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Retraction of articles

This article reports the retraction of articles published in *Acta Crystallographica Section E* between 2005 and 2009.

After further thorough investigation (see Harrison *et al.*, 2010), articles are retracted as a result of problems with the data sets or incorrect atom assignments. 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
Poly[diaquadi-μ_3-malonato-μ-pyrazine-dinickel(II)]	Liu *et al.* (2005)	10.1107/S1600536805026358	GATWAA
catena-Poly[[[diaqua(6-carboxypyridine-2-carboxylato)samarium(II)]-μ-pyridine-2,6-dicarboxylato] tetrahydrate]	Liu *et al.* (2006)	10.1107/S1600536806038141	FONCUH03
Poly[[[μ_4-4,4′-carbonylbis(benzene-3,4-dicarboxylato)]tetrakis(1,10-phenanthroline)-dipalladium(II)] dihydrate]	Li, Wang, Zhang & Yu (2007*e*)	10.1107/S1600536807039050	AFELAZ
Poly[diaqua-μ_3-malonato-μ-pyrazine-diiron(II)]	Li, Liu *et al.* (2007)	10.1107/S1600536807038743	AFELON
Poly[diaqua-di-μ_3-malonato-μ-pyrazine-dimanganese(II)]	Li, Wang, Zhang & Yu (2007*f*)	10.1107/S1600536807039773	VIJZAQ
Poly[[aqua(2,2-bipyridine)(μ_3-pyridine-3,4-dicarboxylato)cobalt(II)] monohydrate]	Li, Wang, Zhang & Yu (2007*g*)	10.1107/S1600536807040275	VIKCIC
catena-Poly[[[diaqua(6-carboxypyridine-2-carboxylato)holmium(III)]-μ-pyridine-2,6-dicarboxylato] tetrahydrate]	Li, Wang, Zhang & Yu (2007*a*)	10.1107/S1600536807041657	DILGEL
catena-Poly[[(2,2′-bipyridine-κ^2N,N')iron(II)]-μ-5-carboxy-4-carboxylatoimidazol-1-ido-$\kappa^4N^3,O^4{:}N^1,O^5$]	Li, Wang, Zhang & Yu (2007*h*)	10.1107/S1600536807042122	XIKWAQ
Poly[[aqua(2,2′-bipyridine)(μ_3-pyridine-3,4-dicarboxylato)nickel(II)] monohydrate]	Li, Wang, Zhang & Yu (2007*b*)	10.1107/S1600536807046466	LEVZAO01
2-(Benzyliminomethyl)-6-methoxyphenol	Li, Wang, Zhang & Yu (2007*i*)	10.1107/S1600536807042134	SILDEX
Poly[aqua(2,2′-bipyridine)(μ_3-pyridine-2,4-dicarboxylato)palladium(II)]	Li, Wang, Zhang & Yu (2007*c*)	10.1107/S1600536807047575	SILXAN
μ-Oxido-bis{chlorido[tris(2-pyridylmethyl)amine]iron(III)} bis(hexafluoridophosphate)	Liu, Dou, Li & Zhang (2007)	10.1107/S1600536807049665	TINRIS
μ-Oxido-bis({4,4′-dibromo-2,2′-[ethane-1,2-diylbis(nitrilomethylidyne)]diphenolato}-manganese(III))	Liu, Dou, Niu & Zhang (2007*a*)	10.1107/S1600536807051008	GIMZAE
Bis[N-(8-quinolyl)pyridine-2-carboxamidato]iron(III) perchlorate monohydrate	Li, Wang, Zhang & Yu (2007*d*)	10.1107/S1600536807048556	WIMZIC
μ-Oxido-bis({4,4′-dibromo-2,2′-[ethane-1,2-diylbis(nitrilomethylidyne)]diphenolato}-chromium(III))	Liu, Dou, Niu & Zhang (2007*b*)	10.1107/S1600536807057996	HIQFIX
μ-Oxido-bis{chlorido[tris(2-pyridylmethyl)amine]chromium(III)} bis(hexafluorido-phosphate)	Li, Wang *et al.* (2008)	10.1107/S1600536807061296	MIRNAD
μ-Oxido-bis({4,4′-dibromo-2,2′-ethane-1,2-diylbis(nitrilomethylidyne)]diphenolato}-iron(III))	Meng *et al.* (2008*a*)	10.1107/S1600536807063143	MIRWUG
catena-Poly[[bis(1H-benzimidazole-κN^3)palladium(II)]-μ-benzene-1,4-dicarboxylato-$\kappa^2O^1{:}O^4$]	Meng *et al.* (2008*b*)	10.1107/S1600536807065051	XISCAE
Oxalatobis(propane-1,3-diamine)manganese(II) chloride monohydrate	Meng *et al.* (2008*e*)	10.1107/S1600536807065361	SISWIB
μ-Oxido-bis{chlorido[tris(2-pyridylmethyl)amine]manganese(III)} bis(hexafluorido-phosphate)	Meng *et al.* (2008*c*)	10.1107/S1600536807066512	RISRIV
Bis[N-(8-quinolyl)pyridine-2-carboxamidato-κ^3N,N',N'']manganese(III) perchlorate monohydrate	Meng *et al.* (2008*d*)	10.1107/S1600536808000287	GISLEA
Diaquabis(pyridine-2-carboxylato-κ^2N,O)cobalt(II)	Huang (2008)	10.1107/S1600536808010507	WIZPOL
Tetra-μ-2,5-difluorobenzoato-bis[(2,2′-bipyridine)(2,5-difluorobenzoato)gadolinium(III)]	Li, Zhang *et al.* (2008)	10.1107/S1600536808023507	BOFQIX
catena-Poly[[(2,2′-bipyridine-κ^2N,N')nickel(II)]-μ-oxalato-$\kappa^4O^1,O^2{:}O^{1'},O^{2'}$]	Li, Yan *et al.* (2008)	10.1107/S1600536808028389	NOHYUF
catena-Poly[[aqua(2,2′-bipyridyl)cobalt(II)]-μ-5-nitroisophthlalato]	Liu *et al.* (2008)	10.1107/S1600536808038178	AFIREN
Diaquabis(pyridine-2-carboxylato-κ^2N,O)iron(II)	Xia & Sun (2009)	10.1107/S1600536809005765	RONFEG
catena-Poly[[[diaquathulium(III)]-μ-6-carboxynicotinato-μ-pyridine-2,5-dicarboxylato] dihydrate]	Li *et al.* (2009)	10.1107/S1600536809008836	NOQNIR
1-Phenyl-3-(2,4,6-trimethoxyphenyl)prop-2-en-1-one	Liu *et al.* (2009)	10.1107/S1600536809040227	PUGLOT

