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Retraction of articles by T. Liu *et al.*

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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
Tetrakis(pyrazine-κN)bis(thiocyanato-κN)manganese(II)	Liu & Xie (2007*a*)	10.1107/S1600536807026852	EDUMAS
(Dihydroxyglyoxime-κ^2N,N')bis(1,10-phenanthroline-κ^2N,N')copper(II) dinitrate dihydrate	Liu, Wang, Wang & Xie (2007*b*)	10.1107/S1600536807028255	EDUVAB
Tetrakis(pyrazine-κN)bis(thiocyanato-κN)zinc(II)	Liu & Xie (2007*b*)	10.1107/S1600536807028735	RIGQAA
Tetrakis(μ-2-pyridyloxyacetato)bis[(1,10-phenanthroline)(2-pyridyloxyacetato)-lanthanum(III)]	Liu, Wang, Wang & Xie (2007*c*)	10.1107/S1600536807030917	UDUMIQ
Polymeric $KNOF_2$	Liu Wang, Wang & Xie (2007*a*)	10.1107/S1600536807027195	ICSD 240891
(Dihydroxyglyoxime-κ^2N,N')bis(1,10-phenanthroline-κ^2N,N')cobalt(II) dinitrate dihydrate	Liu, Wang, Wang & Xie (2007*d*)	10.1107/S1600536807031224	WIHJED
Tetrakis(μ-2-pyridyloxyacetato)bis[(1,10-phenanthroline)(2-pyridyloxyacetato)-praseodymium(III)]	Liu, Wang, Wang & Xie (2007*e*)	10.1107/S1600536807032679	WIHQEK
Tetrakis[μ-(2-pyridyloxy)acetato-$\kappa^2O:O'$]bis{(1,10-phenanthroline-κ^2N,N')-[(2-pyridyloxy)acetato-κO]neodymium(III)}	Liu, Wang, Wang & Xie (2007*f*)	10.1107/S1600536807035349	TIGDAP
(Dihydroxyglyoxime-κ^2N,N')bis(1,10-phenanthroline-κ^2N,N')manganese(II) dinitrate dihydrate	Liu, Wang, Wang & Xie (2007*g*)	10.1107/S1600536807035076	TIGDET
2-Amino-3,5-dinitrobenzoic acid–ammonia (1/1)	Liu & Zhu (2007*j*)	10.1107/S1600536807040068	KIKQAX
2-Hydroxy-3,5-dinitrobenzamide monohydrate	Liu & Zhu (2007*k*)	10.1107/S1600536807039712	KIKQEB
2-(1-Hydroxy-2-pyridyl)acetamide monohydrate	Liu & Zhu (2007*l*)	10.1107/S1600536807040652	CIKQOD
Bis(2,2′-bipyridine-κN,N′)bis(thiocyanato-κN)iron(II)	Liu & Zhu (2007*a*)	10.1107/S1600536807043486	XIFXOA
catena-Poly[hexakis(μ_2-anilinoacetamide)bis(1,10-phenanthroline)disamarium(III]	Liu & Zhu (2007*b*)	10.1107/S1600536807045485	XILNAI
3-Hydroxy-2,4,6-trinitropyridine monohydrate	Liu & Zhu (2007*m*)	10.1107/S1600536807045230	PILNOO
catena-Poly[hexakis(μ_2-anilinoacetamide)bis(1,10-phenanthroline)-dipraseodymium(III)]	Liu & Zhu (2007*c*)	10.1107/S1600536807047733	SILZET
catena-Poly[[tetra-μ-anilinoacetamidato-bis(1,10-phenanthroline)dicerium(III)]-di-μ-anilinoacetamidato]	Liu & Zhu (2007*d*)	10.1107/S1600536807050969	GIMZOS
Tetrakis(pyridine-κN)bis(thiocyanato-κN)chromium(II)	Liu & Zhu (2007*e*)	10.1107/S1600536807051756	WINFAB
2-Ammonio-3-carboxy-5-nitrobenzoate monohydrate	Liu & Zhu (2007*n*)	10.1107/S1600536807048477	GINFEP
2-(Benzoylhydrazinocarbonyl)benzoic acid	Liu & Zhu (2007*o*)	10.1107/S160053680705204X	TINZIA
Tetrakis(pyridine-κN)bis(thiocyanato-κN)vanadium(II)	Liu & Zhu (2007*f*)	10.1107/S1600536807054529	HIPZIQ
catena-Poly[[(nitrato-κO)(1,10-phenanthroline-κ^2N,N')nickel(II)]-μ-acetamido-$\kappa^2O:N$]	Liu & Zhu (2007*g*)	10.1107/S1600536807056504	XIRGIP
catena-Poly[[(nitrato-κO)(1,10-phenanthroline-κ^2N,N')copper(II)]-μ-acetamido-$\kappa^2O:N$]	Liu & Zhu (2007*h*)	10.1107/S1600536807059077	HIQROP
catena-Poly[[(nitrato-κO)(1,10-phenanthroline-κ^2N,N')cobalt(II)]-μ-acetamidato-$\kappa^2O:N$]	Liu & Zhu (2007*i*)	10.1107/S1600536807060631	YIQMER
N′-Benzoyl-4-nitronicotinohydrazide	Liu & Zhu (2007*p*)	10.1107/S1600536807053068	CIPVON
N′-(3-Nitro-4-pyridylcarbonyl)pyridine-4-carbohydrazide	Liu & Zhu (2007*q*)	10.1107/S1600536807054876	RIRWEV

