

# PHYSICAL SCIENCES 2024

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Liebe Leserin, lieber Leser,  
auch in diesem Jahr freuen wir uns sehr, Ihnen die Neuerscheinungen im Bereich Naturwissenschaften bei De Gruyter vorstellen zu dürfen!  
In Zeiten, in denen die Erhaltung unserer Umwelt und die Sicherung einer lebenswerten Zukunft von entscheidender Bedeutung sind, sind nachhaltige Ansätze und Lösungen nicht nur in den Materialwissenschaften, der industriellen Chemie und der Energieversorgung von höchstem Interesse. Um diesen Zielen gerecht zu werden, haben wir uns entschlossen, immer mehr unserer Neuerscheinungen auf die Sustainability-Development-Goals (SDG) der Vereinten Nationen auszurichten. Sie werden daher in Zukunft viele unserer Neuerscheinungen mit dem Logo der SDGs auf der Rückseite entdecken.  
Auch in diesem Jahr haben wir wieder einige Themenschwerpunkte in den Fokus gestellt, die wir Ihnen auf Sonderseiten in diesem Katalog vorstellen: Medizinische Chemie, Pharmakologie und Energiewissenschaft.  
Wir sind stolz darauf, Ihnen diese sorgfältig ausgewählte Sammlung von Themen präsentieren zu können! Lassen Sie uns gemeinsam die Zukunft gestalten und nachhaltige Lösungen für eine bessere Welt vorantreiben!  
Ich wünsche Ihnen eine angenehme und anregende Lektüre!  
Herzliche Grüße,



**Daniel Tiemann**  
Vice President STEM  
Daniel.Tiemann@degruyter.com

Dear reader,  
We are delighted to present to you this year's new releases in the field of natural sciences at De Gruyter!  
In a time where preserving our environment and securing a livable future are of paramount importance, sustainable approaches and solutions are not only of great interest in materials science, industrial chemistry, and energy supply. To align with these goals, we have made the conscious decision to increasingly orient many of our new releases towards the United Nations' Sustainable Development Goals (SDGs). Therefore, in the future, you will discover many of our new releases featuring the SDGs logo on their back covers.  
Once again this year, we have highlighted specific thematic areas in this catalog, which we introduce to you on dedicated pages: Medical Chemistry, Pharmacology, and Energy Science. We take pride in presenting to you this thoughtfully curated collection of topics! Let us together shape the future and advance sustainable solutions for a better world.  
Wishing you an enjoyable and stimulating read!  
Warm regards,

<b>3</b>	<b>MATERIALWISSENSCHAFTEN MATERIALS SCIENCES</b>
<b>14</b>	<b>INDUSTRIELLE CHEMIE INDUSTRIAL CHEMISTRY</b>
<b>35</b>	<b>CHEMIE CHEMISTRY</b>
<b>45</b>	<b>PHYSIK PHYSICS</b>
<b>54</b>	<b>INDEX</b>

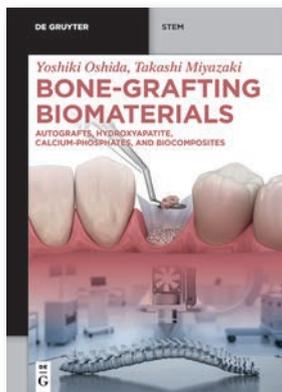
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*Yoshiki Oshida, Takashi Miyazaki*

## Bone-Grafting Biomaterials

Autografts, Hydroxyapatite, Calcium-Phosphates, and Biocomposites

**Series:** De Gruyter STEM

June 2024

English, Approx. X, 350 pp., 130 fig.

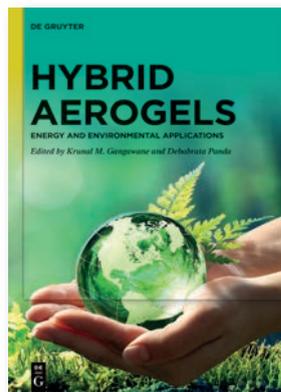
**Pb.** \*RRP € 94.95/ US\$ 104.99/ £ 86.50  
ISBN 978-3-11-113666-0

**eBook** \*RRP € 94.95/ US\$ 104.99/ £ 86.50  
PDF ISBN 978-3-11-113669-1  
ePUB ISBN 978-3-11-113889-3

Bone augmentation is a procedure to replace and repair fractured bone in extreme circumstances. The materials used in such grafting techniques must be biocompatible and might come from natural bone sources or synthetic materials. This book defines bone augmentation and describes different bone grafting materials, techniques, and applications. Recently developed materials are also explored.

**Bone grafting; Biocomposites; Biomaterials; Biotechnology; Implantology; Physiology; Implant Longevity; Survival Rate**

*Yoshiki Oshida*, University of California San Francisco, School of Dentistry, USA;  
*Takashi Miyazaki*, Miyazaki Dental Clinic, Japan.



*Krunal M. Gangawane, Debabrata Panda (Eds.)*

## Hybrid Aerogels

Energy and Environmental Applications

July 2024

English, Approx. X, 340 pp., 100 fig.

**HC** \*RRP € 159.95/ US\$ 175.99/ £ 145.50  
ISBN 978-3-11-125135-6

**eBook** \*RRP € 159.95/ US\$ 175.99/ £ 145.50  
PDF ISBN 978-3-11-125200-1  
ePUB ISBN 978-3-11-125203-2

Aerogels are ultralight porous materials showing great promise in environmental remediation and energy storage. Aerogels successfully remove pollutants and can improve the properties of batteries, supercapacitors and even °exible electronics. The book covers the fundamentals of hybrid aerogels synthesis and their applications. It includes computational approaches such as Molecular Dynamics, lattice Boltzmann method and Navier-Stokes solver.

**Porous Materials; Energy Devices; Environmental Remediation**

*Krunal M. Gangawane* and *Debabrata Panda*, National Institute of Technology Rourkela, India.

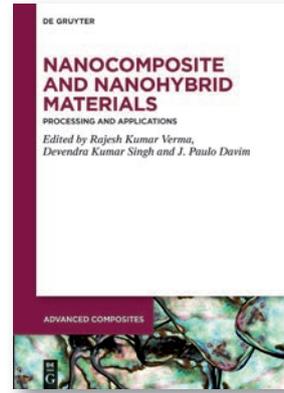
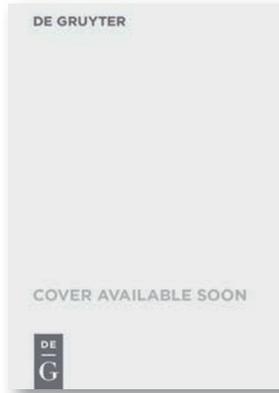
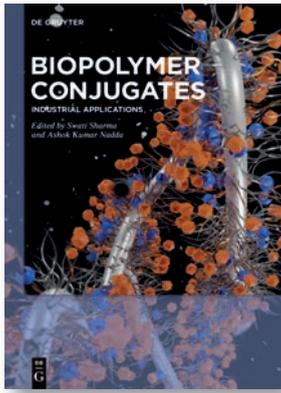
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*Swati Sharma, Ashok Kumar Nadda (Eds.)*

## Biopolymer Conjugates

Industrial Applications

June 2024

English, Approx. X, 440 pp., 90 fig.

**HC** \*RRP € 159.95/ US\$ 182.99/ £ 144.50

ISBN 978-3-11-078576-0

**eBook** \*RRP € 159.95/ US\$ 182.99/ £ 144.50

PDF ISBN 978-3-11-078583-8

ePUB ISBN 978-3-11-078588-3

The book covers conjugation of biopolymers with synthetic polymers, nanoparticles, metals, phytochemicals, food additives and biopolymers, such as polynucleotides, polypeptides and polysaccharides. It describes the latest research advances on biopolymers extracted from waste and their corresponding products.

Polymers

*Swati Sharma*, Chandigarh University;  
*Ashok Kumar Nadda*, Jaypee University of Information Technology, India.

*Mayuri Napagoda, Sanjeeva Witharana*

## Nano-Phytopharmaceuticals

Herbal Medicine Nanotechnology

**Series:** De Gruyter STEM

December 2024

English, Approx. X, 200 pp., 170 fig.

**Pb.** \*RRP € 94.95/ US\$ 104.99/ £ 86.50

ISBN 978-3-11-113657-8

**eBook** \*RRP € 94.95/ US\$ 104.99/ £ 86.50

PDF ISBN 978-3-11-113660-8

ePUB ISBN 978-3-11-113846-6

Herbal medicine is a powerful tool that has been harnessed since prehistoric time. Phytochemicals are active compounds produced by plants to help them resist infection, fungi, and bacteria. Nanotechnology may assist in the delivery and availability of these compounds in medicine. This book covers phytochemicals and nanomaterials in medicine, and their combination for cancer therapies, cosmeceuticals, and more.

**Medicinal Plants; Medicinal Chemistry; Pharmaceutical Chemistry; Nanotechnology; Nanoscience; Nano-phytopharmaceuticals; Phytopharmaceuticals; Nanobiotechnology; Biotechnology**

*Mayuri Napagoda*, University of Ruhuna;  
*Sanjeeva Witharana*, University of Moratuwa, Sri Lanka.

*Rajesh Kumar Verma, Devendra Kumar Singh, J. Paulo Davim (Eds.)*

## Nanocomposite and Nanohybrid Materials

Processing and Applications

**Series:** Advanced Composites 17

November 2023

English, X, 346 pp., 91 fig.

**HC** \*RRP € 169.95/ US\$ 186.99/ £ 154.50

ISBN 978-3-11-113789-6

**eBook** \*RRP € 169.95/ US\$ 186.99/ £ 154.50

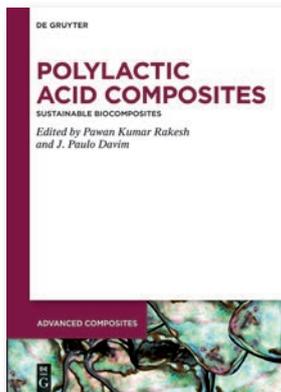
PDF ISBN 978-3-11-113790-2

ePUB ISBN 978-3-11-113925-8

The development of nanocomposites and nanohybrids has been of significant scientific interest in recent years. These materials may have improved mechanical strength, toughness, stiffness, electrical and thermal conductivity, and superior flame retardancy. This book discusses the fabrication of nanocomposites and nanohybrids, their preparation, design, and utilization for structural, aeronautical, automotive, and biomedical applications.

**Nanocomposites; Polymers; Nanohybrids; Nanomaterials; Biomaterials; Composites**

*Rajesh Kumar Verma*, HBTU; *Devendra Kumar Singh*, MMMUT, India; *J. Paulo Davim*, University of Aveiro, Portugal.



*Pawan Kumar Rakesh, J. Paulo Davim (Eds.)*

## Polylactic Acid Composites

Sustainable Biocomposites

**Series:** Advanced Composites 18

December 2023  
English, Approx. XX, 370 pp., 97 fig.

**HC** \*RRP € 169.95/ US\$ 195.99/ £ 154.50  
ISBN 978-3-11-106674-5

**eBook** \*RRP € 169.95/ US\$ 195.99/ £ 154.50  
PDF ISBN 978-3-11-106728-5  
ePUB ISBN 978-3-11-106777-3

This book encompasses the structure, physical properties, production method, and biodegradability analysis of polylactic acid. A discourse of factors influencing the fabrication of polylactic acid-based composites and their characterization is discussed. The effects of reinforcements in the polylactic acid composites and their possible reasons is included. The potential biomedical applications of polylactic acid is covered.

**Polylactic Acid; Biocomposites; Biodegradable; Recyclability; Biomedical Applications; Composites**

*Pawan Kumar Rakesh*, National Institute of Technology Uttarakhand, India. *J. Paulo Davim*, University of Aveiro, Portugal.



*Gurminder Singh, Ravinder Pal Singh, Neeraj Sharma, J. Paulo Davim (Eds.)*

## Green Composites Manufacturing

A Sustainable Approach

**Series:** Advanced Composites

May 2024  
English, Approx. XX, 400 pp., 90 fig.

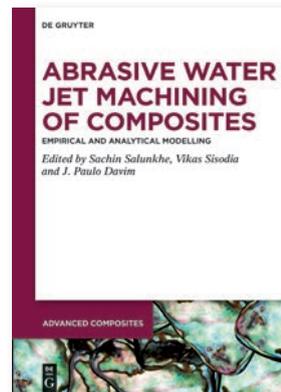
**HC** \*RRP € 144.95/ US\$ 166.99/ £ 132.00  
ISBN 978-3-11-106672-1

**eBook** \*RRP € 144.95/ US\$ 166.99/ £ 132.00  
PDF ISBN 978-3-11-106734-6  
ePUB ISBN 978-3-11-106776-6

In today's society researchers are more focused on cleaner materials production for environmental sustainability. This approach aims at reducing waste and the development of materials with enhanced properties and functionality. This book focuses on optimizing manufacturing processes for sustainable composite materials. It discusses optimum utilization of resources by using minimum effort to save cost and energy.

**Hybrid Composites; Advanced Manufacturing; Additive Manufacturing; Strength; Metal Matrix Composite; Polymer Composite; Composite Machining; Waste Composites**

*G. Singh*, IIT Bombay; *R. Pal Singh* and *N. Sharma*, Maharishi Markandeshwar, India; *J. P. Davim*, University of Aveiro, Portugal.



*Sachin Salunkhe, Vikas Sisodia, J. Paulo Davim (Eds.)*

## Abrasive Water Jet Machining of Composites

Empirical and Analytical Modelling

**Series:** Advanced Composites

May 2024  
English, Approx. X, 240 pp., 50 fig.

**HC** \*RRP € 149.95/ US\$ 164.99/ £ 136.50  
ISBN 978-3-11-124020-6

**eBook** \*RRP € 149.95/ US\$ 164.99/ £ 136.50  
PDF ISBN 978-3-11-124024-4  
ePUB ISBN 978-3-11-124041-1

This book explores new possibilities in the domain of abrasive waterjet machining (AWJM) of composites and polymers. AWJM is a sustainable and well industrialized process, but some parameters of AWJM process need to be optimized according to new composites materials and polymers to obtain the desired machining characteristics. This book presents the reader with the state of the art methodology to cut the advanced composite materials.

**Ceramics composites; Polymeric composites; surface roughness; material removal rate**

*Vikas Sisodia, Sachin Salunkhe*, India; *J. Paulo Davim*, Portugal.



*Arbind Prasad, Gourhari Chakraborty, J. Paulo Davim (Eds.)*

## Sustainable Bio-Based Composites

Biomedical and Engineering applications

**Series:** Advanced Composites

September 2024

English, Approx. X, 390 pp., 80 fig.

**HC** \*RRP € 159.95 / US\$ 175.99 / £ 145.50

ISBN 978-3-11-132137-0

**eBook** \*RRP € 159.95 / US\$ 175.99 / £ 145.50

PDF ISBN 978-3-11-132153-0

ePUB ISBN 978-3-11-132165-3

Sustainable bio-based composites are emerging as raw materials for various products. The book describes cellulose, chitosan, silk, collagen and gelatin bio-based materials. It presents their use in biomedical applications, such as orthopaedic implant, drug delivery, tissue culture, biosensor and engineering applications such as fuel cells, energy storage and packaging. It also covers biorefinery, biolubricant, membrane and adsorbent applications.

**Sustainability; Biopolymers; Orthopaedic Implant; Drug Delivery; Tissue Culture; Biosensor; Fuel Cells; Energy Storage; Packaging**

*Arbind Prasad*, KEC, *Gourhari Chakraborty*, NIT Andhra Pradesh, India; *J. Paulo Davim*, University of Aveiro, Portugal.



*Michael Mingzhe Wang, William M. Risen, Jr.*

## Introduction to Ionomers and their Applications

Chemical Processes, Advanced Materials and Medicine

**Series:** De Gruyter STEM

May 2024

English, Approx. X, 140 pp., 150 fig.

**HC** \*RRP € 74.95 / US\$ 79.99 / £ 66.00

ISBN 978-3-11-078142-7

**eBook** \*RRP € 74.95 / US\$ 79.99 / £ 66.00

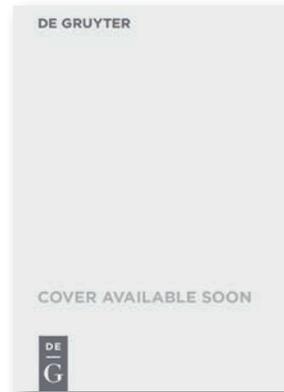
PDF ISBN 978-3-11-078147-2

ePUB ISBN 978-3-11-078153-3

The book reviews polymer fundamentals for the understanding of ionomers. It discusses various chemistries by which polymers incorporate ionic groups and the resultant impact on the parent polymers' chemical and physical properties. It also covers characterization techniques and morphological models. Finally it presents commercial applications of different ionomers and research frontiers in this field for readers to see where they can contribute.

**Ion Containing Polymers; Dentistry; Electrolysis and Electrochemistry; Packaging**

*Michael Mingzhe Wang*, Stepan Company, China; *William M. Risen, Jr.*, Brown University, USA.



*Suong V. Hoa*

## 4D Printing of Composites

October 2024

English, Approx. XIV, 200 pp., 50 fig.

**HC** \*RRP € 139.95 / US\$ 159.99 / £ 125.00

ISBN 978-3-11-066844-5

**eBook** \*RRP € 139.95 / US\$ 159.99 / £ 125.00

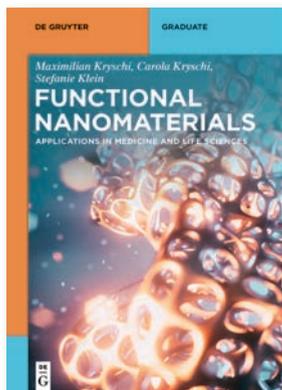
PDF ISBN 978-3-11-066854-4

ePUB ISBN 978-3-11-066862-9

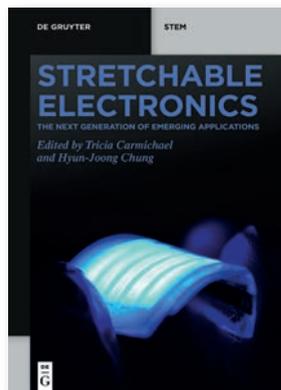
This book introduces the novel and rapidly developing field of 4D printing. The concept of 4D printing of composites extends 3D printing by adding the dimension of a transformation over time. With applications in engineering structures such as aircraft, automobile, wind turbine, sport equipment, this technique introduces programmable matter that can change conformation in contact with humidity, temperature and other external factors.

**3D printing; Plastics; Polymers; Composite Materials**

*Suong V. Hoa*, Concordia University, Canada.



T



*Maximilian Kryschi, Carola Kryschi, Stefanie Klein*

## Functional Nanomaterials

Applications in Medicine and Life Sciences

**Series:** De Gruyter Textbook

August 2024  
English, Approx. XX, 380 pp., 200 fig.

**Pb.** \*RRP € 99.95/ US\$ 113.99/ £ 89.00  
ISBN 978-3-11-060545-7

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-060549-5  
ePUB ISBN 978-3-11-060686-7

Nanoparticles (NPs) offer an innovative platform for targeted cancer diagnosis and therapy. Advanced synthesis and surface functionalization strategies facilitate reversible binding and triggered release of drugs. NPs are also excellent contrast agents for clinical imaging techniques. This book discusses current and future applications of functional nanoparticles in oncology, as well as strategies for tailoring novel multifunctional nanomaterials.

**Nanoparticles; Pharmaceutical Technology; Oncology; Medical nanomaterials**

*Maximilian Kryschi and Carola Kryschi, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany.*

*Tricia Carmichael, Hyun-Joong Chung (Eds.)*

## Stretchable Electronics

The Next Generation of Emerging Applications

**Series:** De Gruyter STEM

August 2024  
English, Approx. X, 350 pp., 70 fig.

**Pb.** \*RRP € 109.95/ US\$ 124.99/ £ 99.00  
ISBN 978-3-11-075718-7

**eBook** \*RRP € 109.95/ US\$ 124.99/ £ 99.00  
PDF ISBN 978-3-11-075728-6  
ePUB ISBN 978-3-11-075731-6

Stretchable electronics is a dynamic field with the potential to revolutionize human health, robotics, energy storage, and even building construction. Electronics with rubber-like form factors can integrate with irregularly shaped moving substances in a seamless manner. This book presents the work and perspective of the next generation of innovators and disruptors who are driving an exciting phase of diversification and growth in the field.

**Wearable electronics; Stretchable electronics; Soft robotics; Wearable biomedical sensors; Wearable therapeutics**

*Tricia Carmichael, University of Windsor; Hyun-Joong Chung, University of Alberta, Canada.*

*Marcin Słoma*

## Additive Manufacturing of Structural Electronics

**Series:** De Gruyter STEM

October 2024  
English, Approx. X, 120 pp., 60 fig.

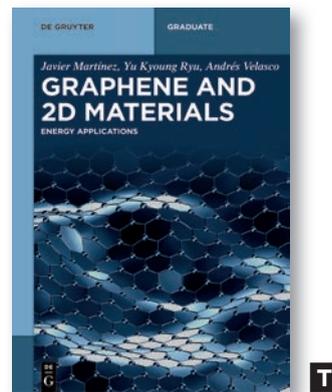
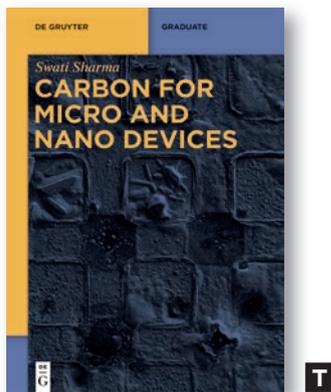
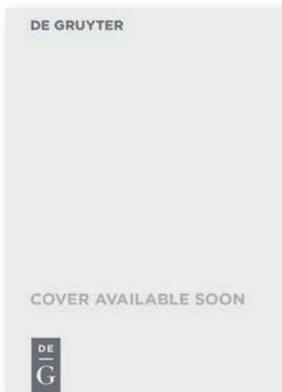
**Pb.** \*RRP € 74.95/ US\$ 85.99/ £ 67.00  
ISBN 978-3-11-079359-8

**eBook** \*RRP € 74.95/ US\$ 85.99/ £ 67.00  
PDF ISBN 978-3-11-079360-4  
ePUB ISBN 978-3-11-079366-6

Additive manufacturing, also called rapid prototyping or 3D printing is a disruptive manufacturing technique with a significant impact in electronics. With 3D printing, bulk objects with circuitry are embedded in the volume of an element or conformally coated on the surface of existing parts, allowing design and manufacturing of smaller and lighter products with fast customisation. The book covers both materials selection and techniques.

**Additive Manufacturing; 3D Printing; Electronics**

*Marcin Słoma, Warsaw University of Technology, Poland.*



*Elizabeth Amir*

## Functional Textiles

Chemistry, Materials and Fabrication Methods

**Series:** De Gruyter STEM

December 2024  
English, Approx. XX, 270 pp., 220 fig.

**Pb.** \*RRP € 89.95/ US\$ 103.99/ £ 82.00  
ISBN 978-3-11-107093-3

**eBook** \*RRP € 89.95/ US\$ 103.99/ £ 82.00  
PDF ISBN 978-3-11-107094-0  
ePUB ISBN 978-3-11-107159-6

Smart fabrics integrate technologies that offer the user greater functionality. Development of functional and smart fabrics with advanced performance and applications requires an understanding of the chemical approaches for their preparation. *Functional Textiles* introduces chemical processes and materials used for surface grafting of fabrics with functional materials.

**smart fabrics; surface grafting; covalent functionalization; functional coatings; thiol-ene click chemistry**

*Elizabeth Amir*, Shenkar College, Israel.

*Swati Sharma*

## Carbon for Micro and Nano Devices

**Series:** De Gruyter Textbook

March 2024  
English, Approx. X, 300 pp., 126 fig.

**Pb.** \*RRP € 69.95/ US\$ 75.99/ £ 59.50  
ISBN 978-3-11-062062-7

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-062063-4  
ePUB ISBN 978-3-11-062070-2

This textbook focuses on the fabrication of micro/nano scale devices using graphitic carbon, including fabrication and characterization techniques, device design strategies, starting materials, and major application areas (microelectrodes, sensors, AFM tips, etc.). The book covers the fundamental physicochemical properties of various graphene-based carbon forms, with an emphasis on glassy carbon, the most common carbon in microfabrication.

**Bio-MEMS; Graphite; MEMS; Microelectrodes; Microelectronics; Nanoelectromechanics; Nanofabrication; Carbon Materials**

*Swati Sharma*, Karlsruhe Institute of Technology, Germany.

*Javier Martínez, Yu Kyoung Ryu, Andrés Velasco*

## Graphene and 2D Materials

Energy Applications

**Series:** De Gruyter Textbook

August 2024  
English, Approx. X, 200 pp., 80 fig.

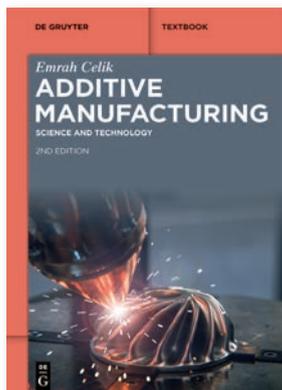
**Pb.** \*RRP € 69.95/ US\$ 75.99/ £ 59.50  
ISBN 978-3-11-077066-7

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-077071-1  
ePUB ISBN 978-3-11-077081-0

An excellent book for future scientists and engineers that choose the yield of energy as their research topic. Readers will discover the main energy devices, their basic concepts, why graphene and other 2D materials are fundamental to develop the next generation of eco-friendly, cost-effective and efficient components and how they will be essential in advanced applications such as wearable and smart electronics.

**Carbon Chemistry; Graphene; Energy; Supercapacitors; Batteries; Solar Cells; Fuel Cells**

*Javier Martínez Rodrigo, Yu Kyoung Ryu and Andrés Velasco*, Universidad Politécnica de Madrid, Spain.

**T***Emrah Celik*

## Additive Manufacturing

Science and Technology

**Series:** De Gruyter Textbook

2. Edition/2nd Edition

November 2024

English, Approx. X, 160 pp., 90 fig.

**Pb.** \*RRP € 79.95 / US\$ 90.99 / £ 70.50

ISBN 978-1-5015-2023-5

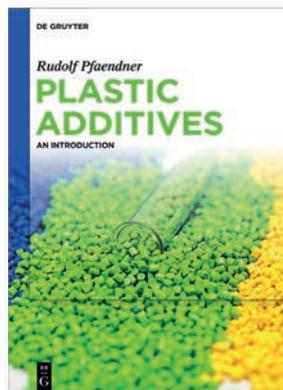
**\*\*eBook** \*RRP € 699.00 / £ 599.00

PDF ISBN 978-1-5015-2024-2

ePUB ISBN 978-1-5015-1722-8

The book covers additive manufacturing of polymers, metals, ceramics, fiber reinforced polymer composites, energy harvesting materials and biomaterials. It includes photopolymerization, heat curing, crystallization of molten metal processes. Hybrid manufacturing is discussed. Topology optimization methodology is described and finite element software examples are provided. The book is ideal for graduate students and career starters in the industry.

**3D printing technologies; Topology optimization methodology; Additive Manufacturing; Bioprinting; Polymers; Composites; Metals; Ceramics**

*Emrah Celik*, University of Miami, USA.*Rudolf Pfaendner*

## Plastic Additives

An Introduction

May 2024

English, Approx. X, 120 pp., 20 fig.

