IUCrData

ISSN 2414-3146

[*SP*-4-2]-(Acetonitrile-κN)chlorido[2-(4,6-diphenylpyridin-2-yl)phenyl-κ^2C^1,N]platinum(II). Corrigendum

Chengjian Fang, Zhao Wang, Zhongjian Cong, Shengli Li* and Fei Li

Department of Chemistry, Anhui University, Hefei, Anhui 230039, People's Republic of China. *Correspondence e-mail: lsl1968@ahu.edu.cn

The article by Fang *et al.* [*IUCrData* (2019), **4**, x191207] is withdrawn.

We wish to withdraw the article by Fang *et al.* (2019). The article was based on structural data previously reported by Zhu (2014).

References

Fang, C., Wang, Z., Cong, Z., Li, S. & Li, F. (2019). *IUCrData* (2019). **4**, x191207.
Zhu, Y. (2014). CCDC 1018678: CSD Communication, https://doi.org/10.5517/cc1360lx.

IUCrData

ISSN 2414-3146

[*SP*-4-2]-(Acetonitrile-κN)chlorido[2-(4,6-diphenylpyridin-2-yl)phenyl-κ^2C^1,N]platinum(II)

Chengjian Fang, Zhao Wang, Zhongjian Cong, Shengli Li* and Fei Li

Department of Chemistry, Anhui University, Hefei, Anhui 230039, People's Republic of China. *Correspondence e-mail: lsl1968@ahu.edu.cn

Received 25 July 2019
Accepted 31 August 2019

Edited by W. Imhof, University Koblenz-Landau, Germany

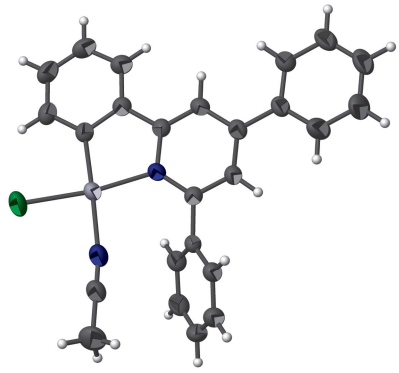
Keywords: crystal structure; platinum(II) complex; *C*,*N*-chelating ligand.

CCDC reference: 1939630

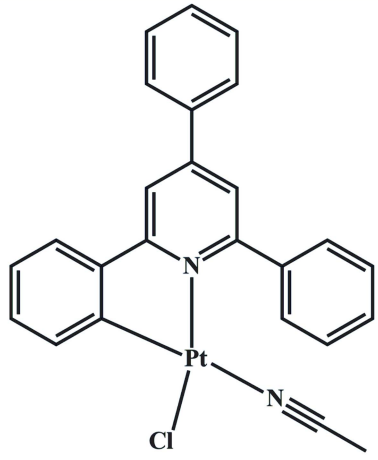
Structural data: full structural data are available from iucrdata.iucr.org

The synthesis and crystal structure of the title Pt^{II} complex, $[Pt(C_{23}H_{16}N)Cl(CH_3CN)]$, based on the *C*,*N*-chelating 2,4,6-triphenylpyridine as the primary ligand, is described. The central Pt^{II} atom is in a distorted square-planar coordination environment. In the crystal, molecules are arranged *via* a metallophilic interaction between platinum atoms with a Pt···Pt contact of 7.052 (2) Å. In addition, a π–π interaction occurs.

3D view



Chemical scheme



Structure description

Platinum complexes have received significant attention because of their chemical and photophysical properties, such as high stability, emissions in the visible region, high fluorescent quantum yields and long excited lifetimes (Fang *et al.*, 2018). Pt^{II} complexes often form one-dimensional (1-D) stacked structures *via* the overlap of the Pt $5dz^2$ orbitals to form intermolecular metallophilic (Pt···Pt) interactions (Yasuhiro *et al.*, 2019). In this study, we report the crystal structure of a novel Pt^{II} complex, $[PtCl(C_{23}H_{16}N)(CH_3CN)]$.

