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Crystal structure of bis[*cis*-diaquabis(phenanthroline)cobalt(II)] bis(citrato)germanate(IV) dinitrate

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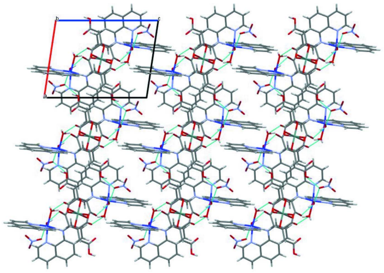
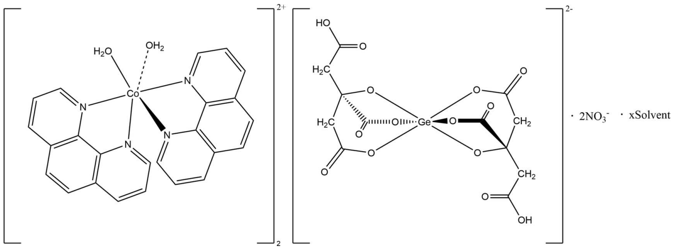
The asymmetric unit of the title compound, $[Co(C_{12}H_8N_2)_2(H_2O)_2]_2[Ge(C_6H_5O_7)_2](NO_3)_2$, features two complex $[(C_{12}H_8N_2)_2(H_2O)_2Co]^{2+}$ cations, two NO_3^- anions as well as one centrosymmetric $[(C_6H_5O_7)_2Ge]^{2-}$ anion. Two HCit ligands (Cit = citrate, $C_6H_4O_7$) each coordinate *via* three different oxygen atoms (hydroxylate, α-carboxylate, β-carboxylate) to the Ge atom, forming a slightly distorted octahedron. The coordination polyhedron of the Co atom is also octahedral, formed by coordination of four nitrogen atoms from two phenanthroline molecules and two water oxygen atoms. In the crystal, the cations and anions are linked by hydrogen bonds and form layers parallel to the *bc* plane. The structure exhibits disorder of the NO_3^- anion [disorder ratio 0.688 (9) to 0.312 (9)]. There are also highly disordered solvent molecules (presumably water and/or ethanol) in the crystal structure; explicit refinement of these molecules was not possible, and the content of the voids was instead taken into account using reverse Fourier transform methods [SQUEEZE procedure in *PLATON*; Spek (2015). *Acta Cryst.* C**71**, 9–18]. The given chemical formula and other crystal data do not take into account the unknown solvent molecule(s).



1. Chemical context

Citric acid (H_4Cit) is an essential component of the Krebs cycle and a universal intermediate in plant and animal metabolism. Its biocompatibility, hydrophilicity and general safety make citric acid a common component in foodstuffs, beverages, pharmaceuticals, cosmetics, etc (Nangare *et al.*, 2021). Recently, Varbanets and co-workers have reported that germanium coordination compounds with citric acid combined with a second metal and ligand, such as Co and 1,10-phenanthroline (phen), show high antihypoxic, cerebroprotective properties and have an activation effect on enzymes (Lukianchuk *et al.*, 2019; Gudzenko *et al.*, 2019*a*,*b*). Complex compounds have been obtained through reactions in the system GeO_2–H_4Cit–CoX_2–phen–C_2H_5OH–H_2O (X = Cl, CH_3COO). The authors reported that the anion of the cobalt salt (chloride and acetate) affects the composition and structure of the complex and results in the formation of cation–anionic compounds such as $[Co(phen)_3][Ge(HCit)_2]\cdot 2H_2O$ (Seifullina *et al.*, 2017*a*) or $[Co(H_2O)_2(phen)_2]_2[Ge(Cit)_2]\cdot 4H_2O$ (Martsinko *et al.*, 2018*a*,*b*). A bis(citrato)germanate anion with $HCit_3$ ligands tridentately coordinated to germanium are implemented in the structure $[Co(phen)_3][Ge(HCit)_2]\cdot 2H_2O$. In the $[Co(phen)_3]^{2+}$ cation, the cobalt atom binds to three phenanthroline molecules. In $[Co(H_2O)_2(phen)_2]_2[Ge(Cit)_2]\cdot 4H_2O$, on the other hand, cobalt(II) combines with only two molecules of 1,10-phenanthroline and the oxygen atoms of two coordinated water molecules to complete the octahedral metal coordination. In this compound, the third carboxylic group of the citric acid is deprotonated, which leads to a change of the charge of the anion and of the molar Co:Ge ratio, while the coordination polyhedron of the germanium atom remains the same: distorted octahedral, formed by six oxygen atoms of three types of oxygen atoms from two tridentate chelating citrate ligands.



In the present work, we report the synthesis and structural analysis of a new complex, $[Co(H_2O)_2(phen)_2]_2[Ge(HCit)_2(NO_3)_2]$, which was synthesized by changing the anion of the initial cobalt(II) salt to nitrate. This study is important for establishing the effect that the anion of the 3d metal salt has on the composition and structure of heterometal bis(citrato)germanates with 1,10-phenanthroline, as well as for the creation of new bioactive compounds.

2. Structural commentary

The title compound is a salt (Fig. 1), with a complex Co-based cation and two types of anions – the complex anion $Ge(HCit)_2$ and nitrate. The Ge atom occupies a special position on an inversion centre [the coordinates are (0.5, 1.0, 0.5)] so only half of the complex anion is located in the asymmetric unit. The charge of the two $[Co(H_2O)_2(phen)_2]^{2+}$ cations are compensated by one Ge complex dianion and two nitrate anions.

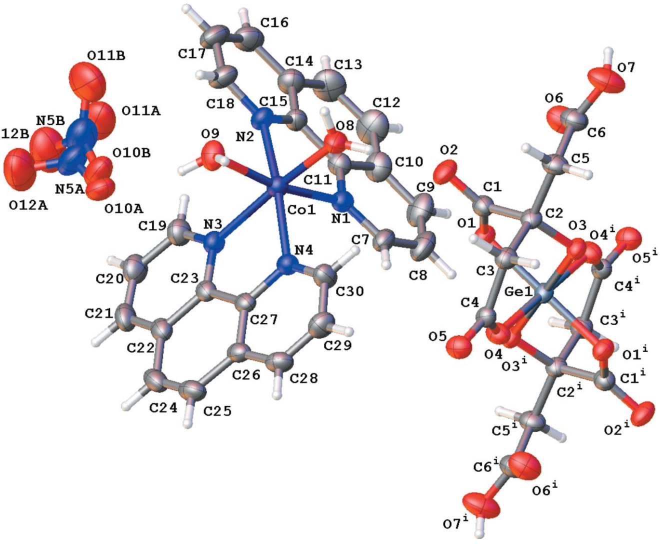


Figure 1
The molecular structure of $[Co(H_2O)_2(phen)_2]_2[Ge(HCit)_2(NO_3)_2]$ [symmetry code: (i)$1 - x, 2 - y, 1 - z$].

