

## New Commercial Products

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*J. Appl. Cryst.* (1986). **19**, 281

### Automatic Thin Film Measurement System

The newly designed **TF1200 automatic thin film measurement system** from the Polaron Division of Bio-Rad Laboratories measures the thickness of semi-transparent films. The system monitors the spectral reflectivity which is used to calculate the film thickness.



The TF1200 thin film measurement system.

The TF1200 offers the following features: Monochromatic irradiation to minimize sample heating. This yields more accurate data than that obtained with conventional white-light irradiation; An autofocusing system; A built-in viewer to observe the sample surface. The power of magnification is selected by changing the microscope objective. This permits film-thickness measurements over very small areas such as part of an IC pattern; Measurement of absolute reflectivity of small areas. The spectral absolute reflectance is displayed on the CRT; The entering of refractive indices of samples by the operator; A wide range of measured thicknesses (100–33 000 Å); A sample stage to accommodate wafers up to 8 in in diameter.

Polaron Equipment Ltd, 53–63 Greenhill Crescent, Watford Business Park, Watford, Hertfordshire WD1 8OS, England

## 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.

*J. Appl. Cryst.* (1986). **19**, 281

**Rapidly quenched metals, Vols. I and II.** Edited by *S. Steeb* and *H. Warlimont*. Pp. lxxii + 1090 and lxxvii + 791. Amsterdam: North Holland, 1985. Price US \$ 96.25, Dfl 260.00 and US \$ 66.75, Dfl 180.00.

The study of metallic alloys lacking long-range chemical order, the amorphous or glassy alloys, produced by rapid quenching from the melt essentially began in 1960 after the celebrated work of Duwez and his co-workers. Their samples were produced as small irregular discs or 'splats' and were of limited use.

The introduction of melt-spinning, a technique for producing the alloys in commercial quantities as continuous ribbons, and the realization that amorphous alloys can be stronger, less resistant to corrosion and, in the case of iron-based alloys, may be superior magnetically when compared with their crystalline equivalents has resulted in an explosion of activity both technological and academic over the last decade.

This two-volume work records the proceedings of the Fifth International Conference on Rapidly Quenched Metals (RQM) held in September 1984 at Wurtzburg with over 650 participants. The last day of the meeting was devoted to applications when the numbers were increased by the attendance of some 50 industrialists.

The material presented in the 540 research papers represents the 'state of the art' at the time and most of the detail is of immediate use only to the specialist and as with all rapidly developing subjects must quickly become dated. However, it is held together with a number of excellent reviews which will stand out as milestones in the development of this multidisciplinary subject.

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*J. Appl. Cryst.* (1986). **19**, 281–282

**The kinetics of industrial crystallisation.** By *J. Nyvlt*, *O. Söhnel*, *M. Matuchová* and *M. Broul*. Pp. 350. Amsterdam: Elsevier, 1985. Price US\$67.25, Dfl 175.00.

A book like this one takes much time to read. The authors have to be praised for their initiative in writing such an extensive literature survey (mainly 1970–1980) on this subject. By doing this they have reduced the gap in knowledge between that of chemical engineers and scientists in the field of solid-state physics and thermodynamics.

Very wisely this book starts with remarks about the dimensions to be used for concentration in the case of crystal growth and mass transfer. The same remarks are made in the introduction to the driving force for a crystallization process; whether the difference in chemical potentials of the substances involved should be used or simply the difference in concentration. The consequences of a simplification are mentioned.

It is clear that a book on the kinetics of crystallization has to deal with the aspects of nucleation of crystals and their growth.

First the formation of new crystalline material is discussed and a distinction is made between primary and secondary nucleation. For primary nucleation the conception of the width of a metastable zone in a phase diagram is put forward and the way this width can be measured is suggested. It becomes clear after the presentation of the basics of phase transition that the data concerning the width of the metastable zone cannot be translated without further research into the industrial situation owing to the influence of mechanical actions such as agitation.

As the main source for nuclei in an industrial crystallizer is formed by the mechanism of secondary nucleation (nucleation due to the presence of crystals) much attention is paid to this subject. Different modes of secondary nucleation are presented such as fluid shear, contact nucleation, collision breeding and also factors influencing the rate of secondary nucleation such as hardness of crystals, temperature, supersaturation, the presence of admixture *etc.* and last but not least the crystal size.

The authors of this book draw attention to many contradictory publications concerning properties related to the crystal