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Disodium 4,4'-oxydibenzoate

 Yuan Yang,^a Qi Li^b and Seik Weng Ng^{c*}

^aSchool of Physics and Chemistry, Guizhou Normal University, Guiyang, Guizhou 550001, People's Republic of China, ^bCollege of Chemistry, Beijing Normal University, Beijing 100875, People's Republic of China, and ^cDepartment of Chemistry, University of Malaya, 50603 Kuala Lumpur, Malaysia
Correspondence e-mail: seikweng@um.edu.my

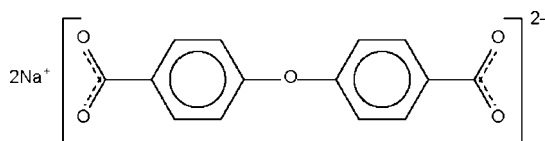
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Key indicators: single-crystal X-ray study; $T = 295$ K; mean $\sigma(\text{C}-\text{C}) = 0.005$ Å; disorder in main residue; R factor = 0.043; wR factor = 0.135; data-to-parameter ratio = 7.2.

The crystal structure of the title compound, $2\text{Na}^+\cdot\text{C}_{14}\text{H}_8\text{O}_5^{2-}$, consists of alternating layers of sodium cations and 4,4'-oxydibenzoate anions; the layers are perpendicular to the a axis, with the distance between the layers of cations (or anions) being half this axial length. The Na atoms are disordered over three sites [occupancies 0.775 (4), 0.781 (6) 0.444 (6)].

Related literature

For the crystal structure of 4,4'-oxybis(benzoic acid), see: Dey & Desiraju (2005); Potts *et al.* (2007).



Experimental

Crystal data

 $2\text{Na}^+\cdot\text{C}_{14}\text{H}_8\text{O}_5^{2-}$
 $M_r = 302.18$

Monoclinic, Cc
 $a = 29.1091$ (4) Å
 $b = 5.7801$ (1) Å
 $c = 7.6429$ (1) Å
 $\beta = 92.4420$ (1)°
 $V = 1284.78$ (3) Å³

$Z = 4$
 Mo $K\alpha$ radiation
 $\mu = 0.17$ mm⁻¹
 $T = 295$ (2) K
 $0.5 \times 0.4 \times 0.2$ mm

Data collection

Bruker SMART APEXII diffractometer
 Absorption correction: multi-scan (SADABS; Sheldrick, 1996)
 $T_{\min} = 0.888$, $T_{\max} = 1.000$
 (expected range = 0.857–0.966)

5002 measured reflections
 1471 independent reflections
 1464 reflections with $I > 2\sigma(I)$
 $R_{\text{int}} = 0.015$

Refinement

$R[F^2 > 2\sigma(F^2)] = 0.042$
 $wR(F^2) = 0.135$
 $S = 1.27$
 1471 reflections
 203 parameters

3 restraints
 H-atom parameters constrained
 $\Delta\rho_{\text{max}} = 0.79$ e Å⁻³
 $\Delta\rho_{\text{min}} = -0.27$ e Å⁻³

Data collection: *APEX2* (Bruker, 2007); cell refinement: *SAINT* (Bruker, 2007); data reduction: *SAINT*; program(s) used to solve structure: *SHELXS97* (Sheldrick, 2008); program(s) used to refine structure: *SHELXL97* (Sheldrick, 2008); molecular graphics: *X-SEED* (Barbour, 2001); software used to prepare material for publication: *publCIF* (Westrip, 2008).

We thank Beijing Normal University and the University of Malaya for supporting this study.

Supplementary data and figures for this paper are available from the IUCr electronic archives (Reference: BT2752).

