Acta Crystallographica Section E
Structure Reports Online
ISSN 1600-5368

Bis(μ-5-carboxybenzene-1,3-dicarboxylato)-$\kappa^3O^1,O^{1'}:O^3;\kappa^3O^3:O^1,O^{1'}$-bis[(2-phenyl-1,3,7,8-tetraazacyclopenta[*l*]phenanthrene-κ^2N^7,N^8)lead(II)]

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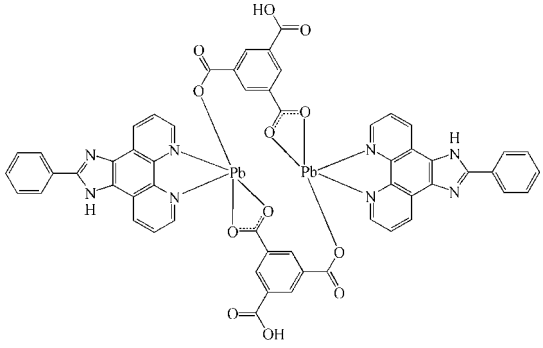
Received 25 September 2010; accepted 8 November 2010

Key indicators: single-crystal X-ray study; T = 292 K; mean σ(C–C) = 0.007 Å; R factor = 0.024; wR factor = 0.055; data-to-parameter ratio = 11.3.

In the title compound, $[Pb_2(C_9H_4O_6)_2(C_{19}H_{12}N_4)_2]$, the Pb^{II} atom is five-coordinated by two N atoms from a chelating 2-phenyl-1*H*-1,3,7,8-tetraazacyclopenta[*l*]phenanthrene (*L*) ligand and three O atoms from two Hbtc ligands (H_3btc is benzene-1,3,5-tricarboxylic acid), resulting in a distorted PbN_2O_3 coordination. Two Pb^{II} atoms are bridged by the Hbtc ligands, forming a discrete centrosymmetric dinuclear complex. Intermolecular N—H···O and O—H···O hydrogen bonds and π–π interactions between the pyridine and imidazole rings, and between the pyridyl rings of the *L* ligands [centroid–centroid distances = 3.600 (6) and 3.732 (6) Å] lead to a three-dimensional supramolecular structure.

Related literature

For general background to the structures and potential applications of supramolecular architectures, see: Che *et al.* (2008). For a related structure, see: Liu *et al.* (2009). For the ligand synthesis, see: Steck & Day (1943).



Experimental

Crystal data

$[Pb_2(C_9H_4O_6)_2(C_{19}H_{12}N_4)_2]$
M_r = 1423.28
Triclinic, $P\overline{1}$
a = 9.2776 (3) Å
b = 11.4409 (5) Å
c = 12.2764 (6) Å
α = 73.820 (4)°
β = 72.754 (4)°
γ = 68.680 (4)°
V = 1137.74 (9) Å^3
Z = 1
Mo $K\alpha$ radiation
μ = 7.47 mm^{-1}
T = 292 K
0.30 × 0.26 × 0.23 mm

Data collection

Oxford Diffraction Gemini R Ultra CCD diffractometer
Absorption correction: multi-scan (*CrysAlis RED*; Oxford Diffraction, 2006)
T_{min} = 0.122, T_{max} = 0.179
5399 measured reflections
3979 independent reflections
3547 reflections with $I > 2\sigma(I)$
R_{int} = 0.021

Refinement

$R[F^2 > 2\sigma(F^2)]$ = 0.024
$wR(F^2)$ = 0.055
S = 1.00
3979 reflections
352 parameters
H-atom parameters constrained
$\Delta\rho_{max}$ = 0.82 e Å^{-3}
$\Delta\rho_{min}$ = −1.28 e Å^{-3}

Table 1
Selected bond lengths (Å).

Pb—N1	2.561 (4)	Pb—O3	2.530 (3)
Pb—N2	2.449 (3)	Pb—O6^{i}	2.903 (3)
Pb—O1^{i}	2.342 (3)		

Symmetry code: (i) $-x+1, -y+1, -z+1$.