Table 1
Selected geometric parameters (Å, °).

Ge1—O1	1.914 (3)	Co1—N1	2.136 (3)
Ge1—O3	1.813 (2)	Co1—N2	2.123 (3)
Ge1—O4	1.959 (3)	Co1—N3	2.157 (4)
Co1—O8	2.083 (3)	Co1—N4	2.159 (3)
Co1—O9	2.100 (3)		
O1—Ge1—O4^{i}	90.92 (12)	O8—Co1—N4	92.07 (14)
O1—Ge1—O4	89.08 (12)	O9—Co1—N2	91.13 (13)
O3—Ge1—O1^{i}	92.43 (11)	O9—Co1—N3	88.06 (13)
O3—Ge1—O1	87.58 (11)	O9—Co1—N4	92.60 (13)
O3—Ge1—O4^{i}	89.40 (11)	N1—Co1—N3	96.18 (12)
O3—Ge1—O4	90.60 (11)	N1—Co1—N4	98.61 (12)
O8—Co1—O9	86.92 (13)	N2—Co1—N1	78.06 (12)
O8—Co1—N1	90.75 (13)	N2—Co1—N3	94.13 (14)
O8—Co1—N2	96.54 (14)	N3—Co1—N4	77.58 (13)

Symmetry code: (i) $-x+1, -y+2, -z+1$.

The coordination polyhedron of the Ge atom is a distorted octahedron formed by oxygen atoms of three types: hydroxyl (O3), α-carboxylate (O1) and β-carboxylate (O4) of two $HCit^{3-}$ ligands. The Ge—O bond lengths are consequently not equivalent. The Ge1—O3 hydroxyl bond [1.813 (2) Å] is shorter than the bonds with the carboxylate oxygen atoms. In addition, the Ge—O1 bond with the α-carboxylate oxygen atom is shorter than the Ge–O4 bond with the β-carboxylate oxygen atom [1.914 (3) Å and 1.959 (3) Å, respectively]. The values of O—Ge—O bond angles lie in the 87.6 (1)–92.4 (1)° range (Table 1). The structure of the complex germanate anion is in a good agreement with those of similar complexes containing citratogermanates previously described (Martsinko *et al.*, 2013, 2018*a*,*b*; Seifullina *et al.*, 2017*a*,*b*, 2019).

The coordination of the organic ligands to the Ge atom forms five- and six-membered metallocycles. The Ge1–O3–C2–C3–C4–O4 six-membered ring adopts a half-chair conformation [the C2 and O3 atoms deviate by 0.277 (4) and −0.657 (3) Å, respectively, from the mean plane though atoms Ge1, C3, C4 and O4, which is planar within 0.01 Å]. The Ge1—O1—C1—C2—O3 five-membered ring adopts an envelope conformation. Atom O3 deviates by 0.527 (3) Å from the mean plane of the remaining ring atoms (planar within 0.03 Å).

The coordination polyhedron of the Co atom is a distorted octahedron, which is formed by nitrogen atoms of two phenanthroline molecules and oxygen atoms of two water molecules. The Co—N and Co—O bond lengths lie in the ranges 2.120 (3)–2.160 (3) and 2.083 (3)–2.098 (3) Å, respectively, while the N—Co—N, O—Co—N and O—Co—O angles are in the range 77.6 (1)–98.6 (1)° (Table 1).

3. Supramolecular features

In the crystal, the water molecules of the $[Co(H_2O)_2(phen)_2]^{2+}$ cation are linked to the $[Ge(HCit)_2]^{2-}$ and NO_3^{-} anions by

Table 2
Hydrogen-bond geometry (Å, °).

D—H⋯A	D—H	H⋯A	D⋯A	D—H⋯A
O7—H7A⋯O10^{ii}	0.82	1.88	2.600 (12)	146
O8—H8A⋯O2	0.84 (2)	1.88 (2)	2.709 (4)	168 (5)
O9—H9A⋯O5^{iii}	0.82 (2)	1.96 (2)	2.701 (4)	150 (4)
O9—H9B⋯O10	0.82 (2)	1.99 (3)	2.789 (15)	166 (6)

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

intermolecular O—H⋯O hydrogen bonds (Table 2); these supramolecular clusters form layers parallel to the *bc* plane (Fig. 2). Voids with a volume of 149 Å^3 containing 49 electrons were found between adjacent layers. The content appears to be a combination of water and ethanol solvent molecules with more than twofold disorder. Refinement of these molecules was not possible, and the content of the voids was instead taken into account using reverse Fourier transform methods (SQUEEZE procedure; Spek, 2015).

4. Database survey

A search of the Cambridge Structural Database (CSD, Version 5.42, update November 2020; Groom *et al.*, 2016) for the Ge(HCit)$_2^{2-}$ anion yielded 15 structures containing this anion (Seiler *et al.*, 2005; Seifullina *et al.*, 2006, 2007, 2015, 2016, 2017*a*,*b*; Martsinko *et al.*, 2011, 2013, 2018*a*,*b*). In these structures, the Ge—O bond lengths for the hydroxyl, α-carboxylate and β-carboxylate oxygen atoms are in the ranges 1.793–1.840, 1.881–1.914 and 1.904–1.955 Å, respectively.

A search for the [Co(H$_2$O)$_2$(phen)$_2$]$^{2+}$ cation yielded six structures (Batsanov *et al.*, 2011; Yang *et al.*, 2003; Bulut *et al.*, 2003; Abdelhak *et al.*, 2006; Das *et al.*, 2013; Fu *et al.*, 2003). The Co—O bond lengths in the coordination polyhedron vary between 2.073 and 2.140 Å while the Co—N bond lengths range from within 2.118 to 2.164 Å.

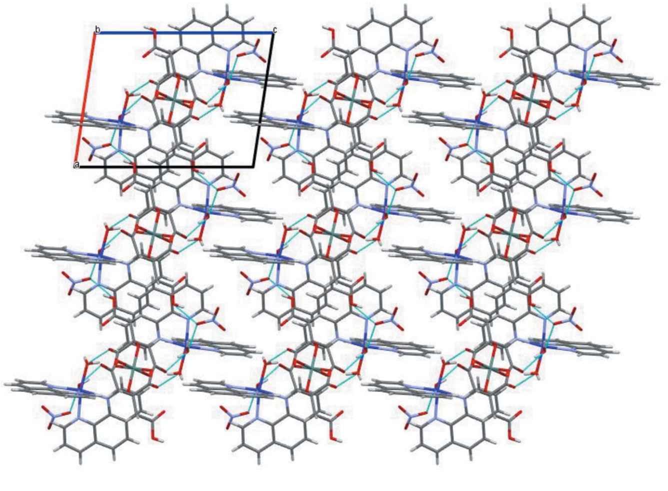


Figure 2
The crystal packing of [Co(H$_2$O)$_2$(phen)$_2$]$_2$[Ge(HCit)$_2$(NO$_3$)$_2$] viewed along the *b* axis.

