

1974). The ratios of atoms with CN16, CN15, CN14 and CN12 are 2:2:2:7 for all three structure types.

The hypothetical structure shown by Steinmetz *et al.* (1982) in Fig. 3(b) has the same tessellations for the secondary network ($4^2.3^3$) as does the t.c.p. μ phase, mentioned above, and shown in Shoemaker & Shoemaker (1969) in Fig. 6(a). Its projection, however, is not identical to the μ -phase projection, which would be obtained if the transformation mechanism described by Steinmetz *et al.* to obtain Fig. 3(b) were performed on a structural slab running in the **b** direction, rather than in the **a** direction. {In this case the middle slab also has to be shifted in the [001] direction and infinite rows of atoms similar to those in Fig. 3(b) are not formed.}

The hypothetical t.c.p. structure (with two main layers and two secondary layers), which has a *c* projection almost identical to the hypothetical structure in Fig. 3(b), is also a four-layer structure when projected down [130] of TiMnSi_2 . When viewed in that direction the main layers consist of alternating rows of hexagons and pentagons, and the

secondary layers have 3^6 tessellations. It is the hypothetical t.c.p. structure shown in Fig. 7(b) of Shoemaker & Shoemaker (1969). It is a fourth t.c.p. structure that may be formulated as R_6X_7 , and that has the same ratios of atoms with the different coordination types as mentioned above.

References

- ARNFELT, H. & WESTGREN, A. (1935). *Jernkontorets Ann.* **119**, 185.
 FRANK, F. C. & KASPER, J. S. (1959). *Acta Cryst.* **12**, 483–499.
 KRIPYAKEVICH, P. I. & YARMOLYUK, YA. P. (1974). *Dopov. Akad. Nauk. Ukr. RSR Ser. A*, **36**, 460–463.
 SHOEMAKER, C. B. & SHOEMAKER, D. P. (1967). *Acta Cryst.* **23**, 231–238.
 SHOEMAKER, C. B. & SHOEMAKER, D. P. (1969). *Developments in the Structural Chemistry of Alloy Phases*, edited by B. C. GIESSEN, pp. 107–139. New York: Plenum.
 STEINMETZ, J., VENTURINI, G., ROQUES, B., ENGEL, N., CHABOT, B. & PARTHÉ, E. (1982). *Acta Cryst.* **B38**, 2103–2108.
 YARMOLYUK, YA. P. & KRIPYAKEVICH, P. I. (1974). *Kristallografiya*, **19**, 539–545.

International Union of Crystallography

Acta Cryst. (1983). **B39**, 655

Chemical Nomenclature

The attention of authors is drawn to the following recommendations of the IUPAC Commission on Nomenclature of Organic Chemistry: *The Designation of Non-Standard Classical Valence Bonding in Organic Nomenclature* [*Pure Appl. Chem.* (1982), **54**, 217–227], *Revision of the Extended Hantzsch–Widman System of Nomenclature for Heteromonocycles* [*Pure Appl. Chem.* (1983), **55**, 409–416]; and to the following recent recommendations of the IUPAC–IUB Joint Commission on Biochemical Nomenclature: *Symbols for Specifying the Conformation of Polysaccharide Chains* [*Eur. J. Biochem.* (1983), **131**, 5–7], *Abbreviations and Symbols for the Description of Conformation of Polynucleotide Chains* [*Eur. J. Biochem.* (1983), **131**, 9–15].

Authors are reminded that, wherever possible, chemical nomenclature in the Union's journals should conform to IUPAC rules. Basic rules for the nomenclature of inorganic chemistry are given in *Nomenclature of Inorganic Chemistry* (1970) ('The Red Book'), London: Butterworths and, for organic chemistry, in the two volumes *Nomenclature of Organic Chemistry, Sections A, B, C, D, E, F, & H* (1979) ('The Blue Book'), Oxford: Pergamon Press and *Biochemical Nomenclature and Related Documents* (1978), London: Biochemical Society. For further details on nomenclature requirements see *Notes for Authors* [*Acta Cryst.* (1983), **A39**, 174–186].

An index to all IUPAC nomenclature publications is available from the IUPAC Secretariat, Bank Court Chambers, 2–3 Pound Way, Cowley Centre, Oxford OX4 3YF.

Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS2 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.

Acta Cryst. (1983). **B39**, 655–656

Extended linear chain compounds, Vol. 3. Edited by J. S. MILLER. Pp. xviii + 561. New York and London: Plenum Press, 1983. Price US \$55.00.

This third volume represents another ten review papers on one-dimensional chain compounds, and I can repeat the comment made already by H. Boller (1983) in his review of the first and second volumes (*Acta Cryst.* **B39**, 287), 'Each contribution covers its subject independently and can therefore be studied at the reader's choice'.

