



Crystal structure of catena-poly[bis[μ_3 -2-(2-nitrophenyl)acetato- κ^3 O:O:O']-disilver(I)]

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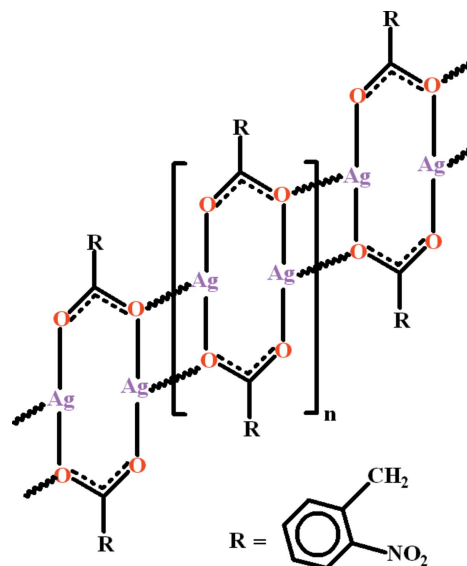
The title compound, $[\text{Ag}_2(\text{C}_8\text{H}_6\text{NO}_4)_2]_n$, is a silver complex of 2-(2-nitrophenyl)acetic acid. The molecules are not conventional crystallographic inversion dimers but consist of two independent ligands and two Ag^{I} ions, each with a distorted T-shaped coordination environment. The dihedral angles between acetate groups and the benzene rings are 51.1 (2) and 57.9 (2)°. The nitro groups are oriented at dihedral angles of 23.6 (5) and 32.3 (3)° with respect to the parent benzene rings. The dimers form polymeric chains along the a -axis direction. The $\text{Ag} \cdots \text{Ag}$ separation within a dimer is 2.8200 (5) and between symmetry-related dimers is 3.6182 (5) Å. The polymeric chains are interlinked by $\text{C}—\text{H} \cdots \text{O}$ hydrogen-bond interactions.

Keywords: crystal structure; silver(I) complex; 2-(2-nitrophenyl)acetic acid; hydrogen bonding.

CCDC reference: 1060272

1. Related literature

For related structures see: Danish *et al.* (2011a,b, 2015a,b); Li *et al.* (2011)



2. Experimental

2.1. Crystal data

$[\text{Ag}_2(\text{C}_8\text{H}_6\text{NO}_4)_2]$
 $M_r = 576.02$
Monoclinic, $P2_1/c$
 $a = 5.5249$ (3) Å
 $b = 15.8838$ (10) Å
 $c = 20.0257$ (11) Å
 $\beta = 96.853$ (3)°

$V = 1744.83$ (17) Å³
 $Z = 4$
Mo $K\alpha$ radiation
 $\mu = 2.30$ mm⁻¹
 $T = 296$ K
 $0.37 \times 0.22 \times 0.18$ mm

2.2. Data collection

Bruker Kappa APEXII CCD diffractometer
Absorption correction: multi-scan (SADABS; Bruker, 2005)
 $T_{\min} = 0.485$, $T_{\max} = 0.682$

14170 measured reflections
3781 independent reflections
3113 reflections with $I > 2\sigma(I)$
 $R_{\text{int}} = 0.027$

2.3. Refinement

$R[F^2 > 2\sigma(F^2)] = 0.033$
 $wR(F^2) = 0.066$
 $S = 1.10$
3781 reflections

253 parameters
H-atom parameters constrained
 $\Delta\rho_{\max} = 0.47$ e Å⁻³
 $\Delta\rho_{\min} = -0.55$ e Å⁻³

Table 1
Hydrogen-bond geometry (Å, °).

$D—H \cdots A$	$D—H$	$H \cdots A$	$D \cdots A$	$D—H \cdots A$
$\text{C2}—\text{H2B} \cdots \text{O4}^{\text{i}}$	0.97	2.53	3.312 (6)	138
$\text{C10}—\text{H10B} \cdots \text{O8}^{\text{ii}}$	0.97	2.35	3.205 (6)	146
$\text{C6}—\text{H6} \cdots \text{O8}^{\text{iii}}$	0.93	2.48	3.322 (6)	151
$\text{C15}—\text{H15} \cdots \text{O7}^{\text{iv}}$	0.93	2.59	3.268 (6)	130

Symmetry codes: (i) $x - 1, y, z$; (ii) $x + 1, y, z$; (iii) $x, -y + \frac{1}{2}, z - \frac{1}{2}$; (iv) $-x + 2, y - \frac{1}{2}, -z + \frac{1}{2}$.