No structures containing any combination of [Co(H$_2$O)$_2$(phen)$_2$]$^{2+}$ cations and [Ge(HCit)$_2$]$^{2-}$ anions were found in the CSD.

5. Synthesis and crystallization

A suspension of germanium(IV) oxide (0.0523 g, 0.5 mmol, GeO$_2$, 99.99%, Aldrich) and citric acid (0.21 g, 1 mmol, H$_4$Cit·H$_2$O, ≥99%, Aldrich) in 100 mL of hot distilled water was stirred to dissolve the reagents completely and slowly evaporated at 323 K to a volume of 20 mL. After cooling the mixture to room temperature, 20 mL of a 95% ethanol solution containing 1,10-phenanthroline (0.18 g, 1 mmol, phen, 99%, Aldrich) and cobalt(II) nitrate hexahydrate [0.146 g, 0.5 mmol, Co(NO$_3$)$_2$·6H$_2$O, ≥99%, Aldrich] were added (Fig. 3). Pink crystals suitable for X-ray analysis were obtained in two days, yield: 63%.

During the study of the thermal stability of the synthesized complex (Q-1500D PerkinElmer), it was established that its decomposition starts with an endothermic peak in the range of 393–423 K (peak 413 K). The corresponding weight loss of 1.5% indicates that the complex includes molecules of solvation. Therefore, crystals were dried at 423 K for 30 min to remove solvate molecules prior to the yield calculation and for elemental analysis.

Analysis calculated for C$_{60}$H$_{50}$Co$_2$GeN$_{10}$O$_{24}$ (1485.57) in %: C 48.47, H 3.37, Co 7.94, Ge 4.49, N 9.42; found C 48.25, H 3.26, Co 7.88, Ge 4.35, N 9.40 (ICP optical emission spectrometer Optima 2000 DV PerkinElmer and Elemental Analyzer CE-440).

IR (ν_{max}, cm^{-1}, spectrometer Frontier PerkinElmer, KBr): 3228 ν(OH), 3062, 2917 ν(C—H), 1743 ν(C=O), 1668 ν_{as}(COO$^-$), 1613 δ(H$_2$O), 1587, 1519, 1428 ν(C—C$_{Ar}$), 1410 ν_s(COO$^-$), 1367 ν(C—N), 1089 ν(C—O), 1198, 1148, 915, 856 δ(C—H), 641 ν(Ge—O), 554 ν(Co—O), 425 ν(Co—N).

The IR spectrum of the complex contains absorption bands for ν(C=O), ν_{as}(COO$^-$) and ν_s(COO$^-$), which indicate the presence of non-equivalent coordinated and free carboxyl groups in the complex. A ν(C—O) absorption band at 1089 cm^{-1} evidences that the alcoholic OH groups of the citrate ligands are deprotonated and involved in coordination. The presence of Ge—O stretching vibrations suggests that the carboxylate and hydroxyl groups are bonded to germanium. Absorption bands assigned to the ν(C—N) heterocycle, the ν(C—C) phenanthroline ring vibrations and deformation

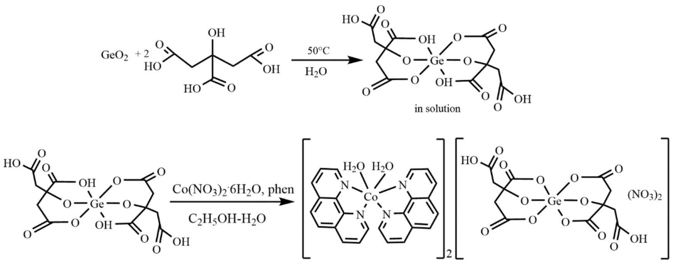


Figure 3
Two-step synthesis of [Co(H$_2$O)$_2$(phen)$_2$]$_2$[Ge(HCit)$_2$(NO$_3$)$_2$].

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Table 3
Experimental details.

Crystal data	
Chemical formula	$[Co(C_{12}H_8N_2)_2(H_2O)_2]_2[Ge(C_6H_5O_7)_2]NO_3$
M_r	1485.55
Crystal system, space group	Triclinic, $P\overline{1}$
Temperature (K)	294
a, *b*, *c* (Å)	10.6719 (5), 11.8089 (4), 14.0901 (7)
α, β, γ (°)	105.697 (4), 94.026 (4), 104.815 (4)
V ($Å^3$)	1633.98 (13)
Z	1
Radiation type	Mo *Kα*
μ (mm^{-1})	1.05
Crystal size (mm)	0.5 × 0.4 × 0.2
Data collection	
Diffractometer	Rigaku Oxford Diffraction Xcalibur, Sapphire3
Absorption correction	Multi-scan (*CrysAlis PRO*; Rigaku OD, 2018)
T_{min}, T_{max}	0.167, 1.000
No. of measured, independent and observed [$I > 2\sigma(I)$] reflections	14229, 7497, 4949
R_{int}	0.071
$(\sin \theta/\lambda)_{max}$ ($Å^{-1}$)	0.650
Refinement	
$R[F^2 > 2\sigma(F^2)]$, $wR(F^2)$, S	0.068, 0.192, 0.98
No. of reflections	7497
No. of parameters	489
No. of restraints	131
H-atom treatment	H atoms treated by a mixture of independent and constrained refinement
$\Delta\rho_{max}$, $\Delta\rho_{min}$ (e $Å^{-3}$)	1.09, −0.87

Computer programs: *CrysAlis PRO* (Rigaku OD, 2018), *SHELXT2018/3* (Sheldrick, 2015*a*), *SHELXL2018/3* (Sheldrick, 2015*b*) and *OLEX2* (Dolomanov *et al.*, 2009).

vibrations δ(C—H) of the aromatic rings are also found in the IR spectrum. The compound contains coordinated water molecules, as indicated by the H_2O deformation vibrations at 1613 cm^{-1}.

6. Refinement

Crystal data, data collection and structure refinement details are summarized in Table 3. Carbon-bound and carboxylic acid H atoms were added in calculated positions with C—H bond lengths of 0.93 Å for C—H, 0.97 Å for CH_2 and 0.82 Å for O—H bonds. Carboxylic acid H atoms were allowed to rotate but not to tip to best fit the experimental electron density. Water hydrogen atoms of the metal complex were located from difference-Fourier maps of electron density and their positions were refined with restraints of 0.84 (2) Å for O—H bond distances and 1.36 (2) Å for H⋯H distances. The position of one water H atom (H9*A*) was further restrained based on hydrogen bonding considerations. $U_{iso}(H)$ were set to $xU_{eq}(C,O)$, where x = 1.5 for hydroxyl groups and water molecules and 1.2 for all other H atoms.