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

D—H···A	D—H	H···A	D···A	D—H···A
N4—H4···O2^{ii}	0.86	1.97	2.815 (5)	169
O4—H4A···O6^{iii}	0.82	1.83	2.653 (4)	177

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

Data collection: *CrysAlis CCD* (Oxford Diffraction, 2006); cell refinement: *CrysAlis RED* (Oxford Diffraction, 2006); data reduction: *CrysAlis RED*; program(s) used to solve structure: *SHELXTL* (Sheldrick, 2008); program(s) used to refine structure: *SHELXTL*; molecular graphics: *SHELXTL* and *DIAMOND* (Brandenburg, 1999); software used to prepare material for publication: *SHELXTL*.

The authors thank Jiangsu University for supporting this work.

Supplementary data and figures for this paper are available from the IUCr electronic archives (Reference: HY2360).

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supporting information

Acta Cryst. (2010). E**66**, m1651–m1652 [https://doi.org/10.1107/S1600536810045812]

Bis(*μ*-5-carboxybenzene-1,3-dicarboxylato)-$\kappa^3O^1,O^{1'}:O^3;\kappa^3O^3:O^1,O^{1'}$-bis[(2-phenyl-1,3,7,8-tetraazacyclopenta[*l*]phenanthrene-κ^2N^7,N^8)lead(II)]

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S1. Comment

The design and construction of supramolecular architectures have received considerable attention in recent years, mostly motivated by their intriguing structural features and potential applications in catalysis, magnetism, molecular adsorption, non-linear optics and molecular sensing (Che *et al.*, 2008). 2-Phenyl-1*H*-1,3,7,8-tetraazacyclopenta[*l*]phenanthrene (*L*) as an important phenanthroline derivative possesses fruitful aromatic systems and is a good candidate for the construction of metal–organic supramolecular architectures (Liu *et al.*, 2009). In this paper, we selected benzene-1,3,5-tricarboxylic acid (H_3btc) as a linker and *L* as a secondary ligand, resulting in the title complex.

In the title compound, the Pb^{II} atom is surrounded by two N atoms from one *L* ligand and three O atoms from two Hbtc ligands (Fig. 1). The neighboring two Pb^{II} atoms are bridged by the two Hbtc ligands, forming a sixteen-membered ring with a long Pb···Pb distance of 8.3037 (5) Å. Adjacent dimers are further linked through intermolecular N—H···O and O—H···O hydrogen bonds and *π*–*π* interactions between the pyridyl and imidazole rings and between the pyridyl rings of the *L* ligands [centroid–centroid distances = 3.600 (6) and 3.732 (6) Å], leading to a three-dimensional supramolecular structure (Fig. 2).

S2. Experimental

The *L* ligand was synthesized according to the literature method (Steck & Day, 1943). The title compound was synthesized under hydrothermal conditions. A mixture of *L* (0.060 g, 0.2 mmol), H_3btc (0.042 g, 0.2 mmol), $Pb(NO_3)_2$ (0.066 g, 0.2 mmol) and water (10 ml) in a mole ratio of 1:1:1:5000 was placed in a 25 ml Teflon-lined autoclave and heated for 3 d at 433 K under autogenous pressure. Upon cooling and opening the bomb, yellow block-shaped crystals were obtained, washed with H_2O and dried in air (yield: 65% based on Pb).

S3. Refinement

H atoms on C and N atoms were positioned geometrically and refined as riding atoms, with C—H = 0.93 and N—H = 0.86 Å and U_{iso}(H) = 1.2U_{eq}(C,N). H atom of the carboxyl group was located from a difference Fourier map and refined as riding, with O—H = 0.82 Å and U_{iso}(H) = 1.5U_{eq}(O).

