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Bis[N^3-(2-hydroxybenzoyl)pyridine-2-carboxamidrazonato-κ^3N^1,N^2,O]zinc(II)

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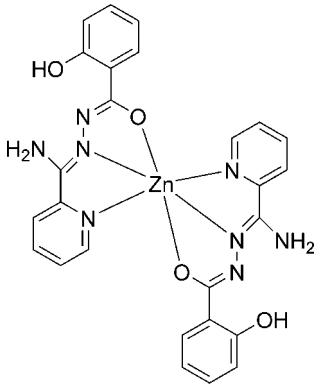
Key indicators: single-crystal X-ray study; T = 173 K; mean σ(C–C) = 0.003 Å; R factor = 0.035; wR factor = 0.098; data-to-parameter ratio = 13.2.

In the title compound, $[Zn(C_{13}H_{11}N_4O_2)_2]$, the Zn atom is coordinated in a distorted octahedral manner by pyridyl N atoms, amidrazonate N atoms and carbamoyl O atoms from two tridentate N^3-salicyloylpyridine-2-carboxamidrazonate ligands. N—H···O hydrogen bonds link the molecules to form a one-dimensional chain parallel to the b axis. The O—H···N hydrogen bonds are intramolecular and do not participate in the packing.

Related literature

For a related structure, see: Van Koningsbruggen *et al.* (1993, 1995).



Experimental

Crystal data

$[Zn(C_{13}H_{11}N_4O_2)_2]$
M_r = 575.89
Monoclinic, $P2/c$
a = 10.7704 (9) Å
b = 13.1196 (11) Å
c = 19.6427 (14) Å
β = 115.630 (4)°
V = 2502.5 (4) Å^3
Z = 4
Mo $K\alpha$ radiation
μ = 1.03 mm^{-1}
T = 173 (2) K
0.45 × 0.42 × 0.35 mm

Data collection

Bruker APEX CCD diffractometer
Absorption correction: multi-scan (*SADABS*; Bruker, 2000)
T_{min} = 0.636, T_{max} = 0.700
13224 measured reflections
4662 independent reflections
4269 reflections with $I > 2\sigma(I)$
R_{int} = 0.023

Refinement

$R[F^2 > 2\sigma(F^2)]$ = 0.035
$wR(F^2)$ = 0.098
S = 1.06
4662 reflections
354 parameters
H-atom parameters constrained
$\Delta\rho_{max}$ = 0.85 e Å^{-3}
$\Delta\rho_{min}$ = −0.47 e Å^{-3}

Table 1
Selected geometric parameters (Å, °).

Zn1—N2	2.0234 (16)	Zn1—N4	2.2980 (17)
Zn1—O2	2.1611 (14)		
N2—Zn1—O2	75.46 (6)	N2—Zn1—N4	73.79 (6)

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

D—H···A	D—H	H···A	D···A	D—H···A
N7—H7B···O2^{i}	0.88	2.17	2.882 (2)	138
N7—H7A···O3^{ii}	0.88	2.49	3.100 (2)	127
N3—H3B···O4^{iii}	0.88	2.18	2.837 (2)	131
N3—H3A···O1^{iv}	0.88	2.43	3.116 (2)	136
O3—H3C···N5	0.84	1.79	2.536 (2)	147
O1—H1···N1	0.84	1.82	2.556 (2)	146

Symmetry codes: (i) $-x+1, -y+1, -z+2$; (ii) $-x+1, y, -z+\frac{3}{2}$; (iii) $-x+1, -y+2, -z+2$; (iv) $-x+1, y, -z+\frac{5}{2}$.

Data collection: *SMART* (Bruker, 2002); cell refinement: *SAINT-Plus* (Bruker, 2003); data reduction: *SAINT-Plus*; program(s) used to solve structure: *SHELXTL* (Bruker, 2000); program(s) used to refine structure: *SHELXTL*; molecular graphics: *SHELXTL*; software used to prepare material for publication: *SHELXTL*.

Supplementary data and figures for this paper are available from the IUCr electronic archives (Reference: DN2252).

