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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 Executive Secretary of the International Union of Crystallography (J. N. King, International Union of Crystallography, 5 Abbey Square, Chester CH1 2HU, England).

J. Appl. Cryst. (1982). **15**, 639

The J. D. Hanawalt Powder Diffraction Award

The first J. Donald Hanawalt Powder Diffraction Award will be presented at the joint meeting of the Denver Conference on Applications of X-ray Analysis and the American Crystallographic Association in Snowmass, Colorado, in August, 1983.

This award is sponsored by the JCPDS-International Centre for Diffraction Data. It is to be presented every three years for an important, recent contribution to the field of powder diffraction. The award will consist of a certificate and \$1000. The awardee is expected to submit an abstract and present a paper on the work being recognized at the designated scientific meeting; travel expenses will be provided.

For this first award, work that is to be eligible must have been published between 1 August 1970 and 31 August 1982. There are no restrictions as to age, experience, or nationality of the recipient.

A committee has been appointed to select the 1983 award. The members are J. W. Caum, G. J. McCarthy, D. K. Smith, and C. Foris, chairman.

The selection committee will welcome suggestions, nominations, and documentation of accomplishments for possible recipients by 1 January 1983 from any interested persons. These should be addressed to C. M. Foris, E. I. du Pont de Nemours & Co., 356 Experimental Station, Wilmington, Delaware 19898, USA.

Book Review

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.

J. Appl. Cryst. (1982). **15**, 639

Crystals: growth, properties, and applications. Vol. 5. Silicon.

Edited by *J. Grabmaier*. Pp. 199. Berlin, Heidelberg, New York: Springer-Verlag, 1981. Price: DM 110.00, US \$ 51.30.

The book is divided into two areas of interest: float-zone-grown silicon and solar silicon.

In a short chapter (42 pages), the technology of the float zone process is investigated. The article describes the historical development, gives a survey of polycrystalline silicon rod production and depicts the usual technology of the float zone process. Equipment is presented, crystallization and doping conditions are discussed. Some information about defects (especially swirls) and material characterization is given. This chapter can be considered as a good background for people interested in learning about float zone technology. For practical applications or new developments, reference to the articles of the bibliography must be made.

The three other chapters are an introduction to solar grade silicon, and more precisely to the production of silicon ribbons.

The role of silicon, and the future trends in photovoltaic programs, are presented in the second chapter of the book. An overview of the refining technology of silicon, especially halosilane and SiO₂ conversions, is given. The main emphasis is on two unconventional crystallization techniques: directional solidification of the ingots, and sheet growth. A large number of examples and pictures highlight these two types of crystallization. A survey of material characterization is added to this chapter.

The study of various types of ribbons, and the capillary-action shaping technique is the purpose of the third chapter. Various types of capillary dies, made of various materials, are investigated. The parameters of ribbon growth are deduced from thermodynamical considerations.

The fourth chapter is a description of a technique of silicon ribbon growth, the EFG (edge-defined film-fed growth). The silicon ribbon is pulled with a contact to liquid silicon in a shape-forming die which is rectilinear or circular. The shape of the meniscus between the die and the ribbon determines the characteristics of the ribbon (thickness) and various parameters which determine this shape (thermal considerations, speed of pulling) are presented.

This book is a didactic presentation of two important technologies of silicon crystallization, float zone and ribbon pulling, with good, updated and precise information on this last technique. Bibliographies of the chapters must be used to get more precise information on the material quality.

V. CAZCARRA

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