B_4Si crystals were examined by rotation and Weissenberg X-ray methods and dimensions corrected by measurement of X-ray powder photographs. The crystals are found to be rhombohedral with the following hexagonal unit cell.

$$a = 6{\cdot}330 \quad \text{and} \quad c = 12{\cdot}736\ \text{Å}\ .$$

Since the compound appears to be isomorphous with B_4C, the $R\bar{3}m$ space group is assigned. However, on the basis of systematic absences, any of the following space groups is possible: $R\bar{3}m$, $R3m$, $R32$, $R\bar{3}$, and $R3$. The rhombohedral unit cell contains three B_4Si molecules. Specific gravity as well as chemical analysis rule out the possibility of this new form of boron silicide being B_3Si.

X-ray powder diffraction lines for B_4Si, shown in Table 1, were obtained by use of Cr $K\alpha$ radiation with a 14 cm. camera.

B_4Si appears to be thermodynamically unstable under long heating in air. For example, after heating for about 100 hr. at 1370 °C., B_4Si is converted completely into orthorhombic B_6Si. This change may prove interesting from a structural viewpoint as a similarity between B_6Si and B_4C is indicated by Adamsky (1958).

The specific gravity of 2·47 g.cm.$^{-3}$ as found for B_4Si is slightly lower than the value of 2·52 g.cm.$^{-3}$ obtained by Moissan (1900) for B_3Si. In view of the difficulty experienced in removing excess silicon from reaction products, the author believes that what Moissan called B_3Si, probably was B_4Si.

Crystals of another orthorhombic and tetragonal form were also found. However, their chemical formulas have not been established.

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Some new intermetallic compounds of beryllium.*

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Two new classes of compounds are reported here (M_3Be and MBe$_{20}$), together with additional compounds of the M_2Be$_{17}$ and MBe$_{13}$ types. The X-ray data are based on powder diffraction patterns using Cu $K\alpha$ radiation. The lattice parameters were calculated from relatively low Bragg angles, i.e., in the forward reflection region.

(1) M_3Be

The compound Mo_3Be was prepared and found to be isomorphous with Mo_3Si (Templeton & Dauben, 1950), which is cubic. The preparation contained free molybdenum, in addition to Mo_3Be. No other beryllides were observed in this preparation.

(2) M_2Be$_{17}$

Compounds of the form M_2Be$_{17}$ were found in the Hf–Be, Nb–Be, Ti–Be, Ta–Be, and Zr–Be systems, but not in the Cr–Be, Mo–Be, Re–Be, V–Be, or W–Be systems. Nb_2Be_{17} (Sands, Zalkin & Krikorian, 1959) and Zr_2Be_{17} (Zalkin, Bedford & Sands, 1959) are reported as isomorphous having rhombohedral symmetry. Their hexagonal unit cells are given as triply primitive. Based on a comparison of powder patterns, all of the M_2Be$_{17}$ compounds mentioned here were found to be isomorphous. The lattice parameters of Hf_2Be_{17}, Ta_2Be_{17}, and Ti_2Be_{17} shown in Table 1 are based on the hexagonal unit cell.

Table 1. *Structures of some intermetallic compounds of beryllium*

Compound	Structure	Lattice constants
Mo_3Be	Cubic–O_h^3	$a = 4{\cdot}89$ Å
Hf_2Be_{17}	Hexagonal	$a = 7{\cdot}50$ $c = 10{\cdot}94$
Ta_2Be_{17}	Hexagonal	$a = 7{\cdot}39$ $c = 10{\cdot}76$
Ti_2Be_{17}	Hexagonal	$a = 7{\cdot}34$ $c = 10{\cdot}73$
$LaBe_{13}$	Cubic–O_h^6	$a = 10{\cdot}44$
$MoBe_{20}$*	Cubic–O_h^7 or T_h^4	$a = 11{\cdot}64$
$ReBe_{20}$*	Cubic–O_h^7 or T_h^4	$a = 11{\cdot}54$
WBe_{20}*	Cubic–O_h^7 or T_h^4	$a = 11{\cdot}64$

* Assigned empirical formulas and space groups are tentative pending further investigation.

(3) MBe$_{13}$

The compound $LaBe_{13}$ was prepared and found to be isomorphous with $ZrBe_{13}$, which has a face-centered cubic $NaZn_{13}$ type structure (Baenziger & Rundle, 1949). Structural data are given in Table 1.

