Supporting Information (SI)

Exploration of Silver Borates with Diverse Low Dimensional Anion Frameworks by Introducing Monovalent Heteroanions

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Tables and Figures

Table S1 Crystal Data and Structure Refinement Parameters.

Compounds	**(1)**	**(2)**	**(3)**	**(4)**
Empirical formula	$Ag_7B_9O_{16}(OH)_2$	$Ag_8B_8O_{15}Cl_2$	$Ag_8B_8O_{15}(OH)Br$	$Ag_{11}B_8O_{16}I_3$
Mr (g·mol^{-1})	1142.40	1260.34	1286.36	1909.75
Cryst syst.	Monoclinic	Monoclinic	Triclinic	Monoclinic
T (K)			296	
Space group	*C*2/*c*	*C*2/*c*	$P\ \bar{1}$	*C*2/*c*
a (Å)	8.826(4)	13.7794(8)	8.7338(3)	13.4121(5)
b (Å)	8.825(3)	10.7272(6)	8.8080(3)	12.5734(4)
c (Å)	20.483(9)	21.5856(12)	10.8986(3)	25.1948(9)
α (°)	90	90	79.573(10)	90
β (°)	100.220(2)	95.604(2)	89.317(10)	93.062(10)
γ (°)	90	90	75.242(10)	90
V (Å^3)	1570.10(11)	3175.40(3)	796.84(4)	4242.70(3)
Z	4	8	2	8
D_c (g·cm^{-3})	4.833	5.273	5.361	5.980
μ (mm^{-1})	8.653	10.071	12.212	14.354
F (000)	2080.0	4560.0	1160.0	6752.0
R_{int}	0.0322	0.0718	0.0313	0.0275
Radiation		MoK*α* (λ = 0.71073)		
2*θ* range for data collection/°	5.038 to 55.002	3.792 to 55.062	4.826 to 54.966	3.238 to 55.068
Index ranges	$-11 \le h \le 9$, $-11 \le k \le 10$, $-26 \le l \le 26$	$-15 \le h \le 17$, $-13 \le k \le 13$, $-28 \le l \le 27$	$-11 \le h \le 11$, $-11 \le k \le 11$, $-14 \le l \le 14$	$-17 \le h \le 16$, $-16 \le k \le 16$, $-32 \le l \le 32$
Reflns collected	7797	15737	14123	32864
GOF on F^2	1.030	1.041	1.022	1.075
Final *R* indexes [I>=2*σ* (I)][a]	$R_1 = 0.0280$, w$R_2 = 0.0556$	$R_1 = 0.0438$, w$R_2 = 0.0514$	$R_1 = 0.0233$, w$R_2 = 0.0455$	$R_1 = 0.0219$, w$R_2 = 0.0398$
Final *R* indexes [all data][a]	$R_1 = 0.0384$, w$R_2 = 0.0592$	$R_1 = 0.0886$, w$R_2 = 0.0580$	$R_1 = 0.0307$, w$R_2 = 0.0480$	$R_1 = 0.0272$, w$R_2 = 0.0412$

[a] $R_1 = \sum||F_o| - |F_c||/\sum|F_o|$ and $wR_2 = [w\ (F_o^2 - F_c^2)^2/wF_o^4]^{1/2}$ for $F_o^2 > 2\sigma\ (F_o^2)$

Table S2(a). Important bond lengths for **(1)**.

Bond Length(Å) for (1)			
B(1)—O(1)	1.353(6)	B(1)—O(2)	1.403(6)
B(1)—O(3)	1.380(6)	B(2)—O(2)	1.501(6)
B(2)—O(4)	1.454(6)	B(2)—O(5)[13]	1.454(6)
B(2)—O(7)[13]	1.495(6)	B(2)[11]—O(5)	1.454(6)
B(2)[11]—O(7)	1.495(6)	B(3)—O(3)	1.491(6)
B(3)—O(4)	1.461(6)	B(3)—O(5)	1.482(6)
B(3)—O(6)	1.468(6)	B(4)—O(6)	1.382(6)
B(4)—O(7)	1.388(6)	B(4)—O(8)	1.363(6)
B(5)—O(8)[3]	1.495(5)	B(5)—O(8)	1.495(5)
B(5)—O(9)[3]	1.459(5)	B(5)—O(9)	1.459(6)
Ag(1)—O(2)	2.139(3)	Ag(1)—O(2)[10]	2.139(3)
Ag(2)[9]—O(1)	2.174(4)	Ag(2)—O(1)[6]	2.174(4)
Ag(2)—O(5)	2.300(3)	Ag(2)—O(7)	2.652
Ag(2)—O(9)	2.665	Ag(3)—O(4)	2.232(3)
Ag(3)—O(5)[2]	2.507(3)	Ag(3)—O(7)[3]	2.536(3)
Ag(3)—O(9)[4]	2.348(4)	Ag(3)[2]—O(5)	2.507(3)
Ag(3)[3]—O(7)	2.536(3)	Ag(3)[12]—O(9)	2.348(4)
Ag(4)—O(1)[8]	2.349(4)	Ag(4)—O(1)[9]	2.507(4)
Ag(4)[8]—O(1)	2.349(4)	Ag(4)[6]—O(1)	2.507(4)
Ag(4)—O(6)	2.499(3)		

[1] -*x*, +*y*, 1/2-*z*; [2] 1/2-*x*, 1/2-*y*, 1/2-*z*; [3] 1-*x*, +*y*, 1/2-*z*; [4] -1/2+*x*, 3/2-*y*, +*z*; [5] +*x*, -1+*y*, +*z*;
[6] 1/2-*x*, -1/2+*y*, -*z*; [7] +*x*, 1+*y*, +*z*; [8] -*x*, 1-*y*, -*z*; [9] 1/2-*x*, 1/2+*y*, -*z*; [10] -*x*, -*y*, -*z*;
[11] 1/2+*x*, 1/2-*y*, +*z*; [12] 1/2+*x*, 3/2-*y*, +*z*; [13] -1/2+*x*, 1/2-*y*, +*z*

Table S2(b). Important bond lengths for **(2)**.

Bond Length(Å) for (2)			
B(1)—O(13)	1.365(9)	B(1)—O(14)	1.365(9)
B(1)—O(15)	1.358(10)	B(2)—O(12)	1.461(8)
B(2)—O(12)^{5}	1.461(8)	B(2)—O(13)	1.494(9)
B(2)—O(13)^{5}	1.494(9)	B(3)—O(6)	1.477(9)
B(3)—O(7)	1.462(9)	B(3)—O(12)	1.459(9)
B(3)—O(14)	1.509(9)	B(4)—O(5)	1.472(9)
B(4)—O(7)	1.472(9)	B(4)—O(8)	1.491(9)
B(4)—O(11)	1.434(9)	B(5)—O(3)	1.478(9)
B(5)—O(4)	1.497(9)	B(5)—O(5)	1.458(9)
B(5)—O(6)	1.458(9)	B(6)—O(2)	1.475(8)
B(6)—O(2)^{5}	1.474(8)	B(6)—O(3)	1.455(8)
B(6)—O(3)^{5}	1.455(8)	B(7)—O(1)	1.379(9)
B(7)—O(2)	1.351(9)	B(7)—O(4)	1.375(9)
B(8)^{13}—O(1)	1.472(9)	B(8)—O(1)^{2}	1.472(9)
B(8)—O(10)	1.504(9)	B(8)—O(11)	1.407(9)
B(8)—O(15)^{3}	1.494(9)	B(8)^{7}—O(15)	1.494(9)
B(9)—O(8)	1.362(10)	B(9)—O(9)	1.333(9)
B(9)—O(10)	1.392(9)	Ag(1)—O(5)^{8}	2.196(5)
Ag(1)—O(9)	2.104(5)	Ag(1)—Cl(2)^{9}	2.923(2)
Ag(1)^{10}—Cl(2)	2.923(2)	Ag(1)^{8}—O(5)	2.196(5)
Ag(2)^{6}—Cl(1)	2.742(2)	Ag(2)^{8}—O(1)	2.439(5)
Ag(2)^{10}—Cl(2)	2.772(2)	Ag(2)—Cl(1)^{6}	2.742(2)
Ag(2)—Cl(2)^{9}	2.772(2)	Ag(2)—O(1)^{8}	2.439(5)
Ag(2)—O(10)	2.311(5)	Ag(3)—Cl(1)	2.556(2)
Ag(3)—O(6)^{4}	2.489(5)	Ag(3)—O(9)	2.316(5)
Ag(3)—O(14)^{4}	2.361(5)	Ag(3)^{4}—O(14)	2.361(5)
Ag(3)^{4}—O(6)	2.489(5)	Ag(4)^{6}—Cl(1)	2.670(2)
Ag(4)^{12}—Cl(2)	2.819(2)	Ag(4)—Cl(1)^{6}	2.670(2)
Ag(4)—Cl(1)	2.632(2)	Ag(4)—O(7)	2.320(5)
Ag(4)—Cl(2)^{11}	2.819(2)	Ag(5)^{4}—O(8)	2.521(5)

Ag(5)[4]—O(4)	2.420(5)	Ag(5)—Cl(1)	2.774(2)
Ag(5)—O(4)[4]	2.420(5)	Ag(5)—O(15)	2.448(5)
Ag(5)—O(8)[4]	2.521(5)	Ag(6)—O(3)[11]	2.317(4)
Ag(6)—O(7)	2.306(5)	Ag(6)—O(12)	2.580(5)
Ag(6)[12]—O(3)	2.317(4)	Ag(7)—O(6)	2.320(4)
Ag(7)—O(3)[5]	2.451(4)	Ag(7)—O(12)[5]	2.388(5)
Ag(7)—Cl(2)[5]	2.545(19)	Ag(7)[5]—O(12)	2.388(5)
Ag(7)[5]—O(3)	2.451(4)	Ag(8)[13]—O(2)	2.458(5)
Ag(8)[7]—O(13)	2.388(5)	Ag(8)—O(2)[2]	2.458(5)
Ag(8)—O(11)	2.311(5)	Ag(8)—O(13)[3]	2.388(5)
Ag(8)—Cl(2)	2.519(2)		

[1] -*x*, +*y*, 1/2-*z*; [2] -1/2+*x*, -1/2+*y*, +*z*; [3] -1/2+*x*, 1/2+*y*, +*z*; [4] 1-*x*, 1-*y*, 1-*z*; [5] 1-*x*, +*y*, 1/2-*z*;
[6] 1/2-*x*, 1/2-*y*, 1-*z*; [7] 1/2+*x*, -1/2+*y*, +*z*; [8] 1/2-*x*, 3/2-*y*, 1-*z*; [9] +*x*, 1-*y*, 1/2+*z*; [10] +*x*, 1-*y*, -1/2+*z*;
[11] 1/2-*x*, -1/2+*y*, 1/2-*z*; [12] 1/2-*x*, 1/2+*y*, 1/2-*z*; [13] 1/2+*x*, 1/2+*y*, +*z*

Table S2(c). Important bond lengths for **(3)**.

