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Crystallographic report

A two-dimensional homochiral coordination polymer: [cadmium(II) bis(*S*-(−)-lactate)]$_n$

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In the two-dimensional (2D) homochiral structure of [cadmium(II) bis(*S*-(−)-lactate)]$_n$, the lactate ligand adopts a μ_3-bridging mode to connect two cadmium atoms, leading to the formation of a 2D network. Copyright © 2004 John Wiley & Sons, Ltd.

KEYWORDS: crystal structure; *S*-(−)-lactate; hydrothermal synthesis; cadmium complex

COMMENT

In the two-dimensional (2D) homochiral structure of [cadmium(II) bis(*S*-(−)-lactate)]$_n$, the coordination environment around the cadmium center, which lies on a two fold axis of symmetry, is slightly distorted octahedral (Fig. 1). Each lactate ligand chelates one cadmium atom via one of the carboxylate oxygen atoms and the hydroxyl oxygen atom, and bridges a neighboring cadmium atom via the second carboxylate oxygen atom. This μ_3-bridging mode results in the formation of the 2D structure shown in Fig. 2, akin to that found for zinc analog.[1]

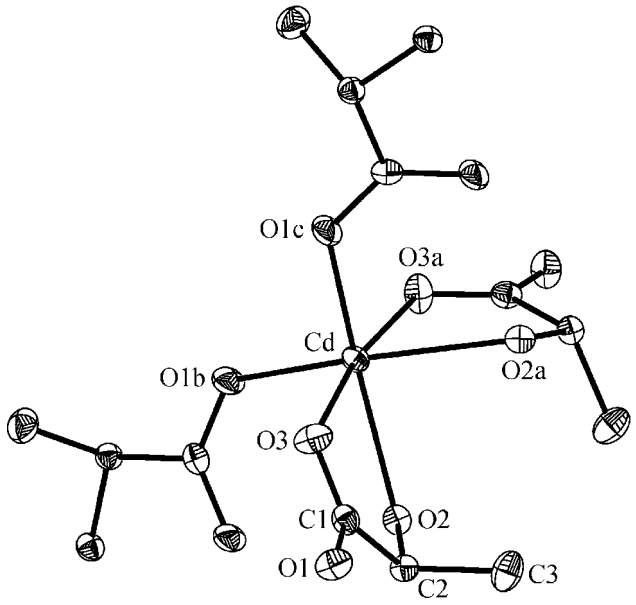

Figure 1. The coordination geometry in [cadmium(II) bis(*S*-(−)-lactate)]$_n$; hydrogen atoms have been omitted for clarity. Key geometric parameters: Cd–O2 2.364(2), Cd–O3 2.284(2), Cd–O1B 2.2491(19) Å; O2–Cd–O3 70.03(7), O2–Cd–O1c 91.05(7), O2–Cd–O2a 83.04(11), O3–Cd–O1c 101.61(7), O3–Cd–O3a 171.02(11), O1b–Cd–O3 83.81(7), O1b–Cd–O1c 106.82(10), O1b–Cd–O3a 101.61(7), O1c–Cd–O3a 83.81(7)°. Symmetry operations a: $2-x$, $-y$, z; b: $\frac{1}{2}+x$, $\frac{1}{2}-y$, $-z$; c: $\frac{3}{2}-x$, $\frac{1}{2}+y$, $-z$.

EXPERIMENTAL

Hydrothermal treatment of $Cd(ClO_4)_2{\cdot}6H_2O$ (1.0 mmol), ethyl (*S*)-lactate (2.0 ml), pyridylacrylic acid (1.0 mmol), water (0.2 ml), pyridine (0.1 ml) and ethanol (0.1 ml) over 1 day at 75 °C yielded colorless block crystals. The yield was about 35% based on $Cd(ClO_4)_2{\cdot}6H_2O$. Intensity data were collected at 293(2) K on a Bruker AXS SMART CCD for a colorless block $0.10 \times 0.15 \times 0.20$ mm^3. $C_6H_{10}CdO_6$, $M = 290.54$, orthorhombic, $P2_12_12$, $a = 8.5517(15)$, $b = 7.3707(13)$, $c = 7.6760(14)$ Å, $V = 483.83(15)$ Å^3, $Z = 4$, 1085 unique data ($\theta_{max} = 28.0°$), $R = 0.022$ (1016 [$I \geq 2\sigma(I)$] reflections), $wR = 0.051$ (all data). The absolute structure was

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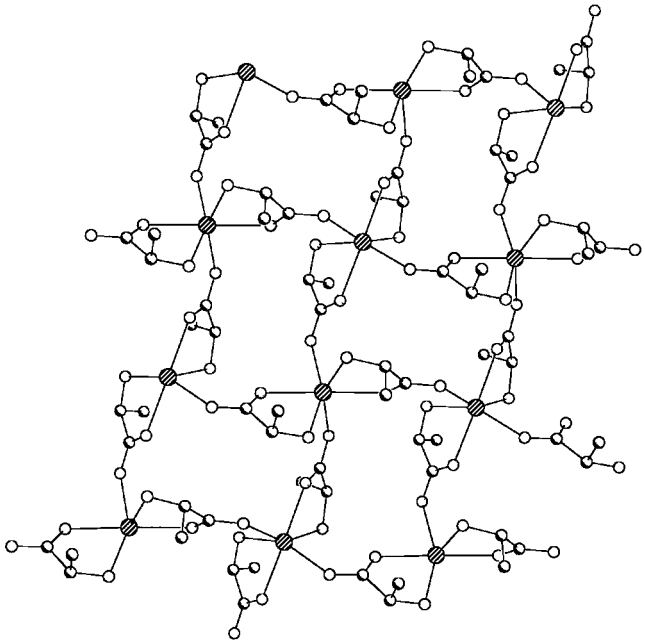

Figure 2. 2D network of [cadmium(II) bis(*S*-(−)-lactate)]$_n$; hydrogen atoms have been omitted for clarity.

determined on the basis of chemistry. Programs used: SAINT, SADABS, SHELX-97, ORTEP. CCDC deposition number: 237642.

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REFERENCE

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