

Introduction to Strategies for Organic Synthesis

This condensed book is presented as a guide to the fundamentals of organic synthesis primarily aimed at first-year graduate students with a smaller amount of undergraduate experience in organic chemistry. It is essentially a pocket guide to organic synthesis useful for quick reference to the basics of the science. Figures and text in the book are clear, however, there is a distinct lack of color in the schemes. Color now features heavily in most organic chemistry texts and it would have been nice to add some in this case. This shortcoming is somewhat offset by keeping the reaction schemes and diagrams as simple as possible.

The book is divided into parts (I–VII) or themes which are further divided into (sub)chapters, e.g. 7.1–7.7., which deal with elementary themes in organic synthesis. This layout is somewhat unconventional and was a little confusing at first, but it does bring a fresh approach to dealing with how to communicate such a large amount of material. Much of the information is tackled in most undergraduate courses in organic synthesis and so for many first-year graduate students, this text really serves as a guide for those who need some revision.

Part I begins with a chapter on retrosynthetic analysis and this approach is then used throughout. Thus, a proposed synthesis for each target molecule (TM: acronyms are used throughout this book) is presented as a retrosynthesis followed by a possible forward approach. This section then ends with a discussion of protecting groups and strategies. Part II deals with the basics of nucleophiles, electrophiles, and redox reactions in organic synthesis with many key classical reactions covered but only briefly. Parts III and IV cover the synthesis of TMs with one or two functional groups (1-FG and 2-FG TMs: more acronyms!) and there is plenty of information condensed in these sections. Part V

covers aromatic chemistry in a fairly comprehensive manner and Part VI discusses the synthesis of compounds containing rings, mostly carbocycles and then adds radical reactions to form five-membered rings. Six-membered rings are covered in the chapter on Diels–Alder reactions at the end of the section. Part VII deals with predicting and controlling stereochemistry and this section is probably the most relevant for first-year graduate students. There are nice chapters on additions to carbonyls (7.5) and “Additions to Enolates: Aldol Stereochemistry” (7.6) although this would be better written as “Additions of Enolates”. There is, somewhat disappointingly, little mention of catalytic methods for the formation of either C–C or C–heteroatom bonds which are so prominent in modern organic synthesis.

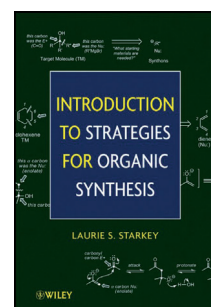
Each Part ends with a section of useful problems which would have been a major undertaking for the author. Solutions to the problems from all the parts of the text are presented in a section with over 60 pages (before the index), and this is definitely something all students will be thankful for—in most cases, one has to purchase such a solution manual. The book has a few references to other texts but none to the primary literature. This is a slight letdown but is perhaps in keeping within the aim of the text as pointed out by the author herself in the preface: “*This book is designed as an intermediate level introduction to the tools and skills needed to study organic chemistry*”. Maybe it is up to the student to do the literature searches!

Finally, my overall impression of the book is that it will serve well as a quick reference or starting point for an undergraduate researcher or new PhD student in organic synthesis. It is essentially a back-to-basics textbook and there may even be something there for the odd academic who needs some inspiration when handed a new teaching assignment in an undergraduate subject in organic synthesis.

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DOI: 10.1002/anie.201204936



Introduction to Strategies for Organic Synthesis
By Laurie S. Starkey. John Wiley & Sons, Hoboken, 2012. 360 pp., softcover, € 43.90.—ISBN 978-0470484098