

## Catalogue

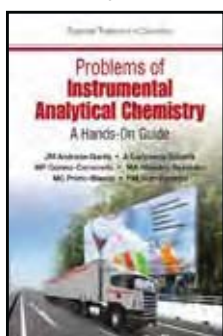
# CHEMISTRY



# Highlights

Chemistry 2017

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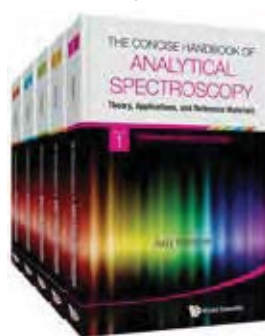
by **J M Andrade-Garda**, **A Carlosena-Zubieta**, **MP Gómez-Carracedo**, **MA Maestro-Saavedra**, **MC Prieto-Blanco** & **RM Soto-Ferreiro** (University of A Coruña, Spain)

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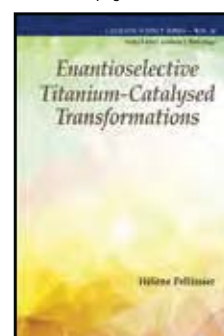
by **Gregory Chatel** (Univ De Poitiers, France)

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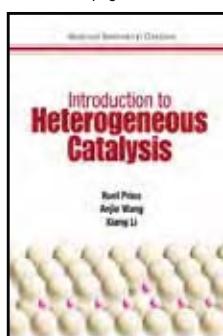
by **Jerry Workman** (Unity Scientific & National Univ, USA)

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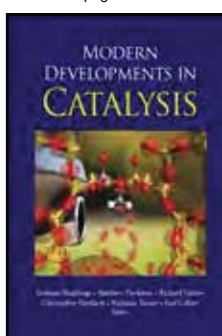
by **Helene Pellissier** (CNRS, France)

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by **Roel Prins** (Institute for Chemical and Bioengineering, ETH Zurich, Switzerland), **Anjie Wang** & **Xiang Li** (Dalian University of Technology, China)

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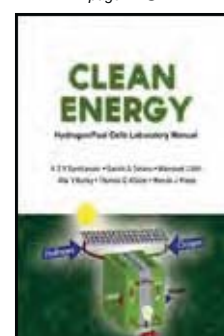
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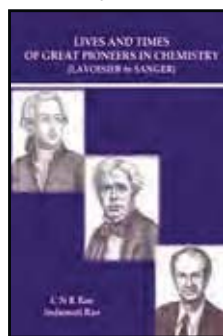
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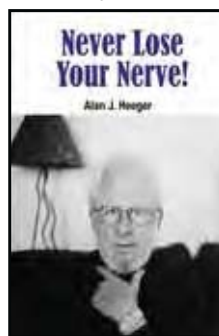
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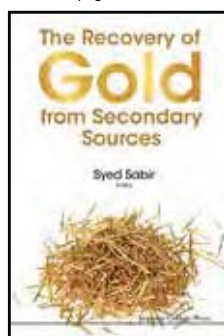
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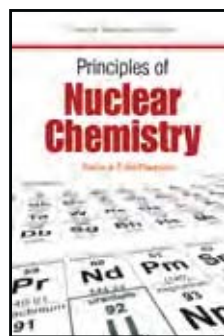
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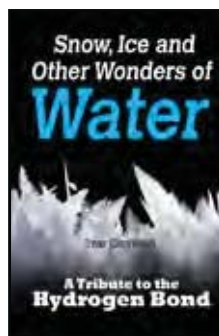
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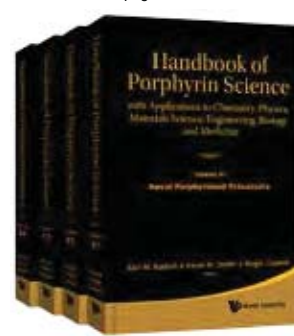
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by **Ivar Olovsson** (Univ Of Uppsala, Sweden)

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# Chemistry

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## ANALYTICAL CHEMISTRY

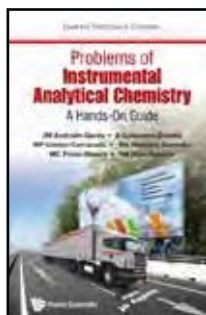
Essential Textbooks in Chemistry

**Problems of Instrumental Analytical Chemistry  
A Hands-On Guide**by **J M Andrade-Garda, A Carlosena-Zubietta, MP Gómez-Carracedo, MA Maestro-Saavedra, MC Prieto-Blanco & RM Soto-Ferreiro** (*University of A Coruña, Spain*)

The complex field of analytical chemistry requires knowledge and application of the fundamental principles of numerical calculation. This book provides support and guidance to help students develop these numerical strategies to generate information from experimental results in an efficient and reliable way. Exercises are provided to give standard protocols to follow which address the most common calculations needed in the daily work of a laboratory.

**Readership:** Undergraduates in chemistry, analytic chemistry and related subjects; scientists looking to brush up on their knowledge of instrumental techniques in laboratories.

<b>250pp</b>	<b>Feb 2017</b>	
<b>978-1-78634-179-2</b>	<b>US\$86</b>	<b>£62</b>
<b>978-1-78634-180-8(pbk)</b>	<b>US\$45</b>	<b>£32</b>
<b>978-1-78634-181-5(ebook)</b>	<b>US\$112</b>	<b>£81</b>



## :: Textbook

**Sonochemistry****New Opportunities for Green Chemistry**by **Gregory Chatel** (*Université Savoie Mont Blanc, France*)

This title first introduces the basics of ultrasonic waves and the history of sonochemistry before moving on to look at acoustic cavitation and the estimation of ultrasonic parameters. After this comes a discussion of the equipment needed for experimentation with sonochemistry. Finally there is an in-depth look at green sonochemistry in different fields of research, covering concepts such as new combinations of ultrasound with ionic liquids, microwave irradiation, enzyme combination, and sono-assisted electrochemistry. In conclusion, distinguished sonochemists from around the world share their opinions on the green sonochemistry, and their predictions in the field.

**Readership:** Undergraduate and graduate students in chemistry, and practitioners of ultrasonic technology.

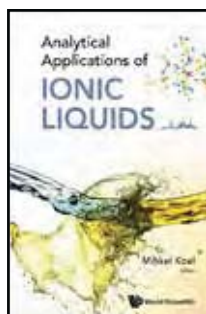
<b>200pp</b>	<b>Dec 2016</b>	
<b>978-1-78634-127-3</b>	<b>US\$80</b>	<b>£58</b>
<b>978-1-78634-150-1(pbk)</b>	<b>US\$45</b>	<b>£32</b>

**Analytical Applications of Ionic Liquids**edited by **Mihkel Koel** (*Tallinn University of Technology, Estonia*)

This title reviews the current research in analytic chemistry, covering subjects as diverse as separation science, chromatography, spectroscopy and analytical electrochemistry. As scientific developments have moved into the 21st century, they have increasingly had to take into account the effects on the environment, both locally and globally. Ionic liquids promise entirely new methods for solution chemistry which could improve the quality of measurements and eliminate the negative impact of waste on the environment. Because of this, the search for applications of ionic liquids is growing in every area of analytical chemistry. Here, material is presented by specialists, giving a critical overview of the current literature surrounding this increasingly prominent topic. Analysis is carried out on latest achievements and applications, followed by critical discussion of possible future developments.

**Readership:** Analytical chemists, undergraduate and graduate students, university professors.

<b>350pp</b>	<b>Nov 2016</b>	
<b>978-1-78634-071-9</b>	<b>US\$162</b>	<b>£117</b>
<b>978-1-78634-072-6(ebook)</b>	<b>US\$211</b>	<b>£152</b>



## :: Bestselling Textbook

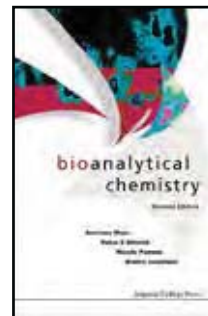
**Bioanalytical Chemistry  
2nd Edition**by **Andreas Manz** (*KIST Europe, Germany*), **Petra S Ditttrich** (*ETH Zürich, Switzerland*), **Nicole Pamme** (*University of Hull, UK*) & **Dimitri Iossifidis** (*AMalva S.A., Athens, Greece*)

"Provides an excellent and very readable introduction to this interdisciplinary field of science using language that everyone can understand independent of whether the reader may originate from the biological or the chemical fields. I suppose it will find a broad readership in particular as it is one of the rare English textbook dedicated to bioanalysis, in particular as this is one of the most emerging fields of science."

**Analytical and Bioanalytical Chemistry**

**Readership:** Undergraduate students in chemistry and engineering.

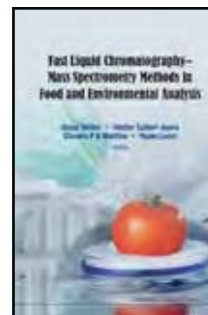
<b>256pp</b>	<b>Aug 2015</b>	
<b>978-1-78326-671-5</b>	<b>US\$84</b>	<b>£55</b>
<b>978-1-78326-672-2(pbk)</b>	<b>US\$48</b>	<b>£32</b>

**Fast Liquid Chromatography – Mass Spectrometry  
Methods in Food and Environmental Analysis**edited by **Oscar Núñez** (*University of Barcelona, Spain*), **Héctor Gallart-Ayala** (*ONIRIS LABERCA, France*), **Claudia P B Martins** (*Thermo Fisher Scientific, France*) & **Paolo Lucci** (*Pontificia Universidad Javeriana, Colombia*)

This book brings together researchers at the top of their field from across the world to discuss and analyze recent advances in fast liquid chromatography – mass spectrometry (LC – MS) methods in food and environmental analysis. First, the most novel approaches to achieve fast and ultra-fast methods as well as the use of alternative and complementary stationary phases are described. Then, recent advances in fast LC – MS methods are addressed, focusing on novel treatment procedures coupled with LC – MS, new ionization sources, high-resolution mass spectrometry, and the problematic confirmation and quantification aspects in mass spectrometry. Finally, relevant LC – MS applications in food and environmental analysis such as the analysis of pesticides, mycotoxins, food packaging contaminants, perfluorinated compounds and polyphenolic compounds are described.

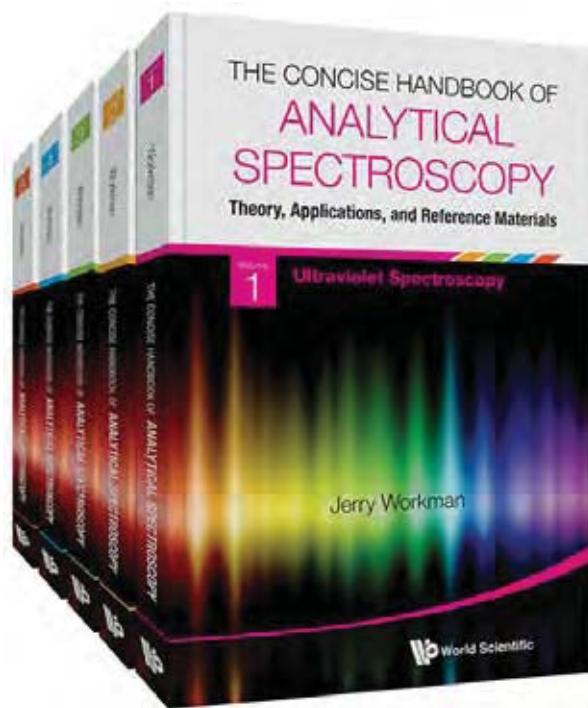
**Readership:** Scientists or students in mass spectrometry, chemists, biologists, and analysts.

