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PHYSICAL SCIENCES 2025

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Liebe Leserinnen und Leser,
innovative Technologien sind der Schlüssel zu einer nachhaltigen Zukunft. Ein herausragendes Beispiel sind die Durchbrüche in der Herstellung und Nutzung von grünem Wasserstoff als Energiequelle in den letzten Jahren. Diese Technologie bietet das Potenzial, die industrielle Produktion zu revolutionieren und CO₂-Emissionen drastisch zu senken. Doch solche Innovationen entstehen nicht von selbst – sie erfordern fundiertes Wissen und bahnbrechende Forschung.

Genau hier setzen auch dieses Jahr wieder unsere Neuerscheinungen an: Die enthaltenen Titel unterstützen Sie als Forscher und Entwickler dabei, Technologien voranzutreiben und neue, nachhaltige Lösungen zu entwickeln. Viele unserer Bücher tragen daher mittlerweile auch das Gütesiegel der Nachhaltigkeitsziele der Vereinten Nationen (SDGs).

Neben Inhalten zur grünen Energie bieten wir Ihnen natürlich auch wieder eine Vielzahl von Werken aus den Bereichen Chemie, Nanotechnologie, Physik, Pharmakologie, Prozessoptimierung, Ingenieurwesen und vielen weiteren Disziplinen. Wie immer zeichnen sich die Bücher unserer renommierten Autoren dabei durch höchste wissenschaftliche Qualität und Aktualität aus. Tauchen Sie ein und gestalten Sie mit uns die Zukunft nachhaltig!

Mit herzlichen Grüßen

Dear Reader,

Innovative technologies are key to a sustainable future. A remarkable example is the recent breakthroughs in the production and use of green hydrogen as an energy source. This technology has the potential to revolutionize industrial production and drastically reduce CO₂ emissions. However, such innovations do not arise on their own—they require deep knowledge and groundbreaking research.

This is exactly where our new releases come in: the featured titles will support you as researchers and developers in advancing technologies and creating new, sustainable solutions. Many of our books now proudly carry the United Nations Sustainable Development Goals (SDG) certification.

In addition to content on green energy, we also offer a wide range of works in fields such as chemistry, nanotechnology, physics, pharmacology, process optimization, engineering, and many more. As always, our renowned authors provide books distinguished by the highest scientific quality and relevance.

Dive in and help shape the future sustainably with us!

Sincerely yours



A handwritten signature in black ink that reads "Daniel Tiemann".

Daniel Tiemann

Vice President STEM

Daniel.Tiemann@degruyter.com

3	MATERIALWISSENSCHAFTEN MATERIALS SCIENCES
14	INDUSTRIELLE CHEMIE INDUSTRIAL CHEMISTRY
39	CHEMIE CHEMISTRY
49	PHYSIK PHYSICS
54	INDEX

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Arbind Prasad, Manoj Kumar Sinha, J. Paulo Davim (Eds.)

High-Performance Metallic Biomaterials

Surface Modification and Coating of Implants

Series: Advanced Mechanical Engineering

May 2025

English, Approx. X, 450 pp., 60 fig.

HC *RRP € 220.00 / US\$ 240.00 / £ 195.00

ISBN 978-3-11-157137-9

eBook *RRP € 220.00 / US\$ 240.00 / £ 195.00

PDF ISBN 978-3-11-157142-3

ePUB ISBN 978-3-11-157212-3

Metallic biomaterials are largely used in medical implants, joint replacements and orthopedic fixations which might lead to related complications due to the interactions between the surface of a synthetic material and the biological environment. Challenges associated with the use of stainless steels, Co-based alloys, titanium and its alloys are presented as well as various laser surface modifications.

Titanium Alloys; Cobalt Alloys; Magnesium Alloys; Nanostructures

Arbind Prasad, Katihar Engineering C, India; *Manoj K. Sinha*, National Inst. of Technology, India; *J. Paulo Davim*, U Aveiro, Portugal.



Sumit Pramanik, Sandipan Roy, J. Paulo Davim (Eds.)

Advanced Biomedical Composites

Materials, Design, Manufacturing

Series: Advanced Composites

April 2025

English, Approx. X, 590 pp., 300 fig.

HC *RRP € 194.95 / US\$ 220.00 / £ 175.50

ISBN 978-3-11-138594-5

eBook *RRP € 194.95 / US\$ 220.00 / £ 175.50

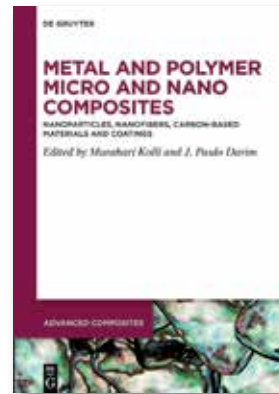
PDF ISBN 978-3-11-138602-7

ePUB ISBN 978-3-11-138615-7

This work focuses on recent advancements of composite materials in a broad range of biomedical engineering applications. After discussing hydrogels and metal, ceramic, polymeric composites it presents the fundamentals of computational modelling of bones, muscles and ligaments. In the last part it covers various additive manufacturing techniques e.g. for implants and prosthetic limbs.

Implants; Polymers; Metals; Ceramics; Composites

Sumit Pramanik and *Sandipan Roy*, SRM Institute of Science and Technology, Chennai, India; *J. Paulo Davim*, U Aveiro, Portugal.



Murahari Kolli, J. Paulo Davim (Eds.)

Metal and Polymer Micro and Nano Composites

Nanoparticles, Nanofibers, Carbon-Based Materials and Coatings

Series: Advanced Composites

November 2025

English, Approx. X, 190 pp., 60 fig.

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

ISBN 978-3-11-166429-3

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

PDF ISBN 978-3-11-166483-5

ePUB ISBN 978-3-11-166616-7

With the rapid advancement in micro and nano scale composite technology, there is an increasing need to understand mechanical, thermal, and structural behavior to design the next generation of materials. The book provides a thorough exploration of cutting-edge research, bridging the gap between fundamental principles and practical applications. It emphasizes enhanced properties, advanced fabrication methods, real-world applications and challenges.

Advanced Composites

Murahari Kolli, Lakireddy Bali Reddy College of Engineering, India; *J. Paulo Davim*, University of Aveiro, Portugal.



Yashvir Singh, Gagan Bansal (Eds.)

Biotribology

Friction, Wear and Lubrication in Biological Systems

Series: Green Tribology and Tribochemistry

September 2025
English, X, 240 pp., 50 fig.

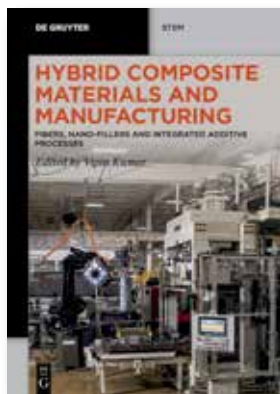
HC *RRP € 164.95/ US\$ 176.99/ £ 146.50
ISBN 978-3-11-156294-0

eBook *RRP € 164.95/ US\$ 176.99/ £ 146.50
PDF ISBN 978-3-11-156317-6
ePUB ISBN 978-3-11-156322-0

Biotribology is the study of the mechanics of living organisms and how they interact with external surfaces. The book explores basic characteristics of biological surfaces, explaining the intricate structures and mechanical features that control how they interact with each other. Topics include causes of friction and wear in biological systems, lubrication techniques used by living organisms and how tissues and organs interact with each other.

Wear Analysis; Biomechanics; Tribology; Friction

Yashvir Singh, Harcourt Butler Technical University; *Gagan Bansal*, Graphic Era Deemed to be University, India.



Vipin Kumar (Ed.)

Hybrid Composite Materials and Manufacturing

Fibers, Nano-Fillers and Integrated Additive Processes

Series: De Gruyter STEM

December 2024
English, Approx. X, 150 pp., 51 fig.

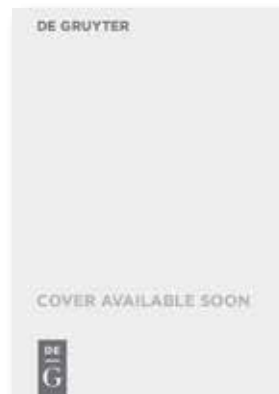
Pb. *RRP € 89.95/ US\$ 94.99/ £ 78.50
ISBN 978-3-11-101934-5

eBook *RRP € 89.95/ US\$ 94.99/ £ 78.50
PDF ISBN 978-3-11-101954-3
ePUB ISBN 978-3-11-102013-6

The book presents hybrid composite manufacturing processes and hybrid material properties. It progresses from traditional hybrid manufacturing processes such as compression molding, injection molding and sheet molding composite to overmolding and emerging hybrid processes. It includes fiber reinforced metal laminates hybrid components and covers emerging trends in hybridization due to the adoption of advanced additive manufacturing by the industry

Hybrid Composites, Polymer Chemistry, Polymer Manufacturing, Fibers, Additives

Vipin Kumar, Oak Ridge National Laboratory, USA.



Jeffrey Moran (Ed.)

Active Colloids

Fabrication, Characterization and Implementation

Series: De Gruyter STEM

December 2025
English, Approx. X, 165 pp., 50 fig.

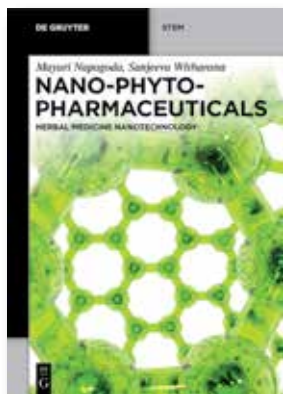
Pb. *RRP € 89.95/ US\$ 101.99/ £ 80.00
ISBN 978-3-11-105520-6

eBook *RRP € 89.95/ US\$ 101.99/ £ 80.00
PDF ISBN 978-3-11-105613-5
ePUB ISBN 978-3-11-105617-3

Self-propelled micro- and nanoparticles show numerous interesting behaviors and have a wide variety of potential applications in energy, environmental remediation and biomedicine. Early chapters of the book guide the reader through the fabrication of basic active colloid designs, while the middle chapters provide instructional guides on microfluidic assays, microscopy methods and video analysis. It covers the most promising practical applications.

Microparticles; Nanoparticles; Nanotechnology; Microfluidics; Active Matter

Jeffrey Moran, George Mason University, USA.



Mayuri Napagoda, Sanjeeva Witharana

Nano-Phyto-pharmaceuticals

Herbal Medicine Nanotechnology

Series: De Gruyter STEM

September 2025

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

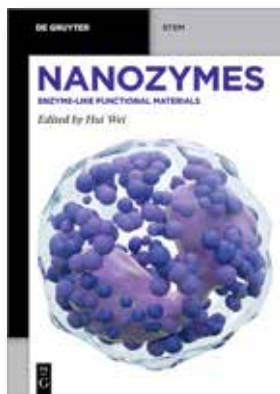
Pb. *RRP € 104.95/ US\$ 112.99/ £ 93.00
ISBN 978-3-11-113657-8

eBook *RRP € 104.95/ US\$ 112.99/ £ 93.00
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.



Hui Wei (Ed.)

Nanozymes

Enzyme-Like Functional Materials

Series: De Gruyter STEM

August 2025

English, Approx. X, 110 pp., 80 fig.

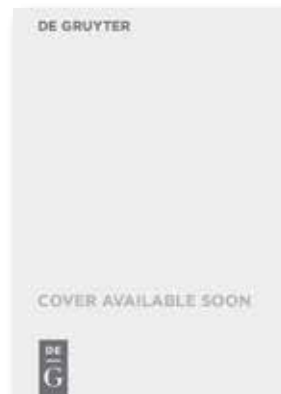
Pb. *RRP € 74.95/ US\$ 82.99/ £ 68.50
ISBN 978-3-11-113015-6

eBook *RRP € 74.95/ US\$ 82.99/ £ 68.50
PDF ISBN 978-3-11-113238-9
ePUB ISBN 978-3-11-113492-5

Nanozymes are functional nanomaterials with enzyme mimicking activities. They are superior to natural enzymes and conventional enzyme mimics and have found a myriad of applications. They are a topic of increasing research interest and are one of the IUPAC Top Ten Emerging Technologies in Chemistry. *Nanozymes* covers fundamentals, typical mechanisms, design and applications and is the perfect introductory book to the topic.

Nanomaterials; Nanotechnology; Functional Materials

Hui Wei, Nanjing University, China.



Alain Dufresne

Nanocellulose

Microfibrillated Cellulose, Cellulose Nanocrystals, Cellulose Nanocomposites

Series: De Gruyter Textbook

December 2025

English, Approx. X, 240 pp., 150 fig.

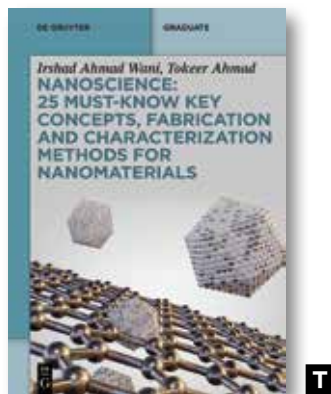
Pb. *RRP € 74.95/ US\$ 82.99/ £ 68.50
ISBN 978-3-11-154622-3

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-154765-7
ePUB ISBN 978-3-11-154821-0

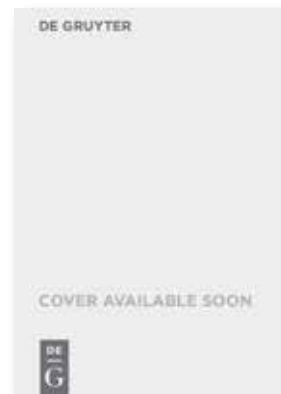
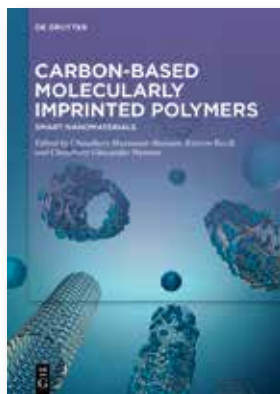
Nanocellulose comprises the preparation, main characteristics, properties and applications of nanoparticles extracted from cellulose, the most abundant polymer.

Cellulose Nanomaterials; Cellulose Nanocrystals; Cellulose Nanofibrils; Nanocrystalline Cellulose; Microfibrillated Cellulose; Paper; Pulp

Alain Dufresne, Grenoble INP-Pagora, Saint Martin d'Hères, France.



T



Irshad Ahmad Wani, Tokeer Ahmad
**Nanoscience:
 25 Must-Know Key
 Concepts, Fabrication
 and Characterization
 Methods for Nanomaterials**

Series: De Gruyter Textbook

September 2025
 English, Approx. X, 140 pp., 50 fig.

Pb. *RRP € 74.95/ US\$ 82.99/ £ 68.50
 ISBN 978-3-11-155452-5

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
 PDF ISBN 978-3-11-155509-6
 ePUB ISBN 978-3-11-155531-7

Nanoscience and Nanomaterials is a guide to understanding the essentials of nanoscience. Readers are introduced to the foundational concepts. The book covers the 5 must-know size effects at the nanoscale, 11 must-know nanofabrication techniques and the 9 must-know tools and techniques used in research, offering insights into modern instrumentation to study nanomaterials. It also examines the applications of nanotechnology across various sectors.

Nanotechnology; Nanoscale

Irshad Ahmad Wani, GDC Anantnag;
Tokeer Ahmad, Jamia Millia Islamia, India.

Chaudhery Mustansar Hussain, Rüstem Keçili, Chaudhery Ghazanfar Hussain (Eds.)
Carbon-Based Molecularly Imprinted Polymers

Smart Nanomaterials
 September 2025
 English, Approx. X, 490 pp., 160 fig.

HC *RRP € 164.95/ US\$ 176.99/ £ 146.50
 ISBN 978-3-11-150302-8

eBook *RRP € 164.95/ US\$ 176.99/ £ 146.50
 PDF ISBN 978-3-11-150332-5
 ePUB ISBN 978-3-11-150367-7

Molecular imprinting allows the creation of synthetic polymers with selective binding capabilities. The infusion of carbon based materials into this field introduces a new dimension, to enhance design, performance and applications of these polymers. *Carbon-Based Molecularly Imprinted Polymers* covers fundamentals, design strategies, performance evaluation and applications in environmental remediation, biomedical sciences and analytical chemistry.

Smart Carbon Nanomaterials; Analytical Applications; Environmental Remediation; Biomedical Applications; Polymer Synthesis

C. M. Hussain, NJIT, USA; *R. Keçili*, Anadolu University, Turkey; *C. G. Hussain*, Department of Education Lahore, Pakistan.

Takeo Oku
**Structure Analysis of
 Advanced Nanomaterials**

Nanoworld of Inorganic Materials by High-Resolution Electron Microscopy

2. Edition/2nd Edition
 September 2025
 English, Approx. X, 190 pp., 100 fig.

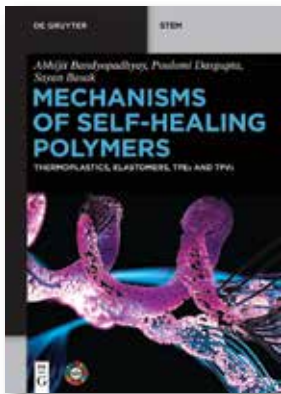
HC *RRP € 149.95/ US\$ 164.99/ £ 136.50
 ISBN 978-3-11-156706-8

eBook *RRP € 149.95/ US\$ 164.99/ £ 136.50
 PDF ISBN 978-3-11-156854-6
 ePUB ISBN 978-3-11-156875-1

High-resolution electron microscopy allows the imaging of the crystallographic structure of a sample at an atomic scale. It is a valuable tool to study nanoscale properties of crystalline materials such as superconductors, semiconductors, solar cells, zeolite materials, carbon nanomaterials or BN nanotubes. New: Nanostructured Materials and details of other parts will also be updated.

Materials Science; Advanced Nanomaterials; Crystallography; Industrial Application; Microscopy

Takeo Oku, The University of Shiga Prefecture, Japan.



Abhijit Bandyopadhyay, Poulomi Dasgupta, Sayan Basak

Mechanisms of Self-Healing Polymers

Thermoplastics, Elastomers, TPEs and TPVs

Series: De Gruyter STEM

December 2025
English, Approx. X, 190 pp., 45 fig.

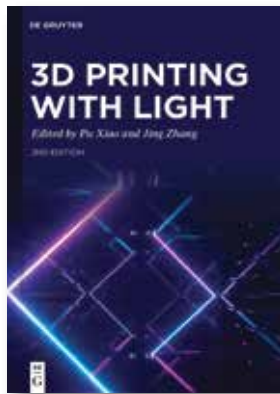
Pb. *RRP € 94.95/ US\$ 100.99/ £ 83.00
ISBN 978-3-11-158309-9

eBook *RRP € 94.95/ US\$ 100.99/ £ 83.00
PDF ISBN 978-3-11-158371-6
ePUB ISBN 978-3-11-158420-1

Self-healing synthetic materials have the ability to repair damage on their own, restoring functionality and significantly extending the lifespan, energy efficiency, safety and environmental impact of synthetic materials. The book encompasses a spectrum of smart materials, introduces the mechanisms that endow these materials with their remarkable properties, processing aspects, self-healing elastomers and applications of these smart materials.

Self-Healing Polymers; Smart Materials; Polymer Science; Thermoplastic Elastomers; Autonomous Repair; Sustainable Materials; Advanced Composites; Self-Healing Technology

Abhijit Bandyopadhyay, Poulomi Dasgupta, Sayan Basak, University of Calcutta, India.



Pu Xiao, Jing Zhang (Eds.)

3D Printing with Light

2. Edition/2nd Edition
August 2025
English, XII, 490 pp., 250 fig.

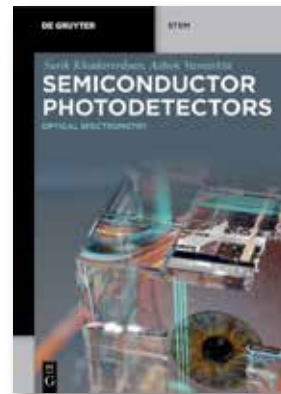
HC *RRP € 194.95/ US\$ 220.00/ £ 175.50
ISBN 978-3-11-150506-0

eBook *RRP € 194.95/ US\$ 220.00/ £ 175.50
PDF ISBN 978-3-11-150519-0
ePUB ISBN 978-3-11-150595-4

The book covers fundamentals of 3D printing with light, photoinitiating system for 3D printing as well as resins and applications. New to this edition: developments in photoinitiating systems, functional dyes and photocurable resins for 3D printing, 3D printing of microfluidic, biomaterials, ceramics and customized objects, dual wavelength systems, femtosecond laser nonlinear lithography and 3D printing with lambda-orthogonal photochemistry.

3D Printing; Photopolymer; Photoinitiator; Resin; Photochemistry; Polymers

Pu Xiao, Chinese Academy of Sciences, P. R., China; *Jing Zhang*, University of South Australia, Australia.



Surik Khudaverdyan, Ashok Vaseashta

Semiconductor Photodetectors

Optical Spectrometry

Series: De Gruyter STEM

October 2024
English, XVI, 174 pp., 144 fig.

Pb. *RRP € 89.95/ US\$ 98.99/ £ 82.00
ISBN 978-3-11-142787-4

eBook *RRP € 89.95/ US\$ 98.99/ £ 82.00
PDF ISBN 978-3-11-142802-4
ePUB ISBN 978-3-11-142831-4

Semiconductor Photodetectors presents the mechanism for the injection amplification of the photocurrent in devices based on cadmium telluride and silicon with a high-resistance sublayer. It covers new spectral analysis mechanism and the design of highly sensitive devices, resistant to radiation of optical and X-ray ranges of electromagnetic waves, for remote spectral analysis, identification and assessment of substances in air, water and food.

Photonics; Sensors; Environment

Surik Khudaverdyan, Armenian National Polytechnic University, Armenia;
Ashok Vaseashta, International Clean Water Institute, USA.



Faris M. AL-Oqla, Afdzaluddin Atiqah, Salit Mohd Sapuan (Eds.)

Biocomposites in Electronics

Natural Fibers, Nanocellulose and Nanocomposites

June 2025

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

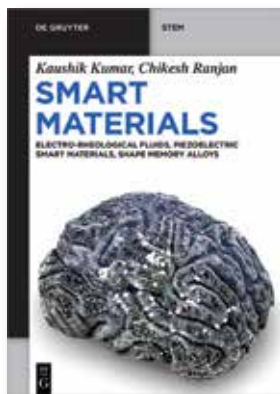
HC *RRP € 164.95/ US\$ 176.99/ £ 146.50
ISBN 978-3-11-140004-4

eBook *RRP € 164.95/ US\$ 176.99/ £ 146.50
PDF ISBN 978-3-11-140005-1
ePUB ISBN 978-3-11-140241-3

Biocomposites in Electronics covers the fundamentals of biocomposite materials and applications in electronics. It describes biopolymer nanocomposites manufacturing and electrical properties characterization. It includes nanocomposites for nano-fluid in heat transfer and thermal management of power electronics, nanocellulose and graphene-nanocellulose starch biopolymer composites for piezoelectrics and electrical characteristics of natural fibers.

Organic Transient Bio-electronics; Electro-active Papers; Bio-sensors; Bio-actuators; Flexible Electronics; Energy Harvesting; Piezoelectric; Dielectric

Faris M. AL-Oqla, The Hashemite University, Jordan; *A. Atiqah*, University Kebangsaan, Malaysia; *S.M. Sapuan*, UPM, Malaysia.



Kaushik Kumar, Chikesh Ranjan

Smart Materials

Electro-Rheological Fluids, Piezoelectric Smart Materials, Shape Memory Alloys

Series: De Gruyter STEM

October 2025

English, Approx. XV, 183 pp., 7 fig.

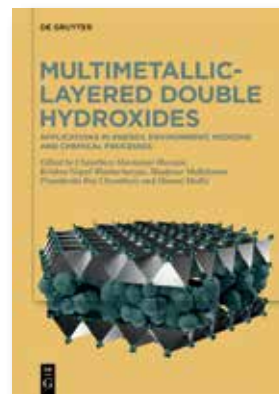
Pb. *RRP € 99.95/ US\$ 105.99/ £ 88.00
ISBN 978-3-11-137901-2

eBook *RRP € 99.95/ US\$ 105.99/ £ 88.00
PDF ISBN 978-3-11-137962-3
ePUB ISBN 978-3-11-137976-0

This work delves into the realm of adaptive substances responding intelligently to external stimuli like temperature, stress, or electromagnetic fields. The authors cover characterization and applications of advanced materials, elucidating their role in pioneering technologies such as self-healing structures, sensors, actuators, and energy-efficient systems across diverse sectors like engineering, healthcare, and consumer electronics.

