# CRC Rights Guide

SPRING / SUMMER 2023

CRC Press
Taylor & Francis Group

# About CRC Press

The world around us is constantly evolving and the impetus for much of that change is scientific and engineering innovation. At CRC Press, we aim to service positive transformation by publishing a broad range of authoritative theoretical and practical titles across all major STEM disciplines. As you look through this catalogue, you will see titles on smart manufacturing, next-generation materials, artificial intelligence, and data science, topics that are at the forefront of the revolutionary changes we see today. There are also many practical titles on medicine, nutrition, financial engineering, and criminal investigations, to name a few subjects represented, books that will provide crucial how-to guidance to a wide range of practitioners. Not to mention books for the more general reader, like *Geometry for the Artist*.

We hope this catalogue gives you a taster of the scope and breadth of our publishing. We publish over two thousand research, professional and textbook titles a year across STEM subjects and we are convinced you will find many treasures, not only here but in our larger publishing programme, for your readers. Our authors are world-renowned scientists, engineers and professionals, and we are always pleased when their precious knowledge is transmitted more widely in other languages.

Nora Konopka

Sunil Nair

*Editorial Directors for STEM*

Our dedicated rights team has a wealth of experience in licensing translation rights worldwide and in-depth knowledge of our books and international publishing markets.

To request further information or an evaluation copy of any of the publications in this catalogue please select the contact most relevant to you from the following list:

**Constance Govindin**, *CRC Press Rights Manager*
constance.govindin@tandf.co.uk

Constance manages licensing for the following languages: French, Greek, Turkish, Arabic and Hebrew.

**Monique Manzella**, *CRC Press Rights Executive*
monique.manzella@tandf.co.uk

Monique is responsible for licensing the following languages: Italian, Spanish, and Portuguese, in addition to English language and pharmaceutical licensing enquiries.

**Bianca Malloy**, *CRC Press Rights Executive*
bianca.malloy@tandf.co.uk

Bianca is responsible for licensing the following languages: German, Dutch and Scandinavian languages.

**Renata Kasprzak**, *CRC Press Rights Executive*
renata.kasprzak@tandf.co.uk

Renata is responsible for licensing the following languages: Japanese, Korean, Russian and Eastern European languages.

**Hansen Lim**, *Rights Licensing Executive*
hansen.lim@tandf.com.sg

Hansen is based in our Singapore office and covers South Asia (non-Arabic Speaking countries), Southeast Asia and Mongolia, along with Sub Saharan Africa for the Routledge and CRC Press imprints.

**Summer Liu**, *Rights Manager*
summer.liu@tandfchina.com

Summer has responsibility for all China rights business requests including Simplified/Complex translation rights enquiries, e-Rights, reprint rights and audio rights licence enquiries. Her key territories are Mainland China, Taiwan, Hong Kong and Macau.

**Daisy Li**, *Rights Executive*
daisy.li@tandfchina.com

Daisy handles rights licensing enquiries for CRC Press and Apple Academic Press publishing imprints for Simplified Chinese Language rights in Mainland China.

IN CONVERSATION WITH

# Urs A. Boelsterli

author of *Why the Dose Matter*, on what we know and what we don't know about toxicants.

**Urs A. Boelsterli, Ph.D., FAASLD**

is an Emeritus Professor of Toxicology at the University of Connecticut School of Pharmacy, where he also held the first Boehringer-Ingelheim Endowed Chair in Mechanistic Toxicology. Prior to this, he was head of the Toxicology Program at the National University of Singapore, and ran a research lab at Roche, Basel, Switzerland and the ETH in Zurich. He is retired and currently lives in Switzerland with his family.


## What is this book about?

Each day we encounter thousands of foreign chemicals in our food, water, and ambient air—pesticides, food additives, natural toxins, or environmental contaminants—but how can we tell which ones are safe and which ones might pose a human health risk? A chemical is not harmful just because it happens to be there. The key is the *dose*—how much, how often, and for how long we are being exposed to it. Without such a quantitative approach, we might grossly overestimate the risk of certain notorious toxic chemicals that make the daily headlines while at the same time miss out on the real threats posed by other, less known but potentially harmful compounds.

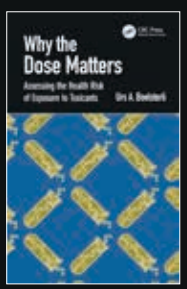
## What triggered the idea to write such a book?

In 2021, the Swiss people had to vote on whether to accept or dismiss a referendum initiated by a group of environment-conscious citizens. The initiative's theme was (paraphrased): should there be a total ban on the use of all synthetic pesticides across the country? The heated debates on TV, in the media, at the cracker-barrel, and across garden fences are long over (the initiative was rejected), but what made me ransack my brains over, even long after that political decision was made, were two nagging questions. First, why do a lot of people believe that everything synthetic is bad and everything natural is good? And second, why do a lot of people merely focus on the hazard of a chemical while blinding out the actual exposure?

It was on one of those days that the seed for this book project was planted in my mind.

## Why do you think this book will be appealing to readers?

For two major reasons: first, because people are confused by the unsettling daily news about "bad" chemicals around us, and second, because the book is written in an easily understandable manner. Oftentimes, the arguments about the safety of pharmaceutical drugs, pesticides, household products, or other chemicals, are acrimonious, fueled by emotions, bold assumptions, beliefs, and knowledge from hearsay rather than being based on rational facts and sound knowledge. If you let yourself become entangled in a discussion, you are either reviled as an idealistic green activist, or stigmatized as a lobbyist for the pesticide industry or big pharma. Where is the science? Fallen by the wayside?




**Why the Dose Matters**
Assessing the Health Risk of Exposure to Toxicants
**Urs A. Boelsterli**


ISBN 9781032387659
April 18, 2023
242 Pages • 25 Color & 5 B/W Illustrations
Subject: Toxicology

The science of toxicology is dauntingly complex. It must therefore be quite confusing for a non-scientist to keep track of the facts and assemble them into the big picture. You can't blame the laypeople when a discussion gets emotionally charged while the scientific, rational arguments are few and far between. This book is targeted at interested people who have no special training in the field but who would like to see through the mist of this complex area without having to whack through the thick jungle of scientific jargon (you won't find any chemical equations or molecular structures).

## What are the most common myths about toxicants?

One of the most popular misconceptions is that human-made chemicals are much more harmful than naturally occurring compounds. For example, many people believe that the world would be a safer place without synthetic chemicals, which is far from the truth. Another common myth is that the mere presence of a hazardous toxicant identified in our food or water will invariably cause cancer or trigger another disease, ignoring the fact that the exposure to that chemical might be so small that the human health risk is negligible. Along the same line, many consumers are scared witless when they hear that the tolerance limit for a certain toxicant in our food, water, or air, as set by the regulatory agencies, has been overstepped. They are unaware of the fact that these values are somewhat arbitrary and that there usually is a large built-in margin of safety. Finally, another widespread opinion is that it is not possible to predict the toxicity of chemicals and that testing in laboratory animals has proved futile, citing as evidence some examples of drugs (e.g., thalidomide) or pesticides (e.g., DDT) introduced decades ago that has led to human tragedies and environmental disasters. In fact, it is the other way around; back then the rigorous safety assessment and sophisticated testing procedures currently required by the regulatory agencies were not yet in place. These and many other examples are discussed throughout the book, and the most common myths are busted.

## You seem to somewhat downplay the human health risk posed by many chemicals—can you give us some specific everyday examples about chemicals in our environment that are of real concern?

While a lot of the anxiety about a perceived acute human health risk caused by certain chemicals is indeed unfounded (even though often blown out of proportion in the popular press), there are real risks that we shouldn't ignore. A valid concern is the long-term, chronic exposure to potentially harmful chemicals including metals (e.g., cadmium, lead, or mercury), arsenic, or specific agricultural or industrial products (e.g., hazardous pesticides) that are persistent and widespread, accumulating in ecosystems or being magnified in the food chain. Also, the emission of combustion products (e.g., dioxins, benzene, and other volatile or particulate matter) contributes to air pollution and human disease on a global scale. This book covers these and many other examples and provides an outlook on emerging topics (e.g., microplastics or nanoparticles) about which we simply don't know enough yet.

## Numerous books on Toxicology are on the market—why another one? What is unique about it?

The book is timely and topical, written in clear language and without the scientific lingo. It aims at a general readership. It develops concepts and illustrates with current examples that we shouldn't lose sleep over sensational, flashy headlines that foster chemophobia and incriminate a chemical without putting it into a quantitative perspective. Instead, we should focus on the significant, but often neglected, environmental and human health risks.

IN CONVERSATION WITH

# Michael Castellini and Jo-Ann Mellish

## the editors of *Physiology of Marine Mammals*, about their new book.

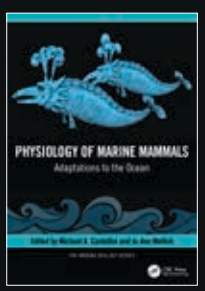
**Michael Castellini**

was a faculty member at the University of Alaska Fairbanks (UAF) from 1989-2021. Now an Emeritus Professor, he was the founding Science Director for the Alaska SeaLife Center, the Director of the Institute of Marine Science at UAF, Dean for the School of Fisheries and Ocean Sciences and Dean for the UAF Graduate School, senior faculty in the Center for Arctic Policy Studies and director of the Center for Global change.

**Jo-Ann Mellish, PhD**

earned her PhD from Dalhousie University in Canada and was jointly-appointed research faculty at UAF and scientist at the Alaska SeaLife Center from 2001-2016. She now facilitates funding opportunities for other scientists in her role of Program Manager and Chief Grants and Operations Officer at the North Pacific Research Board. In Alaska, she focused on innovative approaches to studying physiology, survival and predation in endangered species, working to raise the bar on thoughtful assessments of the research procedures themselves.

---




**Physiology of Marine Mammals**
Adaptations to the Ocean
Edited by **Michael Castellini** and **Jo-Ann Mellish**

ISBN 9781032285603
May 25, 2023
432 Pages • 104 Color Illustrations
Subject: Marine & Aquatic Science

### What motivated you to edit *Physiology of Marine Mammals* in the first instance? What did (and do!) you hope to achieve with the book and specifically the new updated version?

Over the course of decades of teaching marine mammal physiology, students have reminded us that many of the most engaging questions about this group of animals are also some of the most basic, such as:

- How can marine mammals dive for such a long time?
- How can they swim so efficiently?
- Where do they find fresh water to drink?

  or

- How do they stay warm in a cold ocean?

The unifying, single-line syllabus of this book is: *How would you design a marine mammal*? The simplicity of this question was in part inspired by the ancient mariner map illustrations on our textbook cover. The wild interpretations of these sea creatures spark the imagination and provide a contrast to what we know of these animals in today's age.

When we first published *Marine Mammal Physiology: Requisites for Ocean Living* in 2015, our goal was to provide a consolidated set of deep literature reviews for graduate students, postdocs, and colleagues that covered the incredible range of adaptations that allow this group of mammals to succeed in the ocean.

With this new version, *Physiology of Marine Mammals: Adaptations to the Ocean*, our focus is to serve the undergraduate classroom with accessible content, consistent organization, and a variety of learning tools. This includes study questions, critical thinking concepts, fields for future studies, and downloadable

© and permission courtesy of Dolphin Quest Hawaii

Credit Katherine Prager, NOAA NMFS No. 21422

files that can be used by teachers and students alike. There are also several new topics, expanded glossaries, and further reading sections for those that are ready for a deeper dive. We kept the sea creatures cover for the continued entertainment value.

## What did you find most rewarding and/or most challenging about the book editing and writing process?

The idea of a common-themed textbook on marine mammal physiology was simultaneously exciting and daunting. We had both been teaching and giving talks on these topics to increasingly wide ranges of audiences. Students asked challenging questions not only on the details of a specific marine mammal adaptation but are now including topics such as climate change and pollution impacts on the health of marine mammals. The diversity of topics demanded that a large international team of authors be assembled. In this new version we had two major challenges: would the original authors be ready to repackage and update their chapters, and what new topics should be included? Logistically, this entire book was written under COVID 19 conditions, over 99% online, with dozens of video remote conference calls and across multiple worldwide time zones.

## Is there a particular chapter or section you would recommend, if readers picked just one?

Our suggestion is for a reader to move through the book and read the single line "Driving Question" for each chapter. The collection of these 16 single line questions provides an overview that helps the reader ask themselves the basic question of "How would I design a marine mammal"?

We collected a range of common questions from hundreds of students to provide the overall organization of the book. Chapters are organized in groups of related topics:

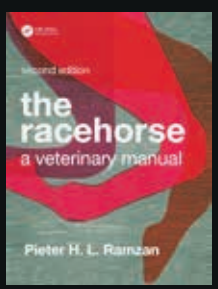
- How do they get around under water? (Spoiler alert: They can withstand literally tons of underwater pressure)
- How do they stay warm, communicate, find food and fresh water? (Spoiler alert: Most do not drink)
- What impacts their health, and how do human interactions including pollution and climate change influence their health? (Spoiler alert: Some tissues safely sequester contaminants)
- For the committed reader, we close out with what new and exciting fields are opening up. (Spoiler alert: So many).

## Why is the book relevant outside of the US? Is there any country/region where you think it could have a particular impact?

Marine mammals have a world-wide distribution and are very popular with the public and students across the globe. The basic principles of physiological, biochemical and anatomical adaptation examined in the book are core scientific concepts, and the adaptations of marine mammals for living in the ocean are relevant for any marine biology class, regardless of location. The book covers species from pole to pole, has a suite of international authors, and deals with global topics from climate change and pollution, to ship noise and conservation.

**Pieter H.L. Ramzan**

is one of the leading veterinary clinicians of his generation working in Thoroughbred practice. He is a previous recipient of BEVA's Richard Hartley Clinical Award and in 2018 was awarded Fellowship of the Royal College of Veterinary Surgeons (RCVS) for Meritorious Contributions to Clinical Practice.




**The Racehorse**
A Veterinary Manual
**Pieter H.L. Ramzan**
ISBN 9780367428310
June 2, 2023
392 Pages • 355 Color Illustrations
Subject: Veterinary

# Pieter H.L. Ramzan

## the author of *The Racehorse: A Veterinary Manual 2e*, explores the importance of his new book in the veterinary filed.

Throughout my time in racehorse practice, it became an increasing source of frustration that there was no 'go-to' veterinary resource available for vets and others involved in caring for racehorses. The assessment and management of orthopaedic conditions were frequently more a function of the individual experience and expertise of the treating clinician rather than 'best-practice' guidelines and, in consequence, career outcomes of Thoroughbred athletes could vary markedly depending on local advice. Given the importance of Thoroughbred racing across the world and the great depth of collective knowledge relating to this fine animal, it was clear that racehorse sports medicine deserved a decent veterinary textbook of its own.

While racehorse conditions have always been given (frequently marginal) space in heavy veterinary tomes, nowhere could one find a single, concise resource for this very particular equine athlete in the style of the many excellent textbooks available to human sports clinicians.

Since the publication of the first edition, there have been profound changes in the public perception of horseracing, with racing regulators responding to this challenge by putting the health and wellbeing of racehorses at the top of their priority lists. Early detection of injury through the development and application of new diagnostic imaging modalities (such as PET and CT) and the introduction of injury risk screening programmes have led both to a greater understanding of some important conditions, and to advances in veterinary care. Likewise, there have been important developments in key areas such as the management of upper airway dysfunction, and a deepening of expertise (and interest) in the sphere of pre-purchase risk assessment of juvenile and mature racehorses.

A second edition of *The Racehorse* has provided the opportunity to expand on these developments as well as to update and enhance both the textual and image-based offering of the publication, with many new figures and diagnostic images being introduced.

The most challenging part of writing *The Racehorse* has been reviewing all the available scientific literature (both equine and human) relating to each condition, synthesising this with empirical knowledge (shared by colleagues from across the globe) and condensing all this information into a concise format that can be easily accessed by the reader. The finished result, particularly some of the point-form summaries and charts relating to musculoskeletal injuries, belies the huge effort that has gone into whittling a large body of information down to the pertinent (and accurate) facts. The background literature review encompassed a diverse range of resources including research papers, textbooks, industry publications, and conference proceedings, and has taken many months for each edition.

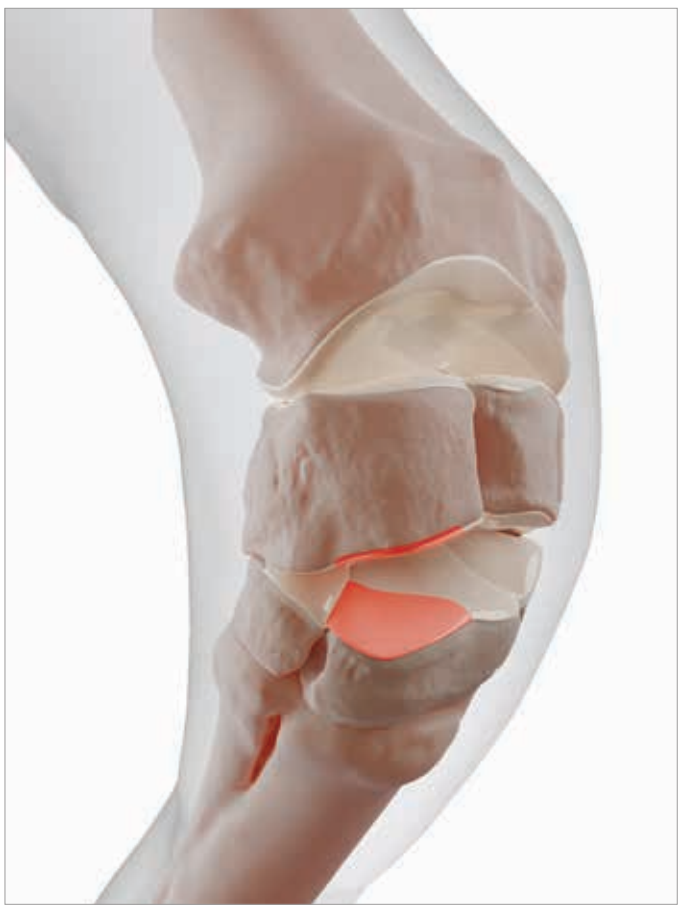
While time-consuming, the process has brought its own rewards and I certainly now have a deeper understanding of the evidence base which underlies much of what we do as equine clinicians and the aspects of veterinary medicine which have the greatest scope for advancement and improvement.

As the textbook covers all aspects of racehorse sports medicine it is difficult to single out any one section! However, **Chapters 6 and 7** comprehensively cover pretty much all the musculoskeletal conditions that anyone might ever expect to encounter in racehorses and will naturally be the part of the book most consulted by readers. The format of these chapters is intended to impart an understanding of why different injuries occur, and to be a ready reference for the best routes to diagnosis (including relevant images) and treatment as well as guidelines on prognosis. Improving the way injuries are diagnosed and treated, such that individual racehorses achieve the best possible outcome to their careers, was the driving motivation behind this section in particular.

Horseracing has been intertwined with human culture for centuries and, in consequence, it is a global and thriving sport that can be found across North and South America, the Middle East, Asia, Oceania and southern Africa in addition to Ireland, continental Europe and the UK. In the 21st century, there is interdependence between Thoroughbred racing jurisdictions at many levels (competition, breeding, ownership). Indeed, it is commonplace for horses to start life on one continent, be reared and trained in another, and compete across international borders as a mature racehorses. While training techniques and racing conditions vary in different regions, the genetic uniformity of the Thoroughbred athlete and the tasks demanded of it mean that the challenges confronted by veterinary clinicians caring for them are in many respects universal across borders. Many racehorse vets also conduct their professional duties across borders. *The Racehorse* was written very much with this universality in mind, as a resource for people working with Thoroughbred racehorses wherever they may be in the world.

While some jurisdictions have long-established centres of veterinary excellence serving as hubs of specialist expertise for their respective racing industries, others are still on a path in which frontline clinicians and racehorse trainers could benefit greatly from the readily accessible veterinary information provided in *The Racehorse*. Regions such as the Middle East and some parts of Asia (such as China, South Korea and India) are good examples, and guidance on appropriate management of veterinary conditions is regularly sought by clinicians and training staff from these countries.

Although clearly intended to be a racehorse-specific textbook, it should be noted that many of the conditions covered in *The Racehorse* are also encountered in other athletic horses, and that the format of the book (and the information that it presents-both textual and image-based) is distinctive enough within the veterinary publishing sector that vets and horse-owners outside of horseracing may find it a valuable resource.



**Robert Fried, PhD**
is a cardiovascular physiologist and NY State Licensed Clinical Psychologist. He is Emeritus Professor, doctoral faculty in Behavioral Neurosciences, City University of New York (CUNY).

**Richard M. Carlton, MD**
is an integrative physician who includes complementary and alternative approaches in the treatment of numerous medical problems, including migraines, inflammatory bowel disease, and diabetes.

**The Omega-Factor**
Promoting Health, Preventing Premature Aging and Reducing the Risk of Sudden Cardiac Death

ISBN 9781032409412
March 21, 2023
202 Pages • 11 Color & 3 B/W Illustrations
Subject: Nutrition and Health

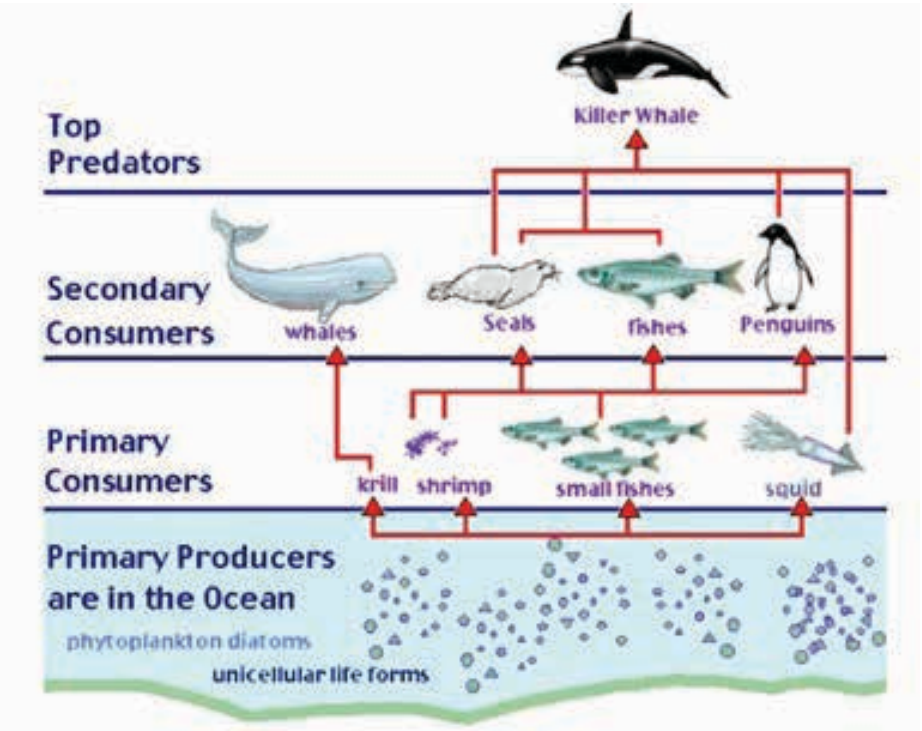
# Robert Fried

## co-author of *The Omega-Factor*, explains how a high Omega-3 fatty acids diet could save your life.

If you subscribe to the high omega-3 fatty acids (FA) nutrition plan and the heart-health advice detailed in our book, it could significantly lower your risk of heart disease, keep you generally healthier, slow your aging, and prolong your life. Medical authorities reporting this are cited in the book. In Spain, for instance, where a high omega-3 FA diet prevails, people eat more fish and less red meat than we do in the US, and they live an average of four years longer. In Okinawa with a similar high omega-3 FA diet, there are more centenarians *per capita* than in the US. Yet they have the same cardiovascular and heart risks as we do.

Fish are the primary source of omega-3 polyunsaturated fatty acids (FA) mainly eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA). There is another important omega-3 FA, *alpha* linolenic acid (ALA), found in flaxseeds.

I caught this arctic charr—chock full of omega-3s—some years ago in Lake Hazen, Canadian Northwest Territory (CNWT), the northernmost landmass in the world and the stepping-off point to the North Pole. But, you don't actually have to go that far. Our book will teach you all about how to harvest the life saving and health preserving benefits of omega-3 fatty acids, and the equally important omega-6s that are found in meats, nuts and some vegetable oils, at your local grocery store or supermarket.




Source Alan SL Wong. httpswww.pinterest.comjeniferholly ocean-food-web]

## Omega-Nothing, the Diet of Our Paleolithic Hunter/Scrounger Ancestors

Contrary to common belief, our Paleolithic ancestors had actually a very poor, low-omega-3 FA diet of seeds, berries and occasional red meat. One of their few sources of omega-3s was crickets! Evidence of dietary omega-3 FA is first found in Neanderthals who lived along the coast of Spain about 30,000 years ago. The first ancestors to be most like us, they ate fish and especially shellfish and mollusks, high in omega-3s. From there on, we evolved rapidly because, for one thing, omega-3s are essential to brain development: About 30% of our brain is comprised of omega-3 fatty acids. If chimpanzees ate shellfish instead of bananas, they'd be as smart as we are by now. Crickets, anyone?

Fish don't actually make EPA and DHA omega-3 FA. They are produced by mini marine plant life—diverse free-floating planktons. Crustaceans eat planktons; small fish eat crustaceans; larger fish eat small fish and so on up the food chain all the way to seals and whales. The latter two are, however, unlikely to appear on our dinner plate. The American Medical Association (AMA) underscores the importance of regular consumption of fish to prevent heart disease and heart attack recurrence—a likely event—and also omega-6 fatty acids found in soybeans, safflower and sunflower oil, nuts and seed and red meats, poultry and eggs, likewise essential to heart health.

## The Omega-6/Omega-3 Ratio

Just as most health-conscious people will have read about the Paleolithic Diet by now, so also will they have heard about the Omega-6/Omega-3 ratio. It is said that a healthy diet consists of foods that result in a near 4:1 ratio. But this ratio is an epiphenomenon of anthropology describing the diet of various populations over time and it has little relevance to what's on your dinner plate because you can't actually calculate it on a meal by meal basis. What it is most important for you to remember is that you need both omega-6 and omega-3 FA and that you need more 3s than 6s. The book shows you how to do that and how to find out if you are on target.

Our new book, *The Omega-Factor*, explains why a Mediterranean Diet Plan enriched with omega-3 FA is health and youth protective and we supply a six-day meal plan with recipes that will substantially improve body levels of omega-3s. Here, we help readers to understand the differences between various sources of omega-3 FA namely fish vs flaxseed vs algae-derived oils, and why these maintain health and flexibility of blood vessels and improve heart function.

The book also details a number of simple to do "at-home tests":

- Where to purchase the "Omega-3 Index" (Omegaquant®) test to assess body levels of omega-3s, that can give you many years of early warning so that you can take preventive steps and decrease the odds of a heart attack, stroke or kidney disease.
- We described a do-it-at-home version of the Ankle/Brachial Index test using the ratio of measures of blood pressure at the arm and lower leg to detect early signs of atherosclerosis. Omega-3 FA prevent atherosclerosis.
- We detail the use of a popular finger pulse oximeter with pulse waveform to determine the "compliance" (flexibility) of your blood vessels. Omega-3s preserve and enhance "compliance" thus lowering blood pressure.

You can do all these, and more, at home, at little cost.

## At the Root of the Main Benefits of a High Omega-3 FA Diet—Antioxidants

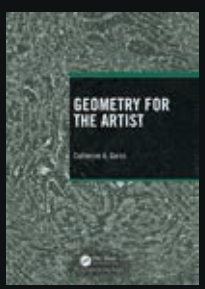
An omega-3 FA rich-diet is the ultimate antioxidant. We know now that all chronic diseases such as atherosclerosis, heart disease, blood vessel diseased including stroke, Type 2 diabetes, and chronic kidney disease start with chronic inflammation caused by unopposed "free radicals" produced in our body by our own metabolism. Our metabolism distorts oxygen molecules into a toxic damaging form, free radicals, that mix with fats, sugars and proteins in the body to form, what science calls, Reactive Oxygen Species (ROS)." ROS chew through our tissues and organs causing our immune system to retaliate with inflammation. And then, we increase those ROS with exposure to sun rays, air pollution, cigarette smoke, and countless other sources of "exogenous" free radicals.

Both Omega-3 and to some extent omega-6 FA—but mostly omega-3s—can limit the inflammation due to free radicals that underlies these severe chronic and often fatal diseases.

Learning and implementing the information in this book could save your life. I consume a large portion of raw (sushi-safe) salmon, three times a week, and so far, I am doing pretty well....

**Catherine A. Gorini**

is a professor of mathematics at Maharishi International University (MIU) in Fairfield, Iowa, where she has taught for over forty years and served as dean of the faculty and dean of the College of Arts and Sciences.




**Geometry for the Artist**

ISBN 9780367628253
May 26, 2023
256 Pages • 244 Color Illustrations
Subject: Geometry

IN CONVERSATION WITH

# Catherine A. Gorini

the author of *Geometry for the Artist*, about her new book.

## Do artists really use geometry?

Frank Stella declared there is no art without geometry. Every branch of visual expression relies on shape and form. So whether an artist is schooled in geometry or uses their own geometric intuition, they are using geometry all the time. In fact, artists were developing and using many areas of geometry, including symmetry, perspective, and fractals, well before mathematicians understood them. And artists use every aspect of geometry, often in unique and unexpected ways, ways that a geometer would hardly imagine.

## What does this book cover? And how do artists use the concepts that you present?

The main topics are symmetry, perspective, Euclidean and non-Euclidean geometry, fractals, and topology.

**Symmetry.** All over the world, one can find symmetric designs and patterns of every kind. Artists use symmetry when they want to convey a feeling of balance and orderliness and even, in the case of symmetric bands or tilings, a feeling of infinity. The mathematics of symmetry explains the structure of designs and patterns and gives artists ways to create new designs and patterns. Interestingly, artists found and used all possible two-dimensional patterns well before mathematicians proved those patterns were all that could exist.

**Perspective.** Perspective is the most common area of geometry that people associate with art. Artists use geometric techniques to ensure that a two-dimensional representation of a three-dimensional scene looks exactly like what the artist saw. Viewers use geometric techniques to determine where the artist was located when they created the painting. M.C. Escher, René Magritte, and others who thoroughly comprehend the rules of perspective find ways to go outside the rules to create deceptive pictures that confound and delight the viewer.

**Euclidean geometry.** The lines, circles, triangles, and squares of Euclidean geometry appear everywhere in art. Conic sections and other curves are indispensable for artists. In addition, the rules of ratio and proportion are essential for drawing a well-proportioned human figure.

**Non-Euclidean geometry.** Geometry on a curved surface, such as a sphere or a saddle, is called non-Euclidean to contrast with Euclidean geometry, the geometry of a flat plane. The human face shows different geometries—the flatness of the brow, the roundness of the tip of the nose, and the saddle of the bridge of the nose—so no one can paint even a portrait without encountering non-Euclidean geometry.

**Fractals.** Fractals are intricate self-similar shapes like a fern, lightning, the branches of trees, or clouds. They have been called the "geometry of nature." To paint nature, one must paint fractals. And to create natural shapes with computers, one must use fractals.

**Topology.** Properties of shapes that do not depend on measurements of length or angle—like the number of holes in a donut or pretzel—are the subject of topology. These properties don't change even when the shapes are bent, stretched, or twisted as if they were made of infinitely stretchy rubber, which is why topology is called "rubber-sheet geometry." If a donut were stretched, its size and measurements would change, but the existence of the hole through the donut would not change. Think about the work of El Greco, Modigliani, and Dalí, and you see applications of topology.

## What inspired you to write this book?

I have always had a special interest in geometry, and I have always enjoyed seeing how artists use geometry. When I discovered that art teachers wanted their students to learn geometry, I started teaching a course designed specifically for art majors, Geometry for the Artist, but other students have enrolled as well. This course has developed and evolved over many years, and the need for a textbook became clear. But the real inspiration for the book has been students getting excited about seeing geometry in art and using geometry in their own work. I am continually amazed and delighted by the ways geometry appears in art and how students use it themselves.

## Who would be interested in this book?

Anyone interested in mathematics or in art will find something engaging in this book. No formal background is required for this book. Examples of how geometry is used in art will help everyone see art in a fresh and new way. Artists can learn new ways to look at art and will discover new ideas that they can incorporate in their art. Students of mathematics will see the diversity of ways that artists have used geometrical ideas and will, I think, gain a deeper understanding of geometry.

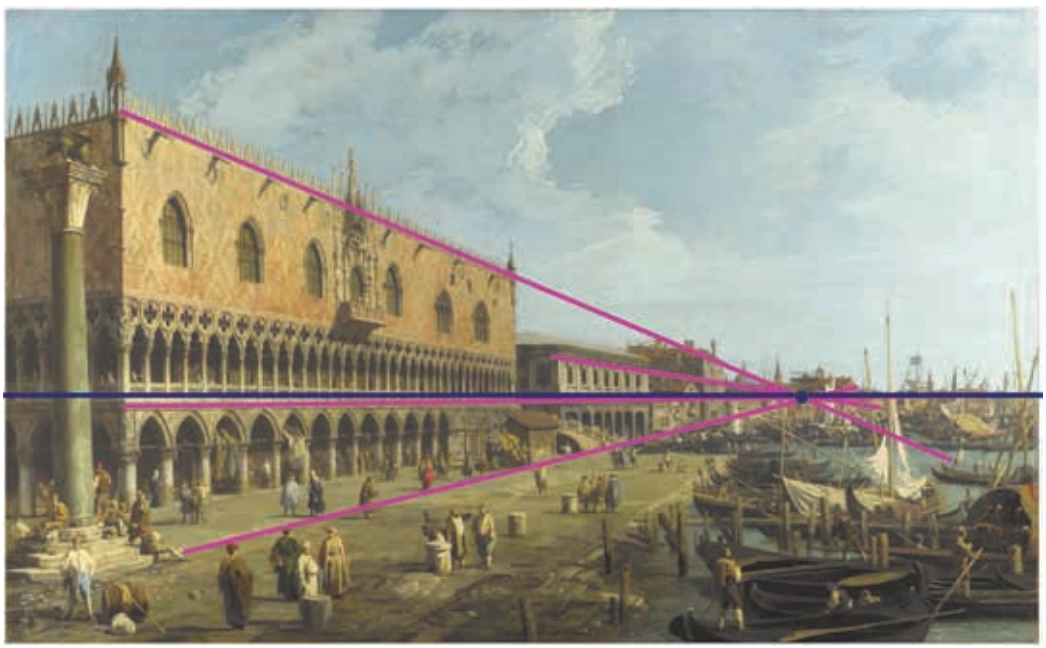
## What courses is this a suitable textbook for?

I use this book for a liberal arts general education course that is taken by students of every major, not just art majors. This textbook is suitable for a general education mathematics course, writing-intensive courses, or a geometry course for teacher education students. The book assumes no specific background, so a course using this as a textbook would not need prerequisites.

## What does the cover show?

A student in my course created the pattern on the cover using ideas from symmetry and fractals.

An illustration from the book, *Venice: The Doge's Palace and the Riva degli Schiavoni* by Canaletto, with transversals, orthogonals, horizon line, and central vanishing point marked. The central vanishing point is low, giving a wide expanse of sky above that balances the activity on the plaza, and is located far to the right, allowing the viewer to see the façades of the buildings facing the river. Knowing the location of these details of the painting reinforces our perception of a peaceful cityscape.



# Christoph Scheuch, Stefan Voigt and Patrick Weiss

## the authors of *Tidy Finance with R*, on the importance of using R in financial analysis.

**Christoph Scheuch**
is the Director of Product at the social trading platform wikifolio.com. He is responsible for product planning, execution, and monitoring and manages a team of data scientists to analyze user behavior and develop data-driven products.

**Stefan Voigt**
is Assistant Professor of Finance at the Department of Economics at the University of Copenhagen and a research fellow at the Danish Finance Institute.

**Patrick Weiss**
is a postdoctoral researcher at the Vienna University of Economics and Business and an external lecturer at Reykjavík University.

Empirical finance can be tedious. Many standard tasks, such as cleaning data or forming factor portfolios, require a lot of effort. The code to produce even seminal results is typically opaque. Why should researchers have to reinvent the wheel over and over again?

*Tidy Finance with R* is our take on how to conduct empirical research in financial economics from scratch. Whether you are an industry professional looking to expand your quant skills, a graduate student diving into the finance world, or an academic researcher, this book shows you how to use R to master applications in asset pricing, portfolio optimization, risk management, and option pricing.

We wrote this book to provide a comprehensive guide to using R for financial analysis. Our book collects all the tools we wish we would have had at hand at the beginning of our graduate studies in finance. Without transparent code for standard procedures, numerous replication efforts (and their failures) feel like a waste of resources. We have been there, as probably everybody working with data has. Since we kicked off our careers, we have constantly updated our methods, coding styles, and workflows. Our book reflects our lessons learned. By sharing them, we aim to help others avoid dead ends.

Working on problems that countless others have already solved in secrecy is not just tedious, it even may have detrimental effects. In a recent study[1] together with hundreds of research teams from across the globe, Albert J. Menkveld, the best-publishing Dutch economist according to Economentop 40, shows that without a standard path to do empirical analysis, results may vary substantially. Even if teams set out to analyze the same research question based on the same data, implementation details are important and deserve more than treatment as subtleties.

There will always be multiple acceptable ways to test relevant research questions. So why should it matter that our book lifts our curtain on reproducible finance by providing a fully transparent code base for many typical financial applications? First and foremost, we hope to inspire others to make their research truly reproducible. This is not a purely theoretical exercise: our examples start with data preparation and conclude with communicating results to get readers to do empirical analysis on real data as fast as possible.

[1]Menkveld, A. J. *et al.* (2022). "Non-standard Errors". http://dx.doi.org/10.2139/ssrn.3961574
[2]Wickham, H. (2014). Tidy Data. Journal of Statistical Software, 59(10), 1–23. https://doi.org/10.18637/jss.v059.i10

We believe that the need for precise academic writing does not stop where the code begins. Understanding and agreeing on standard procedures hopefully frees up resources to focus on what matters: a novel research project, a seminar paper, or a thorough analysis for your employer.

If our book helps to provide a foundation for discussions on which determinants render code useful, we have achieved much more than we were hoping for at the beginning of this project.

Unlike typical stylized examples, our book starts with the problems of any serious research project. The often overlooked challenge behind empirical research may seem trivial at first glance: we need data to conduct our analyses. Finance is not an exception: raw data, often hidden behind proprietary financial data sources, requires cleaning before there is any hope of extracting valuable insights from it. While you can despise data cleaning, you cannot ignore it.

We describe and provide the code to prepare typical open-source and proprietary financial data sources (e.g., CRSP, Compustat, Mergent FISD, TRACE). We reuse these data in all the subsequent chapters, which we keep as self-contained as possible. The empirical applications range from key concepts of empirical asset pricing (beta estimation, portfolio sorts, performance analysis, Fama-French factors) to modeling and machine learning applications (fixed effects estimation, clustering standard errors, difference-in-difference estimators, ridge regression, Lasso, Elastic net, random forests, neural networks) and portfolio optimization techniques.

Necessarily, our book reflects our opinionated perspective on how to perform empirical analyses. From our experience as researchers and instructors, we believe in the value of the workflows we teach and apply daily. The entire book rests on two core concepts: coding principles using the tidyverse family of R packages and tidy data.

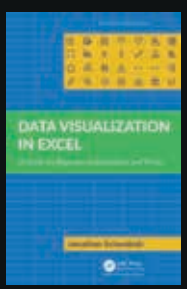
We base our book entirely on the open-source programming language R. R and the tidyverse community provide established tools to perform typical data science tasks, ranging from cleaning and manipulation to plotting and modeling. R is hence the ideal environment to develop an accessible code base for future finance students. The concept of tidy data refers to organizing financial data in a structured and consistent way, allowing for easy analysis and understanding.[2] Taken together, tidy data and code help achieve the ultimate goal: to provide a fundamentally human-centered experience that makes it easier to teach, learn, and replicate the code of others – or even your own!

**Tidy Finance with R**
Christoph Scheuch, Stefan Voigt and Patrick Weiss

ISBN 9781032389349
April 5, 2023
268 Pages • 33 B/W Illustrations
Subject: Probability & Statistics

**Jonathan Schwabish**

is an economist and data communication expert working and living outside Washington, DC. Dr. Schwabish is considered a leader in the data visualization field and is a leading voice for clarity and accessibility in research. Dr. Schwabish is a senior fellow at the Urban Institute, a non-profit research institution in Washington, DC, and is the founder of the data visualization and presentation skills firm, Policy Viz. He helps non-profits, research institutions, and governments at all levels improve how they communicate their work and findings to their colleagues, partners, clients, and constituents.




**Data Visualization in Excel**
A Guide for Beginners, Intermediates, and Wonks
**Jonathan Schwabish**

ISBN 9781032343280
May 12, 2023
400 Pages • 349 Color Illustrations
Subject: Computer Graphics & Visualization

# Jonathan Schwabish

## the author of *Data Visualization in Excel*, on how to level up your graphs in Microsoft Excel.

Have you ever scrolled past the *New York Times, Washington Post, Guardian, Berliner Morgenpost,* or a hundred other websites and wondered how you or your organization could improve how you communicate data? How could you or your team create the engaging graphs, charts, and diagrams found across the world? Have you instinctively concluded that the skills and tools needed to create such visualizations are just too great for you to pursue? Well, wonder no more because *Data Visualization in Excel* puts the power of creating better, more effective graphs and charts in your hands using the Microsoft Excel software tool.

In this book, I show you how to build more than 20 "non-standard" graphs in Excel, graphs that are more complex than those in the standard drop-down menus—and that can show your data in better and more engaging ways. *Data Visualization in Excel* focuses on how to extend and combine the basic graphs in the Excel charting engine; how to use Excel formulas to make your graphs and data more responsive and flexible; and how you can be more productive and efficient when working with the tool.

With more than 750 million users worldwide, Excel continues to be the standard for desktop data analysis. It is relatively cheap to purchase, requires no computer programming skills, and can be used by even the most novice user. In addition to step-by-step tutorials in creating more advanced Excel graphs, this book introduces the novice user to the Excel environment, key formulas, and how to export graphs from the tool.

There are a lot of data analysis and visualization tools you can use to work with and display your data. But whatever tool you use, it's important to keep in mind that it's just that: a tool. As much as I am a fan of Excel and its capabilities, it clearly can't do everything. I wouldn't use Excel to create an interactive data visualization for the *Washington Post* website, and I wouldn't use it for a large dataset with millions of observations. But if I need to create a basic bar chart or line chart—or even some more complex charts like those found later in the book—Excel might be the perfect tool for the job.

With all of the data visualization tools now available, why focus on Excel? Why not explore programming languages like JavaScript, Python, and R that enable more data dense analysis and interactive data visualizations? Or dashboarding tools like PowerBI, Qlick, and Tableau that can be used to provide at-a-glance view across multiple indicators? For one, it requires time and dedication to become proficient in these other tools and languages. But more importantly, everyone has Excel and everyone can easily get started in it.

Think about a small nonprofit organization staffed by six, seven, or eight people. Maybe that organization has one person who is *the* data person—they are responsible for collecting and assembling the data, cleaning it, and making the graphs, slides, and reports.

Maybe that person showed an interest in data visualization or maybe they were thrust into the role because, well, there wasn't really anyone else who could (or wanted to) do it. That person may not have the interest—nor the time—to learn another tool. That person's organization might not be able to afford other tools or might not house a huge amount of data. Or maybe that person's needs are relatively simple—a good bar chart or line chart can go a long way—so creating interactive dashboards or websites is not what their organization needs.

Consider even a large organization home to a large team of data scientists and large amounts of data. How are they getting their analyses to their clients and stakeholders? Perhaps they do not need to build bespoke websites and mobile apps, but instead, all they need to do is simply communicate their analyses through quarterly reports, PowerPoint presentations, and memos. Excel may be their best solution to their data communication needs.

While Excels' data visualization library has significantly expanded since it was introduced in 1985, at its core, it is still a drag-and-drop tool. On the one hand, that simple functionality makes it more accessible because anyone can open it up, type in some data, and start making something. On the other hand, the tool is limited by what is in the drop-down menus and what is in the library of options. This book's tutorials and the accompanying Excel files show you how to incorporate key formulas into your datasets to set up, create, and style effective data visualizations that are more reproducible, scalable, and reliable.

Excel, with its relatively low price point and low barrier to entry, makes it a prime tool for creating useful and effective data visualizations for organizations in every sector and of every size. The approach to Excel demonstrated in this book will show you and your team that you can create great, effective visualizations without having to lean on an entire suite of data visualization tools.

**Nello Cristianini**

is a Professor of Artificial Intelligence at the University of Bath. He has been an active researcher in artificial intelligence for over 25 years, making contributions to the theory of machine learning, to bioinformatics, the digital humanities and various other areas. He is the co-author of two influential books on learning algorithms, and currently he is working on the philosophical challenges posed by AI to society. Cristianini holds a degree in physics from the University of Trieste, a Masters in computational intelligence from the University of London and a PhD from the University of Bristol. Previously he was a Professor of Artificial Intelligence at the University of Bristol, an Associate Professor at the University of California, Davis, and held visiting positions at other universities.

**The Shortcut**
Why Intelligent Machines Do Not Think Like Us
**Nello Cristianini**
ISBN 9781032305097
March 8, 2023
186 Pages • 1 B/W Illustrations
Subject: Artificial Intelligence

# Nello Cristianini

## the author of *The Shortcut: Why intelligent machines do not think like us*, explores the topic of living with intelligent machines.

So, we built intelligent machines and we use them every day. Was it worth it? Are we going to regret it? A lot will depend on what we do next: how we adapt to them, how much power we give them, and even how we think about them. This is currently the main challenge: we do not seem to have the right tools to think correctly about intelligent artefacts, and this is hampering our efforts to make them safe.

Lady Lovelace, the Victorian computer pioneer, used to say that computers can only do "what we know how to order them to do", but from the exploits of AlphaGo we see them do things that we cannot explain, and do them much better than us.

Artificial Intelligence, the science and art of creating autonomous and adaptive goal-driven machines, has taken a decisive turn away from human-like cognition, and towards a very effective form of thinking that is rooted in statistical patterns and vast quantities of data. Our artefacts are so different from us that they may as well be aliens. There is little chance of translating their knowledge and motivations in human terms, and this is making people anxious.

As we delegate to these machines a growing amount of decisions, some of which are very consequential, we still do not know how to think about their alien form of intelligence. At the same time, AI has also found its way to the very core of our infrastructures, and it is no longer realistic to consider going back to a world without it. It would not be recommendable either. So the question that is left for us to face is: how can we share the world with our intelligent creatures, ensuring that we can benefit from their help without reducing our safety, autonomy and dignity? In other words, how do we trust intelligent machines?

The answer will come from changing the way we think about intelligence, understanding that this is not exclusive to humanity, and that language and logical reasoning are not necessary requisites for it. In fact, intelligent behaviour can be observed in a range of organisms, and even organisations, and artefacts: just not of the type that we see in people.

Consider the recommender agents that populate the pages of our social media or video sharing apps. They compile a personalised shortlist of options based on our past activities, and on those of myriad other users, in a way that is intended to maximise our "engagement". This decision is informed by hundreds of "signals" the agent can observe about us and the videos, and by a statistical analysis of what is most likely to engage our attention. What are the effects of long-term exposure to these agents, in terms of both personal and social wellbeing? Some suspect that polarisation could emerge as a result of echo chambers in the news feeds, formed by these agents, while others worry that emotional wellbeing and self-control problems can result as a consequence of this interaction. The truth is that we still do not have clear and strong scientific evidence, and this should be concerning everybody.

At the same time, we also started devolving some high-stake decisions to our machines, including some that may determine access to opportunities such as jobs, financing, education, and healthcare. How do we make sure that nobody's legal rights are violated by mistake?

Legal regulation of AI technologies is necessary and urgent, but it should be based on a solid understanding of their effects on users and society, and this is currently an important open research problem. Regulation will also need to start from the understanding that we are not regulating a human-like type of agent, and therefore our expectations and demands need to reflect the specific form of intelligence that we are dealing with. For example, it will not be easy to obtain explanations from the current machines, to justify their decisions.

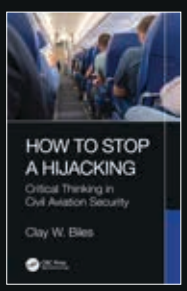
A new philosophical understanding of intelligent agents still needs to find its way to the general public, and even policy makers. The complex interactions between science, technology, culture and society are not a detail in this new type of AI, they are part of its core.

The next big challenge for AI will take place at the interface between the social, human and natural sciences. Scholars from a variety of disciplines, and journalists, and lawmakers, have joined the quest to understand and regulate the alien form of intelligence that is emerging from the interaction between algorithms and human behaviour. For the general public, it is time to let go of what we remember from the narratives of science fiction, or from the marketing hype of digital companies. For the engineers it is time to focus more on the philosophical foundations of the discipline, probably not what many expected to do.

But here is my promise: along the way we can learn a lot about ourselves, rediscover beautiful disciplines such as Cybernetics, connect modern technology with many classical themes of the philosophy of science. We can learn from looking closely at how business models influence the growth of science, and how values struggle to keep up, and this will leave us stronger and safer.

Making intelligent agents safe will require a much deeper understanding of the interplay between social sciences, humanities, and natural sciences, and cannot be done by computer scientists alone. This is the next big challenge, and adventure, for AI.

**Clay W. Biles**
is a former US Federal Air Marshal and inflight security instructor. Biles joined the Federal Air Marshal Service in 2008 and flew more than 1 million miles on international and domestic flights. Biles resigned in 2013 and founded High Order Security, a company that assists at-risk personnel in Latin America.




**How to Stop a Hijacking**
Critical Thinking in Civil Aviation Security
**Clay W. Biles**
ISBN 9781032373003
April 7, 2023
280 Pages
Subject: Security Studies

IN CONVERSATION WITH

# Clay Biles

## the author of *How to Stop a Hijacking*, on the civil aviation security.

### You are former military and served as an air marshal. What is your security background and training?

I went into the Navy in 1994 and spent two years training as a SEAL. But, I was immature and got in a lot of trouble so the Navy showed me the door in 1996. I was studying in college when the 9/11 attacks happened, and a rear admiral helped me get back into the SEAL teams.

I served for three years at SEAL team three, received an honorable discharge, and then started performing contract security overseas for the US government. This began with providing protective security for the President of Afghanistan, Hamid Karzai, alongside other former special forces personnel and diplomatic security agents from the US Department of State. I eventually found my way to the federal air marshal service in 2008. I was sent to instructor training in 2010 and spent two years providing training to air marshals at the San Francisco field office and as an adjunct instructor at the federal air marshal training center in Atlantic City, New Jersey.

