

polyvinylcarbazole, poly(vinyl acetate), poly(allyl esters), and poly(vinyl fluoride) have all been updated in this second edition with current references to the journal and patent literature, and additional emphasis has been placed on their associated hazards. Notable additions to the final chapter on miscellaneous polymer preparations include brief descriptions of polymers from propargyl-terminated monomers, polycyanurates, starburst dendrimers, metal-containing polymers for catalysis, monodisperse latices, optically active polymers, and techniques of polymerization in supercritical fluids, and even a very short section on polymers based on fullerenes. There are, however, no descriptions of syntheses of polythiophenes, polypyrroles, polyanilines, or other such materials that are noted for their high electrical conductivities.

This book is a valuable reference work for specialists and nonspecialists alike. It is an excellent place to begin a search for a reliable synthetic method.

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JA965796+

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DNA Sequencing Strategies: Automated and Advanced Approaches. Edited by Wilhelm Ansorge, Hartmut Voss, and Jürgen Zimmermann (EMBL, Heidelberg). Wiley: New York. 1996. xiv + 202 pp. \$39.95. ISBN 0-471-13683-2.

This book is the first in a series of practical books designed by EMBO, the European Molecular Biology Organization. Each year, EMBO supports approximately 20 practical courses in all parts of Europe, with the goal of facilitating access of European researchers to recent scientific developments. Since only 20 participants are selected for each course, EMBO has decided to publish the material covered in the courses as practical manuals in order to reach a wider cross-section of the scientific community. The first book in this series deals with strategies for large-scale DNA sequencing.

The book is essentially a laboratory manual consisting of five chapters. Chapter 1 provides protocols for cloning DNA. The topics include construction of shotgun libraries of randomly sheared DNA, methods for shotgun cloning of fragments derived from partial cleavage of DNA with restriction enzymes, production of nested deletions, methods for introducing DNA in bacteria for amplification, and an overview of selected cloning vectors and *E. coli* strains used as hosts in cloning experiments. Chapter 2 covers selected procedures for preparing plasmid DNA and for isolating human genomic DNA for amplification by PCR. This chapter also includes strategies for processing the PCR products to prepare templates suitable for DNA sequencing. Chapter 3 goes over various strategies used for sequencing DNA. They include sequencing double- and single-stranded DNA, utilization of fluorescence dyes, cycle sequencing protocols, and automated DNA sequencing. Chapter 4 gives an in-depth coverage of methods for preparing primers for sequencing reactions, strategies for primer selection, and the chemistry underlying the automated machines for DNA synthesis. Chapter 5 outlines the steps in preparing gels and electrophoretic analysis of DNA for sequence determination. Chapter 6 glides rapidly over computational methods for data interpretation including fragment assembly and DNA sequence analysis.

Overall, the book provides a reasonable cross-section of up-to-date strategies for sequencing DNA. The book is concise and yet relatively easy to follow. It could be a valuable asset to graduate students interested in learning about DNA sequencing and a valuable resource for individuals interested in including, in instructional courses, representative examples of methods for DNA sequence determination and analysis.

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Photothermal Spectroscopy Methods for Chemical Analysis. Chemical Analysis Series, Volume 134. By Stephen E. Bialkowski (Utah State University). Wiley: New York. 1996. xxix + 584 pp. \$89.95. ISBN 0-471-57467-8.

This volume in the Chemical Analysis Series provides an authoritative and complete overview of photothermal spectroscopic methods, and their application to detection and analysis. Photothermal spectroscopy concerns the measurement of heat deposited in a sample by absorption of light, providing a high-sensitivity, indirect measurement of weak optical absorption useful in trace-level spectroscopic detection.

The book begins with a clear physical description of photothermal phenomena and brief history of early applications to spectroscopy and analysis. Having motivated the reader with a basic understanding of the measurement, Bialkowski next presents a thorough and well-organized coverage of the physical processes that govern photothermal measurement: these include photoexcitation (including both linear and nonlinear absorption), excited-state relaxation kinetics that govern the yield and rate of heat generation, hydrodynamic relaxation of the sample (heat-transfer and acoustics) in response to transient heating, and finally the principles of optics needed to understand optical probing of thermally-induced refractive index gradients in the sample. In subsequent chapters, Bialkowski combines these physical processes to describe heat-induced optical elements produced in a sample, and the design and response of photothermal spectroscopies, particularly beam-deflection and thermal-lens measurements. Analytical applications of photothermal spectroscopy for detecting weak optical absorption in both gas and liquid phases and in heterogeneous samples are surveyed, along with a short summary of measurements of excitation and decay kinetics and quantum yields.

The major contribution of this book is in providing a complete theoretical description of the physics underlying photothermal measurements. The subject is diverse, requiring background in many fields including photophysics, heat transport, optics, and signal processing. This book presents a complete and well-organized coverage of these areas so that the principles and practice of photothermal spectroscopy methods can be readily understood.

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The Chemistry of the Atmosphere – Oxidants and Oxidation in the Earth's Atmosphere, 7th BOC Priestley Conference. Edited by A. R. Bandy (Drexel University). The Royal Society of Chemistry: Cambridge. 1995. viii + 228 pp. £55.00. ISBN 0-85404-765-4.

This book provides a general and revealing overview of recent research in atmospheric chemistry. A panel of world experts, including 1995 Nobel Laureates Paul Crutzen and Mario Molina, characterize four major areas of concern: the oxidative fate of atmospheric pollutants; urban and regional photochemical pollution; trends in global tropospheric ozone levels; and stratospheric ozone depletion mechanisms. This book also contains a section entitled *The Early History of Ozone*. It includes discussions involving Schönbein, Faraday, Berzelius, and Liebig and provides insight into historic scientific thought on a molecule which is much in the news today.

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