The molecular structure of the title compound is shown in Fig. 1. The platinum(II) center shows a distorted square-planar coordination environment built up by the coordination of one chloride, one acetonitrile and one *C*,*N*-chelating 2,4,6-diphenylpyridine. Bond lengths and angles are given in Table 1. The primary ligand, 2,4,6-triphenylpyridine, is coordinated as a bidentate ligand *via* the pyridine nitrogen atom and C1 of the phenyl substituent in the 2-position after C—H activation. A stable five-membered ring structure is formed by this coordination mode. The remaining two coordination sites of the Pt^{II} center are occupied by an acetonitrile molecule in a *trans*-position with respect to the coordinating carbon atom of 2,4,6-triphenylpyridine and a chloride ligand in a *trans*-position with respect to the pyridine nitrogen atom. The chelating ligand is not planar, showing dihedral angles between the central pyridine ring and ring C1–C6 of 12.98 (2)°,

Table 1
Selected geometric parameters (Å, °).

Pt1—N1	2.054 (3)	Pt1—C1	1.973 (3)
Pt1—N3	2.102 (3)	Pt1—Cl1	2.2964 (10)
C1—Pt1—Cl1	92.94 (10)	N1—Pt1—Cl1	171.86 (7)
C1—Pt1—N1	81.37 (12)	N1—Pt1—N3	100.50 (11)
C1—Pt1—N3	176.81 (12)	N3—Pt1—Cl1	84.92 (9)

50.1 (5)° for the corresponding angle with ring C12–C17, and 7.44 (2)° between the pyridine ring and the top ring C18–C23.

In the crystal, molecules are arranged *via* a metallophilic interaction between platinum atoms with a Pt···Pt contact of 7.052 (2) Å. In addition, a π–π interaction of 3.598 (3) Å occurs between the centroid of the central pyridine ring and the centroid of a phenyl substituent at the 4-position of the pyridine ring of another molecule (Fig. 2).

A closely related structure of a platinum complex in which the phenyl substituents at the 2- and 6-positions of the pyridine ring are replaced by naphthalene moieties has been reported (Kui *et al.*, 2006). In the crystal structure of this complex, a metallophilic interaction also occurs between platinum atoms with a Pt···Pt distance of 7.059 (2) Å.

Synthesis and crystallization

2,4,6-Triphenylpyridine (1 mmol, 0.31 g), potassium tetrachloroplatinate (1 mmol, 0.41 g) and 100 ml of glacial acetic acid were placed in a 250 ml flask and stirred at room temperature for 10 min. The reaction solution then was refluxed for 72 h. After completion of the reaction, the solution was cooled to room temperature and filtered. The residue was washed twice with 30 ml of ethanol, 30 ml of acetone and 30 ml of deionized water yielding a green–yellow solid (yield: 350 mg, 60%). Single crystals of the title compound were obtained by dissolving 200 mg of the product in a mixture of acetonitrile and dichloromethane (25 ml, *v*/*v* =1:1) in an Erlenmeyer flask which was placed in a glove box in a dark environment and without any vibrations. After one week at room temperature yellow–green rod-like crystals suitable for X-ray analysis were obtained.