  doi:10.1107/S1600536811037603

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Diaquabis(pyridine-2-carboxylato-κ^2N,O)iron(II)

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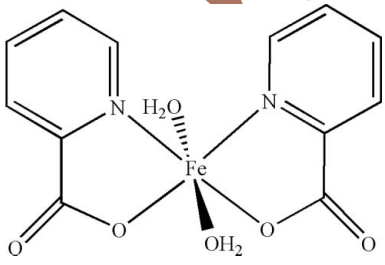
Key indicators: single-crystal X-ray study; T = 293 K; mean σ(C–C) = 0.006 Å; R factor = 0.051; wR factor = 0.166; data-to-parameter ratio = 16.3.

The Fe^{II} atom in the title complex, $[Fe(C_6H_4NO_2)_2(H_2O)_2]$, exists in a distorted octahedral coordination geometry defined by two O and two N atoms from two pyridine-2-carboxylate ligands and two O atoms of two water molecules. In the crystal structure, molecules are linked into a three-dimensional framework by O—H···O hydrogen bonds.

Related literature

For the design and construction of metal-organic supramolecular structures, see: Desiraju (1997); Braga *et al.* (1998); Mccann *et al.* (1996); Wai *et al.* (1990); Yaghi *et al.* (1996); Min & Lee (2002); Maira *et al.* (2001). For bond-length data, see: Allen *et al.* (1987).