I resigned in 2013 and started a security company in California that I moved to Mexico for. I ran teams throughout Latin America that performed protective security work for the CEOs of companies like *Oracle* and *Fisher Investments*. I also had the opportunity to analyze and report on a criminal case as an expert witness, for the federal court in Utah, that involved a 2012 incident with a team of federal air marshals. Eventually the Covid pandemic had an impact on my business, so I decided to put my business on hold and go back to college. I am currently a student of Women's and Gender Studies at Saint Mary's College of California. I plan to go to law school next.

### You mentioned 9/11, since that event the world in general, but the U.S. in particular, has lived through a time of heightened security—to the point where it's raised everyone's awareness and permeated so many aspects of our daily lives to an unprecedented extent. What are your thoughts on this as well as your motivation to write this book?

It is amazing to me that, although we were all impacted in such a dramatic way by the violence of the 9/11 attacks, the training that flight attendants and armed law enforcement officers receive today is no better at preparing them to deal with threats inside the aircraft than it was on September 11, 2001. Compared to the hundreds of air marshals who fly daily in the United States,

there are *thousands* of armed law enforcement officers who do the same. Not to mention the flight attendants who are on every flight to keep passengers safe, as mandated by law. Unfortunately, armed law enforcement officers who fly armed have never been provided with information that would help them combat violence in the air, should they be faced with it. They could be utilized as an asset in the event an emergency, though—to my knowledge—this has never been considered.

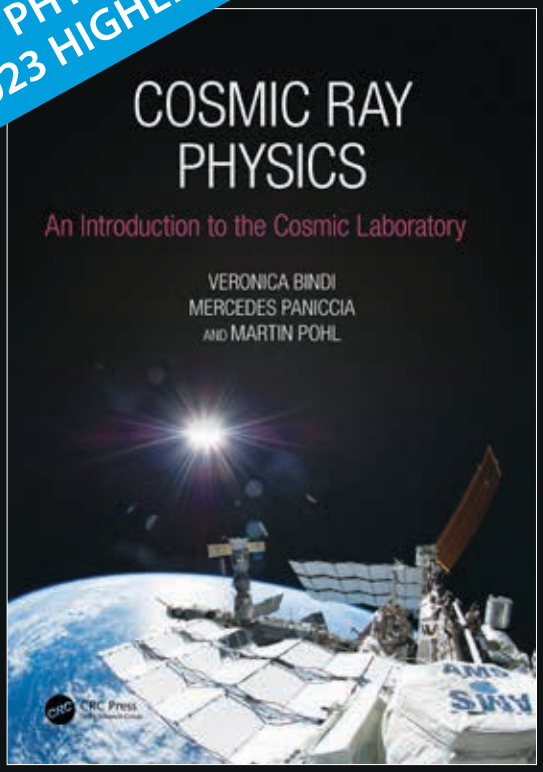
Now, air marshals receive some computer-based training from the Transportation Security Administration (TSA) that allows them to carry a firearm inside the aircraft, but they receive no tactical training. While I was flying around the world as an air marshal, I always thought that our training and tactics should be provided to flight attendants and armed law enforcement officers traveling by air. I wrote *How to Stop a Hijacking* specifically for first responders in civil aviation, like flight attendants and those law enforcement officers who fly armed. Interestingly, the TSA vetted a version of my book only a few years ago and had redacted a lot of the material; fortunately, this year (2022) the TSA reviewed the book again and allowed all of the previously redacted material to go forward to publication; I'm assuming this is due to such previously redacted material having since gone, into public domain through news articles and otherwise released information.

This is a great opportunity for first responders in civil aviation and I am grateful to the TSA, to my editor Mark, and to CRC Press for helping to make this happen. The information in this book will undoubtedly help first responders make decisions inside the aircraft that will help protect the integrity of the aircraft and provide a safer environment for everyone on board. I hope that someday every flight attendant, frequent-flying law enforcement officer, and first responder in civil aviation (both on the ground and in the air) will receive a copy of this book. Critical thinking in aviation security is only possible when first responders have the information they need to make those critical decisions. My new book provides that information.

## You mentioned the audience you had in mind for the book, is there anything in particular that you want people to take away from it?

Yes, while the main audience that I had in mind when writing this book was first responders in civil aviation, such as flight attendants and law enforcement officers who fly armed. Now I realize that this book could be helpful to all first responders in civil aviation, because it will help them think critically about the aviation domain and the specific ways that criminals and terrorists plan and execute attacks against aircraft and airports. It also teaches first responders how to respond like an air marshal to threats in civil aviation. This is all valuable information and so, I don't think there is any one particular thing in the book that I hope first responders take away: it is all equally valuable information that has the potential to save lives both in the air and on the ground.

PHYSICS 2023 HIGHLIGHT




# Cosmic Ray Physics

## An Introduction to The Cosmic Laboratory

VERONICA BINDI
MERCEDES PANICCIA
MARTIN POHL

ISBN 9781032020013
March 27, 2023
336 Pages • 216 B/W Illustrations
Subject: Astrophysics

What exactly is this stardust that we call cosmic rays? Charged particles which constantly rain down on the Earth. Causing showers which penetrate all the way down to the ground and beyond. Such that they influence the evolution of life, weather and climate in the biosphere. And are a deadly threat to technology and humans in space.

This book documents the answers that cosmic ray physics can provide today, in the light of up-to-date experimental findings. It starts out with a brief history of this branch of physics, from early research on "air electricity" to today's precision experiments on ground, underground and in space. The major contributions of pioneers are covered, establishing the extra-terrestrial origin and particle nature of cosmic radiation. Breakthroughs in technology have led to an ever-increasing richness and precision of data, providing us with precious knowledge about this important part of our environment. During more than hundred years of research, the role of cosmic rays has thus changed: from being a major source of high-energy particles to becoming themselves the focus of intense research. Research on the sources, accelerators and transport mechanisms of particles throughout the cosmos, the Milky Way and the solar system, all the way to us.

After a short resumé of the gross features of cosmic rays and the major observables, the book draws up a top-down description of the life cycle of cosmic rays. It starts out with a discussion of the production of cosmic ray particles, which ranges from the aftermath of the Big Bang, through synthesis of elements in stars, to explosive events at their end of life. More speculative sources of particles – like dark matter annihilation and decay, or antimatter left over from the Big Bang – are also discussed.

Different acceleration mechanisms can take cosmic rays from thermal energies to the fabulous ones that are observed, many orders of magnitude greater than anything man-made particle accelerators can ever hope to achieve. Their voyage through interstellar matter and fields is then covered, transforming elements, changing their energy and making them lose memory of where they came from.

All through the life cycle of cosmic rays, photons and neutrinos witness the various mechanisms at work. In contrast to charged particles, they are not scrambled by the ubiquitous magnetic fields present at all scales. The book thus shortly summarizes what can be learned from these messengers, which are pointing back to where they come from.

*Cosmic Ray Physics* reverses gear and discusses what happens to cosmic rays on three scales: in the heliosphere, in the Milky Way and in the cosmos at large. The Sun is itself a source of particles, mostly with energies below what is required to reach Earth, but occasionally also above. Interplay between the solar and the terrestrial magnetic field guides interplanetary plasma. It causes the beautiful ephemeral aurorae observable near the poles. But it also intervenes now and again with air traffic and power distribution. As far as cosmic rays from outside are concerned, it modulates their flux at low energies in a major way.

Up to an energy limit which is not very precisely defined, the bulk of cosmic rays is confined to our own galaxy, the Milky Way. A major chapter of the book is devoted to their properties. Both the elemental composition and the energy spectrum of each species offer surprising features. They challenge the current paradigm, which says that galactic cosmic rays are produced and accelerated in supernovae explosions and share a very similar fate during their confinement. This would lead to a universal spectral shape which is not observed. Characteristic differences exist between primary species – those which arrive from their source unaltered – and secondary ones, which are produced along the way. Different approaches and models to understand these are discussed in the chapter. Potential signals for unconventional sources of galactic cosmic rays are also covered, like annihilation or decay of dark matter particles or small residues of antimatter in the Milky Way.

Above the confinement energy, cosmic rays become too rare to be observed in situ, by balloon or space borne detectors. Instead, giant ground-based observatories use the atmosphere as a particle detector. Covering many square kilometers in area, they extend the observable energy range to the extragalactic domain. New sources and accelerator types like gamma ray burst, active galactic nuclei and starburst galaxies become accessible. The cost is that less detailed knowledge about the observed particle types is available. The book covers spectra and composition data from major hybrid detectors, which use at least two of the basic experimental techniques, surface arrays, air fluoresce cameras and underground muon detectors. Again, no simple picture results. Important features are exposed, like the transition between galactic and extragalactic fluxes, as well as the cut-off at the highest energies ever observed.

The last chapter of the book is devoted to an optimistic outlook into the medium- and long-term future of this field. Important upgrades of existing observatories are under way or planned. Ambitious new facilities to increase the scope and depth of cosmic day research have been proposed. There is thus no loss in momentum after more than a hundred years of cosmic ray physics.

**Veronica Bindi**

is Full Professor and Chair of the Physics and Astronomy Department of the University of Hawaii at Manoa (USA). For more than 10 years, she has been part of the team at CERN (Switzerland) that led the construction, integration and operation of the Alpha Magnetic Spectrometer (AMS) installed on the International Space Station on May 2011 to search for dark matter and study galactic cosmic rays.

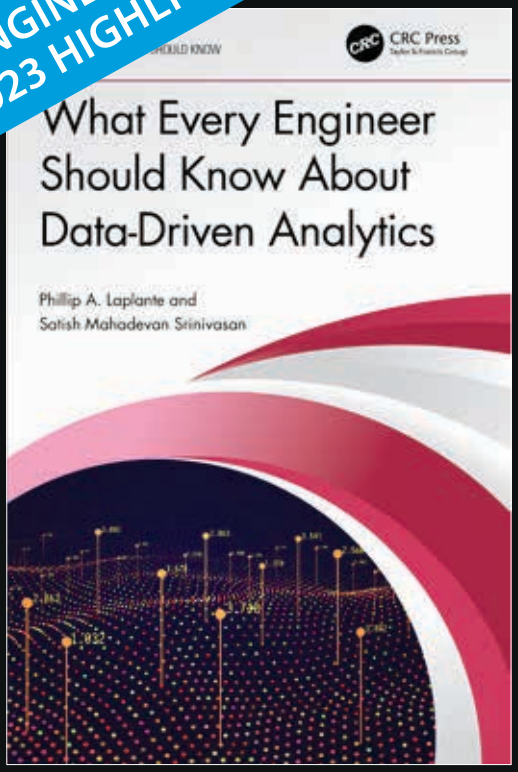
**Mercedes Paniccia**

is Senior Research Associate at University of Geneva (Switzerland). She is member of the AMS Collaboration since 2003. She has contributed to the construction of the silicon tracker, to the calibration and the commissioning of the electromagnetic calorimeter, to the operation of the AMS detector, and to data reconstruction and analysis.

**Martin Pohl**

is professor emeritus at University of Geneva (Switzerland). He has been working on experimental particle physics at colliders before turning to astroparticle physics in space. He was the head of the University of Geneva group for AMS until his retirement in 2017.

ENGINEERING
2023 HIGHLIGHT




# What Every Engineer Should Know About Data-Driven Analytics

SATISH MAHADEVAN SRINIVASAN
PHILLIP A. LAPLANTE

ISBN 9781032235400
April 13, 2023
282 Pages • 113 B/W Illustrations
Subject: Engineering

*What Every Engineer Should Know About Data-Driven Analytics* is a comprehensive introduction to the machine learning theoretical concepts and approaches that are widely used in predictive data analytics. Using machine learning we can build predictive models that can be used to mine patterns from large datasets. Such models can also be tailored to reason on why it sees a particular pattern in the dataset.

Mining large datasets from different domains (healthcare, financial, sports, manufacturing, social media, advertisement etc.) needs a different type of mindset and skillset for predictive model building. This textbook offers a detailed and focused treatment of the important machine learning approaches and concepts that can be exploited to build models to enable decision making in different domains. The theoretical concepts and approaches in machine language are further illustrated by numerous practical applications in the form of worked examples using the R statistical computing language. Interesting and informative sidebar discussions provide additional applications and historical context to many of the key concepts.

Through many examples the book demonstrates how to go from data, to insight, to decision making. Each examples takes a unique approach to build models that exploits different algorithms. In addition he authors present techniques used for validating and evaluating the predictive models.

The topics covered include techniques for data collection and cleaning, background in mathematics, statistics and probability for predictive analytics, regression techniques and strategies for regularization, supervised and unsupervised machine learning techniques, natural language processing strategies for analyzing unstructured data and performing sentiment/emotion classifications, deep neural architectures such as convolutional and recurrent networks for image and text analytics, recommendation systems and strategies for architecting customized Big Data analytical pipeline for predictive analytics.

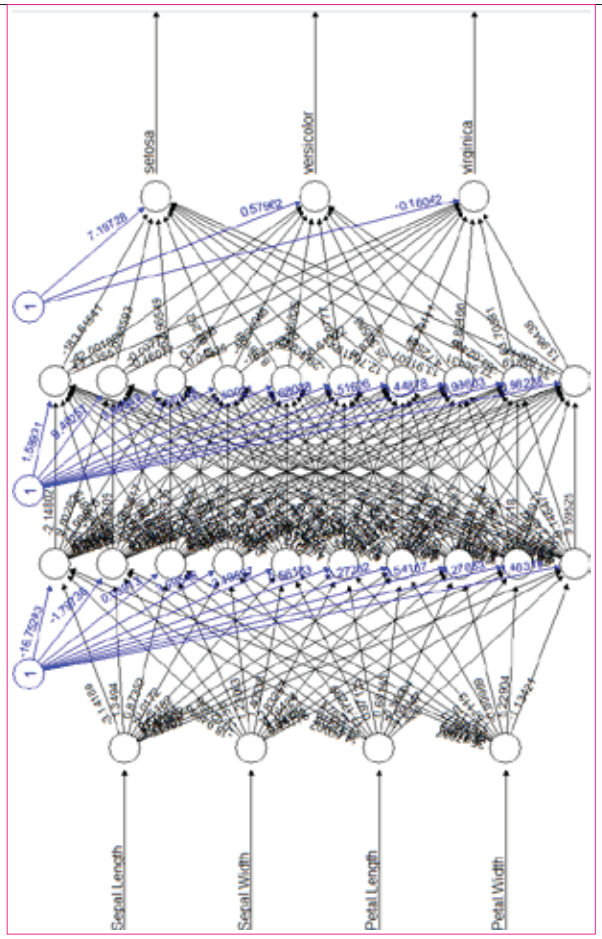
This book is intended for professional data engineers, software engineers, systems engineers, and senior and graduate students of analytics and Artificial Intelligence. Much of the material is derived from the graduate-level "Data Analytics" course taught at Penn State's Great Valley School of Graduate and Professional Studies and online through its World Campus, where the authors work. The typical student in that course has three to five years of work experience in any of a variety of technical or business roles and an undergraduate degree in engineering, science, or business. Typical readers of this book will have one of the following or similar job titles:

Data Analyst, Data Scientist, IT Analyst, Software engineer, Systems engineer, Sales engineer Systems analyst, [XYZ] engineer (where "XYZ" is an adjective for most engineering disciplines, such as "electrical", "computer" or "mechanical"), Project manager, Business analyst, Technical architect, Lead architect, Product Owner

The specific selling features of this book are:

- More practical examples of predictive analytics through worked examples.
- Focused more on real life experience in addition to providing the theory, concepts and mathematical foundations
- Lays foundation on the predictive analytic concepts that is needed for professionals, academicians and students to succeed as data scientist
- Also lays foundation on the required concepts
- Can be a supplement reading material for other books related to predictive analytics.

The book is suitable for various course adoptions such as predictive analytics, machine learning, data driven decision making and data science as a primary reference. It can also be used as a secondary reference, typically in courses such as data mining, statistics, Natural Language Processing, and artificial intelligence.



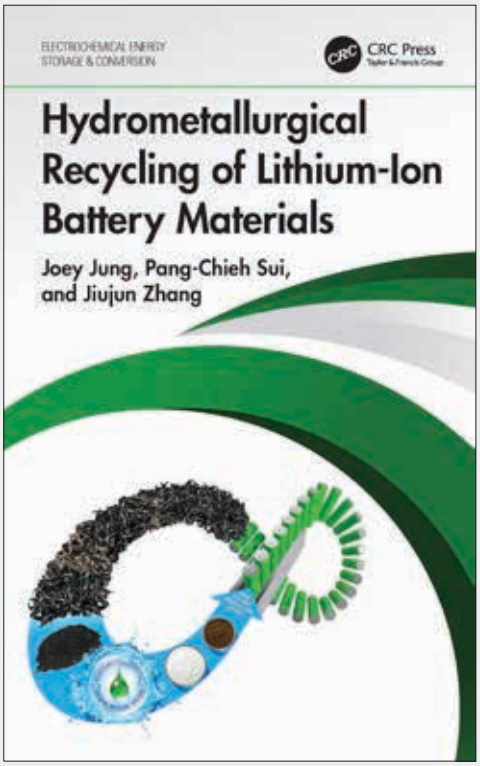

Filename: fig6_06_B.tif
Image Bit: 8
Width x Height(Millimeters): 100.56x160
Resolution: 158.115
Color Mode: RGB
File Size: 0.65MB

## Satish M. Srinivasan

received his B.E. in Information Technology from Bharathidasan University, India and M.S. in Industrial Engineering and Management from the Indian Institute of Technology Kharagpur, India. He earned his Ph.D. in Information Technology from the University of Nebraska at Omaha. Prior to joining Penn State Great Valley, he worked as a postdoctoral research associate at University of Nebraska Medical Center, Omaha.
Dr. Srinivasan teaches courses related to database design, data mining, data collection and cleaning, computer, network and web securities, and business process management. His research interests include data aggregation in partially connected networks, fault-tolerance, software engineering, social network analysis, data mining, machine learning, Big Data, and predictive analytics and bioinformatics.

## Phil Laplante

is Professor of Software and Systems Engineering at The Pennsylvania State University. He received his B.S., M.Eng., and Ph.D. from Stevens Institute of Technology and an MBA from the University of Colorado. He is a Fellow of the IEEE and SPIE and has won international awards for his teaching, research, and service. From 2010 to 2017 he led the effort to develop a national licensing exam for software engineers.




# Hydrometallurgical Recycling of Lithium-Ion Battery Materials

Joey Jung, Pang-Chieh Sui
and Jiujun Zhang

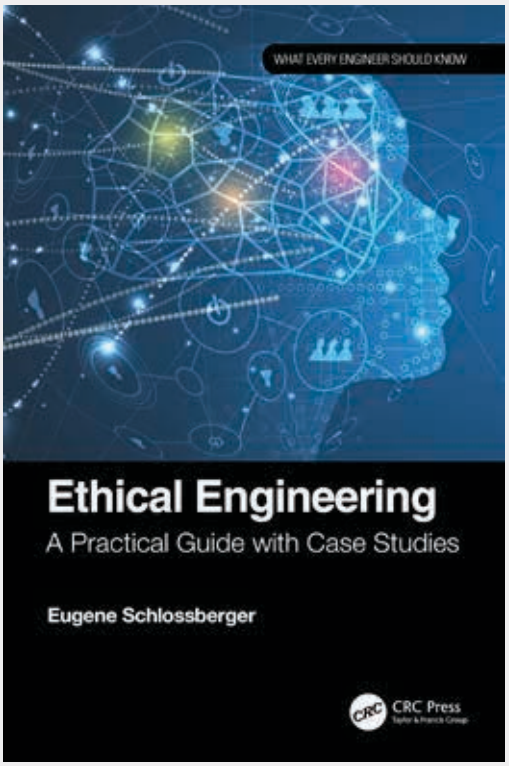
ISBN 9781032216027
February 24, 2023
282 Pages • 187 B/W Illustrations
Subject: Chemical Engineering
**www.routledge.com/9781032216027**

**Dr. Joey Jung**
is the Vice President Operations of Kemetco Research Inc. and co-founder and treasurer of the International Academy of Electrochemical Energy Science (IAOEES).

**Professor Pang-Chieh Sui**
currently holds dual appointments at the Wuhan University of Technology (WUT, from 2016) and Tsinghua-Sichuan Energy Internet Research Institute (EIRI, 2018).

**Professor Jiujun Zhang**
is the Dean of Fuzhou University College of Materials Sciences and Engineering and Dean of Shanghai University Institute for Sustainable Energy/College of Sciences.

The expanding market share of lithium-ion batteries (LIBs), driven by the secondary battery and electric vehicle markets, has consequently led to the accumulation of spent LIBs. This presents a unique business opportunity for recovering and recycling valuable metals from the spent lithium-ion cathode materials. *Hydrometallurgical Recycling of Lithium-Ion Battery Materials* provides a comprehensive review of the available hydrometallurgical technologies for recycling spent lithium-ion cathode active materials. The aim of this book is to raise awareness of LIB recycling, provide comprehensive knowledge of hydrometallurgical recycling of lithium cathode active materials, and promote an environmentally friendlier hydrometallurgical recycling process.




# Ethical Engineering

## A Practical Guide with Case Studies

### Eugene Schlossberger

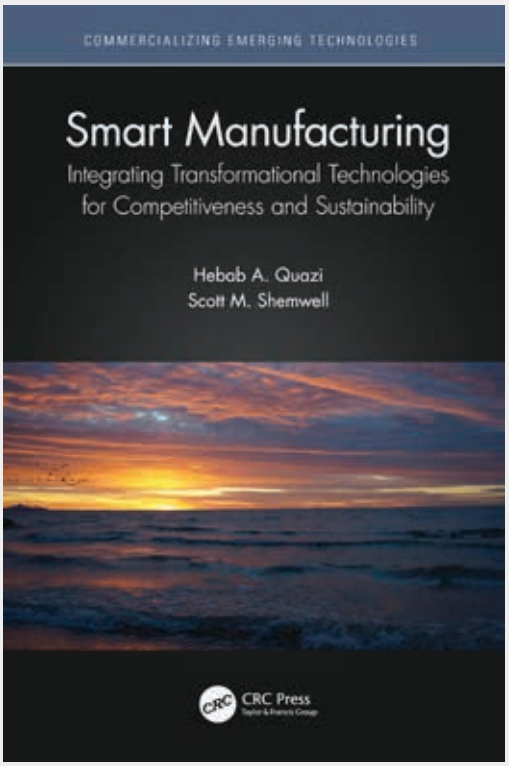
ISBN 9781032151120
March 29, 2023
430 Pages
Subject: General Engineering
**www.routledge.com/9781032151120**

**Eugene Schlossberger**

Professor Emeritus of Philosophy at Purdue University Northwest, is the author of four books and numerous articles on business and engineering ethics, environmental ethics, and political philosophy.

*Ethical Engineering: A Practical Guide with Case Studies* provides detailed and practical guidance in making decisions about the many ethical issues practicing engineers may face in their professional lives. It outlines a decision-making procedure and helps engineers construct an ethics toolkit consisting of professional models, a comprehensive set of ethical considerations and factors that help in weighing those considerations, and analyses of particular issues, such as reverse engineering a patented process. Illustrating case studies, both brief and detailed, are provided.

- Introduces the nature of ethical decision-making as applied to engineering values and issues.
- Helps readers develop a detailed ethics toolkit that identifies options and solutions and allows them to monitor and adjust as necessary.
- Features topics such as safety, sustainability, bioethics, diversity and equality, information technology and AI, as well as critical areas often overlooked in engineering texts, such as mentoring, advertising (for consulting firms), engineering sales, and much more.
- Includes 85 case studies to illustrate a variety of scenarios.
- Offers an international perspective with codes of ethics from around the world, including Saudi Arabia, India, New Zealand, Chile, and Japan.




# Smart Manufacturing

## Integrating Transformational Technologies for Competitiveness and Sustainability

**Hebab A. Quazi and Scott M. Shemwell**

ISBN 9780367742928
April 26, 2023
172 Pages • 22 B/W Illustrations
Subject: Engineering
**www.routledge.com/9780367742928**

### Dr. Hebab A. Quazi

has been the Chief Operating Officer of MARTECH International Inc for over 40 years. Currently, he is the Chairman of the ASME Energy Storage Committee and the Vice-Chairman of the ISA Digital Twin and Simulation Committee. He has written several books and technical papers.

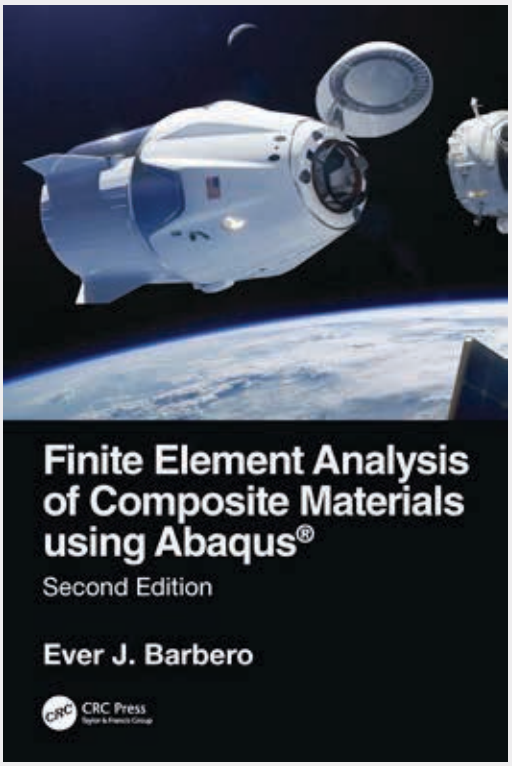
### Dr. Scott M. Shemwell

Managing Director of The Rapid Response Institute, is an authority and thought leader in field operations and risk management, with over 30 years in the energy sector leading turnaround and transformation processes for global S&P 500 organizations as well as start-up and professional service firms.

The manufacturing industries remain the foundation of local, regional, and global economies. Manufacturing plants operate in dynamic markets that demand upgrading with transformational technologies for maintaining profitability, competitiveness, and business sustainability. Yet most manufacturing plants currently use technologies that are no longer competitive and industry leaders face an overwhelming array of operational challenges that require agile and enhanced transformational solutions.

The book offers manufacturers effective strategies and tools for the adoption and implementation of advanced operational technologies to ensure long-term innovation, efficiency, and profitability. It covers advanced automation integration in manufacturing, including digitization, AI, machine learning, IIoT, and cybersecurity. It also describes innovation, development, and integration of control technologies for sustainable manufacturing.

The authors explain how to upgrade existing manufacturing plants for the global market.




# Finite Element Analysis of Composite Materials using Abaqus®

*2nd Edition*

Ever J. Barbero

ISBN 9780367621452
May 4, 2023
560 Pages • 179 B/W Illustrations
Subject: Engineering
**www.routledge.com/9780367621452**

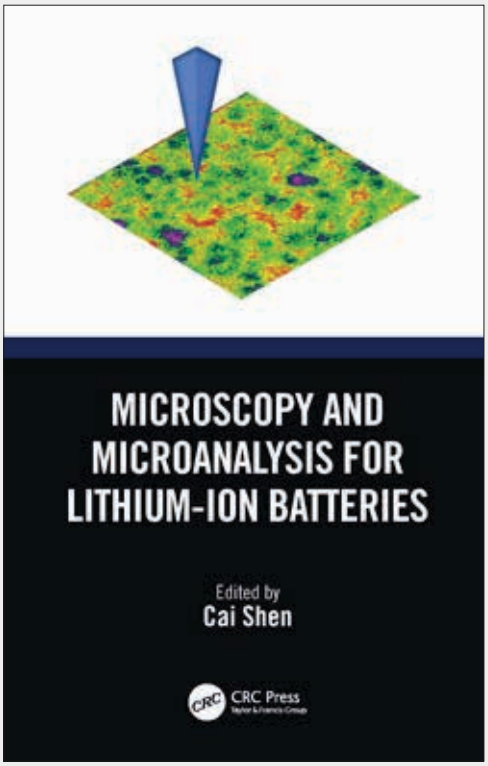
**Ever J. Barbero**

is a Fellow of ASME and SAMPE, Professor of Mechanical and Aerospace Engineering at West Virginia University, Honorary Professor at Universidad Nacional de Trujillo (Peru), Universidad Carlos III de Madrid (Spain), and Universidad de Puerto Rico at Mayaguez (PR). Recognized internationally for his work on material models for advanced materials such as Aerogels, Composites, Self-healing Composites, Superalloys, Thermoelectric materials, and Inflatable structures.

Developed from the author's course on advanced mechanics of composite materials, *Finite Element Analysis of Composite Materials with Abaqus®* shows how powerful finite element tools tackle practical problems in the structural analysis of composites. This Second Edition includes two new chapters on «Fatigue» and «Abaqus Programmable Features» as well as a major update of chapter 10 «Delaminations» and significant updates throughout the remaining chapters. Furthermore, it updates all examples, sample code, and problems to Abaqus 2020.

Unlike other texts, this one takes theory to a hands-on level by actually solving problems. It explains the concepts involved in the detailed analysis of composites, the mechanics needed to translate those concepts into a mathematical representation of the physical reality, and the solution of the resulting boundary value problems using Abaqus. The reader can follow a process to recreate every example using Abaqus graphical user interface (CAE) by following step-by-step directions in the form of pseudo-code or watching the solutions on YouTube.

Aimed at advanced students and professional engineers, this textbook features 62 fully developed examples interspersed with the theory, 82 end-of-chapter exercises, and 50+ separate pieces of Abaqus pseudo-code that illustrate the solution of example problems. The author's website offers the relevant Abaqus and MATLAB model files available for download, enabling readers to easily reproduce the examples and complete the exercises. Video recording of solutions to examples are available on YouTube with multilingual captions.




# Microscopy and Microanalysis for Lithium-Ion Batteries

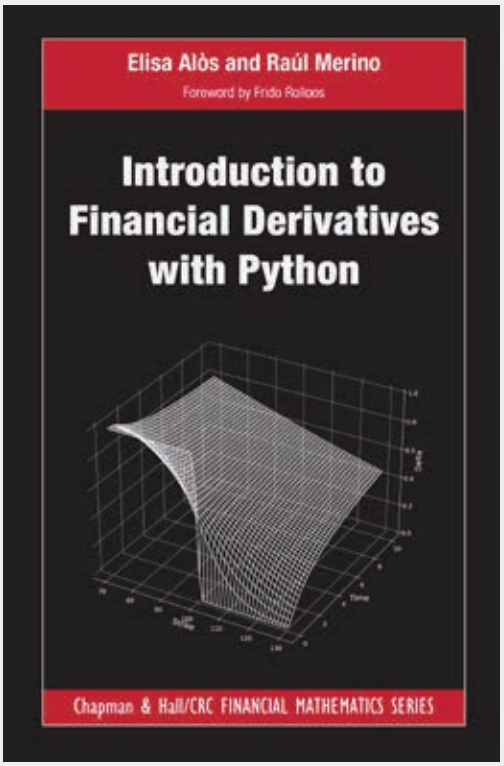
## Edited by Cai Shen

ISBN 9781032289526
May 10, 2023
500 Pages • 203 B/W Illustrations
Subject: Chemical Engineering
**www.routledge.com/9781032289526**

**Cai Shen**
was an Associate Professor and then Professor at the Ningbo institute of Materials Technology and Engineering, Chinese Academy of Science during 2013-2022. He joined the University of Nottingham Ningbo China in February 2022. His research focuses on lithium-ion batteries and application of scanning probe microscopy. He has been admitted as a Fellow of the Royal Society of Chemistry (FRSC) in 2022.

The past three decades have witnessed the great success of lithium-ion batteries, especially in the areas of 3C products, electrical vehicles, and smart grid applications. However, further optimization of the energy/power density, coulombic efficiency, cycle life, charge speed, and environmental adaptability are still needed. To address these issues, a thorough understanding of the reaction inside a battery or dynamic evolution of each component is required. *Microscopy and Microanalysis for Lithium-Ion Batteries* discusses advanced analytical techniques that offer the capability of resolving the structure and chemistry at an atomic resolution to further drive lithium-ion battery research and development.

The book provides comprehensive techniques that probe the fundamentals of Li-ion batteries and covers the basic principles of the techniques involved as well as its application in battery research. It details of experimental set-ups and procedure for successful experiments and is aimed at researchers, engineers, and scientists studying lithium-ion batteries including chemical, materials, and electrical engineers, as well as chemists and physicists.




# Introduction to Financial Derivatives with Python

Elisa Alòs and Raúl Merino

ISBN 9781032211039
Published December 15, 2022
252 Pages • 91 B/W Illustrations
Subject: Mathematics
**www.routledge.com/9781032211039**

## Elisa Alòs

holds a Ph.D. in Mathematics from the University of Barcelona. She is an Associate Professor in the Department of Economics and Business at Universitat Pompeu Fabra (UPF) and a Barcelona GSE Affiliated Professor. Her research focus has been on the applications of the Malliavin calculus and the fractional Brownian motion in mathematical finance and volatility modelling since he past fourteen years.

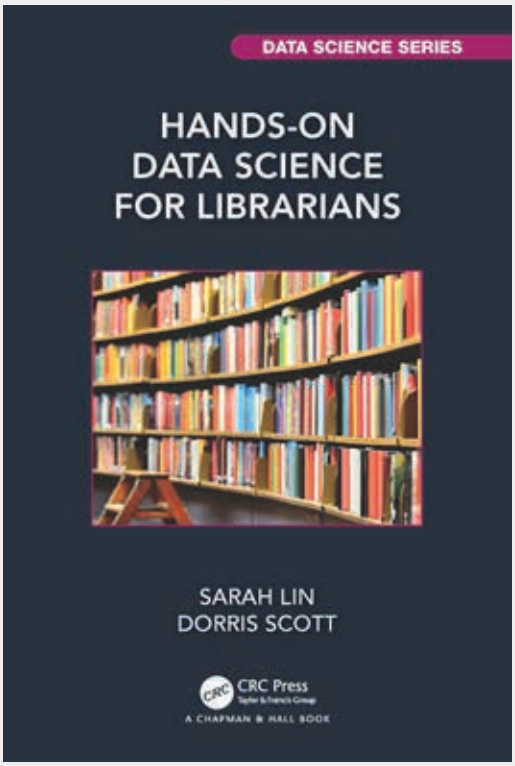
## Raúl Merino

has been working full-time in the industry as Risk Quant since 2008. He is also an Associate Professor at Pompeu Fabra University (UPF) where he teaches the course "Financial Derivatives and Risk Management". Raul holds a Ph.D. in Mathematics from the University of Barcelona. In his Ph.D. he studied the use of decomposition formulas in stochastic volatility models. His research interests are stochastic analysis and applied mathematics, with a special focus on applications to mathematical finance.

*Introduction to Financial Derivatives with Python* is an ideal textbook for an undergraduate course on derivatives, whether on a finance, economics, or financial mathematics programme. As well as covering all of the essential topics one would expect to be covered, the book also includes the basis of the numerical techniques most used in the financial industry, and their implementation in Python.

Features

- Connected to a Github repository with the codes in the book. The repository can be accessed at https://bit.ly/3bllnuf
- Suitable for undergraduate students, as well as anyone who wants a gentle introduction to the principles of quantitative finance
- No pre-requisites required for programming or advanced mathematics beyond basic calculus




# Hands-On Data Science for Librarians

Sarah Lin and Dorris Scott

ISBN 9781032080826
April 18, 2023
207 Pages • 35 Color & 33 B/W Illustrations
Subject: Mathematics & Statistics
**www.routledge.com/9781032080826**

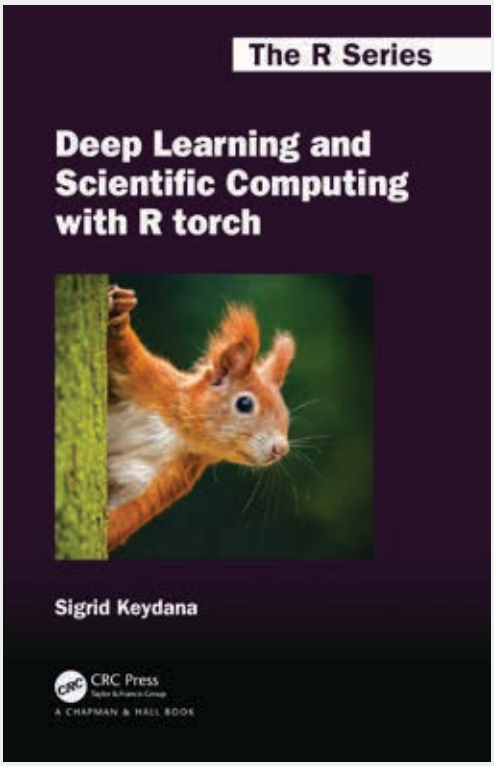
**Sarah Lin**
is the Senior Information & Content Architect at MongoDB.

**Dorris Scott, PhD**
is the Academic Director of Data Studies at Washington University in St. Louis.

Librarians understand the need to store, use and analyze data related to their collection, patrons and institution, and there has been consistent interest over the last 10 years to improve data management, analysis, and visualization skills within the profession. However, librarians find it difficult to move from out-of-the-box proprietary software applications to the skills necessary to perform the range of data science actions in code. This book will focus on teaching R through relevant examples and skills that librarians need in their day-to-day lives that includes visualizations but goes much further to include web scraping, working with maps, creating interactive reports, machine learning, and others. While there's a place for theory, ethics, and statistical methods, librarians need a tool to help them acquire enough facility with R to utilize data science skills in their daily work, no matter what type of library they work at (academic, public or special). By walking through each skill and its application to library work before walking the reader through each line of code, this book will support librarians who want to apply data science in their daily work. *Hands-On Data Science for Librarians* is intended for librarians (and other information professionals) in any library type (public, academic or special) as well as graduate students in library and information science (LIS).

Key Features:

- Only data science book available geared toward librarians that includes step-by-step code examples
- Examples include all library types (public, academic, special)
- Relevant datasets
- Accessible to non-technical professionals
- Focused on job skills and their applications




# Deep Learning and Scientific Computing with R torch

Sigrid Keydana

ISBN 9781032231389
April 3, 2023
424 Pages • 91 B/W Illustrations
Subject: Mathematics & Statistics
**www.routledge.com/9781032231396**

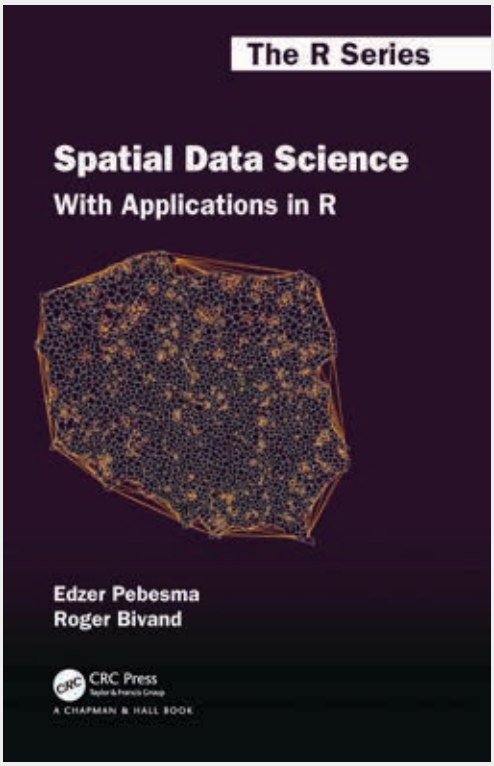
**Sigrid Keydana**
is an Applied Researcher at Posit (formerly RStudio, PBC). She has a background in the humanities, psychology, and information technology, and is passionate about explaining complex concepts in a concepts-first, comprehensible way.

torch is an R port of PyTorch, one of the two most-employed deep learning frameworks in industry and research. It is also an excellent tool to use in scientific computations. It is written entirely in R and C/C++.

Though still "young" as a project, R torch already has a vibrant community of users and developers. Experience shows that torch users come from a broad range of different backgrounds. This book aims to be useful to (almost) everyone. Globally speaking, its purposes are threefold:

- Provides a thorough introduction to torch basics – both by carefully explaining underlying concepts and ideas, and showing enough examples for the reader to become "fluent" in torch.
- Shows how to use torch in deep-learning applications, ranging from image recognition over time series prediction to audio classification.
- Provides a concepts-first, reader-friendly introduction to selected scientific-computation topics (namely, matrix computations, the Discrete Fourier Transform, and wavelets), all accompanied by torch code you can play with.

*Deep Learning and Scientific Computing with R torch* is written with first-hand technical expertise and in an engaging, fun-to-read way.




# Spatial Data Science

## With Applications in R

### Edzer Pebesma and Roger Bivand

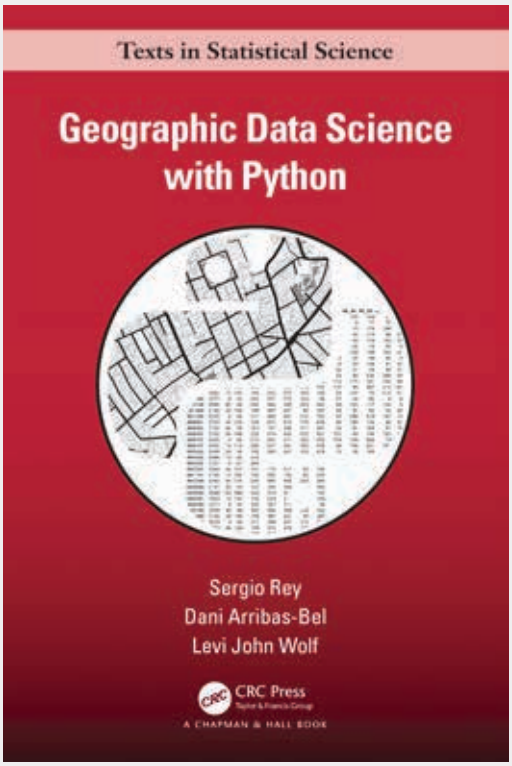
ISBN 9781138311183
May 10, 2023
352 Pages • 84 Color & 14 B/W Illustrations
Subject: Probability & Statistics
**www.routledge.com/9781138311183**

**Edzer Pebesma**
is professor at the Institute for Geoinformatics of the University of Muenster, Germany, where he leads the spatiotemporal modelling lab. He co-initiated openEO, an open source software ecosystem around a language neutral API for analyzing very large data cubes and image collections.

**Roger Bivand**
is a geographer, emeritus professor of the Department of Economics of the Norwegian School of Economics, Bergen, Norway, has worked with spatial autocorrelation since the 1970's, and is a Fellow of the Spatial Econometrics Association.

*Spatial Data Science* introduces fundamental aspects of spatial data that every data scientist should know before they start working with spatial data. These aspects include how geometries are represented, coordinate reference systems (projections, datums), the fact that the Earth is round and its consequences for analysis, and how attributes of geometries can relate to geometries. In the second part of the book, these concepts are illustrated with data science examples using the R language. In the third part, statistical modelling approaches are demonstrated using real world data examples. After reading this book, a number of major spatial data analysis errors should no longer be made because of lack of knowledge.

The book gives a detailed explanation of the core spatial software packages for R: **sf** for simple feature access, and **stars** for raster and vector data cubes – array data with spatial and temporal dimensions. It also shows how geometrical operations change when going from a flat space to the surface of a sphere, which is what **sf** and **stars** use when coordinates are not projected (degrees longitude/latitude). Separate chapters detail a variety of plotting approaches for spatial maps using R, and different ways of handling very large vector or raster (imagery) datasets, locally, in databases, or in the cloud. The data used and all code examples are freely available online from https://r-spatial.org/book/. The solutions to the exercises can be found here: https://edzer.github.io/sdsr_exercises/.




# Geographic Data Science with Python

Sergio Rey, Dani Arribas-Bel and Levi John Wolf

ISBN 9780367263119
June 14, 2023
416 Pages • 119 Color & 4 B/W Illustrations
Subject: Probability & Statistics
**www.routledge.com/9780367263119**

## Sergio Rey

is Professor of Geography and Founding Director of the Center for Open Geographical Science at San Diego State University. Rey is the creator and lead developer of the open source package STARS.

## Dani Arribas-Bel

is a Professor in Geographic Data Science at the Department of Geography and Planning of the University of Liverpool (UK), and Deputy Programme Director for Urban Analytics at the Alan Turing Institute, where he is also ESRC Fellow.

## Levi John Wolf

is a Senior Lecturer/Assistant Professor in Quantitative Human Geography at the University of Bristol's Quantitative Spatial Science Lab, Fellow at the University of Chicago Center for Spatial Data Science, an Affiliate Faculty at the University of California, Riverside's Center for Geospatial Sciences, and Fellow at the Alan Turing Institute.

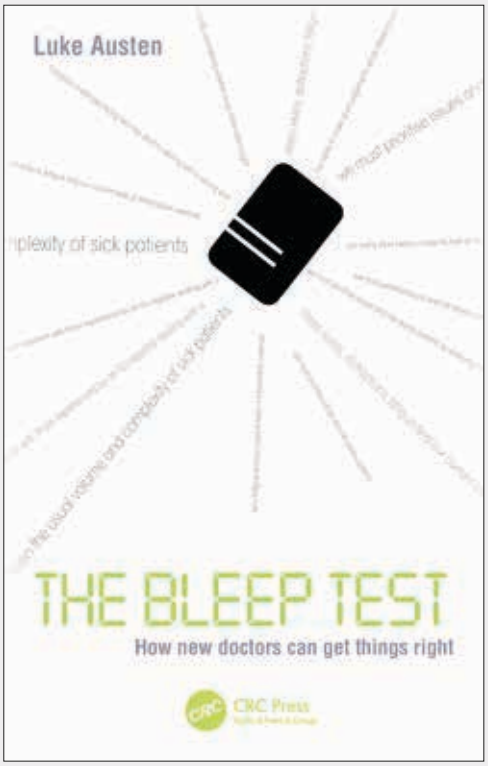
This book provides the tools, the methods, and the theory to meet the challenges of contemporary data science applied to geographic problems and data. In the new world of pervasive, large, frequent, and rapid data, there are new opportunities to understand and analyze the role of geography in everyday life. *Geographic Data Science with Python* introduces a new way of thinking about analysis, by using geographical and computational reasoning, it shows the reader how to unlock new insights hidden within data.

Key Features:

- Showcases the excellent data science environment in Python.
- Provides examples for readers to replicate, adapt, extend, and improve.
- Covers the crucial knowledge needed by geographic data scientists.

It presents concepts in a far more geographic way than competing textbooks, covering spatial data, mapping, and spatial statistics whilst covering concepts, such as clusters and outliers, as geographic concepts.

Intended for data scientists, GIScientists, and geographers, the material provided in this book is of interest due to the manner in which it presents geospatial data, methods, tools, and practices in this new field.




# The Bleep Test

## How New Doctors Can Get Things Right

**Luke Austen**

ISBN 9781032422374
May 12, 2023
244 Pages • 12 B/W Illustrations
Subject: General Medicine
**www.routledge.com/9781032422374**

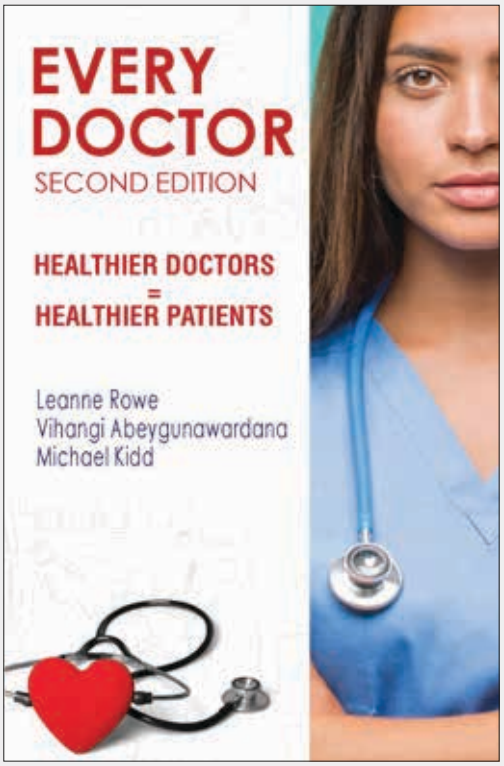
**Luke Austen**
graduated from the University of Oxford in 2018 and is a UK Core Trainee in Anaesthetics.

What does it mean to help save someone's life? How does it feel to nearly kill a patient? Can we keep our patients safe at night? In the face of overwhelming pressures, can we thrive or only survive? And is a happy life as a doctor still possible?

In the early months and years of work, it is these kinds of questions, rather than any technical or knowledge-based queries, which preoccupy many new doctors. This elusive, hidden curriculum is pervasive within departments, around hospitals and across health systems, but is rarely, if ever, explicitly examined and discussed. At its core is the issue that should matter above all others – how we can keep our patients as safe as possible.

*The Bleep Test* combines gripping and startlingly vulnerable recollections of early experiences on the wards with an array of research findings, from psychology and human biology to anthropology, business and behavioural economics. Acknowledging that the truly complex challenges facing new doctors lie far beyond the realms of the traditional medical sciences in which they were trained, the book explains that the shift to being a doctor depends on first understanding how we think, reason and behave as someone we have been all our lives – a human amongst humans.

Focused on the experiences of, and the issues facing, recently qualified medics, The Bleep Test is not only for young doctors, but also for anyone who manages them, works with them, cares for them or may one day depend on them.




# Every Doctor

## Healthier Doctors = Healthier Patient, *2nd Edition*

### Leanne Rowe, Vihangi Abeygunawardana and Michael Kidd

ISBN 9781032284323
May 12, 2023
308 Pages • 6 B/W Illustrations
Subject: General Medicine
**www.routledge.com/9781032284323**

**Leanne Rowe**
General Practitioner and past Deputy Chancellor, Monash University, Australia.

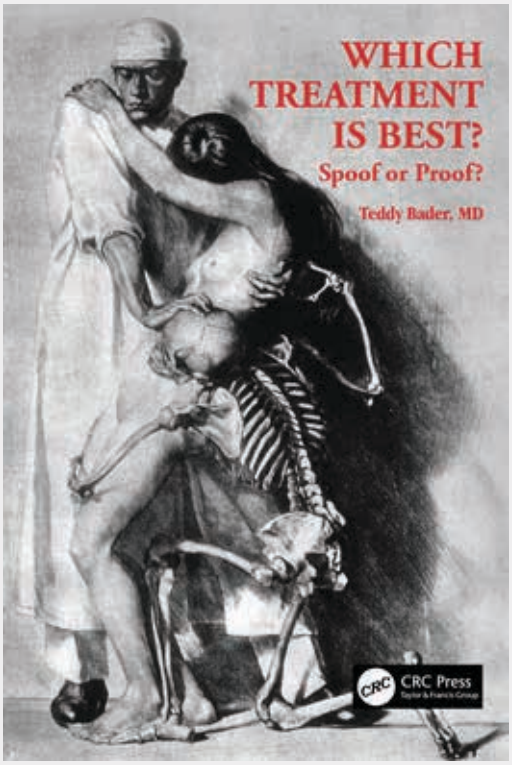
**Vihangi Abeygunawandana**
ICU registrar, Northern Health, Australia.