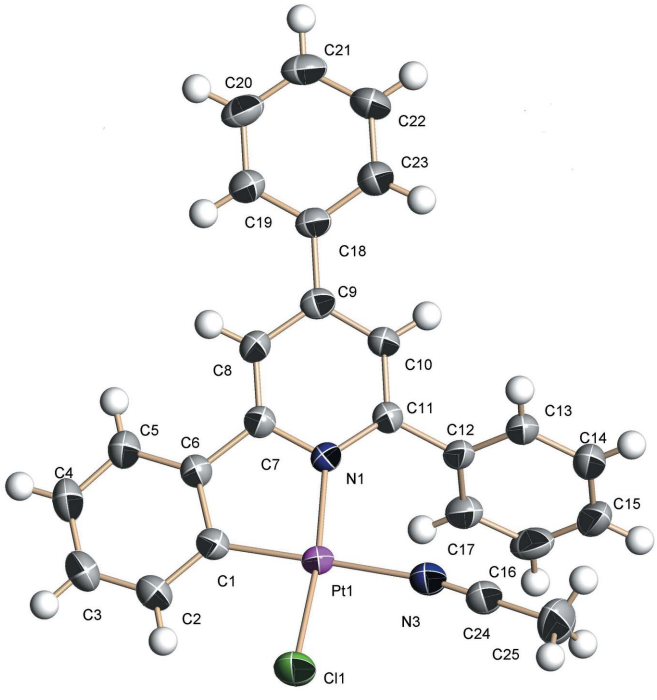


Figure 1
Molecular structure of the title compound showing the atom-numbering scheme.

Table 2
Experimental details.

Crystal data	
Chemical formula	$[Pt(C_{23}H_{16}N)Cl(C_2H_3N)]$
M_r	577.96
Crystal system, space group	Triclinic, $P\overline{1}$
Temperature (K)	293
a, b, c (Å)	7.5024 (6), 7.8654 (6), 17.6956 (14)
α, β, γ (°)	93.063 (1), 101.796 (1), 92.372 (1)
V (Å^3)	1019.23 (14)
Z	2
Radiation type	Mo $K\alpha$
μ (mm^{-1})	7.03
Crystal size (mm)	0.3 × 0.2 × 0.2
Data collection	
Diffractometer	Bruker APEXII CCD area detector
Absorption correction	Multi-scan (*SADABS*; Bruker, 2009)
T_{min}, T_{max}	0.431, 0.746
No. of measured, independent and observed [$I > 2\sigma(I)$] reflections	7516, 3731, 3545
R_{int}	0.025
(sin $\theta/\lambda)_{max}$ (Å^{-1})	0.606
Refinement	
$R[F^2 > 2\sigma(F^2)]$, $wR(F^2)$, S	0.019, 0.048, 1.05
No. of reflections	3731
No. of parameters	264
H-atom treatment	H-atom parameters constrained
$\Delta\rho_{max}$, $\Delta\rho_{min}$ (e Å^{-3})	0.83, −0.79

Computer programs: *APEX2* and *SAINT* (Bruker, 2009), *SHELXS97* (Sheldrick, 2008), *SHELXL* (Sheldrick, 2015) and *OLEX2* (Dolomanov *et al.*, 2009).

Refinement

Crystal data, data collection and structure refinement details are summarized in Table 2.

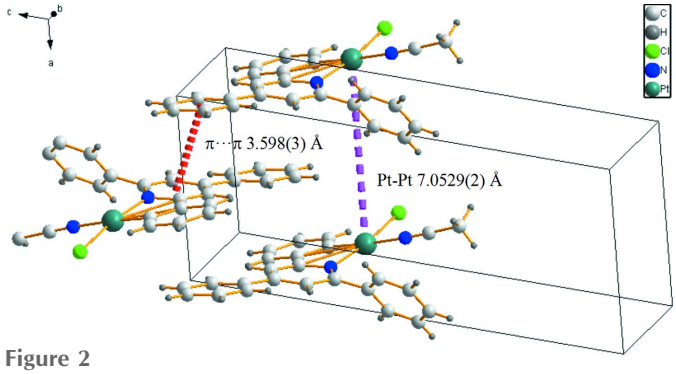


Figure 2
Perspective view of the supramolecular arrangement of molecules in the crystal.

Funding information

The authors thank the National Natural Science Foundation of China (award No. 51802001) and the Natural Science Foundation of Anhui Province (award No. 1908085MB30) for financial support of this project.

References

Bruker (2009). *APEX2*, *SAINT* and *SADABS*. Bruker AXS Inc., Madison, Wisconsin, USA.

Dolomanov, O. V., Bourhis, L. J., Gildea, R. J., Howard, J. A. K. & Puschmann, H. (2009). *J. Appl. Cryst.* **42**, 339–341.

Fang, B., Zhu, Y. Z., Hu, L., Shen, Y., Jiang, G., Zhang, Q., Tian, X., Li, S., Zhou, H., Wu, J. & Tian, Y. (2018). *Inorg. Chem.* **57**, 14134–14143.