**HC** \*RRP € 124.95 / US\$ 139.99 / £ 110.00

ISBN 978-3-11-099755-2

**eBook** \*RRP € 124.95 / US\$ 139.99 / £ 110.00

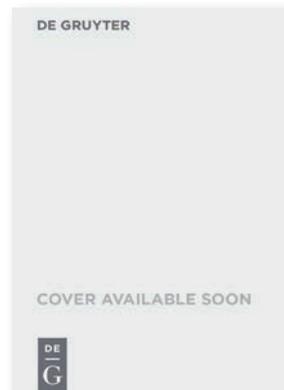
PDF ISBN 978-3-11-098635-8

ePUB ISBN 978-3-11-098637-2

Additives are essential components of plastic formulations providing maintenance and modification of polymer properties, performance and long-term use. The book provides information on the many different plastic ingredients and their purpose with market information, theoretical background such as mechanisms, state-of-the-art technical solutions, applications and examples, synergisms and antagonisms, risks and future trends.

**Plastics; Additives; Polymers**

*Rudolf Pfaendner*, Fraunhofer Institute for Structural Durability and System Reliability, Germany.

*Pablo Froimowicz*

## Macromolecular Science

Understanding Polymers

**Series:** De Gruyter STEM

July 2024

English, Approx. X, 190 pp., 150 fig.

**Pb.** \*RRP € 94.95 / US\$ 108.99 / £ 86.00

ISBN 978-3-11-058885-9

**eBook** \*RRP € 94.95 / US\$ 108.99 / £ 86.00

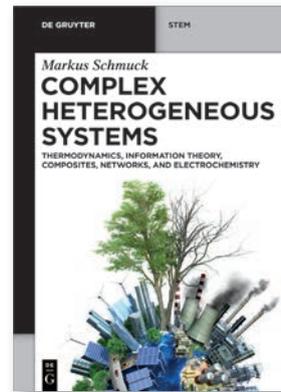
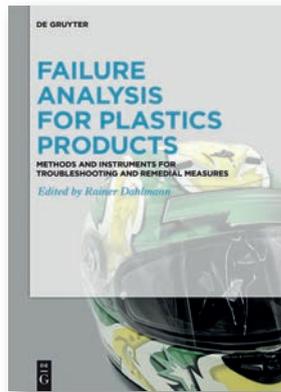
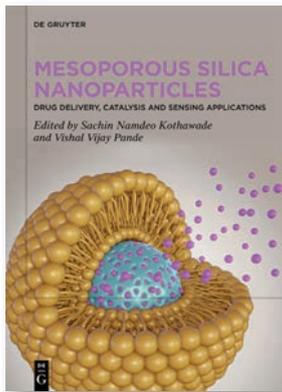
PDF ISBN 978-3-11-058886-6

ePUB ISBN 978-3-11-058888-0

What are polymers and where can you find them in use? This book homogeneously addresses the main fundamental, engineering, and technological aspects of polymers in a way accessible to those coming from very different backgrounds. The author takes a no-nonsense approach to each topic resulting in this idea book for every-day use. Ideal for career starters and students of all disciplines.

**Condensed Matter; Macromolecular Chemistry; Polymers; Polymer Engineering**

*Pablo Froimowicz*, University of Buenos Aires, Argentina.



*Sachin Namdeo Kothawade, Vishal Vijay Pande (Eds.)*

## Mesoporous Silica Nanoparticles

Drug Delivery, Catalysis and Sensing Applications

December 2024

English, Approx. X, 240 pp., 50 fig.

**HC** \*RRP € 139.95 / US\$ 153.99 / £ 127.50  
ISBN 978-3-11-133844-6

**eBook** \*RRP € 139.95 / US\$ 153.99 / £ 127.50  
PDF ISBN 978-3-11-133847-7  
ePUB ISBN 978-3-11-133849-1

*Mesoporous Silica Nanoparticles* comprehensively covers the importance and applications of mesoporous silica nanoparticles in the field of nanoscience and nanotechnology. The book delves into its synthesis and characterization. It explores properties and structure and covers the applications of mesoporous silica nanoparticles in drug delivery, catalysis, sensing and biosensing. It discusses surface functionalization, biocompatibility and toxicity.

Nanotechnology; Nanomaterials

*Sachin Namdeo Kothawade* and *Vishal Vijay Pande*, Rashtriya Shikshan Mandal's N. N. Sattha College of Pharmacy, India.

*Rainer Dahlmann (Ed.)*

## Failure Analysis for Plastics Products

Methods and Instruments for Troubleshooting and Remedial Measures  
June 2024

English, Approx. X, 140 pp., 80 fig.

**HC** \*RRP € 129.95 / US\$ 144.99 / £ 113.50  
ISBN 978-3-11-078562-3

**eBook** \*RRP € 129.95 / US\$ 144.99 / £ 113.50  
PDF ISBN 978-3-11-078564-7  
ePUB ISBN 978-3-11-078569-2

Plastics failure requires immediate action in often complex situations. A systematic approach, basic knowledge of the analysis of plastics, knowledge of materials, typical damage mechanisms and the design of communication help solve the problem and develop remedial measures. The book will provide support to the reader on all these points.

Plastics

*Rainer Dahlmann*, RWTH Aachen University, Germany.

*Markus Schmuck*

## Complex Heterogeneous Systems

Thermodynamics, Information Theory, Composites, Networks, and Electrochemistry

**Series:** De Gruyter STEM

May 2024

English, Approx. CC, 10 pp., 60 fig.

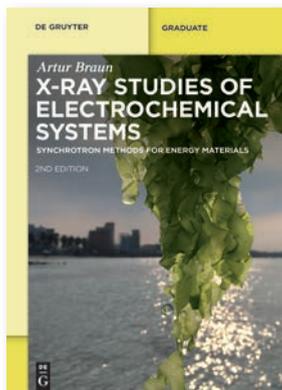
**Pb.** \*RRP € 74.95 / US\$ 81.99 / £ 64.50  
ISBN 978-3-11-057953-6

**eBook** \*RRP € 74.95 / US\$ 81.99 / £ 64.50  
PDF ISBN 978-3-11-057954-3  
ePUB ISBN 978-3-11-057952-9

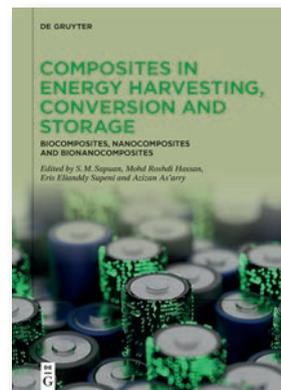
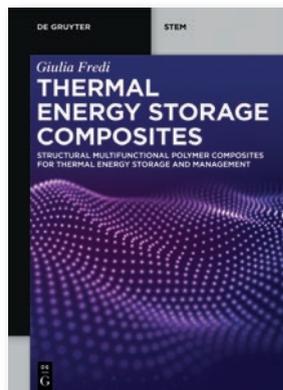
The book will consider different electrochemical systems based on thermodynamic principles. Starting with simple cell based building blocks towards Complex Heterogeneous Multiphase Systems for energy storage and release. Specific physical problems associated with asymptotic limits/approximations are addressed by passing a system specific small parameter such as the heterogeneity or the double layer thickness to zero.

Battery; Fuel Cells; Electrochemistry; Materials Science; Mathematical Models

*Markus Schmuck*, Heriot-Watt University, UK.



T



*Artur Braun*  
**X-Ray Studies of Electrochemical Systems**

Synchrotron Methods for Energy Materials

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
 May 2024  
 English, Approx. XXV, 525 pp., 310 fig.

**Pb.** \*RRP € 104.95 / US\$ 120.99 / £ 96.00  
 ISBN 978-3-11-079400-7

**\*\*eBook** \*RRP € 699.00 / £ 599.00  
 PDF ISBN 978-3-11-079403-8  
 ePUB ISBN 978-3-11-079426-7

This book is your graduate level entrance into battery, fuel cell and solar cell research at synchrotron x-ray sources. Materials scientists find numerous examples for the combination of electrochemical experiments with simple and with highly complex x-ray scattering and spectroscopy methods. Physicists and chemists can link applied electrochemistry with fundamental concepts of condensed matter physics, physical chemistry and surface science.

**Electrochemistry; Materials Characterization; Batteries; Energy**

*Artur Braun*, EMPA – Swiss Federal Laboratories for Materials Science and Technology, Switzerland.

*Giulia Fredi*  
**Thermal Energy Storage Composites**

Structural Multifunctional Polymer Composites for Thermal Energy Storage and Management

**Series:** De Gruyter STEM

November 2024  
 English, Approx. X, 120 pp., 40 fig.

**Pb.** \*RRP € 69.95 / US\$ 76.99 / £ 64.00  
 ISBN 978-3-11-111155-1

**eBook** \*RRP € 69.95 / US\$ 76.99 / £ 64.00  
 PDF ISBN 978-3-11-111186-5  
 ePUB ISBN 978-3-11-111278-7

Thermal energy storage (TES) technologies are used to store waste/excess heat that can be released when and where needed, filling the gap between energy demand and availability. The book briefly introduces the concept of TES and phase change materials, their confinement methods and thermal management (TM) applications. It covers the approach of embedding TES and TM functionalities in structural materials with multifunctional polymer composites.

**Energy Storage; Phase Change Materials; Composites; Polymers; Thermal Management**

*Giulia Fredi*, University of Trento, Italy.

*Salit Mohd Sapuan, Mohd Roshdi Hassan, Eris Elianddy Supeni, Azizan As'arry (Eds.)*  
**Composites in Energy Harvesting, Conversion and Storage**

Biocomposites, Nanocomposites and Bionanocomposites  
 September 2024

English, Approx. X, 290 pp., 100 fig.

**HC** \*RRP € 149.95 / US\$ 164.99 / £ 136.50  
 ISBN 978-3-11-123448-9

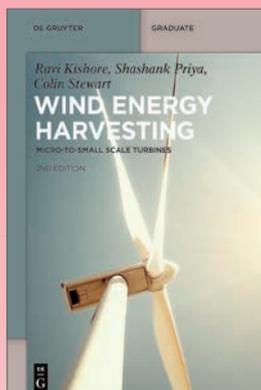
**eBook** \*RRP € 149.95 / US\$ 164.99 / £ 136.50  
 PDF ISBN 978-3-11-123476-2  
 ePUB ISBN 978-3-11-123499-1

Composite Materials is One of solutions for energy issues and challenges. The book describes industrial energy applications of biocomposites, nanocomposites and bionanocomposites. Topics of the book include composites in electric vehicle battery, wind energy-harvesting turbine, photovoltaic technology and hydrogen energy. It also covers life cycle assessment and additive manufacturing.

**Batteries; Wind Energy; Hydrogen Energy; Photovoltaics; Nanocomposites; Biocomposites; Additive Manufacturing**

*S.M. Sapuan, M.R. Hassan, E.E. Supeni and A. As'arry*, Universiti Putra Malaysia, Malaysia.

# ENERGY



*Shashank Priya, Ravi Kishore, Colin Stewart*  
**WIND ENERGY HARVESTING**  
Micro-to-Small Scale Turbines

**De Gruyter Textbook**

09/2024. 2nd Edition, Approx. XX, 175 pp., 100 fig.

**Paperback**

\*RRP € 84.95 [D]/US\$ 94.99/£ 74.50

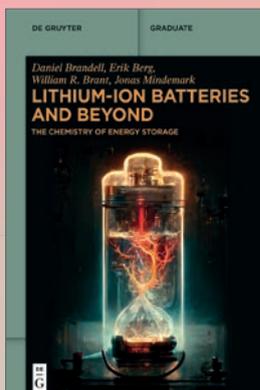
ISBN 978-3-11-078179-3

**\*\*eBook**

\*RRP € 699.00 [D]/US\$ 735.00/£ 599.00

PDF ISBN 978-3-11-078178-6

ePUB ISBN 978-3-11-078194-6



*Daniel Brandell, Erik Berg,  
William R. Brant, Jonas Mindemark*  
**LITHIUM-ION BATTERIES AND BEYOND**  
The Chemistry of Energy Storage

**De Gruyter Textbook**

04/2024. Approx. X, 190 pp., 80 fig.

**Paperback**

\*RRP € 79.95 [D]/US\$ 88.99/£ 69.00

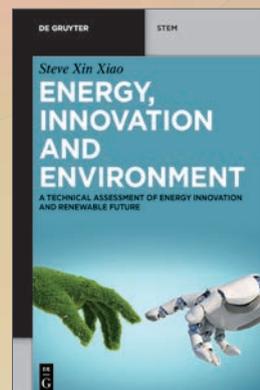
ISBN 978-3-11-078560-9

**\*\*eBook**

\*RRP € 699.00 [D]/US\$ 735.00/£ 599.00

PDF ISBN 978-3-11-078559-3

ePUB ISBN 978-3-11-078567-8



*Steve Xin Xiao*  
**ENERGY, INNOVATION AND ENVIRONMENT**  
A Technical Assessment of Energy Innovation and Renewable Future

**De Gruyter STEM**

07/2024. Approx. XX, 320 pp., 20 fig.

**Paperback**

\*RRP € 94.95 [D]/US\$ 108.99/£ 86.00

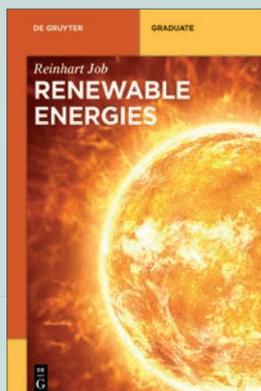
ISBN 978-1-5015-2013-6

**eBook**

RRP € 94.95 [D]/US\$ 108.99/£ 86.00

PDF ISBN 978-1-5015-2012-9

ePUB ISBN 978-1-5015-1369-5



*Reinhart Job*  
**RENEWABLE ENERGIES**

**De Gruyter Textbook**

10/2024. Approx. X, 290 pp., 80 fig.

**Paperback**

\*RRP € 79.95 [D]/US\$ 88.99/£ 69.00

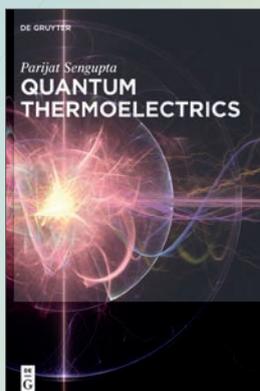
ISBN 978-3-11-072808-8

**\*\*eBook**

\*RRP € 699.00 [D]/US\$ 735.00/£ 599.00

PDF ISBN 978-3-11-072809-5

ePUB ISBN 978-3-11-072830-9



*Parijat Sengupta*  
**QUANTUM THERMOELECTRICS**  
The Chemistry of Energy Storage

**De Gruyter Textbook**

11/2024. Approx. X, 340 pp., 80 fig.

**Hardcover**

\*RRP € 139.95 [D]/US\$ 158.99/£ 125.00

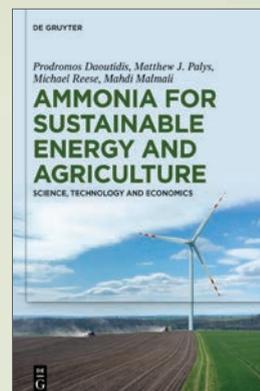
ISBN 978-3-11-099377-6

**eBook**

\*RRP € 139.95 [D]/US\$ 158.99/£ 125.00

PDF ISBN 978-3-11-098097-4

ePUB ISBN 978-3-11-098118-6



*Prodromos Daoutidis, Matthew J. Palys,  
Michael Reese, Mahdi Malmali*  
**AMMONIA FOR SUSTAINABLE ENERGY AND AGRICULTURE**  
Science, Technology and Economics

**De Gruyter Textbook**

09/2024. Approx. X, 240 pp., 140 fig.

**Hardcover**

\*RRP € 134.95 [D]/US\$ 155.99/£ 122.00

ISBN 978-3-11-076247-1

**eBook**

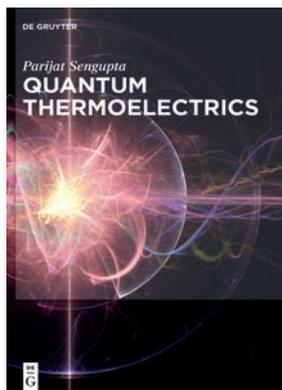
\*RRP € 134.95 [D]/US\$ 155.99/£ 122.00

PDF ISBN 978-3-11-076252-5

ePUB ISBN 978-3-11-076258-7

\*Prices in US\$ apply to orders placed in the Americas only. Prices in £ apply to orders placed in Great Britain only. Prices in € represent the retail prices valid in Germany (unless otherwise indicated). Prices are subject to change without notice. Prices do not include postage and handling. RRP: Recommended Retail Price.

\*\*The eBook prices indicated are only valid for institutional customers. Individual customers can purchase the eBook at list price through one of our vendor partners. eBook at list price through one of our vendor partners.



*Parijat Sengupta*

## Quantum Thermoelectrics

November 2024

English, Approx. X, 340 pp., 80 fig.

**HC** \*RRP € 139.95 / US\$ 158.99 / £ 125.00

ISBN 978-3-11-099377-6

**eBook** \*RRP € 139.95 / US\$ 158.99 / £ 125.00

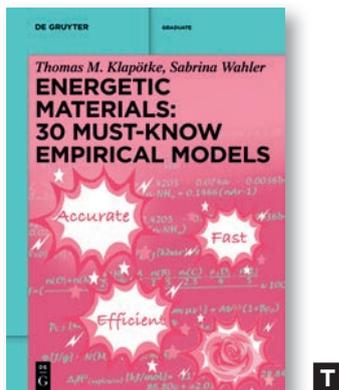
PDF ISBN 978-3-11-098097-4

ePUB ISBN 978-3-11-098118-6

The book describes the collective behaviour of electrons and quantum mechanical interplay between charge and thermal currents. It covers material systems, such as tellurides, chalcogenides and graphene analogs and the key features in the underlying electronic arrangement responsible for a particular mode of heat transport. It discusses the quantum mechanical origin of the electronic dispersions governing heat transport coefficients and efficiency.

Thermoelectrics; Quantum Materials

*Parijat Sengupta*, Intel Corporation, USA.



*Thomas M. Klapötke, Sabrina Wahler*

## Energetic Materials: 30 Must-Know Empirical Models

**Series:** De Gruyter Textbook

August 2024

English, Approx. X, 150 pp., 30 fig.

**Pb.** \*RRP € 79.95 / US\$ 87.99 / £ 73.00

ISBN 978-3-11-109602-5

**\*\*eBook** \*RRP € 699.00 / £ 599.00

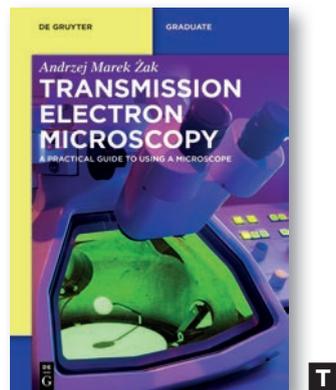
PDF ISBN 978-3-11-109702-2

ePUB ISBN 978-3-11-109782-4

This book gives an overview of empirical models published throughout history to predict properties of energetic materials. It is a collection of historical models developed at the beginning of energetic materials research to current models from the 21 Century.

Energetic Materials Performance; Empirical Modelling; RoseBoom; Physical Chemistry; Thermodynamics; Enthalpy of Formation; Detonation Velocity; Detonation Pressure

*Thomas Klapötke*, Ludwig-Maximilian University; *Sabrina Wahler*, RoseExplosive UG and RoseEnergetic UG, Germany.



*Andrzej Marek Żak*

## Transmission Electron Microscopy

A Practical Guide to Using a Microscope

**Series:** De Gruyter Textbook

December 2024

English, Approx. X, 100 pp., 40 fig.

**Pb.** \*RRP € 59.95 / US\$ 65.99 / £ 54.50

ISBN 978-3-11-131649-9

**\*\*eBook** \*RRP € 699.00 / £ 599.00

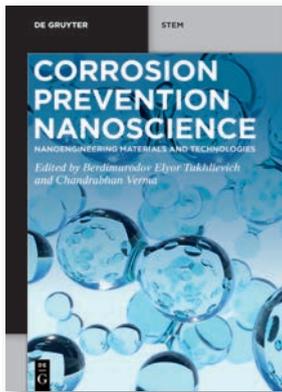
PDF ISBN 978-3-11-131701-4

ePUB ISBN 978-3-11-131715-1

Transmission electron microscopy is a powerful tool for looking at small physical specimens from nanomaterials, metal alloys and other structural materials, to microorganisms, tissues and biomacromolecules. The book covers microscope design and explains how the microscope functions and operates. It provides the essential theoretical and practical information in a compact manner together with case studies and a summary of good operator practices.

Microscopy; Microscope

*Andrzej Marek Żak*, Wrocław University of Science and Technology, Poland.



*Berdimurodov Elyor Tukhliyevich, Chandrabhan Verma (Eds.)*  
**Corrosion Prevention Nanoscience**  
 Nanoengineering Materials and Technologies

**Series:** De Gruyter STEM

July 2023  
 English, XII, 197 pp., 66 fig.

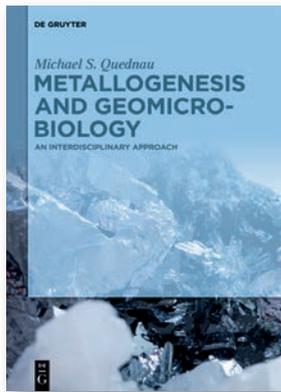
**Pb.** \*RRP € 89.95/ US\$ 103.99/ £ 82.00  
 ISBN 978-3-11-107009-4

**eBook** \*RRP € 89.95/ US\$ 103.99/ £ 82.00  
 PDF ISBN 978-3-11-107175-6  
 ePUB ISBN 978-3-11-107189-3

Recently, surface-engineered and modified nanomaterials have been developed as corrosion inhibitors for different metals alloys in coating and solution phases. This book covers current emerging trends and applications in nanomaterials and nanotechnologies and their applications in corrosion prevention. It offers synthesis, surface modification for enhanced dispersibility and protection, composite formation and their anticorrosive applications.

**Nanomaterials; Surface Protection; Engineered Materials; Functionalized Nanomaterials; Nanoengineering in Corrosion Prevention; Surface Modified Materials; Carbon Allotropes; Nanopolymers; Nanocomposites; Surface Functionalization**

*Berdimurodov Elyor Tukhliyevich*, NUU, Uzbekistan; *Chandrabhan Verma*, King Fahd University of Petroleum and Minerals, Saudi Arabia.



*Michael S. Quednau*  
**Metallogenesis and Geomicrobiology**  
 An Interdisciplinary Approach

June 2024  
 English, XVI, 300 pp., 80 fig.

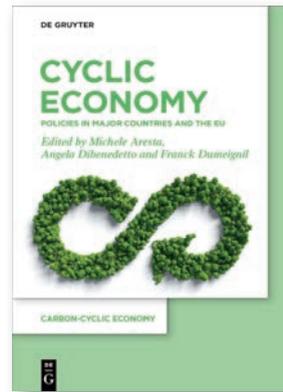
**HC** \*RRP € 109.95/ US\$ 125.99/ £ 98.50  
 ISBN 978-3-11-058138-6

**eBook** \*RRP € 109.95/ US\$ 125.99/ £ 98.50  
 PDF ISBN 978-3-11-058234-5  
 ePUB ISBN 978-3-11-058169-0

This book discusses the genesis of metalliferous deposits in the context of their geomicrobiology and offers a new approach to the exploration and exploitation of industrially relevant metals. The interactions of microbes with minerals and metals are described as well as their isotope geochemistry and current possibilities of predictive modeling. A special focus lies on the elements Au, Pt, U and Th.

**Geomicrobiology; Metallogenesis; Geochemistry**

*Michael Quednau*, Kronberg, Germany.



*Michele Aresta, Angela Dibenedetto, Franck Dumeignil (Eds.)*  
**Cyclic Economy**  
 Policies in Major Countries and the EU

**Series:** Carbon-Cyclic Economy

April 2024  
 English, Approx. X, 200 pp., 90 fig.

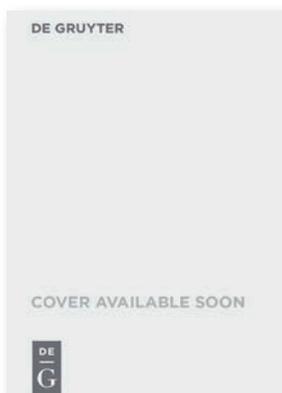
**Pb.** \*RRP € 99.95/ US\$ 113.99/ £ 89.00  
 ISBN 978-3-11-076707-0

**eBook** \*RRP € 99.95/ US\$ 113.99/ £ 89.00  
 PDF ISBN 978-3-11-076717-9  
 ePUB ISBN 978-3-11-076719-3

Circular Economy represents the big change in our society: moving away from fossil-carbon towards renewable energy sources and cycling-carbon will be two major challenges for our future. Gathering the policies in major countries and the EU this work describes the organization of the individual life and gives a unique perspective on the human society according to the decreased level of fossil-C.

**Carbon-Cyclic Economy; Environment protection**

*Michele Aresta* and *Angela Dibenedetto*, University of Bari, Italy; *Franck Dumeignil*, University of Lille, France.

**T**

*Vincent Voet, Jan Jager, Rudy Folkersma*  
**Plastics in the Circular Economy**

**Series:** De Gruyter Textbook

2. Edition/2nd Edition

August 2024

English, Approx. X, 320 pp., 320 fig.

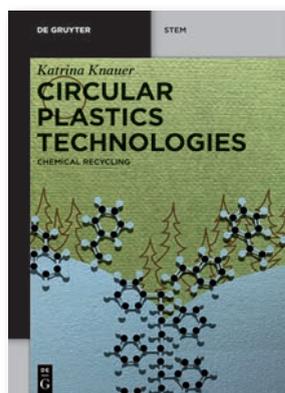
**Pb.** \*RRP € 94.95/ US\$ 104.99/ £ 86.50  
ISBN 978-3-11-120029-3

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-120144-3  
ePUB ISBN 978-3-11-120247-1

Our environment is affected by the way plastics are designed. Plastic waste is a growing problem. A solution is to redesign plastics for reusability and recyclability. This book makes the topic of plastic design approachable for student and career starter, describing the nature and chemistry of polymers as well as how to process them in an environmentally friendly method. The new edition expands on vitrimers, microplastic, recycling and examples.

**Environment; Biopolymers; Biodegradable Polymers; Recycling; Microplastics; Vitrimers**

*Vincent Voet, Rudy Folkersma* and *Jan Jager*, NHL Stenden University, The Netherlands.



*Katrina Knauer*  
**Circular Plastics Technologies**

Chemical Recycling

**Series:** De Gruyter STEM

May 2024

English, Approx. X, 80 pp., 40 fig.

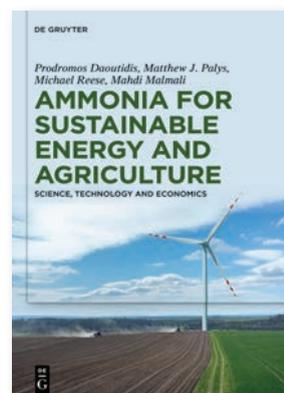
**Pb.**  
ISBN 978-1-5015-2328-1

**eBook**  
PDF ISBN 978-1-5015-1561-3  
ePUB ISBN 978-1-5015-1562-0

The book introduces the innovative chemical recycling technologies being developed at various scales, from pyrolysis of mixed plastics, to unzipping of polymers into their respective monomers, to breaking down plastics into entirely new chemicals. It is ideal for industrial and academic researchers investigating chemical methods for managing plastic waste and synthetic pathways for breaking down plastic waste into usable chemical building blocks.

**Polymers; Recycling; Circular Economy; Sustainability; Plastic Wastes**

*Katrina Knauer*, National Renewable Energy Laboratory, USA.



*Prodromos Daoutidis, Matthew J. Palys, Michael Reese, Mahdi Malmali*  
**AMMONIA FOR SUSTAINABLE ENERGY AND AGRICULTURE**

Science, Technology and Economics  
September 2024

English, Approx. X, 240 pp., 140 fig.