<b>624pp</b>	<b>Apr 2015</b>	
<b>978-1-78326-493-3</b>	<b>US\$198</b>	<b>£143</b>
<b>978-1-78326-494-0(ebook)</b>	<b>US\$257</b>	<b>£186</b>



## NOTABLE BACKLIST

**NOTES ON STATISTICS AND DATA QUALITY FOR  
ANALYTICAL CHEMISTS**THOMPSON MICHAEL ET AL (*BIRKBECK, UNIV OF LONDON, UK*)**VIBRATIONAL SPECTROSCOPY WITH NEUTRONS - WITH  
APPLICATIONS IN CHEMISTRY, BIOLOGY, MATERIALS  
SCIENCE AND CATALYSIS**MITCHELL PHILIP C H ET AL (*UNIV OF READING, UK*)**BIOOLUMINESCENCE: CHEMICAL PRINCIPLES  
AND METHODS (REVISED EDITION)**SHIMOMURA OSAMU (*NOBEL LAUREATE, THE MARINE BIOLOGICAL LAB, USA*)



## The Concise Handbook of Analytical Spectroscopy: Theory, Applications, and Reference Materials (In 5 Volumes)

**Volume 1: Ultraviolet Spectroscopy**

**Volume 2: Visible Spectroscopy**

**Volume 3: Near Infrared Spectroscopy**

**Volume 4: Infrared Spectroscopy**

**Volume 5: Raman Spectroscopy**

by **Jerry Workman** (Unity Scientific, USA & National University, USA)

*The Concise Handbook of Analytical Spectroscopy* is integrated into 5 volumes, each covering the theory, instrumentation, sampling methods, experimental design, and data analysis techniques, as well as essential reference tables, figures, and spectra for each spectroscopic region. The detailed practical aspects of applying spectroscopic tools for many of the most exciting and current applications are covered. Featured applications include: medical, biomedical, optical, physics, common commercial analysis methods, spectroscopic quantitative and qualitative techniques, and advanced methods.

This multi-volume handbook is designed specifically as a reference tool for students, commercial development and quality scientists, and researchers or technologists in a variety of measurement endeavours.

Number of Illustrations and Tables: 393 b/w illus., 304 colour illus, 413 table

**Readership:** Graduate and undergraduate students, and academic, commercial, and government research libraries involved in medicine, biology, physics, optics, biophysics, commercial manufacturing, quality control, and industrial research.

1828pp	Aug 2016	
978-981-4508-05-6(Set)	US\$1680	£1210
	US\$1450	£1044
<b>Introductory Offer till Oct 31, 2016</b>		
978-981-4508-06-3(Set)(ebook)	US\$2184	£1479

## Contents:

### Volume 1: Ultraviolet Spectroscopy:

- Front Reference Material
- Introduction to Ultraviolet Spectroscopy
- Theory of Ultraviolet Spectroscopy, Light Interaction with Matter
- Ultraviolet Instrumentation
- Sampling Considerations for Ultraviolet
- Data Acquisition of Ultraviolet Spectra
- Data Analysis and Presentation for Ultraviolet Spectroscopy
- Applications and Spectral Examples
- Ultraviolet Reference Material Spectra and Tables
- Glossary of Ultraviolet Spectroscopy Terms

### Volume 2: Visible Spectroscopy:

- Front Reference Material
- Introduction to Visible Spectroscopy
- Theory of Visible Spectroscopy, Light Interaction with Matter
- Visible Spectroscopic Instrumentation
- Sampling Considerations for Visible Spectroscopy
- Data Acquisition for Visible Spectra
- Data Analysis and Presentation for Visible Spectroscopy
- Applications and Spectral Examples for Visible Spectroscopy
- Visible Reference Material Spectra and Tables
- Glossary of Basic Spectrometer and Data Processing
- Terms for Visible Spectroscopy

### Volume 3: Near Infrared Spectroscopy:

- Front Reference Material
- Introduction to Near Infrared Spectroscopy
- Theory of Near Infrared Spectroscopy, Light Interaction with Matter
- Near Infrared Instrumentation
- Sampling Considerations for Near Infrared Spectroscopy
- Data Acquisition for Near Infrared Spectra
- Data Analysis and Presentation for Near Infrared
- Applications and Spectral Examples for Near Infrared
- Near Infrared Reference Material Spectra and Tables
- Glossary of Basic Spectrometer and Data Processing Terms for Near Infrared

### Volume 4: Infrared Spectroscopy:

- Front Reference Material
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- Infrared Instrumentation
- Sampling Considerations for Infrared Spectroscopy
- Data Acquisition for Infrared Spectra
- Infrared Data Analysis and Presentation
- Applications and Spectral Examples for Infrared Spectroscopy
- Infrared Reference Material Spectra and Tables
- Glossary of Infrared Spectroscopy Terms

### Volume 5: Raman Spectroscopy:

- Front Reference Material
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- Raman Instrumentation
- Sampling Considerations for Raman
- Data Acquisition of Raman Spectra
- Data Analysis and Presentation for Raman Spectroscopy
- Applications and Spectral Examples
- Raman Reference Material Spectra and Tables
- Glossary of Raman Spectroscopy Terms

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## CATALYST CHEMISTRY

## Modern Developments in Catalysis

edited by **Graham Hutchings** (Cardiff University, UK), **Matthew Davidson** (University of Bath, UK), **Richard Catlow** (University College London, UK & Cardiff University, UK), **Christopher Hardacre**, **Nicholas Turner** (University of Manchester, UK) & **Paul Collier** (Johnson Matthey Technology Centre, UK)

This title provides a review of current research and practise on catalysis, focussing on five main themes: catalysis design, environmental catalysis, catalysis and energy, chemical transformation and biocatalysis and biotransformations. Topics range from complex reactions to the intricacies of catalyst preparation for supported nanoparticles, while chapters illustrate the challenges facing catalytic science and the directions in which the field is developing.

**Readership:** Undergraduate and graduate students, researchers and professors interested in the work of the UK catalysis Hub, professionals working in chemical catalysis.

250pp	Dec 2016	
978-1-78634-121-1	US\$98	£71
978-1-78634-122-8(ebook)	US\$127	£92

Catalytic Science Series

## Noble Metal Noble Value

## Ru-, Rh-, Pd-catalyzed Heterocycle Synthesis

edited by **Xiao-Feng Wu** (Zhejiang Sci-Tech University, China & Leibniz-Institut für Katalyse e.V. an der Universität Rostock, Germany)

*Noble Metals, Noble Value* provides the first comprehensive analysis of the applications of the noble metals of ruthenium (Ru), rhodium (Rh) and palladium (Pd) catalysts in heterocycles synthesis. Pairs of chapters are dedicated to summarizing each of the metals when applied to either five- or six-membered heterocyclic syntheses. An introduction to the importance of heterocycles and possible procedures for the preparation of heterocyclic compounds is also given.

**Readership:** Academics and professionals in the field of chemistry, with a particular focus on the specialities of biological, catalytic and organic chemistry.

300pp	Aug 2016	
978-1-78326-923-5	US\$132	£95
978-1-78326-924-2(ebook)	US\$172	£124

## :: Textbook

Advanced Textbooks in Chemistry - Vol 1

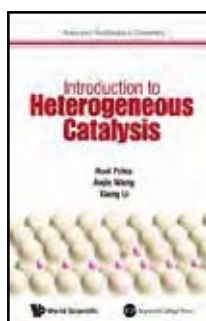
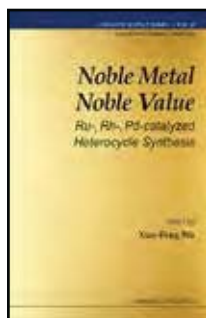
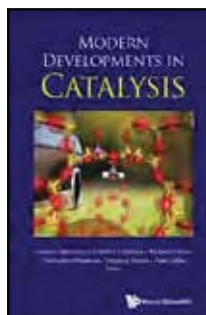
## Introduction to Heterogeneous Catalysis

by **Roel Prins** (Institute for Chemical and Bioengineering, ETH Zurich, Switzerland), **Anjie Wang** & **Xiang Li** (Dalian University of Technology, China)

Catalysis literature can be difficult to read if there is not a sufficient understanding of the underlying connections between the chemical, materials and engineering aspects of catalysis. As a result, many students lack the depth of knowledge to effectively understand the topic. This title solves this issue by presenting not only the basic concepts of catalysis but also, right from the beginning, integrating the chemical, materials and engineering aspects of catalysis in examples taken directly from industry.

**Readership:** Researchers, industrial professionals in catalysis science, inorganic and physical chemistry, chemical engineering, material science. Graduate students in catalysis, material science, industrial chemistry and chemical engineering.

348pp	May 2016	
978-1-78634-080-1	US\$98	£71
978-1-78634-081-8(pbk)	US\$48	£35

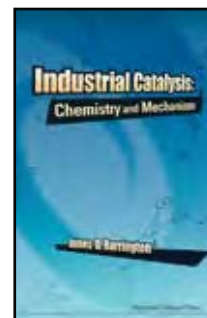
Industrial Catalysis  
Chemistry and Mechanism

by **James D Burchington**

"The book is very helpful for students and teachers in industrial chemistry, mainly in the field of catalytic industrial processes. It is well-written, easy to read and well-documented. It should not only be in every library of chemistry institutions, but also as a personal textbook in industrial chemistry."

Miguel Yus

Professor of Organic Chemistry  
Central European Journal of Chemistry



**Readership:** Advanced undergraduate and graduate students in chemistry, chemical and catalysis researchers, and scientists interested in fundamental chemical and mechanistic principles of catalysis.

296pp	May 2016	
978-1-78326-897-9	US\$85	£56
978-1-78326-898-6(pbk)	US\$45	£30

Catalytic Science Series - Vol 14

Enantioselective  
Titanium-Catalysed  
Transformations

by **Hélène Pellissier** (CNRS, France)

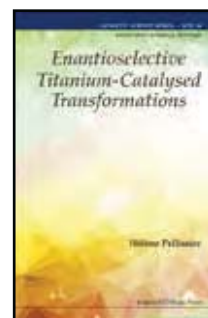
## Key Features:

- First book of its kind collecting and presenting all types of enantioselective titanium-catalysed transformations
- Contains all types of asymmetric reactions catalysed by chiral titanium catalysts

This book contains up to date research and covers all types of enantioselective transformations using chiral titanium catalysts. It illustrates the economic, health, and environmental benefits of chiral titanium catalysts, showing the types of highly enantioselective reactions that they are able to induce are unlimited.

