

BOOK REVIEWS

ISOTOPES IN ORGANIC CHEMISTRY,
Vol.5: Isotopes in Cationic Reactions
E. Bunce & C.C. Lee (Eds)
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The subjects discussed in this fifth volume of the series are degenerate rearrangements in triarylvinyli cations, Pummerer and Pummerer type reactions, applications of isotope labelling to the study of Friedel-Crafts reactions and aromatic cationic reactions. The first of the four chapters by C.C. Lee with 81 references, highlights especially the uses of ^{14}C and ^{13}C tracers in work on four possible degenerate rearrangements involving the solvolysis of triphenylvinyl, trianisylvinyl, 2-anisyl-1,2-diphenyl and 1,2-dianisyl-2-phenylvinyl cationic systems. The use of ^{13}C tracers coupled with ^{13}C nmr spectroscopy provides a powerful combination in the study of such reaction mechanisms. Chapter 2 with 213 references by S. Oae and T. Numata provides a very comprehensive review of the Pummerer and Pummerer type reactions, first identified in 1909. Such reactions in which sulphoxides are transformed into sulphides on treatment with electrophiles, such as acetic anhydride for example, are studied with deuterium and ^{18}O tracers in identifying rate determining steps and rearrangement mechanisms. The authors also discuss the possible use of the Pummerer type reactions as models in biological demethylation processes.

The Friedel-Crafts reaction is probably one of the most widely utilized reactions in organic chemistry. In this third chapter with 77 references R.M. Roberts and T.L. Gibson use selected examples to illustrate the value of isotopic tracers, especially ^{14}C and ^{13}C , in the study of a wide range of Friedel-Crafts processes.

In the final chapter containing 195 references D.L.H. Williams and E. Bunce discuss the extensive use of isotopic tracers in studies of the nitramine rearrangement, the Fischer-Hepp rearrangement of N-nitroso amines, rearrangement of phenylhydroxylamines to amino phenols, the Orton rearrangement of N-haloanilides, rearrangement of arylsulphamic acids using

^{35}S as tracer, the Fries rearrangement of phenyl esters, the rearrangement of aryl alkyl ethers with aluminium trichloride, rearrangement of alkyl aromatic hydrocarbons especially with Lewis acids, the Wallach and related azoxy rearrangements, the well studied benzidine rearrangement first reported in 1863, and finally the rearrangement of diazonium salts with ^{15}N as tracer.

Formulae are clearly produced and there appears to be very few errors.

There is an adequate subject index included by one small but irritating feature of the text is the inconsistency of isotope nomenclature.

The editors in their contributions use predominantly the square-brackets preceding system and should have insisted on its use in other chapters.

Overall this latest volume will I believe find extensive use by students and scientists interested and involved in reaction mechanistic studies, and will achieve the objectives set in publishing this series viz. "in the aid that the surveys it contains may offer the research worker and perhaps more important, the stimulus for further research that may be provided".

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