

Acta Crystallographica Section E

## Structure Reports

Online

ISSN 1600-5368

Poly[ $\mu_3$ -acetato-di- $\mu_3$ -isonicotinato- $\mu_2$ -isonicotinato-samarium(III)silver(I)]

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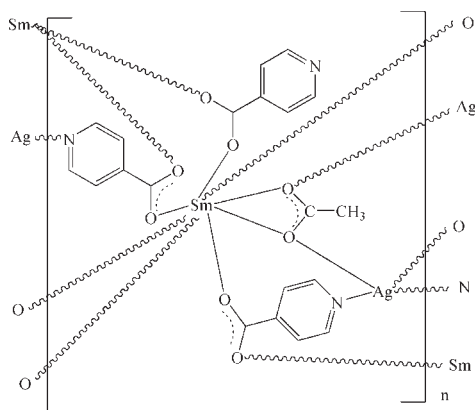
Received 6 November 2009; accepted 14 November 2009

Key indicators: single-crystal X-ray study;  $T = 296$  K; mean  $\sigma(\text{C}-\text{C}) = 0.008$  Å;  $R$  factor = 0.020;  $wR$  factor = 0.049; data-to-parameter ratio = 12.9.

In the title homochiral three-dimensional heterometallic complex,  $[\text{AgSm}(\text{C}_6\text{H}_4\text{NO}_2)_3(\text{C}_2\text{H}_3\text{O}_2)]_n$ , the eight-coordinate  $\text{Sm}^{\text{III}}$  ion displays a bicapped trigonal-prismatic geometry, being coordinated by two O atoms from one acetate ligand, four O atoms from four bridging isonicotinate ligands and two O atoms from two terminal isonicotinate ligands. The four-coordinate  $\text{Ag}^{\text{I}}$  ion adopts a tetrahedral geometry, being bonded to two N atoms from two bridging isonicotinate ligands and two O atoms from two acetate ligands. These metal coordination units are connected by bridging isonicotinate and acetate ligands, generating a three-dimensional network.

## Related literature

For the applications of lanthanide–transition metal heterometallic complexes with bridging multifunctional organic ligands in ion exchange, magnetism, bimetallic catalysis and as luminescent probes, see: Cheng *et al.* (2006); Gu & Xue (2006); Peng *et al.* (2008); Zhu *et al.* (2009).



## Experimental

## Crystal data

$[\text{AgSm}(\text{C}_6\text{H}_4\text{NO}_2)_3(\text{C}_2\text{H}_3\text{O}_2)]$   
 $M_r = 683.58$   
 Hexagonal,  $P6_122$   
 $a = 11.8184$  (5) Å  
 $c = 27.340$  (2) Å  
 $V = 3307.0$  (3) Å<sup>3</sup>

$Z = 6$   
 Mo  $K\alpha$  radiation  
 $\mu = 3.58$  mm<sup>-1</sup>  
 $T = 296$  K  
 $0.23 \times 0.20 \times 0.19$  mm

## Data collection

Bruker APEXII area-detector diffractometer  
 Absorption correction: multi-scan (SADABS; Sheldrick, 1996)  
 $T_{\text{min}} = 0.444$ ,  $T_{\text{max}} = 0.507$

17136 measured reflections  
 1992 independent reflections  
 1928 reflections with  $I > 2\sigma(I)$   
 $R_{\text{int}} = 0.046$

## Refinement

$R[F^2 > 2\sigma(F^2)] = 0.020$   
 $wR(F^2) = 0.049$   
 $S = 1.06$   
 1992 reflections  
 154 parameters  
 H-atom parameters constrained

$\Delta\rho_{\text{max}} = 0.65$  e Å<sup>-3</sup>  
 $\Delta\rho_{\text{min}} = -0.45$  e Å<sup>-3</sup>  
 Absolute structure: Flack (1983),  
 739 Friedel pairs  
 Flack parameter: 0.006 (15)

Data collection: APEX2 (Bruker, 2004); cell refinement: SAINT (Bruker, 2004); data reduction: SAINT; program(s) used to solve structure: SHELXS97 (Sheldrick, 2008); program(s) used to refine structure: SHELXL97 (Sheldrick, 2008); molecular graphics: XP in SHELXTL (Sheldrick, 2008); software used to prepare material for publication: SHELXL97.

