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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

 doi:10.1107/S1600536809049976

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-κO)(1,10-phenanthroline-κ^2N,N')manganese(II)]-μ-nitrato-$\kappa^2O:O'$]	Liu & Zhu (2008)	10.1107/S160053680706254X	MIRROV

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Ethylenediammonium sulfate

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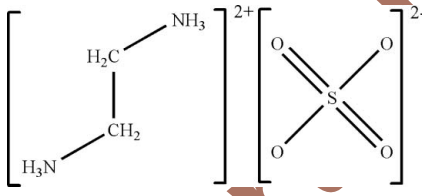
Key indicators: single-crystal X-ray study; T = 273 K; mean σ(C–C) = 0.004 Å; R factor = 0.044; wR factor = 0.152; data-to-parameter ratio = 15.4.

In the crystal structure of the title complex, $C_2H_{10}N_2^{2+}\cdot SO_4^{2-}$, C—H···O, N—H···O and N—H···S hydrogen bonds result in the formation of a supramolecular network.

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

$C_2H_{10}N_2^{2+}\cdot SO_4^{2-}$
M_r = 158.18
Monoclinic, $P2_1/c$
a = 7.5092 (16) Å
b = 11.754 (2) Å
c = 7.9981 (13) Å
β = 109.873 (6)°
V = 663.9 (2) Å^3
Z = 4
Mo $K\alpha$ radiation
μ = 0.44 mm^{-1}
T = 273 (2) K
0.23 × 0.16 × 0.15 mm

Data collection

Bruker SMART CCD area-detector diffractometer
Absorption correction: multi-scan (*SADABS*; Sheldrick, 1996)
T_{min} = 0.906, T_{max} = 0.935
4223 measured reflections
1292 independent reflections
1063 reflections with $I > 2\sigma(I)$
R_{int} = 0.020

Refinement

$R[F^2 > 2\sigma(F^2)]$ = 0.044
$wR(F^2)$ = 0.152
S = 1.05
1292 reflections
84 parameters
H-atom parameters constrained
$\Delta\rho_{max}$ = 0.74 e Å^{-3}
$\Delta\rho_{min}$ = −0.48 e Å^{-3}

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

D—H···A	D—H	H···A	D···A	D—H···A
C2—H2A···O4	0.97	2.58	3.297 (3)	131
N1—H1BB···S1^{i}	0.89	2.76	3.574 (2)	153
N1—H1BB···O1^{i}	0.89	2.65	3.195 (3)	120
N1—H1BB···O2^{i}	0.89	1.91	2.794 (3)	175
N1—H1AA···S1^{ii}	0.89	2.91	3.715 (2)	152
N1—H1AA···O2^{ii}	0.89	1.93	2.820 (3)	178
N1—H1CC···O3	0.89	1.82	2.712 (3)	175
N1—H1CC···S1	0.89	2.87	3.692 (2)	153
N2—H2CC···S1^{iii}	0.89	2.84	3.670 (2)	155
N2—H2CC···O3^{iii}	0.89	1.82	2.705 (3)	176
N2—H2BB···S1^{iv}	0.89	2.75	3.531 (2)	147
N2—H2BB···O3^{iv}	0.89	2.55	3.030 (3)	114
N2—H2BB···O2^{iv}	0.89	2.00	2.891 (3)	175
N2—H2AA···S1^{v}	0.89	3.01	3.858 (2)	160
N2—H2AA···O1^{v}	0.89	1.86	2.734 (3)	169

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

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: HK2367).

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supplementary materials

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Ethylenediammonium sulfate

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 Cu metal chains by reaction of the copper(II) 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 $(C_2N_2H_{10})^{2+}$ cation and one $(SO_4)^{2-}$ anion.

In the crystal structure, C—H···O, N—H···O and N—H···S 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. Copper sulfate pentahydrate (249.7 mg, 1 mmol), ethylene diamine (120.2 mg, 2 mmol), *p*-acetaminobenzoic acid (179.1 mg, 1 mmol) and distilled water (6 g) were placed into the bomb and sealed. The bomb was then heated under autogenous pressure up to 443 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 = 0.89 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 = 1.2 for methylene H, and x = 1.5 for NH_3 H atoms.

Figures

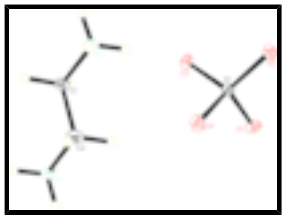

Fig. 1. The molecular structure of the title molecule, with the atom-numbering scheme. Displacement ellipsoids are drawn at the 30% probability level.

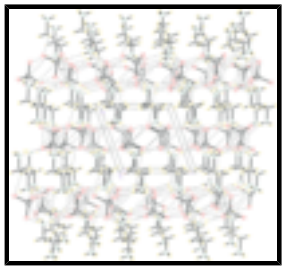

Fig. 2. A packing diagram of (I). Hydrogen bonds are shown as dashed lines.