References

Bruker (2000). *SHELXTL* and *SADABS*. Bruker AXS Inc., Madison, Wisconsin, USA.
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supplementary materials

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Bis[N^3-(2-hydroxybenzoyl)pyridine-2-carboxamidrazonato-κ^3N^1,N^2,O]zinc(II)

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Comment

The N^3-salicyloylpyridine-2-carboxamidrazonato ligand (abbreviated as Hspa) has several potential donor atoms and can occur in different chemical and structural conformations. In the Copper(II) coordination compound containing the dehydrogenated spa ligand (Van Koningsbruggen *et al.*, 1993, 1995), this spa ligand is fairly planar, whereas in the title complex it is slighted bent around the central Zn—N bonds, with a dihedral angle of 21.15 (6)° between the two aromatic rings (Fig. 1).

There are two intramolecular O—H···N hydrogen bonds involving the hydroxyl groups, whereas intermolecular N—H···O hydrogen bonds connect the molecules to build up a chain parallel to the *b* axis (Fig. 2).

Experimental

The ligand N^3-salicyloylpyridine-2-carboxamidrazonato (Hspa) was synthesized according to literature (Van Koningsbruggen *et al.*, 1993, 1995). $[Zn(C_{13}H_{11}N_4O_2)_2]$ was synthesized by adding ligand (0.0256 g, 0.10 mmol) and Et3N (0.010 g, 0.1 mmol) in 1 ml DMSO to a solution of $Zn(acac)_2$ (0.0263 g, 0.10 mmol) in CH_2Cl_2 (4 ml). The compound crystallized upon evaporation of the solvent at room temperature after a few days.

Refinement

H atoms of the hydroxyls were located in a difference synthesis and refined isotropically, and with $U_{iso}(H) = 1.2U_{eq}(O)$. Other H atoms were positioned geometrically and refined using a riding mode, with $U_{iso}(H) = 1.2$ times $U_{eq}(C, N)$.

Figures

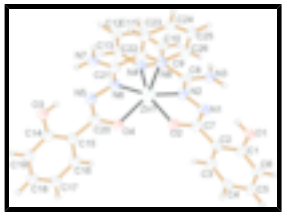

Fig. 1. A view of the title compound with the atom-labelling scheme. Displacement ellipsoids are drawn at the 50% probability level. H atoms are represented as small spheres of arbitrary radii.

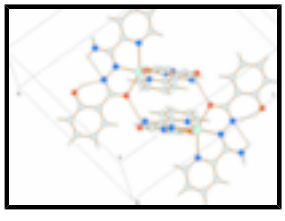

Fig. 2. A packing diagram of the title compound. Hydrogen bonds are shown as dashed lines.

Bis[N^3-(2-hydroxybenzoyl)pyridine-2-carboxamidrazonato- κ^3N^1,N^2,O]zinc(II)

Crystal data

$[Zn(C_{13}H_{11}N_4O_2)_2]$	F_{000} = 1184
M_r = 575.89	D_x = 1.529 Mg m^{-3}
Monoclinic, $P2/c$	Mo $K\alpha$ radiation λ = 0.71073 Å
Hall symbol: -P 2yc	Cell parameters from 10850 reflections
a = 10.7704 (9) Å	θ = 2.4–28.2º
b = 13.1196 (11) Å	μ = 1.03 mm^{-1}
c = 19.6427 (14) Å	T = 173 (2) K
β = 115.630 (4)º	Block, yellow
V = 2502.5 (4) Å^3	0.45 × 0.42 × 0.35 mm
Z = 4	

Data collection

Bruker APEX CCD diffractometer	4269 reflections with $I > 2\sigma(I)$
Monochromator: graphite	R_{int} = 0.023
T = 173(2) K	θ_{max} = 25.5º
φ and ω scans	θ_{min} = 1.6º
Absorption correction: multi-scan (SADABS; Bruker, 2000)	h = −13→11
T_{min} = 0.636, T_{max} = 0.700	k = −13→15
13224 measured reflections	l = −23→23
4662 independent reflections	