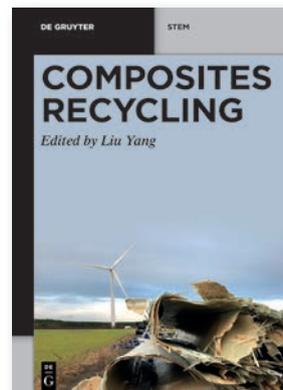
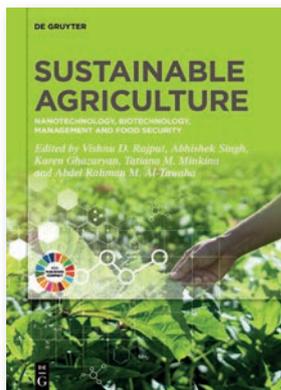
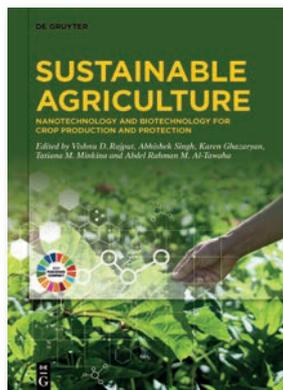
**HC** \*RRP € 134.95/ US\$ 155.99/ £ 122.00  
ISBN 978-3-11-076247-1

**eBook** \*RRP € 134.95/ US\$ 155.99/ £ 122.00  
PDF ISBN 978-3-11-076252-5  
ePUB ISBN 978-3-11-076258-7

The book describes the state of the art in ammonia production and the research efforts in catalysis, separation and electrochemical approaches. It discusses ammonia utilization, including and beyond traditional fertilizer applications. The book reviews the economics of renewable ammonia production and of its utilization for agricultural, energy and sector coupling applications. It also covers ongoing and prospective commercialization activities.

**Sustainability; Energy; Agriculture**

*Prodromos Daoutidis, Matthew Palys* and *Michael Reese*, University of Minnesota; *Mahdi Malmali*, Texas Tech University, USA.



*Vishnu D. Rajput, Abhishek Singh, Karen Ghazaryan, Tatiana M. Minkina, Abdel Rahman M. Al-Tawaha (Eds.)*

## Sustainable Agriculture

Nanotechnology and Biotechnology for Crop Production and Protection

April 2024

English, Approx. XV, 500 pp., 59 fig.

**HC** \*RRP € 149.95/ US\$ 164.99/ £ 136.50  
ISBN 978-3-11-123467-0

**eBook** \*RRP € 149.95/ US\$ 164.99/ £ 136.50  
PDF ISBN 978-3-11-123469-4  
ePUB ISBN 978-3-11-123501-1

The agricultural food system needs to provide access to enough healthy and affordable food for the growing population and mitigate its impact on the planet for future generations. Emerging technologies can help farmers increase yields. The book presents theoretical and applied aspects of nanotechnology, biotechnology, plant breeding and smart farming to increase plant productivity, crop yield, soil fertility and crop soil monitoring.

**Nanotechnology; Crop Yields; Nanosensors; Food Quality; Fertilizers; Biofortification; Speed Breeding; Genetic Engineering; Microbiology**

*Vishnu Rajput, Tatiana Minkina, SFedU, Russia; Abhishek Singh, Karen Ghazaryan, YSU, Armenia; Abdel Rahman Al-Tawaha, AHU, Jordan.*

*Vishnu D. Rajput, Abhishek Singh, Karen Ghazaryan, Tatiana M. Minkina, Abdel Rahman M. Al-Tawaha (Eds.)*

## Sustainable Agriculture

Nanotechnology, Biotechnology, Management and Food Security

April 2024

English, Approx. XV, 645 pp., 53 fig.

**HC**  
ISBN 978-3-11-136197-0

**eBook**  
PDF ISBN 978-3-11-136975-4  
ePUB ISBN 978-3-11-136994-5

The agricultural food system needs to provide access to enough healthy and affordable food for the growing population and mitigate its impact on the planet for future generations. Emerging technologies can help farmers increase yields. The book presents theoretical and applied aspects of nanotechnology and biotechnology. It also includes topics on management and food security.

**Nanotechnology; Crop Yields; Nanosensors; Food Quality; Fertilizers; Biofortification; Speed Breeding; Genetic Engineering; Microbiology**

*Vishnu Rajput, Tatiana Minkina, SFedU, Russia; Abhishek Singh, Karen Ghazaryan, YSU, Armenia; Abdel Rahman Al-Tawaha, AHU, Jordan.*

*Liu Yang (Ed.)*

## Composites Recycling

**Series:** De Gruyter STEM

May 2024

English, Approx. X, 140 pp., 60 fig.

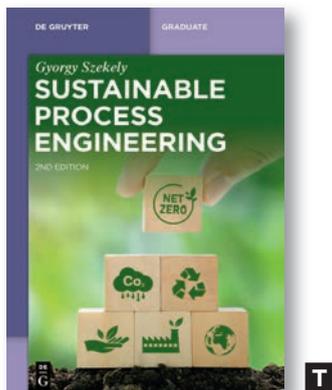
**Pb.** \*RRP € 89.95/ US\$ 97.99/ £ 77.50  
ISBN 978-3-11-075441-4

**eBook** \*RRP € 89.95/ US\$ 97.99/ £ 77.50  
PDF ISBN 978-3-11-075443-8  
ePUB ISBN 978-3-11-075453-7

The book covers recent advances in composites recycling including current industry practice of waste management, composite recycling technologies, economic and environmental impact. It is an indispensable source for professionals in the composites industries, such as aerospace, automotive, wind energy, marine and construction. It is also of interest to any students and researchers working in the field.

**Materials Science; Recycling; Composites; Composites Science**

*Liu Yang, University of Strathclyde, UK.*



*Gyorgy Szekely*  
**Sustainable Process Engineering**

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
 September 2024  
 English, Approx. XX, 380 pp., 189 fig.

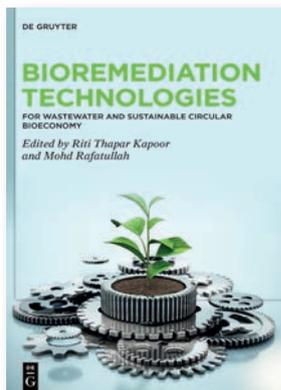
**Pb.** \*RRP € 84.95/ US\$ 96.99/ £ 76.50  
 ISBN 978-3-11-102815-6

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
 PDF ISBN 978-3-11-102816-3  
 ePUB ISBN 978-3-11-103032-6

Sustainable process engineering is a methodology to design new and redesign existing processes that follow the principles of green chemistry and green engineering, and ultimately contribute to a sustainable development. The newest achievements of chemical engineering, opened new opportunities to design more efficient, safe, compact and environmentally benign chemical processes. The book provides a guide applicable in various industrial yields.

**Chemical Engineering; Green Chemistry; Green Engineering; Chemical Process Engineering; Industrial Chemistry; Chemical Industry**

*Gyorgy Szekely*, King Abdullah University of Science and Technology (KAUST), Saudi Arabia.



*Riti Thapar Kapoor, Mohd Rafatullah (Eds.)*

**Bioremediation Technologies**

For Wastewater and Sustainable Circular Bioeconomy  
 June 2023  
 English, XII, 315 pp., 48 fig.

**HC** \*RRP € 164.95/ US\$ 190.99/ £ 150.50  
 ISBN 978-3-11-101665-8

**eBook** \*RRP € 164.95/ US\$ 190.99/ £ 150.50  
 PDF ISBN 978-3-11-101682-5  
 ePUB ISBN 978-3-11-101701-3

Various physico-chemical approaches for the removal of toxic pollutants are available, but these are not very effective. Biological approaches using microorganisms, green plants or their enzymes to degrade/detoxify contaminants are eco-friendly and low cost. This book provides a comprehensive overview of contaminants, their toxicity, and eco-friendly approaches for their management by cost effective sustainable methods.

**Bioremediation; Water Remediation; Biotechnology; Environmental Science; Green Chemistry; Sustainable Technologies**

*Riti Thapar Kapoor*, Amity University, India; *Mohd Rafatullah*, Universiti Sains Malaysia, Malaysia.



*Neha Suyal, Prasenjit Debbarma, Manali Singh, Anita Mishra, Roop S. Bora (Eds.)*

**Biomedical Waste Management**

Bioremediation and Recycling  
 November 2024  
 English, Approx. X, 490 pp., 50 fig.

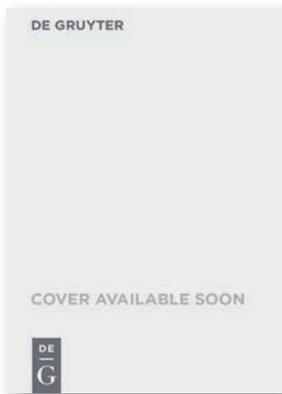
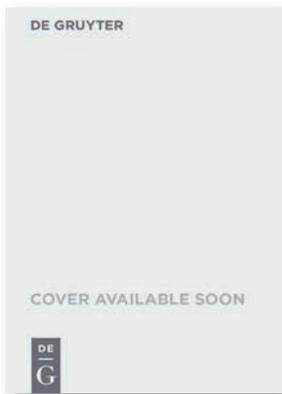
**HC** \*RRP € 139.95/ US\$ 153.99/ £ 127.50  
 ISBN 978-3-11-130316-1

**eBook** \*RRP € 139.95/ US\$ 153.99/ £ 127.50  
 PDF ISBN 978-3-11-130528-8  
 ePUB ISBN 978-3-11-130611-7

Healthcare facilities, medical laboratories and biomedical research facilities generate large amounts of biomedical waste. Poor management of the waste can cause serious health and environmental hazards. This book aims to cover the latest technologies and innovations for sustainable management. It covers bioremediation processes, plastic waste recycling, and metal recovery. It also discusses waste monetization, such as conversion into energy.

**Waste Management; Biotechnology; Bioremediation; Recycling**

*P. Debbarma*, ICVC, *A. Mishra*, VISMT, *M. Singh*, Invertis University, *N. Suyal*, AIIMS, *R.S. Bora*, Akal College of Agriculture, India.



*Maulin P. Shah (Ed.)*

## Smart Wastewater Technologies

For Industrial Wastewater Treatment

**Series:** Sustainable Water and Wastewater Treatment 4

May 2024

English, Approx. XV, 325 pp., 40 fig.

**HC** \*RRP € 174.95 / US\$ 196.99 / £ 155.50  
ISBN 978-3-11-077993-6

**eBook** \*RRP € 174.95 / US\$ 196.99 / £ 155.50  
PDF ISBN 978-3-11-078005-5  
ePUB ISBN 978-3-11-078020-8

This book discusses advancements in biotechnology to remediate toxic pollutants from wastewater caused by industries and human activities. The combination of better sensors and new water treatment technologies is a strong enabler for decentralised and diversified water treatment. The current state of the art and innovative research that will address these challenges, so that wastewater treatment systems can adapt for the future are discussed.

**Advanced Oxidation Processes; membrane technologies; artificial intelligence; bioremediation; nanotechnology; bioelectrochemical technologies**

*Maulin P. Shah*, Enviro Technology Limited, India.

*Slimane Merouani, Oualid Hamdaoui, Maulin P. Shah, Aissa Dehane (Eds.)*

## Sonochemical Water and Wastewater Decontamination

**Series:** Sustainable Water and Wastewater Treatment

May 2024

English, Approx. XX, 600 pp., 60 fig.

**HC** \*RRP € 174.95 / US\$ 192.99 / £ 159.50  
ISBN 978-3-11-113791-9

**eBook** \*RRP € 174.95 / US\$ 192.99 / £ 159.50  
PDF ISBN 978-3-11-113794-0  
ePUB ISBN 978-3-11-113920-3

The sonochemical process is newly advanced oxidation process (AOP) developed for hazardous pollutants destruction in aqueous effluents. This technique produces, in situ, a highly oxidative environment via the irradiation of aqueous solution using high frequency ultrasound to degrade potential contaminants. This book covers sonochemical pollutant degradation from fundamental principles, recent application, to challenges and future trends.

**Ultrasound; Sonochemistry; Sonochemical process; Advanced oxidation process; Wastewater decontamination**

*S. Merouani* and *A. Dehane*, University Constantine 3, Algeria; *O. Hamdaoui*, King Saud University, Saudi Arabia; *M. P. Shah*, ETL, India.

*Polona Žnidaršič Plazl, Rainer Krull, Adama Marie Sesay (Eds.)*

## Microbioreactors

Fundamentals and Applications

**Series:** De Gruyter Textbook

August 2024

English, Approx. XX, 300 pp., 150 fig.

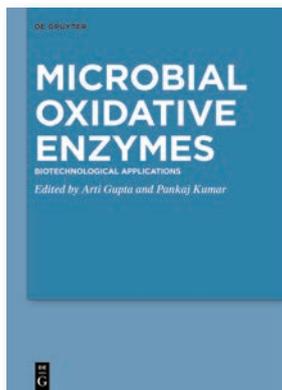
**Pb.** \*RRP € 89.95 / US\$ 97.99 / £ 77.50  
ISBN 978-3-11-067739-3

**\*\*eBook** \*RRP € 699.00 / £ 599.00  
PDF ISBN 978-3-11-067743-0  
ePUB ISBN 978-3-11-067753-9

This book combines fundamentals and concepts of microfluidics and bioprocess development. It is a great introduction into the interdisciplinary field of microbioreactors and suited for students, Ph.D. candidates and researchers. Discussed are nano- and micromaterials, biocatalysts as well as computational approaches. Technological aspects such as microfluidic systems for cell culture and analysis as well as inline-analytics are explained as well.

**Microfluidics; Bioprocess Development; Microbioreactors; Biocatalysis**

*P. Žnidaršič Plazl*, University of Ljubljana, Slovenia; *R. Krull*, TU Braunschweig, Germany; *A. M. Sesay*, Wyss Institute Harvard, USA.



*Arti Gupta, Pankaj Kumar (Eds.)*

## Microbial Oxidative Enzymes

Biotechnological Applications  
December 2023  
English, Approx. X, 600 pp., 65 fig.

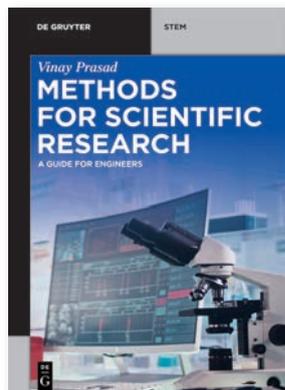
**HC** \*RRP € 154.95 / US\$ 178.99 / £ 141.00  
ISBN 978-3-11-106172-6

**eBook** \*RRP € 154.95 / US\$ 178.99 / £ 141.00  
PDF ISBN 978-3-11-106223-5  
ePUB ISBN 978-3-11-106271-6

The book covers microbial oxidative enzymes production and applications. Oxidative enzymes are being used in a wide range of industrial sectors, such as food, cosmetics, medical applications, detergents, leather, polymers, textile and paper. They are also used for plant-soil health management and waste treatment. The book is a reference guide to any academics and industrials interested in microbial biotechnology and industrial applications.

**Biotechnology; Microbiology; Enzymes; Oxidation**

*Arti Gupta*, Shri Avadh Raz Singh Smarak Degree College; *Pankaj Kumar*, H.N.B. Garhwal University, India.



*Vinay Prasad*

## Methods for Scientific Research

A Guide for Engineers

**Series:** De Gruyter STEM

April 2024  
English, Approx. X, 300 pp., 70 fig.

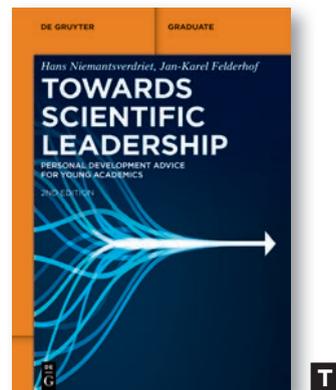
**Pb.** \*RRP € 59.95 / US\$ 65.99 / £ 51.00  
ISBN 978-3-11-062529-5

**eBook** \*RRP € 59.95 / US\$ 65.99 / £ 51.00  
PDF ISBN 978-3-11-062530-1  
ePUB ISBN 978-3-11-062537-0

This book is an introductory guide for research project management. It summarizes essential methods for good scientific practice and organisation. This text provides advice for literature surveys, developing and implementing a research plan, writing scientific texts, intellectual property and authorship, statistical analysis, and performing experimental as well as theoretical experiments.

**Research Methods; Engineering; Scientific Planning; Project Management; Scientific Writing; Intellectual Property; Statistical Analysis**

*Vinay Prasad*, University of Alberta, Canada.



*J. W. (Hans) Niemantsverdriet, Jan-Karel Felderhof*

## Towards Scientific Leadership

Personal Development Advice for Young Academics

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
November 2024  
English, Approx. XV, 185 pp., 70 fig.

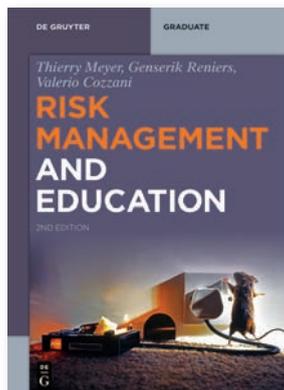
**Pb.** \*RRP € 39.95 / US\$ 43.99 / £ 36.50  
ISBN 978-3-11-132531-6

**\*\*eBook** \*RRP € 699.00 / £ 599.00  
PDF ISBN 978-3-11-132564-4  
ePUB ISBN 978-3-11-132587-3

How can young academics go from being a productive member of a scientific team to leading their own? Modern Science is teamwork and infamous “people skills” are required. The authors equip young academics with the right ideas and strategies not with tricks, but the correct mindset, straightforward vision and teamwork. New: improved scientific presentation and publication, scientific role-models added, updated trajectories to authentic leadership.

**Leadership; Entrepreneurship; Management; Presentation Skills; People Skills; Motivation**

*J.W. (Hans) Niemantsverdriet* and *Jan-Karel Felderhof*, Syngaschem BV, The Netherlands.



T

*Thierry Meyer, Genserik Reniers,  
Valerio Cozzani*

## Risk Management and Education

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
July 2024

English, Approx. X, 140 pp., 20 fig.

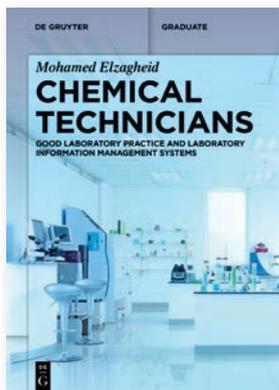
**Pb.** \*RRP € 74.95/ US\$ 82.99/ £ 68.50  
ISBN 978-3-11-110464-5

**\*\*eBook** \*RRP € 699.00/ US\$ 770.00/ £ 635.50  
PDF ISBN 978-3-11-110489-8  
ePUB ISBN 978-3-11-110732-5

Risk and Safety Management are crucial aspects in chemical industry and academic laboratories. From their rich experience, the authors present options for professional training addressing engineers and scientists at different career levels. The book informs about existing norms (OHSAS, ISO, etc.) and discusses examples from several countries. New topics in this edition: the change in education due to the pandemic as well as an industrial view.

**Risk Management; Safety Management;  
Professional Training; Norms; Chemical  
Engineering; Chemical Process Engineering**

*T. Meyer*, Ecole Polytech. Féd. Lausanne, Switzerland; *G. Reniers*, Univ. of Antwerp, Belgium; *V. Cozzani*, Univ. of Bologna, Italy.



T

*Mohamed Elzagheid*

## Chemical Technicians

Good Laboratory Practice and  
Laboratory Information Management  
Systems

**Series:** De Gruyter Textbook

July 2023

English, XVII, 120 pp., 45 fig.

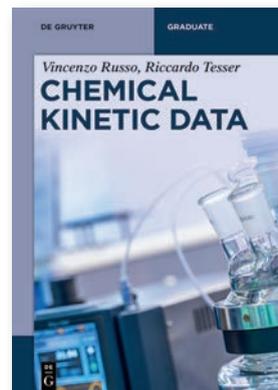
**Pb.** \*RRP € 69.95/ US\$ 76.99/ £ 64.00  
ISBN 978-3-11-119110-2

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-119149-2  
ePUB ISBN 978-3-11-119162-1

The book concisely describes the responsibilities and duties of different chemical laboratory technicians and what they need to do in their jobs. In addition, it includes an elaborate description of the sampling procedures and the chemical analysis, as well as a description of various equipment and techniques used in their laboratories.

**Chemistry; Chemistry Laboratory; Laboratory  
Techniques; Analytical Chemistry**

*Mohamed Elzagheid*, Jubail Industrial  
College, Saudi Arabia.



T

*Vincenzo Russo, Riccardo Tesser*

## Chemical Kinetic Data

**Series:** De Gruyter Textbook

December 2024

English, 10, 190 pp., 250 fig.

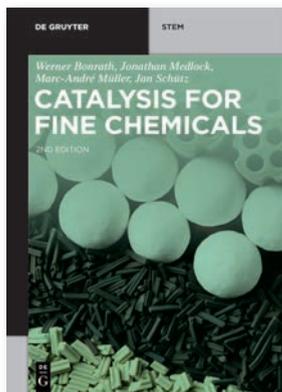
**Pb.** \*RRP € 79.95/ US\$ 88.99/ £ 69.00  
ISBN 978-3-11-046428-3

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-046430-6  
ePUB ISBN 978-3-11-046468-9

*Chemical Kinetic Data* encompasses the characterization of chemical reactions – reaction rates, mechanisms, transition states and is an indispensable tool for chemical engineering, process and reactor design. The book describes first experiments in the lab, how to retrieve simple information without teaching models and how to build an experimental set-up.

**Reaction Kinetics; Physical Chemistry; Chemical  
Reaction Engineering; Chemical Process  
Engineering**

*Vincenzo Russo, Riccardo Tesser, Martino  
die Serio*, University of Naples Federico II,  
Naples, Italy.



Werner Bonrath, Jonathan Medlock,  
Marc-André Müller, Jan Schütz

## Catalysis for Fine Chemicals

Series: De Gruyter STEM

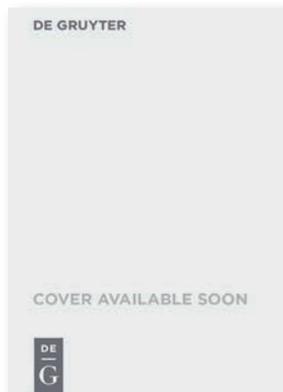
2. Edition/2nd Edition  
July 2024  
English, Approx. XV, 460 pp., 420 fig.

**Pb.** \*RRP € 89.95/ US\$ 103.99/ £ 82.00  
ISBN 978-3-11-109609-4

**eBook** \*RRP € 89.95/ US\$ 103.99/ £ 82.00  
PDF ISBN 978-3-11-110267-2  
ePUB ISBN 978-3-11-110285-6

This book summarizes the wide variety of catalytic methods that have been developed and applied on an industrial scale in recent years to fulfill this goal. The synthesis of pharmaceuticals, agrochemicals, flavoring, and fragrance compounds or vitamins exemplify the use of these modern catalytic methods in the modern chemical industry. New topics in this edition: continuous processing for catalysis, photo- and electrocatalysis  
Catalysis; Physical Chemistry

Werner Bonrath, Jonathan Medlock,  
Marc-André Müller and Jan Schütz, DSM  
Nutritional Products, Switzerland.



Katabathini Naraimharao, Huda Sharbini  
Kamaluddin

## Heterogeneous Catalysts

Metals, Oxides, Silicates, Zeolites and  
Nanomaterials

Series: De Gruyter STEM

November 2024  
English, Approx. X, 120 pp., 30 fig.

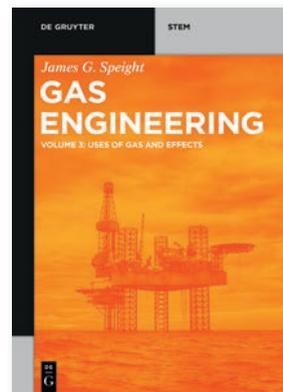
**Pb.** \*RRP € 74.95/ US\$ 82.99/ £ 68.50  
ISBN 978-3-11-131679-6

**eBook** \*RRP € 74.95/ US\$ 82.99/ £ 68.50  
PDF ISBN 978-3-11-131681-9  
ePUB ISBN 978-3-11-131719-9

Heterogeneous catalysis is at the core of chemical manufacturing. The book covers the importance of surfaces, interfaces and nanoscale materials in heterogeneous catalysis. It covers the synthesis of inorganic and nano-sized inorganic catalysts and includes green synthesis methods. It describes characterization techniques and discusses challenges and opportunities in the scale up of catalysts production.

Solid State Chemistry; Catalysis; Heterogeneous

Katabathini Narasimharao and  
Huda Sharbini Kamaluddin, King  
Abdulaziz University, Saudi Arabia.



James G. Speight  
**Gas Engineering**

Vol. 3: Uses of Gas and Effects

Series: De Gruyter STEM

May 2023  
English, XIV, 464 pp., 54 fig.

**Pb.** \*RRP € 94.95/ US\$ 108.99/ £ 86.00  
ISBN 978-3-11-069091-0

**eBook** \*RRP € 94.95/ US\$ 108.99/ £ 86.00  
PDF ISBN 978-3-11-069101-6  
ePUB ISBN 978-3-11-069111-5

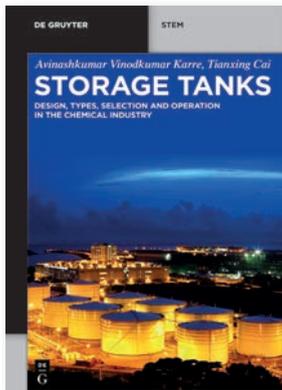
Volume 3 reviews the uses of gas streams and their effects on the environment. The author introduces the concepts of liquefied natural gas as well as gas-to-liquids and presents the corrosion effects such as carburization and metal dusting.

Vol. 1: Origin and Reservoir Engineering.

Vol. 2: Composition and Processing of Gas Streams.

Gaseous Fuels; Liquefied Natural Gas; Corrosion Chemistry; Acid Gas Removal; Air Pollution; Acid Rain

James G. Speight, Laramie, USA.



*Avinashkumar Vinodkumar Karre, Tianxing Cai*

## Storage Tanks

Design, Types, Selection and Operation in the Chemical Industry

**Series:** De Gruyter STEM

July 2024

English, Approx. X, 170 pp., 40 fig.

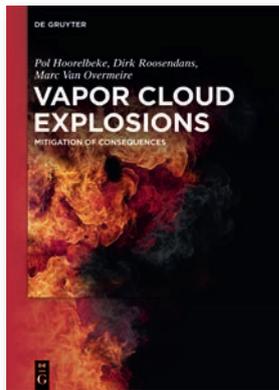
**Pb.** \*RRP € 89.95/ US\$ 98.99/ £ 82.00  
ISBN 978-3-11-131799-1

**eBook** \*RRP € 89.95/ US\$ 98.99/ £ 82.00  
PDF ISBN 978-3-11-131838-7  
ePUB ISBN 978-3-11-131844-8

Storage tanks are used everywhere in the chemical, water and oil refining industry to store a chemical or product. This book describes various storage tanks, design, selection criteria, fire protection and safety practices, process engineering standards, code or standards, dike area design, breathing and tank heat loss calculations, tank heating and mixing, construction material, value saving ideas, instruments, blending and operation of tanks.

**Chemical Engineering; Safety**

*Avinashkumar Vinodkumar Karre*, Worley Group Inc., USA. *Tianxing Cai*, Lamar University, USA.



*Pol Hoorelbeke, Dirk Roosendans, Marc Van Overmeire*

## Vapor Cloud Explosions

Mitigation of Consequences

November 2024

English, Approx. X, 490 pp., 300 fig.