Data collection: APEX2 (Bruker, 2007); cell refinement: SAINT (Bruker, 2007); data reduction: SAINT; program(s) used to solve structure: SHELXS97 (Sheldrick, 2008); program(s) used to refine structure: SHELXL2014 (Sheldrick, 2015); molecular graphics:

ORTEP-3 for Windows (Farrugia, 2012) and *PLATON* (Spek, 2009); software used to prepare material for publication: *WinGX* (Farrugia, 2012) and *PLATON*.

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Supporting information for this paper is available from the IUCr electronic archives (Reference: FK2086).

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supporting information

Acta Cryst. (2015). E71, m118–m119 [doi:10.1107/S2056989015007616]

Crystal structure of *catena*-poly[bis[μ_3 -2-(2-nitrophenyl)acetato- κ^3 O:O:O']disilver(I)]

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S1. Structural commentary

We have reported the crystal structure of *catena*-poly[[trimethyltin(IV)]- μ -2-(2-nitrophenyl)acetato- κ^2 O:O'] (Danish *et al.*, 2015a) and tetra-aqua-bis-[2-(2-nitrophenyl)acetato- κ O]cobalt(II) (Danish *et al.*, 2015b). The title silver complex (I), (Fig. 1) is in continuation of synthesizing various metal complexes with this ligand and other studies of these complexes. We have also reported the crystal structures of *catena*-poly[bis-(μ_3 -2-methylbenzoato)disilver(I)] (Danish *et al.*, 2011a) and *catena*-poly[bis-(μ_3 -2-methyl-3,5-dinitrobenzoato)disilver(I)] (Danish *et al.*, 2011b) which are related to (I). Similarly, the crystal structures of bis(*N,N*-dimethylpyridin-4-amine)-((4-hydroxyphenyl) acetato)-silver dihydrate (Li *et al.*, 2011), is related to the title compound.

In (I), the two ligands of (2-nitrophenyl)acetic acid have been coordinated to two silver ions making a dimer. The structural behaviour of both ligands is different. In one ligand the acetato moiety *A* (O1/C1/C2/O2) and benzene ring *B* (C3–C8) are planar with r.m.s. deviation of 0.0041 and 0.0091 Å, respectively. The dihedral angle between *A/B* is 57.87 (17)°. The nitro group is oriented at a dihedral angle of 23.6 (5)° with the parent benzene ring. In the second ligand the acetato moiety *C* (O5/C9/C10/O6) and benzene ring *D* (C11–C16) are also planar with r. m. s. deviation of 0.0046 and 0.0147 Å, respectively. The dihedral angle between *C/D* is 51.13 (16)°. The adjacent nitro group makes dihedral angle of 32.3 (3)° with *D*. The central eight membered ring (Ag1/O1/C1/O2/Ag2/O5/C9/O6) is not exactly planar. The dimers are interlinked from opposite ends due to Ag—O bonds in the form of one dimensional polymers extending along the *a*-axis. One of the H-atoms of each methylenic group makes H-bonding with adjacent nitro group of parental ligand in the one-dimensional chain. The polymers are interlinked due to C—H···O interactions, where C-atoms are of benzene rings and O-atoms are of nitro groups, therefore, stabilizing the molecules in the form of three dimensional polymeric network ultimately.