Kui, S. C. F., Chui, S. S. Y., Che, C. M. & Zhu, N. Y. (2006). *J. Am. Chem. Soc.* **128**, 8297–8309.

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

Sheldrick, G. M. (2015). *Acta Cryst.* C**71**, 3–8.

Yasuhiro, S., Atsushi, K., Masaki, Y. & Masako, K. (2019). *Eur. J. Inorg. Chem.* 1011–1017.

full crystallographic data

IUCrData (2019). **4**, x191207 [https://doi.org/10.1107/S2414314619012070]

[*SP*-4-2]-(Acetonitrile-κN)chlorido[2-(4,6-diphenylpyridin-2-yl)phenyl-κ^2C^1,N]platinum(II)

Chengjian Fang, Zhao Wang, Zhongjian Cong, Shengli Li and Fei Li

[*SP*-4-2]-(Acetonitrile-κN)chlorido[2-(4,6-diphenylpyridin-2-yl)phenyl-κ^2C^1,N]platinum(II)

Crystal data

$[Pt(C_{23}H_{16}N)Cl(C_2H_3N)]$
M_r = 577.96
Triclinic, $P\overline{1}$
a = 7.5024 (6) Å
b = 7.8654 (6) Å
c = 17.6956 (14) Å
α = 93.063 (1)°
β = 101.796 (1)°
γ = 92.372 (1)°
V = 1019.23 (14) Å^3
Z = 2
$F(000)$ = 556
D_x = 1.883 Mg m^{-3}
Mo $K\alpha$ radiation, λ = 0.71073 Å
Cell parameters from 6030 reflections
θ = 2.4–27.1°
μ = 7.03 mm^{-1}
T = 293 K
Block, yellow
0.3 × 0.2 × 0.2 mm

Data collection

Bruker APEXII CCD area detector diffractometer
Graphite monochromator
phi and ω scans
Absorption correction: multi-scan (SADABS; Bruker, 2009)
T_{min} = 0.431, T_{max} = 0.746
7516 measured reflections
3731 independent reflections
3545 reflections with $I > 2\sigma(I)$
R_{int} = 0.025
θ_{max} = 25.5°, θ_{min} = 2.4°
h = −8→9
k = −9→9
l = −21→21

Refinement

Refinement on F^2
Least-squares matrix: full
$R[F^2 > 2\sigma(F^2)]$ = 0.019
$wR(F^2)$ = 0.048
S = 1.05
3731 reflections
264 parameters
0 restraints
Hydrogen site location: inferred from neighbouring sites
H-atom parameters constrained
$w = 1/[\sigma^2(F_o^2) + (0.0176P)^2 + 0.2638P]$ where $P = (F_o^2 + 2F_c^2)/3$
$(\Delta/\sigma)_{max}$ = 0.003
$\Delta\rho_{max}$ = 0.83 e Å^{-3}
$\Delta\rho_{min}$ = −0.79 e Å^{-3}
Extinction correction: SHELXL2016/4 (Sheldrick 2015), $Fc^*=kFc[1+0.001xFc^2\lambda^3/\sin(2\theta)]^{-1/4}$
Extinction coefficient: 0.0005 (2)

Special details

Geometry. All esds (except the esd in the dihedral angle between two l.s. planes) are estimated using the full covariance matrix. The cell esds are taken into account individually in the estimation of esds in distances, angles and torsion angles; correlations between esds in cell parameters are only used when they are defined by crystal symmetry. An approximate (isotropic) treatment of cell esds is used for estimating esds involving l.s. planes.

Refinement. H atoms bonded to C atoms were placed in idealized positions and refined as riding to their parent atoms with isotropic displacement parameters U_{iso} = 1.2 U_{eq} of the corresponding carrier atom. All non-hydrogen atoms were refined anisotropically.