References

- Barbour, L. J. (2001). *J. Supramol. Chem.* **1**, 189–191.
 Bruker (2007). *APEX2* and *SAINT*. Bruker AXS Inc., Madison, Wisconsin, USA.
 Dey, A. & Desiraju, G. R. (2005). *Chem. Commun.* pp. 2486–2488.
 Potts, S., Bredenkamp, M. W. & Gertenbach, J.-A. (2007). *Acta Cryst.* **E63**, o2887.
 Sheldrick, G. M. (1996). *SADABS*. University of Göttingen, Germany.
 Sheldrick, G. M. (2008). *Acta Cryst.* **A64**, 112–122.
 Westrip, S. P. (2008). *publCIF*. In preparation.

supplementary materials

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Disodium 4,4'-oxydibenzoate

Y. Yang, Q. Li and S. W. Ng

Comment

The crystal structure of disodium 4,4'-oxydibenzoate (Scheme I, Fig. 1) consists of alternating bands of sodium cations and 4,4'-oxydibenzoate anions. The two symmetry-independent sodium atoms over three positions. The lowest occupancy sodium atom is only weakly linked to two oxygen atoms, and probably "rattles" about in the crystal structure.

Experimental

Betaine (0.047 g, 0.4 mmol), 4,4'-oxybis(benzoic acid) (0.103 g, 0.4 mmol) and guanidine hydrochloride (0.076 g, 0.8 mmol) were mixed in a molar ratio 1:1:2. The mixture was dissolved in mixture of ethanol (4 ml), 1 M sodium hydroxide (0.5 ml) and water (0.5 ml). Colorless crystals were obtained after about 10 days.

Refinement

The Na1, Na2 and Na3 atoms were refined such that the total occupancy is two.

Carbon bound H-atoms were placed in calculated positions (C—H 0.93 Å) and were included in the refinement in the riding model approximation, with $U_{\text{iso}}(\text{H}) 1.2U_{\text{eq}}(\text{C})$.

Friedel pairs were merged as there are no anomalous scatterers.

Figures

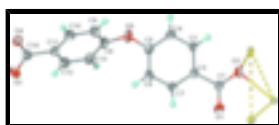


Fig. 1. Thermal ellipsoid plot (Barbour, 2001) of the asymmetric unit of the title compound; displacement ellipsoids are set at the 70% probability level. Hydrogen atoms are drawn as spheres of arbitrary radius. The two sodium atoms are disordered over three positions. Dashed lines denote the distances between them.

Disodium 4,4'-oxydibenzoate

Crystal data

$2\text{Na}^+\cdot\text{C}_{14}\text{H}_8\text{O}_5^{2-}$

$M_r = 302.18$

Monoclinic, *Cc*

$a = 29.1091(4) \text{ \AA}$

$b = 5.7801(1) \text{ \AA}$

$c = 7.6429(1) \text{ \AA}$

$\beta = 92.4420(1)^\circ$

$F_{000} = 616$

$D_x = 1.562 \text{ Mg m}^{-3}$

Mo $K\alpha$ radiation

$\lambda = 0.71073 \text{ \AA}$

Cell parameters from 4314 reflections

$\theta = 4.0\text{--}27.5^\circ$

$\mu = 0.18 \text{ mm}^{-1}$

$T = 295(2) \text{ K}$

supplementary materials

$V = 1284.78 (3) \text{ \AA}^3$
 $Z = 4$

Block, colorless
 $0.5 \times 0.4 \times 0.2 \text{ mm}$

Data collection

Bruker SMART APEXII diffractometer	1471 independent reflections
Radiation source: fine-focus sealed tube	1464 reflections with $I > 2\sigma(I)$
Monochromator: graphite	$R_{\text{int}} = 0.015$
$T = 295(2) \text{ K}$	$\theta_{\text{max}} = 27.5^\circ$
φ and ω scans	$\theta_{\text{min}} = 4.1^\circ$
Absorption correction: multi-scan (SADABS; Sheldrick, 1996)	$h = -37 \rightarrow 37$
$T_{\text{min}} = 0.888$, $T_{\text{max}} = 1.000$	$k = -7 \rightarrow 7$
5002 measured reflections	$l = -9 \rightarrow 9$

