existence of a large, external, transformation-sensitive glycoprotein, which is absent from the surfaces of virally transformed cells even though it is synthesized by these cells. This glycoprotein is sensitive to proteases; its role in growth control is still uncertain.

This is a fascinating and informative book, a pleasure to read.

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Physical Adsorption

Films on Solid Surfaces. The Physics and Chemistry of Physical Adsorption. J. G. DASH. Academic Press, New York, 1975. xii, 274 pp., illus. $26.

This book is an important contribution to the surface science literature. It is concerned primarily with physical adsorption and presents an up-to-date account of theoretical and experimental research on this subject. It will be valuable as a reference text for researchers and as an accompaniment to a graduate-level lecture course in surface science.

The emphasis is on the statistical thermodynamics of adsorbed systems. Theories for noninteracting and interacting adsorbates are treated in considerable detail, and the author presents a lucid account of the theoretical situation without unnecessarily subjecting the reader to extensive mathematical treatments. The assumptions and limitations of the various models are clearly presented. A brief summary is given of the principal experimental techniques currently being used to study solid-vapor interfaces. This account of experimental methods is sufficient to allow the author to discuss the results that have been obtained in work on various systems. However, it does not allow the reader to develop a critical view of the experimental situation; the difficulty can of course be easily overcome by reference to the numerous publications cited in the bibliography.

The subject of phase transitions in thin films is covered in considerable detail. It is this topic that will probably attract the majority of readers. The book contains the most complete and up-to-date summary available of theoretical models of surface phases in language that is familiar to the surface scientist. Although the book is not intended to cover chemically reactive systems, it will be of value to those working in that area; phase condensations and structural transformations are also of prime concern in the study of systems exhibiting chemisorption. In a comprehensive discussion of chemisorption one would, however, like to have more extensive treatments of surface bonding, epitaxial monolayers, and surface heterogeneities.

The final chapter contains a useful review of the current status of theoretical and experimental work on thin film superfluidity. Some aspects of this phenomenon are as yet poorly understood. As the author suggests, this may be due to lack of information on structural aspects of the films, since most other surface properties have been found to be strongly structure-sensitive.

Dash has presented an authoritative account of the properties of physisorbed films. It is written in a pleasant, easy-to-read style, and the material is arranged in such a way that it will require minimal revision as the subject develops.

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Track Etching

Nuclear Tracks in Solids. Principles and Applications. ROBERT L. FLEISCHER, P. BUFORD PRICE, and ROBERT M. WALKER. University of California Press, Berkeley, 1975. xxii, 606 pp., illus. $31.50.

In the late 1950's it was found that damage trails produced by the passage of energetic, heavily ionizing, charged particles through dielectric solids can be visualized by direct viewing with the electron microscope. Subsequently it was also found that these chemically reactive damage trails could be enlarged to microscopic dimensions through a suitable chemical etching procedure. An important new field of study opened with the realization that this phenomenon was of a general nature, applicable to many nonconducting materials, and that the etched tracks contained sufficient information to permit the identification of the charged particles producing them. This book, written by the inventors of the track-etching technique, describes the basic science of chemical etching of particle tracks and outlines recent technical progress. It is the first book to present a thorough exposition of the techniques and applications of nuclear track recording in solids. The basic nature of track formation and structure is covered in less detail.

The first quarter of the book is devoted to three chapters dealing with mechanisms of particle track formation, principles of track etching, and methods used in nuclear particle identification. The remaining portion of the book concentrates on applications. Chapters 4, 5, and 6 (nearly half the book) deal with the applications of track-etching techniques in the earth and space sciences, covering the fission-track dating of rocks and the study of heavy cosmic rays in space. Chapter 5, "Modern energetic particles in space," contains an informative, up-to-date discussion of galactic and solar cosmic rays. The sections on transition cosmic rays and on the search for superheavy elements in cosmic rays are particularly interesting. The data given for transition nuclei are thorough and current. The chapter points out two situations in which the use of nuclear track recording solids is the best way to make measurements, namely, for low-energy cosmic rays ($\lesssim$ 10 million electron volts per atomic mass unit) and for relativistic ultraheavy cosmic rays. The remaining four chapters are concerned with the application of track-etching techniques in nuclear physics, element mapping in rocks, radiation dosimetry, and numerous other kinds of work.

The book provides broad coverage of the field, with emphasis on details of various experimental techniques utilizing the track-etch principle. Little attention is given to rigorous derivation of equations or to exposition of mathematical detail. The precision of the final numerical results is often left to the intuition of the reader.

The book is well written and illustrated, and the comprehensive lists of references found at the end of each chapter are particularly useful. It should be of considerable interest and use to many research workers and students.

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(Continued from page 1327)

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