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Die Phase $NbCd_3$.

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Im Rahmen von Untersuchungen an Legierungen von hochschmelzenden Übergangsmetallen mit sehr niedrigschmelzenden B-Metallen wurden 10 Proben im System Niob–Kadmium hergestellt und untersucht. Über dieses System lagen keine Literaturangaben vor. Die pulverförmigen Komponenten wurden in Quarzampullen eingeschlossen und 400 Stunden bei 650°C geglüht. Die Untersuchung erfolgte röntgenographisch (Pulver- und Goniometeraufnahmen) und metallographisch.

Wie zu erwarten verlief die Gleichgewichtseinstellung in diesem System äusserst träge. Trotz der langen Glühdauer, war die Reaktion, die über die Dampfphase des Kadmiums erfolgte, nicht vollständig. Als einzige intermetallische Phase konnte bei den gegebenen Glühbedingungen $NbCd_3$ hergestellt werden. Nennenswerte Löslichkeiten wurden nicht beobachtet.

$NbCd_3$ kristallisiert im Cu_3Au-Typ (Strukturbericht Typ $L1_2$), Raumgruppe $Pm3m$ (O_h^1) mit einer Gitterkonstanten von $a=4{,}215$ Å. Die Elementarzelle enthält 4 Atome: 1 Nb in (0,0,0) 3 Cd in $(0,\frac{1}{2},\frac{1}{2})$; $(\frac{1}{2},0,\frac{1}{2})$; $(\frac{1}{2},\frac{1}{2},0)$; als Röntgendichte ergibt sich $\varrho=9{,}577$ g.cm^{-3}.

In Systemen der Übergangsmetalle mit Zink sind die im Cu_3Au-Typ kristallisierenden Phasen $TiZn_3$, VZn_3 und $NbZn_3$ bekannt (Rossteutscher & Schubert, 1965). $NbCd_3$ ist die erste Phase im Cu_3Au-Typ an der Kadmium beteiligt ist. Es besteht bei den dicht-gepackten Strukturen der Zusammensetzung AB_3 offensichtlich eine Konkurrenz zwischen den Typen $AuCu_3$, $TiNi_3$, $MgCd_3$, $PuAl_3$, $TiCu_3$ und $TiAl_3$, die sich nur in der Abfolge der dichtgepackten Schichten unterscheiden.

Literatur

Rossteutscher, W. & Schubert, K. (1965). *Z. Metallk.* **56**, 730.

Tabelle 1. *Auswertung einer Pulveraufnahme* (114,6 mm Ø Debye–Scherrer Kamera) *von* $NbCd_3$ *mit* Cu *Kα-Strahlung*

hkl	$10^3 \cdot \sin^2\theta$ ber.	$10^3 \cdot \sin^2\theta$ gef.	Intensität ber.	Intensität gef.	Bemerkung
100	33,4	32,6	32	*m*	
110	66,8	66,1	24	*m*	
111	100,0	99,6	3365	*st*	
200	133,5	133,1	1739	*st*	
210	167,0	166,7	18	*s*	
211	200,0	200,0	11	*s*	
220	267,0	266,8	1050	*st*	
300 } 221 }	301,0	301,4	6	*ss*	
310	334,0	334,0	4	*ss*	
311	368,0	367,2	1192	*st*	
222	401,5	401,2	355	*mst*	
320	434,5	434,0	2	*m*	*K*, Nb 220
321	468,0	466,9	5	*ss*	
400	534,0	534,8	181	*s*	
410 } 322 }	569,0	569,0	5	*ss*	
411 } 330 }	603,0	604,0	3	*ss*	
331	635,5	636,1	589	*mst*	
420	669,0	669,4	589	*mst*	
421	700,5	700,0	4	*ss*	
332	736,0	737,0	2	*ss*	
422	802,5	802,3	787	*mst*	
430 } 500 }	834,5	834,0	4	*sss*	
431 } 510 }	870,0	870,0	11	*m*	*K*, Nb 400
333 } 511 }	903,5	903,5	1528	*st*	

K= Koinzidenz

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Crystallographic data for *s*-diphenylthiourea.

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Crystals of *s*-diphenylthiourea in the form of prisms ($1\times2\times0{\cdot}1$ mm) were grown from a hot ethyl acetate solution. Oscillation, Weissenberg and precession photographs (Cu *Kα*, Ni filter) indicated that the crystals were orthorhombic. The cell dimensions which have been refined from powder data (Cu *Kα*, Ni filter) are as follows: $a=7{\cdot}94\pm0{\cdot}02$, $b=25{\cdot}58\pm0{\cdot}04$, $c=5{\cdot}70\pm0{\cdot}02$ Å.