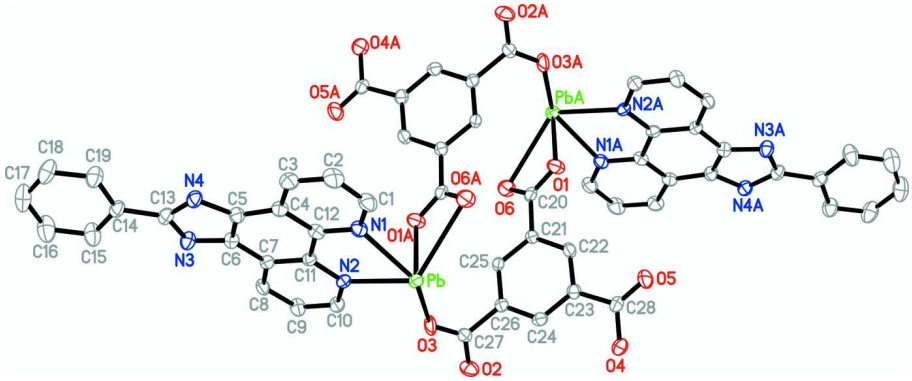

Figure 1

Molecular structure of the title compound. Displacement ellipsoids are drawn at the 50% probability level. H atoms have been omitted for clarity. [Symmetry code: (A) 1-*x*, 1-*y*, 1-*z*.]

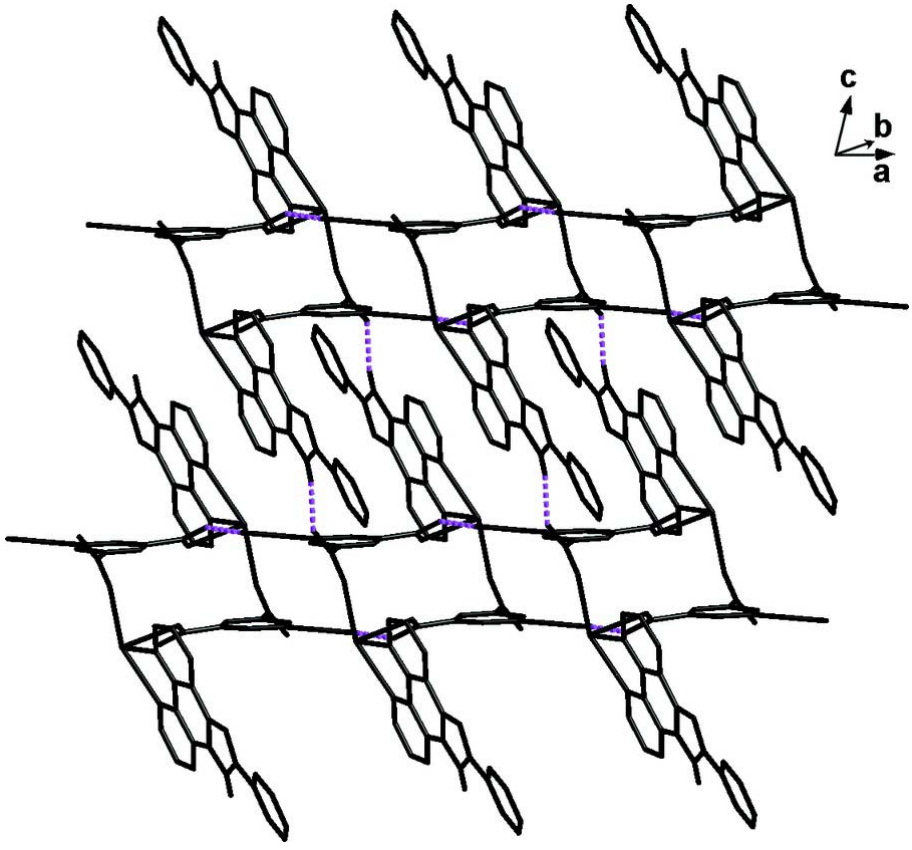

Figure 2

Crystal packing of the title compound, with hydrogen bonds indicated by dotted lines.