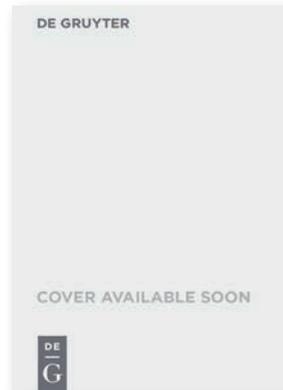
**HC** \*RRP € 174.95/ US\$ 196.99/ £ 155.50  
ISBN 978-3-11-074104-9

**eBook** \*RRP € 174.95/ US\$ 196.99/ £ 155.50  
PDF ISBN 978-3-11-074106-3  
ePUB ISBN 978-3-11-074114-8

The oil and gas industry operates thousands of installations and processes with important quantities of °ammable substances within a wide range of pressures and temperatures. This book provides the research on °ame inhibition and its impact on combustion chemistry, the application of kinetic mechanisms and of a new technology for mitigation of Vapor Cloud Explosions on an industrial scale.

**Chemical Engineering; Risk Management; Security Technology; Technical Chemistry; Process Engineering**

*Pol Hoorelbeke* and *Dirk Roosendans*, TOTAL S.A., France; *Marc Van Overmeire*, Vrije Universiteit Brussel, Belgium.



*Jan Harmsen, André B. de Haan, Pieter L. J. Swinkels*

## Product and Process Design

Driving Innovation

**Series:** De Gruyter Textbook

2. Edition/2nd Edition

May 2024

English, Approx. XXV, 525 pp., 100 fig.

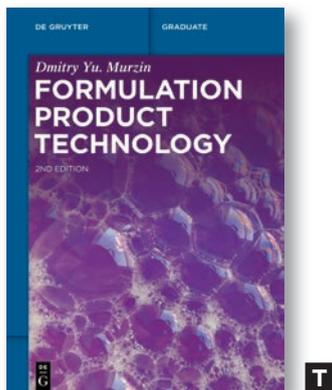
**Pb.** \*RRP € 89.95/ US\$ 99.99/ £ 79.00  
ISBN 978-3-11-078206-6

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-078212-7  
ePUB ISBN 978-3-11-078226-4

This book focuses on the importance of design in all innovation stages for both processes and products and also how to perform these designs. The authors apply these in detail on life cycle, value chain, industrial implementation, processes, unit operations, chemistry, equipment and operations toward sustainable processes and products. This text provides a practical guide on how to innovate in the chemical industry.

**Process Intensification; Process Design; Product Design; Innovation; Sustainable Chemical Processing**

*Jan Harmsen*, Harmsen Consultancy BV, The Netherlands; *André B. de Haan; Pieter L.J. Swinkels*, TU Delft, The Netherlands.



*Dmitry Yu. Murzin*  
**Formulation Product Technology**

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
 December 2023  
 English, Approx. X, 300 pp., 400 fig.

**Pb.** \*RRP € 84.95/ US\$ 96.99/ £ 76.50  
 ISBN 978-3-11-078844-0

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
 PDF ISBN 978-3-11-079796-1  
 ePUB ISBN 978-3-11-079824-1

Formulation Product Technology focuses on materials chemistry and introduces industrial manufacturing technologies for different product types. The author presents a full cycle of product development for the materials that are used in everyday life, such as cosmetics, dyes, drugs, papers, textiles, agrochemicals, etc., starting from product selection and up to setup of manufacturing process.

**Product Design; Formulation; Chemical Industry; Chemical Engineering; Pharmaceuticals; Vitamins; Paints; Textiles; Cosmetics; Ceramics; Photographic Films; Pesticides**

*Dmitry Yu. Murzin*, Abo Akademi University, Finland.



*Tharwat F. Tadros*  
**Formulierungen**  
 in Kosmetik und Körperpflege

**[Formulations in Cosmetics and Personal Care Products]**

**Reihe/Series:** De Gruyter STEM

April/April 2023  
 Deutsch/German, XIV, 314 S./pp., 199 Abb./fig.

**Br./Pb.** \*€ 74.95/ UVP/RRP US\$ 85.99/  
 UVP/RRP £ 67.00  
 ISBN 978-3-11-079852-4

**eBook** \*€ 74.95/ UVP/RRP US\$ 85.99/  
 UVP/RRP £ 67.00  
 PDF ISBN 978-3-11-079854-8  
 ePUB ISBN 978-3-11-079865-4

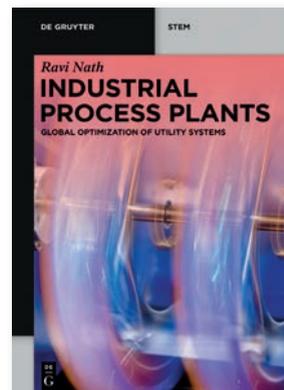
Formulierungstechnik beginnt mit einer allgemeinen Einführung, in der die Wechselwirkungen zwischen Partikeln und Tröpfchen, Systeme der Selbstorganisation, polymere Tenside und Nanoemulsionen erläutert werden. Der zweite Teil befasst sich mit industriellen Beispielen, die von Schäumen und Seifen bis hin zu Haarpe-ge-, Sonnenschutz- und Make-up-Produkten reichen.

**Formulierungstechnik; Galenik; Chemische Technik; Technische Chemie; Verfahrenstechnik**

This volume begins with a general introduction that explains the forces of interaction between particles and drops, systems of self-organization, polymeric surfactants, and nanoemulsions. The second part delves into examples from industry, ranging from foams and soaps to haircare, sun care, and make-up products.

**Formulations; Formulation Technology; Colloids; Cosmetics; Agrochemicals; Physical Chemistry; Dyes; Sunscreen; Make-up; Pharmacology**

*Tharwat F. Tadros*, Wokingham, UK.



*Ravi Nath*  
**Industrial Process Plants**  
 Global Optimization of Utility Systems

**Series:** De Gruyter STEM

January 2024  
 English, Approx. X, 300 pp., 182 fig.

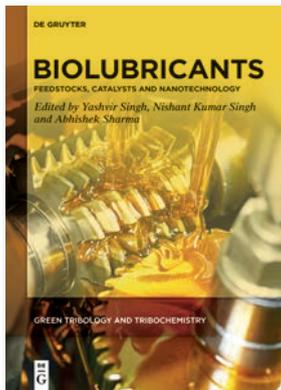
**Pb.** \*RRP € 94.95/ US\$ 109.99/ £ 86.50  
 ISBN 978-3-11-101531-6

**eBook** \*RRP € 94.95/ US\$ 109.99/ £ 86.50  
 PDF ISBN 978-3-11-102067-9  
 ePUB ISBN 978-3-11-102269-7

This book presents Global Optimization of Operations and Utility Systems in Industrial Process Plants – with emphasis on Global Optimization. It is about Operations Optimization i. e., the physical equipment layout and interconnections are fixed and not optimized, and focuses on Plant Utility Systems (Steam, Fuel, Electrical Power, Cooling Water, Compressed Air Sub-systems) responsible for satisfying the utility demands of the Process Units.

**Computers-Aided Chemical Engineering; Chemical Modeling and Optimization; Plant Utility Systems**

*Ravi Nath*, formerly Honeywell Inc., Houston, USA.



*Yashvir Singh, Nishant Kumar Singh, Abhishek Sharma (Eds.)*

## **Biolubricants**

Feedstocks, Catalysts and Nanotechnology

**Series:** Green Tribology and Tribochemistry 1

June 2024  
English, Approx. X, 290 pp., 60 fig.

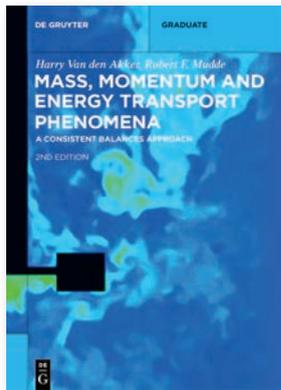
**HC** \*RRP € 149.95/ US\$ 164.99/ £ 136.50  
ISBN 978-3-11-114512-9

**eBook** \*RRP € 149.95/ US\$ 164.99/ £ 136.50  
PDF ISBN 978-3-11-114513-6  
ePUB ISBN 978-3-11-114555-6

Due to their biodegradability, renewability and superior lubrication performance compared to commercial fossil lubricants, vegetable oils are becoming substitutes for petroleum-based lubricants in different sectors, especially in the automotive industry. *Biolubricants* covers feedstocks, physico-chemical properties, process to chemically alter raw oils from feedstocks, lubrication characteristics, as well as the additives to enhance properties.

**Vegetable Oils; Renewable Sources; Sustainable; Green; Technology**

*Yashvir Singh*, Universiti Tun Hussein Onn, Malaysia; *Nishant K. Singh*, Harcourt Butler Technical Uni.; *Abhishek Sharma*, GL Bajaj, India.



*Harry Van den Akker, Robert F. Mudde*

## **Mass, Momentum and Energy Transport Phenomena**

A Consistent Balances Approach

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
September 2023  
English, XII, 298 pp., 129 fig.

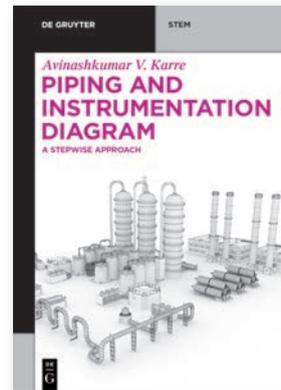
**Pb.** \*RRP € 79.95/ US\$ 87.99/ £ 73.00  
ISBN 978-3-11-124623-9

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-124657-4  
ePUB ISBN 978-3-11-124715-1

A treatment of the transport and transfer processes of heat, mass and momentum on the basis of their analogy. The processes are described in terms of macro and micro balances. The topics of the five chapters are: Balances; Molecular transport, dimensional analysis, forces on immersed objects; Heat transport; Mass transport; Fluid mechanics. The leading idea is to train students in solving problems where transport phenomena are key.

**Balances; Dimensional Analysis; Heat Transport; Mass Transport; Fluid Mechanics**

*Harry E.A. Van den Akker*, University of Limerick, Ireland; *Robert F. Mudde*, Delft University of Technology, The Netherlands.



*Avinashkumar Vinodkumar Karre*

## **Piping and Instrumentation Diagram**

A Stepwise Approach

**Series:** De Gruyter STEM

July 2023  
English, XII, 197 pp., 82 fig.

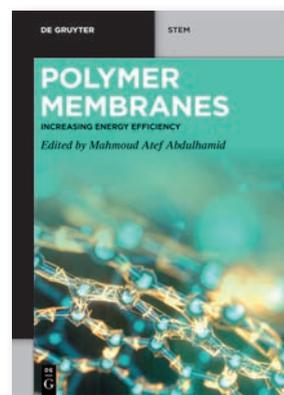
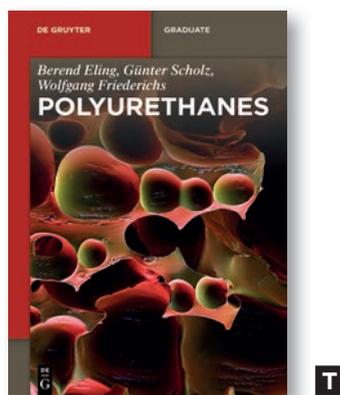
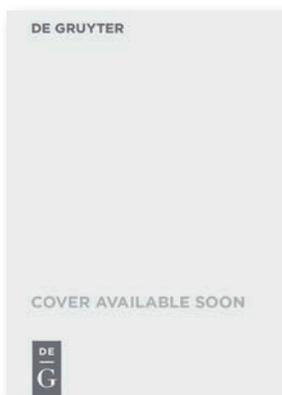
**Pb.** \*RRP € 89.95/ US\$ 97.99/ £ 77.50  
ISBN 978-1-5015-1984-0

**eBook** \*RRP € 89.95/ US\$ 97.99/ £ 77.50  
PDF ISBN 978-1-5015-1986-4  
ePUB ISBN 978-1-5015-1335-0

The book provides stepwise guidelines for the development of Piping and Instrumentation Diagrams for all different areas of chemical engineering such as pumps, heat exchangers, columns, compressors, vessels, instrumentation, control logic, piping, valves, notes, equipment design, and °are systems. It also provides guidance to commonly used methodology to mark-up each subsystem mentioned earlier and discusses common tools used in the industry.

**Chemical Engineering; Process Plant; Process Engineering**

*Avinashkumar Vinodkumar Karre*, Worley Group Inc., USA.



*Ravi Naidu, Megh Mallavarapu, Yanju Liu, Anthony Umeh (Eds.)*

## Per- and Polyfluorinated Alkyl Substances

Occurrence, Toxicity and Remediation of PFAS

July 2024

English, Approx. X, 290 pp., 120 fig.

**HC** \*RRP € 144.95 / US\$ 164.99 / £ 130.00  
ISBN 978-3-11-079671-1

**eBook** \*RRP € 144.95 / US\$ 164.99 / £ 130.00  
PDF ISBN 978-3-11-079679-7  
ePUB ISBN 978-3-11-079686-5

Per- and Poly<sup>o</sup> uorinated Alkyl Substances are used in household products and are linked to adverse health effects leading to class actions in US and other countries. This unique book discusses the dynamics of PFAS in the environment by capturing the latest information on the composition of PFAS, nomenclature, analytical measurements, nature, fate and transport of PFAS in the environment, toxicity, regulatory considerations, risk and remediation.

**Environment; Toxicity; Sustainable; Pollution; Remediation; Polymers**

*Ravi Naidu, Megh Mallavarapu, Yanju Liu, and Anthony Umeh, The University of Newcastle, Australia.*

*Berend Eling, Wolfgang Friederichs, Günter Scholz*

## Polyurethanes

**Series:** De Gruyter Textbook

November 2024

English, Approx. X, 240 pp., 120 fig.

**Pb.** \*RRP € 69.95 / US\$ 80.99 / £ 63.50  
ISBN 978-3-11-074456-9

**\*\*eBook** \*RRP € 699.00 / £ 599.00  
PDF ISBN 978-3-11-074458-3  
ePUB ISBN 978-3-11-074462-0

This book provides a comprehensive survey on these important polymeric materials. Polyurethanes are widely used – hence understanding their chemistry, properties, production, analysis, environmental issues and the extensive overview on their applications, is mandatory for anybody embarking in this industry.

**Polymers; Polyurethane; Polymer Chemistry; Materials Sciences**

*Berend Eling and Günter Scholz, BASF Polyurethanes; Wolfgang Friederichs, formerly Bayer MaterialScience AG, Germany.*

*Mahmoud Atef Abdulhamid (Ed.)*

## Polymer Membranes

Increasing Energy Efficiency

July 2024

English, Approx. X, 170 pp., 100 fig.

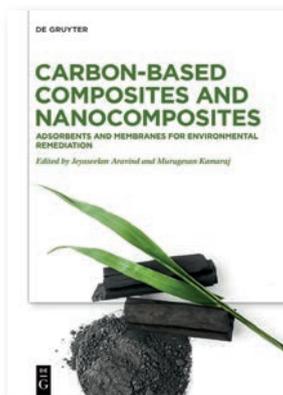
**Pb.** \*RRP € 89.95 / US\$ 102.99 / £ 81.00  
ISBN 978-3-11-079599-8

**eBook** \*RRP € 89.95 / US\$ 102.99 / £ 81.00  
PDF ISBN 978-3-11-079603-2  
ePUB ISBN 978-3-11-079613-1

The book covers polymer membranes for different applications such as gas separation, organic solvent nanoöltration, water desalination and fuel cells. It describes the impact of polymers of intrinsic microporosity on the separation performance. It includes bio-based membranes, mixed matrix membranes, polyimides-based membranes for energy-efficient separations and polybenzimidazole-based membranes for efficient CO<sub>2</sub> capturing and storage.

**Polymers; Membranes; Gas Separation**

*Mahmoud Atef Abdulhamid, King Fahd University of Petroleum and Minerals, Saudi Arabia.*



*Jeyaseelan Aravind, Murugesan Kamaraj*  
(Eds.)

## Carbon-based Composites and Nanocomposites

Adsorbents and Membranes for Environmental Remediation  
December 2024  
English, Approx. X, 290 pp., 50 fig.

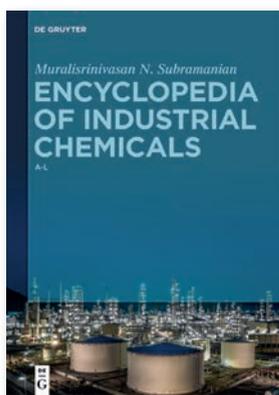
**HC** \*RRP € 149.95 / US\$ 164.99 / £ 136.50  
ISBN 978-3-11-133606-0

**eBook** \*RRP € 149.95 / US\$ 164.99 / £ 136.50  
PDF ISBN 978-3-11-133617-6  
ePUB ISBN 978-3-11-133650-3

Carbon composites have high efficiency for removing pollutants. The book covers production and characterization of carbon-based composites and adsorbents. It covers biochar, carbon-metal nanoparticle composites, carbon nanotubes, carbon nanofibers, nano-gels and carbon-polymer composites. Pollutants include emerging contaminants, dyes, heavy metals, micro and nanoplastics. It also describes graphene membranes for water and wastewater treatment.

Emerging Contaminants; Microplastics; Nanoplastics; Heavy Metals; Dyes; Biochar; Metal Nanoparticles; Carbon Nanotubes; Nanofibers; Nanogels; Graphene

*Jeyaseelan Aravind*, Saveetha School of Engineering; *Murugesan Kamaraj*, SRM Institute of Science and Technology, India.



## Encyclopedia of Industrial Chemicals Volume 1: A-L

September 2024  
English, Approx. X, 490 pp., 30 fig.

**HC** \*RRP € 174.95 / US\$ 196.99 / £ 155.50  
ISBN 978-3-11-074755-3

**eBook** \*RRP € 174.95 / US\$ 196.99 / £ 155.50  
PDF ISBN 978-3-11-074763-8  
ePUB ISBN 978-3-11-074773-7

The book covers industrial chemicals from M to L and includes more than 1000 chemicals. It describes preparation, physical and chemical properties, and industrial applications. It serves as a unique reference guide to any researchers, students, chemists and chemical engineers in the industry.

Industrial Chemicals; Physical Properties; Chemical Properties; Industrial Applications

*Muralisrinivasan Natamai Subramanian*,  
Plastic Consultant, India.

## Encyclopedia of Industrial Chemicals Volume 2: M-Z

September 2024  
English, Approx. X, 490 pp., 30 fig.

**HC** \*RRP € 174.95 / US\$ 196.99 / £ 155.50  
ISBN 978-3-11-074780-5

**eBook** \*RRP € 174.95 / US\$ 196.99 / £ 155.50  
PDF ISBN 978-3-11-074797-3  
ePUB ISBN 978-3-11-074804-8

The book covers industrial chemicals from A to Z and includes more than 1000 chemicals. It describes preparation, physical and chemical properties, and industrial applications. It serves as a unique reference guide to any researchers, students, chemists and chemical engineers in the industry.

Industrial Chemicals; Physical Properties; Chemical Properties; Industrial Applications

*Muralisrinivasan Natamai Subramanian*,  
Plastic Consultant, India.

## Encyclopedia of Industrial Chemicals, Vol 1+2

August 2024  
English

**Set** \*RRP € 299.95 / US\$ 340.00 / £ 272.50  
ISBN 978-3-11-075027-0

Covers industrial chemicals from A to Z and includes more than 1000 chemicals. The two volume encyclopedia describes preparation, physical and chemical properties, and industrial applications. It serves as a unique reference guide to any researchers, students, chemists and chemical engineers in the industry.

*Muralisrinivasan Natamai Subramanian*,  
Plastic Consultant, India.

# HOT TOPICS!

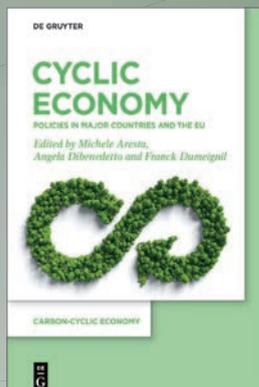


*Gyorgy Szekely*  
**SUSTAINABLE PROCESS ENGINEERING**

**De Gruyter Textbook**  
09/2024. 2<sup>nd</sup> Edition, Approx. XX,  
380 pp., 189 fig.

**Paperback**  
\*RRP € 84.95 [D]/US\$ 94.99/£ 74.50  
ISBN 978-3-11-102815-6

**\*\*eBook**  
\*RRP € 699.00 [D]/US\$ 735.00/£ 599.00  
PDF ISBN 978-3-11-102816-3  
ePUB ISBN 978-3-11-103032-6



*Michele Aresta, Angela Dibenedetto,  
Franck Dumeignil (Eds.)*  
**CYCLIC ECONOMY**  
Policies in Major Countries in the EU

**Carbon-Cyclic Economy**  
04/2024. Approx. X, 200 pp., 90 fig.

**Paperback**  
\*RRP € 99.95 [D]/US\$ 113.99/£ 89.00  
ISBN 978-3-11-076707-0

**eBook**  
\*RRP € 99.95 [D]/US\$ 113.99/£ 89.00  
PDF ISBN 978-3-11-076717-9  
ePUB ISBN 978-3-11-076719-3

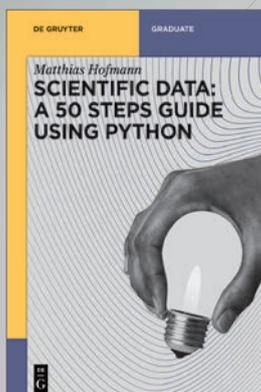


*Dmitry Yu. Murzin*  
**FORMULATION PRODUCT TECHNOLOGY**

**De Gruyter Textbook**  
02/2024. 2<sup>nd</sup> Edition, Approx. X,  
300 pp., 400 fig.

**Paperback**  
\*RRP € 84.95 [D]/US\$ 94.99/£ 74.50  
ISBN 978-3-11-078844-0

**\*\*eBook**  
\*RRP € 699.00 [D]/US\$ 735.00/£ 599.00  
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ePUB ISBN 978-3-11-079824-1

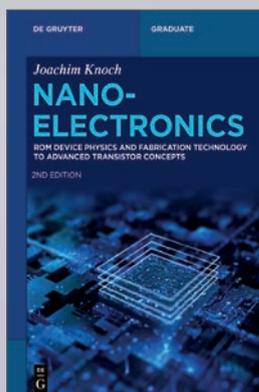


*Matthias Hofmann*  
**SCIENTIFIC DATA: A 50 STEPS GUIDE  
USING PYTHON**

**De Gruyter Textbook**  
11/2024. Approx. X, 180 pp., 50 fig.

**Paperback**  
\*RRP € 69.95 [D]/US\$ 76.99/£ 64.00  
ISBN 978-3-11-133457-8

**\*\*eBook**  
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ePUB ISBN 978-3-11-133470-7

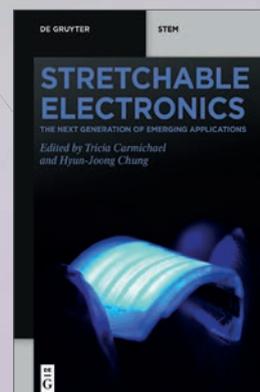


*Joachim Knoch*  
**NANOELECTRONICS**  
From Device Physics and Fabrication  
Technology to Advanced Transistor  
Concepts

**De Gruyter Textbook**  
03/2024. 2<sup>nd</sup> Edition, Approx. XVIII,  
420 pp., 260 fig.

**Paperback**  
\*RRP € 74.95 [D]/US\$ 86.99/£ 68.00  
ISBN 978-3-11-099377-6

**\*\*eBook**  
\*RRP € 699.00 [D]/US\$ 735.00/£ 599.00  
PDF ISBN 978-3-11-105442-1  
ePUB ISBN 978-3-11-105501-5



*Tricia Carmichael, Hyun-Joong Chung (Eds.)*  
**STRETCHABLE ELECTRONICS**

The Next Generation of  
Emerging Applications

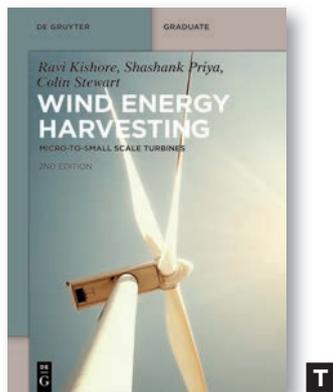
**De Gruyter STEM**  
04/2024. Approx. X, 350 pp., 70 fig.

**Paperback**  
\*RRP € 109.95 [D]/US\$ 124.99/£ 99.00  
ISBN 978-3-11-075718-7

**eBook**  
\*RRP € 109.95 [D]/US\$ 124.99/£ 99.00  
PDF ISBN 978-3-11-075728-6  
ePUB ISBN 978-3-11-075731-6

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\*\*The eBook prices indicated are only valid for institutional customers. Individual customers can purchase the eBook at list price through one of our vendor partners. eBook at list price through one of our vendor partners.



*Shashank Priya, Ravi Kishore,  
Colin Stewart*

## Wind Energy Harvesting

Micro-to-Small Scale Turbines

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
September 2024  
English, Approx. XX, 175 pp., 100 fig.

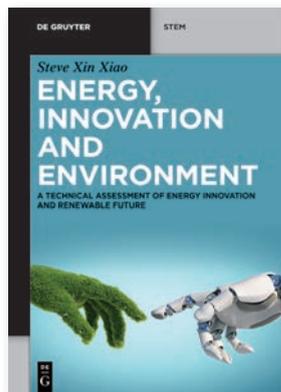
**Pb.** \*RRP € 84.95 / US\$ 94.99 / £ 74.50  
ISBN 978-3-11-078179-3

**\*\*eBook** \*RRP € 699.00 / £ 599.00  
PDF ISBN 978-3-11-078178-6  
ePUB ISBN 978-3-11-078194-6

This book provides a systematic overview of small scale wind turbine technology. Basic design techniques are covered, as well as various fabrication techniques that can be used to manufacture cost-effective and efficient small scale wind turbines. Coverage of aspects related to materials science and engineering, as well as mechanical engineering, is included. The 2nd edition also has a new chapter on recent developments in the field.

**Energy Harvesting; Energy Scavenging; Wind Turbines; Sustainable Energy; Wind Power**

*Shashank Priya*, Pennsylvania State University; *Ravi Kishore*, NREL; *Colin Stewart*, Virginia Tech University, USA.



*Steve Xin Xiao*

## Energy, Innovation and Environment

A Technical Assessment of Energy Innovation and Renewable Future

**Series:** De Gruyter STEM

July 2024  
English, Approx. XX, 320 pp., 20 fig.

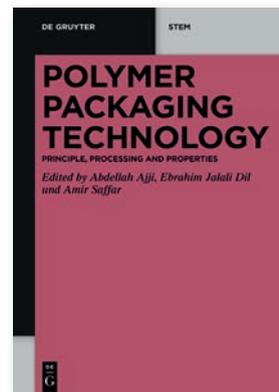
**Pb.** \*RRP € 94.95 / US\$ 108.99 / £ 86.00  
ISBN 978-1-5015-2013-6

**eBook** \*RRP € 94.95 / US\$ 108.99 / £ 86.00  
PDF ISBN 978-1-5015-2012-9  
ePUB ISBN 978-1-5015-1369-5

The book examines past and current energy statistics, impact on climate and future directions in energy innovation and renewable energy. It covers technical fundamentals to answer important questions such as climate change, energy availability, affordability, innovation. It is an essential resource to policymakers, government program managers, entrepreneurs, investors, philanthropists, scientists, engineers, professors, students and researchers.

**Renewable Energy; Biomass; Solar Energy; Wind Energy; Clean Coal; Nuclear Fusion Energy**

*Xin Xiao*, Savannah River National Laboratory, USA.



