

in this very updated version, I can appreciate how such an endeavour could have taken 7 years to complete.

This textbook by Hartwig covers the fundamentals of bonding and electron counting just as its predecessors. The rudimentary ligand classes and bonding motifs are clearly presented and explained. As an understanding of fundamentals is at the heart of latter chapters on catalysis, these sections are of the utmost importance.

The text then moves to catalysis in its numerous incarnations: from hydrogenation to cross coupling reactions, alkene polymerisation to olefin metathesis, and finally presents industrially important catalytic processes. Catalytic reactions are discussed in details with important mechanistic details highlighted.

One must remember that the pioneers of organometallic chemistry were physical organic chemists and that to date a fundamental understanding of mechanism guides major developments in the field. The textbook clearly highlights this and Hartwig's own contributions to the area represent an invaluable teaching tool.

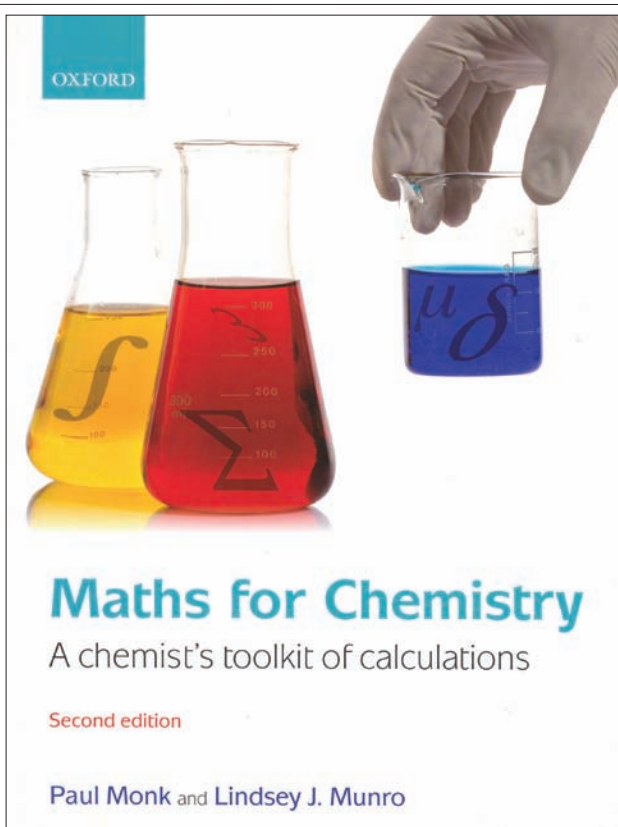
This more than 1100-page textbook is likely to have as profound an influence on organometallic chemistry students and researchers as its ancestors. Hartwig has compiled an enormous amount of organometallic chemistry into a readable and very well organised textbook. He has created what will surely become the textbook from which to teach the subject for many years to come.

The maths challenge

Maths for chemists. A chemist's toolkit of calculations

Paul Monk and Lindsey Munro
Oxford, UK: Oxford University Press
2010 | 448pp | £24.99 (SB)
ISBN 9780199541294
Reviewed by Lucy Mitton

This is the second edition of a book first published in 2006. It has been completely revised and expanded – this edition has 542 pages compared with the 328 pages in the first edition.



Chemistry needs maths – so chemistry students need their own maths book

The reason for the revision and expansion is a response to the sad realisation by the authors that many chemistry students now start university degrees with only maths to GCSE level. This presents a challenge to universities, most of which now provide maths courses to bridge the gap. This book provides excellent material for such courses and also represents a good self-study and revision guide.

More introductory material has been added, especially in the areas of algebra, statistics and calculus, the latter being particularly necessary to cope with such maths-heavy subjects as quantum mechanics.

All the excellent worked examples are based on chemistry, as are the self-test questions and additional problems, thus ensuring the relevance of the content to the undergraduate chemist.

The book is well written throughout and has an admirable step-by-step approach to teaching, which allows the maths-deficient chemistry student the top up his or her knowledge of the subject as painlessly as possible.

'This is an excellent book for the maths-deficient chemist'

In brief

Modern molecular photochemistry of organic molecules

Nicholas Turro, V Ramamurthy and J C Scaiano
Sausalito, US: University Science Books

2010 | 1120pp | £48.99 (HB)
ISBN 9781891389252

An extensive revision of Turro's classic text *Modern molecular photochemistry*, presenting the mechanisms of organic photoreactions and the photochemistry of the basic functional groups of organic molecules.

The basics of crystallography and diffraction

Christopher Hammond
Oxford, UK: Oxford University Press
2009 | 416pp | £60.00 (HB)
ISBN 9780199546442

This book is a third revised and expanded edition of a book first published in 1997 as part of the series of International Union of Crystallography texts. It provides a clear and comprehensive introduction to crystallography and diffraction.

Atkins' physical chemistry

Peter Atkins and Julio de Paula
Oxford, UK: Oxford University Press
2009 | 1008pp | £43.99 (HB)
ISBN 9780199543373

This is the ninth edition of a well established authoritative text on physical chemistry.

Introduction to surface chemistry and catalysis

Gabor Somorjai and Yimin Li
Chichester, UK: John Wiley
2010 | 787pp | £100.50 (HB)
ISBN 9780470508237

This is the second edition of a book first published in 1997. It has been extensively revised, especially in the area of nanoparticles.

Chemistry

Catherine Housecroft and Edwin Constable
Harlow, UK: Pearson Education
2010 | 1517pp | £44.95 (SB)
ISBN 9780273715450

This is the fourth edition of a general textbook for first year undergraduate chemistry, first published in 1997.