Fractional atomic coordinates and isotropic or equivalent isotropic displacement parameters (Å²)

	x	*y*	*z*	U_{iso}*/U_{eq}
C1	1.1156 (5)	0.3608 (4)	0.2502 (2)	0.0401 (7)
C2	1.2081 (5)	0.5191 (5)	0.2712 (2)	0.0519 (9)
H2	1.272281	0.542178	0.321782	0.062*
C3	1.2062 (6)	0.6426 (5)	0.2180 (3)	0.0629 (11)
H3	1.268544	0.747458	0.233415	0.076*
C4	1.1129 (6)	0.6118 (5)	0.1427 (3)	0.0639 (11)
H4	1.111549	0.695878	0.107641	0.077*
C5	1.0212 (5)	0.4559 (5)	0.1193 (2)	0.0540 (9)
H5	0.958450	0.434496	0.068398	0.065*
C6	1.0232 (4)	0.3309 (4)	0.17231 (19)	0.0413 (7)
C7	0.9257 (4)	0.1635 (4)	0.15328 (18)	0.0380 (7)
C8	0.8518 (4)	0.0982 (4)	0.07915 (19)	0.0423 (7)
H8	0.866177	0.160857	0.037473	0.051*
C9	0.7563 (4)	−0.0594 (4)	0.06540 (18)	0.0383 (7)
C10	0.7339 (5)	−0.1397 (4)	0.13105 (18)	0.0408 (7)
H10	0.665178	−0.242549	0.124982	0.049*
C11	0.8096 (4)	−0.0729 (4)	0.20525 (18)	0.0371 (7)
C12	0.7610 (4)	−0.1563 (4)	0.27160 (18)	0.0394 (7)
C13	0.7726 (5)	−0.3310 (4)	0.2770 (2)	0.0471 (8)
H13	0.818067	−0.395508	0.240332	0.057*
C14	0.7165 (6)	−0.4090 (5)	0.3370 (2)	0.0615 (11)
H14	0.726329	−0.525850	0.340825	0.074*
C15	0.6461 (6)	−0.3159 (6)	0.3912 (2)	0.0681 (12)
H15	0.608426	−0.369571	0.431328	0.082*
C16	0.6320 (5)	−0.1439 (6)	0.3856 (2)	0.0616 (11)
H16	0.583755	−0.080896	0.421891	0.074*
C17	0.6891 (5)	−0.0625 (5)	0.3263 (2)	0.0494 (8)
H17	0.679410	0.054469	0.323126	0.059*
C18	0.6785 (4)	−0.1317 (4)	−0.01394 (19)	0.0404 (7)
C19	0.6816 (5)	−0.0405 (5)	−0.0784 (2)	0.0501 (9)
H19	0.735190	0.069442	−0.071596	0.060*
C20	0.6080 (5)	−0.1070 (6)	−0.1525 (2)	0.0562 (10)
H20	0.613632	−0.041727	−0.194384	0.067*
C21	0.5280 (6)	−0.2657 (5)	−0.1649 (2)	0.0586 (10)
H21	0.477181	−0.310203	−0.214767	0.070*
C22	0.5235 (8)	−0.3592 (6)	−0.1026 (3)	0.0891 (17)

H22	0.469068	−0.468913	−0.110384	0.107*
C23	0.5976 (8)	−0.2950 (6)	−0.0287 (2)	0.0817 (16)
H23	0.593458	−0.362731	0.012463	0.098*
C24	1.1269 (5)	−0.1497 (5)	0.4249 (2)	0.0527 (9)
C25	1.1527 (8)	−0.2807 (6)	0.4812 (3)	0.0798 (15)
H25A	1.271806	−0.263594	0.513924	0.120*
H25B	1.141454	−0.391331	0.454474	0.120*
H25C	1.061876	−0.273198	0.512214	0.120*
Cl1	1.34036 (17)	0.27375 (14)	0.40961 (6)	0.0722 (3)
N1	0.9166 (3)	0.0737 (3)	0.21650 (15)	0.0349 (6)
N3	1.1089 (4)	−0.0486 (4)	0.38137 (18)	0.0514 (8)
Pt1	1.10465 (2)	0.16285 (2)	0.31332 (2)	0.03819 (6)

Atomic displacement parameters (Å²)