(4) 'MBe$_{20}$'

Compounds having the approximate composition of MBe$_{20}$ were observed in Mo–Be, Re–Be, and W–Be systems. The compounds are mutually isomorphous, being cubic and having systematic absences characteristic of both O_h^7 and T_h^4 space groups. No intensity calculations

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* The work was performed in part under contracts with the U.S. Air Force, and is continuing under contracts with both the U.S.A.F. and the U.S. Atomic Energy Commission.

were made in this work; however, further work is being conducted on the $M\mathrm{Be}_{20}$ structure.

Structural data for MoBe_{20}, ReBe_{20}, and WBe_{20} are given in Table 1.

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Structure d'une cyanine monomethinique.

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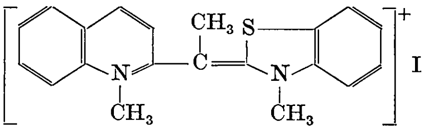
La cyanine de formule



cristallise dans le système orthorhombique, groupe spatial *Pbca*. Les paramètres de la maille-unité valent:

$$a = 11{,}5 \pm 0{,}1,\ b = 16{,}9 \pm 0{,}1,\ c = 20{,}8 \pm 0{,}1\ \text{Å}\ .$$

La maille contient 8 molécules.

La structure a été déterminée en appliquant la méthode de l'atome lourd aux spectres $0kl$, $1kl$, $h0l$ et $hk0$. L'affinement de la structure a été réalisé par synthèses de Fourier ordinaires et des différences. R final: $R(0kl) = 17\%$, $R(1kl) = 17\%$, $R(h0l) = 19\%$, $R(hk0) = 27\%$.

Les figures 1(*a*) et 1(*b*) montrent les projections sur les plans (100) et (001) respectivement. On remarquera que le cristal est formé de molécules énantiomorphes. Dans ces molécules, l'encombrement stérique des trois groupes méthyle induit une torsion progressive tout au long de la chaine conjugée, torsion qui incline le noyau quinoléïne à 60° par rapport au noyau benzothiazole.

Un compte rendu détaillé de cette détermination de structure paraîtra prochainement au Bulletin des Sociétés Chimiques Belges.

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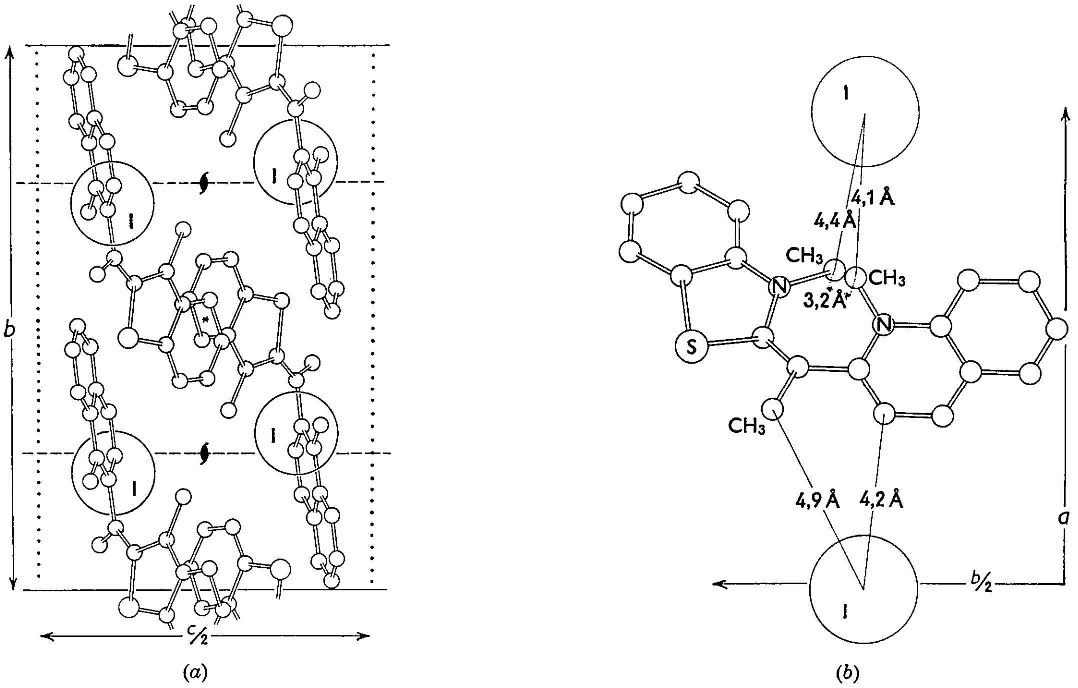

(*a*) (*b*)

Fig. 1. (*a*) Assemblage des molécules dans la maille. Projection sur le plan (100). (*b*) Projection d'une molécule sur le plan (001).