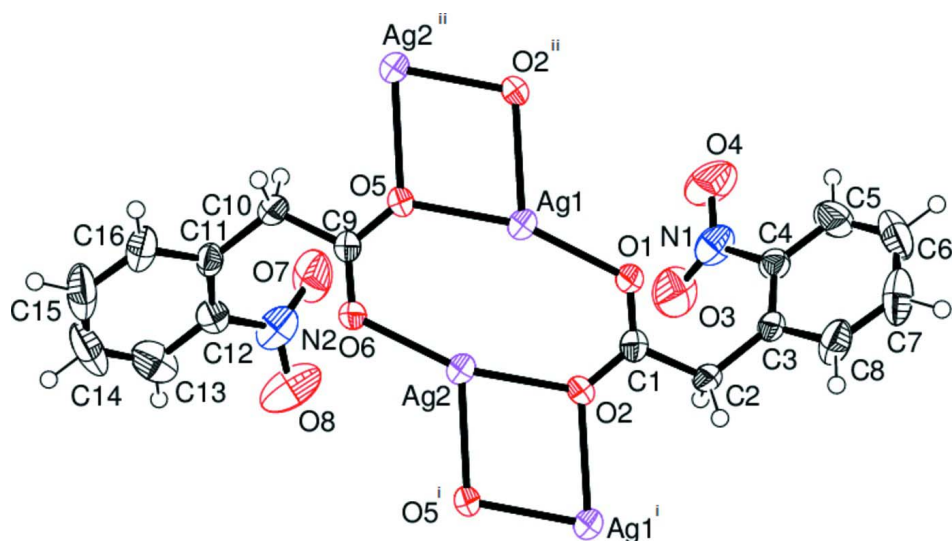
S2. Synthesis and crystallization

The sodium salt of (2-nitrophenyl)acetic acid was prepared in water with one molar ratio of (2-nitrophenyl)acetic acid and Na(HCO₃). In this solution one mole of silver nitrate AgNO₃ (1.08 g) dissolved in water was added and stirred for 5 minutes. Curd white precipitate formed was dissolved by adding few drops of liquid ammonia and kept for crystallization in dark. Needle like colourless crystals were obtained after two weeks.

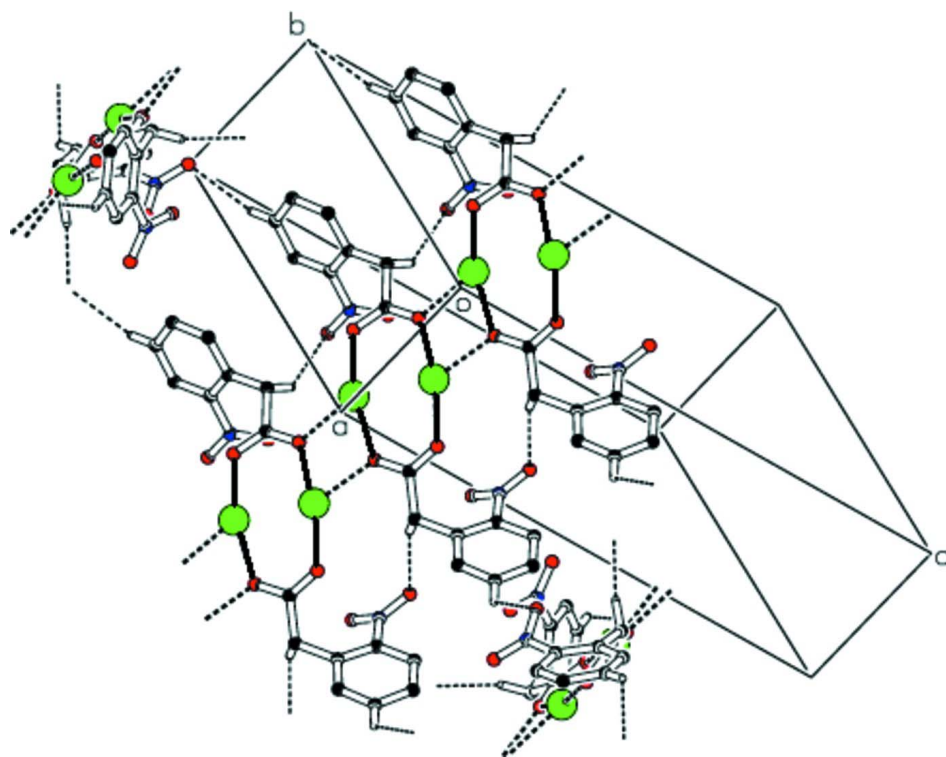
Yield: 45% Melting Point: 395 K (Decomposes)

S3. Refinement

Crystal data, data collection and structure refinement details are summarized in Table 1. The H-atoms were positioned geometrically (C—H = 0.93–0.97 Å) and refined riding on the carbon atoms with isotropic displacement parameters $U_{\text{iso}}(\text{H}) = 1.2U_{\text{eq}}(\text{C})$.