**Readership:** Researchers in organic and catalytic chemistry, and industrial companies.

280pp	Mar 2016	
978-1-78326-894-8	US\$118	£85
978-1-78326-895-5(ebook)	US\$153	£111



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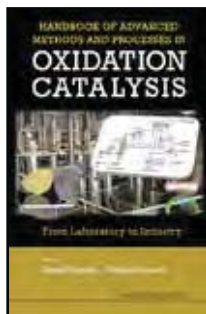
## :: Bestseller

**Handbook of Advanced Methods and Processes in Oxidation Catalysis**

From Laboratory to Industry

edited by **Daniel Duprez** (University of Poitiers, France) & **Fabrizio Cavani** (University of Bologna, Italy)

"This book is highly recommended to senior scientists/engineers and industrialists as well as to young researchers and students, because of its very valuable contents and strong relation with industrial interests."



**Jacques C Védrine**  
Emeritus Professor

Laboratoire de Réactivité de Surface  
University Pierre & Marie Curie

**Readership:** Researchers from academic laboratories and also from research departments in the chemical industry.

1036pp	Sep 2014	
978-1-84816-750-6	US\$225	£149
978-1-84816-751-3(ebook)	US\$293	£194

## :: Textbook

**Design and Applications of Single-Site Heterogeneous Catalysts**

Contributions to Green Chemistry, Clean Technology and Sustainability

by **Sir John Meurig Thomas** (University of Cambridge, UK)

"A true marriage of the practical and the fundamental, John Thomas's masterly account of single-site heterogeneous catalysts, a remarkably effective form of matter guiding desired chemical transformation, is a sheer joy to read. With the synthetic flair of Humphry Davy and the physical brilliance of his hero Faraday, we are led by the author to a feast of contemporary masterworks of chemical reactivity, prodded, by design, into the service of humanity."



**Ronald Hoffmann**  
Nobel Laureate, Chemistry, 1981

**Readership:** Students, professionals, some industrial scientists.

324pp	Apr 2012	
978-1-84816-909-8	US\$120	£79
978-1-84816-910-4(pbk)	US\$58	£38

## :: Bestseller

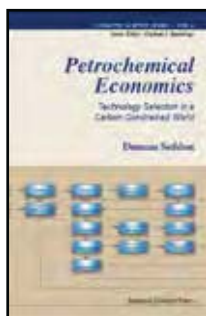
Catalytic Science Series - Vol 8

**Petrochemical Economics**

Technology Selection in a Carbon Constrained World

by **Duncan Seddon** (Duncan Seddon & Associates Pty Ltd, Australia)

This compendium gives an overview of the technologies and economics in the production of olefins in the petrochemical industries. It highlights the options and costs for producing olefins using different technologies and different feedstocks at a time when the cost of carbon dioxide emissions are set to be included in the production cost. Industry professionals, engineers, research scientists and financiers will find this title a valuable resource.

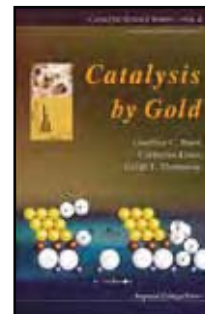


**Readership:** Academics, professionals and researchers in industrial chemistry, environmental economics/energy economics, chemical engineering, innovation/technology/knowledge management, energy studies and inorganic chemistry.

268pp	May 2010	
978-1-84816-534-2	US\$99	£65
978-1-84816-535-9(ebook)	US\$128	£85

## :: Bestseller

Catalytic Science Series - Vol 6

**Catalysis by Gold**by **Geoffrey C Bond** (Brunel University, UK), **Catherine Louis** (Université Pierre et Marie Curie, France) & **David T Thompson** (Consultant, World Gold Council, UK)

"Catalysis by Gold is a book of great cultural relevance combined with a simple and pleasant reading. Certainly, it is an appropriate time in the remarkable progress of gold catalysis for the first comprehensive review of the subject. This excellent book should be essential reading for all those working in gold catalysis or seeking to exploit it — research students, industrialists, etc. — as well as for those working generally in the catalysis field."

Gold Bulletin

**Readership:** Postgraduate level researchers in academia and industry, as well as general readers.

384pp	Aug 2007	
978-1-86094-658-5	US\$180	£119
978-1-86094-895-4(ebook)	US\$234	£155

## NOTABLE BACKLIST

## CONCEPTS IN SYNGAS MANUFACTURE

ROSTRUP-NIELSEN JENS & CHRISTIANSEN LARS J  
(HALDOR TOPSOE A/S, DENMARK)

## DEACTIVATION AND REGENERATION OF ZEOLITE CATALYSTS

GUINNET MICHEL & RIBEIRO FERNANDO RAMOA  
(TECHNICAL UNIV OF LISBON, PORTUGAL)

## SUPPORTED METALS IN CATALYSIS (2ND EDITION)

ANDERSON JAMES A ET AL (UNIV OF ABERDEEN, UK)

## DESIGN AND APPLICATIONS OF SINGLE-SITE HETEROGENEOUS CATALYSTS: CONTRIBUTIONS TO GREEN CHEMISTRY, CLEAN TECHNOLOGY AND SUSTAINABILITY

THOMAS JOHN MEURIG (UNIV OF CAMBRIDGE, UK)

## CATALYSIS BY CERIA AND RELATED MATERIALS (2ND EDITION)

TROVARELLI ALESSANDRO ET AL (UNIV DI UDINE, ITALY)



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<http://www.worldscientific.com/page/chemistry>  
for more titles and sample chapters

## COMPUTATIONAL CHEMISTRY / THEORETICAL CHEMISTRY / QUANTUM CHEMISTRY

Materials and Energy - Vol 7

### The WSPC Reference on Organic Electronics: Organic Semiconductors (In 2 Volumes)

**Volume 1: Basic Concepts**  
**Volume 2: Fundamental  
Aspects of Materials and  
Applications**

edited by **Jean-Luc Bredas**

(King Abdullah University  
of Science & Technology,

Saudi Arabia & Georgia Institute of Technology, USA) &

**Seth R Marder** (Georgia Institute of Technology, USA)



#### Key Features:

- Number of Illustrations and Tables: 168 b/w illus., 242 colour illus., 13 tables.
- The pedagogy of the book is distinctive and the authors are chosen not only for their extremely significant scientific accomplishments but also, importantly, for their teaching ability
- In addition, the breadth of areas of applications of organic semiconductors covered in the books is unprecedented

This 2-volume set provides the reader with a basic understanding of the foundational concepts pertaining to the design, synthesis, and applications of conjugated organic materials used as organic semiconductors, in areas including organic photovoltaic devices, light-emitting diodes, field-effect transistors, spintronics, actuation, bioelectronics, thermoelectrics, and nonlinear optics.

While there are many monographs in these various areas, the emphasis here is both on the fundamental chemistry and physics concepts underlying the field of organic semiconductors and on how these concepts drive a broad range of applications. This makes the volumes ideal introductory textbooks in the subject. They will thus offer great value to both junior and senior scientists working in areas ranging from organic chemistry to condensed matter physics and materials science and engineering.

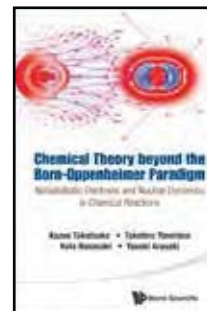
**Readership:** Junior and senior scientists from fields ranging from organic chemistry to condensed matter physics and materials science and engineering, with an interest in organic semiconductors.

896pp  
978-981-4699-22-8(Set) US\$545 £360  
US\$495 £327  
*Introductory Offer till Oct 31, 2016*  
978-981-4699-23-5(Set)(ebook) US\$709 £468

For more info, visit <http://www.worldscientific.com/worldscibooks/10.1142/9678>

### Chemical Theory beyond the Born-Oppenheimer Paradigm Nonadiabatic Electronic and Nuclear Dynamics in Chemical Reactions

by **Kazuo Takatsuka**, **Takehiro Yonehara**, **Kota Hanasaki** & **Yasuki Arasaki** (The University of Tokyo, Japan)



*"The book is recommended for both experts and novice researchers who are looking for new methods and tools of analysis in the new field of research. The documented developments of concepts, methods and exploratory applications are ingenious and stimulating."*

**Angewandte Chemie (International Edition)**

**Readership:** Graduate students, professional scientists in theoretical chemistry, quantum chemistry, chemical dynamics, nonadiabatic transition, molecular physics, electron dynamics, and experimentalists in laser chemistry (including ultrafast chemical dynamics), photochemistry, laser control of chemical reactions, and scientists working in physical chemistry and chemical physics in general.

448pp  
978-981-4619-64-6 Feb 2015 US\$145 £96  
978-981-4619-65-3(ebook) US\$188 £125

#### :: Bestselling Textbook

Mathematics Across the Curriculum - Vol 1

### The Bell that Rings Light A Primer in Quantum Mechanics and Chemical Bonding

by **Dorothy Wallace** & **Joseph J BelBruno** (Dartmouth College, USA)



*"It probably serves best as supplementary material, either for mathematics students to see how some seemingly abstract mathematics has been applied to physical systems or for science students to appreciate the logical system that underpins familiar physical models."*

**Choice**

**Readership:** Introductory undergraduate courses in chemistry, quantum mechanics, and physics, courses in partial differential equations and mathematical physics.

152pp  
978-981-256-705-5 Sep 2006 US\$58 £38  
978-981-256-706-2(pbk) US\$29 £19

#### NOTABLE BACKLIST

**QUANTUM CHEMISTRY: A UNIFIED APPROACH**  
COOK DAVID B (UNIV OF SHEFFIELD, UK)

**SOLVING THE SCHRÖDINGER EQUATION: HAS EVERYTHING BEEN TRIED?**  
POPELIER PAUL (UNIV OF MANCHESTER, UK)

**PROTEIN FOLDING PROBLEM AND ITS SOLUTIONS, THE**  
BEN-NAIM ARIEH (THE HEBREW UNIV OF JERUSALEM, ISRAEL)



<http://www.facebook.com/worldscientific>



## Journal of Theoretical and Computational Chemistry

<http://www.worldscientific.com/jtcc>

The *Journal of Theoretical and Computational Chemistry* (JTCC) is an international interdisciplinary journal, aimed at providing comprehensive coverage on the latest developments of research in the ever-expanding area of theoretical and computational chemistry and their applications to broad scientific fields spanning physics, chemistry, biology, materials, and so on.

With the proliferation of sub-fields in the application of theoretical chemistry and the explosion of applications in various scientific fields, it is difficult these days for us to keep up with all the new research developments in these cross-disciplinary fields. We hope this journal will serve as a major single source of information on the latest research that can be broadly defined to be in the general area of theoretical and computational chemistry.

The journal publishes original contributions on broad aspects: from both the development of fundamental theoretical methodology and computational algorithm to extensive numerical applications to specific scientific problems ranging from gas-phase to condensed phase, and to biological systems. It covers general research areas broadly defined as quantum chemistry, chemical dynamics, statistical mechanics, and chemical biology.