Experimental

Crystal data

$[Fe(C_6H_4NO_2)_2(H_2O)_2]$
M_r = 336.09
Monoclinic, $P2_1/n$
a = 11.6255 (3) Å
b = 9.0247 (4) Å
c = 14.9724 (2) Å
β = 105.568 (2)°
V = 1513.22 (8) Å^3
Z = 4
Mo $K\alpha$ radiation
μ = 1.02 mm^{-1}
T = 293 K
0.23 × 0.19 × 0.07 mm

Data collection

Bruker SMART APEX area-detector diffractometer
Absorption correction: multi-scan (*SADABS*; Sheldrick, 1996)
T_{min} = 0.796, T_{max} = 0.928
10191 measured reflections
3283 independent reflections
2158 reflections with $I > 2\sigma(I)$
R_{int} = 0.043

Refinement

$R[F^2 > 2\sigma(F^2)]$ = 0.051
$wR(F^2)$ = 0.166
S = 1.08
3283 reflections
201 parameters
6 restraints
H atoms treated by a mixture of independent and constrained refinement
$\Delta\rho_{max}$ = 0.72 e Å^{-3}
$\Delta\rho_{min}$ = −0.47 e Å^{-3}

Table 1
Selected geometric parameters (Å, °).

Fe1—O1	2.163 (2)	Fe1—O5	2.154 (2)
Fe1—O2	2.148 (3)	Fe1—N1	2.262 (3)
Fe1—O3	2.164 (2)	Fe1—N2	2.279 (2)
O1—Fe1—O2	84.52 (10)	O3—Fe1—N1	99.03 (10)
O1—Fe1—O3	167.30 (9)	O5—Fe1—N1	73.12 (9)
O1—Fe1—O5	98.68 (10)	O1—Fe1—N2	93.92 (9)
O2—Fe1—O3	92.66 (10)	O2—Fe1—N2	99.14 (10)
O2—Fe1—O5	95.00 (10)	O3—Fe1—N2	74.26 (9)
O3—Fe1—O5	93.89 (9)	O5—Fe1—N2	161.88 (9)
O1—Fe1—N1	86.39 (10)	N1—Fe1—N2	94.86 (10)
O2—Fe1—N1	163.77 (12)		

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

D—H···A	D—H	H···A	D···A	D—H···A
O1—H1B···O4^{i}	0.805 (18)	1.93 (2)	2.726 (3)	169 (4)
O1—H1A···O5^{ii}	0.82	1.87	2.661 (3)	161
O2—H2B···O4^{iii}	0.82 (5)	1.92 (5)	2.704 (3)	159 (6)
O2—H2A···O6^{ii}	0.82	1.94	2.697 (4)	153

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

Data collection: *SMART* (Siemens, 1996); cell refinement: *SAINT* (Siemens, 1996); data reduction: *SAINT*; program(s) used to solve structure: *SHELXS97* (Sheldrick, 2008); program(s) used to refine structure: *SHELXL97* (Sheldrick, 2008); molecular graphics: *SHELXTL* (Sheldrick, 2008); 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: AT2725).

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supporting information

Acta Cryst. (2009). E**65**, m315–m316 [doi:10.1107/S1600536809005765]

Diaquabis(pyridine-2-carboxylato-κ^2N,O)iron(II)

Guohua Xia and Zexi Sun

S1. Comment

In the synthesis of crystal structures by design, the assembly of molecular units in predefined arrangements is a key goal (Desiraju, 1997; Braga *et al.*, 1998). Due to carboxyl groups are one of the most important classes of biological ligands, the coordination of metal-carboxyl groups complexes are of critical importance in biological systems, organic materials and coordination chemistry. Recently, carboxyl groups with variable coordination modes have been used to construct metal-organic supramolecular structures (Mccann *et al.*, 1996; Wai *et al.*, 1990; Yaghi *et al.*, 1996; Min & Lee 2002; Maira *et al.*, 2001). We report here in 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). In the title complex, each Fe^{II} atom is axially coordinated by water molecules and consists of an equatorial plane of two oxygen donors and two nitrogen donors from two pyridine-2-carboxylato ligands with a distorted octahedral coordination geometry. The Fe—O bonds [average 2.152 (4) Å] are somewhat shorter than the Fe—N distances [average 2.270 (8) Å].