The author acknowledges South China Normal University for supporting this work.

Supplementary data and figures for this paper are available from the IUCr electronic archives (Reference: PV2235).

## References

- Bruker (2004). APEX2 and SAINT. Bruker AXS Inc., Madison, Wisconsin, USA.  
 Cheng, J.-W., Zhang, J., Zheng, S.-T., Zhang, M.-B. & Yang, G.-Y. (2006). *Angew. Chem. Int. Ed.* **45**, 73–77.  
 Flack, H. D. (1983). *Acta Cryst.* **A39**, 876–881.  
 Gu, X. & Xue, D. (2006). *Inorg. Chem.* **45**, 9257–9261.  
 Peng, G., Qiu, Y.-C., Hu, Z.-H., Li, Y.-H., Liu, B. & Deng, H. (2008). *Inorg. Chem. Commun.* **11**, 1409–1411.  
 Sheldrick, G. M. (1996). SADABS. University of Göttingen, Germany.  
 Sheldrick, G. M. (2008). *Acta Cryst.* **A64**, 112–122.  
 Zhu, L.-C., Zhao, Z.-G. & Yu, S.-J. (2009). *Acta Cryst.* **E65**, m1105.

## supporting information

*Acta Cryst.* (2009). E65, m1616 [doi:10.1107/S1600536809048430]

**Poly[ $\mu_3$ -acetato-di- $\mu_3$ -isonicotinato- $\mu_2$ -isonicotinato-samarium(III)silver(I)]****Li-Cai Zhu****S1. Comment**

In the past few years, lanthanide-transition metal heterometallic complexes with bridging multifunctional organic ligands are of increasing interest, not only because of their impressive topological structures, but also due to their versatile applications in ion exchange, magnetism, bimetallic catalysis and luminescent probe (Cheng *et al.*, 2006; Peng *et al.*, 2008; Zhu *et al.*, 2009). However, because of complicated interactions among the organic moiety and two types of metal centers, the construction of a homochiral Ln—M heterometallic coordination framework is one of the most challenging issues in synthetic chemistry and materials science (Gu & Xue, 2006). As an extension of this research, the structure of the title compound, a new homochiral heterometallic coordination polymer, (I), has been determined which is presented in this article.

