

The final chapter, IX, "Design of Catalytic Reactions," is an extremely valuable account of the basic principles in this field, such as kinetics, mass transfer, and heat transfer. This is followed by actual design calculations for various conditions in packed beds, and a discussion of the stability of the packed bed reactor. The results are then confronted with those of the fluid bed reactor. The chapter terminates in the problem of optimization.

In conclusion, an interesting, very informative sometimes controversial book that is well worth its price. The printing is excellent and there are only a few printing errors.

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The Solid-Gas Interface, Volume 2. Edited by E. ALISON FLOOD. Marcel Dekker, Inc., New York, 1967. xvi + 660 pp. Price \$27.50.

This is the second and final volume of a book consisting of a compendium of articles dealing with various aspects of adsorption of vapor at solid surfaces. Volume 1 has previously been reviewed in this Journal (8, 397) by Gert Ehrlich.

Volume 2 contains Chapters 17-37 and the author and subject indexes for the entire book. The last chapter is a Commentary by George Halsey on the other chapters, like that of the final chapter in Volume 1.

The variety of topics in Volume 2 is somewhat greater than in Volume 1, which deals largely with the more classic aspects of physical adsorption as studied chiefly by isotherms and calorimetric measurements. Much of Volume 2 is devoted to topics less directly connected with adsorption measurements, including sections on dielectric and magnetic properties of the interface, vapor phase chromatography (both gas-solid and gas-liquid), optical and infrared spectroscopy of adsorbed molecules, X-ray measurements of surface areas, mechanical properties as

affected by sorption, surface potentials, surface chemistry of semiconductors, and applications of NMR, EPR, and the Mössbauer effect to studies of the interface. Of a more classical nature are chapters on accommodation coefficients, thermodynamics, and kinetics of adsorption, properties of active carbon, porosity and pore structure, hysteresis, surface and volume flow in porous solids. As in Volume 1 each section is written by an authority (or authorities) in the particular field. The list of authors reads like a who's who of surface chemistry and related fields and is international in scope.

As noted by Ehrlich in his review of Volume 1, there are some omissions in coverage, some duplications in what is said by the various contributors, and a great deal of unevenness in the quality of the treatments by the various authors. Some authors give a very thorough and critical review of their respective topic while others give a more superficial treatment. Such variations are inevitable in a compendium of this nature for in addition to differences in people there is a great deal of variation in the state of knowledge for respective topics. Despite some shortcomings this reviewer feels that taken as a whole the book meets admirably the objective as set forth in the Preface of providing in a single place an overall review of the more important aspects of physical adsorption of vapors at solid surfaces, in order to make available to the investigator in a given area of the field a panoramic view of other aspects of surface chemistry. The need for wide coverage per se precludes coverage in depth. This book is therefore not competitive with monographs in the field or with such publications as *Advances in Catalysis*. Rather we feel that it supplements the other works by providing a ready reference source. As such it is recommended for the surface chemistry library with the feeling that in some portions at least it will have a useful life of a decade or more.

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