In the crystal structure, O—H···O hydrogen bonds (Fig. 2 and Table 2) seem to be effective in the stabilization of the structure, resulting in the formation of a supramolecular network structure.

S2. Experimental

Crystals of the title compound were synthesized using hydrothermal method in a 23 ml Teflon-lined Parr bomb, which was then sealed. Iron(II) chloride tetrahydrate (198.71 mg, 1 mmol), pyridine-2-carboxylic acid (246 mg, 2 mmol) and distilled water (10 g) were placed into the bomb and sealed. The bomb was then heated under autogenous pressure up to 433 K over the course of 7 d and allowed to cool at room temperature for 24 h. Upon opening the bomb, a clear colourless solution was decanted from small purple crystals. These crystals were washed with distilled water followed by ethanol, and allowed to air-dry at room temperature.

S3. Refinement

H1B and H2B (for two water molecules) were located in difference syntheses and refined isotropically [O—H = 0.805 (18) and 0.82 (5) Å, U_{iso}(H) = 0.093 (15) and 0.18 (3) Å^2]. The remaining H atoms were positioned geometrically, with O—H = 0.82 Å (for H_2O) and C—H = 0.93 Å for aromatic H, and constrained to ride on their parent atoms, with U_{iso}(H) = xU_{eq}(C,*O*), where x = 1.2 for aromatic H atoms and x = 1.5 for all other H atoms.

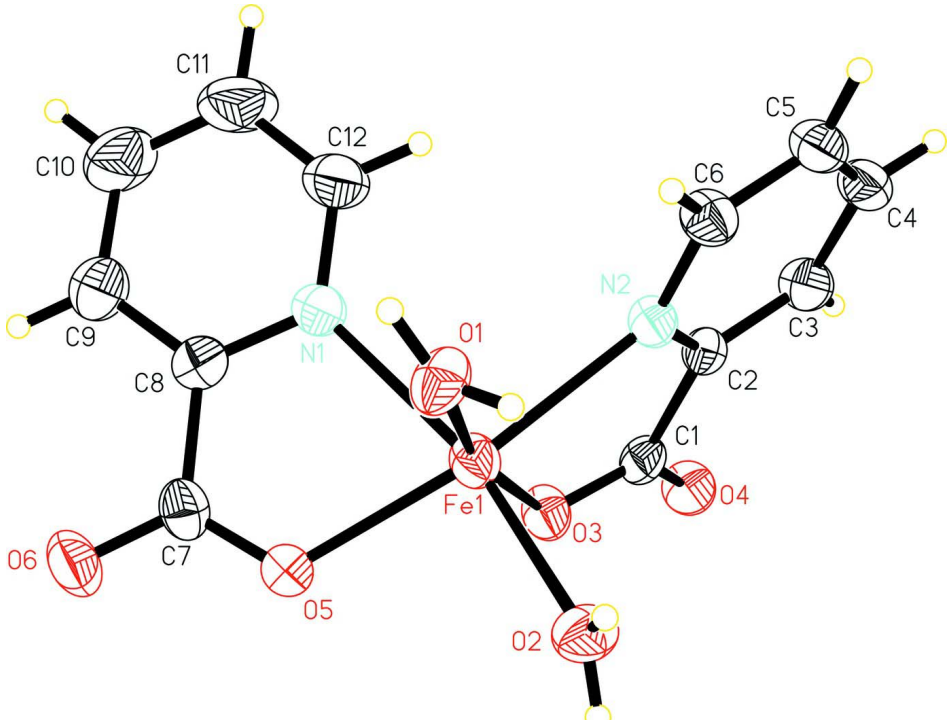

Figure 1

View of the molecule of (I), showing the atom-labelling scheme. Displacement ellipsoids are drawn at the 30% probability level.