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Table 1 (continued)

Title	Reference	DOI	Refcode
Ethylenediammonium sulfate	Liu & Zhu (2007*r*)	10.1107/S1600536807056280	ETDAMS03
Ethylenediammonium perchlorate	Liu & Zhu (2007*s*)	10.1107/S1600536807059909	HIRYEN
catena-Poly[[(nitrato-κ*O*)(1,10-phenanthroline-κ^2N,N')manganese(II)]-μ-nitrato-$\kappa^2O:O'$]	Liu & Zhu (2008)	10.1107/S160053680706254X	MIRROV

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Tetrakis(pyridine-κN)bis(thiocyanato-κN)chromium(II)

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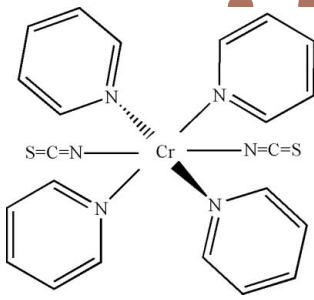
Key indicators: single-crystal X-ray study; T = 273 K; mean σ(C–C) = 0.006 Å; R factor = 0.047; wR factor = 0.161; data-to-parameter ratio = 15.3.

In the molecule of the title complex, $[Cr(NCS)_2(C_5H_5N)_4]$, the Cr^{II} atom is bonded in a distorted octahedral arrangement to two N atoms of two SCN^- ligands and four N atoms of four pyridine ligands. The Cr atom is located on a centre of inversion. In the crystal structure, C—H···N hydrogen bonds result in the formation of a supramolecular network structure.

Related literature

For related literature, see: Allen *et al.* (1987); Li *et al.* (2005); Liu *et al.* (2004); Pan & Xu (2004); Pope & Müller (2001); Wu *et al.* (2003); Zhong *et al.* (2007*a*,*b*).



Experimental

Crystal data

$[Cr(NCS)_2(C_5H_5N)_4]$
M_r = 484.56
Monoclinic, $C2/c$
a = 12.4232 (11) Å
b = 12.9354 (12) Å
c = 15.1331 (14) Å
β = 107.313 (1)°
V = 2321.7 (4) Å^3
Z = 4
Mo $K\alpha$ radiation
μ = 0.69 mm^{-1}
T = 273 (2) K
0.31 × 0.30 × 0.16 mm

Data collection

Bruker APEXII area-detector diffractometer
Absorption correction: multi-scan (*SADABS*; Sheldrick, 1996)
T_{min} = 0.814, T_{max} = 0.897
7288 measured reflections
2187 independent reflections
1843 reflections with $I > 2\sigma(I)$
R_{int} = 0.019

Refinement

$R[F^2 > 2\sigma(F^2)]$ = 0.047
$wR(F^2)$ = 0.161
S = 1.03
2187 reflections
143 parameters
H-atom parameters constrained
$\Delta\rho_{max}$ = 0.93 e Å^{-3}
$\Delta\rho_{min}$ = −0.51 e Å^{-3}

Table 1
Selected geometric parameters (Å, °).