**Figure 1**

Molecular structure of the title compound. Anisotropic displacement ellipsoids are drawn at the 50% probability level. H-atoms are shown by small circles of arbitrary radii.

**Figure 2**

Crystal packing which shows that molecules form polymeric network due to interlinkage of dimers. The dimers are interlinked due to H-bondings. The H-atoms not involved in H-bondings are omitted for clarity.

catena-Poly[bis[μ_3 -2-(2-nitrophenyl)acetato- κ^3 O:O:O']disilver(I)]*Crystal data*[Ag₂(C₈H₆NO₄)₂] $M_r = 576.02$ Monoclinic, $P2_1/c$ $a = 5.5249$ (3) Å $b = 15.8838$ (10) Å $c = 20.0257$ (11) Å $\beta = 96.853$ (3)° $V = 1744.83$ (17) Å³ $Z = 4$ $F(000) = 1120$ $D_x = 2.193$ Mg m⁻³Mo $K\alpha$ radiation, $\lambda = 0.71073$ Å

Cell parameters from 3113 reflections

 $\theta = 1.6$ – 27.0 ° $\mu = 2.30$ mm⁻¹ $T = 296$ K

Needle, colorless

 $0.37 \times 0.22 \times 0.18$ mm*Data collection*

Bruker Kappa APEXII CCD

diffractometer

Radiation source: fine-focus sealed tube

Graphite monochromator

Detector resolution: 7.80 pixels mm⁻¹ ω scans

Absorption correction: multi-scan

(SADABS; Bruker, 2005)

 $T_{\min} = 0.485$, $T_{\max} = 0.682$

14170 measured reflections

3781 independent reflections

3113 reflections with $I > 2\sigma(I)$ $R_{\text{int}} = 0.027$ $\theta_{\max} = 27.0$ °, $\theta_{\min} = 1.6$ ° $h = -7 \rightarrow 7$ $k = -20 \rightarrow 20$ $l = -25 \rightarrow 25$ *Refinement*Refinement on F^2

Least-squares matrix: full

 $R[F^2 > 2\sigma(F^2)] = 0.033$ $wR(F^2) = 0.066$ $S = 1.10$

3781 reflections

253 parameters

0 restraints

Primary atom site location: structure-invariant

direct methods

Secondary atom site location: difference Fourier

map

Hydrogen site location: inferred from

neighbouring sites

H-atom parameters constrained

 $w = 1/[\sigma^2(F_o^2) + (0.0165P)^2 + 3.0884P]$ where $P = (F_o^2 + 2F_c^2)/3$ $(\Delta/\sigma)_{\max} < 0.001$ $\Delta\rho_{\max} = 0.47$ e Å⁻³ $\Delta\rho_{\min} = -0.55$ e Å⁻³*Special details*

Geometry. All e.s.d.'s (except the e.s.d. in the dihedral angle between two l.s. planes) are estimated using the full covariance matrix. The cell e.s.d.'s are taken into account individually in the estimation of e.s.d.'s in distances, angles and torsion angles; correlations between e.s.d.'s in cell parameters are only used when they are defined by crystal symmetry. An approximate (isotropic) treatment of cell e.s.d.'s is used for estimating e.s.d.'s involving l.s. planes.

Refinement. Refinement of F^2 against ALL reflections. The weighted R -factor wR and goodness of fit S are based on F^2 , conventional R -factors R are based on F , with F set to zero for negative F^2 . The threshold expression of $F^2 > \sigma(F^2)$ is used only for calculating R -factors(gt) *etc.* and is not relevant to the choice of reflections for refinement. R -factors based on F^2 are statistically about twice as large as those based on F , and R -factors based on ALL data will be even larger.

