

Retraction of articles by T. Liu *et al.*T. Liu,<sup>a\*</sup> Y.-X. Wang,<sup>b</sup> Z.-W. Wang,<sup>a</sup> Z.-P. Xie<sup>a,c</sup> and J. Y. Zhu<sup>d</sup>

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A series of 29 papers by Liu *et al.* are retracted.

As a result of problems with the data sets and incorrect atom assignments, 29 papers by Liu *et al.* are retracted. Full details of all the articles are given in Table 1.

**Table 1**

Details of articles to be retracted, in order of publication.

Title	Reference	DOI	Refcode
<i>Tetrakis(pyrazine-κN)bis(thiocyanato-κN)manganese(II)</i>	Liu & Xie (2007a)	10.1107/S1600536807026852	EDUMAS
<i>(Dihydroxyglyoxime-κ<sup>2</sup>N,N')bis(1,10-phenanthroline-κ<sup>2</sup>N,N')copper(II) dinitrate dihydrate</i>	Liu, Wang, Wang & Xie (2007b)	10.1107/S1600536807028255	EDUVAB
<i>Tetrakis(pyrazine-κN)bis(thiocyanato-κN)zinc(II)</i>	Liu & Xie (2007b)	10.1107/S1600536807028735	RIGQAA
<i>Tetrakis(μ-2-pyridyloxyacetato)bis[(1,10-phenanthroline)(2-pyridyloxyacetato)-lanthanum(III)]</i>	Liu, Wang, Wang & Xie (2007c)	10.1107/S1600536807030917	UDUMIQ
<i>Polymeric KNOF<sub>2</sub></i>	Liu Wang, Wang & Xie (2007a)	10.1107/S1600536807027195	ICSD 240891
<i>(Dihydroxyglyoxime-κ<sup>2</sup>N,N')bis(1,10-phenanthroline-κ<sup>2</sup>N,N')cobalt(II) dinitrate dihydrate</i>	Liu, Wang, Wang & Xie (2007d)	10.1107/S1600536807031224	WIHJED
<i>Tetrakis(μ-2-pyridyloxyacetato)bis[(1,10-phenanthroline)(2-pyridyloxyacetato)-praseodymium(III)]</i>	Liu, Wang, Wang & Xie (2007e)	10.1107/S1600536807032679	WIHQEK
<i>Tetrakis[μ-(2-pyridyloxy)acetato-κ<sup>2</sup>O:O']bis[(1,10-phenanthroline-κ<sup>2</sup>N,N')-(2-pyridyloxy)acetato-κO]neodymium(III)]</i>	Liu, Wang, Wang & Xie (2007f)	10.1107/S1600536807035349	TIGDAP
<i>(Dihydroxyglyoxime-κ<sup>2</sup>N,N')bis(1,10-phenanthroline-κ<sup>2</sup>N,N')manganese(II) dinitrate dihydrate</i>	Liu, Wang, Wang & Xie (2007g)	10.1107/S1600536807035076	TIGDET
<i>2-Amino-3,5-dinitrobenzoic acid-ammonia (1/1)</i>	Liu & Zhu (2007j)	10.1107/S1600536807040068	KIKQAX
<i>2-Hydroxy-3,5-dinitrobenzamide monohydrate</i>	Liu & Zhu (2007k)	10.1107/S1600536807039712	KIKQEB
<i>2-(1-Hydroxy-2-pyridyl)acetamide monohydrate</i>	Liu & Zhu (2007l)	10.1107/S1600536807040652	CIKQOD
<i>Bis(2,2'-bipyridine-κN,N')bis(thiocyanato-κN)iron(II)</i>	Liu & Zhu (2007a)	10.1107/S1600536807043486	XIFXOA
<i>catena-Poly[hexakis(μ<sub>2</sub>-anilinoacetamide)bis(1,10-phenanthroline)disamarium(III)]</i>	Liu & Zhu (2007b)	10.1107/S1600536807045485	XILNAI
<i>3-Hydroxy-2,4,6-trinitropyridine monohydrate</i>	Liu & Zhu (2007m)	10.1107/S1600536807045230	PILNOO
<i>catena-Poly[hexakis(μ<sub>2</sub>-anilinoacetamide)bis(1,10-phenanthroline)-dipraseodymium(III)]</i>	Liu & Zhu (2007c)	10.1107/S1600536807047733	SILZET
<i>catena-Poly[[tetra-μ-anilinoacetamidato-bis(1,10-phenanthroline)dicerium(III)]-di-μ-anilinoacetamidato]</i>	Liu & Zhu (2007d)	10.1107/S1600536807050969	GIMZOS
<i>Tetrakis(pyridine-κN)bis(thiocyanato-κN)chromium(II)</i>	Liu & Zhu (2007e)	10.1107/S1600536807051756	WINFAB
<i>2-Ammonio-3-carboxy-5-nitrobenzoate monohydrate</i>	Liu & Zhu (2007n)	10.1107/S1600536807048477	GINFEP
<i>2-(Benzoylhydrazinocarbonyl)benzoic acid</i>	Liu & Zhu (2007o)	10.1107/S160053680705204X	TINZIA
<i>Tetrakis(pyridine-κN)bis(thiocyanato-κN)vanadium(II)</i>	Liu & Zhu (2007f)	10.1107/S1600536807054529	HIPZIQ
<i>catena-Poly[[nitrate-κO](1,10-phenanthroline-κ<sup>2</sup>N,N')nickel(II)]-μ-acetamido-κ<sup>2</sup>O:N]</i>	Liu & Zhu (2007g)	10.1107/S1600536807056504	XIRGIP
<i>catena-Poly[[nitrate-κO](1,10-phenanthroline-κ<sup>2</sup>N,N')copper(II)]-μ-acetamido-κ<sup>2</sup>O:N]</i>	Liu & Zhu (2007h)	10.1107/S1600536807059077	HIQROP
<i>catena-Poly[[nitrate-κO](1,10-phenanthroline-κ<sup>2</sup>N,N')cobalt(II)]-μ-acetamidato-κ<sup>2</sup>O:N]</i>	Liu & Zhu (2007i)	10.1107/S1600536807060631	YIQMER
<i>N'-Benzoyl-4-nitronicotinohydrazide</i>	Liu & Zhu (2007p)	10.1107/S1600536807053068	CIPVON
<i>N'-(3-Nitro-4-pyridylcarbonyl)pyridine-4-carbohydrazide</i>	Liu & Zhu (2007q)	10.1107/S1600536807054876	RIRWEV