Cr1—N1	2.172 (2)	Cr1—N2	2.161 (2)
		Cr1—N3	2.057 (2)
N1—Cr1—N1^{i}	180	N2^{i}—Cr1—N2	180
N1^{i}—Cr1—N2	87.17 (9)	N2—Cr1—N3^{i}	89.03 (10)
N1—Cr1—N2	92.83 (9)	N2—Cr1—N3	90.97 (10)
N1^{i}—Cr1—N3	89.43 (10)	N3^{i}—Cr1—N3	180
N1—Cr1—N3	90.57 (10)		

Symmetry code: (i) $-x+\frac{3}{2}, -y+\frac{3}{2}, -z+1$.

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

D—H···A	D—H	H···A	D···A	D—H···A
C5—H5···N3^{i}	0.93	2.54	3.063 (5)	116
C1—H1···N3	0.93	2.59	3.120 (4)	117

Symmetry code: (i) $-x+\frac{3}{2}, -y+\frac{3}{2}, -z+1$.

Data collection: *APEX2* (Bruker, 2005); 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: AT2432).

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Article retracted

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supplementary materials

Article retracted

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Tetrakis(pyridine-*κN*)bis(thiocyanato-*κN*)chromium(II)

T. Liu and J. Y. Zhu

Comment

In recent years, interest in the chemistry of metal-oxygen clusters has grown because of their applications in areas including catalysis, materials, chemistry and biochemistry (Pope & Müller, 2001). Aromatic polycyclic compounds, such as pyridine, phenanthroline, quinoline and benzimidazole, have commonly shown π-π stacking in metal complexes (Wu *et al.*, 2003; Pan & Xu, 2004; Liu *et al.*, 2004; Li *et al.*, 2005; Zhong *et al.*, 2007*a*,b). We herein report the crystal structure of the title compound, (I).

In the molecule of (I), (Fig. 1) the ligand bond lengths and angles are within normal ranges (Allen *et al.*, 1987). The two N atoms of two SCN^- and four N atoms of four pyridine ligands are coordinated to the Cr atom, in a distorted octahedral arrangement (Table 1). The Cr—N distances for the SCN^- and pyridine ligand are 2.057 (2)Å and in the range of [2.161 (2)–2.172 (2) Å], respectively (Table 1).

In the crystal structure, the C—H···N hydrogen bonds result in the formation of a supramolecular network structure (Fig. 2).

Experimental

Crystals of the title compound were synthesized using hydrothermal method in a Teflon-lined Parr bomb (23 ml), which was then sealed. Lanthanum (III) nitrate hexahydrate (216.4 mg, 0.5 mmol), chromium(II) acetate dihydrate (103.1 mg, 0.5 mmol), potassium thiocyanate (97.1 mg, 1 mmol), pyridine (4 ml), and distilled water (6 g) were placed into the bomb and sealed. The bomb was heated under autogenous pressure for 7 d at 453 K and allowed to cool at room temperature for 24 h. Upon opening the bomb, a clear colourless solution was decanted from small brown 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 C—H = 0.93 Å for aromatic H and constrained to ride on their parent atoms, with $U_{iso}(H) = 1.2U_{eq}(C)$.

