Lanthanide Luminescence
Photophysical, Analytical and Biological Aspects

With contributions by numerous experts

Lanthanides have fascinated scientists for more than two centuries now, and since efficient separation techniques were established roughly 50 years ago, they have increasingly found their way into industrial exploitation and our everyday lives. Numerous applications are based on their unique luminescent properties, which are highlighted in this volume. It presents established knowledge about the photophysical basics, relevant lanthanide probes or materials, and describes instrumentation-related aspects including chemical and physical sensors. The uses of lanthanides in bioanalysis and medicine are outlined, such as assays for in vitro diagnostics and research. All chapters were compiled by renowned scientists with a broad audience in mind, providing both beginners in the field and advanced researchers with comprehensive information on the given subject.

Features
► The first book to present application-oriented knowledge on this topic
► Written by experts
► Richly illustrated

From the contents
Introduction.- Photophysical basics of lanthanides.- Lanthanide probes and materials.- Luminescent stable chelates and macrocyclic compounds.- Particulate labels.- Chelating particles.- Upconverters.- NIR labels.- Supramolecules and assemblies.- Optical properties and applications of solid lanthanide materials.- Lanthanide based chemical and physical sensors.- Instrumental aspects on measuring lanthanide luminescence.- Direct and time-resolved measurements.- Frequency-domain measurements.- Imaging systems.

Fields of interest
Analytical Chemistry; Molecular Medicine; Medical Biochemistry

Target groups
Research

Type of publication
Reviews

Due May 2011

2011. 400 p. (Springer Series on Fluorescence, Volume 7) Hardcover
► € 299,00 | £ 269.50
► $ (US) 319.93 | $ (A) 328,90 | sFr 429,00
ISBN 978-3-642-21022-8

Carbon-based Membranes for Separation Processes

This book provides a significant overview of carbon-related membranes. It will cover the development of carbon related membranes and membrane modules from its onset to the latest research on carbon mixed matrix membranes. After reviewing progress in the field, the authors indicate future research directions and prospective development. The authors also attempt to provide a guideline for the readers who would like to establish their own laboratories for carbon membrane research. For this purpose, detailed information on preparation, characterization and testing of various types of carbon membrane is provided. Design and construction of carbon membrane modules are also described in detail.

Features
► This is the first book exclusively dedicated to carbon membranes and the carbon-related membranes
► It contains detailed information on the preparation, characterization and testing of carbon membranes for separation processes
► It includes real life examples and schematics, and details of experimental methods so that readers can conduct experiments themselves after reading the chapters on the experimental methods
► Real experimental data is analyzed in a theoretical framework

Contents

Fields of interest
Industrial Chemistry/Chemical Engineering; Organic Chemistry; Polymer Sciences

Target groups
Research

Type of publication
Monograph

Due July 2011

► € 129,95 | £ 117.00
► $ (US) 139,95 | $ (A) 142,94 | sFr 186,50
ISBN 978-3-642-21023-5

Enantioselective Organocatalyzed Reactions I
Enantioselective Oxidation, Reduction, Functionalization and Desymmetrization

Organocatalyzed Reactions I and II presents a timely summary of organocatalysed reactions including: a) Enantioselective C-C bond formation processes e.g. Michael-addition, Mannich-reaction, Hydrocyanation (Strecker-reaction), aldol reaction, allylation, cycloadditions, aza-Diels-Alder reactions, benzoin condensation, Stetter reaction, conjugative Umpolung, asymmetric Friedel-Crafts reactions; b) Asymmetric enantioselective reduction processes e.g. Reductive amination of aldehydes or ketones, asymmetric transfer hydrogenation; c) Asymmetric enantioselective oxidation processes; d) Asymmetric epoxidation, Bayer-Villiger oxidation; e) Enantioselective a-functionalization; f) A-alkylation of ketones, a-halogenation and a-oxidation of carbonyl compounds.