**Table 1 (continued)**

Title	Reference	DOI	Refcode
<i>Ethylenediammonium sulfate</i>	Liu & Zhu (2007r)	10.1107/S1600536807056280	ETDAMS03
<i>Ethylenediammonium perchlorate</i>	Liu & Zhu (2007s)	10.1107/S1600536807059909	HIRYEN
<i>catena-Poly[[[nitrate-κO](1,10-phenanthroline-κ<sup>2</sup>N,N')manganese(II)]-μ-nitrate-κ<sup>2</sup>O:O']</i>	Liu & Zhu (2008)	10.1107/S160053680706254X	MIRROV

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## Ethylenediammonium perchlorate

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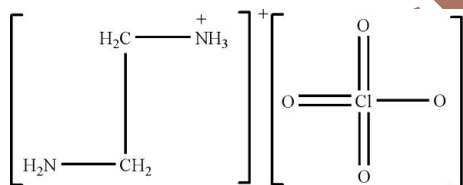
Received 15 November 2007; accepted 16 November 2007

Key indicators: single-crystal X-ray study;  $T = 273$  K; mean  $\sigma(\text{C}-\text{C}) = 0.004$  Å;  $R$  factor = 0.048;  $wR$  factor = 0.143; data-to-parameter ratio = 16.1.

