

of the Medical Research Council, Laboratory of Molecular Biology, Cambridge and Dr **M. J. Whelan**, Reader in the Physical Examination of Materials at the University of Oxford have been elected Fellows of the Royal Society.

Sir **James Menter**, Director of Research at Tube Investments Ltd., Hinxton Hall, England, has been appointed Principal of Queen Mary College, London University.

Professor **Richard S. Stein**, of the Department of Chemistry, University of Massachusetts, U.S.A., has been awarded the 1976 American Physical Society High Polymer Physics Prize, sponsored by the Ford Motor Company, for his pioneering optical and X-ray studies of structure and deformation in solid polymers under equilibrium and dynamic conditions.

William G. Pfann and **Henry C. Theuerer** of Bell Laboratories, Murray Hill, U.S.A., have been awarded the American Physical Society International Prize for New Materials, sponsored by IBM, for their outstanding work on the development of methods for the purification of semiconductors and the growth of epitaxial crystals from the vapour phase.

Dr **M. Hart**, a Co-editor of *Journal of Applied Crystallography* and at present at the H. H. Willis Physics Laboratory, University of Bristol, has been appointed Wheatstone Professor of Physics and Head of the Physics Department at Kings College, University of London, as from 1 October 1976. His new address is given on the inside front cover of this issue.

International Union of Crystallography

Report of the Tenth General Assembly and International Congress of Crystallography

The Report of the Tenth General Assembly and Congress has been published in *Acta Crystallographica*, Section A [*Acta Cryst.* (1976), A32, 691-745]. It includes the minutes of the General Assembly; the triennial reports of the Executive Committee, the Commissions and the Union representatives on bodies not belonging to the Union; the Statutes and By-Laws as amended by the Tenth Assembly; membership of the Executive Committee and the Commissions; names and addresses of Union representatives on

other bodies; a list of Adhering Bodies and the membership of National Committees for Crystallography, with names and addresses of the Secretaries. Reprints of the report have been sent to Secretaries of National Committees.

World Directory of Crystallographers Fifth Edition

Biographical data for the Fifth Edition of the *World Directory of Crystallographers* are now being compiled in many countries. Each crystallographer in a country for which a national Sub-Editor has been appointed should have recently received a Data Input Form to complete. Anyone who has not received a Data Input Form should request one immediately from his Sub-Editor. A list of national Sub-Editors has been published in the July issue *Acta Cryst.* A32, pp. 745-747. Efforts are being made to contact crystallographers in all other countries: if not reached by 1 August 1976, they should write directly to the General Editor, Dr S. C. Abrahams, Bell Laboratories, Murray Hill, New Jersey 07974, U.S.A. Scientists with crystallographic colleagues in countries without Sub-Editors are requested to bring this notice to their attention.

The Fifth Edition of the *World Directory of Crystallographers* will be produced by computer-controlled photocomposition from punched cards prepared by the Sub-Editors. The resulting book is expected to be published by mid 1977, and to compare favourably with the Fourth Edition in appearance but at a substantially lower cost.

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.

Real solids and radiation. By **A. E. Hughes** and **D. Pooley**. Pp. ix + 200. London: Wykeham (Wykeham Science Series), 1975. Price £3.00.

With the spreading of nuclear reactors the effects of radiation on the properties of materials has become a subject of interest to an increasing number of people. The paperback under consideration is written with the purpose to explain these effects in a very simple manner on a level

accessible for high school students. The arguments used are mostly only qualitative, but they are clearly expressed having in mind that they should be intelligible for college students. As for the other volumes in this series the authors, who are experts in this field, are assisted by a schoolmaster to ensure that the correct level is maintained throughout the text.

The book contains all the required background information on solids and on radiation, starting from atomic structure, describing perfect solids and defects in crystals, and explaining their relation to physical properties. The interaction of different types of radiation with solids, leading to the creation of defects, is of course the main theme to which the major part of the book is devoted. The relevance of these considerations to technical problems is discussed as well.

This book can be recommended strongly as a first introduction to the subject; it completely meets the aim of the series to which it belongs.

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Fraktionierung der Spurenelemente bei der Kristallisation.

By **H. E. Usdowski**. Pp. viii + 104. Berlin, New York: Springer-Verlag, 1975. Price DM 29.80, U.S. \$12.90.

