

BOOK REVIEWS

Low Energy Electrons and Surface Chemistry, 2nd ed. By G. ERTL and J. KUPPERS. Verlag-Chemie, Weinheim, 1985. xii + 374 pp.

This book is an outstanding, thorough text dealing with the properties of electrons in surface science. The thirteen chapters include an introductory chapter, eleven chapters on various surface spectroscopic methods, and an appendix which includes line positions, sensitivity factors, vibrational information, and related data. The book is extremely well written, progressing from basic concepts through state-of-the-art descriptions of the fundamental principles of each technique, instrumentation and components, sample preparation methods, specific examples, and the original critical references. A multitude of diagrams and photographs are incorporated into the text that are well presented, clear, and informative. A feeling for the important discoveries and their proper historical

Electronic Structure and Electronic Transitions in Layered Materials (Physics and Chemistry of Materials with Low Dimensional Structures Series). Edited by V. GRASSO. Reidel (Kulwer), Dordrecht, 1986. xi + 517 pp. \$89.50.

This book is an up to date and thorough review of the experimental and theoretical progress in the study of the electronic structure of layered compounds. It reviews work since 1975 on the band structure, optical, UV, and X-ray properties of layered halide and chalcogenide compounds. The first chapter is an extensive discussion of different band theoretical techniques that have been applied to layered systems and a comparison of these results to experiment. The role of two-dimensional-like properties of the band structure in the appearance of charge density waves in some of

perspective is often given. This book could be used as a text in an advanced undergraduate or graduate course. Starting with the more familiar methods of Auger electron and X-ray photoelectron spectroscopy, the text progresses through ultraviolet photoelectron spectroscopy, electron spectroscopy of noble gas ions and atoms, appearance potential spectroscopy, and inverse photoemission. The latter chapters are concerned with electron energy loss spectroscopy, low energy diffraction, X-ray absorption fine structure, and vibrational spectroscopy with a chapter dealing with electron and photon stimulated desorption. Each chapter is self-consistent although there is a logical progression between chapters. This book clearly stands out as a gem among stones.

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these compounds and the subsequent modifications of the band structure are also treated in some detail.

Excellent chapters on the optical properties in the 1- to 100-eV range and on photoemission are recommended reading for both specialists interested in layered compounds and those involved in photon or electron spectroscopies. The final chapter on plasmons is rather concise and assumes some familiarity with the manipulation of Maxwell's equations as applied to anisotropic media. The conclusions are, however, well illustrated with experimental examples. The authors of each of the five chapters are active researchers in the field and convey their insights in a detailed and clear manner.

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