

## Supplementary Material

### Hydrogen-bonded pillars of alternating chiral complex cations and anions: 1. Synthesis, characterization, X-ray structure and thermal stability of *catena*- {[Co(H<sub>2</sub>oxado)<sub>3</sub>][Cr(C<sub>2</sub>O<sub>4</sub>)<sub>3</sub>]·5H<sub>2</sub>O} and of its precursor (H<sub>3</sub>oxado)- [Co(H<sub>2</sub>oxado)<sub>3</sub>](SO<sub>4</sub>)<sub>2</sub>·2H<sub>2</sub>O

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Table S1. Hydrogen bonds for **2** [pm and °].

D-H...A	d(D-H)	d(H...A)	d(D...A)	<(DHA)
O(1)-H(1O)...O(15)	87(3)	182(3)	268.8(4)	172(5)
O(2)-H(2O)...O(8)#1	85(3)	184(3)	265.6(4)	160(5)
O(3)-H(3O)...O(11)	86(3)	182(3)	264.8(4)	161(5)
O(4)-H(4O)...O(16)#1	87(3)	176(3)	262.6(4)	175(6)
O(5)-H(5O)...O(7)	87(3)	183(3)	265.1(4)	157(5)
O(6)-H(6O)...O(12)#1	87(3)	187(3)	270.5(4)	161(5)
N(3)-H(1N)...O(22)	78(2)	220(2)	296.8(7)	169(4)
N(4)-H(4N)...O(2)	82(2)	213(5)	259.7(5)	116(4)
N(4)-H(3N)...O(10)#2	80(2)	224(3)	299.3(5)	157(5)
N(7)-H(6N)...O(17)#3	80(2)	227(3)	299.1(5)	151(4)
N(8)-H(7N)...O(17)#3	85(2)	222(2)	306.3(5)	175(5)

N(8)-H(8N)...O(19)#4	85(2)	225(3)	305.5(6)	159(4)
N(11)-H(10N)...O(13)#4	84(2)	240(5)	276.2(5)	107(4)
N(12)-H(12N)...O(23)	83(2)	220(4)	294.8(12)	149(5)
N(12)-H(11N)...O(9)#5	83(2)	222(2)	305.3(5)	174(5)

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Symmetry transformations used to generate equivalent atoms:

#1  $x-1, y, z$  #2  $-x+1, -y+1, -z+1$  #3  $-x+1/2, y+1/2, -z+1/2$

#4  $x-1/2, -y+1/2, z-1/2$  #5  $-x+1/2, y-1/2, -z+1/2$