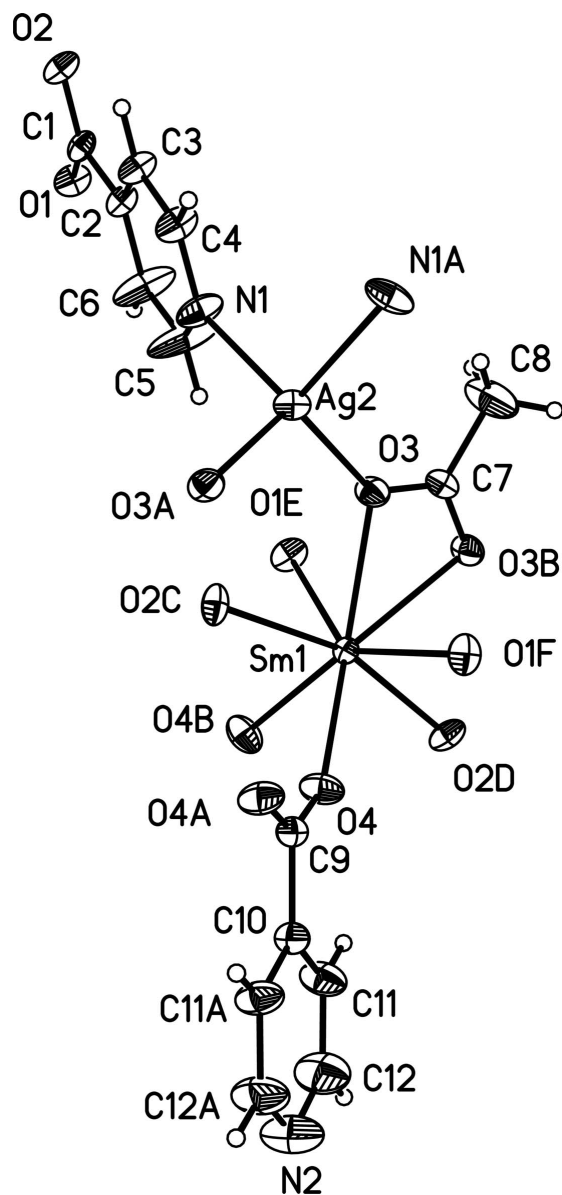
In the title compound (Fig. 1), there are half of Sm<sup>III</sup> ion, half of Ag<sup>I</sup> ion, half of acetate ligand, and one and half crystallographically unique isonicotinate ligands in the asymmetrical unit. Isonicotinate ligands have two types of distinctly different coordination modes: one acts as a bridging ligand to coordinate one Ag<sup>I</sup> ion and two Sm<sup>III</sup> ions, and the other acts as a terminal ligand to coordinate two Sm<sup>III</sup> ions. Acetate ligand adopts chelating [Sm<sup>III</sup>] and bridging [Ag<sup>I</sup>] coordination modes. Each Sm<sup>III</sup> ion is eight-coordinated by two O atoms from one acetate ligand, four O atoms from four bridging isonicotinate ligands, and two O atoms from two terminal isonicotinate ligands. The Sm center can be described as having a bicapped trigonal prism coordination geometry. The four-coordinated Ag<sup>I</sup> ion is bonded to two N atoms from two bridging isonicotinate ligand and two O atoms from two acetate ligands to furnish a tetrahedral geometry, (Table 1). These metal coordination units are connected by bridging isonicotinate and acetate ligands, generating a three-dimensional network (Fig. 2).