Self-healing Structures; Sensors; Actuators; Energy-Efficient Systems; Consumer Electronics

Kaushik Kumar, Chikesh Ranjan, Birla Institute of Technology, Jharkhand, India.



Chaudhery Mustansar Hussain, Krishna Gopal Bhattacharyya, Shadpour Mallakpour, Priyadarshi Roy Chowdhury, Himani Medhi (Eds.)

Multimetallic-Layered Double Hydroxides

Applications in Energy, Environment, Medicine and Chemical Processes

June 2025

English, Approx. X, 490 pp., 180 fig.

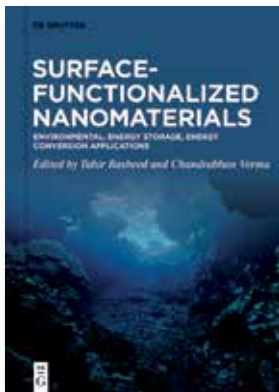
HC *RRP € 164.95/ US\$ 176.99/ £ 146.50
ISBN 978-3-11-138247-0

eBook *RRP € 164.95/ US\$ 176.99/ £ 146.50
PDF ISBN 978-3-11-138251-7
ePUB ISBN 978-3-11-138311-8

Multimetallic Layered Double Hydroxides delves into the design, synthesis, characterization and practical applications of these nanomaterials. It showcases real-world applications of multimetallic LDHs in catalysis, adsorption, green chemistry applications, theranostics, tissue engineering, metal-air batteries, thermoelectric devices, solar cells, fuel cells, supercapacitors, drug delivery, sensing applications and environmental remediation.

Nanomaterials; Nanotechnology; Catalysis; Adsorption; Green Chemistry; Theranostics; Tissue Engineering; Batteries; Thermoelectrics; Solar Cells; Fuel Cells; Supercapacitors; Drug Delivery; Sensors; Environmental Remediation

C.M. Hussain, NJIT, USA;
K.G. Bhattacharyya, ADBU, India;
S. Mallakpour, IUT, Iran; *P.R. Chowdhury*, Gauhati Uni.; *H. Medhi*, EKAC, India.



Tahir Rasheed, Chandrabhan Verma (Eds.)

Surface-Functionalized Nanomaterials

Environmental, Energy Storage, Energy Conversion Applications

March 2025

English, Approx. X, 450 pp., 80 fig.

HC *RRP € 174.95/ US\$ 188.99/ £ 156.00

ISBN 978-3-11-138164-0

eBook *RRP € 174.95/ US\$ 188.99/ £ 156.00

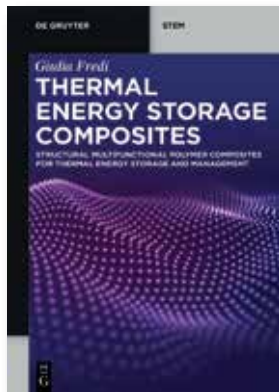
PDF ISBN 978-3-11-138180-0

ePUB ISBN 978-3-11-138189-3

The work describes synthesis, characterization, synthetic mechanisms, and applications of functionalized nanomaterials. Starting with surface functionalization of two-dimensional, carbon- or polymer-based materials it discusses nanomaterials for environmental applications such as adsorption and degradation of pollutants or wastewater treatment and energy storage such as batteries and supercapacitors.

Pollutants Degradation; Fossil Fuels; Energy Storage Technologies; Energy Conversion; Recyclability

Tahir Rasheed, King Fahd University, Dhahran, Saudi Arabia; *Chandrabhan Verma*, Khalifa University Abu Dhabi, United Arab Emirates.



Giulia Fredi

Thermal Energy Storage Composites

Structural Multifunctional Polymer Composites for Thermal Energy Storage and Management

Series: De Gruyter STEM

July 2025

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

Pb. *RRP € 74.95/ US\$ 82.99/ £ 68.50

ISBN 978-3-11-111155-1

eBook *RRP € 74.95/ US\$ 82.99/ £ 68.50

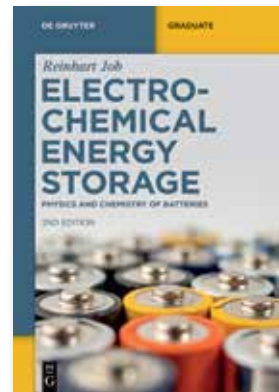
PDF ISBN 978-3-11-111186-5

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.



Reinhart Job

Electrochemical Energy Storage

Physics and Chemistry of Batteries

Series: De Gruyter Textbook

2. Edition/2nd Edition

December 2025

English, XV, 250 pp., 100 fig.

Pb. *RRP € 79.95/ US\$ 87.99/ £ 73.00

ISBN 978-3-11-914971-6

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00

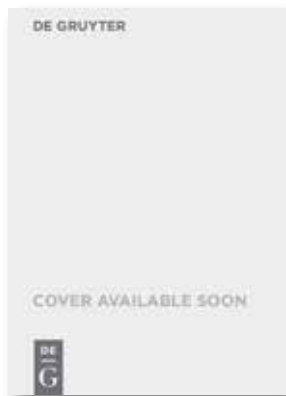
PDF ISBN 978-3-11-161853-1

ePUB ISBN 978-3-11-161864-7

Energy storage devices and their working principles are explained from physical and electrochemical foundations. After a history of galvanic cells, different types of primary, secondary and flow cells, fuel cells and supercapacitors are covered. An emphasis lies on the general setup and mechanisms behind those devices to enable easy understanding. New: two current batteries types are added and explained to complete and update the content.

Galvanic Cells; Flow Cells; Supercapacitors; Fuel Cells; Batteries

Reinhart Job, Münster University of Applied Sciences, Germany.



Takeo Oku

Solar Cells and Energy Materials

Perovskite Solar Cells, Organic Solar Cells, Hydrogen, Nuclear Fusion, SiC Device

2. Edition/2nd Edition
June 2025

English, Approx. X, 320 pp., 120 fig.

HC *RRP € 129.95 / US\$ 141.99 / £ 117.50
ISBN 978-3-11-156568-2

eBook *RRP € 129.95 / US\$ 141.99 / £ 117.50
PDF ISBN 978-3-11-156599-6
ePUB ISBN 978-3-11-156699-3

The introduction to solar cells and energy materials. The book included new materials based on organics, nanostructures and novel inorganics and developments in more traditional photovoltaic materials. New: Perovskite solar cells and details of other parts will also be updated.

Green Energy; Solar Cells; Inorganic Solar Cells; Organic Solar Cells; Perovskite Solar Cells; Energy Materials; Perovskite Solar Cells; Hydrogen; Nuclear Fusion; SiC Device

Takeo Oku, The University of Shiga Prefecture, Japan.

Yucheng Wu

Tungsten in Nuclear Fusion Applications

Plasma-Facing Materials
December 2025

English, Approx. X, 190 pp., 244 fig.

HC *RRP € 194.95 / US\$ 220.00 / £ 175.50
ISBN 978-3-11-155689-5

eBook *RRP € 194.95 / US\$ 220.00 / £ 175.50
PDF ISBN 978-3-11-155698-7
ePUB ISBN 978-3-11-155715-1

The progress and goals of the ITER from the extraction of fusion energy reflect the important role of plasma-oriented materials.

The book describes composition, structure control, properties and processing methods and how to overcome the brittleness of tungsten matrix materials. It also explains material selection, module manufacturing, heat load testing of diverter, ability and damage mechanism to withstand heat load and radiation damage.

Energy

Yuchen Wu, Hefei University of Technology, China.

Paolo Bondavalli

Research Grant Proposal Writing

How to Understand a Call and Win Funding

Series: De Gruyter Textbook

December 2025

English, Approx. X, 140 pp., 30 fig.

Pb. *RRP € 44.95 / US\$ 47.99 / £ 39.50
ISBN 978-3-11-143890-0

****eBook** *RRP € 699.00 / US\$ 769.00 / £ 599.00
PDF ISBN 978-3-11-143892-4
ePUB ISBN 978-3-11-143953-2

Grant Proposal Writing covers the methodology and approach to follow to write a winning proposal. The book teaches how to approach and understand a call for applications and write what is asked for, not what the applicant would like to write. It explains how to write effectively the objectives, impact and implementation sections. Anecdotes and case studies are included to help the reader understand how to handle each situation.

Funding Applications; European Projects

Paolo Bondavalli, Thales Research and Technology, France.

SUSTAINABLE AND GREEN SCIENCE



Henk Akse
SUSTAINABLE MANUFACTURING PROCESSES

01/2025, approx. 115 pages,
approx. 60 fig.

Paperback

RRP € 44.95 [D]/US\$ 47.99/£ 39.50

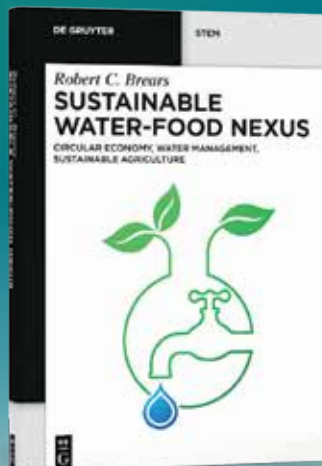
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ePUB ISBN 978-3-11-138380-4



Robert C. Brears
SUSTAINABLE WATER-FOOD NEXUS

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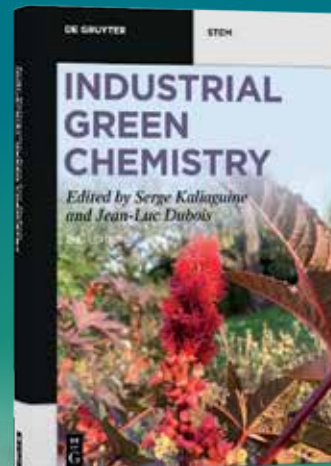
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eBook

RRP € 104.95 [D]/US\$ 112.99/£ 93.00

PDF ISBN 978-3-11-134138-5

ePUB ISBN 978-3-11-134147-7



Serge Kaliaguine, Jean-Luc Dubois
INDUSTRIAL GREEN CHEMISTRY

05/2025, approx. 375 pages,
approx. 120 fig.

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ISBN 978-3-11-138340-8

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RRP € 109.95 [D]/US\$ 117.99/£ 97.50

PDF ISBN 978-3-11-138344-6

ePUB ISBN 978-3-11-138361-3



Clemens Posten, Carola Griehl
MICROALGAL BIOTECHNOLOGY

06/2025, approx. 360 pages.,
approx. 200 fig.

Paperback

RRP € 99.95 [D]/US\$ 104.99/£ 83.00

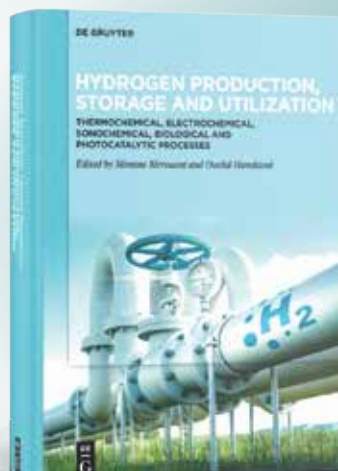
ISBN 978-3-11-066782-0

eBook

RRP € 99.95 [D]/US\$ 104.99/£ 83.00

PDF ISBN 978-3-11-066783-7

ePUB ISBN 978-3-11-066788-2



Slimane Merouani, Oualid Hamdaoui
**HYDROGEN PRODUCTION,
STORAGE AND UTILIZATION**

03/2025, approx. 650 pages,
approx. 80 fig.

Hardcover

RRP € 169.95 [D]/US\$ 182.99/£ 151.00

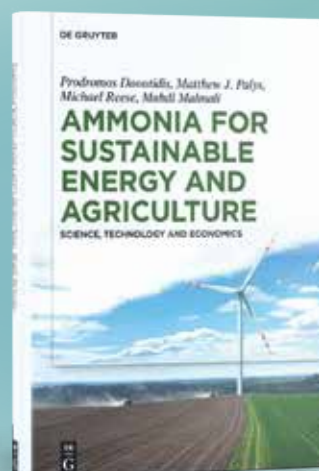
ISBN 978-3-11-162375-7

eBook

RRP € 169.95 [D]/US\$ 182.99/£ 151.00

PDF ISBN 978-3-11-162386-3

ePUB ISBN 978-3-11-162396-2



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

03/2025, approx. 250 pages,
approx. 150 fig.

Hardcover

RRP € 144.95 [D]/US\$ 166.99/£ 131.00

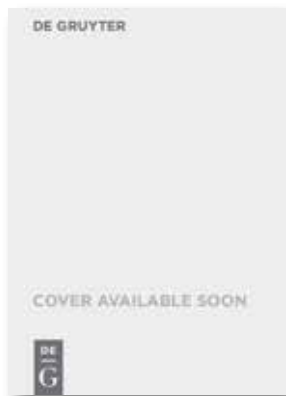
ISBN 978-3-11-076247-1

eBook

RRP € 144.95 [D]/US\$ 166.99/£ 131.00

PDF ISBN 978-3-11-076252-5

ePUB ISBN 978-3-11-076258-7



*Clive R. Neal, Lisa R. Gaddis,
Bradley L. Jolliff, Samuel J. Lawrence,
Stephen J. Mackwell, Charles K. Shearer,
Sarah N. Valencia (Eds.)*

New View of the Moon 2

Together with Mineralogical Society of America

Series: Reviews in Mineralogy & Geochemistry 89

May 2024
English, XXII, 868 pp., 121 fig.

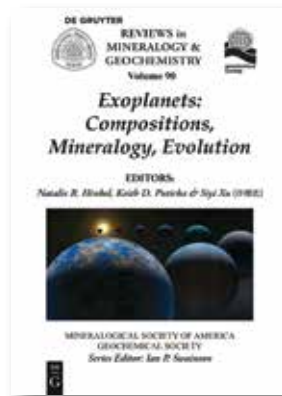
Pb. *RRP € 64.95/ US\$ 70.99/ £ 58.50
ISBN 978-1-946850-11-9

eBook *RRP € 64.95/ US\$ 70.99/ £ 58.50
PDF ISBN 978-1-5015-1989-5

Volume 89 summarizes the advances in lunar science and exploration since 2006 when Vol. 60 “New Views of the Moon” was published. All its contributions present our knowledge and expectations for an exciting future of lunar science and exploration and the new discoveries to be made.

Lunar Mission; Lunar Origin; Lunar Magma Ocean;
Lunar Crust; Lunar Interior; Lunar Surface

Clive R. Neal, Notre Dame/IN, USA;
Lisa R. Gaddis, Houston/TX, USA;
Bradley L. Jolliff St. Louis/MO, USA, et al.



*Natalie R. Hinkel, Keith D. Putirka,
Siyi Xu (Eds.)*

Exoplanets: Compositions, Mineralogy, Evolution

Together with Mineralogical Society of America

Series: Reviews in Mineralogy & Geochemistry 90

September 2024
English, XVIII, 594 pp., 150 fig.

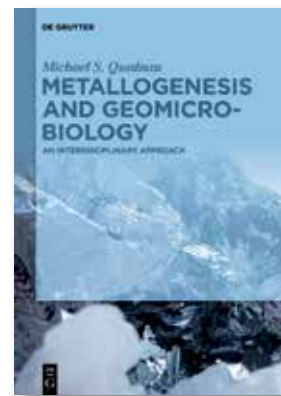
Pb. *RRP € 59.95/ US\$ 65.99/ £ 54.50
ISBN 978-1-946850-12-6

eBook *RRP € 59.95/ US\$ 65.99/ £ 54.50
PDF ISBN 978-1-5015-2081-5

The focus for RiMG volume 90 is on rocky exoplanets due to the high interest for truly Earth-like planets. A better union of geologic insights with astronomical ideas and data would provide the clearest prospect for increasing our understanding of exoplanets and their evolution.

Astro-Geology; Planetary Systems; Cosmos;
Telescopes

Natalie R. Hinkel, Louisiana St U/USA;
Keith D. Putirka, California St U/USA;
Siyi Xu, Gemini Observatory/NSF's
NOIRLab, Hawaii/USA.



Michael Quednau

Metallogenesis and Geomicrobiology

An Interdisciplinary Approach

September 2025
English, XVI, 300 pp., 80 fig.

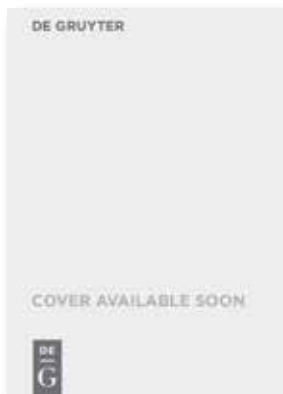
HC *RRP € 119.95/ US\$ 134.99/ £ 105.50
ISBN 978-3-11-058138-6

eBook *RRP € 119.95/ US\$ 134.99/ £ 105.50
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.

Geochemistry; Microbes; Metalliferous Deposits

Michael Quednau, Kronberg, Germany.

**T**

Thomas M. Klapötke

Chemistry of High Energy Materials

Explosives, Propellants, Pyrotechnics

Series: De Gruyter Textbook

7. Edition/7th Edition

July 2025

English, Approx. XX, 600 pp., 240 fig.

Pb. *RRP € 99.95/ US\$ 105.99/ £ 88.00

ISBN 978-3-11-144698-1

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00

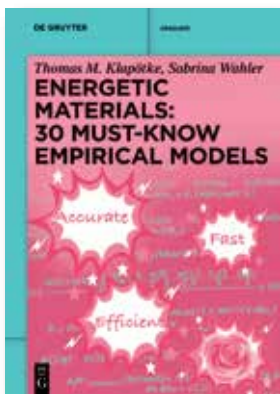
PDF ISBN 978-3-11-144708-7

ePUB ISBN 978-3-11-144713-1

The 7th revised edition expands with new research developments and adds timely topics, including machine learning, new programs (e.g., RoseBoom), the production of propellants, supply of energetic materials in times of war, and flow chemistry. This work is of interest to advanced students in chemistry, materials science and engineering, as well as to all those working in military and defense technology.

Explosives; Military Technology; Propellants; Thermochemistry; Pyrotechnics; Detonation

Thomas M. Klapötke, Ludwig-Maximilians-University, Germany.

**T**

Thomas M. Klapötke, Sabrina Wahler

Energetic Materials: 30 Must-Know Empirical Models

Series: De Gruyter Textbook

April 2025

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

Pb. *RRP € 89.95/ US\$ 94.99/ £ 78.50

ISBN 978-3-11-109602-5

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00

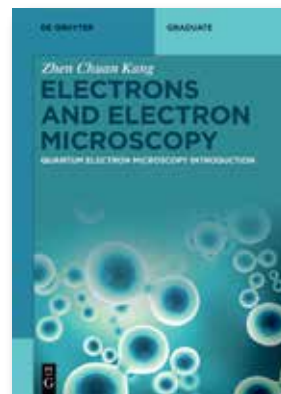
PDF ISBN 978-3-11-109702-2

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.

**T**

Zhen Chuan Kang

Electrons and Electron Microscopy

Quantum Electron Microscopy Introduction

Series: De Gruyter Textbook

December 2024

English, Approx. XX, 153 pp., 39 fig.

Pb. *RRP € 79.95/ US\$ 87.99/ £ 73.00

ISBN 978-3-11-144913-5

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00

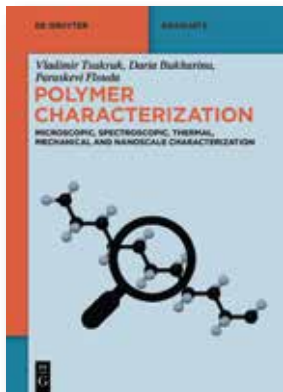
PDF ISBN 978-3-11-144933-3

ePUB ISBN 978-3-11-144969-2

The remarkable achievements of the transmission electron microscope, especially, with the aberration corrected object lens, which itself is the incoherent integration of the particle electron optics and modern wave imaging technology. This book offers a comprehensive understanding what the quantum electron microscopy is, that may bring the microscopy field beyond the atom's spatial periodicity in materials.

Wave-corpuscle; Newton law; Maxwell equation; Schrödinger equation; Near-field; de Broglie wave; Far-field; Spatial and temperol coupling; Flying Torus Pulse Beam

Zhenchuan Kang, retired from Arizona State University, USA.



T

*Daria Bukharina, Paraskevi Flouda,
Vladimir Tsukruk*
Polymer Characterization

Microscopic, Spectroscopic,
Thermal, Mechanical and Nanoscale
Characterization

Series: De Gruyter Textbook

December 2025
English, Approx. X, 150 pp., 40 fig.

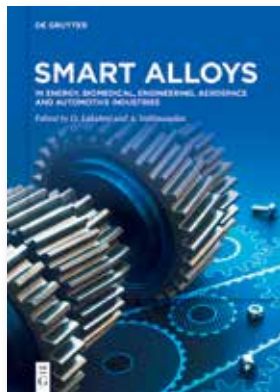
Pb. *RRP € 69.95/ US\$ 77.99/ £ 64.00
ISBN 978-3-11-134536-9

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-134574-1
ePUB ISBN 978-3-11-134589-5

The book provides an overview of fundamentals and current experimental practices in the field of characterization. It includes theoretical basics, guidance on experimental routines, specimen preparations, data analysis, resolution and limitations of experimental measurements, and common issues and artifacts. It describes spectroscopic and microscopic techniques for understanding chemical composition, microstructure, morphology and properties.

Polymers; Biopolymers; Composites

*Daria Bukharina, Paraskevi Flouda,
Vladimir V. Tsukruk*, Georgia Institute of
Technology, USA.



D. Lakshmi, A. Vallimanalan (Eds.)
Smart Alloys

In Energy, Biomedical, Engineering,
Aerospace and Automotive Industries
September 2025
English, Approx. X, 290 pp., 90 fig.

HC *RRP € 149.95/ US\$ 164.99/ £ 136.50
ISBN 978-3-11-163005-2

eBook *RRP € 149.95/ US\$ 164.99/ £ 136.50
PDF ISBN 978-3-11-163020-5
ePUB ISBN 978-3-11-163022-9

This book provides a comprehensive exploration of smart alloys, covering their scientific foundations, manufacturing processes, and diverse applications across industries. It delves into the microstructural intricacies, energy solutions, biomedical uses, and market perspectives of these advanced materials, offering valuable insights for researchers, engineers, and industry professionals.

Smart Materials; High Entropy Alloys; Advanced Manufacturing Technique; Biomedical Application of Alloys; Energy Storage Materials

D. Lakshmi, A. Vallimanalan, PSG College
of Arts & Science, Coimbatore, India.



T

Mark Anthony Benvenuto
Industrial Biotechnology

Series: De Gruyter Textbook

2. Edition/2nd Edition
October 2024
English, IX, 142 pp., 95 fig.

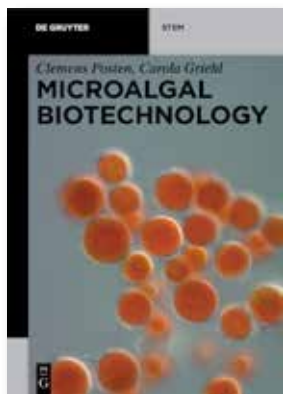
Pb. *RRP € 79.95/ US\$ 87.99/ £ 73.00
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****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-133025-9
ePUB ISBN 978-3-11-133082-2

The book provides an excellent introduction to industrial biotechnology, addressing the applications of biomolecules and living systems in industrial manufacturing of various products. Each part of the book is devoted to a certain biotech sector, such as biofuels, food, chemicals, pharmaceuticals and materials. The book also covers the environmental aspects of industrial biotechnology and the principles of bio-based economy.

Biotechnology; Downstream Processing; Biochemistry; Chemical Process Engineering

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



Clemens Posten, Carola Griehl
Microalgal Biotechnology

Series: De Gruyter STEM

July 2025
English, Approx. XV, 350 pp., 200 fig.

Pb. *RRP € 99.95/ US\$ 104.99/ £ 83.00
ISBN 978-3-11-066782-0

eBook *RRP € 99.95/ US\$ 104.99/ £ 83.00
PDF ISBN 978-3-11-066783-7
ePUB ISBN 978-3-11-066788-2

This book introduces the principles of microalgal biotechnology with a view to its industrial applications. Microalgae are capable of converting carbon dioxide and sunlight into valuable products, giving them great potential for “green” technologies. The authors discuss both the biochemical foundations and the unique process engineering challenges of microalgal processes.

Biotechnology, Bioprocess Engineering, Microalgae

Clemens Posten, Karlsruhe Institute of Technology; *Carola Griehl*, Anhalt University of Applied Sciences, Germany.



Clemens Posten, Carola Griehl
Mikroalgen-Biotechnologie

[Microalgal Biotechnology]

Reihe/Series: De Gruyter Studium

März/March 2025
Deutsch/German, Ca./Approx. XV, 375 S./pp.,
200 Abb./fig.