The structure exhibits disorder of the NO_3^- anion. All N—O bond distances were restrained to be similar to each other (within a standard deviation of 0.02 Å) and the distance between oxygen atoms O10*B* and O11*B* was restrained to a target value of 2.200 (4) Å. U^{ij} values of nitrate atoms closer to each other than 2 Å were restrained to be similar to each other (within a standard deviation of 0.02 $Å^2$). Subject to these conditions, the disorder ratio refined to 0.688 (9):0.312 (9).

There are also highly disordered solvent molecules (presumably water and/or ethanol) in the crystal structure; explicit refinement of these molecules was not possible, and the content of the voids was instead taken into account using reverse Fourier transform methods (SQUEEZE; Spek, 2015) as implemented in the program *PLATON* (Spek, 2020). The voids with a volume of 149 $Å^3$ contain 49 electrons.

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supporting information

Acta Cryst. (2021). E**77**, 950-954   [https://doi.org/10.1107/S205698902100846X]

Crystal structure of bis[*cis*-diaquabis(phenanthroline)cobalt(II)] bis(citrato)germanate(IV) dinitrate

Olha Buchko, Viktoriya Dyakonenko, Elena Martsinko and Elena Chebanenko

Computing details

Data collection: *CrysAlis PRO* (Rigaku OD, 2018); cell refinement: *CrysAlis PRO* (Rigaku OD, 2018); data reduction: *CrysAlis PRO* (Rigaku OD, 2018); program(s) used to solve structure: *SHELXT2018/3* (Sheldrick, 2015a); program(s) used to refine structure: *SHELXL2018/3* (Sheldrick, 2015b); molecular graphics: *OLEX2* (Dolomanov *et al.*, 2009); software used to prepare material for publication: *OLEX2* (Dolomanov *et al.*, 2009).

Bis[*cis*-diaquabis(phenanthroline)cobalt(II)] bis(citrato)germanate(IV) dinitrate

Crystal data

$[Co(C_{12}H_8N_2)_2(H_2O)_2]_2[Ge(C_6H_5O_7)_2](NO_3)_2$
$M_r = 1485.55$
Triclinic, $P\overline{1}$
$a = 10.6719$ (5) Å
$b = 11.8089$ (4) Å
$c = 14.0901$ (7) Å
$\alpha = 105.697$ (4)°
$\beta = 94.026$ (4)°
$\gamma = 104.815$ (4)°
$V = 1633.98$ (13) Å^3
$Z = 1$
$F(000) = 758$
$D_x = 1.510$ Mg m^{-3}
Mo $K\alpha$ radiation, $\lambda = 0.71073$ Å
Cell parameters from 3558 reflections
$\theta = 3.6$–26.0°
$\mu = 1.05$ mm^{-1}
$T = 294$ K
Block, colourless
0.5 × 0.4 × 0.2 mm

Data collection

Rigaku Oxford Diffraction Xcalibur, Sapphire3 diffractometer
Radiation source: fine-focus sealed X-ray tube, Enhance (Mo) X-ray Source
Graphite monochromator
Detector resolution: 16.1827 pixels mm^{-1}
ω scans
Absorption correction: multi-scan (CrysAlisPro; Rigaku OD, 2018)
$T_{min} = 0.167$, $T_{max} = 1.000$
14229 measured reflections
7497 independent reflections
4949 reflections with $I > 2\sigma(I)$
$R_{int} = 0.071$
$\theta_{max} = 27.5°$, $\theta_{min} = 2.9°$
$h = -13 \rightarrow 13$
$k = -13 \rightarrow 15$
$l = -17 \rightarrow 18$

Refinement

Refinement on F^2
Least-squares matrix: full
$R[F^2 > 2\sigma(F^2)] = 0.068$
$wR(F^2) = 0.192$
$S = 0.98$
7497 reflections
489 parameters
131 restraints
Hydrogen site location: mixed
H atoms treated by a mixture of independent and constrained refinement
$w = 1/[\sigma^2(F_o^2) + (0.092P)^2]$
where $P = (F_o^2 + 2F_c^2)/3$
$(\Delta/\sigma)_{max} < 0.001$
$\Delta\rho_{max} = 1.09$ e Å^{-3}
$\Delta\rho_{min} = -0.87$ e Å^{-3}

Special details

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

Fractional atomic coordinates and isotropic or equivalent isotropic displacement parameters (Å^2)

	x	*y*	*z*	$U_{\rm iso}$*/$U_{\rm eq}$	Occ. (<1)
Ge1	0.500000	1.000000	0.500000	0.03675 (17)	
Co1	0.33663 (5)	0.61981 (4)	0.77746 (4)	0.04432 (18)	
O1	0.5174 (3)	0.9298 (2)	0.6060 (2)	0.0458 (6)	
O2	0.6415 (3)	0.8220 (3)	0.6500 (2)	0.0586 (8)	
O3	0.6711 (2)	1.0110 (2)	0.4908 (2)	0.0425 (6)	
O4	0.4470 (3)	0.8345 (2)	0.4052 (2)	0.0491 (7)	
O5	0.4742 (3)	0.6620 (2)	0.3179 (2)	0.0542 (7)	
O6	0.8227 (3)	1.0894 (3)	0.7076 (3)	0.0752 (10)	
O7	1.0212 (3)	1.0937 (4)	0.6678 (3)	0.0905 (12)	
H7A	1.046289	1.134511	0.726375	0.136*	
O8	0.5332 (3)	0.6796 (3)	0.7618 (3)	0.0618 (8)	
H8A	0.574 (5)	0.717 (5)	0.725 (4)	0.093*	
H8B	0.588 (4)	0.655 (5)	0.791 (4)	0.093*	
O9	0.3742 (4)	0.4581 (3)	0.7902 (3)	0.0634 (8)	
H9A	0.415 (4)	0.437 (4)	0.745 (3)	0.095*	
H9B	0.306 (3)	0.407 (4)	0.789 (4)	0.095*	
O10	0.1634 (11)	0.2778 (14)	0.8150 (6)	0.079 (2)	0.688 (9)
O10B	0.186 (3)	0.285 (3)	0.8413 (15)	0.105 (6)	0.312 (9)
O11	0.1943 (13)	0.3850 (8)	0.9768 (7)	0.145 (4)	0.688 (9)
O11B	0.287 (2)	0.3400 (17)	0.9953 (13)	0.154 (6)	0.312 (9)
O12	0.0517 (10)	0.2005 (10)	0.9183 (8)	0.157 (4)	0.688 (9)
O12B	0.072 (2)	0.304 (2)	0.9734 (17)	0.151 (5)	0.312 (9)
N1	0.3167 (3)	0.7994 (3)	0.7946 (2)	0.0457 (7)	
N2	0.3626 (4)	0.6943 (3)	0.9350 (2)	0.0506 (8)	
N3	0.1305 (3)	0.5296 (3)	0.7653 (3)	0.0479 (8)	
N4	0.2778 (3)	0.5440 (3)	0.6181 (2)	0.0461 (8)	
N5	0.1351 (12)	0.2883 (9)	0.9041 (7)	0.102 (3)	0.688 (9)
N5B	0.180 (2)	0.319 (3)	0.9359 (18)	0.124 (4)	0.312 (9)
C1	0.6179 (4)	0.8863 (3)	0.6003 (3)	0.0447 (9)	
C2	0.7002 (4)	0.9130 (3)	0.5205 (3)	0.0397 (8)	
C3	0.6587 (4)	0.7976 (4)	0.4312 (3)	0.0454 (9)	
H3A	0.715808	0.809487	0.381935	0.054*	
H3B	0.672611	0.729839	0.452798	0.054*	
C4	0.5174 (4)	0.7610 (3)	0.3810 (3)	0.0394 (8)	
C5	0.8460 (4)	0.9469 (4)	0.5569 (3)	0.0525 (10)	
H5A	0.867066	0.874970	0.566046	0.063*	
H5B	0.893737	0.970051	0.505709	0.063*	
C6	0.8925 (5)	1.0500 (4)	0.6529 (4)	0.0632 (12)	
C7	0.3017 (4)	0.8521 (4)	0.7247 (3)	0.0541 (10)	