Article retracted

Figures

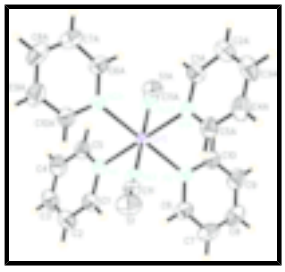

Fig. 1. The molecular structure of the title molecule, with the atom-numbering scheme. Displacement ellipsoids are drawn at the 30% probability level [symmetry code (A): 3/2 − *x*, 3/2 − *y*, 1 − *z*].

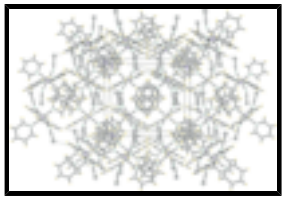

Fig. 2. A packing diagram for (I).

Article retracted

Tetrakis(pyridine-κ*N*)bis(thiocyanato-κ*N*)chromium(II)

Crystal data

$[Cr(NCS)_2(C_5H_5N)_4]$	F_{000} = 1000
M_r = 484.56	D_x = 1.386 Mg m^{-3}
Monoclinic, *C*2/*c*	Mo *K*α radiation λ = 0.71073 Å
Hall symbol: -C 2yc	Cell parameters from 4510 reflections
a = 12.4232 (11) Å	θ = 2.3–28.2°
b = 12.9354 (12) Å	μ = 0.69 mm^{-1}
c = 15.1331 (14) Å	*T* = 273 (2) K
β = 107.3130 (10)°	Block, colourless
V = 2321.7 (4) Å^3	0.31 × 0.30 × 0.16 mm
Z = 4	

Data collection

Bruker APEXII area-detector diffractometer	2187 independent reflections
Radiation source: fine-focus sealed tube	1843 reflections with $I > 2\sigma(I)$
Monochromator: graphite	R_{int} = 0.019
T = 273(2) K	θ_{max} = 26.0°
φ and ω scans	θ_{min} = 2.3°
Absorption correction: multi-scan (SADABS; Sheldrick, 1996)	*h* = −15→15
T_{min} = 0.814, T_{max} = 0.897	*k* = −15→15
7288 measured reflections	*l* = −18→18

Refinement

Refinement on F^2

Least-squares matrix: full

$R[F^2 > 2\sigma(F^2)] = 0.047$

$wR(F^2) = 0.161$

$S = 1.03$

2187 reflections

143 parameters

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

$w = 1/[\sigma^2(F_o^2) + (0.1244P)^2 + 0.7474P]$ where $P = (F_o^2 + 2F_c^2)/3$

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

$\Delta\rho_{max} = 0.93$ e Å^{-3}

$\Delta\rho_{min} = -0.50$ e Å^{-3}

Extinction correction: SHELXL97 (Sheldrick, 1997), $Fc^* = kFc[1+0.001xFc^2\lambda^3/\sin(2\theta)]^{-1/4}$

Extinction coefficient: 0.0134 (19)

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 (Å^2)

	x	*y*	*z*	U_{iso}*/U_{eq}
Cr1	0.7500	0.7500	0.5000	0.0358 (3)
S1	1.07279 (8)	0.64366 (7)	0.41890 (7)	0.0776 (4)
N1	0.7869 (2)	0.68986 (19)	0.63983 (16)	0.0552 (6)
N2	0.6398 (2)	0.62220 (19)	0.44152 (16)	0.0560 (6)
N3	0.8863 (2)	0.6721 (2)	0.48200 (18)	0.0608 (6)
C1	0.8410 (3)	0.6007 (3)	0.6647 (2)	0.0666 (8)
H1	0.8658	0.5655	0.6207	0.080*
C2	0.8626 (3)	0.5571 (3)	0.7514 (3)	0.0792 (10)
H2	0.8993	0.4938	0.7648	0.095*
C3	0.8289 (3)	0.6094 (4)	0.8169 (3)	0.0857 (11)
H3	0.8432	0.5830	0.8764	0.103*
C4	0.7737 (4)	0.7014 (4)	0.7931 (3)	0.0848 (11)
H4	0.7504	0.7386	0.8368	0.102*
C5	0.7525 (4)	0.7389 (3)	0.7047 (3)	0.0697 (9)
H5	0.7129	0.8005	0.6892	0.084*
C6	0.6747 (3)	0.5247 (3)	0.4543 (2)	0.0703 (9)