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Hall symbol: -P 1
$a = 9.2776$ (3) Å
$b = 11.4409$ (5) Å
$c = 12.2764$ (6) Å
$\alpha = 73.820$ (4)°
$\beta = 72.754$ (4)°
$\gamma = 68.680$ (4)°
$V = 1137.74$ (9) Å^3
$Z = 1$
$F(000) = 684$
$D_x = 2.077$ Mg m^{-3}
Mo $K\alpha$ radiation, $\lambda = 0.71073$ Å
Cell parameters from 6223 reflections
$\theta = 4.3$–$29.1°$
$\mu = 7.47$ mm^{-1}
$T = 292$ K
Block, yellow
0.30 × 0.26 × 0.23 mm

Data collection

Oxford Diffraction Gemini R Ultra CCD diffractometer
Radiation source: fine-focus sealed tube
Graphite monochromator
ω scans
Absorption correction: multi-scan (*CrysAlis RED*; Oxford Diffraction, 2006)
$T_{min} = 0.122$, $T_{max} = 0.179$
5399 measured reflections
3979 independent reflections
3547 reflections with $I > 2\sigma(I)$
$R_{int} = 0.021$
$\theta_{max} = 25.0°$, $\theta_{min} = 4.3°$
$h = -11 \rightarrow 11$
$k = -12 \rightarrow 13$
$l = -14 \rightarrow 14$

Refinement

Refinement on F^2
Least-squares matrix: full
$R[F^2 > 2\sigma(F^2)] = 0.024$
$wR(F^2) = 0.055$
$S = 1.00$
3979 reflections
352 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
$w = 1/[\sigma^2(F_o^2) + (0.0349P)^2]$ where $P = (F_o^2 + 2F_c^2)/3$
$(\Delta/\sigma)_{max} = 0.006$
$\Delta\rho_{max} = 0.82$ e Å^{-3}
$\Delta\rho_{min} = -1.28$ e Å^{-3}

Fractional atomic coordinates and isotropic or equivalent isotropic displacement parameters (Å^2)

	x	*y*	*z*	U_{iso}*/U_{eq}
C1	0.7189 (5)	0.2900 (4)	0.0863 (4)	0.0311 (11)
H1	0.6208	0.3528	0.0892	0.037*
C2	0.8282 (6)	0.2868 (5)	−0.0199 (4)	0.0340 (11)
H2	0.8024	0.3455	−0.0862	0.041*
C3	0.9727 (5)	0.1970 (4)	−0.0252 (4)	0.0284 (10)
H3	1.0473	0.1940	−0.0952	0.034*
C4	1.0091 (5)	0.1086 (4)	0.0756 (4)	0.0230 (9)
C5	1.1546 (5)	0.0094 (4)	0.0827 (4)	0.0235 (9)
C6	1.1849 (5)	−0.0717 (4)	0.1856 (4)	0.0219 (9)
C7	1.0700 (4)	−0.0637 (4)	0.2914 (3)	0.0183 (8)
C8	1.0944 (5)	−0.1447 (4)	0.3980 (4)	0.0236 (9)