Refinement

Refinement on F^2	Secondary atom site location: difference Fourier map
Least-squares matrix: full	Hydrogen site location: inferred from neighbouring sites
$R[F^2 > 2\sigma(F^2)] = 0.042$	H-atom parameters constrained
$wR(F^2) = 0.135$	$w = 1/[\sigma^2(F_o^2) + (0.0883P)^2 + 0.9438P]$
$S = 1.27$	where $P = (F_o^2 + 2F_c^2)/3$
1471 reflections	$(\Delta/\sigma)_{\text{max}} = 0.001$
203 parameters	$\Delta\rho_{\text{max}} = 0.79 \text{ e \AA}^{-3}$
3 restraints	$\Delta\rho_{\text{min}} = -0.27 \text{ e \AA}^{-3}$
Primary atom site location: structure-invariant direct methods	Extinction correction: SHELXL97 (Sheldrick, 2008), $F_c^* = kF_c[1 + 0.001x F_c^2 \lambda^3 / \sin(2\theta)]^{-1/4}$
	Extinction coefficient: 0.024 (4)

Special details

Experimental. A somewhat large crystal was used in the measurements, but this does not seem to have an adverse effect on the quality of the diffraction data.

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

	<i>x</i>	<i>y</i>	<i>z</i>	$U_{\text{iso}}^*/U_{\text{eq}}$	Occ. (<1)
Na1	0.50001 (5)	0.1573 (3)	0.50001 (18)	0.0119 (4)	0.775 (4)
Na2	0.44106 (5)	0.3880 (3)	0.84063 (18)	0.0113 (5)	0.781 (6)
Na3	0.47490 (10)	0.7168 (5)	0.7153 (4)	0.0147 (9)	0.444 (6)
O1	0.53701 (10)	0.4833 (5)	0.9932 (4)	0.0273 (6)	
O2	0.51425 (9)	0.1864 (5)	0.8264 (4)	0.0243 (6)	
O3	0.91491 (10)	0.5648 (5)	0.9768 (4)	0.0279 (6)	
O4	0.92132 (9)	0.1917 (5)	1.0487 (4)	0.0249 (6)	
O5	0.72485 (10)	0.1735 (6)	0.6575 (4)	0.0338 (7)	

C1	0.54493 (12)	0.3222 (6)	0.8891 (5)	0.0199 (7)
C2	0.59376 (12)	0.2835 (6)	0.8364 (4)	0.0199 (7)
C3	0.60419 (13)	0.0883 (6)	0.7386 (5)	0.0234 (7)
H3	0.5812	-0.0182	0.7088	0.028*
C4	0.64896 (13)	0.0513 (7)	0.6849 (5)	0.0250 (7)
H4	0.6559	-0.0793	0.6201	0.030*
C5	0.68284 (12)	0.2121 (7)	0.7296 (5)	0.0230 (7)
C6	0.67343 (13)	0.4048 (7)	0.8307 (5)	0.0251 (8)
H6	0.6966	0.5089	0.8634	0.030*
C7	0.62823 (12)	0.4391 (7)	0.8825 (5)	0.0228 (7)
H7	0.6214	0.5685	0.9488	0.027*
C8	0.76546 (12)	0.2304 (8)	0.7501 (5)	0.0261 (8)
C9	0.78630 (13)	0.0650 (7)	0.8574 (5)	0.0266 (8)
H9	0.7713	-0.0733	0.8792	0.032*
C10	0.82982 (14)	0.1068 (7)	0.9322 (5)	0.0248 (7)
H10	0.8442	-0.0052	1.0026	0.030*
C11	0.85196 (11)	0.3161 (6)	0.9022 (4)	0.0194 (7)
C12	0.82984 (13)	0.4838 (7)	0.7983 (5)	0.0243 (7)
H12	0.8440	0.6256	0.7813	0.029*
C13	0.78638 (13)	0.4407 (7)	0.7192 (5)	0.0264 (7)
H13	0.7719	0.5509	0.6475	0.032*
C14	0.89941 (12)	0.3616 (6)	0.9821 (5)	0.0200 (7)

