

Notable Titles on the 2011 Chemistry Nobel Prize winning topic of Quasicrystals

New and Revised Printing

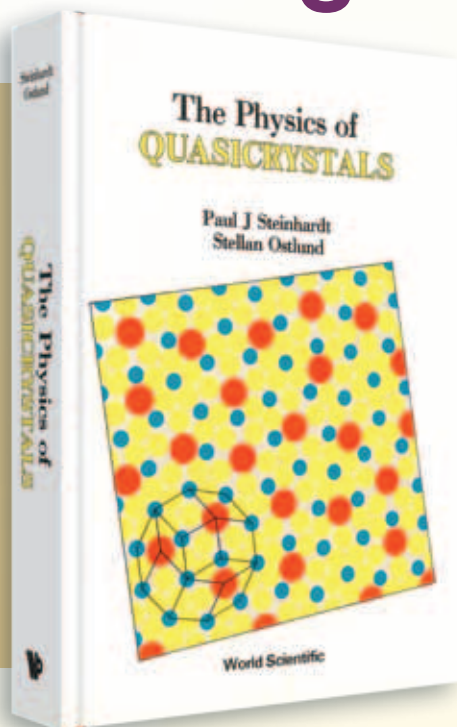
THE PHYSICS OF QUASICRYSTALS

edited by **P J Steinhardt** & **S Ostlund** (*University of Pennsylvania*)

This book comprises an introductory lecture outlining the basic concepts and challenges in the field. This is followed by a collection of reprinted articles which are important in understanding the subject. The book will focus mainly on mathematical and physical foundations of the subject rather than experimental progress. By concentrating on theoretical topics, this volume has long-lasting as well as immediate value to physicists, crystallographers, metallurgists and mathematicians.

Contents: Geometrical Properties of Quasilattices; Some Group Theoretical Properties of Quasicrystals; Diffraction Properties of Quasicrystals; Quasicrystalline Atomic Structural Models; Competing Models for the Icosahedral Phase; Landau Theory, Stability, Defects and Phasons; Electronic Phonon and Magnetic Properties.

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|------------------------|----------|------|
| 788pp | Dec 1987 | |
| 978-9971-5-0226-3 | US\$166 | £110 |
| 978-9971-5-0227-0(pbk) | US\$78 | £51 |



Series on Directions in Condensed Matter Physics - Vol. 16

QUASICRYSTALS

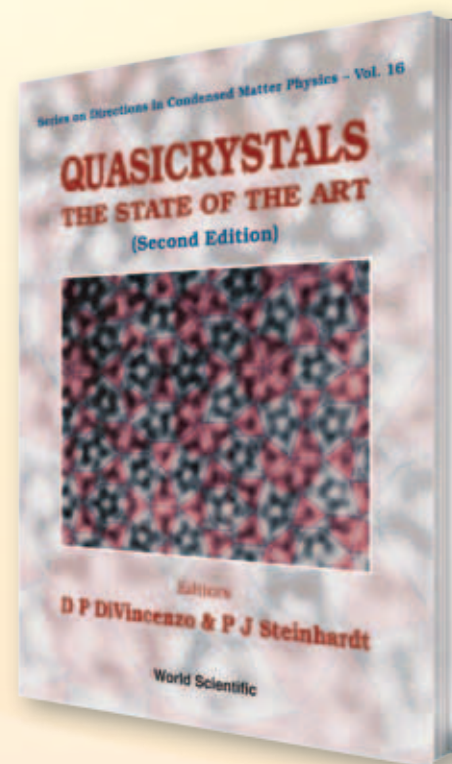
The State of the Art (2nd Edition)

edited by **D P DiVincenzo** (*IBM T J Watson Research Center*) & **P J Steinhardt** (*Princeton University*)

In this second edition, some authors have appended short notes updating their essays. Two new chapters have been added. Chapter 16, by Goldman and Thiel, reviews the experimental progress since the first edition (1991) in making quasicrystals, determining their structure, and finding applications. In Chapter 17, Steinhardt discusses the quasi-unit cell picture, a promising, new approach for describing the structure and growth of quasicrystals in terms of a single, repeating, overlapping cluster of atoms.