**Michael Kidd**
General Practitioner and Deputy Chief Medical Officer of Australia.

The second edition of this well-received text advocates for a transformational change in the way doctors protect their mental health, look out for their colleagues, co-create a kinder, more humane work culture and lead health system reform. Offering practical strategies and real solutions, based both on medical literature and the wisdom of experienced doctors, the new edition reimagines health care, where every doctor is encouraged and supported to:

- prioritise psychological wellbeing and physical protection
- promote healthy workplace cultures, fairness and safety
- build strong relationships by sharing challenges
- save lives through medical co-leadership
- rediscover the joy in medicine

Brimming with poignant and hopeful stories and quotes from a diverse array of doctors from many different specialities and at all career stages, the book is a celebration of the growing global interconnectedness and the changing face of the medical profession. An invaluable support and companion for those in the early years of medicine, *Every Doctor* is a must-read for all doctors across all specialties and wherever they practise in the world, because exemplary care of patients, peers, profession and self is a lifelong journey.




# Which Treatment Is Best? Spoof or Proof?

## Teddy Bader

ISBN 9781032348186
February 28, 2023
182 Pages • 6 Color & 23 B/W Illustrations
Subject: General Medicine
**www.routledge.com/9781032348186**

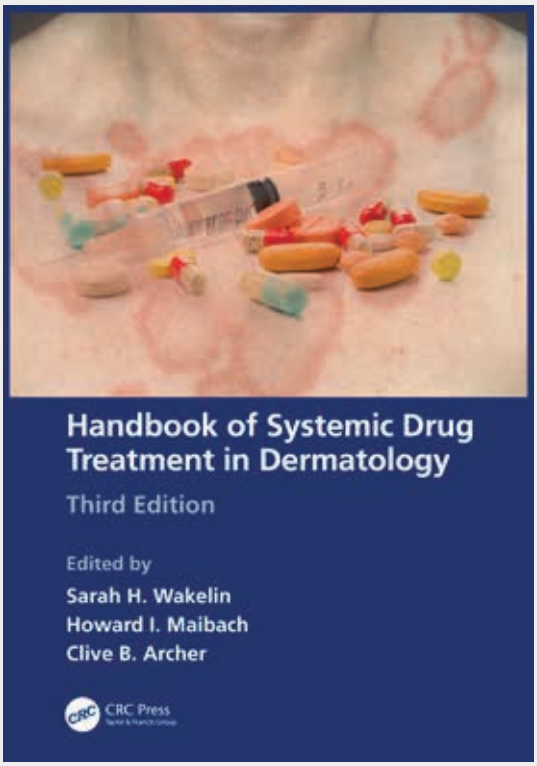
### Teddy Bader

is a retired Professor of Medicine from the University of Oklahoma. Dr Bader worked in the Gastroenterology section. His effort was centered on liver disease and transplantation. He authored a textbook on viral hepatitis that went into three editions. Dr Bader penned 55 medical publications that have been cited by 1,131 other scientific reports. (Google Scholar).

A young woman cries, "Please don't let me die!" Has she received the best treatment? What is the best treatment? How do we know? Life-threatening disease prompts these questions in everyone. *Which Treatment Is Best? Spoof or Proof?* explains the best scientific evidence for any treatment—the randomized controlled trial. This book begins with rotten humors as the source of all diseases. The reader is guided through serious attempts in history to treat disease, but which now seem amusing. The story ends with the randomized controlled trial and how to interpret it. The text will help students and clinicians understand this universal language of clinical research worldwide.

Key Features

- Describes the development of the randomized, controlled trial as the gold standard of proof
- Unravels the meaning of "randomized," "double-blind," and "p-values" in a simplified manner for students and clinicians
- Contains timeless information on how medical evidence can be understood




# Handbook of Systemic Drug Treatment in Dermatology

*3rd Edition*

Sarah H. Wakelin, Howard I. Maibach and Clive B. Archer

ISBN 9780367860813
February 13, 2023
304 Pages • 15 Color & 3 B/W Illustrations
Subject: Dermatology
**www.routledge.com/9780367860813**

**Sarah H. Wakelin, BSc, MB, BS, FRCP**
Consultant Dermatologist and Honorary Senior Lecturer, Imperial College Healthcare NHS Trust, London, UK.

**Howard I. Maibach, MD**
Professor of Dermatology, Department of Dermatology, University of California, San Francisco, USA.

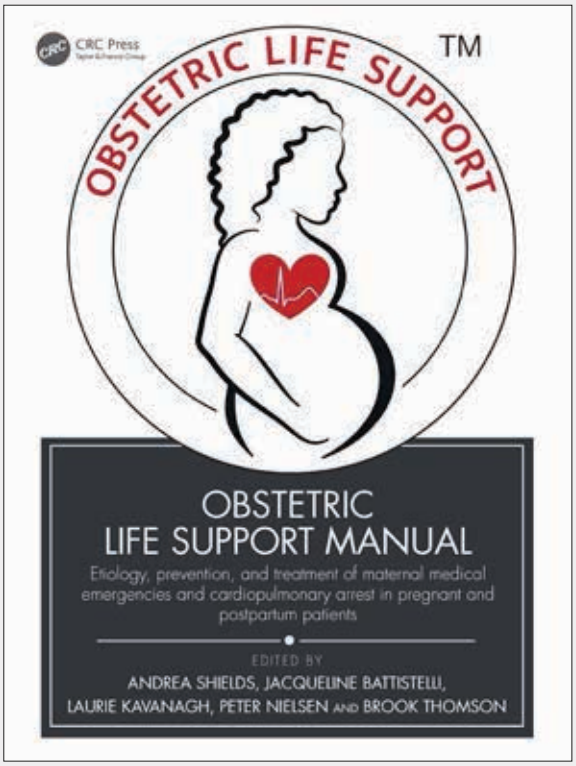
**Clive B. Archer, BSc, MBBS, MSc Med Ed, MD, PhD (Lond), FRCP**
Consultant Dermatologist, St John's Institute of Dermatology, Guy's and St. Thomas' Hospitals NHS Foundation Trust, Honorary Professor of Dermatology and Immunopharmacology (UCLan) and Honorary Senior Lecturer (KCL), London, UK.

*The Handbook of Systemic Drug Treatment in Dermatology* helps prescribers and patients make rational decisions about drug treatment while considering known risks and potential unwanted effects. Written for dermatologists, family practitioners, pharmacists and specialist nurses, this completely revised and updated third edition of a bestseller provides an accessible and concise aid to prescribing and monitoring systemic dermatologic therapy. For each drug or drug class, the book lists its classification, mode of action, formulations, dosages, suggested regimens, contraindications, important drug interactions, adverse effects, patient information, and more. This third edition includes new classes of drugs as well as information on updated guidelines for prescribing and monitoring established drugs.

## FROM REVIEWS OF PREVIOUS EDITIONS

**"This updated edition includes new arrivals… Quite simply, it is indispensable! I have it with me in every clinic and often refer to it in discussions with pharmacists (who have been known to borrow my copy and forget to return it)."** – *Dermatology in Practice*

**"... an outstanding resource that helps to alleviate worrying by providing precise guidelines and advice in managing our most infirm patients who require these medications."** – *SkinMed*




# Obstetric Life Support Manual

## Etiology, prevention, and treatment of maternal medical emergencies and cardiopulmonary arrest in pregnant and postpartum patients

**Andrea Shields, Jacqueline Battistelli, Laurie Kavanagh, Peter Nielsen and Brook Thomson**

ISBN 9781032289519
July 6, 2023
144 Pages • 43 Color & 20 B/W Illustrations
Subject: Specialist Medicine
**www.routledge.com/9781032289519**

### Andrea Shields, MD, MS

is OBLS Principal Investigator and Research Team Lead; Maternal Fetal Medicine Fellowship Program Director, Associate Professor, University of Connecticut Health Center.

### Jacqueline Battistelli, MD

is OBLS Co-Investigator; Assistant Professor, Department of Obstetrics and Gynecology, San Antonio Uniformed Services Health Education Consortium, San Antonio, Texas.

### Laurie Kavanagh, MPH

is OBLS Program Manager, Seattle, Washington

### Peter Nielsen, MS, MSS

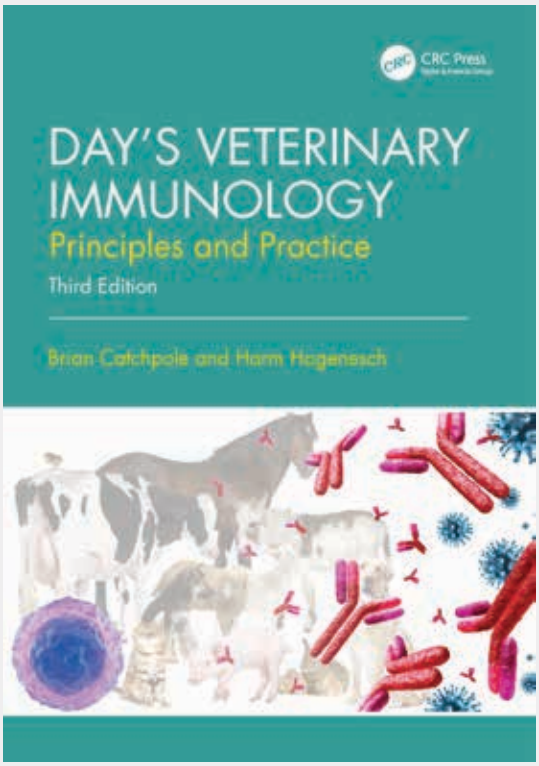
is OBLS Co-Investigator, Professor, Department of Obstetrics and Gynecology, University of Texas Health Center at San Antonio, San Antonio, Texas.

### Brook Thomson, MD

is OBLS Co-Investigator; Associate Professor, Department of Obstetrics and Gynecology, University of Texas Health Science Center at San Antonio, San Antonio, Texas.

This text is a comprehensive review in normal and abnormal pregnancy physiology, the most common etiologies of maternal medical emergencies, recognition of maternal deterioration and pending cardiopulmonary arrest, modifications to cardiopulmonary resuscitation in pregnant and postpartum patients, special procedures that can assist in diagnosing and treating maternal medical emergencies tailored to the setting (e.g., point of care ultrasound, resuscitative cesarean delivery, extracorporeal cardiopulmonary resuscitation), treatment of trauma/stroke in pregnancy, and postpartum maternal medical emergencies. There are streamlined algorithms and cognitive aids designed to improve a team's ability to successfully implement techniques unique to treating maternal medical emergencies and cardiac arrest.

- Offers a practical guide to treating complex and challenging maternal medical emergencies
- Equips the entire team responding to a maternal cardiac arrest with the current evidence-based approaches and techniques
- Presents a thorough review, detailed algorithms, and a consolidated discussion of the practical aspects of implementation




# Day's Veterinary Immunology

## Principles and Practice, *3rd Edition*

### Brian Catchpole and Harm HogenEsch

ISBN 9781032317168
April 6, 2023
448 Pages • 348 Color Illustrations
Subject: Veterinary
**www.routledge.com/9781032317168**

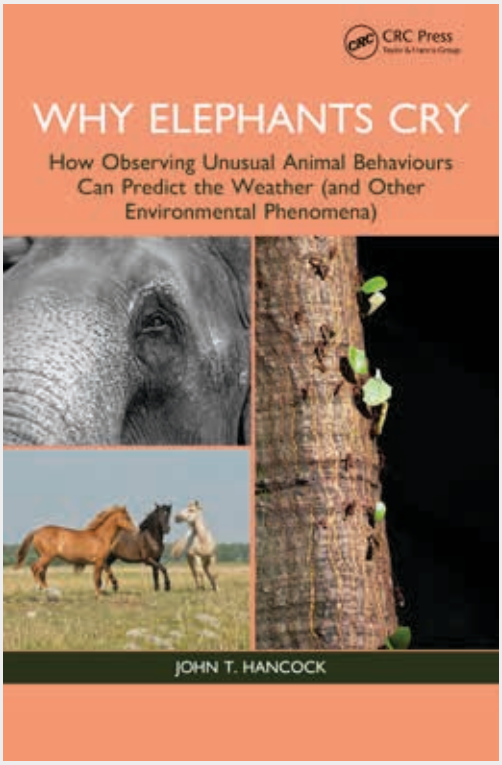
**Brian Catchpole**
is Professor of Companion Animal Immunology at the Royal Veterinary College, University of London.

**Harm HogenEsch**
is a Distinguished Professor of Immunopathology in the Department of Comparative Pathobiology of the Purdue University College of Veterinary Medicine.

Michael Day's *Veterinary Immunology: Principles and Practice* is the adopted text in numerous veterinary schools throughout the world. Updated and revised by Brian Catchpole and Harm HogenEsch with advances in knowledge since 2014, this third edition reflects the rapid developments in the field internationally, while preserving the strengths of Day's original writing. It adds numerous case studies demonstrating the clinical context across companion and farm animals.

The textbook presents information on commonly used diagnostic test procedures and includes learning objectives at the start and key points at the end of each chapter, standard symbols in diagrams throughout the text to provide continuity, clinical examples and clinicopathological figures throughout, and a glossary of terms and list of commonly used abbreviations.

Exploring the immunological principles of both large and small animals, the book emphasizes immunological principles while applying them to disease processes and to clinical practice. It provides a practical textbook for veterinary students and a handy reference for practitioners.




# Why Elephants Cry

## How Observing Unusual Animal Behaviours Can Predict the Weather (and Other Environmental Phenomena)

**John T. Hancock**

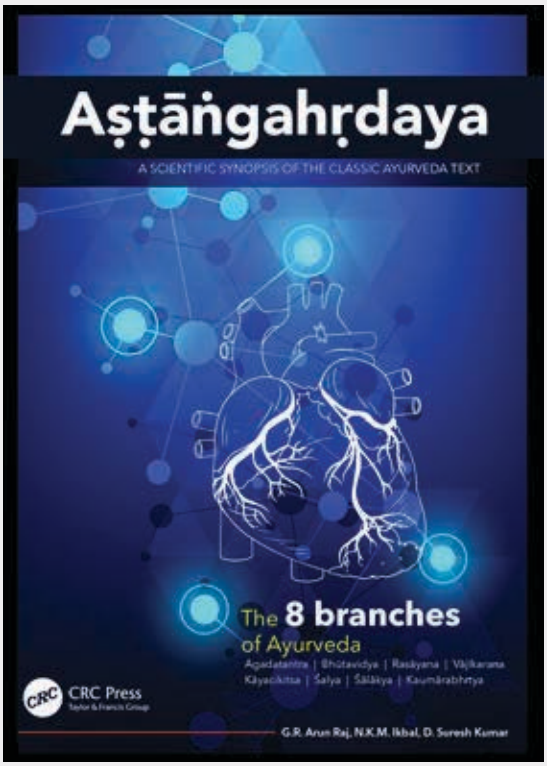
ISBN 9781032381763
May 1, 2023
232 Pages • 34 B/W Illustrations
Subject: Biology & Life Science
**www.routledge.com/9781032381763**

**John T. Hancock**
is Professor of Cell Signalling at the University of the West of England, Bristol (UWE), UK. He has authored several editions of a textbook, *Cell Signalling*, where the processes of how cells perceive and respond to their environment is discussed. John also has several editorial positions for international journals, and is Editor-in-Chief of the journal *Oxygen*.

*Why Elephants Cry* is a fascinating frolic through the literature and evidence surrounding the use of unusual behavior of animals to measure and predict the environment. The role of animals, from the smallest ant to the biggest elephant, as predictors of environmental changes is framed around the climate crisis, which highlights the increasingly important part that animals will have to play in the future.

Renowned biologist Professor John T. Hancock collects anecdotal stories and myths along with scientific evidence, demonstrating that observation of animals can be of tangible use. He looks at the measurement of the air temperature using ants, crickets and snakes, and goes on to assess the evidence that the observation of a wide range of animals can predict the weather or the imminent eruption of volcanoes and earthquakes. Evidence of animals being able to predict lunar and solar events, such as lunar cycles and the Northern Lights, is also considered.

This is the only time that all this literature has been brought together in one place, a fascinating reference for anybody interested in animals and the environment. The book is also an ideal supplementary textbook for students studying animal behaviour.




# Aṣṭāṅgahṛdaya

## A Scientific Synopsis of the Classic Ayurveda Text

**G.R. Arun Raj, N.K.M. Ikbal and D. Suresh Kumar**

ISBN 9780367685720
February 7, 2023
288 Pages • 36 B/W Illustrations
Subject: Biology & Life
**www.routledge.com/9780367685720**

**Dr. G.R. Arun Raj**
is the principal investigator of a major research project on spastic cerebral palsy sponsored by Rajiv Gandhi University of Health Sciences. He is also the Dean for research publications and member of Institutional research committee, SDM College of Ayurveda.

**Dr. N.K.M. Ikbal**
is the founder member of National Susruta Association (Association of Ayurvedic Surgeons of India).

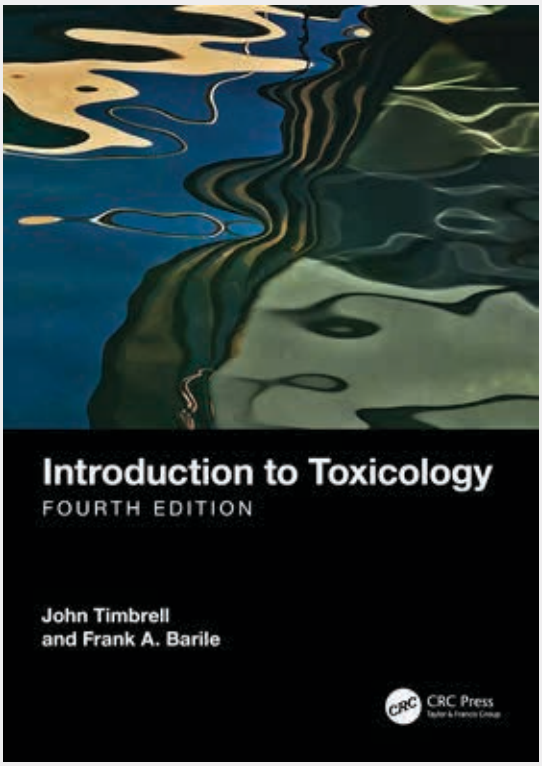
**D. Suresh Kumar**
the author of *Herbal Bioactives and Food Fortification: Extraction and Formulation* (2016) and editor of *Ayurveda in the New Millennium* (2020, CRC).

Worldwide interest in Ayurveda is on the rise, ever since the World Health Organization adopted the Alma Ata Declaration in 1978. Ayurveda is increasingly being adopted and many phytotherapy schools in Europe and the Americas teach Ayurveda as a wellness system. Considering the prominent position that Aṣṭāṅgahṛdaya occupies in Ayurveda, a scientific synopsis of this masterpiece is now presented before the world of Ayurveda.

In eight comprehensive chapters, *Aṣṭāṅgahṛdaya: A Scientific Synopsis of the Classic Ayurveda Text* presents a lucid summary of the teachings of Vāgbhaṭa. Ayurvedic view of the human body, basic principles of Ayurveda, surgical armamentarium, diagnosis and treatment of diseases, herbs and other medicinal substances used in the preparation of various dosage forms, ayurvedic pharmaceutialcs, ayurvedic approach to food fortification, salient features of Aṣṭāṅgahṛdaya and a roadmap for the future are among the topics discussed.

Key Features:

- Presents the ayurvedic view of conception and the human body.
- Discusses aspects of ayurvedic pharmaceuticals.
- Examines diagnosis of diseases, lines of treatment, prognosis of diseases, signs of imminent death, management of mishaps and treatment of new diseases.




# Introduction to Toxicology

*4th Edition*

John Timbrell and Frank A. Barile

ISBN 9781032036922
February 27, 2023
316 Pages • 1 Color & 69 B/W Illustrations
Subject: Biology & Life Science
**www.routledge.com/9781032036922**

**John Timbrell**
is Emeritus Professor of Biochemical Toxicology in the Pharmacy Department at King's College London and was a member of the Committee on Toxicity, U.K. Government.

**Frank A. Barile**
is retired Professor of Toxicology in the Pharmaceutical sciences Department, St. John's University College of Pharmacy and Health Sciences, New York. He is former Chief Editor of *Toxicology in Vitro*.

Current concerns about the effects of therapeutic drugs, carcinogens, industrial toxins, pesticides, and herbicides on human health, animal welfare, and the stability and maintenance of the ecosystem continue to highlight toxicology as an important and growing scientific discipline.

*Introduction to Toxicology* condenses the diffuse literature in the field into an accessible and readable text. It introduces fundamental concepts and builds upon these using topical and relevant historical examples. Its improved format includes learning objectives and summaries of each chapter, as well as questions and answers suitable for self-assessment.

This latest edition is an invaluable resource for undergraduate and graduate toxicology students, as well as an introductory text for other health care students and professionals. The book also functions as a comprehensive introductory reference text for environmental scientists, medical biologists and chemists, chemical engineers, and regulatory agencies, with interests in toxicologically related areas.

# Hayes' Principles and Methods in Toxicology

*7th Edition*

## Edited by A. Wallace Hayes and Tetyana Kobets

ISBN 9781032467085
April 27, 2023
2032 Pages • 496 B/W Illustrations
Subject: Biology & Life Science
**www.routledge.com/9781032467085**

### Dr. A. Wallace Hayes

is a toxicologist and has held professorships at the University of Alabama, University of Mississippi Medical Center, Wake Forest University School of Medicine, and Visiting Scientist at Harvard T. H. Chan School of Public Health

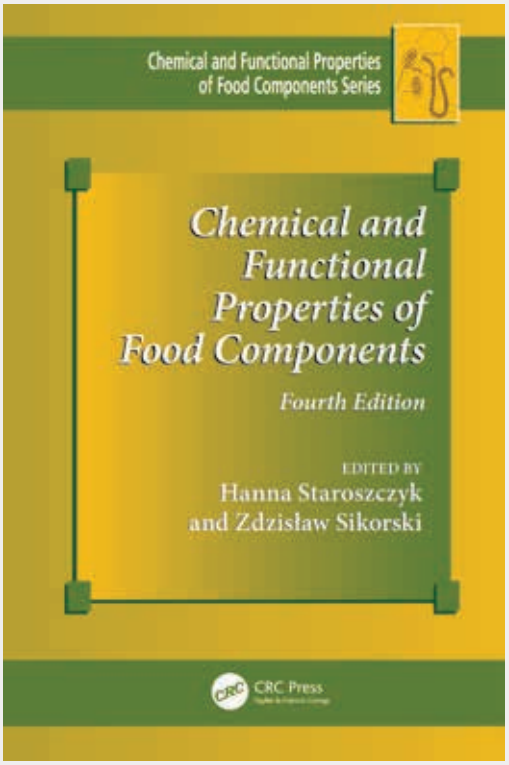
### Dr. Tetyana Kobets

is an Assistant Professor of Pathology, Microbiology, and Immunology at the New York Medical College (NYMC), Valhalla, NY.

Hayes' Principles and Methods of Toxicology has long been established as a reliable and informative reference for the concepts, methodologies, and assessments integral to toxicology. The new edition contains updated and new chapters with the addition of new authors while maintaining the same high standards that have made this book a benchmark resource in the field.

Key Features of the 7th edition:

- The comprehensive yet concise coverage of various aspects of fundamental and applied toxicology makes this book a valuable resource for educators, students, and professionals.
- Questions provided at the end of each chapter allow readers to test their knowledge and understanding of the material covered.
- All chapters have been updated and over 60 new authors have been added to reflect the dynamic nature of toxicological sciences
- New topics in this edition include Safety Assessment of Cosmetics and Personal Care Products, The Importance of the Dose/Rate Response, Novel Approaches and Alternative Models, Epigenetic Toxicology, and an Expanded Glossary.




# Chemical and Functional Properties of Food Components

*4th Edition*

## Edited by Hanna Staroszczyk and Zdzislaw Edmund Sikorski

ISBN 9781032199221
May 22, 2023
576 Pages • 148 B/W Illustrations
Subject: Food Science & Culinary Arts
**www.routledge.com/9781032199221**

### Hanna Staroszczyk

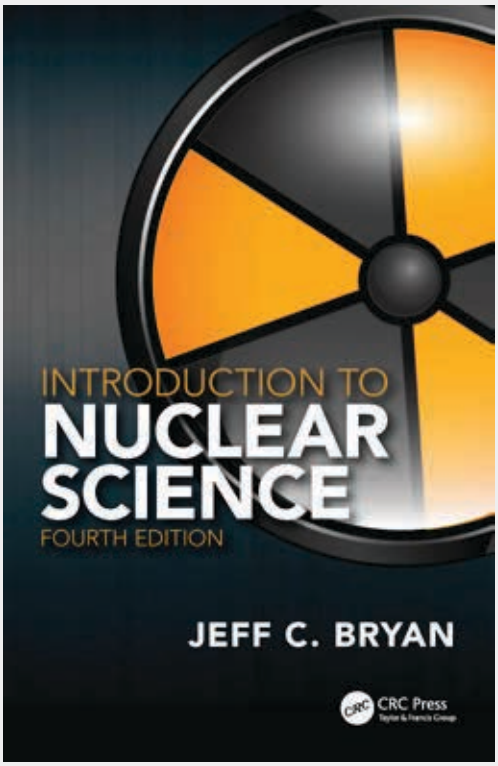
is the head of the Department of Chemistry, Technology and Biotechnology of Food at the Gdansk University of Technology (GUT), Poland and a member of the Polish Society of Food Technologists. She worked as researcher/ postdoc/visiting professor at the Institute of Food Research, Norwich, UK, Academia Sinica, Tajpej, Taiwan, and University of Arkansas, Fayetteville.

### Zdzislaw E Sikorski

worked as researcher/ professor in Ohio State University; CSIRO in Hobart; DSIR in Auckland; and National Taiwan Ocean University in Keelung. Currently he is a honorary professor emeritus in the Faculty of Chemistry at the Gdansk University of Technology (GUT), Poland.

Through three editions, this book described the contents of food raw materials and products, the chemistry/ biochemistry of food components, as well as the changes occurring during post harvest storage and processing affecting the quality of foods. *Chemical and Functional Properties of Food Components, Fourth Edition*, discusses the role of chemical compounds in the structure of raw materials and the formation of different attributes of food quality, including nutritional value, safety, and sensory properties. This new edition contains four new chapters: Non-Protein Nitrogenous Compounds; Prooxidants and Antioxidants in Food; Non-Nutritive Bioactive Compounds in Food of Plant Origin; and Methods Used for Control of the Sensory and Biological Properties of Foods.

The knowledge of the chemistry and biochemistry of the components and their interactions presented in this book aids food scientists in making the right decisions for controlling the rate of beneficial and undesirable reactions, selecting optimal storage and processing parameters, as well as the best use of food raw materials.




# Introduction to Nuclear Science

*4th Edition*

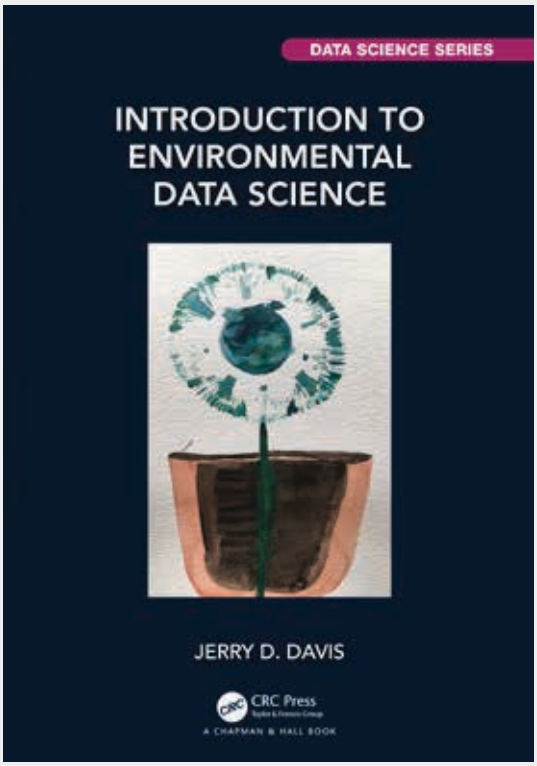
Jeff C. Bryan

ISBN 9781032301808
May 2, 2023
384 Pages • 164 B/W Illustrations
Subject: Chemistry
**www.routledge.com/9781032301808**

**Dr. Bryan**
has over 100 publications in peer-reviewed journals, including one book chapter and an encyclopedia article. His research has been featured on the covers of one book, two journals, and two professional society newsletters. Dr. Bryan co-authored a nuclear chemistry laboratory manual with Dr. Sid Katz in 2011.

Written to provide students who have limited backgrounds in the physical sciences and math with an accessible textbook on nuclear chemistry and physics, Introduction to Nuclear Science, Fourth Edition continues to provide a clear and complete introduction to nuclear chemistry and physics, from basic concepts to nuclear power and medical applications. Incorporating suggestions from adopting professors and collaborations with the U.S. Department of Energy funded and American Chemical Society sponsored Nuclear Chemistry Summer School, a new chapter on nuclear structure is now included.

This book covers energetics, nuclear stability and structure, radioactive decay and reactions, interactions of radiation with matter, detection methods, and safety measures, including monitoring and regulations. This updated, expanded edition provides a much-needed textbook and resource for undergraduate students in science and engineering as well as those studying nuclear medicine and radiation therapy.




# Introduction to Environmental Data Science

Jerry Davis

ISBN 9781032322186
March 6, 2023
424 Pages • 185 Color & 76 B/W Illustrations
Subject: Environmental Science
**www.routledge.com/9781032322186**

**Jerry Douglas Davis**

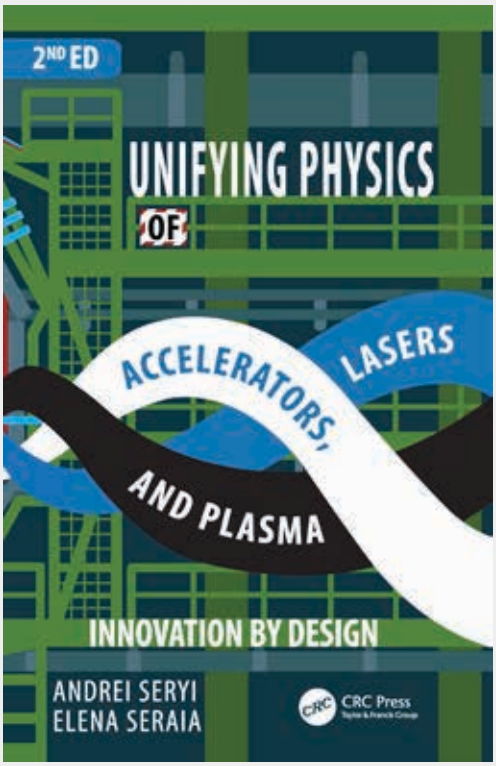
is a Professor of Geography & Environment (https://geog.sfsu.edu/) and the Director of the Institute for Geographic Information Science (https://gis.sfsu.edu/) at San Francisco State University, and borrows heavily from his and his students' field-based environmental research for examples in the book.

*Introduction to Environmental Data Science* focuses on data science methods in the R language applied to environmental research, with sections on exploratory data analysis in R including data abstraction, transformation, and visualization; spatial data analysis in vector and raster models; statistics and modelling ranging from exploratory to modelling, considering confirmatory statistics and extending to machine learning models; time series analysis, focusing especially on carbon and micrometeorological flux; and communication.

The book is an ideal textbook to teach undergraduate to graduate level students in environmental science, environmental studies, geography, earth science, and biology, but can also serve as a reference for environmental professionals working in consulting, NGOs, and government agencies at the local, state, federal, and international levels.

Features

- Gives thorough consideration of the needs for environmental research in both spatial and temporal domains.
- Features examples of applications involving field-collected data ranging from individual observations to data logging.
- Includes examples also of applications involving government and NGO sources, ranging from satellite imagery to environmental data collected by regulators such as EPA.
- Contains class-tested exercises in all chapters other than case studies. Solutions manual available for instructors.
- All examples and exercises make use of a GitHub package for functions and especially data.




# Unifying Physics of Accelerators, Lasers and Plasma

*2nd Edition*

Andrei Seryi and Elena Seraia

ISBN 9781032352503
April 25, 2023
448 Pages • 375 B/W Illustrations
Subject: Physics
**www.routledge.com/9781032352503**

**Andrei Seryi**

Jefferson Lab Associate Director for accelerators operations and R&D, Governor's distinguished CEBAF Professor. Until 2018 served as the Director of the John Adams Institute for accelerator science in the UK and a professor at Oxford University.

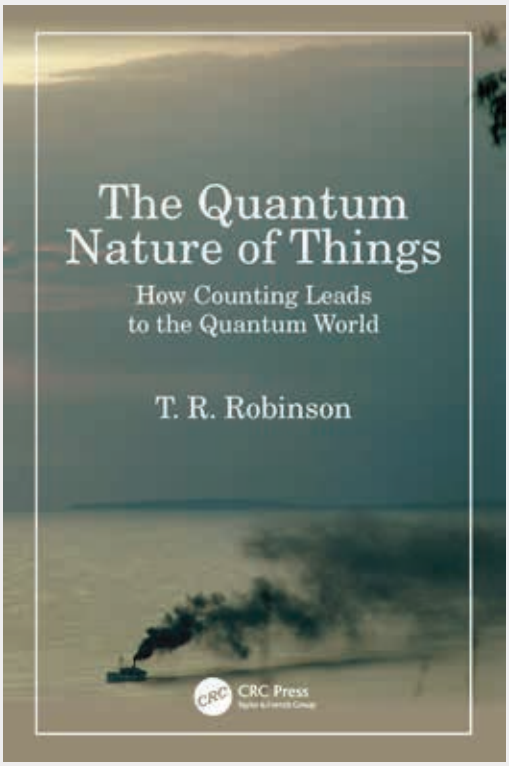
**Elena Seraia**

presently a consultant, and until 2018 was working in the Medical Department of the University of Oxford, in the group of Radiation Oncology and Biology, contributing to research aimed at finding ways of comprehensive cancer treatment.

*Unifying Physics of Accelerators, Lasers and Plasma* introduces the physics of accelerators, lasers and plasma in tandem with the industrial methodology of inventiveness, a technique that teaches that similar problems and solutions appear again and again in seemingly dissimilar disciplines. This unique approach builds bridges and enhances connections between the three aforementioned areas of physics that are essential for developing the next generation of accelerators. A Breakthrough by Design approach, introduced in the book as an amalgam of TRIZ inventive principles and laws of technical system evolution with the art of back-of-the-envelope estimations, via numerous examples and exercises discussed in the solution manual, will make you destined to invent.

The book outlines a path from idea to practical implementation of scientific and technological innovation. This second edition has been updated throughout, with new content on superconducting technology, energy recovery, polarization, various topics of advanced technology, etc., making it relevant for the Electron-Ion Collider project, as well as for advanced lights sources, including Free Electron Lasers with energy recovery.

The book is suitable for students at the senior undergraduate and graduate levels, as well as for scientists and engineers interested in enhancing their abilities to work successfully on the development of the next generation of facilities, devices and scientific instruments manufactured from the synergy of accelerators, lasers and plasma.




# The Quantum Nature of Things

## How Counting Leads to the Quantum World

**T.R. Robinson**

ISBN 9781032455464
April 14, 2023
296 Pages • 35 B/W Illustrations
Subject: Physics
**www.routledge.com/9781032455464**

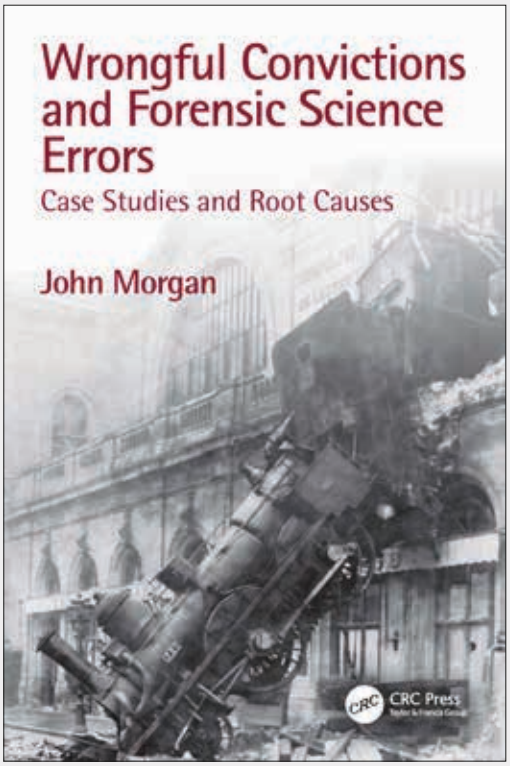
**Terry Robinson**
is Emeritus Professor of Space Plasma Physics at the University of Leicester. He has had a research career at the University of Leicester of over 30 years in Space Plasma Physics, publishing over 100 papers in international refereed journals. He was awarded a personal chair in Space Plasma Physics in 1997.

This book offers readers an entirely original and unconventional view of quantum mechanics. It is a view that accepts quantum mechanics as the natural way to think about the way nature works, rather than the view commonly expressed, especially in books on quantum physics, that quantum theory is weird and counterintuitive. It is based on the concept of itemization.

From this simple premise, quantities like energy and momentum, both linear and angular emerge naturally, as do configuration space, potentials, the electromagnetic field, many-body dynamics, special relativity and relativistic wave mechanics. The many-body dynamics, because it is not tied to physics from the outset, can be applied to population dynamics outside physics as well as the usual physical situations.

From this emerges much of the basic physics that describes, mathematically, how the natural world behaves.

This accessible introduction does not require exotic maths, and is aimed at inquisitive physics students and professionals who are interested in exploring unconventional approaches to physics. It may also be of interest to anyone studying quantum information theory or quantum computing.




# Wrongful Convictions and Forensic Science Errors

## Case Studies and Root Causes

### John Morgan

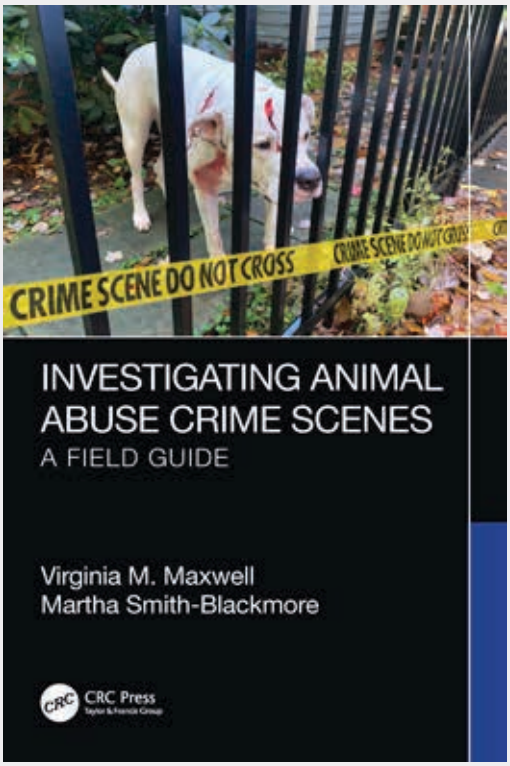
ISBN 9781032063508
March 20, 2023
368 Pages • 35 Color & 15 B/W Illustrations
Subject: Forensic Science
**www.routledge.com/9781032063508**

**Dr. John Morgan**
is internationally recognized for his work in forensic science, body armor, special operations technology, and police technology. He has served as the Deputy Director for Science and Technology at the National Institute of Justice and as Command Science Advisor for the US Army Special Operations Command.

The book provides a rigorous and detailed examination of two key issues: the continuing problem of wrongful convictions and the role of forensic science in these miscarriages of justice. It is a comprehensive textbook that covers the full breadth of the topic. It looks at each type of evidence, historical factors, system issues, organizational factors, and individual examiners.

John Morgan provides a thorough discussion of the policy, practice, and technical aspects of forensic science errors from a root-cause, scientific analysis perspective. Readers will learn to analyze common issues across cases and jurisdictions, perform basic root cause analysis, and develop systemic reforms. The reader is encouraged to assess cases and issues without regard to preconceived views or prejudicial language. As such, the book reinforces the need to obtain a clear understanding of errors to properly develop a set of effective scientific, procedural, and policy reforms to reduce wrongful convictions and improve forensic integrity and reliability.

Written in a format and style accessible to a broad audience, *Forensic Science Errors and Wrongful Convictions* presents a root-cause analysis across all of these issues, supported by detailed case studies and a clear understanding of the scientific basis of the forensic disciplines.




# Investigating Animal Abuse Crime Scenes

## A Field Guide

Virginia M. Maxwell
and Martha Smith-Blackmore

ISBN 9781032482651
May 12, 2023
360 Pages • 200 Color & 11 B/W Illustrations
Subject: Forensic Science
**www.routledge.com/9781032482651**

**Virginia Maxwell**
is Professor in the Forensic Science Department at the University of New Haven. She has over 30 years of experience in Forensic Science as both a practitioner in the State of Connecticut Forensic Science Laboratory and at the University of New Haven.

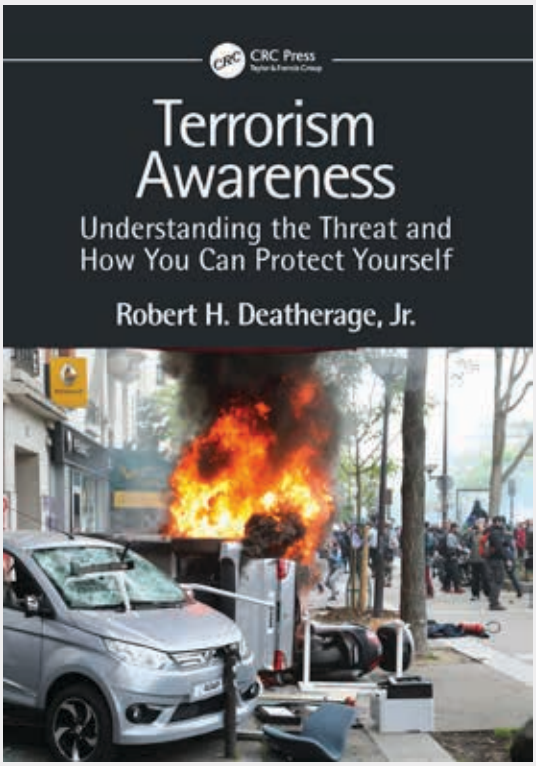
**Martha Smith-Blackmore**
is a veterinarian and president of a private veterinary forensic consulting firm, Forensic Veterinary Investigations, LLC with over 25 years' experience documenting cases of suspected animal cruelty and working as an expert witness in criminal and civil cases involving animals.

Animal abuse is well established as a gateway crime linked to other forms of antisocial behaviors and broader criminal violence. Increased awareness of the link between animal abuse and criminal behavior has led many states to mandate cross-reporting between agencies overseeing the welfare of families and of animals.

*Investigating Animal Abuse Crime Scenes: A Field Guide* is designed for first responders—such as animal control officers and police officers—as well as forensic scientists and other criminal justice professionals who are who are tasked with processing and analyzing animal crime scenes and evidence. The book serves equally as a useful resource for those in the field and laboratory, in addition to those professionals who are further along in the investigative and judicial process.

Part I addresses general crime scene procedures that includes securing and releasing the scene, search and seizure issues, chain of custody, documentation, searching for evidence, and the use of enhancement technologies. Part II will move into recognition, collection, and preservation of different types of evidence that may be located at animal abuse scenes, with examples of the most important evidence for specific case types. Part III addresses the role of the veterinarian and the key aspects of veterinary forensic science. Part IV presents useful checklists and templates for crime scenes processing, necropsy, and report writing.

*Investigating Animal Abuse Crime Scenes* fills the growing need for a handy, comprehensive field reference that specifically focuses on the crime scene processing, investigation, analysis of evidence, and the subsequent adjudication of animal abuse cases within the court system.




# Terrorism Awareness

## Understanding the Threat and How You Can Protect Yourself

**Robert H. Deatherage, Jr.**

ISBN 9781032274164
March 16, 2023
296 Pages • 1 B/W Illustrations
Subject: Forensic Science
**www.routledge.com/9781032274164**

**Robert H. Deatherage Jr. (Bob)**

spent over 22 years in the US Military, serving in both the US Marine Corps and US Army Special Forces, and working in several different positions and groups. He retired as the Non-commissioned Officer in Charge of the Antiterrorism Training Detachment, D company 2nd Battalion 1st Special Warfare Training Group. Since retirement, he has worked as a Security Manager for international construction companies in Iraq, Israel, the West Bank, and Gaza.

*Terrorism Awareness: Understanding the Threat and How You Can Protect Yourself* provides readers a foundational understanding of the threats that face us every day. The goal is to introduce readers to different tactics and techniques used by terrorists—both international and domestic—to better understand personal protection concepts and, if necessary, take actions to make themselves "hard targets" that terrorist organizations will want to avoid. This includes providing a background on understanding how terrorists operate, and, more specifically, how to recognize the pre-incident indicators associated with terrorist operations.

Coverage includes situation awareness of the phases of terrorist operations, common attacks, surveillance and targeting tactics, kidnapping and hostage situations, bombings and blast effects, hijacking, armed assaults, and more. With such awareness, readers can be alert to common cues to avoid dangerous situations, as well as familiarize themselves with various actions they can take to better protect themselves. Sometimes certain events may arise which are unavoidable and, in those cases, learning how to best mitigate those scenarios can mean life or death and provide the best opportunity for safety and survival.

*Terrorism Awareness* is a helpful guide to provide anyone working or traveling in the United States or overseas—particularly in potentially volatile places subject to terrorism or civil unrest—the tools they need to recognize potential threats and to keep themselves, and those they are with, safe.

# The Game Writing Guide

## Get Your Dream Job and Keep It

### Anna Megill

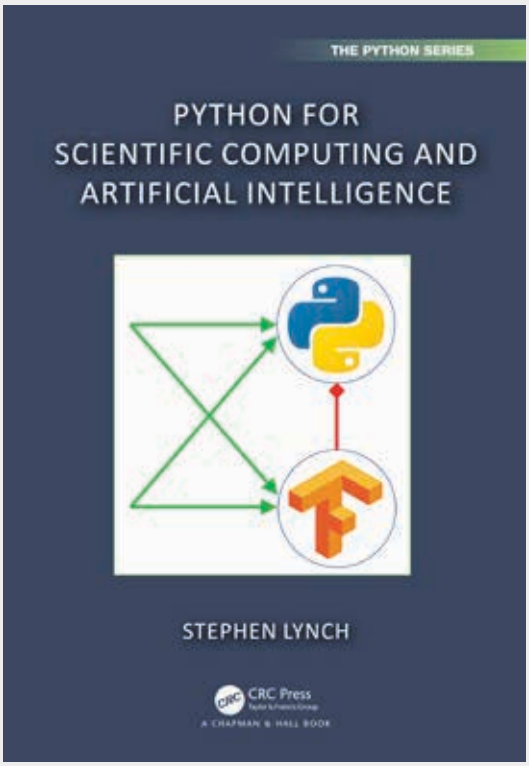
ISBN 9781032252360
May 26, 2023
256 Pages • 28 B/W Illustrations
Subject: Game Design
**www.routledge.com/9781032252360**

**Anna Megill**
is an award-winning game writer and industry veteran with experience writing primarily for modern AAA games. In her nearly two decades of game development, Anna has worked for some of the top studios around the world, such as Ubisoft, Arkane, Remedy, and Square Enix. A longtime advocate for marginalized voices in games, she provides resources and advice to aspiring writers through her website. Anna currently works at Playground Games on their upcoming Fable game.

This comprehensive guide walks readers through the entire process of getting and keeping a writing job in the games industry. It outlines exactly what a beginner needs to know about education requirements, finding opportunities, applying for roles, and acing studio interviews. Professional writers will learn how to navigate studio hierarchies, transfer roles and companies, work overseas, and keep developing their careers.

Written by an experienced games writer with nearly two decades of industry knowledge, the book contains a wealth of interviews and perspectives with industry leaders, hiring managers, and developers from marginalized communities, all offering their tips and insights. Included are examples of materials such as job posts, writing samples, and portfolios, as well as chapter end challenges for readers to directly apply the skills they have learnt.

This book will be of great interest to all beginner and aspiring games writers and narrative designers, as well as more experienced writers looking to hone their skills.




# Python for Scientific Computing and Artificial Intelligence

## Stephen Lynch

ISBN 9781032258737
June 15, 2023
344 Pages • 155 Color Illustrations
Subject: Computer Science
**www.routledge.com/9781032258737**

In 2022,

**Stephen Lynch**

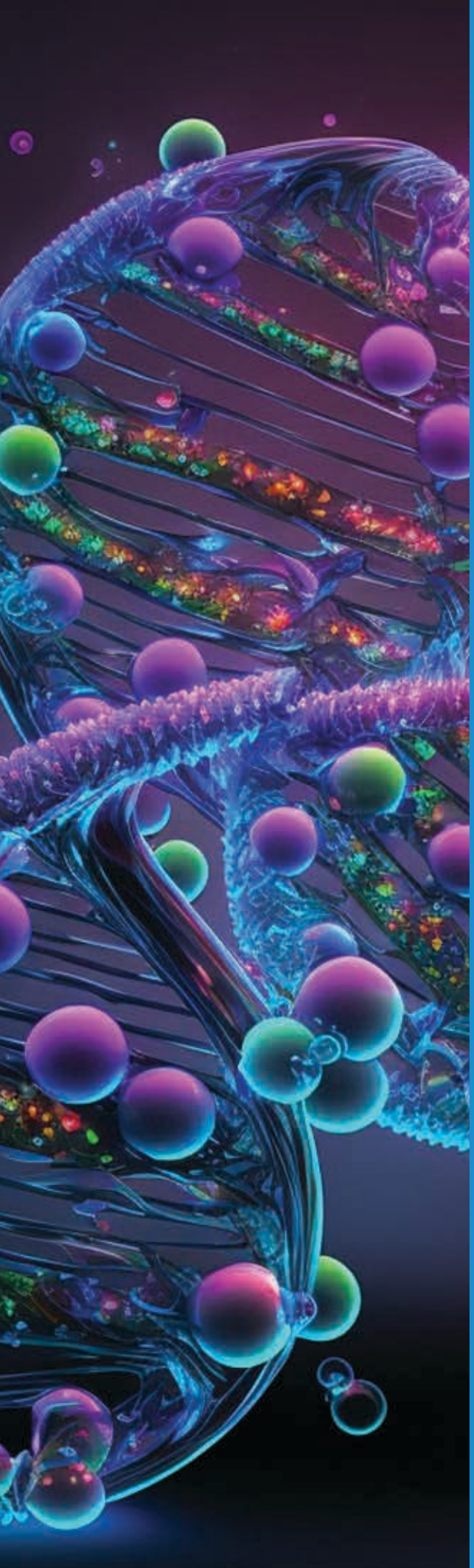
was named a National Teaching Fellow, which celebrates and recognises individuals who have made an outstanding impact on student outcomes and teaching in higher education. He won the award for his work in programming in the STEM subjects, research feeding into teaching, and widening participation (using experiential and object-based learning). Although educated as a pure mathematician, Stephen's many interests now include applied mathematics, cell biology, electrical engineering, computing, neural networks, nonlinear optics and binary oscillator computing, which he co-invented with a colleague.

