Acta Crystallographica Section C
Crystal Structure Communications
ISSN 0108-2701

A zigzag-type one-dimensional coordination polymer formed by (2,2-dimethyl-1,3-propanediamine)bis(isonicotinato)platinum(II) and copper nitrate

Song, Kim and Sohn

Electronic paper
This paper is published electronically. It meets the data-validation criteria for publication in Acta Crystallographica Section C. The submission has been checked by a Section C Co-editor though the text in the 'Comments' section is the responsibility of the authors.

Acta Crystallographica Section C
Crystal Structure Communications
ISSN 0108-2701

A zigzag-type one-dimensional coordination polymer formed by (2,2-dimethyl-1,3-propanediamine)-bis(isonicotinato)platinum(II) and copper nitrate

Rita Song, Kwan Mook Kim and Youn Soo Sohn*

Inorganic Chemistry Laboratory, Korea Institute of Science and Technology, Seoul 130-650, South Korea
Correspondence e-mail: kkmook@kistmail.kist.re.kr

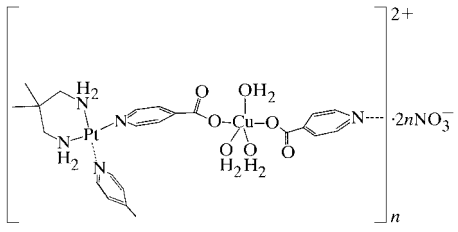
Received 15 June 2000
Accepted 11 September 2000

Data validation number: IUC0000257

The title compound, *catena*-poly[[[triaqua-2κ^3O-(2,2-dimethyl-1,3-propanediamine)-1κ^2N,N'-μ-isonicotinato-1:2κ^2-*N*:*O*-copper(II)platinum(II)]-μ-isonicotinato-2:1′κ^2O:*N*] dinitrate], $\{[CuPt(C_6H_4NO_2)_2(C_5H_{14}N_2)(H_2O)_3](NO_3)_2\}_n$, obtained from equimolar (dmpda)Pt^{II}(isonic)$_2$ (where dmpda is 2,2-dimethyl-1,3-propanediamine and isonic is isonicotinate) and copper(II) nitrate, has been found to be a one-dimensional coordination polymer of the zigzag-type.

Comment

The title compound, (I), has been found to be a one-dimensional coordination polymer of the zigzag-type. The polymer has repeat units in which the Cu—Pt—Cu′ angle is 64.9°. One Cu atom links two platinum complex molecules through coordination to two carboxylate groups from the two platinum complex units. Three water molecules are also bound to the



(I)

Cu atom forming a square-pyramidal geometry. The axial water molecule has a bond to the Cu atom of 2.306 (4) Å, whereas carboxylate O atoms and two equatorial water molecules have distances to copper in the range 1.912 (4)–1.988 (5) Å, which is similar to the pattern in other copper compounds (Shields & Kennard, 1972). The structural properties of the platinum complex moiety, (dmpda)Pt(isonic)$_2$, are similar to those of the starting platinum complex, whose structure was reported previously (Song *et al.*, 1999).

Experimental

Equimolar (dmpda)Pt(isonic)$_2$ (1.0 g, 1.85 mmol) and $Cu(NO_3)_2\cdot 3H_2O$ (0.45 g, 1.85 mmol) were dissolved in water (10 ml) and acetone (5 ml) was added to the solution. After two weeks at room temperature, blue block-shaped crystals had formed and were filtered off and washed with cold water and acetone.

Crystal data

$[CuPt(C_6H_4NO_2)_2(C_5H_{14}N_2)(H_2O)_3](NO_3)_2$
M_r = 819.12
Monoclinic, $P2_1/n$
a = 10.105 (3) Å
b = 18.133 (3) Å
c = 15.590 (5) Å
β = 103.29 (2)°
V = 2780.1 (12) Å^3
Z = 4
D_x = 1.957 Mg m^{-3}
Mo $K\alpha$ radiation
Cell parameters from 25 reflections
θ = 9.37–14.23°
μ = 5.870 mm^{-1}
T = 293 (2) K
Block, blue
0.55 × 0.40 × 0.35 mm

Data collection

Enraf–Nonius CAD-4 diffractometer
$\omega/2\theta$ scans
Absorption correction: ψ scan (North *et al.*, 1968)
T_{min} = 0.058, T_{max} = 0.128
6863 measured reflections
4819 independent reflections
4175 reflections with $I > 2\sigma(I)$
R_{int} = 0.035
θ_{max} = 24.97°
$h = 0 \rightarrow 11$
$k = -21 \rightarrow 21$
$l = -18 \rightarrow 18$
3 standard reflections
frequency: 120 min
intensity decay: 9.6%

Refinement

Refinement on F^2
$R[F^2 > 2\sigma(F^2)]$ = 0.034
$wR(F^2)$ = 0.091
S = 1.073
4819 reflections
361 parameters
H-atom parameters constrained
$w = 1/[\sigma^2(F_o^2) + (0.0497P)^2 + 7.8145P]$ where $P = (F_o^2 + 2F_c^2)/3$
$(\Delta/\sigma)_{max}$ = 0.011
$\Delta\rho_{max}$ = 2.34 e Å^{-3}
$\Delta\rho_{min}$ = −1.29 e Å^{-3}

Water atoms were not located; others were included in the structure-factor calculations using a riding model. The largest difference map features lie close to the Pt atom.

Data collection: *CAD*-4-*VAX* (Enraf–Nonius, 1981); cell refinement: *CAD*-4-*VAX*; data reduction: *SDP* (Frenz, 1985); program(s) used to solve structure: *SHELXS*97 (Sheldrick, 1997); program(s) used to refine structure: *SHELXL*97 (Sheldrick, 1997); software used to prepare material for publication: *SHELXL*97.

We thank the Ministry of Science and Technology of South Korea for financial support.

References

Enraf–Nonius (1981). *CAD*-4 *VAX*. Enraf–Nonius, Delft, The Netherlands.
Frenz, B. A. (1985). *SDP*. Version 3.0. Enraf–Nonius, Delft, The Netherlands.
North, A. C. T., Phillips, D. C. & Mathews, F. S. (1968). *Acta Cryst.* A**24**, 351–359.
Sheldrick, G. M. (1997). *SHELXS*97 and *SHELXL*97. University of Göttingen, Germany.
Shields, K. G. & Kennard, C. H. L. (1972). *Cryst. Struct. Commun.* **1**, 189–191.
Song, R., Kim, K. M. & Sohn, Y. S. (1999). *Inorg. Chim. Acta*, **292**, 238–243.