Br./Pb. *€ 99.95/ UVP/RRP US\$ 106.99/
UVP/RRP £ 85.00
ISBN 978-3-11-067035-6

****eBook** *€ 699.00/ UVP/RRP US\$ 769.00/
UVP/RRP £ 599.00
PDF ISBN 978-3-11-067042-4
ePUB ISBN 978-3-11-067055-4

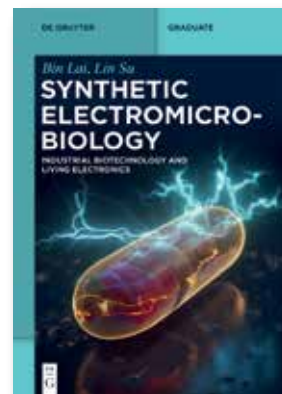
Dieses Buch stellt die grundlegenden Prinzipien der Mikroalgen-Biotechnologie sowie ihre industriellen Anwendungen vor. Dank ihrer Fähigkeit, Kohlenstoffdioxid und Sonnenlicht in wertvolle Produkte umzuwandeln, haben Mikroalgen großes Potential für „grüne“ Technologien. Die Autoren diskutieren sowohl die biochemischen Grundlagen als auch die spezifischen verfahrenstechnischen Herausforderungen von Prozessen mit Mikroalgen.

Mikroalgen; Biotechnologie; Bioverfahrenstechnik

This book presents the fundamental principles of microalgal biotechnology as well as its industrial applications. Thanks to their ability to transform carbon dioxide and sunlight into valuable products, microalgae have great potential for “green” technologies. The authors discuss both the biochemical principles and the specific process engineering challenges of processes that use microalgae.

Biotechnology; bioprocess engineering; microalgae

Clemens Posten, Karlsruhe Institute of Technology; *Carola Griehl*, Hochschule Anhalt, Deutschland.



Bin Lai, Lin Su
Synthetic Electromicrobiology

Industrial Biotechnology and Living Electronics

Series: De Gruyter Textbook

August 2025
English, Approx. X, 120 pp., 40 fig.

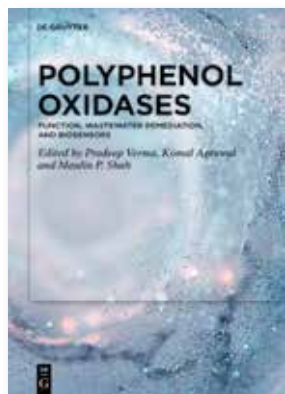
Pb. *RRP € 64.95/ US\$ 70.99/ £ 58.50
ISBN 978-3-11-127349-5

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-127958-9
ePUB ISBN 978-3-11-127969-5

Synthetic electromicrobiology is showing great potential to create new living electronics and new-to-nature biosynthetic pathways for better sustainability. The book introduces the concept of synthetic electromicrobiology and the essential methodologies for different applications. It is the ideal textbook for students interested in learning more about the topic and it provides hand-on guidelines to career starters in this rising field.

Microbiology; Biotechnology; Electronics; Electron Transfer; Synthetic Biology; Bioelectrochemistry

Bin Lai, Helmholtz Center for Environmental Research – UFZ, Germany; *Lin Su*, Cambridge University, United Kingdom.



*Pradeep Verma, Komal Agrawal,
Maulin P. Shah (Eds.)*

Polyphenol Oxidases

Function, Wastewater Remediation, and
Biosensors

April 2024

English, XV, 347 pp., 57 fig.

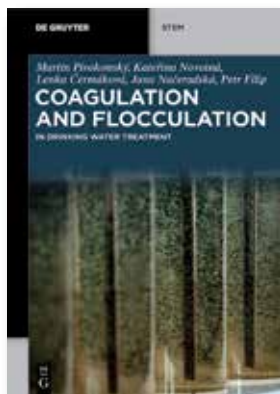
HC *RRP € 189.95 / US\$ 220.00 / £ 166.50
ISBN 978-3-11-103345-7

eBook *RRP € 189.95 / US\$ 220.00 / £ 166.50
PDF ISBN 978-3-11-103352-5
ePUB ISBN 978-3-11-103361-7

Currently, there are no books that cover all the dimensions of Polyphenol Oxidases (PPOs), which is why publication of the book is needed. The book focuses on its types, structure, distinctive aspects, applications, genetic engineering, and commercial status. PPOs have been used for wastewater remediation and in environmental biosensors. The role of PPOs in global sustainability along with challenges and future prospects is also discussed.

**Polyphenol Oxidases; Plants; Bacteria;
Microbiology; Fungi; Sustainability**

Pradeep Verma, Komal Agrawal, Central
University of Rajasthan, India.



*Martin Pivokonský, Kateřina Novotná,
Lenka Čermáková, Jana Načeradská,
Petr Filip*

Coagulation and Flocculation

in Drinking Water Treatment

Series: De Gruyter STEM

August 2025

English, Approx. X, 320 pp., 150 fig.

Pb. *RRP € 89.95 / US\$ 94.99 / £ 78.50
ISBN 978-3-11-124597-3

eBook *RRP € 89.95 / US\$ 94.99 / £ 78.50
PDF ISBN 978-3-11-124676-5
ePUB ISBN 978-3-11-124721-2

How to ensure clean potable water? Hydrochemistry, colloidal chemistry, physics, plus engineering aspects are combined in this book for practical drinking water treatment. Focusing on coagulation-flocculation as a key step in this process, it provides principles, optimisation, and efficiency evaluation, broader theoretical background and practical aspects.

**Destabilisation; Aggregation; Mixing; Colloids;
Natural Organic Matter**

*M. Pivokonský, K. Novotná, L. Čermáková,
J. Načeradská, P. Filip*, Czech Academy of
Sci., Inst. of Hydrodynamics, Prague, Czech
Republic.



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

Marine Biomass

Biorefinery, Bioproducts and
Environmental Bioremediation

June 2024

English, XIII, 405 pp., 43 fig.

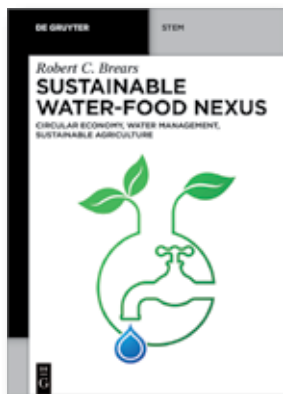
HC *RRP € 184.95 / US\$ 210.00 / £ 165.50
ISBN 978-3-11-135358-6

eBook *RRP € 184.95 / US\$ 210.00 / £ 165.50
PDF ISBN 978-3-11-135395-1
ePUB ISBN 978-3-11-135406-4

Ocean plays a significant role in energy production, human health and economy. Seawater, seaweed, microalgae, yeast, bacteria act as feedstock for biofuels and bioproducts. The book focuses on biorefinery and marine biomass for energy, fertilizers, nutraceuticals, bioplastics and other value-added products. It describes how marine resources can be applied to wastewater treatment, eco-restoration, environment protection and sustainable development.

**Microalgae; Seaweeds; Macroalgae; Diatoms;
Food; Biofertilizers; Pharmaceuticals; Cosmetics;
Biochar; Bioplastics**

Riti Thapar Kapoor, Amity University
Uttar Pradesh, India; *Mohd Rafatullah,
Norli Ismail*, Universiti Sains Malaysia,
Malaysia.



Robert C. Brears
**Sustainable
Water-Food Nexus**

Circular Economy, Water Management,
Sustainable Agriculture

Series: De Gruyter STEM

March 2025
English, Approx. X, 190 pp.

Pb. *RRP € 104.95 / US\$ 112.99 / £ 93.00
ISBN 978-3-11-134128-6

eBook *RRP € 104.95 / US\$ 112.99 / £ 93.00
PDF ISBN 978-3-11-134138-5
ePUB ISBN 978-3-11-134147-7

A comprehensive analysis of the intertwined nature of water and food systems in a circular economy: From sustainable agriculture to investment strategies, this book explores various facets of the water-food nexus. It also offers insights into cutting-edge technologies and urban agriculture's potential role. A crucial read for those invested in forging a sustainable, circular future.

Circular Economy; Water-Food Nexus; Sustainable Agriculture; Water Management

Robert C. Brears, Our Future Water,
Christchurch, New Zealand.



Maulin P. Shah (Ed.)
**Smart Wastewater
Technologies**

For Industrial Wastewater Treatment

Series: Sustainable Water and Wastewater
Treatment 5

December 2024
English, Approx. XV, 325 pp., 40 fig.

HC *RRP € 189.95 / US\$ 210.00 / £ 171.00
ISBN 978-3-11-077993-6

eBook *RRP € 189.95 / US\$ 210.00 / £ 171.00
PDF ISBN 978-3-11-078005-5
ePUB ISBN 978-3-11-078020-8

This work 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 authors present innovative research addressing these challenges and discuss successful wastewater treatment systems.

Advanced Oxidation Processes; Membrane Technologies; Artificial Intelligence; Bioremediation; Nanotechnology; Bioelectrochemical Technologies

Maulin P. Shah, Enviro Technology Limited,
India.



Maulin P. Shah, Sumira Malik (Eds.)
Bacterial Metagenomics
In Industrial Wastewater Treatment

Series: Sustainable Water and Wastewater
Treatment

April 2025
English, Approx. XV, 375 pp., 50 fig.

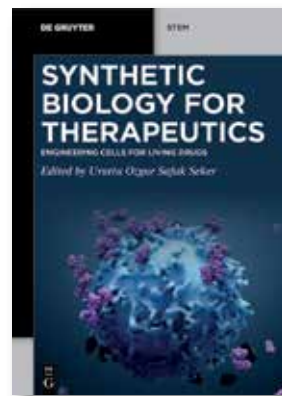
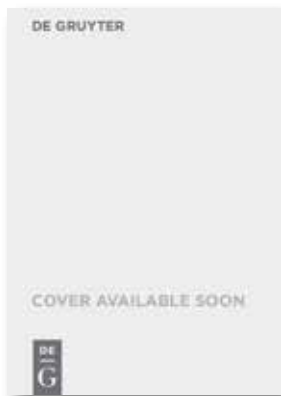
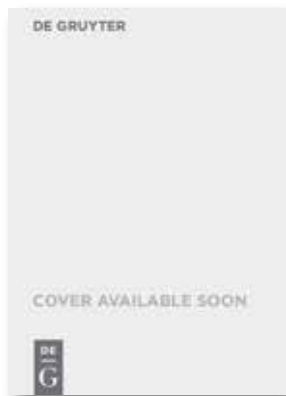
HC *RRP € 189.95 / US\$ 220.00 / £ 166.50
ISBN 978-3-11-079355-0

eBook *RRP € 189.95 / US\$ 220.00 / £ 166.50
PDF ISBN 978-3-11-079363-5
ePUB ISBN 978-3-11-079368-0

As wastewater contains diverse microbes, the regular microbiological screening at wastewater treatment plants is essential for monitoring wastewater treatment. This work discusses enzymatic as well as culture-dependent/-independent methods used to estimate bacterial diversity and to monitor temporal and spatial changes. A metagenomic approach is used to characterize the microbial communities in industrial wastewater treatment.

Metagenomics; Bioremediation; Bioinformatics; Metatranscriptomics; DNA sequencing; Microbial Community

Maulin P. Shah, Enviro Technology Limited,
India; *Sumira Malik*, Amity Institute of
Biotechnology, India.



Riccardo Tesser, Vincenzo Russo

Advanced Reactor Modeling with MATLAB

Case Studies with Solved Examples

Series: De Gruyter STEM

2. Edition/2nd Edition

November 2025

English, Approx. XV, 345 pp., 110 fig.

Pb. *RRP € 99.95/ US\$ 105.99/ £ 88.00

ISBN 978-3-11-145738-3

eBook *RRP € 99.95/ US\$ 105.99/ £ 88.00

PDF ISBN 978-3-11-145873-1

ePUB ISBN 978-3-11-146119-9

Using the widely applied numerical language MATLAB, the book provides the reader with categorized groups of general code for a wide variety of chemical reactors. Being designed as a tool for researchers and professionals, the code can easily be extended and adapted by the reader to their own specific problems. New: Improved, plus two chapters on MonteCarlo modeling for chemical reactors, also comparisons between different reactor configurations.

Chemical Reaction Engineering; Chemical Kinetics; Reactor Engineering; Process Intensification; Reactor Modelling; Catalysis

Riccardo Tesser, Vincenzo Russo, University of Naples Federico II, Italy.

David Bogle, Tomasz Sosnowski (Eds.)

Chemical Engineering Principles Applied to Medicine

Modeling Physiology, Disease and Drug Delivery

Series: De Gruyter STEM

May 2025

English, Approx. XX, 380 pp., 250 fig.

Pb. *RRP € 109.95/ US\$ 117.99/ £ 97.50

ISBN 978-3-11-139454-1

eBook *RRP € 109.95/ US\$ 117.99/ £ 97.50

PDF ISBN 978-3-11-139455-8

ePUB ISBN 978-3-11-139489-3

The computational model of the heart developed over the past 30 or more years – a true systems thinking in physiology! The 21 Century challenge is to bring together widely dispersed models to enable the understanding of highly complex systems. Chemical Engineers have this appropriate skill set: they tackle multiple scale problems in manufacturing processes – from molecular scale through unit operations to plant-wide and enterprise-wide systems.

Modeling; Medicine; Physiology; Engineering Design; Disease; Process Systems Engineering

David Bogle, University College London, UK; *Tomasz Sosnowski*, Warsaw Technical University, Poland.

Urartu Ozgur Safak Seker (Ed.)

Synthetic Biology for Therapeutics

Engineering Cells for Living Drugs

Series: De Gruyter STEM

November 2024

English, Approx. X, 200 pp., 17 fig.

Pb. *RRP € 84.95/ US\$ 88.99/ £ 73.50

ISBN 978-3-11-132948-2

eBook *RRP € 84.95/ US\$ 88.99/ £ 73.50

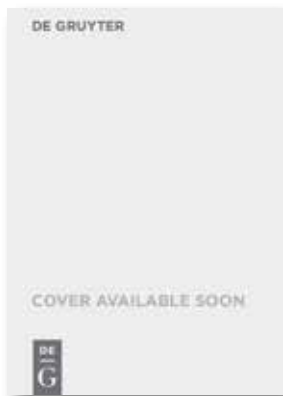
PDF ISBN 978-3-11-132949-9

ePUB ISBN 978-3-11-132962-8

Synthetic biology is enabling scientists to use engineered cells as the basis for the development of new living therapeutics and as a powerful new weapon in the fight against diseases, especially cancer. Bacteria-mediated therapy is a promising alternative cancer treatment. The book covers the recent developments of CAR-T therapies and engineered microbial therapies and is an indispensable guide to scientists in both biotechnology and medicine.

Programming Cells; Cellular Targeting; Biological Devices; Mammalian Cells; Microbial Cells

Urartu Ozgur Safak Seker, Bilkent University, Turkey.



*Katabathini Narasimharao,
Huda Sharbini Kamaluddin*
Heterogeneous Catalysts

Metals, Oxides, Silicates, Zeolites and Nanomaterials

Series: De Gruyter STEM

April 2025
English, Approx. X, 120 pp., 30 fig.

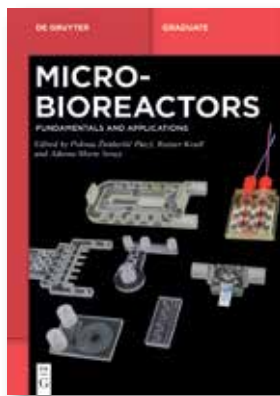
Pb. *RRP € 84.95/ US\$ 88.99/ £ 73.50
ISBN 978-3-11-131679-6

eBook *RRP € 84.95/ US\$ 88.99/ £ 73.50
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, Huda Sharbini Kamaluddin, King Abdulaziz University, Saudi Arabia.



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

Fundamentals and Applications

Series: De Gruyter Textbook

June 2025
English, Approx. XX, 300 pp., 150 fig.

Pb. *RRP € 99.95/ US\$ 105.99/ £ 88.00
ISBN 978-3-11-067739-3

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 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.

Microbioprocess Development; Flow Chemistry; Continuous Synthesis; Chemical Engineering; Pharmaceutical Industry

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



Basudeb Saha (Ed.)
Catalytic Reactors

Multifunctional Reactors, Membrane Reactors, Microflow Reactors

Series: De Gruyter Textbook

2. Edition/2nd Edition
June 2025
English, Approx. XX, 430 pp., 200 fig.

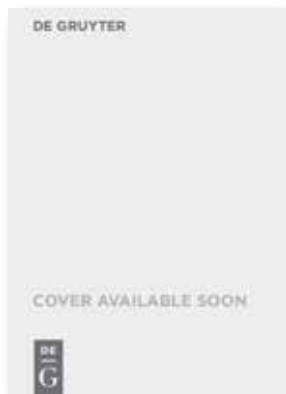
Pb. *RRP € 89.95/ US\$ 94.99/ £ 78.50
ISBN 978-3-11-144918-0

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-144928-9
ePUB ISBN 978-3-11-144962-3

Reactor design for Chemical Engineering deals with maximization of product yields and the net present value for the chemical reaction, optimization of the reaction efficiency, and minimization of costs. This book discusses the best choice of catalysts, different reaction steps and intermediates and the design of the catalytic reactors, in which the catalysis and chemical reaction are combined to achieve intensification. New: Chapter on Biofuels.

Catalysis; Multifunctional Reactors; Chromatographic Reactors; Membrane Reactors; Micro Fluidized-Bed Reactors; Reactor Engineering; Process Intensification; Chemical Process Optimization; Chemical Reaction Engineering

Basudeb Saha, Lancaster University, United Kingdom.



T

Vincenzo Russo, Tapio Salmi, Stefan Haase
(Eds.)

Chemical Kinetics and Reactor Architecture

Reaction Engineering, Catalysts, Process Intensification, Optimization

Series: De Gruyter Textbook

June 2025

English, Approx. XXV, 275 pp., 75 fig.

Pb. *RRP € 89.95/ US\$ 94.99/ £ 78.50
ISBN 978-3-11-137803-9

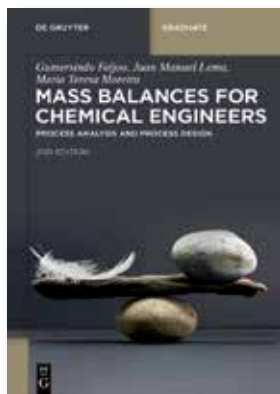
****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-138398-9
ePUB ISBN 978-3-11-138423-8

A guided path for process development starting from the most modern techniques of synthesis and characterization of heterogeneous catalysts to their application in multiphase reactors!

Modern numerical techniques are presented and their application in modelling and designing advanced reactors and processes are discussed.

Chemical Kinetics; Reactor Engineering; Process Intensification; Reactor Modelling; Catalysis

V. Russo, Univ. of Naples Federico II, Italy;
T. Salmi, Åbo Akademi, Turku, Finland;
St. Haase, Univ. of Appl. Sci., Dresden, Germany.



T

Gumersindo Feijoo, Juan Manuel Lema,
Maria Teresa Moreira

Mass Balances for Chemical Engineers

Process Analysis and Process Design

Series: De Gruyter Textbook

2. Edition/2nd Edition

June 2025

English, Approx. X, 240 pp., 200 fig.

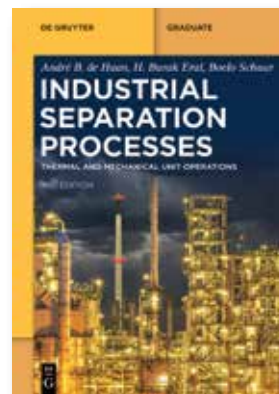
Pb. *RRP € 74.95/ US\$ 82.99/ £ 68.50
ISBN 978-3-11-161826-5

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-161846-3
ePUB ISBN 978-3-11-161873-9

The fundamentals of mass balances, relevant for chemical engineers summarized in an easy comprehensible manner. Plenty of example calculations, schemes and flow diagrams facilitate the understanding. Case studies from relevant topics such as sustainable chemistry illustrate the theory behind current applications. New: circular economy, the concept of dimensional analysis, Artificial Intelligence, plus 20% more case studies and problems to solve.

Chemical Engineering; Mass Conservation; Mass Balances

Gumersindo Feijoo, Juan Manuel Lema, Maria Teresa Moreira, Universidade de Santiago de Compostela, Santiago de Compostela, Spain.



T

André B. de Haan, H. Burak Eral,
Boelo Schuur

Industrial Separation Processes

Thermal and Mechanical Unit Operations

Series: De Gruyter Textbook

3. Edition/3rd Edition

July 2025

English, Approx. XVII, 633 pp., 400 fig.

Pb. *RRP € 99.95/ US\$ 111.99/ £ 88.00
ISBN 978-3-11-106363-8

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-106381-2
ePUB ISBN 978-3-11-106408-6

Separation processes on an industrial scale account for well over half of the capital and operating costs in the chemical industry. Knowledge of these processes is key for every student of chemical or process engineering and makes this book with its wealth of exercises and solutions ideally suited to university teaching. The Third edition boasts an even greater number of applied examples and updated chapters on drying, adsorption and membranes.

Unit Operations; Chemical Process Technology; Chemical Engineering; Distillation; Thermal Separations; Mechanical Process Technology

André B. de Haan, Burak Eral, TU Delft;
Boelo Schuur, University of Twente, The Netherlands.

**T**

Vincenzo Russo, Riccardo Tesser, Martino Di Serio

Chemical Kinetic Data Interpretation

Series: De Gruyter Textbook

July 2025
English, 10 , 190 pp., 250 fig.

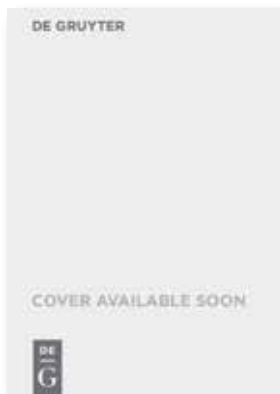
Pb. *RRP € 89.95/ US\$ 95.99/ £ 74.00
ISBN 978-3-11-046428-3

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 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 di Serio, University of Naples Federico II, Naples, Italy.

**T**

Applied Linear Analysis for Chemical Engineers

A Multi-scale Approach with Mathematica®

Series: De Gruyter Textbook

2. Edition/2nd Edition
July 2025
English, Approx. XX, 780 pp., 180 fig.

Pb. *RRP € 94.95/ US\$ 100.99/ £ 83.00
ISBN 978-3-11-159738-6

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-159805-5
ePUB ISBN 978-3-11-159847-5

The book details mathematical techniques for chemical and other engineers. Many practical examples encountered by chemical (and other) engineers, modern approach involving multiple length and time scales, use of symbolic software (such as Mathematica) and combination of analytical methods with graphics are included. New: examples and restructuring of the material to make it didactically more appealing.

Matrix Algebra; Initial Value Problems; Boundary Value Problems; Fourier Transforms; Initial Boundary Value Problems; Chemical Engineering Problems

Vemuri Balakotaiah, Cullen College of Engineering, USA; Ram R. Ratnakar, Shell International Exploration & Production, USA.

**T**

Transport Phenomena Data Companion

Balances, Fluid Flow, Heat and Mass Transfer, Materials Properties

Series: De Gruyter Textbook

2. Edition/2nd Edition
August 2024
English, XIII, 192 pp., 66 fig.

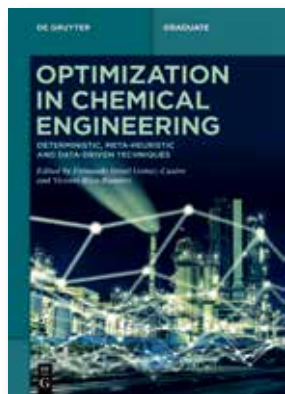
Pb. *RRP € 69.95/ US\$ 76.99/ £ 64.00
ISBN 978-3-11-138507-5

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-138534-1
ePUB ISBN 978-3-11-138567-9

A compendium of the most important aspects of Transport Phenomena in an accessible form. It contains data, equations, mathematical techniques and material properties that form the basis of not only Transport Phenomena but also other parts of Chemical Engineering. It is a quick reference guide for everybody involved in chemistry and in engineering: students, scientists and professionals.

Chemical Engineering; Flow Calculations; Heat Transfer; Mass Transfer

C. Janssen, Univ. Nacional Autónoma de México, Mexico; L. Janssen, Univer. of Groningen, The Netherlands; M. Warmoeskerken (deceased).



T

Fernando Israel Gómez-Castro, Vicente Rico-Ramírez (Eds.)

Optimization in Chemical Engineering

Deterministic, Meta-Heuristic and Data-Driven Techniques

Series: De Gruyter Textbook

July 2025
English, Approx. XXV, 275 pp., 125 fig.

