References

Groeneveld Meijer, W. O. J. (1955): Synthesis, structures, and properties of platinum metal tellurides. *Am. Mineral.*, **40,** 646–657.

Oftedal, I. (1928): Röntgenographische Untersuchungen von Manganarsenid, Eisentellurid, Nickelstannid und Platinstannid. *Z. phys. Chem.*, **132,** 208–216.

Ramdohr, P. (1950): *Die Erzmineralien und ihre Verwachsungen.* Berlin, Akademie Verlag.

Scholtz, D. L. (1936): The magmatic nickeliferous ore deposits of East Griqualand and Pondoland. *Publ. Univ. Pretoria; Series II: Nat. Sc.* No. **1,** 81–210.

Thomassen, L. (1929): Über Kristallstrukturtypen einiger binärer Verbindugen der Platinmetalle. *Z. phys. Chem.*, **48,** 277–287.

LATTICE DIMENSIONS OF CADMIUM SULPHIDE

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There appears to be a discrepancy between the structure assigned to certain tetrahedral compounds and the measured lattice dimensions. In wurtzite-type structures, if the coordination is tetrahedral, the ratio $c/a = \sqrt{2/3} \times Z = 0.81650\,Z$. However, in the case of hexagonal cadmium sulphide, the following lattice dimensions and ratios have been reported:

	c	a	Z	$c/a\,Z$
Ulrich and Zacharaisen (1925)[1]	6.724	4.142	2	0.8115
Schnaase (1933)[2]	6.691	4.131	2	0.8099

These values agree fairly well, but the mean ratio, 0.8107, is significantly smaller than the theoretical vaue, 0.8165.

Pure cadmium sulphide was precipitated, dried, mixed with about 10 per cent by weight of Na_2S_x in evacuated vycor tubes, and heated in a controlled furnace for several hours. The chilled crystalline products were ground, washed free from alkali, and mounted on glass plates with balsam. After curing, the specimens were ground flat. Analysis of several x-ray diffractions was carried out with a Norelco geiger counter diffractometer. Instrumental calibration for angle was by the direct comparison method using a Norelco silicon standard. Diffraction angles of Cu$K\alpha_1$ radiation were converted to spacings using U. S. Bureau of Standards tables (1950). The a dimension (= tetrahedral edge) was obtained from twice the spacing of the 11.0 plane, and the c dimension (= tetrahedral height) was obtained from three times the spacing of the third order of the basal plane. From calibration and reproducibility tests, both values

[1] *Zeit. Krist.* **62,** 260–270 (1925).

[2] *Zeit. phys. Chemie* **20**B, 89–117 (1933).

are probably accurate to ± 0.0005 Å. The experimental conditions and results are given below:

Temperature	Time Hours	c/Z	a	$c/a\ Z$
586±5° C.	15	3.3747	4.1360	0.81593
832	65	3.3747	4.1350	0.81613
957	62	3.3741	4.1334	0.81630

The mean of the above ratios, 0.8161, is much nearer the theoretical value of 0.8165 than the earlier values. Whether the small difference remaining is real or not was not determined. However, the c/a ratio is less than 0.1% from the tetrahedral value.

In order to test whether the kind of flux used for crystallizing had a significant effect, a run at 515° C. for 237 hours was made with a flux consisting of a low melting temperature mixture of NaCl, KCl, and LiCl. The measured values, as in the above table, were 3.3747, 4.1356, 0.81601. One run at 900° C. for 3 hours with no flux gave 3.3750, 4.1356, 0.81608. These data are very similar to those of the first set.

The above results for hexagonal CdS crystallized at 550–950° C. in the presence of excess sulphur are:

$$a = 4.1348 \pm 0.0015 \text{ Å},$$
$$c = 6.7490 \pm 0.0010 \text{ Å},$$

when $Z = 2$, and

$$c/aZ = 0.8161 \pm 0.0002.$$

A NEW CENTRIFUGE TUBE FOR MINERAL SEPARATION[1]

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ABSTRACT

A centrifuge tube consisting of three components is described, which permits the efficient separation and removal of the sink and float fractions in heavy liquid separation.

INTRODUCTION

In the gravity separation of minerals using heavy liquids, centrifuging is frequently desirable and sometimes necessary. This procedure is particularly effective in the separation of minerals whose specific gravities are very similar, or with mineral powders which are very fine

[1] Published by permission of the Deputy Minister, Department of Mines and Technical Surveys, Ottawa, Canada.

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