Article retracted

H6	0.7499	0.5122	0.4866	0.084*
C7	0.6049 (4)	0.4405 (3)	0.4222 (3)	0.0861 (11)
H7	0.6319	0.3733	0.4342	0.103*
C8	0.4946 (4)	0.4591 (3)	0.3720 (3)	0.0916 (13)
H8	0.4457	0.4046	0.3483	0.110*
C9	0.4583 (4)	0.5597 (3)	0.3577 (3)	0.0896 (12)
H9	0.3840	0.5744	0.3245	0.108*
C10	0.5323 (3)	0.6375 (3)	0.3926 (3)	0.0708 (9)
H10	0.5066	0.7052	0.3818	0.085*
C11	0.9642 (2)	0.65943 (19)	0.45611 (19)	0.0519 (6)

Atomic displacement parameters (Å^2)

	U^{11}	U^{22}	U^{33}	U^{12}	U^{13}	U^{23}
Cr1	0.0318 (4)	0.0365 (4)	0.0401 (4)	0.00192 (18)	0.0124 (2)	−0.00210 (18)
S1	0.0726 (6)	0.0752 (6)	0.1001 (7)	0.0086 (4)	0.0488 (5)	−0.0010 (5)
N1	0.0513 (12)	0.0607 (14)	0.0531 (13)	−0.0014 (11)	0.0149 (10)	−0.0013 (10)
N2	0.0524 (13)	0.0544 (13)	0.0624 (14)	−0.0017 (10)	0.0191 (11)	−0.0037 (10)
N3	0.0533 (13)	0.0643 (14)	0.0680 (15)	0.0041 (11)	0.0229 (12)	−0.0020 (12)
C1	0.0653 (18)	0.0713 (19)	0.0633 (18)	0.0078 (16)	0.0193 (15)	0.0058 (15)
C2	0.070 (2)	0.091 (2)	0.075 (2)	0.0073 (18)	0.0195 (17)	0.0213 (19)
C3	0.073 (2)	0.119 (3)	0.062 (2)	−0.006 (2)	0.0160 (17)	0.023 (2)
C4	0.084 (3)	0.111 (3)	0.064 (2)	−0.005 (2)	0.0297 (19)	−0.009 (2)
C5	0.070 (2)	0.080 (2)	0.061 (2)	−0.0007 (16)	0.0203 (17)	−0.0114 (15)
C6	0.072 (2)	0.0583 (18)	0.083 (2)	−0.0016 (15)	0.0270 (17)	−0.0089 (15)
C7	0.096 (3)	0.061 (2)	0.109 (3)	−0.0131 (19)	0.042 (3)	−0.0133 (19)
C8	0.096 (3)	0.081 (3)	0.104 (3)	−0.038 (2)	0.040 (2)	−0.026 (2)
C9	0.071 (2)	0.094 (3)	0.097 (3)	−0.019 (2)	0.014 (2)	−0.020 (2)
C10	0.0581 (17)	0.071 (2)	0.080 (2)	−0.0016 (15)	0.0146 (16)	−0.0034 (16)
C11	0.0547 (15)	0.0450 (14)	0.0553 (15)	0.0041 (11)	0.0150 (13)	−0.0006 (11)

Geometric parameters (Å, °)

Cr1—N1	2.172 (2)	C2—H2	0.9300
Cr1—N1^{i}	2.172 (2)	C3—C4	1.368 (7)
Cr1—N2^{i}	2.161 (2)	C3—H3	0.9300
Cr1—N2	2.161 (2)	C4—C5	1.373 (5)
Cr1—N3^{i}	2.057 (2)	C4—H4	0.9300
Cr1—N3	2.057 (2)	C5—H5	0.9300
S1—C11	1.622 (3)	C6—C7	1.387 (5)
N1—C1	1.332 (4)	C6—H6	0.9300
N1—C5	1.341 (4)	C7—C8	1.375 (7)
N2—C6	1.330 (4)	C7—H7	0.9300
N2—C10	1.335 (4)	C8—C9	1.373 (6)
N3—C11	1.159 (4)	C8—H8	0.9300
C1—C2	1.379 (5)	C9—C10	1.359 (5)
C1—H1	0.9300	C9—H9	0.9300
C2—C3	1.365 (6)	C10—H10	0.9300