### Featured Articles

**Modeling reactivation of the phosphorylated human butyrylcholinesterase by QM(DFTB)/MM calculations**

DOI: 10.1142/S0219633615500510

**Adsorption enthalpies of alkyl halides in a FAU acidic zeolite investigated by the ONIOM2 method**

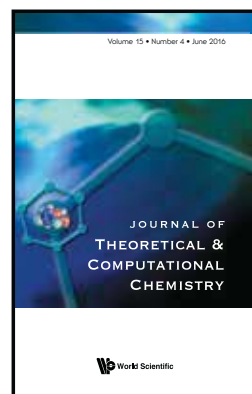
DOI: 10.1142/S0219633615500340

**Toward understanding tautomeric switching in 4-hydroxynaphthaldehyde and its dimers: A DFT and quantum topology study**

DOI: 10.1142/S0219633615500169

**Calculation of free energy changes due to mutations from alchemical free energy simulations**

DOI: 10.1142/S0219633615500236



## Surface Review and Letters

<http://www.worldscientific.com/srl>

This international journal is devoted to the elucidation of properties and processes that occur at the boundaries of materials. The scope of the journal covers a broad range of topics in experimental and theoretical studies of surfaces and interfaces. Both the physical and chemical properties are covered. The journal also places emphasis on emerging areas of cross-disciplinary research where new phenomena occur due to the presence of a surface or an interface. Representative areas include surface and interface structures; their electronic, magnetic and optical properties; dynamics and energetics; chemical reactions at surfaces; phase transitions, reconstruction, roughening and melting; defects, nucleation and growth; and new surface and interface characterization techniques.

### Featured Articles:

**Growth, Structural Characterization and Interfacial Reaction of Magnetron Sputtered CeO<sub>2</sub> Thin Films on Different Substrates**

DOI: 10.1142/S0218625X14500541

**Hydrodynamic Testing of a Biological Sharkskin Replica Manufactured Using the Vacuum Casting Method**

DOI: 10.1142/S0218625X15500304

**Characterization of Fly Ash From Coal-Fired Power Plant and Their Properties of Mercury Retention**

DOI: 10.1142/S0218625X15500183

**Characteristic Significance of Magnetic Relaxations on Copper Oxide Thin Film Using the Bloch NMR**

DOI: 10.1142/S0218625X14500759



## ELECTROCHEMISTRY

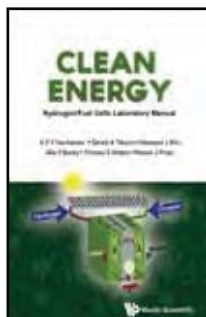
## Clean Energy

## Hydrogen/Fuel Cells Laboratory Manual

by **K S V Santhanam**, **Gerald A Takacs**, **Massoud J Miri**, **Alla V Bailey**, **Thomas D Allston** & **Roman J Press** (Rochester Institute of Technology, USA)

## Key Features:

- A laboratory manual that describes the principles of clean energy experiments
- Provides hands on experience on hydrogen safety and hydrogen storage
- Gives theoretical background on fuel cells and motivates to do the fuel cell experiments



**Readership:** General audience interested in clean energy, global warming solutions, fuel cells, hydrogen gas safety tests; undergraduate students taking general chemistry course or energy as minor; graduate students who wish to learn the basic fuel cells, mechanical and electrical engineering students.

140pp	Mar 2016	
978-981-4749-66-4	US\$38	£25
978-981-4749-67-1(ebook)	US\$49	£33

## Compendium of In Vivo Monitoring in Real-Time Molecular Neuroscience

## Volume 1: Fundamentals and Applications

edited by **George S Wilson** (University of Kansas, USA) & **Adrian C Michael** (University of Pittsburgh, USA)

This new volume documents the transition from the development of electrochemical monitoring of brain function, now more than 40 years old, to fundamental neuroscience. This includes the links of molecular neuroscience to biobehavior, to a molecular understanding of neurologically-linked diseases and to the investigation of neuroactive molecules made possible by new detection methodology. This work should be of interest to a broad audience, especially those who are engaged in neuroscience research, for example in drug discovery, but are not familiar with electrochemical methodology.



**Readership:** Students and researchers in neuroscience research, drug discovery, electrochemistry, neurology, neurobiology, biomedical engineering and analytical chemistry.

444pp	Feb 2015	
978-981-4619-76-9	US\$165	£109
978-981-4619-77-6(ebook)	US\$215	£142

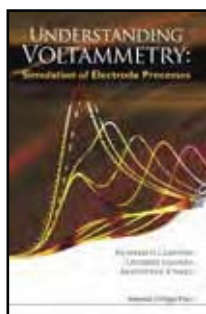
## :: Bestselling Textbook

## Understanding Voltammetry

## Simulation of Electrode Processes

by **Richard G Compton** (Oxford), **Eduardo Laborda** (Oxford & University of Murcia, Spain) & **Kristopher R Ward** (Oxford)

This is the first textbook in the field of electrochemistry that will teach experimental electrochemists how to carry out simulation of electrode processes. Processes at both macro- and micro-electrodes are examined and the simulation of both diffusion-only and diffusion – convection processes are addressed. The simulation of processes with coupled homogeneous kinetics and at microelectrode arrays are further discussed.



**Readership:** Graduate students pursuing electrochemistry and electroanalytical studies, as well as researchers and professionals working in the area.

260pp	Jan 2014	
978-1-78326-323-3	US\$58	£38
978-1-78326-325-7(ebook)	US\$75	£50

## :: Bestselling Textbook

## Understanding Voltammetry

## Problems and Solutions

by **Richard G Compton**, **Christopher Batchelor-McAuley** & **Edmund J F Dickinson** (Oxford)

*"The presentation of the relevant theory through real cases is undoubtedly one of the main characteristics, which makes this book of real interest, particularly for students but also to more experienced scientists ... Although this volume is a complement to the textbook cited above, it can stand alone and may become one of those books that you keep returning to."*

Chemistry World

**Readership:** Senior undergraduates, graduates and researchers interested or specialising in electrochemistry and especially, voltammetry.

272pp	Dec 2011	
978-1-84816-730-8	US\$85	£53
978-1-84816-731-5(pbk)	US\$48	£30



## :: Bestselling Textbook

## Understanding Voltammetry

## 2nd Edition

by **Richard G Compton** (Oxford), **Craig E Banks** (Manchester Metropolitan University, UK)

## Review of the First Edition

*"There is a wealth of voltammetric data from a range of systems, with numerous diagrams showing actual voltammograms, greatly helpful to a reader new to the field, with underpinning mathematical equations and supportive mechanistic explanation. This is a most useful and instructive book."*

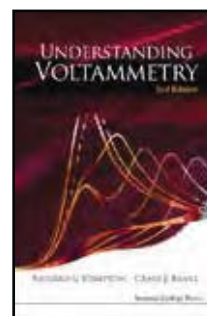
Chemistry &amp; Industry

## Key Features:

- Pedagogically structured to focus solely on voltammetry
- Detailed explanations on how to design and interpret experiments using various forms of voltammetry
- A rigorous yet accessible treatment of all the "difficult" topics in voltammetry

**Readership:** Graduate students pursuing electrochemistry and electroanalytical studies, as well as researchers and industrialists working in the area.

444pp	Jan 2011	
978-1-84816-585-4	US\$115	£76
978-1-84816-586-1(pbk)	US\$64	£42



## Sample Chapters

Offers a selection of titles with sample chapters in Adobe PDF

## Technology

<http://www.worldscientific.com/technology>

Fashioned as a high-impact, high-visibility, top-echelon publication, this new ground-breaking journal - TECHNOLOGY - will feature the development of cutting-edge new technologies in a broad array of emerging fields of science and engineering. The content will have an applied science and technological slant with a focus on both innovation and application to daily lives. It will cover diverse disciplines such as health and life science, energy and environment, advanced materials, technology-based manufacturing, information science and technology, and marine and transportation technologies.

It's been said that global scientific discoveries are changing the face of technology, and that technology is changing the world. Enhancing the old rules of scientific reporting and communication, this journal is proposed as a vehicle to preview and showcase the innovation that stands behind future technological changes, to demonstrate how it applies to the modern world, and ensure that the communication is understandable to readers in scientific, business, and academic environments.

### Featured Articles:

**Microengineered cell and tissue systems for drug screening and toxicology applications: Evolution of *in-vitro* liver technologies**

DOI: 10.1142/S2339547815300012

**A microfluidic biochip for complete blood cell counts at the point-of-care**

DOI: 10.1142/S2339547815500090

**Modulating electrolytic tissue ablation with reversible electroporation pulses**

DOI: 10.1142/S233954781550003X



## Functional Materials Letters

<http://www.worldscientific.com/fml>

Functional Materials Letters is an international peer-reviewed scientific journal for original contributions to research on the synthesis, behavior and characterization of functional materials. The journal seeks to provide a rapid forum for the communication of novel research of high quality and with an interdisciplinary flavor. The journal is an ideal forum for communication amongst materials scientists and engineers, chemists and chemical engineers, and physicists in the dynamic fields associated with functional materials.

### Featured Articles:

**A novel high color purity yellow luminescent material  $\text{NaBaBO}_3:\text{Sm}^{3+}$**

DOI: 10.1142/S1793604715500423

**Effects of hydrothermal temperature on the morphology and photoelectrocatalytic performance of  $\text{TiO}_2$ -based nanomaterials photoelectrode**

DOI: 10.1142/S1793604715500344

**Effects of flow rate of atmosphere gases on the characteristics of Zn-doped ITO (ZITO) thin films for organic light emitting diodes**

DOI: 10.1142/S179360471540007X



## NANO Life

<http://www.worldscientific.com/nl>

Nano LIFE is a quarterly international journal publishing peer-reviewed research in all fields of nano and biomedical sciences. The emphasis of this journal is based on its originality, importance, and interdisciplinary nature between nano and life sciences. Nano LIFE also provides current news and interpretations of critical issues in nanomedicine that caters to scientific communities and the general public.

Nano LIFE will effectively facilitate interactions and collaborations between the nano and medical research communities that are more focused on solving key problems based on emerging nanoscience and technologies. This journal is also addressed to researchers in a broad spectrum of materials, chemical, biological and medical sciences, and engineering. In addition, it summarizes the wealth of experimental results in both nanomaterials and biomedicine and introduces new aspects of nanoscience relevant to biological and medical applications. It also demonstrates new trends in the field and cultivates a new research community in both frontier research and higher education.

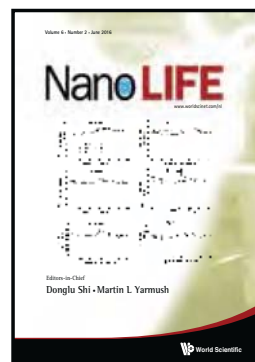
### Featured Articles:

**Nanotoxicology in the Skin: How Deep is the Issue?**

DOI: 10.1142/S1793984414400042

**Review Of Metal, Carbon and Polymer Nanoparticles For Infrared Photothermal Therapy**

DOI: 10.1142/S1793984413300021





## GENERAL CHEMISTRY

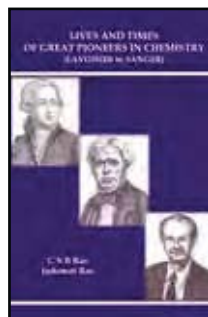
**The Chemistry Department at Imperial College London****A History, 1845 – 2000**by **Hannah Gay** (*Simon Fraser University, Canada & Imperial College London, UK*) & **William Griffith** (*Imperial College London, UK*)

This is the first comprehensive history of the chemistry department at Imperial College London. Based on archival records, oral testimony, published papers, published and unpublished memoirs, the book tells the story of this world-famous department from its foundation as the Royal College of Chemistry in 1845 to the large department it became by the year 2000.