Fractional atomic coordinates and isotropic or equivalent isotropic displacement parameters (Å²)

	<i>x</i>	<i>y</i>	<i>z</i>	$U_{\text{iso}}^*/U_{\text{eq}}$
Ag1	0.94971 (5)	0.08333 (2)	0.04106 (2)	0.04649 (10)
Ag2	0.55095 (5)	−0.00701 (2)	0.08051 (2)	0.04710 (10)
O1	0.6850 (4)	0.17796 (16)	0.00365 (15)	0.0446 (7)
O2	0.3776 (5)	0.11268 (17)	0.04293 (16)	0.0507 (8)

O3	0.6222 (7)	0.3128 (3)	0.10446 (17)	0.0813 (12)
O4	0.9451 (7)	0.3737 (3)	0.0785 (2)	0.0857 (12)
O5	1.1302 (5)	−0.02471 (16)	0.09716 (15)	0.0455 (7)
O6	0.8165 (4)	−0.09755 (16)	0.12586 (14)	0.0422 (7)
O7	1.0110 (7)	−0.0492 (2)	0.2652 (2)	0.0769 (11)
O8	0.6646 (7)	−0.0985 (3)	0.28321 (19)	0.0891 (13)
N1	0.7356 (7)	0.3501 (2)	0.06550 (19)	0.0519 (9)
N2	0.8701 (7)	−0.1072 (3)	0.26878 (18)	0.0534 (10)
C1	0.4719 (7)	0.1752 (2)	0.0172 (2)	0.0376 (9)
C2	0.3050 (7)	0.2495 (2)	0.0012 (2)	0.0439 (10)
H2A	0.1657	0.2306	−0.0292	0.053*
H2B	0.2445	0.2672	0.0426	0.053*
C3	0.4109 (6)	0.3250 (2)	−0.02943 (19)	0.0321 (8)
C4	0.6114 (7)	0.3702 (2)	−0.00200 (19)	0.0344 (8)
C5	0.7012 (8)	0.4370 (3)	−0.0343 (3)	0.0583 (12)
H5	0.8407	0.4645	−0.0149	0.070*
C6	0.5883 (11)	0.4634 (3)	−0.0944 (3)	0.0666 (14)
H6	0.6486	0.5095	−0.1158	0.080*
C7	0.3877 (11)	0.4226 (3)	−0.1231 (2)	0.0654 (14)
H7	0.3080	0.4410	−0.1640	0.079*
C8	0.3015 (8)	0.3533 (3)	−0.0914 (2)	0.0531 (11)
H8	0.1660	0.3248	−0.1122	0.064*
C9	1.0388 (6)	−0.0834 (2)	0.12825 (19)	0.0338 (8)
C10	1.2235 (7)	−0.1397 (3)	0.1690 (2)	0.0448 (10)
H10A	1.3176	−0.1683	0.1379	0.054*
H10B	1.3352	−0.1038	0.1972	0.054*
C11	1.1271 (7)	−0.2051 (2)	0.21313 (18)	0.0333 (8)
C12	0.9564 (7)	−0.1916 (2)	0.25696 (18)	0.0366 (8)
C13	0.8654 (9)	−0.2561 (3)	0.2933 (2)	0.0609 (13)
H13	0.7455	−0.2457	0.3211	0.073*
C14	0.9568 (12)	−0.3357 (3)	0.2873 (3)	0.0778 (18)
H14	0.8973	−0.3801	0.3108	0.093*
C15	1.1325 (11)	−0.3498 (3)	0.2474 (3)	0.0747 (17)
H15	1.1997	−0.4033	0.2453	0.090*
C16	1.2119 (8)	−0.2866 (3)	0.2102 (2)	0.0518 (11)
H16	1.3281	−0.2985	0.1815	0.062*

Atomic displacement parameters ($\text{\AA}^2$)

	U^{11}	U^{22}	U^{33}	U^{12}	U^{13}	U^{23}
Ag1	0.02941 (16)	0.04213 (18)	0.0682 (2)	0.00658 (13)	0.00686 (14)	0.02080 (15)
Ag2	0.02920 (16)	0.04436 (18)	0.0678 (2)	0.00628 (13)	0.00618 (14)	0.02365 (16)
O1	0.0297 (14)	0.0374 (15)	0.069 (2)	0.0081 (11)	0.0160 (13)	0.0225 (13)
O2	0.0301 (14)	0.0367 (15)	0.086 (2)	−0.0014 (11)	0.0084 (14)	0.0291 (15)
O3	0.090 (3)	0.112 (3)	0.041 (2)	0.009 (2)	0.0057 (19)	0.018 (2)
O4	0.054 (2)	0.101 (3)	0.093 (3)	−0.003 (2)	−0.031 (2)	−0.015 (2)
O5	0.0312 (14)	0.0391 (15)	0.0670 (19)	0.0026 (11)	0.0095 (13)	0.0276 (13)
O6	0.0265 (14)	0.0419 (15)	0.0569 (18)	−0.0024 (11)	−0.0010 (12)	0.0243 (13)