Refinement

Refinement on F^2	Secondary atom site location: difference Fourier map
Least-squares matrix: full	Hydrogen site location: inferred from neighbouring sites
$R[F^2 > 2\sigma(F^2)]$ = 0.035	H-atom parameters constrained
$wR(F^2)$ = 0.098	$w = 1/[\sigma^2(F_o^2) + (0.0553P)^2 + 1.8417P]$ where $P = (F_o^2 + 2F_c^2)/3$
S = 1.06	$(\Delta/\sigma)_{max}$ = 0.002
4662 reflections	$\Delta\rho_{max}$ = 0.85 e Å^{-3}
354 parameters	$\Delta\rho_{min}$ = −0.47 e Å^{-3}
Primary atom site location: structure-invariant direct methods	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 $F^2 > \sigma(F^2)$ 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}
Zn1	0.50740 (2)	0.755008 (16)	0.997968 (12)	0.02136 (10)
O1	0.65569 (16)	0.92559 (12)	1.27605 (8)	0.0318 (3)
H1	0.5991	0.9209	1.2304	0.048*
O2	0.65510 (14)	0.71793 (11)	1.11148 (8)	0.0233 (3)
O3	0.66246 (17)	0.57460 (12)	0.79709 (9)	0.0361 (4)
H3C	0.6069	0.5801	0.8165	0.054*
O4	0.66491 (14)	0.78488 (10)	0.96013 (8)	0.0234 (3)
N1	0.55574 (16)	0.85711 (12)	1.14099 (9)	0.0225 (3)
N2	0.47785 (16)	0.86238 (12)	1.06345 (9)	0.0214 (3)
N3	0.36365 (19)	1.00564 (12)	1.07950 (10)	0.0261 (4)
H3A	0.4037	1.0007	1.1291	0.031*
H3B	0.3045	1.0551	1.0576	0.031*
N4	0.34997 (16)	0.86802 (13)	0.91667 (9)	0.0238 (4)
N5	0.56026 (17)	0.64891 (13)	0.88078 (9)	0.0243 (4)
N6	0.47942 (16)	0.64650 (13)	0.91961 (9)	0.0225 (3)
N7	0.3818 (2)	0.49273 (13)	0.85983 (11)	0.0301 (4)
H7A	0.4241	0.4949	0.8303	0.036*
H7B	0.3268	0.4414	0.8565	0.036*
N8	0.35017 (17)	0.64502 (13)	1.00461 (9)	0.0251 (4)
C1	0.7504 (2)	0.85039 (16)	1.29318 (11)	0.0268 (4)
C2	0.7468 (2)	0.77696 (16)	1.23975 (11)	0.0248 (4)
C3	0.8479 (2)	0.70121 (19)	1.26353 (13)	0.0337 (5)
H3	0.8458	0.6502	1.2287	0.040*
C4	0.9503 (2)	0.6987 (2)	1.33609 (14)	0.0416 (6)
H4	1.0176	0.6461	1.3509	0.050*
C5	0.9556 (2)	0.7724 (2)	1.38756 (13)	0.0384 (6)
H5	1.0278	0.7715	1.4373	0.046*
C6	0.8557 (2)	0.84767 (19)	1.36664 (12)	0.0342 (5)
H6	0.8588	0.8976	1.4023	0.041*
C7	0.64676 (19)	0.78135 (15)	1.15900 (11)	0.0207 (4)
C8	0.39280 (19)	0.93784 (14)	1.03738 (11)	0.0205 (4)
C9	0.31880 (18)	0.94341 (14)	0.95347 (11)	0.0202 (4)
C10	0.2237 (2)	1.01911 (16)	0.91557 (12)	0.0253 (4)

H10	0.2038	1.0718	0.9426	0.030*
C11	0.1584 (2)	1.01588 (17)	0.83733 (12)	0.0297 (5)
H11	0.0932	1.0668	0.8099	0.036*
C12	0.1884 (2)	0.93879 (17)	0.79973 (12)	0.0314 (5)
H12	0.1438	0.9350	0.7462	0.038*
C13	0.2853 (2)	0.86639 (17)	0.84151 (11)	0.0287 (5)
H13	0.3065	0.8133	0.8154	0.034*
C14	0.7624 (2)	0.64543 (17)	0.82713 (12)	0.0298 (5)
C15	0.7599 (2)	0.72169 (16)	0.87768 (11)	0.0248 (4)
C16	0.8671 (2)	0.79311 (17)	0.90454 (12)	0.0299 (5)
H16	0.8650	0.8461	0.9370	0.036*
C17	0.9754 (2)	0.7883 (2)	0.88506 (14)	0.0372 (5)
H17	1.0474	0.8372	0.9042	0.045*
C18	0.9785 (3)	0.7114 (2)	0.83724 (14)	0.0414 (6)
H18	1.0543	0.7068	0.8248	0.050*
C19	0.8724 (3)	0.6415 (2)	0.80769 (13)	0.0382 (5)
H19	0.8745	0.5904	0.7739	0.046*
C20	0.6551 (2)	0.72165 (15)	0.90799 (11)	0.0214 (4)
C21	0.4011 (2)	0.56730 (15)	0.90969 (10)	0.0222 (4)
C22	0.32611 (19)	0.56442 (15)	0.95812 (10)	0.0207 (4)
C23	0.2401 (2)	0.48520 (16)	0.95648 (12)	0.0263 (4)
H23	0.2257	0.4289	0.9235	0.032*
C24	0.1753 (2)	0.48959 (17)	1.00393 (13)	0.0309 (5)
H24	0.1152	0.4365	1.0037	0.037*
C25	0.1992 (2)	0.57185 (19)	1.05130 (13)	0.0358 (5)
H25	0.1563	0.5763	1.0845	0.043*
C26	0.2868 (2)	0.64814 (18)	1.04985 (13)	0.0323 (5)
H26	0.3025	0.7051	1.0824	0.039*