The book is written for students in mineralogy, crystallography, petrology and geochemistry in order to answer the question as to which factors can influence the concentrations of foreign elements that are present in trace quantities in the minerals of the earth's crust and in crystals in general.

The text starts with the derivation of the segregation coefficient as already given by Nernst in 1891, describing the equilibrium concentration of solute in neighbouring phases. Many consequences and examples are given, interesting both for chemists who have to purify or concentrate the minor component and for scientists of other disciplines who want to understand the segregation of impurities between different crystalline phases in sediments of various origins.

These aspects are treated in chapter V (segregation in laboratory and factory) and chapter VI (segregation in geological processes). The latter chapter describes

segregation in magnetic and sedimentary rocks and in the process of metamorphism, i.e. the formation of new phases, after the initial sedimentation, as a result of an increase in temperature and pressure in the geological history of the mineral under study.

Also interesting is the application of trace elements as a geological thermometer; from the ratio of the concentrations of trace elements in neighbouring minerals conclusions can be drawn as to the solidification temperature.

A number of problems are given (with clarifying notes and answers in an appendix); this greatly helps the student to check his knowledge.

The text is clearly written, no formula is given without derivation and the book will be an excellent aid for those interested in the mineralogical sciences who wish to go into the problems encountered in the segregation of trace elements. The book is less suited for the study of segregation as found in semiconductor physics and chemistry where the charge of the impurity often plays a predominant part: in the biological field however the incorporation of impurities in kidney stones will be governed by the laws outlined in the present monograph which is highly recommended for the rather small group of people interested in this specialized field.

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Surface physics. Par *M. Prutton*. Pp. viii + 118. Oxford: The Clarendon Press, 1975. Prix £2.75.

Les études des surfaces se sont considérablement développées avec les progrès de la technique du vide et des méthodes d'analyse au moyen d'électrons. Pourtant, si le nombre des publications et des revues consacrées à ces problèmes est important, il n'existe que très peu d'ouvrages didactiques; aussi faut-il féliciter le Dr Prutton d'avoir écrit un petit livre d'une centaine de pages destiné aux étudiants.

L'auteur définit l'objet de la physique des surfaces comme l'étude de la nature chimique et de l'arrangement géométrique des atomes superficiels, en vue d'expliquer les propriétés mécaniques, électroniques et chimiques de ces surfaces. Il est bien connu que ces propriétés sont différentes de celles des corps à l'état massif.

Dans son introduction, l'auteur donne des exemples de phénomènes dépendant de façon importante de la nature de la surface: l'effet thermionique, la croissance cristalline, les réactions chimiques, la catalyse, les propriétés semiconductrices, la fragilité mécanique *etc.*

Deux chapitres sont consacrés à une rapide description des méthodes récentes d'investigation utilisant les électrons: (1) analyse des photoélectrons excités par les rayons X (XPS: X-ray photoelectron spectroscopy) et les rayons ultraviolets (UPS), (2) analyse des électrons Auger

(AES) qui renseigne sur la nature chimique des atomes, (3) étude des structures cristallines superficielles au moyen de la diffraction des électrons de faible énergie (LEED) et de haute énergie sous incidence rasante (RHEED, reflexion high-energy electron diffraction) qui dans bien des cas donnent de précieuses informations sur la maille cristalline bidimensionnelle, ses dimensions et sa symétrie.

Les deux chapitres suivants sont consacrés aux propriétés électroniques des surfaces: potentiel de contact et travail de sortie, et au mouvement des atomes superficiels: effet de température (Debye-Waller) et diffusion superficielle.

Le dernier chapitre traite des atomes et des molécules adsorbés à la surface: physisorption, chimisorption, effet sur le travail de sortie, épitaxie.

Il est évident que dans un aussi faible volume, il n'est pas possible de donner des détails sur les méthodes énumérées ni sur les résultats obtenus. Cependant une bibliographie courte mais complète oriente le lecteur vers les ouvrages où il trouvera les informations complémentaires. Les explications contenues dans ce livre sont souvent concises mais toujours claires.

Ce livre donne un très bon aperçu sur la nature et les propriétés des surfaces. Il rendra service aux étudiants et servira d'excellente introduction pour le chercheur désireux d'entreprendre des études dans ce domaine.

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