Acta Cryst E CRYSTALLOGRAPHIC COMMUNICATIONS

ISSN 2056-9890

Crystal structure of [2,6-difluoro-3-(pyridin-2-yl-κN)pyridin-4-yl-κC^4](pentane-2,4-dionato-$\kappa^2 O,O'$)-platinum(II)

Ki-Min Park,[a] Jieun Lee[b] and Youngjin Kang[b]*

[a]Research Institute of Natural Science, Gyeongsang National University, Jinju 660-701, Republic of Korea, and [b]Division of Science Education, Kangwon National University, Chuncheon 220-701, Republic of Korea. *Correspondence e-mail: kangy@kangwon.ac.kr

Received 12 February 2015
Accepted 3 March 2015

Edited by M. Weil, Vienna University of Technology, Austria

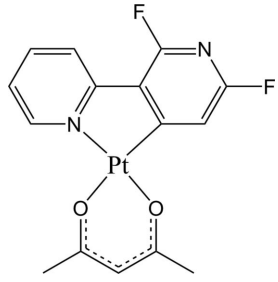
Keywords: crystal structure; platinum(II); CNO_2 coordination set; hydrogen bonding; π–π interactions

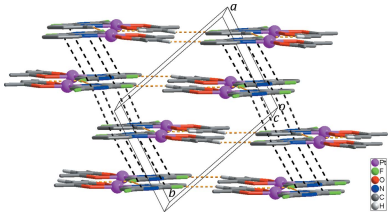
CCDC reference: 1051825
Supporting information: this article has supporting information at journals.iucr.org/e

The asymmetric unit of the title compound, $[Pt(C_{10}H_5F_2N_2)(C_5H_7O_2)]$, comprises one Pt^{II} atom, one 2,6-difluoro-2,3-bipyridine ligand and one acetylacetonate anion. The Pt^{II} atom adopts a distorted square-planar coordination geometry, being *C*,*N*-chelated by the 2,6-difluoro-3-(pyridin-2-yl)-pyridin-4-yl ligand and *O*,*O*′-chelated by the pentane-2,4-dionate ligand. The two pyridine rings of the bipyridine ligand are approximately coplanar, making a dihedral angle of 1.2 (2)°. A variety of intra- and intermolecular C—H···O and C—H···F hydrogen bonds, as well as π–π interactions [centroid–centroid distances = 4.337 (3) and 3.774 (3) Å] contribute to the stabilization of the molecular and crystal structures, and result in the formation of a three-dimensional supramolecular framework.

1. Chemical context

Cyclometalated platinum(II) compounds with *C*,*N*-chelating ligands have been considered as an attractive research area due to their wide applications, such as biological imaging, non-linear optics, oxygen sensing and organic light-emitting diodes (OLEDs) (Hudson *et al.*, 2012). In particular, phenylpyridine (ppy) based platinum(II) β-diketonate compounds have been widely studied because of their excellent stability and high quantum efficiency in OLEDs (Rao *et al.*, 2012). However, examples of platinum(II) compounds with *C*,*N*-chelating bipyridine ligands are scarce. Herein, we report the result of our investigation on the crystal structure of a novel platinum(II) compound with fluorinated bipyridine and acetylacetonate (acac, *O*,*O*) ligands.





2. Structural commentary

The molecular structure of the title compound is shown in Fig. 1. The asymmetric unit consists of one Pt^{II} atom, one 2,6-difluoro-2,3-bipyridine ligand and one acetylacetonate anion. The Pt^{II} atom is four-coordinated by the *C*,*N*-chelating 2′,6′-difluoro-2,3′-bipyridinato ligand and by the *O*,*O*′-chelating