Ethylenediammonium sulfate

Crystal data

$C_2H_{10}N_2^{2+}\cdot S_1O_4^{2-}$	F_{000} = 336
M_r = 158.18	D_x = 1.583 Mg m^{-3}
Monoclinic, $P2_1/c$	Mo $K\alpha$ radiation λ = 0.71073 Å
Hall symbol: -P 2ybc	Cell parameters from 2361 reflections
a = 7.5092 (16) Å	θ = 2.7–28.1°
b = 11.754 (2) Å	μ = 0.44 mm^{-1}
c = 7.9981 (13) Å	T = 273 (2) K
β = 109.873 (6)°	Prism, colorless
V = 663.9 (2) Å^3	0.23 × 0.16 × 0.15 mm
Z = 4	

Data collection

Bruker SMART CCD area-detector diffractometer	1292 independent reflections
Radiation source: fine-focus sealed tube	1063 reflections with $I > 2\sigma(I)$
Monochromator: graphite	R_{int} = 0.020
T = 273(2) K	θ_{max} = 26.0°
φ and ω scans	θ_{min} = 2.9°
Absorption correction: multi-scan (SADABS; Sheldrick, 1996)	h = −9→8
T_{min} = 0.906, T_{max} = 0.935	k = −14→14
4223 measured reflections	l = −9→9

Refinement

Refinement on F^2

Least-squares matrix: full

$R[F^2 > 2\sigma(F^2)] = 0.044$

$wR(F^2) = 0.152$

$S = 1.05$

1292 reflections

84 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

$w = 1/[\sigma^2(F_o^2) + (0.1018P)^2 + 0.5371P]$ where $P = (F_o^2 + 2F_c^2)/3$

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

$\Delta\rho_{max} = 0.74$ e Å^{-3}

$\Delta\rho_{min} = -0.48$ e Å^{-3}

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 (Å^2)

	x	*y*	*z*	U_{iso}*/U_{eq}
S1	0.58508 (9)	0.36383 (5)	0.24204 (8)	0.0186 (3)
O1	0.6651 (3)	0.25601 (15)	0.3432 (2)	0.0257 (5)
O2	0.3693 (3)	0.35509 (15)	0.1524 (2)	0.0225 (5)
O3	0.6419 (3)	0.46893 (15)	0.3572 (2)	0.0227 (5)
O4	0.6766 (3)	0.38077 (16)	0.0927 (2)	0.0265 (5)
N1	0.7498 (3)	0.65774 (18)	0.2216 (3)	0.0197 (5)
H1AA	0.7111	0.6552	0.1035	0.030*
H1BB	0.7051	0.7204	0.2559	0.030*
H1CC	0.7071	0.5968	0.2623	0.030*
N2	1.2438 (3)	0.55725 (18)	0.2858 (3)	0.0198 (5)
H2AA	1.2887	0.6207	0.2542	0.030*
H2BB	1.2833	0.4974	0.2399	0.030*
H2CC	1.2853	0.5516	0.4038	0.030*
C1	0.9598 (4)	0.6591 (2)	0.2939 (4)	0.0237 (6)
H1A	1.0029	0.6537	0.4225	0.028*
H1B	1.0067	0.7299	0.2622	0.028*
C2	1.0347 (4)	0.5606 (2)	0.2187 (4)	0.0285 (7)
H2A	0.9862	0.4903	0.2500	0.034*

H2B	0.9899	0.5663	0.0901	0.034*

Atomic displacement parameters (Å^2)

	U^{11}	U^{22}	U^{33}	U^{12}	U^{13}	U^{23}
S1	0.0197 (4)	0.0186 (4)	0.0184 (4)	−0.0005 (2)	0.0074 (3)	0.0003 (2)
O1	0.0326 (11)	0.0209 (10)	0.0245 (10)	0.0087 (8)	0.0110 (8)	0.0061 (7)
O2	0.0170 (10)	0.0255 (10)	0.0228 (10)	−0.0019 (7)	0.0039 (8)	0.0014 (7)
O3	0.0301 (10)	0.0203 (10)	0.0180 (9)	−0.0041 (7)	0.0085 (7)	−0.0033 (7)
O4	0.0333 (11)	0.0276 (10)	0.0257 (11)	−0.0070 (8)	0.0191 (9)	−0.0014 (7)
N1	0.0147 (11)	0.0225 (11)	0.0212 (11)	0.0022 (8)	0.0053 (9)	−0.0003 (8)
N2	0.0176 (11)	0.0212 (11)	0.0211 (11)	0.0019 (8)	0.0074 (8)	0.0000 (8)
C1	0.0166 (13)	0.0264 (14)	0.0269 (14)	0.0003 (10)	0.0056 (10)	−0.0072 (11)
C2	0.0188 (14)	0.0301 (15)	0.0333 (15)	0.0005 (11)	0.0046 (11)	−0.0127 (11)

Geometric parameters (Å, °)