Bond Length(Å) for (3)			
B(1)—O(1)	1.497(6)	B(1)—O(2)	1.478(5)
B(1)—O(3)	1.441(6)	B(1)^{13}—O(13)	1.479(6)
B(1)—O(13)^{1}	1.479(6)	B(2)—O(3)	1.448(6)
B(2)—O(4)	1.476(6)	B(2)—O(6)	1.443(6)
B(2)—O(7)	1.504(6)	B(3)—O(4)	1.371(6)
B(3)—O(5)	1.392(6)	B(3)—O(15)^{16}	1.344(6)
B(3)^{16}—O(15)	1.344(6)	B(4)—O(5)	1.486(6)
B(4)—O(6)	1.423(5)	B(4)—O(9)	1.493(6)
B(4)—O(11)	1.487(6)	B(5)—O(8)	1.369(6)
B(5)—O(9)	1.369(6)	B(5)—O(10)	1.369(6)
B(6)—O(1)^{4}	1.469(6)	B(6)—O(7)^{4}	1.466(6)
B(6)—O(14)^{7}	1.475(6)	B(6)—O(10)	1.502(5)
B(6)^{2}—O(1)	1.469(6)	B(6)^{2}—O(7)	1.466(6)
B(6)^{7}—O(14)	1.475(6)	B(7)—O(11)	1.365(6)
B(7)—O(12)	1.379(6)	B(7)—O(13)	1.360(6)
B(8)^{1}—O(2)	1.466(6)	B(8)—O(2)^{13}	1.466(6)
B(8)^{7}—O(8)	1.479(6)	B(8)—O(8)^{7}	1.479(6)
B(8)—O(12)	1.473(6)	B(8)—O(14)	1.463(6)
Ag(1)—O(1)	2.292(3)	Ag(1)—O(2)^{3}	2.477(3)
Ag(1)^{13}—O(14)	2.398(3)	Ag(1)—O(14)^{1}	2.398(3)
Ag(1)—Br(1)^{3}	2.6158(6)	Ag(1)^{3}—Br(1)	2.6158(6)
Ag(2)—O(2)^{14}	2.336(3)	Ag(2)^{14}—O(2)	2.337(3)
Ag(2)—O(3)	2.184(3)	Ag(2)—Br(1)^{14}	2.8618(7)
Ag(2)^{14}—Br(1)	2.8618(7)	Ag(3)—O(10)	2.411(3)
Ag(3)—O(11)^{6}	2.452(3)	Ag(3)—O(16)^{5}	2.516(4)
Ag(3)^{6}—O(11)	2.452(3)	Ag(3)^{11}—O(16)	2.516(4)
Ag(4)—O(6)	2.317(3)	Ag(4)—O(8)	2.513(3)
Ag(4)—O(12)	2.364(3)	Ag(5)—O(7)^{8}	2.567(3)
Ag(5)—O(7)	2.567(3)	Ag(5)—O(14)^{8}	2.325(3)
Ag(5)—O(14)	2.325(3)	Ag(6)—O(7)	2.151(3)
Ag(6)—O(15)	2.096(3)	Ag(7)—O(1)^{13}	2.389(3)

Ag(7)[1]—O(1)	2.389(3)	Ag(7)—O(15)	2.287(4)
Ag(7)—O(16)	2.358(4)	Ag(8)—O(16)[12]	2.101(4)
Ag(8)—O(16)	2.101(4)	Ag(9)—O(5)[11]	2.387(3)
Ag(9)[5]—O(5)	2.387(3)	Ag(9)—O(9)[10]	2.569(3)
Ag(9)[10]—O(9)	2.569(3)	Ag(9)—O(16)	2.406(4)

[1] -1+*x*, +*y*, +*z*; [2] +*x*, -1+*y*, +*z*; [3] -*x*, 1-*y*, 1-*z*; [4] +*x*, 1+*y*, +*z*; [5] -1+*x*, 1+*y*, +*z*;
[6] 1-*x*, 2-*y*, 2-*z*; [7] 1-*x*, 2-*y*, 1-*z*; [8] 1-*x*, 1-*y*, 1-*z*; [9] 1+*x*, -1+*y*, 1+*z*; [10] 2-*x*, 1-*y*, 2-*z*;
[11] 1+*x*, -1+*y*, +*z*; [12] 2-*x*, -*y*, 2-*z*; [13] 1+*x*, +*y*, +*z*; [14] -*x*, 2-*y*, 1-*z*; [15] -1+*x*, 1+*y*, -1+*z*; [16] 1-*x*, 1-*y*, 2-*z*

Table S2(d). Important bond lengths for **(4)**.

Bond lengths (Å) for (4)			
B(1)—O(1)	1.343(6)	B(1)—O(2)	1.390(6)
B(1)—O(3)	1.377(6)	B(2)—O(2)	1.473(6)
B(2)—O(4)	1.465(5)	B(2)—O(5)^{13}	1.482(5)
B(2)—O(14)^{12}	1.479(5)	B(2)^{9}—O(14)	1.479(5)
B(2)^{13}—O(5)	1.482(5)	B(3)—O(3)	1.517(6)
B(3)—O(4)	1.449(5)	B(3)—O(8)	1.453(6)
B(3)—O(9)	1.489(6)	B(4)—O(5)	1.380(6)
B(4)—O(6)	1.371(6)	B(4)—O(7)	1.353(6)
B(5)—O(9)	1.386(6)	B(5)—O(10)	1.349(6)
B(5)—O(11)	1.371(6)	B(6)—O(8)	1.455(6)
B(6)—O(11)	1.480(6)	B(6)—O(12)	1.485(6)
B(6)—O(13)	1.483(6)	B(7)^{17}—O(6)	1.480(6)
B(7)—O(12)	1.454(6)	B(7)—O(14)	1.473(6)
B(7)—O(15)	1.473(6)	B(7)—O(6)^{18}	1.480(6)
B(8)—O(13)	1.371(6)	B(8)—O(15)	1.378(6)
B(8)—O(16)	1.355(6)	Ag(1)—O(1)	2.211(3)
Ag(1)—O(3)	2.139(3)	Ag(1)—I(1)	2.6965(5)
Ag(1)—O(12)^{6}	2.575(3)	Ag(1)^{6}—O(12)	2.575(3)
Ag(2)—O(1)	2.243(3)	Ag(2)—O(14)^{6}	2.292(3)
Ag(2)^{6}—O(14)	2.292(3)	Ag(2)—I(2)^{2}	2.8962(6)
Ag(2)^{2}—I(2)	2.8962(6)	Ag(3)^{1}—I(3)	2.8532(5)
Ag(3)—I(3)^{14}	2.8532(5)	Ag(3)—O(2)	2.387(3)
Ag(3)—O(10)^{14}	2.346(3)	Ag(3)^{1}—O(10)	2.346(3)
Ag(4)—O(5)	2.308(3)	Ag(4)—O(7)^{13}	2.447(3)
Ag(4)^{13}—O(7)	2.447(3)	Ag(4)^{1}—I(3)	2.8113(5)
Ag(4)—I(3)^{14}	2.8112(5)	Ag(5)—O(4)	2.440(3)
Ag(5)—O(7)	2.249(3)	Ag(5)—O(15)^{12}	2.424(3)
Ag(5)^{9}—O(15)	2.424(3)	Ag(6)—O(9)	2.255(3)
Ag(6)—O(14)^{12}	2.404(3)	Ag(6)^{9}—O(14)	2.404(3)
Ag(6)—I(2)^{3}	2.7774(5)	Ag(6)^{3}—I(2)	2.7774(5)
Ag(7)—O(10)	2.255(3)	Ag(7)—O(12)^{4}	2.449(3)

Ag(7)[4]—O(12)	2.449(3)	Ag(7)—I(2)	2.7408(6)
Ag(8)—O(10)	2.239(3)	Ag(8)—O(1)[1]	2.559(3)
Ag(8)—O(3)[4]	2.306(3)	Ag(8)[14]—O(1)	2.559(3)
Ag(8)[4]—O(3)	2.306(3)	Ag(9)—O(13)	2.359(3)
Ag(9)—O(16)[11]	2.240(3)	Ag(9)[11]—O(16)	2.239(3)
Ag(9)—I(3)	2.6886(5)	Ag(10)—O(16)	2.303(3)
Ag(10)—O(6)[9]	2.486(3)	Ag(10)[12]—O(6)	2.486(3)
Ag(10)—O(8)[11]	2.381(3)	Ag(10)[11]—O(8)	2.381(3)
Ag(10)—I(1)[8]	2.9118(5)	Ag(10)[5]—I(1)	2.9118(5)
Ag(11)—O(7)[11]	2.184(6)	Ag(11)[11]—O(7)	2.184(6)
Ag(11)—I(1)[4]	2.703(9)	Ag(11)[4]—I(1)	2.703(9)
Ag(11)—O(16)	2.214(5)	Ag(12)—O(16)	2.372(5)
Ag(12)—O(7)[11]	2.321(4)	Ag(12)[11]—O(7)	2.321(4)
Ag(12)—I(1)[4]	2.997(5)	Ag(12)[4]—I(1)	2.997(5)
Ag(12)—I(2)[4]	2.916(7)	Ag(12)[4]—I(1)	2.916(7)

[1]-1/2+*x*, -1/2+*y*, +*z*, [2]2-*x*, 1-*y*, 1-*z*, [3]3/2-*x*, 1/2-*y*, 1-*z*, [4]1-*x*, 1-*y*, 1-*z*, [5]1/2+*x*, 3/2-*y*, -1/2+*z*, [6]3/2-*x*, 3/2-*y*, 1-*z*, [7]-1/2+*x*, 3/2-*y*, -1/2+*z*, [8]-1/2+*x*, 3/2-*y*, 1/2+*z*, [9]-1/2+*x*, 1/2+*y*, +*z*, [10]-1+*x*, +*y*, +*z*, [11]1-*x*, +*y*, 3/2-*z*, [12]1/2+*x*, -1/2+*y*, +*z*, [13]2-*x*, +*y*, 3/2-*z*, [14]1/2+*x*, 1/2+*y*, +*z*, [15]1/2+*x*, 3/2-*y*, 1/2+*z*, [16]1+*x*, +*y*, +*z*, [17]3/2-*x*, -1/2+*y*, 3/2-*z*, [18]3/2-*x*, 1/2+*y*, 3/2-*z*

Table S3(a). Selected bond angles (deg) for **(1)**.