Pb. *RRP € 99.95/ US\$ 105.99/ £ 88.00
ISBN 978-3-11-138338-5

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-138343-9
ePUB ISBN 978-3-11-138362-0

Optimization is a branch of mathematics focused on finding the best alternative among a set of potential solutions. It has a wide range of applications in Chemical Engineering, as the design and control of whole facilities. Optimization techniques have evolved to deal with more complex problems with various scales and sizes. This book presents a compilation of classic and modern optimization techniques with applications in Chemical Engineering.

Optimization; Chemical Engineering; Mathematical Programming; Meta-Heuristic Optimization; Data-Driven Optimization; Process Optimization; Decision-Making; Operations Research; Process Systems Engineering

Fernando Israel Gómez-Castro, Universidad de Guanajuato, Mexico; *Vicente Rico-Ramírez*, Tecnológico Nacional de México en Celaya, Mexico.



T

Edwin Zondervan

Process Optimization

Decision-Making Tools for Chemical Engineers

Series: De Gruyter Textbook

September 2025
English, Approx. XXV, 275 pp., 100 fig.

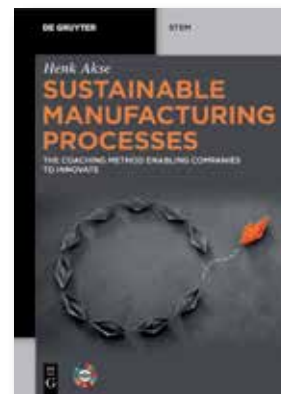
Pb. *RRP € 74.95/ US\$ 82.99/ £ 68.50
ISBN 978-3-11-134208-5

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-134228-3
ePUB ISBN 978-3-11-134275-7

The theory and practice of optimization as a tool for successful decision-making when designing new products and processes: While the focus is on the formulation of optimization problems, also attention is given to solution methods, software implementation, and analysis and interpretation of solutions. This book is an excellent guide and companion for undergraduate, graduate students as well as professional practitioners.

Chemical Engineering; Process Optimization; Decision-Making; Operations Research; Process Systems Engineering

Edwin Zondervan, University of Twente, The Netherlands.



Henk Akse

Sustainable Manufacturing Processes

The Coaching Method Enabling Companies to Innovate

Series: De Gruyter STEM

January 2025
English, Approx. XV, 100 pp., 59 fig.

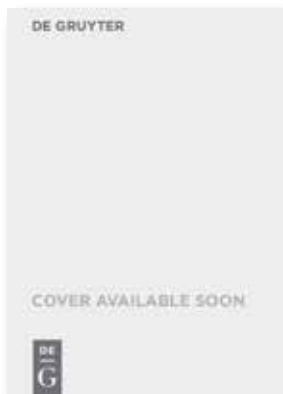
Pb. *RRP € 44.95/ US\$ 47.99/ £ 39.50
ISBN 978-3-11-138342-2

eBook *RRP € 44.95/ US\$ 47.99/ £ 39.50
PDF ISBN 978-3-11-138366-8
ePUB ISBN 978-3-11-138380-4

The European process industry is challenged by the need for greenhouse gas emission reduction and circular feedstocks. Methodically, technological, economical, psychological and organizational factors promoting or preventing innovation are analyzed and a unique proven method is described that enables both existing and new companies to innovate their own processes towards sustainability.

Sustainability; Start-ups; Deployment; Leadership; Entrepreneurship; Management

Henk Akse, Traxxys Innovation & Sustainability, Woerden, The Netherlands.

**T***Jan Harmsen*

Chemical Engineering: 25 Must-Know Process Design Principles

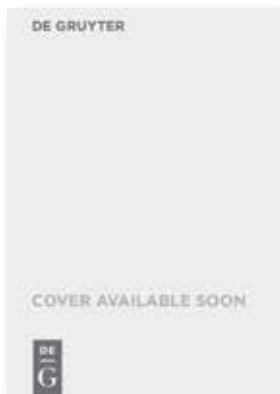
Series: De Gruyter Textbook

April 2025

English, Approx. X, 190 pp., 25 fig.

Pb. *RRP € 74.95/ US\$ 82.99/ £ 68.50
ISBN 978-3-11-120323-2****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-120325-6
ePUB ISBN 978-3-11-120401-7

The book covers all main chemical engineering design methods regarding, process synthesis, unit operations, heat integration, industrial symbiosis, value chain, life cycle, reactor type selection, reaction engineering, residence time distribution, mass transfer, heat transfer, catalyst design, distillation design. Unit operation sizing by transport phenomena: mass transfer, heat transfer, impulse transfer, and shear rate.

Process Concepts; Process Design; Unit Operations; Functional Design; Transport Phenomena*Jan Harmsen*, Harmsen Consultancy BV, Nieuwerkerk adIJ, The Netherlands.**T***Thierry Meyer, Genserik Reniers*

Engineering Risk Management

Series: De Gruyter Textbook

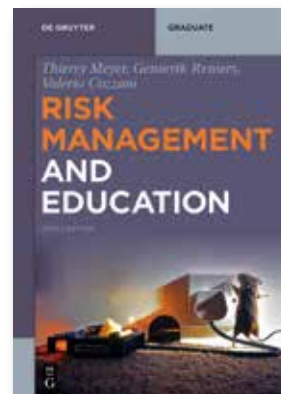
4. Edition/4th Edition

May 2025

English, Approx. XX, 400 pp., 145 fig.

Pb. *RRP € 89.95/ US\$ 94.99/ £ 78.50
ISBN 978-3-11-149058-8****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-149363-3
ePUB ISBN 978-3-11-149501-9

Promoting a culture of risk awareness and integrating risk management principles and practices into education is essential to ensure that students have the knowledge and skills to identify hazards, and assess and control risks in different contexts through the development and implementation of a risk management curriculum. Besides theoretical considerations, an effective education involves case studies, simulations and experiential learning tools.

Safety; Security; Risk Assessment; Safety Management; Risk Control; Risk Management; Resilience; Risk Analysis; Crisis Management; Risk Governance; Chemical Engineerig; Chemical Process Engineering*Thierry Meyer*, Ecole Polytechnique Fédérale de Lausanne, Switzerland;
Genserik Reniers, TU Delft, The Netherlands.**T***Thierry Meyer, Genserik Reniers, Valerio Cozzani*

Risk Management and Education

Series: De Gruyter Textbook

2. Edition/2nd Edition

April 2025

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

Pb. *RRP € 84.95/ US\$ 88.99/ £ 73.50
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 Engineerig; Chemical Process Engineering*T. Meyer*, Ecole Polytech. Féd. Lausanne, Switzerland; *G. Reniers*, Univ. of Antwerp, Belgium; *V. Cozzani*, Univ. of Bologna, Italy.



T

Daniel Reid Kuespert
Research Laboratory Safety

Chemical Hazards, Physical Hazards, Radiation Hazards, Hazard Control

Series: De Gruyter Textbook

2. Edition/2nd Edition
 October 2025
 English, Approx. XX, 300 pp., 100 fig.

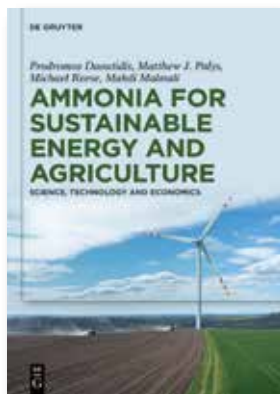
Pb. *RRP € 99.95/ US\$ 105.99/ £ 88.00
 ISBN 978-3-11-159412-5

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
 PDF ISBN 978-3-11-159502-3
 ePUB ISBN 978-3-11-159548-1

Prerequisite for working in a laboratory: Knowing potential hazards of equipment and chemical materials to be employed. Students learn to assess and control risks in a research laboratory and to identify danger. An approach on physical, chemical, biological and radiation hazards is given and exercises to each class prepare for exams. New incident stories, plus recently published guidelines from the ACS Committee on Chemical Safety included.

Risk Assessment; Risk Controlling; Hazard Control; Hazard Classes; Safety; Job Hazard Analysis

Daniel R. Kuespert, Johns Hopkins University, MD, USA.



Prodromos Daoutidis, Matthew J. Palys, Michael Reese, Mahdi Malmali

Ammonia for Sustainable Energy and Agriculture

Science, Technology and Economics

March 2025
 English, Approx. X, 240 pp., 140 fig.

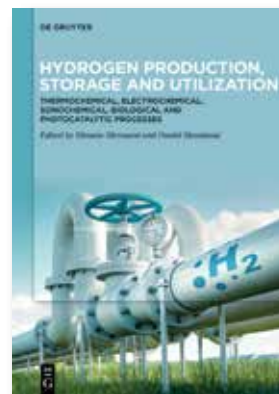
HC *RRP € 144.95/ US\$ 166.99/ £ 131.00
 ISBN 978-3-11-076247-1

eBook *RRP € 144.95/ US\$ 166.99/ £ 131.00
 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, Michael Reese, University of Minnesota; *Mahdi Malmali*, Texas Tech University, USA.



Slimane Merouani, Oualid Hamdaoui (Eds.)

Hydrogen Production, Storage and Utilization

Thermochemical, Electrochemical, Sonochemical, Biological and Photocatalytic Processes

March 2025
 English, Approx. X, 640 pp., 80 fig.

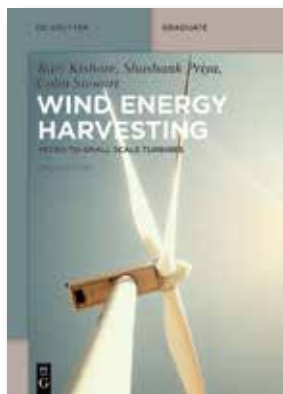
HC *RRP € 169.95/ US\$ 182.99/ £ 151.00
 ISBN 978-3-11-162375-7

eBook *RRP € 169.95/ US\$ 182.99/ £ 151.00
 PDF ISBN 978-3-11-162386-3
 ePUB ISBN 978-3-11-162396-2

Hydrogen Production, Storage and Utilization explores hydrogen production techniques, including thermal approaches, water electrolysis, photocatalysis, biological production and sonochemical methods to enhance hydrogen yield. The book also addresses hydrogen storage solutions, including compressed gas, liquid hydrogen and metal hydrides. It highlights applications of hydrogen in various sectors, such as fuel cells and hydrogen combustion engines.

Hydrogen Production; Hydrogen Storage; Hydrogen Utilization; Hydrogen Energy Technologies; Thermal Hydrogen Production; Water Electrolysis; Photocatalysis Hydrogen Production; Sonochemical Hydrogen Production; Biological Hydrogen Production; Low-Temperature Electrolysis; Hydrogen Fuel Cells; Hydrogen Economy; Sustainable Energy Solutions; Renewable Hydrogen Technologies; Hydrogen Energy Innovations; Hydrogen Storage Materials; Hydrogen Production Methods; Advanced Hydrogen Technologies; Clean Energy Solutions

Slimane Merouani, University Constantine 3 Salah Boubnider, Algeria; *Oualid Hamdaoui*, King Saud University, Saudi Arabia.



*Shashank Priya, Ravi Kishore,
Colin Stewart*

Wind Energy Harvesting

Micro-to-Small Scale Turbines

Series: De Gruyter Textbook

2. Edition/2nd Edition

September 2025

English, Approx. XX, 175 pp., 100 fig.

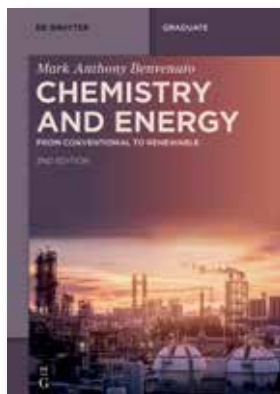
Pb. *RRP € 94.95 / US\$ 101.99 / £ 80.00
ISBN 978-3-11-078179-3

****eBook** *RRP € 699.00 / US\$ 769.00 / £ 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.



Mark Anthony Benvenuto

Chemistry and Energy

From Conventional to Renewable

2. Edition/2nd Edition

September 2025

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

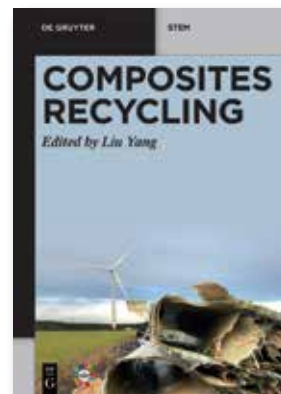
Pb. *RRP € 84.95 / US\$ 88.99 / £ 73.50
ISBN 978-3-11-133090-7

****eBook** *RRP € 699.00 / US\$ 769.00 / £ 599.00
PDF ISBN 978-3-11-133109-6
ePUB ISBN 978-3-11-133122-5

This book focuses on the processes and materials behind energy technologies. The author details the underlying chemistry of renewable sources, such as biofuels and wind power, as well as the traditionally used coal and gas. Chapters on energy storage technologies and the connection between energy generation and climate change round off this uniquely concise overview of the relationship between chemistry and energy.

Energy; Renewable Sources; Sustainable Technology; Green Technology

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



Liu Yang (Ed.)

Composites Recycling

Series: De Gruyter STEM

June 2025

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

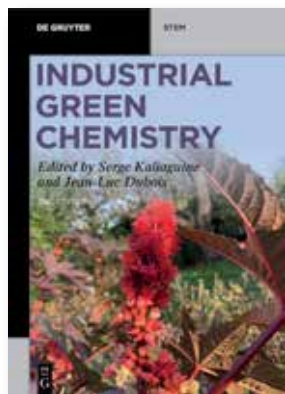
Pb. *RRP € 99.95 / US\$ 104.99 / £ 83.00
ISBN 978-3-11-075441-4

eBook *RRP € 99.95 / US\$ 104.99 / £ 83.00
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.



Serge Kaliaguine, Jean-Luc Dubois (Eds.)
Industrial Green Chemistry

Series: De Gruyter STEM

2. Edition/2nd Edition
 September 2025
 English, XXV, 350 pp., 120 fig.

Pb. *RRP € 109.95 / US\$ 117.99 / £ 97.50
 ISBN 978-3-11-138340-8

eBook *RRP € 109.95 / US\$ 117.99 / £ 97.50
 PDF ISBN 978-3-11-138344-6
 ePUB ISBN 978-3-11-138361-3

Editors and authors with backgrounds in academia and industry tie together recent and established technologies for the change to a sustainable industrial chemistry. Modern methods and technologies are presented to make catalytic processes more efficient, resource-saving and environmentally friendly. This book is an indispensable source for researchers and professional working for a sustainable change in chemistry.

Green Chemistry; Sustainable Chemistry; Catalysis; Green Process Engineering

Serge Kaliaguine, Université Laval, Québec, Canada; *Jean-Luc Dubois*, Altuglas International/Trinseo, Courbevoie, France.



Mark Anthony Benvenuto, Lawrence Kolopajlo (Eds.)
Green Chemical Processes

Developments in Science, Math, Engineering and Technology

Series: Green Chemical Processing 11

October 2024
 English, X, 166 pp., 35 fig.

HC *RRP € 144.95 / US\$ 164.99 / £ 130.00
 ISBN 978-3-11-079907-1

eBook *RRP € 144.95 / US\$ 164.99 / £ 130.00
 PDF ISBN 978-3-11-079908-8
 ePUB ISBN 978-3-11-079918-7

A volume that includes examples of the newest ideas and practices how green chemistry and green science can be applied – in the classroom, but also in the connections between classes and the work place. In this volume brings together authors who are making novel strides in bringing green chemistry principles in their teaching and their work.

Green Chemistry; Sustainability; Green Processing; Chemical Industry; Chemical Processing; Procrss Intensification

Mark A. Benvenuto, University of Detroit Mercy, Detroit, USA; *Lawrence Kolopajlo*, Eastern Michigan University, Ypsilanti, USA.



Chandra Mohan, Neeraj Kumari, Mark Anthony Benvenuto, Asha Anish Madhavan (Eds.)
Green Materials for Eco-Friendly Environment

Sustainable Materials, Biopolymers, Renewables, Fuel Cells, Biofuels, Biorefineries

Series: Green Chemical Processing

September 2025
 English, Approx. X, 240 pp., 70 fig.

HC *RRP € 164.95 / US\$ 176.99 / £ 146.50
 ISBN 978-3-11-161883-8

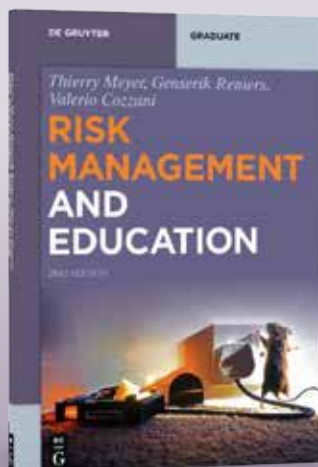
eBook *RRP € 164.95 / US\$ 176.99 / £ 146.50
 PDF ISBN 978-3-11-161890-6
 ePUB ISBN 978-3-11-161924-8

Adopting sustainable practices will provide environment and economic benefits. This book on Green Materials offers an overview on developments designed to minimize environmental impact through sustainable practices. Topics addressed: green materials, integrated technologies to promote an eco-friendly environment, reducing carbon footprints, conserving natural resources, with accomplishments in biofuels, renewables, and remediation of pollutants.

Green Materials; Environmental Remediation; Environmental Risk Assessment; Sustainable Solution; Biofuels; Biopolymers; Circular Economy

C. Mohan, N. Kumari, K. R. Mangalam Univ., India; *M. Benvenuto*, Detroit Mercy Univ., USA; *A. A. Madhavan*, Amity Univ., Dubai.

ESSENTIAL TEXTBOOKS IN CHEMICAL ENGINEERING



Thierry Meyer, Genserik Reniers, Valerio Cozzani
RISK MANAGEMENT AND EDUCATION

04/2025. approx. 150 pages,
approx. 20 fig.

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*Camiel Janssen, Léon Janssen,
Marijn Warmoeskerken*
**TRANSPORT PHENOMENA
DATA COMPANION**

Balances, Fluid Flow, Heat and
Mass Transfer, Materials Properties

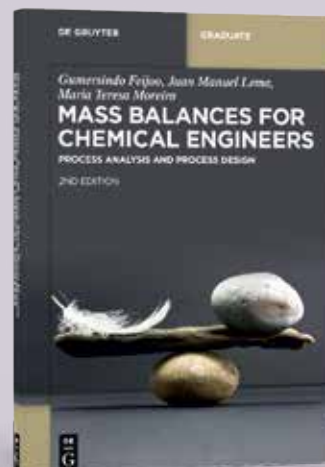
08/2024. 205 pages, 66 fig.

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RRP € 69.95 [D]/US\$ 76.99/£ 64.00
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eBook

RRP € 69.95 [D]/US\$ 76.99/£ 64.00
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ePUB ISBN 978-3-11-138567-9



*Gumersindo Feijoo, Juan Manuel Lema,
Maria Teresa Moreira*
**MASS BALANCES FOR
CHEMICAL ENGINEERS**

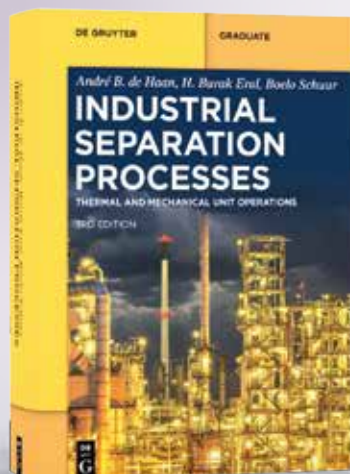
06/2025. approx. 250 pages,
approx. 200 fig.

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André B. de Haan, Burak Eral, Boelo Schuur
INDUSTRIAL SEPARATION PROCESSES

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*Vincenzo Russo, Riccardo Tesser,
Martino Di Serio*
**CHEMICAL KINETIC
DATA INTERPRETATION**

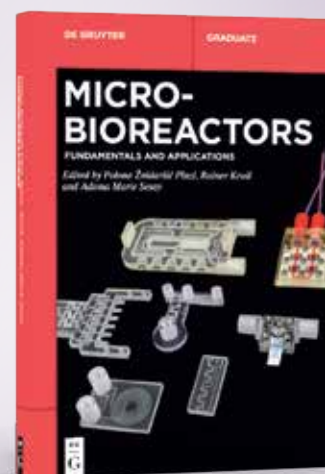
06/2025. approx. 200 pages,
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RRP € 89.95 [D]/US\$ 95.99/£ 74.00
ISBN 978-3-11-046428-3

eBook

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ePUB ISBN 978-3-11-046468-9



*Polona Žnidaršič Plazl, Rainer Krull,
Adama Marie Sesay*
MICROBIOREACTORS

Fundamentals and Applications

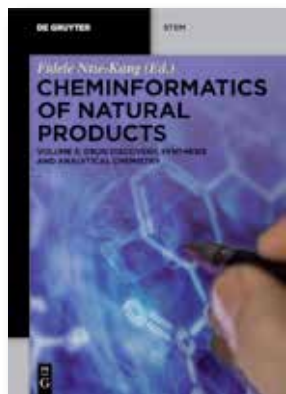
04/2025. approx. 320 pages,
approx. 150 fig.

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eBook

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ePUB ISBN 978-3-11-067753-9



Fidele Ntie-Kang (Ed.)

Chemoinformatics of Natural Products

Drug Discovery, Synthesis and Analytical Chemistry

Series: De Gruyter STEM

November 2025
English, X, 290 pp., 80 fig.

Pb. *RRP € 104.95 / US\$ 112.99 / £ 93.00
ISBN 978-3-11-137652-3

eBook *RRP € 104.95 / US\$ 112.99 / £ 93.00
PDF ISBN 978-3-11-137665-3
ePUB ISBN 978-3-11-137773-5

Vol. 3 of Chemoinformatics of Natural Products presents basic and advanced computational and instrumentation methods for natural products structure elucidation as well as computer-assisted natural products synthesis and chemoinformatics methods and tools for medicinal, agricultural and veterinary-based natural products research. It includes workshops on Computational Applications in Secondary Metabolite Discovery (CAiSMD).

Chemoinformatics; Medicinal Chemistry; Agrochemicals

Fidele Ntie-Kang, University of Buea Center for Drug Discovery, Buea, Cameroon.

Fidele Ntie-Kang (Ed.)

[Set: Fundamental Concepts + Advanced Concepts and Applications + Drug Discovery, Synthesis and Analytical Chemistry]

Series: De Gruyter STEM

June 2025
English,

Set *RRP € 219.00 / US\$ 250.00 / £ 199.50
ISBN 978-3-11-139589-0

This three-volume textbook makes the field of chemoinformatic accessible for beginners in the field.

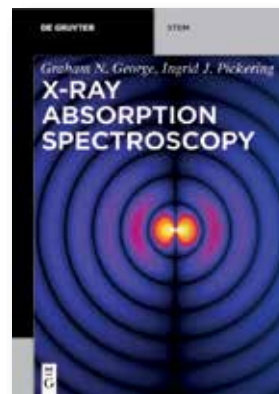
Vol. 1 „Fundamental Concepts“ provides an overview of natural products chemistry.

Vol. 2 „Advanced Concepts and Applications“ covers toxicity and drug property prediction, computational methods and case studies.

Vol. 3 „Drug Discovery, Synthesis and Analytical Chemistry“ includes tools for modelling and computer assisted structure elucidation.

Chemoinformatics; Natural Products; Pharmaceutical Chemistry; Drug Discovery; Computation Chemistry, Medicinal Chemistry, Agrochemicals.

Fidele Ntie-Kang, University of Buea Center for Drug Discovery, Buea, Cameroon.



Graham N. George, Ingrid J. Pickering

X-ray Absorption Spectroscopy

Series: De Gruyter STEM

December 2024
English, XIX, 403 pp., 277 fig.

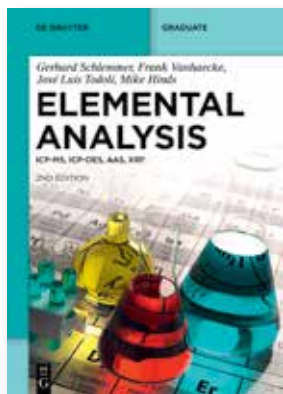
Pb. *RRP € 99.95 / US\$ 104.99 / £ 83.00
ISBN 978-3-11-057037-3

eBook *RRP € 99.95 / US\$ 104.99 / £ 83.00
PDF ISBN 978-3-11-057044-1
ePUB ISBN 978-3-11-057057-1

Targeted for chemists, the current textbook outlines the principles, experimental methods and data analysis in X-Ray Absorption Spectroscopy (XAS). The authors introduce EXAFS, Near-Edge XAS, X-Ray Imaging and many other advanced experimental techniques. A special section of the book is devoted to applications of XAS in chemistry, materials and environmental sciences.