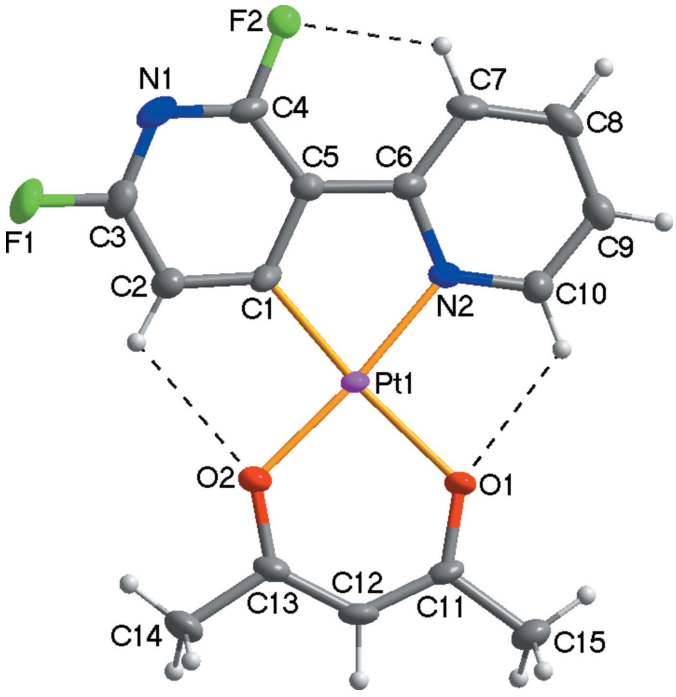


Figure 1
View of the molecular structure of the title compound, with the atom-numbering scheme. Displacement ellipsoids are drawn at the 50% probability level; dashed lines represent intramolecular C—H···O and C—H···F hydrogen bonds.

pentane-2,4-dionato ligand, forming a distorted square-planar coordination sphere due to narrow ligand bite angles, which range from 81.28 (17) to 93.25 (13)°. The Pt—C bond length of 1.951 (4) Å is shorter than the Pt—N bond length of 1.995 (4) Å due to the more electronegative fluorine substituent on the C-bound pyridine ring. The Pt—C, Pt—N and Pt—O bond lengths (Table 1) are in normal ranges as reported for similar Pt^{II} compounds, *e.g.* [Pt(Bppy)(acac)] (Bppy is a boron-functionalized phenylpyridine; Rao *et al.*, 2012). Within

Table 1
Selected bond lengths (Å).

Pt1—C1	1.951 (4)	Pt1—O1	2.074 (3)
Pt1—N2	1.995 (4)	Pt1—O2	2.001 (3)

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

D—H···*A*	*D*—H	H···*A*	*D*···*A*	*D*—H···*A*
C2—H2···O2	0.95	2.57	3.040 (5)	111
C7—H7···F2	0.95	2.31	2.917 (6)	121
C10—H10···F1^{i}	0.95	2.32	3.180 (5)	150
C10—H10···O1	0.95	2.41	3.006 (5)	120
C12—H12···F2^{ii}	0.95	2.44	3.361 (5)	163
C15—H15*A*···F1^{i}	0.98	2.54	3.481 (6)	161

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

the *C*,*N*-bidentate ligand of the title compound, the two pyridine rings are approximately co-planar, making a dihedral angle of 1.2 (2)°, indicating that an effective π conjugation of the two pyridine rings occurs in the title compound. The molecular structure is stabilized by weak intramolecular C—H···O and C—H···F hydrogen bonds (Table 2).

3. Supramolecular features

Intermolecular C—H···F hydrogen bonds between neighboring molecules lead to the formation of a two-dimensional supramolecular network extending parallel to the $(\bar{1}10)$ plane (Fig. 2, Table 2). These networks are interlinked by π–π interactions [$Cg1—Cg2^{i}$ = 4.337 (3) Å and $Cg1—Cg2^{ii}$ = 3.774 (3) Å, where $Cg1$ and $Cg2$ are the centroids of the N1, C1–C5 and the N2, C6–C10 rings, respectively; symmetry codes: (i) $-x+1, -y+2, -z+2$; (ii) $-x+2, -y+2, -z+2$], resulting in the formation of an overall three-dimensional supramolecular framework (Fig. 3).