H7	0.299949	0.808312	0.658670	0.065*
C8	0.2886 (5)	0.9685 (5)	0.7449 (5)	0.0770 (16)
H8	0.277307	1.002198	0.693535	0.092*
C9	0.2924 (6)	1.0338 (5)	0.8411 (5)	0.0803 (17)
H9	0.282433	1.112360	0.855452	0.096*
C10	0.3110 (6)	0.9843 (4)	0.9186 (4)	0.0690 (14)
C11	0.3231 (4)	0.8637 (4)	0.8909 (3)	0.0497 (10)
C12	0.3176 (7)	1.0460 (5)	1.0206 (5)	0.092 (2)
H12	0.309794	1.125379	1.039407	0.110*
C13	0.3359 (7)	0.9894 (5)	1.0937 (4)	0.0885 (18)
H13	0.337511	1.030144	1.160419	0.106*
C14	0.3519 (5)	0.8692 (4)	1.0659 (4)	0.0666 (13)
C15	0.3463 (4)	0.8074 (4)	0.9668 (3)	0.0486 (9)
C16	0.3762 (6)	0.8107 (5)	1.1371 (4)	0.0761 (15)
H16	0.379325	0.848450	1.204675	0.091*
C17	0.3953 (6)	0.6961 (6)	1.1045 (4)	0.0787 (15)
H17	0.412778	0.655870	1.149965	0.094*
C18	0.3882 (5)	0.6420 (5)	1.0041 (4)	0.0684 (13)
H18	0.401944	0.564997	0.983189	0.082*
C19	0.0581 (5)	0.5253 (4)	0.8367 (4)	0.0620 (12)
H19	0.093641	0.575016	0.901218	0.074*
C20	−0.0684 (5)	0.4500 (5)	0.8195 (5)	0.0702 (13)
H20	−0.116577	0.450418	0.871997	0.084*
C21	−0.1230 (5)	0.3757 (5)	0.7271 (5)	0.0674 (13)
H21	−0.208339	0.324658	0.715527	0.081*
C22	−0.0488 (4)	0.3766 (4)	0.6486 (4)	0.0531 (10)
C23	0.0781 (4)	0.4572 (3)	0.6715 (3)	0.0440 (9)
C24	−0.0971 (5)	0.3013 (4)	0.5461 (4)	0.0644 (13)
H24	−0.180876	0.246614	0.530428	0.077*
C25	−0.0238 (5)	0.3089 (4)	0.4742 (4)	0.0634 (12)
H25	−0.057055	0.259283	0.409219	0.076*
C26	0.1055 (4)	0.3925 (4)	0.4953 (3)	0.0508 (10)
C27	0.1561 (4)	0.4645 (3)	0.5929 (3)	0.0436 (9)
C28	0.1845 (5)	0.4073 (4)	0.4225 (4)	0.0593 (12)
H28	0.154207	0.361152	0.356240	0.071*
C29	0.3026 (5)	0.4868 (4)	0.4473 (4)	0.0642 (12)
H29	0.355017	0.497089	0.398522	0.077*
C30	0.3479 (5)	0.5546 (4)	0.5458 (3)	0.0555 (10)
H30	0.431305	0.610072	0.561765	0.067*

Atomic displacement parameters (Å²)

	U^{11}	U^{22}	U^{33}	U^{12}	U^{13}	U^{23}
Ge1	0.0349 (3)	0.0352 (3)	0.0442 (3)	0.0129 (2)	0.0064 (2)	0.0156 (2)
Co1	0.0491 (3)	0.0407 (3)	0.0417 (3)	0.0123 (2)	0.0033 (2)	0.0112 (2)
O1	0.0451 (15)	0.0529 (15)	0.0486 (16)	0.0186 (13)	0.0101 (13)	0.0250 (12)
O2	0.0620 (19)	0.0699 (19)	0.065 (2)	0.0305 (16)	0.0121 (16)	0.0419 (16)
O3	0.0422 (15)	0.0426 (14)	0.0503 (16)	0.0154 (12)	0.0083 (12)	0.0230 (12)

