

Book reviews

Reactivity and Structure: Concepts in Organic Chemistry; edited by K. Hafner, J.-M. Lehn, C.W. Rees, P.v.R. Schleyer, B.M. Trost and R. Zahradnik, *Volume 26, Polyquinane Chemistry, Synthesis and Reactions*; by Leo A. Paquette and Annette M. Doherty. Springer-Verlag, Berlin, Heidelberg, New York, London, Paris and Tokyo, 1987, 230 pages, 140 schemes, Price DM178, ISBN 3-540-17703-5

Polyquinanes, that is molecules containing condensed five-membered ring systems, include compounds of both theoretical and biological importance. The synthesis of these structures has been facilitated in recent years by many developments in organometallic chemistry. This book is concerned with recent advances in the chemistry of polyquinane systems and it extends an earlier account by one of the authors, L.A. Paquette, presented in "Topics in Current Chemistry". The book reviews the literature to mid-1986. After a brief introductory chapter, there is a substantial review of new synthetic developments. Here the utility of new organometallic chemistry is particularly apparent in annulation and related reactions. Intramolecular homolytic addition reactions involving tributyltin hydride, [3 + 2]-cycloaddition methodology in the presence of palladium(0) reagents and cyclopentenone formation by the condensation of an alkyne and an alkene with carbon monoxide in the presence of dicobalt octacarbonyl are examples. The third chapter reviews functional group manipulation within the polyquinanes whilst the fourth chapter discusses physical data for the series. The fifth chapter is an account of recent work on molecules of particular theoretical interest such as pentalene, semibullvalene, the triquinacenes and the highly strained fenestranes in which four rings are constructed in such a way that they share a common carbon atom. The remainder of the book is devoted to natural product chemistry and in particular to the synthesis of these compounds. The regiospecificity of new synthetic methodology involving organometallic reagents is exemplified by syntheses of the pentalenolactone group, quadrone and terrecyclic acid. Efforts to synthesize carboprostacyclins to develop therapeutically useful analogues of the prostacyclins, represent an important area of synthesis where modified Wittig methodology has been used in the construction of alkenes of defined geometry. This book provides a well-documented account of recent developments in an area of interest to chemists who are concerned with the application of organometallic methods in synthesis.