

Advanced Tomographic Methods in Materials Research and Engineering



Available in...



Edited by **John Banhart**, Hahn-Meitner-Institute, Berlin

Tomography provides three-dimensional images of materials or engineering components and an unprecedented insight into their internal structure. This book, written for applied physicists, materials scientists and engineers, discusses recent

developments in the field, such as the extension of tomographic methods to materials research and engineering.

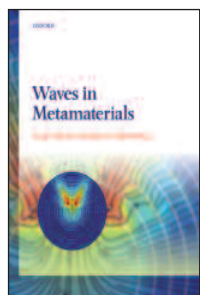
Monographs on the Physics and Chemistry of Materials No. 66

2008 | 488 pages | 233 halftones and line drawings
4 page colour plate section

978-0-19-921324-5, HARDBACK

£87.50/\$150.00

Waves in Metamaterials



Laszlo Solymar, Imperial College, London, and **Ekaterina Shamonina**, University of Erlangen, Germany

Metamaterials is a subject born in the 21st century. It is concerned with artificial materials which can have electrical and magnetic properties difficult or impossible to find in nature.

The mathematics is at a level within the power of a final year undergraduate: the aim is to explain the physics in simple terms and enumerate the major advances.

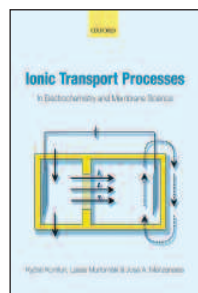
2009 | 408 pages | 16pp colour plates | 191 b/w line drawings | 89 b/w halftones

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Ionic Transport Processes

in Electrochemistry and Membrane Science



Kyösti Kontturi, Helsinki University of Technology, **Lasse Murtoimäki**, Helsinki University of Technology, and **José A. Manzanares**, University of Valencia

This book discusses transport processes of ionic species at an advanced level. It is meant for postgraduate students and researchers in electrochemistry and membrane science and technology. The book can also be used as a reference of ionic transport problems.

2008 | 304 pages | 107 b&w line drawings

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William Barford, University of Oxford

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Physics Today

International Series of Monographs on Physics No. 129

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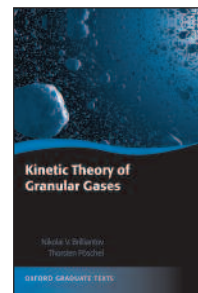
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Nikolai V. Brilliantov and **Thorsten Pöschel**, both at Humboldt University, Germany

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the similarities and differences between normal and granular gases. The book fills a significant gap, and I expect it will be adopted for graduate courses in both physics and engineering programs'

James W. Duffy, *Physics Today*

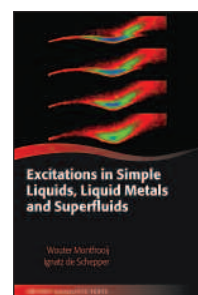
Oxford Graduate Texts

November 2010 | 344 pages | 25 b/w line and halftone illustrations

978-0-19-958813-8, PAPERBACK

£27.50/\$49.50

Excitations in Simple Liquids, Liquid Metals and Superfluids



Wouter Montfrooij, University of Missouri, Columbia MO, USA, and **Ignatz de Schepper**, Technical University Delft, The Netherlands

The rapid increase in capabilities at neutron and x-ray scattering sources has resulted in a wealth of highly accurate data on liquids, allowing for the testing of

sophisticated models pertinent to the microscopic dynamics. This book is a practical guide on how to infer the maximum amount of information from the data using a minimum number of parameters, employing a fail-safe framework that ensures that pitfalls are avoided and that small differences between various liquids can be uncovered. Also, it details excitations for a range of liquids, covering simple fluids, colloids, mixtures, metals and superfluids. Results are interpreted in words rather than in equations, bringing to the fore new links between these fluids and between spontaneous fluctuations involving thousands of atoms down to those involving just a few.

Oxford Graduate Texts

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Handbook of Single Molecule Fluorescence Spectroscopy

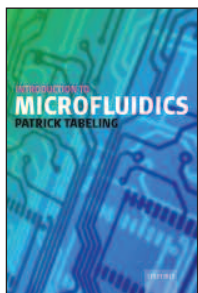
Chris Gell, David Brockwell, and Alastair Smith, all at the University of Leeds

This book is aimed at providing a practical introduction to single molecule fluorescence experiments, the analysis of the data, and applications of the techniques to the study of biological structure and function. The techniques have wide applications in biology, and underpin some aspects of nanotechnology and quantum information processing.