O4	0.0410 (14)	0.0452 (15)	0.0594 (18)	0.0166 (12)	−0.0003 (13)	0.0106 (12)
O5	0.0590 (18)	0.0459 (15)	0.0540 (18)	0.0197 (14)	0.0005 (14)	0.0068 (13)
O6	0.061 (2)	0.080 (2)	0.073 (2)	0.0225 (18)	0.0113 (19)	0.0010 (18)
O7	0.052 (2)	0.111 (3)	0.084 (3)	0.016 (2)	−0.008 (2)	−0.001 (2)
O8	0.0465 (18)	0.072 (2)	0.069 (2)	0.0075 (16)	−0.0001 (16)	0.0349 (16)
O9	0.071 (2)	0.0506 (17)	0.079 (2)	0.0247 (16)	0.0242 (19)	0.0254 (16)
O10	0.093 (5)	0.080 (4)	0.061 (4)	0.019 (4)	−0.013 (4)	0.026 (4)
O10B	0.157 (11)	0.077 (7)	0.070 (9)	0.009 (9)	−0.009 (9)	0.034 (8)
O11	0.212 (9)	0.093 (5)	0.091 (5)	0.002 (5)	−0.003 (6)	0.012 (4)
O11B	0.175 (12)	0.088 (9)	0.159 (11)	0.000 (9)	−0.015 (10)	0.015 (8)
O12	0.169 (7)	0.153 (7)	0.123 (7)	−0.016 (6)	0.035 (6)	0.053 (6)
O12B	0.167 (10)	0.141 (10)	0.122 (9)	0.011 (9)	0.058 (8)	0.025 (8)
N1	0.0435 (18)	0.0484 (18)	0.0450 (19)	0.0124 (15)	0.0061 (15)	0.0143 (14)
N2	0.061 (2)	0.0498 (19)	0.044 (2)	0.0171 (17)	0.0063 (17)	0.0185 (15)
N3	0.0477 (19)	0.0493 (18)	0.049 (2)	0.0128 (15)	0.0088 (16)	0.0196 (15)
N4	0.0485 (19)	0.0437 (17)	0.0434 (19)	0.0106 (15)	0.0007 (15)	0.0125 (13)
N5	0.151 (7)	0.087 (5)	0.070 (5)	0.029 (5)	0.001 (5)	0.036 (4)
N5B	0.164 (8)	0.104 (7)	0.092 (8)	0.012 (7)	0.015 (7)	0.036 (7)
C1	0.040 (2)	0.041 (2)	0.054 (2)	0.0126 (17)	0.0013 (18)	0.0151 (17)
C2	0.0343 (18)	0.0420 (19)	0.048 (2)	0.0176 (16)	0.0053 (16)	0.0163 (16)
C3	0.041 (2)	0.050 (2)	0.050 (2)	0.0176 (18)	0.0082 (18)	0.0178 (17)
C4	0.045 (2)	0.0319 (17)	0.041 (2)	0.0123 (16)	0.0027 (16)	0.0090 (14)
C5	0.041 (2)	0.056 (2)	0.059 (3)	0.0181 (19)	−0.0031 (19)	0.0122 (19)
C6	0.051 (3)	0.065 (3)	0.066 (3)	0.014 (2)	−0.005 (2)	0.014 (2)
C7	0.051 (2)	0.063 (3)	0.058 (3)	0.017 (2)	0.006 (2)	0.033 (2)
C8	0.080 (4)	0.089 (4)	0.093 (4)	0.038 (3)	0.023 (3)	0.061 (3)
C9	0.102 (4)	0.067 (3)	0.098 (4)	0.047 (3)	0.031 (4)	0.042 (3)
C10	0.079 (4)	0.056 (3)	0.079 (4)	0.031 (3)	0.019 (3)	0.018 (2)
C11	0.050 (2)	0.045 (2)	0.052 (2)	0.0158 (19)	0.0063 (19)	0.0102 (17)
C12	0.126 (6)	0.064 (3)	0.085 (4)	0.042 (4)	0.024 (4)	0.006 (3)
C13	0.110 (5)	0.080 (4)	0.062 (4)	0.030 (3)	0.020 (3)	−0.004 (3)
C14	0.074 (3)	0.065 (3)	0.055 (3)	0.016 (3)	0.005 (3)	0.013 (2)
C15	0.052 (2)	0.047 (2)	0.041 (2)	0.0083 (18)	0.0039 (18)	0.0119 (16)
C16	0.074 (3)	0.096 (4)	0.050 (3)	0.016 (3)	0.004 (3)	0.016 (3)
C17	0.081 (4)	0.107 (4)	0.058 (3)	0.026 (3)	0.002 (3)	0.043 (3)
C18	0.084 (4)	0.077 (3)	0.050 (3)	0.030 (3)	−0.002 (3)	0.025 (2)
C19	0.057 (3)	0.063 (3)	0.068 (3)	0.015 (2)	0.015 (2)	0.024 (2)
C20	0.059 (3)	0.079 (3)	0.083 (4)	0.019 (3)	0.024 (3)	0.038 (3)
C21	0.044 (3)	0.066 (3)	0.100 (4)	0.008 (2)	0.013 (3)	0.044 (3)
C22	0.044 (2)	0.046 (2)	0.073 (3)	0.0119 (18)	0.000 (2)	0.026 (2)
C23	0.040 (2)	0.0384 (19)	0.057 (2)	0.0131 (16)	0.0001 (18)	0.0189 (16)
C24	0.047 (3)	0.049 (2)	0.089 (4)	0.004 (2)	−0.013 (3)	0.021 (2)
C25	0.065 (3)	0.051 (2)	0.062 (3)	0.013 (2)	−0.017 (2)	0.007 (2)
C26	0.055 (2)	0.043 (2)	0.051 (2)	0.0136 (18)	−0.010 (2)	0.0129 (17)
C27	0.043 (2)	0.0398 (19)	0.050 (2)	0.0133 (16)	−0.0026 (18)	0.0167 (16)
C28	0.065 (3)	0.058 (3)	0.047 (3)	0.020 (2)	−0.009 (2)	0.0059 (19)
C29	0.078 (3)	0.070 (3)	0.050 (3)	0.026 (3)	0.014 (2)	0.021 (2)
C30	0.054 (3)	0.059 (3)	0.048 (3)	0.008 (2)	0.010 (2)	0.0139 (19)

Geometric parameters (Å, º)

Ge1—O1^{i}	1.914 (3)	C5—H5A	0.9700
Ge1—O1	1.914 (3)	C5—H5B	0.9700
Ge1—O3^{i}	1.813 (2)	C5—C6	1.505 (6)
Ge1—O3	1.813 (2)	C7—H7	0.9300
Ge1—O4^{i}	1.959 (3)	C7—C8	1.372 (6)
Ge1—O4	1.959 (3)	C8—H8	0.9300
Co1—O8	2.083 (3)	C8—C9	1.357 (8)
Co1—O9	2.100 (3)	C9—H9	0.9300
Co1—N1	2.136 (3)	C9—C10	1.396 (7)
Co1—N2	2.123 (3)	C10—C11	1.414 (6)
Co1—N3	2.157 (4)	C10—C12	1.411 (8)
Co1—N4	2.159 (3)	C11—C15	1.442 (6)
O1—C1	1.301 (4)	C12—H12	0.9300
O2—C1	1.221 (4)	C12—C13	1.399 (9)
O3—C2	1.429 (4)	C13—H13	0.9300
O4—C4	1.282 (4)	C13—C14	1.425 (7)
O5—C4	1.214 (4)	C14—C15	1.378 (6)
O6—C6	1.196 (5)	C14—C16	1.408 (7)
O7—H7A	0.8200	C16—H16	0.9300
O7—C6	1.317 (6)	C16—C17	1.378 (7)
O8—H8A	0.839 (19)	C17—H17	0.9300
O8—H8B	0.846 (19)	C17—C18	1.374 (7)
O9—H9A	0.821 (17)	C18—H18	0.9300
O9—H9B	0.815 (19)	C19—H19	0.9300
O10—N5	1.292 (10)	C19—C20	1.376 (7)
O10B—N5B	1.294 (14)	C20—H20	0.9300
O11—N5	1.288 (10)	C20—C21	1.348 (8)
O11B—N5B	1.292 (14)	C21—H21	0.9300
O12—N5	1.253 (10)	C21—C22	1.405 (7)
O12B—N5B	1.295 (14)	C22—C23	1.399 (6)
N1—C7	1.321 (5)	C22—C24	1.452 (7)
N1—C11	1.351 (5)	C23—C27	1.440 (5)
N2—C15	1.349 (5)	C24—H24	0.9300
N2—C18	1.334 (5)	C24—C25	1.331 (7)
N3—C19	1.314 (5)	C25—H25	0.9300
N3—C23	1.353 (5)	C25—C26	1.433 (7)
N4—C27	1.351 (5)	C26—C27	1.391 (6)
N4—C30	1.321 (5)	C26—C28	1.392 (6)
C1—C2	1.524 (5)	C28—H28	0.9300
C2—C3	1.524 (5)	C28—C29	1.322 (7)
C2—C5	1.518 (5)	C29—H29	0.9300
C3—H3A	0.9700	C29—C30	1.381 (6)
C3—H3B	0.9700	C30—H30	0.9300
C3—C4	1.521 (5)		
O1^{i}—Ge1—O1	180.0	C6—C5—C2	114.2 (3)