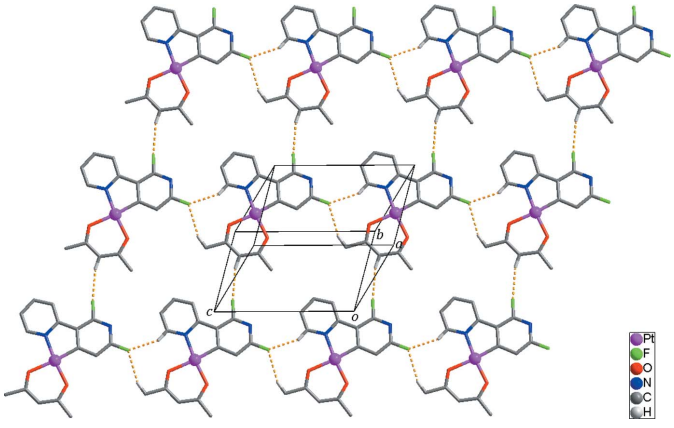


Figure 2
The two-dimensional supramolecular network formed through C—H···F interactions (yellow dashed lines). H atoms not involved in intermolecular interactions have been omitted for clarity.

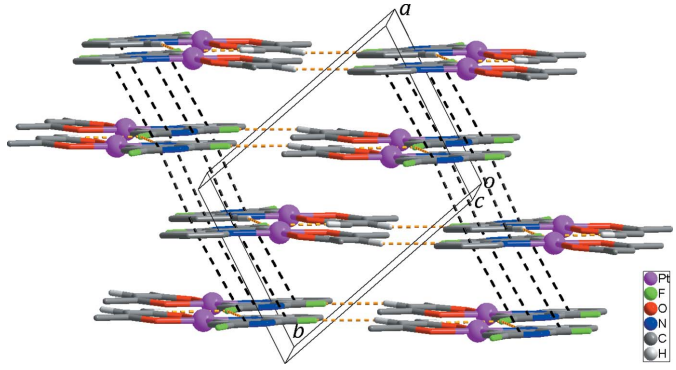


Figure 3
The three-dimensional supramolecular network formed through π–π stacking interactions (black dashed lines). Yellow dashed lines indicate the C—H···F interactions. H atoms not involved in intermolecular interactions have been omitted for clarity.

Table 3
Experimental details.

Crystal data	
Chemical formula	$[Pt(C_{10}H_5F_2N_2)(C_5H_7O_2)]$
M_r	485.36
Crystal system, space group	Triclinic, $P\overline{1}$
Temperature (K)	180
a, b, c (Å)	8.0442 (6), 9.8711 (7), 10.1458 (7)
α, β, γ (°)	97.683 (1), 112.320 (1), 99.410 (1)
V (Å^3)	718.12 (9)
Z	2
Radiation type	Mo $K\alpha$
μ (mm^{-1})	9.80
Crystal size (mm)	0.27 × 0.24 × 0.12
Data collection	
Diffractometer	Bruker APEXII CCD area detector
Absorption correction	Multi-scan (*SADABS*; Bruker, 2006)
T_{min}, T_{max}	0.177, 0.386
No. of measured, independent and observed [$I > 2\sigma(I)$] reflections	7062, 2810, 2773
R_{int}	0.023
(sin $\theta/\lambda)_{max}$ (Å^{-1})	0.617
Refinement	
$R[F^2 > 2\sigma(F^2)]$, $wR(F^2)$, S	0.017, 0.053, 1.07
No. of reflections	2810
No. of parameters	199
H-atom treatment	H-atom parameters constrained
$\Delta\rho_{max}$, $\Delta\rho_{min}$ (e Å^{-3})	0.51, −1.27

Computer programs: *APEX2* and *SAINT* (Bruker, 2006), *SHELXS97*, *SHELXL97* and *SHELXTL* (Sheldrick, 2008) and *DIAMOND* (Brandenburg, 2005).

4. Synthesis and crystallization

The title compound was synthesized according to a previous report (Rao *et al.*, 2012). Slow evaporation from a dichloromethane/hexane solution afforded yellow crystals suitable for X-ray crystallography analysis.

5. Refinement

Crystal data, data collection and crystal structure refinement details are summarized in Table 3. All H atoms were positioned geometrically and refined using a riding model, with d(C—H) = 0.95 Å, U_{iso}(H) = 1.2U_{eq}(C) for Csp^2-H, and 0.98 Å, U_{iso}(H) = 1.5U_{eq}(C) for methyl protons.