Analytical Chemistry; Chemical Analysis; X-ray Absorption Spectroscopy; X-ray Spectroscopy

Graham George, Ingrid J. Pickering, University of Saskatchewan, Canada.



T

*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

May 2025

English, Approx. XV, 435 pp., 240 fig.

Pb. *RRP € 99.95/ US\$ 105.99/ £ 88.00

ISBN 978-3-11-133371-7

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00

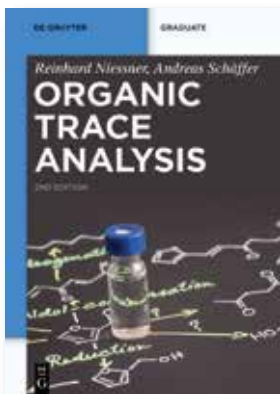
PDF ISBN 978-3-11-133394-6

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.



T

Reinhard Nießner, Andreas Schäffer

Organic Trace Analysis

Series: De Gruyter Textbook

2. Edition/2nd Edition

September 2024

English, XIII, 457 pp., 270 fig.

Pb. *RRP € 89.95/ US\$ 98.99/ £ 82.00

ISBN 978-3-11-116518-9

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00

PDF ISBN 978-3-11-116520-2

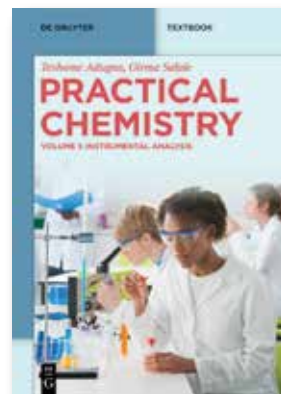
ePUB ISBN 978-3-11-116613-1

This up-dated work presents the basics of trace analysis, from sample preparation to the measurement: Students are introduced to statistical evaluation, quality control technologies, sampling and preparation of organic traces. Spectroscopic techniques as chromatography, capillary electrophoresis, mass spectrometry, and receptor-based bioanalysis are covered in detail.

New: Micro- and nanoplastic particles in the environment.

Analytical Chemistry; Organic Chemistry; Trace Analysis; Chromatography; Mass Spectrometry

Reinhard Nießner, TU Munich, Germany;
Andreas Schaeffer, RWTH Aachen
University, Germany.



T

Teshome Adugna, Girma Salale

Practical Chemistry

Instrumental Analysis

Series: De Gruyter Textbook

November 2024

English, VIII, 94 pp., 15 fig.

Pb. *RRP € 49.95/ US\$ 53.99/ £ 44.00

ISBN 978-3-11-157504-9

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00

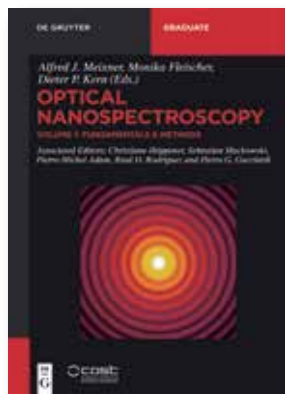
PDF ISBN 978-3-11-157563-6

ePUB ISBN 978-3-11-157566-7

This laboratory manual offers a broad introduction to practical instrumental analysis. The practical activities include experiments for thin layer chromatography, paper chromatography, gas chromatography, high-performance liquid chromatography, electrophoresis, potentiometry, voltammetry, conductometry, coulometry, and electrogravimetry.

Analytical Chemistry; Chromatography; Electrophoresis; Electroanalytical Methods

Teshome Adugna, Girma Salale, Salale
University, Ethiopia.



T

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

September 2025
English, 20, 330 pp., 300 fig.

Pb. *RRP € 74.95 / US\$ 81.99 / £ 64.00
ISBN 978-3-11-042702-8

**eBook *RRP € 699.00 / US\$ 769.00 / £ 599.00
PDF ISBN 978-3-11-042703-5
ePUB ISBN 978-3-11-042319-8

This two-volume graduate textbook makes the field of nanospectroscopy for the first time accessible for students. Volume 1 covers the basics from the fundamentals of light-matter-interaction and gives an overview over optical spectroscopies in general as well as 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, Christiane Höppener, Sebastian Mackowski, Pierre-Michel Adam, Raul D. Rodriguez, Pietro G. Gucciardi, Antonio Cricenti, Ulrich Hohenester, Manuela Scarselli (Eds.)

Volume 1-2: [Set Optical Nanospectroscopy, Vol 1+2]

Series: De Gruyter Textbook

September 2025
English, XL, 660 pp., 600 fig.

Set *RRP € 119.95 / US\$ 131.99 / £ 109.50
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.

Optical Spectroscopy; Nanophotonics; Plasmonics; Super-resolution Microscopy; Calibration Methods

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

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

Volume 2: Instrumentation, Simulation & Materials

Series: De Gruyter Textbook

September 2025
English, 20, 330 pp., 300 fig.

Pb. *RRP € 74.95 / US\$ 81.99 / £ 64.00
ISBN 978-3-11-042704-2

**eBook *RRP € 699.00 / US\$ 769.00 / £ 599.00
PDF ISBN 978-3-11-042705-9
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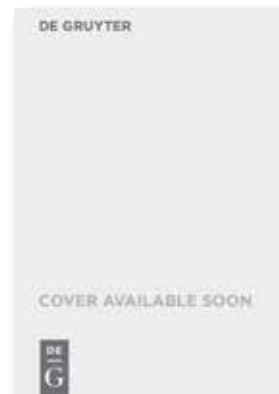
This two-volume graduate textbook makes the field of nanospectroscopy for the first time accessible for students. Volume 2 covers theoretical and experimental methods essential for nanospectroscopy, explains necessary instrumentation, gives insights into simulation tools and introduces a wide variety 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.



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

Per- and Polyfluorinated Alkyl Substances

Occurrence, Toxicity and Remediation of PFAS

January 2025
English, Approx. X, 650 pp., 116 fig.

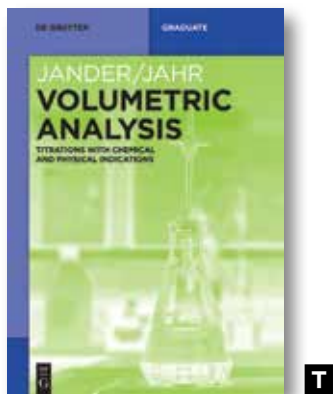
HC *RRP € 159.95 / US\$ 176.99 / £ 139.50
ISBN 978-3-11-079671-1

eBook *RRP € 159.95 / US\$ 176.99 / £ 139.50
PDF ISBN 978-3-11-079679-7
ePUB ISBN 978-3-11-079686-5

Per- and Polyfluorinated 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, Anthony Umeh, The University of Newcastle, Australia.



T

Jander/Jahr
Volumetric Analysis

Titration with Chemical and Physical Indications

*Founded by Gerhart Jander, Karl-Friedrich Jahr
 Rev by Ralf Martens-Menzel, Lena Harwardt,
 Hanns-Jürgen Krauss*

Series: De Gruyter Textbook

February 2025
 English, Approx. X, 340 pp., 120 fig.

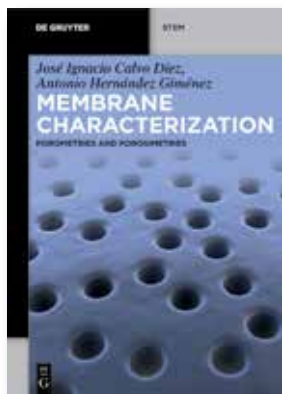
Pb. *RRP € 74.95/ US\$ 82.99/ £ 68.50
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****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
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 ePUB ISBN 978-3-11-135029-5

The introduction to titration and instrumental dimensional analysis provides comprehensive information on theory and practical applications. From acid-base titration, redox and complexation titrations to pharmaceutical analysis and environmental analysis, all common methods are described and explained in detail.

Titration; Analytical Chemistry; Physical Chemistry; Dimensional Analysis; Pharmaceutical Analysis; Environmental Analysis

R. Martens-Menzel, Berliner Hochschule für Technik; *L. Harwardt*, Ulm University; *H.-J. Krauss*, LMU Munich, Germany.



*José Ignacio Calvo Díez,
 Antonio Hernández Giménez*
Membrane Characterization

Porometries and Porosimetries

Series: De Gruyter STEM

October 2024
 English, XII, 282 pp., 99 fig.

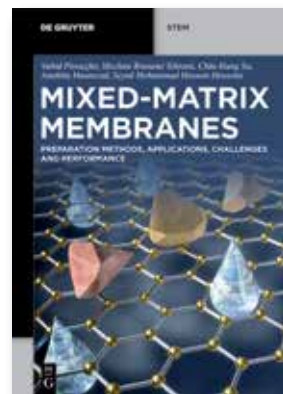
Pb. *RRP € 104.95/ US\$ 120.99/ £ 96.00
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eBook *RRP € 104.95/ US\$ 120.99/ £ 96.00
 PDF ISBN 978-3-11-079219-5
 ePUB ISBN 978-3-11-079231-7

This book deals with the most important methods to determine the pore size and pore size distribution of synthetic membranes and other porous materials. For each method the experimental setup necessary is commented, referring to commercial marketed devices when available. Finally, the features, advantages and disadvantages of each method are compared and thoroughly discussed.

Chemical Engineering; Thin Films; Surface Characterization; Porous Materials

José Ignacio Calvo Díez and *Antonio Hernández Giménez*, University of Valladolid, Spain.



*Vahid Pirouzfar, Mozhan Rostami Tehrani,
 Chia-Hung Su, Anahita Hasanzad,
 Seyed Mohammad Hossein Hosseini*
Mixed-Matrix Membranes

Preparation Methods, Applications, Challenges and Performance

Series: De Gruyter STEM

August 2024
 English, XIV, 51 pp., 10 fig.

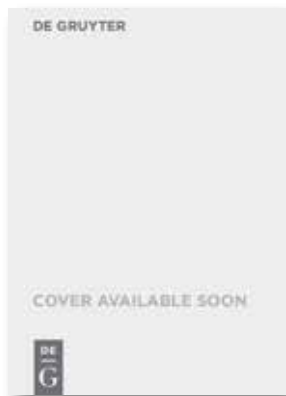
Pb. *RRP € 59.95/ US\$ 65.99/ £ 54.50
 ISBN 978-3-11-128245-9

eBook *RRP € 59.95/ US\$ 65.99/ £ 54.50
 PDF ISBN 978-3-11-128434-7
 ePUB ISBN 978-3-11-128449-1

Mixed-matrix membranes are identified as a new type of membranes being more efficient due to the inorganic particles in their structure. In industry they can be a good substitute for old methods which consume a lot of energy. Thus, the present research scrutinizes different filling particles used in this group of membranes, applications, shortcomings and the challenges of producing these types of membranes.

Separation Process; Mixed Matrix Membranes; Polymeric Precursors; Gas Permeability; Gas Selectivity

Vahid Pirouzfar, Mozhan Rostami Tehrani, Anahita Hasanzad, Islamic Azad Univ., Iran; *Chia-Hung Su*, Ming Chi Univ. of Technol., Taiwan.



Vishnu D. Rajput, Abhishek Singh, Karen Ghazaryan, Athanasios Alexiou, Hassan El-Ramady (Eds.)

Biogenic Nanoparticles and Biochar in Agriculture

Innovations for Sustainable Crop Production and Protection
July 2025
English, Approx. X, 510 pp., 40 fig.

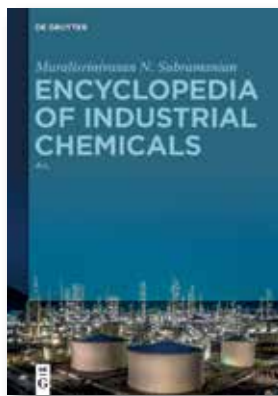
HC *RRP € 169.95/ US\$ 182.99/ £ 151.00
ISBN 978-3-11-144427-7

eBook *RRP € 169.95/ US\$ 182.99/ £ 151.00
PDF ISBN 978-3-11-144436-9
ePUB ISBN 978-3-11-144497-0

With a burgeoning global population and intensifying environmental pressures, the imperative for sustainable and resilient agricultural practices has never been more crucial. *Biogenic Nanoparticles and Biochar in Agriculture* delves into the groundbreaking realm of biogenic nanoparticles and biochar. From mitigating abiotic stresses to bolstering pest and disease resistance, the book navigates the landscape of innovative agricultural technologies.

Sustainable Agriculture; Drought Management; Heat Stress Mitigation; Heavy Metal Stress in Soil; Plant Disease Management; Soil-Borne Disease Control; Plant Protection; Pest Management; Nutrient Management

V. D. Rajput, SFedU, Russia; *A. Singh*, *K. Ghazaryan*, YSU, Armenia;
A. Alexiou, Funogen, Greece;
H. El-Ramady, Kafrelsheikh Uni., Egypt.



Muralisrinivasan Natamai Subramanian **Encyclopedia of Industrial Chemicals** **Volume 1: A-L**

October 2025
English, Approx. X, 490 pp., 30 fig.

HC *RRP € 189.95/ US\$ 220.00/ £ 166.50
ISBN 978-3-11-074755-3

eBook *RRP € 189.95/ US\$ 220.00/ £ 166.50
PDF ISBN 978-3-11-074763-8
ePUB ISBN 978-3-11-074773-7

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.

Muralisrinivasan Natamai Subramanian **Volume 2: M-Z**

October 2025
English, Approx. X, 490 pp., 30 fig.

HC *RRP € 189.95/ US\$ 220.00/ £ 166.50
ISBN 978-3-11-074780-5

eBook *RRP € 189.95/ US\$ 220.00/ £ 166.50
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.

Volume 1+2: [Set Encyclopedia of Industrial Chemicals, Vol1+2]

October 2025
English,

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

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.

Muralisrinivasan Natamai Subramanian,
Plastic Consultant, Tamil Nadu, India.

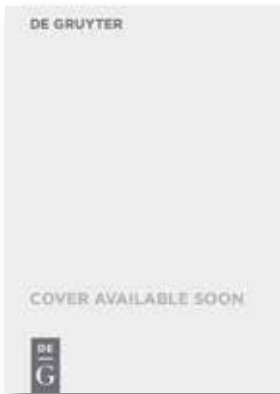


IMAGINE
YOUR
WRITING
COULD
CHANGE
THE
WORLD

Make your
mark on the
future of
knowledge.



PUBLISH WITH US



Walter Eckart Schmidt
**Encyclopedia of
Bipropellant Combinations**

August 2025
English, Approx. XX, 1780 pp., 400 fig. The content
is published in 2 Volumes.

HC *RRP € 540.00 / US\$ 590.00 / £ 486.00
ISBN 978-3-11-133135-5

eBook *RRP € 540.00 / US\$ 590.00 / £ 486.00
PDF ISBN 978-3-11-133156-0
ePUB ISBN 978-3-11-133168-3

The book provides an overview of the rapid development of new propellant concepts, mainly in the area of environmentally-friendly rocket propellants, while at the same time documents the history of what had been done with less sustainable materials in the past. The publication summarizes lessons learned, covering mostly liquid rocket propellants, and helps chemists in developing new energetic materials.

Bipropellants; Rocket Propellants

Eckart W. Schmidt, Consultant, Hazardous Materials, Bellevue, WA, USA.



Ernst-Christian Koch
**High Explosives,
Propellants, Pyrotechnics**

2. Edition/2nd Edition
February 2025
English, Approx. XXV, 875 pp., 180 fig.

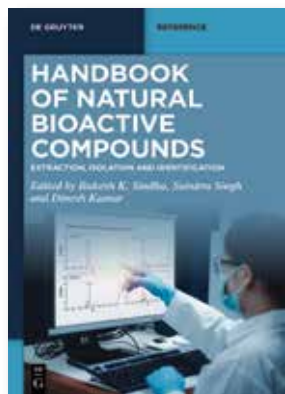
HC *RRP € 164.95 / US\$ 182.99 / £ 144.00
ISBN 978-3-11-077148-0

eBook *RRP € 164.95 / US\$ 182.99 / £ 144.00
PDF ISBN 978-3-11-077158-9
ePUB ISBN 978-3-11-077161-9

Over 650 alphabetically ordered entries on energetic materials stand out with up-to-date and detailed descriptions, synthetic aspects, explanatory photographs and figures. Concisely listed properties and performance data of explosives make it an indispensable book for international scientists and professionals dealing with high-energy compounds such as high explosives, propellants, and pyrotechnics.

Energetic Materials; Explosives; Pyrotechnics; Propellants

Ernst-Christian Koch, Lutradyn-Energetic Materials Science & Technology Consulting, Germany.



*Rakesh K. Sindhu, Sumitra Singh,
Dinesh Kumar (Eds.)*

Handbook of Natural Bioactive Compounds

Extraction, Isolation and Identification

Series: De Gruyter Reference

December 2025
English, Approx. X, 490 pp., 80 fig.

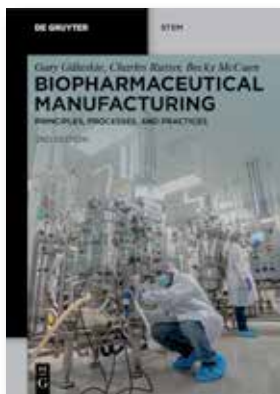
HC *RRP € 194.95/ US\$ 220.00/ £ 175.50
ISBN 978-3-11-162771-7

eBook *RRP € 194.95/ US\$ 220.00/ £ 175.50
PDF ISBN 978-3-11-162824-0
ePUB ISBN 978-3-11-162827-1

Natural bioactive compounds have a wide range of therapeutic potential. They are the basis for many life-saving drugs and have the potential to treat and manage a variety of diseases. Handbook of Natural Bioactive Compounds provides a broad overview of techniques for the extraction, isolation, and identification of bioactive compounds from natural sources, such as plants, marine organisms and microorganisms.

Chromatography; Spectroscopy; Bioassays

Rakesh K. Sindhu, Sharda University,
Sumitra Singh, Guru Jambheshwar
University, *Dinesh Kumar*, Central
University of Haryana, India.



*Gary Gilleskie, Charles Rutter,
Becky McCuen*

Biopharmaceutical Manufacturing

Principles, Processes, and Practices

Series: De Gruyter STEM

2. Edition/2nd Edition
October 2025
English, Approx. X, 370 pp., 100 fig.

Pb. *RRP € 109.95/ US\$ 117.99/ £ 97.50
ISBN 978-3-11-111206-0

eBook *RRP € 109.95/ US\$ 117.99/ £ 97.50
PDF ISBN 978-3-11-111245-9
ePUB ISBN 978-3-11-111396-8

Biopharmaceuticals, medicines made by or from living organisms (including cells from living organisms), are extremely effective in treating a broad range of diseases. This book provides concise, comprehensive, and up-to-date coverage of biopharmaceutical manufacturing. Written in a clear and informal style, the content has been influenced by the authors' substantial industry experience and teaching expertise.

**Pharmaceutical Production; Manufacture;
Biopharmaceuticals**

Gary Gilleskie and *Charles Rutter*, NC
State University, Raleigh, North Carolina,
USA; *Becky McCuen*, KBI BioPharma, Inc.,
Durham, USA.



*Oluwatosin Ademola Ijadeniyi,
Christiana Aruwa, Titilayo Adenike
Ajayeoba (Eds.)*

Food Biotechnology

Food Processing, Gene Editing and
Safety

Series: De Gruyter STEM

October 2025
English, Approx. X, 460 pp., 40 fig.

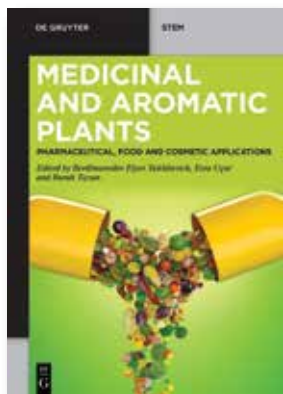
Pb. *RRP € 109.95/ US\$ 117.99/ £ 97.50
ISBN 978-3-11-144121-4

eBook *RRP € 109.95/ US\$ 117.99/ £ 97.50
PDF ISBN 978-3-11-144123-8
ePUB ISBN 978-3-11-144157-3

Biotechnological advances sparked a food revolution with new ideas for a sustainable food future. The book embodies all microbial and food biotechnology related topics, and current, emerging, and future technologies for food fortification, safety and security. It critically assesses the use of emerging trends in biotechnology to develop disease resistant raw foods and products, enhance food and food products nutritional profiles.

**Microbiology; Microbiome; Nutrigenomics;
Gene Editing; Functional Foods; Nutraceuticals;
Enzymes; Food Informatics; Food Supply; Food
Preservation; Food Safety; Food Waste; Food
Packaging; Bioeconomy**

*Oluwatosin A. Ijadeniyi, Christiana E.
Aruwa*, Durban Uni. of Technology, South
Africa; *Titilayo A. Ajayeoba*, Adeleke Uni.,
Nigeria.



*Berdimurodov Elyor Tukhlievich,
Esra Uçar, Burak Tuzun (Eds.)*

Medicinal and Aromatic Plants

Pharmaceutical, Food and Cosmetic Applications

Series: De Gruyter STEM

December 2025
English, Approx. X, 490 pp., 60 fig.

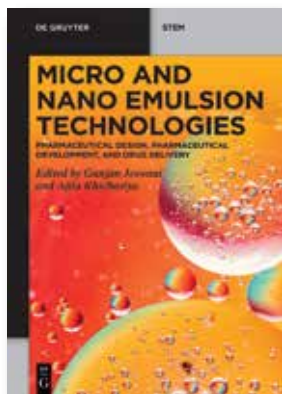
Pb. *RRP € 109.95/ US\$ 117.99/ £ 97.50
ISBN 978-3-11-146866-2

eBook *RRP € 109.95/ US\$ 117.99/ £ 97.50
PDF ISBN 978-3-11-146971-3
ePUB ISBN 978-3-11-147038-2

Medicinal and aromatic plants have been used for medicinal and therapeutic purposes for centuries, and modern medicine recognizes the health benefits of these plants. The book covers the methods to obtain drugs from medicinal and aromatic plants, the challenges encountered in growing them and stress factors effects. It presents edible and toxic medicinal and aromatic plants and gives information on pharmaceutical, cosmetic and aromatherapy uses.

Drug; Biodiversity; Sustainability; Conservation; Biochemistry; Aromatherapy

Berdimurodov Elyor Tukhliyivich, NUU, Uzbekistan; *Esra Uçar, Burak Tuzun*, Sivas Cumhuriyet University, Turkey.



Gunjan Jeswani, Ajita Khichariya (Eds.)

Micro and Nano Emulsion Technologies

Pharmaceutical Design, Pharmaceutical Development, and Drug Delivery

Series: De Gruyter STEM

August 2025
English, Approx. XX, 380 pp., 100 fig.

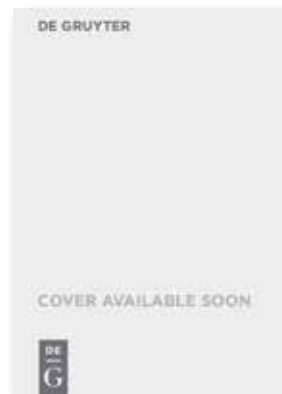
Pb. *RRP € 119.95/ US\$ 131.99/ £ 109.50
ISBN 978-3-11-159362-3

eBook *RRP € 119.95/ US\$ 131.99/ £ 109.50
PDF ISBN 978-3-11-159365-4
ePUB ISBN 978-3-11-159383-8

A comprehensive reference on formulating, characterizing, and applying Micro and Nano emulsion technologies for pharmaceutical products. The book covers the fundamentals, formulation strategies, characterization methods, application aspects, and emerging trends in this field, while also showcasing practical applications and case studies. It serves as a valuable resource in developing novel drug delivery systems based on emulsion technologies.

Emulsion; Microemulsion; Nanoemulsion; Drug Delivery; Drug Design; Bioavailability; Pharmaceutical Chemistry; Colloids; Formulation

Gunjan Jeswani, Ajita Khichariya, Faculty of Pharmaceutical Sciences, SSTC, Bhilai, Chhattisgarh, India.



Ludwig Erik Aguilar, Sofia Wareham Mathiassen

Advanced Drug Delivery

Series: De Gruyter Textbook

October 2025
English, Approx. X, 190 pp., 50 fig.

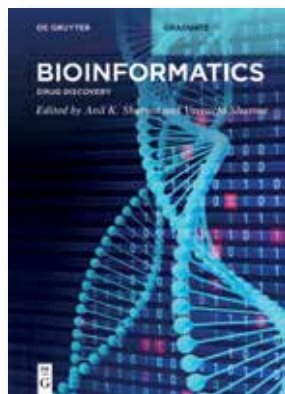
Pb. *RRP € 104.95/ US\$ 112.99/ £ 93.00
ISBN 978-3-11-124521-8

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-124522-5
ePUB ISBN 978-3-11-124542-3

The book discusses the advancement and innovation within the field of drug delivery. It covers drug delivery via systemic and local delivery. The first chapters discuss basic foundational knowledge within pharmacology. The next chapters cover all drug delivery routes, i.e., inhalables and ocular, intravenous, mucosal, topical, buccal, sublingual, oral, subcutaneous, intradermal and intramuscular drug delivery.