Contents: Progress and Current Issues in Quasicrystals (*D P DiVincenzo & P J Steinhardt*); Order and Disorder in Icosahedral Alloys (*P A Bancel*); Neutron Scattering Approaches to Quasicrystals (*Ch Janot & M de Boissieu*); High-Resolution Electron Microscopy of Quasicrystals (*K Hiraga*); Scanning Tunneling Microscopy Studies of Quasicrystals (*R S Becker & A R Kortan*); (Quasi) Crystallography is Better in Fourier Space (*N D Mermin*); Matching Rules for Quasicrystalline Tilings (*K Ingersent*); Growth Rules for Quasicrystals (*J E S Socolar*); Continuous Atomic Surfaces (*L S Levitov*); Chiral Smectics as Quasicrystals (*T C Lubensky et al.*); Experimental Studies of Electronic Transport in Quasicrystals (*K Kimura & S Takeuchi*); Electronic Structure and Transport of Quasicrystals (*T Fujiwara & H Tsunetsugu*); Electronic-Structure and Total-Energy Calculations for Quasicrystals and Related Crystals (*A E Carlsson & R Phillips*); Faceting and Surface Roughening in Quasicrystals (*T-L Ho*); Random Tiling Models (*C L Henley*); Horizons in Quasicrystal Research (*A I Goldman & P A Thiel*); A New Paradigm for the Structure of Quasicrystals (*P J Steinhardt*)

| | | |
|------------------------|----------|------|
| 632pp | Dec 1999 | |
| 978-981-02-4155-1 | US\$186 | £123 |
| 978-981-02-4156-8(pbk) | US\$90 | £59 |





BCS: 50 YEARS

edited by **Leon N Cooper & Dmitri Feldman** (*Brown University*)

"... the editors deserve praise for the selection of topics and for enlisting a distinguished set of authors. BCS: 50 Years is a successful attempt to capture the history of the development of superconductivity theory and its continuing impact. Any person curious about superconductivity will find something in this book to enjoy."

Physics Today

" This exceptionally well written and edited book celebrates and reviews the state of BCS theory and experiment. The many chapters on the history and early experiments are all very clear and readily accessible to a high-energy physicist, despite containing a wealth of detail. The content continues well beyond the usual applications of BCS theory and there are extensive discussions of extensions of BCS, especially in the light of attempts to understand the new high Tc superconductors ... All 23 chapters are by outstanding physicists (including many Nobel prize-winners) and all were fascinating to read. I would highly recommend this book to anyone and everyone as a wonderful review of a powerful unifying concept that covers an enormous range of phenomena."

CERN Courier

588pp Nov 2010
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 978-981-4304-65-8(pbk) US\$65 £40

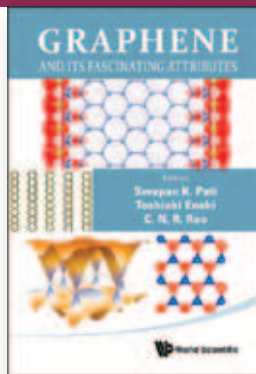
GRAPHENE AND ITS FASCINATING ATTRIBUTES

edited by **Swapan K Pati, C N R Rao** (*Jawaharlal Nehru Centre for Advanced Scientific Research, India*) & **Toshiaki Enoki** (*Tokyo Institute of Technology*)

Graphene is the most fundamental building block, with which a variety of carbon-based materials such as graphite, fullerene and carbon nanotubes can be created. The diverse chemical, electronic and magnetic properties of nanographene and graphene are mainly due to their geometrical electronic structure. This book presents the frontiers of graphene research ranging from important issues in condensed matter physics and chemistry to advanced device applications.

Readership: Graduates and researchers in condensed matter physics, materials science, and nanoelectronics.

288pp Mar 2011
 978-981-4329-35-4 US\$90 £59



NEW

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Notes from a Thoughtful Curmudgeon

by **P W Anderson** (*Princeton University*)

"Philip W Anderson is the doyen of present-day condensed matter physics, and has written widely and provocatively on many subjects both within and without the discipline. This collection of his essays is guaranteed to instruct, amuse and in some cases annoy readers irrespective of their specialist backgrounds."

Anthony Leggett
 Nobel Laureate

"Phil Anderson has made many wonderful contributions to physics, often illustrating his favorite theme of how more is different. I am sure readers of diverse interests will enjoy this book and learn much from it."

Edward Witten
 Institute for Advanced Study, Princeton

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Textbook

GLASSY MATERIALS AND DISORDERED SOLIDS

An Introduction to Their Statistical Mechanics (Revised Edition)

by **Kurt Binder** (*Johannes-Gutenberg Universität*) & **Walter Kob** (*Université Montpellier 2*)

This book gives a pedagogical introduction to the physics of amorphous solids and related disordered condensed matter systems. Important concepts from statistical mechanics such as percolation, random walks, fractals and spin glasses are explained.

Contents: Structure and Dynamics of Disordered Matter; Models of Disordered Structures; General Concepts and Physical Properties of Disordered Matter; Supercooled Liquids and the Glass Transition; Further Models for Glassy Dynamics; Dynamical Heterogeneities; Gels; Driven Systems.

Readership: Graduate students, researchers in academia and industry, and teaching faculty.

564pp Jan 2011
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