Acknowledgements

This work was supported by the Industrial Strategic Technology Development Program (10039141) funded by the MOTIE (Ministry of Trade, Industry & Energy, Korea), KEIT (Korea Evaluation Institute of Industrial Technology) and the 2014 Research Grant from Kangwon National University (C1010838-01-01).

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Sheldrick, G. M. (2008). *Acta Cryst.* A**64**, 112–122.

supporting information

Acta Cryst. (2015). E**71**, 354-356 [doi:10.1107/S2056989015004375]

Crystal structure of [2,6-difluoro-3-(pyridin-2-yl-κN)pyridin-4-yl-κC^4](pentane-2,4-dionato-$\kappa^2 O,O'$)platinum(II)

Ki-Min Park, Jieun Lee and Youngjin Kang

Computing details

Data collection: *APEX2* (Bruker, 2006); cell refinement: *SAINT* (Bruker, 2006); data reduction: *SAINT* (Bruker, 2006); program(s) used to solve structure: *SHELXS97* (Sheldrick, 2008); program(s) used to refine structure: *SHELXL97* (Sheldrick, 2008); molecular graphics: *SHELXTL* (Sheldrick, 2008) and *DIAMOND* (Brandenburg, 2005); software used to prepare material for publication: *SHELXTL* (Sheldrick, 2008).

[2,6-Difluoro-3-(pyridin-2-yl-κN)pyridin-4-yl-κC^4](pentane-2,4-dionato-$\kappa^2 O,O'$)platinum(II)

Crystal data

$[Pt(C_{10}H_5F_2N_2)(C_5H_7O_2)]$
$M_r = 485.36$
Triclinic, $P\overline{1}$
Hall symbol: -P 1
$a = 8.0442$ (6) Å
$b = 9.8711$ (7) Å
$c = 10.1458$ (7) Å
$\alpha = 97.683$ (1)°
$\beta = 112.320$ (1)°
$\gamma = 99.410$ (1)°
$V = 718.12$ (9) Å^3
$Z = 2$
$F(000) = 456$
$D_x = 2.245$ Mg m^{-3}
Mo $K\alpha$ radiation, $\lambda = 0.71073$ Å
Cell parameters from 2773 reflections
$\theta = 2.1$–26.0°
$\mu = 9.80$ mm^{-1}
$T = 180$ K
Block, yellow
0.27 × 0.24 × 0.12 mm

Data collection

Bruker APEXII CCD area-detector diffractometer
Radiation source: fine-focus sealed tube
Graphite monochromator
φ and ω scans
Absorption correction: multi-scan (*SADABS*; Bruker, 2006)
$T_{min} = 0.177$, $T_{max} = 0.386$
7062 measured reflections
2810 independent reflections
2773 reflections with $I > 2\sigma(I)$
$R_{int} = 0.023$
$\theta_{max} = 26.0°$, $\theta_{min} = 2.1°$
$h = -9 \rightarrow 9$
$k = -12 \rightarrow 12$
$l = -12 \rightarrow 12$

Refinement

Refinement on F^2
Least-squares matrix: full
$R[F^2 > 2\sigma(F^2)] = 0.017$
$wR(F^2) = 0.053$
$S = 1.07$
2810 reflections
199 parameters
0 restraints
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

$w = 1/[\sigma^2(F_o^2) + (0.0295P)^2 + 1.5655P]$
where $P = (F_o^2 + 2F_c^2)/3$
$(\Delta/\sigma)_{max} = 0.002$