Bond Angles (deg) for (1)			
O(1)—B(1)—O(2)	117.6(4)	O(1)—B(1)—O(3)	124.2(5)
O(3)—B(1)—O(2)	118.2(4)	O(4)—B(2)—O(2)	109.1(4)
O(4)—B(2)—O(7)[13]	111.7(4)	O(5)[13]—B(2)—O(4)	108.7(4)
O(5)[13]—B(2)—O(2)	111.2(4)	O(5)[13]—B(2)—O(7)[13]	109.8(4)
O(7)[13]—B(2)—O(2)	106.4(4)	O(4)—B(3)—O(5)	108.4(4)
O(4)—B(3)—O(3)	110.0(4)	O(4)—B(3)—O(6)	109.1(4)
O(5)—B(3)—O(3)	110.9(4)	O(6)—B(3)—O(5)	110.6(4)
O(6)—B(3)—O(3)	107.9(4)	O(8)—B(4)—O(6)	123.0(4)
O(8)—B(4)—O(7)	116.8(4)	O(6)—B(4)—O(7)	120.2(4)
O(8)—B(5)—O(8)[3]	109.7(5)	O(9)—B(5)—O(8)[3]	110.9(2)
O(9)—B(5)—O(8)	108.71(19)	O(9)[3]—B(5)—O(8)	110.9(2)
O(9)[3]—B(5)—O(8)[3]	108.71(19)	O(9)—B(5)—O(9)[3]	107.8(6)

[1] -*x*, +*y*, 1/2-*z*; [2] 1/2-*x*, 1/2-*y*, 1/2-*z*; [3] 1-*x*, +*y*, 1/2-*z*; [4] -1/2+*x*, 3/2-*y*, +*z*; [5] +*x*, -1+*y*, +*z*;
[6] 1/2-*x*, -1/2+*y*, -*z*; [7] +*x*, 1+*y*, +*z*; [8] -*x*, 1-*y*, -*z*; [9] 1/2-*x*, 1/2+*y*, -*z*; [10] -*x*, -*y*, -*z*;
[11] 1/2+*x*, 1/2-*y*, +*z*; [12] 1/2+*x*, 3/2-*y*, +*z*; [13] -1/2+*x*, 1/2-*y*, +*z*

Table S3(b). Selected bond angles (deg) for **(2)**.

Bond Angles (deg) for **(2)**			
O(1)—B(1)—O(11)	116.4(3)	O(7)[1]—B(1)—O(1)	124.4(3)
O(13)—B(1)—O(14)	120.3(7)	O(15)—B(1)—O(14)	117.0(7)
O(15)—B(2)—O(13)	122.7(7)	O(13)—B(2)—O(13)[5]	104.2(8)
O(12)—B(2)—O(13)[5]	108.9(3)	O(12)—B(2)—O(13)	110.1(3)
O(12)[5]—B(2)—O(13)	108.9(3)	O(12)[5]—B(2)—O(13)[5]	110.1(3)
O(12)—B(2)—O(12)[5]	114.2(9)	O(6)—B(3)—O(14)	105.7(5)
O(7)—B(3)—O(6)	111.2(6)	O(7)—B(3)—O(14)	107.7(6)
O(12)—B(3)—O(6)	114.0(6)	O(12)—B(3)—O(14)	110.8(6)
O(12)—B(3)—O(7)	107.3(6)	O(11)—B(4)—O(5)	109.9(6)
O(11)—B(4)—O(7)	108.9(6)	O(11)—B(4)—O(8)	110.9(6)
O(5)—B(4)—O(7)	108.9(6)	O(5)—B(4)—O(8)	109.2(6)
O(7)—B(4)—O(8)	109.0(6)	O(6)—B(5)—O(3)	112.8(6)
O(6)—B(5)—O(4)	108.7(6)	O(5)—B(5)—O(6)	111.0(6)
O(5)—B(5)—O(3)	106.3(6)	O(5)—B(5)—O(4)	109.1(6)
O(3)—B(5)—O(4)	108.8(6)	O(3)[5]—B(6)—O(3)	114.6(9)
O(3)[5]—B(6)—O(2)	108.1(3)	O(3)[5]—B(6)—O(2)[5]	110.3(3)
O(3)—B(6)—O(2)[5]	108.1(3)	O(3)—B(6)—O(2)	110.3(3)
O(2)[5]—B(6)—O(2)	105.0(8)	O(2)—B(7)—O(4)	120.3(7)
O(2)—B(7)—O(1)	122.1(7)	O(4)—B(7)—O(1)	117.5(7)
O(11)—B(8)—O(1)[2]	114.1(6)	O(11)—B(8)—O(15)[3]	114.7(6)
O(11)—B(8)—O(10)	111.3(6)	O(1)[2]—B(8)—O(15)[3]	105.7(6)
O(1)[2]—B(8)—O(10)	106.7(6)	O(15)[3]—B(8)—O(10)	103.5(5)
O(8)—B(9)—O(10)	119.8(7)	O(9)—B(9)—O(10)	122.4(7)
O(9)—B(9)—O(8)	117.7(7)		

[1] -*x*, +*y*, 1/2-*z*; [2] -1/2+*x*, -1/2+*y*, +*z*; [3] -1/2+*x*, 1/2+*y*, +*z*; [4] 1-*x*, 1-*y*, 1-*z*; [5] 1-*x*, +*y*, 1/2-*z*;
[6] 1/2-*x*, 1/2-*y*, 1-*z*; [7] 1/2+*x*, -1/2+*y*, +*z*; [8] 1/2-*x*, 3/2-*y*, 1-*z*; [9] +*x*, 1-*y*, 1/2+*z*; [10] +*x*, 1-*y*, -1/2+*z*;
[11] 1/2-*x*, -1/2+*y*, 1/2-*z*; [12] 1/2-*x*, 1/2+*y*, 1/2-*z*; [13] 1/2+*x*, 1/2+*y*, +*z*

Table S3(c). Selected bond angles (deg) for **(3)**.

Bond Angles (deg) for (3)			
O(1)—B(1)—O(3)	109.7(4)	O(2)—B(1)—O(3)	109.4(4)
O(3)—B(1)—O(13)^{2}	110.6(4)	O(2)—B(1)—O(1)	110.8(4)
O(2)—B(1)—O(13)^{2}	110.1(3)	O(1)—B(1)—O(13)^{2}	106.2(3)
O(6)—B(2)—O(7)	109.3(4)	O(6)—B(2)—O(3)	108.9(4)
O(6)—B(2)—O(4)	111.8(4)	O(3)—B(2)—O(7)	107.9(4)
O(3)—B(2)—O(4)	111.5(4)	O(4)—B(2)—O(7)	107.3(3)
O(4)—B(3)—O(5)	120.6(4)	O(15)^{16}—B(3)—O(5)	121.5(4)
O(15)^{16}—B(3)—O(4)	117.8(4)	O(6)—B(4)—O(9)	113.0(4)
O(6)—B(4)—O(11)	114.8(4)	O(6)—B(4)—O(5)	112.0(4)
O(11)—B(4)—O(9)	106.0(4)	O(5)—B(4)—O(9)	105.4(3)
O(5)—B(4)—O(11)	104.9(3)	O(9)—B(5)—O(8)	121.4(4)
O(9)—B(5)—O(10)	118.4(4)	O(10)—B(5)—O(8)	120.3(4)
O(14)^{7}—B(6)—O(10)	110.2(3)	O(14)^{7}—B(6)—O(7)^{5}	106.7(3)
O(1)^{1}—B(6)—O(7)^{5}	111.2(3)	O(10)—B(6)—O(7)^{5}	108.3(4)
O(14)^{7}—B(6)—O(1)^{5}	112.7(4)	O(10)—B(6)—O(1)^{5}	107.7(3)
O(12)—B(7)—O(11)	121.7(4)	O(13)—B(7)—O(11)	118.0(4)
O(12)—B(7)—O(12)	120.3(4)	O(14)—B(8)—O(8)^{7}	109.8(4)
O(14)—B(8)—O(2)^{13}	113.8(4)	O(14)—B(8)—O(12)	108.8(4)
O(2)^{13}—B(8)—O(8)^{7}	107.6(4)	O(2)^{13}—B(8)—O(12)	110.5(4)
O(12)—B(8)—O(8)^{7}	106.1(4)		

[1] -1+*x*, +*y*, +*z*; [2] +*x*, -1+*y*, +*z*; [3] -*x*, 1-*y*, 1-*z*; [4] +*x*, 1+*y*, +*z*; [5] -1+*x*, 1+*y*, +*z*;
[6] 1-*x*, 2-*y*, 2-*z*; [7] 1-*x*, 2-*y*, 1-*z*; [8] 1-*x*, 1-*y*, 1-*z*; [9] 1+*x*, -1+*y*, 1+*z*; [10] 2-*x*, 1-*y*, 2-*z*;
[11] 1+*x*, -1+*y*, +*z*; [12] 2-*x*, -*y*, 2-*z*; [13] 1+*x*, +*y*, +*z*; [14] -*x*, 2-*y*, 1-*z*; [15] -1+*x*, 1+*y*, -1+*z*; [16] 1-*x*, 1-*y*, 2-*z*

Table S3(d). Selected bond angles (deg) for **(4)**.