The the crystal structure of the title compound,  $\text{C}_2\text{H}_9\text{N}_2^+\cdot\text{ClO}_4^-$ ,  $\text{C}-\text{H}\cdots\text{O}$ ,  $\text{N}-\text{H}\cdots\text{O}$  and  $\text{N}-\text{H}\cdots\text{Cl}$  hydrogen bonds result in the formation of a supramolecular network structure.

### Related literature

For related literature, see: Desiraju (1995, 1997); Braga *et al.* (1998); Zaworotko (1997); Braga & Grepioni (2000); Moulton & Zaworotko (2001); Pan *et al.* (2001); Ma *et al.* (2001); Prior & Rosseinsky (2001). For bond-length data, see: Allen *et al.* (1987).



### Experimental

#### Crystal data

$\text{C}_2\text{H}_9\text{N}_2^+\cdot\text{ClO}_4^-$   
 $M_r = 160.56$   
 Monoclinic,  $P2_1/c$   
 $a = 7.417$  (2) Å  
 $b = 11.9078$  (13) Å  
 $c = 8.1023$  (16) Å  
 $\beta = 110.105$  (4)°

$V = 672.0$  (2) Å<sup>3</sup>  
 $Z = 4$   
 Mo  $K\alpha$  radiation  
 $\mu = 0.52$  mm<sup>-1</sup>  
 $T = 273$  (2) K  
 $0.22 \times 0.17 \times 0.16$  mm

#### Data collection

Bruker SMART CCD area-detector diffractometer

Absorption correction: multi-scan (SADABS; Sheldrick, 1996)  
 $T_{\min} = 0.892$ ,  $T_{\max} = 0.924$

4245 measured reflections  
 1334 independent reflections

1078 reflections with  $I > 2\sigma(I)$   
 $R_{\text{int}} = 0.021$

#### Refinement

$R[F^2 > 2\sigma(F^2)] = 0.048$   
 $wR(F^2) = 0.143$   
 $S = 1.01$   
 1334 reflections

83 parameters  
 H-atom parameters constrained  
 $\Delta\rho_{\text{max}} = 0.87$  e Å<sup>-3</sup>  
 $\Delta\rho_{\text{min}} = -0.66$  e Å<sup>-3</sup>

**Table 1**

Hydrogen-bond geometry (Å, °).

$D-\text{H}\cdots A$	$D-\text{H}$	$\text{H}\cdots A$	$D\cdots A$	$D-\text{H}\cdots A$
$\text{N2}-\text{H2C}\cdots\text{O4}$	0.89	2.03	2.914 (3)	174
$\text{N2}-\text{H2C}\cdots\text{Cl1}$	0.89	2.74	3.525 (3)	148
$\text{N2}-\text{H2C}\cdots\text{O3}$	0.89	2.51	2.994 (3)	115
$\text{N2}-\text{H2E}\cdots\text{Cl1}^{\text{i}}$	0.89	2.89	3.714 (2)	154
$\text{N2}-\text{H2E}\cdots\text{O3}^{\text{i}}$	0.89	1.85	2.739 (3)	176
$\text{N2}-\text{H2D}\cdots\text{O1}^{\text{ii}}$	0.89	1.89	2.765 (3)	168
$\text{N1}-\text{H1C}\cdots\text{Cl1}^{\text{iii}}$	0.86	2.74	3.574 (2)	165
$\text{N1}-\text{H1C}\cdots\text{O1}^{\text{iii}}$	0.86	2.50	3.162 (3)	134
$\text{N1}-\text{H1C}\cdots\text{O4}^{\text{iii}}$	0.86	2.01	2.823 (3)	158
$\text{N1}-\text{H1D}\cdots\text{O4}^{\text{iv}}$	0.86	2.37	2.855 (3)	116
$\text{C2}-\text{H2A}\cdots\text{O2}^{\text{v}}$	0.97	2.55	3.280 (4)	132

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

Data collection: SMART (Siemens, 1996); cell refinement: SAINT (Siemens, 1996); data reduction: SAINT; program(s) used to solve structure: SHELXS97 (Sheldrick, 1997); program(s) used to refine structure: SHELXL97 (Sheldrick, 1997); molecular graphics: SHELXTL (Siemens, 1996); software used to prepare material for publication: SHELXTL.

