

# Book Reviews

## *Adhesion—Fundamentals and Practice*

The Ministry of Technology (U.K.); Maclaren: London, 1969. 7½ in. × 10 in.  
xiii + 308 pp. 130s

THIS book is the report of a conference held at the University of Nottingham in September 1966, and because it is a conference report it will be of only limited value to anyone wishing to gain competence in a new field. Its serious readers will be, in the main, already engaged in research on adhesives. For them, the aid of the book (and of the conference)—to bridge the gap between theoretical concepts of adhesion, and their practical application to adhesive joints—has been amply achieved, as may be judged from the distribution of papers among the topics covered. There are 24 papers grouped into 5 sections under the headings: the adherend surface (6 papers, 55 pages), preparation of the adherend surface (5 papers, 34 pages), the adhesive (5 papers, 57 pages), joint design (4 papers, 49 pages), and methods of testing (4 papers, 53 pages).

The three principal theories of adhesion, the diffusion theory of polymer-polymer adhesion, and the adsorption and the electronic theories of polymer-polymer and polymer-metal adhesion are discussed by VASENIN, SCHONHORN, and DERJAGUIN (the originator of the electronic theory). These three contributions, and those of WEAVER on adhesion to high energy surfaces (e.g. polymer-metal adhesion), and ELEY and RUDHAM on the wetting of metals by adhesives (epoxy polymers-aluminium) are the ones most concerned with the chemistry of adhesion, but the other papers contain much practical information on aspects of adhesion ranging from the high temperature bonding of aluminium to non-destructive testing methods for glued joints.

The book has a curious format. The left hand margin extends a third of the way across the page. Perhaps this extravagance accounts for the high price.

T. B. GRIMLEY

## *Infra-red Spectra and Structure of Organic Long-chain Polymers*

ARTHUR ELLIOTT: Arnold: London, 1969. 5½ in. × 8½ in. 120 pp. 35s

THIS short textbook is intended as an introduction to the infra-red spectra of polymers for those concerned with molecular biology and polymer technology.

The first chapter is a very brief introduction to the principles of infra-red spectroscopy. This is followed in Chapter 2 by a useful up-to-date survey of experimental methods.

Chapter 3 discusses the principles of vibrational assignments. The classic analysis of the polyethylene spectrum by KRIMM, LIANG and SUTHERLAND is reviewed in some detail, together with related work by other investigators on this polymer.

The uses of polarized radiation are considered at length in Chapter 4, and the author goes to some trouble to develop the formal relationship between dichroic ratios and various models for molecular orientation. There is then a discussion of some typical applications of polarized infra-red spectroscopy.

Finally Chapter 5 consists of a review of a few selected topics such as hydrogen bonding, deuteration, and differences between the spectra of crystalline and amorphous polymers.

It can be seen that this book takes the form of an extended review article on the infra-red spectroscopy of polymers, and each individual chapter is a self-contained unit. This will prove an advantage to those who wish to seek Dr ELLIOTT's advice on a particular topic although it does lead to some duplication, e.g. repeated discussion of optical densities in Chapters 1, 3 and 5.