Systematic absences of *hk*0 for *h* odd, 0*kl* for $k+l$ odd, indicate that the space group is either *Pnma* or $Pn2_1a$. Piezoelectric studies were negative, suggesting that the space group *Pnma* is more probable. The experimental density is 1·32 g.cm^{-3}. The calculated density for four molecules per unit cell is 1·34 g.cm^{-3}. If the centrosymmetric space group is correct, then the molecule must lie on the mirror plane, which requires no additional systematic extinctions.

The powder pattern of *s*-diphenylthiourea was obtained on a Philips diffractometer and Debye–Scherrer camera. The intensities observed on the photograph were in agreement with those found with the diffractometer. Therefore, there was probably no preferred orientation. The powder diffraction data obtained are listed in Table 1.

No further work on this compound is contemplated.

Table 1. *Powder diffraction data: s-diphenylthiourea*

hkl	I/I_1	d_o	d_c
020	60	12·83 Å	12·80 Å
040	40	6·40	6·40
011	10	5·56	5·57
111	100	4·56	4·56
060	40	4·26	4·27
131	2	4·07	4·07
200	40	3·97	3·98
051	2	3·80	3·81
230	1	3·60	3·60
151	8	3·43	3·44
240	8	3·38	3·38
211	5	3·23	3·24
080	20	3·20	3·20
250	40	3·14	3·14
161			3·14
071	4	3·08	3·08
231	8	3·04	3·05
260	40	2·906	2·908
270	1	2·690	2·691
112	1	2·665	2·670
0,10,0	25	2·557	2·560
191	4	2·422	2·424
062	4	2·370	2·371
331			2·313
290	4	2·314	2·313
202			2·318
162	1	2·268	2·272
1,10,1	4	2·241	2·240
0,11,1	5	2·154	2·155
1,11,1	5	2·080	2·080

Notes and News

Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. The notes (in duplicate) should be sent to the General Secretary of the International Union of Crystallography (G. Boom, Laboratorium voor Technische Natuurkunde der Rijksuniversiteit, Westersingel 34, Groningen, The Netherlands). Publication of an item in a particular issue cannot be guaranteed unless the draft is received 8 weeks before the date of publication.

Second International Congress for Stereology

Chicago, Illinois, U.S.A., 8–13 April 1967

The International Society for Stereology is organizing the Second International Congress for Stereology, which is to be held in Chicago, Illinois, from 8 to 13 April 1967. All scientists interested in theory or applications of methods of stereology and morphometry are invited to participate in this meeting.

Problems of quantitative study of three-dimensional structures by means of sections occur in practically all morphological sciences, in life sciences as well as in earth and material sciences. Even in astronomy related problems exist. The First Congress for Stereology, held in Vienna in 1963, has shown that extensive mutual stimulation evolves from contacts thus established across the boundaries of scientific disciplines. This second congress should therefore again gather workers from all fields of science, who are faced with the problem of interpreting sections through unknown structures in terms of spatial relationships.

The program includes ten sessions covering the following topics: quantitative evaluation of sectioned material, measuring devices, shape determination, size distribution and number of structures, sampling and statistics, orientation of structures, stereology and topology, as well as applications to specific problems. Each topic will be introduced by an invited survey lecture followed by contributed papers related to the topic. The congress will be followed by a workshop to which a limited number of participants can be admitted.

Deadline for submission of titles is 1 December 1966. Further information can be obtained from the Organizing Committee, International Society for Stereology, 2020 West Ogden Avenue, Chicago, Illinois; or from the Secretary, International Society for Stereology, Anatomisches Institut, Bühlstrasse 26, CH-3000 Bern, Switzerland.

Book Reviews

Works intended for notice in this column should be sent direct to the Editor (A. J. C. Wilson, Department of Physics, The University, Birmingham 15, England). As far as practicable books will be reviewed in a country different from that of publication.

Bulletin de la Société Belge de Physique, Ser. IV, No.3–4. October 1964. Price per issue 200 B.F.

This brochure, written in French, with the exception of one contribution in German, contains the papers presented at a seminar on the brittleness and ductility of the solid state, especially of metals, held in Brussels on 24 and 25 March, 1964. At the end of some of the papers discussions are reported. Most of the papers are intermediate between surveys of limited (usually technological) fields and original papers. A particularly welcome review is that by H. C. van Elst on the observation of crack propagation by ultra-rapid photography.

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