O7	0.093 (3)	0.0350 (18)	0.096 (3)	0.0016 (18)	−0.016 (2)	−0.0170 (18)
O8	0.065 (2)	0.135 (4)	0.065 (2)	0.032 (2)	−0.0004 (19)	−0.044 (2)
N1	0.050 (2)	0.053 (2)	0.049 (2)	0.0084 (18)	−0.0069 (19)	−0.0121 (18)
N2	0.056 (2)	0.059 (2)	0.042 (2)	0.0120 (19)	−0.0094 (18)	−0.0205 (18)
C1	0.035 (2)	0.0286 (19)	0.049 (2)	0.0023 (15)	0.0027 (17)	0.0075 (16)
C2	0.0245 (19)	0.032 (2)	0.075 (3)	0.0038 (15)	0.0060 (19)	0.0145 (19)
C3	0.0283 (18)	0.0251 (17)	0.043 (2)	0.0057 (14)	0.0039 (16)	0.0032 (15)
C4	0.0321 (19)	0.0316 (19)	0.039 (2)	0.0009 (15)	0.0023 (16)	−0.0012 (15)
C5	0.054 (3)	0.042 (2)	0.081 (4)	−0.013 (2)	0.012 (3)	0.004 (2)
C6	0.096 (4)	0.039 (3)	0.070 (4)	0.002 (3)	0.033 (3)	0.018 (2)
C7	0.102 (4)	0.053 (3)	0.040 (3)	0.024 (3)	0.002 (3)	0.013 (2)
C8	0.058 (3)	0.041 (2)	0.053 (3)	0.008 (2)	−0.019 (2)	0.001 (2)
C9	0.0315 (19)	0.0311 (19)	0.038 (2)	0.0021 (15)	0.0025 (16)	0.0100 (16)
C10	0.029 (2)	0.051 (2)	0.055 (3)	0.0056 (17)	0.0051 (18)	0.022 (2)
C11	0.035 (2)	0.0276 (18)	0.035 (2)	0.0015 (14)	−0.0060 (16)	0.0048 (15)
C12	0.040 (2)	0.038 (2)	0.030 (2)	−0.0071 (16)	−0.0068 (16)	−0.0018 (15)
C13	0.071 (3)	0.081 (4)	0.029 (2)	−0.024 (3)	0.000 (2)	0.005 (2)
C14	0.111 (5)	0.052 (3)	0.063 (4)	−0.038 (3)	−0.021 (3)	0.027 (3)
C15	0.103 (5)	0.029 (2)	0.083 (4)	−0.002 (3)	−0.027 (3)	0.011 (2)
C16	0.061 (3)	0.037 (2)	0.054 (3)	0.013 (2)	−0.009 (2)	0.002 (2)

Geometric parameters (Å, °)

Ag1—O1	2.167 (2)	C3—C4	1.379 (5)
Ag1—O5	2.221 (2)	C3—C8	1.388 (5)
Ag1—O2 ⁱ	2.405 (3)	C4—C5	1.365 (5)
Ag1—Ag2	2.8200 (4)	C5—C6	1.354 (7)
Ag1—Ag1 ⁱⁱⁱ	3.1998 (7)	C5—H5	0.9300
Ag2—O6	2.174 (2)	C6—C7	1.351 (7)
Ag2—O2	2.219 (3)	C6—H6	0.9300
Ag2—O5 ⁱⁱⁱ	2.404 (2)	C7—C8	1.384 (7)
Ag2—Ag2 ^{iv}	3.2140 (7)	C7—H7	0.9300
O1—C1	1.241 (4)	C8—H8	0.9300
O2—C1	1.259 (4)	C9—C10	1.518 (5)
O2—Ag1 ⁱⁱⁱ	2.405 (3)	C10—C11	1.503 (5)
O3—N1	1.211 (5)	C10—H10A	0.9700
O4—N1	1.215 (5)	C10—H10B	0.9700
O5—C9	1.260 (4)	C11—C12	1.380 (5)
O5—Ag2 ⁱ	2.404 (2)	C11—C16	1.380 (5)
O6—C9	1.244 (4)	C12—C13	1.386 (6)
O7—N2	1.214 (5)	C13—C14	1.373 (8)
O8—N2	1.212 (5)	C13—H13	0.9300
N1—C4	1.476 (5)	C14—C15	1.348 (8)
N2—C12	1.451 (5)	C14—H14	0.9300
C1—C2	1.509 (5)	C15—C16	1.354 (7)
C2—C3	1.498 (5)	C15—H15	0.9300
C2—H2A	0.9700	C16—H16	0.9300
C2—H2B	0.9700		