It covers research, teaching, departmental governance, students and social life. It also highlights the extraordinary contributions made to the war effort in both the first and second world wars. From its first professors, A. Wilhelm Hofmann and Edward Frankland, the department has been home to many eminent chemists, including, in the later twentieth century, the Nobel laureates Derek Barton and Geoffrey Wilkinson. New information on these and many others is presented in a lively narrative that places both people and events in the larger historical contexts of chemistry, politics, culture and the economy.

**Readership:** Those connected with science at Imperial College, and anyone interested in chemistry and its history, or in higher education in the sciences.

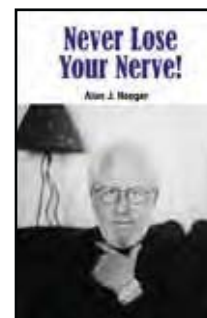
<b>450pp</b>	<b>Oct 2016</b>	
<b>978-1-78326-973-0</b>	<b>US\$68</b>	<b>£45</b>
<b>978-1-78326-974-7(ebook)</b>	<b>US\$88</b>	<b>£59</b>

**Lives and Times of Great Pioneers in Chemistry****(Lavoisier to Sanger)**by **C N R Rao** & **Indumati Rao** (*Jawaharlal Nehru Centre for Advanced Scientific Research, India*)

This book presents the lives and times of 21 great chemists starting from Lavoisier (18th century) and ending with Sanger. Then, there are stories of the great Faraday (19th century) and of the 20th century geniuses G N Lewis and Linus Pauling. The material in the book is presented in the form of stories describing important aspects of the lives of these great personalities, besides highlighting their contributions to chemistry. It is hoped that the book will provide enjoyable reading and also inspiration to those who wish to understand the secret of the creativity of these great chemists.

**Readership:** Students and teachers of chemistry, young scientists and chemists.

<b>324pp</b>	<b>Jan 2016</b>	
<b>978-981-4689-05-2</b>	<b>US\$58</b>	<b>£38</b>
<b>978-981-4689-92-2(pbk)</b>	<b>US\$29</b>	<b>£19</b>
<b>978-981-4689-06-9(ebook)</b>	<b>US\$75</b>	<b>£49</b>

**Never Lose Your Nerve!**by **Alan J Heeger** (*UC Santa Barbara*)

"A deeply insightful book by and about the man who created the field of conducting polymers and who won a Nobel Prize for it. But more than that it captures his way of life, his uncanny willingness to take thoughtful risks, his exquisite taste in choosing problems, his artist's bent and his deep desire to have impact on the world. I wholeheartedly recommend this inspiring book to a wide set of readers, scientists and non-scientists alike."

**John Seely Brown**

**Former Chief Scientist, Xerox Corp and  
former director of Xerox Palo Alto Research Center  
(PARC)**

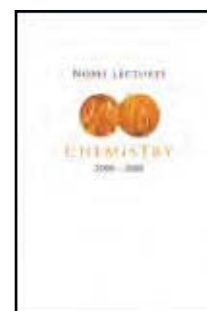
<b>288pp</b>	<b>Dec 2015</b>	
<b>978-981-4704-85-4</b>	<b>US\$58</b>	<b>£38</b>
<b>978-981-4704-86-1(pbk)</b>	<b>US\$28</b>	<b>£18</b>
<b>978-981-4719-55-1(ebook)</b>	<b>US\$75</b>	<b>£49</b>

**Understanding Experimental Planning for Advanced Level Chemistry****The Learner's Approach**by **Kim Seng Chan** (*Victoria Junior College, Singapore*) & **Jeanne Tan**

The book provides a fundamental important scaffolding to aid students to create their own understanding of how to plan an experiment based on the given reagent and apparatus. It guides the students in integrating the various concepts that they have learnt into a coherent and meaningful conceptual network during experimental planning.

**Readership:** A level students and teaching professionals.

<b>308pp</b>	<b>Jul 2015</b>	
<b>978-981-4667-90-6(pbk)</b>	<b>US\$32</b>	<b>£21</b>

**Nobel Lectures in Chemistry (2006 – 2010)**edited by **Bengt Nordén** (*Chalmers University of Technology, Sweden*)

This volume is a collection of the Nobel lectures delivered by the prizewinners, together with their biographies and the presentation speeches for the period 2006 – 2010. Each Nobel lecture is based on the work for which the laureate was awarded the prize. List of prizewinners and their award citations: (2006) Roger D Kornberg; (2007) Gerhard Ertl; (2008) Osamu Shimomura, Martin Chalfie and Roger Y Tsien; (2009) Venkatraman Ramakrishnan, Thomas A Steitz and Ada E Yonath; (2010) Richard F Heck, Ei-ichi Negishi and Akira Suzuki

<b>444pp</b>	<b>Mar 2015</b>	
<b>978-981-4630-16-0</b>	<b>US\$128</b>	<b>£84</b>
<b>978-981-4630-17-7(pbk)</b>	<b>US\$48</b>	<b>£32</b>
<b>978-981-4635-66-0(ebook)</b>	<b>US\$166</b>	<b>£109</b>

## Entropy Demystified

### The Second Law Reduced to Plain Common Sense 2nd Edition

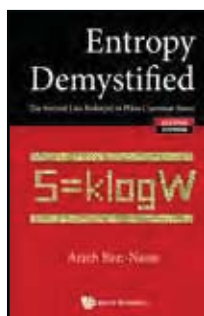
by **Arieh Ben-Naim** (*The Hebrew University of Jerusalem, Israel*)

In this unique book, the reader is invited to experience the joy of appreciating something which has eluded understanding for many years — entropy and the Second Law of Thermodynamics. The book has a two-pronged message: first, that the Second Law is not infinitely incomprehensible as commonly stated in most textbooks on thermodynamics, but can, in fact, be comprehended through sheer common sense; and second, that entropy is not a mysterious quantity that has resisted understanding but a simple, familiar and easily comprehensible concept.

In this new edition, seven simulated games are included so that the reader can actually experiment with the games described in the book. These simulated games are meant to enhance the readers' understanding and sense of joy upon discovering the Second Law of Thermodynamics.

**Readership:** General readers interested in science; a useful companion for a course in thermodynamics.

<b>230pp</b>	<b>Jul 2016</b>	
<b>978-981-3100-11-4</b>	<b>US\$64</b>	<b>£42</b>
<b>978-981-3100-12-1(pbk)</b>	<b>US\$32</b>	<b>£21</b>



## Information, Entropy, Life and the Universe

### What We Know and What We Do Not Know

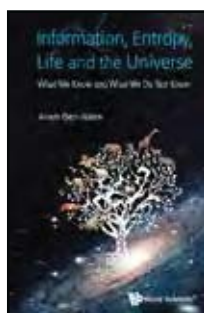
by **Arieh Ben-Naim** (*The Hebrew University of Jerusalem, Israel*)

*"With all its profoundness the book is very understandable and easy to read and should be accessible to a wide audience with a general scientific background. Overall, the book provides a pleasantly dry look at a subject matter that frequently plays a role in popular science literature when it comes to explaining the really big picture."*

**Angewandte Chemie**

**Readership:** Interested lay public in information theory, thermodynamics, biology and cosmology.

<b>492pp</b>	<b>May 2015</b>	
<b>978-981-4651-66-0</b>	<b>US\$62</b>	<b>£41</b>
<b>978-981-4651-67-7(pbk)</b>	<b>US\$29</b>	<b>£19</b>
<b>978-981-4651-68-4(ebook)</b>	<b>US\$81</b>	<b>£53</b>



## :: Bestselling Textbook

## Entropy and the Second Law

### Interpretation and Miss-Interpretationss

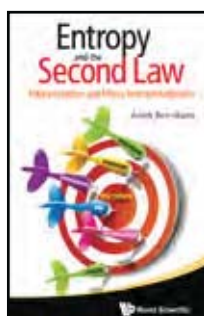
by **Arieh Ben-Naim** (*The Hebrew University of Jerusalem, Israel*)

*"Ben-Naim does a thorough job in making the SMI a familiar and intuitive quantity. He presents his case in a very readable examination of entropy's multifaceted nature."*

**Chemistry World**

**Readership:** Undergraduate and graduate students in chemistry and physics, academics and lay persons.

<b>296pp</b>	<b>Jul 2012</b>	
<b>978-981-4407-55-7</b>	<b>US\$48</b>	<b>£32</b>
<b>978-981-4374-89-7(pbk)</b>	<b>US\$24</b>	<b>£16</b>



## :: Bestselling Textbook

## Understanding Basic Chemistry Through Problem Solving

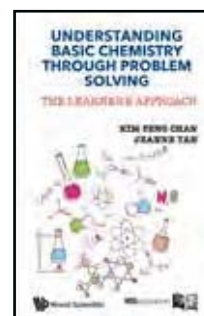
### The Learner's Approach

by **Kim Seng Chan** (*Victoria Junior College, Singapore*) & **Jeanne Tan**

Written for students taking either the University of Cambridge O-level examinations or the GCSE examinations, this guidebook covers essential topics and concepts under stipulated chemistry syllabi. The topics are explored through an explanatory and inquiry-based approach. They are interrelated and easy to understand, with succinct explanations/examples being included, especially on areas that students frequently find difficult. Topics address the whys and hows behind key concepts to be mastered, so that the concepts are made understandable and intuitive for students. The focus is on conceptual learning so as to equip students with knowledge for critical learning and problem solving.

**Readership:** Students taking the University of Cambridge O-level examinations or the GCSE examinations.

<b>468pp</b>	<b>Jan 2015</b>	
<b>978-981-4641-18-0(pbk)</b>	<b>US\$34</b>	<b>£22</b>



## :: Bestselling Textbook

## Understanding Basic Chemistry

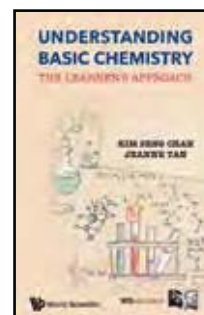
### The Learner's Approach

by **Kim Seng Chan** (*Victoria Junior College, Singapore*) & **Jeanne Tan**

Written for students taking either the University of Cambridge O-level examinations or the GCSE examinations, this textbook covers essential topics under both stipulated chemistry syllabi. The book is written in such a way as to guide the reader through the understanding and applications of basic essential chemical concepts by introducing a discourse feature — the asking and answering of questions — that stimulates coherent thinking and hence, elucidates ideas. Based on the Socratic Method, questions are implanted throughout the book to help facilitate the reader's development in forming logical conclusions of concepts. The book helps students to master fundamental chemical concepts in a simple way.