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Supplementary data and figures for this paper are available from the IUCr electronic archives (Reference: HK2389).

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**supplementary materials**

**Article retracted**

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## Ethylenediammonium perchlorate

T. Liu and J. Y. Zhu

### Comment

In the synthesis of crystal structures by design, the assembly of molecular units in predefined arrangements is a key goal (Desiraju, 1995, 1997; Braga *et al.*, 1998). Due to hydrogen-bonding interactions are of critical importance in biological systems, organic materials and coordination chemistry, hydrogen -bonding is currently the best tool in achieving this goal (Zaworotko, 1997; Braga & Grepioni, 2000). Supramolecular architectures are of considerable contemporary interest by virtue of their potential applications in various fields (Moulton & Zaworotko, 2001; Pan *et al.*, 2001; Ma *et al.*, 2001; Prior & Rosseinsky, 2001). We originally attempted to synthesize complexes featuring Dy metal chains by reaction of the dysprosium (III) ion with ethylene diamine and *p*-acetaminobenzoic acid ligands. Unfortunately, we obtained only the title compound, (I), and we report herein its crystal structure.

In the molecule of (I) (Fig. 1), the ligand bond lengths and angles are within normal ranges (Allen *et al.*, 1987). It contains one  $C_2N_2H_9^+$  cation and one  $ClO_4^-$  anion.

In the crystal structure, C—H $\cdots$ O, N—H $\cdots$ O and N—H $\cdots$ Cl hydrogen bonds (Table 1, Fig. 2) result in the formation of a supramolecular network structure.

### Experimental

Crystals of the title compound were synthesized using hydrothermal method in a 23 ml Teflon-lined Parr bomb. Dysprosium (III) perchlorate hexahydrate (558.8 mg, 1 mmol), ethylene diamine (120.2 mg, 2 mmol), *p*-acetaminobenzoic acid (179.1 mg, 1 mmol) and distilled water (8 g) were placed into the bomb and sealed. The bomb was then heated under autogenous pressure up to 453 K over the course of 7 d and allowed to cool at room temperature for 24 h. Upon opening the bomb, a clear colorless solution was decanted from small colorless crystals. These crystals were washed with distilled water followed by ethanol, and allowed to air-dry at room temperature.

### Refinement

H atoms were positioned geometrically, with N—H = 0.86 Å (for  $NH_2$ ), 0.89 Å (for  $NH_3$ ) and C—H = 0.97 Å for methylene H atoms, and constrained to ride on their parent atoms, with  $U_{iso}(H) = xU_{eq}(C,N)$ , where  $x = 1.5$  for  $NH_3$  H, and  $x = 1.2$  for all other H atoms.

### Figures

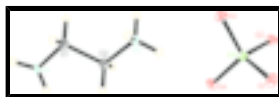


Fig. 1. The molecular structure of the title molecule, with the atom-numbering scheme. Displacement ellipsoids are drawn at the 30% probability level.

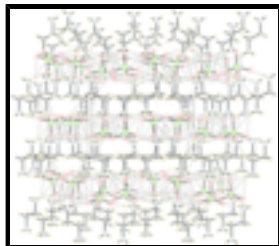
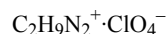


Fig. 2. A packing diagram of (I). Hydrogen bonds are shown as dashed lines.