Features
► Promotes and focuses on the use and deployment of organocatalysts in organic reactions
► Summarizes and discusses the most recent literature in this quickly evolving field

Contents
Organocatalysed Asymmetric Oxidation Reactions - Enantioselective Reductions Using Dihydropyridines - Organocatalyzed Enantioselective Protonation - Enantioselective a-Heterofunctionalization of Carbonyl Compounds - Chiral Primary Amine Catalysis - Bifunctional Acid-Base Catalysis - Chalcogen-Based Organocatalysis

Fields of interest
Organic Chemistry; Catalysis

Target groups
Research

Type of publication
Monograph

Due August 2011

2011. 350 p. 376 illus., 83 in color. Hardcover
► € 139,95 | £ 126.00
► $ (US) 149,75 | $ (A) 153,94 | sFr 201,00
ISBN 978-3-642-21024-2
Vanadium
Biochemical and Molecular Biological Approaches

Since the early 1980s, the biochemical behavior of vanadium has been investigated extensively such as its potent inhibitory role for Na+/K+-ATPase and its participation in insulin-mimicking but also because of the more recent findings on the enzymes and compounds containing vanadium. In addition, knowledge of the medicinal applications of vanadium such as the biochemical roles of its compounds in bone development, cellular mechanisms, signaling pathways and anti-cancer agents has increased enormously.

Vanadium: Featuring Biochemical and Molecular Biological Approaches adds to this knowledge by presenting inorganic and redox processes and demonstrating the important use of vanadium in biological systems. Chapters include the following themes: hyper-accumulators of vanadium, enzymatic roles of vanadium, biochemical functions of vanadium and medicinal functions of vanadium. This volume is aimed at pure and applied chemists, biochemists, pharmaceutical and medical scientists.

Features
► Includes contributions on recent developments from Asia, Europe, India, South America and the USA
► Features biological system applications
► Presents the biochemical and medicinal functionalities of vanadium

Contents

Fields of interest
Medical Chemistry; Biochemistry, general; Medical Biochemistry

Target groups
Research

Type of publication
Monograph

Due August 2011

2011. 400 p. 67 illus., 17 In color. Hardcover
► £ 139.95 | € 126.00
► = ¥ (JP) 149,751 | (A) 153,94 | sFr 201,00
ISBN 978-3-642-13013-7

Polyurethane Elastomers
From Morphology to Mechanical Aspects

A comprehensive account of the physical / mechanical behaviour of polyurethanes (PU’s) elastomers, films and blends of variable crystallinity. Aspects covered include the elasticity and inelasticity of amorphous to crystalline PUs, in relation to their sensitivity to chemical and physical structure. A study is made of how aspects of the constitutive responses of PUs vary with composition: the polyaddition procedure, the hard segment, soft segment and chain extender (diols and diamines) are varied systematically in a large number of systems of model and novel crosslinked andthermoplastic PUs. Results will be related to: microstructural changes, on the basis of evidence from x-ray scattering (SAXS and WAXS), and also dynamic mechanical analyses (DMA), differential scanning calorimetry (DSC) and IR dichroism. Inelastic effects will be investigated also by including quantitative correlations between the magnitude of the Mullins effect and the fractional energy dissipation by hysteresis under cyclic straining, giving common relations approached by all the materials studied.

Features
► Brings important new insights into the basic research of polyurethanes and their industrial applications
► The special DBDI based PUs covered help scientists understand the role of introducing an enhanced crystallinity to the overall properties of such polyurethanes and of elastomeric materials in general
► Presents break-throughs in understanding at a quantitative level the relation between detailed polyurethane chemical structure and the in-use performance of the PU

Fields of interest
Polymer Sciences; Crystallography; Characterization and Evaluation of Materials

Target groups
Research

Type of publication
Monograph

Due August 2011

2011. 1 p. 15 illus. in color. Hardcover
► approx. € 99.95 | £90.00
► = ¥ (JP) 106,95 | (A) 109,95 | sFr 143,50
ISBN 978-3-642-13013-7

Progress in the Chemistry of Organic Natural Products

Volume 94

A. D. Kinghorn, Ohio State University, Columbus, Ohio; H. Falk, Universität Linz, 4040 Linz, Austria; J. Kobayashi, Kyushu University, Fukuoka, Japan (Eds.)