**Readership:** O level students and teaching professionals in Chemistry.

<b>404pp</b>	<b>Oct 2014</b>	
<b>978-981-4612-28-9(pbk)</b>	<b>US\$45</b>	<b>£30</b>

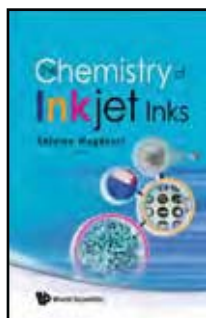


## :: Bestseller

**The Chemistry of Inkjet Inks**

edited by **Shlomo Magdassi** (*The Hebrew University of Jerusalem, Israel*)

This book provides basic and essential information on the important parameters which determine ink performance. It covers not only the conventional use of inkjet technology on graphic applications, but also the extension of this method to print various functional materials, such as the use of conductive inks to print light-emitting diodes (LEDs) and three-dimensional structures. Thus, the book will serve a large community: industrial chemists who deal with ink formulations and synthesis of chemicals for inks; chemical engineers and physicists who deal with the rheological and flow properties of inks; and researchers in academic institutes who seek to develop novel applications based on inkjet printing of new materials.



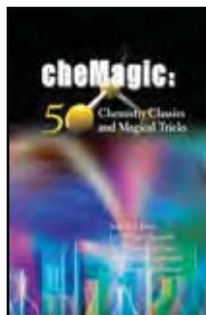
<b>356pp</b>	<b>Aug 2009</b>	
<b>978-981-281-821-8</b>	<b>US\$128</b>	<b>£85</b>
<b>978-981-281-822-5(ebook)</b>	<b>US\$167</b>	<b>£110</b>

## :: Bestselling Textbook

**cheMagic****50 Chemistry Classics and Magical Tricks**

by **Wee Khee Seah, Mingjie Kenneth Lim, Cheng Feng Gary Lee, Tien Sheng Royston Ong & Wei Xiong Nicholas Yeo** (*NUS High School of Math and Science, Singapore*)

*"This delightful little book is a 'how to' for the budding chemical magician. It is written more for the novice magician than the novice chemist since some of the tricks require some knowledge of chemistry, but the magic is all delineated ... The authors capture the essence of magic, be it chemical, mathematical, or common slight of hand: surprise! They give advice throughout for achieving maximal effect: don't tip off the audience about what to expect. Many of these clever tricks can be done right at home with materials available at the local drug store. I highly recommend this book as a great way to (a) dazzle your friends and (b) excite students about the magical world of chemistry."*



**Harold B Reiter**

**Problems Editor, Pi Mu Epsilon Journal  
Professor, University of North Carolina at Charlotte**

<b>148pp</b>	<b>Oct 2008</b>	
<b>978-981-283-707-3(pbk)</b>	<b>US\$30</b>	<b>£20</b>

**NOTABLE BACKLIST****UNDERSTANDING CHEMISTRY**

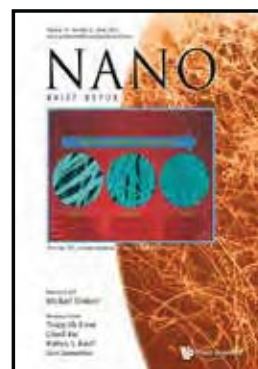
**RAO C N R** (*JAWAHARLAL NEHRU CENTRE FOR ADVANCED SCIENTIFIC RESEARCH, INDIA*)

**CHEMISTRY: THE IMPURE SCIENCE**

**BENSAUDE-VINCENT BERNADETTE ET AL** (*UNIV PARIS X, FRANCE*)

**VOYAGE THROUGH TIME: WALKS OF LIFE TO THE NOBEL PRIZE**

**ZEWAIL AHMED** (*NOBEL LAUREATE; LINUS PAULING CHAIR PROFESSOR, CALTECH*)

**NANO**

<http://www.worldscientific.com/nano/>

NANO is an international peer-reviewed monthly journal for nanoscience and nanotechnology that presents forefront fundamental research and new emerging topics. It features timely scientific reports of new results and technical breakthroughs and also contains interesting review articles about recent hot issues.

NANO provides an ideal forum for presenting original reports of theoretical and experimental nanoscience and nanotechnology research. Research areas of interest include: nanomaterials including nano-related biomaterials, new phenomena and newly developed characterization tools, fabrication methods including by self-assembly, device applications, and numerical simulation, modeling, and theory. However, in light of the current stage development of nanoscience, manuscripts on numerical simulation, modeling, and/or theory only without experimental evidences are considered as not pertinent to the scope of NANO.

**Editors' Choice:**

**Cobalt/Chromium Nanoparticles-Incorporated Carbon Nanofibers as Effective Nonprecious Catalyst for Methanol Electrooxidation in Alkaline Medium**

DOI: 10.1142/S1793292016500491

**Enhancing the Specific Activity of Metal Catalysts Toward Oxygen Reduction by Introducing Proton Conductor**

DOI: 10.1142/S1793292016500557

**Model-Based Design and Control of Distributed DNA-Based Systems by Petri Nets**

DOI: 10.1142/S179329201650003X

**Synthesis of Carbon-Coated LiFePO<sub>4</sub> Cathode Material by One-Step Microwave-Assisted Pyrolysis of Ionic Liquid Process**

DOI: 10.1142/S1793292016500041

**Morphological Dependence of Field Emission Properties of Silicon Nanowire Arrays**

DOI: 10.1142/S179329201650017X



# MATERIALS CHEMISTRY / NANO CHEMISTRY

Frontiers in Nanobiomedical  
Research - Vol 6

## Handbook of Immunological Properties of Engineered Nanomaterials (In 3 Volumes)

**Volume 1: Key Considerations  
for Nanoparticle**

**Characterization Prior to  
Immunotoxicity Studies**

**Volume 2:**

**Haematocompatibility of Engineered Nanomaterials**

**Volume 3: Engineered Nanomaterials and the Immune Cell  
Function**

**2nd Edition**

edited by **Marina A Dobrovolskaia & Scott E McNeil** (Leidos  
Biomedical Research Inc., USA)

*"An indispensable handbook for anyone developing nanomedicines  
or anything that is to be put into or come in contact with the body.  
Valuable for specialists and a practical guide for non-specialists."*



**Ai Lin Chun, PhD**

**Senior Editor, Nature Nanotechnology**

*"A diverse family of engineered nanomaterials is rapidly gaining attention for use as diagnostics and drug delivery platforms for a variety of disorders, including infectious diseases, cardiovascular disorders, and cancer. However, many of the attractive attributes of nanoparticles are offset by potentially detrimental properties such as the host immune response to these novel materials and their therapeutic payloads. Expanded and updated, the second edition of 'Handbook of Immunological Properties of Engineered Nanomaterials,' edited by Drs. Dobrovolskaia and McNeil, offers a versatile resource for investigators and clinicians working toward the goal of reducing to practice the promising concept of nanomaterials applications in innovative diagnostic and therapeutic strategies. This compilation encompasses state-of-art information on haematocompatibility of engineered nanopreparations, impact of physicochemical features of nanomaterials on their immunological compatibility, best practices in assuring nanomaterials' sterility and lack of endotoxin contamination, biological consequences of nanomaterials' interactions with specific cellular subsets of immune system, capabilities of nanoformulations as adjuvants, vaccines, and drug delivery vehicles, contributed by an impressive constellation of leading experts. It will serve as a cutting edge guide to the design of improved therapeutic nanoformulations with mitigated risks of immunotoxicologic burden."*

**Stefanie N Vogel, PhD**

**Professor, University of Maryland, School of Medicine**

**Readership:** Researchers, academics, undergraduates and graduates in toxicology, immunotoxicology and nanomedicine, and industry (small and mid biotech companies and big pharmaceutical companies), as well as regulatory agencies (EPA, FDA) and physicians.

<b>1184pp</b>	<b>Apr 2016</b>	
<b>978-981-4699-16-7(Set)</b>	<b>US\$840</b>	<b>£554</b>
<b>978-981-4699-17-4(Set)(ebook)</b>	<b>US\$1287</b>	<b>£849</b>

For more info and sample chapter, visit  
<http://www.worldscientific.com/worldscibooks/10.1142/9677>

## Gold Nanoparticles for Physics, Chemistry and Biology 2nd Edition

edited by **Catherine Louis & Olivier Pluchery** (Université Pierre et  
Marie Curie, France)

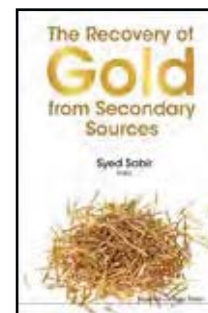
This Second Edition begins with a history of over 2000 years of the use of gold nanoparticles, with a review of the specific properties which make gold unique. Updated chapters include gold nanoparticle preparation methods, their plasmon resonance and thermo-optical properties, their catalytic properties and their future technological applications. New chapters have been included, and reveal the growing impact of plasmonics in research, with an introduction to quantum plasmonics, plasmon assisted catalysis and electro-photon conversion. The growing field of nanoparticles for health is also addressed with a study of gold nanoparticles as radiosensibiliser for radiotherapy, and of gold nanoparticle functionalisation. This new edition also considers the relevance of bimetallic nanoparticles for specific applications.

**Readership:** Graduate students, young scientists and experts in related areas of chemistry, biology, material science and physics who need an introduction to gold nanoparticles.

<b>500pp</b>	<b>Feb 2017</b>	
<b>978-1-78634-124-2</b>	<b>US\$138</b>	<b>£99</b>
<b>978-1-78634-125-9(ebook)</b>	<b>US\$179</b>	<b>£129</b>

## The Recovery of Gold from Secondary Sources

edited by **Syed Sabir** (King Saud University,  
Saudi Arabia)



This title analyses the most advanced technology in gold recovery and recycling from spent sources of mobile phones, unwanted electronic equipment and waste materials. State-of-the-art techniques of hydrometallurgical and bio-metallurgical processing, leaching, cementing, adsorbing and separation through bio-sorbents are all described in detail, providing a guide for students and researchers. Discussion of environmentally friendly methods of recovery are presented, in order to provide modern-day alternatives to previous techniques. For those interested in the study of gold recovery this book gives a comprehensive overview of current recovery, making it the ultimate source of information for students, researchers, chemists, metallurgists, environmental scientists and electronic waste recovery experts.

**Readership:** Students, researchers, chemists, metallurgists, environmental scientists and electronic waste recovery experts.

