with strong Ag-Ag interaction†

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Table S1. Selected Bond Lengths (Å) and Bond Angles (deg) for 1-3[a]

Complex 1					
Ag(1)-N(1)	2.068(5)	Ag(1)-N(4)	2.088(5)		
N(1)-Ag(1)-N(4)	175.8(3)				
Complex 2					
Ag(1)-N(5)	2.107(7)	Ag(1)-N(1)	2.117(6)	Ag(1)-Ag(2)	3.0987(10)
Ag(2)-O(13A)	2.325(5)	Ag(2)-O(2)	2.385(6)	Ag(2)-O(5B)	2.463(6)
Ag(2)-Ag(3)	3.3445(10)	Ag(3)-O(15)	2.275(5)	Ag(3)-O(4B)	2.357(6)
Ag(3)-O(14A)	2.372(6)	Ag(3)-O(1)	2.536(5)	Ag(3)-Ag(4)	2.9063(9)
Ag(4)-O(3B)	2.036(6)	Ag(4)-O(16)	2.133(6)	Ag(4)-O(8)	2.580(5)
Ag(4)-Ag(5)	3.3617(8)	Ag(5)-O(11C)	2.090(5)	Ag(5)-O(8)	2.120(5)
Ag(5)-Ag(6)	2.8426(9)	Ag(6)-O(7)	2.129(6)	Ag(6)-O(12C)	2.291(5)
Ag(6)-O(6D)	2.373(6)	Ag(6)-O(9)	2.583(6)	Ag(6)-Ag(7)	2.9771(9)
Ag(7)-O(10)	2.040(6)	Ag(7)-O(5D)	2.193(6)	Ag(8)-N(8)	2.151(7)
Ag(8)-N(4E)	2.185(6)				
N(5)-Ag(1)-N(1)	149.8(3)	N(5)-Ag(1)-Ag(2)	69.53(18)	N(1)-Ag(1)-Ag(2)	127.47(15)
O(13A)-Ag(2)-O(2)	126.15(18)	O(13A)-Ag(2)-O(5B)	77.82(18)	O(2)-Ag(2)-O(5B)	87.0(2)
O(13A)-Ag(2)-Ag(1)	57.09(13)	O(2)-Ag(2)-Ag(1)	147.60(14)	O(5B)-Ag(2)-Ag(1)	61.35(16)
O(13A)-Ag(2)-Ag(3)	77.68(13)	O(2)-Ag(2)-Ag(3)	78.16(14)	O(5B)-Ag(2)-Ag(3)	135.18(15)
Ag(1)-Ag(2)-Ag(3)	128.51(2)	O(15)-Ag(3)-O(4B)	131.84(18)	O(15)-Ag(3)-O(14A)	91.83(19)
O(4B)-Ag(3)-O(14A)	101.2(2)	O(15)-Ag(3)-O(1)	119.98(18)	O(4B)-Ag(3)-O(1)	84.85(18)
O(14A)-Ag(3)-O(1)	131.05(19)	O(15)-Ag(3)-Ag(4)	71.00(13)	O(4B)-Ag(3)-Ag(4)	71.55(12)
O(14A)-Ag(3)-Ag(4)	143.93(15)	O(1)-Ag(3)-Ag(4)	84.35(13)	O(15)-Ag(3)-Ag(2)	164.02(13)
O(4B)-Ag(3)-Ag(2)	50.82(13)	O(14A)-Ag(3)-Ag(2)	72.69(14)	O(1)-Ag(3)-Ag(2)	74.69(13)
Ag(4)-Ag(3)-Ag(2)	119.46(3)	O(3B)-Ag(4)-O(16)	176.7(2)	O(3B)-Ag(4)-O(8)	105.42(19)
O(16)-Ag(4)-O(8)	75.49(18)	O(3B)-Ag(4)-Ag(3)	87.61(15)	O(16)-Ag(4)-Ag(3)	91.19(14)
O(8)-Ag(4)-Ag(3)	165.81(11)	O(3B)-Ag(4)-Ag(5)	126.90(15)	O(16)-Ag(4)-Ag(5)	52.00(14)
O(8)-Ag(4)-Ag(5)	39.09(10)	Ag(3)-Ag(4)-Ag(5)	127.84(3)	O(11C)-Ag(5)-O(8)	173.7(2)
O(11C)-Ag(5)-Ag(6)	86.43(17)	O(8)-Ag(5)-Ag(6)	87.85(14)	O(11C)-Ag(5)-Ag(4)	132.44(17)
O(8)-Ag(5)-Ag(4)	50.13(13)	Ag(6)-Ag(5)-Ag(4)	124.76(3)	O(7)-Ag(6)-O(12C)	142.7(2)
O(7)-Ag(6)-O(6D)	87.7(2)	O(12C)-Ag(6)-O(6D)	117.5(2)	O(7)-Ag(6)-O(9)	107.9(2)
O(12C)-Ag(6)-O(9)	84.31(17)	O(6D)-Ag(6)-O(9)	119.5(2)	O(7)-Ag(6)-Ag(5)	77.21(15)
O(12C)-Ag(6)-Ag(5)	73.43(14)	O(6D)-Ag(6)-Ag(5)	163.75(16)	O(9)-Ag(6)-Ag(5)	71.74(12)
O(7)-Ag(6)-Ag(7)	144.80(15)	O(12C)-Ag(6)-Ag(7)	72.53(14)	O(6D)-Ag(6)-Ag(7)	68.65(16)
O(9)-Ag(6)-Ag(7)	66.23(13)	Ag(5)-Ag(6)-Ag(7)	127.52(3)	O(10)-Ag(7)-O(5D)	173.7(2)
Complex 3					
O(10)-Ag(7)-Ag(6)	92.57(14)	O(5D)-Ag(7)-Ag(6)	91.33(15)	N(8)-Ag(8)-N(4E)	157.7(3)
Ag(1)-O(1)	2.169(4)	Ag(1)-O(6)	2.193(4)	Ag(2)-N(1)	2.129(4)
Ag(2)-N(3)	2.136(5)	Ag(2)-Ag(3)	3.2509(6)	Ag(3)-N(7)	2.077(4)
Ag(3)-N(5)	2.100(4)	Ag(3)-Ag(4)	3.2813(6)	Ag(4)-N(11)	2.080(5)
Ag(4)-N(9)	2.096(5)				
O(1)-Ag(1)-O(6)	168.20(15)	N(1)-Ag(2)-N(3)	159.62(17)	N(1)-Ag(2)-Ag(3)	85.02(12)
N(3)-Ag(2)-Ag(3)	113.60(13)	N(7)-Ag(3)-N(5)	178.94(16)	N(7)-Ag(3)-Ag(2)	101.05(11)
Ag(2)-Ag(3)-Ag(4)	171.867(17)	N(11)-Ag(4)-N(9)	164.39(18)	N(11)-Ag(4)-Ag(3)	87.66(12)