Bond Angles (deg) for (4)			
O(2)—B(1)—O(3)	119.4(4)	O(1)—B(1)—O(3)	123.3(4)
O(1)—B(1)—O(2)	117.2(4)	O(4)—B(2)—O(14)[12]	113.4(4)
O(4)—B(2)—O(5)[13]	106.9(3)	O(4)—B(2)—O(2)	110.2(3)
O(14)[12]—B(2)—O(5)[13]	110.7(3)	O(2)—B(2)—O(14)[12]	107.9(3)
O(2)—B(2)—O(5)[13]	107.5(3)	O(8)—B(3)—O(9)	109.1(3)
O(8)—B(3)—O(3)	110.0(4)	O(4)—B(3)—O(8)	111.2(4)
O(4)—B(3)—O(9)	110.2(4)	O(4)—B(3)—O(3)	110.2(3)
O(9)—B(3)—O(3)	105.9(3)	O(7)—B(4)—O(5)	119.9(4)
O(7)—B(4)—O(6)	121.5(4)	O(5)—B(4)—O(6)	118.6(4)
O(10)—B(5)—O(9)	120.0(4)	O(10)—B(5)—O(11)	121.3(4)
O(11)—B(5)—O(9)	118.6(4)	O(13)—B(6)—O(12)	109.5(3)
O(8)—B(6)—O(13)	108.7(4)	O(8)—B(6)—O(12)	112.9(4)
O(11)—B(6)—O(8)	110.8(3)	O(11)—B(6)—O(13)	108.3(4)
O(11)—B(6)—O(12)	106.6(4)	O(14)—B(7)—O(6)[18]	111.0(4)
O(14)—B(7)—O(12)	109.4(4)	O(12)—B(7)—O(15)	111.6(4)
O(12)—B(7)—O(6)[18]	109.4(4)	O(15)—B(7)—O(14)	107.0(3)
O(15)—B(7)—O(6)[18]	108.4(4)	O(13)—B(8)—O(15)	118.7(4)
O(16)—B(8)—O(13)	121.8(4)	O(16)—B(8)—O(15)	119.5(4)

[1]-1/2+*x*, -1/2+*y*, +*z*; [2]2-*x*, 1-*y*, 1-*z*; [3]3/2-*x*, 1/2-*y*, 1-*z*; [4]1-*x*, 1-*y*, 1-*z*; [5]1/2+*x*, 3/2-*y*, -1/2+*z*; [6]3/2-*x*, 3/2-*y*, 1-*z*;[7]-1/2+*x*, 3/2-*y*, -1/2+*z*; [8]-1/2+*x*, 3/2-*y*, 1/2+*z*; [9]-1/2+*x*, 1/2+*y*, +*z*; [10]-1+*x*, +*y*, +*z*; [11]1-*x*, +*y*, 3/2-*z*; [12]1/2+*x*, -1/2+*y*, +*z*; [13]2-*x*, +*y*, 3/2-*z*; [14]1/2+*x*, 1/2+*y*, +*z*; [15]1/2+*x*, 3/2-*y*, 1/2+*z*; [16]1+*x*, +*y*, +*z*; [17]3/2-*x*, -1/2+*y*, 3/2-*z*; [18]3/2-*x*, 1/2+*y*, 3/2-*z*

Table S4(a). Fractional Atomic Coordinates ($\times 10^4$) and Equivalent Isotropic Displacement Parameters ($Å^2 \times 10^3$) for **(1)**. U_{eq} is defined as 1/3 of the trace of the orthogonalized U_{ij} tensor.

Atom	***x***	***y***	***z***	U_{eq}[a]/Å^2
Ag(1)	0	0	0	44.6(2)
Ag(2)	3410.1(6)	101.6(5)	999.5(2)	29.39(14)
Ag(3)	1643.0(5)	3795.6(5)	2636.4(2)	23.95(14)
Ag(4)	1691.4(5)	7063.4(5)	889.3(3)	30.10(15)
B(1)	1238(6)	3155(6)	172(3)	11.4(11)
B(2)	409(6)	2161(6)	1241(3)	8.8(10)
B(3)	2719(6)	3827(6)	1255(3)	9.4(10)
B(4)	4976(6)	5431(6)	1710(3)	10.7(11)
B(5)	5000	7664(8)	2500	9.0(14)
O(1)	972(4)	3082(4)	-498.9(17)	16.1(7)
O(2)	478(4)	2104(4)	513.9(16)	14.2(7)
O(3)	2220(4)	4181(4)	537.5(16)	12.9(7)
O(4)	1392(4)	3382(4)	1547.3(15)	9.8(7)
O(5)	3847(3)	2567(4)	1347.6(16)	9.3(7)
O(6)	3402(4)	5204(4)	1586.4(17)	12.2(7)
O(7)	5953(4)	4349(4)	1519.2(17)	12.6(7)
O(8)	5650(4)	6689(4)	2020.6(17)	12.7(7)
O(9)	6221(4)	8637(4)	2845.3(18)	14.8(8)
H(9)	7030(70)	8380(70)	2880(30)	19(17)

Table S4(b). Fractional Atomic Coordinates ($\times 10^4$) and Equivalent Isotropic Displacement Parameters ($Å^2 \times 10^3$) for **(2)**. U_{eq} is defined as 1/3 of the trace of the orthogonalized U_{ij} tensor.

Atom	*Wyckoff site*	*x*	*y*	*z*	U_{eq}[a]/Å^2
Ag(1)	*8f*	2482.4(5)	6616.7(6)	6183.8(3)	28.58(18)
Ag(2)	*8f*	977.8(5)	4323.8(6)	5441.9(3)	26.73(18)
Ag(3)	*8f*	4524.3(5)	4812.7(6)	5604.4(3)	28.22(19)
Ag(4)	*8f*	2693.9(6)	3051.8(6)	4111.0(3)	37.3(2)
Ag(5)	*8f*	5686.6(4)	2626.1(6)	5174.5(3)	19.80(17)
Ag(6)	*8f*	2373.9(5)	3261.4(6)	2621.5(3)	34.3(2)
Ag(7)	*8f*	6157.3(4)	5642.2(6)	3060.2(3)	17.93(16)
Ag(8)	*8f*	1189.5(4)	5718.7(6)	2577.8(3)	17.91(16)
Cl(1)	*8f*	3683.9(15)	2800.4(19)	5210.0(10)	24.6(5)
Cl(2)	*8f*	2033.1(14)	5894.2(18)	1597.3(9)	17.4(5)
B(1)	*8f*	5151(6)	2606(8)	3625(4)	9(2)
B(2)	*4e*	5000	3225(11)	2500	14(3)
B(3)	*8f*	4126(6)	4483(8)	3279(4)	6.0(18)
B(4)	*8f*	2732(6)	5670(8)	3672(4)	10(2)
B(5)	*8f*	4082(6)	6902(8)	3268(4)	8.6(19)
B(6)	*4e*	5000	8157(11)	2500	11(3)
B(7)	*8f*	5067(6)	8820(8)	3609(4)	7.6(19)
B(8)	*8f*	1051(6)	5672(7)	4101(4)	4.5(18)
B(9)	*8f*	2613(6)	5772(8)	4831(4)	12(2)
O(1)	*8f*	5342(3)	9643(4)	4084(2)	9.7(12)
O(2)	*8f*	5312(3)	8993(4)	3024(2)	11.7(12)
O(3)	*8f*	4161(3)	7424(4)	2641(2)	7.9(11)
O(4)	*8f*	4502(3)	7818(4)	3745(2)	7.8(11)
O(5)	*8f*	3043(3)	6759(4)	3327(2)	8.0(11)
O(6)	*8f*	4592(3)	5718(4)	3368(2)	9.0(11)
O(7)	*8f*	3100(3)	4531(4)	3396(2)	8.3(11)
O(8)	*8f*	3151(3)	5760(5)	4334(2)	17.0(13)
O(9)	*8f*	3086(4)	5917(4)	5395(2)	16.7(13)
O(10)	*8f*	1604(3)	5651(4)	4737(2)	9.2(11)
O(11)	*8f*	1688(3)	5616(4)	3630(2)	9.1(11)
O(12)	*8f*	4169(3)	3965(4)	2657(2)	9.0(11)
O(13)	*8f*	5328(4)	2369(4)	3025(2)	14.7(12)
O(14)	*8f*	4648(3)	3647(4)	3766(2)	10.5(12)
O(15)	*8f*	5462(3)	1841(4)	4105(2)	9.8(12)

Table S4(c). Fractional Atomic Coordinates ($\times 10^4$) and Equivalent Isotropic Displacement Parameters ($Å^2 \times 10^3$) for **(3)**. U_{eq} is defined as 1/3 of the trace of the orthogonalized U_{ij} tensor.