Atomic displacement parameters (\AA^2)

	U^{11}	U^{22}	U^{33}	U^{12}	U^{13}	U^{23}
Na1	0.0114 (7)	0.0098 (7)	0.0144 (7)	0.0005 (5)	-0.0009 (5)	-0.0005 (5)
Na2	0.0119 (8)	0.0094 (7)	0.0127 (8)	-0.0011 (5)	0.0003 (5)	0.0001 (5)
Na3	0.0169 (14)	0.0144 (15)	0.0127 (14)	0.0013 (10)	0.0008 (10)	-0.0004 (10)
O1	0.0230 (11)	0.0294 (14)	0.0299 (15)	0.0020 (11)	0.0043 (10)	-0.0037 (11)
O2	0.0183 (11)	0.0254 (13)	0.0293 (13)	-0.0020 (9)	0.0007 (10)	0.0005 (10)
O3	0.0262 (13)	0.0292 (15)	0.0282 (14)	-0.0081 (11)	-0.0015 (11)	0.0009 (11)
O4	0.0209 (12)	0.0281 (13)	0.0254 (13)	0.0042 (10)	-0.0017 (10)	0.0008 (10)
O5	0.0171 (12)	0.056 (2)	0.0288 (14)	-0.0011 (12)	0.0005 (10)	-0.0141 (13)
C1	0.0181 (15)	0.0215 (15)	0.0200 (15)	0.0019 (12)	0.0015 (12)	0.0039 (12)
C2	0.0165 (15)	0.0228 (16)	0.0204 (15)	0.0011 (12)	-0.0006 (12)	0.0030 (12)
C3	0.0187 (16)	0.0241 (17)	0.0274 (18)	-0.0015 (13)	0.0007 (13)	-0.0029 (13)
C4	0.0223 (17)	0.0260 (17)	0.0267 (17)	0.0035 (15)	0.0008 (13)	-0.0051 (14)
C5	0.0179 (16)	0.0299 (17)	0.0211 (15)	0.0015 (13)	0.0003 (12)	-0.0001 (13)
C6	0.0174 (16)	0.0290 (19)	0.0287 (17)	-0.0044 (13)	-0.0014 (13)	-0.0039 (15)
C7	0.0226 (17)	0.0217 (16)	0.0243 (17)	-0.0001 (13)	0.0016 (13)	-0.0034 (12)
C8	0.0159 (16)	0.039 (2)	0.0232 (17)	-0.0016 (14)	0.0031 (13)	-0.0074 (15)
C9	0.0227 (17)	0.0278 (18)	0.0294 (18)	-0.0069 (14)	0.0037 (14)	-0.0022 (14)
C10	0.0260 (18)	0.0237 (16)	0.0247 (17)	-0.0007 (14)	0.0024 (13)	0.0025 (14)
C11	0.0162 (15)	0.0232 (16)	0.0187 (15)	0.0003 (11)	0.0008 (11)	-0.0018 (12)
C12	0.0237 (17)	0.0238 (17)	0.0255 (18)	-0.0004 (13)	0.0028 (13)	0.0033 (13)
C13	0.0210 (16)	0.033 (2)	0.0252 (16)	0.0056 (15)	-0.0003 (12)	0.0026 (15)
C14	0.0188 (16)	0.0252 (16)	0.0162 (14)	-0.0013 (12)	0.0023 (12)	-0.0001 (12)

supplementary materials

Geometric parameters (\AA , $^\circ$)