<b>325pp</b>	<b>Oct 2016</b>	
<b>978-1-78326-989-1</b>	<b>US\$154</b>	<b>£111</b>
<b>978-1-78326-990-7(ebook)</b>	<b>US\$200</b>	<b>£144</b>

### NOTABLE BACKLIST

**CHEMISTRY OF NANOSTRUCTURED MATERIALS, THE - VOLUME II**  
YANG PEIDONG (UNIV OF CALIFORNIA, BERKELEY, USA)

**NANOSTRUCTURED AND PHOTOELECTROCHEMICAL  
SYSTEMS FOR SOLAR PHOTON CONVERSION**  
ARCHER MARY D ET AL (IMPERIAL COLLEGE, UK)

**CHEMISTRY OF NANOSTRUCTURED MATERIALS, THE**  
YANG PEIDONG (UNIV OF CALIFORNIA, BERKELEY, USA)

## ORGANIC CHEMISTRY / INORGANIC CHEMISTRY

:: Textbook

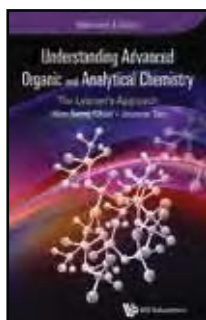
### Understanding Advanced Organic and Analytical Chemistry

**The Learner's Approach Revised Edition**

by **Kim Seng Chan** (*Victoria Junior College, Singapore*)  
& **Jeanne Tan**

This revised edition has been updated to meet the minimum requirements of the new Singapore GCE A level syllabus that would be implemented in the year 2016. Nevertheless, this book is also highly relevant to students who are studying chemistry for other examination boards. In addition, the authors have also included more Q&A to help students better understand and appreciate the chemical concepts that they are mastering.

560pp  
978-981-4733-98-4(pbk)      Nov 2016  
US\$38      £25



### Sodium Dithionite, Rongalite and Thiourea Oxides

**Chemistry and Application**

by **Sergei V Makarov** (*Ivanovo State University of Chemistry and Technology, Russia*), **Attila K Horváth** (*University of Pécs, Hungary*), **Radu Silaghi-Dumitrescu** (*University Babes-Bolyai, Romania*) & **Qingyu Gao** (*China University of Mining and Technology, China*)

This title provides an in depth overview of historical and newly developed fields of application for important sulfur-containing reductants. It begins with an introduction into the structure and general properties of sodium dithionite, sodium hydroxymethanesulfonate (rongalite) and thiourea oxides. Following this there is analysis of their stability in different types of solutions, and reactions with both organic and inorganic compounds. Finally, there is description of the application of the reductants in industry, using examples of the textile, printing and paper industries, as well as in polymerization processes.

**Readership:** Chemistry students and professionals at graduate and research levels, specialists in sulfur chemistry, coordination chemistry, biochemistry, nonlinear chemical kinetics, researchers of graphene and graphite, synthetic organic chemists, specialists in applied chemistry (paper, textile, polymer industries).

210pp  
978-1-78634-095-5      Oct 2016  
US\$98      £71  
978-1-78634-096-2(ebook)      US\$127      £92



### Metallomics

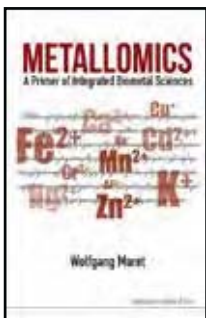
**A Primer of Integrated Biometal Sciences**

by **Wolfgang Maret** (*King's College London, UK*)

This title bridges chemistry and the biological sciences from a global and quantitative systems approach, while the biological context provides new insights into the functions of metals in biological cells. The book challenges the traditional view of relating biochemistry only to organic chemistry, and discusses the structure and function of metal ions in the context of their environment in organisms.

**Readership:** Undergraduate and graduate students in the fields of biochemistry, cell biology, nutrition (trace element research), toxicology, pharmacology, ecology and the effects of metals on human health.

156pp  
978-1-78326-827-6      Jul 2016  
US\$68      £45  
978-1-78326-828-3(pbk)      US\$36      £24



### Conformational Concept for Synthetic Chemist's Use

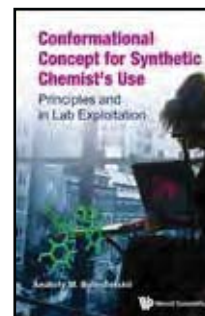
**Principles and in Lab Exploitation**

by **Anatoly M Belostotskii** (*Bar-Ilan University, Israel*)

This book presents an original account of the principles of conformational theory. It has a strong focus on computational methodologies for conformational space exploration. By revisiting basic conformational conventions, considering experimental results which are often misinterpreted by organic chemists, and qualitatively analyzing the potential energy surface, the book helps non-experts to understand molecular flexibility at the level required in contemporary research.

**Readership:** Organic, bioorganic, and medicinal chemists, specialists in structure determination of natural products, drug and material designers; advanced graduate students.

580pp  
978-981-281-409-8      Nov 2015  
US\$186      £134  
978-981-281-410-4(ebook)      US\$242      £174



### Carbohydrate Chemistry: State of the Art and Challenges for Drug Development

**An Overview on Structure, Biological Roles, Synthetic Methods and Application as Therapeutics**

edited by **Laura Cipolla** (*University of Milano-Bicocca, Italy*)

#### Key Features:

- The book is intended to give a clear and concise review on carbohydrate chemistry and biology, evidencing the biological role, analytical techniques and limitations due to complexity, and their application in medicinal chemistry
- The book aims at giving the most extended overview on this complex class of biomolecules, highlighting their potentialities as therapeutics

**Readership:** Chemists, biochemists, glycobiologists, materials scientists, students in biochemistry and biology.

536pp  
978-1-78326-719-4      Sep 2015  
US\$186      £134  
978-1-78326-720-0(ebook)      US\$242      £174



#### NOTABLE BACKLIST

**CRYSTAL ENGINEERING: A TEXTBOOK**  
DESIRAJU GAUTAM R ET AL (*INDIAN INST OF SCIENCE, INDIA*)

**NEW CHEMISTRY AND NEW OPPORTUNITIES FROM THE EXPANDING PROTEIN UNIVERSE - PROCEEDINGS OF THE 23RD INTERNATIONAL SOLVAY CONFERENCE ON CHEMISTRY**  
DE WIT ANNE ET AL (*FREE UNIV OF BRUSSELS, BELGIUM*)

**GOLD CATALYSIS: AN HOMOGENEOUS APPROACH**  
MICHELET VERONIQUE ET AL (*CHIMIE PARISTECH, FRANCE*)

**ACROSS CONVENTIONAL LINES: SELECTED PAPERS OF GEORGE A OLAH, VOLUME 3 - THE SIXTH DECADE AND THE METHANOL ECONOMY**  
OLAH GEORGE A ET AL (*UNIV OF SOUTHERN CALIFORNIA, USA*)

## PHYSICAL CHEMISTRY

### :: Textbook

Advanced Textbooks in Chemistry

#### **Astrochemistry and Atmospheric Chemistry From the Big Bang to the Present Day**

by **Claire Vallance** (Oxford)

This title describes the chemical history of the Universe, our solar system, and our planet. It explores in some detail the 'alien' chemistry occurring in interstellar gas clouds, the regions where stars and planets are formed, and also looks at the theoretical and experimental methods that allow us to carry out Earth-based studies of astrochemistry.

The evolution of the Universe and the complex chemistry occurring both in interstellar space and in the planetary systems that form in these regions is explained primarily in terms of basic principles of physical chemistry. While there is plenty to interest the general reader, this book is aimed at intermediate to advanced undergraduates of chemistry and astrochemistry, highlighting many different aspects of physical chemistry and demonstrating their relevance to the world we live in.

This book was written in conjunction with *Atmospheric Chemistry: From the Surface to the Stratosphere*

<b>250pp</b>	<b>Feb 2017</b>	
<b>978-1-78634-037-5</b>	<b>US\$74</b>	<b>£49</b>
<b>978-1-78634-038-2(pbk)</b>	<b>US\$38</b>	<b>£25</b>

### :: Textbook

Essential Textbooks in Chemistry

#### **Atmospheric Chemistry From the Surface to the Stratosphere**

by **Grant Ritchie** (Oxford)

This title considers in detail the atmospheric physics and chemistry of our contemporary planet, its weather systems and climate, pollutants, UV radiation and all other aspects of the air we breathe. The development of the complex chemistry occurring on Earth can be explained through application of basic principles of physical chemistry, as is discussed in this book. It also provides an ideal opportunity to bring together many different aspects of physical chemistry and demonstrate their relevance to the world we live in.

The development of the complex chemistry occurring on Earth can be explained through application of basic principles of physical chemistry, as is discussed in this book. It is therefore accessible to intermediate and advanced undergraduates of chemistry, with an interdisciplinary approach relevant to meteorologists, oceanographers, and climatologists. It also provides an ideal opportunity to bring together many different aspects of physical chemistry and demonstrate their relevance to the world we live in.

**Readership:** Intermediate and advanced undergraduates of chemistry, with an interdisciplinary approach relevant to meteorologists, oceanographers, and climatologists.

<b>250pp</b>	<b>Feb 2017</b>	
<b>978-1-78634-175-4</b>	<b>US\$85</b>	<b>£61</b>
<b>978-1-78634-176-1(pbk)</b>	<b>US\$45</b>	<b>£32</b>

### :: Textbook

Essential Textbooks in Chemistry

#### **Principles of Nuclear Chemistry**

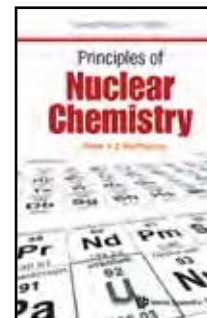
by **Peter A C McPherson** (Belfast Metropolitan College, UK)

This is an introductory text in nuclear chemistry and radiochemistry, aimed at undergraduates with little or no knowledge of physics. It covers the key aspects of modern nuclear chemistry and includes worked solutions to end of chapter questions.

The text begins with basic theories in contemporary physics and uses these to introduce some fundamental mathematical techniques. It relates nuclear phenomena to key divisions of chemistry such as atomic structure, spectroscopy, equilibria and kinetics. It also gives an introduction to f-block chemistry and the nuclear power industry.

**Readership:** Undergraduates with little or no knowledge of physics, those taking a first course in nuclear chemistry, those new to working in nuclear chemistry or radiochemistry.

<b>200pp</b>	<b>Jan 2017</b>	
<b>978-1-78634-050-4</b>	<b>US\$68</b>	<b>£45</b>
<b>978-1-78634-051-1(pbk)</b>	<b>US\$38</b>	<b>£25</b>



### :: Textbook

#### **Understanding Advanced Physical Inorganic Chemistry**

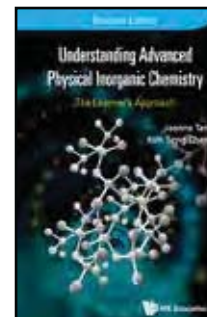
**The Learner's Approach Revised Edition**

by **Kim Seng Chan** (Victoria Junior College, Singapore) & **Jeanne Tan**

This revised edition has been updated to meet the minimum requirements of the new Singapore GCE A level syllabus that would be implemented in the year 2016. Nevertheless, this book is also highly relevant to students who are studying chemistry for other examination boards. In addition, the authors have also included more Q&A to help students better understand and appreciate the chemical concepts that they are mastering.