S1—O3	1.5133 (18)	N2—H2AA	0.8900
S1—O1	1.5137 (18)	N2—H2BB	0.8900
S1—O2	1.5366 (19)	N2—H2CC	0.8900
S1—O4	1.5803 (19)	C1—C2	1.499 (4)
N1—C1	1.484 (3)	C1—H1A	0.9700
N1—H1AA	0.8900	C1—H1B	0.9700
N1—H1BB	0.8900	C2—H2A	0.9700
N1—H1CC	0.8900	C2—H2B	0.9700
N2—C2	1.477 (3)		
O3—S1—O1	112.30 (11)	C2—N2—H2CC	109.5
O3—S1—O2	111.91 (10)	H2AA—N2—H2CC	109.5
O1—S1—O2	110.94 (10)	H2BB—N2—H2CC	109.5
O3—S1—O4	104.61 (10)	N1—C1—C2	109.2 (2)
O1—S1—O4	108.32 (11)	N1—C1—H1A	109.8
O2—S1—O4	108.45 (11)	C2—C1—H1A	109.8
C1—N1—H1AA	109.5	N1—C1—H1B	109.8
C1—N1—H1BB	109.5	C2—C1—H1B	109.8
H1AA—N1—H1BB	109.5	H1A—C1—H1B	108.3
C1—N1—H1CC	109.5	N2—C2—C1	111.8 (2)
H1AA—N1—H1CC	109.5	N2—C2—H2A	109.2
H1BB—N1—H1CC	109.5	C1—C2—H2A	109.2
C2—N2—H2AA	109.5	N2—C2—H2B	109.2
C2—N2—H2BB	109.5	C1—C2—H2B	109.2
H2AA—N2—H2BB	109.5	H2A—C2—H2B	107.9

Hydrogen-bond geometry (Å, °)

D—H···*A*	*D*—H	H···*A*	*D*···*A*	*D*—H···*A*
C2—H2A···O4	0.97	2.58	3.297 (3)	131
N1—H1BB···S1^{i}	0.89	2.76	3.574 (2)	153
N1—H1BB···O1^{i}	0.89	2.65	3.195 (3)	120

N1—H1BB···O2^{i}	0.89	1.91	2.794 (3)	175
N1—H1AA···S1^{ii}	0.89	2.91	3.715 (2)	152
N1—H1AA···O2^{ii}	0.89	1.93	2.820 (3)	178
N1—H1CC···O3	0.89	1.82	2.712 (3)	175
N1—H1CC···S1	0.89	2.87	3.692 (2)	153
N2—H2CC···S1^{iii}	0.89	2.84	3.670 (2)	155
N2—H2CC···O3^{iii}	0.89	1.82	2.705 (3)	176
N2—H2BB···S1^{iv}	0.89	2.75	3.531 (2)	147
N2—H2BB···O3^{iv}	0.89	2.55	3.030 (3)	114
N2—H2BB···O2^{iv}	0.89	2.00	2.891 (3)	175
N2—H2AA···S1^{v}	0.89	3.01	3.858 (2)	160
N2—H2AA···O1^{v}	0.89	1.86	2.734 (3)	169

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

Fig. 1

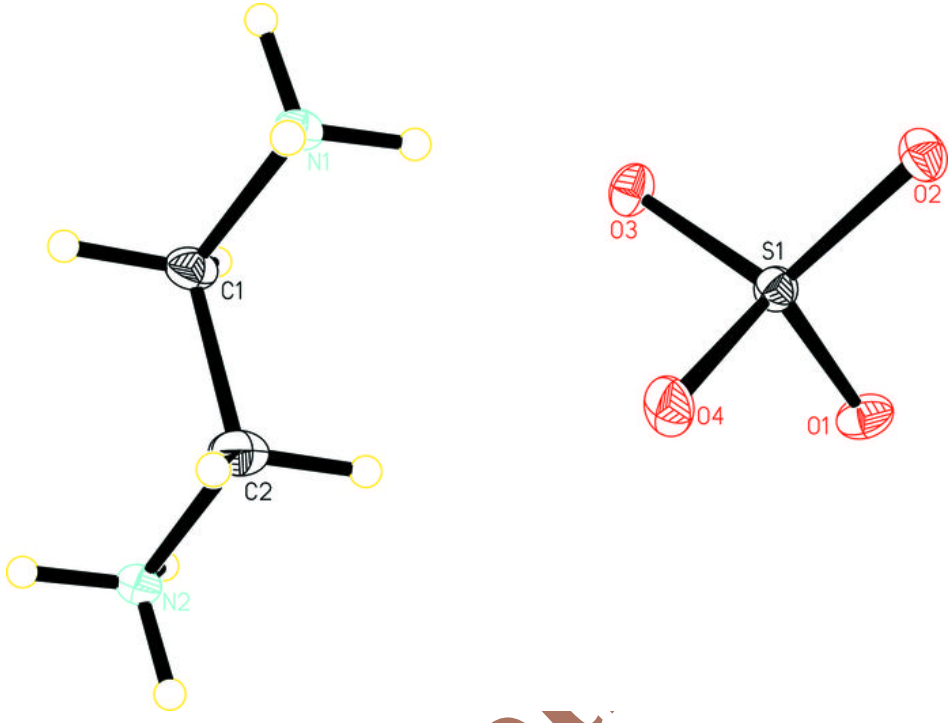

Fig. 2