*Python for Scientific Computing and Artificial Intelligence* is split into 3 parts: in Section 1, the reader is introduced to the Python programming language and shown how Python can aid in the understanding of advanced High School Mathematics. In Section 2, the reader is shown how Python can be used to solve real-world problems from a broad range of scientific disciplines. Finally, in Section 3, the reader is introduced to neural networks and shown how TensorFlow (written in Python) can be used to solve a large array of problems in Artificial Intelligence (AI).

This book was developed from a series of national and international workshops that the author has been delivering for over twenty years. The book is beginner friendly and has a strong practical emphasis on programming and computational modelling.

Features:

- No prior experience of programming is required.
- Online GitHub repository available with codes for readers to practice.
- Covers applications and examples from biology, chemistry, computer science, data science, electrical and mechanical engineering, economics, mathematics, physics, statistics and binary oscillator computing.
- Full solutions to exercises are available as Jupyter notebooks on the Web.



2023 CRC PRESS

# New Titles


**BUSINESS MANAGEMENT & INDUSTRIAL ENGINEERING** 2
Ergonomics & Human Factors 2

**ENGINEERING** 3
General Engineering 3
Chemical Engineering 4
Civil & Mechanical Engineering 5
Electrical Engineering 6
Industrial & Manufacturing Engineering 6
Mining Engineering 8

**FOOD & AGRICULTURE** 8
Food Science & Culinary Arts 8
Agriculture 10
Nutrition 10

**MATHEMATICS & STATISTICS** 11
Mathematics 11
Probability & Statistics 14

**MEDICINE & VETERINARY** 16
General Medicine 16
Specialist Medicine 18
Veterinary Medicine 22

**SCIENCE** 23
Biology & Life Science 23
Chemistry 26
Computer Science & Computer Graphics 29
Environmental Science 32
Forensic Science 32
Materials Science 35
Physics 37

**GAME DESIGN & ANIMATION** 40

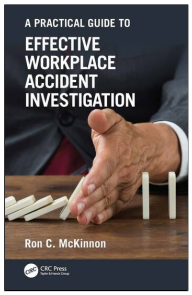
**JENNY STANFORD PUBLISHING** 40

**APPLE ACADEMIC PRESS** 42

**Index** 43

## ERGONOMICS & HUMAN FACTORS

### A Practical Guide to Effective Workplace Accident Investigation




**Ron C. McKinnon**, Safety Professional, Author, Motivator and Presenter.

*Series: Workplace Safety, Risk Management, and Industrial Hygiene*

The text discusses different theories on what causes accidents and uses a combined remedial approach to identify immediate and root accident causes and how to remedy them to prevent a recurrence. It will be a valuable resource for professionals and graduate students in the fields of ergonomics, human factors, occupational health and safety.

CRC Press
May 2022: 272pp
Hb: 978-1-032-05444-5: **£82.99**
Pb: 978-1-032-11488-0: **£42.99**
eBook: 978-1-003-22009-1
* For **full contents** and more information, visit: **www.routledge.com/9781032054445**

### Human Factors on the Flight Deck

A Practical Guide for Design, Modelling and Evaluation

**Katie J. Parnell**, University of Southampton, **Victoria A. Banks**, Transportation Research Group, Faculty of Engineering & Environment, University of Southampton, **Rachael A. Wynne**, **Neville A. Stanton** and **Katherine L. Plant**

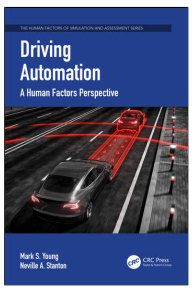
*Series: Transportation Human Factors*

*Human Factors on the Flight Deck* discusses the underlying theories and practices that allow for identification, development, design, analysis, and evaluation, this text will be useful for professionals, graduate students and academic researchers in the fields of aviation, human factors, and ergonomics. It covers principles and methodologies for user-centered design.

CRC Press
May 2023: 200pp
Hb: 978-0-367-75447-1: **£89.99**
Pb: 978-1-032-47070-2: **£42.99**
eBook: 978-1-003-38446-5
* For **full contents** and more information, visit: **www.routledge.com/9780367754471**

### Driving Automation

A Human Factors Perspective




**Mark S. Young**, Loughborough University, UK and **Neville A. Stanton**, University of Southampton, UK

*Series: The Human Factors, Simulation and Performance Assessment Series*

*Driving Automation: A Human Factors Perspective* addresses a range of issues related to vehicle automation beyond the "how" or "can we" to "what will be the implications". It covers important topics including mental workload and malleable resources theory, effects of adaptive cruise control on mental workload, in-vehicle interface design, driver modeling and monitoring, eco-driving, responses to automation failure, and brake reaction time with automation.

CRC Press
March 2023: 296pp
Hb: 978-0-367-75445-7: **£110.00**
Pb: 978-1-032-44824-4: **£42.99**
eBook: 978-1-003-37408-4
* For **full contents** and more information, visit: **www.routledge.com/9780367754457**

### Master Airline Pilot

Applying Human Factors to Reach Peak Performance and Operational Resilience

**Steve Swauger**

*Master Airline Pilot* offers a process for improving pilots' skills in risk management, situational awareness building, decision making, communications, and crew management. It links aviation human factors with practical airline operations to promote the development of master-level aviation skills across the full range of pilot experience. The book is intended for airline pilots, training captains, simulator instructors, and aviation students taking courses in flight safety and crew management to improve their skillset, proficiency, and expertise towards peak performance.

CRC Press
April 2023: 576pp
Hb: 978-1-032-38344-6: **£130.00**
Pb: 978-1-032-38345-3: **£52.99**
eBook: 978-1-003-34457-5
* For **full contents** and more information, visit: **www.routledge.com/9781032383446**

### Human Factors in Engineering

Manufacturing Systems, Automation, and Interactions

Edited by **Beata Mrugalska**, **Tareq Z. Ahram**, University of Central Florida, USA and **Waldemar Karwowski**, Univ. of Central Florida, Orlando, USA

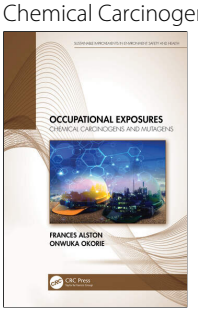
*Series: Human Factors in Design, Engineering, and Computing*

This book addresses aspects of human factors in engineering and provides a detailed discussion of novel approaches, systems engineering tools, artificial cognitive systems, and intelligent technologies and automation. It presents applications in diverse areas including digital manufacturing, transportation, infrastructure development, and cybersecurity. It will serve as an ideal text for students, professionals, and researchers in the fields of ergonomics, human factors, industrial engineering, and manufacturing engineering.

CRC Press
May 2023: 272pp
Hb: 978-1-032-37008-8: **£110.00**
Pb: 978-1-032-46823-5: **£42.99**
eBook: 978-1-003-38344-4
* For **full contents** and more information, visit: **www.routledge.com/9781032370088**

### Occupational Exposures

Chemical Carcinogens and Mutagens




**Frances Alston**, Oregon State University, USA and **Onwuka Okorie**, Lawrence Livermore National Laboratory (LLNL), USA

*Series: Sustainable Improvements in Environment Safety and Health*

The text provides a comprehensive list of carcinogens and mutagens, preventive measures, and controls for carcinogens and mutagens. It will be used as a resource in assisting organizations to prevent litigations as a result of cancers caused by occupational exposures. It will be a valuable resource for professionals and graduate students in the fields of occupational health and safety, industrial engineering, and chemical engineering.

CRC Press
February 2023: 208pp
Hb: 978-1-032-05450-6: **£99.99**
Pb: 978-1-032-11491-0: **£48.00**
eBook: 978-1-003-22011-4
* For **full contents** and more information, visit: **www.routledge.com/9781032054506**

## ERGONOMICS & HUMAN FACTORS

### Pilot Competency and Capability

Responsibilities, Strategy, and Command

**Steven Green**

*Pilot Competency and Capability* presents strategies for the air carrier pilot-in-command operating complex engineered systems within a complex natural environment. It bridges the gap between academic books and practical application by providing real-world examples of how various safety and operational theories work. The book is intended for airline pilots, training captains, and simulator instructors. It also serves as a reference for aviation students taking courses in risk management and flight safety to improve in-flight decision-making, risk analysis, and strategic planning.

CRC Press
May 2023: 280pp
Hb: 978-1-032-43798-9: **£99.99**
Pb: 978-1-032-43974-7: **£44.99**
eBook: 978-1-003-36967-7
* For **full contents** and more information, visit: **www.routledge.com/9781032437989**

### Safety Engineering in the Oil and Gas Industry

**Karan Sotoodeh**, University of Stavanger, Norway

Safety Engineering in the Oil and Gas Industry discusses how to improve safety and reliability in the oil and gas industry so that hazards can be reduced to the lowest level feasible. It covers the techniques needed to operate safety in an oil and/or gas industry setting, the standards that should be adhered to, the impacts of PPE, fire and explosions, equipment and infrastructure failures and storage and reliability engineering, amongst many other topics. This book is written in an easy-to-read and appealing style and multiple-choice questions are included to help with learning and understanding the concepts included.

CRC Press
June 2023: 456pp
Hb: 978-1-032-47973-6: **£130.00**
Pb: 978-1-032-48074-9: **£51.99**
eBook: 978-1-003-38727-5
* For **full contents** and more information, visit: **www.routledge.com/9781032479736**

3rd Edition

### Safety Management Systems in Aviation

**Alan J Stolzer**, **Robert L Sumwalt** and **John J Goglia**

*Safety Management Systems in Aviation, Third Edition* presents the quality management underpinnings of SMS, the four components, risk management, reliability engineering, SMS implementation, and the scientific rigor that must be designed into proactive safety. The book is intended for undergraduate aviation students taking Safety Management and Aviation Safety courses. It also functions as a valuable reference tool for SMS practitioners. Including coverage on the cultures of regulatory organizations and expanded coverage on culture assessment, the book considers the nexus between cultural maturity and safety management performance.

CRC Press
April 2023: 368pp
Hb: 978-1-032-26021-1: **£130.00**
Pb: 978-1-032-26020-4: **£49.99**
eBook: 978-1-003-28612-7
* For **full contents** and more information, visit: **www.routledge.com/9781032260204**

2nd Edition

### The Cause, Effect, and Control of Accidental Loss

**Ron C. McKinnon**

*Series: Workplace Safety, Risk Management, and Industrial Hygiene*

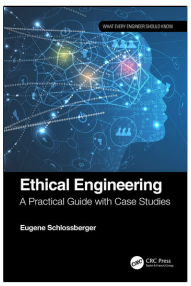
The book explains the anatomy of an accident by breaking it down into fifteen components depicted by fifteen dominoes falling after being triggered. It builds on the work of safety pioneers and includes a controversial proposal that three luck factors influence the result of an accident. It further discusses important concepts such as hazard identification, risk assessment, flawed safety management system (SMS), accident root causes, the potential for loss, and management control.

It serves as an ideal text for professionals, graduate students, and academics in the fields including occupational health, safety, and industrial hygiene.

CRC Press
April 2023: 200pp
Hb: 978-1-032-40905-4: **£68.99**
Pb: 978-1-032-47402-1: **£42.99**
eBook: 978-1-003-38594-3
* For **full contents** and more information, visit: **www.routledge.com/9781032409054**

## GENERAL ENGINEERING

### Ethical Engineering



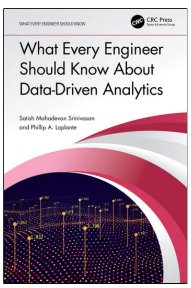

**Eugene Schlossberger**, Purdue University Northwest (Hammond campus), USA

*Series: What Every Engineer Should Know*

Ethical Engineering provides detailed and practical guidance in making decisions about the many ethical issues practicing engineers may face in their professional lives. It outlines a decision-making procedure and helps engineers construct an ethics toolkit consisting of professional models, a comprehensive set of ethical considerations and factors that help in weighing those considerations, and analyses of particular issues. Illustrating case studies are provided. This book helps readers navigate a variety of real-world ethical issues they are likely to face in this increasingly interdisciplinary, global, and diverse profession.

CRC Press
March 2023: 430pp
Hb: 978-1-032-15113-7: **£120.00**
Pb: 978-1-032-15112-0: **£48.99**
eBook: 978-1-003-24257-4
* For **full contents** and more information, visit: **www.routledge.com/9781032151120**

### What Every Engineer Should Know About Data-Driven Analytics




**Satish Mahadevan Srinivasan**, Penn State Great Valley, USA and **Phillip A. Laplante**

*Series: What Every Engineer Should Know*

What Every Engineer Should Know About Data-Driven Analytics provides a comprehensive introduction to the machine learning theoretical concepts and approaches that are used in predictive data analytics through practical applications and case studies. It offers a detailed and focused treatment of the important machine learning approaches and concepts that can be exploited to build models to enable decision making in different domains. Written to be accessible to non-experts in the subject, this comprehensive introductory text is suitable for students, professionals, and researchers in engineering and data science.

CRC Press
April 2023: 282pp
Hb: 978-1-032-23543-1: **£120.00**
Pb: 978-1-032-23540-0: **£44.99**
eBook: 978-1-003-27817-7
* For **full contents** and more information, visit: **www.routledge.com/9781032235400**

## CHEMICAL ENGINEERING

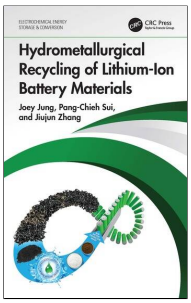
### Advanced Technologies for Solid, Liquid, and Gas Waste Treatment

Edited by **Yeek Chia Ho**, **Woei Jye Lau**, **Sudip Chakraborty**, **Rajamohan Natarajan** and **Saleh Al Arni**

Advanced Technologies for Solid, Liquid, and Gas Waste Treatment presents the potential of using advanced and emerging technologies to effectively treat waste. This book uniquely addresses treatment techniques for waste in all three phases, solid, liquid, and gas, with the goals of mitigating negative impacts of waste and producing valued-added products, such as biogas and fertilizer. This book will appeal to chemical and environmental engineers working on waste treatment, waste valorization, and pollution control.

CRC Press
April 2023: 328pp
Hb: 978-1-032-19759-3: **£120.00**
Pb: 978-1-032-19763-0: **£48.00**
eBook: 978-1-003-26073-8
* For **full contents** and more information, visit: **www.routledge.com/9781032197593**

### Hydrometallurgical Recycling of Lithium-Ion Battery Materials




**Joey Jung**, **Pang-Chieh Sui** and **Jiujun Zhang**

*Series: Electrochemical Energy Storage and Conversion*

With increasing market share of lithium-ion batteries (LIBs) in the secondary battery market and their applications in electric vehicles, the number of spent LIBs grows daily. This presents a unique business opportunity for recovering and recycling valuable metals from the spent lithium-ion cathode materials. This book provides a comprehensive review of the available hydrometallurgical technologies for recycling spent lithium-ion cathode active materials. Offering the most up-to-date information on LIB material recycling, this book is aimed at researchers and professionals in materials, chemical, electrical, and mechanical engineering, as well as chemists working with batteries.

CRC Press
February 2023: 282pp
Hb: 978-1-032-21602-7: **£130.00**
Pb: 978-1-032-21609-6: **£52.99**
eBook: 978-1-003-26920-5
* For **full contents** and more information, visit: **www.routledge.com/9781032216027**

### Biofuels

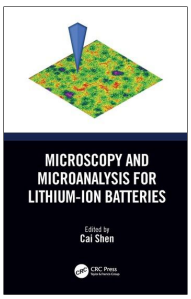
Technologies, Policies, and Opportunities

Edited by **Sunil Kumar**, CSIR-National Environmental Engineering Research Institute (CSIR-NEERI), Maharashtra, India and **Rena Rena**

Offering a comprehensive overview of biofuels and bioenergy systems, this book describes advances in technologies and global policies around biofuels as a renewable energy source. It discusses current status and potential challenges in developed and developing countries. Written for professionals and researchers in the biofuel sector, as well as waste management, this book provides readers with a wide-ranging review of current research and developments.

CRC Press
March 2023: 418pp
Hb: 978-1-032-05482-7: **£130.00**
Pb: 978-1-032-05484-1: **£52.99**
eBook: 978-1-003-19773-7
* For **full contents** and more information, visit: **www.routledge.com/9781032054827**

### Microscopy and Microanalysis for Lithium-Ion Batteries



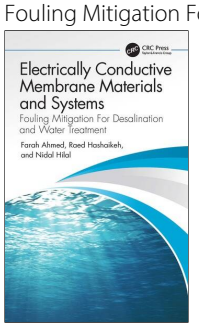

Edited by **Cai Shen**, University of Nottingham Ningbo China

Microscopy and Microanalysis for Lithium-Ion Batteries discusses advanced analytical techniques that offer the capability of resolving the structure and chemistry at an atomic resolution to further drive lithium-ion battery research and development. This reference is aimed at researchers, engineers, and scientists studying lithium-ion batteries including chemical, materials, and electrical engineers, as well as chemists and physicists.

CRC Press
May 2023: 500pp
Hb: 978-1-032-28952-6: **£140.00**
Pb: 978-1-032-28954-0: **£52.99**
eBook: 978-1-003-29929-5
* For **full contents** and more information, visit: **www.routledge.com/9781032289526**

### Electrically Conductive Membrane Materials and Systems

Fouling Mitigation For Desalination and Water Treatment




**Farah Ahmed**, **Raed Hashaikeh** and **Nidal Hilal**, Research (CWATER), College of Engineering, Swansea University, UK

With rising concerns around inaccessibility to freshwater and the ever-increasing threats of population growth, climate change and urban development, the book brings electrically conducting materials to the forefront of membrane separation technology with an emphasis on their role in mitigation of fouling and related phenomena.

The book is important reading for scientists, engineers, entrepreneurs, and enthusiasts from the water industry who seek to familiarize themselves with a ground-breaking area of study within modern desalination and water treatment.

CRC Press
May 2023: 424pp
Hb: 978-0-367-70206-9: **£180.00**
eBook: 978-1-003-14499-1
* For **full contents** and more information, visit: **www.routledge.com/9780367702069**

### Particulate Drying

Techniques and Industry Applications

Edited by **Jangam Vinayak**, **Chung-Lim Law** and **Shivanand Shirkole**

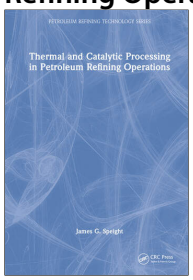
*Series: Advances in Drying Science and Technology*

In the process industry, understanding the unit operation of particulate drying is imperative to yield products with desired properties and characteristics and to ensure process safety, optimal energy efficiency and drying performance, and low environmental impact. There are many techniques and tools available, which can cause confusion. This book provides an overview of particulate drying techniques, their advantages and limitations, industrial applications, and simple design methods. This book is a reference for process and plant engineers as well as researchers in the fields of particulate processing, mineral processing, food processing, chemical engineering, and mechanical engineering.

CRC Press
May 2023: 216pp
Hb: 978-1-032-07467-2: **£110.00**
Pb: 978-1-032-07473-3: **£44.00**
eBook: 978-1-003-20710-8
* For **full contents** and more information, visit: **www.routledge.com/9781032074672**

## CHEMICAL ENGINEERING

### Thermal and Catalytic Processing in Petroleum Refining Operations



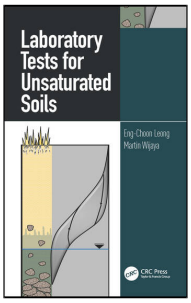

**James G. Speight**, CD & W Inc., Laramie, USA

*Series: Petroleum Refining Technology Series*

This book presents the thermal and catalytic processes in refining. The differences between each type of process and the types of feedstock that can be used for the processes are presented. Relevant process data is provided, and process operations are fully described. This accessible guide is written for managers, professionals and technicians as well as graduate students transitioning into the refining industry.

CRC Press
April 2025: 368pp
Hb: 978-1-032-02720-3: **£150.00**
Pb: 978-1-032-02731-9: **£59.99**
eBook: 978-1-003-18490-4
* For **full contents** and more information, visit: **www.routledge.com/9781032027319**

### Laboratory Tests for Unsaturated Soils




**Eng-Choon Leong**, Nanyang Technological University, Singapore and **Martin Wijaya**, Parahyangan Catholic University, Indonesia

Testing of unsaturated soils is particularly difficult and time-consuming, and guidance for engineers is minimal.

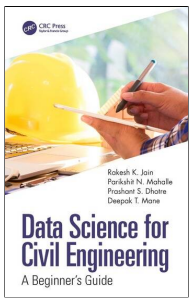
This is the first book to systematically collate the various laboratory tests. It covers general background and theory along with test procedures and the interpretation of test results. Test procedures are broken down into simple stages, and the pitfalls are described. Test data and calculation methods are provided along with several numerical examples

It serves for students and researchers who are new to the field as well as for established professionals.

CRC Press
February 2023: 436pp
Hb: 978-1-138-09382-9: **£130.00**
Pb: 978-0-367-86058-5: **£72.99**
eBook: 978-1-315-10514-7
* For **full contents** and more information, visit: **www.routledge.com/9780367860585**

## CIVIL & MECHANICAL ENGINEERING

### Data Science for Civil Engineering

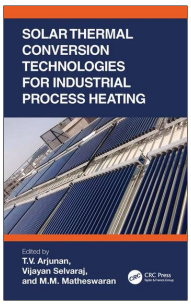



**Prashant Shantaram Dhotre**, JSPM's Rajarshi Shahu College of Engineering, Pune, India, **Parikshit Narendra Mahalle**, Vishwakarma Inst. of Information Tech., India, **Deepak Tatyasaheb Mane**, JSPM's Rajarshi Shahu College of Engineering, India and **Rakesh K. Jain**, JSPM's Rajarshi Shahu College of Engineering, India.

This book explains use of data science-based techniques for modelling and providing optimal solutions to complex problems in civil engineering. It discusses civil engineering problems like air, water and land pollution, climate crisis, transportation infrastructures, traffic and travel modes, mobility services, and so forth. Divided into two sections, the first one deals with the basics of data science and essential mathematics while the second section covers pertinent applications in structural and environmental engineering, construction management, and transportation. This textbook aims at senior undergraduate students in civil engineering and data analytics including professionals.

CRC Press
May 2023: 272pp
Hb: 978-1-032-32780-8: **£65.99**
Pb: 978-1-032-32781-5: **£42.99**
eBook: 978-1-003-31667-1
* For **full contents** and more information, visit: **www.routledge.com/9781032327808**

### Solar Thermal Conversion Technologies for Industrial Process Heating



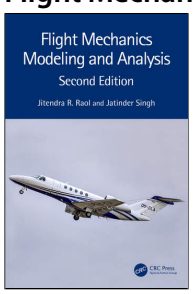

Edited by **T.V. Arjunan**, Guru Ghasidas University (Central University), Bilaspur, Chhattisgarh, India, **Vijayan Selvaraj**, National Institute of Technology, India and **M.M. Matheswaran**, Jansons Institute of Technology, India

*Solar Thermal Conversion Technologies for Industrial Process Heating* presents a comprehensive look at the use of solar thermal energy in industrial applications, such as textiles, chemical processing, and food. The successful projects implemented in a variety of industries are shown in case studies, alongside performance assessment methodologies. The book will be useful for researchers, graduate students, and industry professionals with an aim to promote mutual understanding between sectors dealing with solar thermal energy. The book includes various solar thermal energy conversion technologies and new techniques and applications of solar collectors in industrial sectors.

CRC Press
April 2023: 366pp
Hb: 978-1-032-20324-9: **£110.00**
Pb: 978-1-032-20356-0: **£42.99**
eBook: 978-1-003-26332-6
* For **full contents** and more information, visit: **www.routledge.com/9781032203249**

2nd Edition

### Flight Mechanics Modeling and Analysis

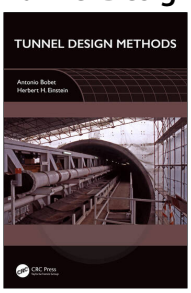



**Jitendra R. Raol**, National Aerospace Laboratories (CSIR-NAL), India and **Jatinder Singh**, CSIR-NAL, India

*Flight Mechanics Modeling and Analysis* comprehensively covers flight mechanics and flight dynamics using a systems approach. The book focuses on applied mathematics and control theory in its discussion of flight mechanics to build a strong foundation for solving design and control problems. The book is intended for senior undergraduate aerospace students taking Aircraft Mechanics, Flight Dynamics & Controls, and Flight Mechanics courses. The second edition includes two new chapters and coverage of aeroservoelastic topics, including concepts, control, and estimation. It also features end-of-chapter exercises and examples with a MATLAB® based approach.

CRC Press
March 2023: 568pp
Hb: 978-1-032-27609-0: **£99.99**
Pb: 978-1-032-27610-6: **£39.99**
eBook: 978-1-003-29351-4
* For **full contents** and more information, visit: **www.routledge.com/9781032276090**

### Tunnel Design Methods



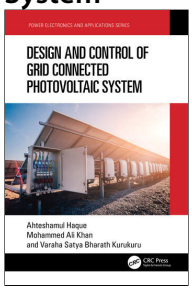

**Antonio Bobet**, Purdue University, USA and **Herbert H. Einstein**, Massachusetts Institute of Technology, USA

This book covers analytical, numerical and empirical methods for the design of tunnels in soil and in rock. It gives detailed analytical and numerical methods for design engineers, suits graduate students, and guides specialists in ground–support interaction under static and seismic loading. It presents fundamental concepts in ground and support behavior and in ground–excavation–support interaction along with detailed information on methods used for the design of tunnels, with applications, and on the latest developments in empirical methods.

CRC Press
May 2023: 552pp
Hb: 978-1-032-35844-4: **£110.00**
Pb: 978-1-032-35845-1: **£59.99**
eBook: 978-1-003-32894-0
* For **full contents** and more information, visit: **www.routledge.com/9781032358444**

## ELECTRICAL ENGINEERING

### Design and Control of Grid Connected Photovoltaic System




**Ahteshamul Haque**, Jamia Millia Islamia, India, **Mohammed Ali Khan** and **V S Kurukuru**

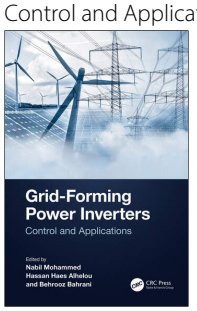
*Series: Power Electronics and Applications Series*

The current model for electricity generation and distribution is dominated by centralized power plants which are typically associated with combustion (coal, oil, and natural) or nuclear generation units.This book will be useful for the industrial professionals who are modeling PV plants and all the necessary information related to the field will be available in the book.

CRC Press
April 2023: 244pp
Hb: 978-1-032-18974-1: **£100.00**
Pb: 978-1-032-18977-2: **£42.99**
eBook: 978-1-003-25718-9
* For **full contents** and more information, visit: **www.routledge.com/9781032189741**

### Grid-Forming Power Inverters

Control and Applications

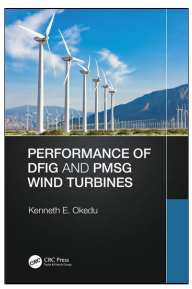



Edited by **Nabil Mohammed**, **Hassan Haes Alhelou**, Monash University, Australia. and **Behrooz Bahrani**

Grid-Forming Power Inverters: Control and Applications" is the first book dedicated to address the operation principles, grid codes, modelling and control of grid-forming power inverters. The book discusses initially the need for this technology due to the substantial annual integration of inverter-based renewable energy resources.

CRC Press
February 2023: 306pp
Hb: 978-1-032-29888-7: **£74.99**
Pb: 978-1-032-29889-4: **£42.99**
eBook: 978-1-003-30252-0
* For **full contents** and more information, visit: **www.routledge.com/9781032298887**

### Performance of DFIG and PMSG Wind Turbines



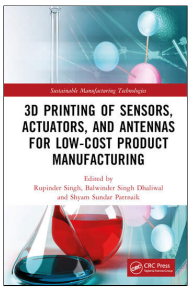

**Kenneth Okedu**

Due to environmental pollution and climate change, the use of renewable energy sources as alternative means of power generation is on the rise globally. The two most widely employed VSWTs in wind farm development are the Doubly Fed Induction Generator (DFIG), and the Permanent Magnet Synchronous Generator (PMSG) wind turbines. In order to solve transient stability intricacies during power grid faults, this book proposes different control strategies for the DFIG and PMSG wind turbines.

CRC Press
April 2023: 233pp
Hb: 978-1-032-39507-4: **£74.99**
Pb: 978-1-032-39690-3: **£22.99**
eBook: 978-1-003-35091-0
* For **full contents** and more information, visit: **www.routledge.com/9781032395074**

## INDUSTRIAL & MANUFACTURING ENGINEERING

### 3D Printing of Sensors, Actuators, and Antennas for Low-Cost Product Manufacturing




Edited by **Rupinder Singh**, NITTTR, Chandigarh, India, **Balwinder Singh Dhaliwal**, National Institute of Technical Teachers Training and Research, **Shyam Sundar Pattnaik**

*Series: Sustainable Manufacturing Technologies*

Offering the most recent developments in 3D printing of sensors, actuators, and antennas for low-cost product manufacturing; the book highlights some of the commercially available low-cost 3D printing processes that have higher efficiency and accuracy. Fundamental principles and working methodologies are presented with a critical review of the past work involved and current trends with future predictions. It covers composite and polymeric materials widely used and specifically focusing on the low-cost element. Recent breakthroughs and advantages in product manufacturing when printing smart materials are also discussed.

CRC Press
February 2023: 170pp
Hb: 978-1-032-04680-8: **£74.99**
Pb: 978-1-032-04681-5: **£74.99**
eBook: 978-1-003-19422-4
* For **full contents** and more information, visit: **www.routledge.com/9781032046808**

### AI Factory

Theories, Applications and Case Studies

**Ramin Karim**, Lulea University, **Diego Galar**, Luleå University of Technology, Sweden and **Uday Kumar**, Luleå University of technology, Norrbotten, Sweden

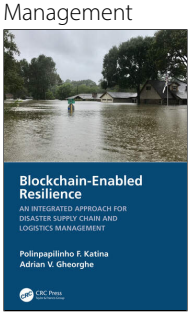
*Series: ICT in Asset Management*

This book provides insights on how to approach and utilise data science tools, technologies and methodologies related to artificial intelligence (AI) in industrial contexts. It explains the essence of distributed computing and AI-technologies, and their inter-connections. Description of various technology and methodology approaches, and their purpose and benefits when developing AI-solution in industrial contexts is included. In addition, it summarizes experiences from AI technology deployment projects from several industrial sectors. This book aims at researchers in industrial/software engineering, including engineering/asset managers, operational/maintenance specialists and so forth.

CRC Press
May 2023: 392pp
Hb: 978-1-032-07764-2: **£150.00**
Pb: 978-1-032-07765-9: **£59.99**
eBook: 978-1-003-20868-6
* For **full contents** and more information, visit: **www.routledge.com/9781032077642**

### Blockchain-Enabled Resilience

An Integrated Approach for Disaster Supply Chain and Logistics Management



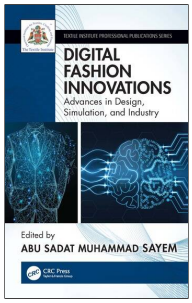

**Polinpapilinho F. Katina** and **Adrian V. Gheorghe**

This book provides a first-of-its-kind approach for managers and policy-makers as well as researchers interested in using blockchain to enhance resilience in disaster supply chains, especially when dealing with dynamic communication, relief operations, prioritization, coordination, and distribution of scarce resources. Practical guidance is provided for managers interested in implementation. A robust research agenda is also provided for those interested in expanding present research.

CRC Press
March 2023: 180pp
Hb: 978-1-032-37150-4: **£74.99**
Pb: 978-1-032-37327-0: **£42.99**
eBook: 978-1-003-33608-2
* For **full contents** and more information, visit: **www.routledge.com/9781032371504**

# INDUSTRIAL & MANUFACTURING ENGINEERING

## Digital Fashion Innovations




Edited by **Abu Sadat Muhammad Sayem**, Manchester Fashion Institute, Manchester Fashion Metropolitan University, UK

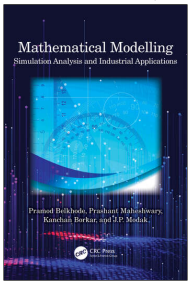
*Series: Textile Institute Professional Publications*

Digitalisation is becoming standard practice within the fashion industry, reinforced by the Covid-19 pandemic. Digital Fashion Innovations captures the state-of-art developments taking place in this multi-disciplinary field. This interdisciplinary book will appeal to professionals working in the area of textile and clothing technology, including fashion and textile technologists, those developing AR and AI for clothing end uses, and anyone interested in the business of digital fashion and textile design. It will also be of interest to scientists and engineers working in anthropometry for a variety of disciplines, such as medical devices and ergonomics.

CRC Press
June 2023: 224pp
Hb: 978-1-032-20729-2: **£170.00**
Pb: 978-1-032-20727-8: **£68.99**
eBook: 978-1-003-26495-8
* For **full contents** and more information, visit: **www.routledge.com/9781032207278**

## Mathematical Modelling

Simulation Analysis and Industrial Applications



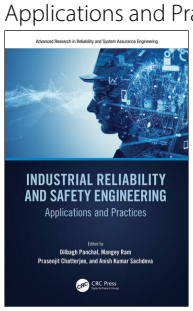

**Pramod Belkhode**, **Prashant Maheshwary**, **Kanchan Borkar** and **J.P. Modak**

This book investigates human-machine systems through the use of case studies such as crankshaft maintenance, liner piston maintenance, and biodiesel blend performance. Through mathematical modelling and using various case studies, the book provides an understanding of how a mathematical modelling approach can assist in working out problems in any industrial-oriented activity. Mathematical Modeling: Simulation Analysis and Industrial Applications details a data analysis approach using mathematical modeling sensitivity

CRC Press
April 2023: 240pp
Hb: 978-1-032-33198-0: **£140.00**
Pb: 978-1-032-33201-7: **£56.99**
eBook: 978-1-003-31869-9
* For **full contents** and more information, visit: **www.routledge.com/9781032331980**

## Industrial Reliability and Safety Engineering

Applications and Practices




Edited by **Dilbagh Panchal**, Dr B R Ambedkar NIT Jalandhar, India, **Mangey Ram**, Graphic Era Uni, India, **Prasenjit Chatterjee**, MCKV Institute of Engineering, Liluah and **Anish Kumar Sachdeva**

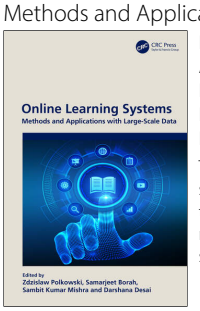
*Series: Advanced Research in Reliability and System Assurance Engineering*

The book provides real-life studies on industrial operations along with solutions. It discusses modelling and optimization of reliability and safety aspects in industry and covers reliability maintenance issues in process industries. The book goes on to present cost optimization, life-cycle costing analysis, and MCDM application for risk and safety analysis.

CRC Press
April 2023: 168pp
Hb: 978-0-367-69031-1: **£89.99**
Pb: 978-0-367-69032-8: **£36.99**
eBook: 978-1-003-14009-2
* For **full contents** and more information, visit: **www.routledge.com/9780367690311**

## Online Learning Systems

Methods and Applications with Large-Scale Data




Edited by **Zdzislaw Polkowski**, Karkonosze State Univ of Appl. Sci., Jelenia Góra, **Samarjeet Borah**, Sikkim Manipal Inst. of Tech., India, **Sambit Kumar Mishra**, Gandhi Inst. for Edu. and Tech., India and **Darshana Desai**, Indira College of Engineering & Management

This book discusses the newest approach to online learning systems in higher education. As e-learning platforms change their mechanisms for data processing and storage, there is a need to move these systems towards being more efficient and smarter.

CRC Press
February 2023: 188pp
Hb: 978-1-032-22508-1: **£99.99**
Pb: 978-1-032-22510-4: **£39.99**
eBook: 978-1-003-27282-3
* For **full contents** and more information, visit: **www.routledge.com/9781032225081**

## Machine Tools

An Industry 4.0 Perspective

Edited by **Wasim Ahmed Khan**, GIK Institute of Engineering Sciences and Technology, Pakistan, **Khalid Rahman**, GIK Institute of Engineering Sciences and Technology, Pakistan, **Ghulam Hussain**, GIK Institute of Engineering Sciences and Technology, Khyber Pakhtoon Khwa? Topi, Pakistan, **Ghulam Abbas**, GIK Institute of Engineering Sciences and Techology, Pakistan and **Xiaoping Wang**

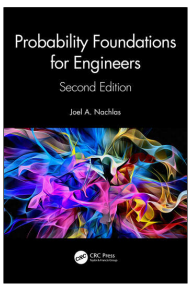
*Series: Computers in Engineering Design and Manufacturing*

This book introduces the applications of Industry 4.0 in machine tools through an overview of the latest available digital technologies. It focuses on the digital twining of machine tools which improves the life of the machines and provides a method of operating a factory during times of complete lockdown. It presents an overview of the communication between industrial controls, motion, and input/output devices through standardized digital interfaces such as SERCOS and USB.

CRC Press
February 2023: 226pp
Hb: 978-1-032-11669-3: **£120.00**
Pb: 978-1-032-11670-9: **£48.99**
eBook: 978-1-003-22098-5
* For **full contents** and more information, visit: **www.routledge.com/9781032116693**

2nd Edition

## Probability Foundations for Engineers




**Joel A. Nachlas**, Virginia Polytechnic Institute and State University, Department of Industrial & Systems Engineering, Blacksburg, USA

*Probability Foundations for Engineers, Second Edition* continues to focus specifically on probability rather than probability and statistics. It offers a conversational presentation rather than theorem/proof and includes examples based on engineering applications as it highlights Excel computations. This new edition presents a review of set theory and updates all descriptions so they are more understandable such as events versus outcomes. Additional new material includes distributions such as beta and lognormal, a section on counting principles for defining probabilities, a section on mixture distributions, and a pair of distribution summary tables.

CRC Press
April 2023: 186pp
Hb: 978-1-032-27848-3: **£110.00**
Pb: 978-1-032-27850-6: **£44.00**
eBook: 978-1-003-29438-2
* For **full contents** and more information, visit: **www.routledge.com/9781032278483**

## INDUSTRIAL & MANUFACTURING ENGINEERING

### Smart Manufacturing

Integrating Transformational Technologies for Competitiveness and Sustainability

**Hebab A. Quazi** and **Scott M. Shemwell**

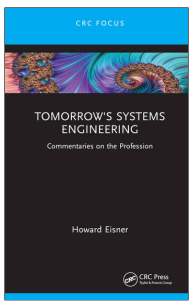
*Series: Commercializing Emerging Technologies*

The manufacturing industries remain the foundation of local, regional, and global economies. Manufacturing plants operate in dynamic markets that demand upgrading with transformational technologies to maintain profitability, competitiveness, and sustainability. Yet most manufacturing plants currently use technologies that are no longer competitive and industry leaders face an overwhelming array of operational challenges that require agile and enhanced transformational solutions. This book offers manufacturers effective strategies and tools for the adoption and implementation of advanced operational technologies to ensure long-term innovation, efficiency, and profitability.

CRC Press
April 2023: 172pp
Hb: 978-0-367-74292-8: **£68.99**
eBook: 978-1-003-15697-0
* For **full contents** and more information, visit: **www.routledge.com/9780367742928**

### Tomorrow's Systems Engineering

Commentaries on the Profession




**Howard Eisner**, Professor Emeritus, The George Washington University

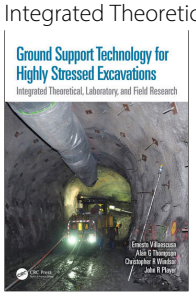
Offering commentaries regarding how the field of systems engineering might evolve over the next couple of decades, this book looks at the potential opportunities that might lie ahead rather than making predictions for the future of the field. The book allows the reader to prepare for the future in terms of technical interest as well as competitiveness and suggests opportunities that could be significant and useful for planning actions in the careers of future systems engineers. Discussions of improvements in how we develop and use software that can help to facilitate and protect overall IT capability within the system design and system architecture are also included.

CRC Press
December 2022: 136pp
Hb: 978-1-032-21622-5: **£44.99**
Pb: 978-1-032-21623-2: **£16.99**
eBook: 978-1-003-26927-4
* For **full contents** and more information, visit: **www.routledge.com/9781032216225**

## MINING ENGINEERING

### Ground Support Technology for Highly Stressed Excavations

Integrated Theoretical, Laboratory, and Field Research




**Ernesto Villaescusa**, WA School of Mines, Australia, **Alan G Thompson**, WA School of Mines, Australia, **Christopher R Windsor** and **John R Player**, MineGeoTech, Perth, Australia

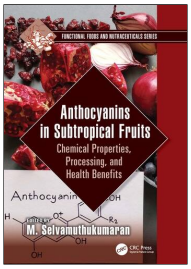
The performance of ground support as a scheme is essential to constrain failures occurring at the rock surfaces of deep or highly stressed excavations. This book covers laboratory and theoretical developments coupled with field experiments and observations with implementation of the methodology at mines. It explains the energy dissipation capabilities of reinforcement and support systems leading to the design of complete ground support schemes that can maintain integrity following dynamic ejection of a mass of rock from an excavation boundary. This book is aimed at professionals in Mining Engineering including civil, geological Engineering, and geotechnical engineering.

CRC Press
April 2023: 442pp
Hb: 978-1-032-39972-0: **£130.00**
Pb: 978-1-032-41360-0: **£52.99**
eBook: 978-1-003-35771-1
* For **full contents** and more information, visit: **www.routledge.com/9781032399720**

## FOOD SCIENCE & CULINARY ARTS

### Anthocyanins in Subtropical Fruits

Chemical Properties, Processing, and Health Benefits



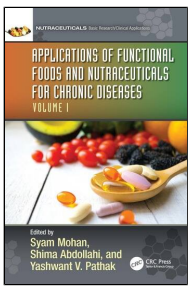

Edited by **M. Selvamuthukumaran**, Institute of Technology, Haramaya University

*Series: Functional Foods and Nutraceuticals*

Anthocyanins, water soluble pigments that exhibit different colors like purple, red, blue depending upon the pH value, are powerful antioxidants known for alleviating several lifestyle diseases. This book describes various anthocyanins sourced from tropical fruits of various continents, addressing their chemical properties, classification and stability during processing and storage. It describes the benefits of using both thermal and non-thermal processing methods for extraction of anthocyanins from various sub-tropical fruits. Further it delves into commercial production methodologies for manufacturing anthocyanins from various sub-tropical fruits. It also addresses regulatory issues.

CRC Press
February 2023: 194pp
Hb: 978-1-032-12795-8: **£155.00**
Pb: 978-1-032-15117-5: **£64.99**
eBook: 978-1-003-24259-8
* For **full contents** and more information, visit: **www.routledge.com/9781032127958**

### Applications of Functional Foods and Nutraceuticals for Chronic Diseases




Edited by **Syam Mohan**, Substance Abuse & Toxicology Research Centre, Jazan University, **Shima Abdollahi** and **Yashwant V. Pathak**, USF College of Pharmacy, USA and Adjunct Professor, Faculty of Pharmacy, Airlangga University, Indonesia

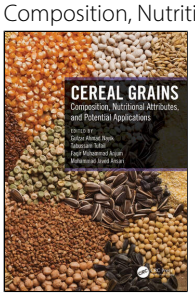
*Series: Nutraceuticals*

This volume collects information on the association between functional and chronic diseases. The burden of growing chronic diseases is discussed in the first chapters, and the remaining chapters summarize the effect of functional foods on a range of chronic diseases.
Contributors hail from different geographical locations around the world and possess many years of research and scholarly experience in functional foods, nutraceuticals, and biology.

CRC Press
February 2023: 436pp
Hb: 978-1-032-07295-1: **£155.00**
Pb: 978-1-032-11477-4: **£64.99**
eBook: 978-1-003-22005-3
* For **full contents** and more information, visit: **www.routledge.com/9781032072951**

### Cereal Grains

Composition, Nutritional Attributes, and Potential Applications




Edited by **Gulzar Ahmad Nayik**, Govt. Degree College, Dept. of Food Science & Technology, India, **Tabussam Tufail**, The University of Lahore, Pakistan, **Faqir Muhammad Anjum** and **Mohammad Javed Ansari**, Department of Botany, Hindu College Moradabad Moradabad, India

Cereal processing represents an important part of the food production chain, but the contribution of cereals to the non-food sector is also significant. Covering both cereal science & technology, this book provides a general view of cereals including their properties, chemical composition, applications, phytochemical profiles, postharvest losses, storage, and quality. Rather than covering the 9 specific grains, the various chapters cover cereal's role in food security, allergens in grains, phytochemical profile, industrial applications, health benefits, global standard of cereals, post harvest losses, and recent advances in cereal processing.

CRC Press
March 2023: 354pp
Hb: 978-1-032-15663-7: **£150.00**
Pb: 978-1-032-17159-3: **£64.99**
eBook: 978-1-003-25202-3
* For **full contents** and more information, visit: **www.routledge.com/9781032156637**

## FOOD SCIENCE & CULINARY ARTS

### Chemical and Functional Properties of Food Components, 4th Edition

Edited by **Hanna Staroszczyk** and **Zdzislaw Edmund Sikorski**, Gdansk University of Technology, Poland

*Series: Chemical & Functional Properties of Food Components*

Through three editions, this book described the contents of food raw materials and products, the chemistry/ biochemistry of food components, as well as the changes occurring during post harvest storage and processing affecting the quality of foods. This new edition contains four new chapters: Non-Protein Nitrogenous Compounds; Prooxidants and Antioxidants in Food; Non-Nutritive Bioactive Compounds in Food of Plant Origin; and Methods Used for Control of the Sensory and Biological Properties of Foods.

CRC Press
May 2023: 576pp
Hb: 978-1-032-19922-1: **£160.00**
Pb: 978-1-032-20922-7: **£64.99**
eBook: 978-1-003-26595-5
* For **full contents** and more information, visit: **www.routledge.com/9781032199221**

### Craft Beers

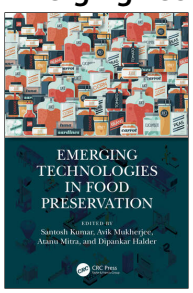
Fortification, Processing, and Production

**Manju Nehra**, **Suresh Kumar Gahlawat** and **Nishant Grover**, Chaudhary Devi Lal University

This book covers the history of beer, compositional analysis, different beer styles, brewing process of craft beers, fortification patterns and nutritional analysis including antioxidant profiles. It explains the fortification of beers, emphasising raw materials, processes and compositional aspects. This book presents detailed literature and our research into selective improvisation of the most popular alcoholic beverage –beer. The alcohol industry continues to grow quickly worldwide – this book provides relevant research literature about the recent studies and experimentation about beers which will be helpful to students, researchers, industrialists, producers, and many others.

CRC Press
March 2023: 178pp
Hb: 978-1-032-27257-3: **£150.00**
Pb: 978-1-032-27256-6: **£52.99**
eBook: 978-1-003-29198-5
* For **full contents** and more information, visit: **www.routledge.com/9781032272566**

### Emerging Technologies in Food Preservation

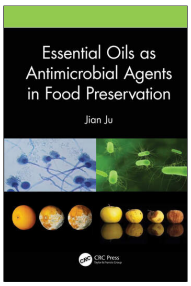



Edited by **Santosh Kumar**, **Avik Mukherjee**, **Atanu Mitra** and **Dipankar Halder**

Unlike other books on emerging food processing technologies that focus on the application to specific food types, this book discusses novel thermal and non-thermal preservation techniques that cater to the emerging consumers' demands for fresh, minimally processed foods, and for foods subjected to least severe preservation and processing.

CRC Press
February 2023: 414pp
Hb: 978-0-367-67515-8: **£155.00**
Pb: 978-0-367-70783-5: **£64.99**
eBook: 978-1-003-14797-8
* For **full contents** and more information, visit: **www.routledge.com/9780367675158**

### Essential Oils as Antimicrobial Agents in Food Preservation



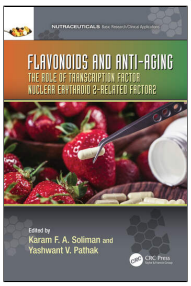

**Jian Ju**

The book discusses how as a natural antimicrobial and antioxidant, essential oil has great potential to be used in the food industry to combat the growth of foodborne pathogens and spoilage microorganisms. But because the essential oil itself has obvious smell and is sensitive to light and heat, it cannot be directly added to the food matrix and thus the application strategies presented in this book explain how to alleviate those issues.

CRC Press
February 2023: 314pp
Hb: 978-1-032-34874-2: **£150.00**
Pb: 978-1-032-35904-5: **£64.99**
eBook: 978-1-003-32926-8
* For **full contents** and more information, visit: **www.routledge.com/9781032348742**

### Flavonoids and Anti-Aging

The Role of Transcription Factor Nuclear Erythroid 2-Related Factor2




Edited by **Karam F.A. Soliman**, Florida A&M University, USA and **Yashwant V. Pathak**, Sullivan University, Louisville, Kentucky, USA

*Series: Nutraceuticals*

Because of their anti-oxidative, anti-inflammatory, anti-mutagenic and anti-carcinogenic properties, flavonoids are an important ingredient in nutraceuticals and functional foods as well as pharmaceuticals. This book is focused on interaction between NRF 2 and flavonoids and their applications in various conditions such as aging, osteoporosis, cardiovascular diseases and neurodegenerative disease and many other areas. This will be a first of its kind approach to understand the flavonoid activation of the transcription of factor NRF 2 which is responsible for many different disease conditions due to increase l Reactive oxidative species in the body due to some physiological triggers.

CRC Press
March 2023: 304pp
Hb: 978-1-032-11373-9: **£150.00**
Pb: 978-1-032-12573-2: **£64.99**
eBook: 978-1-003-22522-5
* For **full contents** and more information, visit: **www.routledge.com/9781032113739**

### Fruits and Their Roles in Nutraceuticals and Functional Foods

Edited by **Sajad Ahmad Wani**, Islamic University of Science and Technology, Kashmir, **Jasmeet Kour**, **Raees-ul Haq** and **Mohamed S. Elshikh**

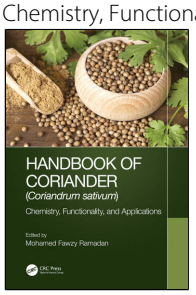
Adequate intake of fruits has been linked with the reduction in the risk of chronic diseases and maintenance of body weight. Fruits are the mature ovary and other allied parts and they possess lot of health promoting bioactive compounds. This book covers recent research related to the bioactive compounds present in the fruits. It presents information concerning the role of fruits in nutraceuticals and functional foods. Novel techniques and methodologies used in the extraction, isolation and identification of bioactive compounds of functional fruits. Covered in this book are apple, pear, mango, pomegranate, papaya, watermelon, pineapple, banana, and orange, among others.

