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**BOOK REVIEWS**


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**Solute-defect Interaction-theory and Experiment** (eds) S. Saimoto, G. R. Purdy and G. V. Kidson (Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, New York 10523) 1986, pp. 455, Price \$100.00

The book under review consists of the proceedings of the International Seminar held at Kingston, Canada in August 1985. The subject of solute-defect interactions had initial success in elucidating the interaction between interstitial solutes and dislocations, particularly in BCC crystals, following the pioneering work of Bilby and Cottrell. Since then, the theoretical understanding has been towards substitutional solutes/vacancies and dislocations. The seminar papers, however, cover a wide range: atomistic modelling of point defects, thermodynamic formulation and statistical mechanistic approach to diffusion.

Papers by J. W. Cahn and F. Larche, J. C. M. Li, and Kidson are related to statistical model and on diffusion in stressed solids. Of particular interest is the recent development of 'linear response approach' by Allnatt and Okamura for non-equilibrium thermodynamics of atomic transport in crystals. Their paper outlines the directions of current research.

The experimental work relating to vacancy properties of Al and  $\alpha$ -Zr and the problem of studying solute-vacancy interactions are summarised in papers by G. M. Hood, and Bull and Saimoto. A few papers are devoted to computer modelling of defect properties—a topic greatly refined in the past two decades.

Since one of the major aims of the seminar had been to relate the subject to microstructural development, eleven papers were devoted to 'classical' topics in metallurgy such as solute hardening in dilute FCC alloys, strain aging, migration of antiphase boundaries, effect of stress on hydride formation, solute segregation in grain boundaries and temper embrittlement. These topics are necessarily complex, and the present researches are mostly at empirical level, extending the general concepts relating to solute-defect interactions.

The papers taken together clearly indicate the complexity involved in defect-solute interaction studies and the various lines of approach, both theoretical and experimental. The indications are that a detailed understanding of vacancy-solute and dislocation-solute interactions is required before a

firm theoretical structure could be built and extended to microstructural development based on fundamental considerations.

The conference proceedings will be of great interest to materials scientists, metallurgists and metal physicists engaged in research on point defects and dislocations.

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**Vistas in Plant Pathology** by Anupam Varma and Jeevan P. Verma (Published by Malhotra Publishing House, New Delhi). 1986, pp. 593. Price Rs. 550.

The book has 44 chapters, authors index and a subject title index. The chapters have been written by world authorities on the different topics from Australia, Canada, Germany, India, Japan, Mexico, Singapore, UK and USA. This book has been published to honour Dr S. P. Raychandhuri, one of the eminent and distinguished Plant Pathologists of India.

The book contains articles from specialists covering the latest developments in some areas of pathogens and their detection, physiological plant pathology, topical problems, epidemiology and management practices. The articles have been written systematically by including latest world literature. Each chapter is written by a distinguished scientist. The volume contains critical reviews and treatment of various topics at an advanced as well as comprehensive levels. The discussions are thought-provoking towards solving some of the fundamental and applied problems in plant pathology. The volume will not only generate excellent information but also inspire the young scientists to devote more time and energy to this interesting field of agriculture. The book stresses on alarming losses due to plant diseases and the methods to overcome these losses, so that yield potential of various crops are reached.

This book will serve as an essential reference tool as well as an advanced treatise for workers in plant pathology and related fields. This is a good book for the students, teachers, research workers and extension specialists of plant pathology.

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