**S2. Experimental**

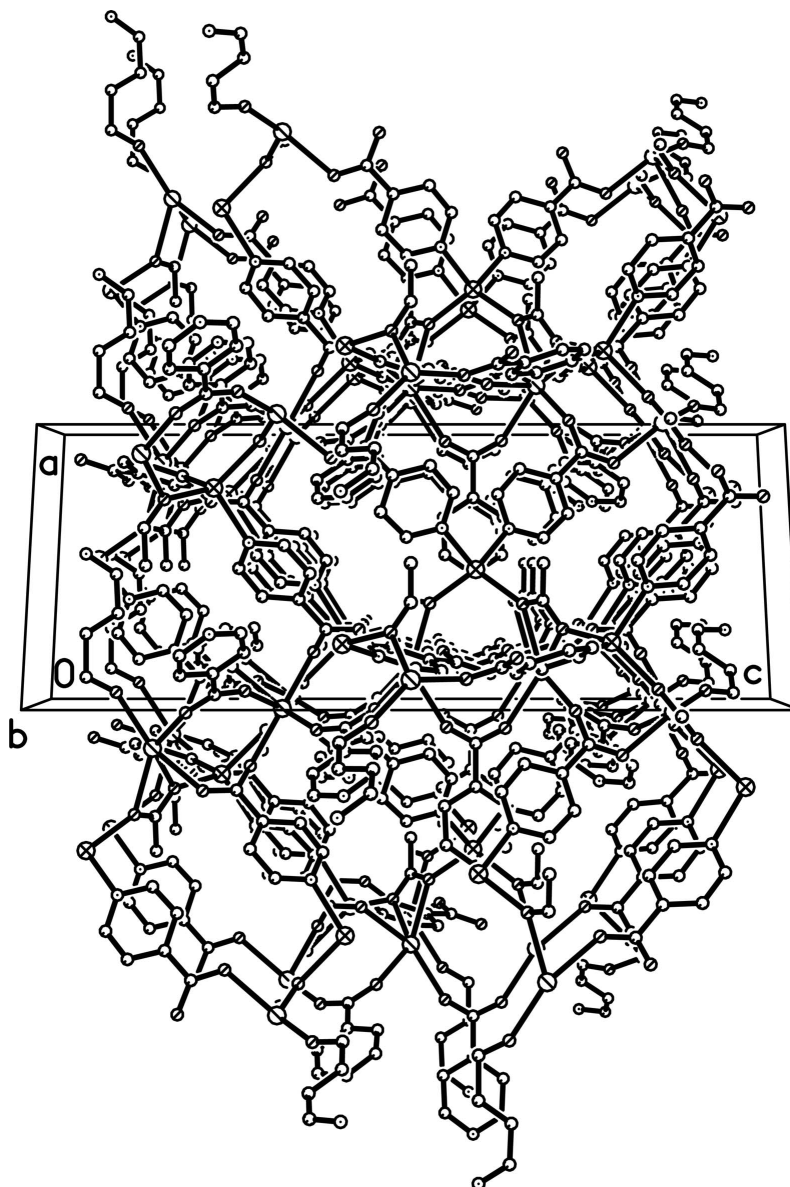
A mixture of AgNO<sub>3</sub> (0.057 g, 0.33 mmol), Sm<sub>2</sub>O<sub>3</sub> (0.116 g, 0.33 mmol), isonicotinic acid (0.164 g, 1.33 mmol), acetic acid (0.080 g, 1.33 mmol), and H<sub>2</sub>O (7 ml) was sealed in a 20 ml Teflon-lined reaction vessel at 443 K for 6 days then slowly cooled to room temperature. The product was collected by filtration, washed with water and air-dried. Colorless block crystals suitable for X-ray analysis were obtained.

**S3. Refinement**

All H atoms bonded to C atoms were positioned geometrically and refined as riding, with C—H = 0.93 or 0.96 Å and  $U_{\text{iso}}(\text{H}) = 1.2$  or  $1.5 U_{\text{eq}}(\text{C})$ .

**Figure 1**

The molecular structure showing the atomic-numbering scheme and displacement ellipsoids drawn at the 30% probability level. Symmetry codes: (A)  $x, 1+x-y, 1/6-z$ ; (B)  $1+x-y, 2-y, -z$ ; (C)  $1+x-y, 1-y, -z$ ; (D)  $1+x, 1+y, z$ ; (E)  $1-y, 1-x, -1/6-z$ ; (F)  $1+x-y, 1+x, 1/6+z$ .



**Figure 2**

A view of the three-dimensional structure of the title compound. Hydrogen atoms are omitted for clarity.

**Poly[ $\mu_3$ -acetato-di- $\mu_3$ -isonicotinato- $\mu_2$ -isonicotinato-samarium(III)silver(I)]**

*Crystal data*

[AgSm(C<sub>6</sub>H<sub>4</sub>NO<sub>2</sub>)<sub>3</sub>(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>)]

$M_r = 683.58$

Hexagonal,  $P6_122$

Hall symbol: P 61 2 (0 0 -1)

