

mounted in thin silica capillaries, and examined *in vacuo* in a Unicam S.150 high-temperature powder camera. Since this camera has a maximum working temperature

of 1400° C. it was not possible to examine the existence of the alleged allotropic transformation at 1500° C., but temperatures could be chosen to span the two other temperatures of interest. Trial experiments showed that there was no reaction between the silica and ruthenium up to 1300° C.

The parameters derived from the film measurements were corrected for eccentricity and absorption by a slight modification to the method of Taylor & Floyd (1950), while the temperature of the specimen was checked using the lattice parameter of platinum as a standard. The results are summarized in Fig. 1. The parameters at room temperature ($a = 2.7056$ Å, $c/a = 1.5820$) agree well with those of Hellawell & Hume-Rothery (1954) ($a = 2.7057$ Å, $c/a = 1.5823$) and increase in a regular manner with rising temperature, showing no significant anomaly at either 1035° C. or 1190° C. It is therefore concluded that the β and γ phases postulated by Jaeger & Rosenbohm have no structural significance. The possible existence of δ ruthenium is still in doubt.

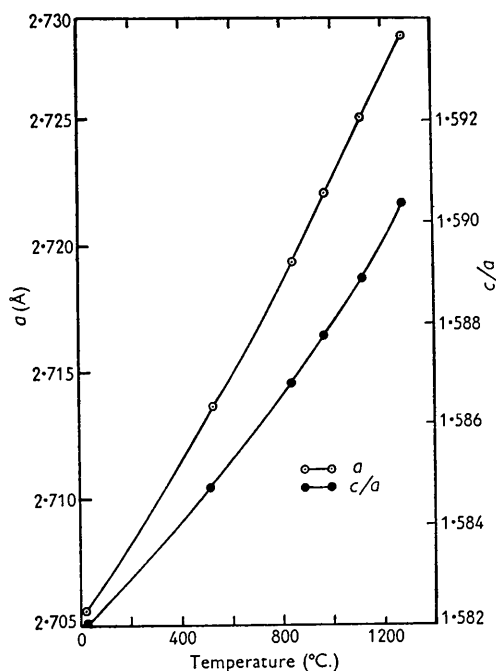


Fig. 1. Lattice parameters of ruthenium.

References

- HELLAWELL, A. & HUME-ROTHERY, W. (1954). *Phil. Mag.* (7), **45**, 797.
 JAEGER, F. M. & ROSENBOHM, E. (1931). *Proc. Acad. Sci. Amst.* **34**, 808.
 JAEGER, F. M. & ROSENBOHM, E. (1941). *Proc. Acad. Sci. Amst.* **44**, 144.
 OWEN, E. A. & ROBERTS, E. W. (1937). *Z. Kristallogr.* **96**, 497.
 TAYLOR, A. & FLOYD, R. W. (1950). *Acta Cryst.* **3**, 285.

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).

Kristallografiya

Volume 1, Part 5 (1956)

Articles

- V. V. BAKAKIN and N. V. BELOV. A rational method of counting the different closest packings of spheres.
 B. K. VAINSHTEIN. The accuracy of the Fourier series for the potential in electronography.
 N. L. SMIRNOVA. Structure types with closest packed atoms. Possible structure types with composition AB_4 .
 N. N. ZHURAVLEV. Microscopic and X-ray studies of alloys of cobalt and antimony.
 N. N. ZHURAVLEV and G. S. ZHDANOV. X-ray determination of the structures of $CoSb_3$, $RhSb_3$ and $IrSb_3$.
 G. S. ZHDANOV, Z. V. ZVONKOVA and N. V. RANNEV. An X-ray structural investigation of lead diethyldithiocarbamate.
 E. G. FESENKO and O. I. PROKOPALO. Isomorphism of the titanates and ferrates of strontium, barium and lead.
 T. L. KHOTSYANOVA. The structures of the chloride and iodide of diphenyliodonium.
 N. A. SHAL'NIKOVA and I. A. YAKOVLEV. X-ray determination of the lattice constants and the coefficients of thermal expansion of leucosapphire and ruby.

- L. I. TATARINOVA. Electronographic investigation of amorphous GaSe.
 L. I. TATARINOVA, YU. K. AULEITNER and Z. G. PINSKER. Electronographic investigation of GaSe.
 S. A. SEMILETOV. Electronographic investigation of the structure of films of germanium obtained by vacuum deposition.
 V. G. ZUBOV and M. M. FIRSOVA. The measurement and the re-calculation of the dynamic elastic constants of quartz.
 V. G. ZUBOV and M. M. FIRSOVA. On certain peculiarities in the diffraction of light by ultrasonic waves in quartz.
 V. M. FRIDKIN. Certain results of the investigation of the photo-electret state of monocrystals of sulphur.
 M. V. KLASSEN-NEKLYUDOVA and A. A. URUSOVSKAYA. Investigation of the structure of the slip bands in crystals of the halides of thallium.
 V. P. BUTUZOV and E. G. PONYATOVSKII. Investigation of the polymorphic transformations of bismuth under super-high pressures.
 M. O. KLIYA. On the re-formation of dendritic crystals.
 A. A. CHERNOV. Estimation of the time of re-formation of inclusions in dendritic crystals.
 P. G. POZDNYAKOV. The growth of crystals of potassium tartrate.