**Readership:** Junior college students and teachers in chemistry.

<b>482pp</b>	<b>Nov 2016</b>	
<b>978-981-4733-95-3(pbk)</b>	<b>US\$35</b>	<b>£23</b>



#### **Advances in Multi-Photon Processes and Spectroscopy - Vol 23**

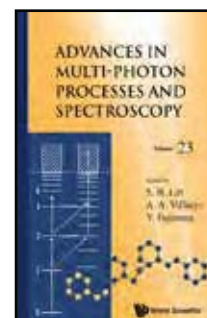
edited by **Sheng Hsien Lin** (National Chiao-Tung University, Taiwan & Institute of Atomic and Molecular Sciences, Taiwan & Arizona State University, USA), **Albert A Villaeys** (Institute de Physique et Chimie des Matériaux de Strasbourg, France) & **Yuichi Fujimura** (Tohoku University, Japan)

#### **Key Features:**

- The volume contains new findings and interpretation in multi-photon processes and multi-photon spectroscopy in broad areas in natural science
- Each chapter is written in a self-contained manner so that readers can grasp the knowledge without too much preparation

**Readership:** Chemists, physicists, biologists, material scientists and postgraduates studying multiphoton processes and multiphoton spectroscopy of atoms, molecules and ions.

<b>300pp</b>	<b>Jul 2016</b>	
<b>978-981-4749-75-6</b>	<b>US\$138</b>	<b>£99</b>
<b>978-981-4749-76-3(ebook)</b>	<b>US\$179</b>	<b>£129</b>





**Snow, Ice and Other Wonders of Water****A Tribute to the Hydrogen Bond**by **Ivar Olovsson** (University of Uppsala, Sweden)

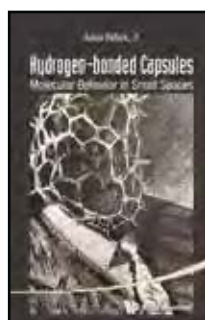
The book illustrates the fascinating world of the different forms of water — from ice and snow to liquid water. The water molecule,  $\text{H}_2\text{O}$ , is the second most common molecule in the Universe (behind hydrogen,  $\text{H}_2$ ) and ice is the most abundant solid material. Snow and ice appear in a countless large number of different shapes and with properties which can be quite different. Detailed knowledge of the properties of snow is of great importance for the Sami people involved in reindeer herding and several hundred names are used to characterize the different types.



<b>124pp</b>	<b>Feb 2016</b>	
<b>978-981-4749-35-0</b>	<b>US\$38</b>	<b>£25</b>
<b>978-981-4749-36-7(pbk)</b>	<b>US\$19</b>	<b>£13</b>
<b>978-981-4749-37-4(ebook)</b>	<b>US\$49</b>	<b>£33</b>

**Hydrogen-bonded Capsules****Molecular Behavior in Small Spaces**by **Julius Rebek, Jr.** (Fudan University, China & The Scripps Research Institute, USA)

This monograph describes the behavior of molecules confined to small spaces. The small spaces are created by the self-assembly of modules into hollow capsular structures through hydrogen bonding; capsules assembled by metal/ligand binding or other forces are not included. Topics discussed include how assembly of capsules occurs, how molecules get in and out of the capsules, new spatial arrangements (stereochemistry) created in the capsules, and the altered shapes, interactions and reactivities of molecules held inside the small spaces.

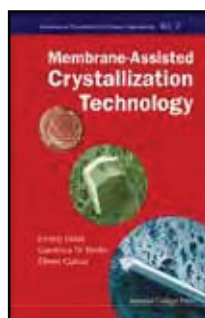


**Readership:** Graduate students and researchers in physical organic chemistry, nanotechnology and nanoscience and materials science.

<b>220pp</b>	<b>Nov 2015</b>	
<b>978-981-4678-35-3</b>	<b>US\$118</b>	<b>£85</b>
<b>978-981-4678-36-0(ebook)</b>	<b>US\$153</b>	<b>£111</b>

Advances in Chemical and Process Engineering - Vol 2  
**Membrane-Assisted Crystallization Technology**  
 by **Enrico Drioli** (University of Calabria, Italy), **Gianluca Di Profio** (CNR-ITM, Italy) & **Efrem Curcio** (University of Calabria, Italy)

"The first book which treats the overall subject of membrane crystallization from a unified hands-on-point of view. The authors provide a comprehensive and up to date background on the physico-chemical, materials science and engineering aspects on what is considered as a recent breakthrough in membrane processes. The lucid writing supports new understanding of molecular processes, mechanisms, technological context and scientific challenges which should be of interest for students, researchers and engineers involved in crystallization studies and industrial applications."



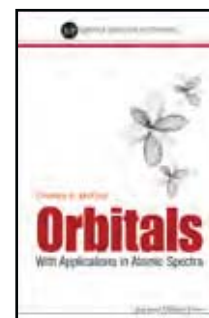
**Eric Favre**  
 University of Lorraine, France

**Readership:** Undergraduates, graduates, researchers, and professionals studying/dealing with physical chemistry, chemical engineering, materials chemistry/nanochemistry, liquid crystals & crystallography, surface science, and general material science.

<b>244pp</b>	<b>Nov 2015</b>	
<b>978-1-78326-331-8</b>	<b>US\$113</b>	<b>£81</b>
<b>978-1-78326-332-5(ebook)</b>	<b>US\$147</b>	<b>£105</b>

**:: Bestselling Textbook****Essential Textbooks in Chemistry**  
**Orbitals****With Applications in Atomic Spectra**by **Charles S McCaw** (Winchester College, UK)

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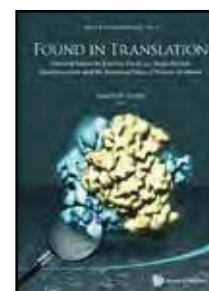
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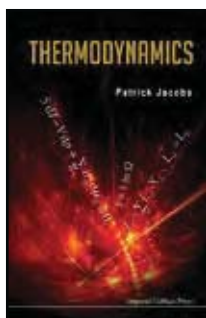


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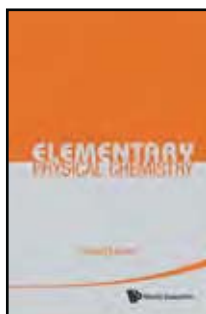
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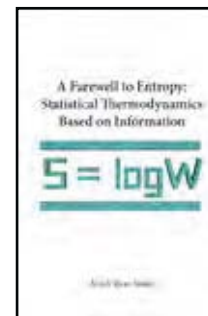
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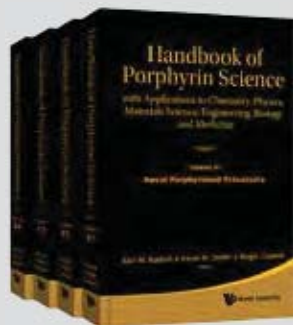
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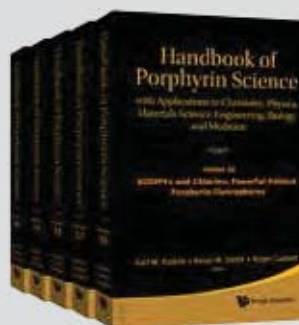
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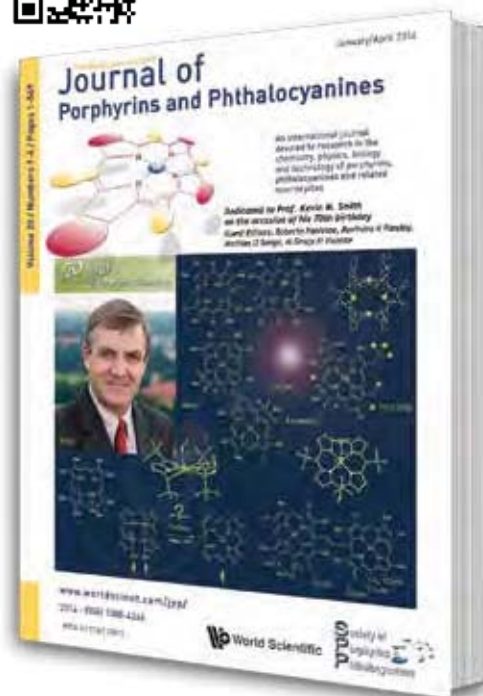
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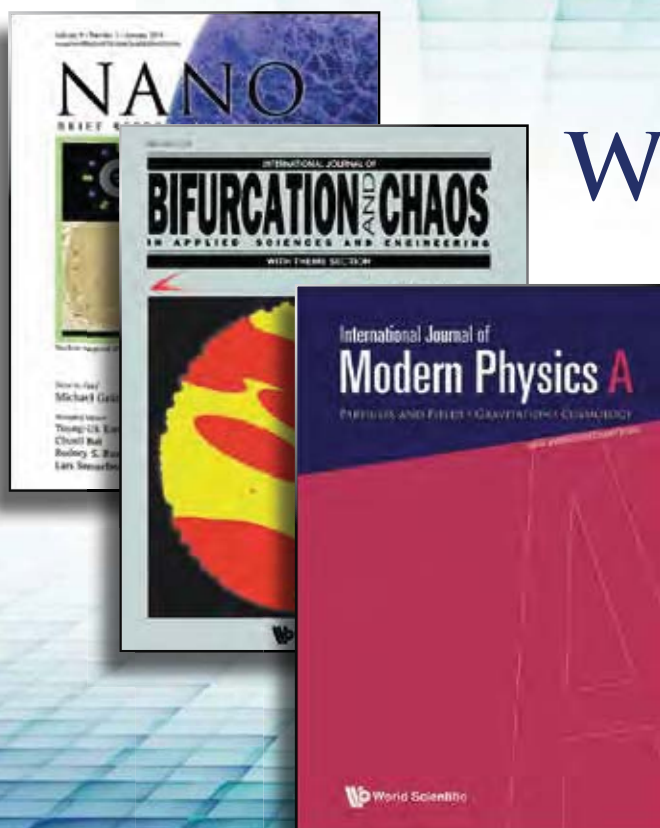
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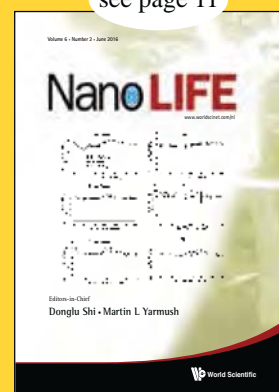
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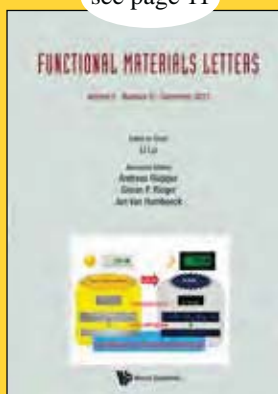
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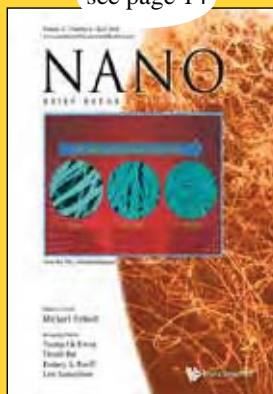
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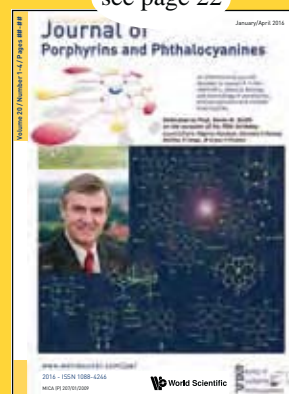
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