H8	1.1921	−0.2058	0.4036	0.028*
C9	0.9727 (5)	−0.1323 (4)	0.4929 (4)	0.0257 (10)
H9	0.9871	−0.1848	0.5643	0.031*
C10	0.8272 (5)	−0.0415 (4)	0.4835 (4)	0.0239 (9)
H10	0.7448	−0.0361	0.5491	0.029*
C11	0.9200 (5)	0.0296 (4)	0.2884 (3)	0.0188 (8)
C12	0.8917 (5)	0.1180 (4)	0.1795 (3)	0.0207 (9)
C13	1.3926 (5)	−0.1295 (4)	0.0540 (4)	0.0251 (9)
C14	1.5482 (5)	−0.2019 (4)	−0.0049 (4)	0.0248 (9)
C19	1.6161 (5)	−0.1588 (5)	−0.1198 (4)	0.0335 (11)
H19	1.5631	−0.0815	−0.1614	0.040*
C18	1.7622 (6)	−0.2314 (5)	−0.1714 (4)	0.0407 (13)
H18	1.8074	−0.2031	−0.2483	0.049*
C17	1.8423 (6)	−0.3458 (6)	−0.1105 (5)	0.0493 (15)
H17	1.9410	−0.3941	−0.1462	0.059*
C26	0.2977 (4)	0.2718 (4)	0.6601 (3)	0.0183 (8)
C24	0.1360 (5)	0.3197 (4)	0.6642 (3)	0.0219 (9)
H24	0.0784	0.2638	0.6764	0.026*
C23	0.0600 (5)	0.4498 (4)	0.6502 (4)	0.0206 (9)
C22	0.1453 (5)	0.5317 (4)	0.6363 (4)	0.0223 (9)
H22	0.0948	0.6194	0.6255	0.027*
C21	0.3059 (4)	0.4849 (4)	0.6381 (4)	0.0203 (9)
C25	0.3821 (4)	0.3546 (4)	0.6483 (3)	0.0191 (9)
H25	0.4901	0.3226	0.6472	0.023*
C27	0.3789 (5)	0.1300 (4)	0.6694 (4)	0.0204 (9)
C28	−0.1124 (5)	0.5072 (4)	0.6481 (4)	0.0230 (9)
C20	0.3893 (5)	0.5775 (4)	0.6332 (4)	0.0224 (9)
C16	1.7755 (6)	−0.3883 (6)	0.0038 (5)	0.0504 (15)
H16	1.8298	−0.4651	0.0452	0.060*
C15	1.6285 (6)	−0.3171 (5)	0.0564 (4)	0.0380 (12)
H15	1.5834	−0.3462	0.1330	0.046*
N1	0.7482 (4)	0.2074 (3)	0.1833 (3)	0.0232 (8)
N2	0.8010 (4)	0.0378 (3)	0.3847 (3)	0.0191 (7)
N4	1.2883 (4)	−0.0273 (3)	−0.0012 (3)	0.0244 (8)
H4	1.3037	0.0068	−0.0739	0.029*
N3	1.3343 (4)	−0.1584 (4)	0.1674 (3)	0.0259 (8)
O3	0.4905 (4)	0.0925 (3)	0.5863 (3)	0.0346 (8)
O2	0.3312 (4)	0.0561 (3)	0.7562 (3)	0.0312 (7)
O1	0.3317 (3)	0.6937 (3)	0.5876 (3)	0.0281 (7)
O6	0.5074 (3)	0.5389 (3)	0.6780 (3)	0.0380 (8)
O5	−0.1757 (3)	0.6197 (3)	0.6241 (3)	0.0371 (8)
O4	−0.1880 (3)	0.4204 (3)	0.6780 (3)	0.0395 (8)
H4A	−0.2815	0.4561	0.6755	0.059*
Pb	0.537207 (17)	0.188377 (15)	0.371460 (14)	0.02330 (7)

Atomic displacement parameters (Å²)

