BOOK REVIEW — BUCHBESPRECHUNG

MOLECULAR SPECTROSCOPY

Edited by E. Thornton and H. W. Thompson

The book contains the subject-matter of the conference on Molecular Spectroscopy, held in London, 27—28 February 1958. It is divided into four parts in accordance with the four sessions. The lectures involve the whole field of molecular spectroscopy, mainly of the infrared range.

R. E. Richard gives information of the general theoretical bases, experimental methods and applicability of the nuclear resonance spectroscopy.

H. Primas presents a new method for the analysis of spectra obtained by high resolution N. M. R. spectrometers.

R. B. Williams shows the application of N. M. R. spectra in petroleum analysis. As example the use of the spectrum for the analysis of simple multicomponent systems, for the determination of the character of complex hydrocarbon mixtures and of total hydrogene content is given.

W. C. Price and coworkers describe the determination of the ionization-potentials of hydrocarbons with direct photoionisation by means of a vacuum ultraviolet monochromator.

J. G. Clouston and A. G. Gaydon used a "shock tube", *viz.* an instantaneous high temperature gas discharge as light source for making emission and absorption spectra.

G. H. Beaven and E. A. Johnson investigated the ultraviolet and infrared spectra of methylbiphenyls with particular regard to the steric effect of ortho methyl groups.

In the second part, S. F. D. Orr gives account of the most recent developments and research in the infrared technique.

A. E. Martin writes, that the sharpness of absorption bands may be increased by means of multiple differentiation, thus separating, for example, overlapping bands too.

G. L. Collier and A. C. N. Panting also apply the second derivative of the absorption curve to determine methyl groups quantitatively. The discussion of the measuring instrument is also given.

H. A. Willis and R. G. J. Miller used the difference method in the "fingerprint" region (5—15 μ) for identification and quantitative estimation of some additives and impurities, present in very small amounts.

T. Yoshino and H. J. Bernstein measured the intensities of the polarized Raman bands of gaseous organic compounds with a photoelectrically recording spectrometer. The derivatives of the mean polarizability per bond were obtained from the observed intensities.

In the third part, H. W. Thompson investigated the variation of apparent band shapes with instrumental factors, and by means of the true band intensities, the effect of some functional groups or solvents on these.

C. A. Coulson mentioned some difficulties on calculating theoretical band intensities, the most important factors being the lone-pair electrons and hybridization changes during a molecular vibration.

C. La Lau reports on the frequency and intensity shifts of γ-CH vibrations in aromatic hydrocarbons caused by the solvent.

L. J. Bellamy studied the solvent effect on the group frequencies.

D. N. Shigorin presents a study of infrared

absorption spectra of H-bonding and metal-element bonding. Approximate data of bond energies are also given.

B. Vodar investigated the molecular interactions in gaseous mixtures on the basis of the pressure dependence of the infrared and ultraviolet spectra.

In the fourth part. J. A. A. Ketelaar found that the infrared intensities of forbidden transitions in compressed gases are proportional to the square of the density, and discusses the problem of simultaneous transitions.

N. Sheppard obtained informations from the infrared spectra of absorbed molecules on the nature of interactions between adsorbent-adsorptivum.

G. Porter summarizes the recent progress and experimental methods of the free-radical spectroscopy.

M. M. Sushinski writes of the inherence of the structure of hydrocarbon molecules and their Raman spectra.

G. R. Wilkinson, W. C. Price and F. M. Bradbury make known the theory of polarized infrared radiation. the experimental technique of its spectroscopy and the application in studying molecular structures.

ASLE TRANSACTIONS, VOLUME 2, NUMBER 1

Edited by John Boyd. Published by Pergamon Press, London, New York, Paris, Los Angeles. 1959.

The volume contains 16 papers given at conferences organized or attended by the American Society of Lubrication Engineers. The papers discuss the problems connected with lubricants and lubrication, such as radiation resistant oils, the influence of irradiation on viscosity, the effect of ionising radiation on turbine oil performance characteristics, the development of seals for rocket engine turbopumps etc. from technological and scientific aspects. Several papers dealt with design and operation of rolling element bearings and oscillating plain bearings, as well. One of the papers writes about a laboratory tester developed for evaluating the fatigue of bearing materials and the changes occurring in lubricants at elevated temperatures. The influence of additifs on metal surfaces, as well as some factors influencing the fatigue of bearings, are also discussed.

Numerous photographs, diagrams and tables contribute to the lucidity of this publication of 157 pages. Bibliographical references are also given by most of the authors.

PROCEEDINGS OF THE THIRD CONFERENCE ON CARBON

Published by the Symposium Publications Division Pergamon Press, London. New York, Paris, Los Angeles. 1959.

The volume contains 79 papers divided into 5 parts, presented at the Third Conference on Carbon. The papers deal with the properties, such as electronic and magnetic characteristics of carbon, graphite and diamond, as well as some polycyclic aromatic compounds from a physical, chemical, physicochemical and technological point of view, furthermore with the influences of some special conditions on these properties. More than one paper discusses some chemical reactions and compounds of graphite and carbon black, the circumstances of graphite formation and the thermal and mechanical properties of both natural and artifical graphites.

The papers from the different fields give a survey of recent advances in carbon research. An alphabetic, author and subject index enables a rapid glance over this book of 718 pages.

L. ACKERMANN