

Supporting Information

Dihalogen-templated synthesis of dodecanuclear silver dichalcogenophosphate clusters

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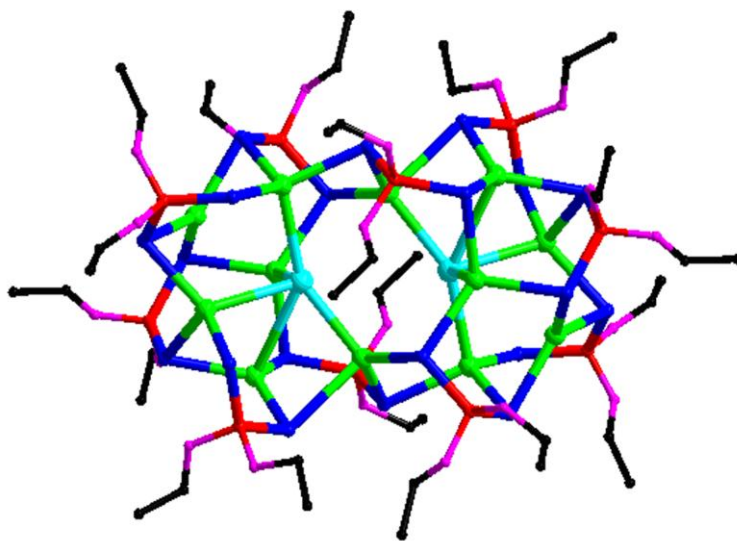


Figure S1. Structure of $\text{Ag}_{12}(\mu_5\text{-X})_2[\text{E}_2\text{P}(\text{OEt})_2]_{10}$ ($\text{X} = \text{Br}$, $\text{E} = \text{S}$, **1**; $\text{X} = \text{I}$, $\text{E} = \text{S}$, **2**; $\text{X} = \text{I}$, $\text{E} = \text{Se}$, **3**) (Ag, green; S/Se, blue; P, red; C, Black; O, purple; Br/I, turquoise). Hydrogen atoms are omitted for clarity.

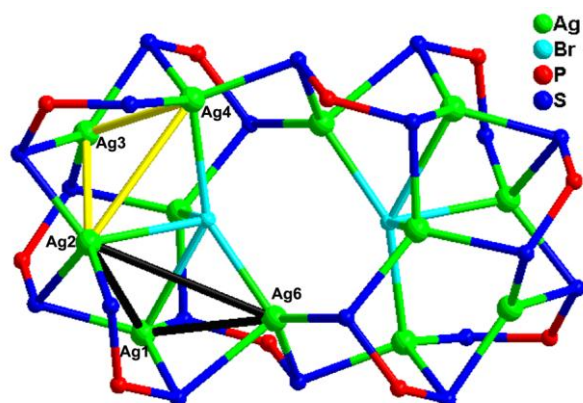


Figure S2. Black and yellow lines represent the edges of Ag1-Ag2-Ag6 and Ag2-Ag3-Ag4 triangles, respectively. Ethoxy groups are omitted for clarity.

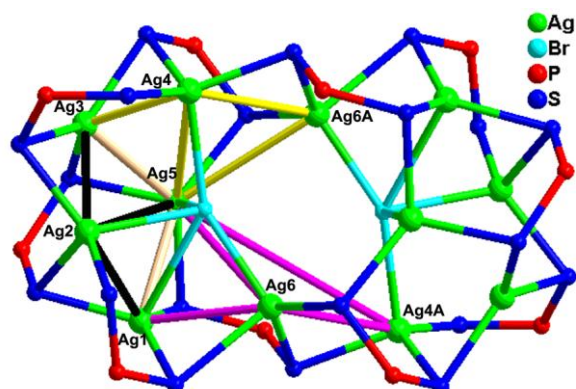


Figure S3. Black, yellow, and purple lines represent the edges of three Ag_4 butterflies, respectively ($Ag1-Ag2-Ag3-Ag5$, $Ag3-Ag4-Ag5-Ag6A$, and $Ag1-Ag5-Ag6-Ag4A$, symmetry codes: A= $1-x$, $1-y$, $-z$). Ethoxy groups are omitted for clarity.

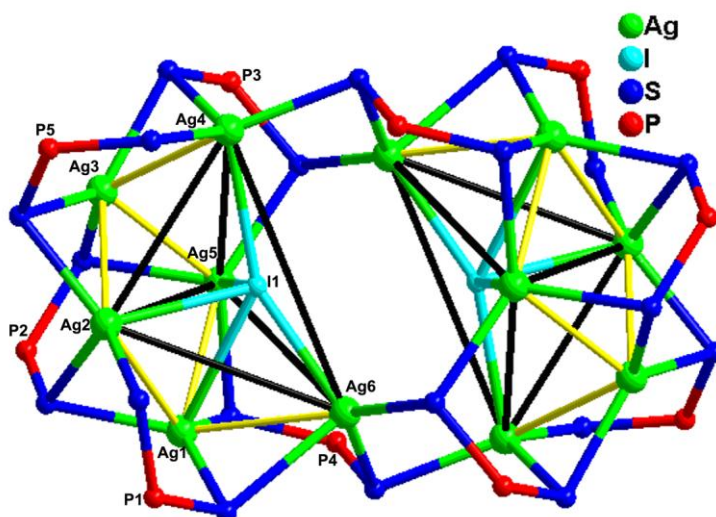


Figure S4. Structure of $Ag_{12}(\mu_5-I)_2[S_2P(OEt)_2]_{10}$. The black and yellow lines represent the edges of a tetrahedron and the edges of the capping slivers to vertices of the tetrahedron, respectively. Ethoxy groups are omitted for clarity.

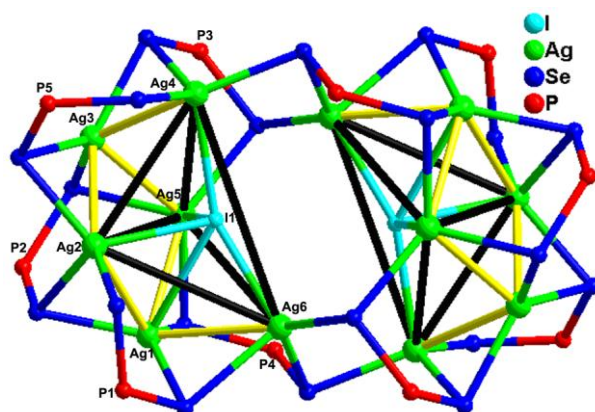


Figure S5. Structure of $\text{Ag}_{12}(\mu_5\text{-I})_2[\text{Se}_2\text{P}(\text{OEt})_2]_{10}$. The black and yellow lines represent the edges of a tetrahedron and the edges of the capping slivers and vertices of the tetrahedron, respectively. Ethoxy groups are omitted for clarity.