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Book Reviews

Organic Reaction Mechanisms: 40 Solved Cases

Mar Gomez Callego, Miguel A. Sierra (Ed.); Springer-Verlag, Berlin, Germany, 2004, $x + 290$ pages, ISBN 3-540-00352-5 (£38.50)

Organic chemistry, which covers the study and the understanding of organic reactions, is taught in most universities at undergraduate and postgraduate levels. The teaching of organic chemistry requires the formal representation of organic reactions on the blackboard or a computer screen in order to simplify the understanding of the reaction processes. Controversially, the formal representation of organic reactions does not always represent reality since organic chemistry is an experimental science where only the results are observed. Moreover, there is no 'theorem of stereocontrol' to ensure that processes occur in a very specific way.

Organic Reaction Mechanisms: 40 Solved Cases presents cases of organic reaction mechanisms using formal representation (432 figures) of the processes including the alternative mechanisms to achieve a reaction. The 40 cases are taken from original works of other authors and classified into three different levels. Level 1 presents 16 cases of study to illustrate basic concepts of organic chemistry reactions such as crossover experiments, neighbouring groups participation, carbocation formation, Hammett constants, kinetic constants and activation parameters. Those concepts are explained in illustrated cases, for example the nucleophilic versus basic catalysis. Levels 2 and 3 present 15 and 9 cases, respectively, from medium to difficult levels that involve the use of the basic concepts covered in level 1. The examples are treated in detail with an introduction, experimental data, discussion, key points and additional references. Levels 2 and 3 cases are for example, the chelate-controlled carbonyl reaction, the tandem cycloadditions with nitronates, the Baylis–Hillman reaction, and the solvolysis of vinyl iodonium salts.

This volume clearly explains these 40 cases with good formal representations of the processes. The approach of the authors is original since they do not approach the reaction mechanisms with general theories illustrated by examples, as it is done in most of the textbook, but they focus instead on very specific examples. This volume will be useful to advanced undergraduate students and researchers interested in understanding the mechanism of organic reactions.

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Fundamentals of food reaction technology

R. Earle, M. Earle; Royal Society of Chemistry, Cambridge, UK, and Leatherhead International Ltd, Leatherhead, UK, 2003, x + 188 pages, ISBN 1-904007-53-8, £39.50

Most of the food products available on the market today result from food processing technologies carried out on agriculture and fish raw materials. Food processing is aimed to make optimum food products that manage to satisfy both consumers and producers concerns. Consumers concerns include nutrition, safety, shelf life, sensory qualities, physiological benefits, as well as the social and environment aspects, whereas producers concerns include feasibility and profitability as well as satisfying consumer requirements since those translate directly into buying specifications.

Fundamentals of Food Reaction Technology introduces food processing technologies in five chapters organised in stages from the definition and description of the existing processes to the current trends of food reaction technologies. The first chapter introduces broad concepts relating particular food situations to the general framework of reaction technology by defining the important problems encountered in food processing such as consumers concerns and processes limits. The next chapter presents product changes occurring during processing and parameters such as concentration and temperature affecting these changes. Chapter 3 presents processing outcomes and variation. This sometimes refers to the use of equations to describe the kinetic of reactions such as bacterial growth and death. The penultimate presents the means to achieve better food products by using multiple rather than single reaction processes. The final chapter introduces reaction processes other than heat processing. For example, using processing agents or alternative energy sources such as very high pressure. The latter part of this chapter presents examples of the success of some applied reaction technologies such as