*Abdellah Aji, Ebrahim Jalali Dil,  
Amir Saffar (Eds.)*

## Polymer Packaging Technology

Principle, Processing and Properties

**Series:** De Gruyter STEM

November 2024  
English, Approx. XX, 300 pp., 100 fig.

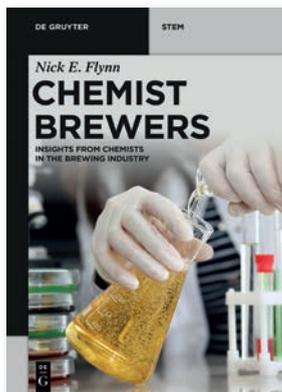
**Pb.** \*RRP € 89.95 / US\$ 97.99 / £ 77.50  
ISBN 978-1-5015-1924-6

**eBook** \*RRP € 89.95 / US\$ 97.99 / £ 77.50  
PDF ISBN 978-1-5015-1925-3  
ePUB ISBN 978-1-5015-1221-6

The book offers a convincing approach to understanding the basic and advanced principles of polymer packaging, such as inter-molecular forces, crystallinity, effects of chain architecture on final polymer properties, control of morphology in multiphase systems and bacteria sensing technology. It also provides a complete guide to processing, post-processing and characterization techniques in packaging technology.

**Polymer Packaging Technology; Polymer Properties; Processing; Polymer**

*Abdellah Aji*, Polytechnique Montreal; *Ebrahim Jalali Dil*, PolyExpert; *Amir Saffar*, ProAmpac, Canada.



*Nick Edward Flynn*  
**Chemist Brewers**

Insights From Chemists and Biologists in the Brewing Industry

**Series:** De Gruyter STEM

May 2024  
English, Approx. XIV, 220 pp., 228 fig.

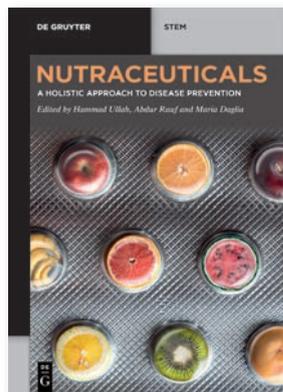
**Pb.** \*RRP € 79.95/ US\$ 91.99/ £ 72.50  
ISBN 978-3-11-079875-3

**eBook** \*RRP € 79.95/ US\$ 91.99/ £ 72.50  
PDF ISBN 978-3-11-079877-7  
ePUB ISBN 978-3-11-079894-4

Many brewers and craft beer drinkers have dreams of working at or owning a brewery. Chemists are a very natural fit in the brewing industry given their training, background and interests in exploring the world around them. This book supports that natural curiosity through a series of interviews with chemists who work in the brewing industry at all levels of employment from the lab manager to working as brewery staff to starting a brewery.

**Brewery; Brewing; Beer; Career; Chemistry; Biochemistry; Career Interview**

*Nick Edward Flynn*, West Texas A&M University, USA.



*Hammad Ullah, Abdur Rauf, Maria Daglia (Eds.)*

**Nutraceuticals**

A Holistic Approach to Disease Prevention

**Series:** De Gruyter STEM

April 2024  
English, Approx. XX, 430 pp., 220 fig.

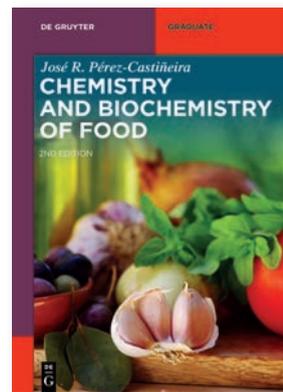
**Pb.** \*RRP € 89.95/ US\$ 98.99/ £ 82.00  
ISBN 978-3-11-131730-4

**eBook** \*RRP € 89.95/ US\$ 98.99/ £ 82.00  
PDF ISBN 978-3-11-131760-1  
ePUB ISBN 978-3-11-131787-8

Nutraceuticals is a broad term describing the bioactive components derived from food sources with added health benefits to the host, in addition to their nutritional values. The book focuses on the potential biological benefits of proteins, lipids, probiotics and prebiotics, micronutrients, dietary fibers, polyphenols, spices, and botanicals. It also addresses the safety aspects of nutraceuticals and their concerns in pregnancy.

**Nutraceuticals; Dietary Supplements; Human Health; Disease Prevention; Alternative Therapies; Functional Food; Food Chemistry; Pharmaceutical Chemistry; Vitamins; Carbohydrates; Probiotics**

*Hammad Ullah* and *Maria Daglia*, University of Napoli Federico II, Italy;  
*Abdur Rauf*, University of Swabi, Pakistan.



*Jose Pérez-Castineira*  
**Chemistry and Biochemistry of Food**

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
January 2024  
English, Approx. XX, 590 pp., 172 fig.

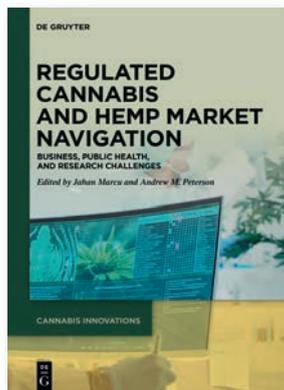
**Pb.** \*RRP € 99.95/ US\$ 109.99/ £ 91.00  
ISBN 978-3-11-110834-6

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-111187-2  
ePUB ISBN 978-3-11-111330-2

This book provides an excellent platform for understanding the chemical processes involved in food transformation. Starting with the examination of major food components, such as water, carbohydrates, lipids, proteins and minerals, the author further introduces the biochemistry of digestion and energy metabolism of food ingredients. The last section of the book is devoted to modern food technologies and their future perspectives.

**Nutrition; Diet; Carbohydrates; Lipids; Proteins; Vitamins; Oxidative Stress; Flavor Biochemistry; Food Safety; Food Additives; Food Safety; Digestion; Colon Microbiota; Nutrients Adsorption; Energy Homeostasis; Mediterranean Diet**

*Jose R. Perez-Castineira*, University of Sevilla, Spain.



*Jahan Marcu, Andrew M. Peterson (Eds.)*  
**Regulated Cannabis and Hemp Market Navigation**

Business, Public Health, and Research Challenges

**Series:** Cannabis Innovations 1

August 2024  
 English, Approx. X, 150 pp., 20 fig.

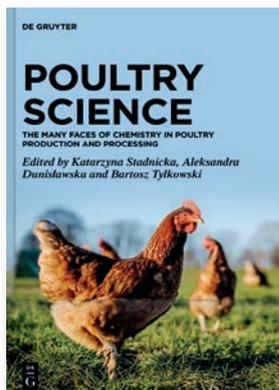
**Pb.** \*RRP € 99.95 / US\$ 113.99 / £ 90.00  
 ISBN 978-3-11-067742-3

**eBook** \*RRP € 99.95 / US\$ 113.99 / £ 90.00  
 PDF ISBN 978-3-11-067750-8  
 ePUB ISBN 978-3-11-067760-7

This book provides an in-depth resource for the cannabis industry – from the cultivation, manufacturing, and product quality to the distribution, and use of cannabis products. It examines the four main areas of the industry: plant science, medical science, regulatory and legal issues, and business issues. This approach provides entrepreneurs, scientists, and healthcare practitioners the necessary tools to navigate this new and exciting space.

**Cannabis; Cannabis Industry; Pharmacology**

*Jahan Marcu*, New York City;  
*Andrew M. Peterson*, Philadelphia, USA.



*Katarzyna Stadnicka, Aleksandra Dunisławska, Bartosz Tylkowski (Eds.)*  
**Poultry Science**

The Many Faces of Chemistry in Poultry Production and Processing

July 2023  
 English, XII, 209 pp., 50 fig.

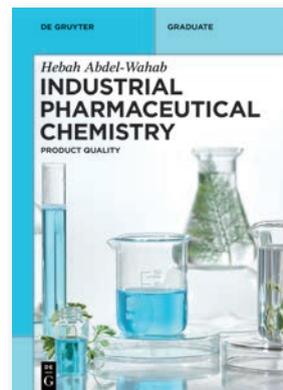
**HC** \*RRP € 149.95 / US\$ 170.99 / £ 134.50  
 ISBN 978-3-11-068371-4

**eBook** \*RRP € 149.95 / US\$ 170.99 / £ 134.50  
 PDF ISBN 978-3-11-068391-2  
 ePUB ISBN 978-3-11-068409-4

The book presents a novel, interdisciplinary approach to describe and implement chemical knowledge and engineering in poultry science and poultry production. Each chapter of the book is written by acknowledged experts in chemistry and animal science. Current technologies, safety, use of antibiotics and welfare issues are a few of the topics that this book examines.

**Bioprocess Engineering; Food Technology**

*Katarzyna Stadnicka* and  
*Aleksandra Dunisławska*, UTP, Poland;  
*Bartosz Tylkowski*, Rovira i Virgili University, Spain.



*Hebah Abdel-Wahab*  
**Industrial Pharmaceutical Chemistry**

Product Quality

**Series:** De Gruyter Textbook

November 2023  
 English, XII, 93 pp., 16 fig.

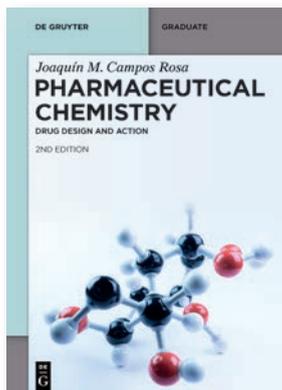
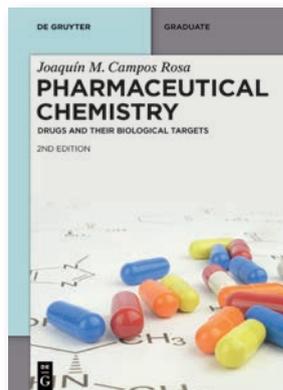
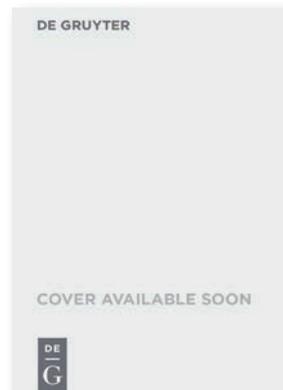
**Pb.** \*RRP € 69.95 / US\$ 76.99 / £ 64.00  
 ISBN 978-3-11-131657-4

**\*\*eBook** \*RRP € 699.00 / £ 599.00  
 PDF ISBN 978-3-11-131686-4  
 ePUB ISBN 978-3-11-131725-0

The book describes methods used to improve quality of some industrial and pharmaceutical products. It includes types of chemical compounds used in the formulations: their chemical structures, and their usage in each chemical formulation, the amounts used, and the correct amounts to be used.

**Medicinal Chemistry; Pharmaceutical Chemistry; Product Quality; Chemical Formulations; Computational Chemistry; Industrial Chemistry**

*Hebah Abdel-Wahab*, Essex County College, Newark NJ, USA.

**T****T**

Joaquín M. Campos Rosa  
**Pharmaceutical Chemistry**  
Drug Design and Action

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
January 2024  
English, Approx. X, 180 pp., 418 fig.

**Pb.** \*RRP € 79.95/ US\$ 87.99/ £ 73.00  
ISBN 978-3-11-131654-3

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-131690-1  
ePUB ISBN 978-3-11-131721-2

This two volume work is an excellent introduction to this interdisciplinary area, at the interface between organic chemistry, biochemistry and medicine. The author gives a comprehensive overview of the yield and outline the actual challenges in pharmaceutical science and industry. This volume introduces the concepts of drug design and drug metabolic processes as well as antibacterial, antiviral and anticancer agents.

**Drug; Neurotransmitter; Pharmaceutical Chemistry; Drug Design; Active Ingredient**

*Joaquín M. Campos Rosa*, University of Granada, Spain.

Joaquín M. Campos Rosa  
**Pharmaceutical Chemistry**  
Drugs and Their Biological Targets

2. Edition/2nd Edition  
November 2024  
English, Approx. X, 290 pp., 320 fig.

**Pb.** \*RRP € 79.95/ US\$ 87.99/ £ 73.00  
ISBN 978-3-11-131655-0

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-131688-8  
ePUB ISBN 978-3-11-131724-3

This two volume work is an excellent introduction to this interdisciplinary area, at the interface between organic chemistry, biochemistry and medicine. The author gives a comprehensive overview of the yield and outline the actual challenges in pharmaceutical science and industry. This volume covers neurotransmitters, antihistamines, enzymatic inhibitors and nonsteroidal anti-inflammatory drugs.

**Drug; Neurotransmitter; Pharmaceutical Chemistry; Drug Design; Active Ingredient**

*Joaquín M. Campos Rosa*, University of Granada, Spain.

Sushil Kumar Upadhyay, Manoj Singh,  
Anil K. Sharma (Eds.)

**Anticancer Therapeutics**

Bionanotechnology, Nanomedicine and Phytochemicals

October 2024  
English, Approx. X, 290 pp., 40 fig.

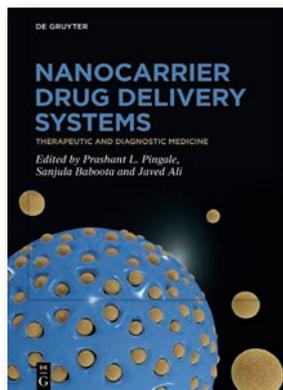
**HC** \*RRP € 149.95/ US\$ 164.99/ £ 136.50  
ISBN 978-3-11-134948-0

**eBook** \*RRP € 149.95/ US\$ 164.99/ £ 136.50  
PDF ISBN 978-3-11-134954-1  
ePUB ISBN 978-3-11-134965-7

The book provides a strong platform for delineating the complex mechanism underlying cancer therapeutics along with the therapies countering drug resistance. It describes tumor angiogenesis and cancer metastasis, oncogenes and oncogenesis. It covers natural phytochemicals and herbal nanomedicines. It includes the recent advances in nanocomposite films and siRNA-mediated drug delivery.

**Cancer; Angiogenesis; Metastasis; Oncogenesis; Phytochemicals; Nanomedicine; siRNA; Nanocarriers; Nanocomposite Films; Nanotherapy; Hypoxia-Inducible Factors; Enhanced Photoradiation Therapy; Multi-Drug Resistance**

*Sushil Kumar Upadhyay, Manoj Singh and Anil K. Sharma*, Maharishi Markandeshwar, India.



*Prashant L. Pingale, Sanjula Baboota, Javed Ali (Eds.)*

## Nanocarrier Drug Delivery Systems

Therapeutic and Diagnostic Medicine  
November 2024  
English, Approx. X, 390 pp., 80 fig.

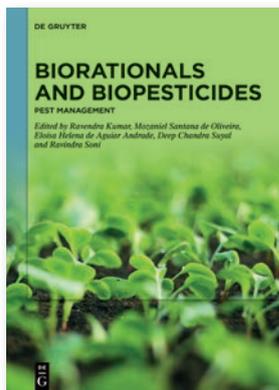
**HC** \*RRP € 139.95 / US\$ 153.99 / £ 127.50  
ISBN 978-3-11-132056-4

**eBook** \*RRP € 139.95 / US\$ 153.99 / £ 127.50  
PDF ISBN 978-3-11-132084-7  
ePUB ISBN 978-3-11-132096-0

Nanotechnology can treat diseases by site-specific and target-oriented delivery of precise medicines. Nanomaterials improve the efficacy of drugs and selective diagnosis. The book covers detection and treatment. It explains the use of nanocarriers for a variety of diseases such as cardiovascular and respiratory diseases, cancer, and ulcerative colitis. It includes topical, transdermal, and ocular drug delivery and combined medication delivery.

**Topical; Transdermal; Ocular; Combined Medication Delivery**

*Prashant Pingale*, GES's Sir Dr. M.S. Gosavi College of Pharma. Education and Research; *Sanjula Baboota, Javed Ali*, Jamia Hamdard, India.



*Ravendra Kumar, Mozaniel Santana de Oliveira, Eloisa Helena de Aguiar Andrade, Deep Chandra Suyal, Ravindra Soni (Eds.)*

## Biorationals and Biopesticides

Pest Management  
June 2024  
English, Approx. X, 540 pp., 100 fig.

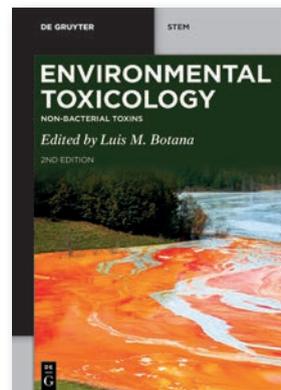
**HC** \*RRP € 159.95 / US\$ 175.99 / £ 145.50  
ISBN 978-3-11-120472-7

**eBook** \*RRP € 159.95 / US\$ 175.99 / £ 145.50  
PDF ISBN 978-3-11-120481-9  
ePUB ISBN 978-3-11-120510-6

Biorationals or biopesticides are pest control agents of biological origin. Biopesticides are emerging alternatives to harmful chemical pest control agents. The book provides essential information on botanical, biological originated insecticidal, herbicidal, fungicidal, nematocidal agents, insect growth hormones, insect pheromones and plant growth regulators. It will help researchers and students to develop new strategies for pest management.

**Biorationals; Biopesticides; Insect growth regulators; Bioinsecticides; Pest control; Botanicals; Plant Protection**

*M. S. de Oliveira, E. H. de Aguiar Andrade*, MPEG, Brazil; *R. Kumar*, GBPUAT; *D. C. Suyal*, Eternal University; *R. Soni*, IGKV, India.



*Luis M. Botana (Ed.)*

## Environmental Toxicology

Non-bacterial Toxins

**Series:** De Gruyter STEM

2. Edition/2nd Edition  
March 2024  
English, Approx. XX, 300 pp., 140 fig.

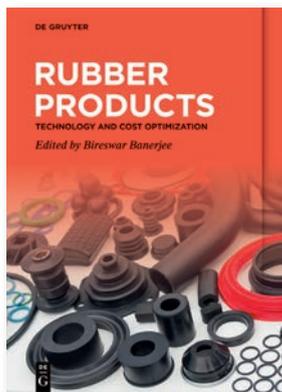
**Pb.** \*RRP € 94.95 / US\$ 109.99 / £ 86.50  
ISBN 978-3-11-101431-9

**eBook** \*RRP € 94.95 / US\$ 109.99 / £ 86.50  
PDF ISBN 978-3-11-101444-9  
ePUB ISBN 978-3-11-101476-0

Natural toxins research needs a close cross-talk between ecology, analytical chemistry, food safety, toxicology and drug discovery. As natural toxins are privileged structures, their extreme potency makes them a hazard, but also a unique opportunity as drug leads. From certified calibrants, analytical methods, to toxicology and in vitro protocols to determine mode of action and potency, this book is a comprehensive introduction for researchers.

**Toxicology; Environmental Toxicology; Environmental Science; Mycotoxins; Cyanotoxins; Phycotoxins**

*Luis M. Botana*, University of Santiago de Compostela, Spain.



*Bireswar Banerjee (Ed.)*  
**Rubber Products**

Technology and Cost Optimization  
February 2024  
English, Approx. XX, 470 pp., 267 fig.

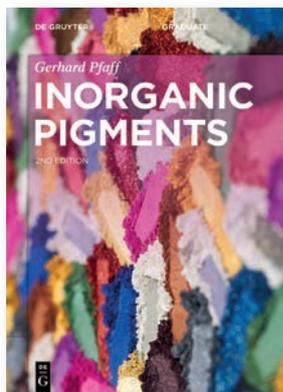
**Pb.** \*RRP € 159.95 / US\$ 175.99 / £ 145.50  
ISBN 978-3-11-066724-0

**eBook** \*RRP € 149.95 / US\$ 170.99 / £ 134.50  
PDF ISBN 978-3-11-066853-7  
ePUB ISBN 978-3-11-066740-0

This book describes cost-effective and environmentally friendly technologies in the yield of rubber products. These include rubber compounding, devulcanization, and lean management. The authors also explore innovative applications of rubber in automotive and defense technologies, as well as discussing potential alternatives to rubber which could disrupt the yield in the future.

Rubber Compounding; Carbon Black; Rubber Nanocomposites; Devulcanization; Elastomers

*Bireswar Banerjee*, Consultant, Kolkata, India.



*Gerhard Pfaff*  
**Inorganic Pigments**

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
August 2023  
English, XI, 379 pp., 130 fig.

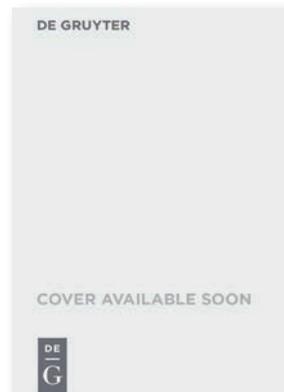
**Pb.** \*RRP € 89.95 / US\$ 99.99 / £ 79.00  
ISBN 978-3-11-074391-3

**\*\*eBook** \*RRP € 699.00 / £ 599.00  
PDF ISBN 978-3-11-074392-0  
ePUB ISBN 978-3-11-074399-9

The book provides a complete overview on inorganic pigments and their use in dye industry. Each chapter introduces a certain class of pigment in respect of fundamentals, manufacture, properties and toxicology and thus being very valuable for paint chemists and materials specialists. The readers will benefit from a concise and well-structured text, numerous examples and a set of test questions in the end of each chapter.

Dyes; Pigments; Color; Colorants; Coloring Matter; Coatings; Surface Chemistry

*Gerhard Pfaff*, Technical University Darmstadt, Germany.



*Gerhard Schlemmer, Frank Vanhaecke, José Luis Todolí, Mike Hinds*  
**Elemental Analysis**

ICP-MS, ICP-OES, AAS, XRF

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
August 2024  
English, Approx. XV, 435 pp., 240 fig.

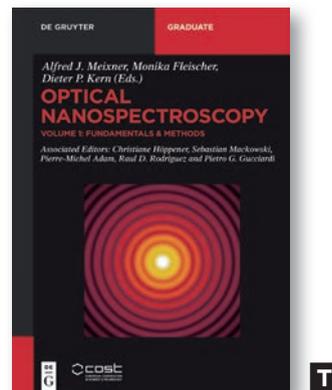
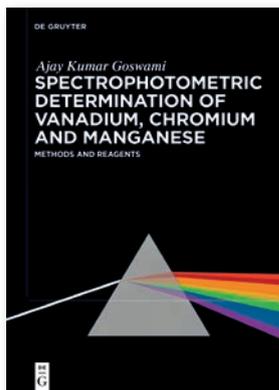
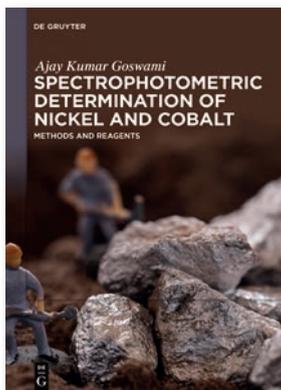
**Pb.** \*RRP € 89.95 / US\$ 98.99 / £ 82.00  
ISBN 978-3-11-133371-7

**\*\*eBook** \*RRP € 699.00 / £ 599.00  
PDF ISBN 978-3-11-133394-6  
ePUB ISBN 978-3-11-133420-2

Elemental Analysis is an excellent guide introducing cutting-edge methods for the qualitative and quantitative analysis of elements. Each chapter gives an overview of a certain technique, such as AAS, AFS, ICP-OES, MIP-OES, ICP-MS and XRF. Readers will benefit from a combination of theoretical basics, operational principles of instruments and their applications. New: extended section on supply of liquid samples for AAS, ICP-OES and ICP-MS.

Analytical Chemistry; Elemental Analysis; Instrumental Analysis; XRF; AAS; ICP-OES; ICP-MS; Spectroscopy; physical Chemistry

*Gerhard Schlemmer*, Germany; *Frank Vanhaecke*, Ghent University, Belgium; *José L. Todolí*, University Alicante, Spain; *Mike Hinds*, Canada.



*Ajay Kumar Goswami*  
**Spectrophotometric  
 Determination of Nickel  
 and Cobalt**

Methods and Reagents

**Series:** De Gruyter Reference

October 2023  
 English, XIII, 99 pp.

**HC** \*RRP € 129.95 / US\$ 142.99 / £ 118.50  
 ISBN 978-3-11-113311-9

**eBook** \*RRP € 129.95 / US\$ 142.99 / £ 118.50  
 PDF ISBN 978-3-11-113330-0  
 ePUB ISBN 978-3-11-113530-4

The book is a collection of commonly used methods for spectrophotometric determination of metal nickel and cobalt. It provides a ready-to-use guide of reagents, methods and conditions for any researchers or analytical chemists working on iron and copper based products. It is the ideal book for quality control laboratories, pharmaceutical industry using Ni and Co, catalyst industry and metallurgical laboratories.

**Analytical chemistry; Instrumental analysis;  
 Sampling; Spectroscopy**

*Ajay Kumar Goswami*, Mohanlal Sukhadia  
 University, India.

*Ajay Kumar Goswami*  
**Spectrophotometric  
 Determination of  
 Vanadium, Chromium and  
 Manganese**

Reagents and Methods

**Series:** De Gruyter Reference

September 2024  
 English, Approx. X, 290 pp., 10 fig.

**HC** \*RRP € 129.95 / US\$ 142.99 / £ 118.50  
 ISBN 978-3-11-131516-4

**eBook** \*RRP € 129.95 / US\$ 142.99 / £ 118.50  
 PDF ISBN 978-3-11-131610-9  
 ePUB ISBN 978-3-11-131639-0

The book is a collection of commonly used methods for spectrophotometric determination of the industrially important metal vanadium, chromium and manganese. It provides a ready-to-use guide of reagents, methods and conditions for both industry and academia. It is a unique guide for researchers in analytical chemistry and environmental monitoring working on vanadium, chromium and manganese based products.

**Analytical chemistry; Instrumental analysis;  
 Sampling; Spectroscopy**

*Ajay Kumar Goswami*, Mohanlal Sukhadia  
 University, India.

*Alfred J. Meixner, Monika Fleischer,  
 Dieter P. Kern (Eds.)*  
**Optical Nanospectroscopy**

*Alfred J. Meixner, Monika Fleischer, Dieter  
 P. Kern, Christiane Höppener, Sebastian  
 Mackowski, Pierre-Michel Adam, Raul  
 David Rodriguez, Pietro G. Gucciardi (Eds.)*

**Volume 1: Fundamentals &  
 Methods**

**Series:** De Gruyter Textbook

November 2024  
 English, 20, 330 pp., 300 fig.

**Pb.** \*RRP € 69.95 / US\$ 75.99 / £ 59.50  
 ISBN 978-3-11-042702-8

**\*\*eBook** \*RRP € 699.00 / £ 599.00  
 PDF ISBN 978-3-11-042703-5  
 ePUB ISBN 978-3-11-042319-8

This two-volume graduate textbook for the first time makes the field of nanospectroscopy accessible for students. Volume 1 covers the basics from the fundamentals of light-matter-interaction, through an overview over optical spectroscopies in general to the specific techniques in nanospectroscopy.

Vol. 2: Instrumentation, Simulation & Materials.

A further publication by the editors: "Optical Nanospectroscopy. Applications".

**Optical Spectroscopy; Super-resolution  
 Microscopy; Nanophotonics; Plasmonics**

Eds: *A. Meixner, M. Fleischer, D. Kern*,  
 U Tübingen GER; Ass. Eds: *C Höppener,  
 S Mackowski, P-M Adam, R.D. Rodriguez,  
 P.G. Gucciardi*.

Alfred J. Meixner, Monika Fleischer,  
Dieter P. Kern, Antonio Cricenti, Ulrich  
Hohenester, Manuela Scarselli (Eds.)

## Volume 2: Instrumentation, Simulation & Materials

Series: De Gruyter Textbook

November 2024  
English, 20, 330 pp., 300 fig.