$a = 11.8184 (5) \text{ \AA}$

$c = 27.340 (2) \text{ \AA}$

$V = 3307.0 (3) \text{ \AA}^3$

$Z = 6$

$F(000) = 1974$

$D_x = 2.059 \text{ Mg m}^{-3}$

Mo  $K\alpha$  radiation,  $\lambda = 0.71073 \text{ \AA}$

Cell parameters from 7353 reflections

$\theta = 2.5\text{--}27.4^\circ$

$\mu = 3.58 \text{ mm}^{-1}$

$T = 296 \text{ K}$

Block, colorless

$0.23 \times 0.20 \times 0.19 \text{ mm}$

Data collection

Bruker APEXII area-detector diffractometer	17136 measured reflections
Radiation source: fine-focus sealed tube	1992 independent reflections
Graphite monochromator	1928 reflections with $I > 2\sigma(I)$
$\varphi$ and $\omega$ scan	$R_{\text{int}} = 0.046$
Absorption correction: multi-scan (SADABS; Sheldrick, 1996)	$\theta_{\text{max}} = 25.2^\circ$ , $\theta_{\text{min}} = 2.0^\circ$
$T_{\text{min}} = 0.444$ , $T_{\text{max}} = 0.507$	$h = -13 \rightarrow 14$
	$k = -11 \rightarrow 14$
	$l = -32 \rightarrow 30$

Refinement

Refinement on $F^2$	Hydrogen site location: inferred from neighbouring sites
Least-squares matrix: full	H-atom parameters constrained
$R[F^2 > 2\sigma(F^2)] = 0.020$	$w = 1/[\sigma^2(F_o^2) + (0.0242P)^2 + 2.1731P]$
$wR(F^2) = 0.049$	where $P = (F_o^2 + 2F_c^2)/3$
$S = 1.06$	$(\Delta/\sigma)_{\text{max}} = 0.001$
1992 reflections	$\Delta\rho_{\text{max}} = 0.65 \text{ e } \text{\AA}^{-3}$
154 parameters	$\Delta\rho_{\text{min}} = -0.45 \text{ e } \text{\AA}^{-3}$
0 restraints	Absolute structure: Flack (1983), 739 Friedel pairs
Primary atom site location: structure-invariant direct methods	Absolute structure parameter: 0.006 (15)
Secondary atom site location: difference Fourier map	

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 ( $\text{\AA}^2$ )

	$x$	$y$	$z$	$U_{\text{iso}}^*/U_{\text{eq}}$	Occ. (<1)
Sm1	0.86531 (2)	1.0000	0.0000	0.02353 (8)	
Ag2	0.51785 (4)	0.75893 (2)	0.0833	0.03675 (12)	
O1	0.1435 (3)	0.2764 (3)	-0.10025 (9)	0.0409 (7)	
O2	-0.0057 (3)	0.1970 (3)	-0.04112 (10)	0.0401 (7)	
O3	0.6346 (3)	0.9170 (3)	0.02435 (11)	0.0401 (7)	
O4	1.0601 (3)	1.0664 (3)	0.04589 (11)	0.0495 (8)	
C1	0.1062 (4)	0.2765 (4)	-0.05754 (14)	0.0312 (10)	
C2	0.1996 (4)	0.3805 (4)	-0.02321 (13)	0.0328 (9)	
C3	0.1670 (4)	0.3897 (4)	0.02451 (15)	0.0410 (12)	
H4	0.0847	0.3306	0.0366	0.049*	
C4	0.2570 (5)	0.4864 (5)	0.05370 (16)	0.0460 (11)	
H2	0.2328	0.4914	0.0856	0.055*	
C5	0.4073 (6)	0.5645 (7)	-0.0058 (2)	0.101 (3)	
H3	0.4902	0.6253	-0.0169	0.121*	
C6	0.3228 (6)	0.4690 (6)	-0.03802 (19)	0.083 (3)	

H5	0.3500	0.4655	-0.0696	0.100*	
C7	0.6215 (5)	1.0000	0.0000	0.0345 (13)	
C8	0.4962 (7)	1.0000	0.0000	0.089 (3)	
H11A	0.5133	1.0884	-0.0010	0.133*	0.50
H11B	0.4481	0.9581	0.0292	0.133*	0.50
H11C	0.4458	0.9535	-0.0282	0.133*	0.50
C9	1.1136 (5)	1.0568 (3)	0.0833	0.0345 (13)	
C10	1.2622 (6)	1.1311 (3)	0.0833	0.0375 (13)	
C11	1.3318 (5)	1.2039 (6)	0.04352 (19)	0.0576 (15)	
H13	1.2889	1.2083	0.0157	0.069*	
C12	1.4659 (6)	1.2700 (8)	0.0456 (3)	0.082 (2)	
H14	1.5112	1.3200	0.0186	0.099*	
N1	0.3766 (4)	0.5734 (4)	0.03960 (13)	0.0508 (11)	
N2	1.5358 (7)	1.2679 (4)	0.0833	0.093 (3)	