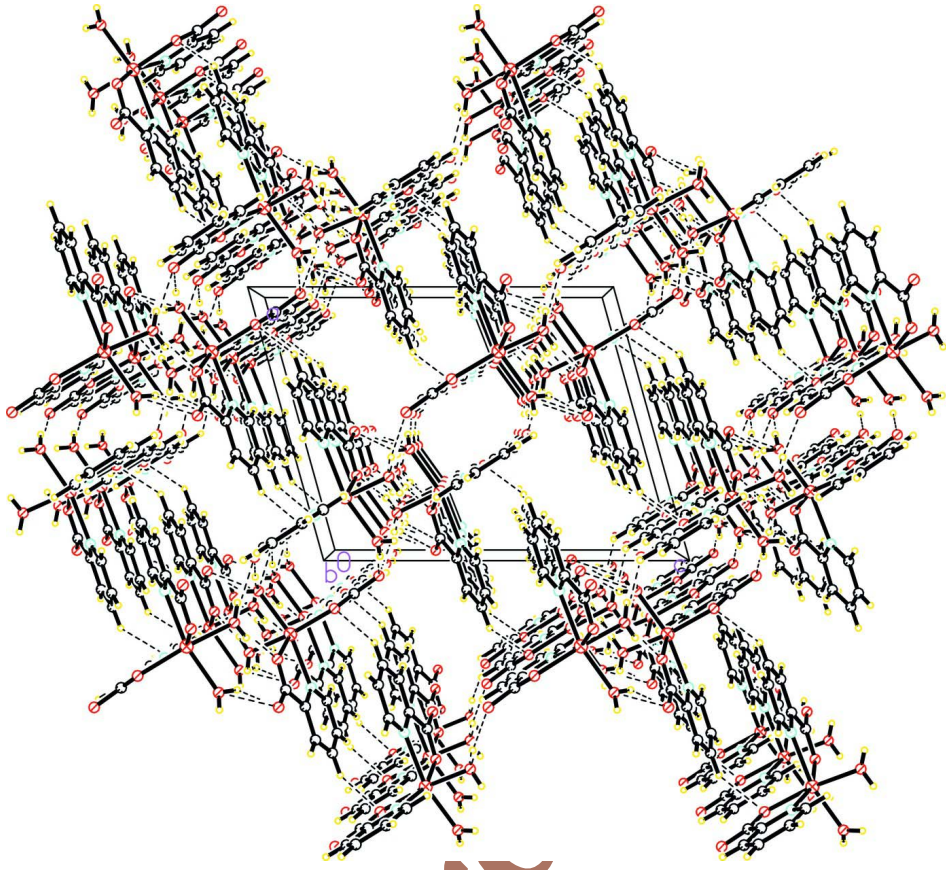

Figure 2

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

Diaquabis(pyridine-2-carboxylato-κ^2N,O)iron(II)

Crystal data

$[Fe(C_6H_4NO_2)_2(H_2O)_2]$
$M_r = 336.09$
Monoclinic, $P2_1/n$
Hall symbol: -P 2yn
$a = 11.6255\ (3)$ Å
$b = 9.0247\ (4)$ Å
$c = 14.9724\ (2)$ Å
$\beta = 105.568\ (2)°$
$V = 1513.22\ (8)$ Å^3
$Z = 4$
$F(000) = 688$
$D_x = 1.475$ Mg m^{-3}
Mo $K\alpha$ radiation, $\lambda = 0.71073$ Å
Cell parameters from 2834 reflections
$\theta = 2.4–24.8°$
$\mu = 1.02$ mm^{-1}
$T = 293$ K
Plane, purple
0.23 × 0.19 × 0.07 mm