Pb. \*RRP € 69.95 / US\$ 75.99 / £ 59.50  
ISBN 978-3-11-042704-2

\*\*eBook \*RRP € 699.00 / £ 599.00  
PDF ISBN 978-3-11-042705-9  
ePUB ISBN 978-3-11-042316-7

This two-volume graduate textbook for the first time makes the field of nanospectroscopy accessible for students. Volume 2, covering theoretical and experimental methods essential for nanospectroscopy, explains necessary instrumentation, gives insights into simulation tools and introduces a wide variety of investigated nanomaterials.

Vol. 1: Fundamentals & Methods.

A further publication by the editors: "Optical Nanospectroscopy. Applications".

Optical Spectroscopy; Nanophotonics;  
Plasmonics; Calibration Methods

Eds: A. Meixner, M. Fleischer, D. Kern, U  
Tübingen Germany; Ass. Eds: A. Cricenti,  
U. Hohenester, M. Scarselli.

Alfred J. Meixner, Monika Fleischer,  
Dieter P. Kern, Christina Höppener,  
Sebastian Mackowski, Pierre-Michel Adam,  
Pietro G. Gucciard, Antonio Cricenti,  
Ulrich Hohenester, Manuela Scarselli  
(Eds.)

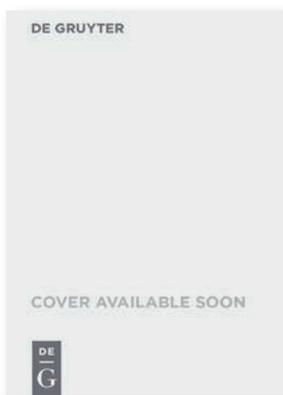
## [Set Optical Nanospectroscopy, Vol 1+2] Dezember 2024

English

Set \*RRP € 99.95 / US\$ 114.99 / £ 91.00  
ISBN 978-3-11-043783-6

This two-volume graduate textbook makes the field of nanospectroscopy accessible for students. Vol. 1 "Fundamentals & Methods" covers the basics from the fundamentals through an overview over optical spectroscopies. Vol. 2 "Instrumentation, Simulation & Materials" presents theoretical and experimental methods.

Eds: A. Meixner, M. Fleischer, D. Kern,  
U Tübingen, Germany, with further  
Associated Editors.



T

Erwin Riedel, Hans-Jürgen Meyer

## Allgemeine und Anorganische Chemie

[General and Inorganic Chemistry]

Reihe/Series: De Gruyter Studium

13. Edition/13th Edition  
Oktober/October 2024  
Deutsch/German, Ca./Approx. XIV, 480 S./pp., 260  
Abb./fig. Beilage Periodensystem der Elemente

Br./Pb. \*€ 64.95 / UVP/RRP US\$ 71.99 /  
UVP/RRP £ 59.50  
ISBN 978-3-11-133588-9

\*\*eBook \*€ 699.00 / UVP/RRP US\$ 770.00 /  
UVP/RRP £ 635.50  
PDF ISBN 978-3-11-133624-4  
ePUB ISBN 978-3-11-133668-8

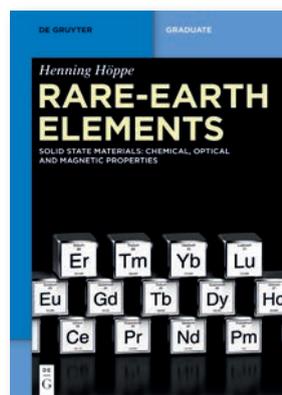
Das beliebte Lehrbuch behandelt die theoretischen Grundlagen der allgemeinen und anorganischen Chemie und führt in die anorganische Stoffchemie ein. Die aktualisierte Neuauflage diskutiert anschaulich heutige Umweltprobleme. Das Werk ist als vorlesungsbegleitendes Lehrbuch und zugleich als Repetitorium zur Prüfungsvorbereitung optimal geeignet.

Atombau; Chemische Bindung; Chemische  
Reaktion; Nichtmetalle; Metalle; Umweltchemie

This popular textbook presents the theoretical principles of general and inorganic chemistry and provides an introduction to inorganic materials chemistry. The new updated edition clearly discusses contemporary environmental problems. This volume is optimally suited to use as a companion textbook for lectures and as a review book for exam preparation.

Atomic structure; Chemical bonding; Chemical  
reaction; Non-metals; Metals; Environmental  
Chemistry

Erwin Riedel, Technische Universität Berlin  
(em.); Hans-Jürgen Meyer, Eberhard-Karls-  
Universität Tübingen, Deutschland.



T

Henning Höpfe

## Rare-Earth Elements

Solid State Materials: Chemical, Optical  
and Magnetic Properties

Series: De Gruyter Textbook

March 2024  
English, Approx. XIV, 290 pp., 100 fig.

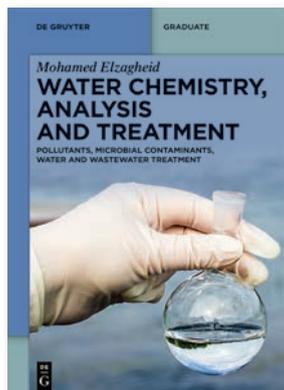
Pb. \*RRP € 89.95 / US\$ 97.99 / £ 77.50  
ISBN 978-3-11-068081-2

\*\*eBook \*RRP € 699.00 / £ 599.00  
PDF ISBN 978-3-11-068082-9  
ePUB ISBN 978-3-11-068088-1

Rare-earth elements (REEs) are a series of 17 transition metals (scandium, yttrium, and the lanthanide series of elements) that have important applications in fields ranging from geology to catalysis, glass, and high-performance magnets and electronics. This book is a comprehensive introduction to REEs, starting from basic aspects like ore distribution and production to more advanced properties and applications.

Rare-Earth Elements; Rare-Earth Chemistry;  
Lanthanoids; Rare-Earth compounds; Optical  
properties; Magnetic properties

Henning Höpfe, University of Augsburg,  
Germany.



T

*Mohamed Elzagheid*  
**Water Chemistry,  
 Analysis and Treatment**

Pollutants, Microbial Contaminants,  
 Water and Wastewater Treatment

**Series:** De Gruyter Textbook

January 2024  
 English, Approx. X, 130 pp., 45 fig.

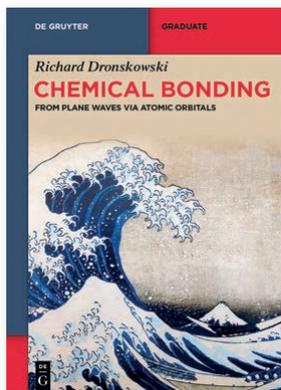
**Pb.** \*RRP € 69.95/ US\$ 76.99/ £ 64.00  
 ISBN 978-3-11-133242-0

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
 PDF ISBN 978-3-11-133246-8  
 ePUB ISBN 978-3-11-133261-1

The book provides basic understanding of the chemical principles involved in water, analysis and treatment. It covers water chemistry, sources, pollutants, microbiological contaminants, water quality, analysis and treatment. It describes techniques and methods for treatment of sea water, municipality and industrial water waste. This fundamental text is the ideal introduction to water science for both students and professionals.

**Pollution; Pollutants; Microbial Contaminants;  
 Desalination; Wastewater**

*Mohamed Elzagheid*, Jubail Industrial  
 College, Saudi Arabia.



T

*Richard Dronskowski*  
**Chemical Bonding**

From Plane Waves via Atomic Orbitals

**Series:** De Gruyter Textbook

October 2023  
 English, XIV, 172 pp., 89 fig.

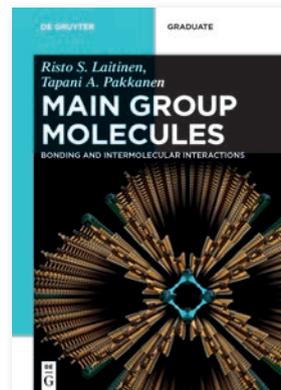
**Pb.** \*RRP € 69.95/ US\$ 76.99/ £ 64.00  
 ISBN 978-3-11-116653-7

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
 PDF ISBN 978-3-11-116721-3  
 ePUB ISBN 978-3-11-116726-8

Modern DFT simulations of solids and molecules are typically based on the mighty plane-wave pseudopotential combination. Despite being numerically efficient, it does not allow for chemical conclusions unless the electronic structure is unitarily transformed into atomic orbitals. This primer for chemists and also for physicists and engineers shows how to simply extract the chemistry and, hence, truly understand a plethora of real-world materials.

**Computational Materials Science; Quantum  
 Chemistry; Chemistry; Density-Functional Theory;  
 Atomic Orbitals**

*Richard Dronskowski*, RWTH Aachen,  
 Germany.



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*Risto S. Laitinen, Tapani Pakkanen*  
**Main Group Molecules**

Bonding and Intermolecular Interactions

**Series:** De Gruyter Textbook

July 2024  
 English, Approx. X, 300 pp., 200 fig.

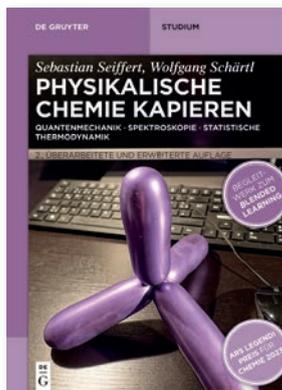
**Pb.** \*RRP € 89.95/ US\$ 97.99/ £ 77.50  
 ISBN 978-3-11-061327-8

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
 PDF ISBN 978-3-11-061333-9  
 ePUB ISBN 978-3-11-061337-7

How do atoms bond to form molecules and how do molecules interact with each other? This book aims to explain the nature of chemical bonding and its impact on the structure, properties and reactivity of compounds. After an introductory part, outlining the theoretical framework of chemical bonding, the book gives a thorough overview of different bonding types and intermolecular forces as well as experimental and computational tools to study them.

**Main Group Chemistry; Chemical Bonding;  
 Inorganic Chemistry**

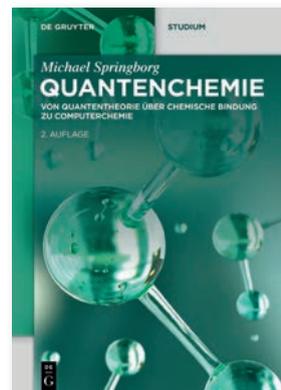
*Risto S. Laitinen*, University of Oulu;  
*Tapani Pakkanen*, University of Eastern  
 Finland, Finland.



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## Sebastian Seiffert, Wolfgang Schärtl Physikalische Chemie Kapieren

Quantenmechanik, Spektroskopie,  
Statistische Thermodynamik

[Understanding Physical Chemistry:  
Quantum Mechanics, Spectroscopy,  
Statistical Thermodynamics]

Reihe/Series: De Gruyter Studium

2. Edition/2nd Edition  
April/April 2024  
Deutsch/German, Ca./Approx. XX, 400 S./pp.,  
120 Abb./fig.

Br./Pb. \*€ 59.95/ UVP/RRP US\$ 62.99/  
UVP/RRP £ 49.50  
ISBN 978-3-11-073732-5

\*\*eBook \*€ 699.00/ UVP/RRP £ 599.00  
PDF ISBN 978-3-11-073757-8  
ePUB ISBN 978-3-11-073266-5

Ausgerichtet auf eine Physikalische Chemie Lehrveranstaltung im Blended-Learning Format. Präsentiert den klassischen Stoff einer typischen Grundvorlesung zu den Themen Quantenmechanik, Spektroskopie und Statistische Thermodynamik, in thematisch fokussierte Lehreinheiten, didaktisch anschaulich aufbereitet, um ein Verständnis von Grundkonzepten in qualitativer und in quantitativer Art zu erreichen.

Physikalische Chemie; Thermodynamik;  
Quantenmechanik

Provides a text platform for a physical chemistry lecture in a blended-learning format. Presents the classic material for a typical introductory lecture (chemical thermodynamics, kinetics, electrochemistry, and statistical thermodynamics), in units focusing on various topics and prepared in a pedagogically insightful way, in order to help readers gain qualitative and quantitative understanding of fundamental concepts.

Quantum mechanics; physical chemistry;  
thermodynamics

Sebastian Seiffert und Wolfgang Schärtl,  
Johannes Gutenberg Universität Mainz,  
Deutschland.

## Sebastian Seiffert, Wolfgang Schärtl Physikalische Chemie Kapieren

Thermodynamik, Kinetik, Elektrochemie

[Understanding Physical Chemistry:  
Thermodynamics, Kinetics,  
Electrochemistry]

Reihe/Series: De Gruyter Studium

2. Edition/2nd Edition  
April/April 2024  
Deutsch/German, Ca./Approx. X, 340 S./pp.,  
100 Abb./fig.

Br./Pb. \*€ 59.95/ UVP/RRP US\$ 68.99/  
UVP/RRP £ 54.50  
ISBN 978-3-11-107248-7

\*\*eBook \*€ 699.00/ UVP/RRP US\$ 800.00/  
UVP/RRP £ 635.50  
PDF ISBN 978-3-11-107274-6  
ePUB ISBN 978-3-11-107327-9

Dieses Buch ist ausgerichtet auf eine Physikalische Chemie Lehrveranstaltung im Blended-Learning Format. Es präsentiert den klassischen Stoff einer typischen Grundvorlesung (Chemische Thermodynamik, Kinetik, Elektrochemie), eingeteilt in 24 thematisch fokussierte Lehreinheiten, didaktisch anschaulich aufbereitet, um ein Verständnis von Grundkonzepten in qualitativer und in quantitativer Art zu erreichen.

Physikalische Chemie; Thermodynamik;  
Elektrochemie

This book is designed for a physical chemistry course in blended learning format. It presents the classical material of a typical basic lecture (chemical thermodynamics, kinetics, electrochemistry), divided into 24 thematically focused teaching units, didactically prepared to achieve an understanding of basic concepts in a qualitative and quantitative way.

Physical Chemistry; Thermodynamics; Kinetics;  
Electrochemistry

Sebastian Seiffert und Wolfgang Schärtl,  
Johannes Gutenberg Universität Mainz,  
Deutschland.

## Michael Springborg Quantenchemie

Von Quantentheorie über chemische  
Bindung zu Computerchemie

[Quantum Chemistry: From Quantum  
Theory and Chemical Bonding to  
Computational Chemistry]

Reihe/Series: De Gruyter Studium

2. Edition/2nd Edition  
November/November 2023  
Deutsch/German, XII, 390 S./pp., 164 Abb./fig.

Br./Pb. \*€ 69.95/ UVP/RRP US\$ 76.99/  
UVP/RRP £ 64.00  
ISBN 978-3-11-121453-5

\*\*eBook \*€ 699.00/ UVP/RRP £ 599.00  
PDF ISBN 978-3-11-121507-5  
ePUB ISBN 978-3-11-121558-7

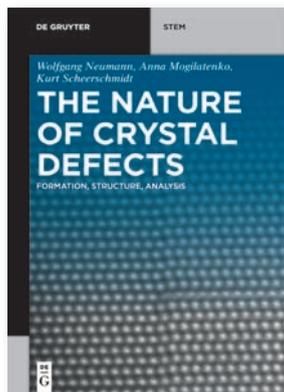
Führt kompakt in die Quantenchemie ein und macht deutlich, weshalb elektronisches Verhalten von Atomen, Molekülen sowie deren chemische Bindung nur mittels der Quantenchemie verständlich wird. Anwendungen wie die spektroskopische Charakterisierung von Substanzen und Techniken des computerunterstützten Modellierens chemischer Moleküle werden ausführlich diskutiert. In der 2. Auflage: Ergänzungen zum Orbitalmodell und kugelförmige Atome.

Quantentheorie; Chemische Bindung;  
Theoretische Chemie; Molecular Modelling;  
Chemieinformatik

Concise introduction to quantum chemistry and shows why the electronic behavior of atoms, molecules, and their chemical bonding can only be understood by way of quantum chemistry. It includes extensive discussions of applications such as spectroscopic methods of characterizing substances and computer-based techniques for modeling chemical molecules. New in second edition: new material on orbital models and spherical atoms.

Quantum Theory; Quantum Chemistry; Chemical Bonding; Theoretical Chemistry; Molecular Modelling; Computational Chemistry

Michael Springborg, Universität des Saarlandes, Deutschland.



Wolfgang Neumann, Anna Mogilatenko,  
Kurt Scheerschmidt

## The Nature of Crystal Defects

Formation, Structure, Analysis

**Series:** De Gruyter STEM

December 2024  
English, Approx. XX, 350 pp., 200 fig.

**Pb.** \*RRP € 89.95/ US\$ 99.99/ £ 79.00  
ISBN 978-3-11-062145-7

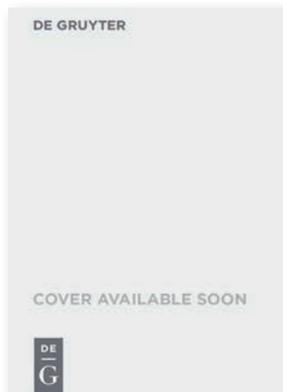
**eBook** \*RRP € 89.95/ US\$ 99.99/ £ 79.00  
PDF ISBN 978-3-11-062150-1  
ePUB ISBN 978-3-11-062196-9

This work provides a comprehensive description of all major structural defects in crystals. It shows how dislocations, grain boundaries, twins and many other influence both the structure and properties of crystals. Specific spectroscopic and diffraction methods as well as etching procedures for characterization are described.

It is a valuable source for all scientists concerned with crystal defects analysis.

**Crystals; Crystallography; Materials Science**

*W. Neumann*, Humboldt Univ. Berlin; *A. Mogilatenko*, F.-Braun-Inst.;  
*K. Scheerschmidt*, M.-Planck-Inst. f.  
MicroStructurePhy., Germany.



Prerna Bansal

## Maths in Chemistry

Numerical Methods for Physical and  
Analytical Chemistry

**Series:** De Gruyter Textbook

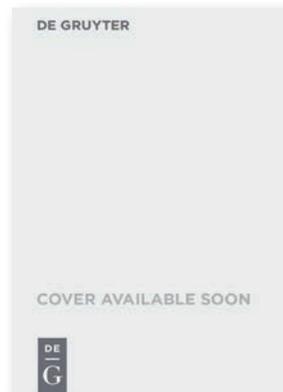
2. Edition/2nd Edition  
July 2024  
English, Approx. XV, 210 pp., 70 fig.

**Pb.** \*RRP € 79.95/ US\$ 87.99/ £ 73.00  
ISBN 978-3-11-133392-2

This book aims to make students thoroughly aware of various important mathematical concepts and numerical methods frequently used in physical chemistry and analytical chemistry. The numerical methods discussed are used in physical chemistry problems, including finding roots of equation, numerical integration, differentiation, differential equations and numerical curve fitting methods.

**Mathematics; Physical Chemistry; Analytical Chemistry; Computational Chemistry**

*Prerna Bansal*, University of Delhi, India.



Lars Backman

## Protein Chemistry

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
May 2024  
English, Approx. XV, 250 pp., 200 fig.

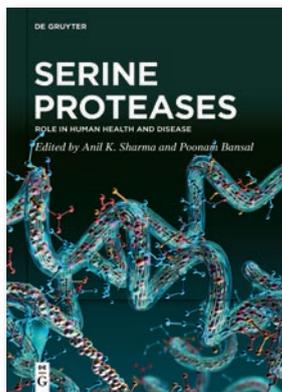
**Pb.** \*RRP € 79.95/ US\$ 87.99/ £ 73.00  
ISBN 978-3-11-135066-0

**\*\*eBook** \*RRP € 699.00/ US\$ 770.00/ £ 635.50  
PDF ISBN 978-3-11-135068-4  
ePUB ISBN 978-3-11-135072-1

An overview on structure and functions of proteins explaining how amino acids form a defined structural entity with specific properties. It provides modern methods for purification and separation, techniques for analyzing their structural and functional properties, enzymes and kinetics of enzymatic reactions. New: computing and the use of Alpha Fold in protein research, the use of molecular dynamics, a real life example of protein purification.

**Biochemistry; Enzyme Catalysis; Peptides; Peptide Synthesis**

*Lars Backman*, Umeå University, Sweden.



*Anil K. Sharma, Poonam Bansal (Eds.)*

## Serine Proteases

Role in Human Health and Disease

October 2023

English, XVII, 157 pp., 11 fig.

**HC** \*RRP € 149.95 / US\$ 164.99 / £ 136.50

ISBN 978-3-11-132498-2

**eBook** \*RRP € 149.95 / US\$ 164.99 / £ 136.50

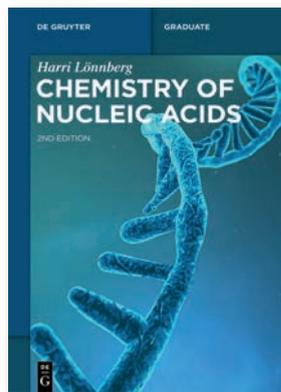
PDF ISBN 978-3-11-132504-0

ePUB ISBN 978-3-11-132528-6

Serine proteases play significant roles in human health and disease. Abnormal expression and activities of serine proteases are linked to the pathogenesis of many diseases. The book presents correlation between serine proteases and diseases. It helps the reader understand classification, catalytic mechanism and role in human disease pathogenesis at mechanistic level. It also covers mechanistic insights of serine proteases inhibitors.

**Serine Protease Inhibitors; Digestion; Immune Responses; Blood Coagulation; Cancer; Respiratory Disorders**

*Anil K Sharma, Poonam Bansal*, Maharishi Markandeshwar, India



*Harri Lönnberg*

## Chemistry of Nucleic Acids

**Series:** De Gruyter Textbook

2. Edition/2nd Edition

November 2024

English, Approx. X, 390 pp., 210 fig.

**Pb.** \*RRP € 89.95 / US\$ 98.99 / £ 82.00

ISBN 978-3-11-132532-3

**\*\*eBook** \*RRP € 699.00 / £ 599.00

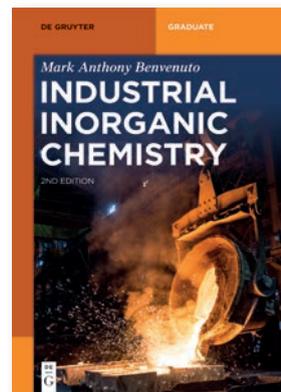
PDF ISBN 978-3-11-132563-7

ePUB ISBN 978-3-11-132592-7

Life in all its forms is based on nucleic acids which store and transfer genetic information. The book addresses synthesis, hydrolytic stability, solution equilibria of nucleosides nucleotides and base modifications of nucleic acids. The author describes their structural analogues used as therapeutic drugs, such as antivirals and anticancer agents, and prodrug strategies of nucleotides. New: DNA and RNA extended, mRNA vaccination, Aptamer expanded.

**Medical Biochemistry; Biochemistry; Nucleic Acids; Nucleic Acid Metabolism; Pharmaceutical Chemistry; Medicinal Biochemistry**

*Harri Lönnberg*, University of Turku, Finland.



*Mark Anthony Benvenuto*

## Industrial Inorganic Chemistry

**Series:** De Gruyter Textbook

2. Edition/2nd Edition

April 2024

English, Approx. XV, 235 pp., 200 fig.

**Pb.** \*RRP € 79.95 / US\$ 87.99 / £ 73.00

ISBN 978-3-11-132944-4

**\*\*eBook** \*RRP € 699.00 / £ 599.00

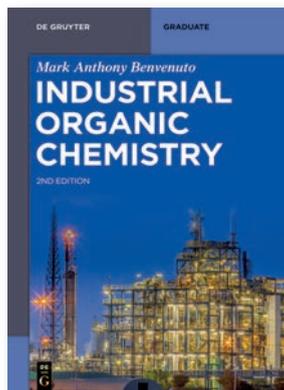
PDF ISBN 978-3-11-132951-2

ePUB ISBN 978-3-11-132963-5

All major industrial inorganic chemistry processes, from the largest down to the smaller niche processes, are included. Each chapter provides some discussion on the creation of by-products, pollution, and any necessary waste generated in a process, and discusses ways in which industry has made them more environmentally benign. New: Updated nitrogen, ammonia, metals, platinum group metals, lanthanides.

**Inorganic Chemistry; Industrial Inorganic Processes; Sulfuric Acid; Industrial Gases; Nitrogen-based Inorganic Compounds; Fertilizers; Limestone-based Products; Water; Iron; Steel; Aluminum; Copper; Metals; Rare Earth Elements; Uranium; Silicon; Ceramics; Hard Materials**

*Mark Anthony Benvenuto*, University of Detroit Mercy, USA.



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*Mark Anthony Benvenuto*  
**Industrial Organic Chemistry**

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
September 2024  
English, Approx. XV, 155 pp., 160 fig.

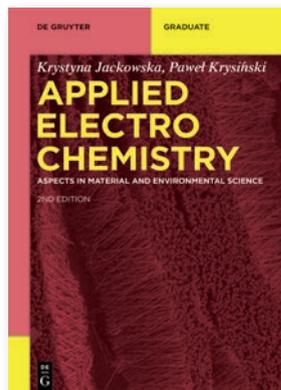
**Pb.** \*RRP € 79.95/ US\$ 87.99/ £ 73.00  
ISBN 978-3-11-132991-8

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-133035-8  
ePUB ISBN 978-3-11-133080-8

Industrial Organic Chemistry examines all major industrial manufacturing technologies and reaction types with a focus on organic chemistry. In particular, the author introduces bio-sources for each class of compounds and compares bio-based organic chemicals to the corresponding petro-based materials. Each chapter includes a discussion on supplementary important topics, such as process selectivity, waste management, product purification, etc.

Organic Chemistry

*Mark Anthony Benvenuto*, University of Detroit Mercy, USA.



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*Krystyna Jackowska, Paweł Krysiński*  
**Applied Electrochemistry**  
Aspects in Material and Environmental Science

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
June 2024  
English, Approx. XV, 370 pp., 150 fig.

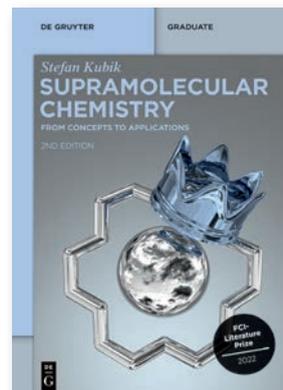
**Pb.** \*RRP € 94.95/ US\$ 104.99/ £ 86.50  
ISBN 978-3-11-116034-4

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-116098-6  
ePUB ISBN 978-3-11-116344-4

Starting with the basics of electrochemical kinetics, the authors address the chemistry of corrosion, principles of electro- and biocatalysis, electrodeposition and its applications in industrial processes. Then the electrochemistry and photoelectrochemistry of semiconductors and their applications in solar energy conversion and photocatalysis are discussed. New to the 2nd Edition is a section on green electrochemistry and green fuel production.

Electrochemistry; Electrodeposition;  
Electrocatalysis; Corrosion

*Krystyna Jackowska, Paweł Krysiński*,  
University of Warsaw, Poland.



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*Stefan Kubik*  
**Supramolecular Chemistry**  
From Concepts to Applications

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
November 2024  
English, Approx. XX, 650 pp., 450 fig.

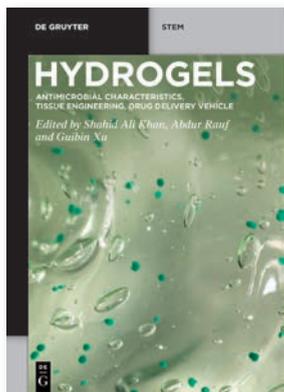
**Pb.** \*RRP € 99.95/ US\$ 109.99/ £ 91.00  
ISBN 978-3-11-131507-2

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-131517-1  
ePUB ISBN 978-3-11-131576-8

Starting with the principles of molecular recognition and supramolecular receptors, an overview of different supramolecular systems and methods for their synthesis is given. This book is an excellent introduction to supramolecular chemistry, explaining how molecules can be arranged to more complex chemical systems through non-covalent interactions and what makes supramolecular architectures stable.

