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**Crystallographic data on some Kurrol salts.** By D. E. C. CORBRIDGE, *Research Department, Albright and Wilson Limited, Oldbury, Birmingham, England*

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The crystalline alkali metaphosphates exist in a number of insoluble varieties. Among these are the 'Kurrol salts'\* which often appear as long fibrous crystals and which, on the basis of their colloidal properties, are thought to contain long chains of high molecular weight (Topley, 1949; Callis, Van Wazer & Arvan, 1954). In the course of an investigation into the crystal structures of some of these compounds, the unit-cell and space-group data listed in Table 1 have been obtained.

The salts were prepared by heating the appropriate dihydrogen orthophosphate to expel water. Small crystals suitable for X-ray examination were produced by slow cooling of the melts. The unit-cell dimensions were obtained from rotation photographs and the space-group extinctions from Weissenberg photographs taken about the three principal axes in each case.

The sodium salt has considerable fibrous character and crystals of the two forms appear to be intimately mixed in a given sample. Most apparently single crystals gave a mixed photograph of forms  $\alpha$  and  $\beta$ , but after a considerable search a single specimen of each form was obtained. While the data for form  $\beta$  confirm those given by Raistrick (1949), the above data on this salt are not in agreement with those published by Pleith & Wurster (1951).

\* The term 'Kurrol salt' is usually restricted to the fibrous form of sodium metaphosphate, but is extended here to cover the other salts discussed.

The detailed crystal structure of the rubidium salt has been worked out by three-dimensional Fourier methods and will be published separately. A chain structure has been confirmed in this salt, and the chains probably have a similar configuration in the potassium salt and in the isomorphous caesium salt. For the structures of the sodium and calcium salts a different type of chain is indicated by space-group and packing considerations.

Very similar infra-red absorption spectra (2–15 $\mu$ ) are given by the salts in Table 1. The spectra of the sodium and potassium salts have already been shown to be characteristic of the 'Kurrol' metaphosphates (Corbridge & Lowe, 1954) and this enables them to be readily distinguished from other salts of the metaphosphate composition.

### References

- ANDRESS, K. R. & FISCHER, K. (1953). *Z. anorg. Chem.* **273**, 193.  
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 RAISTRICK, B. (1949). *Disc. Faraday Soc.* No. 5, p. 234.  
 TOPLEY, B. (1949). *Quart. Rev. Chem. Soc. Lond.* **3**, 345.

Table 1. *Crystallographic data*

	$a$ (Å)	$b$ (Å)	$c$ (Å)	$\beta$ (°)	$n$	$\rho_0$ (g.cm. <sup>-3</sup> )	$\rho_c$ (g.cm. <sup>-3</sup> )	Space group
Sodium metaphosphate $\alpha$ , (NaPO <sub>3</sub> ) <sub>n</sub>	12.12	6.20†	6.99	88	8	2.54–2.60	2.58	$P2_1/n$
Sodium metaphosphate $\beta$ , (NaPO <sub>3</sub> ) <sub>n</sub>	11.37	6.02†	7.64	86	8	2.54–2.60	2.60	$P2_1/n$
Potassium metaphosphate,* (KPO <sub>3</sub> ) <sub>n</sub>	14.02	4.54†	10.28	78.5	8	2.43	2.45	$P2_1/a$
Rubidium metaphosphate, (RbPO <sub>3</sub> ) <sub>n</sub>	12.12	4.23†	6.48	85	4	3.29	3.32	$P2_1/n$
Caesium metaphosphate, (CsPO <sub>3</sub> ) <sub>n</sub>	12.71	4.32†	6.83	83	4	—	3.78	$P2_1/n$
Calcium metaphosphate, [Ca(PO <sub>3</sub> ) <sub>2</sub> ] <sub>n</sub>	16.95	7.66	7.04†	90	8	2.84	2.87	$P2_1/a$

\* These unit-cell dimensions confirm those given by Andress & Fischer (1953).

† Needle axis.

## Notes and News

*Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. Copy should be sent direct to the British Co-editor (R. C. Evans, Crystallographic Laboratory, Cavendish Laboratory, Cambridge, England).*

### Société de Chimie Physique

The Société de Chimie Physique announces that the sixth annual meeting of the Society will be held in Paris from 22 to 25 May 1956 and will take the form of a Conference

on the subject 'Réactions superficielles des gaz sur les métaux'.

Further information may be obtained from the General Secretary of the Society (10 rue Vauquelin, Paris V<sup>e</sup>, France).