### Ethylenediammonium perchlorate

#### Crystal data



$$M_r = 160.56$$

Monoclinic,  $P2_1/c$

Hall symbol: -P 2ybc

$$a = 7.417 (2) \text{ \AA}$$

$$b = 11.9078 (13) \text{ \AA}$$

$$c = 8.1023 (16) \text{ \AA}$$

$$\beta = 110.105 (4)^\circ$$

$$V = 672.0 (2) \text{ \AA}^3$$

$$Z = 4$$

$$F_{000} = 336$$

$$D_x = 1.587 \text{ Mg m}^{-3}$$

Mo  $K\alpha$  radiation

$$\lambda = 0.71073 \text{ \AA}$$

Cell parameters from 2295 reflections

$$\theta = 2.5\text{--}27.9^\circ$$

$$\mu = 0.52 \text{ mm}^{-1}$$

$$T = 273 (2) \text{ K}$$

Prism, colorless

$$0.22 \times 0.17 \times 0.16 \text{ mm}$$

#### Data collection

Bruker SMART CCD area-detector diffractometer

Radiation source: fine-focus sealed tube

Monochromator: graphite

$$T = 273(2) \text{ K}$$

$\varphi$  and  $\omega$  scans

Absorption correction: multi-scan (SADABS; Sheldrick, 1996)

$$T_{\min} = 0.892, T_{\max} = 0.924$$

4245 measured reflections

1334 independent reflections

1078 reflections with  $I > 2\sigma(I)$

$$R_{\text{int}} = 0.021$$

$$\theta_{\max} = 26.5^\circ$$

$$\theta_{\min} = 2.9^\circ$$

$$h = -9 \rightarrow 8$$

$$k = -14 \rightarrow 14$$

$$l = -9 \rightarrow 10$$

#### Refinement

Refinement on  $F^2$

Least-squares matrix: full

$$R[F^2 > 2\sigma(F^2)] = 0.048$$

$$wR(F^2) = 0.143$$

$$S = 1.01$$

1334 reflections

Secondary atom site location: difference Fourier map

Hydrogen site location: inferred from neighbouring sites

H-atom parameters constrained

$$w = 1/[\sigma^2(F_o^2) + (0.0847P)^2 + 1.0354P]$$

$$\text{where } P = (F_o^2 + 2F_c^2)/3$$

$$(\Delta/\sigma)_{\max} < 0.001$$

$$\Delta\rho_{\max} = 0.87 \text{ e \AA}^{-3}$$

83 parameters

$$\Delta\rho_{\min} = -0.66 \text{ e } \text{\AA}^{-3}$$

Primary atom site location: structure-invariant direct methods

Extinction correction: none

### 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  $F^2 > 2\sigma(F^2)$  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 ( $\text{\AA}^2$ )

	$x$	$y$	$z$	$U_{\text{iso}}^*/U_{\text{eq}}$
Cl1	0.58506 (9)	0.36384 (5)	0.24194 (8)	0.0190 (3)
O1	0.6650 (3)	0.25634 (16)	0.3425 (2)	0.0239 (5)
O2	0.6771 (3)	0.38079 (17)	0.0940 (3)	0.0246 (5)
O3	0.6418 (3)	0.46860 (16)	0.3568 (2)	0.0209 (4)
O4	0.3699 (3)	0.35523 (16)	0.1531 (2)	0.0209 (5)
N1	-0.2506 (3)	0.65783 (19)	0.2210 (3)	0.0183 (5)
H1D	-0.3092	0.6061	0.1483	0.022*
H1C	-0.3155	0.7088	0.2511	0.022*
N2	0.2444 (3)	0.55704 (19)	0.2860 (3)	0.0179 (5)
H2D	0.2905	0.6200	0.2566	0.027*
H2C	0.2847	0.4985	0.2399	0.027*
H2E	0.2858	0.5505	0.4025	0.027*
C1	-0.0398 (4)	0.6591 (2)	0.2940 (4)	0.0217 (6)
H1A	0.0033	0.6534	0.4211	0.026*
H1B	0.0087	0.7288	0.2634	0.026*
C2	0.0337 (4)	0.5605 (3)	0.2183 (4)	0.0269 (7)
H2A	-0.0164	0.4914	0.2487	0.032*
H2B	-0.0114	0.5665	0.0912	0.032*