CRC Press
March 2023: 406pp
Hb: 978-1-032-19446-2: **£150.00**
Pb: 978-1-032-19491-2: **£59.99**
eBook: 978-1-003-25921-3
* For **full contents** and more information, visit: **www.routledge.com/9781032194462**

## FOOD SCIENCE & CULINARY ARTS

### Handbook of Coriander (Coriandrum sativum)

Chemistry, Functionality, and Applications




Edited by **Mohamed Fawzy Ramadan**

*Coriandrum sativum* is recommended as a food preservative to replace synthetic antioxidants because of its antioxidant and antibacterial traits. Authored by international scientists and industry experts, this handbook is a great resource for food chemistry, clinical nutrition, biochemistry, pharmacology, and horticulture researchers and students, as well as developers of novel food, cosmetics, and pharmaceuticals. It is a valuable resource for novel food developers and R&D researchers in a variety of fields that use herbs, spices, and medicinal plants.

CRC Press
February 2023: 590pp
Hb: 978-1-032-06852-7: **£140.00**
Pb: 978-1-032-06933-3: **£64.99**
eBook: 978-1-003-20462-6
* For **full contents** and more information, visit: **www.routledge.com/9781032068527**

### Molecular Mechanisms of Action of Functional Foods and Nutraceuticals for Chronic Diseases

Volume II

Edited by **Shima Abdollahi**, **Syam Mohan**, Substance Abuse & Toxicology Research Centre, Jazan University and **Yashwant V. Pathak**, USF College of Pharmacy, USA

*Series: Nutraceuticals*

This book addresses the effects and mechanism of functional foods in relation to chronic diseases such as obesity, cardiovascular diseases, diabetes, cancer, etc. This volume, like its companion, inspires new thought processes and a paradigm shift in research and development. The world's leading wellness centers for chronic diseases are using functional foods and nutraceuticals in their practice and discovering their useful applications, and this second of two related books is another great reference for practitioners, scientists, and clinicians in the management of chronic diseases.

CRC Press
May 2023: 408pp
Hb: 978-1-032-33512-4: **£150.00**
Pb: 978-1-032-35171-1: **£64.99**
eBook: 978-1-003-32564-2
* For **full contents** and more information, visit: **www.routledge.com/9781032335124**

### Handbook of Nanoencapsulation

Preparation, Characterization, Delivery, and Safety of Nutraceutical Nanocomposites

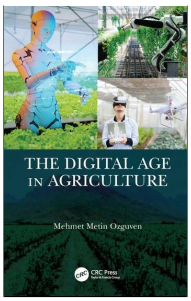
Edited by **Jasmeet Kour**, **Raees-ul Haq**, **Sajad Ahmad Wani**, Islamic University of Science and Technology, Kashmir and **Bhaskar Jyoti**

A promising technique to ensure the stabilization of such labile compounds and to protect the core ingredients from premature reactions and interactions, nanoencapsulation techniques can offer protection and targeted release of various food bioactive ingredients. This book presents a comprehensive look at various nanosystems/nanocarriers, physical and chemical techniques used in encapsulation of various nutraceuticals and the targeted delivery of nutraceutics. It discusses multiple applications of nanoencapsulation techniques used on nutraceuticals derived from plants, animals as well as microalgae.

CRC Press
April 2023: 328pp
Hb: 978-1-032-19438-7: **£140.00**
Pb: 978-1-032-19442-4: **£56.99**
eBook: 978-1-003-25918-3
* For **full contents** and more information, visit: **www.routledge.com/9781032194387**

## AGRICULTURE

### The Digital Age in Agriculture



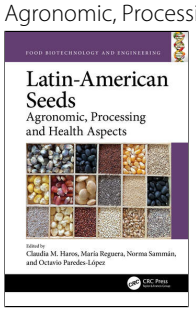

**Mehmet Ozguven**

This book presents information on various topics appealing to the digital age in the agriculture sector. Topics include precision agriculture and livestock farming; using agricultural robots and unmanned arial vehicles in agriculture practices; agriculture 5.0 and the internet of things; image processing and machine vision; data mining, AI, machine learning, and deep learning in agriculture.

CRC Press
February 2023: 306pp
Hb: 978-1-032-38577-8: **£99.99**
Pb: 978-1-032-38580-8: **£42.99**
eBook: 978-1-003-34571-8
* For **full contents** and more information, visit: **www.routledge.com/9781032385808**

### Latin-American Seeds

Agronomic, Processing and Health Aspects




Edited by **Claudia M. Haros**, **María Reguera**, Universidad Autonoma de Madrid, **Norma Sammán**, Facultad de Ingenieria Universidad Nacional de Jujuy and **Octavio Paredes-López**

*Series: Food Biotechnology and Engineering*

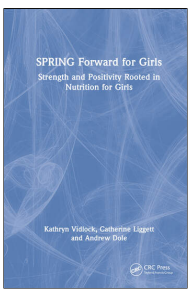
In the last few years, the Latin-American seeds have gained increased importance (also due to the increased demand for gluten-free foods). Worldwide demand for Latin-American seeds and grains has risen in a high proportion. In parallel, seeds and grains´ research from this region in all relevant fields has been intensified. *Latin-American Seeds: Agronomic, Processing and Health Aspects* summarizes the recent research on Latin-American crops regarding agronomic and botanical characteristics, composition, structure, use, production, technology, and impact on human health.

CRC Press
April 2023: 458pp
Hb: 978-0-367-53145-4: **£170.00**
Pb: 978-1-032-36739-2: **£68.99**
eBook: 978-1-003-08842-4
* For **full contents** and more information, visit: **www.routledge.com/9780367531454**

## NUTRITION

### SPRING Forward for Girls

Strength and Positivity Rooted in Nutrition for Girls




**Kathryn Vidlock**, **Catherine Liggett** and **Andrew Dole**

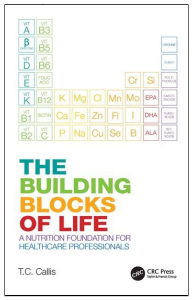
This is a guide for coaches, teachers, parents, and female athletes on how to implement an educational program teaching nutrition for fueling properly, avoidance of disordered eating among female athletes, and promoting mental health through positive body image.

CRC Press
April 2023: 202pp
Hb: 978-1-032-38568-6: **£74.99**
Pb: 978-1-032-38564-8: **£18.99**
eBook: 978-1-003-34565-7
* For **full contents** and more information, visit: **www.routledge.com/9781032385648**

## NUTRITION

### The Building Blocks of Life

A Nutrition Foundation for Healthcare




TC Callis

This book outlines nutrition basics and nutritional issues for primary healthcare practitioners providing potential solutions or support for a range of health concerns.

CRC Press
March 2023: 152pp
Hb: 978-1-032-27112-5: **£150.00**
Pb: 978-1-032-27111-8: **£24.99**
eBook: 978-1-003-29140-4
* For **full contents** and more information, visit: **www.routledge.com/9781032271118**

### Basics of Ramsey Theory

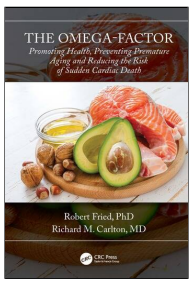
**Veselin Jungić**, Simon Fraser University, Canada

*Basics of Ramsey Theory* serves as a gentle introduction to Ramsey theory for students interested in becoming familiar with a dynamic segment of contemporary mathematics that combines ideas from number theory and combinatorics. The core of the of the book consists of discussions and proofs of the results now universally known as Ramsey's theorem, van der Waerden's theorem, Schur's theorem, Rado's theorem, the Hales–Jewett theorem, and the Happy End Problem of Erdős and Szekeres. The aim is to present these in a manner that will be challenging but enjoyable, and broadly accessible to anyone with a genuine interest in mathematics.

Chapman & Hall
June 2023: 240pp
Hb: 978-1-032-26037-2: **£89.99**
Pb: 978-1-032-26066-2: **£32.99**
eBook: 978-1-003-28637-0
* For **full contents** and more information, visit: **www.routledge.com/9781032260372**

### The Omega-Factor

Promoting Health, Preventing Premature Aging and Reducing the Risk of Sudden Cardiac Death



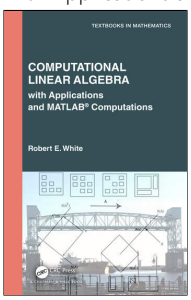

**Robert Fried**, City University of New York-Hunter College and **Richard Carlton**

This book presents evidence-based research on omega-3 and omega-6 fatty acids including clinical trials based on description of their health and longevity-promoting health benefits.

CRC Press
March 2023: 202pp
Hb: 978-1-032-45098-8: **£150.00**
Pb: 978-1-032-40941-2: **£16.99**
eBook: 978-1-003-35546-5
* For **full contents** and more information, visit: **www.routledge.com/9781032409412**

### Computational Linear Algebra

with Applications and MATLAB® Computations




**Robert E. White**, North Carolina State University, Raleigh, USA

*Series: Textbooks in Mathematics*

Courses on linear algebra and numerical analysis need each other. Often NA courses have some linear algebra topics, and LA courses mention some topics from numerical analysis/scientific computing. This text merges these two areas into one introductory undergraduate course. It assumes students have had multivariable calculus. The text has a number of applications. These are to motivate the student to study the linear algebra topics. Also, the text has a number of computations. MATLAB, is used, but one could modify these codes to other programming languages. These are either to simplify some linear algebra computation, or to model a particular application.

Chapman & Hall
March 2023: 288pp
Hb: 978-1-032-30246-1: **£44.99**
eBook: 978-1-003-30412-8
* For **full contents** and more information, visit: **www.routledge.com/9781032302461**

## MATHEMATICS

5th Edition

### An Introduction to Numerical Methods

A MATLAB® Approach

**Abdelwahab Kharab** and **Ronald B. Guenther**

*Series: Chapman & Hall/CRC Numerical Analysis and Scientific Computing Series*

An Introduction to Numerical Methods: A MATLAB® Approach, Fifth Edition continues to offer readers an accessible and practical introduction to numerical analysis. It presents a wide range of algorithms for scientific and engineering applications, using MATLAB to illustrate each numerical method. This edition also includes new chapters on Approximation of Continuous Functions and Dealing with Large Sets of Data. Features include: Covers the most common numerical methods encountered in science and engineering; Ideal as an undergraduate textbook for numerical analysis; Presents numerous examples and exercises, with selected answers provided; Accompanied by downloadable MATLAB code

Chapman & Hall
June 2023: 632pp
Hb: 978-1-032-40682-4: **£125.00**
Pb: 978-1-032-40683-1: **£52.99**
eBook: 978-1-003-35428-4
* For **full contents** and more information, visit: **www.routledge.com/9781032406831**

### Computational Mathematics

An introduction to Numerical Analysis and Scientific Computing with Python

**Dimitrios Mitsotakis**

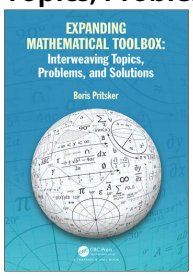
*Series: Advances in Applied Mathematics*

This textbook is a comprehensive introduction to computational mathematics and scientific computing suitable for undergraduate and postgraduate courses. It presents both practical and theoretical aspects of the subject, as well as advantages and pitfalls of classical numerical methods alongside with computer code and experiments in Python. Each chapter closes with modern applications in physics, engineering, and computer science.

Chapman & Hall
June 2023: 532pp
Hb: 978-1-032-26239-0: **£99.99**
Pb: 978-1-032-26240-6: **£39.99**
eBook: 978-1-003-28729-2
* For **full contents** and more information, visit: **www.routledge.com/9781032262390**

MATHEMATICS

## Expanding Mathematical Toolbox: Interweaving Topics, Problems, and Solutions



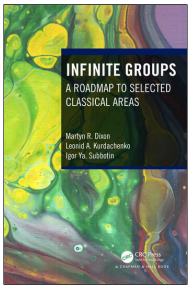

Boris Pritsker

This book offers several topics from different mathematical disciplines and show how closely they are related. The purpose of the book is to direct the attention of readers who have an interest in and talent for mathematics to engaging and thought-provoking problems that should help them change their ways of thinking, entice further exploration, and could lead to independent research and projects in mathematics. With just a few exceptions, in spite of the many problems' challenging character, solutions require no more than a basic knowledge covered in a high school math curriculum.

Chapman & Hall
February 2023: 220pp
Hb: 978-1-032-41738-7: **£120.00**
Pb: 978-1-032-41735-6: **£44.99**
eBook: 978-1-003-35950-0
* For **full contents** and more information, visit: **www.routledge.com/9781032417356**

## Infinite Groups

### A Roadmap to Selected Classical Areas




**Martyn R. Dixon**, **Leonid A. Kurdachenko** and **Igor Ya. Subbotin**

This book covers a broad swath of the theory of infinite groups, without giving proofs, but with all the concepts and auxiliary results necessary for understanding such results. In other words, this book is an extended directory, or a guide, to some of the more established areas of infinite groups.

Features

An excellent resource for a subject formerly lacking an accessible and in-depth reference Suitable for graduate students, PhD students, and researchers working in group theory Introduces the reader to the most important methods, ideas, approaches, and constructions in infinite group theory.

Chapman & Hall
January 2023: 410pp
Hb: 978-0-367-70262-5: **£170.00**
Pb: 978-0-367-70697-5: **£42.99**
eBook: 978-1-003-14757-2
* For **full contents** and more information, visit: **www.routledge.com/9780367702625**

## Foundations of Quantitative Finance: Book III. The Integrals of Riemann, Lebesgue and (Riemann-)Stieltjes

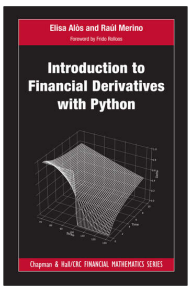
Robert R. Reitano

*Series: Chapman & Hall/CRC Finance Series*

Book III: The Integrals of Lebesgue and (Riemann-) Stieltjes, develops several approaches to an integration theory. The first two approaches were introduced in the Chapter 1 of *Book I* to motivate measure theory. The general theory of integration on measure spaces will be developed in *Book V* , and stochastic integrals then studies on *Book VIII*

Chapman & Hall
May 2023: 290pp
Hb: 978-1-032-20656-1: **£180.00**
Pb: 978-1-032-20654-7: **£68.99**
eBook: 978-1-003-26459-0
* For **full contents** and more information, visit: **www.routledge.com/9781032206547**

## Introduction to Financial Derivatives with Python



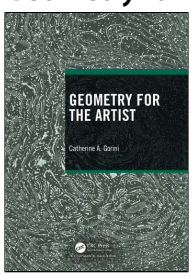

**Elisa Alos**, Universitat Pompeu Frabra, Spain and **Raúl Merino**

*Series: Chapman and Hall/CRC Financial Mathematics Series*

*Introduction to Financial Derivatives with Python* is an ideal textbook for an undergraduate course on derivatives, whether on a finance, economics, or financial mathematics programme. As well as covering all of the essential topics one would expect to be covered, the book also includes the basis of the numerical techniques most used in the financial industry, and their implementation in Python.

Chapman & Hall
December 2022: 252pp
Hb: 978-1-032-21103-9: **£74.99**
Pb: 978-1-032-21105-3: **£42.99**
eBook: 978-1-003-26673-0
* For **full contents** and more information, visit: **www.routledge.com/9781032211039**

## Geometry for the Artist

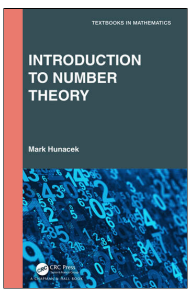



Catherine A. Gorini

This book is aimed both at artists willing to dive deeper into geometry and at mathematicians open to learning about applications of mathematics in art. The book includes topics such as perspective, symmetry, topology, fractals, curves, surfaces, and more. A key part of the book's approach is the analysis of art from a geometric point of view—looking at examples of how artists use each new topic. In addition, exercises encourage students to experiment in their own work with the new ideas presented in each chapter. This book is an exceptional resource for students in a general-education mathematics course or teacher-education geometry course.

Chapman & Hall
May 2023: 256pp
Hb: 978-0-367-62823-9: **£120.00**
Pb: 978-0-367-62825-3: **£44.99**
eBook: 978-1-003-11097-2
* For **full contents** and more information, visit: **www.routledge.com/9780367628253**

## Introduction to Number Theory




Mark Hunacek

*Series: Textbooks in Mathematics*

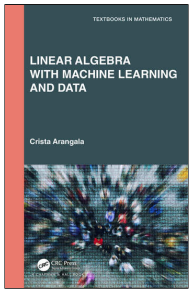
Introduction to Number Theory covers the essential content of an intorductory number theory course. The book employs a versatile approach to the use of algebraic ideas. Instructors who wish to put this material into a broader context may do so, though the author introduces these concepts in a non-essential way.

A final chapter discusses algebraic systems (like the Gaussian integers) presuming no previous exposure to abstract algebra. Studying general systems urges students realize unique factorization into primes is a more subtle idea than may at first appear; students will find this chapter interesting, fun and quite accessible.

Chapman & Hall
February 2023: 160pp
Hb: 978-1-032-33205-5: **£94.99**
Pb: 978-1-032-01720-4: **£38.99**
eBook: 978-1-003-31871-2
* For **full contents** and more information, visit: **www.routledge.com/9781032017204**

# MATHEMATICS

## Linear Algebra With Machine Learning and Data




**Crista Arangala**, Elon University, North Carolina, USA

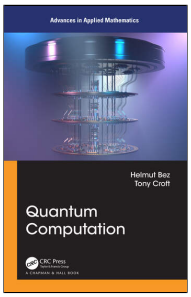
*Series: Textbooks in Mathematics*

This book takes a deep dive into several key linear algebra subjects as they apply to data analytics and data mining. The book offers a case study approach where each case will be grounded in a real-world application.

This text is meant to be used for a second course in applications of Linear Algebra to Data Analytics, with a supplemental chapter on Decision Trees and their applications in regression analysis. The text can be considered in two different but overlapping general data analytics categories, clustering and interpolation.

Chapman & Hall
March 2023: 366pp
Hb: 978-0-367-45839-3: **£74.99**
Pb: 978-1-032-45864-9: **£32.99**
eBook: 978-1-003-02567-2
* For **full contents** and more information, visit: **www.routledge.com/9780367458393**

## Quantum Computation




**Helmut Bez** and **Tony Croft**

*Series: Advances in Applied Mathematics*

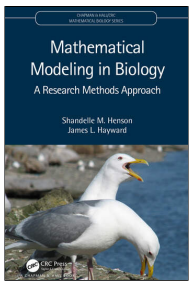
This book presents the mathematics of quantum computation. The purpose is to *introduce* the topic of quantum computing to students in computer science, physics and mathematics who have no prior knowledge of this field.

The book is written in two parts. The primary mathematical topics required for an initial understanding of quantum computation are with in Part I: sets, functions, complex numbers and other relevant mathematical structures from linear and abstract algebra. Part II discusses quantum information, quantum measurement, and quantum algorithms. These topics provide foundations upon which more advanced topics may be approached with confidence.

Chapman & Hall
February 2023: 391pp
Hb: 978-1-032-20648-6: **£74.99**
Pb: 978-1-032-20649-3: **£42.99**
eBook: 978-1-003-26456-9
* For **full contents** and more information, visit: **www.routledge.com/9781032206486**

## Mathematical Modeling in Biology

A Research Methods Approach




**Shandelle M. Henson** and **James L. Hayward**

*Series: Chapman & Hall/CRC Mathematical Biology Series*

This textbook is primarily written for advanced mathematics and science undergraduate students and graduate-level biology students. Although the applications center on ecology, the expertise of the authors, the methodology can be imported to any other science, including social science and economics. The aim of the book, beyond being a useful aid to teaching and learning the core modeling skills needed for mathematical biology, is to encourage students to think deeply and clearly about the meaning of mathematics in science and to learn significant research methods. Most importantly, it is hoped that students will experience some of the excitement of doing research.

Chapman & Hall
February 2023: 338pp
Hb: 978-1-032-20821-3: **£150.00**
Pb: 978-1-032-20694-3: **£59.99**
eBook: 978-1-003-26538-2
* For **full contents** and more information, visit: **www.routledge.com/9781032206943**

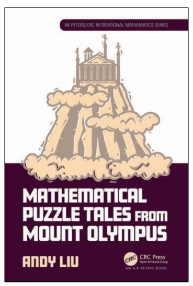
## Stochastic Differential Equations for Science and Engineering

**Uffe Høgsbro Thygesen**

The book describes the mathematical construction of stochastic differential equations with a level of detail suitable to the audience, while also discussing applications to estimation, stability analysis, and control. The book includes numerous examples and challenging exercises. Computational aspects are central to the approach taken in the book, so the text is accompanied by a repository on GitHub containing a toolbox in R which implements algorithms described in the book, code that regenerates all figures, and solutions to exercises.

Chapman & Hall
June 2023: 384pp
Hb: 978-1-032-23217-1: **£89.99**
Pb: 978-1-032-23406-9: **£44.99**
eBook: 978-1-003-27756-9
* For **full contents** and more information, visit: **www.routledge.com/9781032232171**

## Mathematical Puzzle Tales from Mount Olympus




**Andy Liu**, University of Alberta, Canada

*Series: AK Peters/CRC Recreational Mathematics Series*

*Mathematical Puzzle Tales from Mount Olympus* uses fascinating tales from Greek Mythology as the background for introducing mathematics puzzles to the general public. A background in high school mathematics will be ample preparation for using this book, and it should appeal to anyone who enjoys puzzles and recreational mathematics.

Features:

Combines the arts and science, and emphasizes the fact that mathematics straddles both domains. Great resource for students preparing for mathematics competitions, and the trainers of such students.

A K Peters/CRC Press
December 2022: 210pp
Hb: 978-1-032-42454-5: **£56.99**
Pb: 978-1-032-42418-7: **£22.99**
eBook: 978-1-003-36284-5
* For **full contents** and more information, visit: **www.routledge.com/9781032424187**

## Sustainable Life Insurance

Managing Risk Appetite for Insurance Savings and Retirement Products

**Aymeric Kalife**, **Mouti Saad**, **Ludovic Goudenège**, **Tan Xiaolu** and **Mounir Bellmane**

*Series: Chapman and Hall/CRC Financial Mathematics Series*

This book gives an overview of all relevant aspects of traditional and non-traditional savings and retirement products from both insurers' and policyholders' respective risk appetites. Examples of such products include general accounts, whole life, annuities (variable, fixed and fixed indexed, structured), index linked products, CPPI-based products etc.

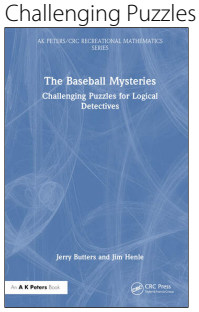
The book contains technical details associated with both practice and theory, specifically related to modelling, product design, investments and risk management challenges and solutions, tailored to both insurers' and policyholders' perspectives.

Chapman & Hall
May 2023: 392pp
Hb: 978-1-032-08155-7: **£89.99**
Pb: 978-1-032-11092-9: **£44.99**
eBook: 978-1-003-21837-1
* For **full contents** and more information, visit: **www.routledge.com/9781032081557**

## MATHEMATICS

### The Baseball Mysteries

Challenging Puzzles for Logical Detectives



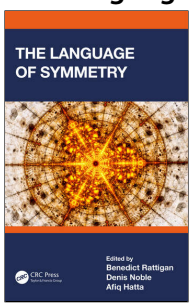

**Jerry Butters** and **Jim Henle**

*Series: AK Peters/CRC Recreational Mathematics Series*

This book contains numerous logical baseball puzzles. To jump in, all you need is logic and a casual fan's knowledge of the game. The puzzles are solved by reasoning from the rules of the game and a few facts. The logic in the puzzles is like legal reasoning. A solution must argue from evidence (the facts) and law (the rules). Unlike legal arguments, however, a solution must reach an unassailable conclusion. The puzzles offer a unique and scintillating connection between abstract logic and gritty reality.

A K Peters/CRC Press
May 2023: 264pp
Hb: 978-1-032-36548-0: **£74.99**
Pb: 978-1-032-36505-3: **£22.99**
eBook: 978-1-003-33260-2
* For **full contents** and more information, visit: **www.routledge.com/9781032365053**

### The Language of Symmetry




Edited by **Benedict Rattigan**, **Denis Noble** and **Afiq Hatta**

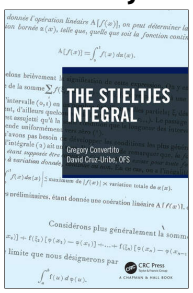
This book is a re-assessment of the structure and reach of symmetry, by an interdisciplinary group of specialists from the arts, humanities, and sciences at Oxford University.

It explores, amongst other topics

order and chaos in the formation of planetary systems entropy and symmetry in particle physics group theory, fractals and self-similarity symmetrical structures in western classical music how biological systems harness disorder to create order

Chapman & Hall
April 2023: 138pp
Hb: 978-1-032-30849-4: **£56.99**
Pb: 978-1-032-30394-9: **£22.99**
eBook: 978-1-003-30698-6
* For **full contents** and more information, visit: **www.routledge.com/9781032303949**

### The Stieltjes Integral




**Gregory Convertito** and **David Cruz-Uribe**

*The Stieltjes Integral* provides a detailed, rigorous treatment of the Stieltjes integral. It offers an accessible treatment of the subject to students who have had a one semester course in analysis. This book is suitable for a second semester course in analysis, and also for independent study or as the foundation for a senior thesis or Masters project.

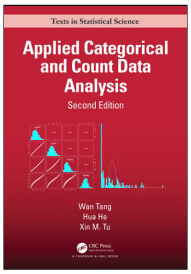
Features:

Written to be rigorous without sacrificing readability. Accessible to undergraduate students who have taken a one-semester course on real analysis. Contains a large number of exercises from routine to challenging.

Chapman & Hall
February 2023: 268pp
Hb: 978-0-815-37400-8: **£74.99**
Pb: 978-1-032-43913-6: **£42.99**
eBook: 978-1-351-24281-3
* For **full contents** and more information, visit: **www.routledge.com/9780815374008**

## PROBABILITY & STATISTICS

### Applied Categorical and Count Data Analysis




**Wan Tang**, Tulane University, New Orleans, LA, **Hua He**, Tulane University and **Xin M. Tu**, University of California-San Diego

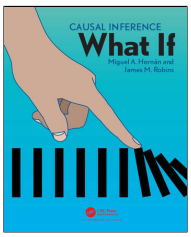
*Series: Chapman & Hall/CRC Texts in Statistical Science*

This second edition explains how to perform the statistical analysis of discrete data, including categorical and count outcomes. It covers classic concepts and popular topics, such as logistic regression models, along with modern areas including models for zero-modified count outcomes. R, SAS, SPSS, and Stata programming codes are provided for all the examples. Designed for a one-semester course for graduate and senior undergraduate students in biostatistics, this self-contained text is also suitable as a self-learning guide for biomedical and psychosocial researchers. It will help readers analyze data with discrete variables in a wide range of research fields.

Chapman & Hall
April 2023: 400pp
Hb: 978-0-367-56827-6: **£74.99**
Pb: 978-0-367-62583-2: **£41.99**
eBook: 978-1-003-10981-5
* For **full contents** and more information, visit: **www.routledge.com/9780367568276**

### Causal Inference

What If

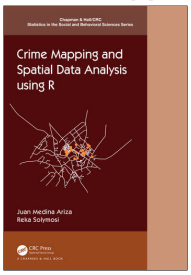



**Miguel A. Hernan**, Harvard School of Public Health, Boston, Massachusetts, USA and **James M. Robins**, Harvard School of Pub Health, Boston, Massachusetts, USA

The application of causal inference methods is growing exponentially in fields that deal with observational data. Written by pioneers in the field, this practical book presents an authoritative yet accessible overview of the methods and applications of causal inference. With a wide range of detailed, worked examples using real epidemiologic data as well as software for replicating the analyses, the text provides a thorough introduction to the basics of the theory for non-time-varying treatments and the generalization to complex longitudinal data.

CRC Press
April 2023: 312pp
Hb: 978-1-420-07616-5: **£36.99**
eBook: 978-1-315-37493-2
* For **full contents** and more information, visit: **www.routledge.com/9781420076165**

### Crime Mapping and Spatial Data Analysis using R




**Juan Medina Ariza** and **Reka Solymosi**

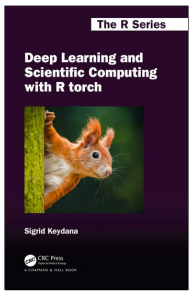
*Series: Chapman & Hall/CRC Statistics in the Social and Behavioral Sciences*

Practical introduction to crime mapping and spatial data analysis using R and R Studio. Crime mapping and analysis of crime problems using spatially explicit data has become a central feature of law enforcement agencies across the world. Criminology degrees have begun to adapt their curriculums to foster the skills required for these jobs.

Chapman & Hall
March 2023: 480pp
Hb: 978-0-367-72469-6: **£74.99**
Pb: 978-0-367-72459-7: **£42.99**
eBook: 978-1-003-15491-4
* For **full contents** and more information, visit: **www.routledge.com/9780367724696**

PROBABILITY & STATISTICS

## Deep Learning and Scientific Computing with R torch



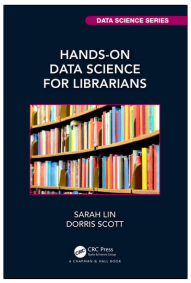

Sigrid Keydana

*Series: Chapman & Hall/CRC The R Series*

This book aims to be useful to (almost) everyone. Its purposes are threefold. To provide a thorough introduction to *torch* basics – by explaining underlying concepts and ideas, *and* showing enough examples for the reader to become "fluent" in *torch*. Byfocusing on conceptual explanation, show how to use *torch* in deep-learning applications, ranging from image recognition over time series prediction to audio classification, and provide a concepts-first, reader-friendly introduction to selected scientific-computation topics (namely, matrix computations, the Discrete Fourier Transform, and wavelets), all accompanied by *torch* code you can play with.

Chapman & Hall
April 2023: 424pp
Hb: 978-1-032-23138-9: **£140.00**
Pb: 978-1-032-23139-6: **£52.99**
eBook: 978-1-003-27592-3
* For **full contents** and more information, visit: **www.routledge.com/9781032231396**

## Hands-On Data Science for Librarians



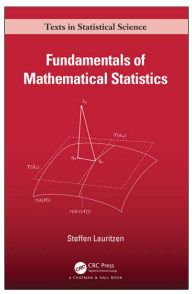

**Sarah Lin**, R Studio and **Dorris Scott**

*Series: Chapman & Hall/CRC Data Science Series*

This book focus on teaching R through relevant examples and skills that librarians need in their day-to-day lives that includes visualizations but goes much further to include web scraping, working with maps, creating interactive reports and machine learning. By walking through each skill and its application to library work before walking the reader through each line of code, this book will support librarians who want to apply data science in their daily work. *Hands-On Data Science for Librarians* is intended for librarians (and other information professionals) in any library type (public, academic or special) as well as graduate students in library and information science.

Chapman & Hall
April 2023: 207pp
Hb: 978-1-032-10999-2: **£140.00**
Pb: 978-1-032-08082-6: **£52.99**
eBook: 978-1-003-21801-2
* For **full contents** and more information, visit: **www.routledge.com/9781032080826**

## Fundamentals of Mathematical Statistics



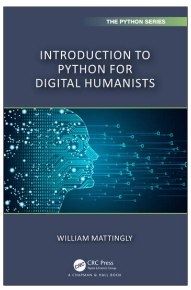

Steffen Lauritzen

*Series: Chapman & Hall/CRC Texts in Statistical Science*

This book is meant for a standard one-semester advanced undergraduate or graduate level course on Mathematical Statistics. It covers all the key topics - statistical models, linear normal models, exponential families, estimation, asymptotics of maximum likelihood, significance testing, and models for tables of counts. It assumes a good background in mathematical analysis, linear algebra, and probability, but includes an appendix with basic results from these areas. Throughout the text, there are numerous examples and graduated exercises that illustrate the topics covered, rendering the book suitable for teaching or self-study.

Chapman & Hall
February 2023: 258pp
Hb: 978-1-032-22382-7: **£74.99**
Pb: 978-1-032-22383-4: **£44.99**
eBook: 978-1-003-27235-9
* For **full contents** and more information, visit: **www.routledge.com/9781032223827**

## Introduction to Python for Humanists



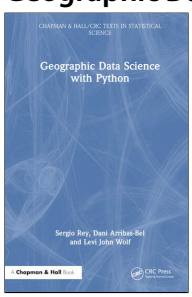

**William Mattingly**

*Series: Chapman & Hall/CRC The Python Series*

This book will introduce digital humanists at all levels of education to Python. It provides background and guidance on learning the Python computer programming language, and as it presumes no knowledge on the part of the reader about computers or coding concepts allows the reader to gradually learn the more complex tasks that are currently popular in the field of digital humanities. This book will be aimed at undergraduates, graduates, and faculty who are interested in learning how to use Python as a tool within their workflow, and will act as a primer for students who wish to use Python, allowing them to engage with more advanced textbooks.

Chapman & Hall
June 2023: 272pp
Hb: 978-1-032-37790-2: **£115.00**
Pb: 978-1-032-37837-4: **£44.99**
eBook: 978-1-003-34217-5
* For **full contents** and more information, visit: **www.routledge.com/9781032378374**

## Geographic Data Science with Python



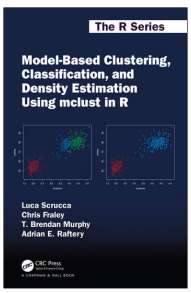

**Sergio Rey**, **Dani Arribas-Bel**, University of Liverpool, Merseyside, United Kingdom and **Levi John Wolf**, School of Geographical Sciences

*Series: Chapman & Hall/CRC Texts in Statistical Science*

This book provides the tools, the methods, and the theory to meet the challenges of contemporary data science applied to geographic problems and data. In the new world of pervasive, large, frequent, and rapid data, there are new opportunities to understand and analyze the role of geography in everyday life. *Geographic Data Science with Python* introduces a new way of thinking about analysis, by using geographical and computational reasoning. Intended for data scientists, GIScientists, and geographers, the material provided in this book is of interest due to the manner in which it presents geospatial data, methods, tools, and practices in this new field.

Chapman & Hall
June 2023: 416pp
Hb: 978-0-367-26311-9: **£130.00**
Pb: 978-1-032-44595-3: **£48.99**
eBook: 978-0-429-29250-7
* For **full contents** and more information, visit: **www.routledge.com/9781032445953**

## Model-Based Clustering, Classification, and Density Estimation Using mclust in R




**Luca Scrucca**, **Chris Fraley**, **T. Brendan Murphy** and **Raftery Adrian E.**

*Series: Chapman & Hall/CRC The R Series*

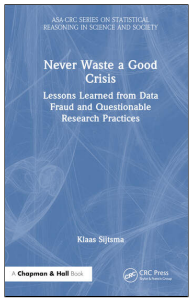
Model-based clustering and classification methods provide a systematic statistical approach to clustering, classification, and density estimation via mixture modeling. The model-based framework allows the problems of choosing or developing methods to be understood within the context of statistical modeling. The mclust package for the statistical environment R is a widely-adopted platform implementing these model-based strategies. The package includes both summary and visual functionality, complementing procedures for estimating and choosing models.

Chapman & Hall
June 2023: 288pp
Hb: 978-1-032-23496-0: **£140.00**
Pb: 978-1-032-23495-3: **£52.99**
eBook: 978-1-003-27796-5
* For **full contents** and more information, visit: **www.routledge.com/9781032234953**

## PROBABILITY & STATISTICS

### Never Waste a Good Crisis

Lessons Learned from Data Fraud and Questionable Research



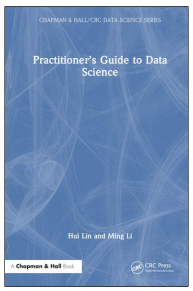

**Klaas Sijtsma**

*Series: ASA-CRC Series on Statistical Reasoning in Science and Society*

This book covers statistical consequences of breaches of research integrity such as fabrication and falsification of data, and researcher glitches summarized as questionable research practices. It discusses how unwarranted data manipulation harms research results and that questionable research practices are often caused by researchers' inadequate mastery of the statistical methods and procedures they use for their data analysis. The author's solution to prevent trustworthiness queries of research results is to publish data in publicly available repositories and encourage researchers to resort to professional support from statisticians or methodologists.

Chapman & Hall
June 2023: 140pp
Hb: 978-1-032-18901-7: **£74.99**
Pb: 978-1-032-18374-9: **£29.99**
eBook: 978-1-003-25684-7
* For **full contents** and more information, visit: **www.routledge.com/9781032183749**

### Practitioner's Guide to Data Science




**Hui Lin** and **Ming Li**

*Series: Chapman & Hall/CRC Data Science Series*

This book aims to increase the visibility of data science in real-world, which differs from what you learn from a typical textbook. Many aspects of day-to-day data science work are almost absent from conventional statistics, machine learning, and data science curriculum. This book is for readers who want to explore possible career paths and eventually become data scientists. This book comprehensively introduces various data science fields, and programming skills in data science projects. Traditional data-related practitioners such as statisticians, business analysts, and data analysts will find this book helpful in expanding their skills for future data science careers.

Chapman & Hall
May 2023: 400pp
Hb: 978-0-815-35447-5: **£140.00**
Pb: 978-0-815-35439-0: **£52.99**
eBook: 978-1-351-13291-6
* For **full contents** and more information, visit: **www.routledge.com/9780815354475**

### Spatial Data Science

With Applications in R

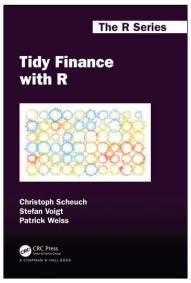
**Edzer Pebesma**, Insititte for Geoinformatics, University of Muenster, Germany and **Roger Bivand**

*Series: Chapman & Hall/CRC The R Series*

This is a book for data scientists with intermediate R knowledge. The book gives a detailed explanation of the core spatial software packages for R: sf for simple feature access, and stars for raster and vector data cubes – array data with spatial and temporal dimensions. It also shows how geometrical operations change when going from a flat space to the surface of a sphere. This is what sf and stars use when coordinates are not projected. Separate chapters detail a variety of plotting approaches for spatial maps using R, and different ways of handling very large vector or raster (imagery) datasets, locally, in databases, or in the cloud.

Chapman & Hall
May 2023: 352pp
Hb: 978-1-138-31118-3: **£74.99**
Pb: 978-1-032-47392-5: **£42.99**
eBook: 978-0-429-45901-6
* For **full contents** and more information, visit: **www.routledge.com/9781138311183**

### Tidy Finance with R




**Christoph Scheuch**, **Stefan Voigt** and **Patrick Weiss**

*Series: Chapman & Hall/CRC The R Series*

This textbook shows how to bring theoretical concepts from finance and econometrics to the data. Focusing on coding and data analysis with R, we show how to conduct research in empirical finance from scratch. We start by introducing the concepts of tidy data and coding principles using the tidyverse family of R packages. The empirical applications range from key concepts of empirical asset pricing to modeling and machine learning applications (fixed effects estimation, clustering standard errors, difference-in-difference estimators, ridge regression, Lasso, Elastic net, random forests, neural networks) and portfolio optimization techniques.

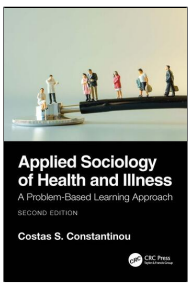
Chapman & Hall
April 2023: 268pp
Hb: 978-1-032-38933-2: **£150.00**
Pb: 978-1-032-38934-9: **£59.99**
* For **full contents** and more information, visit: **www.routledge.com/9781032389349**

## GENERAL MEDICINE

2nd Edition

### Applied Sociology of Health and Illness

A Problem-Based Learning Approach



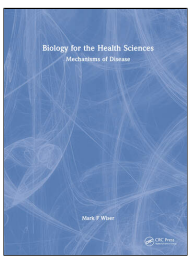

**Costas S. Constantinou**

This popular and accessible text continues to cover the basic principles of the sociology of health and illness in an eminently readable way. This fully revised second edition has been inspired, informed and reviewed by medical students. By creatively employing a problem-based learning approach, the book examines commonly covered topics integrating underlying principles and research findings through real-life stories. The book investigates the relevance of sociology and considers a new direction - one that places sociology in the context of healthcare settings, making the topic more realistic, useful and memorable.

CRC Press
January 2023: 210pp
Hb: 978-1-032-18866-9: **£62.99**
Pb: 978-1-032-18865-2: **£24.99**
eBook: 978-1-003-25668-7
* For **full contents** and more information, visit: **www.routledge.com/9781032188652**

### Biology for the Health Sciences

Mechanisms of Disease




**Mark F Wiser**

Biology is central to our understanding of health and disease and to the development of treatments, so its critical that health professionals have a solid grounding in the pathogenesis and mechanisms of disease processes. This new textbook draws these topics together, providing an accessible introduction across four central disciplines - basic biology, non-infectious disease, infectious disease, and biotechnology.

Enhanced with plentiful illustrations, *Biology for the Health Sciences* is an essential companion for any student of the health sciences and for biological science students studying the causes of disease as part of a wider course.

Garland Science
June 2023: 512pp
Hb: 978-1-032-35726-3: **£125.00**
Pb: 978-0-815-34586-2: **£49.99**
eBook: 978-1-003-32820-9
* For **full contents** and more information, visit: **www.routledge.com/9780815345862**

## GENERAL MEDICINE

2nd Edition

### Every Doctor

Healthier Doctors = Healthier Patients

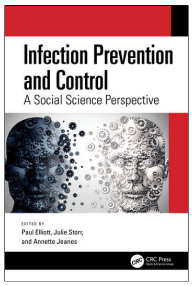
**Leanne Rowe**, Monash University, Australia, **Vihangi Abeygunawardana**, Northern Health, Australia and **Michael Kidd**

The second edition of *Every Doctor* advocates for a transformational change in the way doctors protect their mental health, look out for their colleagues, co-create a kinder, more humane work culture and lead health system reform. Offering practical strategies and real solutions, based both on medical literature and the wisdom of experienced doctors, the new edition reimagines health care.

CRC Press
May 2023: 308pp
Hb: 978-1-032-28434-7: **£48.99**
Pb: 978-1-032-28432-3: **£18.99**
eBook: 978-1-003-29682-9
* For **full contents** and more information, visit: **www.routledge.com/9781032284323**

### Infection Prevention and Control

A Social Science Perspective




Edited by **Paul Elliott**, Canterbury Christ Church University, UK, **Julie Storr**, S3 Global, London and **Annette Jeanes**, Nightingale Hospital, London

An understanding of the social sciences within infection prevention and control (IPC) is important for those working in health and social care. This new book positions the specialty of IPC as more than a technical discipline concerned with microbes. It is about people and their behaviour in context and the book therefore explores a number of relevant social sciences and their relationship to IPC across different contexts and cultures. IPC is relevant to every person who works in, and accesses health care and it remains a global challenge. Exploring novel approaches and perspectives that expand our collective horizons in an ever changing and evolving IPC landscape therefore makes sense.

CRC Press
April 2023: 230pp
Hb: 978-1-032-45944-8: **£89.99**
Pb: 978-1-032-45838-0: **£36.99**
eBook: 978-1-003-37939-3
* For **full contents** and more information, visit: **www.routledge.com/9781032458380**

### Medical Innovation

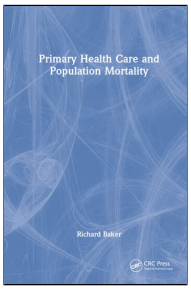
Concepts, Delivery and the Future of Healthcare

Edited by **Rahul Kanegaonkar**, Medway Maritime Hospital, Kent, UK and **James Tysome**, Cambridge University Hospitals, UK

An essential text for innovators, this accessible book explains how medical and healthcare professionals and students who are new to innovation in healthcare can best progress their innovation projects and how those interested in healthcare innovation can develop an improved understanding of novel treatments and developments. The book provides a clear framework for the innovation pathway, describing step-by-step how projects are taken from concept to marketing, and also includes a current assessment of emerging technologies that will influence medical innovation in the future.

CRC Press
February 2023: 260pp
Hb: 978-0-367-75916-2: **£120.00**
Pb: 978-0-367-70300-4: **£46.99**
eBook: 978-1-003-16460-9
* For **full contents** and more information, visit: **www.routledge.com/9780367703004**

### Primary Health Care and Population Mortality




**Richard Baker**

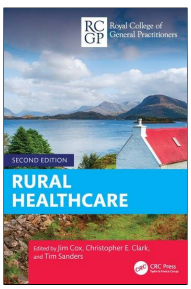
Population health management is being increasingly adopted by health systems yet the importance of primary health care in influencing population mortality and the mechanisms that explain it are not well understood. Too often, primary health care is regarded as a service for minor health problems and for managing access to secondary care. This limited view is no longer tenable and it is time to be much more ambitious about the place of primary health care in health systems worldwide.

*Primary Health Care and Population Mortality* fulfils this need.

CRC Press
March 2023: 228pp
Hb: 978-1-032-40931-3: **£84.99**
Pb: 978-1-032-39737-5: **£34.99**
eBook: 978-1-003-35538-0
* For **full contents** and more information, visit: **www.routledge.com/9781032397375**

2nd Edition

### Rural Healthcare




Edited by **Jim Cox**, **Christopher Clark** and **Tim Sanders**, Uni of Cent Lancashire Westlakes Cam

*Rural Healthcare* was the first textbook of rural medicine in the UK. In this fully revised second edition it continues to fulfil the requirement for a resource dedicated to the particular needs of those living and practising in rural areas. Offering an authoritative, informative, evidence-based, practical reference book, it is required reading for undergraduate and postgraduate students of rural healthcare, a foundation for rural healthcare curriculae and an inspirational read.

It is invaluable for both intending and established rural primary healthcare workers, including general practitioners, nurses, managers and administrators.

CRC Press
March 2023: 270pp
Hb: 978-1-032-29867-2: **£74.99**
Pb: 978-1-032-29866-5: **£29.99**
eBook: 978-1-003-30243-8
* For **full contents** and more information, visit: **www.routledge.com/9781032298665**

4th Edition

### Teaching Made Easy

A Manual for Health Professionals

**Kay Mohanna**, Three Counties Medical School, **David Wall**, **Elizabeth Cottrell**, Wolstanton Med Cent and **Ruth Chambers**, NHS

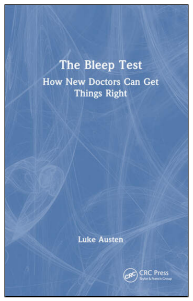
Pitched at an introductory level with an emphasis on practical tips and application of theory, rather than focussing heavily on scholarly research, its content is designed to be relevant and inclusive to all healthcare disciplines. *Teaching Made Easy, 4E* will continue to benefit everyone teaching health professionals at all levels, from general practitioners and hospital doctors, nurses in primary and secondary care, and professionals allied to medicine and health service managers, and will also support the development of colleagues in new roles such as physician associates, FCPs and newer nursing associates.

CRC Press
April 2023: 328pp
Hb: 978-1-032-40328-1: **£89.99**
Pb: 978-1-032-39763-4: **£36.99**
eBook: 978-1-003-35253-2
* For **full contents** and more information, visit: **www.routledge.com/9781032397634**

## GENERAL MEDICINE

### The Bleep Test

How New Doctors Can Get Things Right

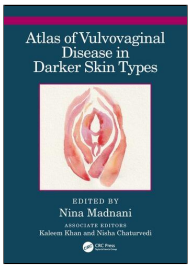



**Luke Austen**, University Hospitals Birmingham, UK

*The Bleep Test* combines gripping and startlingly vulnerable recollections of early experiences on the wards with an array of research findings, from psychology and human biology to anthropology, business and behavioural economics. Acknowledging that the truly complex challenges facing new doctors lie far beyond the realms of the traditional medical sciences in which they were trained, the book explains that the shift to being a doctor depends on first understanding how we think, reason and behave as someone we have been all our lives – a human amongst humans.

CRC Press
May 2023: 248pp
Hb: 978-1-032-42237-4: **£48.99**
Pb: 978-1-032-41490-4: **£12.99**
eBook: 978-1-003-36188-6
* For **full contents** and more information, visit: **www.routledge.com/9781032414904**

### Atlas of Vulvovaginal Disease in Darker Skin Types

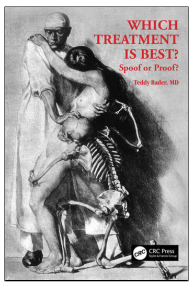



Edited by **Nina Madnani**, P.D. Hinduja National Hospital &MRC, India

There is significant increase in cross migration of women from various ethnicities, cultures, and with varying skin colour. This book is focused on female genital dermatoses and fills in those gaps for healthcare workers dealing with coloured skin types. Provides inclusive and consolidated contents on disorders of female genital skin and mucosa. Features high quality illustrations and impressive treatment algorithms, making it a ready reckoner for dermatologists, gynaecologists, and general physicians. Facilitates diagnosis and further management of vulvar disease in the skin of colour, thus optimizing patient care.

CRC Press
March 2023: 224pp
Hb: 978-1-032-25589-7: **£190.00**
Pb: 978-1-032-25588-0: **£74.99**
eBook: 978-1-003-28411-6
* For **full contents** and more information, visit: **www.routledge.com/9781032255880**

### Which Treatment Is Best? Spoof or Proof?



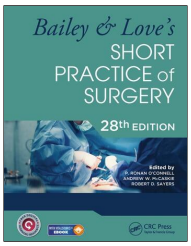

**Teddy Bader**, University of Oklahoma,USA

*Which Medical Treatment is Best? Spoof or Proof?* explains the best scientific evidence for any treatment - the randomized controlled trial. This book begins with rotten humors as the source for all diseases. The reader is guided through serious attempts in history to treat disease, but which now seem amusing. The story ends with the randomized controlled trial and how to interpret it. The text will help students and clinicians understand this universal language of clinical research worldwide.

CRC Press
February 2023: 182pp
Hb: 978-1-032-34834-6: **£56.99**
Pb: 978-1-032-34818-6: **£22.99**
eBook: 978-1-003-32405-8
* For **full contents** and more information, visit: **www.routledge.com/9781032348186**

28th Edition

### Bailey & Love's Short Practice of Surgery




Edited by **P. Ronan O'Connell**, Royal College of Surgeons, Ireland, **Andrew W. McCaskie**, Cambridge Univ. and **Robert D. Sayers**, Leicester Univ.

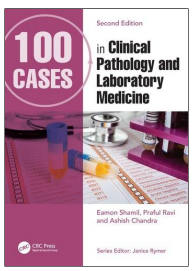
Renowned as a superb and unique collection of surgical knowledge suitable for both undergraduates, postgraduates and professional surgeons. Retains it's celebrated all - embracing coverage of surgery. International authors reflect the curricullum needs of both undergraduate medical students and trainee surgeons. Fully updated and including new developments in the specialties of transplantation, plastic surgery, breast surgery and urologic surgery. Includes free access to the online Bailey & Love Digital Learning Resource which includes MCQs, Advanced Learning Content, and Videos.

