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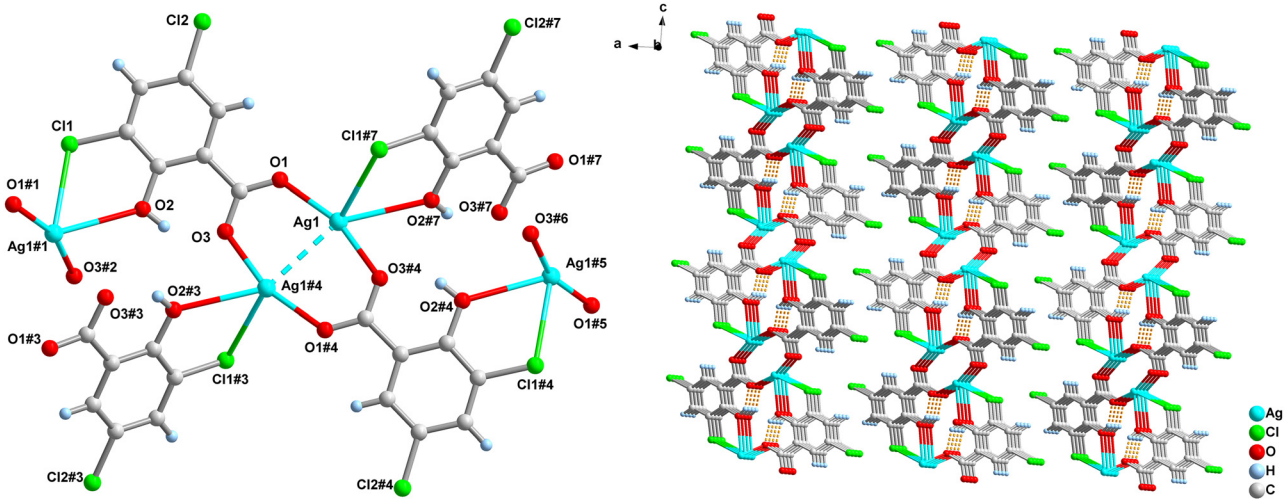
# Crystal structure of poly[($\mu_3$-3, 5-dichloro-2-hydroxy-benzoato-$\kappa^4$*Cl*,*O*:*O*′:*O*″) silver(I)], $C_7H_3AgCl_2O_3$

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**Abstract**

$C_7H_3AgCl_2O_3$, monoclinic, $P2_1/c$ (no. 14), $a$ = 13.1492(5) Å, $b$ = 3.72760(10) Å, $c$ = 16.5625(6) Å, $\beta$ = 92.1810(10)°, $V$ = 811.22(5) Å$^3$, $Z$ = 4, $R_{gt}$(F) = 0.0229, w$R_{ref}$($F^2$) = 0.0492, $T$ = 301(2) K.

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Table 1 contains crystallographic data and Table 2 contains the list of the atoms including atomic coordinates and displacement parameters.

**Table 1:** Data collection and handling.

| | |
|---|---|
| Crystal: | Colorless needle |
| Size: | 0.10 × 0.04 × 0.03 mm |
| Wavelength: | Mo *Kα* radiation (0.71073 Å) |
| $\mu$: | 3.10 mm$^{-1}$ |
| Diffractometer, scan mode: | Bruker APEX-II, $\varphi$ and $\omega$ |
| $\theta_{max}$, completeness: | 27.1°, >99 % |
| $N(hkl)_{measured}$, $N(hkl)_{unique}$, $R_{int}$: | 27,890, 1795, 0.058 |
| Criterion for $I_{obs}$, $N(hkl)_{gt}$: | $I_{obs}$ > 2 $\sigma(I_{obs})$, 1623 |
| $N(param)_{refined}$: | 119 |
| Programs: | Bruker [1], SHELX [2, 4], Olex2 [3], Diamond [5] |

## 1 Source of materials

The $AgNO_3$ (0.170 g, 1 mmol) and $Na_2CO_3$ (0.052 g, 0.5 mmol) were added in 10 mL $H_2O$ to form a spot of jade-green $Ag_2CO_3$ precipitate. After several minutes, the DMF solution of 2-hydroxy-3, 5-dichlorobenzoic acid (**HDBA**, 0.207 g, 1 mmol) was mixed with $Ag_2CO_3$ precipitate to react for 15 min and a few drops of ammonia was added in precursor to make it clear. The solution was maintained at room temperature in a dark room to obtain some crystals after several days.