Na1—O1 ⁱ	2.342 (3)	O5—C8	1.391 (5)
Na1—O2 ⁱⁱ	2.434 (3)	C1—C2	1.511 (5)
Na1—O4 ⁱⁱⁱ	2.494 (3)	C2—C7	1.382 (5)
Na1—O2	2.517 (3)	C2—C3	1.394 (5)
Na1—O3 ⁱⁱⁱ	2.789 (3)	C3—C4	1.399 (5)
Na2—O3 ^{iv}	2.285 (3)	C3—H3	0.9300
Na2—O4 ⁱⁱⁱ	2.326 (3)	C4—C5	1.388 (5)
Na2—O2	2.435 (3)	C4—H4	0.9300
Na2—O4 ^v	2.453 (3)	C5—C6	1.389 (6)
O1—C1	1.252 (5)	C6—C7	1.404 (5)
O1—Na1 ^{vi}	2.342 (3)	C6—H6	0.9300
O1—Na3 ^{vi}	2.784 (4)	C7—H7	0.9300
O2—C1	1.268 (4)	C8—C9	1.382 (6)
O2—Na1 ^{vii}	2.434 (3)	C8—C13	1.384 (6)
O3—C14	1.260 (5)	C9—C10	1.389 (5)
O3—Na2 ^{viii}	2.285 (3)	C9—H9	0.9300
O3—Na3 ^{ix}	2.774 (4)	C10—C11	1.394 (5)
O3—Na1 ^x	2.789 (3)	C10—H10	0.9300
O4—C14	1.266 (5)	C11—C12	1.393 (5)
O4—Na2 ^x	2.326 (3)	C11—C14	1.509 (5)
O4—Na2 ^{xi}	2.453 (3)	C12—C13	1.401 (5)
O4—Na1 ^x	2.494 (3)	C12—H12	0.9300
O5—C5	1.381 (4)	C13—H13	0.9300
O1 ⁱ —Na1—O2 ⁱⁱ	128.52 (12)	O2—C1—C2	117.6 (3)
O1 ⁱ —Na1—O4 ⁱⁱⁱ	96.84 (11)	C7—C2—C3	119.4 (3)
O2 ⁱⁱ —Na1—O4 ⁱⁱⁱ	123.07 (11)	C7—C2—C1	121.1 (3)
O1 ⁱ —Na1—O2	84.62 (11)	C3—C2—C1	119.5 (3)
O2 ⁱⁱ —Na1—O2	124.75 (10)	C2—C3—C4	120.5 (3)
O4 ⁱⁱⁱ —Na1—O2	86.69 (10)	C2—C3—H3	119.7
O1 ⁱ —Na1—O3 ⁱⁱⁱ	144.60 (11)	C4—C3—H3	119.7
O2 ⁱⁱ —Na1—O3 ⁱⁱⁱ	76.17 (10)	C5—C4—C3	119.1 (3)
O4 ⁱⁱⁱ —Na1—O3 ⁱⁱⁱ	49.58 (9)	C5—C4—H4	120.4
O2—Na1—O3 ⁱⁱⁱ	101.66 (10)	C3—C4—H4	120.4
O3 ^{iv} —Na2—O4 ⁱⁱⁱ	101.63 (12)	O5—C5—C4	115.2 (3)
O3 ^{iv} —Na2—O2	86.45 (11)	O5—C5—C6	123.4 (3)
O4 ⁱⁱⁱ —Na2—O2	92.48 (11)	C4—C5—C6	121.3 (3)
O3 ^{iv} —Na2—O4 ^v	101.41 (12)	C5—C6—C7	118.6 (3)
O4 ⁱⁱⁱ —Na2—O4 ^v	135.10 (11)	C5—C6—H6	120.7
O2—Na2—O4 ^v	126.93 (11)	C7—C6—H6	120.7