*Atomic displacement parameters (Å<sup>2</sup>)*

	$U^{11}$	$U^{22}$	$U^{33}$	$U^{12}$	$U^{13}$	$U^{23}$
Sm1	0.02697 (12)	0.02447 (15)	0.01831 (13)	0.01224 (7)	0.00126 (6)	0.00253 (11)
Ag2	0.0309 (2)	0.0440 (2)	0.0310 (2)	0.01544 (12)	0.000	-0.00131 (18)
O1	0.0433 (18)	0.0454 (18)	0.0227 (14)	0.0137 (15)	-0.0043 (13)	-0.0073 (12)
O2	0.0395 (17)	0.0320 (16)	0.0298 (15)	0.0036 (14)	-0.0050 (13)	0.0045 (12)
O3	0.0345 (16)	0.0457 (18)	0.0413 (17)	0.0210 (14)	0.0125 (13)	0.0158 (14)
O4	0.0354 (17)	0.070 (2)	0.0403 (17)	0.0244 (15)	-0.0079 (14)	0.0031 (15)
C1	0.038 (2)	0.024 (2)	0.024 (2)	0.0092 (18)	-0.0050 (17)	0.0024 (16)
C2	0.038 (2)	0.028 (2)	0.023 (2)	0.009 (2)	-0.0038 (18)	0.0002 (17)
C3	0.040 (3)	0.033 (2)	0.031 (2)	0.004 (2)	0.0042 (18)	-0.0024 (19)
C4	0.048 (3)	0.042 (3)	0.028 (2)	0.008 (2)	0.002 (2)	-0.008 (2)
C5	0.061 (4)	0.095 (5)	0.045 (3)	-0.037 (3)	0.022 (3)	-0.033 (3)
C6	0.066 (4)	0.075 (4)	0.031 (3)	-0.023 (3)	0.017 (3)	-0.020 (3)
C7	0.031 (2)	0.046 (3)	0.031 (3)	0.0231 (17)	-0.0010 (15)	-0.002 (3)
C8	0.062 (3)	0.129 (9)	0.098 (7)	0.064 (4)	0.021 (3)	0.042 (7)
C9	0.031 (3)	0.034 (2)	0.037 (3)	0.0156 (16)	0.000	0.000 (2)
C10	0.035 (3)	0.042 (3)	0.034 (3)	0.0174 (16)	0.000	0.004 (3)
C11	0.041 (3)	0.080 (4)	0.051 (3)	0.029 (3)	0.011 (2)	0.025 (3)
C12	0.055 (4)	0.102 (6)	0.075 (4)	0.028 (4)	0.026 (3)	0.027 (4)
N1	0.042 (2)	0.046 (2)	0.033 (2)	-0.0024 (19)	-0.0019 (18)	-0.0115 (17)
N2	0.049 (4)	0.120 (6)	0.086 (6)	0.025 (2)	0.000	0.009 (5)

*Geometric parameters (Å, °)*

Sm1—O2 <sup>i</sup>	2.336 (3)	C3—H4	0.9300
Sm1—O2 <sup>ii</sup>	2.336 (3)	C4—N1	1.323 (6)
Sm1—O4	2.384 (3)	C4—H2	0.9300
Sm1—O4 <sup>iii</sup>	2.384 (3)	C5—N1	1.311 (6)
Sm1—O1 <sup>iv</sup>	2.478 (3)	C5—C6	1.386 (7)
Sm1—O1 <sup>v</sup>	2.478 (3)	C5—H3	0.9300
Sm1—O3	2.483 (3)	C6—H5	0.9300