N(9)-Ag(4)-Ag(3)	107.71(13)

[a]Symmetry codes: (2) A:-x, -y+1, -z+2; B:-x, -y+1, -z+1; C:-x+1, -y, -z+2; D:-x+1, -y, -z+1; E:x+1, y-1, z+1; F:x-1, y+1, z-1

Table S2. Selected Distances (Å) and Angles (deg) of Hydrogen Bonding for Complexes 1 and 3

D—H···A	d(D···A)	< (D—H···A)	symmetry code
		Complex 1	
O(1)—H(1C)···O(4)	2.440(6)	159.3	x-1/2, -y+3/2, -z+2
		Complex 3	
O(10)—H(10D)···O(3)	2.785(10)	120.6	-x+1, -y+1, -z+1
O(11)—H(11A)···O(8)	2.774(14)	110.1	-x+1, y-1/2, -z+3/2
O(11)—H(11B)···O(19)	2.746(18)	170.6	-x+1, -y+1, -z+1
O(19)—H(9D)···O(11)	2.746(17)	113.6	-x+1, -y+1, -z+1
O(11)—H(11A)···O(11)	2.93(2)	133.1	-x+1, -y, -z+2

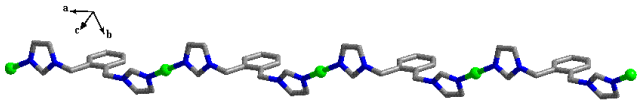
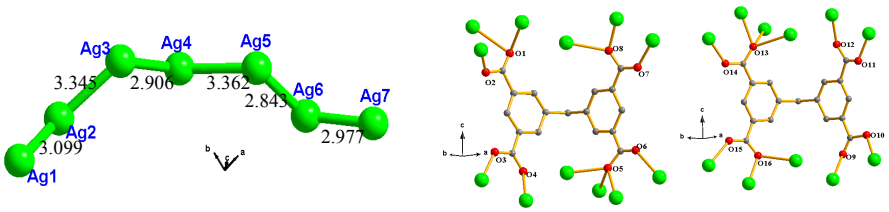


Figure S1. View of 1D chain in complex **1**



(a) (b)

Figure S2. **(a)** Ag-Ag bond distances shown in $[Ag]_7$ chain unit of complex **2**; (b) Coordination model of MDIP ligands in complex **2**.