Atomic displacement parameters (Å^2)

	U^{11}	U^{22}	U^{33}	U^{12}	U^{13}	U^{23}
Zn1	0.02212 (15)	0.02048 (16)	0.02072 (15)	−0.00079 (8)	0.00856 (11)	−0.00534 (8)
O1	0.0361 (8)	0.0338 (8)	0.0204 (7)	0.0050 (7)	0.0075 (6)	−0.0043 (6)
O2	0.0244 (7)	0.0239 (7)	0.0199 (7)	0.0020 (6)	0.0079 (6)	−0.0023 (5)
O3	0.0447 (9)	0.0381 (9)	0.0352 (9)	−0.0083 (7)	0.0263 (8)	−0.0123 (7)
O4	0.0261 (7)	0.0216 (7)	0.0233 (7)	−0.0018 (6)	0.0115 (6)	−0.0036 (6)
N1	0.0232 (8)	0.0240 (8)	0.0166 (8)	0.0011 (7)	0.0051 (7)	−0.0021 (6)
N2	0.0208 (8)	0.0232 (8)	0.0168 (8)	0.0000 (6)	0.0050 (6)	−0.0033 (6)
N3	0.0323 (9)	0.0242 (9)	0.0196 (8)	0.0074 (7)	0.0092 (7)	0.0009 (6)
N4	0.0220 (8)	0.0261 (9)	0.0214 (8)	−0.0021 (7)	0.0077 (7)	−0.0036 (7)
N5	0.0280 (9)	0.0251 (9)	0.0230 (8)	−0.0030 (7)	0.0140 (7)	−0.0039 (7)
N6	0.0231 (8)	0.0245 (9)	0.0209 (8)	−0.0023 (7)	0.0105 (7)	−0.0047 (7)
N7	0.0438 (11)	0.0241 (10)	0.0300 (10)	−0.0115 (7)	0.0231 (9)	−0.0086 (7)
N8	0.0235 (8)	0.0266 (9)	0.0250 (8)	−0.0014 (7)	0.0101 (7)	−0.0049 (7)
C1	0.0278 (10)	0.0298 (11)	0.0224 (10)	−0.0026 (8)	0.0106 (8)	0.0018 (8)
C2	0.0229 (10)	0.0291 (10)	0.0216 (10)	−0.0018 (8)	0.0090 (8)	0.0012 (8)
C3	0.0299 (11)	0.0402 (13)	0.0282 (11)	0.0074 (10)	0.0099 (9)	0.0019 (10)