	U^{11}	U^{22}	U^{33}	U^{12}	U^{13}	U^{23}
C1	0.0420 (17)	0.0389 (17)	0.0381 (18)	−0.0031 (13)	0.0069 (14)	−0.0009 (14)
C2	0.053 (2)	0.046 (2)	0.052 (2)	−0.0112 (16)	0.0059 (17)	−0.0024 (16)
C3	0.075 (3)	0.044 (2)	0.067 (3)	−0.0193 (19)	0.014 (2)	0.0003 (19)
C4	0.081 (3)	0.044 (2)	0.065 (3)	−0.0128 (19)	0.013 (2)	0.0154 (19)
C5	0.067 (2)	0.046 (2)	0.047 (2)	−0.0072 (17)	0.0081 (18)	0.0104 (16)
C6	0.0460 (18)	0.0375 (17)	0.0389 (18)	−0.0032 (14)	0.0062 (14)	0.0033 (14)
C7	0.0384 (16)	0.0388 (17)	0.0354 (17)	−0.0022 (13)	0.0054 (13)	0.0036 (13)
C8	0.0495 (19)	0.0433 (18)	0.0324 (17)	−0.0046 (14)	0.0047 (14)	0.0073 (14)
C9	0.0358 (16)	0.0437 (17)	0.0338 (17)	0.0028 (13)	0.0039 (13)	0.0013 (13)
C10	0.0476 (18)	0.0377 (16)	0.0336 (17)	−0.0065 (14)	0.0025 (14)	0.0004 (13)
C11	0.0397 (17)	0.0348 (16)	0.0356 (17)	−0.0020 (13)	0.0059 (13)	0.0030 (13)
C12	0.0416 (17)	0.0445 (18)	0.0290 (16)	−0.0108 (14)	0.0026 (13)	0.0024 (13)
C13	0.059 (2)	0.0447 (19)	0.0339 (17)	−0.0111 (16)	0.0034 (15)	0.0024 (14)
C14	0.083 (3)	0.054 (2)	0.042 (2)	−0.022 (2)	0.002 (2)	0.0096 (17)
C15	0.085 (3)	0.078 (3)	0.037 (2)	−0.036 (2)	0.011 (2)	0.007 (2)
C16	0.063 (2)	0.084 (3)	0.037 (2)	−0.016 (2)	0.0173 (18)	−0.0098 (19)
C17	0.053 (2)	0.054 (2)	0.0389 (19)	−0.0064 (16)	0.0086 (16)	−0.0020 (16)
C18	0.0415 (17)	0.0462 (18)	0.0317 (17)	0.0006 (14)	0.0049 (14)	−0.0012 (14)
C19	0.057 (2)	0.055 (2)	0.0369 (19)	−0.0084 (17)	0.0087 (16)	0.0012 (16)
C20	0.061 (2)	0.075 (3)	0.0315 (19)	0.000 (2)	0.0093 (17)	0.0002 (17)
C21	0.064 (2)	0.070 (3)	0.037 (2)	−0.001 (2)	0.0036 (17)	−0.0103 (18)
C22	0.138 (5)	0.068 (3)	0.046 (3)	−0.045 (3)	−0.001 (3)	−0.009 (2)
C23	0.135 (5)	0.061 (3)	0.040 (2)	−0.033 (3)	0.003 (3)	0.0040 (19)
C24	0.061 (2)	0.051 (2)	0.039 (2)	−0.0072 (17)	−0.0053 (17)	0.0055 (17)
C25	0.100 (4)	0.068 (3)	0.063 (3)	−0.005 (3)	−0.007 (3)	0.028 (2)
Cl1	0.0869 (7)	0.0672 (6)	0.0457 (6)	−0.0237 (6)	−0.0198 (5)	0.0035 (5)
N1	0.0388 (14)	0.0352 (13)	0.0295 (13)	0.0012 (11)	0.0040 (11)	0.0040 (11)
N3	0.0583 (19)	0.0497 (17)	0.0391 (17)	−0.0074 (14)	−0.0047 (14)	0.0024 (14)
Pt1	0.04378 (9)	0.03880 (9)	0.02922 (8)	−0.00374 (5)	0.00262 (5)	0.00073 (5)