Short communications

- N. I. SHULEPOVA and N. V. BELOV. The symmetry of Patterson syntheses (functions).
 S. S. BATANOV and E. D. RUCHKIN. Ionic radii and re-fractivities of Group 8 metals.
 B. N. GRECHUSHNIKOV and D. BRODOVSKII. Temperature strains in cubic crystals.
 V. L. INDENBOM, I. M. SIL'VESTROVA and YU. I. SIROTIN. Thermo-elastic strains in anisotropic plates.
 M. I. YAROSLAVSKII and I. G. VASIN. Resonators from quartz plates twinned according to the Brazil law.
 A. V. SHUBNIKOV. A lecture experiment for demonstrating the rhythmic growth of crystals of salol.
 N. V. GLIKI, I. A. PLETENEVA and V. A. TIMOFEEVA. Spiral layer growth on crystals of barium titanate.
 L. I. TSINOBER. On the spiral structure of accessory growth on the 0001 surface of crystals of synthetic quartz.
 N. V. BELOV. Medieval Moorish ornamentation in the framework of the symmetry groups.

Letters to the editor

- A. V. SHUBNIKOV. Answer to the observations of O. M. Ansheles on my paper 'On a traditional error and the multifarious forms of its appearance'.
 N. V. BELOV and T. N. TARKHOVA. A correction to the paper 'The colour symmetry groups'.

Notes and news

Notice of the First Conference on Electronography.

Self-binders for *Acta Crystallographica*

Readers are reminded that arrangements have been made with Messrs Easibind Ltd, 84 Newman Street, London W. 1, England, for the provision of self-binders for *Acta Crystallographica*. The binder for Vols. 1-2 is designed to carry the twelve parts of the two volumes, which are held without damage by steel wires; it is lettered with title, volume numbers and years (e.g. Vols. 1 and 2, 1948-9).

The binders for Vol. 3 and subsequent volumes are designed for one volume only, and are supplied in two styles:

- (1) Lettered with title only.
- (2) Lettered with title, volume number and year (e.g. Vol. 10, 1957).

The price of the binder is 14s. post paid throughout the world. Orders should be placed with Messrs Easibind Ltd, stating clearly which style is required.

World Directory of Crystallographers

The publication of a *World Directory of Crystallographers* under the auspices of the International Union of Crystallography is under consideration. As a preliminary step the undersigned is compiling a list in time for the Fourth Assembly of the Union in Montreal, 10-17 July, 1957, and the secretaries of the National Committees (see *Acta Cryst.* (1956), 9, 692) have been asked for lists of the crystallographers of their countries. It is intended to include in the list all practising crystallographers, including advanced graduate students. Even in some countries adhering to the International Union of Crystallography, and certainly in all others, a Crystallographic

Society or a crystallographic section of some other society may not exist, or it may not have among its members all the physicists, chemists, mineralogists, metallurgists, ceramists, biologists and others actively engaged in diffraction studies of the structure and texture of solids. If it is possible that the names and addresses of readers of this notice be not contained on the lists reaching the undersigned through the secretaries of the National Committees of Crystallography, these readers are requested to send their names and addresses as soon as possible to the undersigned for inclusion in the preliminary list. Please use English printed letters.

WILLIAM PARRISH

Philips Laboratories

Irvington-on-Hudson, New York, U.S.A.

Structure Reports

Structure Reports for 1940-1941, the sixth volume to be prepared under the auspices of the International Union of Crystallography, is now ready. It is the aim of these *Reports* to give a critical account of crystal-structure investigations so complete that only those in need of minute detail will find it profitable to consult the original papers.

The volume now published has been prepared under the general editorship of A. J. C. Wilson, with N. C. Baenziger (Metals), J. M. Bijvoet (Inorganic Compounds) and J. M. Robertson (Organic Compounds) as section editors.

Orders may be placed direct with the publisher:

N.V. A. Oosthoek's Uitgevers Mij.,
 Domstraat 1-3, Utrecht,
 Holland,

with the Polycrystal Book Service, 84 Livingston Street, Brooklyn 1, N.Y., U.S.A., or with any bookseller. The price is 80 Dutch florins, £7.11.0 or \$21.50, post free. A remittance should accompany all orders.

The above volume closes the gap between the pre-war publication *Strukturbericht*, which covers the years up to 1939 (Vols. 1-7), and *Structure Reports*, which at present cover the years 1940-1950 (Vols. 8-13). Further volumes of *Structure Reports*, covering the years 1951 onwards, are in course of preparation.

The Commission on *Structure Reports* also intends to publish a Supplementary Volume and Cumulative Index for the years 1940-50, covering Vols. 8-13. This will be numbered Vol. 14, though it is expected that Vol. 15 (1951) will in fact be published earlier. Reports on papers inadvertently omitted will be included in Vol. 14, as well as full cumulative indexes to the six volumes.

The Commission appeals to all crystallographers who have noticed errors or omissions in Vols. 8-13 to communicate promptly with the General Editor, Prof. A. J. C. Wilson, at University College, Cardiff, Great Britain.

A simplified calculation for the elastic constants of arbitrarily oriented single crystals: correction

Errors occur in the above paper by D. S. Lieberman & S. Zirinsky (*Acta Cryst.* (1956), 9, 431). The element γ_{55} of the matrix γ , equation (2), should be $(\beta_{13}\beta_{31} + \beta_{11}\beta_{33})$ and the final expression for S'_{11} , equation (6), should be

$$S'_{11} = S_{11} - \{2(S_{11} - S_{12}) - S_{44}\}(\beta_{11}^2\beta_{12}^2 + \beta_{11}^2\beta_{13}^2 + \beta_{12}^2\beta_{13}^2).$$