Organic Process Research & Development

Book Review

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Practical Process Research and Development - A Guide For Organic Chemists

Practical Process Research and Development - A Guide For Organic Chemists, 2nd ed. By Neal G. Anderson. Academic Press: New York, 2012. 416 pages. Price $125, €89.95, £75.99. ISBN 978-0-12-386537-3.

I would hope that most readers of this journal are very familiar with the first edition of Neal Anderson's excellent book on Chemical Process Research and Development and are as keen to see the second edition as I was. The good news is that the new edition is bigger (by over 100 pages), better than the original, and cheaper. There are 17 chapters including "Introduction", "Process Safety", "Route Selection", "Reagent Selection", "Solvent Selection, "Effects of Water", "In-Process Assays, In-Process Controls, and Specifications", Practical Considerations for Scale-Up", "Optimizing Process by Minimizing Impurities", "Optimizing Organometallic Reactions", Workup, "Crystallization and Purification", Final Product Form and Impurities", "Continuous Operations", "Refining The Process for Simplicity and Ruggedness", "Process Validation and Implementation", and "Troubleshooting".

There are a host of new examples, almost all derived from this journal, and 85% of the references were published since 1999. Many of the chapter headings are the same, but there are also some additions, in particular, the section on "Process Validation and Implementation" whilst "Continuous Operations" now comprises a whole chapter reflecting the developments that have taken place in this area in the pharmaceutical industry. Environmental or green considerations now get a much higher profile than in the original edition, again reflecting the changes in the industry. The chapter on "Chiral Synthesis" has disappeared and the material has been spread through the book showing how chiral synthesis has become much more normal and routine in the last 10 years. The overall approach and emphasis of the book is still very much on practical aspects of process research and development and problem solving. There are a large number of tips and suggestions to help the reader

The big improvement in the new edition is the layout so that the schemes are now much closer to the relevant text than before which makes reading that much easier. There is also an added index on drug substances and a glossary to go with the General Index, Reaction Type Index, and Reagent Index. The only slight weaknesses that I have found is that the section on Process Analytical Technology (PAT) is rather cursory, and Design of Experiments (DoE) only gets mentioned in passing. But these are minor quibbles about what is clearly the best book on the subject of Process R&D by quite a margin. Overall this book is highly recommended even if you already have a copy of the original edition.

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Notes

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