

HELMUT KRAUCH • WERNER KUNZ

Organic Name Reactions

ORGANIC NAME REACTIONS

A Contribution to the Terminology of Organic
Chemistry, Biochemistry and Theoretical
Organic Chemistry

by

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with a Foreword by

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Foreword

The term "name reactions" is the designation generally applied to reactions which either for historical reasons, or because of their unfailing practical value, or, finally, because of the associated mnemonic convenience bear the names of their discoverers. The need for keeping terminology short has led to a continuous extension of this principle in recent times. Hence it is of value, not only for the beginner, but often even for the expert, to have an ordered collection of all the more important name reactions at his disposal. The basic requirements for identification purposes have been catered for by less comprehensive surveys which have appeared previously.

Naturally, it is only partially a historical tendency inherent in the nature of any particular branch of science that causes a reaction to become a name reaction. It also illustrates the compromise made in order to be able to include in subject indices novel types of reactions which have not as yet been described by general terminological expressions. The precedence given all too frequently to author indices over subject indices is due in no small part to this trend. This presentation, which considerably improves upon its predecessors with regard to both coverage and detail, should prove more than a convenience to all chemists, experimenter, teacher, and publisher alike. The "device" of using authors' names here affords the possibility of combining convenience with usefulness. Thus, this encyclopaedic collection has become practically a textbook of the most important organic reactions and their mechanisms as they are accepted today. Not all of the important reactions of organic chemistry are name reactions; however, this is the case for many, particularly synthesis reactions, and it is a benefit for all to find them explained and illustrated by their basic classical examples. The present volume makes a significant advance towards providing a summarizing review of organic chemistry.

Frankfurt-on-Main
Fall, 1960

FRIEDRICH RICHTER

Preface to the First German Edition

The chemical nomenclature of organic compounds has been constantly advanced and systematized over the past decades by applying structural theory. In contrast, names indicating the intrinsic features of the course of chemical reactions have been badly neglected. Since an author's name used in conjunction with such a general term as the word "reaction" hardly proffers more information than is obtained by using a common or trivial name to describe a substance, many chemists were dissatisfied with the extensiveness of usage of name reactions, and some authors had started to coin suitable expressions, such as "carbonylation", "vinylation", "ethnation", or "aminomethylation", to describe certain reactions.

The need for names indicating the essence of reactions was aggravated both by the transition of the static mode of thought of the organic chemist and biochemist, which was concerned principally with the substances themselves, to a more dynamic method of consideration with emphasis on kinetics and by the simultaneous change in the approach of the chemical technologist, stressing the technicalities of his processes rather than the nature of the materials concerned. The issue was initially avoided by further vast extension in the use of name reactions. The resulting confusion revealed the dire need for the development of a systematic classification of terminology for organic reactions. As a result of a suggestion by Professor Richard Kuhn, we started to catalogue name reactions several years ago and to develop corresponding terminology, in so far as this was not already extant in the literature. Just as the generic terminology in systematic chemical nomenclature is based directly on molecular structure, any system for naming reactions indicating their characteristics must also take their mechanisms into consideration. However, only a few reaction mechanisms have been sufficiently investigated. Moreover, the significance of a given reaction is based on the evaluation criterion applied to it; for example, in a synthesis, interest centres on the end-product, in a biochemical cycle, more on the materials' importance in cell metabolism, and in a technological process, on the technical aspects of the reaction. Furthermore, to us it seemed advisable to adhere as far as possible to existing terminology in unanimity with the normal nomenclature development process. The present work can therefore only constitute an attempt to initiate systematic development of terminology describing reactions.

To increase the information derivable from each title, we have tried to

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add brief supplementary explanations in a convenient, easily memorizable form.

The extent of the description following each heading was determined by the importance allocated to the reaction in standard textbooks and handbooks. For this reason, as well as from didactic considerations, textbooks and manuals have been frequently cited. Name reactions applied in analytical organic chemistry—apart from a few exceptions—have not been considered.

Our work has been supported by the Beilstein-Institut, the Badische Anilin- und Soda-Fabrik and the Vereinigung der Freunde der Studentenschaft der Universität Heidelberg. The authors are greatly indebted for valuable suggestions, particularly regarding the choice of designations, for constant benevolent encouragement, numerous proposals for improvements and for many literature references, primarily to Professors R. Kuhn and to F. Richter, who has also written the foreword. The progress of the work was also aided by the interest of Professors K. Freudenberg, G. Wittig and in particular, W. Mayer. The entire manuscript has been read through by Drs. D. Blum and G. Wellenreuther, both of Ludwigshafen, and by Dr. R. Otto of Leverkusen, who have contributed many valuable amendments. We wish to express our sincerest gratitude to the above and to all other colleagues who have discussed the work with us and offered advice. We acknowledge with thanks the help of Miss Erika Hemme in compiling the indices, checking the bibliography, assisting with the proof-reading and, together with Miss Ingrid Eber and Miss Ingrid Werner, typing the manuscripts.

Dr. E. Baum, reader in the publishing firm and editor of *Chemiker Zeitung — Chemische Apparatur*, was a source of constant advice and encouragement, especially in checking the proofs. We wish to thank the publisher, Dr. Alfred Hüthig, and his staff for their pleasant and understanding co-operation.

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