Atom	*Wyckoff site*	*x*	*y*	*z*	U_{eq}[a]/Å^2
Ag(1)	*2i*	-1066.3(4)	3774.7(4)	6147.5(4)	15.93(9)
Ag(2)	*2i*	535.1(5)	10381.3(5)	6106.5(5)	35.53(13)
Ag(3)	*2i*	3119.4(5)	13366.0(5)	9719.0(3)	18.79(10)
Ag(4)	*2i*	3762.4(5)	8829.5(5)	5165.8(3)	18.04(10)
Ag(5)	*1h*	5000	5000	5000	33.54(17)
Ag(6)	*2i*	5435.3(5)	4567.2(5)	7820.1(4)	19.71(10)
Ag(7)	*2i*	9817.3(5)	4194.2(6)	8792.0(4)	33.22(13)
Ag(8)	*1a*	10000	0	10000	27.43(15)
Ag(9)	*2i*	13448.6(5)	-228.0(5)	10743.5(4)	21.12(10)
Br(1)	*2i*	2613.9(6)	8393.1(6)	3125.3(5)	17.87(12)
B(1)	*2i*	-229(6)	6883(6)	6530(4)	7.4(10)
B(2)	*2i*	2360(6)	7059(6)	7383(5)	7.7(10)
B(3)	*2i*	2893(6)	6707(6)	9683(5)	8.5(10)
B(4)	*2i*	4216(6)	8519(6)	8227(4)	6.0(9)
B(5)	*2i*	3326(6)	11524(6)	7312(5)	7.9(10)
B(6)	*2i*	2319(6)	14506(6)	6615(4)	6.4(9)
B(7)	*2i*	6950(6)	7585(6)	7196(4)	6.4(9)
B(8)	*2i*	7416(6)	7374(6)	4953(5)	7.8(10)
O(1)	*2i*	613(3)	5144(4)	6753(3)	7.4(6)
O(2)	*2i*	-962(4)	7405(4)	5257(3)	8.0(6)
O(3)	*2i*	877(4)	7807(4)	6684(3)	9.9(6)
O(4)	*2i*	2095(4)	6445(4)	8698(3)	13.8(7)
O(5)	*2i*	3865(4)	7752(4)	9491(3)	8.8(6)
O(6)	*2i*	3314(4)	8192(4)	7274(3)	7.4(6)
O(7)	*2i*	3205(3)	5652(4)	6817(3)	7.8(6)
O(8)	*2i*	3201(4)	11308(4)	6108(3)	12.4(7)
O(9)	*2i*	3888(4)	10258(4)	8264(3)	10.2(6)
O(10)	*2i*	2868(4)	13024(4)	7592(3)	9.7(6)
O(11)	*2i*	5962(4)	7945(4)	8141(3)	11.2(7)
O(12)	*2i*	6378(4)	7718(4)	5997(3)	10.6(7)
O(13)	*2i*	8535(4)	7073(4)	7470(3)	10.7(7)
O(14)	*2i*	7298(4)	5861(4)	4638(3)	7.5(6)
O(15)	*2i*	7256(4)	4117(5)	9176(3)	18.6(8)
O(16)	*2i*	11040(4)	1846(4)	10209(3)	20.2(8)
H(15)	*2i*	7900(200)	4400(300)	8700(200)	420(160)

Table S4(d). Fractional Atomic Coordinates ($\times 10^4$) and Equivalent Isotropic Displacement Parameters ($Å^2 \times 10^3$) for **(4)**. U_{eq} is defined as 1/3 of the trace of the orthogonalized U_{ij} tensor.

Atom	*Wyckoff site*	*x*	*y*	*z*	U_{eq}[a]/Å^2
Ag(1)	*8f*	8162.1(3)	7006.8(3)	4191.4(2)	23.47(9)
Ag(2)	*8f*	10317.2(3)	6249.2(4)	4842.3(2)	35.44(12)
Ag(3)	*8f*	10276.0(3)	7147.8(3)	5975.2(2)	31.13(11)
Ag(4)	*8f*	11037.8(4)	6413.8(3)	7843.7(2)	34.19(11)
Ag(5)	*8f*	8031.3(3)	3921.7(3)	7137.5(2)	18.20(8)
Ag(6)	*8f*	7593.0(3)	2987.0(3)	5831.0(3)	43.53(14)
Ag(7)	*8f*	6073.4(3)	3488.8(4)	4686.9(2)	30.20(11)
Ag(8)	*8f*	3593.6(3)	3716.3(3)	5168.4(2)	28.85(10)
Ag(9)	*8f*	5974.0(3)	4806.9(3)	7205.7(2)	24.66(9)
Ag(10)	*8f*	3099.9(3)	7331.1(3)	7971.9(2)	19.99(9)
Ag(11)	*8f*	2577(6)	5143(11)	6853(6)	47(2)
Ag(12)	*8f*	2420(3)	5446(4)	6690(2)	37.8(8)
I(1)	*8f*	6547.5(2)	6605.0(3)	3538.3(2)	23.06(8)
I(2)	*8f*	7957.2(2)	4082.5(3)	4435.9(2)	22.45(8)
I(3)	*8f*	6255.3(2)	2750.2(2)	6962.8(2)	16.64(7)
B(1)	*8f*	8475(4)	6134(4)	5430(2)	10.9(9)
B(2)	*8f*	9038(3)	4946(4)	6194.1(19)	8.6(9)
B(3)	*8f*	7177(3)	5436(4)	6049.7(19)	9.4(9)
B(4)	*8f*	9492(4)	4548(4)	8151(2)	12.0(10)
B(5)	*8f*	5635(4)	4487(4)	5696(2)	10.9(9)
B(6)	*8f*	5422(4)	6172(4)	6215(2)	10.6(9)
B(7)	*8f*	4728(4)	8040(4)	6339(2)	10.5(9)
B(8)	*8f*	4180(4)	6591(4)	6915.5(19)	11.4(10)
O(1)	*8f*	8752(2)	6713(3)	5014.5(13)	17.7(7)
O(2)	*8f*	9229(2)	5663(2)	5748.2(12)	12.3(6)
O(3)	*8f*	7496(2)	6015(3)	5558.4(12)	13.3(6)
O(4)	*8f*	8043(2)	5146(2)	6386.5(12)	10.7(6)
O(5)	*8f*	10231(2)	5210(2)	8363.4(12)	12.6(6)
O(6)	*8f*	9433(2)	3532(2)	8344.7(14)	17.4(7)
O(7)	*8f*	8835(2)	4914(3)	7768.2(13)	17.1(7)
O(8)	*8f*	6493(2)	6095(2)	6334.3(12)	13.6(6)
O(9)	*8f*	6641(2)	4463(2)	5852.6(13)	13.0(6)
O(10)	*8f*	5215(2)	3658(2)	5427.8(13)	14.9(7)
O(11)	*8f*	5088(2)	5369(2)	5814.5(13)	14.9(7)
O(12)	*8f*	5113(2)	7224(2)	5995.3(12)	11.2(6)
O(13)	*8f*	4900(2)	5964(2)	6709.1(12)	14.4(7)
O(14)	*8f*	4179(2)	8841(2)	6011.7(12)	10.1(6)
O(15)	*8f*	4021(2)	7594(2)	6707.3(13)	16.8(7)
O(16)	*8f*	3602(2)	6238(3)	7303.3(13)	15.9(7)

Table S5. Assignment of the absorption peaks observed in the IR spectra of **(1)**, **(2)**, **(3)** and **(4)**.

Mode description of (1)	Absorption peaks (cm^{-1})
$V_{as}(BO_3)$	1348.00, 1220.72
$V_s(BO_3)$	1031.73, 966.16, 916.02
$V_s(BO_4)$	846.60, 813.81
$\delta_{out}(BO_3)$	684.61, 611.33
$\delta(BO_3, BO_4)$	566.97, 534.19
$V_c(OH)$	3278.40

Mode description of (2)	Absorption peaks (cm^{-1})
$V_{as}(BO_3)$	1361.50, 1295.93, 1249.65
$V_{as}(BO_4)$	1143.58, 1116.58
$V_s(BO_3)$	993.16, 931.45, 896.74
$V_s(BO_4)$	829.31, 792.60, 725.11
$\delta_{out}(BO_3)$	663.39, 603.61
$\delta(BO_3, BO_4)$	541.90, 457.05

Mode description of (3)	Absorption peaks (cm^{-1})
$V_{as}(BO_3)$	1292.22, 1247.72
$V_s(BO_3)$	1052.95, 995.09, 892.88
$V_s(BO_4)$	829.24, 790.67, 723.18
$\delta_{out}(BO_3)$	667.25
$\delta(BO_3, BO_4)$	579.83, 534.19, 433.91
$V_c(OH)$	3411.47

Mode description of (4)	Absorption peaks (cm^{-1})
$V_{as}(BO_3)$	1340.28, 1261.22, 1216.87
$V_{as}(BO_4)$	1062.59, 1018.23
$V_s(BO_3)$	875.23
$V_s(BO_4)$	821.53
$\delta_{out}(BO_3)$	669.25, 632.53
$\delta(BO_3, BO_4)$	555.40

Table S6. Reported inorganic stoichiometric Ag-borates with B–O framework.

No.	Compounds	Space group	B–O Units	Dimension	*Ref.*
1	$Ag_7B_9O_{16}(OH)_2$	*C*2/*c*	$B_{15}O_{30}(OH)_4$	1	This work **(1)**
2	$Ag_8B_8O_{15}Cl_2$	*C*2/*c*	$B_{18}O_{40}$, $B_{16}O_{36}$, $B_{12}O_{26}$	2	This work **(2)**
3	$Ag_8B_8O_{15}(OH)Br$	$P\bar{1}$	$B_{18}O_{38}(OH)_2$, $B_{16}O_{36}$, $B_{12}O_{26}$	2	This work **(3)**
4	$Ag_{11}B_8O_{16}I_3$	*C*2/*c*	B_9O_{20}	1	This work **(4)**
5	$AgBO_2$(I)	*Pbca*	B_3O_8	1	1
6	$AgBO_2$(II)	*Cc*	B_3O_8	1	2
7	$Ag_2O(B_2O_3)_4$	$P2_1/c$	B_5O_{10}	3	3
8	Ag_3BO_3(I)	*R*32	BO_3	0	4
9	Ag_3BO_3(II)	$R\bar{3}c$	BO_3	0	5
10	$Ag_6[B_{12}O_{18}(OH)_6]\cdot 3H_2O$	$P2_1/c$	$B_{12}O_{18}(OH)_6$	0	6
11	*ß*-$Ag_2B_8O_{13}$	$P2_1/c$	BO_3	0	7
12	AgB_3O_5	$Pna2_1$	BO_3, BO_4	3	8
13	$Ag_3B_5O_9$	$P2_12_12_1$	BO_3, BO_4	3	9
14	$Ag_2B_4O_7$	$P2_1/c$	BO_3, BO_4	3	10
15	*α*-$Ag_2B_8O_{13}$	$P2_1/c$	BO_3	0	11
16	*ß*-$Ag_2B_8O_{13}$	$P2_1/c$	B_8O_{13}	0	12
17	$Ag_{16}B_4O_{10}$	$I4_1/a$	B_4O_{10}	1	13
18	$Ag_3B_6O_{10}I$	*Pnma*	B_6O_{10}	3	14
19	$Ag_4B_7O_{12}Cl$	$P\bar{1}$	B_4O_9, B_3O_7	2	15
20	$Ag_4B_7O_{12}Br$	$P\bar{1}$	B_4O_9, B_3O_7	2	15
21	$Ag_4B_7O_{12}I$	$P\bar{1}$	B_4O_9, B_3O_7	2	15
22	$Ag_4B_4O_7Br_2$	$P6_122$	B_3O_8	3	16
23	$Ag_4B_4O_7I_2$	$P6_122$	B_3O_8	3	16
24	$Ag_3B_6O_{10}Br$	$Pnm2_1$	B_6O_{10}	3	17
25	$Ag_2Cs[B_{15}O_{24}]$	$P2_12_12$	$B_{15}O_{24}$	3	18
26	$AgSr(B_7O_{12})$	*C*2/*c*	B_7O_{12}	2	19
27	$Ag_2B_{10}O_{14}(OH)_4\cdot H_2O$	$P\bar{1}$	$B_5O_8(OH)_2$	2	20
28	$Ag_2B_5O_8(OH)\cdot H_2O$	$P2_1/c$	$B_5O_{10}(OH)$	1	20