Data collection

Bruker SMART APEX area-detector diffractometer
Radiation source: fine-focus sealed tube
Graphite monochromator
φ and ω scans
Absorption correction: multi-scan (*SADABS*; Sheldrick, 1996)
$T_{min} = 0.796$, $T_{max} = 0.928$
10191 measured reflections
3283 independent reflections
2158 reflections with $I > 2\sigma(I)$
$R_{int} = 0.043$
$\theta_{max} = 27.3°$, $\theta_{min} = 2.0°$
$h = -14\rightarrow14$
$k = -11\rightarrow11$
$l = -19\rightarrow18$

Refinement

Refinement on F^2
Least-squares matrix: full
$R[F^2 > 2\sigma(F^2)] = 0.051$
$wR(F^2) = 0.166$
$S = 1.08$
3283 reflections
201 parameters
6 restraints
Primary atom site location: structure-invariant direct methods
Secondary atom site location: difference Fourier map
Hydrogen site location: inferred from neighbouring sites
H atoms treated by a mixture of independent and constrained refinement
$w = 1/[\sigma^2(F_o^2) + (0.089P)^2 + 0.0485P]$ where $P = (F_o^2 + 2F_c^2)/3$
$(\Delta/\sigma)_{max} = 0.001$
$\Delta\rho_{max} = 0.72$ e Å^{-3}
$\Delta\rho_{min} = -0.47$ e Å^{-3}
Extinction correction: *SHELXL97* (Sheldrick, 2008), $Fc^*=kFc[1+0.001xFc^2\lambda^3/\sin(2\theta)]^{-1/4}$
Extinction coefficient: 0.0048 (16)

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}
Fe1	0.74557 (4)	0.85895 (5)	0.62770 (3)	0.0492 (2)
O1	0.8189 (2)	0.7456 (3)	0.75783 (16)	0.0565 (6)
H1A	0.7646	0.7075	0.7752	0.085*
O2	0.5913 (2)	0.8895 (3)	0.6788 (2)	0.0606 (7)
H2A	0.5961	0.8351	0.7235	0.091*
O3	0.65069 (19)	0.9271 (3)	0.48892 (15)	0.0527 (6)
O4	0.5389 (2)	0.8582 (3)	0.35014 (17)	0.0592 (7)
O5	0.8181 (2)	1.0762 (3)	0.66750 (16)	0.0540 (6)
O6	0.9719 (3)	1.2298 (3)	0.6897 (2)	0.0772 (8)
N1	0.9337 (3)	0.8594 (3)	0.6119 (2)	0.0534 (7)
N2	0.6907 (2)	0.6454 (3)	0.54619 (18)	0.0435 (6)
C1	0.6030 (3)	0.8306 (4)	0.4297 (2)	0.0454 (7)
C2	0.6264 (3)	0.6693 (3)	0.4578 (2)	0.0418 (7)
C3	0.5833 (3)	0.5536 (4)	0.3976 (2)	0.0561 (9)
H3	0.5407	0.5724	0.3367	0.067*
C4	0.6042 (3)	0.4112 (4)	0.4288 (3)	0.0587 (9)
H4	0.5742	0.3320	0.3897	0.070*
C5	0.6703 (3)	0.3863 (4)	0.5188 (3)	0.0580 (9)
H5	0.6864	0.2900	0.5407	0.070*
C6	0.7123 (3)	0.5052 (4)	0.5758 (2)	0.0530 (8)
H6	0.7568	0.4880	0.6365	0.064*
C7	0.9225 (3)	1.1079 (4)	0.6662 (2)	0.0538 (8)
C8	0.9906 (3)	0.9877 (4)	0.6345 (2)	0.0514 (8)

C9	1.1059 (3)	1.0068 (5)	0.6312 (3)	0.0731 (11)
H9	1.1448	1.0967	0.6481	0.088*
C10	1.1632 (4)	0.8908 (6)	0.6027 (4)	0.0974 (17)
H10	1.2406	0.9023	0.5974	0.117*
C11	1.1060 (4)	0.7585 (6)	0.5820 (4)	0.108 (2)
H11	1.1452	0.6771	0.5659	0.130*
C12	0.9911 (4)	0.7474 (5)	0.5854 (3)	0.0813 (13)
H12	0.9510	0.6583	0.5686	0.098*
H1B	0.8859 (15)	0.715 (5)	0.778 (3)	0.093 (15)*
H2B	0.539 (5)	0.953 (5)	0.673 (4)	0.18 (3)*