The three reviews cover the advances in the chemistry and biology of withanolides over the last 16 years, review the chemistry and biology of the rocaglamide-type derivatives and related compounds, with emphasis on their structural diversity, biosynthesis, pharmacological significance and total synthesis, and summarize the extensive chemistry and biology studies on a natural product, which have resulted in a novel therapy approved worldwide.

Features
► Written by recognized authorities in their fields
► Provides comprehensive and up-to-date review in topic Well-known series

Contents

Fields of interest
Organic Chemistry

Target groups
Research

Type of publication
Reviews
Structure and Bonding
Series editor: D. M. Mingos
Volume 138
A. Vegas, Instituto de Química Física "Rocasolano", Madrid, Spain (Ed.)

Inorganic 3D Structures
The Extended Zintl-Klemm Concept

Features
- This series presents critical reviews of the present position and future trends in modern chemical research concerned with chemical structure and bonding
- Short and concise reports, each written by the world’s renowned experts
- Still valid and useful after 5 or 10 years
- More information as well as the electronic version of the whole content available at: springerlink.com.

Contents

Fields of interest
Inorganic Chemistry; Physical Chemistry

Target groups
Research

Type of publication
Contributed volume
Structure and Bonding
Series editor: D. M. Mingos

Volume 140
T. F. Fässler, TU Munich, Germany (Ed.)

Zintl Ions
Principles and Recent Developments
R. Bruce King: Structure and Bonding in Zintl Ions and Related Main Group Element Clusters-
Stefanie Gärtner, Nikolaus Korber: Polyanions of Group 14 and Group 15 Elements in Alkali and
Alkaline Earth Metal Solid State Compounds and Solvate Structures Bryan Eichhorn, Sanem Kocak:
Dynamic Properties of the Group 14 Zintl Ions and Their Derivatives Thomas F. Fässler: Relationships
between soluble Zintl anions, ligand-stabilized cage compounds, and intermetalloid clusters
of tetrel (Si – Pb) and pentel (P – Bi) elements-Gerasimos S. Armatas, Mercouri Kanatzidis: Germanium-Based
Porous Semiconductors from Molecular Zintl Anions

Features
► This series presents critical reviews of the present position and future trends in modern
chemical research concerned with chemical structure and bonding ► Short and concise reports,
each written by the world’s renowned experts ► Still valid and useful after 5 or 10 years

From the contents
R. Bruce King: Structure and Bonding in Zintl Ions and Related Main Group Element Clusters.-
Stefanie Gärtner, Nikolaus Korber: Polyanions of Group 14 and Group 15 Elements in Alkali and
Alkaline Earth Metal Solid State Compounds and Solvate Structures.-Bryan Eichhorn, Sanem Kocak:
Dynamic Properties of the Group 14 Zintl Ions and Their Derivatives.-Thomas F. Fässler: Relationships
between soluble Zintl anions, ligand-stabilized cage compounds, and intermetalloid clusters
of tetrel (Si – Pb) and pentel (P – Bi) elements.

Fields of interest
Inorganic Chemistry; Physical Chemistry

Target groups
Research

Type of publication
Contributed volume

Due June 2011
► approx. € 139,95 | £126.00
► approx. * € (D) 149,75 | € (A) 153,94 | sFr 201,00
ISBN 978-3-642-21180-5

Chromium -VI Reagents: Synthetic Applications
S. Sundaram, Ramakrishna Mission Vivekananda College, Chennai, India; P. Raghavan, Christian College, Chennai, India

SpringerBriefs in Molecular Science
SpringerBriefs in Molecular Science present concise summaries of cutting-edge research and
practical applications across a wide spectrum of fields centered around chemistry. Featuring
compact volumes of 50 to 125 pages, the series covers a range of content from professional to
academic.