Sm1—O3 <sup>iii</sup>	2.483 (3)	C7—O3 <sup>iii</sup>	1.257 (4)
Ag2—N1	2.316 (4)	C7—C8	1.482 (9)
Ag2—N1 <sup>vi</sup>	2.316 (4)	C8—H11A	0.9600
Ag2—O3	2.328 (3)	C8—H11B	0.9600
Ag2—O3 <sup>vi</sup>	2.328 (3)	C8—H11C	0.9600
O1—C1	1.248 (5)	C9—O4 <sup>vi</sup>	1.238 (4)
O1—Sm1 <sup>vii</sup>	2.478 (3)	C9—C10	1.521 (8)
O2—C1	1.261 (5)	C10—C11	1.376 (6)
O2—Sm1 <sup>viii</sup>	2.336 (3)	C10—C11 <sup>vi</sup>	1.376 (6)
O3—C7	1.257 (4)	C11—C12	1.374 (8)
O4—C9	1.238 (4)	C11—H13	0.9300
C1—C2	1.501 (5)	C12—N2	1.329 (8)
C2—C6	1.362 (7)	C12—H14	0.9300
C2—C3	1.380 (6)	N2—C12 <sup>vi</sup>	1.329 (8)
C3—C4	1.363 (6)		
O2 <sup>i</sup> —Sm1—O2 <sup>ii</sup>	162.24 (16)	C9—O4—Sm1	149.2 (3)
O2 <sup>i</sup> —Sm1—O4	83.32 (11)	O1—C1—O2	124.9 (4)
O2 <sup>ii</sup> —Sm1—O4	82.47 (11)	O1—C1—C2	118.0 (4)
O2 <sup>i</sup> —Sm1—O4 <sup>iii</sup>	82.47 (11)	O2—C1—C2	117.1 (3)
O2 <sup>ii</sup> —Sm1—O4 <sup>iii</sup>	83.32 (11)	C6—C2—C3	117.0 (4)
O4—Sm1—O4 <sup>iii</sup>	73.52 (16)	C6—C2—C1	120.6 (4)
O2 <sup>i</sup> —Sm1—O1 <sup>iv</sup>	102.15 (10)	C3—C2—C1	122.4 (4)
O2 <sup>ii</sup> —Sm1—O1 <sup>iv</sup>	83.83 (10)	C4—C3—C2	119.2 (4)
O4—Sm1—O1 <sup>iv</sup>	145.28 (11)	C4—C3—H4	120.4
O4 <sup>iii</sup> —Sm1—O1 <sup>iv</sup>	73.30 (11)	C2—C3—H4	120.4
O2 <sup>i</sup> —Sm1—O1 <sup>v</sup>	83.83 (10)	N1—C4—C3	124.3 (4)
O2 <sup>ii</sup> —Sm1—O1 <sup>v</sup>	102.15 (10)	N1—C4—H2	117.9
O4—Sm1—O1 <sup>v</sup>	73.30 (11)	C3—C4—H2	117.9
O4 <sup>iii</sup> —Sm1—O1 <sup>v</sup>	145.28 (11)	N1—C5—C6	123.5 (5)
O1 <sup>iv</sup> —Sm1—O1 <sup>v</sup>	141.02 (16)	N1—C5—H3	118.3
O2 <sup>i</sup> —Sm1—O3	124.27 (10)	C6—C5—H3	118.3
O2 <sup>ii</sup> —Sm1—O3	73.44 (10)	C2—C6—C5	119.6 (5)
O4—Sm1—O3	132.68 (10)	C2—C6—H5	120.2
O4 <sup>iii</sup> —Sm1—O3	139.93 (12)	C5—C6—H5	120.2
O1 <sup>iv</sup> —Sm1—O3	72.14 (10)	O3 <sup>iii</sup> —C7—O3	118.3 (5)
O1 <sup>v</sup> —Sm1—O3	72.89 (11)	O3 <sup>iii</sup> —C7—C8	120.9 (3)
O2 <sup>i</sup> —Sm1—O3 <sup>iii</sup>	73.44 (10)	O3—C7—C8	120.9 (3)
O2 <sup>ii</sup> —Sm1—O3 <sup>iii</sup>	124.27 (10)	O3 <sup>iii</sup> —C7—Sm1	59.1 (3)
O4—Sm1—O3 <sup>iii</sup>	139.93 (12)	O3—C7—Sm1	59.1 (3)
O4 <sup>iii</sup> —Sm1—O3 <sup>iii</sup>	132.68 (10)	C8—C7—Sm1	180.000 (1)
O1 <sup>iv</sup> —Sm1—O3 <sup>iii</sup>	72.89 (11)	C7—C8—H11A	109.5
O1 <sup>v</sup> —Sm1—O3 <sup>iii</sup>	72.14 (10)	C7—C8—H11B	109.5
O3—Sm1—O3 <sup>iii</sup>	51.51 (13)	H11A—C8—H11B	109.5
O2 <sup>i</sup> —Sm1—C7	98.88 (8)	C7—C8—H11C	109.5
O2 <sup>ii</sup> —Sm1—C7	98.88 (8)	H11A—C8—H11C	109.5
O4—Sm1—C7	143.24 (8)	H11B—C8—H11C	109.5
O4 <sup>iii</sup> —Sm1—C7	143.24 (8)	O4—C9—O4 <sup>vi</sup>	127.5 (6)