Inhalables; Ocular; Intravenous; Mucosal; Topical; Buccal; Sublingual; Oral; Subcutaneous; Intradermal; Intramuscular

Ludwig Erik Aguilar, Sofia Wareham Mathiassen, Novo Nordisk A/S, Hillerød, Denmark.



T

Anil K. Sharma, Varruchi Sharma (Eds.)

Bioinformatics

Drug Discovery

Series: De Gruyter Textbook

December 2024

English, X, 174 pp., 31 fig.

Pb. *RRP € 74.95/ US\$ 82.99/ £ 68.50

ISBN 978-3-11-156788-4

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00

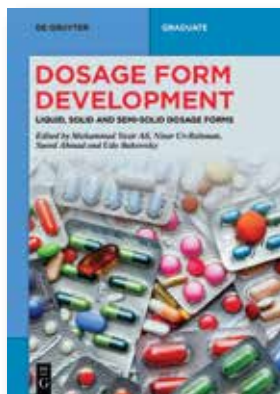
PDF ISBN 978-3-11-156858-4

ePUB ISBN 978-3-11-156882-9

Quantitative tools are becoming increasingly important in order to understand complex cascade of signal transduction events, pathways or biochemical reactions. The book showcases how computational techniques and algorithms are applied to biological data analysis, interpretation, and modelling. It covers applications in drug design and discovery, immune systems, phylogenetic analysis and protein structures.

Immunoinformatics; Proteins; Phylogenetic Analysis

Anil K. Sharma, Amity University;
Varruchi Sharma, Sri Guru Gobind Singh
College, India.



T

Muhammad Yasir Ali, Nisar Ur-Rahman,

Saeed Ahmad, Udo Bakowsky (Eds.)

Dosage Form Development

Liquid, Solid and Semi-Solid Dosage
Forms

Series: De Gruyter Textbook

October 2025

English, Approx. X, 390 pp., 50 fig.

Pb. *RRP € 74.95/ US\$ 82.99/ £ 68.50

ISBN 978-3-11-143801-6

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00

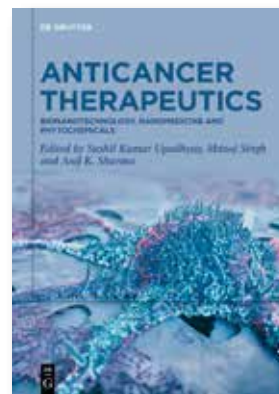
PDF ISBN 978-3-11-143810-8

ePUB ISBN 978-3-11-143825-2

Comprehending the principles behind dosage forms is crucial in the advancement of pharmaceutical carriers for drug delivery. *Dosage Form Development* explores the impact of various pharmaceutical and analytical factors on the design and evaluation of dosage forms. It describes the mechanistic approaches involved in developing these carriers and aims to elucidate the physicochemical and procedural key points in dosage form development and analysis.

Drug Delivery

Muhammad Yasir Ali, GCUF; Nisar
Ur-Rahman, CUI; Saeed Ahmad, IUB,
Pakistan; Udo Bakowsky, Philipps
University of Marburg, Germany.



Sushil Kumar Upadhyay, Manoj Singh,

Anil K. Sharma (Eds.)

Anticancer Therapeutics

Bionanotechnology, Nanomedicine and
Phytochemicals

December 2024

English, Approx. X, 390 pp., 23 fig.

HC *RRP € 164.95/ US\$ 176.99/ £ 146.50

ISBN 978-3-11-134948-0

eBook *RRP € 164.95/ US\$ 176.99/ £ 146.50

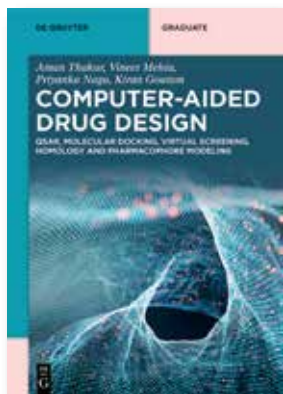
PDF ISBN 978-3-11-134954-1

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 onco genesis. 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.

**T**

*Aman Thakur, Vineet Mehta,
Priyanka Nagu, Kiran Goutam*

Computer-Aided Drug Design

QSAR, Molecular Docking, Virtual Screening, Homology and Pharmacophore Modeling

Series: De Gruyter Textbook

August 2024
English, XII, 339 pp., 111 fig.

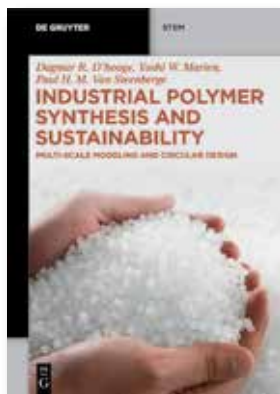
Pb. *RRP € 69.95/ US\$ 76.99/ £ 64.00
ISBN 978-3-11-143474-2

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-143485-8
ePUB ISBN 978-3-11-143487-2

Computer-Aided Drug Design (CADD) is a comprehensive theoretical and practical guide on CADD written in an easy language. The authors begin by establishing a solid foundation, explaining the core concepts of CADD, the user interface and essential tools. The book then delves into QSAR, molecular docking, homology modeling, virtual screening, pharmacophore modeling and provides in-depth insights into 3D modeling, rendering, and parametric design.

Medicinal Chemistry; Bioinformatics; Drug Discovery; Artificial Intelligence

Aman Thakur, Govt. of Rajasthan;
Vineet Mehta, Priyanka Nagu, GCP, Rohru;
Kiran Goutam, Shri Haridatt College of Pharmacy, India.



Dagmar D'hooge, Paul Van Steenberge

Industrial Polymer Synthesis and Sustainability

Multi-Scale Modeling and Circular Design

Series: De Gruyter STEM

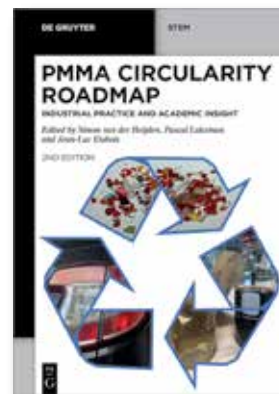
September 2025
English, Approx. X, 300 pp., 100 fig.

Pb. *RRP € 84.95/ US\$ 87.99/ £ 69.50
ISBN 978-3-11-058837-8

eBook *RRP € 84.95/ US\$ 87.99/ £ 69.50
PDF ISBN 978-3-11-058864-4
ePUB ISBN 978-3-11-058866-8

This book provides a unique summary of the crucial steps in industrial polymer synthesis by a well-structured multi-scale approach. Chemical fundamentals of polymerization, kinetics, transport phenomena, reactor design, characterization and monitoring techniques, process control as well as case studies describe the interdisciplinary process of polymer production and research in the chemical industry.

Dagmar D'hooge, Paul Van Steenberge, Ghent University, Ghent, Belgium.



*Simon van der Heijden, Pascal Lakeman,
Jean-Luc Dubois (Eds.)*

PMMA Circularity Roadmap

Industrial Practice and Academic Insight

Series: De Gruyter STEM

2. Edition/2nd Edition
April 2025
English, Approx. X, 290 pp., 85 fig.

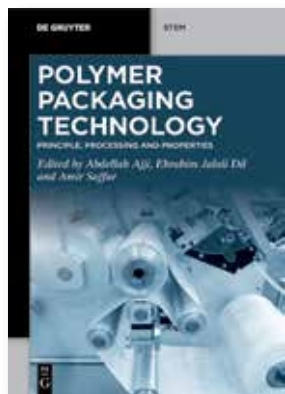
Pb. *RRP € 89.95/ US\$ 103.99/ £ 82.00
ISBN 978-3-11-107683-6

eBook *RRP € 89.95/ US\$ 103.99/ £ 82.00
PDF ISBN 978-3-11-107699-7
ePUB ISBN 978-3-11-107742-0

Currently, large amounts of plastic waste are incinerated or landfilled, despite the existence of several recycling routes. In this book, a roadmap is provided to increase the amount of recycled plastic waste. Focus is on poly(methyl methacrylate), PMMA, which is a polymer widely used for its optical properties. The entire recycling chain, from collection of plastic waste, to mechanical/chemical recycling, and purification is covered.

Polymer Recycling; Circular Economy; Polymer Production; Plastic Waste; Mechanical Recycling; Chemical Recycling

S. van der Heijden, Heathland B.V., NL;
P. Lakeman, Trinseo Netherlands BV, NL;
J.-L. Dubois, Altuglas International/ Trinseo, F.



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

Polymer Packaging Technology

Principle, Processing and Properties

Series: De Gruyter STEM

May 2025

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

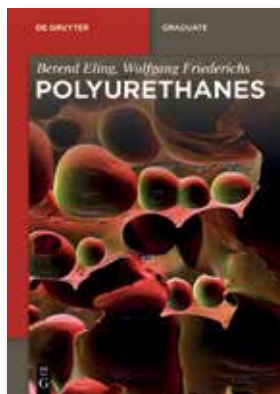
Pb. *RRP € 99.95 / US\$ 104.99 / £ 83.00
ISBN 978-1-5015-1924-6

eBook *RRP € 99.95 / US\$ 104.99 / £ 83.00
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.



Polyurethanes

Series: De Gruyter Textbook

July 2025

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 / US\$ 769.00 / £ 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; Macromolecules; Plastics Microcellular Foam Seals; Spray Foam; Durable Elastomeric Wheels; Tires; High-Performance Adhesives; Surface Coatings; Sealants; Synthetic Fibers

Berend Eling BASF Polyurethanes;
Wolfgang Friederichs, formerly Bayer MaterialScience AG, Germany.



Smart and Functional Coatings

Nanotechnology in Coatings

March 2025

English, Approx. X, 140 pp., 100 fig.

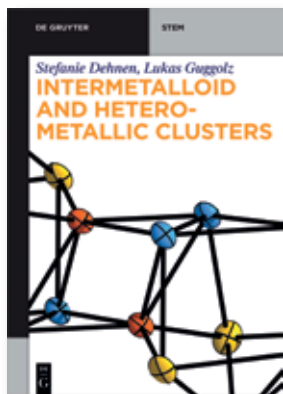
HC *RRP € 144.95 / US\$ 159.99 / £ 132.00
ISBN 978-3-11-132644-3

eBook *RRP € 144.95 / US\$ 159.99 / £ 132.00
PDF ISBN 978-3-11-132649-8
ePUB ISBN 978-3-11-132755-6

Smart and Functional coatings improve performance in terms of functionality, durability, aesthetics and other properties. The book describes a wide range of smart coatings such as photocatalytic, self-cleaning, self-healing, anti-microbial, anti-fouling, anti-reflection, heat reflective, anti-corrosion and anti-icing coatings. It also covers nanotechnology and the incorporation of functional components, such as sensors or actuators, into coatings.

Photocatalytic; Self-cleaning; Self-healing; Anti-microbial; Anti-fouling; Anti-reflection; Anti-corrosion; Anti-icing

Arno Schut, Axcentive, France.



Stefanie Dehnen, Lukas Guggolz (Eds.)
Intermetalloid and Heterometallic Clusters

Series: De Gruyter STEM

June 2025
English, Approx. XII, 150 pp., 70 fig.

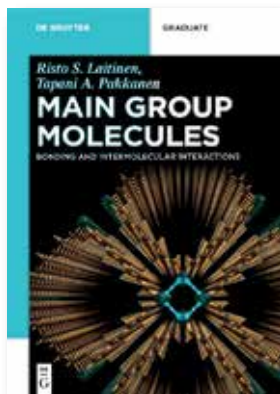
Pb. *RRP € 89.95/ US\$ 95.99/ £ 74.00
ISBN 978-3-11-067642-6

eBook *RRP € 89.95/ US\$ 95.99/ £ 74.00
PDF ISBN 978-3-11-067643-3
ePUB ISBN 978-3-11-067650-1

Intermetalloid clusters can be viewed as molecular models of alloys and doped metals. With their special electronic properties, intermetalloid clusters are important in materials science as well as inorganic chemistry. This book will give a comprehensive introduction to the topic and cover the different classes of both intermetalloid and heterometallic clusters.

Intermetalloid Clusters; Heterometallic Clusters; Catalysis

Stefanie Dehnen, Philipps-Universität Marburg, Germany; *Lukas Guggolz*, Kirchhain, Germany.



Risto S. Laitinen, Tapani Pakkanen
Main Group Molecules
Bonding and Intermolecular Interactions

Series: De Gruyter Textbook

May 2025
English, Approx. X, 300 pp., 200 fig.

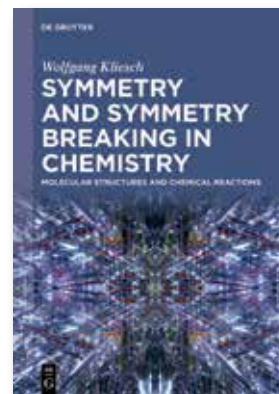
Pb. *RRP € 99.95/ US\$ 104.99/ £ 83.00
ISBN 978-3-11-061327-8

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 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.



Wolfgang Kliesch
Symmetry and Symmetry Breaking in Chemistry
Molecular Structures and Chemical Reactions

December 2024

English, Approx. X, 500 pp., 46 fig.

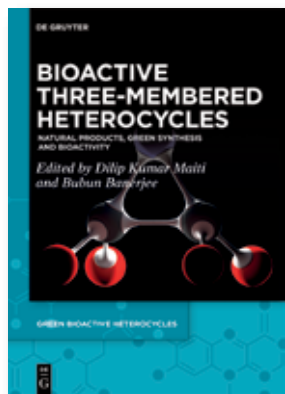
HC *RRP € 220.00/ US\$ 240.00/ £ 195.00
ISBN 978-3-11-134478-2

eBook *RRP € 220.00/ US\$ 240.00/ £ 195.00
PDF ISBN 978-3-11-134523-9
ePUB ISBN 978-3-11-134531-4

This work points out which important part symmetry of molecules and the breaking of symmetry in molecular systems plays in chemical reactions. After a thorough mathematical treatment of isometry groups and bifurcation subgroups it finally describes some interesting examples.

Theoretical Chemistry; Symmetry in molecules; Chemical reactions; Transition state theory; Reaction path

Wolfgang Kliesch, Leipzig, Germany.



Dilip Kumar Maiti, Bubun Banerjee (Eds.)
Bioactive Three-Membered Heterocycles

Natural Products, Green Synthesis and Bioactivity

Series: Green Bioactive Heterocycles 6

August 2025
 English, Approx. X, 340 pp., 300 fig.

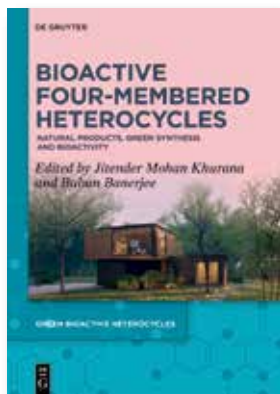
HC *RRP € 164.95/ US\$ 176.99/ £ 146.50
 ISBN 978-3-11-138631-7

eBook *RRP € 164.95/ US\$ 176.99/ £ 146.50
 PDF ISBN 978-3-11-138637-9
 ePUB ISBN 978-3-11-138644-7

Bioactive Three-Membered Heterocycles provides detailed information on the green synthesis of the structurally diverse pharmaceutically active three-membered heterocycles. It covers both synthesis and biological aspects and highlights the role of three-membered heterocycles in drugs and drug designing. It also includes naturally occurring bioactive three-membered heterocycles.

Azirines; Diaziridines; Diazirines; Epoxides; Dioxiranes; Oxaziridines; Thiiranes; Dithiiranes; Thiaziridines; Thiirenes

Dilip Kumar Maiti, Biswa Bangla Biswabidyalay, India; *Bubun Banerjee*, Akal University, India.



Jitender Mohan Khurana, Bubun Banerjee (Eds.)
Bioactive Four-Membered Heterocycles

Natural Products, Green Synthesis and Bioactivity

Series: Green Bioactive Heterocycles 7

August 2025
 English, Approx. X, 290 pp., 300 fig.

HC *RRP € 164.95/ US\$ 176.99/ £ 146.50
 ISBN 978-3-11-138655-3

eBook *RRP € 164.95/ US\$ 176.99/ £ 146.50
 PDF ISBN 978-3-11-138657-7
 ePUB ISBN 978-3-11-138673-7

Bioactive Four-Membered Heterocycles provides detailed information on the green synthesis of the structurally diverse pharmaceutically active four-membered heterocycles. It covers both synthesis and biological aspects and highlights the role of four-membered heterocycles in drugs and drug designing. It also includes naturally occurring bioactive four-membered heterocycles.

Oxetanes; Thietanes; Azetidines; Diazetidines; Dioxetanes; Oxazetidines; Dithietes; Thiazetidines

Bubun Banerjee, Akal University;
Jitender Mohan Khurana, University of Delhi, India.



Mesay Solomon Tesema, Digafie Zeleke
Practical Chemistry

Transition Metals

Series: De Gruyter Textbook

December 2024
 English, VIII, 102 pp., 1 fig.

Pb. *RRP € 44.95/ US\$ 47.99/ £ 39.50
 ISBN 978-3-11-157384-7

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
 PDF ISBN 978-3-11-157434-9
 ePUB ISBN 978-3-11-157488-2

This laboratory manual offers a broad introduction to the chemistry of transition elements and more specifically to the chemistry of titanium, vanadium, chromium, molybdenum, manganese, iron, cobalt, nickel, copper, zinc, cadmium and mercury. The book includes preparation and properties of these transition metals and introduces the chemistry student to the laboratory skills required for accurate and precise chemical analysis.

Inorganic Chemistry; Laboratory Manual

Mesay Solomon Tesema, Digafie Zeleke, Salale University, Ethiopia.



Ajay Kumar Goswami
Medicinal Inorganic Chemistry

Metal-Based Drugs and Metal Complexes for Therapeutic Applications
December 2024
English, Approx. X, 120 pp., 56 fig.

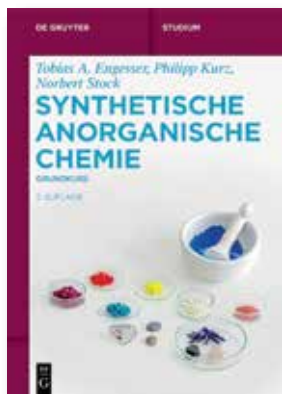
HC *RRP € 119.95 / US\$ 127.99 / £ 105.50
ISBN 978-3-11-142609-9

eBook *RRP € 119.95 / US\$ 127.99 / £ 105.50
PDF ISBN 978-3-11-142613-6
ePUB ISBN 978-3-11-142673-0

Metal complex based drugs target various diseases due to their distinct structural peculiarities and can be used effectively against diseases such as cancer, malaria and Alzheimer. The present book covers the role of metal complexes as future potential drugs. It explains metal-ligand bonding, structural scaffolds beyond organic molecules and describes both traditional and innovative drug discovery and development, including in-silico prediction.

Metal Complexes; In Silico Prediction

Ajay Kumar Goswami, Mohanlal Sukhadia University, India.



Tobias Engesser, Philipp Kurz, Norbert Stock
Synthetische Anorganische Chemie
Grundkurs

[Synthetic Inorganic Chemistry: Introductory Course]

Reihe/Series: De Gruyter Studium

2. Edition/2nd Edition
Juni/June 2025
Deutsch/German, Ca./Approx. X, 160 S./pp., 35 Abb./fig.

Br./Pb. *€ 64.95 / UVP/RRP US\$ 70.99 / UVP/RRP £ 58.50
ISBN 978-3-11-067782-9

****eBook** *€ 699.00 / UVP/RRP US\$ 769.00 / UVP/RRP £ 599.00
PDF ISBN 978-3-11-067784-3
ePUB ISBN 978-3-11-067810-9

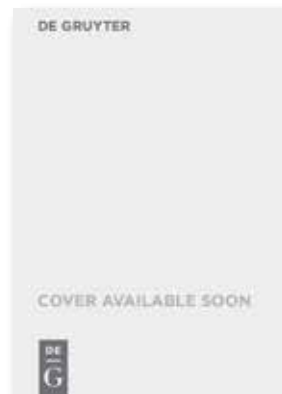
Das Werk bietet eine Einführung in Synthesemethoden der anorganischen Chemie. Die 2., überarbeitete Auflage enthält sowohl weitere Vorbereitungsfragen als auch 20 neue Präparate und Beschreibungen zur Arbeit unter Schutzgas. Ein Absolvent dieses Kurses lernt Reaktionen von Festkörpern, Lösungen, Schmelzen und Gasen kennen und wird darüber hinaus in einfache Charakterisierungsmethoden der erhaltenen Produkte eingewiesen.

Synthetische Chemie; Präparative Chemie; Laborkurs; Chemische Synthese

This book provides an introduction to methods of synthesis in inorganic chemistry. The second revised edition contains additional texts and preparatory questions. Moreover, it includes twenty new compounds and descriptions for working under protective gas. Students taking this course will learn about the reactions of solids, solutions, enamels, and gases. They will also be introduced to simple methods of characterizing the products obtained.

Inorganic Chemistry; Chemical Synthesis; Preparative Chemistry; Laboratory Course

Tobias Engesser, Norbert Stock, Christian-Albrechts-Universität Kiel; *Philipp Kurz*, Albert-Ludwigs-Universität Freiburg.



Mark Anthony Benvenuto
Lunar Chemistry

Lunar Mining, Space Exploration

Series: De Gruyter Textbook

June 2025
English, Approx. X, 240 pp., 75 fig.

Pb. *RRP € 89.95 / US\$ 94.99 / £ 78.50
ISBN 978-3-11-138712-3

****eBook** *RRP € 699.00 / US\$ 769.00 / £ 599.00
PDF ISBN 978-3-11-138730-7
ePUB ISBN 978-3-11-138788-8

In the near future, the return to the Moon, and its colonization, will require a large number of chemical processes to be brought together and used so that humans can survive in this harsh environment, and so that profitable operations can begin. This book examines what capabilities currently exist that can be brought to bear to this end. It also examines what advances will have to be made in the near future.

Lunar Mining; Space Exploration

Mark Anthony Benvenuto, University of Detroit Mercy, USA.



T

*Wolfgang Grünert, Wolfgang Kleist,
Martin Muhler*
Katalyse an Oberflächen

[Surface Catalysis]

Reihe/Series: De Gruyter Studium

April/April 2025
Deutsch/German, Ca./Approx. XV, 835 S./pp.,
225 Abb./fig.

Geb./HC *€ 99.95/ UVP/RRP US\$ 105.99/
UVP/RRP £ 88.00
ISBN 978-3-11-134431-7

****eBook** *€ 699.00/ UVP/RRP US\$ 769.00/
UVP/RRP £ 599.00
PDF ISBN 978-3-11-134445-4
ePUB ISBN 978-3-11-134457-7

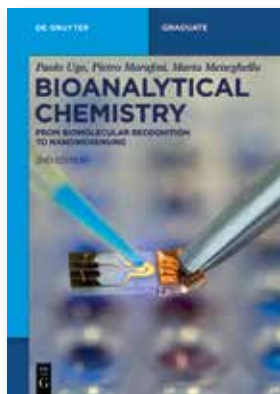
Die Katalyse ist ein sehr interdisziplinäres Thema: Grundlagen der Kinetik, Adsorption und Desorption, Reaktionsmechanismen sowie die Herstellung, Charakterisierung und das In-silico-Screening von Katalysatoren werden in prägnanter Weise beschrieben. Industrielle und umwelttechnische Anwendungen, neueste Erkenntnisse in der Elektro- und Photokatalyse sowie Übungen unterstreichen die Bedeutung und ständige Weiterentwicklung der Katalyse.

Katalyse; Oberflächenchemie; Heterogene Katalyse; Katalysator

Catalysis is a very interdisciplinary topic. This volume concisely describes the principles of kinetics, adsorption and desorption, reaction mechanisms, and the synthesis, characterization, and in-silico screening of catalysts. Industrial and environmental applications, the latest developments in electro- and photocatalysis, and practical exercises underscore the significance and constant advances being made in catalysis.

Catalysis; Surface Chemistry; Heterogeneous Catalysis; Catalyst; Physical Chemistry

Wolfgang Grünert, Martin Muhler Ruhr-Universität Bochum, Bochum;
Wolfgang Kleist, RPTU Kaiserslautern, Landau, Deutschland.