Macrocyclic Compounds; Molecular Machines;  
Molecular Recognition; Catalysis; Supramolecular  
Chemistry; Self-Assembly

*Stefan Kubik*, Kaiserslautern University of  
Technology, Germany.



*Shahid Ali Khan, Abdur Rauf, Guibin Xu (Eds.)*

## Hydrogels

Antimicrobial Characteristics, Tissue Engineering, Drug Delivery Vehicle

**Series:** De Gruyter STEM

December 2023  
English, Approx. XX, 150 pp., 70 fig.

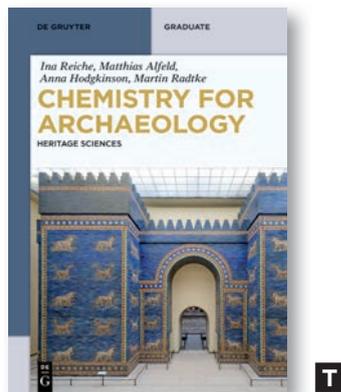
**Pb.** \*RRP € 79.95/ US\$ 87.99/ £ 73.00  
ISBN 978-3-11-133349-6

**eBook** \*RRP € 79.95/ US\$ 87.99/ £ 73.00  
PDF ISBN 978-3-11-133408-0  
ePUB ISBN 978-3-11-133422-6

Therapeutic agents are very effective and play an important role in drug discovery and development producing many blockbuster medicinal agents for various diseases and discomfort. Current therapeutic agents have many adverse effects, but with the advent of nanotechnology and material science's applications in the biomedical sector, many of the traditional therapeutic agents have been replaced. Innovations in medical diagnosis are highly needed!

**Hydrogels; Antibacterial; Adsorbent Medium; Drug Delivery**

*Shahid Ali Khan*, Nat. Univ. of Sci. & Technol., Pakistan; *Abdur Rauf*, Univ. of Swabi, Pakistan; *Guibin Xu*, Guangzhou Med. Univ., China.



*Ina Reiche, Matthias Alfeld, Anna Hodgkinson, Martin Radtke*

## Chemistry for Archaeology

Heritage Sciences

**Series:** De Gruyter Textbook

September 2024  
English, Approx. 10 , 250 pp., 105 fig.

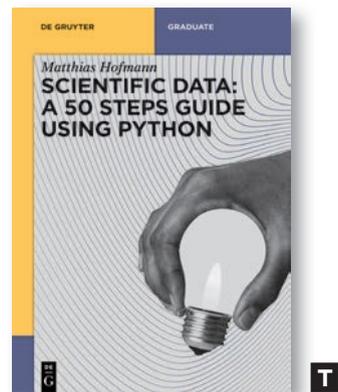
**Pb.** \*RRP € 79.95/ US\$ 88.99/ £ 66.50  
ISBN 978-3-11-044214-4

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-044216-8  
ePUB ISBN 978-3-11-043378-4

This book introduces relevant basics of chemistry and spectroscopy and discusses applications of chemical methods in the context of archaeology. The book describes the characterization of materials of cultural heritage as well as methods for dating and provenancing.

**Archaeology; Conservation; Restoration; Chemistry; Spectroscopy; Cultural Heritage**

*Ina Reiche*, Rathgen-Forschungslabor, *Matthias Alfeld*, LAMS, *Martin Radtke*, BAM, and *Anna Hodgkinson*, FU.



*Matthias Hofmann*

## Scientific Data: A 50 Steps Guide using Python

**Series:** De Gruyter Textbook

November 2024  
English, Approx. X, 180 pp., 50 fig.

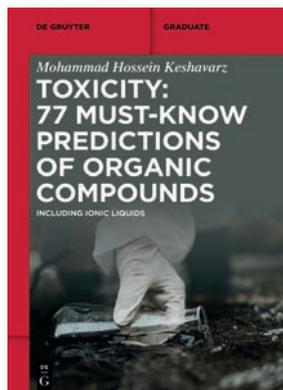
**Pb.** \*RRP € 69.95/ US\$ 76.99/ £ 64.00  
ISBN 978-3-11-133457-8

**\*\*eBook** \*RRP € 699.00/ US\$ 770.00/ £ 635.50  
PDF ISBN 978-3-11-133460-8  
ePUB ISBN 978-3-11-133470-7

This guide provides a solid understanding of how to understand experimental data within a natural scientific context while ensuring sustainable use of findings and processing as seen through a programmer's eye. The concise problem – solution – discussion structure used throughout supported by Python code snippets emphasizes the book's focus on practitioners.

**Scientific experiments; Modeling experiments; Data analysis; Experiments evaluation; Programming language Python**

*Matthias Josef Hofmann*, Tylraching, Germany.



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*Mohammad Hossein Keshavarz*  
**Toxicity: 77 Must-Know Predictions of Organic Compounds**

Including Ionic Liquids

**Series:** De Gruyter Textbook

October 2023  
 English, IX, 199 pp., 1 fig.

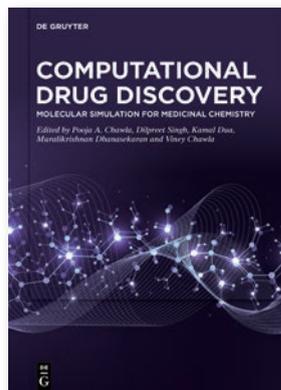
**Pb.** \*RRP € 69.95/ US\$ 76.99/ £ 64.00  
 ISBN 978-3-11-118912-3

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
 PDF ISBN 978-3-11-118967-3  
 ePUB ISBN 978-3-11-119092-1

This book reviews the best predictive methods to assess toxicity of organic compounds and ionic liquids (ILs), which were derived by *in vitro* or *in vivo* experiments. Each chapter contains some complimentary problems with their answers. This book is of interest to any scientist or student working with new organic compounds and ILs or the synthesized compounds.

**Toxicity; Organic Compound; Ionic Liquid; Organic Chemistry**

*Mohammad H. Keshavarz*, Malek-ashtar University of Technology, Iran.



*Pooja A. Chawla, et al (Eds.)*  
**Computational Drug Discovery and Delivery**

*Pooja A. Chawla, Dilpreet Singh, Kamal Dua, Muralikrishnan Dhanasekaran, Viney Chawla (Eds.)*

**Volume 1: Computational Drug Discovery**

Molecular Simulation for Medicinal Chemistry

December 2024  
 English, Approx. X, 200 pp., 50 fig.

**HC** \*RRP € 134.95/ US\$ 148.99/ £ 123.00  
 ISBN 978-3-11-120669-1

**eBook** \*RRP € 134.95/ US\$ 148.99/ £ 123.00  
 PDF ISBN 978-3-11-120711-7  
 ePUB ISBN 978-3-11-120759-9

Computational methods and understanding computational models are important in modern drug discovery. The book focuses on computational approaches that can improve the development of *in silico* methodologies. It includes lead hit methods, docking algorithms, computational chiral compounds, structure-based drug design, GROMACS and NAMD, structural genomics, toxicity prediction, enzyme inhibitors and peptidomimetic therapeutics

**Computational Approaches; Artificial Intelligence; Machine Learning; Drug Design; Medicinal Chemistry**

*P. A. Chawla, D. Singh*, ISFCP, India;  
*K. Dua*, ARCCIM, Australia;  
*M. Dhanasekaran*, Auburn University, USA;  
*V. Chawla*, UIPSR, India.

*Pooja A. Chawla, Dilpreet Singh, Kamal Dua, Muralikrishnan Dhanasekaran, Viney Chawla (Eds.)*

**Volume 2: Computational Drug Delivery**

Molecular Simulation for Pharmaceutical Formulation

December 2024  
 English, Approx. X, 200 pp., 100 fig.

**HC** \*RRP € 134.95/ US\$ 148.99/ £ 123.00  
 ISBN 978-3-11-120864-0

**eBook** \*RRP € 134.95/ US\$ 148.99/ £ 123.00  
 PDF ISBN 978-3-11-120867-1  
 ePUB ISBN 978-3-11-120971-5

The book bridges the gap between pharmaceuticals and molecular modelling at the micro, meso and macro scale. It covers Lipinski's rule of five, nanoparticulate drug delivery, computational prediction of drug solubility and ability to cross blood brain barrier, computer-based simulation of pharmacokinetic parameters, virtual screening of mucoadhesive polymers, QSPR modelling, designing of 2D nanomaterials and role of principal component analysis.

**Computational Approaches; Artificial Intelligence; Machine Learning; Drug Formulation; Nanoscale; Bioavailability**

*P. A. Chawla, D. Singh*, ISFCP, India;  
*K. Dua*, ARCCIM, Australia;  
*M. Dhanasekaran*, Auburn University, USA;  
*V. Chawla*, UIPSR, India.

*Pooja A. Chawla, Dilpreet Singh, Kamal Dua, Muralikrishnan Dhanasekaran, Viney Chawla (Eds.)*

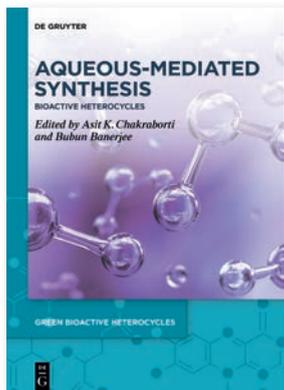
**[Set Computational Drug Discovery + Computational Drug Delivery]**

December 2024  
 English,

**Set** \*RRP € 199.95/ US\$ 219.99/ £ 182.00  
 ISBN 978-3-11-125348-0

Computational methods and understanding computational models are important in modern drug discovery. The books focus on computational approaches that can improve the development of *in silico* methodologies. They include lead hit methods, docking algorithms, computational chiral compounds, structure-based drug design, GROMACS and NAMD, structural genomics, toxicity prediction, enzyme inhibitors and peptidomimetic therapeutics.

*P. A. Chawla, D. Singh*, ISFCP, India;  
*K. Dua*, ARCCIM, Australia;  
*M. Dhanasekaran*, Auburn University, USA;  
*V. Chawla*, UIPSR, India.



*Asit K. Chakraborti, Bubun Banerjee*  
(Eds.)

## **Aqueous-Mediated Synthesis**

Bioactive Heterocycles

**Series:** Green Bioactive Heterocycles 2

May 2024

English, Approx. XV, 504 pp., 429 fig.

**HC** \*RRP € 144.95 / US\$ 164.99 / £ 130.00

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PDF ISBN 978-3-11-098562-7

ePUB ISBN 978-3-11-098609-9

Aqueous-mediated synthesis may provide new and green routes for obtaining bioactive heterocycles. This method produces less organic waste due to the absence of organic solvent, the largest component of many reactions. It can be applied to the synthesis of several classes of heterocycles such as N-,O-,S-heterocycles and spiroheterocycles. This book explores various aqueous-mediated synthesis of structurally diverse bioactive heterocycles.

**Aqueous Mediated Synthesis; Green Chemistry; Green Synthesis; Ultrasound; Organocatalysis; Catalysis; Heterogeneous Catalysis**

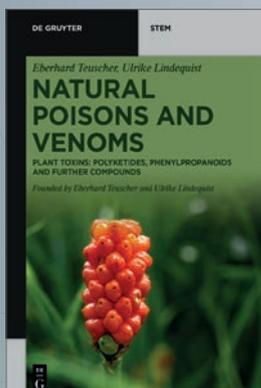
*Asit K. Chakraborti*, Indian Association for the Cultivation of Science; *Bubun Banerjee*, Akal University, India.

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# MEDICINAL CHEMISTRY AND PHARMACEUTICAL SCIENCE



Ulrike Lindequist, Timo Niedermeyer,  
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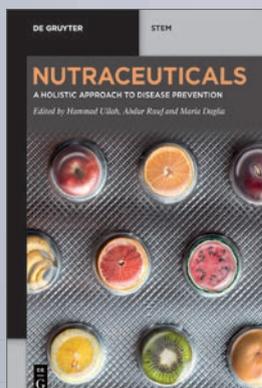
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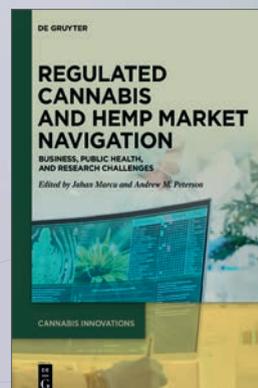
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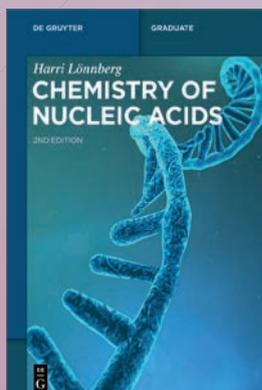
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ISBN 978-3-11-125348-0



Harri Lönnberg

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11/2024. 2<sup>nd</sup> Edition, Approx. X, 390 pp., 210 fig.

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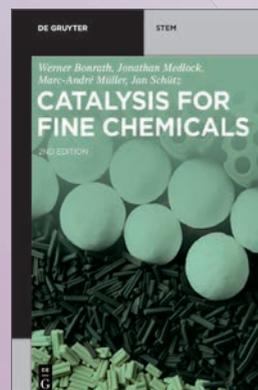
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Werner Bonrath, Jonathan Medlock,  
Marc Andre Müller, Jan Schütz

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The Next Generation of Emerging Applications

De Gruyter STEM

05/2024. 2<sup>nd</sup> Edition, Approx. XV, 460 pp., 420 fig.

**Paperback**

\*RRP € 89.95 [D]/US\$ 103.99/£ 82.00

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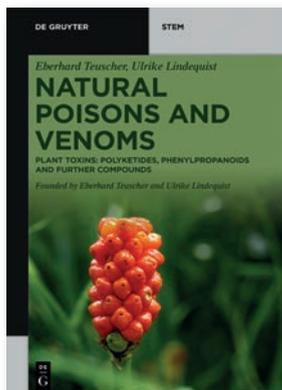
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*Eberhard Teuscher, Ulrike Lindequist*  
**Natural Poisons and Venoms**

Plant Toxins: Polyketides, Phenylpropanoids and Further Compounds

**Series:** De Gruyter STEM

January 2024  
 English, Approx. XX, 330 pp., 236 fig.

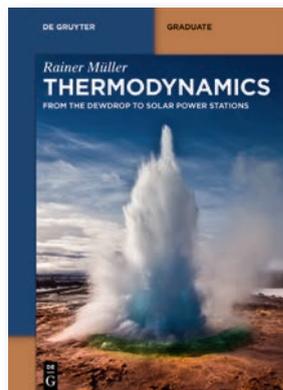
**Pb.** \*RRP € 79.95/ US\$ 88.99/ £ 69.00  
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**eBook** \*RRP € 79.95/ US\$ 88.99/ £ 69.00  
 PDF ISBN 978-3-11-072853-8  
 ePUB ISBN 978-3-11-072864-4

After an introduction on toxins and toxicology, the book is arranged according to biogenetic origin and chemistry of the poisonous and venomous compounds. Each chapter describes the biology of toxin producing organisms, chemistry, pharmacological activity and mode of action of the poisonous compounds, risks and symptoms of intoxications and treatment. It shows the great potential of toxins as drugs and for drug development.

Poisons; Venoms; Toxicology; Plants

*Eberhard Teuscher, Ulrike Lindequist,*  
 University Greifswald, Germany.



*Rainer Müller*  
**Thermodynamics**

From the dewdrop to solar power stations

**Series:** De Gruyter Textbook

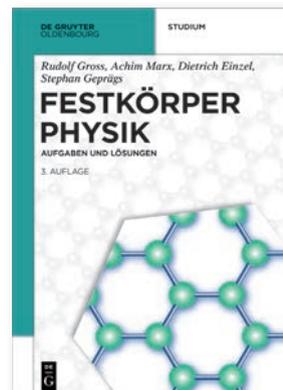
October 2024  
 English, Approx. 10 , 400 pp.

**Pb.** \*RRP € 49.95/ US\$ 60.99/ £ 45.50  
 ISBN 978-3-11-031018-4

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
 PDF ISBN 978-3-11-031020-7  
 ePUB ISBN 978-3-11-038829-9

This book explains the theory of thermodynamics in a very clear style. Numerous examples, figures, tables and exercises make the topic easy to understand. Suitable also for students of engineering and teaching.

*Rainer Müller,* TU Braunschweig, Germany.



*Rudolf Gross, Achim Marx, Dietrich Einzel, Stephan Geprägs*  
**Festkörperphysik**

Aufgaben und Lösungen

**[Solid-State Physics: Exercises and Solutions]**

**Reihe/Series:** De Gruyter Studium

3. Edition/3rd Edition  
 Juli/July 2023  
 Deutsch/German, XII, 377 S./pp., 127 Abb./fig.

**Br./Pb.** \*€ 39.95/ UVP/RRP US\$ 45.99/  
 UVP/RRP £ 35.00  
 ISBN 978-3-11-078235-6

**\*\*eBook** \*€ 699.00/ UVP/RRP £ 599.00  
 PDF ISBN 978-3-11-078253-0  
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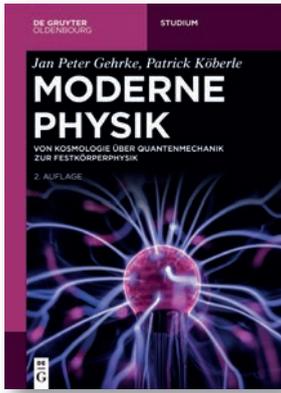
Erst beim Lösen von Aufgaben stellen sich Fragen, die man meint geklärt und verstanden zu haben. Anhand ausführlicher Lösungswege ermöglicht dieses Übungsbuch mit über 100 Aufgaben und kompletten Musterlösungen sowohl eine Vertiefung und Erweiterung der Kenntnisse als auch die Selbstkontrolle des erlernten Stoffs. Die dritte, aktualisierte und erweiterte Auflage mit neuen Aufgaben ist ideal zur Prüfungsvorbereitung geeignet.

Moderne Festkörperphysik; Quantentechnologie; Supraleitung; Halbleiterphysik; Magnetismus

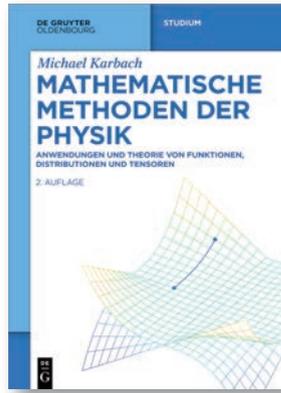
It is only when solving problems that we ask ourselves questions that we think we have already answered and understood. By providing full solutions, this exercise book with over 100 tasks and complete sample solutions allows students to both consolidate and expand their knowledge and to test what they have learned. The third, updated, and expanded edition with new exercises is ideally suited to exam preparation.

Modern Solid State Physics; Quantum Technology; Superconductivity; Semiconductor Physics; Magnetism

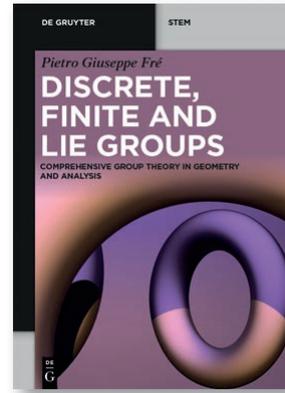
*Rudolf Gross, Achim Marx, Dietrich Einzel, Stephan Geprägs,* Walther-Meißner-Institut für Tieftemperaturforschung, TU München, Germany.



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Jan Peter Gehrke, Patrick Köberle

## Moderne Physik

Von Kosmologie über Quantenmechanik zur Festkörperphysik

[Modern Physics: From Cosmology Via Quantum Mechanics to Solid-State Physics]

Reihe/Series: De Gruyter Studium

2. Edition/2nd Edition  
Dezember/December 2023  
Deutsch/German, Ca./Approx. X, 280 S./pp., 110 Abb./fig.

Br./Pb. \*€ 54.95/ UVP/RRP US\$ 60.99/  
UVP/RRP £ 50.00  
ISBN 978-3-11-125881-2

\*\*eBook \*€ 699.00/ UVP/RRP £ 599.00  
PDF ISBN 978-3-11-126057-0  
ePUB ISBN 978-3-11-126144-7

Dieser Streifzug durch die moderne Physik bereitet wichtige Forschungsthemen für Studienanfänger auf und erläutert anschaulich sowie verständlich Spitzenforschung z.B. zu Supraleitung, Gravitationswellen oder Quasikristallen. Die Themen werden trotz komplexer Zusammenhänge mitreißend und spannend vermittelt, ohne komplexes Formelverständnis und Detailkenntnisse vorauszusetzen.

Neue Kapitel: Laser und Mikroskopie.

Forschung; Festkörperphysik; Quantenmechanik; Chaostheorie; Optik

This tour through modern physics presents students with important research topics and clearly explains the cutting-edge research being done on, e.g., superconductivity, gravitational waves, and quasicrystals. It conveys its topics in a captivating, exciting way, without requiring detailed prior knowledge or knowledge of complex formulas.

New chapters: laser and microscopy.

Physics Research; Solid State Physics; Quantum Mechanics; Chaos Theory; Optics

Jan Peter Gehrke, Duale Hochschule Baden-Württemberg Stuttgart; Patrick Köberle, Stuttgart, Deutschland.

Michael Karbach

## Mathematische Methoden der Physik

Anwendungen und Theorie von Funktionen, Distributionen und Tensoren

[Mathematical Methods of Physics]

Reihe/Series: De Gruyter Studium

2. Edition/2nd Edition  
Juli/July 2023  
Deutsch/German, XII, 340 S./pp., 210 Abb./fig.

Br./Pb. \*€ 64.95/ UVP/RRP US\$ 74.99/  
UVP/RRP £ 59.00  
ISBN 978-3-11-105825-2

\*\*eBook \*€ 699.00/ UVP/RRP £ 599.00  
PDF ISBN 978-3-11-105922-8  
ePUB ISBN 978-3-11-105980-8

Das Werk vermittelt alle grundlegenden mathematischen Methoden und Werkzeuge, die der Physiker sowohl im Studium als auch in der Praxis benötigt. Die Methoden werden kompakt und mit einheitlicher Notation präsentiert, wobei der Autor mittels erklärender farbiger Grafiken und Aufgaben mit Lösungen den Stoff anschaulich und leicht verständlich erläutert.

Neu: Zahlreiche praxisrelevante Beispiele.

Funktionentheorie; Funktionalanalysis; Orthogonale Funktionen; Distributionen; Tensorrechnung

The work teaches all the basic mathematical methods and tools needed by the physicist, both in graduate study and in practice. The methods are presented compactly and with consistent notation, and the author uses explanatory color graphics and tasks with solutions to explain the material in a clear and easy-to-understand manner.

New: numerous relevant examples.

Function Theory; Functional Analysis; Orthogonal Functions; Distributions; Tensor Calculus; numerous practical examples

Michael Karbach, Universität Wuppertal, Deutschland.

Pietro Giuseppe Fré

## Discrete, Finite and Lie Groups

Comprehensive Group Theory in Geometry and Analysis

Series: De Gruyter STEM

August 2023  
English, XXII, 508 pp., 112 fig.

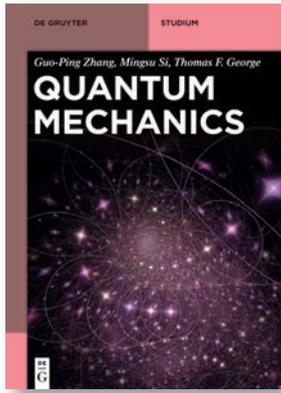
Pb. \*RRP € 99.95/ US\$ 109.99/ £ 91.00  
ISBN 978-3-11-120075-0

eBook \*RRP € 99.95/ US\$ 109.99/ £ 91.00  
PDF ISBN 978-3-11-120153-5  
ePUB ISBN 978-3-11-120277-8

In a self contained and exhaustive work the author covers Group Theory in its multifaceted aspects, treating its conceptual foundations in a proper logical order. First discrete and finite group theory, that includes the entire chemical-physical yield of crystallography is developed self consistently, followed by the structural theory of Lie Algebras with a complete exposition of the roots and Dynkin diagrams lore.

Homogeneous Spaces; Geodesics; Dynkin Diagrams; Point and Space Groups; Weyl Group

Pietro Giuseppe Fré, University of Turin, Italy.

**T**

*Guo-Ping Zhang, Mingsu Si,  
Thomas F. George*  
**Quantum Mechanics**

**Series:** De Gruyter Textbook

April 2024  
English, Approx. X, 400 pp., 200 fig.

**Pb.** \*RRP € 79.95/ US\$ 87.99/ £ 68.00  
ISBN 978-3-11-067212-1

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
PDF ISBN 978-3-11-067215-2  
ePUB ISBN 978-3-11-067228-2

This book covers the basic ideas of quantum mechanics, with emphasis on concepts, calculations, and their applications in many areas of modern science and technology. As opposed to other available introductions to quantum mechanics, this book was developed in close collaboration with students in order to guarantee that the explanations and exercises are clear and effective.

*Guo-Ping Zhang*, Indiana State University, USA; *Mingsu Si*, Lanzhou University, China; *Thomas F. George*, University of Missouri, USA.

**T**

*Hugo Reinhardt*  
**Quantenmechanik 1**

Funktionalintegralformulierung und Operatorformalismus

**[Functional Integral Formulations]**

**Reihe/Series:** De Gruyter Studium

3. Edition/3rd Edition  
April/April 2024  
Deutsch/German, Ca./Approx. XVI, 540 S./pp., 145 Abb./fig.

**Br./Pb.** \*€ 89.95/ UVP/RRP US\$ 98.99/  
UVP/RRP £ 82.00  
ISBN 978-3-11-126677-0

**\*\*eBook** \*€ 699.00/ UVP/RRP £ 599.00  
PDF ISBN 978-3-11-126825-5  
ePUB ISBN 978-3-11-126901-6

Der erste Teil des zweiteiligen Lehrbuches gibt eine moderne Einführung in die Quantentheorie, die die Feynman'sche Pfadintegralformulierung mit dem traditionellen Operatorformalismus verbindet. Mittels des Funktionalintegralzugangs werden die Wesenszüge der Quantentheorie erschlossen, was den Zugang zur Quantenfeldtheorie erheblich erleichtert. Die überarbeitete 3. Auflage stellt moderne Aspekte und Anwendungen der Quantentheorie vor.

Schrödinger-Gleichung; Wellenfunktion; Funktionalintegral-Quantisierung; Unschärferelation; Drehimpuls und Spin

The first part of this two-part textbook provides a modern introduction to quantum theory, which combines Feynman's path integral formulation with traditional operator formalism. By taking the functional integral approach, it explores the key features of quantum theory, making it much easier to understand quantum field theory. The revised third edition presents the modern aspects and applications of quantum theory.

Schrödinger equation; Wave function; Functional integral quantization; Uncertainty principle; Angular momentum and spin

*Hugo Reinhardt*, Universität Tübingen, Deutschland.

**T**

*Hugo Reinhardt*  
**Quantenmechanik 2**

Zeitabhängige Prozesse, Symmetrien, Vielteilchensysteme

**[Symmetries, Many-Particle Systems]**

**Reihe/Series:** De Gruyter Studium

3. Edition/3rd Edition  
April/April 2024  
Deutsch/German, Ca./Approx. XVIII, 612 S./pp., 110 Abb./fig.

**Br./Pb.** \*€ 89.95/ UVP/RRP US\$ 98.99/  
UVP/RRP £ 82.00  
ISBN 978-3-11-126937-5

**\*\*eBook** \*€ 699.00/ UVP/RRP £ 599.00  
PDF ISBN 978-3-11-127150-7  
ePUB ISBN 978-3-11-127170-5

Der zweite Teil des Lehrbuchs entwickelt neben der Streutheorie und der Zweiten Quantisierung ausführlich die Funktionalintegralquantisierung von Bose- und Fermi-Systemen, was einen unmittelbaren Einstieg in die Quantenfeldtheorie ermöglicht. Weitere Schwerpunkte sind die Symmetrien, der Starre Körper, die Berry-Phase, die Quantenstatistik sowie Vielteilchensysteme.