	U^{11}	U^{22}	U^{33}	U^{12}	U^{13}	U^{23}
C1	0.032 (2)	0.023 (2)	0.035 (3)	−0.0044 (19)	−0.012 (2)	0.000 (2)
C2	0.042 (3)	0.029 (3)	0.024 (2)	−0.007 (2)	−0.014 (2)	0.007 (2)
C3	0.036 (2)	0.028 (2)	0.017 (2)	−0.011 (2)	−0.0024 (19)	0.000 (2)
C4	0.026 (2)	0.023 (2)	0.020 (2)	−0.0090 (18)	−0.0063 (18)	−0.0022 (18)
C5	0.024 (2)	0.024 (2)	0.023 (2)	−0.0074 (18)	−0.0021 (18)	−0.0083 (19)
C6	0.022 (2)	0.024 (2)	0.021 (2)	−0.0061 (18)	−0.0059 (18)	−0.0061 (19)
C7	0.020 (2)	0.021 (2)	0.016 (2)	−0.0078 (16)	−0.0030 (17)	−0.0051 (17)
C8	0.026 (2)	0.018 (2)	0.022 (2)	−0.0015 (17)	−0.0045 (18)	−0.0030 (18)
C9	0.031 (2)	0.024 (2)	0.015 (2)	−0.0024 (19)	−0.0059 (19)	−0.0004 (18)
C10	0.027 (2)	0.024 (2)	0.016 (2)	−0.0069 (18)	−0.0001 (18)	−0.0027 (19)
C11	0.022 (2)	0.020 (2)	0.017 (2)	−0.0097 (17)	−0.0022 (17)	−0.0051 (17)
C12	0.028 (2)	0.019 (2)	0.016 (2)	−0.0071 (17)	−0.0076 (18)	−0.0024 (17)
C13	0.022 (2)	0.029 (2)	0.022 (2)	−0.0086 (18)	−0.0009 (18)	−0.007 (2)
C14	0.023 (2)	0.032 (3)	0.021 (2)	−0.0108 (19)	0.0004 (18)	−0.010 (2)
C19	0.030 (2)	0.039 (3)	0.027 (2)	−0.006 (2)	−0.002 (2)	−0.009 (2)
C18	0.031 (3)	0.059 (4)	0.026 (3)	−0.010 (2)	0.003 (2)	−0.013 (3)
C17	0.033 (3)	0.056 (4)	0.050 (4)	0.003 (3)	−0.003 (3)	−0.027 (3)
C26	0.020 (2)	0.020 (2)	0.013 (2)	−0.0057 (16)	−0.0014 (16)	−0.0024 (17)
C24	0.023 (2)	0.023 (2)	0.022 (2)	−0.0109 (18)	−0.0027 (18)	−0.0046 (18)
C23	0.019 (2)	0.022 (2)	0.022 (2)	−0.0048 (17)	−0.0064 (17)	−0.0042 (18)
C22	0.022 (2)	0.017 (2)	0.024 (2)	−0.0020 (17)	−0.0048 (18)	−0.0033 (18)
C21	0.018 (2)	0.018 (2)	0.023 (2)	−0.0045 (16)	−0.0051 (17)	−0.0022 (18)
C25	0.0150 (19)	0.018 (2)	0.020 (2)	−0.0027 (16)	−0.0007 (16)	−0.0034 (17)
C27	0.020 (2)	0.019 (2)	0.025 (2)	−0.0054 (17)	−0.0094 (19)	−0.0044 (19)
C28	0.017 (2)	0.026 (2)	0.024 (2)	−0.0057 (18)	−0.0034 (18)	−0.0049 (19)
C20	0.017 (2)	0.024 (2)	0.025 (2)	−0.0067 (17)	0.0019 (18)	−0.0089 (19)
C16	0.044 (3)	0.046 (3)	0.047 (3)	0.006 (3)	−0.010 (3)	−0.014 (3)
C15	0.039 (3)	0.036 (3)	0.027 (3)	0.003 (2)	−0.007 (2)	−0.008 (2)
N1	0.0248 (18)	0.0207 (19)	0.0231 (19)	−0.0057 (15)	−0.0088 (15)	−0.0008 (16)
N2	0.0187 (16)	0.0216 (18)	0.0160 (18)	−0.0080 (14)	−0.0015 (14)	−0.0024 (15)
N4	0.0246 (18)	0.027 (2)	0.0182 (19)	−0.0072 (15)	0.0006 (15)	−0.0051 (16)
N3	0.0224 (18)	0.030 (2)	0.021 (2)	−0.0047 (16)	−0.0026 (15)	−0.0052 (17)
O3	0.0308 (17)	0.0241 (17)	0.0301 (18)	0.0034 (14)	0.0087 (14)	−0.0088 (15)
O2	0.0413 (18)	0.0236 (17)	0.0254 (17)	−0.0120 (14)	−0.0078 (14)	0.0033 (14)
O1	0.0315 (16)	0.0210 (16)	0.0350 (18)	−0.0103 (13)	−0.0128 (14)	−0.0013 (14)
O6	0.0233 (16)	0.0293 (18)	0.067 (2)	−0.0096 (14)	−0.0204 (17)	−0.0045 (17)
O5	0.0235 (16)	0.0238 (18)	0.060 (2)	−0.0008 (13)	−0.0140 (16)	−0.0062 (16)
O4	0.0156 (14)	0.0305 (18)	0.071 (2)	−0.0068 (13)	−0.0128 (16)	−0.0040 (17)
Pb	0.01918 (9)	0.02098 (10)	0.02834 (11)	−0.00717 (6)	−0.00471 (7)	−0.00173 (7)

