Advanced Organic Chemistry

Carey and Sundberg

Part A

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Advanced Organic Chemistry

Part A: Structure and Mechanisms

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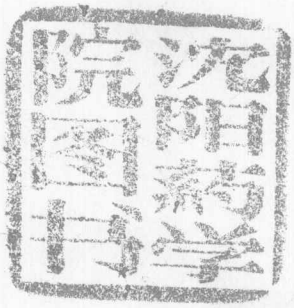

PLENUM PRESS · NEW YORK AND LONDON

Library of Congress Cataloging in Publication Data

Carey, Francis A 1937-
Advanced organic chemistry.

Includes bibliographical references and indexes.
CONTENTS: pt. A. Structure and mechanisms.—pt. B. Reactions and synthesis.
1. Chemistry, Organic. I. Sundberg, Richard J., 1938- joint author. II. Title.
[DNLM: 1. Chemistry, Organic. QD258 C273a]
QD251.2.C36 547 76-26090
ISBN 0-306-35116-1 (pt. A)

First Printing – January 1977
Second Printing – May 1978

A Division of Plenum Publishing Corporation
227 West 17th Street, New York, N.Y. 10011

Printed in the United States of America

Advanced Organic Chemistry

Part A: Structure and Mechanisms

ADVANCED ORGANIC CHEMISTRY

PART A: Structure and Mechanisms
PART B: Reactions and Synthesis

Preface to Part A

This volume is intended to serve as an advanced text in organic chemistry and is aimed at developing a deeper understanding of the *structure* of organic compounds and the *mechanisms* of organic reactions. The text assumes introductory courses in organic chemistry and in physical chemistry. The first three chapters consider three fundamental aspects of the structure of organic molecules: bonding, stereochemistry, and conformation. Chapter 4 is an overview of the methods that have been used to probe details of organic reaction mechanisms. The remaining chapters are organized on the basis of fundamental mechanistic patterns, although we return to the topic of structure in Chapter 9, in which aromatic molecules are considered. At Virginia, we have used this material in a course that serves third- and fourth-year undergraduate chemistry majors and beginning graduate students.

By the use of extensive references and referenced problems from the literature, we hope to provide an opportunity for the student to delve into the research literature. Considerable numerical data are included with the intent that the student can supplement a qualitative understanding of the role that substituents and other structural features play in organic reactions with some grasp of the magnitude of such effects. A considerable amount of this material is presented with a minimum of commentary in schemes and tables. Much of organic chemistry, however, resists interpretation in terms of a single variable. Often, several factors may operate in different directions to influence rate or equilibria or both, and it may not be possible to make consistently correct interpretations by inspection. Caution also needs to be exercised in attempts at rationalizing small differences in rate or equilibria or both. We recommend that instructors and students use these schemes and tables as working outlines for further discussion.

We have tried to emphasize the teaching of concepts in our development and treatment of the material. This emphasis of concepts is often best done by referring the reader to review articles, and sometimes produces the unfortunate result of failing to credit important contributions to their original source. To our colleagues

whose work fell into this category, we extend our apologies and request their understanding of our attempts to produce a working text, rather than to review the historical development of various concepts and techniques.

This volume is a companion to Part B, *Reactions and Synthesis*. Part B emphasizes the synthetically important organic reactions. It adds some further mechanistic information, but is aimed primarily at introducing to students the available repertoire of organic reactions and providing an opportunity to develop a background in synthetic methodology.

We believe that Parts A and B used sequentially as texts in a one-year advanced course will prepare the student to turn to the extensive review and monograph literature and to the primary journals with a thorough exposure to both the mechanistic and synthetic areas of organic chemistry.

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Part A: Structure and Mechanisms

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