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

	$U^{11}$	$U^{22}$	$U^{33}$	$U^{12}$	$U^{13}$	$U^{23}$
Cl1	0.0188 (4)	0.0196 (4)	0.0189 (4)	-0.0006 (2)	0.0071 (3)	0.0003 (2)
O1	0.0284 (10)	0.0206 (10)	0.0236 (10)	0.0083 (8)	0.0101 (8)	0.0064 (7)
O2	0.0288 (11)	0.0267 (10)	0.0249 (11)	-0.0074 (8)	0.0178 (9)	-0.0032 (8)
O3	0.0265 (10)	0.0185 (10)	0.0187 (9)	-0.0040 (8)	0.0090 (7)	-0.0032 (7)
O4	0.0142 (10)	0.0251 (11)	0.0219 (10)	-0.0017 (7)	0.0042 (8)	0.0013 (7)
N1	0.0099 (10)	0.0227 (11)	0.0217 (11)	0.0030 (8)	0.0045 (8)	-0.0039 (8)
N2	0.0130 (11)	0.0210 (11)	0.0195 (11)	0.0020 (8)	0.0052 (8)	-0.0011 (8)

## supplementary materials

C1	0.0122 (13)	0.0252 (14)	0.0262 (14)	-0.0003 (10)	0.0048 (10)	-0.0076 (11)
C2	0.0138 (13)	0.0295 (15)	0.0344 (16)	-0.0002 (11)	0.0043 (11)	-0.0143 (12)

### Geometric parameters (Å, °)

C11—O4	1.512 (2)	N2—H2D	0.8900
C11—O1	1.5236 (19)	N2—H2C	0.8900
C11—O3	1.5266 (19)	N2—H2E	0.8900
C11—O2	1.583 (2)	C1—C2	1.511 (4)
N1—C1	1.469 (3)	C1—H1A	0.9700
N1—H1D	0.8600	C1—H1B	0.9700
N1—H1C	0.8600	C2—H2A	0.9700
N2—C2	1.468 (3)	C2—H2B	0.9700
O4—C11—O1	110.52 (11)	H2C—N2—H2E	109.5
O4—C11—O3	111.74 (11)	N1—C1—C2	108.1 (2)
O1—C11—O3	112.68 (11)	N1—C1—H1A	110.1
O4—C11—O2	107.91 (11)	C2—C1—H1A	110.1
O1—C11—O2	108.79 (11)	N1—C1—H1B	110.1
O3—C11—O2	104.91 (10)	C2—C1—H1B	110.1
C1—N1—H1D	120.0	H1A—C1—H1B	108.4
C1—N1—H1C	120.0	N2—C2—C1	110.9 (2)
H1D—N1—H1C	120.0	N2—C2—H2A	109.5
C2—N2—H2D	109.5	C1—C2—H2A	109.5
C2—N2—H2C	109.5	N2—C2—H2B	109.5
H2D—N2—H2C	109.5	C1—C2—H2B	109.5
C2—N2—H2E	109.5	H2A—C2—H2B	108.0
H2D—N2—H2E	109.5		

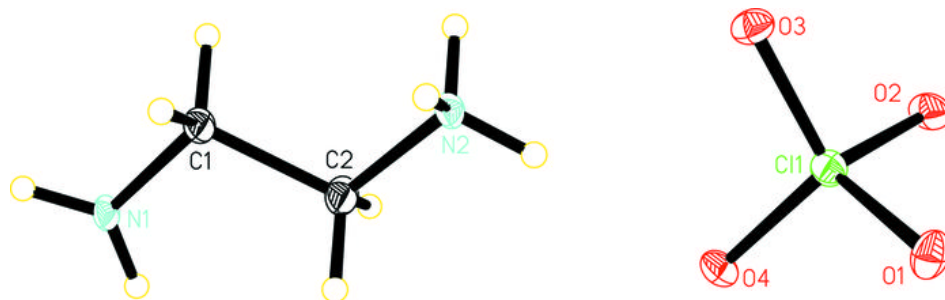
### Hydrogen-bond geometry (Å, °)