O1^{i}—Ge1—O4^{i}	89.08 (12)	C6—C5—H5A	108.7
O1—Ge1—O4^{i}	90.92 (12)	C6—C5—H5B	108.7
O1^{i}—Ge1—O4	90.92 (12)	O6—C6—O7	124.1 (5)
O1—Ge1—O4	89.08 (12)	O6—C6—C5	125.0 (4)
O3—Ge1—O1^{i}	92.43 (11)	O7—C6—C5	110.9 (4)
O3^{i}—Ge1—O1^{i}	87.57 (11)	N1—C7—H7	118.5
O3—Ge1—O1	87.58 (11)	N1—C7—C8	123.0 (5)
O3^{i}—Ge1—O1	92.43 (11)	C8—C7—H7	118.5
O3^{i}—Ge1—O3	180.0	C7—C8—H8	120.5
O3^{i}—Ge1—O4^{i}	90.60 (11)	C9—C8—C7	119.0 (5)
O3—Ge1—O4^{i}	89.40 (11)	C9—C8—H8	120.5
O3^{i}—Ge1—O4	89.40 (11)	C8—C9—H9	119.6
O3—Ge1—O4	90.60 (11)	C8—C9—C10	120.8 (4)
O4—Ge1—O4^{i}	180.0	C10—C9—H9	119.6
O8—Co1—O9	86.92 (13)	C9—C10—C11	116.4 (5)
O8—Co1—N1	90.75 (13)	C9—C10—C12	124.6 (5)
O8—Co1—N2	96.54 (14)	C12—C10—C11	119.0 (5)
O8—Co1—N3	168.28 (14)	N1—C11—C10	121.9 (4)
O8—Co1—N4	92.07 (14)	N1—C11—C15	118.3 (3)
O9—Co1—N1	168.62 (14)	C10—C11—C15	119.8 (4)
O9—Co1—N2	91.13 (13)	C10—C12—H12	119.6
O9—Co1—N3	88.06 (13)	C13—C12—C10	120.9 (5)
O9—Co1—N4	92.60 (13)	C13—C12—H12	119.6
N1—Co1—N3	96.18 (12)	C12—C13—H13	120.0
N1—Co1—N4	98.61 (12)	C12—C13—C14	120.0 (5)
N2—Co1—N1	78.06 (12)	C14—C13—H13	120.0
N2—Co1—N3	94.13 (14)	C15—C14—C13	120.1 (5)
N2—Co1—N4	170.78 (13)	C15—C14—C16	117.9 (4)
N3—Co1—N4	77.58 (13)	C16—C14—C13	122.0 (5)
C1—O1—Ge1	109.6 (2)	N2—C15—C11	116.4 (4)
C2—O3—Ge1	107.7 (2)	N2—C15—C14	123.4 (4)
C4—O4—Ge1	127.8 (3)	C14—C15—C11	120.2 (4)
C6—O7—H7A	109.5	C14—C16—H16	120.7
Co1—O8—H8A	134 (3)	C17—C16—C14	118.5 (5)
Co1—O8—H8B	118 (3)	C17—C16—H16	120.7
H8A—O8—H8B	107 (3)	C16—C17—H17	120.3
Co1—O9—H9A	106 (3)	C18—C17—C16	119.3 (5)
Co1—O9—H9B	110 (4)	C18—C17—H17	120.3
H9A—O9—H9B	114 (3)	N2—C18—C17	123.3 (5)
C7—N1—Co1	128.3 (3)	N2—C18—H18	118.3
C7—N1—C11	118.9 (4)	C17—C18—H18	118.3
C11—N1—Co1	112.8 (3)	N3—C19—H19	118.7
C15—N2—Co1	114.3 (3)	N3—C19—C20	122.5 (5)
C18—N2—Co1	128.2 (3)	C20—C19—H19	118.7
C18—N2—C15	117.5 (4)	C19—C20—H20	119.7
C19—N3—Co1	128.8 (3)	C21—C20—C19	120.5 (5)
C19—N3—C23	118.5 (4)	C21—C20—H20	119.7
C23—N3—Co1	112.2 (3)	C20—C21—H21	120.5

C27—N4—Co1	112.8 (3)	C20—C21—C22	118.9 (4)
C30—N4—Co1	129.2 (3)	C22—C21—H21	120.5
C30—N4—C27	117.6 (4)	C21—C22—C24	124.0 (4)
O11—N5—O10	120.7 (11)	C23—C22—C21	117.3 (4)
O12—N5—O10	118.2 (10)	C23—C22—C24	118.7 (4)
O12—N5—O11	121.1 (10)	N3—C23—C22	122.3 (4)
O10B—N5B—O12B	124 (3)	N3—C23—C27	118.4 (3)
O11B—N5B—O10B	116.8 (15)	C22—C23—C27	119.3 (4)
O11B—N5B—O12B	117 (2)	C22—C24—H24	119.3
O1—C1—C2	115.1 (3)	C25—C24—C22	121.3 (4)
O2—C1—O1	123.4 (4)	C25—C24—H24	119.3
O2—C1—C2	121.4 (3)	C24—C25—H25	119.5
O3—C2—C1	109.2 (3)	C24—C25—C26	121.0 (4)
O3—C2—C3	108.5 (3)	C26—C25—H25	119.5
O3—C2—C5	109.4 (3)	C27—C26—C25	119.4 (4)
C3—C2—C1	106.9 (3)	C27—C26—C28	117.2 (4)
C5—C2—C1	112.1 (3)	C28—C26—C25	123.4 (4)
C5—C2—C3	110.6 (3)	N4—C27—C23	117.3 (3)
C2—C3—H3A	108.3	N4—C27—C26	122.4 (4)
C2—C3—H3B	108.3	C26—C27—C23	120.2 (4)
H3A—C3—H3B	107.4	C26—C28—H28	119.9
C4—C3—C2	115.8 (3)	C29—C28—C26	120.1 (4)
C4—C3—H3A	108.3	C29—C28—H28	119.9
C4—C3—H3B	108.3	C28—C29—H29	120.0
O4—C4—C3	119.9 (3)	C28—C29—C30	119.9 (5)
O5—C4—O4	121.5 (4)	C30—C29—H29	120.0
O5—C4—C3	118.6 (3)	N4—C30—C29	122.7 (4)
C2—C5—H5A	108.7	N4—C30—H30	118.7
C2—C5—H5B	108.7	C29—C30—H30	118.7
H5A—C5—H5B	107.6		