C4	0.0309 (12)	0.0556 (16)	0.0317 (12)	0.0145 (11)	0.0072 (10)	0.0094 (11)
C5	0.0278 (12)	0.0568 (15)	0.0207 (11)	−0.0018 (11)	0.0013 (9)	0.0074 (10)
C6	0.0346 (11)	0.0424 (13)	0.0216 (10)	−0.0064 (10)	0.0086 (9)	−0.0012 (9)
C7	0.0213 (9)	0.0211 (9)	0.0200 (9)	−0.0016 (7)	0.0091 (8)	−0.0003 (7)
C8	0.0196 (9)	0.0195 (9)	0.0222 (9)	−0.0040 (7)	0.0089 (8)	−0.0019 (7)
C9	0.0165 (8)	0.0211 (10)	0.0215 (9)	−0.0039 (7)	0.0068 (7)	−0.0009 (7)
C10	0.0225 (10)	0.0240 (10)	0.0260 (10)	−0.0011 (8)	0.0072 (8)	−0.0013 (8)
C11	0.0235 (10)	0.0317 (11)	0.0262 (11)	−0.0009 (8)	0.0034 (8)	0.0053 (9)
C12	0.0281 (10)	0.0404 (13)	0.0195 (10)	−0.0055 (9)	0.0043 (8)	−0.0001 (9)
C13	0.0281 (10)	0.0338 (12)	0.0227 (10)	−0.0035 (9)	0.0096 (8)	−0.0064 (8)
C14	0.0362 (11)	0.0315 (11)	0.0258 (10)	0.0013 (9)	0.0172 (9)	0.0022 (9)
C15	0.0289 (10)	0.0258 (10)	0.0219 (10)	0.0018 (8)	0.0131 (9)	0.0043 (8)
C16	0.0322 (11)	0.0308 (12)	0.0278 (11)	−0.0001 (9)	0.0139 (9)	0.0043 (9)
C17	0.0307 (12)	0.0452 (14)	0.0377 (13)	−0.0061 (10)	0.0165 (10)	0.0057 (11)
C18	0.0376 (13)	0.0578 (16)	0.0398 (13)	0.0034 (12)	0.0270 (11)	0.0063 (12)
C19	0.0443 (13)	0.0442 (14)	0.0353 (12)	0.0018 (11)	0.0259 (11)	−0.0013 (10)
C20	0.0253 (10)	0.0194 (9)	0.0191 (9)	0.0023 (8)	0.0093 (8)	0.0018 (7)
C21	0.0229 (9)	0.0224 (10)	0.0184 (9)	0.0014 (7)	0.0063 (8)	0.0003 (7)
C22	0.0166 (8)	0.0234 (10)	0.0179 (9)	0.0020 (7)	0.0036 (7)	0.0008 (7)
C23	0.0206 (10)	0.0264 (10)	0.0279 (11)	−0.0020 (8)	0.0067 (8)	−0.0019 (8)
C24	0.0229 (10)	0.0336 (12)	0.0357 (12)	−0.0032 (8)	0.0122 (9)	0.0033 (9)
C25	0.0319 (11)	0.0438 (14)	0.0388 (12)	0.0000 (10)	0.0220 (10)	−0.0005 (10)
C26	0.0307 (11)	0.0377 (12)	0.0322 (11)	−0.0018 (9)	0.0170 (9)	−0.0085 (9)

Geometric parameters (Å, °)

Zn1—N6	2.0213 (16)	C4—C5	1.383 (4)
Zn1—N2	2.0234 (16)	C4—H4	0.9500
Zn1—O2	2.1611 (14)	C5—C6	1.385 (3)
Zn1—O4	2.1622 (14)	C5—H5	0.9500
Zn1—N8	2.2711 (17)	C6—H6	0.9500
Zn1—N4	2.2980 (17)	C8—C9	1.490 (3)
O1—C1	1.352 (3)	C9—C10	1.389 (3)
O1—H1	0.8400	C10—C11	1.387 (3)
O2—C7	1.282 (2)	C10—H10	0.9500
O3—C14	1.350 (3)	C11—C12	1.371 (3)
O3—H3C	0.8400	C11—H11	0.9500
O4—C20	1.286 (2)	C12—C13	1.387 (3)
N1—C7	1.332 (2)	C12—H12	0.9500
N1—N2	1.387 (2)	C13—H13	0.9500
N2—C8	1.294 (2)	C14—C19	1.394 (3)
N3—C8	1.341 (3)	C14—C15	1.418 (3)
N3—H3A	0.8800	C15—C16	1.400 (3)
N3—H3B	0.8800	C15—C20	1.487 (3)
N4—C13	1.333 (3)	C16—C17	1.378 (3)
N4—C9	1.350 (3)	C16—H16	0.9500
N5—C20	1.329 (3)	C17—C18	1.389 (4)
N5—N6	1.384 (2)	C17—H17	0.9500
N6—C21	1.299 (3)	C18—C19	1.382 (4)