Geometric parameters (Å, º)

C1—N1	1.328 (6)	C18—H18	0.9300
C1—C2	1.394 (7)	C17—C16	1.383 (8)
C1—H1	0.9300	C17—H17	0.9300

C2—C3	1.357 (6)	C26—C25	1.388 (6)
C2—H2	0.9300	C26—C24	1.388 (5)
C3—C4	1.403 (6)	C26—C27	1.508 (5)
C3—H3	0.9300	C24—C23	1.382 (6)
C4—C12	1.412 (6)	C24—H24	0.9300
C4—C5	1.421 (6)	C23—C22	1.379 (6)
C5—N4	1.371 (5)	C23—C28	1.497 (5)
C5—C6	1.380 (6)	C22—C21	1.393 (5)
C6—N3	1.377 (5)	C22—H22	0.9300
C6—C7	1.416 (6)	C21—C25	1.386 (5)
C7—C8	1.404 (6)	C21—C20	1.502 (6)
C7—C11	1.416 (5)	C25—H25	0.9300
C8—C9	1.359 (6)	C27—O2	1.239 (5)
C8—H8	0.9300	C27—O3	1.262 (5)
C9—C10	1.386 (6)	C28—O5	1.196 (5)
C9—H9	0.9300	C28—O4	1.327 (5)
C10—N2	1.324 (5)	C20—O6	1.253 (5)
C10—H10	0.9300	C20—O1	1.269 (5)
C11—N2	1.356 (5)	C16—C15	1.380 (7)
C11—C12	1.463 (6)	C16—H16	0.9300
C12—N1	1.350 (5)	C15—H15	0.9300
C13—N3	1.330 (6)	Pb—N1	2.561 (4)
C13—N4	1.374 (5)	Pb—N2	2.449 (3)
C13—C14	1.462 (6)	Pb—O1^{i}	2.342 (3)
C14—C15	1.387 (6)	Pb—O3	2.530 (3)
C14—C19	1.394 (6)	Pb—O6^{i}	2.903 (3)
C19—C18	1.376 (6)	O4—H4A	0.8200
C19—H19	0.9300	N4—H4	0.8600
C18—C17	1.379 (8)		

N1—C1—C2	123.1 (4)	C23—C24—C26	120.5 (4)
N1—C1—H1	118.5	C23—C24—H24	119.8
C2—C1—H1	118.5	C26—C24—H24	119.8
C3—C2—C1	119.1 (4)	C22—C23—C24	119.3 (4)
C3—C2—H2	120.4	C22—C23—C28	117.9 (4)
C1—C2—H2	120.4	C24—C23—C28	122.8 (4)
C2—C3—C4	119.6 (4)	C23—C22—C21	121.0 (4)
C2—C3—H3	120.2	C23—C22—H22	119.5
C4—C3—H3	120.2	C21—C22—H22	119.5
C3—C4—C12	117.7 (4)	C25—C21—C22	119.2 (4)
C3—C4—C5	125.7 (4)	C25—C21—C20	122.2 (3)
C12—C4—C5	116.5 (4)	C22—C21—C20	118.6 (4)
N4—C5—C6	106.2 (3)	C21—C25—C26	120.1 (3)
N4—C5—C4	131.0 (4)	C21—C25—H25	119.9
C6—C5—C4	122.8 (4)	C26—C25—H25	119.9
N3—C6—C5	110.6 (4)	O2—C27—O3	123.3 (4)
N3—C6—C7	127.5 (4)	O2—C27—C26	118.9 (4)
C5—C6—C7	121.8 (4)	O3—C27—C26	117.7 (4)

