Peptide Synthesis

Peptides 1968. Proceedings of the ninth European Peptide Symposium, Orsay, France, 1968. E. BRICAS, Ed. North-Holland, Amsterdam; Interscience (Wiley), New York, 1968. xvi + 348 pp., illus. $17.50.

Since 1959, the European Peptide Symposia have provided an opportunity for investigators of peptide synthesis to discuss in detail advances and problems in their area of interest. Like the volumes based on previous symposia, the book under review gives attention to general methods for the protection of reactive groups (seven reports) and coupling procedures (five reports) in the synthesis of oligopeptides without the use of polymeric supports. The largest part of the book is devoted to recent applications of "classical" procedures of peptide synthesis to insulin and related peptides (five reports), to other biologically active peptides (glucagon, corticotropin, antamanid, caerulin, eledoisin, physalaemin, and the like; ten reports), and to bacterial cell-wall and antibiotic peptides (four reports). There are, in addition, nine reports on "solid-phase" peptide synthesis, including the application of this approach to the synthesis of insulin and other biologically active peptides. A series of nine reports on the conformation of peptides in solution, two reports on structure-function relations in the action of ribonuclease, and lectures on the genetic control of the biosynthesis of peptide bonds and on intermolecular forces in relation to the specificity of chymotrypsin round out the volume. Many of the reports give valuable technical details, whereas others are relatively brief announcements.

This reviewer found the reports on peptide conformation of special interest, for they provide empirical data needed to test the validity of various recent theoretical treatments of this problem. The experimental demonstration, through nuclear-magnetic-resonance studies in Kenner's laboratory, of a possible interaction between aromatic rings and the amide bond appears to be particularly significant.

Among the valuable new advances in the methodology of peptide synthesis are the use of *t*-butyloxycarbonyl fluoride for the preparation of Boc-amino acids (Sehnabel *et al.*), the use of *N*-carboxy anhydrides (Hirschmann), a new repetitive method of peptide synthesis involving the use of carboxyl-terminal picolyl esters (Garner *et al.*), and the various improvements made in the synthesis of peptides with the aid of polymeric supports. Among the important new synthetic accomplishments is the total synthesis of glucagon (Wünsch *et al.*). The lectures on conformation (Goodman and Choi), biosynthesis of peptide bonds (Gros and Revel), bacterial cell-wall peptidoglycan (Ghuysen), and enzyme specificity (Knowles) are stimulating reviews of important problems.

It is clear that the art of peptide synthesis has made great advances since the first European Peptide Symposium but that much remains to be done to improve the available methods for the synthesis of long-chain peptides and of proteins. Of special importance is the problem of the criteria of identity and purity applied to such products. No doubt this question will be treated in future volumes in this valuable series.

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Technique for Chemistry

Analytical Reaction Gas Chromatography. VIKTOR G. BEREZKIN. Translated, with revisions by the author, from the Russian edition (Moscow, 1966). L. S. Ettre, Transl. Ed. Plenum, New York, 1968. x + 198 pp., illus. $12.50.

Reaction gas chromatography involves the use of reactors in a chromatographic system to bring about specific chemical transformations of the components being analyzed. This process may allow qualitative identification of functional groups from changes in retention of components in the presence or absence of the reactor, or advantage may be taken of the change in retention to improve separation and analysis of the components of a mixture. Examples of reaction gas chromatography are reported in this text in which the effective sensitivity of detectors was modified through sample transformations so as to decrease sensitivity toward interferences or increase sensitivity toward trace components being sought.

Hydrogenation, dehydrogenation, ester formation, hydrolysis, dehydration, decarboxylation, and oxidation are among the reactions reviewed. Subtractive methods are also discussed in which nonvolatile products are selectively formed and certain classes of compounds are removed, the qualitative identification of peaks in complex mixtures thus being facilitated. The analysis of polymers and other nonvolatile compounds through pyrolysis gas chromatography is covered, as are microanalytical techniques for carbon, hydrogen, nitrogen, oxygen, and sulfur in organic compounds.

Over 380 references are cited from the more than 800 papers which the author says were published on reaction gas chromatography prior to publication of the original Russian edition. Approximately 100 of the citations are of Russian publications. A new, four-page chapter on selective, chemically active sorbents has been added for the English edition. A few articles published as late as 1967 are reviewed, but the vast majority of the references in the text are to work published in 1965 or earlier. Translation and publication delays, of course, adversely affect the portion of a text devoted to applications to a greater extent than they affect the portion covering fundamental principles. The lack of an author index might be criticized, and the subject index is just barely adequate.

Since reaction gas chromatography is finding increased application as gas chromatographic techniques become more sophisticated, this reviewer thinks the text should be made available in most chemical research libraries. Research workers in this somewhat specialized area of gas chromatography will certainly want copies.

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Books Received

Acetylenes and Allenes. Addition, Cyclization, and Polymerization Reactions. Thomas F. Rutledge. Reinhold, New York, 1969. xvi + 432 pp., illus. $21.50.

Advances in Cancer Research. Vol. 11. Alexander Haddow and Sidney Weinhouse, Eds. Academic Press, New York, 1968. xii + 516 pp., illus. $24.

Advances in Hydroscience. Vol. 5. Ven Te Chow, Ed. Academic Press, New York, 1969. xiv + 306 pp., illus. $17.50.

The Albanian Carpets. Ikbale Bihiku. Ethnographic Section, Institute of History and Linguistics, State University of Tirana, Albania, 1969. 144 pp., illus. Spiral bound.

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