CRC Press
March 2023: 1696pp
Hb: 978-0-367-61859-9: **£190.00**
Pb: 978-0-367-54811-7: **£105.00**
eBook: 978-1-003-10685-2
* For **full contents** and more information, visit: **www.routledge.com/9780367548117**

## SPECIALIST MEDICINE

2nd Edition

### 100 Cases in Clinical Pathology and Laboratory Medicine




Edited by **Eamon Shamil**, **Praful Ravi**, Dana-Farber Cancer Inst and **Ashish Chandra**

*Series: 100 Cases*

100 Cases in Clinical Pathology and Laboratory Medicine presents 100 clinical scenarios commonly seen by medical students and junior doctors in the emergency department, outpatient clinic, operating theatre or in general practice. A succinct summary of the patient's history, examination and initial investigations is followed by questions on each case. The answer includes a detailed discussion on each topic, providing an essential revision aid as well as a practical guide for students and junior doctors, especially those preparing for undergraduate and postgraduate examinations.

CRC Press
February 2023: 354pp
Hb: 978-1-032-15139-7: **£74.99**
Pb: 978-1-032-15137-3: **£29.99**
eBook: 978-1-003-24269-7
* For **full contents** and more information, visit: **www.routledge.com/9781032151373**

### Botulinum Toxin in Aesthetic Medicine

Injection Protocols and Complication Management

Edited by **Jani van Loghem**, UMA Institute & Clinic, Amsterdam, Netherlands

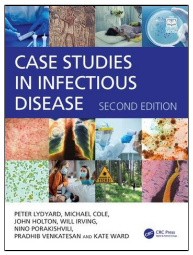
*Series: UMA Academy Series in Aesthetic Medicine*

This practical book is a quick review of the necessary details for safe and effective deployment of botulinum toxins in day-to-day practice, covering basic background information about the products, patient consultation, and treatment preparation, with more emphasis on injection patterns, relevant anatomy, and avoiding and treating complications.

CRC Press
May 2023: 100pp
Hb: 978-1-032-44053-8: **£120.00**
Pb: 978-1-032-44054-5: **£42.99**
eBook: 978-1-003-37018-5
* For **full contents** and more information, visit: **www.routledge.com/9781032440538**

SPECIALIST MEDICINE

## Case Studies in Infectious Disease, 2nd Edition




**Peter Lydyard**, **Michael Cole**, **John Holton**, **Will Irving**, **Nino Porakishvili**, University of Westminster, London, UK, **Pradhib Venkatesan** and **Kate Ward**

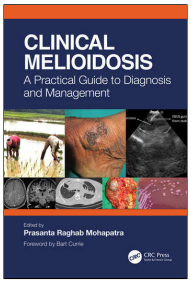
This book presents forty case studies, with a further eight online, featuring the most important human infectious diseases worldwide. Written for students of microbiology and medicine this book describes, through five core sets of questions, the natural history of infection from point of entry of the pathogen through pathogenesis, followed by the clinical presentation, diagnosis and treatment.

This standardised approach provides the reader with a logical basis for understanding these diverse and medically important organisms and diseases, fully integrating microbiology and immunology throughout.

CRC Press
April 2023: 536pp
Hb: 978-0-367-72587-7: **£120.00**
Pb: 978-0-367-69639-9: **£49.99**
eBook: 978-1-003-15544-7
* For **full contents** and more information, visit: **www.routledge.com/9780367696399**

## Clinical Melioidosis

### A Practical Guide to Diagnosis and Management

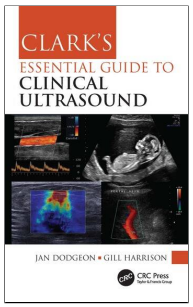



Edited by **Prasanta Raghab Mohapatra**, AIIMS, Bhubaneswar, India

Melioidosis is an endemic tropical disease and is fast becoming an emerging global concern. Its clinical mimicry with several other common diseases has made its diagnosis and treatment difficult. This book identifies a gap in the literature and represents the management and diagnosis of this fatal but curable disease. It provides detailed coverage of its history, epidemiology, the latency of the agent, pathogenesis, manifestations, clinical clues for detection, microbiological diagnosis, treatment, prevention, and environmental aspects. This book is for clinicians, infectious disease specialists, microbiologists, and public health professionals, in countries where melioidosis is endemic.

CRC Press
April 2023: 152pp
Hb: 978-1-032-34828-5: **£110.00**
Pb: 978-1-032-34827-8: **£44.99**
eBook: 978-1-003-32401-0
* For **full contents** and more information, visit: **www.routledge.com/9781032348278**

## Clark's Essential Guide to Clinical Ultrasound




**Jan Dodgeon** and **Gill Harrison**

*Series: Clark's Companion Essential Guides*

This easy-to-understand pocketbook in the highly respected Clark's stable of diagnostic imaging texts is an invaluable tool for students, sonographers and other ultrasound practitioners, providing practical guidance on clinical ultrasound procedures, summarising current relevant literature and professional body guidelines.

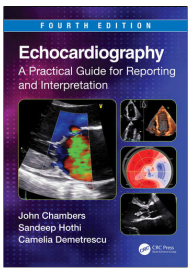
Clark's Essential Guide to Clinical Ultrasound is ideal for all users of clinical ultrasound at both undergraduate and postgraduate level. It provides a convenient distillation of the latest best practice and guidelines for sonographers, vascular technologists, ECG technologists, and other health professionals.

CRC Press
February 2023: 392pp
Hb: 978-0-367-77508-7: **£74.99**
Pb: 978-0-367-77116-4: **£29.99**
eBook: 978-1-003-17170-6
* For **full contents** and more information, visit: **www.routledge.com/9780367771164**

4th Edition

## Echocardiography

### A Practical Guide for Reporting and Interpretation

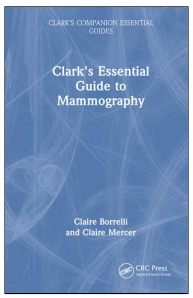



**John Chambers**, Guy's and St Thomas' Hospitals, London, UK, **Sandeep S. Hothi**, University of Birmingham, UK and **Camelia Demetrescu**, Guy's and St Thomas' Hospitals, London, UK

This book sets echocardiography within a routine clinical context. It aims to synthesize guidelines into a pragmatic clinical approach to real patients providing a step-by-step guide to performing, reporting and interpreting a study. Written with the imagination of the calm voice of a senior echocardiographer teaching a junior, this edition has been extensively revised with an expansion of sections on acute, intensive care and emergency medicine. COVID-19 has necessitated limiting exposure of both patient and operator to infection and also caused a huge increase in waiting lists. It also highlights the importance of collaboration between clinicians and echocardiographers.

CRC Press
May 2023: 200pp
Hb: 978-1-032-15160-1: **£125.00**
Pb: 978-1-032-15158-8: **£49.99**
eBook: 978-1-003-24278-9
* For **full contents** and more information, visit: **www.routledge.com/9781032151588**

## Clark's Essential Guide to Mammography




**Claire Borrelli**, Uni of Salford and **Claire Mercer**, St George's Breast Edu Cen

*Series: Clark's Companion Essential Guides*

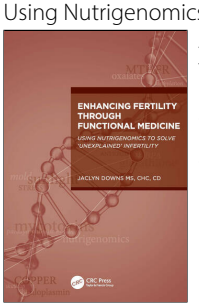
This easy-to-understand pocketbook in the highly respected Clark's stable of imaging texts is an invaluable tool and training aid, providing essential information for mammographic positioning, technique and interpretation for mammography practitioners at all levels.

*Clark's Essential Guide to Mammography* is ideal as an educational tool for trainee mammographers, trainee assistant and associate apprenticeship mammographers, mammography training teams and universities delivering mammography education and a convenient clinical guide for practising mammographers, including assistant and associate apprenticeship mammographers.

CRC Press
July 2023: 124pp
Hb: 978-1-032-03365-5: **£48.99**
Pb: 978-1-032-03362-4: **£18.99**
eBook: 978-1-003-18693-9
* For **full contents** and more information, visit: **www.routledge.com/9781032033624**

## Enhancing Fertility through Functional Medicine

### Using Nutrigenomics to Solve 'Unexplained' Infertility




**Jaclyn Downs**

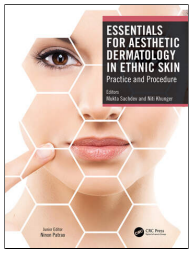
This book reviews lesser known, yet common factors that cause inflammation and oxidative stress that profoundly impact fertility at all stages. It provides actionable content that users can implement immediately to correct root causes of fertility challenges.

CRC Press
March 2023: 216pp
Hb: 978-1-032-37679-0: **£68.99**
Pb: 978-1-032-37677-6: **£38.99**
eBook: 978-1-003-34136-9
* For **full contents** and more information, visit: **www.routledge.com/9781032376776**

SPECIALIST MEDICINE

## Essentials for Aesthetic Dermatology in Ethnic Skin

Practice and Procedure

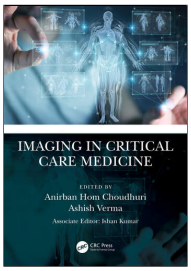



Edited by **Mukta Sachdev**, Manipal Hospitals, Bangalore and **Niti Khunger**, VM Medical College, Safdarjang Hospital, New Delhi, India

This book focusses on creating awareness and detailing the nuances of aesthetic dermatology practice in skin of colour. It highlights practical considerations in pre/intra/post procedure care with emphasis on patient selection for aesthetic procedures and the associated challenges involved in real-time practice. It aims to cater to audiences of countries with both high and low dark skin patient population, as often the clinicians have limited experience in treating this group. Numerous topics are explored through case- based discussions and practical tips. This is a practical ready reference manual for a cosmetic dermatologist dealing with darker skin.

CRC Press
May 2023: 272pp
Hb: 978-0-367-19857-2: **£79.99**
Pb: 978-1-032-46015-4: **£32.99**
eBook: 978-0-429-24376-9
* For **full contents** and more information, visit: **www.routledge.com/9780367198572**

## Imaging in Critical Care Medicine



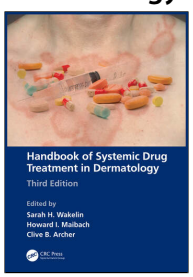

Edited by **Anirban Hom Choudhuri**, GIPMER, ND and **Ashish Verma**, IMS, BHU, Varanasi, India

Imaging in critically ill patients is a ubiquitous but challenging line of investigation for the physician as accurate interpretation is often difficult as patient cooperation during the procedure is grossly compromised, and the resultant image is often suboptimal. This book provides details on principles of imaging and the diagnostic hallmarks of common diseases. It contains guidance to overcome the deficiencies observed during the performance of bedside imaging and equipment handling and addresses the rationale for various procedural/management and imaging approaches. It is a useful companion for most doctors & trainees working in critical care settings.

CRC Press
June 2023: 192pp
Hb: 978-1-032-11178-0: **£150.00**
Pb: 978-1-032-11177-3: **£59.99**
eBook: 978-1-003-21873-9
* For **full contents** and more information, visit: **www.routledge.com/9781032111773**

3rd Edition

## Handbook of Systemic Drug Treatment in Dermatology

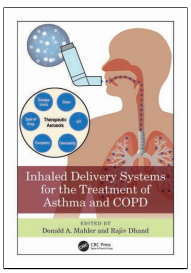



Edited by **Sarah H. Wakelin**, **Howard I. Maibach**, University of California, USA. and **Clive B. Archer**

The Handbook of Systemic Drug Treatment in Dermatology helps prescribers and patients make rational decisions about drug treatment while considering known risks and potential unwanted effects. This third edition includes new classes of drugs as well as information on updated guidelines for prescribing and monitoring established drugs.

CRC Press
February 2023: 304pp
Hb: 978-0-367-86082-0: **£137.98**
Pb: 978-0-367-86081-3: **£68.99**
eBook: 978-1-003-01678-6
* For **full contents** and more information, visit: **www.routledge.com/9780367860813**

## Inhaled Delivery Systems for the Treatment of Asthma and COPD



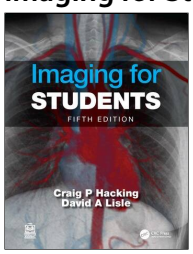

Edited by **Donald A. Mahler**, Geisel School of Medicine, USA and **Rajiv Dhand**, University of Tennessee, USA

Inhaled therapies form the cornerstone for treatment of patients with asthma and COPD. The four different delivery systems -- pressurized metered-dose inhalers, slow mist inhalers, dry powder inhalers, and nebulizers - are unique in design and require distinct inhalational instructions for correct use. This book provides current information about inhalation devices, includes their advantages and disadvantages, with guidance for optimal techniques of use. It emphasizes appropriate selection of inhalation devices based on patient and health care professional factors and device attributes that allow selection of the right medication at the right time for the right patient.

CRC Press
June 2023: 216pp
Hb: 978-1-032-21574-7: **£125.00**
Pb: 978-1-032-21573-0: **£48.99**
eBook: 978-1-003-26901-4
* For **full contents** and more information, visit: **www.routledge.com/9781032215730**

5th Edition

## Imaging for Students

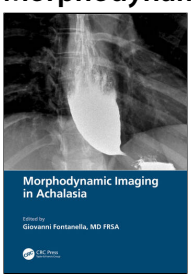



**Craig Hacking**, UQ School of Medicine, Australia and **David Lisle**, Retd., UQ School of Medicine, Australia

Imaging for Students delivers step-by-step guidance to the range of imaging techniques available, providing a clear explanation of how each imaging modality actually works, and including information on the associated risks and hazards. Throughout, the importance of patient preparation and post-procedure observation is emphasized. Taking information from evidence-based studies and published guidelines, in line with current clinical practice, the book takes a highly logical approach to the investigation of clinical scenarios, where possible indicating the "best first test"—vital to both appropriate clinical and cost-effective decision-making.

CRC Press
February 2023: 334pp
Hb: 978-1-032-31751-9: **£94.99**
Pb: 978-1-032-31748-9: **£36.99**
eBook: 978-1-003-31113-3
* For **full contents** and more information, visit: **www.routledge.com/9781032317489**

## Morphodynamic Imaging in Achalasia




Edited by **Giovanni Fontanella**

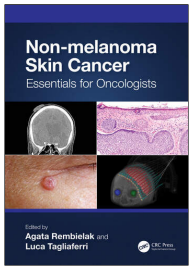
This book approaches the imaging of achalasia with new pathophysiological assumptions in mind, coming from the Chicago Classification of Manometric diagnosis. Using modern x-ray technology, the authors have developed a schematic and simple approach to detection, diagnosis, and patient stadiation and prognostic stratification, for radiologists, clinicians, and students. It serves as a useful guide to structured and comprehensive reporting of barium swallows. The book allows radiologists to comprehensively understand achalasia from anatomic, pathophysiologic, therapeutic points of view and empowers readers to diagnose and define the exact achalasia subtype in each patient.

CRC Press
February 2023: 209pp
Hb: 978-1-032-33585-8: **£110.00**
Pb: 978-1-032-33584-1: **£44.99**
eBook: 978-1-003-32030-2
* For **full contents** and more information, visit: **www.routledge.com/9781032335841**

SPECIALIST MEDICINE

## Non-melanoma Skin Cancer

Essentials for Oncologists

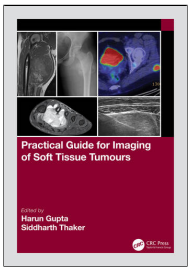



Edited by **Agata Rembielak** and **Luca Tagliaferri**

This book provides a comprehensive introduction to the current state-of-the-art in skin cancer, exploring the recent developments, appraising the current evidence and providing future directions with particular emphasis on interdisciplinary collaboration and need for clinical trials. It covers all aspects of skin cancers, including epidemiology, pathology, surgical and non-surgical treatments.

CRC Press
March 2023: 454pp
Hb: 978-1-032-10371-6: **£150.00**
Pb: 978-1-032-12741-5: **£42.99**
eBook: 978-1-003-22601-7
* For **full contents** and more information, visit: **www.routledge.com/9781032103716**

## Practical Guide for Imaging of Soft Tissue Tumours

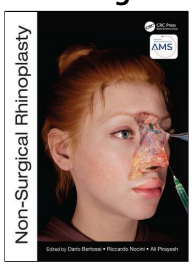



Edited by **Harun Gupta**, Leeds Teaching Hospitals, UK and **Siddharth Thaker**, Manchester University Hospitals, UK

Soft tissue tumours are extremely common although difficult to understand due to a large number of sub-types, leading to a significant increase in their imaging in the last decade. This highly illustrated practical book provides a simplified, systematic approach to imaging, reporting and diagnosing these tumours. It covers all the modalities with emphasis on ultrasound and MRI, along with the newer techniques in these modalities. This concise guide to soft tissue lesions, will help clinicians to quickly understand the spectrum of tumours and identify the appropriate imaging techniques to best serve their patients.

CRC Press
April 2023: 212pp
Hb: 978-1-032-11176-6: **£150.00**
Pb: 978-1-032-11175-9: **£59.99**
eBook: 978-1-003-21872-2
* For **full contents** and more information, visit: **www.routledge.com/9781032111759**

## Non-Surgical Rhinoplasty




Edited by **Dario Bertossi**, Associate Professor in Maxillo Facial Surgery, Italy, **Riccardo Nocini** and **Ali Pirayesh**

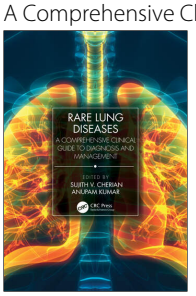
*Series: The PRIME Series*

Plastic surgeons specializing in rhinoplasty will here find an essential resource bringing together the expertise they will need to offer non-invasive techniques in their practice.

CRC Press
February 2023: 163pp
Hb: 978-1-032-30344-4: **£150.00**
Pb: 978-1-032-30345-1: **£42.99**
eBook: 978-1-003-30462-3
* For **full contents** and more information, visit: **www.routledge.com/9781032303444**

## Rare Lung Diseases

A Comprehensive Clinical Guide to Diagnosis and Management



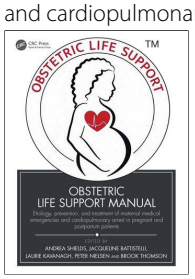

Edited by **Sujith V. Cherian**, University of Texas Health-McGovern Medical School, Houston,Texas, USA and **Anupam Kumar**, Baylor College of Medicine, Houston, Texas, USA

This book aims to be a complete guide to diagnose, manage and treat rare lung diseases encountered by practising pulmonologists and trainees. It extensively covers the "more common" of the rare lung diseases, categorising them based on developmental lung anomalies in adults, airway disorders, diffuse parenchymal lung diseases, neoplasms, rare vascular disorders and other miscellaneous conditions. This comprehensive review facilitates the study and understanding of this complex and diverse set of disorders, focussing on differential diagnosis, evidence-based discussions of management algorithms, and thoughtful analysis of treatment options.

CRC Press
March 2023: 238pp
Hb: 978-0-367-54456-0: **£190.00**
Pb: 978-0-367-54455-3: **£74.99**
eBook: 978-1-003-08938-4
* For **full contents** and more information, visit: **www.routledge.com/9780367544553**

## Obstetric Life Support Manual

Etiology, prevention, and treatment of maternal medical emergencies and cardiopulmonary arrest in pregnant and postpartum patients




Edited by **Andrea Shields**, University of Connecticut Health, USA, **Jacqueline Battistelli**, **Laurie Kavanagh**, **Peter Nielsen** and **Brook Thomson**

This text is a comprehensive review in normal and abnormal pregnancy physiology, the most common etiologies of maternal medical emergencies, recognition of maternal deterioration and pending cardiopulmonary arrest, modifications to cardiopulmonary resuscitation in pregnant and postpartum patients, special procedures that can assist in diagnosing and treating maternal medical emergencies tailored to the setting (e.g., point of care ultrasound, resuscitative cesarean delivery, extracorporeal cardiopulmonary resuscitation), treatment of trauma/stroke in pregnancy, and postpartum maternal medical emergencies.

CRC Press
July 2023: 144pp
Hb: 978-1-032-28953-3: **£115.00**
Pb: 978-1-032-28951-9: **£44.99**
eBook: 978-1-003-29928-8
* For **full contents** and more information, visit: **www.routledge.com/9781032289519**

## Soft Tissue Filler Complications

Prevention and Management

Edited by **Jani van Loghem**, Founder, UMA Institute, Amsterdam, Netherlands and **Philippe Snozzi**, Aesthetic Physician, Smoothline, Zurich, Switzerland

*Series: UMA Academy Series in Aesthetic Medicine*

Complications after injection of soft tissue fillers can have a major impact on the quality of life of the patient. It is therefore essential that injectors are up to date with preventive measures and the management of complications. This succinct guide from an expert centre for training provides both the theoretical background to the most common and serious complications arising from the main types of filler treatments and a complete practical guide to prevention, diagnosis and treatment, with the use of algorithms for clarity.

CRC Press
May 2023: 120pp
Hb: 978-1-032-44046-0: **£120.00**
Pb: 978-1-032-44049-1: **£42.99**
eBook: 978-1-003-37015-4
* For **full contents** and more information, visit: **www.routledge.com/9781032440460**

## SPECIALIST MEDICINE

3rd Edition

### Strelkauskas' Microbiology

**Beatrix Fahnert**, **Phoebe Lostroh** and **Jennifer Strelkauskas**, Practicing Veterinarian, Oregon and Washington, USA

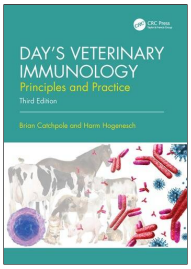
This third edition of this much-celebrated title remains a comprehensive introductory textbook written specifically for pre-nursing, nursing and allied health students. Clinically relevant throughout, it uses the theme of infection as its foundation, fitting closely with the 'One Health' approach. It has been thoroughly revised and updated to reflect the latest developments, including the emergence of the SARS-CoV-2 virus and associated COVID-19 pandemic. The book is accompanied by a robust instructor ancillary package including downloadable figures for use in lectures, and includes additional materials for students to supplement classroom learning.

Garland Science
July 2023: 720pp
Hb: 978-1-032-04369-2: **£130.00**
Pb: 978-1-032-04347-0: **£54.99**
eBook: 978-1-003-19167-4
* For **full contents** and more information, visit: **www.routledge.com/9781032043470**

3rd Edition

### Day's Veterinary Immunology

Principles and Practice




**Brian Catchpole**, Royal Vet College and **Harm HogenEsch**, Purdue Univ.

Michael Day's *Veterinary Immunology: Principles and Practice* is the adopted text in numerous veterinary schools throughout the world. Updated and revised by Brian Catchpole and Harm HogenEsch with advances in knowledge since 2014, this third edition reflects the rapid developments in the field internationally, while preserving the strengths of Day's original writing. It adds numerous case studies demonstrating the clinical context across companion and farm animals. Animations hosted online add a new element of practical application.

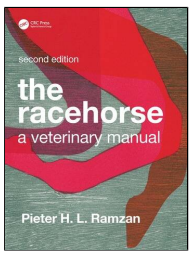
CRC Press
April 2023: 448pp
Hb: 978-1-032-31717-5: **£130.00**
Pb: 978-1-032-31716-8: **£49.99**
eBook: 978-1-003-31096-9
* For **full contents** and more information, visit: **www.routledge.com/9781032317168**

## VETERINARY MEDICINE

2nd Edition

### The Racehorse

A Veterinary Manual



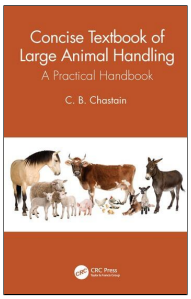

**Pieter H. L. Ramzan**, Rossdales Veterinary Surgeons

This has become the definitive text for primary care of the Thoroughbred racehorse. Written by one of the world's leading racehorse veterinary clinicians, it sets out best practice standards of diagnosis and management of all the major conditions likely to be encountered in racehorse clinical practice, as well as comprehensively reviewing subjects as diverse as pre-purchase assessment and exercise physiology. This second edition has been thoroughly updated and introduces new chapters on a range of topics from injury risk assessment to electrolyte and fluid therapy.

CRC Press
June 2023: 392pp
Hb: 978-0-367-42831-0: **£150.00**
Pb: 978-1-032-47983-5: **£59.99**
eBook: 978-1-003-00384-7
* For **full contents** and more information, visit: **www.routledge.com/9780367428310**

### Concise Textbook of Large Animal Handling

A Practical Handbook



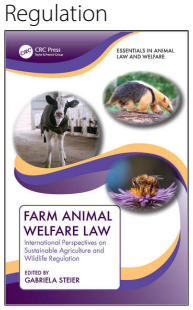

**C. B. Chastain**, Univ. of Missouri, College of Veterinary Medicine, Columbia, USA

This concise, instructional guide condenses the most important aspects of large animal handling. It provides a portable, durable, beside-the-animal means of learning, as well as a convenient way to refresh on safety and efficacy in animal handling techniques. The text covers handler and animal safety, sanitation, approach and capture, routine handling and release, handling for medical procedures and use of restraint equipment. Important reading for undergraduate veterinary students on EMS rotations, as well as practicing veterinarians, technicians and assistants, the book covers species encountered in farm, equine and laboratory settings.

CRC Press
May 2023: 256pp
Hb: 978-0-367-62812-3: **£94.99**
Pb: 978-0-367-62809-3: **£38.99**
eBook: 978-1-003-11091-0
* For **full contents** and more information, visit: **www.routledge.com/9780367628093**

### Farm Animal Welfare Law

International Perspectives on Sustainable Agriculture and Wildlife Regulation




Edited by **Gabriela Steier**, Northeastern Univ.

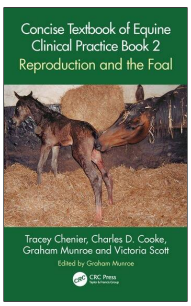
*Series: Essentials in Animal Law and Welfare*

Introducing the various aspects of international farm animal protection and wildlife conservation through the lenses of food safety and environmental protection law, *Farm Animal Welfare Law* provides a primer for law school courses and masters' programs, for practitioners, advocates, and animal enthusiasts alike. Animal welfare and biodiversity conservation sit at the core of the selected chapters, each one providing real-world examples to make the complex field easy to understand. Current developments including food safety modernization, block chain, and COVID-19 considerations, are addressed head-on.

CRC Press
May 2023: 328pp
Hb: 978-0-367-68477-8: **£94.99**
Pb: 978-0-367-68476-1: **£38.99**
eBook: 978-1-003-13773-3
* For **full contents** and more information, visit: **www.routledge.com/9780367684761**

### Concise Textbook of Equine Clinical Practice Book 2

Reproduction and the Foal




**Tracey Chenier**, Ontario Vet. College, **Charles D. Cooke**, Equine Reproductive Services, **Graham Munroe**, Cambridge Veterinary School and **Victoria Scott**, Univ. of Glasgow

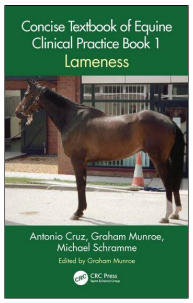
This concise, practical text covers the essential information veterinary students, new graduates and practitioners need to succeed in Equine practice, focussing on reproduction. Written for an international readership, the book conveys the core information in an easily digestible, precise form with extensive use of bullet-points, lists, diagrams, protocols and extensive illustrations. Part of a four-book series that extracts and updates key information from Munroe's *Equine Surgery, Reproduction and Medicine, Second Edition,* the book distils best practice in a logical straightforward clinical-based approach. The spiralbound format allows the book to lie open during practice.

CRC Press
July 2023: 208pp
Hb: 978-1-032-47982-8: **£130.00**
Pb: 978-1-032-06618-9: **£49.99**
eBook: 978-1-003-38683-4
* For **full contents** and more information, visit: **www.routledge.com/9781032066189**

## VETERINARY MEDICINE

### Concise Textbook of Equine Clinical Practice Book 1

Lameness




**Antonio Cruz**, Royal College of Vet. Surgeons, **Graham Munroe**, Cambridge Veterinary School and **Michael Schramme**, Royal College of Vet. Surgeons

This concise, practical text covers the essential information veterinary students need to succeed in Equine practice, focussing on lameness. Written for an international readership, the book conveys the core information in an easily digestible, precise form with extensive use of bullet-points, lists, protocols and extensive illustration (over 650 full colour, high quality photographs and radiographs). Part of a fur-book series that extracts key information from Munroe's *Equine Surgery, Reproduction and Medicine,* the book distils best practice in a logical clinical-based approach. The spiralbound format allows the book to lie open during practice.

CRC Press
July 2023: 440pp
Hb: 978-1-032-43886-3: **£130.00**
Pb: 978-1-032-06614-1: **£49.99**
eBook: 978-1-003-36922-6
* For **full contents** and more information, visit: **www.routledge.com/9781032066141**

### Aromatic and Medicinal Plants of Drylands and Deserts

Ecology, Ethnobiology, and Potential Uses

Edited by **David Ramiro Aguillón Gutiérrez**, **Cristian Torres León**, Universidad Autónoma de Coahuila, Mexico and **Jorge Alejandro Aguirre Joya**, Universidad Autónoma de Coahuila, Mexico

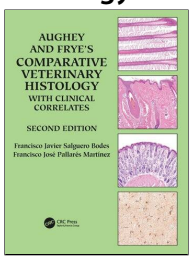
*Series: Exploring Medicinal Plants*

The description and analysis of the Mexican and other countries desertic plants from the point of view of their use in traditional medicine and their potential use in integrative medicine is the overall theme of this book. The book represents an effort to keep the ethnobiological knowledge of communities for the use of traditional desertic plants with the actual analytical techniques to unveil the chemical molecules responsible of the biological or biomedical applications.

CRC Press
May 2023: 304pp
Hb: 978-1-032-16972-9: **£150.00**
Pb: 978-1-032-16980-4: **£64.99**
eBook: 978-1-003-25125-5
* For **full contents** and more information, visit: **www.routledge.com/9781032169729**

2nd Edition

### Aughey and Frye's Comparative Veterinary Histology with Clinical Correlates




**Francisco Javier Salguero Bodes**, Public Health England and **Francisco Jose Pallares Martinez**, Murcia Univ.

Organized by body system, the new edition of this highly illustrated textbook covers the normal histological appearance of tissues in a wide range of animals, with relevant clinical correlates emphasizing the need to appreciate the normal in order to recognize the abnormal. In this update by two experienced veterinary pathologists and histology lecturers, new species, such as other companion mammals, aquatic species and livestock, are introduced into each chapter along with a wealth of new high-quality images. A new chapter covers epitehlial tissue and new techniques used in histology and histopathology are discussed throughout, including ISH and digital image analysis.

CRC Press
April 2023: 268pp
Hb: 978-1-032-36797-2: **£140.00**
Pb: 978-1-032-36448-3: **£52.99**
eBook: 978-1-003-33380-7
* For **full contents** and more information, visit: **www.routledge.com/9781032364483**

### Biology Trending

A Contemporary Issues Approach

**Eli Minkoff**, Bates College, US and **Jennifer K. Hood-DeGrenier**, Worcester State University

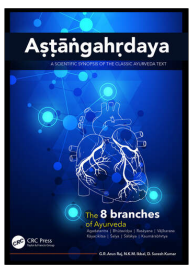
*Biology Trending* is a truly innovative introductory biology text. Designed to combine the teaching of biological concepts within the context of current societal issues, *Biology Trending* encourages introductory biology students to think critically about the role that science plays in their world. To support teaching and learning, the book is accompanied by a range of digital Instructor and Student Resources, such as questions for self-testing, visual simulations to demonstrate key processes, and for instructors, time-saving resources such as PowerPoint slides and a comprehensive lesson plan.

CRC Press
July 2023: 740pp
Hb: 978-1-032-48858-5: **£190.00**
Pb: 978-1-032-48804-2: **£74.99**
eBook: 978-1-003-39115-9
* For **full contents** and more information, visit: **www.routledge.com/9781032488042**

## BIOLOGY & LIFE SCIENCE

### Astangahrdaya

A Scientific Synopsis of the Classic Ayurveda Text




**G.R. Arun Raj**, **N.K.M. Ikbal** and **D. Suresh Kumar**

In eight comprehensive chapters, this book presents a lucid summary of the teachings of the human body, basic principles of Ayurveda, surgical armamentarium, diagnosis and treatment of diseases, herbs and other medicinal substances used in the preparation of various dosage forms, ayurvedic pharmaceutics, ayurvedic approach to food fortification.

CRC Press
February 2023: 288pp
Hb: 978-0-367-70868-9: **£150.00**
Pb: 978-0-367-68572-0: **£68.99**
eBook: 978-1-003-14829-6
* For **full contents** and more information, visit: **www.routledge.com/9780367685720**

### Biotechnology for Toxicity Remediation and Environmental Sustainability

Edited by **K. M. Gothandam**, **Ramachandran Srinivasan**, **Shivendu Ranjan**, Nano-food Research Group, India and **Nandita Dasgupta**, Nano-food Research Group, VIT University, India

This book discusses the removal of pollutants by absorption techniques and recycling wastewater into valuable by-products and biofuels by microorganisms. Moreover, this book also addresses corrosion prevention by green inhibitors, uses electrochemical systems for renewable energy and waste recycling using microbes, and recent food safety and security trends in the food microbiome. On the other hand, this book also discusses therapy and treatments against antibiotic-resistant bacteria, anti-cancer and pharmacological properties of thymoquinone and preventive properties of zinc nanoparticles against stress-mediated apoptosis in epithelial cells.

CRC Press
February 2023: 297pp
Hb: 978-1-032-31923-0: **£150.00**
Pb: 978-1-032-32019-9: **£64.99**
eBook: 978-1-003-31239-0
* For **full contents** and more information, visit: **www.routledge.com/9781032319230**

BIOLOGY & LIFE SCIENCE

## Chinese Medicine for Upper Body Pain

Benjamin Apichai

*Chinese Medicine for Upper Body Pain* further explores other pain management options, introducing treatments such as acupuncture, herbal medicine, and Tui Na (Chinese bodywork). This book provides concise explanations in terms of anatomy, pathology, and etiology for both Western and Chinese medicine, and also provides selfcare instructions that are effective and easy to follow.

This book is suitable for healthcare practitioners and students of Chinese medicine practices as well as patients who want to better understand and mitigate their pain.

CRC Press
May 2023: 416pp
Hb: 978-1-032-06601-1: **£180.00**
Pb: 978-1-032-06600-4: **£68.99**
eBook: 978-1-003-20301-8
* For **full contents** and more information, visit: **www.routledge.com/9781032066004**

## Hox Modules in Evolution and Development

Edited by **David E. K. Ferrier**

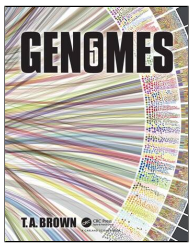
*Series: Evolutionary Cell Biology*

Few, if any, genes have had the same level of impact on the field of evolutionary-developmental biology (evo-devo) as the Hox genes. These genes are renowned for their roles in patterning the body plans and development of the animal kingdom. This is complemented by the distinctive organisation of these genes in the genome, with them frequently being found as clusters in which gene position is linked to when and where the individual genes are expressed, particularly during embryogenesis. This book provides the latest overviews of Hox gene organisation and function for major clades of animals from across the animal kingdom.

CRC Press
March 2023: 216pp
Hb: 978-0-367-52258-2: **£89.99**
Pb: 978-0-367-52260-5: **£39.99**
eBook: 978-1-003-05721-5
* For **full contents** and more information, visit: **www.routledge.com/9780367522582**

5th Edition

## Genomes 5




Terry A. Brown

*Genomes 5* has been rigorously updated. It is a thoroughly modern textbook about genomes and how they are investigated. As with previous editions, techniques come first, then genome anatomies, followed by genome function, and finally genome evolution. The genomes of all types of organism are covered: viruses, bacteria, fungi, plants, and animals including humans.

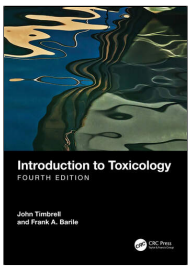
Genome sequencing and assembly methods have been thoroughly revised including a survey of four genome projects: human, Neanderthal, giant panda, and barley to include new developments in long-read DNA sequencing.

This is the ideal text for upper-level courses focused on genomes and genomics.

CRC Press
March 2023: 560pp
Hb: 978-0-367-67866-1: **£150.00**
Pb: 978-0-367-67407-6: **£64.99**
eBook: 978-1-003-13316-2
* For **full contents** and more information, visit: **www.routledge.com/9780367674076**

4th Edition

## Introduction to Toxicology




John Timbrell and Frank A. Barile

The book begins with basic toxicological principles, including an historical summary, dose-response relationships (NEW chapter), exposure-response relationships (NEW chapter), disposition, and metabolism of xenobiotic toxic substances. Other important new chapters include target organ toxicity, toxicity of carcinogenic agents and new and updated concepts in toxicity testing, and antidotes and treatment of poisonings.

This latest edition is an invaluable resource for undergraduate and graduate toxicology students, as well as an introductory text for other health care students and professionals. It also functions as a comprehensive introductory reference text.

CRC Press
February 2023: 316pp
Hb: 978-1-032-03699-1: **£150.00**
Pb: 978-1-032-03692-2: **£59.99**
eBook: 978-1-003-18857-5
* For **full contents** and more information, visit: **www.routledge.com/9781032036922**

7th Edition

## Hayes' Principles and Methods in Toxicology

Edited by **A. Wallace Hayes** and **Tetyana Kobets**, New York Medical College, New York, USA

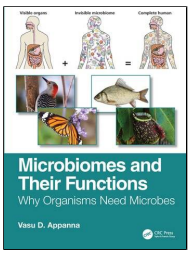
This book has long been established as a reliable and informative reference for the concepts, methodologies, and assessments integral to toxicology. The new edition contains updated and new chapters with the addition of new authors while maintaining the same high standards that have made this book a benchmark resource in the field.

The volume is divided into 4 major sections, addressing fundamental principles of toxicology, major classes of established chemical hazards, current methods used for the assessment of various endpoints indicative of chemical toxicity, as well as toxicology of specific target systems and organs.

CRC Press
April 2023: 2032pp
Hb: 978-1-032-46708-5: **£180.00**
Pb: 978-1-032-46709-2: **£69.99**
eBook: 978-1-003-39000-8
* For **full contents** and more information, visit: **www.routledge.com/9781032467085**

## Microbiomes and Their Functions

Why Organisms Need Microbes




Vasu D. Appanna

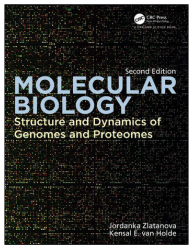
This book provides a fundamental understanding of the importance of the microbiome in the life of virtually all multicellular organisms. It explains why microbes are an integral part of living organisms and describes the diverse roles they perform for their hosts. Researchers and professionals probing microbial interactions with living organisms will find this book interesting and enriching.

CRC Press
January 2023: 256pp
Hb: 978-0-367-76333-6: **£149.99**
Pb: 978-0-367-74989-7: **£59.99**
eBook: 978-1-003-16648-1
* For **full contents** and more information, visit: **www.routledge.com/9780367749897**

BIOLOGY & LIFE SCIENCE

## Molecular Biology, 2nd Edition

Structure and Dynamics of Genomes and Proteomes



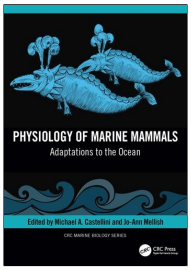

**Jordanka Zlatanova**, Department of Molecular Biology, University of Wyoming

*Molecular Biology: Structure and Dynamics of Genomes and Proteomes* 2nd edition illustrates the essential principles behind the transmission and expression of genetic information at the level of DNA, RNA, and proteins. Emphasis is on the experimental basis of discovery and the most recent advances in the field while presenting a rigorous, yet concise, summary of the structural mechanisms of molecular biology. Topics new to this edition include the CRISPR-Cas gene editing system, coronaviruses, and newly-recognised mechanisms for transcription termination. The text is written for advanced undergraduate or graduate-level courses in molecular biology.

Garland Science
March 2023: 732pp
Hb: 978-0-367-67408-3: **£160.00**
Pb: 978-0-367-67809-8: **£64.99**
eBook: 978-1-003-13292-9
* For **full contents** and more information, visit: **www.routledge.com/9780367678098**

## Physiology of Marine Mammals

Adaptations to the Ocean




Edited by **Michael Castellini**, Univ. of Alaska, Fairbanks and **Jo-Ann Mellish**, North Pacific Research Board, USA

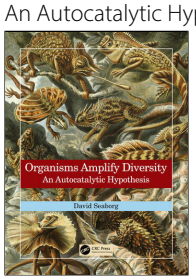
*Series: CRC Marine Biology Series*

This unique undergraduate textbook considers what makes a marine mammal different from terrestrial mammals, focusing on the physiological and biochemical characteristics that have allowed this group of mammals to effectively exploit the hostile marine environment. The contents are organised around common student questions such as " How do mammals stay warm in a cold ocean?" while each chapter provides a set of PowerPoint slides for instructors to use in teaching. Study Questions and Future Implications points conclude each chapter, while full-colour images and comprehensive, accessible content make this the definitive textbook for marine mammal physiology.

CRC Press
May 2023: 432pp
Hb: 978-1-032-28570-2: **£130.00**
Pb: 978-1-032-28560-3: **£49.99**
eBook: 978-1-003-29746-8
* For **full contents** and more information, visit: **www.routledge.com/9781032285603**

## Organisms Amplify Diversity

An Autocatalytic Hypothesis

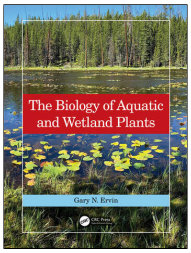



**David Seaborg**

This book presents a hypothesis and evidence that organisms promote and ecosystems maximize biodiversity. All species have a net positive effect on their environment, other species, and diversity. No species evolves in isolation, and most evolution is coevolution. The nature and number of links between species are as important as species number. Eukaryotes coevolve with complex ecosystems of microbes with which they exchange genes. Genomes and intraspecific interactions both act to promote evolution and diversification. Viruses increase diversity of their hosts and cause macroevolutionary transitions.

CRC Press
May 2023: 254pp
Hb: 978-1-032-15802-0: **£170.00**
Pb: 978-1-032-15993-5: **£68.99**
eBook: 978-1-003-24664-0
* For **full contents** and more information, visit: **www.routledge.com/9781032158020**

## The Biology of Aquatic and Wetland Plants



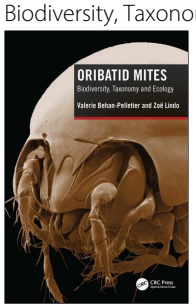

**Gary N. Ervin**, Mississippi State University, USA

Aquatic plants play a critically important role in maintaining ecosystem health. *The Biology of Aquatic and Wetland Plants* is a thorough and up-to-date textbook devoted to these plants and their interactions with the environment. The focus is on botanical diversity from the perspective of evolutionary relationships, emphasizing the role of evolution in shaping adaptations to the aquatic environment. By incorporating recent findings on the phylogeny of green plants, with special emphasis on the angiosperms, the text is broadly useful for courses in plant biology, physiology, and ecology.

CRC Press
April 2023: 312pp
Hb: 978-1-482-23204-2: **£120.00**
Pb: 978-1-032-46539-5: **£52.99**
eBook: 978-1-315-15683-5
* For **full contents** and more information, visit: **www.routledge.com/9781032465395**

## Oribatid Mites

Biodiversity, Taxonomy and Ecology

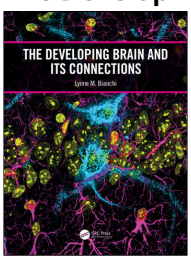



**Valerie Behan-Pelletier**, Canadian National Collection of Insects, Arachnids, Nematodes, Ontario and **Zoë Lindo**, University of Western Ontario

Oribatid mites, also called beetle or moss mites, include more than 10,000 named species representing 172 families worldwide. This book provides an identification key to the 96 families, 250 genera and the c.580 described species for Canada and Alaska, a fauna that encompasses more than 50% of northern Hemisphere genera. It includes known data on the ecology of species, their distribution in the Holarctic region, and relevant literature. *Oribatid Mites* is unparalleled in the comprehensive nature of the information provided.

CRC Press
January 2023: 508pp
Hb: 978-1-032-10293-1: **£99.99**
Pb: 978-1-032-10294-8: **£36.99**
eBook: 978-1-003-21464-9
* For **full contents** and more information, visit: **www.routledge.com/9781032102931**

## The Developing Brain and its Connections



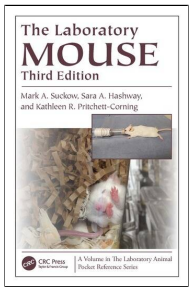

**Lynne M. Bianchi**

This text tells of the extraordinary processes of neural development by showing how the scientific discoveries were made and how the hypotheses evolved over time. Each chapter explores the specific mechanisms of development while highlighting the key experiments and methods used to make those discoveries—including descriptions of both invertebrate and vertebrate animal models. Discussions of neurodevelopmental disorders and therapeutic approaches to them will captivate those interested in the more clinical aspects of the field. With its clear illustrations and easy-to-follow writing style, itpresents an accessible approach to neural development for undergraduate students.

CRC Press
December 2022: 378pp
Hb: 978-0-367-76243-8: **£190.00**
Pb: 978-0-367-74990-3: **£74.99**
eBook: 978-1-003-16607-8
* For **full contents** and more information, visit: **www.routledge.com/9780367749903**

## BIOLOGY & LIFE SCIENCE

### The Laboratory Mouse, 3rd Edition




**Mark A. Suckow**, University of Kentucky, **Sara Hashway**, Colorado Univ., Boulder and **Kathleen R. Pritchett-Corning**, FAS, Harvard Univ.

*Series: Laboratory Animal Pocket Reference*

Revised to reflect advances since the second edition, *The Laboratory Mouse* continues to be the most accessible reference on the biology and care of the mouse in research settings. This guide presents basic information and common procedures in detail to provide a quick reference source for investigators, technicians, and caretakers in the humane care and use of the mouse. The new edition adds information on novel technologies such as CRISPR-Cas, on housing systems and management practices, and concepts such as pain assessment by facial expression and nest-building as an assessment tool of well-being, with expanded sections on anesthesia and analgesia, behavior, and enrichment.

CRC Press
January 2023: 244pp
Hb: 978-1-032-41685-4: **£140.00**
Pb: 978-0-367-37320-7: **£52.99**
eBook: 978-0-429-35308-6
* For **full contents** and more information, visit: **www.routledge.com/9780367373207**

### Why the Dose Matters

Assessing the Health Risk of Exposure to Toxicants

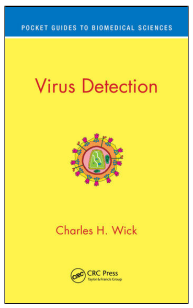
**Urs A. Boelsterli**

*Why the Dose Matters: Assessing the Health Risk of Exposure to Toxicants* uses a rational, science-based approach to explain in plain language that a quantitative view is key for understanding and predicting potentially toxic effects of chemicals.

This book is aimed at interested laypeople. It uses numerous examples to illustrate the basic concepts and ensure that the reader will get a better understanding of why not only the hazard, but also the overall exposure will determine whether some chemicals pose a serious risk while others are of little or negligible concern.

CRC Press
April 2023: 242pp
Hb: 978-1-032-38765-9: **£150.00**
Pb: 978-1-032-38764-2: **£52.99**
eBook: 978-1-003-34666-1
* For **full contents** and more information, visit: **www.routledge.com/9781032387659**

### Virus Detection




Charles H. Wick

*Series: Pocket Guides to Biomedical Sciences*

Viruses do not behave as other microbes; their life cycles require infecting healthy cells, commandeering their cellular apparatus, replicating and then killing the host cell. Methods for virus detection and identification have been developed only in the past few decades. These recently developed methods include molecular, physical, and proteomic techniques. All these approaches (Electron Microscopy, Molecular, Direct Counting, and Mass Spectrometry Proteomics) to detection and identification are reviewed in this succinct volume. It is written in approachable language with enough detail for trained professionals to follow and want to recommend to others.

CRC Press
May 2023: 232pp
Hb: 978-0-367-61801-8: **£79.99**
Pb: 978-0-367-61798-1: **£34.99**
eBook: 978-1-003-10662-3
* For **full contents** and more information, visit: **www.routledge.com/9780367617981**

## CHEMISTRY

### A Practical Guide to Scientific Writing in Chemistry

Scientific Papers, Research Grants and Book Proposals

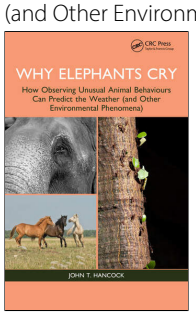
**Andrew Terhemen Tyowua**, Benue State University, Makurdi, Nigeria

Successful completion of postgraduate studies, especially PhD, and career advancement in academia strongly depends on the ability to publish scientific papers or books and research grant proposals. However, many chemical scientists find preparing scientific papers, research grant and book proposals difficult; partly because of insufficient training in writing and partly because there are few practical books to enable them to learn the art. This step-by-step practical guide is intended mainly for postgraduate students and early career researchers in chemical science and the libraries that serve them but will also be useful to other scientists.

CRC Press
March 2023: 268pp
Hb: 978-1-032-03318-1: **£110.00**
Pb: 978-1-032-03320-4: **£42.99**
eBook: 978-1-003-18674-8
* For **full contents** and more information, visit: **www.routledge.com/9781032033204**

### Why Elephants Cry

How Observing Unusual Animal Behaviours Can Predict the Weather (and Other Environmental Phenomena)




**John T. Hancock**, UWE Bristol

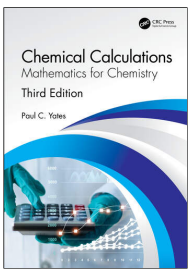
*Why Elephants Cry* is a fascinating frolic through the evidence surrounding the use of unusual behavior of animals to measure and predict the environment. The role of animals, from the smallest ant to the biggest elephant, as predictors of environmental changes is framed around the climate crisis, renowned Biologist John Hancock collecting anecdotal stories and myths along with scientific evidence to demonstrate that observation of animals can be of tangible use. He looks at the measurement of air temperature using ants, crickets and snakes, and how a wide range of animals can predict the weather or the imminent eruption of volcanoes and earthquakes.

CRC Press
May 2023: 232pp
Hb: 978-1-032-38179-4: **£110.00**
Pb: 978-1-032-38176-3: **£39.99**
eBook: 978-1-003-34384-4
* For **full contents** and more information, visit: **www.routledge.com/9781032381763**

3rd Edition

### Chemical Calculations

Mathematics for Chemistry




**Paul C. Yates**

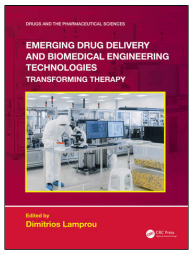
Uniquely organized by chemical rather than mathematical topics, this book relates each mathematical technique to the chemical concepts where it applies. The new edition features additional, revised, and updated material in every chapter, and maintains the clarity of the previous edition with appropriate organization of topics and improved cross-referencing where mathematical techniques occur more than once. The text contains additional worked examples and end-of-chapter exercises with detailed solutions—giving students the opportunity to apply previously introduced techniques to chemically related problems. An ideal course companion for chemistry courses throughout the length of a degree.