O2—Na2—Na3 ^{vi}	72.45 (9)	C2—C7—C6	121.0 (3)
C1—O1—Na1 ^{vi}	140.4 (3)	C2—C7—H7	119.5
C1—O1—Na3 ^{vi}	102.7 (2)	C6—C7—H7	119.5
Na1 ^{vi} —O1—Na3 ^{vi}	92.50 (11)	C9—C8—C13	121.6 (3)
C1—O2—Na1 ^{vii}	115.6 (2)	C9—C8—O5	118.7 (4)
C1—O2—Na2	106.9 (2)	C13—C8—O5	119.4 (4)
Na1 ^{vii} —O2—Na2	101.34 (11)	C8—C9—C10	119.6 (3)
C1—O2—Na1	120.0 (2)	C8—C9—H9	120.2
Na1 ^{vii} —O2—Na1	117.45 (12)	C10—C9—H9	120.2
Na2—O2—Na1	88.21 (10)	C9—C10—C11	120.2 (4)
C14—O3—Na2 ^{viii}	154.6 (3)	C9—C10—H10	119.9
C14—O3—Na3 ^{ix}	128.3 (2)	C11—C10—H10	119.9
Na2 ^{viii} —O3—Na3 ^{ix}	73.42 (10)	C12—C11—C10	119.4 (3)
C14—O3—Na1 ^x	83.5 (2)	C12—C11—C14	120.1 (3)
Na2 ^{viii} —O3—Na1 ^x	95.35 (10)	C10—C11—C14	120.4 (3)
Na3 ^{ix} —O3—Na1 ^x	68.61 (9)	C11—C12—C13	120.6 (3)
C14—O4—Na2 ^x	129.7 (2)	C11—C12—H12	119.7
C14—O4—Na2 ^{xi}	115.0 (2)	C13—C12—H12	119.7
Na2 ^x —O4—Na2 ^{xi}	115.15 (12)	C8—C13—C12	118.6 (4)
C14—O4—Na1 ^x	96.8 (2)	C8—C13—H13	120.7
Na2 ^x —O4—Na1 ^x	91.23 (10)	C12—C13—H13	120.7
Na2 ^{xi} —O4—Na1 ^x	84.93 (10)	O3—C14—O4	124.1 (3)
C5—O5—C8	120.4 (3)	O3—C14—C11	118.2 (3)
O1—C1—O2	123.7 (3)	O4—C14—C11	117.7 (3)
O1—C1—C2	118.7 (3)		
O3 ^{iv} —Na2—O2—C1	-128.5 (2)	C3—C4—C5—O5	-174.1 (4)
O4 ⁱⁱⁱ —Na2—O2—C1	130.0 (2)	C3—C4—C5—C6	1.9 (6)
O4 ^v —Na2—O2—C1	-26.9 (3)	O5—C5—C6—C7	173.5 (3)
O3 ^{iv} —Na2—O2—Na1 ^{vii}	-7.05 (12)	C4—C5—C6—C7	-2.2 (6)
O4 ⁱⁱⁱ —Na2—O2—Na1 ^{vii}	-108.56 (12)	C3—C2—C7—C6	0.7 (6)
O4 ^v —Na2—O2—Na1 ^{vii}	94.58 (14)	C1—C2—C7—C6	-178.9 (3)
O3 ^{iv} —Na2—O2—Na1	110.60 (11)	C5—C6—C7—C2	0.9 (6)
O4 ⁱⁱⁱ —Na2—O2—Na1	9.09 (11)	C5—O5—C8—C9	90.4 (5)
O4 ^v —Na2—O2—Na1	-147.78 (12)	C5—O5—C8—C13	-96.2 (5)
O1 ⁱ —Na1—O2—C1	-19.8 (3)	C13—C8—C9—C10	-1.9 (6)
O2 ⁱⁱ —Na1—O2—C1	114.3 (2)	O5—C8—C9—C10	171.3 (3)
O4 ⁱⁱⁱ —Na1—O2—C1	-117.0 (3)	C8—C9—C10—C11	1.3 (6)
O3 ⁱⁱⁱ —Na1—O2—C1	-164.5 (3)	C9—C10—C11—C12	0.7 (5)
C14 ⁱⁱⁱ —Na1—O2—C1	-138.8 (3)	C9—C10—C11—C14	-179.5 (3)
O1 ⁱ —Na1—O2—Na1 ^{vii}	-169.42 (13)	C10—C11—C12—C13	-2.2 (5)
O2 ⁱⁱ —Na1—O2—Na1 ^{vii}	-35.3 (2)	C14—C11—C12—C13	178.0 (3)

