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Book Review

Functional group chemistry

J.R. Hanson; The Royal Society of Chemistry, Cambridge, UK, 2001, vi + 165 pages, ISBN 0-85404-627-5 (£9.95)

Becoming familiar with the characteristic properties of functional groups is an essential aspect of organic chemistry, and is the overall aim of this sixth volume in The Royal Society of Chemistry "*Tutorial Chemistry Texts*" series. The chemistry of functional groups is presented with particular emphasis on reactivity patterns, the relative electronegativity of functional group atoms, the role of lone pairs and the stereochemistry of reactions at a particular functional group.

The volume is divided into four sections. The first section describes some of the general principles that affect the reactivity of functional groups, and covers structure and bonding, classes of reagent and types of reaction. Functional groups may be divided into several broad classes, the first being those in which the reactions, mainly substitution and elimination, involve σ-bonds. The second section is therefore devoted to such functional groups, and examines the chemistry of alkanes, alkyl halides, alcohols, epoxides and ethers, organosulfur compounds, and aliphatic amines. Another important class of functional groups are those in which a π-bond is a characteristic feature. The initial step in many of their reactions is addition. The third section is therefore devoted to the chemistry of symmetrical and unsymmetrical π-bonded functional groups, typified by alkenes and carbonyl groups, respectively. Alkenes, alkynes, carbonyl compounds, carboxylic acids, enolates and related carbanions, and nitriles, imines and nitro compounds are discussed in this section. The final section concentrates on aromatic compounds and is concerned with the interaction between an aromatic ring and functional groups that are attached to it, such as their effect on the orientation of aromatic substitution. Both aromatic and heteroaromatic compounds are discussed, the latter in terms of the peturbation of the π-system brought about by heteroatom insertion. Each section concludes with a series of problems, and a set of answers is provided at the end of the volume.

In this volume the chemistry of functional groups is considered with a mechanistic rationale, which encourages the reader to consider the reactivity of functional groups in terms of their regions of electron deficiency and excess, and hence to identify the sites at which electrophiles and nucleophiles might react. It is therefore highly recommended as an informative introductory guide for individuals requiring a comprehensive understanding of functional group chemistry.

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