The first chapter describes the experimental results of Gillespie's (1971) prediction, 'It seemed reasonable to suppose that, if two mercury atoms could be bonded together (Hg_2^{2+}), it might be possible to prepare cations containing three or even more mercury atoms covalently bonded together'. Chapter 2 deals extensively and systematically with the metal–metal chain bondings in hexagonal close-packed anion spheres (hexagonal perovskites); ferromagnetic properties of these compounds are dealt with in chapter 3. Chapters 4 and 5 turn to stacked organic charge-transfer complexes in which magnetic resonance results predominate amongst the many physical properties of these stacking

compounds. Chapter 6 describes the different interesting properties of the electron-transfer series of the transition-metal 1,2-dithiolates, stackings of flat molecules (or ions) of this series with long-distance metal-metal contacts, and their magnetic and electrical properties. A change of subject takes place again in chapter 7, in which TCNQ spin-Peierls transitions are the subject of discussion. The interesting, thermally stable, electrically conducting polypyrroles, which can be prepared electrochemically, and the application of these polymers as electrode materials is well described in chapter 8. Finally, chapters 9 and 10 are devoted to preparations and physical methods respectively, the latter being the determination of the way in which the stackings of different units in the crystals are ordered.

The reviewer agrees fully with Boller's comments on the first two volumes: 'The standard of all contributions is high throughout . . .'. However, the ordering of the 30 papers is almost random and therefore 'chains of papers' are missing through the three volumes.

J. A. CRAS

Department of Inorganic Chemistry
University of Nijmegen
Toernooiveld
6525 ED Nijmegen
The Netherlands

Acta Cryst. (1983). **B39**, 656

Uses of synchrotron radiation in biology. Edited by H. B. STUHRMANN. Pp. xii + 348. London: Academic Press, 1982. Price £36.40.

Synchrotron radiation is becoming increasingly utilized as a research tool in many disciplines. The radiation itself (SR for short) is produced in copious quantities over a continuum from X-ray to infrared wavelengths by electron or positron storage rings or synchrotrons. These machines are available at a relatively small number of sites around the world and have consequently led to a substantial change in the working lifestyle of many research scientists now using these centralized facilities. This is especially true of the structural biologist whose samples are particularly demanding of sources of radiation. As a result he/she is one of the major users of SR sources today. This book deals with these uses of SR in biology and, in particular, in the techniques of diffraction, spectroscopy and microscopy applied to the structural study of biological macromolecules and their aggregates in a variety of sample states. The book owes much to the energy and enthusiasm of the editor, H. B. Stuhrmann. There are 12 chapters in all with a plentiful supply of approximately 600 references covering research up to 1981. The chapters on radiation damage and fluctuation scattering are refreshingly new in such a book. The whole volume is written as a collection of reviews by some of the

leading experts in Europe. The book counterbalances the dominantly American-oriented authorship of *Synchrotron Radiation Research* edited by H. Winick and S. Doniach (1980) [see *Acta Cryst.* (1981), **A37**, 447 for a brief review], though the latter does strike a better balance from this point of view than the present book.

The bias of the present work appears to aim at satisfying the research scientist rather than offering a didactic approach for the research student; it is in any case rather expensive for someone on a grant rather than a salary. The ordering of the chapters seems a little peculiar and would have been better perhaps with the instrumentation sections (detectors and data acquisition) placed after the first chapter on SR and its properties. A chapter on optical beam conditioning is badly missed since it would have given a more flowing treatment and avoided overlap between several of the chapters in this area. There also seems to be no need for the use of identical figures in different chapters; that is, Fig. 5 of ch. 6 is Fig. 6 of ch. 1, and Fig. 1 of ch. 3 is Fig. 4 of ch. 2. There are a sizeable number of proof errors, which are distracting to the reader, the most unfortunate of which, in the context of *Acta Cryst.*, is 'the phrase problem of crystallography' (p. viii). The overall layout of the book is, however, very well done and the quality of the figures is very good. There is also an extensive subject index. The book would serve as a valuable research reference work.

J. R. HELLIWELL

SERC, Daresbury Laboratory
Daresbury
Warrington
Cheshire
WA4 4AD
England

Book Received

The following books have been received by the Editor. Brief and generally uncritical notices are given of works of marginal crystallographic interest; occasionally a book of fundamental interest is included under this heading because of difficulty in finding a suitable reviewer without great delay.

Landolt-Börnstein: numerical data and functional relationships in science and technology. Group III. Crystal and solid state physics. Vol. 7. Crystal structure data of inorganic compounds. Part b3: Key elements S, Se, Te. Edited by K.-H. HELLWEGE & A. M. HELLWEGE. Pp. xxvii + 435. Berlin, Heidelberg, New York: Springer-Verlag, 1982. Price DM 740, US \$296.00.