$\Delta\rho_{max} = 0.51$ e Å^{-3}
$\Delta\rho_{min} = -1.27$ e Å^{-3}

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}
Pt1	0.541428 (18)	0.778516 (13)	0.974446 (14)	0.01645 (7)
F1	0.6043 (5)	0.8519 (4)	0.4799 (3)	0.0462 (8)
F2	0.9252 (4)	1.1982 (3)	0.8748 (3)	0.0362 (6)
O1	0.4622 (4)	0.7037 (3)	1.1284 (3)	0.0240 (6)
O2	0.3730 (4)	0.6133 (3)	0.8158 (3)	0.0231 (6)
N1	0.7621 (5)	1.0252 (4)	0.6783 (4)	0.0294 (8)
N2	0.7143 (5)	0.9517 (4)	1.1169 (4)	0.0197 (7)
C1	0.6273 (6)	0.8664 (4)	0.8434 (5)	0.0209 (8)
C2	0.5731 (6)	0.8150 (5)	0.6931 (5)	0.0251 (8)
H2	0.4892	0.7267	0.6431	0.030*
C3	0.6477 (6)	0.8990 (5)	0.6230 (5)	0.0290 (9)
C4	0.8076 (6)	1.0704 (4)	0.8184 (5)	0.0245 (8)
C5	0.7490 (5)	0.9996 (4)	0.9079 (4)	0.0205 (8)
C6	0.7995 (6)	1.0466 (4)	1.0634 (5)	0.0210 (8)
C7	0.9196 (6)	1.1711 (4)	1.1559 (5)	0.0263 (9)
H7	0.9801	1.2372	1.1190	0.032*
C8	0.9507 (6)	1.1986 (5)	1.3023 (5)	0.0295 (9)
H8	1.0316	1.2836	1.3659	0.035*
C9	0.8626 (6)	1.1006 (5)	1.3545 (5)	0.0279 (9)
H9	0.8829	1.1168	1.4544	0.034*
C10	0.7447 (6)	0.9790 (5)	1.2585 (5)	0.0249 (8)
H10	0.6829	0.9121	1.2937	0.030*
C11	0.3374 (6)	0.5912 (4)	1.0981 (5)	0.0219 (8)
C12	0.2383 (6)	0.5027 (4)	0.9600 (5)	0.0247 (9)
H12	0.1450	0.4256	0.9525	0.030*
C13	0.2611 (6)	0.5149 (4)	0.8326 (5)	0.0230 (8)
C14	0.1488 (7)	0.4045 (5)	0.6953 (5)	0.0328 (10)
H14A	0.1816	0.4288	0.6163	0.049*
H14B	0.0170	0.3996	0.6684	0.049*
H14C	0.1746	0.3131	0.7117	0.049*
C15	0.3027 (7)	0.5529 (5)	1.2257 (5)	0.0305 (10)
H15A	0.3822	0.6245	1.3142	0.046*

H15B	0.3306	0.4613	1.2389	0.046*
H15C	0.1728	0.5479	1.2072	0.046*

Atomic displacement parameters (Å²)

	U^{11}	U^{22}	U^{33}	U^{12}	U^{13}	U^{23}
Pt1	0.01828 (10)	0.01327 (9)	0.01850 (9)	0.00005 (6)	0.00925 (7)	0.00501 (6)
F1	0.062 (2)	0.0564 (19)	0.0253 (14)	0.0043 (16)	0.0257 (14)	0.0124 (13)
F2	0.0389 (15)	0.0238 (13)	0.0495 (17)	−0.0032 (11)	0.0244 (13)	0.0138 (12)
O1	0.0251 (15)	0.0198 (14)	0.0209 (14)	−0.0073 (12)	0.0087 (12)	0.0017 (11)
O2	0.0242 (14)	0.0179 (14)	0.0241 (14)	−0.0014 (11)	0.0095 (12)	0.0034 (11)
N1	0.031 (2)	0.033 (2)	0.034 (2)	0.0088 (16)	0.0200 (17)	0.0187 (17)
N2	0.0176 (16)	0.0169 (16)	0.0235 (17)	0.0015 (13)	0.0083 (14)	0.0045 (13)
C1	0.029 (2)	0.0176 (19)	0.025 (2)	0.0086 (16)	0.0169 (18)	0.0103 (16)
C2	0.027 (2)	0.025 (2)	0.022 (2)	0.0021 (17)	0.0101 (17)	0.0073 (16)
C3	0.032 (2)	0.037 (2)	0.021 (2)	0.0097 (19)	0.0124 (18)	0.0108 (18)
C4	0.023 (2)	0.021 (2)	0.035 (2)	0.0044 (16)	0.0161 (18)	0.0130 (17)
C5	0.0191 (18)	0.0190 (19)	0.025 (2)	0.0043 (15)	0.0102 (16)	0.0065 (16)
C6	0.0198 (18)	0.0182 (19)	0.028 (2)	0.0041 (15)	0.0119 (17)	0.0077 (16)
C7	0.023 (2)	0.0170 (19)	0.037 (2)	0.0004 (16)	0.0115 (18)	0.0070 (17)
C8	0.025 (2)	0.021 (2)	0.031 (2)	−0.0002 (17)	0.0042 (18)	−0.0021 (17)
C9	0.029 (2)	0.027 (2)	0.022 (2)	0.0038 (18)	0.0074 (17)	−0.0002 (17)
C10	0.028 (2)	0.024 (2)	0.023 (2)	0.0032 (17)	0.0120 (17)	0.0037 (16)
C11	0.023 (2)	0.020 (2)	0.028 (2)	0.0037 (16)	0.0136 (17)	0.0129 (16)
C12	0.021 (2)	0.0175 (19)	0.034 (2)	−0.0024 (16)	0.0119 (18)	0.0086 (17)
C13	0.0207 (19)	0.0160 (19)	0.027 (2)	−0.0004 (15)	0.0065 (17)	0.0040 (16)
C14	0.031 (2)	0.025 (2)	0.029 (2)	−0.0074 (18)	0.0057 (19)	−0.0023 (18)
C15	0.030 (2)	0.032 (2)	0.032 (2)	0.0008 (19)	0.016 (2)	0.0124 (19)