Geometric parameters (Å, º)

C1—C2	1.394 (5)	C12—C17	1.394 (5)
C1—C6	1.412 (5)	C13—H13	0.9300
Pt1—N1	2.054 (3)	C13—C14	1.383 (5)
Pt1—N3	2.102 (3)	C14—H14	0.9300
Pt1—C1	1.973 (3)	C14—C15	1.378 (6)
Pt1—Cl1	2.2964 (10)	C15—H15	0.9300
C2—H2	0.9300	C15—C16	1.369 (6)
C2—C3	1.387 (5)	C16—H16	0.9300
C3—H3	0.9300	C16—C17	1.388 (5)
C3—C4	1.376 (6)	C17—H17	0.9300
C4—H4	0.9300	C18—C19	1.383 (5)
C4—C5	1.381 (5)	C18—C23	1.386 (5)
C5—H5	0.9300	C19—H19	0.9300
C5—C6	1.393 (5)	C19—C20	1.380 (5)
C6—C7	1.467 (4)	C20—H20	0.9300
C7—C8	1.378 (4)	C20—C21	1.350 (6)
C7—N1	1.366 (4)	C21—H21	0.9300
C8—H8	0.9300	C21—C22	1.362 (6)
C8—C9	1.390 (4)	C22—H22	0.9300
C9—C10	1.388 (4)	C22—C23	1.373 (6)
C9—C18	1.479 (4)	C23—H23	0.9300
C10—H10	0.9300	C24—C25	1.463 (5)
C10—C11	1.386 (4)	C24—N3	1.130 (5)
C11—C12	1.476 (4)	C25—H25A	0.9600
C11—N1	1.359 (4)	C25—H25B	0.9600
C12—C13	1.387 (5)	C25—H25C	0.9600
C2—C1—C6	117.2 (3)	C16—C15—C14	119.5 (4)
C2—C1—Pt1	128.9 (3)	C16—C15—H15	120.3
C6—C1—Pt1	113.9 (2)	C15—C16—H16	119.7
C1—C2—H2	119.4	C15—C16—C17	120.7 (4)
C3—C2—C1	121.1 (4)	C17—C16—H16	119.7
C3—C2—H2	119.4	C12—C17—H17	120.0
C2—C3—H3	119.6	C16—C17—C12	120.0 (4)
C4—C3—C2	120.7 (4)	C16—C17—H17	120.0
C4—C3—H3	119.6	C19—C18—C9	122.1 (3)
C3—C4—H4	120.0	C19—C18—C23	115.5 (3)
C3—C4—C5	120.0 (4)	C23—C18—C9	122.3 (3)
C5—C4—H4	120.0	C18—C19—H19	118.8
C4—C5—H5	120.2	C20—C19—C18	122.4 (4)
C4—C5—C6	119.6 (4)	C20—C19—H19	118.8
C6—C5—H5	120.2	C19—C20—H20	119.7
C1—C6—C7	115.1 (3)	C21—C20—C19	120.7 (4)
C5—C6—C1	121.3 (3)	C21—C20—H20	119.7
C5—C6—C7	123.5 (3)	C20—C21—H21	120.8
C8—C7—C6	124.4 (3)	C20—C21—C22	118.5 (4)