Umfassend überarbeitete 2. Auflage mit weiteren Beispielen.

Streutheorie; Zweite Quantisierung; Grassmann-Variablen; Quantenstatistik; Berry-Phase

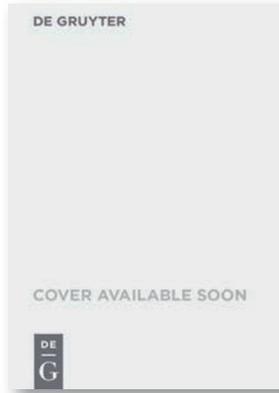
In addition to scattering theory and second quantization, the second part of this textbook draws out the functional integral quantization of Bose and Fermi systems, facilitating a direct introduction to quantum field theory. Other focuses include the symmetries of rigid bodies, the Berry phase, quantum statistics, and many-particle systems. Completely revised second edition providing even more examples.

Scattering theory; Second quantization; Grassmann variables; Quantum statistics; Berry phase

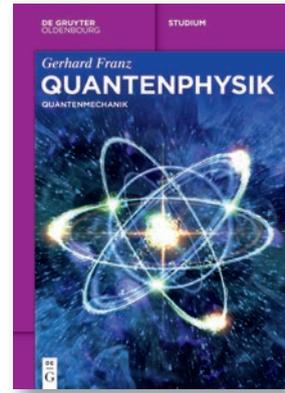
*Hugo Reinhardt*, Universität Tübingen, Deutschland.



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*Hugo Reinhardt*

## [Set: Quantenmechanik]

April/April 2024  
Deutsch/German,

**Set**

ISBN 978-3-11-131987-2

Zweiteiliges Lehrbuch gibt eine moderne Einführung in die Quantentheorie, die die Feynman'sche Pfadintegralformulierung mit dem traditionellen Operatorformalismus verbindet. Band 1 behandelt Funktionalintegralformulierung und Operatorformalismus. Band 2 enthält zeitabhängige Prozesse, Symmetrien und Vielteilchensysteme.

**Elektromagnetismus; Geometrische Optik; Fourier-Optik; Interferenz; Polarisation; Beugung**

Textbook in two volumes gives modern introduction to quantum theory connecting Feynman path integral formulation to traditional operator formalism. Volume 1 discusses functional integral formulation and operator formalism. Volume 2 focusses on time-dependent processes, symmetries and many body systems.

**Electromagnetism; Geometric Optics; Fourier Optics; Interference; Polarisation; Diffraction**

*Hugo Reinhardt*, Universität Tübingen, Deutschland.

## Physik für Lehramtsstudierende

[Teaching Physics]

*Oliver Passon*

## Band 5: Quantenmechanik

[Quantum Mechanics]

**Reihe/Series:** De Gruyter Studium

November/November 2024  
Deutsch/German, Ca./Approx. X, 230 S./pp., 30 Abb./fig.

**Br./Pb.** \*€ 49.95/ UVP/RRP US\$ 54.99/  
UVP/RRP £ 45.50  
ISBN 978-3-11-115171-7

**\*\*eBook** \*€ 699.00/ UVP/RRP £ 599.00  
PDF ISBN 978-3-11-115262-2  
ePUB ISBN 978-3-11-115295-0

Alle für die Lehramtsausbildung relevanten Teilgebiete der Physik werden in der fünfbandigen Lehrbuchreihe auf dem Niveau der Anfängervorlesungen behandelt, wobei die fachliche Darstellung mit der fachdidaktischen Perspektive verknüpft wird. Hervorgehobene Blöcke widmen sich typischen Alltagsvorstellungen, dem für Schüler interessanten phänomenologischen Zugang und typischen Verständnisschwierigkeiten. Band 5 behandelt die Quantenmechanik.

**Physik; Physik Lehramt; Quantentechnologien; Geschichte der Physik; Philosophie der Physik**

This five-volume textbook series addresses all of the branches of physics relevant for teachers in training at the level of introductory lectures, combining scientific presentation with subject didactics. Highlighted blocks are dedicated to typical everyday notions, the phenomenological approach most interesting to students, and typical difficulties in understanding. Volume 5 addresses quantum physics.

**Physics; Physics Teacher Training; Quantum Technologies; History of Physics; Philosophy of Physics**

*Oliver Passon*, Bergische Universität Wuppertal, Deutschland.

*Gerhard Franz*

## Quantenphysik

Quantenmechanik

[Quantum Physics: Quantum Mechanics]

**Reihe/Series:** De Gruyter Studium

Januar/January 2024  
Deutsch/German, Ca./Approx. X, 710 S./pp., 247 Abb./fig.

**Br./Pb.** \*€ 79.95/ UVP/RRP US\$ 87.99/  
UVP/RRP £ 73.00  
ISBN 978-3-11-123798-5

**\*\*eBook** \*€ 699.00/ UVP/RRP US\$ 770.00/  
UVP/RRP £ 635.50  
PDF ISBN 978-3-11-123867-8  
ePUB ISBN 978-3-11-123895-1

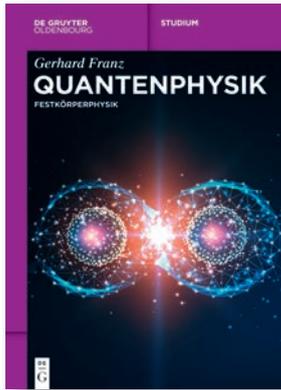
Das 2-bändige Lehrbuch vermittelt anschaulich und verständlich quanten- und festkörpertheoretische Kenntnisse und Fertigkeiten. In „Quantenmechanik“ werden ausführlich sowohl Handwerkszeug als auch Methoden erläutert, um typische Eigenwertprobleme kleinster Systeme zu lösen. Sowohl quantenmechanischer Calculus als auch verschiedene Näherungsverfahren und Anwendung auf typische Eigenwertprobleme von Quantensystemen werden diskutiert.

**Eigenwertproblem; Quanteneffekte; Wellenmechanik; Quantenoszillator; Zentralfeldproblem**

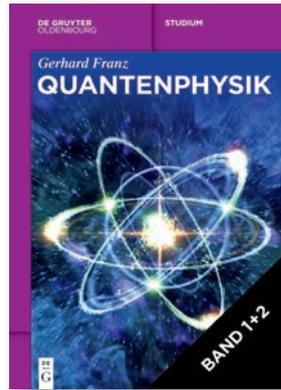
This two-part textbook clearly and comprehensibly conveys knowledge and skills pertaining to quantum and solid-state theory. “Quantum Mechanics,” thoroughly explains the tools as well as methods required to solve the typical eigenvalue problems of the smallest systems. It discusses quantum-mechanical calculus, different methods of approximation, and their application to the typical eigenvalue problems of quantum systems.

**Eigenvalue problems; Quantum effects; Wave mechanics; Quantum oscillator; Central field problem**

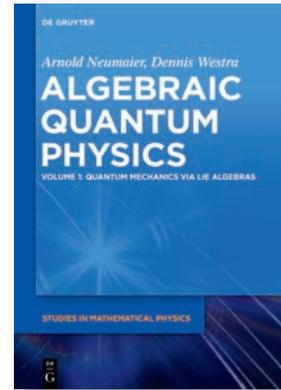
*Gerhard Franz*, Hochschule München, Deutschland.



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**Gerhard Franz**  
**Quantenphysik**

Festkörperphysik

[Quantum Physics: Solid-State Physics]

**Reihe/Series:** De Gruyter Studium

Januar/January 2024

Deutsch/German, Ca./Approx. X, 620 S./pp., 355 Abb./fig.

**Br./Pb.** \*€ 79.95/ UVP/RRP US\$ 87.99/  
UVP/RRP £ 73.00  
ISBN 978-3-11-124075-6

**\*\*eBook** \*€ 699.00/ UVP/RRP US\$ 770.00/  
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PDF ISBN 978-3-11-124157-9  
ePUB ISBN 978-3-11-124212-5

Das 2-bändige Lehrbuch erläutert anschaulich und verständlich quanten- und festkörpertheoretische Kenntnisse und Fertigkeiten. Band 2 beginnt mit der Betrachtung einzelner Festkörperklassen, erläutert thermische Energie und optische Phänomene von Isolatoren und behandelt im Schwerpunkt Metalle und Halbleiter. Anhand des Modells freier Elektronen werden sowohl optische wie magnetische Effekte bis hin zum Ferromagnetismus umfassend beschrieben.

**Festkörpermodelle; Kondensierter Zustand; Gitterdynamik; Elektronenzustände; Halbleiter**

Volume 2 begins by looking at the individual solid-state classes, explains thermal energy and optical phenomena of isolators, and focuses on metals and semiconductors. By examining the free electron model, it thoroughly describes both optical and magnetic effects, including ferromagnetism.

**Solid-state; Condensed state; Lattice dynamics; Electron states; Semiconductor**

**Gerhard Franz**, Hochschule München, Deutschland.

**Gerhard Franz**  
**[Set Quantenphysik, I + II)**

Januar/January 2024

Deutsch/German,

**Set** \*€ 111.95/ UVP/RRP US\$ 123.99/  
UVP/RRP £ 102.00  
ISBN 978-3-11-125363-3

Das 2-bändige Lehrbuch erläutert anschaulich und verständlich quanten- und festkörpertheoretische Kenntnisse und Fertigkeiten. Band 1 behandelt die Quantenmechanik. Band 2 behandelt die Festkörperphysik. Beide Bände enthalten zahlreiche Aufgaben und ausführliche Lösungen.

**Eigenwertprobleme; Goldene Regel; Austauschwechselwirkung; Modell freier Elektronien; Modell fast freier Elektronien**

Elektronien; Modell fast freier Elektronien  
Textbook in two volumes presents clear and comprehensible knowledge in quantum and solid state theory fundamentals. Volume 1 discusses quantum mechanics. Volume 2 presents solid state physics. Both volumes contain numerous exercises and extensive solutions.

**Eigenvalue problems; Golden rule; exchange interaction; Free electron model; Nearly free electron model**

**Gerhard Franz**, Hochschule München, Deutschland.

**Arnold Neumaier, Dennis Westra**  
**Algebraic Quantum Physics**  
**Volume 1: Quantum Mechanics via Lie Algebras**

**Series:** De Gruyter Studies in Mathematical Physics

November 2024

English, 20 , 500 pp., 50 fig.

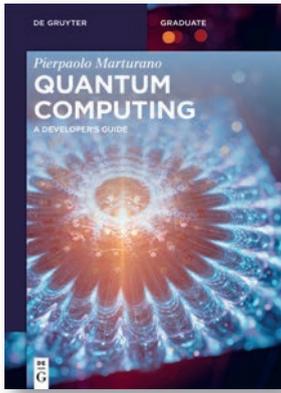
**HC** \*RRP € 149.95/ US\$ 170.99/ £ 134.50  
ISBN 978-3-11-040610-8

**eBook** \*RRP € 149.95/ US\$ 170.99/ £ 134.50  
PDF ISBN 978-3-11-040620-7  
ePUB ISBN 978-3-11-040624-5

Presenting classical mechanics, quantum mechanics, and statistical mechanics in an almost completely algebraic setting, this monograph introduces mathematicians, physicists, and engineers to the ideas relating classical and quantum mechanics with Lie algebras and Lie groups. The focus lies on discussing structural properties of mechanics rather than computational techniques.

**Classical mechanics; Theoretical physics; Oscillating systems; Statistical mechanics; Thermodynamics; Markov processes**

**Arnold Neumaier and Dennis Westra**, University of Vienna, Austria.



T

*Pierpaolo Marturano*  
**Quantum Computing**  
 A Developer's Guide

**Series:** De Gruyter Textbook

August 2024  
 English, Approx. XX, 200 pp., 130 fig.

**Pb.** \*RRP € 89.95/ US\$ 97.99/ £ 77.50  
 ISBN 978-3-11-063675-8

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
 PDF ISBN 978-3-11-063679-6  
 ePUB ISBN 978-3-11-063703-8

This book introduces the exciting new field of quantum computing for computer science students and classical software developers. It starts from the basics of quantum mechanics and linear algebra before delving into quantum gates and quantum algorithms. The book also describes the physical realizations of quantum computers and teaches how to write software for the IBM Quantum Experience using Qiskit, a modular open-source programming framework.

**Quantum informatics; Quantum logic; Quantum simulator; Quantum information theory; Software development**

*Pierpaolo Marturano*, dotQuantum.io, Italy.



T

*Matthias Zschornak, Dirk C. Meyer*  
**Elektrodynamik und Phänomenologische Thermodynamik Kapiieren**

Experimentalphysik

[Understanding Electrodynamics and Phenomenological Thermodynamics: Experimental Physics]

**Reihe/Series:** De Gruyter Studium

Oktober/October 2024  
 Deutsch/German, Ca./Approx. X, 150 S./pp., 100 Abb./fig.

**Br./Pb.** \*€ 59.95/ UVP/RRP US\$ 65.99/  
 UVP/RRP £ 54.50  
 ISBN 978-3-11-133145-4

**\*\*eBook** \*€ 699.00/ UVP/RRP US\$ 770.00/  
 UVP/RRP £ 635.50  
 PDF ISBN 978-3-11-133157-7  
 ePUB ISBN 978-3-11-133164-5

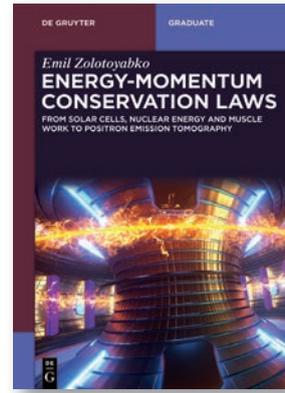
Das Lehrbuch, in engem Austausch mit Studierenden entstanden, behandelt zunächst den Ladungstransport in Medien und wichtige Gesetzmäßigkeiten der Elektrostatik sowie des stationären Magnetfeldes. Darauf aufbauend werden instationäre Felder bis hin zu den Maxwell-Gleichungen entwickelt. Der zweite Teil erläutert Konvektion, Wärmestrahlung und schließlich Zustandsänderungen des idealen Gases sowie die beiden ersten Hauptsätze der Thermodynamik.

**Elektrostatik; Ladungstransport; Induktionsgesetz; Wärmetransport; Energiesatz; Physik-Kompodium**

This text book, which was created in close consultation with students, begins by addressing charge transport in media and the important principles of electrostatics and stationary magnetic fields. Building on that, it covers non-stationary fields and Maxwell equations. The second part explains convection, thermal radiation, and, finally, changes of state in ideal gasses and the first two laws of thermodynamics.

**Electrostatics; Charge transport; Law of induction; Heat transport; Energy theorem; Physics compodium**

*Matthias Zschornak und Dirk C. Meyer*, TU Bergakademie Freiberg, Deutschland.



T

*Emil Zolotoyabko*  
**Energy-Momentum Conservation Laws**

From Solar Cells, Nuclear Energy and Muscle Work to Positron Emission Tomography

**Series:** De Gruyter Textbook

February 2024  
 English, Approx. X, 115 pp., 79 fig.

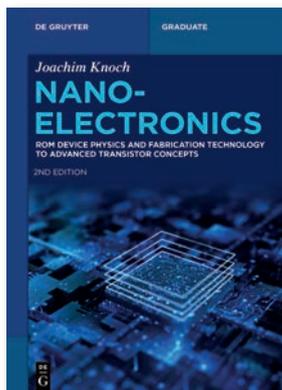
**Pb.** \*RRP € 64.95/ US\$ 71.99/ £ 59.50  
 ISBN 978-3-11-134345-7

**\*\*eBook** \*RRP € 699.00/ US\$ 770.00/ £ 635.50  
 PDF ISBN 978-3-11-134354-9  
 ePUB ISBN 978-3-11-134392-1

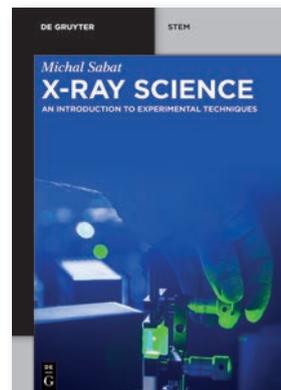
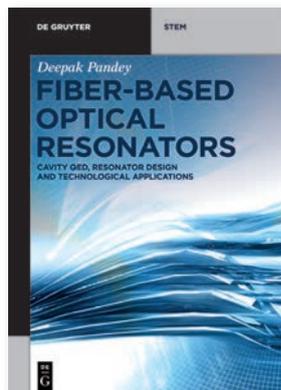
Conservation laws, reflecting basic symmetries of space and time, play a vital role in understanding the surrounding world. Specifically, they allow us to explain very different phenomena from a unified point of view. The textbook illustrates this statement by stimulating examples taken from mechanics, optics, nuclear physics, solid-state physics, biology, and medicine.

**Light emitting diodes (LED); Jet propulsion**

*Emil Zolotoyabko*, Technion-Israel Institute of Technology, Israel.



T



*Joachim Knoch*  
**Nanoelectronics**

From Device Physics and Fabrication Technology to Advanced Transistor Concepts

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
 April 2024  
 English, Approx. XVIII, 420 pp., 260 fig.

**Pb.** \*RRP € 74.95/ US\$ 86.99/ £ 68.00  
 ISBN 978-3-11-105424-7

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
 PDF ISBN 978-3-11-105442-1  
 ePUB ISBN 978-3-11-105501-5

The 2nd edition covers all aspects related to nanoelectronics devices including the quantum mechanical and solid-state physics aspects, an overview of semiconductor fabrication techniques as well as a brief introduction into device simulation. Equipped with this foundation, the book discusses nanoscale yield-effect transistors and alternative device concepts such as Schottky-barrier MOSFETs as well as steep slope FETs.

Field-Effect Transistors; Electronic Transport; Semiconductor Fabrication; Two-Dimensional Materials; Metal-Oxide Semiconductor

*Joachim Knoch*, University Aachen, Germany.

*Deepak Pandey*  
**Fiber-Based Optical Resonators**

Cavity QED, Resonator Design and Technological Applications

**Series:** De Gruyter STEM

February 2024  
 English, Approx. X, 200 pp., 72 fig.

**Pb.** \*RRP € 99.95/ US\$ 109.99/ £ 91.00  
 ISBN 978-3-11-063623-9

**eBook** \*RRP € 99.95/ US\$ 109.99/ £ 91.00  
 PDF ISBN 978-3-11-063626-0  
 ePUB ISBN 978-3-11-063630-7

After introducing the basics of optical resonators and cavity quantum electrodynamics, this book illustrates several aspects of fiber-based resonators: from their employment in daily life and precision experiments to the different design techniques, including the most recent developments in the field. The book describes in detail the applications to different research areas and highlights the future potential as quantum technology devices.

Technological Applications; Optical Resonators; Fiber; Resonator Design; Cavity QED; Quantum Technology

*Deepak Pandey*, Bonn University, Germany.

*Michal Sabat*  
**X-ray Science**

An Introduction to Experimental Techniques

**Series:** De Gruyter Textbook

December 2024  
 English, Approx. XVI, 450 pp., 200 fig.

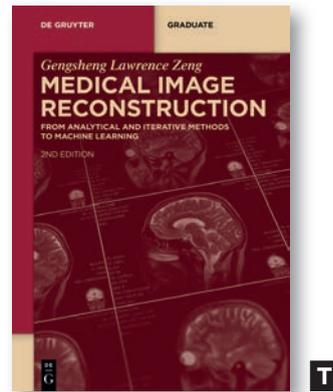
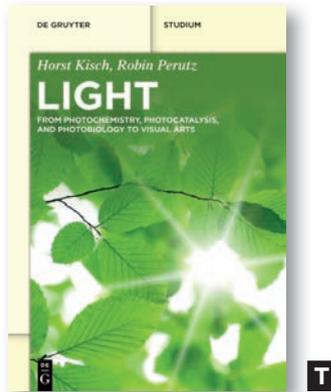
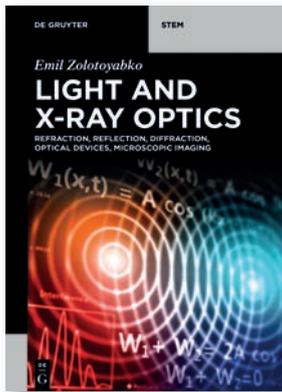
**Pb.** \*RRP € 79.95/ US\$ 87.99/ £ 68.00  
 ISBN 978-3-11-058317-5

**eBook** \*RRP € 79.95/ US\$ 87.99/ £ 68.00  
 PDF ISBN 978-3-11-058333-5  
 ePUB ISBN 978-3-11-058352-6

*X-ray Science* is a comprehensive introduction into characterization techniques for surfaces and bulk materials involving X-rays in physics, crystallography, materials science and chemistry. It starts with the basic properties of X-rays and methods to generate X-rays. Various X-ray diffraction methods are discussed together with computed tomography, x-ray fluorescence, photoelectron spectroscopy and a section on soft x-rays for biological samples.

Structure analysis; Single-crystal diffraction; X-ray imaging methods; X-ray computed tomography (XCT); X-ray fluorescence (XRF); Small-angle X-ray scattering (SAXS)

*Michal Sabat*, University of Virginia, USA.



*Emil Zolotoyabko*  
**Light and X-Ray Optics**

Refraction, Reflection, Diffraction, Optical Devices, Microscopic Imaging

**Series:** De Gruyter STEM

June 2023  
 English, XII, 286 pp., 210 fig.

**Pb.** \*RRP € 89.95/ US\$ 98.99/ £ 82.00  
 ISBN 978-3-11-113969-2

**eBook** \*RRP € 89.95/ US\$ 98.99/ £ 82.00  
 PDF ISBN 978-3-11-114010-0  
 ePUB ISBN 978-3-11-114089-6

Optics – the fastest developing in the physical sciences with vital applications to nanotechnology and life sciences. The common principles and essential distinctions between optics of visible light and X-rays are discussed. The emphasis is on modern experimental techniques, considering the wide-ranging knowledge in optics that students and young researchers, trained as materials scientists, physicists, chemists, biologists, or engineers, require.

Microscopic Imaging; Wave interference; Light Diffraction; X-ray Diffraction; Optical Devices

*Emil Zolotoyabko*, Technion-Israel Institute of Technology, Israel.

*Horst Kisch, Robin Perutz*  
**Light**

From Photochemistry, Photocatalysis, and Photobiology to Visual Arts

**Series:** De Gruyter Textbook

September 2024  
 English, Approx. X, 190 pp., 180 fig.

**Pb.** \*RRP € 74.95/ US\$ 85.99/ £ 67.00  
 ISBN 978-3-11-102934-4

**\*\*eBook** \*RRP € 699.00/ £ 599.00  
 PDF ISBN 978-3-11-102937-5  
 ePUB ISBN 978-3-11-102987-0

This book explains in a clear and vivid language why light plays a central role in life and natural science. From its interaction with animate and inanimate matter fascinating relations arise between physics, chemistry, and life sciences: from photovoltaics, photosynthesis, solar hydrogen production, human vision, communication in the darkness of deep sea, and cancer therapy up to general cultural aspects.

Photochemistry; Luminescence; Photocatalysis; Photosynthesis; Photobiology

*Horst Kisch*, University of Erlangen (em.), Germany; *Robin Perutz*, University of York (em.), UK.

*Gengsheng Lawrence Zeng*  
**Medical Image Reconstruction**

From Analytical and Iterative Methods to Machine Learning

**Series:** De Gruyter Textbook

2. Edition/2nd Edition  
 July 2023  
 English, XIV, 273 pp., 60 fig.

**Pb.** \*RRP € 69.95/ US\$ 80.99/ £ 63.50  
 ISBN 978-3-11-105503-9

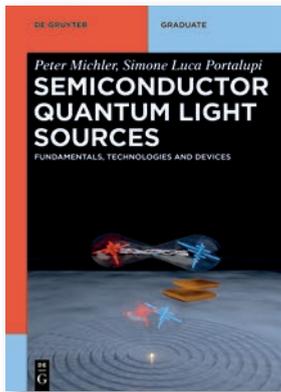
**\*\*eBook** \*RRP € 699.00/ £ 599.00  
 PDF ISBN 978-3-11-105540-4  
 ePUB ISBN 978-3-11-105570-1

This work introduces image reconstruction technologies in tomography, including 2D parallel-beam, 3D parallel ray and cone-beam imaging by using case studies to illustrate mathematical expressions for each method. Due to the didactical structure and a balanced combination of methodologies and applications, it is an essential reference for students and engineers with electrical engineering and biomedical background.

New chapter: Machine Learning.

Tomography Methods; Analytic Inversion; Iterative Optimization; Machine Learning; Clinical Applications of Tomographic Methods

*Gengsheng Lawrence Zeng*, Weber State University, USA.



T

*Peter Michler, Simone Luca Portalupi*

## **Semiconductor Quantum Light Sources**

Fundamentals, Technologies and Devices

**Series:** De Gruyter Textbook

March 2024

English, Approx. XX, 350 pp., 177 fig.

**Pb.** \*RRP € 79.95/ US\$ 88.99/ £ 69.00

ISBN 978-3-11-070340-5

**\*\*eBook** \*RRP € 699.00/ £ 599.00

PDF ISBN 978-3-11-070341-2

ePUB ISBN 978-3-11-070349-8

The work provides today's research expertise of photonic-based quantum optics and technology with particular attention to the generation of non-classical light with semiconductor nanostructures. After presenting the compact fundamentals of single and entangled photon sources it discusses quantum dots, nanofabrication methods and describes the technological transfer into real world implementations.

**Semiconductor Technologies; Quantum Optics; Photonic Engineering; Semiconductor Nanostructures; Quantum Dots**

*Peter Michler and Simone L. Portalupi,*  
University of Stuttgart, Germany.

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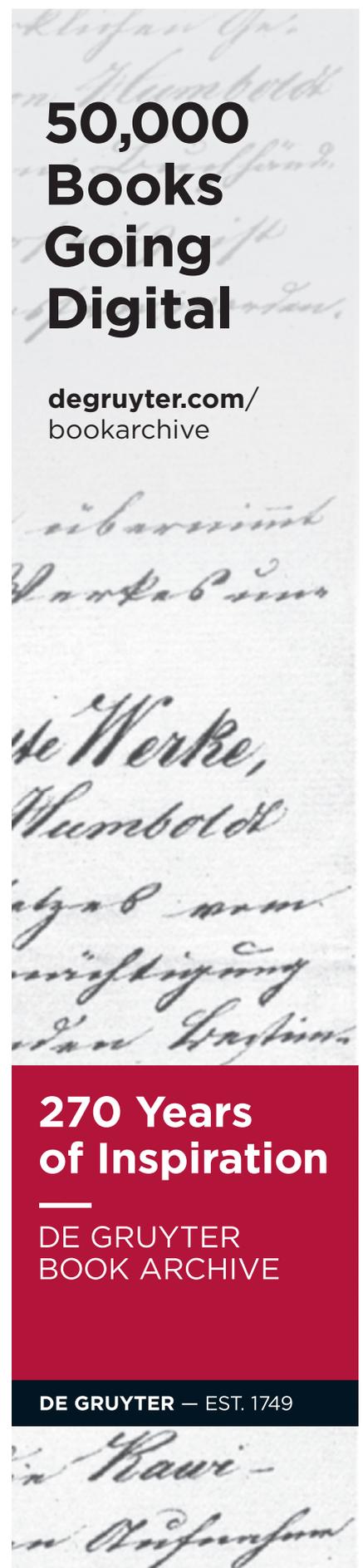
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