O1—Ag1—O5	162.60 (9)	C4—C3—C2	126.1 (3)
O1—Ag1—O2 ⁱ	119.49 (9)	C8—C3—C2	118.4 (4)
O5—Ag1—O2 ⁱ	76.16 (9)	C5—C4—C3	122.4 (4)
O1—Ag1—Ag2	86.12 (7)	C5—C4—N1	116.5 (4)
O5—Ag1—Ag2	77.51 (6)	C3—C4—N1	121.0 (3)
O2 ⁱ —Ag1—Ag2	153.31 (6)	C6—C5—C4	120.4 (4)
O1—Ag1—Ag1 ⁱⁱ	123.20 (8)	C6—C5—H5	119.8
O5—Ag1—Ag1 ⁱⁱ	61.69 (8)	C4—C5—H5	119.8
O2 ⁱ —Ag1—Ag1 ⁱⁱ	86.43 (8)	C7—C6—C5	119.8 (4)
Ag2—Ag1—Ag1 ⁱⁱ	84.972 (15)	C7—C6—H6	120.1
O6—Ag2—O2	161.91 (10)	C5—C6—H6	120.1
O6—Ag2—O5 ⁱⁱⁱ	118.69 (9)	C6—C7—C8	119.7 (4)
O2—Ag2—O5 ⁱⁱⁱ	76.23 (9)	C6—C7—H7	120.2
O6—Ag2—Ag1	86.72 (6)	C8—C7—H7	120.2
O2—Ag2—Ag1	77.83 (6)	C7—C8—C3	122.1 (4)
O5 ⁱⁱⁱ —Ag2—Ag1	154.04 (6)	C7—C8—H8	119.0
O6—Ag2—Ag2 ^{iv}	119.58 (8)	C3—C8—H8	119.0
O2—Ag2—Ag2 ^{iv}	65.40 (9)	O6—C9—O5	124.5 (3)
O5 ⁱⁱⁱ —Ag2—Ag2 ^{iv}	95.20 (7)	O6—C9—C10	120.8 (3)
Ag1—Ag2—Ag2 ^{iv}	74.507 (13)	O5—C9—C10	114.7 (3)
C1—O1—Ag1	121.2 (2)	C11—C10—C9	117.4 (3)
C1—O2—Ag2	129.1 (2)	C11—C10—H10A	107.9
C1—O2—Ag1 ⁱⁱⁱ	126.9 (2)	C9—C10—H10A	107.9
Ag2—O2—Ag1 ⁱⁱⁱ	102.88 (10)	C11—C10—H10B	107.9
C9—O5—Ag1	129.8 (2)	C9—C10—H10B	108.0
C9—O5—Ag2 ⁱ	127.3 (2)	H10A—C10—H10B	107.2
Ag1—O5—Ag2 ⁱ	102.86 (9)	C12—C11—C16	115.8 (4)
C9—O6—Ag2	120.7 (2)	C12—C11—C10	125.7 (3)
O3—N1—O4	124.4 (4)	C16—C11—C10	118.5 (4)
O3—N1—C4	118.4 (4)	C11—C12—C13	122.5 (4)
O4—N1—C4	117.1 (4)	C11—C12—N2	120.7 (4)
O8—N2—O7	123.6 (4)	C13—C12—N2	116.7 (4)
O8—N2—C12	118.7 (4)	C14—C13—C12	118.3 (5)
O7—N2—C12	117.7 (4)	C14—C13—H13	120.8
O1—C1—O2	124.6 (3)	C12—C13—H13	120.8
O1—C1—C2	119.8 (3)	C15—C14—C13	120.2 (5)
O2—C1—C2	115.6 (3)	C15—C14—H14	119.9
C3—C2—C1	117.0 (3)	C13—C14—H14	119.9
C3—C2—H2A	108.0	C14—C15—C16	120.4 (5)
C1—C2—H2A	108.0	C14—C15—H15	119.8
C3—C2—H2B	108.0	C16—C15—H15	119.8
C1—C2—H2B	108.0	C15—C16—C11	122.5 (5)
H2A—C2—H2B	107.3	C15—C16—H16	118.7
C4—C3—C8	115.5 (3)	C11—C16—H16	118.7
Ag1—O1—C1—O2	−12.5 (6)	Ag2—O6—C9—O5	−11.1 (5)
Ag1—O1—C1—C2	169.0 (3)	Ag2—O6—C9—C10	170.6 (3)