CRC Press
April 2023: 336pp
Hb: 978-0-367-48867-3: **£59.99**
Pb: 978-0-367-48866-6: **£24.99**
eBook: 978-1-003-04321-8
* For **full contents** and more information, visit: **www.routledge.com/9780367488673**

CHEMISTRY

## Emerging Drug Delivery and Biomedical Engineering Technologies

Transforming Therapy




Edited by **Dimitrios Lamprou**

*Series: Drugs and the Pharmaceutical Sciences*

This book details the advances in drug discovery and delivery and the present need for emerging technologies. Throughout the text new micro and nanofabrication techniques are described, including methods like electrohydrodynamic processes, additive manufacturing, and microfluidics, which have the potential to produce drug delivery systems that were not possible a few years ago. This book is of great use to both entry-level and experienced researchers in the field of emerging technologies for the manufacturing of drug delivery devices.

CRC Press
March 2023: 268pp
Hb: 978-1-032-12271-7: **£110.00**
Pb: 978-1-032-12422-3: **£42.99**
eBook: 978-1-003-22446-4
* For **full contents** and more information, visit: **www.routledge.com/9781032122717**

2nd Edition

## Handbook of Acid-Base Indicators

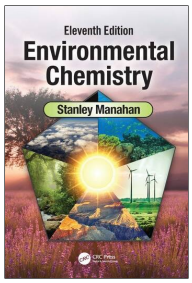
**R.W. Sabnis**

The substances which change color based on acidity or alkalinity of a solution are called acid-base indicators or pH indicators. This updated handbook provides information on over 300+ acid-base indicators and a guide for both the chemist and non-chemist in industry and in university. Listed alphabetically each entry contains Gneral Chemical Name, Other Chemical Names, Chemical Abstract (CA) Index Name, CAS Registry Number, Merck Index Number, Chemical Structure, Chemical/Dye Class, Molecular Formula, Molecular Weight, Melting Point, Boiling Point, pH Range, Color Change at pH, pKa, Physical Form, Solubility, UV-visible Spectrum, Synthesis, Major Applications, Safety and References.

CRC Press
January 2024: 1200pp
Hb: 978-1-138-19805-0: **£190.00**
eBook: 978-1-315-27071-5
* For **full contents** and more information, visit: **www.routledge.com/9781138198050**

11th Edition

## Environmental Chemistry



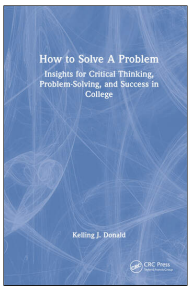

**Stanley E Manahan**

With clear explanations, real-world examples and updated ancillary material, the 11th edition of Environmental Chemistry emphasizes the concepts essential to the practice of environmental science, technology and chemistry. The new edition provides a comprehensive view of key environmental issues, and significantly looks at diseases and pandemics as an environmental problem influenced by other environmental concerns like climate change.

CRC Press
June 2022: 764pp
Hb: 978-0-367-55887-1: **£74.99**
Pb: 978-0-367-56054-6: **£30.99**
eBook: 978-1-003-09623-8
* For **full contents** and more information, visit: **www.routledge.com/9780367558871**

## How to Solve A Problem

Insights for Critical Thinking, Problem-Solving, and Success in College

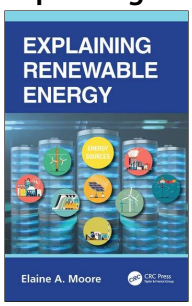



**Kelling J. Donald**, University of Richmond, USA

This concise and accessible resource offers new college students, especially those in science degree programs, guidance on engaging successfully with the classroom experience and skillfully tackling technical or scientific questions. The author provides insights on identifying, from the outset, individual markers for what success in college will look like for students, how to think about the engagement with professors as a partnership, and how to function effectively in that partnership toward achieving their pre-defined goals or markers of success. It is an ideal companion for science degree prospects and first-generation students seeking insight into the college experience.

CRC Press
April 2023: 62pp
Hb: 978-1-032-20368-3: **£56.99**
Pb: 978-1-032-20361-4: **£22.99**
eBook: 978-1-003-26334-0
* For **full contents** and more information, visit: **www.routledge.com/9781032203614**

## Explaining Renewable Energy




**Elaine A. Moore**, The Open University, Milton Keynes, UK

This undergraduate text aimed primarily at high schoolers and lower level undergraduates focuses on explaining how various forms of renewable energy work and current ongoing research. It includes sections on non-scientific aspects that should be considered such as availability of resources. A final chapter covers methods of removing carbon dioxide from the atmosphere. ; Renewable energy is currently on everyone's mind in the context of climate change. This text provides students with an introduction to the science behind the various types of renewable energy enabling them to access literature in the field and options that should be considered when selecting methods.

CRC Press
December 2022: 102pp
Hb: 978-1-032-27841-4: **£68.99**
Pb: 978-1-032-27575-8: **£26.99**
eBook: 978-1-003-29433-7
* For **full contents** and more information, visit: **www.routledge.com/9781032275758**

4th Edition

## Introduction to Nuclear Science

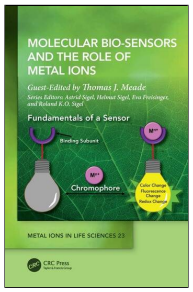
**Jeff C. Bryan**, University of Wisconsin–La Crosse, USA

Written to provide students with limited backgrounds in the physical sciences and math, the author provides a clear and complete introduction to nuclear chemistry and physics, from basic concepts to nuclear power and medical applications. Incorporating suggestions from adopting professors, this edition includes a new chapter on nuclear structure, and new sections on the theory of alpha, beta and gamma decay and completely rewritten coverage of statistics. This updated edition provides a much-needed textbook and resource for undergraduate students in science and engineering as well as those studying nuclear medicine and radiation therapy.

CRC Press
May 2023: 384pp
Hb: 978-1-032-30180-8: **£74.99**
Pb: 978-1-032-30183-9: **£32.99**
eBook: 978-1-003-30378-7
* For **full contents** and more information, visit: **www.routledge.com/9781032301808**

## CHEMISTRY

### Molecular Bio-Sensors and the Role of Metal Ions




Edited by **Thomas J. Meade**, Northwestern University, IL, USA

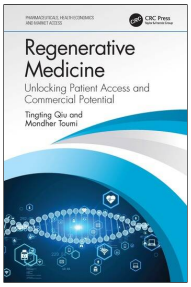
*Series: Metal Ions in Life Sciences Series*

Volume 23 in Metal Ions in Life Sciences Series links coordination chemistry and biochemistry in the widest sense and thus increases our understanding of the relationship between the chemistry of metals and life processes. It is well-known that metals are indispensable for life. This volume presents a milestone of contemporary progress and understanding of molecular biosensors for metal ions by bringing together the latest research in academia and industry and emphasize the spectrum of evolving regulations from regulatory bodies. Sections include chemistry and biosensors for essential metal ions, detection and quantification of toxic metal ions and molecular imaging.

CRC Press
September 2022: 348pp
Hb: 978-1-032-13578-6: **£120.00**
Pb: 978-1-032-13586-1: **£59.99**
eBook: 978-1-003-22997-1
* For **full contents** and more information, visit: **www.routledge.com/9781032135786**

### Regenerative Medicine

Unlocking Patient Access and Commercial Potential




**Tingting Qiu** and **Mondher Toumi**, Aix Marseille University, France

*Series: Pharmaceuticals, Health Economics and Market Access*

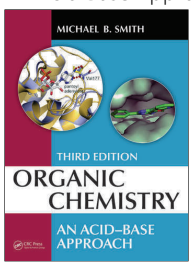
A comprehensive review of the challenges that exist in patient accessibility to advanced therapy medicinal products (ATMPs), presenting clinical trials, marketing authorization, HTA, pricing, reimbursement, affordability, payment and partnership agreements of RMs and commercialisation. Specfically, we investigated how COVID-19 has impacted the RMs industry by elaborating on the disruptions it caused but also the new opportunities it brought. The ultimate goal of this work is to make strategic recommendations for manufacturers and decisions-markers on effective strategies to address the above obstacles and facilitate patient access to promising regenerative medicines.

CRC Press
May 2023: 240pp
Hb: 978-1-032-43296-0: **£150.00**
Pb: 978-1-032-43198-7: **£59.99**
eBook: 978-1-003-36667-6
* For **full contents** and more information, visit: **www.routledge.com/9781032431987**

3rd Edition

### Organic Chemistry

An Acid-Base Approach



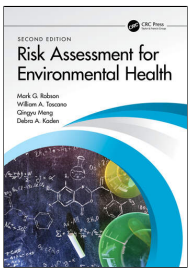

**Michael B. Smith**, University of Connecticut, Storrs, USA University of Connecticut, Storrs, U.S.A University of Connecticut, Storrs, USA University of Connecticut, Storrs, USa

This latest edition constitutes significant changes within this unique introductory technique to organic chemistry. The reactions and mechanisms it covers are the most fundamental concepts in organic chemistry that are applied to industry, biological chemistry, biochemistry, molecular biology, and pharmacy. Using an illustrated conceptual approach rather than presenting sets of principles and theories to memorize, it gives students a more concrete understanding of the material.

CRC Press
September 2022: 726pp
Hb: 978-0-367-76870-6: **£120.00**
Pb: 978-1-032-00616-1: **£48.00**
eBook: 978-1-003-17492-9
* For **full contents** and more information, visit: **www.routledge.com/9780367768706**

2nd Edition

### Risk Assessment for Environmental Health



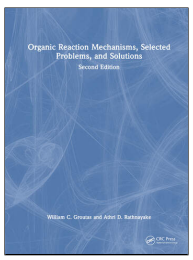

Edited by **Mark G. Robson**, Department of Plant Biology, Rutgers, New Brunswick, **William A. Toscano**, UMN School of Public Health, Minneapolis, **Qingyu Meng** and **Debra A. Kaden**

Understanding risk to humans is one of the most important problems in environmental public health. Risk assessment is constantly changing with the advent of new exposure assessment tools, more sophisticated models, and a better understanding of disease processes. Risk assessment is also gaining greater acceptance in the developing world where major environmental problems exist. Developed in partnership with the Association of Schools of Public Health, this comprehensive text offers a thorough survey of risk assessment, management, and communications as these practices apply to public health.

CRC Press
December 2022: 400pp
Hb: 978-0-367-26151-1: **£150.00**
Pb: 978-0-367-26144-3: **£59.99**
eBook: 978-0-429-29172-2
* For **full contents** and more information, visit: **www.routledge.com/9780367261443**

### Organic Reaction Mechanisms, Selected Problems, and Solutions

Second Edition



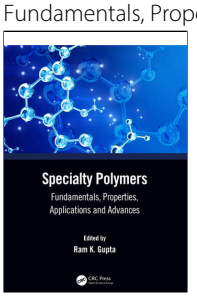

**William C. Groutas**, Department of Chemistry and Biochemistry, WSU, USA and **Athri D. Rathnayake**

This fully updated new edition presents organic reaction mechanism questions, carefully selected from the primary chemical literature, to understand how reactants are transformed into products. The author explains step-by-step solutions to all problems with appropriate contextual comments explaining the rationale and reasoning underlying each step, and identifying the underlying principles involved in each question. In the process the reader gains a better understanding of the fundamental principles of organic chemistry and how to become proficient in using the Lewis acid/Lewis base concept to complete organic reactions without resorting to memorization.

CRC Press
May 2023: 504pp
Hb: 978-1-032-48343-6: **£130.00**
Pb: 978-1-032-48825-7: **£52.99**
eBook: 978-1-003-39096-1
* For **full contents** and more information, visit: **www.routledge.com/9781032488257**

### Specialty Polymers

Fundamentals, Properties, Applications and Advances




Edited by **Ram K. Gupta**

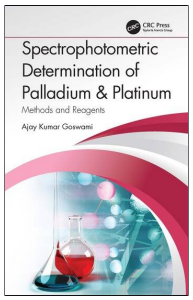
The main purpose of this book is to provide current, state-of-the-art knowledge of specialty polymers that can be used for many advanced applications. This book will cover the fundamentals of specialty polymers, synthetic approaches, and chemistries to modify their properties to meet the requirement for special applications, along with current challenges and prospects. Chapters will be written by global experts making this a suitable textbook for students and one stop resource for researchers and industry.

CRC Press
February 2023: 492pp
Hb: 978-1-032-24372-6: **£155.00**
Pb: 978-1-032-24374-0: **£42.99**
eBook: 978-1-003-27826-9
* For **full contents** and more information, visit: **www.routledge.com/9781032243726**

## CHEMISTRY

### Spectrophotometric Determination of Palladium & Platinum

Methods & Reagents



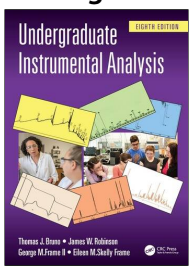

**Ajay Kumar Goswami**

This versatile resource consolidates available methods for the determination of palladium and platinum and serves as a practical ready-to-use guide for those researching palladium and platinum and for those working in the field of medicinal metal complexes of the two metals. The beauty of spectrophotometric methods lies in their simplicity, convenience, and easy operation not to mention their cost effectiveness. They can be automated easily and are thus the most affordable methods. Addresses analysts from all areas of industry, research labs and post graduate students of analytical or medicinal chemistry as well as material science.

CRC Press
March 2023: 138pp
Hb: 978-1-032-23244-7: **£89.99**
Pb: 978-1-032-23246-1: **£42.99**
eBook: 978-1-003-27641-8
* For **full contents** and more information, visit: **www.routledge.com/9781032232447**

8th Edition

### Undergraduate Instrumental Analysis



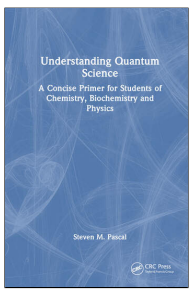

**Thomas J. Bruno**, **James W. Robinson**, Louisiana State University, Baton Rouge, USA, **George M. Frame II**, New York State Department of Health, Albany, USA and **Eileen M. Skelly Frame**

This bestselling textbook provides students and users of analytical instrumentation with an understanding of these instruments, covering all major fields of instrumentation. Each chapter provides a discussion of the fundamental principles underlying the techniques, descriptions of the instrumentation, and numerous applications. The chapters also contain updated bibliographies and problems, and most have suggested experiments appropriate to the techniques. This updated edition is ideal for teaching undergraduates and those with no analytical chemistry background how today's instrumentation works and its uses and limitations.

CRC Press
May 2023: 1608pp
Hb: 978-1-032-03691-5: **£99.99**
Pb: 978-1-032-03695-3: **£42.99**
eBook: 978-1-003-18854-4
* For **full contents** and more information, visit: **www.routledge.com/9781032036915**

### Understanding Quantum Science

A Concise Primer for Students of Chemistry, Biochemistry and Physics




**Steven M. Pascal**

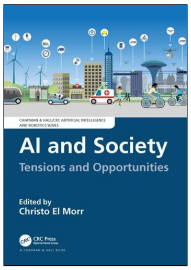
This book provides a brief tour of some of the wonders of Quantum science. But it is more than that: it is designed to be the most concise tour possible that truly explains how these wonders arise so you can develop a working understanding of Quantum concepts. If your goal is loftier and you wish to become a Quantum specialist, the conceptual groundwork presented here, along with rationalization of the mathematics required, will position you well for higher level classes.

CRC Press
May 2023: 120pp
Hb: 978-1-032-41085-2: **£110.00**
Pb: 978-1-032-41083-8: **£42.99**
eBook: 978-1-003-35617-2
* For **full contents** and more information, visit: **www.routledge.com/9781032410838**

## COMPUTER SCIENCE & COMPUTER GRAPHICS

### AI and Society

Tensions and Opportunities




**Christo El Morr**

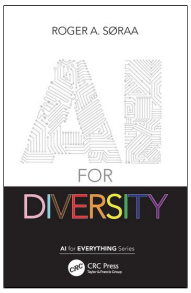
*Series: Chapman & Hall/CRC Artificial Intelligence and Robotics Series*

Artificial intelligence and machine learning are becoming more present in several sectors in society today and are expected to become more pervasive in the future. This four-sections book is a first to shed a critical light on AI use and its impact on society. It addresses the health, social, legal, ethical, philosophical questions raised by AI use.

Written from a multi-disciplinary perspective, *this is the first book worldwide that assesses critically the impact of AI on several aspects of human society. It is written with the general non-academic reader in mind while maintaining the scientific soundness to address a wide audience*

Chapman & Hall
January 2023: 326pp
Hb: 978-1-032-19416-5: **£89.99**
Pb: 978-1-032-19870-5: **£42.99**
eBook: 978-1-003-26124-7
* For **full contents** and more information, visit: **www.routledge.com/9781032194165**

### AI for Diversity




**Roger Søraa**

*Series: AI for Everything*

*AI for Diversity* questions how AI technology can lead to inclusion or exclusion for diverse groups of society. The way data is selected, trained, used, and embedded into societies can have unfortunate consequences unless we critically investigate the dangers of systems left unchecked, and can lead to misogynist, homophobic, racist, ageist, transphobic or ableist outcomes. This book enables the reader to step back and see how AI is impacting diversity in humans impacted by AI and how diversity-awareness strategies can impact AI.

CRC Press
January 2022: 130pp
Hb: 978-1-032-07444-3: **£120.00**
Pb: 978-1-032-07356-9: **£22.99**
eBook: 978-1-003-20695-8
* For **full contents** and more information, visit: **www.routledge.com/9781032073569**

### AI for Finance

**Edward P K Tsang**, University of Essex, United Kingdom

*Series: AI for Everything*

How could Finance benefit from AI? How can AI techniques provide an edge? Moving well beyond simply speeding up computation, this book tackles AI for Finance from a range of perspectives including business, technology, research, and students. Covering aspects like algorithms, big data, and machine learning, this book answers these and many other questions.

CRC Press
June 2023: 122pp
Hb: 978-1-032-39120-5: **£120.00**
Pb: 978-1-032-38443-6: **£22.99**
eBook: 978-1-003-34847-4
* For **full contents** and more information, visit: **www.routledge.com/9781032384436**

## COMPUTER SCIENCE & COMPUTER GRAPHICS

### AI for Scientific Discovery

**Janna Hastings**, University College London, London, UK

*Series: AI for Everything*

AI for Scientific Discovery provides an accessible introduction to the wide-ranging applications of artificial intelligence technologies in scientific research and discovery across the full breadth of scientific disciplines. Artificial intelligence technologies support discovery science in multiple different ways. They support literature management and synthesis, allowing the wealth of what has already been discovered and reported on to be integrated and easily accessed. They play a central role in data analysis and interpretation – in the context of what is called 'data science'.

CRC Press
June 2023: 112pp
Hb: 978-1-032-12877-1: **£120.00**
Pb: 978-1-032-12484-1: **£22.99**
eBook: 978-1-003-22664-2
* For **full contents** and more information, visit: **www.routledge.com/9781032124841**

### AI in and for Africa

A Humanist Perspective

**Susan Brokensha**, **Eduan Kotzé** and **Burgert A. Senekal**

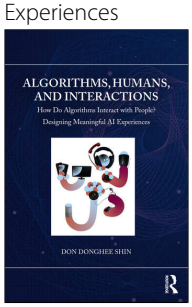
*Series: Chapman & Hall/CRC Artificial Intelligence and Robotics Series*

The book explores the convoluted intersection of artificial intelligence with Africa's unique socio-economic realities. The first of its kind to provide a comprehensive overview of how AI is currently being deployed on the African continent. It will be of great interest to researchers, students, and readers who wish to critically appraise the different facets of AI in the context of Africa, across many areas that run the gamut from education, gender studies, and linguistics to agriculture, data science, and economics, with especial appeal to scholars in disciplines including anthropology, computer science, philosophy, and sociology, to name a few.

Chapman & Hall
May 2023: 184pp
Hb: 978-1-032-23176-1: **£69.99**
Pb: 978-1-032-21575-4: **£42.99**
eBook: 978-1-003-27613-5
* For **full contents** and more information, visit: **www.routledge.com/9781032231761**

### Algorithms, Humans, and Interactions

How Do Algorithms Interact with People? Designing Meaningful AI Experiences




**Don Donghee Shin**, Zayed University, UAE

This book takes an interdisciplinary approach to contribute to the ongoing development of human–AI interaction with a particular focus on the "human" dimension and provides insights to improve the design of AI that could be genuinely beneficial and effectively used in society. The readers will gain insights into various perspectives about how AI has impacted people and society, and will continue to do so in future, in addition to understanding how we can design algorithms that are beneficial, legitimate, and consider and respect human values. This book provides a set of guidelines and insight into how humans can be empowered by making choices that allow meaningful control over AI.

Routledge
January 2023: 216pp
Hb: 978-1-032-33358-8: **£110.00**
Pb: 978-1-032-33297-0: **£42.99**
eBook: 978-1-003-31931-3
* For **full contents** and more information, visit: **www.routledge.com/9781032332970**

### Bioinformatics

A practical Guide to Next Generation Sequencing Data Analysis

**Hamid D. Ismail**, NC A&T State University, North Carolina, USA

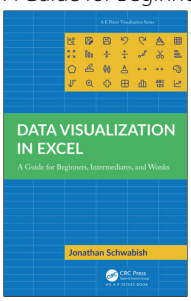
*Series: Chapman & Hall/CRC Computational Biology Series*

Bioinformatics: A Practical Guide to Next Generation Sequencing Data Analysis contains the latest material in the subject, covering NGS applications and meeting the requirements of a complete semester course. The book provides both concept and practice to satisfy the exact need of researchers seeking to understand and use NGS data reprocessing, genome assembly, variant discovery, gene profiling, epigenetics, and metagenomics. The book is primarily designed as a companion for researchers and graduate students using sequencing data analysis, but will also serve as a textbook for teachers and students in biology and bioscience.

Chapman & Hall
June 2023: 242pp
Hb: 978-1-032-40900-9: **£150.00**
Pb: 978-1-032-40891-0: **£68.99**
eBook: 978-1-003-35520-5
* For **full contents** and more information, visit: **www.routledge.com/9781032408910**

### Data Visualization in Excel

A Guide for Beginners, Intermediates, and Wonks




**Jonathan Schwabish**

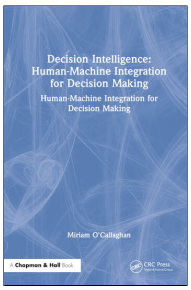
*Series: AK Peters Visualization Series*

*Data Visualization in Excel* closes the gap between what people think Excel can do and what they can achieve in the tool. Over the past few years, recognition of the importance of effectively visualizing data has led to an explosion data analysis and visualization software tools. But for many people, Microsoft Excel continues to be the workhorse for their data visualization needs, not to mention the only tool that many data workers have access to.This book is the perfect guide for anyone who wants to create better, more effective, and more engaging data visualizations.

A K Peters/CRC Press
May 2023: 400pp
Hb: 978-1-032-34328-0: **£74.99**
Pb: 978-1-032-34326-6: **£26.99**
eBook: 978-1-003-32155-2
* For **full contents** and more information, visit: **www.routledge.com/9781032343266**

### Decision Intelligence

Human–Machine Integration for Decision Making




**Miriam O'Callaghan**

Revealing the flaws in human decision making, this book explores how AI can be used to optimise decisions for improved business outcomes and efficiency, as well as looking ahead into the significant contributions Decision Intelligence (DI) can make to society and the ethical challenges it may raise.

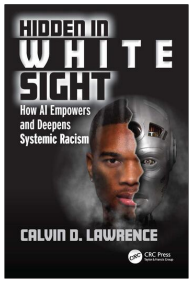
Replete with case studies on DI application, as well as wider discussions on the social implications of the technology, this book appeals to both students of AI and data solutions and businesses considering DI adoption.

Chapman & Hall
April 2023: 278pp
Hb: 978-1-032-38410-8: **£88.00**
Pb: 978-1-032-38409-2: **£42.99**
eBook: 978-1-003-34492-6
* For **full contents** and more information, visit: **www.routledge.com/9781032384092**

## COMPUTER SCIENCE & COMPUTER GRAPHICS

### Hidden in White Sight

How AI Empowers and Deepens Systemic Racism




**Calvin Lawrence**

Artificial Intelligence was meant to be the great social equalizer that helps promote fairness by removing human bias from the equation, but is this true? Given that the policing and judicial systems can display human bias, this book explores how the technology they use can also reflect these prejudices.

This book advises readers on what they can do to fight against it, including the introduction of a proposed AI Bill of Rights, whilst also providing specific recommendations for AI developers and technologists.

Through personal stories from an esteemed Black Data Scientist and AI expert, this book attempts to demystify the algorithmic black box.

Chapman & Hall
March 2023: 296pp
Hb: 978-1-032-43764-4: **£56.99**
Pb: 978-1-032-43762-0: **£22.99**
eBook: 978-1-003-36875-5
* For **full contents** and more information, visit: **www.routledge.com/9781032437620**

### The Pragmatic Programmer for Machine Learning

Engineering Analytics and Data Science Solutions

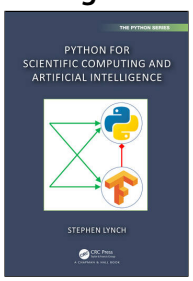
**Marco Scutari**, Istituto Dalle Molle and **Mauro Malvestio**

*Series: Chapman & Hall/CRC Machine Learning & Pattern Recognition*

Machine learning has redefined the way we work with data and is increasingly becoming an indispensable part of everyday life, yet software engineering has played a remarkably small role compared to other disciplines. Comprising a complete overview of how to design machine learning pipelines, this book provides a multi-disciplinary view of how traditional software learning practices can be integrated with the workflows of domain experts. This guide to software engineering will appeal to machine learning and data science specialists, whilst also utilising natural language and clear case studies to be accessible for students of computer science and aspiring programmers.

Chapman & Hall
March 2023: 348pp
Hb: 978-0-367-26350-8: **£111.00**
Pb: 978-0-367-25506-0: **£43.99**
eBook: 978-0-429-29283-5
* For **full contents** and more information, visit: **www.routledge.com/9780367263508**

### Python for Scientific Computing and Artificial Intelligence




**Stephen Lynch**

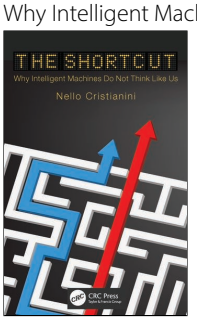
*Series: Chapman & Hall/CRC The Python Series*

This book is split into 3 parts: in Section 1, the reader is introduced to the Python programming language and shown how Python can aid in the understanding of advanced High School Mathematics. In Section 2, the reader is shown how Python can be used to solve real-world problems from a broad range of scientific disciplines. Finally, in Section 3, the reader is introduced to neural networks and shown how TensorFlow (written in Python) can be used to solve a large array of problems in Artificial Intelligence (AI). The book is beginner friendly and has a strong practical emphasis on programming and computational modelling.

Chapman & Hall
June 2023: 344pp
Hb: 978-1-032-25873-7: **£125.00**
Pb: 978-1-032-25871-3: **£52.99**
eBook: 978-1-003-28581-6
* For **full contents** and more information, visit: **www.routledge.com/9781032258737**

### The Shortcut

Why Intelligent Machines Do Not Think Like Us



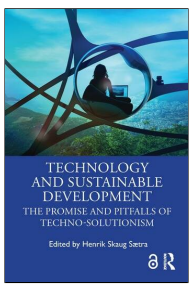

**Nello Cristianini**

One of the most influential scientists in the field of artificial intelligence explains its fundamental concepts and how it is changing culture and society. *The Shortcut: Why Intelligent Machines Do Not Think Like Us* provides an accessible yet probing exposure of AI in its prevalent form today. Entertaining, disturbing, but always thoughtful, *The Shortcut* confronts the hidden logic of AI while preserving a space for human dignity. Essential reading for anyone with an interest in AI, the history of technology, and that of ideas. General readers will come away much more informed about how AI really works today, and what we should do next.

CRC Press
March 2023: 186pp
Hb: 978-1-032-37199-3: **£120.00**
Pb: 978-1-032-30509-7: **£22.99**
eBook: 978-1-003-33581-8
* For **full contents** and more information, visit: **www.routledge.com/9781032305097**

### Technology and Sustainable Development

The Promise and Pitfalls of Techno-Solutionism

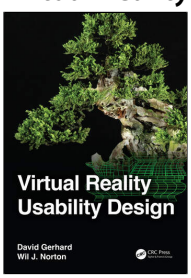



Edited by **Henrik Skaug Sætra**, Østfold Univ. College, Remmen, Halden

This book examines whether technology can be used to fix the very problems caused by technology, as the various chapters examine different aspects related to how technology has brought us where we are today (which some will say is the best place humanity's been at according to a range of metrics), and whether technology helps or hinders us in our efforts to solve the challenges we currently face. The issues discussed cover the three sustainability dimensions and include topics such as the materiality of AI, technology in education, AI for gender equality, innovation and the digital divide, and how technology relates to power, the political system, and capitalism.

Routledge
April 2023: 312pp
Hb: 978-1-032-35059-2: **£110.00**
Pb: 978-1-032-35056-1: **£42.99**
eBook: 978-1-003-32508-6
* For **full contents** and more information, visit: **www.routledge.com/9781032350561**

### Virtual Reality Usability Design




**David Gerhard** and **Wil J. Norton**

The development of effective and usable software for spatial computing platforms like Virtual Reality requires an understanding of how these devices create new possibilities (and new perils) when it comes to interactions between humans and computers. Virtual Reality Usability Design provides readers with an understanding of the techniques and technologies required to design engaging and effective VR applications.

Full of real-world examples, this book is an indispensable guide for any practicing VR developer interested in making efficient and effective interfaces.

CRC Press
February 2023: 408pp
Hb: 978-1-032-19869-9: **£140.00**
Pb: 978-1-032-19132-4: **£52.99**
eBook: 978-1-003-26123-0
* For **full contents** and more information, visit: **www.routledge.com/9781032191324**

## ENVIRONMENTAL SCIENCE

### Geographic Data Science with R

Visualizing and Analyzing Environmental Change

**Michael C. Wimberly**, The University of Oklahoma, USA

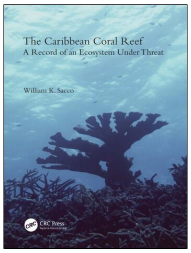
*Series: Chapman & Hall/CRC Data Science Series*

The purpose of this book is to provide a series of tutorials aimed at teaching good practices for using geospatial data to address problems in environmental geography. Fundamental techniques for processing and visualizing tabular, vector, and raster data are introduced through a series of practical examples followed by case studies that combine multiple types of data to address more complex problems. The book will have a broad audience. Students and professionals can use it as a workbook to learn high-level techniques for geospatial data processing and analysis with R. It is designed to be accessible to readers who have at least some knowledge of coding.

Chapman & Hall
May 2023: 336pp
Hb: 978-1-032-34771-4: **£74.99**
Pb: 978-1-032-35288-6: **£42.99**
eBook: 978-1-003-32619-9
* For **full contents** and more information, visit: **www.routledge.com/9781032347714**

### The Caribbean Coral Reef

A Record of an Ecosystem under Threat



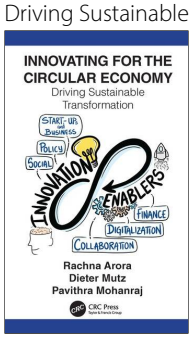

**William K. Sacco**, Yale University

This book is a visual tour of Caribbean coral reefs between 1968 and 1978, the world's second largest coral reef community and the most threatened. It offers a priceless historical record by a photographer who set out to document all the major reef species when those reefs were at their prime. Sadly, most of what is shown in his photographs is now gone forever. It is only by comparing the images in this book with what we see now that we are able to fully recognize what we have lost. With its stunning photography and precise, accurate scientific information, this book offers students of coral reefs a wealth of information about this rich, fragile ecosystem.

CRC Press
March 2023: 217pp
Hb: 978-1-032-41450-8: **£89.99**
Pb: 978-1-032-41451-5: **£36.99**
eBook: 978-1-003-35814-5
* For **full contents** and more information, visit: **www.routledge.com/9781032414508**

### Innovating for The Circular Economy

Driving Sustainable Transformation



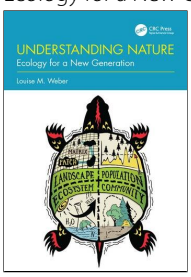

Edited by **Rachna Arora**, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH., **Dieter Mutz**, University of Basel, Switzerland and **Pavithra Mohanraj**, Infinitive Corporation, India

This book takes a deep dive into the innovation aspect of the circular economy (CE), with a specific focus on India as a geography. This book lays foundations on mainstreaming and challenges of RE/CE pertaining to global supply chain. It covers innovation within businesses towards CE and need for collaborations, partnerships and frameworks required to spur, finance and mainstream CE innovation. The book showcases many practical examples and inspirational case studies, to create an understanding on the existing models and policies with an analysis of the international context. This book aims at researchers and professionals in circular economy, sustainability, and environmental studies.

CRC Press
March 2023: 192pp
Hb: 978-1-032-06334-8: **£44.95**
Pb: 978-1-032-06338-6: **£16.99**
eBook: 978-1-003-20181-6
* For **full contents** and more information, visit: **www.routledge.com/9781032063348**

### Understanding Nature

Ecology for a New Generation

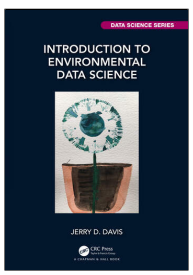



**Louise M. Weber**, University of Saint Francis, USA

*Understanding Nature* is a new kind of ecology textbook: a straight-forward resource that teaches natural history and ecological content, and a way to instruct students that will nurture both Earth and self. While meeting the textbook guidelines set forth by the ESA, the book has a unique ecotherapy theme, using a historical framework to teach ecological theory to undergraduates. Presenting all the core information without being wordy or lengthy, Weber uses simple, relatable language and discusses ecology in ways that any student can apply in real life. The book includes traditional ecological knowledge and the history of scientific ecological knowledge.

CRC Press
April 2023: 376pp
Hb: 978-1-032-22261-5: **£150.00**
Pb: 978-1-032-22260-8: **£56.99**
eBook: 978-1-003-27183-3
* For **full contents** and more information, visit: **www.routledge.com/9781032222608**

### Introduction to Environmental Data Science




**Jerry Davis**, Professor of Geography and Environmental Science, San Francisco State Uni, USA

*Series: Chapman & Hall/CRC Data Science Series*

Introduction to Environmental Data Science focuses on data science methods in the R language applied to environmental research, with sections on exploratory data analysis in R including data abstraction, transformation, and visualization; spatial data analysis in vector and raster models and more. It is an ideal textbook to teach undergraduate to graduate level students in environmental science, environmental studies, geography, earth science, and biology, but can also serve as a reference for environmental professionals working in consulting, NGOs, and government agencies at the local, state, federal, and international levels.

Chapman & Hall
March 2023: 424pp
Hb: 978-1-032-32218-6: **£74.99**
Pb: 978-1-032-33034-1: **£42.99**
eBook: 978-1-003-31782-1
* For **full contents** and more information, visit: **www.routledge.com/9781032322186**

## FORENSIC SCIENCE

3rd Edition

### Advanced Crime Scene Photography

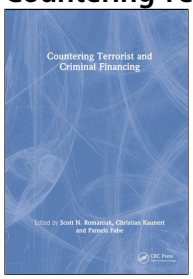
**Christopher D. Duncan**

Fully updated, the Third Edition provides guidance to help crime scene investigators, and students enrolled in forensic photography courses, in capturing better crime scene and evidentiary photographs, especially in difficult or low-light environments. The book provides step-by-step procedures and best practices for recording valuable photographic images by discussing and explaining photographic concepts in an easily understandable way.

CRC Press
March 2022: 464pp
Hb: 978-1-032-27376-1: **£120.00**
Pb: 978-1-032-27381-5: **£64.99**
eBook: 978-1-003-29244-9
* For **full contents** and more information, visit: **www.routledge.com/9781032273815**

## FORENSIC SCIENCE

### Countering Terrorist and Criminal Financing




Edited by **Scott N Romaniuk**, University of South Wales, UK, **Christian Kaunert**, University of South Wales, UK and **Amparo Pamela H Fabe**

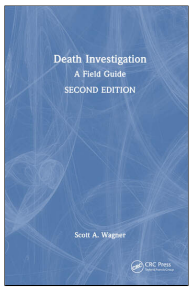
Countering Terrorist and Criminal Financing provides an up-to-date overview and critical analysis of terrorism financing and measures looking at practical, institutional practices directed at preventing money laundering and counter the flow of terrorism funding. This focus addresses legal measures, social policies, and military/security responses by states and non-state actors--serving as the most up-to-date counterterrorist volume available.

CRC Press
July 2023: 640pp
Hb: 978-0-367-55155-1: **£120.00**
Pb: 978-1-032-36661-6: **£64.99**
eBook: 978-1-003-09221-6
* For **full contents** and more information, visit: **www.routledge.com/9781032366616**

2nd Edition

### Death Investigation

A Field Guide




**Scott A. Wagner**, Wagner Research, LLC, and Northeast Indiana Forensic Center, Fort Wayne, Indiana, USA

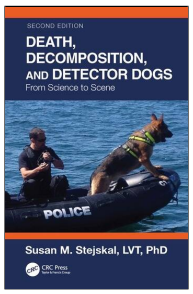
*Death Investigation: A Field Guide, Second Edition* provides concise instruction on procedure and best practices for the death scene investigator, crime scene investigator, coroner, medical examiner, or anyone associated with the investigation of manner and causation of death. Fully illustrated with over 230 full-color images, the book covers death investigation practices that municipalities can implement to standardize their methodologies for consistency and reliable results.

CRC Press
March 2023: 332pp
Hb: 978-0-367-21756-3: **£120.00**
Pb: 978-0-367-36760-2: **£48.99**
eBook: 978-0-429-31866-5
* For **full contents** and more information, visit: **www.routledge.com/9780367367602**

2nd Edition

### Death, Decomposition, and Detector Dogs

From Science to Scene




**Susan M. Stejskal**, Recover K9 / St. Joseph County Sheriff's Department, Michigan, USA

The book is designed to help canine handlers, detectives, death investigators, crime scene personnel (including forensic laboratory personnel, technicians, and supervisors), and attorneys understand the science involved when utilizing human remains detector (HRD) canines as a locating tool. Coverage examines the basic anatomy and physiology of canine olfaction and the unique characteristics of their scenting ability that allows dogs to be trained to locate distinct odors.

CRC Press
December 2022: 248pp
Hb: 978-1-032-10748-6: **£120.00**
Pb: 978-1-032-10830-8: **£42.99**
eBook: 978-1-003-21725-1
* For **full contents** and more information, visit: **www.routledge.com/9781032108308**

2nd Edition

### Field Guide to Clandestine Laboratory Identification and Investigation

**Donnell R. Christian, Jr.**, Professional Business Solutions, O'Fallon, Missouri, USA

Provides tools to law enforcement, the fire services, and other emergency responders to recognize the tools used in clandestine laboratories to manufacture contraband drugs and explosive. An indispensible resource to help responders and investigators combat drug abuse and terrorism.

CRC Press
June 2023: 104pp
Hb: 978-1-032-37062-0: **£130.00**
Pb: 978-1-032-37029-3: **£42.99**
eBook: 978-1-003-33513-9
* For **full contents** and more information, visit: **www.routledge.com/9781032370293**

2nd Edition

### Forensic DNA Applications

An Interdisciplinary Perspective

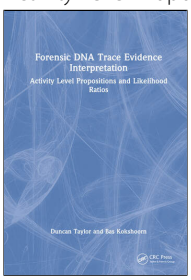
Edited by **Dragan Primorac**, The Pennsylvania State University, University Park, USA and **Moses Schanfield**

This edition is fully updated with the latest techniques and application. Part I discusses the statistical interpretation of results, mitochondrial DNA testing, Y single nucleotide polymorphisms and short tandem repeats, and X SNP and STR testing. It also explores low copy number DNA typing, mixtures, and quality assurance and control. Part II covers applications for analyzing collected physical evidence, victim identification in mass disasters, analyzing animal DNA, and Forensic Botany. Part III is dedicated to the latest advances in human molecular biology, and Part IV looks at policies and ethics governing DNA evidence, and its utilization in the courts.

CRC Press
April 2023: 544pp
Hb: 978-0-367-03026-1: **£120.00**
Pb: 978-1-032-39202-8: **£56.99**
eBook: 978-0-429-01994-4
* For **full contents** and more information, visit: **www.routledge.com/9781032392028**

### Forensic DNA Trace Evidence Interpretation

Activity Level Propositions and Likelihood Ratios




**Duncan Taylor** and **Bas Kokshoorn**, Netherlands Forensic Institute, Netherlands

Forensic DNA Trace Evidence Interpretation provides all foundational information required for a reader to understand the practice of evaluating forensic biology evidence given activity level propositions, and to implement the practice into active casework within a forensic institution. The book begins by explaining basic concepts and foundational theory, pulling together research and studies that have accumulated in forensic journal literature over the last 20 years.

CRC Press
May 2023: 504pp
Hb: 978-1-032-22582-1: **£120.00**
Pb: 978-1-032-22581-4: **£69.99**
eBook: 978-1-003-27318-9
* For **full contents** and more information, visit: **www.routledge.com/9781032225814**

## FORENSIC SCIENCE

### How to Stop a Hijacking

Critical Thinking in Civil Aviation Security

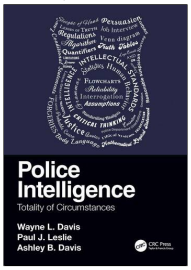
**Clay W. Biles**, High Order Security, USA

The book provides readers with fundamental principles on how to think more critically about onboard security threats. Coverage offers methodological and tactically proven strategies for stopping violent acts onboard an aircraft inflight, teaching the reader how to counter inflight aggression and maintain tactical control of the cabin.

CRC Press
April 2023: 280pp
Hb: 978-1-032-37315-7: **£120.00**
Pb: 978-1-032-37300-3: **£48.99**
eBook: 978-1-003-33645-7
* For **full contents** and more information, visit: **www.routledge.com/9781032373003**

### Police Intelligence

Totality of Circumstances



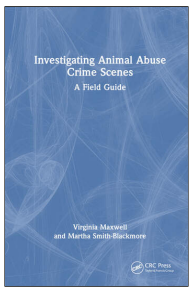

**Wayne L. Davis**, **Paul J. Leslie** and **Ashley B. Davis**

This book takes a unique approach to police procedure and communication, providing an essential overview to the importance of written and spoken communication. An officer cannot effectively enforce the law if they do not understand math and English—and how laws are written in English logical statements. Laws need to be converted into mathematical logical statements in order to determine the truth-values of the laws, police reports, and the actions of police officers. This book provides an overview for officers and criminal justice students to more effectively understand laws, their roles, and to more effectively communicate and carry out their duties.

CRC Press
March 2023: 506pp
Hb: 978-1-032-18094-6: **£120.00**
Pb: 978-1-032-18093-9: **£52.99**
eBook: 978-1-003-25283-2
* For **full contents** and more information, visit: **www.routledge.com/9781032180939**

### Investigating Animal Abuse Crime Scenes

A Field Guide




**Virginia M. Maxwell**, University of New Haven, USA and **Martha Smith-Blackmore**

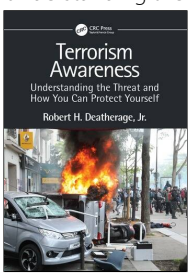
This book is designed for first responders—such as animal control officers and police officers—as well as forensic scientists and other criminal justice professionals who are who are tasked with processing and analyzing animal crime scenes and evidence. The book serves equally as a useful resource for those in the field and laboratory, in addition to those professionals who are further along in the investigative and judicial process.

It fills the growing need for a handy, comprehensive field reference that specifically focuses on the crime scene processing, investigation, analysis of evidence, and the subsequent adjudication of animal abuse cases within the court system.

CRC Press
May 2023: 360pp
Hb: 978-0-367-54827-8: **£49.99**
Pb: 978-1-032-48265-1: **£49.99**
eBook: 978-1-003-09076-2
* For **full contents** and more information, visit: **www.routledge.com/9781032482651**

### Terrorism Awareness

Understanding the Threat and How You Can Protect Yourself




**Robert H. Deatherage, Jr.**

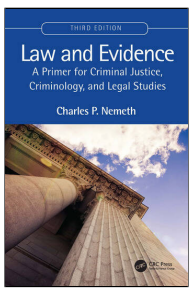
Provides a foundationalunderstanding of terrorist threats, introducing readers to different tactics and techniques used by terrorists—both international and domestic. Informs readers of personal protection concepts and, when necessary, how to take actions to make themselves "hard targets" that terrorist organizations will want to avoid.

CRC Press
March 2023: 296pp
Hb: 978-1-032-27418-8: **£120.00**
Pb: 978-1-032-27416-4: **£48.99**
eBook: 978-1-003-29264-7
* For **full contents** and more information, visit: **www.routledge.com/9781032274164**

3rd Edition

### Law and Evidence

A Primer for Criminal Justice, Criminology, and Legal Studies

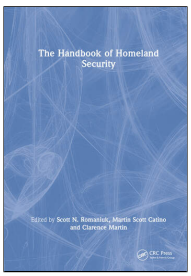



**Charles P. Nemeth**

Introduces the complex topic of evidence law in a straightforward and accessible manner. The use and function of evidence in both criminal and civil cases is examined to offer a complete understanding of how evidence principles play out in the real world of litigation and advocacy. This revised Third Edition includes new discussions of rules and case law analysis, forensic cases, and evidentiary software programs.

CRC Press
March 2023: 402pp
Hb: 978-1-032-21178-7: **£120.00**
Pb: 978-1-032-21176-3: **£46.99**
eBook: 978-1-003-26714-0
* For **full contents** and more information, visit: **www.routledge.com/9781032211763**

### The Handbook of Homeland Security




Edited by **Scott N. Romaniuk**, University of South Wales, UK, **Martin Scott Catino**, Liberty University Online, USA and **C. Augustus Martin**, California State University Dominguez Hills, USA

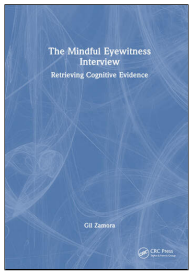
The Homeland Security Handbook is a convenient, one-stop reference on critical areas of Homeland Security such as countering terrorism, critical infrastructure protection, information and cybersecurity, military and private sector support for Homeland Security, risk assessment, preparedness for all-hazards and evolving threats. It presents over 100 chapters on topical security and policy considerations serving as a resource for any student, professional, researcher, policy-maker, or library in understanding public-sector Homeland Security initiatives and responsibilities.

CRC Press
June 2023: 696pp
Hb: 978-1-138-50172-0: **£120.00**
Pb: 978-1-032-36263-2: **£69.99**
eBook: 978-1-315-14451-1
* For **full contents** and more information, visit: **www.routledge.com/9781032362632**

## FORENSIC SCIENCE

### The Mindful Eyewitness Interview

Retrieving Cognitive Evidence



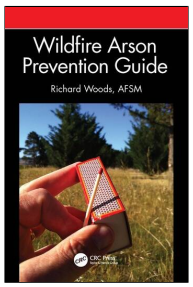

Gil Zamora

*The Mindful Eyewitness Interview: Retrieving Cognitive Evidence* assists investigators in gathering authentic, reliable information from eyewitnesses to identify the culprit, and improving the gathering of reliable information from private sector interviewers.

Considering this current justice reform on best practices, *The Mindful Eyewitness Interview* provides a path forward, detailing how the interviewer can conduct information-gathering strategies of questioning anyone in a mindful manner.

CRC Press
June 2023: 416pp
Hb: 978-1-032-20310-2: **£130.00**
Pb: 978-1-032-20079-8: **£54.99**
eBook: 978-1-003-26317-3
* For **full contents** and more information, visit: **www.routledge.com/9781032200798**

### Wildfire Arson Prevention Guide



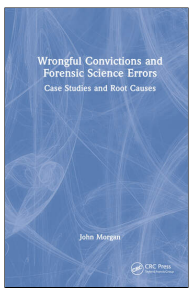

Richard Woods, AFSM

Provides police and fire investigators with frameworks, strategies, and tactics across agencies—that can be incorporated into their current procedures—to address intentional fire starting in their local jurisdictions. The book presents readers with an understanding of why offenders deliberately light fires and provides a broad range of tactics and strategies to identify and prosecute these deliberate firelighters.

CRC Press
March 2023: 128pp
Hb: 978-1-032-40596-4: **£120.00**
Pb: 978-1-032-40594-0: **£42.99**
eBook: 978-1-003-35384-3
* For **full contents** and more information, visit: **www.routledge.com/9781032405940**

### Wrongful Convictions and Forensic Science Errors

Case Studies and Root Causes




John Morgan

This bookprovides a rigorous and detailed examination of two key issues: the continuing problem of wrongful convictions and the role of forensic science in these miscarriages of justice. This comprehensive textbook covers the full breadth of the topic. It looks at each type of evidence, historical factors, system issues, organizational factors, and individual examiners.

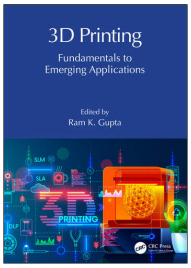
Written in a format and style accessible to a broad audience, Forensic Science Errors and Wrongful Convictions presents a root-cause analysis across all of these issues, supported by detailed case studies and a clear understanding of the scientific basis of the forensic disciplines.

CRC Press
March 2023: 368pp
Hb: 978-1-032-06497-0: **£120.00**
Pb: 978-1-032-06350-8: **£56.99**
eBook: 978-1-003-20257-8
* For **full contents** and more information, visit: **www.routledge.com/9781032063508**

## MATERIALS SCIENCE

### 3D Printing

Fundamentals to Emerging Applications



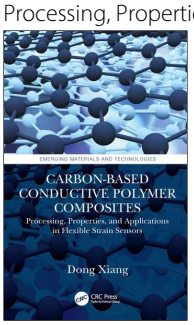

Edited by **Ram K. Gupta**, Pittsburg State University

This comprehensive work provides the fundamentals of 3D printing technologies, current knowledge, and their emerging applications in energy, biomedicals, and sensors. Top international authors in their field cover the fundamentals of 3D printing technologies for batteries, supercapacitors, solar cells, fuel cells, sensors, biomedical, and other emerging applications. They also address current challenges and possible solutions in 3D printing technologies for advanced applications. This is a suitable textbook for students and a must-have resource for researchers and industry professionals working in energy, biomedical, materials, and nanotechnology fields.