C8—C7—C11	118.2 (4)	O5—C28—O4	123.7 (4)
C8—C7—C6	124.0 (4)	O5—C28—C23	123.3 (4)
C11—C7—C6	117.8 (3)	O4—C28—C23	113.0 (4)
C9—C8—C7	118.9 (4)	O6—C20—O1	122.8 (4)
C9—C8—H8	120.6	O6—C20—C21	119.3 (4)
C7—C8—H8	120.6	O1—C20—C21	117.8 (3)
C8—C9—C10	120.1 (4)	C17—C16—C15	120.1 (5)
C8—C9—H9	119.9	C17—C16—H16	120.0
C10—C9—H9	119.9	C15—C16—H16	120.0
N2—C10—C9	122.6 (4)	C16—C15—C14	120.0 (5)
N2—C10—H10	118.7	C16—C15—H15	120.0
C9—C10—H10	118.7	C14—C15—H15	120.0
N2—C11—C7	121.1 (3)	C1—N1—C12	118.4 (4)
N2—C11—C12	119.2 (3)	C1—N1—Pb	123.8 (3)
C7—C11—C12	119.7 (4)	C12—N1—Pb	117.3 (3)
N1—C12—C4	122.0 (4)	C10—N2—C11	119.1 (3)
N1—C12—C11	116.8 (4)	C10—N2—Pb	120.9 (3)
C4—C12—C11	121.2 (3)	C11—N2—Pb	119.9 (2)
N3—C13—N4	112.4 (4)	C5—N4—C13	106.3 (3)
N3—C13—C14	123.3 (4)	C5—N4—H4	126.9
N4—C13—C14	124.3 (4)	C13—N4—H4	126.9
C15—C14—C19	119.8 (4)	C13—N3—C6	104.5 (3)
C15—C14—C13	118.3 (4)	C27—O3—Pb	130.6 (3)
C19—C14—C13	121.9 (4)	C20—O1—Pb^{i}	107.3 (2)
C18—C19—C14	119.5 (5)	C28—O4—H4A	109.5
C18—C19—H19	120.3	O1^{i}—Pb—N2	75.71 (10)
C14—C19—H19	120.3	O1^{i}—Pb—O3	86.66 (11)
C19—C18—C17	120.8 (5)	N2—Pb—O3	79.48 (10)
C19—C18—H18	119.6	O1^{i}—Pb—N1	78.54 (11)
C17—C18—H18	119.6	N2—Pb—N1	66.07 (10)
C18—C17—C16	119.8 (5)	O3—Pb—N1	144.85 (10)
C18—C17—H17	120.1	O6^{i}—Pb—N1	79.58 (10)
C16—C17—H17	120.1	O6^{i}—Pb—N2	119.29 (10)
C25—C26—C24	119.8 (4)	O6^{i}—Pb—O1^{i}	48.50 (10)
C25—C26—C27	121.0 (3)	O6^{i}—Pb—O3	113.57 (10)
C24—C26—C27	119.3 (4)		

Symmetry code: (i) $-x+1, -y+1, -z+1$.

Hydrogen-bond geometry (Å, º)

D—H···*A*	*D*—H	H···*A*	*D*···*A*	*D*—H···*A*
N4—H4···O2^{ii}	0.86	1.97	2.815 (5)	169
O4—H4*A*···O6^{iii}	0.82	1.83	2.653 (4)	177

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