Atomic displacement parameters (Å²)

	U^{11}	U^{22}	U^{33}	U^{12}	U^{13}	U^{23}
Fe1	0.0490 (3)	0.0448 (4)	0.0474 (3)	−0.0005 (2)	0.0020 (2)	−0.00062 (19)
O1	0.0430 (12)	0.0648 (16)	0.0542 (14)	0.0009 (12)	0.0002 (10)	0.0158 (11)
O2	0.0602 (15)	0.0518 (15)	0.0723 (18)	0.0102 (12)	0.0223 (13)	0.0148 (12)
O3	0.0536 (13)	0.0450 (14)	0.0507 (13)	−0.0018 (10)	−0.0013 (10)	0.0043 (10)
O4	0.0566 (14)	0.0563 (16)	0.0512 (14)	0.0076 (11)	−0.0091 (10)	0.0080 (10)
O5	0.0489 (13)	0.0466 (13)	0.0659 (15)	−0.0013 (10)	0.0144 (10)	−0.0088 (11)
O6	0.0798 (18)	0.0646 (18)	0.096 (2)	−0.0277 (15)	0.0388 (15)	−0.0312 (15)
N1	0.0535 (16)	0.0470 (18)	0.0624 (18)	−0.0004 (13)	0.0205 (13)	−0.0032 (13)
N2	0.0437 (13)	0.0411 (15)	0.0403 (14)	0.0004 (11)	0.0018 (10)	0.0027 (10)
C1	0.0345 (14)	0.054 (2)	0.0428 (17)	0.0025 (13)	0.0016 (12)	0.0015 (14)
C2	0.0361 (14)	0.0442 (18)	0.0418 (16)	−0.0003 (12)	0.0045 (11)	−0.0028 (13)
C3	0.0540 (19)	0.057 (2)	0.0473 (18)	0.0048 (16)	−0.0028 (14)	−0.0067 (16)
C4	0.059 (2)	0.047 (2)	0.065 (2)	0.0017 (17)	0.0074 (17)	−0.0142 (17)
C5	0.064 (2)	0.043 (2)	0.070 (2)	0.0023 (16)	0.0226 (18)	−0.0010 (16)
C6	0.0591 (18)	0.047 (2)	0.0489 (18)	0.0017 (16)	0.0080 (14)	0.0045 (15)
C7	0.059 (2)	0.057 (2)	0.0445 (18)	−0.0115 (16)	0.0121 (15)	−0.0065 (15)
C8	0.0509 (17)	0.058 (2)	0.0456 (17)	0.0039 (16)	0.0140 (13)	0.0021 (15)
C9	0.061 (2)	0.075 (3)	0.088 (3)	−0.008 (2)	0.029 (2)	−0.001 (2)
C10	0.070 (3)	0.095 (4)	0.143 (5)	0.002 (3)	0.055 (3)	0.007 (3)
C11	0.090 (3)	0.077 (3)	0.183 (6)	0.013 (3)	0.081 (4)	−0.007 (3)
C12	0.076 (3)	0.056 (3)	0.124 (4)	0.003 (2)	0.047 (3)	−0.007 (2)

Geometric parameters (Å, º)

Fe1—O1	2.163 (2)	C1—C2	1.520 (4)
Fe1—O2	2.148 (3)	C2—C3	1.382 (4)
Fe1—O3	2.164 (2)	C3—C4	1.366 (5)
Fe1—O5	2.154 (2)	C3—H3	0.9300
Fe1—N1	2.262 (3)	C4—C5	1.379 (5)
Fe1—N2	2.279 (2)	C4—H4	0.9300
O1—H1A	0.8200	C5—C6	1.377 (5)
O1—H1B	0.805 (18)	C5—H5	0.9300
O2—H2A	0.8200	C6—H6	0.9300
O2—H2B	0.82 (5)	C7—C8	1.494 (5)