Geometric parameters (Å, º)

Pt1—C1	1.951 (4)	C7—C8	1.389 (7)
Pt1—N2	1.995 (4)	C7—H7	0.9500
Pt1—O1	2.074 (3)	C8—C9	1.384 (7)
Pt1—O2	2.001 (3)	C8—H8	0.9500
F1—C3	1.352 (5)	C9—C10	1.379 (6)
F2—C4	1.349 (5)	C9—H9	0.9500
O1—C11	1.282 (5)	C10—H10	0.9500
O2—C13	1.288 (5)	C11—C12	1.399 (6)
N1—C4	1.316 (6)	C11—C15	1.506 (6)
N1—C3	1.327 (6)	C12—C13	1.391 (6)
N2—C10	1.343 (5)	C12—H12	0.9500
N2—C6	1.361 (5)	C13—C14	1.504 (6)
C1—C5	1.406 (6)	C14—H14A	0.9800
C1—C2	1.410 (6)	C14—H14B	0.9800
C2—C3	1.368 (6)	C14—H14C	0.9800
C2—H2	0.9500	C15—H15A	0.9800
C4—C5	1.387 (6)	C15—H15B	0.9800

C5—C6	1.457 (6)	C15—H15C	0.9800
C6—C7	1.393 (6)		

C1—Pt1—N2	81.28 (17)	C6—C7—H7	120.0
C1—Pt1—O2	92.90 (16)	C9—C8—C7	119.3 (4)
N2—Pt1—O2	174.15 (12)	C9—C8—H8	120.4
C1—Pt1—O1	174.40 (14)	C7—C8—H8	120.4
N2—Pt1—O1	93.25 (13)	C10—C9—C8	118.6 (4)
O2—Pt1—O1	92.55 (12)	C10—C9—H9	120.7
C11—O1—Pt1	123.4 (3)	C8—C9—H9	120.7
C13—O2—Pt1	123.9 (3)	N2—C10—C9	122.4 (4)
C4—N1—C3	113.8 (4)	N2—C10—H10	118.8
C10—N2—C6	119.9 (4)	C9—C10—H10	118.8
C10—N2—Pt1	123.4 (3)	O1—C11—C12	125.5 (4)
C6—N2—Pt1	116.7 (3)	O1—C11—C15	115.4 (4)
C5—C1—C2	117.9 (4)	C12—C11—C15	119.1 (4)
C5—C1—Pt1	114.5 (3)	C13—C12—C11	127.3 (4)
C2—C1—Pt1	127.4 (3)	C13—C12—H12	116.4
C3—C2—C1	116.6 (4)	C11—C12—H12	116.4
C3—C2—H2	121.7	O2—C13—C12	127.1 (4)
C1—C2—H2	121.7	O2—C13—C14	113.0 (4)
N1—C3—F1	113.5 (4)	C12—C13—C14	119.9 (4)
N1—C3—C2	127.9 (4)	C13—C14—H14A	109.5
F1—C3—C2	118.6 (4)	C13—C14—H14B	109.5
N1—C4—F2	113.7 (4)	H14A—C14—H14B	109.5
N1—C4—C5	126.6 (4)	C13—C14—H14C	109.5
F2—C4—C5	119.7 (4)	H14A—C14—H14C	109.5
C4—C5—C1	117.2 (4)	H14B—C14—H14C	109.5
C4—C5—C6	127.6 (4)	C11—C15—H15A	109.5
C1—C5—C6	115.3 (4)	C11—C15—H15B	109.5
N2—C6—C7	119.9 (4)	H15A—C15—H15B	109.5
N2—C6—C5	112.2 (4)	C11—C15—H15C	109.5
C7—C6—C5	128.0 (4)	H15A—C15—H15C	109.5
C8—C7—C6	119.9 (4)	H15B—C15—H15C	109.5
C8—C7—H7	120.0		

