

the thermal cleavage of dioxetanes. Wilson regards this process and redox excitation as the two prototype models of liquid phase chemiluminescence. The experimental procedures used in the study of dioxetane chemiluminescence are discussed in some detail. A relatively short section on the thermochemistry and spectroscopy of the dioxetanes is followed by a tabulation of results and a lucid examination of the reactivity of dioxetanes.

The remaining review is by G. G. Hammes (Cornell) on 'Kinetic Investigation of Enzyme Catalysis'. Hammes starts by considering the steady state kinetics of enzyme systems, and then goes on to demonstrate the greater information that can be obtained about elementary processes from a study of transient kinetics (rapid mixing or temperature jump). Ribonuclease A is used to exemplify in detail the types of techniques used and results obtained.

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*Creation and Detection of the Excited State*, Vol. 4, edited by W. R. Ware, published by Marcel Dekker, New York, 1976; 336 pp.; price: Sfr. 130.00.

This volume is the fourth in a series intended to present detailed information upon experimental techniques for both the production and detection of excited molecules. The aim is to provide an investigator new to a particular aspect of the field with sufficient experimental details to enable him to establish the technique within his own laboratory.

The first two chapters consider the measurement of laser powers and intensities by both chemical and physical methods. J. N. Demas discusses the fundamentals of chemical actinometry, and presents detailed information upon the use of such systems with a variety of laser sources, possible inaccuracies being carefully considered. Most experimentalists will share his hope (and the manufacturer's claim) that physical means of detection which are both accurately calibrated and stable with time will soon achieve the reliability and reproducibility of chemical methods. E. D. West, in a brief chapter concerned with some details of physical methods of laser power measurements, describes the construction and operation of an N.B.S. basic standard calorimeter, and discusses potential sources of error in standardization procedures. A warning is given regarding the validity of the claims of the manufacturers of laser power and energy meters that the calibrations of their products are traceable to N.B.S. standards; the user is strongly advised to check precisely how this is done.

A further section is concerned with the detection of photolytically produced gas phase radicals by spin trapping, a method by which relatively stable spin adducts, formed by reaction of the radical with compounds containing nitroso or nitrono functional groups, are detected by E.S.R. The author, E. G. Janzen, concentrates almost entirely on describing results and assigning spectra obtained from a large number of successful experiments. This serves admirably to illustrate the utility of the method, but, although the relative merits of experimental variants on the technique are presented

in some detail, the overall impression of the article is that of a review rather than an exposition of technique.

A chapter on measurement of reaction quantum yields, by P. de Mayo and H. Shizuka, provides a well rounded and useful summary of both practical methods and potential errors involved in the technique. Topics discussed include light sources, optical filters, reaction vessels, physical methods of light intensity measurements, and a particularly comprehensive account of the relative merits of a number of chemical actinometers for use in quantum yield determinations (some of the material complementing that of the first chapter, some essentially repeating parts of it). Various procedures involved in quantum yield measurements are discussed in detail with the limitations of each carefully evaluated.

In the final chapter, on experimental methods in flash photolysis, M. A. West has set out with the clear intention of meeting the requirements of the series, to provide a source of detailed experimental information on a particular technique, and has succeeded admirably in doing so. Here is a well planned and well written account of the topic, ranging from microsecond flash spectroscopy and kinetic spectrophotometry, to laser methods of flash photolysis in the nanosecond and picosecond regions. Details on design and construction of components and apparatus are presented fully, with the scope of the many varied applications of flash photolysis clearly illustrated. The reader intending to establish this technique in his own laboratory would be well advised to consult this definitive account of the method.

Overall the volume is attractively produced, contains few printing errors, but at a cost of 130 S.Fr. has succeeded in pricing itself well outside the pocket of most experimentalists.

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