supplementary materials

O4 ⁱⁱⁱ —Na1—O2—Na1 ^{vii}	93.37 (13)	C9—C8—C13—C12	0.5 (6)
O3 ⁱⁱⁱ —Na1—O2—Na1 ^{vii}	45.83 (14)	O5—C8—C13—C12	-172.7 (3)
C14 ⁱⁱⁱ —Na1—O2—Na1 ^{vii}	71.53 (14)	C11—C12—C13—C8	1.6 (6)
O1 ⁱ —Na1—O2—Na2	88.72 (11)	Na2 ^{viii} —O3—C14—O4	113.0 (6)
O2 ⁱⁱ —Na1—O2—Na2	-137.17 (13)	Na3 ^{ix} —O3—C14—O4	-31.9 (5)
O4 ⁱⁱⁱ —Na1—O2—Na2	-8.48 (10)	Na1 ^x —O3—C14—O4	24.2 (3)
O3 ⁱⁱⁱ —Na1—O2—Na2	-56.02 (11)	Na2 ^{viii} —O3—C14—C11	-66.2 (7)
Na1 ^{vi} —O1—C1—O2	-69.3 (5)	Na3 ^{ix} —O3—C14—C11	148.8 (3)
Na3 ^{vi} —O1—C1—O2	40.8 (4)	Na1 ^x —O3—C14—C11	-155.1 (3)
Na1 ^{vi} —O1—C1—C2	111.7 (4)	Na2 ^{viii} —O3—C14—Na1 ^x	88.8 (6)
Na3 ^{vi} —O1—C1—C2	-138.3 (3)	Na3 ^{ix} —O3—C14—Na1 ^x	-56.1 (2)
Na1 ^{vii} —O2—C1—O1	-88.5 (4)	Na2 ^x —O4—C14—O3	70.0 (5)
Na2—O2—C1—O1	23.4 (4)	Na2 ^{xi} —O4—C14—O3	-114.9 (4)
Na1—O2—C1—O1	121.4 (3)	Na1 ^x —O4—C14—O3	-27.3 (4)
Na1 ^{vii} —O2—C1—C2	90.6 (3)	Na2 ^x —O4—C14—C11	-110.7 (3)
Na2—O2—C1—C2	-157.5 (2)	Na2 ^{xi} —O4—C14—C11	64.4 (3)
Na1—O2—C1—C2	-59.6 (4)	Na1 ^x —O4—C14—C11	152.0 (3)
O1—C1—C2—C7	-8.4 (5)	Na2 ^x —O4—C14—Na1 ^x	97.3 (3)
O2—C1—C2—C7	172.5 (3)	Na2 ^{xi} —O4—C14—Na1 ^x	-87.57 (17)
O1—C1—C2—C3	172.0 (4)	C12—C11—C14—O3	11.6 (5)
O2—C1—C2—C3	-7.1 (5)	C10—C11—C14—O3	-168.2 (3)
C7—C2—C3—C4	-1.0 (5)	C12—C11—C14—O4	-167.7 (3)
C1—C2—C3—C4	178.6 (3)	C10—C11—C14—O4	12.5 (5)
C2—C3—C4—C5	-0.3 (6)	C12—C11—C14—Na1 ^x	-95.3 (6)
C8—O5—C5—C4	-146.1 (4)	C10—C11—C14—Na1 ^x	84.9 (6)
C8—O5—C5—C6	37.9 (6)		

Symmetry codes: (i) $x, -y+1, z-1/2$; (ii) $x, -y, z-1/2$; (iii) $x-1/2, -y+1/2, z-1/2$; (iv) $x-1/2, y-1/2, z$; (v) $x-1/2, y+1/2, z$; (vi) $x, -y+1, z+1/2$; (vii) $x, -y, z+1/2$; (viii) $x+1/2, y+1/2, z$; (ix) $x+1/2, -y+3/2, z+1/2$; (x) $x+1/2, -y+1/2, z+1/2$; (xi) $x+1/2, y-1/2, z$.

Fig. 1