N2—Pt1—O1—C11	176.1 (3)	C2—C1—C5—C6	180.0 (4)
O2—Pt1—O1—C11	−3.1 (3)	Pt1—C1—C5—C6	3.4 (5)
C1—Pt1—O2—C13	−175.2 (3)	C10—N2—C6—C7	0.7 (6)
O1—Pt1—O2—C13	3.5 (3)	Pt1—N2—C6—C7	178.9 (3)
C1—Pt1—N2—C10	−179.3 (4)	C10—N2—C6—C5	−179.6 (4)
O1—Pt1—N2—C10	1.9 (3)	Pt1—N2—C6—C5	−1.4 (4)
C1—Pt1—N2—C6	2.6 (3)	C4—C5—C6—N2	179.1 (4)
O1—Pt1—N2—C6	−176.2 (3)	C1—C5—C6—N2	−1.3 (5)
N2—Pt1—C1—C5	−3.2 (3)	C4—C5—C6—C7	−1.2 (7)
O2—Pt1—C1—C5	176.2 (3)	C1—C5—C6—C7	178.4 (4)
N2—Pt1—C1—C2	−179.4 (4)	N2—C6—C7—C8	−0.6 (6)
O2—Pt1—C1—C2	0.0 (4)	C5—C6—C7—C8	179.8 (4)

C5—C1—C2—C3	1.4 (6)	C6—C7—C8—C9	0.5 (6)
Pt1—C1—C2—C3	177.4 (3)	C7—C8—C9—C10	−0.6 (7)
C4—N1—C3—F1	−178.8 (4)	C6—N2—C10—C9	−0.8 (6)
C4—N1—C3—C2	0.9 (7)	Pt1—N2—C10—C9	−178.9 (3)
C1—C2—C3—N1	−1.8 (7)	C8—C9—C10—N2	0.8 (7)
C1—C2—C3—F1	177.9 (4)	Pt1—O1—C11—C12	0.5 (6)
C3—N1—C4—F2	179.4 (4)	Pt1—O1—C11—C15	178.7 (3)
C3—N1—C4—C5	0.3 (6)	O1—C11—C12—C13	3.4 (7)
N1—C4—C5—C1	−0.6 (6)	C15—C11—C12—C13	−174.8 (4)
F2—C4—C5—C1	−179.6 (4)	Pt1—O2—C13—C12	−1.3 (6)
N1—C4—C5—C6	179.1 (4)	Pt1—O2—C13—C14	179.2 (3)
F2—C4—C5—C6	0.0 (6)	C11—C12—C13—O2	−3.0 (7)
C2—C1—C5—C4	−0.3 (6)	C11—C12—C13—C14	176.4 (4)
Pt1—C1—C5—C4	−176.9 (3)		

Hydrogen-bond geometry (Å, º)

D—H···*A*	*D*—H	H···*A*	*D*···*A*	*D*—H···*A*
C2—H2···O2	0.95	2.57	3.040 (5)	111
C7—H7···F2	0.95	2.31	2.917 (6)	121
C10—H10···F1^{i}	0.95	2.32	3.180 (5)	150
C10—H10···O1	0.95	2.41	3.006 (5)	120
C12—H12···F2^{ii}	0.95	2.44	3.361 (5)	163
C15—H15*A*···F1^{i}	0.98	2.54	3.481 (6)	161

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