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N1—Cr1—N1^{i}	180	C2—C3—C4	118.6 (3)
N1^{i}—Cr1—N2	87.17 (9)	C2—C3—H3	120.7
N1—Cr1—N2	92.83 (9)	C4—C3—H3	120.7
N1^{i}—Cr1—N2^{i}	92.83 (9)	C3—C4—C5	119.9 (4)
N1^{i}—Cr1—N3	89.43 (10)	C3—C4—H4	120.0
N1—Cr1—N3	90.57 (10)	C5—C4—H4	120.0
N1^{i}—Cr1—N3^{i}	90.57 (10)	N1—C5—C4	122.5 (4)
N2^{i}—Cr1—N2	180	N1—C5—H5	118.8
N2^{i}—Cr1—N3^{i}	90.97 (10)	C4—C5—H5	118.8
N2—Cr1—N3^{i}	89.03 (10)	N2—C6—C7	123.4 (4)
N2—Cr1—N3	90.97 (10)	N2—C6—H6	118.3
N3^{i}—Cr1—N3	180	C7—C6—H6	118.3
C1—N1—C5	116.6 (3)	C8—C7—C6	118.3 (4)
C1—N1—Cr1	121.8 (2)	C8—C7—H7	120.9
C5—N1—Cr1	121.5 (2)	C6—C7—H7	120.9
C6—N2—C10	116.8 (3)	C9—C8—C7	118.6 (4)
C6—N2—Cr1	121.8 (2)	C9—C8—H8	120.7
C10—N2—Cr1	121.4 (2)	C7—C8—H8	120.7
C11—N3—Cr1	156.5 (2)	C10—C9—C8	119.2 (4)
N1—C1—C2	124.1 (3)	C10—C9—H9	120.4
N1—C1—H1	117.9	C8—C9—H9	120.4
C2—C1—H1	117.9	N2—C10—C9	123.7 (4)
C3—C2—C1	118.3 (4)	N2—C10—H10	118.1
C3—C2—H2	120.8	C9—C10—H10	118.1
C1—C2—H2	120.8	N3—C11—S1	179.0 (3)

Symmetry codes: (i) −*x*+3/2, −*y*+3/2, −*z*+1.

