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Crystallographic data of α-glucoheptonic acid γ-lactone.

By RALPH R. PFEIFFER, *Lilly Research Laboratories, Indianapolis 6, Indiana, U.S.A.*

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Crystals of β-glucoheptonic acid γ-lactone, prepared by recrystallization of the commercial compound from water, were found to be orthorhombic with

$a_0 = 7{\cdot}61$, $b_0 = 17{\cdot}25$, $c_0 = 6{\cdot}60$ Å (all $\pm 0{\cdot}02$ Å).

The density was measured by flotation as 1·587 g.cm.$^{-3}$, (calculated: 1·596 g.cm.$^{-3}$); therefore the cell contains four molecules of $C_7H_{12}O_7$. Weissenberg patterns showed odd orders of $h00$, $0k0$, and $00l$ to be the only systematic absences, thus establishing the space group as D_2^4–$P2_12_12_1$.

Principal powder diffraction lines are given in Table 1. A camera with a diameter of 114·6 mm. and Cr $K\alpha$ radiation ($\lambda = 2{\cdot}285$ Å) were used. Relative intensities were determined visually and no corrections for absorption were applied.

Optical data were kindly furnished by H. A. Rose of these laboratories:

Refractive indices (5893 Å, 25° C.):

$\alpha = 1{\cdot}498 \pm 0{\cdot}002$, $\beta = 1{\cdot}562 \pm 0{\cdot}002$, $\gamma = 1{\cdot}574 \pm 0{\cdot}002$.

Optic axial angle: (−)45° (calculated from α, β, and γ).
Optic axial plane: 100.
Acute bisectrix: $\alpha = b$.

Form and habit: The crystals are equant and may be found lying on any face. They show the forms: prism {110}, brachydome {011}, and brachypinacoid {010}.

Table 1

Observed spacing (Å)	I/I_1	HKL	Calculated spacing (Å)
8·63	0·07	020	8·63
7·00	0·03	110	7·00
6·18	0·50	011	6·18
5·26	0·13	021	5·25
4·80	1·00	111	4·80
4·59	0·33	130	4·59
4·31	1·00	040	4·31
3·81	0·03	200	3·81
3·75	0·67	210, 140	3·74, 3·76
3·60	0·33	041	3·61
3·31	0·07	002	3·30
3·25	0·20	012	3·25
3·15	0·03	150	3·17
3·10	0·03	022, 051, 221	3·10, 3·09, 3·10
2·86	0·27	240	2·86
2·69	0·27	160	2·70
2·62	0·13	042, 061	2·62, 2·64
2·55	0·07	250	2·56
2·50	0·07	202	2·50
2·39	0·03	052	2·39
2·36	0·07	301, 170	2·37, 2·35
2·33	0·07	330	2·33
2·29	0·13	260, 232	2·30, 2·29
2·27	0·13	321	2·28
2·20	0·07	340	2·19
2·10	0·13	113	2·10
2·05	0·07	350, 123	2·05, 2·05
1·96	0·07	043, 322	1·96, 1·96
1·90	0·07	400	1·90
1·67	0·07	0, 10, 1	1·67

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A preliminary X-ray study of some alkali aminedisulphonates and methanedisulphonates.

By D. W. JONES,* *Chemistry Department, The University, Leeds 2, England*

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As a result of goniometric measurements, Münzing (1888) and Zirngiebl (1902) concluded that crystals of ammonium and potassium aminedisulphonates (or imidosulphates) are isomorphous. In addition Zirngiebl pointed out the crystallographic similarities between these salts and ammonium and potassium methanedisulphonates (or methionates); the morphological constants of these and other alkali metal methionates have been determined by Backer & Terpstra (1929).

The cell dimensions and space groups of five of these sulphonates have now been determined from single-crystal X-ray photographs with Cu $K\alpha$ radiation, and are recorded in Table 1. Ammonium aminedisulphonate was prepared by deammonation of ammonium sulphamate; and potassium aminedisulphonate by hydrolysis of the trisulphonate, $K_3(N(SO_3)_3)2H_2O$; rubidium aminedisulphonate, no previous reference to which could be found in the literature, was obtained by double decomposition of the more soluble ammonium salt. Suitable specimens of ammonium and potassium methionates were crystallized from material kindly supplied by Prof. H. J. Backer.

Systematic extinctions showed the space groups of $(KSO_3)_2NH$, $(KSO_3)_2CH_2$ and $(NH_4SO_3)_2CH_2$ to be Cc or $C2/c$, and statistical examination of the intensities of the aminedisulphonate indicated that the centrosymmetrical $C2/c$ should be chosen. The isomorphism of the three compounds is shown not only by the similarity of cell dimensions and space group but by correspondences between low-order intensities. The ammonium and ru-

* Present address: British Rayon Research Association, Heald Green Laboratories, Wythenshawe, Manchester, England.