Figure S1. Rietveld refiement for the powder X-ray diffraction pattern of **(1)**.

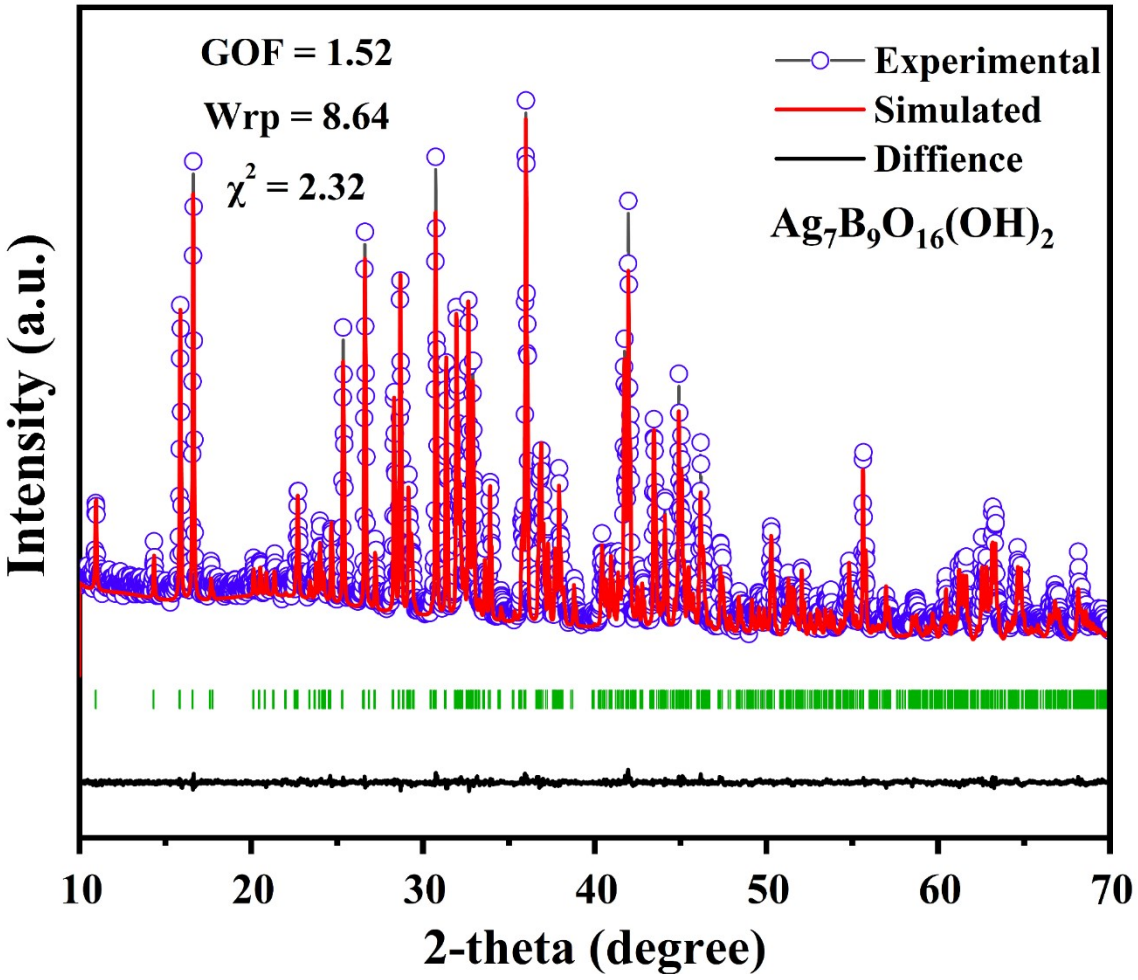


Figure S2. Rietveld refiement for the powder X-ray diffraction pattern of **(2)**.

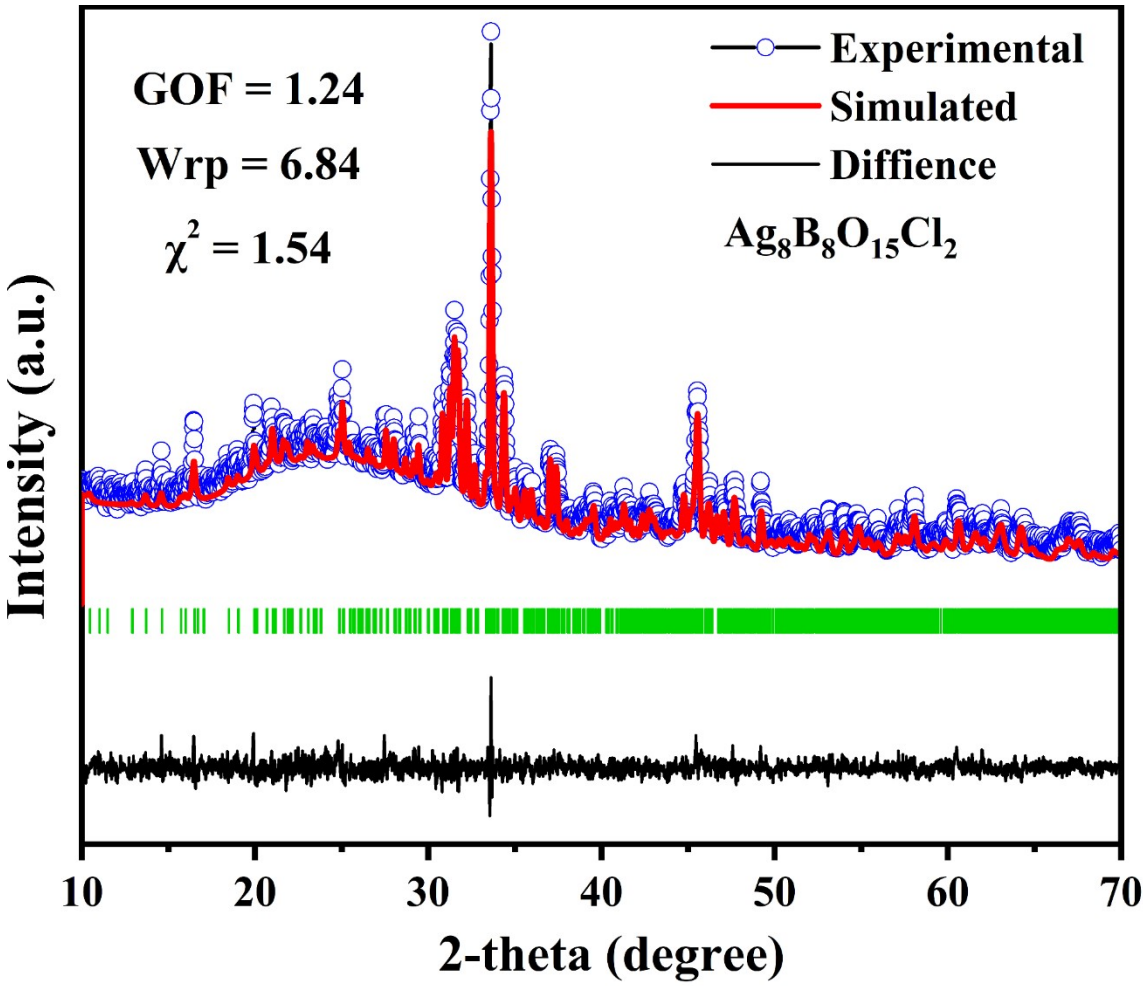


Figure S3. Rietveld refiement for the powder X-ray diffraction pattern of **(3)**.