O3—C1	1.260 (4)	C8—C9	1.365 (5)
O4—C1	1.249 (4)	C9—C10	1.369 (6)
O5—C7	1.251 (4)	C9—H9	0.9300
O6—C7	1.247 (4)	C10—C11	1.361 (7)
N1—C12	1.329 (5)	C10—H10	0.9300
N1—C8	1.332 (4)	C11—C12	1.353 (6)
N2—C6	1.342 (4)	C11—H11	0.9300
N2—C2	1.351 (4)	C12—H12	0.9300

O1—Fe1—O2	84.52 (10)	N2—C2—C1	115.8 (3)
O1—Fe1—O3	167.30 (9)	C3—C2—C1	122.4 (3)
O1—Fe1—O5	98.68 (10)	C4—C3—C2	119.2 (3)
O2—Fe1—O3	92.66 (10)	C4—C3—H3	120.4
O2—Fe1—O5	95.00 (10)	C2—C3—H3	120.4
O3—Fe1—O5	93.89 (9)	C3—C4—C5	119.2 (3)
O1—Fe1—N1	86.39 (10)	C3—C4—H4	120.4
O2—Fe1—N1	163.77 (12)	C5—C4—H4	120.4
O3—Fe1—N1	99.03 (10)	C6—C5—C4	119.4 (3)
O5—Fe1—N1	73.12 (9)	C6—C5—H5	120.3
O1—Fe1—N2	93.92 (9)	C4—C5—H5	120.3
O2—Fe1—N2	99.14 (10)	N2—C6—C5	121.7 (3)
O3—Fe1—N2	74.26 (9)	N2—C6—H6	119.1
O5—Fe1—N2	161.88 (9)	C5—C6—H6	119.1
N1—Fe1—N2	94.86 (10)	O6—C7—O5	124.9 (3)
Fe1—O1—H1A	109.5	O6—C7—C8	119.1 (3)
Fe1—O1—H1B	128 (3)	O5—C7—C8	116.0 (3)
H1A—O1—H1B	119.0	N1—C8—C9	121.7 (3)
Fe1—O2—H2A	109.5	N1—C8—C7	116.3 (3)
Fe1—O2—H2B	136 (3)	C9—C8—C7	122.0 (3)
H2A—O2—H2B	112.5	C8—C9—C10	118.6 (4)
C1—O3—Fe1	119.6 (2)	C8—C9—H9	120.7
C7—O5—Fe1	120.9 (2)	C10—C9—H9	120.7
C12—N1—C8	118.8 (3)	C11—C10—C9	119.5 (4)
C12—N1—Fe1	127.4 (3)	C11—C10—H10	120.2
C8—N1—Fe1	113.8 (2)	C9—C10—H10	120.2
C6—N2—C2	118.7 (3)	C12—C11—C10	118.9 (4)
C6—N2—Fe1	128.3 (2)	C12—C11—H11	120.5
C2—N2—Fe1	113.04 (19)	C10—C11—H11	120.5
O4—C1—O3	124.8 (3)	N1—C12—C11	122.3 (4)
O4—C1—C2	118.1 (3)	N1—C12—H12	118.8
O3—C1—C2	117.0 (3)	C11—C12—H12	118.8
N2—C2—C3	121.8 (3)		

Hydrogen-bond geometry (Å, º)

D—H···*A*	*D*—H	H···*A*	*D*···*A*	*D*—H···*A*
O1—H1*B*···O4^{i}	0.81 (2)	1.93 (2)	2.726 (3)	169 (4)
O1—H1*A*···O5^{ii}	0.82	1.87	2.661 (3)	161

O2—H2*B*···O4^{iii}	0.82 (5)	1.92 (5)	2.704 (3)	159 (6)
O2—H2*A*···O6^{ii}	0.82	1.94	2.697 (4)	153

Symmetry codes: (i) $x+1/2, -y+3/2, z+1/2$; (ii) $-x+3/2, y-1/2, -z+3/2$; (iii) $-x+1, -y+2, -z+1$.