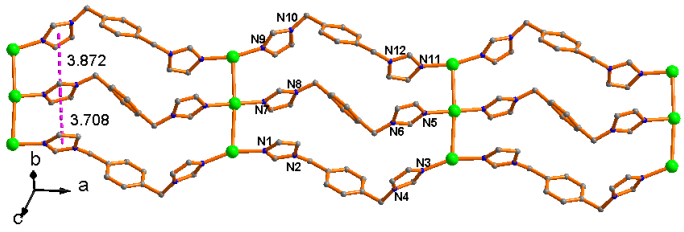


Figure S3. Perspective view of the π-π internactions in the trinuclear cationic cluster of complex **3**

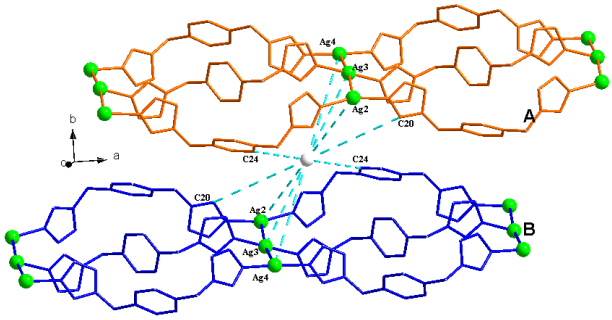


Figure S4. View of the centrosymmertry of A and B in complex **3**

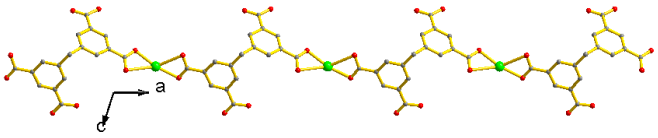


Figure S5. View of 1D chain in complex **3**

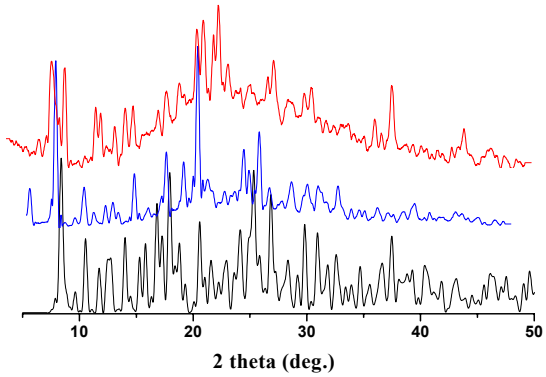


Figure S6. The PXRD for **1**. Black: simulated; blue: taken at room temperature; red: after heating to 120 ℃ for 5h

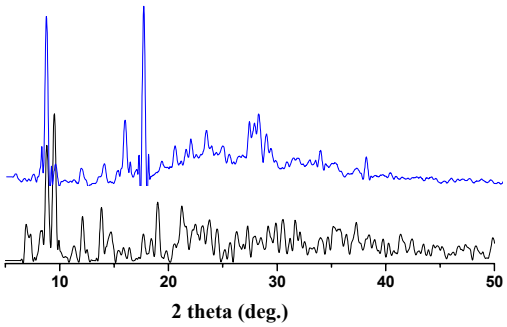


Figure S7. The PXRD for **2**. Black: simulated; blue: taken at room temperature; red: after heating to 120 ℃ for 5h

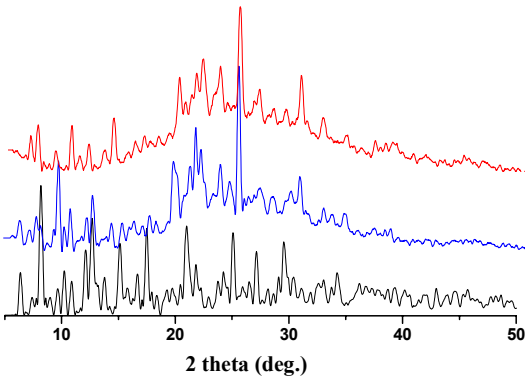


Figure S8. The PXRD for **3**. Black: simulated; blue: taken at room temperature; red: after heating to 120 ℃ for 5h

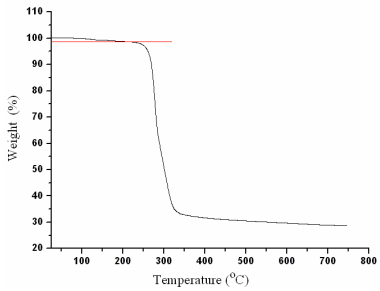


Figure S9. TGA curve of complex **1**

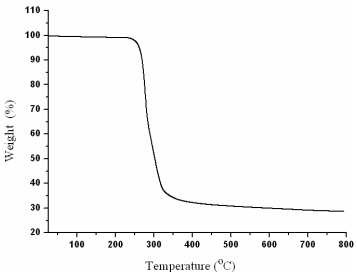


Figure S10. TGA curve of complex **2**

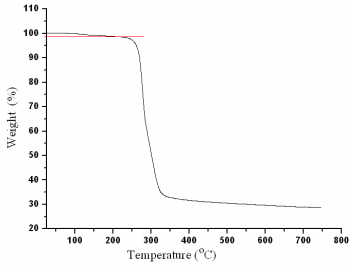


Figure S11. TGA curve of complex **3**