Ge1—O1—C1—O2	−169.8 (3)	C9—C10—C11—C15	178.3 (5)
Ge1—O1—C1—C2	5.7 (4)	C9—C10—C12—C13	179.6 (6)
Ge1—O3—C2—C1	−32.7 (3)	C10—C11—C15—N2	−177.1 (4)
Ge1—O3—C2—C3	83.5 (3)	C10—C11—C15—C14	2.3 (7)
Ge1—O3—C2—C5	−155.8 (3)	C10—C12—C13—C14	1.9 (11)
Ge1—O4—C4—O5	−177.0 (3)	C11—N1—C7—C8	−1.9 (7)
Ge1—O4—C4—C3	2.6 (5)	C11—C10—C12—C13	0.0 (10)
Co1—N1—C7—C8	179.4 (4)	C12—C10—C11—N1	179.5 (5)
Co1—N1—C11—C10	−179.4 (4)	C12—C10—C11—C15	−2.0 (8)
Co1—N1—C11—C15	2.1 (5)	C12—C13—C14—C15	−1.6 (10)
Co1—N2—C15—C11	−4.1 (5)	C12—C13—C14—C16	177.2 (6)
Co1—N2—C15—C14	176.5 (4)	C13—C14—C15—N2	178.9 (5)
Co1—N2—C18—C17	−175.9 (4)	C13—C14—C15—C11	−0.4 (8)
Co1—N3—C19—C20	−170.6 (3)	C13—C14—C16—C17	−177.7 (6)
Co1—N3—C23—C22	170.9 (3)	C14—C16—C17—C18	−0.9 (9)
Co1—N3—C23—C27	−9.5 (4)	C15—N2—C18—C17	1.7 (8)
Co1—N4—C27—C23	9.6 (4)	C15—C14—C16—C17	1.1 (9)

Co1—N4—C27—C26	−171.0 (3)	C16—C14—C15—N2	0.1 (8)
Co1—N4—C30—C29	170.5 (3)	C16—C14—C15—C11	−179.3 (5)
O1^{i}—Ge1—O3—C2	−149.9 (2)	C16—C17—C18—N2	−0.5 (9)
O1—Ge1—O3—C2	30.1 (2)	C18—N2—C15—C11	178.0 (4)
O1—C1—C2—O3	17.6 (4)	C18—N2—C15—C14	−1.5 (7)
O1—C1—C2—C3	−99.6 (4)	C19—N3—C23—C22	−1.4 (5)
O1—C1—C2—C5	139.1 (3)	C19—N3—C23—C27	178.2 (3)
O2—C1—C2—O3	−166.8 (4)	C19—C20—C21—C22	−0.2 (7)
O2—C1—C2—C3	76.0 (5)	C20—C21—C22—C23	−1.0 (6)
O2—C1—C2—C5	−45.3 (5)	C20—C21—C22—C24	−179.7 (4)
O3—C2—C3—C4	−54.0 (4)	C21—C22—C23—N3	1.8 (6)
O3—C2—C5—C6	68.0 (5)	C21—C22—C23—C27	−177.8 (3)
O4—Ge1—O3—C2	−59.0 (2)	C21—C22—C24—C25	177.8 (4)
O4^{i}—Ge1—O3—C2	121.0 (2)	C22—C23—C27—N4	179.6 (3)
N1—C7—C8—C9	0.7 (8)	C22—C23—C27—C26	0.2 (5)
N1—C11—C15—N2	1.4 (6)	C22—C24—C25—C26	−0.3 (7)
N1—C11—C15—C14	−179.2 (4)	C23—N3—C19—C20	0.1 (6)
N3—C19—C20—C21	0.7 (8)	C23—C22—C24—C25	−0.9 (6)
N3—C23—C27—N4	0.0 (5)	C24—C22—C23—N3	−179.4 (3)
N3—C23—C27—C26	−179.4 (3)	C24—C22—C23—C27	1.0 (5)
C1—C2—C3—C4	63.7 (4)	C24—C25—C26—C27	1.5 (6)
C1—C2—C5—C6	−53.3 (5)	C24—C25—C26—C28	−177.7 (4)
C2—C3—C4—O4	9.6 (5)	C25—C26—C27—N4	179.2 (3)
C2—C3—C4—O5	−170.7 (3)	C25—C26—C27—C23	−1.4 (5)
C2—C5—C6—O6	13.3 (7)	C25—C26—C28—C29	179.5 (4)
C2—C5—C6—O7	−165.2 (4)	C26—C28—C29—C30	0.5 (7)
C3—C2—C5—C6	−172.5 (4)	C27—N4—C30—C29	−1.1 (6)
C5—C2—C3—C4	−174.0 (3)	C27—C26—C28—C29	0.3 (6)
C7—N1—C11—C10	1.6 (6)	C28—C26—C27—N4	−1.6 (5)
C7—N1—C11—C15	−176.9 (4)	C28—C26—C27—C23	177.8 (3)
C7—C8—C9—C10	0.8 (9)	C28—C29—C30—N4	−0.1 (7)
C8—C9—C10—C11	−1.0 (9)	C30—N4—C27—C23	−177.4 (3)
C8—C9—C10—C12	179.3 (6)	C30—N4—C27—C26	2.0 (5)
C9—C10—C11—N1	−0.2 (7)		

Symmetry code: (i) −*x*+1, −*y*+2, −*z*+1.

Hydrogen-bond geometry (Å, º)

D—H···*A*	*D*—H	H···*A*	*D*···*A*	*D*—H···*A*
O7—H7*A*···O10^{ii}	0.82	1.88	2.600 (12)	146
O8—H8*A*···O2	0.84 (2)	1.88 (2)	2.709 (4)	168 (5)
O9—H9*A*···O5^{iii}	0.82 (2)	1.96 (2)	2.701 (4)	150 (4)
O9—H9*B*···O10	0.82 (2)	1.99 (3)	2.789 (15)	166 (6)

Symmetry codes: (ii) *x*+1, *y*+1, *z*; (iii) −*x*+1, −*y*+1, −*z*+1.