Typical topics might include:
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► A bridge between new research results, as published in journal articles, and a contextual
literature review
► An in-depth case study
► A presentation of core concepts that students must understand in order to make independent
contributions
► Best practices or protocols to be followed

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easy-to-use manuscript preparation and formatting guidelines, and expedited production schedules.
Both solicited and unsolicited manuscripts are considered for publication in this series.

Features
► Latest research results in the mentioned field

Contents
Introduction.- Reagent classification.- Synthetic strategies.- Kinetic aspects.- Solid supported
Cr(VI) reagents.- Chromium in Biology.

Fields of interest
Organic Chemistry; Biochemistry, general

Target groups
Research

Type of publication
SpringerBriefs

Due June 2011
2011. 60 p. 50 illus. (SpringerBriefs in Molecular Science) Softcover
► approx. € 49,95 | £44.99
► approx. * € (D) 53,45 | € (A) 54,95 | sFr 72,00
ISBN 978-3-642-20816-4
Topics in Organometallic Chemistry

Volume 36
S. Ma, Chinese Academy of Sciences, Shanghai PR China (Ed.)

Asymmetric Catalysis from a Chinese Perspective

Features
► Each volume of Topics in Organometallic Chemistry provides the broad scientific readership with a comprehensive summary and critical overview of a specific topic in organometallic chemistry ► Research in this rapidly developing transdisciplinary field is having profound influence on other areas of scientific investigation, ranging from catalytic organic synthesis to biology, medicine and material science ► With contributions by international experts

From the contents

Fields of interest
Organometallic Chemistry ; Catalysis; Organic Chemistry

Target groups
Research

Type of publication
Reviews

Due June 2011
2011. XII, 280 p. 258 illus., 6 in color. Hardcover
► € 229,00 | £206.50
► = € (D) 245,03 | € (A) 251,90 | sFr 328,50
ISBN 978-3-642-19471-9

Topics in Organometallic Chemistry

Volume 37
T. Ikariya, Tokyo Institute of Technology, Tokyo, Japan; M. Shibasaki, The University of Tokyo, Japan (Eds.)

Chemistry of Bifunctional Molecular Catalysis

Features
► Each volume of Topics in Organometallic Chemistry provides the broad scientific readership with a comprehensive summary and critical overview of a specific topic in organometallic chemistry ► Research in this rapidly developing transdisciplinary field is having profound influence on other areas of scientific investigation, ranging from catalytic organic synthesis to biology, medicine and material science ► With contributions by international experts

Contents

Fields of interest
Organometallic Chemistry ; Catalysis; Organic Chemistry

Target groups
Research

Type of publication
Reviews

Due May 2011
2011. XII, 200 p. Hardcover
► € 189,95 | £171.00
► = € (D) 203,25 | € (A) 208,94 | sFr 272,50
ISBN 978-3-642-20730-3

Selenium and Tellurium Chemistry

From Small Molecules to Biomolecules and Materials

Our knowledge of the chemistry of selenium and tellurium has seen significant progress in the last few decades. This monograph comprises contributions from leading scientists on the latest research into the synthesis, structure and bonding of novel selenium and tellurium compounds. It provides insights into mechanistic studies of these compounds and describes coordination chemistry involving selenium and tellurium containing ligands. Contributions also describe the theoretical and spectroscopic studies of selenium and tellurium compounds.

Features
► Offers readers a multidisciplinary approach to the subject ► Highlights significant recent progress in Selenium and Tellurium Chemistry ► Presents both the basic chemistry as well as applications such as in semiconductors, insulators, catalysts, nanotubes, polymers and thin films

From the contents

Fields of interest
Inorganic Chemistry; Materials Science, general; Biochemistry, general

Target groups
Research

Type of publication
Monograph

Due August 2011
2011. 350 p. 400 illus. in color. Hardcover
► € 139,95 | £126.00
► = € (D) 149,75 | € (A) 153,94 | sFr 201,00
ISBN 978-3-642-20698-6