<i>D</i> —H... <i>A</i>	<i>D</i> —H	H... <i>A</i>	<i>D</i> ... <i>A</i>	<i>D</i> —H... <i>A</i>
N2—H2C...O4	0.89	2.03	2.914 (3)	174
N2—H2C...C11	0.89	2.74	3.525 (2)	148
N2—H2C...O3	0.89	2.51	2.994 (3)	115
N2—H2E...C11 <sup>i</sup>	0.89	2.89	3.714 (2)	154
N2—H2E...O3 <sup>i</sup>	0.89	1.85	2.739 (3)	176
N2—H2D...O1 <sup>ii</sup>	0.89	1.89	2.765 (3)	168
N1—H1C...C11 <sup>iii</sup>	0.86	2.74	3.574 (2)	165
N1—H1C...O1 <sup>iii</sup>	0.86	2.50	3.162 (3)	134
N1—H1C...O4 <sup>iii</sup>	0.86	2.01	2.823 (3)	158
N1—H1D...O4 <sup>iv</sup>	0.86	2.37	2.855 (3)	116
C2—H2A...O2 <sup>v</sup>	0.97	2.55	3.280 (4)	132

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

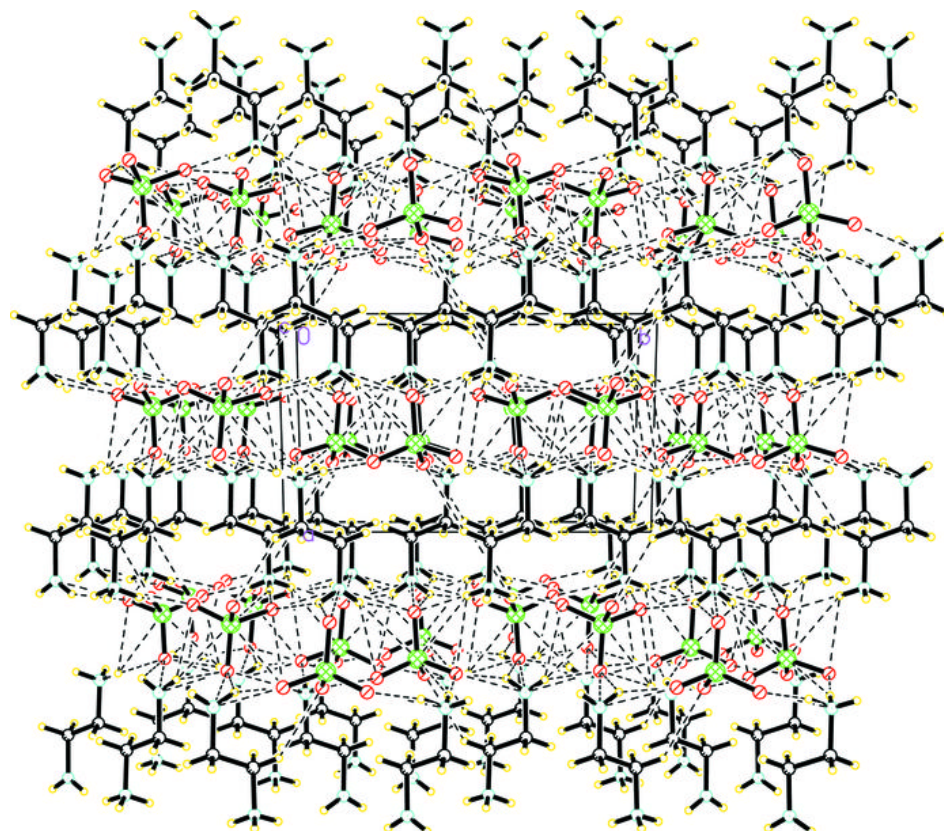


Fig. 1



Article retracted

Fig. 2



Article