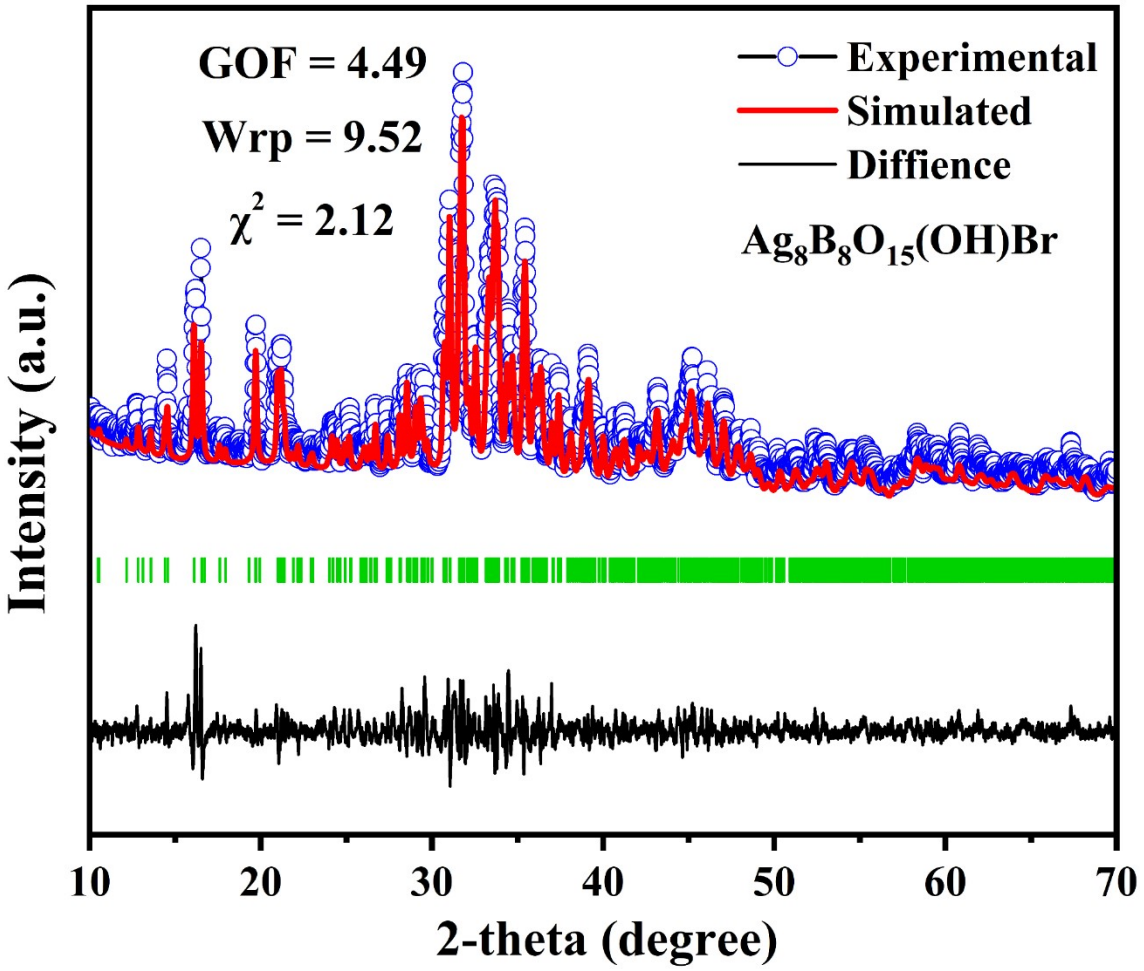


Figure S4. Rietveld refiement for the powder X-ray diffraction pattern of **(4)**.

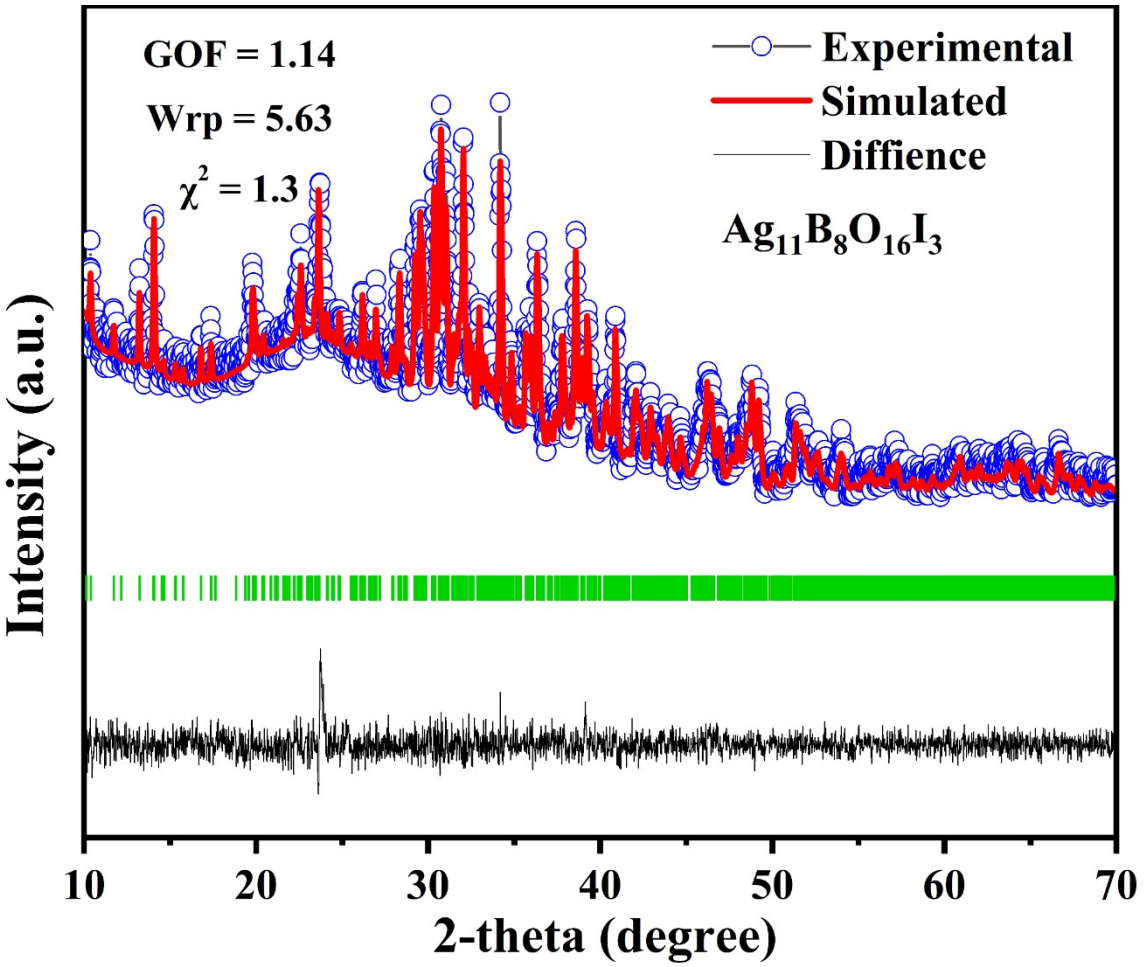


Figure S5. Asymmetric units of **(1)** to **(4)**, and the coordination environments of atoms.

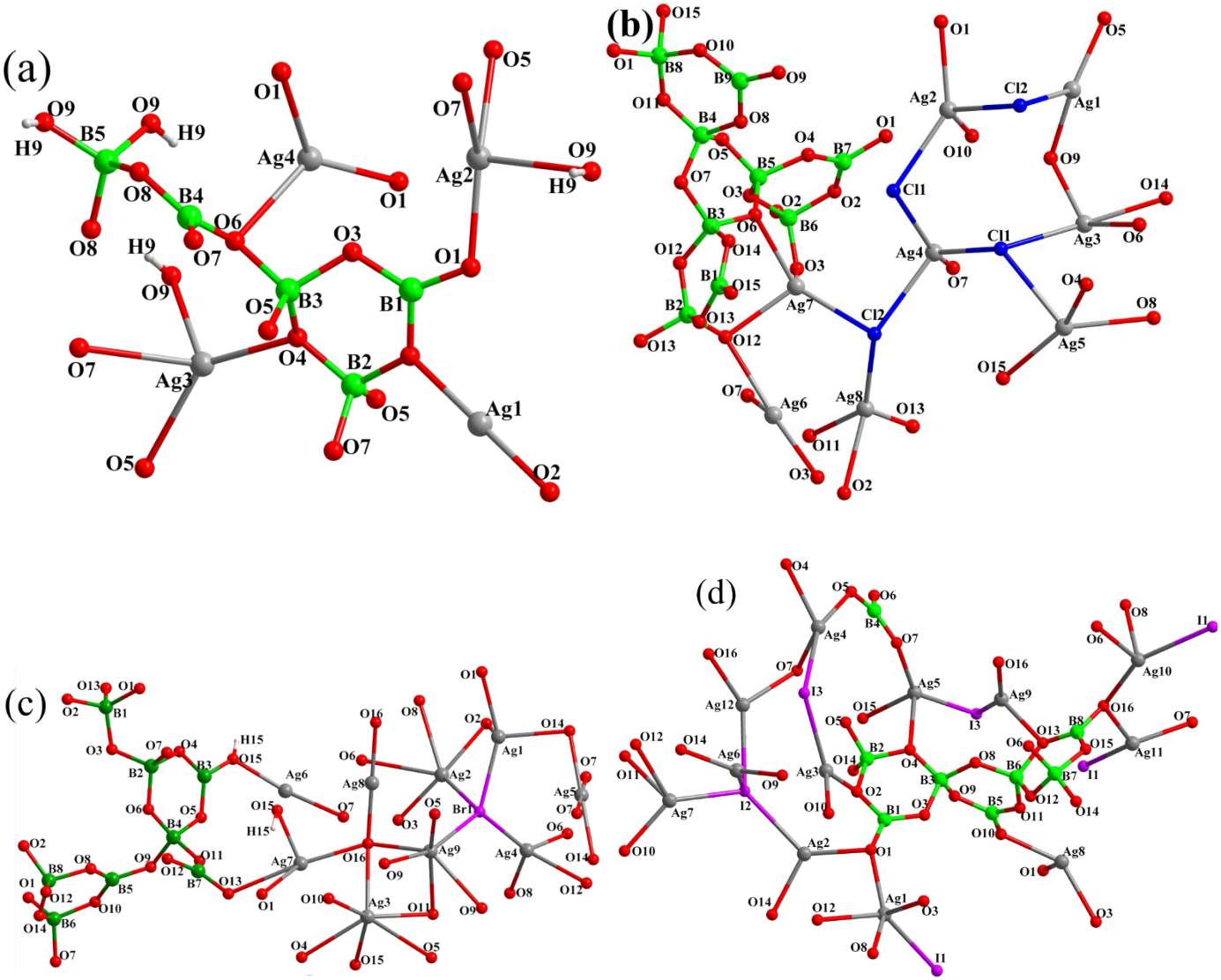


Figure S6. (a) 2D structure of **(2)** along the *ab* plane, (b) 12-MR channel, (c) 20-MR channel, and (d) 16-MR channel.

