Experimental organic chemistry: standard and microscale

Description

This established text continues to provide a rigorous account of the principles and practice of experimental organic chemistry, taking students from their first day in the laboratory right through to research work. New to this edition, a microscale approach has been integrated into the entire text, alongside conventional manipulations, bringing it in line with current laboratory practice. Maintaining the unique structure of the previous edition, the first half of the book surveys all aspects of safe laboratory practice and the use of a wide range of purification and analytical techniques, particularly spectroscopic analysis. The second half contains easy-to-follow experimental procedures, each designed to illustrate an important reaction type of basic principle of organic chemistry. Tried and tested over the past decade, these experiments are graded according to their complexity and many of these have microscale equivalents. Of prime importance, all aspects of health and safety in the laboratory have been updated according to the latest guidelines and are highlighted throughout the text.

Editorial Review

"Experimental Organic Chemistry" is devoted to presenting practical organic synthesis in an easily understandable form. In my opinion, this book addresses all of the fundamentals that facilitate the first steps taken by novices in the laboratory. How to assemble apparatus set ups and the correct handling of toxic chemicals are never given short shrift in this work. Moreover, important laboratory techniques such as crystallization and extraction are explained in detail, and the theoretical background is also included. All of the articles are superbly illustrated, such as in the section on column chromatography, so that rarely are any questions left unanswered. Even the basic principles of analytical methods can be found here, making this book very well balanced thematically.

There are two experimental sections that contain identification reactions, and large sections that deal with simple transformations, and even more extensive projects such as the isolation of natural products or the determination of physicochemical values. The experiments are described clearly, and dangerous materials are conspicuously set in red type. The experiments cover a broad thematic spectrum, and come with question sets designed to help students develop their theoretical understanding. The clear-cut descriptions enable students to complete their actual research work much more promptly, leaving more time for their own experiments and for the answers to their questions. In addition, this approach lowers the potential for hazards to the students due to making incorrect stoichiometric calculations and being inadequately prepared to handle hazardous materials. This level of detail is really ideal for introductory laboratories that are notoriously understaffed with assistants.

The work that these authors have prepared provides all of the necessary fundamentals for running a successful introductory organic chemistry laboratory. The experiments are laid out in detail in a way that leaves little to be desired, and they certainly cover a broad range of potential synthetic operations. Thus, the purchase of this book is to be recommended.

Contents

Part 1: Laboratory Practice

Safety in the Chemical Laboratory
Glasware and Equipment in the Laboratory
Organic Reactions: from Starting Materials to Pure Organic Product
Qualitative Analysis of Organic Compounds
Spectroscopic Analysis of Organic Compounds
Keeping Records: the Laboratory Notebook and Chemical Literature

Part 2: Experimental Procedures

Introduction
List of Experiments
Experiments which can be Taken in Sequence
Experiments which Illustrate Particular Techniques
Functional Group Interconversions
Carbon - Carbon Bond-Forming Reactions
Appendix
Index of Chemicals
General Index