N1—C7—C6	113.7 (3)	C22—C21—H21	120.8
N1—C7—C8	121.9 (3)	C21—C22—H22	119.3
C7—C8—H8	119.3	C21—C22—C23	121.4 (4)
C7—C8—C9	121.3 (3)	C23—C22—H22	119.3
C9—C8—H8	119.3	C18—C23—H23	119.2
C8—C9—C18	121.8 (3)	C22—C23—C18	121.6 (4)
C10—C9—C8	115.3 (3)	C22—C23—H23	119.2
C10—C9—C18	122.9 (3)	N3—C24—C25	179.2 (5)
C9—C10—H10	118.7	C24—C25—H25A	109.5
C11—C10—C9	122.7 (3)	C24—C25—H25B	109.5
C11—C10—H10	118.7	C24—C25—H25C	109.5
C10—C11—C12	118.8 (3)	H25A—C25—H25B	109.5
N1—C11—C10	120.4 (3)	H25A—C25—H25C	109.5
N1—C11—C12	120.6 (3)	H25B—C25—H25C	109.5
C13—C12—C11	120.5 (3)	C7—N1—Pt1	112.9 (2)
C13—C12—C17	119.1 (3)	C11—N1—C7	117.7 (3)
C17—C12—C11	120.2 (3)	C11—N1—Pt1	128.6 (2)
C12—C13—H13	120.0	C24—N3—Pt1	171.1 (3)
C14—C13—C12	119.9 (4)	C1—Pt1—Cl1	92.94 (10)
C14—C13—H13	120.0	C1—Pt1—N1	81.37 (12)
C13—C14—H14	119.6	C1—Pt1—N3	176.81 (12)
C15—C14—C13	120.9 (4)	N1—Pt1—Cl1	171.86 (7)
C15—C14—H14	119.6	N1—Pt1—N3	100.50 (11)
C14—C15—H15	120.3	N3—Pt1—Cl1	84.92 (9)

C1—C2—C3—C4	−0.2 (7)	C10—C11—C12—C13	50.2 (4)
C1—C6—C7—C8	−169.2 (3)	C10—C11—C12—C17	−124.7 (3)
C1—C6—C7—N1	9.6 (4)	C10—C11—N1—C7	8.8 (4)
C2—C1—C6—C5	−1.5 (5)	C10—C11—N1—Pt1	−159.7 (2)
C2—C1—C6—C7	−179.2 (3)	C11—C12—C13—C14	−176.2 (3)
C2—C3—C4—C5	−0.5 (7)	C11—C12—C17—C16	175.6 (3)
C3—C4—C5—C6	0.3 (7)	C12—C11—N1—C7	−166.6 (3)
C4—C5—C6—C1	0.7 (6)	C12—C11—N1—Pt1	25.0 (4)
C4—C5—C6—C7	178.3 (4)	C12—C13—C14—C15	1.0 (6)
C5—C6—C7—C8	13.1 (5)	C13—C12—C17—C16	0.6 (5)
C5—C6—C7—N1	−168.1 (3)	C13—C14—C15—C16	−0.1 (7)
C6—C1—C2—C3	1.2 (5)	C14—C15—C16—C17	−0.5 (7)
C6—C7—C8—C9	−178.0 (3)	C15—C16—C17—C12	0.2 (6)
C6—C7—N1—C11	171.9 (3)	C17—C12—C13—C14	−1.2 (5)
C6—C7—N1—Pt1	−17.9 (3)	C18—C9—C10—C11	178.9 (3)
C7—C8—C9—C10	3.1 (5)	C18—C19—C20—C21	0.4 (6)
C7—C8—C9—C18	−179.2 (3)	C19—C18—C23—C22	−1.0 (7)
C8—C7—N1—C11	−9.2 (4)	C19—C20—C21—C22	−0.7 (7)
C8—C7—N1—Pt1	161.0 (3)	C20—C21—C22—C23	0.2 (8)
C8—C9—C10—C11	−3.5 (5)	C21—C22—C23—C18	0.7 (9)
C8—C9—C18—C19	−6.0 (5)	C23—C18—C19—C20	0.5 (6)
C8—C9—C18—C23	174.0 (4)	N1—C7—C8—C9	3.2 (5)
C9—C10—C11—C12	172.9 (3)	N1—C11—C12—C13	−134.3 (3)

C9—C10—C11—N1	−2.5 (5)	N1—C11—C12—C17	50.8 (4)
C9—C18—C19—C20	−179.5 (3)	Pt1—C1—C2—C3	177.6 (3)
C9—C18—C23—C22	179.0 (5)	Pt1—C1—C6—C5	−178.4 (3)
C10—C9—C18—C19	171.4 (3)	Pt1—C1—C6—C7	3.9 (4)
C10—C9—C18—C23	−8.6 (5)		