N7—C21	1.336 (3)	C18—H18	0.9500
N7—H7A	0.8800	C19—H19	0.9500
N7—H7B	0.8800	C21—C22	1.491 (3)
N8—C26	1.335 (3)	C22—C23	1.383 (3)
N8—C22	1.347 (3)	C23—C24	1.386 (3)
C1—C6	1.398 (3)	C23—H23	0.9500
C1—C2	1.413 (3)	C24—C25	1.375 (3)
C2—C3	1.397 (3)	C24—H24	0.9500
C2—C7	1.484 (3)	C25—C26	1.384 (3)
C3—C4	1.374 (3)	C25—H25	0.9500
C3—H3	0.9500	C26—H26	0.9500
N6—Zn1—N2	164.11 (7)	N1—C7—C2	115.06 (17)
N6—Zn1—O2	115.33 (6)	N2—C8—N3	125.28 (18)
N2—Zn1—O2	75.46 (6)	N2—C8—C9	115.05 (16)
N6—Zn1—O4	75.32 (6)	N3—C8—C9	119.59 (17)
N2—Zn1—O4	117.06 (6)	N4—C9—C10	122.22 (18)
O2—Zn1—O4	93.36 (5)	N4—C9—C8	114.73 (17)
N6—Zn1—N8	74.16 (6)	C10—C9—C8	123.05 (18)
N2—Zn1—N8	94.57 (6)	C11—C10—C9	118.35 (19)
O2—Zn1—N8	91.84 (6)	C11—C10—H10	120.8
O4—Zn1—N8	148.25 (6)	C9—C10—H10	120.8
N6—Zn1—N4	95.92 (6)	C12—C11—C10	119.7 (2)
N2—Zn1—N4	73.79 (6)	C12—C11—H11	120.2
O2—Zn1—N4	148.73 (6)	C10—C11—H11	120.2
O4—Zn1—N4	95.56 (6)	C11—C12—C13	118.61 (19)
N8—Zn1—N4	96.06 (6)	C11—C12—H12	120.7
C1—O1—H1	109.5	C13—C12—H12	120.7
C7—O2—Zn1	110.66 (12)	N4—C13—C12	122.9 (2)
C14—O3—H3C	109.5	N4—C13—H13	118.5
C20—O4—Zn1	110.50 (12)	C12—C13—H13	118.5
C7—N1—N2	110.80 (15)	O3—C14—C19	117.8 (2)
C8—N2—N1	117.46 (16)	O3—C14—C15	122.60 (19)
C8—N2—Zn1	124.05 (13)	C19—C14—C15	119.6 (2)
N1—N2—Zn1	118.47 (12)	C16—C15—C14	118.28 (19)
C8—N3—H3A	120.0	C16—C15—C20	119.61 (19)
C8—N3—H3B	120.0	C14—C15—C20	121.86 (19)
H3A—N3—H3B	120.0	C17—C16—C15	121.6 (2)
C13—N4—C9	118.23 (18)	C17—C16—H16	119.2
C13—N4—Zn1	129.38 (14)	C15—C16—H16	119.2
C9—N4—Zn1	112.34 (12)	C16—C17—C18	119.5 (2)
C20—N5—N6	110.61 (16)	C16—C17—H17	120.3
C21—N6—N5	117.30 (16)	C18—C17—H17	120.3
C21—N6—Zn1	123.41 (13)	C19—C18—C17	120.6 (2)
N5—N6—Zn1	118.78 (12)	C19—C18—H18	119.7
C21—N7—H7A	120.0	C17—C18—H18	119.7
C21—N7—H7B	120.0	C18—C19—C14	120.4 (2)
H7A—N7—H7B	120.0	C18—C19—H19	119.8
C26—N8—C22	118.13 (18)	C14—C19—H19	119.8
C26—N8—Zn1	128.85 (14)	O4—C20—N5	124.56 (18)