Ag2—O2—C1—O1	5.5 (6)	Ag1—O5—C9—O6	9.8 (6)
Ag1 ⁱⁱⁱ —O2—C1—O1	−160.2 (3)	Ag2 ⁱ —O5—C9—O6	−167.2 (3)
Ag2—O2—C1—C2	−175.9 (3)	Ag1—O5—C9—C10	−171.8 (3)
Ag1 ⁱⁱⁱ —O2—C1—C2	18.3 (5)	Ag2 ⁱ —O5—C9—C10	11.2 (5)
O1—C1—C2—C3	−1.4 (6)	O6—C9—C10—C11	−8.0 (6)
O2—C1—C2—C3	−180.0 (4)	O5—C9—C10—C11	173.6 (4)
C1—C2—C3—C4	−57.6 (6)	C9—C10—C11—C12	−47.7 (6)
C1—C2—C3—C8	122.1 (4)	C9—C10—C11—C16	131.7 (4)
C8—C3—C4—C5	−1.7 (6)	C16—C11—C12—C13	−3.2 (6)
C2—C3—C4—C5	177.9 (4)	C10—C11—C12—C13	176.2 (4)
C8—C3—C4—N1	176.2 (3)	C16—C11—C12—N2	174.5 (3)
C2—C3—C4—N1	−4.1 (6)	C10—C11—C12—N2	−6.1 (6)
O3—N1—C4—C5	155.5 (4)	O8—N2—C12—C11	150.3 (4)
O4—N1—C4—C5	−23.1 (5)	O7—N2—C12—C11	−31.5 (5)
O3—N1—C4—C3	−22.5 (6)	O8—N2—C12—C13	−31.9 (5)
O4—N1—C4—C3	158.8 (4)	O7—N2—C12—C13	146.4 (4)
C3—C4—C5—C6	2.5 (7)	C11—C12—C13—C14	2.7 (6)
N1—C4—C5—C6	−175.5 (4)	N2—C12—C13—C14	−175.1 (4)
C4—C5—C6—C7	−1.0 (8)	C12—C13—C14—C15	0.7 (7)
C5—C6—C7—C8	−1.0 (8)	C13—C14—C15—C16	−3.4 (8)
C6—C7—C8—C3	1.8 (7)	C14—C15—C16—C11	2.8 (8)
C4—C3—C8—C7	−0.4 (6)	C12—C11—C16—C15	0.4 (6)
C2—C3—C8—C7	179.9 (4)	C10—C11—C16—C15	−179.0 (4)

Symmetry codes: (i) $x+1, y, z$; (ii) $-x+2, -y, -z$; (iii) $x-1, y, z$; (iv) $-x+1, -y, -z$.

Hydrogen-bond geometry ($\text{\AA}$, $^\circ$)

$D-H\cdots A$	$D-H$	$H\cdots A$	$D\cdots A$	$D-H\cdots A$
C2—H2B $\cdots$ O4 ⁱⁱⁱ	0.97	2.53	3.312 (6)	138
C10—H10B $\cdots$ O8 ⁱ	0.97	2.35	3.205 (6)	146
C6—H6 $\cdots$ O8 ^v	0.93	2.48	3.322 (6)	151
C15—H15 $\cdots$ O7 ^{vi}	0.93	2.59	3.268 (6)	130

Symmetry codes: (i) $x+1, y, z$; (iii) $x-1, y, z$; (v) $x, -y+1/2, z-1/2$; (vi) $-x+2, y-1/2, -z+1/2$.