T

Paolo Ugo, Pietro Marafini, Marta Meneghello
Bioanalytical Chemistry
From Biomolecular Recognition to Nanobiosensing

Series: De Gruyter Textbook

2. Edition/2nd Edition
July 2025
English, Approx. XXV, 310 pp., 265 fig.

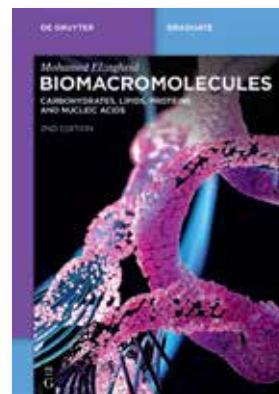
Pb. *RRP € 94.95/ US\$ 100.99/ £ 83.00
ISBN 978-3-11-119208-6

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-119261-1
ePUB ISBN 978-3-11-119337-3

The urgent need for rapid and reliable analytical tools suitable to perform a large number of high quality analyses of biological molecules has been dramatically stressed by the recent crisis caused by the COVID-19 pandemic. This book provides graduate students and young researchers with the elements of interdisciplinary knowledge necessary to apply the wide arsenal of bioanalytical devices and methods available today.

Bioanalytical Chemistry; Analytical Chemistry; Biosensors; Biomolecules

Paolo Ugo, University Ca'Foscari of Venice, Italy; *Pietro Marafini*, CS Genetics, UK, *Marta Meneghello*, CNRS, France.



T

Mohamed Elzagheid
Biomacromolecules
Carbohydrates, Lipids, Proteins and Nucleic Acids

Series: De Gruyter Textbook

2. Edition/2nd Edition
December 2024
English, Approx. X, 135 pp., 122 fig.

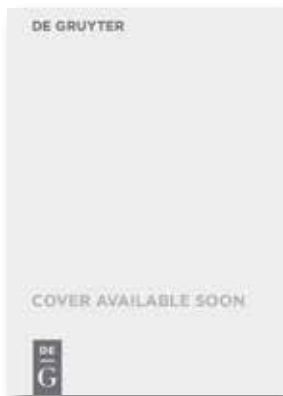
Pb. *RRP € 69.95/ US\$ 77.99/ £ 64.00
ISBN 978-3-11-158298-6

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-158327-3
ePUB ISBN 978-3-11-158397-6

The second edition of *Macromolecular Chemistry* broadens into two areas: biomacromolecules and polymers. *Biomacromolecules* covers carbohydrates, lipids, proteins, nucleic acids, classifications and properties. The book is a simple, brief, and straightforward text on biomacromolecules and it includes practice exercises after each chapter. New: cellulose, lignin, lipid bilayer, terpenoids, new protein structures, central dogma and DNA secret code.

Biological Chemistry; Monosaccharides; Disaccharides; Polysaccharides; Triglycerides; Steroids; Vitamins; Proteins; Amico Acids; Nucleosides; Oligonucleotides; Genetic Code; DNA Secret Code; PCR and DNA Fingerprinting

Mohamed Elzagheid, Jubail Industrial College, KSA.



Ramon Eritja (Ed.)

Nucleic Acids Chemistry

Modifications and Conjugates for Biomedicine and Nanotechnology

2. Edition/2nd Edition

October 2025

English, VIII, 422 pp., 150 fig.

HC *RRP € 164.95/ US\$ 176.99/ £ 146.50

ISBN 978-3-11-142468-2

eBook *RRP € 164.95/ US\$ 176.99/ £ 146.50

PDF ISBN 978-3-11-142508-5

ePUB ISBN 978-3-11-142544-3

This book compiles recent research on the modification of nucleic acids. It covers backbone modifications and conjugation of lipids, peptides and proteins to oligonucleotides and their therapeutic use. Synthesis and application in biomedicine and nanotechnology of aptamers, fluorescent and xeno nucleic acids, DNA repair and artificial DNA are discussed. New: expands on DNA nanotechnology and presents the fundamentals of novel RNA therapeutics.

DNA; RNA; Nucleic Acids; Oligonucleotides; Biochemistry

Ramon Eritja, Institute for Advanced Chemistry of Catalonia, Barcelona, Spain.



Diana Kessler

Mein Mikrobiom, meine Gene und ich

Eine grenzenlose Reise ...

Series: De Gruyter Populärwissenschaftliche Reihe

June 2025

English, Approx. X, 360 pp., 85 fig.

Pb. *RRP € 39.95/ US\$ 41.99/ £ 34.50

ISBN 978-3-11-161095-5

eBook *RRP € 39.95/ US\$ 41.99/ £ 34.50

PDF ISBN 978-3-11-161114-3

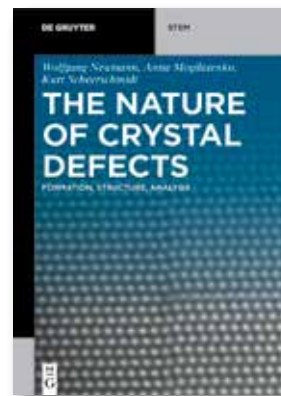
ePUB ISBN 978-3-11-161137-2

Das Buch entführt Sie auf eine Reise in Ihr mikroskopisches Inneres. Es besteht aus drei Teilen: „Was wir nicht sehen können. Das unsichtbare Leben der Mikroben,, „Krieg und Frieden in uns. Wie wir jeden Tag überleben“ und „Die Sprache des Lebens. DNA, RNA,, Sie beschäftigen sich jeweils mit unserem Mikrobiom, unserem Immunsystem und unseren Genen. Es geht um die mikroskopischen Bestandteile, ihr Zusammenwirken, ihre Entdeckung und Erforschung.

The book takes you on a journey into your microscopic inner world. It is divided into three parts: „What we can't see. The invisible life of microbes,, „War and peace in ourselves. How we survive everyday“ and „The language of life. DNA, RNA,, They explore our microbiome, immune system and our genes. It covers microscopic components, their interaction, their discovery and investigation.

Immune System; Biochemistry; DNA; Cells; Evolution; Immunsystem; Zelle

Diana Kessler, Mannheim, Deutschland.



Wolfgang Neumann, Anna Mogilatenko, Kurt Scheerschmidt

The Nature of Crystal Defects

Formation, Structure, Analysis

Series: De Gruyter STEM

August 2025

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

Pb. *RRP € 99.95/ US\$ 106.99/ £ 85.00

ISBN 978-3-11-062145-7

eBook *RRP € 99.95/ US\$ 106.99/ £ 85.00

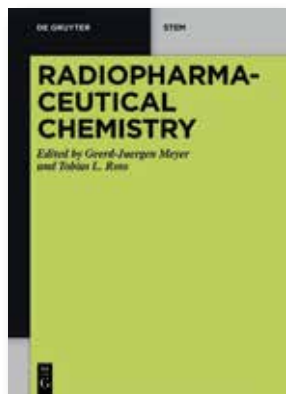
PDF ISBN 978-3-11-062150-1

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.



Geerd-Juergen Meyer, Tobias L. Ross (Eds.)
Radiopharmaceutical Chemistry

Series: De Gruyter STEM

October 2025
 English, Approx. XIV, 300 pp., 50 fig.

Pb. *RRP € 99.95 / US\$ 106.99 / £ 85.00
 ISBN 978-3-11-069062-0

eBook *RRP € 99.95 / US\$ 106.99 / £ 85.00
 PDF ISBN 978-3-11-069063-7
 ePUB ISBN 978-3-11-069067-5

A comprehensive introduction to the topic of radiopharmaceutical chemistry. Starts with a historical background on radiopharmacy and the challenges that we are facing today, followed by production of radioisotopes, labelling, syntheses and state-of-the-art applications. This book also contains the important aspect of contamination and quality assurance in radiochemistry.

Nuclear Medicine; Nuclear Chemistry;
 Radiochemistry; Pharmaceutical Chemistry;
 Radiopharmaceutical Chemistry

Geerd-J. Meyer, Tobias L. Ross, MHH,
 Hannover, Germany.



Rudolf Holze
**Elektroenergie:
 Elektrochemisch nutzen,
 speichern und wandeln**

[Electrical Electricity: Harnessing,
 Storing, and Transforming Power
 through Electro-chemistry]

Reihe/Series: De Gruyter Studium

Juni/June 2025
 Deutsch/German, Ca./Approx. X, 250 S./pp., 120
 Abb./fig.

Br./Pb. *€ 64.95 / UVP/RRP US\$ 70.99 /
 UVP/RRP £ 58.50
 ISBN 978-3-11-143676-0

****eBook** *€ 699.00 / UVP/RRP US\$ 770.00 /
 UVP/RRP £ 635.50
 PDF ISBN 978-3-11-143683-8
 ePUB ISBN 978-3-11-143686-9

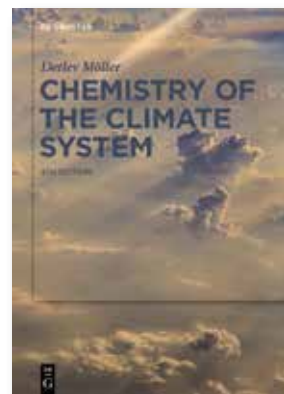
Das Werk beschreibt elektrochemische Verfahren und Systeme in einer sich wandelnden Energielandschaft und diskutiert die Bedeutung elektrischer Energie in Industrie, Wirtschaft und dem täglichen Leben. Es stellt diverse Anforderungen an elektrische Energiespeicher vor, vom kleinsten Speicher für Sensoren und Kleinstgeräte bis zu Großspeichern zur Inselversorgung und Netzstabilisierung.

Elektrochemie; Energiespeicher; Energiewandler;
 Wirkungsgrade

This volume describes electrochemical processes and systems in a changing energy landscape, discussing the significance of electrical energy in industry, business, and daily life. It presents the various demands placed on electrical energy storage systems, from compact storage for sensors and small devices to large-scale systems for island power supply and grid stabilization.

Electrochemistry; Energy Storage; Energy Converter; Efficiencies

Rudolf Holze, Universität Chemnitz,
 Deutschland.



Detlev Michael Möller
**Chemistry of
 the Climate System**

4. Edition/4th Edition
 January 2025
 English, Approx. XXV, 975 pp., 250 fig.

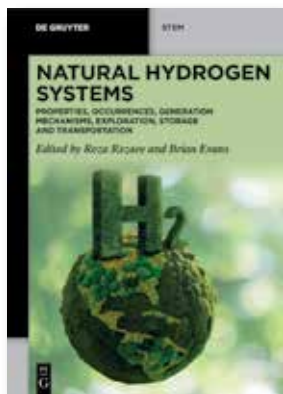
HC *RRP € 194.95 / US\$ 220.00 / £ 175.50
 ISBN 978-3-11-134151-4

eBook *RRP € 194.95 / US\$ 220.00 / £ 175.50
 PDF ISBN 978-3-11-134169-9
 ePUB ISBN 978-3-11-134179-8

Climate change is a major challenge facing modern society. *Chemistry of the Climate System* provides a physicochemical understanding of atmospheric processes. The chemical substances and reactions found in the earth's atmosphere are presented along with their influence on the global climate system, evaluating the effects of changing air compositions and possibilities for interference with these processes through the use of chemistry.

Atmosphere; Atmospheric Chemistry; Climate Change; Meteorology; Sustainability

Detlev Michael Möller, Brandenburg
 Technical University, Cottbus, Germany.



Reza Rezaee, Brian Evans (Eds.)

Natural Hydrogen Systems

Properties, Occurrences, Generation Mechanisms, Exploration, Storage and Transportation

Series: De Gruyter STEM

October 2025

English, Approx. XXV, 375 pp., 250 fig.

Pb. *RRP € 109.95/ US\$ 117.99/ £ 97.50

ISBN 978-3-11-143703-3

eBook *RRP € 109.95/ US\$ 117.99/ £ 97.50

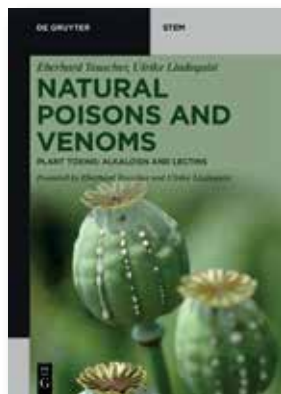
PDF ISBN 978-3-11-143704-0

ePUB ISBN 978-3-11-143761-3

Exploring the complexities of Natural Hydrogen Systems the upcoming book provides chapters covering properties, occurrences, generation mechanisms, detection methods, energy applications, environmental impacts, and more. The volume concludes with case studies, offering real-world applications and reinforcing theoretical concepts. A comprehensive guide for researchers and graduate students.

Geoenergy; Geology; Renewable Energy; Energy Source; Hydrogen Formation Mechanisms; Hydrogen Occurrence; Hydrogen Exploration Methods; Hydrogen Storage; Hydrogen Transportation

Reza Rezaee, Brian Evans, Curtin University, Bentley, Australia.



Eberhard Teuscher, Ulrike Lindequist

Natural Poisons and Venoms

Plant Toxins: Alkaloids and Lectins

Series: De Gruyter STEM

November 2024

English, Approx. XX, 330 pp., 131 fig.

Pb. *RRP € 79.95/ US\$ 87.99/ £ 73.00

ISBN 978-3-11-112740-8

eBook *RRP € 79.95/ US\$ 87.99/ £ 73.00

PDF ISBN 978-3-11-113621-9

ePUB ISBN 978-3-11-113692-9

The present book is the third volume of the 5-volume series 'Natural Poisons and Venoms'. The present volume covers the poisonous representatives of two very important groups of natural compounds: of alkaloids and of lectins. The chapters on alkaloids provide knowledge about very dangerous alkaloids, the chapters on lectins cover the highly toxic compounds ricin and abrin as well as lectins in our food.

Poisons; Venoms; Toxicology; Plants

Eberhard Teuscher, Ulrike Lindequist, University Greifswald, Germany.



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EJOURNALS



DATABASES AND MAJOR REFERENCE WORKS



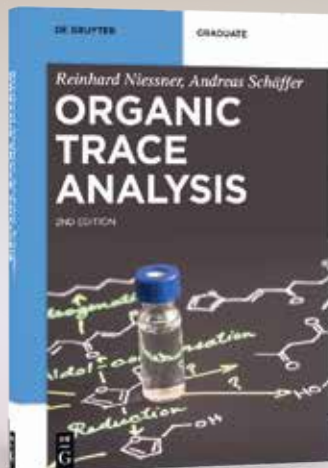
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ESSENTIAL TEXTBOOKS IN CHEMISTRY



Reinhard Nießner, Andreas Schäffer
ORGANIC TRACE ANALYSIS

09/2024. 470 pages, 270 fig.

Paperback

RRP € 89.95 [D]/US\$ 98.99/£ 82.00

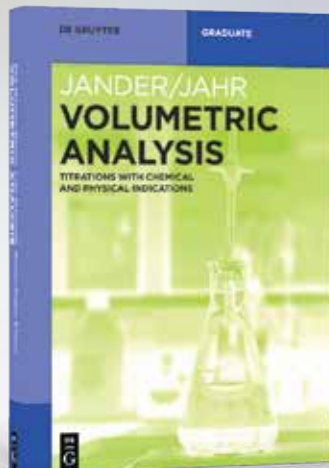
ISBN 978-3-11-116518-9

eBook

RRP € 89.95 [D]/US\$ 98.99/£ 82.00

PDF ISBN 978-3-11-116520-2

ePUB ISBN 978-3-11-116613-1



*Ralf Martens-Menzel, Lena Harwardt,
Hanns-Jürgen Krauss*

VOLUMETRIC ANALYSIS

02/2025. approx. 350 pages,

approx. 120 fig.

Paperback

RRP € 74.95 [D]/US\$ 82.99/£ 68.50

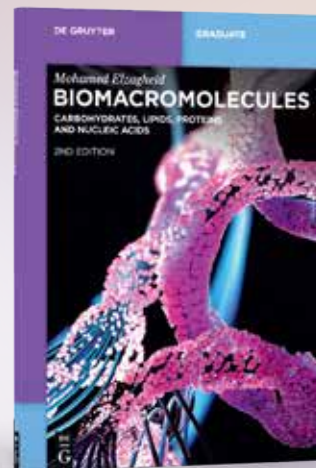
ISBN 978-3-11-134977-0

eBook

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Mohamed Elzagheid
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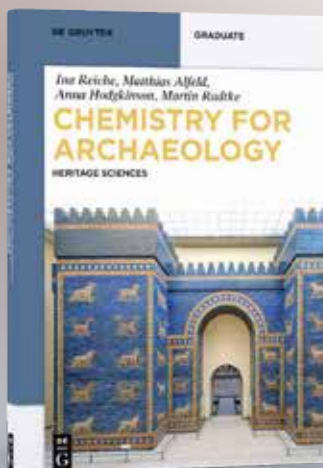
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*Ina Reiche, Matthias Alfeld,
Martin Radtke, Anna Hodgkinson*
CHEMISTRY FOR ARCHAEOLOGY

04/2025. approx. 250 pages,
approx. 100 fig.

Paperback

RRP € 89.95 [D]/US\$ 95.99/£ 71.50

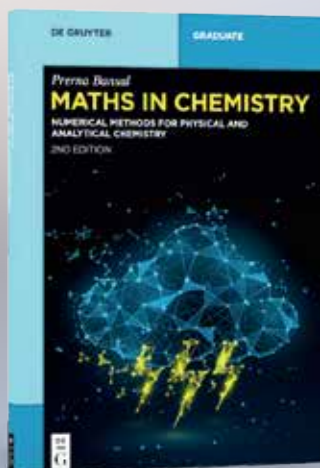
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RRP € 89.95 [D]/US\$ 95.99/£ 71.50

PDF ISBN 978-3-11-044216-8

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Purna Bansal
MATHS IN CHEMISTRY
Numerical Methods for Physical
and Analytical Chemistry

08/2024. 215 pages, 81 fig.

Paperback

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RRP € 79.95 [D]/US\$ 87.99/£ 73.00

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ePUB ISBN 978-3-11-133450-9



Daniel R. Kuespert
RESEARCH LABORATORY SAFETY
Chemical Hazards, Physical Hazards,
Radiation Hazards, Hazard Control

08/2025. approx. 350 pages,
approx. 100 fig.

Paperback

RRP € 99.95 [D]/US\$ 105.99/£ 88.00

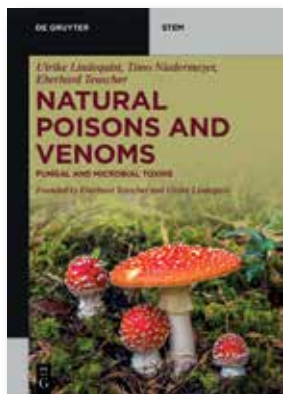
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eBook

RRP € 99.95 [D]/US\$ 105.99/£ 88.00

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ePUB ISBN 978-3-11-159548-1



Ulrike Lindequist, Timo Niedermeyer, Eberhard Teuscher

Natural Poisons and Venoms

Fungal and Microbial Toxins

Series: De Gruyter STEM

August 2025

English, Approx. XX, 280 pp., 200 fig.

Pb. *RRP € 79.95/ US\$ 88.99/ £ 69.00

ISBN 978-3-11-072856-9

eBook *RRP € 79.95/ US\$ 88.99/ £ 69.00

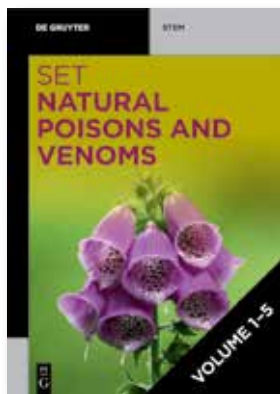
PDF ISBN 978-3-11-072857-6

ePUB ISBN 978-3-11-072865-1

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; Fungi Toxins; Microorganism Toxins

Ulrike Lindequist, Eberhard Teuscher, University Greifswald; *Timo Niedermeyer,* Halle-Wittenberg University, Germany.



Eberhard Teuscher, Ulrike Lindequist, Jan-Peter Hildebrandt, Timo Niedermeyer

Set: Natural Poisons and Venoms 1+2+3+4+5

Series: De Gruyter STEM

August 2025

English, Approx. LXXV, 1730 pp., 1200 fig.

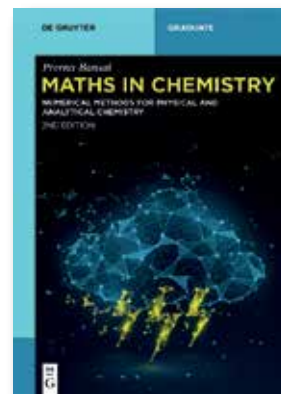
Set *RRP € 320.00/ US\$ 360.00/ £ 291.00

ISBN 978-3-11-160199-1

The 5-volume series 'Natural Poisons and Venoms' informs detailed about biogenic toxins. Volumes 1-3 summarize poisons produced by plants, volume 4 has poisons and venoms of animals as its object and volume 5 reports on poisons of fungi, including mushrooms, and selected topics of eubacteria and cyanobacteria.

Poisons; Pharmacology; Toxicology; Pharmaceutical Chemistry

Ulrike Lindequist, Eberhard Teuscher, Jan-Peter Hildebrandt, University Greifswald; *Timo Niedermeyer,* Halle-Wittenberg University, Germany.



Prerna Bansal

Maths in Chemistry

Numerical Methods for Physical and Analytical Chemistry

Series: De Gruyter Textbook

2. Edition/2nd Edition

September 2024

English, XII, 203 pp., 81 fig.

Pb. *RRP € 79.95/ US\$ 87.99/ £ 73.00

ISBN 978-3-11-133392-2

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00

PDF ISBN 978-3-11-133444-8

ePUB ISBN 978-3-11-133450-9

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.

**T**

Thorsten Gressling
**Data Science
in Chemistry**

LLMs, Chemometrics, and Model
Generation with Jupyter

Series: De Gruyter Textbook

2. Edition/2nd Edition
August 2025

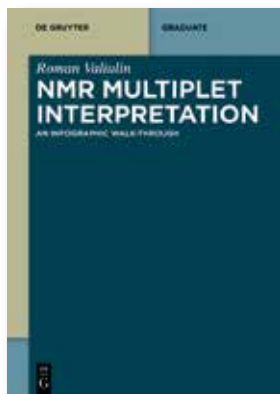
English, Approx. XX, 330 pp., 145 fig.

Pb. *RRP € 89.95/ US\$ 94.99/ £ 78.50
ISBN 978-3-11-153743-6

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-153819-8
ePUB ISBN 978-3-11-153865-5

The ever-growing wealth of information has led to the emergence of a fourth paradigm of science. This new field of activity – data science – includes computer science, mathematics and a given specialist domain. This book focuses on chemistry and the use of data science for deep insights taking chemical research and engineering to the next level. It covers Big Data, Artificial Intelligence and new to this edition: Large Language Models. **Cheminformatics; Computational Chemistry; Digital Twin; AI; Robotics; IT-Systems; Software Development; GPT**

Thorsten Gressling, Humboldt University of Berlin, Berlin, Germany.

**T**

Roman Valiulin
**NMR Multiplet
Interpretation**

An Infographic Walk-Through

Series: De Gruyter Textbook

2. Edition/2nd Edition
April 2025

English, Approx. X, 190 pp., 200 fig.

Pb. *RRP € 69.95/ US\$ 78.99/ £ 62.00
ISBN 978-3-11-079300-0

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 599.00
PDF ISBN 978-3-11-079301-7
ePUB ISBN 978-3-11-079312-3

A visual guide for the interpretation of complex ¹H-NMR spectra with a concise and illustrative practice problems section. The *2nd edition* expands upon the interpretation of (H and F) multiplets and ties the shape of multiplets to the structural features of hypothetical chemical compounds. This book is an easy-to-grasp source for (organic) chemists and students that want to understand and practice NMR spectroscopy.

NMR; Spectroscopy; Physical Chemistry; Analytical Chemistry; Organic Chemistry

Roman Valiulin, Informed Educational Insights LLC, San Diego, USA.

**T**

*Ina Reiche, Matthias Alfeld,
Martin Radtke, Anna Hodgkinson*
**Chemistry for
Archaeology**

Heritage Sciences

Series: De Gruyter Textbook

October 2025

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

Pb. *RRP € 89.95/ US\$ 95.99/ £ 71.50
ISBN 978-3-11-044214-4

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 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 authors describe 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; *Anna Hodgkinson*, FU, Germany.



T

Physik für das Lehramt

[Physics for Teachers]

Hermann Nienhaus

Band 4: Kondensierte Materie

[Volume 4: Condensed Matter]

Reihe/Series: De Gruyter Studium

Dezember/December 2025
Deutsch/German, XX, 300 S./pp., 300 Abb./fig.