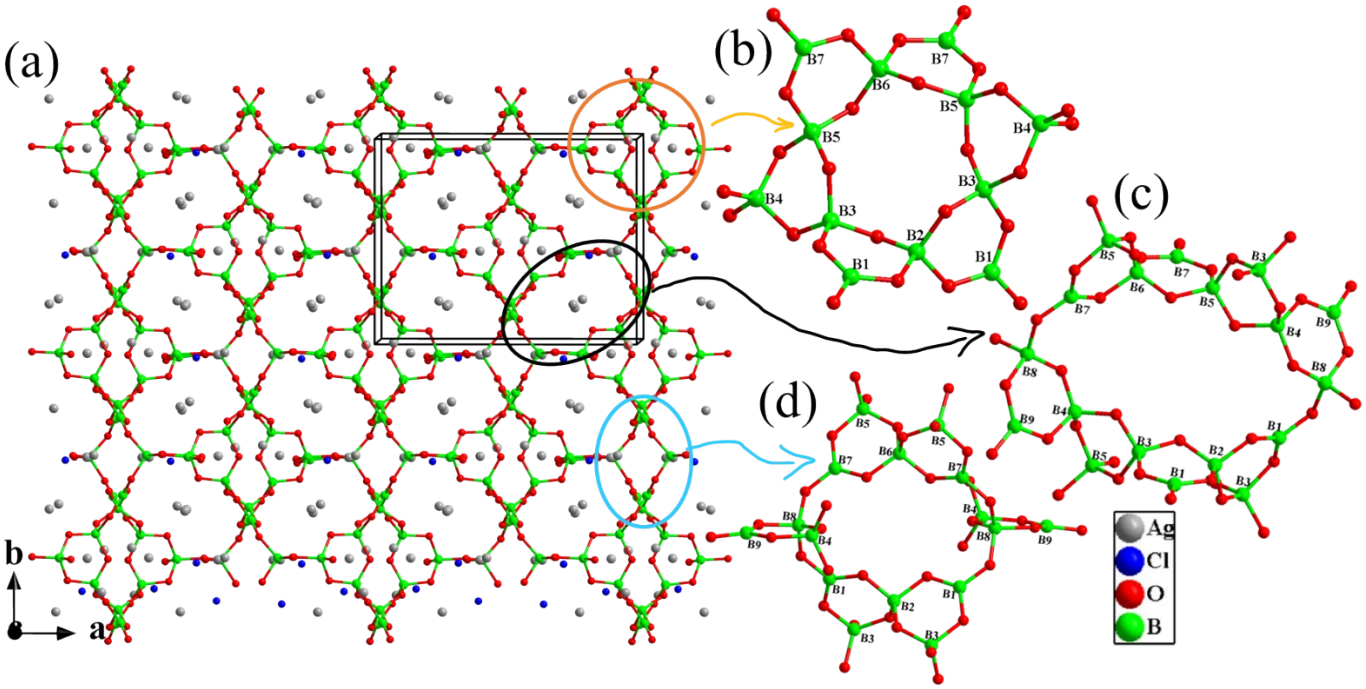


Figure S7. (a) 2D structure of **(3)** along the *ab* plane, (b) 12-MR channel, (c) 20-MR channel, and (d) 16-MR channel.

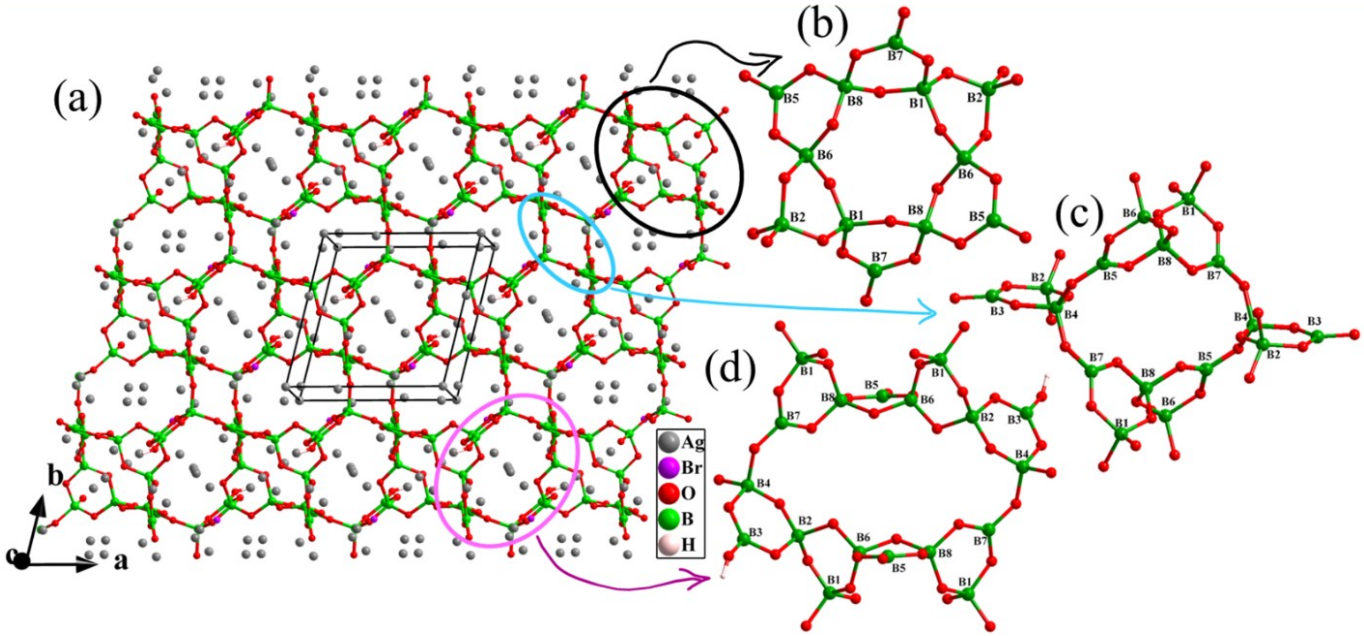
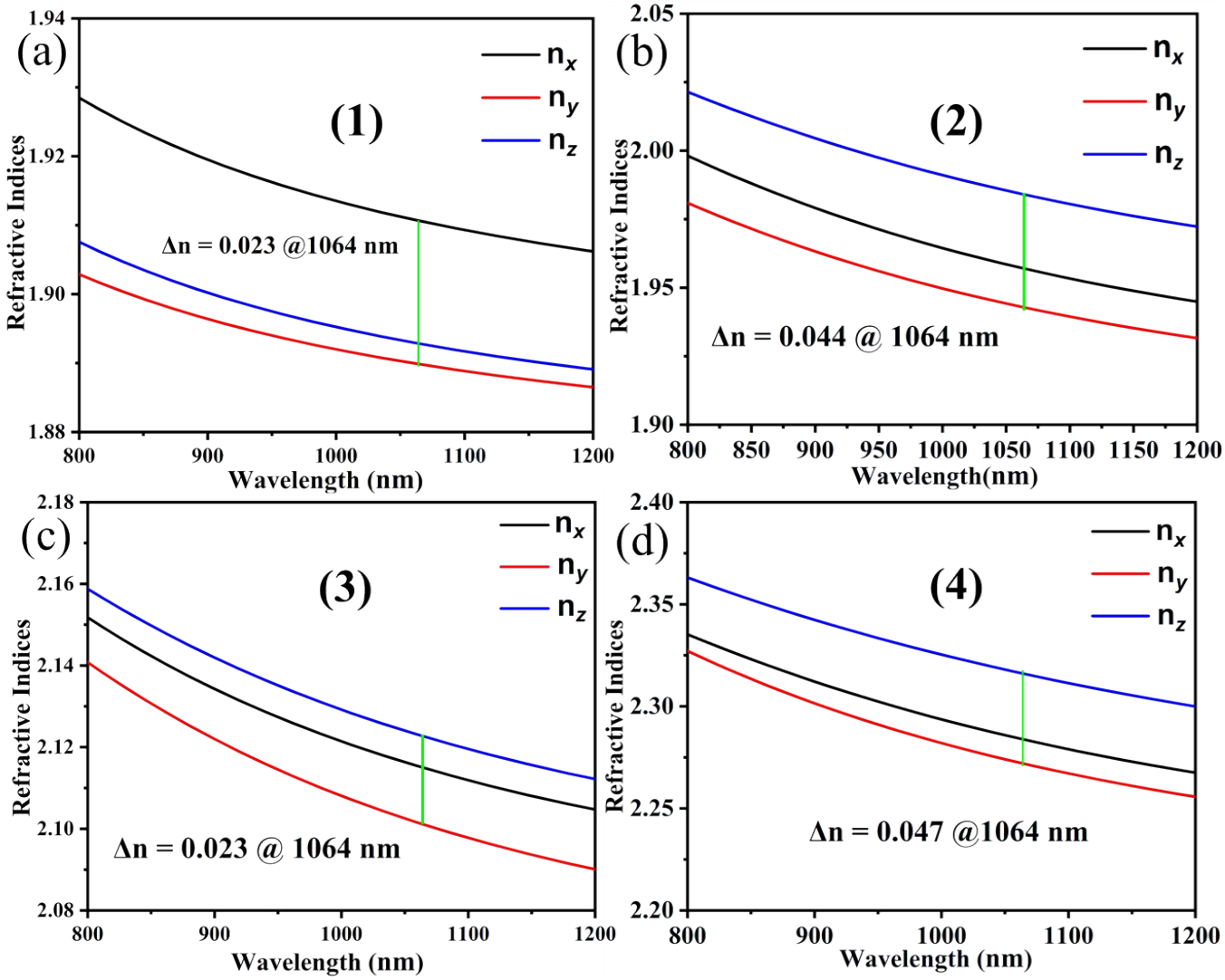


Figure S8. The calculated refractive indices of **(1), (2), (3)** and **(4)**.



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