## 2 Experimental details

The structure was solved by SHELXT [2] program within Olex2 [3] and refined by SHELXL [4]. The graphics were finished using Diamond [5].

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**Table 2:** Fractional atomic coordinates and isotropic or equivalent isotropic displacement parameters (Å$^2$).

| Atom | *x* | *y* | *z* | $U_{iso}$*/$U_{eq}$ |
|---|---|---|---|---|
| Ag1 | 0.06825 (2) | 0.97028 (7) | 0.57215 (2) | 0.04894 (9) |
| Cl1 | 0.24723 (5) | 0.13062 (19) | 0.13438 (3) | 0.03959 (15) |
| Cl2 | 0.50327 (5) | 0.1217 (2) | 0.39439 (4) | 0.04191 (16) |
| O1 | 0.15808 (14) | 0.6805 (6) | 0.48567 (10) | 0.0416 (4) |
| O2 | 0.10453 (13) | 0.4635 (5) | 0.24177 (10) | 0.0395 (4) |
| H2 | 0.066300 | 0.555208 | 0.273860 | 0.059* |
| O3 | 0.05119 (13) | 0.6967 (6) | 0.37795 (11) | 0.0434 (5) |
| C1 | 0.13651 (18) | 0.6245 (6) | 0.41305 (14) | 0.0290 (5) |
| C2 | 0.21530 (17) | 0.4583 (6) | 0.36220 (13) | 0.0264 (5) |
| C3 | 0.31102 (17) | 0.3769 (6) | 0.39720 (13) | 0.0278 (5) |
| H3 | 0.324844 | 0.423754 | 0.451663 | 0.033* |
| C4 | 0.38464 (18) | 0.2275 (6) | 0.35094 (14) | 0.0296 (5) |
| C5 | 0.36590 (18) | 0.1530 (6) | 0.26964 (14) | 0.0299 (5) |
| H5 | 0.415991 | 0.050623 | 0.238856 | 0.036* |
| C6 | 0.27132 (18) | 0.2340 (6) | 0.23544 (13) | 0.0289 (5) |
| C7 | 0.19469 (17) | 0.3887 (6) | 0.27974 (13) | 0.0279 (5) |

## 3 Comment

In this paper, we report a silver(I) coordination polymer, which has been synthesized by the volatilization of solution. As is depicted in the left part of the figure, the Ag1 is four-coordinated by two oxygen atoms from two **HDBA** ligands desperately, one oxygen atom from hydroxyl and a chlorine atom coming from the one **HDBA** ligand. The bond distances of Ag–O range from 2.178 to 2.842 Å within the normal range of the literatures which have reported [6–9]. The distance of Ag1–Cl1 is 2.938 Å. At the same time, the distance among silver atoms (Ag1 … Ag1#4) is 2.942 Å. There is a $Ag_2O_4C_2$ plane among two **HDBA** ligands connected with two silver atoms. Above all, the interactions furnish a layered coordination polymer (*cf.* right part of the figure) (symmetry codes: #1 = $x, 1.5 - y, -0.5 + z$; #2 = $-x, -0.5 + y, 0.5 - z$; #3 = $-x, 0.5 + y, 0.5 - z$; #4 = $-x, 2 - y, 1 - z$; #5 = $-x, 0.5 + y, 1.5 - z$; #6 = $x, 2.5 - y, 0.5 + z$; #7 = $x, 1.5 - y, 0.5 + z$).

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**Conflict of interest statement:** The authors declare no conflicts of interest regarding this article.

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