2006 | 280 pages | 82 line drawings and halftones
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Introduction to Microfluidics



Patrick Tabeling, Ecole Supérieure pour la Physique et Chimie Industrielle, Paris

Microfluidics deals with fluids flowing in miniaturized systems. The book is an introduction to this discipline. The first chapter presents a short historical background and discusses the main perspectives of the domain,

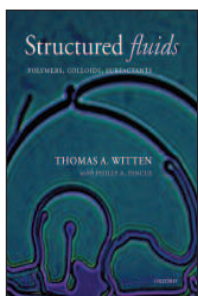
at economical and scientific levels. Then the physics of miniaturization and the fluid mechanics of microflows are discussed. In the following three chapters, dispersion, electrical and thermal phenomena in miniaturized devices are presented. A brief introduction to microfabrication techniques is given in Chap VI and the book concludes by providing a few examples of microfluidic systems.

May 2010 | 312 pages | numerous line drawings and halftones
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Structured Fluids

Polymers, Colloids, Surfactants



Thomas A. Witten, University of Chicago, USA, and Philip A. Pincus, University of California, USA

'Tom Witten has written a splendid introduction to the subject, with three strong themes indicated by the subtitle....The text is elegantly laid out and well complemented by illustrations.'

Europhysics News

January 2010 | 232 pages | 85 line drawings and halftones
978-0-19-958382-9, PAPERBACK £25.50/\$45.00
978-0-19-852688-9, HARDBACK £57.50/\$106.00

Polymer Physics

Michael Rubinstein, University of North Carolina, Chapel Hill, and Ralph H. Colby, Pennsylvania State University



suitable as a student text

'The authors have produced an excellent textbook targeted at the final year undergraduate or the postgraduate student ... as a book on modelling it shows an insight and clarity which will make it an invaluable guide for teaching at a high level in any polymer physics or polymer science department.'

Polymer International

2003 | 456 pages | numerous figures
978-0-19-852059-7, HARDBACK £59.50/\$120.00

Liquid Crystal Elastomers

Mark Warner and Eugene Michael Terentjev, both at Cavendish Laboratory, University of Cambridge

'In short, this book is likely to become a classic: read it, learn from it, and let it inspire you.'

Euro Pysics News

International Series of Monographs on Physics No. 120
2007 | 432 pages | 197 line drawings and halftones
978-0-19-921486-0, PAPERBACK £37.50
978-0-19-852767-1, HARDBACK £97.50

Models of Cellular Regulation

Baltazar Aguda and Avner Friedman, both at the Ohio State University

This graduate textbook illustrates mechanisms and models linking the realms of molecular interactions and biological processes or functions. It addresses the need of mathematical modelers, on the one hand, to learn how to formulate models of cellular processes that are based firmly on details of molecular biology, and of biologists, on the other hand, to understand how quantitative modelling can help sort through the complexities of molecular regulatory networks.

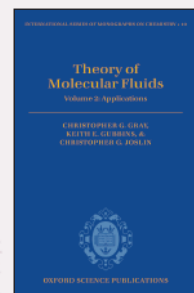
Oxford Graduate Texts

2008 | 200 pages | 91 line drawings and halftones
8 colour images
978-0-19-857091-2, HARDBACK £47.50/\$99.00

Theory of Molecular Fluids

Volume 2:
Applications

Christopher G. Gray, University of Guelph, Canada, Keith E. Gubbins, North Carolina State University, Raleigh, North Carolina, USA, and Christopher G. Joslin, Corpus Christi College, Cambridge, UK



Existing texts on the statistical mechanics of liquids treat only spherical molecules. However, nearly all fluids of practical interest are composed of non-spherical molecules that are often dipolar or exhibit other kinds of electrostatic forces. This book describes the statistical mechanical theory of fluids of non-spherical molecules and its application to the calculation of physical properties, and is a sequel to *Theory of Molecular Fluids. Volume 1: Fundamentals* by C.G. Gray and K.E. Gubbins.

International Series of Monographs on Chemistry No. 10
June 2011 | 752 pages | 239 b/w line illustrations
978-0-19-855621-3, HARDBACK £85.00/\$165.00

Volume 1: Fundamentals

Christopher G. Gray, University of Guelph, Canada, and Keith E. Gubbins, North Carolina State University, Raleigh, North Carolina, USA

International Series of Monographs on Chemistry No. 9
1984 | 640 pages | numerous figures and tables
978-0-19-855602-2, HARDBACK £85.00/\$350.00

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