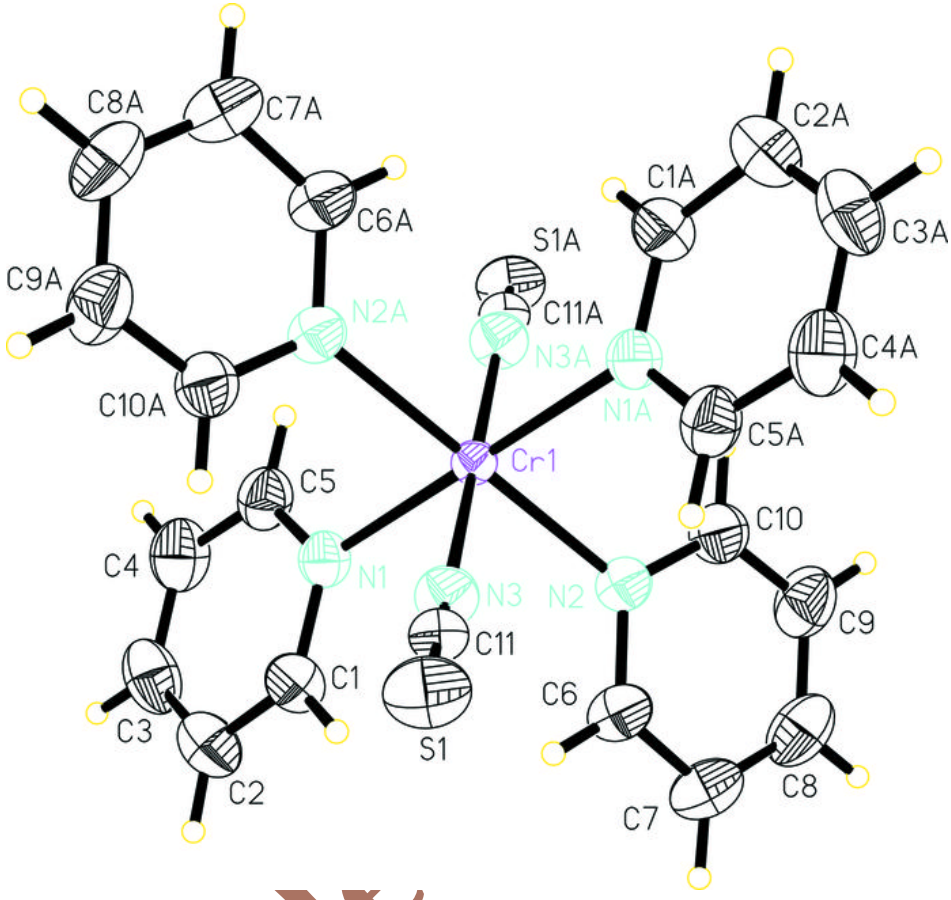
Hydrogen-bond geometry (Å, °)

D—H···*A*	*D*—H	H···*A*	*D*···*A*	*D*—H···*A*
C5—H5···N3^{i}	0.93	2.54	3.063 (5)	116
C1—H1···N3	0.93	2.59	3.120 (4)	117

Symmetry codes: (i) −*x*+3/2, −*y*+3/2, −*z*+1.

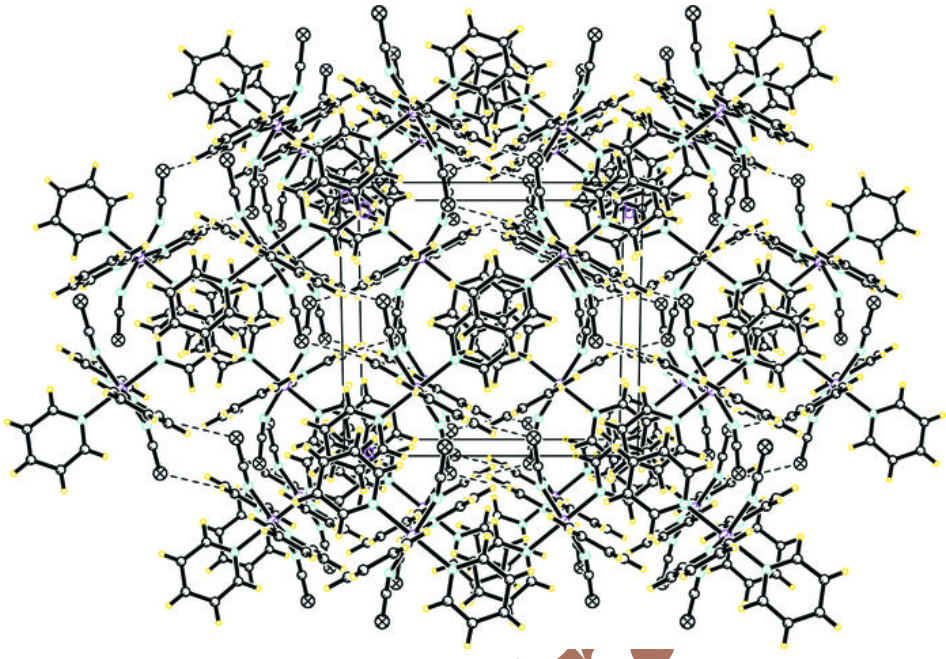
Article retracted

Fig. 1



Article

Fig. 2



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