C22—N8—Zn1	112.92 (13)	O4—C20—C15	120.22 (18)
O1—C1—C6	117.60 (19)	N5—C20—C15	115.08 (17)
O1—C1—C2	122.49 (18)	N6—C21—N7	125.48 (18)
C6—C1—C2	119.9 (2)	N6—C21—C22	114.88 (17)
C3—C2—C1	118.02 (19)	N7—C21—C22	119.63 (17)
C3—C2—C7	119.05 (19)	N8—C22—C23	122.43 (18)
C1—C2—C7	122.79 (19)	N8—C22—C21	114.46 (17)
C4—C3—C2	121.6 (2)	C23—C22—C21	123.10 (18)
C4—C3—H3	119.2	C22—C23—C24	118.7 (2)
C2—C3—H3	119.2	C22—C23—H23	120.7
C3—C4—C5	120.1 (2)	C24—C23—H23	120.7
C3—C4—H4	119.9	C25—C24—C23	119.1 (2)
C5—C4—H4	119.9	C25—C24—H24	120.4
C4—C5—C6	120.1 (2)	C23—C24—H24	120.4
C4—C5—H5	120.0	C24—C25—C26	118.9 (2)
C6—C5—H5	120.0	C24—C25—H25	120.6
C5—C6—C1	120.3 (2)	C26—C25—H25	120.6
C5—C6—H6	119.9	N8—C26—C25	122.7 (2)
C1—C6—H6	119.9	N8—C26—H26	118.6
O2—C7—N1	124.48 (17)	C25—C26—H26	118.6
O2—C7—C2	120.39 (18)		

Hydrogen-bond geometry (Å, °)

D—H···*A*	*D*—H	H···*A*	*D*···*A*	*D*—H···*A*
N7—H7B···O2^{i}	0.88	2.17	2.882 (2)	138
N7—H7A···O3^{ii}	0.88	2.49	3.100 (2)	127
N3—H3B···O4^{iii}	0.88	2.18	2.837 (2)	131
N3—H3A···O1^{iv}	0.88	2.43	3.116 (2)	136
O3—H3C···N5	0.84	1.79	2.536 (2)	147
O1—H1···N1	0.84	1.82	2.556 (2)	146

Symmetry codes: (i) −*x*+1, −*y*+1, −*z*+2; (ii) −*x*+1, *y*, −*z*+3/2; (iii) −*x*+1, −*y*+2, −*z*+2; (iv) −*x*+1, *y*, −*z*+5/2.

Fig. 1

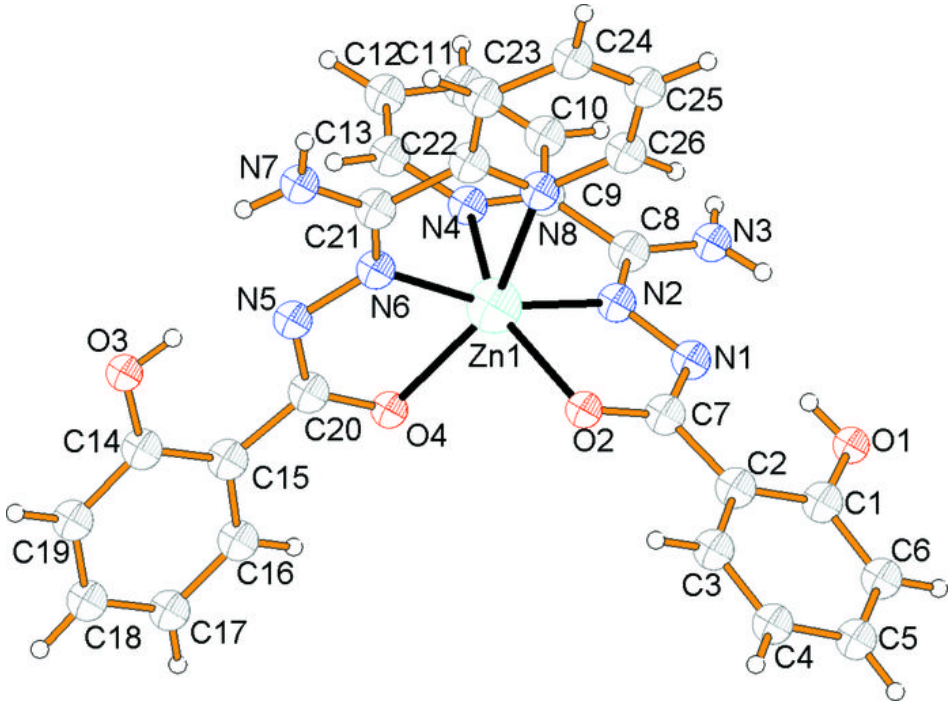
C12
C11
C23
C24
C25
C10
C13
C22
C26
N7
C9
N4
N8
C8
N3
C21
N5
N6
N2
Zn1
O3
N1
C14
C20
O4
O2
C7
O1
C15
C2
C1
C19
C16
C6
C3
C18
C17
C4
C5

Fig. 2