O1 <sup>iv</sup> —Sm1—C7	70.51 (8)	O4—C9—C10	116.3 (3)
O1 <sup>v</sup> —Sm1—C7	70.51 (8)	O4 <sup>vi</sup> —C9—C10	116.3 (3)
O3—Sm1—C7	25.76 (7)	C11—C10—C11 <sup>vi</sup>	117.6 (6)
O3 <sup>iii</sup> —Sm1—C7	25.76 (7)	C11—C10—C9	121.2 (3)
N1—Ag2—N1 <sup>vi</sup>	102.7 (2)	C11 <sup>vi</sup> —C10—C9	121.2 (3)
N1—Ag2—O3	105.05 (13)	C10—C11—C12	118.8 (5)
N1 <sup>vi</sup> —Ag2—O3	112.42 (14)	C10—C11—H13	120.6
N1—Ag2—O3 <sup>vi</sup>	112.42 (14)	C12—C11—H13	120.6
N1 <sup>vi</sup> —Ag2—O3 <sup>vi</sup>	105.05 (13)	N2—C12—C11	125.0 (6)
O3—Ag2—O3 <sup>vi</sup>	118.21 (15)	N2—C12—H14	117.5
C1—O1—Sm1 <sup>vii</sup>	124.3 (3)	C11—C12—H14	117.5
C1—O2—Sm1 <sup>viii</sup>	146.4 (3)	C5—N1—C4	116.4 (4)
C7—O3—Ag2	137.6 (3)	C5—N1—Ag2	117.8 (3)
C7—O3—Sm1	95.1 (3)	C4—N1—Ag2	124.7 (3)
Ag2—O3—Sm1	126.58 (12)	C12—N2—C12 <sup>vi</sup>	114.9 (7)

Symmetry codes: (i)  $x+1, y+1, z$ ; (ii)  $x-y+1, -y+1, -z$ ; (iii)  $x-y+1, -y+2, -z$ ; (iv)  $-y+1, -x+1, -z-1/6$ ; (v)  $x-y+1, x+1, z+1/6$ ; (vi)  $x, x-y+1, -z+1/6$ ; (vii)  $y-1, -x+y, z-1/6$ ; (viii)  $x-1, y-1, z$ .