Br./Pb. *€ 49.95/ UVP/RRP US\$ 54.99/
UVP/RRP £ 43.00
ISBN 978-3-11-046914-1

****eBook** *€ 699.00/ UVP/RRP US\$ 769.00/
UVP/RRP £ 599.00
PDF ISBN 978-3-11-046915-8
ePUB ISBN 978-3-11-046922-6

Die vierteilige Reihe für Physik im Lehramtsstudium behandelt kompakt und anschaulich die Grundlagen der Physik. Beispiele aus dem Alltag, technische Anwendungen und historische Wissenschaftsentwicklung werden in Vertiefungsthemen vermittelt. Band 4 beschäftigt sich mit Molekülen, Gasen und Kondensierter Materie.

Festkörperphysik; Moleküle; Gase; Halbleiterphysik

This four-part series for physics teachers in training addresses the principles of physics in a clear and compact way. Conveying examples from everyday life, technological applications, and the historical development of science in consolidation topics. Volume 4 looks at molecules, gases, and condensed matter.

Solid-State Physics; Semiconductor Physics; Molecules; Gases

Prof. Dr. Hermann Nienhaus, Universität Duisburg-Essen.



T

Hermann Nienhaus

Set Physik für das Lehramt

Reihe/Series: De Gruyter Studium

Juli/July 2025
Deutsch/German, L, 1300 S./pp., 940 Abb./fig.

Set *€ 149.95/ UVP/RRP US\$ 164.99/
UVP/RRP £ 136.50
ISBN 978-3-11-047100-7

Die vierteilige Reihe für Physik im Lehramtsstudium behandelt kompakt und anschaulich die Grundlagen der Physik. Bekannten falschen Vorstellungen der Studierenden begegnet der erfahrene Dozent mit erläuternden Randbemerkungen. Beispiele aus dem Alltag, technische Anwendungen und historische Wissenschaftsentwicklung werden in Vertiefungsthemen vermittelt.

Mechanik; Wärmelehre; Elektrodynamik; Optik; Atomphysik; Kernphysik; Quantenphysik; Kondensierte Materie

This four-part series for physics teachers in training addresses the principles of physics in a clear and compact way. The experienced lecturer confronts familiar falsehoods held by students with explanatory side notes, conveying examples from everyday life, technological applications, and the historical development of science in consolidation topics.

Mechanics; Thermodynamics; Electrodynamics; Optics; Atomic Physics; Nuclear Physics; Quantum Physics; Condensed Matter Physics

Hermann Nienhaus, Universität Duisburg-Essen, Deutschland.



T

Tomasz Blachowicz, Andrea Erdmann

Spintronics

Theory, Modelling, Devices

Series: Graduate Texts in Condensed Matter

2. Edition/2nd Edition
October 2024
English, XI, 295 pp., 99 fig.

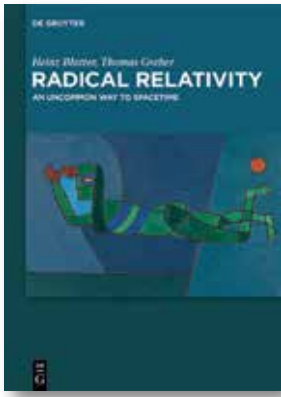
Pb. *RRP € 99.95/ US\$ 105.99/ £ 88.00
ISBN 978-3-11-138249-4

****eBook** *RRP € 699.00/ US\$ 770.00/ £ 635.50
PDF ISBN 978-3-11-138373-6
ePUB ISBN 978-3-11-138383-5

The up-dated 2 edition starts from quantum mechanical and condensed matter foundations and introduces into the necessary theory behind spin electronics. Providing equations of spin diffusion, -evolution and -tunnelling the authors give an overview of simulation of spin transport at the atomic scale and discuss devices such as spin valves, memory cells and hard disk heads.

Spin Transport Electronics; Electron Spin; Spin Injection; Magnetism; Magnetic Domains; Micromagnetic Modeling; Spintronic Devices

Tomasz Blachowicz, Silesian University of Technology, Gliwice, Poland;
Andrea Erdmann, FH Bielefeld, Germany.



Heinz Blatter, Thomas Greber
Radical Relativity

An Uncommon Way to Spacetime
 February 2025
 English, Approx. X, 190 pp., 45 fig.

HC *RRP € 164.95/ US\$ 176.99/ £ 146.50
 ISBN 978-3-11-150309-7

eBook *RRP € 164.95/ US\$ 176.99/ £ 146.50
 PDF ISBN 978-3-11-150359-2
 ePUB ISBN 978-3-11-150366-0

Special relativity is at the foundation of any physical theory. Though, its consequences leave us with unexpected results in kinematics, dynamics and, to a lesser extent, in electrodynamics. The work introduces the special theory of relativity in an unconventional way, from the view of a local observer who encounters aberration and Doppler shift. It is an unusual approach to spacetime that opens up new insights and deeper understanding.

Spacetime; Local Observer; Synchrotron Radiation; Spacetravel; Ramjet

Heinz Blatter, Thomas Greber, ETH Zurich, Switzerland.



Oliver Passon
Quantenmechanik

[Teaching Physics]

Oliver Passon
Band 5: Quantenmechanik

[Quantum Mechanics]

Reihe/Series: De Gruyter Studium

August/August 2025
 Deutsch/German, Ca./Approx. X, 230 S./pp., 30 Abb./fig.

Br./Pb. *€ 54.95/ UVP/RRP US\$ 58.99/
 UVP/RRP £ 49.00
 ISBN 978-3-11-115171-7

****eBook** *€ 699.00/ UVP/RRP US\$ 769.00/
 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.



Hugo Reinhardt
[Set: Quantenmechanik]

[Set: Path Integral Formulation and Operator Formalism]

Reihe/Series: De Gruyter Studium

Mai/May 2025
 Deutsch/German, Ca./Approx. XXIV, 1152 S./pp., 35 Abb./fig.

Set *€ 199.95/ UVP/RRP US\$ 219.99/
 UVP/RRP £ 182.00
 ISBN 978-3-11-131987-2

Set *€ 199.95/ UVP/RRP US\$ 219.99/
 UVP/RRP £ 182.00
 ISBN 978-3-11-131987-2

Das dreiteilige Lehrbuch gibt eine moderne Einführung in die Quantentheorie, die die Feynman'sche Pfadintegralformulierung mit dem traditionellen Operatorformalismus verbindet.

Band 1: Grundlagen der Quantentheorie in leicht verständlicher Form mittels des Funktionalintegralzugangs vor.

Band 2: Streutheorie, die Zweite Quantisierung und die Funktionalintegralquantisierung von Bose- und Fermi-Systemen.

Band 3: Vielteilchensysteme und Relativistische Felder

Funktionalintegralformulierung; Operatorformalismus; Zeitabhängige Prozesse; Relativistische Teilchen; Vielteilchensysteme; Relativistische Felder

This three-part textbook provides a modern introduction to quantum theory, which combines Feynman's path integral formulation with traditional operator formalism. Volume 1 presents the basics of quantum theory in an easily understandable form by means of the functional integral approach, volume 2 addresses scattering theory, second quantization, and the functional integral quantization of Bose and Fermi systems, while volume 3 covers many-body systems and relativistic fields.

Schrödinger equation; Wave function; Functional integral quantization; Scattering theory; Second quantization; Grassmann variables

Hugo Reinhardt, Universität Tübingen, Deutschland.

**T***Hugo Reinhardt*

Quantenmechanik 1

Funktionalintegralformulierung und Operatorformalismus

[Quantum Mechanics. Functional Integral Formulations]

Reihe/Series: De Gruyter Studium

3. Edition/3rd Edition

Juni/June 2025

Deutsch/German, XX, 450 S./pp., 145 Abb./fig.

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

ISBN 978-3-11-126677-0

****eBook** *€ 699.00/ UVP/RRP US\$ 769.00/
UVP/RRP £ 599.00

PDF ISBN 978-3-11-126825-5

ePUB ISBN 978-3-11-126901-6

Der erste Teil des dreiteiligen 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 three-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, Relativistische Teilchen

[Quantum Mechanics. Time-Dependent Processes, Symmetries, Relativistic Particles]

Reihe/Series: De Gruyter Studium

3. Edition/3rd Edition

Juni/June 2025

Deutsch/German, Ca./Approx. XX, 420 S./pp., 80 Abb./fig.

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

ISBN 978-3-11-126937-5

****eBook** *€ 699.00/ UVP/RRP US\$ 769.00/
UVP/RRP £ 599.00

PDF ISBN 978-3-11-127150-7

ePUB ISBN 978-3-11-127170-5

Neben den zeitabhängigen Prozessen behandelt der zweite Teil des dreibändigen Lehrbuchs ausführlich die Streutheorie und weiterhin Themen wie Symmetrien, starrer Körper, Ladungen im Magnetfeld, die Berry-Phase sowie die relativistische Quantenmechanik. Umfassend überarbeitete 3. Auflage mit weiteren Beispielen.

Streutheorie; Zweite Quantisierung; Grassmann-Variablen; Quantenstatistik; Berry-Phase

In addition to time-dependent processes, this second part of the three-volume textbook extensively covers scattering theory and rigid body symmetries, charges in magnetic fields, the Berry phase as well as relativistic quantum mechanics. Revised third edition with numerous examples.

Scattering theory; Second quantization; Grassmann variables; Quantum statistics; Berry phase

Hugo Reinhardt, Universität Tübingen, Deutschland.

**T***Hugo Reinhardt*

Quantenmechanik 3

Vielteilchensysteme und Relativistische Felder

[Many-body systems and relativistic fields]

Reihe/Series: De Gruyter Studium

3. Edition/3rd Edition

Juni/June 2025

Deutsch/German, Ca./Approx. XX, 420 S./pp., 80 Abb./fig.

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

ISBN 978-3-11-162508-9

****eBook** *€ 699.00/ UVP/RRP US\$ 769.00/
UVP/RRP £ 599.00

PDF ISBN 978-3-11-162512-6

ePUB ISBN 978-3-11-162511-9

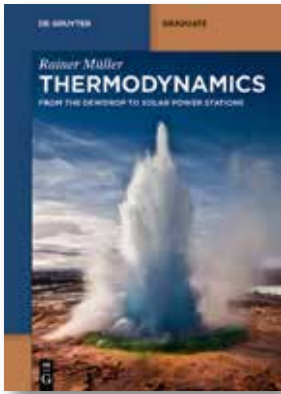
Der 3. Band des dreiteiligen Lehrbuchs behandelt ausführlich die Zweite Quantisierung sowie die Funktionalintegralquantisierung von Bose- und Fermi-Systemen sowie von relativistischen Feldern. Weitere Schwerpunkte sind die Quantenstatistik und die Green'schen Funktionen sowie deren Anwendungen zur Beschreibung von Vielteilchensystemen bei endlichen Temperaturen.

Quantenmechanik, Vielteilchensysteme, relativistische Felder

The third part of this three-part textbook thoroughly covers the second quantization as well as functional integral quantization of Bose and Fermi-systems and relativistic fields. Further emphases are quantum statistics, Green functions and their application for the description of many-body systems at finite temperatures. The revised third edition presents the modern aspects and applications of quantum theory.

Quantum Mechanics. Many-Body Systems and Relativistic Fields

Hugo Reinhardt, Universität Tübingen, Deutschland.



T

Rainer Müller
Thermodynamics

From the dewdrop to solar power stations

Series: De Gruyter Textbook

May 2025
 English, Approx. 10 , 400 pp., 260 fig.

Pb. *RRP € 54.95/ US\$ 65.99/ £ 49.00
 ISBN 978-3-11-031018-4

****eBook** *RRP € 699.00/ US\$ 769.00/ £ 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.

Entropy; Second Law of Thermodynamics; Heat Conduction; Heat Pump; Thermodynamic Cycles

Rainer Müller, TU Braunschweig, Germany.



T

Matthias Zschornak, Dirk C. Meyer
Elektrodynamik und Phänomenologische Thermodynamik Kapiieren

Experimentalphysik

[**Understanding Electrodynamics and Phenomenological Thermodynamics: Experimental Physics**]

Reihe/Series: De Gruyter Studium

Mai/May 2025
 Deutsch/German, Ca./Approx. X, 150 S./pp., 100 Abb./fig.

Br./Pb. *€ 64.95/ UVP/RRP US\$ 70.99/
 UVP/RRP £ 58.50
 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

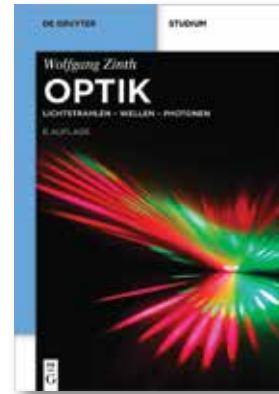
Das Lehrbuch, in engem Austausch mit Studierenden entstanden, behandelt zunächst den Ladungstransport in Medien und wichtige Gesetzmäßigkeiten der Elektrostatik sowie des stationären Magnetfeldes. Darauf aufbauend werden instationäre Felder bis hin zu den Maxwell-Gleichungen entwickelt. Der zweite Teil 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

Wolfgang Zinth
Optik

Lichtstrahlen – Wellen – Photonen

[**Optics: Light Rays – Waves – Photons**]

Reihe/Series: De Gruyter Studium

6. Edition/6th Edition
 Mai/May 2025
 Deutsch/German, Ca./Approx. X, 370 S./pp., 250 Abb./fig.

Br./Pb. *€ 74.95/ UVP/RRP US\$ 82.99/
 UVP/RRP £ 68.50
 ISBN 978-3-11-150964-8

****eBook** *€ 699.00/ UVP/RRP US\$ 769.00/
 UVP/RRP £ 599.00
 PDF ISBN 978-3-11-151073-6
 ePUB ISBN 978-3-11-151274-7

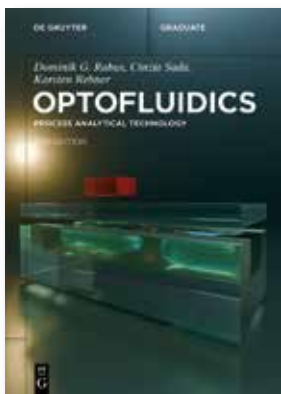
Das eingeführte Lehrbuch gibt in seiner 6., aktualisierten Auflage sowohl eine fundierte Einführung als auch einen vollständigen Überblick über das Gebiet der modernen Optik und stellt die Inhalte in Zusammenhang mit anderen Gebieten der Physik, wie zum Beispiel Elektrodynamik und Quantenphysik. Das Werk ist besonders als vorlesungsbegleitende Lektüre und aufgrund der Übungsaufgaben zur Prüfungsvorbereitung geeignet.

Elektromagnetismus; Geometrische Optik; Beugung; Interferenz; Polarisation

The sixth, updated edition of this established textbook provides both a well-grounded introduction to and a complete overview of the field of modern optics, drawing connections to other fields of physics like electrodynamics and quantum physics. Exercises and problems make this volume particularly well suited for using as supplementary reading for lectures and in exam preparation.

Electromagnetism; Geometrical Optics; Diffraction; Interference; Polarization

Wolfgang Zinth, Ludwig-Maximilians-Universität München, Deutschland.



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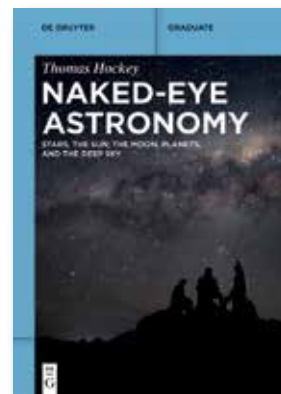
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Night Sky; Stars; Sun; Moon; Eclipses; Comets

Thomas Hockey, University of Northern Iowa, USA.

A	
Adam, Pierre-Michel	30
Adugna, Teshome	29
Agrawal, Komal	16
Aguilar, Ludwig Erik	35
Ahmad, Saeed	36
Ahmad, Tokeer	6
Ajayeoba, Titilayo Adenike	34
Ajji, Abdellah	38
Akse, Henk	22
Alexiou, Athanasios	32
Alfeld, Matthias	48
AL-Oqja, Faris M.	8
Aruwa, Christiana	34
Atiqah, Afdzaluddin	8
B	
Bakowsky, Udo	36
Balakotaiah, Vemuri	21
Bandyopadhyay, Abhijit	7
Banerjee, Bubun	40
Bansal, Gagan	4
Bansal, Prerna	47
Basak, Sayan	7
Benvenuto, Mark Anthony	14, 25, 26, 41
Bhattacharyya, Krishna Gopal	8
Blachowicz, Tomasz	49
Blatter, Heinz	50
Bogle, David	18
Bondavalli, Paolo	10
Brears, Robert C.	17
Bukharina, Daria	14
C	
Calvo Díez, José Ignacio	31
Čermáková, Lenka	16
Chowdhury, Priyadarshi Roy	8
Cozzani, Valerio	23
Cricenti, Antonio	30
D	
Daoutidis, Prodromos	24
Dasgupta, Poulomi	7
Davim, J. Paulo	3
de Haan, André B.	20
Dehnen, Stefanie	39
D'hooge, Dagmar	37
Di Serio, Martino	21
Dubois, Jean-Luc	26, 37
Dufresne, Alain	5
E	
Ehrmann, Andrea	49
Eling, Berend	38
El-Ramady, Hassan	32
Elzagheid, Mohamed	42
Engesser, Tobias	41
Eral, H. Burak	20
Eritja, Ramon	43
Evans, Brian	45
F	
Feijoo, Gumersindo	20
Filip, Petr	16
Fleischer, Monika	30
Flouda, Paraskevi	14
Fredi, Giulia	9
Friederichs, Wolfgang	38
G	
Gaddis, Lisa R.	12
George, Graham N.	28
Ghazaryan, Karen	32
Gilleskie, Gary	34
Gómez-Castro, Fernando Israel	22
Goswami, Ajay Kumar	41
Goutam, Kiran	37
Greber, Thomas	50
Gressling, Thorsten	48
Griehl, Carola	15
Grünert, Wolfgang	42
Gucciardi, Pietro G.	30
Gucciard, Pietro G.	30
Guggolz, Lukas	39
H	
Haase, Stefan	20
Hamdaoui, Oualid	24
Harmsen, Jan	23
Harwardt, Lena	31
Hasanzad, Anahita	31
Hernández Giménez, Antonio	31
Hildebrandt, Jan-Peter	47
Hinds, Mike	29
Hinkel, Natalie R.	12
Hockey, Thomas	53
Hodgkinson, Anna	48
Hohenester, Ulrich	30
Holze, Rudolf	44
Höppener, Christiana	30
Höppener, Christiane	30
Hosseini, Seyed Mohammad Hossein	31
Hussain, Chaudhery Ghazanfar	6
Hussain, Chaudhery Mustansar	6, 8
I	
Ijabadeniyi, Oluwatosin Ademola	34
Ismail, Norli	16
J	
Jahr, Karl-Friedrich	31
Jalali Dil, Ebrahim	38
Jander, Gerhart	31
Janssen, Camiel	21
Janssen, Léon	21
Jeswani, Gunjan	35
Job, Reinhart	9
Jolliff, Bradley L.	12
K	
Kaliaguine, Serge	26
Kang, Zhen Chuan	13
Keçili, Rüstem	6
Kern, Dieter P.	30
Kessler, Diana	43
Khichariya, Ajita	35
Khudaverdyan, Surik	7
Khurana, Jitender Mohan	40
Kishore, Ravi	25
Klapötke, Thomas M.	13
Kleist, Wolfgang	42
Kliesch, Wolfgang	39
Koch, Ernst-Christian	33
Kolli, Murahari	3
Kolopajlo, Lawrence	26
Krauss, Hanns-Jürgen	31
Krull, Rainer	19
Kuespert, Daniel Reid	24
Kumar, Dinesh	34
Kumari, Neeraj	26
Kumar, Kaushik	8
Kumar Maiti, Dilip	40
Kumar, Vipin	4
Kurz, Philipp	41
L	
Lai, Bin	15
Laitinen, Risto S.	39
Lakeman, Pascal	37
Lakshmi, D.	14
Langanke, Karlheinz	53
Lawrence, Samuel J.	12
Lema, Juan Manuel	20
Lindequist, Ulrike	45, 47
Liu, Yanju	30
M	
Mackowski, Sebastian	30
Mackwell, Stephen J.	12
Madhavan, Asha Anish	26
Malik, Sumira	17
Mallakpour, Shadpour	8
Mallavarapu, Megh	30
Malmali, Mahdi	24
Marafini, Pietro	42
Martens-Menzel, Ralf	31
McCuen, Becky	34
Medhi, Himani	8
Mehta, Vineet	37
Meixner, Alfred J.	30
Meneghello, Marta	42
Merouani, Slimane	24
Meyer, Dirk C.	52
Meyer, Geerd-Juergen	44
Meyer, Thierry	23
Mineralogical Society of America	12
Mogilatenko, Anna	43
Mohan, Chandra	26
Möller, Detlev Michael	44
Moran, Jeffrey	4
Moreira, Maria Teresa	20
Muhler, Martin	42
Müller, Rainer	52
N	
Načeradská, Jana	16
Nagu, Priyanka	37
Naidu, Ravi	30
Napagoda, Mayuri	5
Narasimharao, Katabathini	19
Neal, Clive R.	12
Neumann, Wolfgang	43
Niedermeyer, Timo	47
Nienhaus, Hermann	49
Nießner, Reinhard	29
Novotná, Kateřina	16
Ntie-Kang, Fidele	28
O	
Oku, Takeo	6, 10
P	
Pakkanen, Tapani	39
Palys, Matthew J.	24
Passon, Oliver	50
Pickering, Ingrid J.	28
Pirouzfard, Vahid	31

Pivokonský, Martin	16
Posten, Clemens	15
Pramanik, Sumit	3
Prasad, Arbind	3
Priya, Shashank	25
Putirka, Keith D.	12

Q	
Quednau, Michael	12

R	
Rabus, Dominik G.	53
Radtke, Martin	48
Rafatullah, Mohd	16
Rajput, Vishnu D.	32
Ranjan, Chikesh	8
Rasheed, Tahir	9
Ratnakar, Ram R.	21
Rebner, Karsten	53
Reese, Michael	24
Reiche, Ina	48
Reinhardt, Hugo	50, 51
Reniers, Genserik	23
Rezaee, Reza	45
Rico-Ramírez, Vicente	22
Rodriguez, Raul D.	30
Rodriguez, Raul David	30
Ross, Tobias L.	44
Roy, Sandipan	3
Russo, Vincenzo	18, 20, 21
Rutter, Charles	34

S	
Sada, Cinzia	53
Saffar, Amir	38
Saha, Basudeb	19
Salale, Girma	29
Salmi, Tapio	20
Sapuan, Salit Mohd	8
Scarselli, Manuela	30
Schäffer, Andreas	29
Scheerschmidt, Kurt	43
Schlemmer, Gerhard	29
Schmidt, Walter Eckart	33
Schüt, Arno	38
Schuur, Boelo	20
Seker, Urtartu Ozgur Safak	18
Sesay, Adama Marie	19
Shah, Maulin P.	16, 17
Sharbini Kamaluddin, Huda	19
Sharma, Anil K.	36
Sharma, Varruchi	36
Shearer, Charles K.	12
Sindhu, Rakesh K.	34
Singh, Abhishek	32
Singh, Manoj	36
Singh, Sumitra	34
Singh, Yashvir	4
Sinha, Manoj Kumar	3
Sosnowski, Tomasz	18
Stewart, Colin	25
Stock, Norbert	41
Subramanian, Muralisrinivasan Natamai	32
Su, Chia-Hung	31
Su, Lin	15

T	
Tehrani, Mozhan Rostami	31
Tesema, Mesay Solomon	40
Tesser, Riccardo	18, 21
Teuscher, Eberhard	45, 47
Thakur, Aman	37
Thapar Kapoor, Riti	16
Todolí, José Luis	29
Tsukruk, Vladimir	14
Tukhlievich, Berdimurodov Elyor	35
Tuzun, Burak	35

U	
Uçar, Esra	35
Ugo, Paolo	42
Umeh, Anthony	30
Upadhyay, Sushil Kumar	36
Ur-Rahman, Nisar	36

V	
Valencia, Sarah N.	12
Valiulin, Roman	48
Vallimanalan, A.	14
van der Heijden, Simon	37
Vanhaecke, Frank	29
Van Steenberge, Paul	37
Vaseashta, Ashok	7
Verma, Chandrabhan	9
Verma, Pradeep	16

W	
Wahler, Sabrina	13
Wani, Irshad Ahmad	6
Wareham Mathiassen, Sofia	35
Wei, Hui	5
Witharana, Sanjeeva	5
Wu, Yucheng	10

X	
Xiao, Pu	7
Xu, Siyi	12

Y	
Yang, Liu	25
Yasir Ali, Muhammad	36

Z	
Zeleke, Digafie	40
Zhang, Jing	7
Zinth, Wolfgang	52
Žnidaršič Plazl, Polona	19
Zondervan, Edwin	22
Zschornak, Matthias	52

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