CRC Press
April 2023: 502pp
Hb: 978-1-032-28399-9: **£190.00**
Pb: 978-1-032-28401-9: **£42.99**
eBook: 978-1-003-29667-6
* For **full contents** and more information, visit: **www.routledge.com/9781032283999**

### Carbon-Based Conductive Polymer Composites

Processing, Properties, and Applications in Flexible Strain Sensors




Dong Xiang

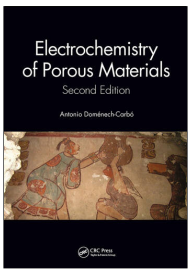
*Series: Emerging Materials and Technologies*

Conductive polymer composites based on carbon nanomaterials are finding increasing applications in aerospace, automotive and electronic industries when flexibility or light weight is required. This book summarizes recent remarkable achievements in the processing-structure-property relationship of conductive polymer composites based on carbon nanomaterials. It also discusses research developments for their application in flexible strain sensors and novel processing methods like additive manufacturing. This work is written for materials scientists and engineers researching and applying these advanced materials.

CRC Press
February 2023: 175pp
Hb: 978-1-032-11158-2: **£120.00**
Pb: 978-1-032-11159-9: **£48.99**
eBook: 978-1-003-21866-1
* For **full contents** and more information, visit: **www.routledge.com/9781032111582**

2nd Edition

### Electrochemistry of Porous Materials




Antonio Doménech Carbó

Describes essential theoretical aspects of the electrochemistry of nanostructured materials and primary applications, incorporating the advances in the field in the last ten years including recent theoretical formulations and the incorporation of novel materials. Concentrating on nanostructured micro- and mesoporous materials, the book offers a more focused and practical analysis of key porous materials considered relatively homogeneous from an electrochemical point of view. Details the use of electrochemical methods in materials science for characterization and their applications in the fields of analysis, energy production and storage, environmental remediation, and the biomedical arena.

CRC Press
February 2023: 350pp
Hb: 978-0-367-36650-6: **£170.00**
Pb: 978-1-032-47426-7: **£42.99**
eBook: 978-0-429-35162-4
* For **full contents** and more information, visit: **www.routledge.com/9781032474267**

## MATERIALS SCIENCE

### Energy Storage and Conversion Materials

Properties, Methods, and Applications

Edited by **Ngoc Thanh Thuy Tran**, National Cheng Kung University, Taiwan, **Jeng-Shiung Jan**, **Wen-Dung Hsu**, National Cheng Kung University, Tainan City, **Ming-Fa Lin** and **Jow-Lay Huang**

This book explores the fundamental properties of a wide range of energy storage and conversion materials, covering mainstream theoretical and experimental studies and their applications in green energy. It investigates physical, chemical, and material properties of rechargeable batteries, supercapacitors, solar cells, and fuel cells, covering the development of theoretical simulations, machine learning, high-resolution experimental measurements, and excellent device performance. The work is appropriate for senior graduate students and researchers in materials, chemical, and energy engineering and related disciplines.

CRC Press
May 2023: 362pp
Hb: 978-1-032-43421-6: **£130.00**
Pb: 978-1-032-43422-3: **£52.99**
eBook: 978-1-003-36721-5
* For **full contents** and more information, visit: **www.routledge.com/9781032434216**

### Functional Nanomaterials for Sensors

Edited by **Suresh Sagadevan** and **Won-Chun Oh**

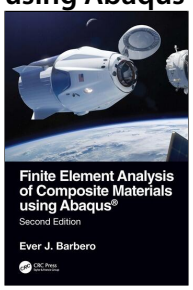
*Series: Emerging Materials and Technologies*

Because of their novel chemical and physical properties, functional nanomaterials have found increasing industrial applications in nanoelectronics, energy science, and biological applications. This book surveys advances in functional nanomaterials and their use in sensing. It covers their properties, synthesis, design, fabrication, and their applications, including in chemical, biological, and gas sensing, environmental remediation, fuel cells, catalysis, electronic devices, and biotechnology. This book is aimed at materials, chemical, biotech, and electronics researchers and industry professionals working on sensor design and development.

CRC Press
May 2023: 352pp
Hb: 978-1-032-20495-6: **£120.00**
Pb: 978-1-032-20496-3: **£48.99**
eBook: 978-1-003-26385-2
* For **full contents** and more information, visit: **www.routledge.com/9781032204956**

2nd Edition

### Finite Element Analysis of Composite Materials using Abaqus®



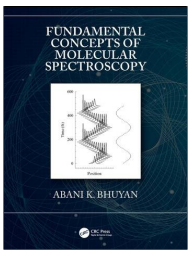

**Ever J. Barbero**, West Virginia University, Morgantown, USA

*Series: Composite Materials*

Developed from the author's course on advanced mechanics of composite materials, Finite Element Analysis of Composite Materials with Abaqus™ shows how powerful finite element tools address practical problems in the structural analysis of composites. This Second Edition updates all examples, sample code, and problems to Abaqus 2020. Aimed at advanced students and professional engineers, this text features 60+ fully developed examples, 80+ end-of-chapter exercises, and 50+ pieces of Abaqus pseudo-code that illustrate solutions to example problems. A companion website offers relevant model files for download, enabling readers to easily reproduce the examples and complete the exercises.

CRC Press
May 2023: 560pp
Hb: 978-0-367-62145-2: **£90.00**
Pb: 978-0-367-62149-0: **£36.00**
eBook: 978-1-003-10815-3
* For **full contents** and more information, visit: **www.routledge.com/9780367621452**

### Fundamental Concepts of Molecular Spectroscopy

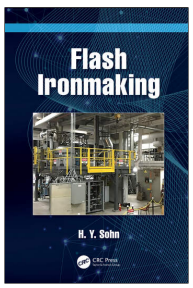



**Abani Bhuyan**, Senior Professor of Chemistry, University of Hyderabad, Hyderabad, Telangana, India, 500046

This practical and unique textbook explains the core areas of molecular spectroscopy as a classical teacher would. The author carefully explores and explains each concept, walking side by side with the student through carefully constructed text, pedagogy, and derivations to ensure comprehension of the basics before approaching higher level topics. The author incorporates both electric resonance and magnetic resonance in the textbook.

CRC Press
March 2023: 322pp
Hb: 978-1-032-27485-0: **£99.99**
Pb: 978-1-032-27495-9: **£42.99**
eBook: 978-1-003-29306-4
* For **full contents** and more information, visit: **www.routledge.com/9781032274850**

### Flash Ironmaking

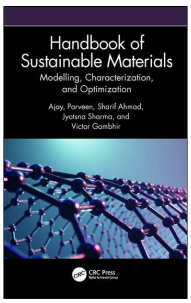



H. Y. Sohn

The steel industry accounts for 6.7% of the anthropogenic CO2 emissions and consumes 6% of the total energy consumed in manufacturing. In response to these critical issues, a new technology called Flash Ironmaking Technology has been developed, aimed at producing iron directly from iron ore concentrate using gaseous reductants/fuels such as natural gas or hydrogen.

CRC Press
March 2023: 296pp
Hb: 978-1-032-37775-9: **£140.00**
Pb: 978-1-032-37838-1: **£56.99**
eBook: 978-1-003-34219-9
* For **full contents** and more information, visit: **www.routledge.com/9781032377759**

### Handbook of Sustainable Materials: Modelling, Characterization, and Optimization




Edited by **Ajay**, SGT University, India, **Parveen**, Rawal Institute of Engineering and Technology, India, **Sharif Ahmad**, Shree Guru Gobind Singh Tricentenary University, India, **Jyotsna Sharma**, Amity University Haryana, India and **Victor Gambhir**, JECRC University, India

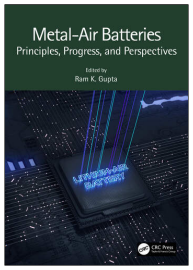
*Handbook of Sustainable Materials* presents recent developments in sustainable materials and how these materials interact with the environment. It highlights the recent and advancements involved in proper utilization of sustainable materials, including chemical and biological approaches. The book will be useful to graduate students, researchers, and professionals working with sustainable materials. It considers applications in sectors such as aerospace, automobile, and biomedical for rapid prototyping and customized production without negative environmental impacts. It features research outcomes and case studies of optimization and modeling techniques in practice.

CRC Press
March 2023: 488pp
Hb: 978-1-032-28632-7: **£140.00**
Pb: 978-1-032-28633-4: **£56.99**
eBook: 978-1-003-29777-2
* For **full contents** and more information, visit: **www.routledge.com/9781032286327**

## MATERIALS SCIENCE

### Metal-Air Batteries

Principles, Progress, and Perspectives




Edited by **Ram K. Gupta**, Pittsburg State University

This essential resource covers the entire spectrum of metal-air batteries, their working principles, recent advancement, and future perspectives. Leading international researchers address materials design, electrochemistry, and architectural aspects. The fundamentals of metal-air materials for cathode and anode, their synthetic approaches, chemistries to modify their properties to provide high energy and power densities, along with long life and stable electrochemical characteristics are detailed. This is a unique offering that will be used by a wide range of readers including those in academia and industries worldwide.

CRC Press
April 2023: 390pp
Hb: 978-1-032-28208-4: **£150.00**
Pb: 978-1-032-28212-1: **£42.99**
eBook: 978-1-003-29576-1
* For **full contents** and more information, visit: **www.routledge.com/9781032282084**

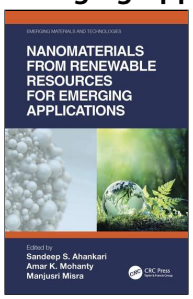
### Polymer-Carbonaceous Filler Based Composites for Wastewater Treatment

Edited by **Jyotishkumar Parameswaranpillai**, Cochin University of Science and Technology, Kerala, India, **Poushali Das**, **Sayan Ganguly**, **Murthy CHAVALI** and **Nishar Hameed**

Polymer-Carbonaceous Filler Based Composites for Wastewater Treatment serves as the first book to offer a concise treatment of the use of these materials in the treatment of wastewater. It provides a systematic and comprehensive account of recent developments and encompasses novel methods for the synthesis of carbonaceous derivatives-based fillers for polymer composites, their characterization techniques, and applications for remediation of water contamination. Academics, researchers, scientists, engineers and students in materials and polymer engineering and wastewater treatment will benefit from this application-oriented book.

CRC Press
May 2023: 368pp
Hb: 978-1-032-35090-5: **£140.00**
Pb: 978-1-032-35699-0: **£52.00**
eBook: 978-1-003-32809-4
* For **full contents** and more information, visit: **www.routledge.com/9781032350905**

### Nanomaterials from Renewable Resources for Emerging Applications




Edited by **Sandeep S. Ahankari**, **Amar K. Mohanty** and **Manjusri Misra**

*Series: Emerging Materials and Technologies*

Nanomaterials from Renewable Resources for Emerging Applications details developments in nanomaterials produced from renewable materials and their usage in food and packaging, energy conservation, and environmental applications. Equally beneficial to researchers and professionals, this book is aimed at readers across materials science and engineering, chemical engineering, chemistry, and related fields interested in sustainable engineering.

CRC Press
February 2023: 542pp
Hb: 978-1-032-15671-2: **£140.00**
eBook: 978-1-003-24526-1
* For **full contents** and more information, visit: **www.routledge.com/9781032156712**

### Recycled Aggregate Concrete

Technology and Properties

**Natt Makul**, Phranakhon Rajabhat University, Bangkok

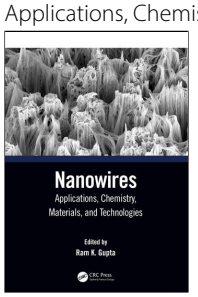
*Series: IOM3 Publications*

Recycled aggregate concrete (RAC) as a sustainable material is gaining increasing importance in the construction industry. This book discusses properties, specifications, and applications of RAC and offers readers insight into current research and advances in the development and utilization of RAC. It will be useful for researchers, concrete scientists and technologists, practicing engineers, and advanced students interested in the re-use of construction waste for sustainable construction practices.

CRC Press
April 2023: 408pp
Hb: 978-1-032-18941-3: **£130.00**
Pb: 978-1-032-18987-1: **£42.99**
eBook: 978-1-003-25709-7
* For **full contents** and more information, visit: **www.routledge.com/9781032189413**

### Nanowires

Applications, Chemistry, Materials, and Technologies



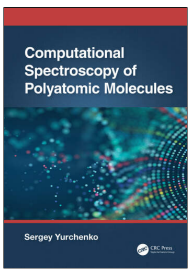

Edited by **Ram K. Gupta**, Pittsburg State University

This comprehensive resource covers the fundamentals of synthesis, characterizations, recent progress, and applications of nanowires for many emerging applications. Early chapters address their unique properties and morphology that enable their electronic, optical, and mechanical properties to be tuned. Later chapters address future perspectives and future challenges in areas where nanowires could provide possible solutions. All chapters will be covered by global experts making this a suitable textbook for students and an up-to-date handbook for researchers and industry professionals working in physics, chemistry, materials, energy, biomedical, and nanotechnology.

CRC Press
March 2023: 428pp
Hb: 978-1-032-28385-2: **£140.00**
Pb: 978-1-032-28390-6: **£64.99**
eBook: 978-1-003-29662-1
* For **full contents** and more information, visit: **www.routledge.com/9781032283852**

## PHYSICS

### Computational Spectroscopy of Polyatomic Molecules




**Sergey Yurchenko**, University College London, UK

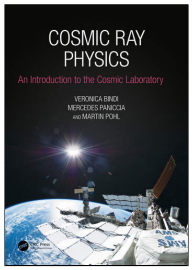
This book provides a detailed description of the modern variational methods available for solving the nuclear motion Schrödinger equation to enable accurate theoretical spectroscopy of polyatomic molecules. This book has collected descriptions of quantum mechanical methods into one cohesive text, making the information more accessible to the scientific community, especially for young researchers, who would like to devote their scientific career to the field of computational molecular physics.

CRC Press
February 2023: 206pp
Hb: 978-1-498-76119-2: **£89.99**
Pb: 978-1-032-43372-1: **£42.99**
eBook: 978-0-429-15434-8
* For **full contents** and more information, visit: **www.routledge.com/9781498761192**

## PHYSICS

### Cosmic Ray Physics

An Introduction to The Cosmic Laboratory




**Veronica Bindi**, **Mercedes Paniccia** and **Martin Pohl**

The book provides an accessible overview of this lively and diversified research field. It will be of interest to undergraduate physics students beginning their studies on astronomy, cosmology, and particle physics. It is also accessible to the general public by concentrating mathematical and technical detail into Focus Boxes.

CRC Press
March 2023: 336pp
Hb: 978-1-032-00391-7: **£125.00**
Pb: 978-1-032-02001-3: **£49.99**
eBook: 978-1-003-18138-5
* For **full contents** and more information, visit: **www.routledge.com/9781032020013**

### Introductory Physics for the Life Sciences Two-Vol. Set

**David V. Guerra**

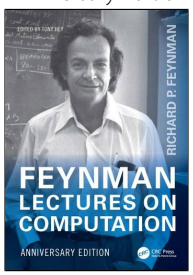
This textbook provides an accessible introduction to physics for undergraduate students in the life sciences, including those majoring in all branches of biology, biochemistry, and psychology and students working on pre-professional programs such as pre-medical, pre-dental, and physical therapy. The text is geared for the algebra-based physics course, often named College Physics in the United States. The order of topics studied are such that most of the problems in the text can be solved with the methods of Statics or Dynamics. That is, they require a free body diagram, the application of Newton's Laws, and any necessary kinematics.

CRC Press
June 2023: 932pp
Hb: 978-1-032-49091-5: **£230.00**
Pb: 978-1-032-49093-9: **£89.99**
* For **full contents** and more information, visit: **www.routledge.com/9781032490939**

2nd Edition

### Feynman Lectures on Computation

Anniversary Edition




Edited by **Tony Hey**, Microsoft Research Connections, Redmond, Washington, USA

*Series: Frontiers in Physics*

The last lecture course that Nobel Prize winner Richard P. Feynman gave at Caltech from 1983 to 1986 was not on physics but on computer science. The first edition of this book published in 1996 and provided an overview of standard and not-so-standard topics in computer science given in Feynman's inimitable style. The material is still relevant and interesting, and Feynman's unique philosophy of learning and discovery shines through. For this new edition, editor Tony Hey has updated the lectures with invited chapters from preeminient scholars. This exciting and important work provides key reading for students and scholars in the fields of computer science and computational physics.

CRC Press
May 2023: 392pp
Hb: 978-1-032-41588-8: **£120.00**
Pb: 978-0-367-85733-2: **£48.99**
eBook: 978-1-003-35881-7
* For **full contents** and more information, visit: **www.routledge.com/9781032415888**

### Polarization Dynamics of Mode-Locked Fiber Lasers

Science, Technology, and Applications

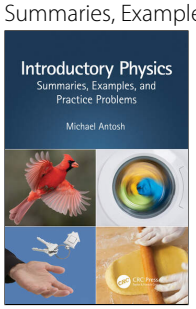
Edited by **Sergey V. Sergeyev** and **Chengbo Mou**

This book provides a comprehensive review of the latest research on the science, technology, and applications of mode-locked fiber lasers generating pulse trains with the evolving state of polarization at time scales ranging from a few pulse widths to ten thousand laser cavity round-trip times. It supports readers with a timely source of information on the current novel scientific concepts, and cost-effective schematics, in addition to an overview of the feasible applications.

CRC Press
April 2023: 248pp
Hb: 978-1-032-06450-5: **£89.99**
Pb: 978-1-032-07406-1: **£42.99**
eBook: 978-1-003-20676-7
* For **full contents** and more information, visit: **www.routledge.com/9781032064505**

### Introductory Physics

Summaries, Examples, and Practice Problems




**Michael Antosh**, University of Rhode Island

This textbook covers topics related to units, kinematics, forces, energy, momentum, circular and rotational motion, Newton's general equation for gravity, and simple harmonic motion (things that go back and forth). A math review is also included, with a focus on algebra and trigonometry. This book is a very useful study guide for students in introductory physics courses, particularly high school and college students in an algebra-based introductory physics course, and even students in an introductory calculus-level course. It can also be used as a standalone textbook in courses where derivations are not emphasized.

CRC Press
February 2023: 408pp
Hb: 978-0-367-43685-8: **£110.00**
Pb: 978-0-367-43423-6: **£42.99**
eBook: 978-1-003-00504-9
* For **full contents** and more information, visit: **www.routledge.com/9780367434236**

### Systems Approach to Astrobiology

**Vera M. Kolb**, Department of Chemistry, University of Wisconsin-Parkside, USA and **Benton C. Clark**

Systems thinking/analysis is widely applied for solving complex problems in engineering and certain other fields. Astrobiology, which inherently involves complex problems, can benefit from such an approach. This book provides background and methodology of this approach for professionals, upper-level undergraduate students, and others with an interest in astrobiology topics.

CRC Press
May 2023: 168pp
Hb: 978-1-032-12714-9: **£120.00**
Pb: 978-1-032-11628-0: **£48.99**
eBook: 978-1-003-22587-4
* For **full contents** and more information, visit: **www.routledge.com/9781032116280**

# PHYSICS

## Textbook of Ion Channels Volume I

Basics and Methods

Edited by **Jie Zheng**, University of California at Davis, USA and **Matthew C. Trudeau**, University of Maryland, Baltimore, USA

This three-volume textbook provides a wide-ranging reference source on ion channels for students, instructors, and researchers. Volume I covers fundamental topics and basic principles, and offers a practical guide of cardinal methods for researching ion channels. The modern methods used in the study of ion channels are powerful and diverse, and all three volumes give the reader an introduction to the fundamental concepts of the mechanism of ion channels, a guide to technical research aspects, a modern guide to the properties of major ion channel families, and include key examples of regulatory, physiological, and disease roles for ion channels.

CRC Press
April 2023: 328pp
Hb: 978-0-367-53815-6: **£89.99**
Pb: 978-0-367-56049-2: **£41.99**
eBook: 978-1-003-09621-4
* For **full contents** and more information, visit: **www.routledge.com/9780367538156**

## Textbook of Ion Channels Volume II

Properties, Function, and Pharmacology of the Superfamilies

Edited by **Jie Zheng**, University of California at Davis, USA and **Matthew C. Trudeau**, University of Maryland, Baltimore, USA

This three-volume textbook provides a wide-ranging reference source on ion channels for students, instructors, and researchers. Volume II covers the physiological role, structural components, gating mechanisms, biophysics, permeation, selectivity, regulation, and pharmacology in disease mechanisms. The modern methods used in the study of ion channels are powerful and diverse, and all three volumes give the reader an introduction to the fundamental concepts of the mechanism of ion channels, a guide to technical research aspects, a modern guide to the properties of major ion channel families, and include key examples of regulatory, physiological, and disease roles for ion channels.

CRC Press
April 2023: 496pp
Hb: 978-0-367-53816-3: **£89.99**
Pb: 978-0-367-56081-2: **£41.99**
eBook: 978-1-003-09627-6
* For **full contents** and more information, visit: **www.routledge.com/9780367538163**

## Textbook of Ion Channels Volume III

Regulation, Physiology, and Diseases

Edited by **Jie Zheng**, University of California at Davis, USA and **Matthew C. Trudeau**, University of Maryland, Baltimore, USA

This three-volume textbook provides a wide-ranging reference source on ion channels for students, instructors, and researchers. Volume III covers key ion channel regulators, the role of ion channels in selected physiological systems, and examples of mutations and dysfunction in selected diseases. The modern methods used in the study of ion channels are powerful and diverse, and all three volumes give the reader an introduction to the fundamental concepts of the mechanism of ion channels, a guide to technical research aspects, a modern guide to the properties of major ion channel families, and include key examples of regulatory, physiological, and disease roles for ion channels.

CRC Press
April 2023: 240pp
Hb: 978-0-367-53819-4: **£89.99**
Pb: 978-1-032-40804-0: **£42.99**
eBook: 978-1-003-31031-0
* For **full contents** and more information, visit: **www.routledge.com/9780367538194**

## The Physics of Evolution

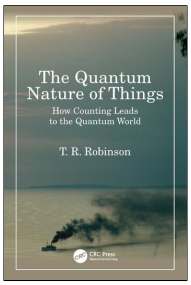
**Michael W. Roth**

This book provides an introduction to the significant role of physics in evolution, based on the ideas of matter and energy resource flow, organism self-copying, and ecological change. The text employs these ideas to create quantitative models for important evolutionary processes. It demonstrates that these models are in conceptual agreement with numerous examples of biological phenomena, and reveals, through physics, how complex design can arise naturally. The book will serve as a key text on the part physics plays in evolution, and will be of great interest to students at the university level and above studying biophysics, physics, systems biology, and related fields.

CRC Press
June 2023: 200pp
Hb: 978-1-032-48907-0: **£120.00**
Pb: 978-1-032-49042-7: **£48.99**
eBook: 978-1-003-39139-5
* For **full contents** and more information, visit: **www.routledge.com/9781032489070**

## The Quantum Nature of Things

How Counting Leads to the Quantum World




**T R Robinson**

This book offers readers an entirely original and unconventional view of quantum mechanics. It is a view that accepts quantum mechanics as the natural way to think about the way nature works, rather than the view commonly expressed, especially in books on quantum physics, that quantum theory is weird and counterintuitive. It is based on the concept of itemization.

From this simple premise, quantities like energy and momentum, both linear and angular emerge naturally, as do configuration space, potentials, the electromagnetic field, many-body dynamics, special relativity and relativistic wave mechanics.

CRC Press
April 2023: 296pp
Hb: 978-1-032-44623-3: **£112.99**
Pb: 978-1-032-45546-4: **£44.99**
eBook: 978-1-003-37750-4
* For **full contents** and more information, visit: **www.routledge.com/9781032455464**

## Thermal Physics Tutorials with Python Simulations

**Minjoon Kouh** and **Taejoon Kouh**

*Series: Series in Computational Physics*

This book may serve as a thermal physics textbook for a semester-long undergraduate thermal physics course or may be used as a tutorial on scientific computing with focused examples from thermal physics. This book will also appeal to engineering students studying intermediate-level thermodynamics as well as computer science students looking to understand how to apply their computer programming skills to science.

CRC Press
March 2023: 238pp
Hb: 978-1-032-25756-3: **£74.99**
Pb: 978-1-032-26343-4: **£42.99**
eBook: 978-1-003-28784-1
* For **full contents** and more information, visit: **www.routledge.com/9781032257563**

## PHYSICS

2nd Edition

### Unifying Physics of Accelerators, Lasers and Plasma

**Andrei Seryi** and **Elena Seraia**

Unifying Physics of Accelerators, Lasers and Plasma outlinesa path from idea to practical implementation of scientific and technological innovation.This second edition has been updated throughout, with new content on superconducting technology, linacs, energy recovery, polarization, various topics of advanced technology, etc., making it relevant for the Electron-Ion Collider project, as well as for advanced lights sources, including energy recovery-based FELs .

CRC Press
April 2023: 448pp
Hb: 978-1-032-35035-6: **£140.00**
Pb: 978-1-032-35250-3: **£56.99**
eBook: 978-1-003-32607-6
* For **full contents** and more information, visit: **www.routledge.com/9781032352503**

### The Game Writing Guide

Get Your Dream Job and Keep It

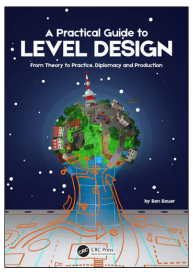
**Anna Megill**

This comprehensive guide walks readers through the entire process of getting and keeping a writing job in the games industry. It outlines exactly what a beginner needs to know about education requirements, finding opportunities, applying for roles, and acing studio interviews. Professional writers will learn how to navigate studio hierarchies, transfer roles and companies, work overseas, and keep developing their careers. This book will be of great interest to all beginner and aspiring games writers and narrative designers, as well as more experienced writers looking to hone their skills.

CRC Press
May 2023: 256pp
Hb: 978-1-032-25238-4: **£120.00**
Pb: 978-1-032-25236-0: **£42.99**
eBook: 978-1-003-28223-5
* For **full contents** and more information, visit: **www.routledge.com/9781032252360**

## GAME DESIGN

### A Practical Guide to Level Design




**Benjamin Bauer**

Written by a AAA industry expert with over twenty years of experience, this book gives a realistic and practical insight into the complex work of being a level designer. It covers everything from practical production skills to the social and soft skills needed to become a successful level designer in the games industry. This book will be of great interest to all level designers, content leads and directors looking to enhance their skillset. It will also appeal to students of level and game design looking for tips on how to break into the industry.

CRC Press
February 2023: 374pp
Hb: 978-1-032-23098-6: **£120.00**
Pb: 978-1-032-23089-4: **£44.99**
eBook: 978-1-003-27566-4
* For **full contents** and more information, visit: **www.routledge.com/9781032230894**

### Digital Character Creation for Video Games and Collectibles

**Samuel King**

This book covers the process of creating digital characters for videogames as well as for 3D print and collectibles. It looks at character asset creation for high-end AAA console games as well as asset creation for legacy devices and the ever-growing mobile gaming industry. Lastly, it covers creation of figurines for 3D printing and collectables. This book will be of great interest to all beginner and junior character artists currently working in the gaming or collectable industry or looking to enter these industries. There is also relevant content in the highly detailed examples for people currently working in the industry and looking to pick up a few new tips, tricks and knowledge.

CRC Press
June 2023: 200pp
Hb: 978-1-032-01289-6: **£120.00**
Pb: 978-1-032-01287-2: **£48.99**
eBook: 978-1-003-17805-7
* For **full contents** and more information, visit: **www.routledge.com/9781032012872**

## ANIMATION

### Creative Character Design for Games and Animation

**Jenny Harder**

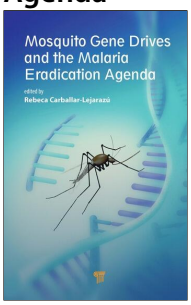
This book takes you through the general practice of designing characters for games and animation.

It covers aspects such as creative thinking, working with references through to the development phase and final render. It covers a range of styles such as cartoony, stylized and semi-realistic, and explains how to differentiate between them and use them effectively. This book will be a valuable resource for all junior artists, hobby artists, and art students looking to develop and improve their character development skills for games and animation.

CRC Press
June 2023: 128pp
Hb: 978-1-032-15299-8: **£110.00**
Pb: 978-1-032-15296-7: **£42.99**
eBook: 978-1-003-24353-3
* For **full contents** and more information, visit: **www.routledge.com/9781032152967**

## JENNY STANFORD PUBLISHING

### Mosquito Gene Drives and the Malaria Eradication Agenda




Edited by **Rebeca Carballar-Lejarazú**

Genetic approaches that focus on the vector mosquitoes to prevent malaria parasite transmission have been considered for many decades. Genetic control strategies received a significant boost with the successful development of gene-drive systems, genetic methods for rapidly spreading beneficial genes and phenotypes through mosquito populations. This book reviews some concepts of gene drive systems and describes pioneering applications to control mosquito populations and prevent parasite transmission.

Jenny Stanford Publishing
February 2023: 372pp
Hb: 978-9-814-96833-1: **£139.00**
eBook: 978-1-003-30877-5
* For **full contents** and more information, visit: **www.routledge.com/9789814968331**

JENNY STANFORD PUBLISHING

## Neuroscience for Artificial Intelligence

**Huijue Jia**, Fudan University, China, People's Republic

The ongoing boom of applications for artificial intelligence (AI) is based on algorithms that were inspired by neuroscience discoveries in the 1960s. This is a timely book to introduce the new discoveries and ideas in neuroscience, for the next wave of more powerful AI. AI researchers are all interested in the human brain, which is more capable and energy-efficient, but do not have good reading materials from the rather separate subfields of neuroscience, all with plenty of jargons. Based on hundreds of publications from top journals, the book fills in the gap between existing computational hardware/algorithms and emerging knowledge from neuroscience.

Jenny Stanford Publishing
June 2023: 300pp
Hb: 978-9-814-96878-2: **£116.00**
* For **full contents** and more information, visit: **www.routledge.com/9789814968782**

## Rhyacophilidae of India

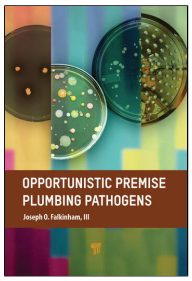
Systematics and Ecology of the Indian Species of family Rhyacophilidae

**Sajad Hussain Parey**, **Tabraq Ali** and **Manpreet Singh Pandher**

This book documents all of the 184 species of one of the largest family of Trichoptera: Rhyacophilidae. It details the taxonomic description of each species along with good-quality figures, provides information on the holotypes for each species, and incorporates a detailed and updated checklist of the caddisfly family Rhyacophilidae in India, the keys for the groups and subgroups, and the generic keys. This book will be a useful resource for the researchers, insect biologists, professionals, and undergraduate and postgraduate students studying the systematic and ecological aspects of caddisflies.

Jenny Stanford Publishing
June 2023: 400pp
Hb: 978-9-814-96874-4: **£139.00**
* For **full contents** and more information, visit: **www.routledge.com/9789814968744**

## Opportunistic Premise Plumbing Pathogens



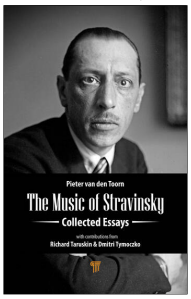

**Joseph O. Falkinham, III**, Virginia Tech, U.S.A.

As the first book-length review of OPPPs, this book describes the shared characteristics of the emerging group of water-borne pathogens that are normal inhabitants of drinking water systems and premise plumbing. It discusses the selective conditions of drinking water distribution systems and premise plumbing that have led to the emergence of OPPPs. The text also reviews the results of the studies that describe microbial adaptations leading to survival, persistence, and growth in drinking water distribution systems and premise plumbing.

Jenny Stanford Publishing
March 2023: 240pp
Hb: 978-9-814-96840-9: **£116.00**
eBook: 978-1-003-32100-2
* For **full contents** and more information, visit: **www.routledge.com/9789814968409**

## The Music of Stravinsky

Collected Essays



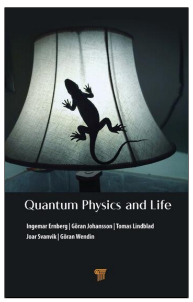

**Pieter C. van den Toorn**, University of California, U.S.A.

The essays in this volume, spanning more than forty, address the dynamics of Stravinsky's music from a variety of analytical, critical, and aesthetic angles. Works such as The Rite of Spring (1913), Les Noces (1917–23), the Symphony of Psalms (1930), and the Symphony in Three Movements (1945) are discussed in detail, as are many of the circumstances attending their conception.

Jenny Stanford Publishing
September 2023: 514pp
Hb: 978-9-814-96862-1: **£53.99**
eBook: 978-1-003-35916-6
* For **full contents** and more information, visit: **www.routledge.com/9789814968621**

## Quantum Physics and Life

How We Interact with the World Inside and Around Us



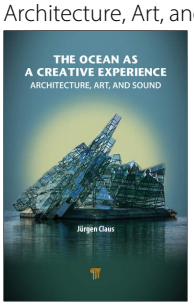

**Ingemar Ernberg**, Karolinska Institute, Sweden, **Göran Johansson**, Chalmers University of Technology, Sweden, **Tomas Lindblad**, **Joar Svanvik**, Linköping University, Sweden and **Göran Wendin**, Chalmers University of Technology, Sweden

This book presents glimpses of how the physics of atoms and molecules influences, and even controls, the way our cells function and how we interact with our environment. Certainly, biochemistry and molecular biology are the foundations for the biology of living cells, but there might be more—quantum coherence and entanglement influencing the functioning of proteins and enzymes. There are even speculations that our thinking brains make use of quantum entanglement. In the end, however, this book is based on the solid ground of science, presenting the many fascinating phenomena of quantum physics and life without unwarranted mystification.

Jenny Stanford Publishing
December 2022: 176pp
Hb: 978-9-814-96828-7: **£76.99**
eBook: 978-1-003-31267-3
* For **full contents** and more information, visit: **www.routledge.com/9789814968287**

## The Ocean as a Creative Experience

Architecture, Art, and Music




**Juergen Claus**

The new book by artist, diver and editor-in-chief of an underwater magazine Jürgen Claus is a milestone among the books dedicated to the planet sea. It is the knowledgeable overview, created from facts and experiences, of three creative areas that have never before been described in context. A special attention is paid by Prof. Claus on a post-disaster architecture. Younger readers are encouraged to design such metabolic buildings themselves.

Jenny Stanford Publishing
March 2023: 196pp
Hb: 978-9-814-96857-7: **£76.99**
eBook: 978-1-003-35668-4
* For **full contents** and more information, visit: **www.routledge.com/9789814968577**

APPLE ACADEMIC PRESS

## Advanced Technologies for Water Quality Treatment and Management

Edited by **Mehraj U. Din Dar**, Punjab Agricultural University, India, **Aamir Ishaq Shah**, Indian Institute of Technology (Roorkee), India, **Shakeel Ahmad Bhat**, Sher-E-Kashmir University of Agricultural Sciences and Technology, India and **Syed Rouhullah Ali**, Sher-E-Kashmir University of Agricultural Sciences and Technology, India

Explores important current and recent approaches and advanced techniques for the effective management and treatment of wastewater. It discusses techniques for achieving optimum water quality management, for restoration of water bodies, for the improvement of a circular water economy, and for effective water reuse. These include sustainable phytoremediation techniques, such as the use of earthworms, ecological floating beds, and anaerobic biovalorization. Also covers eco-roofs, remote sensing in water quality management, biosand filters for household wastewater treatment, and much more.

Apple Academic Press
June 2025: 328pp
Hb: 978-1-774-91177-8: **£124.00**
Pb: 978-1-774-91178-5: **£82.99**
eBook: 978-1-003-31457-8
* For **full contents** and more information, visit: **www.routledge.com/9781774911785**

## Emotional Intelligence for Leadership Effectiveness

Management Opportunities and Challenges during Times of Crisis

Edited by **Mubashir Majid Baba**, University of Kashmir, India, **Chitra Krishnan**, Amity University, India and **Fatma Nasser Al-Harthy**

An in-depth examination of workplace challenges faced due to COVID-19 through the lens of emotional intelligence and the roles of leadership. Offering multiple perspectives—theoretical, philosophical, qualitative, and quantitative, it discusses how to effectively apply emotional intelligence principles and strategies to navigate the mental and psychological challenges facing the workforce and those in management roles. Topics address meeting the psychological and emotional health needs of the workforce and the roles of leadership. It discusses anxiety, depression, and stress, the spread of negative information through social media, etc.

Apple Academic Press
June 2025: 270pp
Hb: 978-1-774-91132-7: **£116.00**
Pb: 978-1-774-91133-4: **£82.99**
eBook: 978-1-003-30386-2
* For **full contents** and more information, visit: **www.routledge.com/9781774911334**

## Advances in Food Process Engineering

Novel Processing, Preservation, and Decontamination of Foods

Edited by **Megh R. Goyal**, University of Puerto Rico, USA, **N. Veena**, Guru Angad Dev Veterinary and Animal Sciences University, India and **Ritesh B. Watharkar**, MIT-ADT University, India

*Series: Innovations in Agricultural & Biological Engineering*

Discusses novel food processing methods, exploring the principles, benefits, and techniques used; recent developments and applications of ultrasonication; supercritical fluid extraction and supercritical fluid chromatography; extrusion technology; advanced drying and dehydration technologies; and encapsulation methods as important tools in the processing of food. Chapters on membrane technology in food processing along with their advantages and disadvantages, food and starch processing, beverage processing, sugar manufacturing, oil processing, and treatment of industrial food processing waste.

Apple Academic Press
June 2025: 370pp
Hb: 978-1-774-91114-3: **£131.00**
Pb: 978-1-774-91115-0: **£82.99**
eBook: 978-1-003-30384-8
* For **full contents** and more information, visit: **www.routledge.com/9781774911150**

## Environmental Pollution Impact on Plants

Survival Strategies under Challenging Conditions

Edited by **Tariq Aftab**, Aligarh Muslim University, India and **Khalid Rehman Hakeem**, King Abdulaziz University, Saudi Arabia

Studies the impact and management of pollution on plants, resulting in plant abiotic stress physiology, which causes reduction in growth due to alterations in biochemical and physiological processes. It details harm to plants caused primarily by heavy metal contamination in soils, using pesticides, and by air pollution and presents several mitigation strategies. Topics include the antioxidant, photosynthesis, and growth characteristics of plants grown in polluted soils; the benefits and hazards of pesticides; microbe-assisted bioremediation and biotechnological advances for plant pollution control; and more.

Apple Academic Press
June 2025: 294pp
Hb: 978-1-774-91124-2: **£131.00**
Pb: 978-1-774-91125-9: **£82.99**
eBook: 978-1-003-30421-0
* For **full contents** and more information, visit: **www.routledge.com/9781774911259**

## Computational Health Informatics for Biomedical Applications

Edited by **Aryan Chaudhary** and **Sardar M. N. Islam (Naz)**

Explores computational tactics as applied to the development of biomedical applications, using artificial intelligence, machine learning, signal analysis, computer-aided design, robotics and automation, biomedical imaging, telemedicine, and other technologies. It provides an overview of the advancements in modern technology for diagnosing major life-threatening diseases, including using photonic MEMS sensors, biomedical signal processing, 1D photonic crystal-based distributed Bragg reflectors (DBRs), and biosensor chips used to detect foreign bodies, such as cancer cells, or infected stages of blood cells for quick medical diagnosis.

Apple Academic Press
August 2025: 364pp
Hb: 978-1-774-91253-9: **£139.00**
Pb: 978-1-774-91254-6: **£82.99**
eBook: 978-1-003-33168-1
* For **full contents** and more information, visit: **www.routledge.com/9781774912546**

## Sustainable Nanomaterials for Biosystems Engineering

Trends in Renewable Energy, Environment, and Agriculture

Edited by **Junaid Ahmad Malik**, **Megh R. Goyal** and **Mohamed Jaffer M. Sadiq**

*Series: Innovations in Agricultural & Biological Engineering*

Explores the integration of bionanomaterials and sustainable resources for the development of new and emerging sustainable processes. It highlights the concept of essential bionanomaterials derived from sustainable resources with examples of interdisciplinary methodologies and research that highlight the reuse of biomass waste as well as the proper usage of green technologies. The volume considers the most recent trends, challenges, and applications in bionanomaterials derived from sustainable sources in energy production and environmental mitigation.

Apple Academic Press
June 2025: 554pp
Hb: 978-1-774-91201-0: **£147.00**
Pb: 978-1-774-91202-7: **£82.99**
eBook: 978-1-003-33351-7
* For **full contents** and more information, visit: **www.routledge.com/9781774912027**

*100 Cases in Clinical Pathology and Laboratory Medicine* ..... 18
*3D Printing* ..... 35
*3D Printing of Sensors, Actuators, and Antennas for Low-Cost Product Manufacturing* ..... 6

## A

*Advanced Crime Scene Photography* ..... 32
*Advanced Technologies for Solid, Liquid, and Gas Waste Treatment* ..... 4
*Advanced Technologies for Water Quality Treatment and Management* ..... 42
*Advances in Food Process Engineering* ..... 42
*AI and Society* ..... 29
*AI Factory* ..... 6
*AI for Diversity* ..... 29
*AI for Finance* ..... 29
*AI for Scientific Discovery* ..... 30
*AI in and for Africa* ..... 30
*Algorithms, Humans, and Interactions* ..... 30
*Anthocyanins in Subtropical Fruits* ..... 8
*Applications of Functional Foods and Nutraceuticals for Chronic Diseases* ..... 8
*Applied Categorical and Count Data Analysis* ..... 14
*Applied Sociology of Health and Illness* ..... 16
*Aromatic and Medicinal Plants of Drylands and Deserts* ..... 23
*Atlas of Vulvovaginal Disease in Darker Skin Types* ..... 18
*Aughey and Frye's Comparative Veterinary Histology with Clinical Correlates* ..... 23
*Aggarwaya* ..... 23

## B

*Bailey & Love's Short Practice of Surgery - 28th Edition* ..... 18
*Baseball Mysteries, The* ..... 14
*Basics of Ramsey Theory* ..... 11
*Biofuels* ..... 4
*Bioinformatics* ..... 30
*Biology for the Health Sciences* ..... 16
*Biology of Aquatic and Wetland Plants, The* ..... 25
*Biology Trending* ..... 23
*Biotechnology for Toxicity Remediation and Environmental Sustainability* ..... 23
*Bleep Test, The* ..... 18
*Blockchain-Enabled Resilience* ..... 6
*Botulinum Toxin in Aesthetic Medicine* ..... 18
*Building Blocks of Life, The* ..... 11

## C

*Carbon-Based Conductive Polymer Composites* ..... 35
*Caribbean Coral Reef, The* ..... 32
*Case Studies in Infectious Disease* ..... 19
*Causal Inference* ..... 14
*Cause, Effect, and Control of Accidental Loss, The* ..... 3
*Cereal Grains* ..... 8
*Chemical and Functional Properties of Food Components* ..... 9
*Chemical Calculations* ..... 26
*Chinese Medicine for Upper Body Pain* ..... 24
*Clark's Essential Guide to Clinical Ultrasound* ..... 19
*Clark's Essential Guide to Mammography* ..... 19
*Clinical Melioidosis* ..... 19
*Computational Health Informatics for Biomedical Applications* ..... 42
*Computational Linear Algebra* ..... 11
*Computational Mathematics* ..... 11
*Computational Spectroscopy of Polyatomic Molecules* ..... 37
*Concise Textbook of Equine Clinical Practice Book 1* ..... 23
*Concise Textbook of Equine Clinical Practice Book 2* ..... 22
*Concise Textbook of Large Animal Handling* ..... 22
*Cosmic Ray Physics* ..... 38
*Countering Terrorist and Criminal Financing* ..... 33
*Craft Beers* ..... 9
*Creative Character Design for Games and Animation* ..... 40
*Crime Mapping and Spatial Data Analysis using R* ..... 14

## D

*Data Science for Civil Engineering* ..... 5
*Data Visualization in Excel* ..... 30
*Day's Veterinary Immunology* ..... 22
*Death Investigation* ..... 33
*Death, Decomposition, and Detector Dogs* ..... 33
*Decision Intelligence* ..... 30
*Deep Learning and Scientific Computing with R torch* ..... 15
*Design and Control of Grid Connected Photovoltaic System* ..... 6
*Developing Brain and its Connections, The* ..... 25
*Digital Age in Agriculture, The* ..... 10
*Digital Character Creation for Video Games and Collectibles* ..... 40
*Digital Fashion Innovations* ..... 7
*Driving Automation* ..... 2

## E

*Echocardiography* ..... 19
*Electrically Conductive Membrane Materials and Systems* ..... 4
*Electrochemistry of Porous Materials* ..... 35
*Emerging Drug Delivery and Biomedical Engineering Technologies* ..... 27
*Emerging Technologies in Food Preservation* ..... 9
*Emotional Intelligence for Leadership Effectiveness* ..... 42
*Energy Storage and Conversion Materials* ..... 36
*Enhancing Fertility through Functional Medicine* ..... 19
*Environmental Chemistry* ..... 27
*Environmental Pollution Impact on Plants* ..... 42
*Essential Oils as Antimicrobial Agents in Food Preservation* ..... 9
*Essentials for Aesthetic Dermatology in Ethnic Skin* ..... 20
*Ethical Engineering* ..... 3
*Every Doctor* ..... 17
*Expanding Mathematical Toolbox: Interweaving Topics, Problems, and Solutions* ..... 12
*Explaining Renewable Energy* ..... 27

## F

*Farm Animal Welfare Law* ..... 22
*Feynman Lectures on Computation* ..... 38
*Field Guide to Clandestine Laboratory Identification and Investigation* ..... 33
*Finite Element Analysis of Composite Materials using Abaqus®* ..... 36
*Flash Ironmaking* ..... 36
*Flavonoids and Anti-Aging* ..... 9
*Flight Mechanics Modeling and Analysis* ..... 5
*Forensic DNA Applications* ..... 33
*Forensic DNA Trace Evidence Interpretation* ..... 33
*Foundations of Quantitative Finance: Book III. The Integrals of Riemann, Lebesgue and (Riemann-)Stieltjes* ..... 12
*Fruits and Their Roles in Nutraceuticals and Functional Foods* ..... 9
*Functional Nanomaterials for Sensors* ..... 36
*Fundamental Concepts of Molecular Spectroscopy* ..... 36
*Fundamentals of Mathematical Statistics* ..... 15

## G

*Game Writing Guide, The* ..... 40
*Genomes 5* ..... 24
*Geographic Data Science with Python* ..... 15
*Geographic Data Science with R* ..... 32
*Geometry for the Artist* ..... 12
*Grid-Forming Power Inverters* ..... 6
*Ground Support Technology for Highly Stressed Excavations* ..... 8

## H

*Handbook of Acid-Base Indicators* ..... 27
*Handbook of Coriander (Coriandrum sativum)* ..... 10
*Handbook of Homeland Security, The* ..... 34
*Handbook of Nanoencapsulation* ..... 10
*Handbook of Sustainable Materials: Modelling, Characterization, and Optimization* ..... 36
*Handbook of Systemic Drug Treatment in Dermatology* ..... 20
*Hands-On Data Science for Librarians* ..... 15
*Hayes' Principles and Methods in Toxicology* ..... 24
*Hidden in White Sight* ..... 31
*How to Solve A Problem* ..... 27
*How to Stop a Hijacking* ..... 34
*Hox Modules in Evolution and Development* ..... 24
*Human Factors in Engineering* ..... 2
*Human Factors on the Flight Deck* ..... 2
*Hydrometallurgical Recycling of Lithium-Ion Battery Materials* ..... 4

## I

*Imaging for Students* ..... 20
*Imaging in Critical Care Medicine* ..... 20
*Industrial Reliability and Safety Engineering* ..... 7
*Infection Prevention and Control* ..... 17
*Infinite Groups* ..... 12
*Inhaled Delivery Systems for the Treatment of Asthma and COPD* ..... 20
*Innovating for The Circular Economy* ..... 32
*Introduction to Environmental Data Science* ..... 32
*Introduction to Financial Derivatives with Python* ..... 12
*Introduction to Nuclear Science* ..... 27
*Introduction to Number Theory* ..... 12
*Introduction to Numerical Methods, An* ..... 11
*Introduction to Python for Humanists* ..... 15
*Introduction to Toxicology* ..... 24
*Introductory Physics* ..... 38
*Introductory Physics for the Life Sciences - Two-Vol. Set* ..... 38
*Investigating Animal Abuse Crime Scenes* ..... 34

## L

*Laboratory Mouse, The* ..... 26
*Laboratory Tests for Unsaturated Soils* ..... 5
*Language of Symmetry, The* ..... 14
*Latin-American Seeds* ..... 10
*Law and Evidence* ..... 34
*Linear Algebra With Machine Learning and Data* ..... 13

## M

*Machine Tools* ..... 7
*Master Airline Pilot* ..... 2
*Mathematical Modeling in Biology* ..... 13
*Mathematical Modelling* ..... 7
*Mathematical Puzzle Tales from Mount Olympus* ..... 13
*Medical Innovation* ..... 17
*Metal-Air Batteries* ..... 37
*Microbiomes and Their Functions* ..... 24
*Microscopy and Microanalysis for Lithium-Ion Batteries* ..... 4
*Mindful Eyewitness Interview, The* ..... 35
*Model-Based Clustering, Classification, and Density Estimation Using mclust in R* ..... 15
*Molecular Bio-Sensors and the Role of Metal Ions* ..... 28
*Molecular Biology* ..... 25
*Molecular Mechanisms of Action of Functional Foods and Nutraceuticals for Chronic Diseases* ..... 10
*Morphodynamic Imaging in Achalasia* ..... 20
*Mosquito Gene Drives and the Malaria Eradication Agenda* ..... 40
*Music of Stravinsky, The* ..... 41

## N

*Nanomaterials from Renewable Resources for Emerging Applications* ..... 37
*Nanowires* ..... 37
*Neuroscience for Artificial Intelligence* ..... 41
*Never Waste a Good Crisis* ..... 16
*Non-melanoma Skin Cancer* ..... 21
*Non-Surgical Rhinoplasty* ..... 21

## O

*Obstetric Life Support Manual* ..... 21
*Occupational Exposures* ..... 2
*Ocean as a Creative Experience, The* ..... 41
*Omega-Factor, The* ..... 11
*Online Learning Systems* ..... 7
*Opportunistic Premise Plumbing Pathogens* ..... 41
*Organic Chemistry* ..... 28
*Organic Reaction Mechanisms, Selected Problems, and Solutions* ..... 28
*Organisms Amplify Diversity* ..... 25
*Oribatid Mites* ..... 25

## P

*Particulate Drying* ..... 4
*Performance of DFIG and PMSG Wind Turbines* ..... 6

*Physics of Evolution, The* ..... 39
*Physiology of Marine Mammals* ..... 25
*Pilot Competency and Capability* ..... 3
*Polarization Dynamics of Mode-Locked Fiber Lasers* ..... 38
*Police Intelligence* ..... 34
*Polymer-Carbonaceous Filler Based Composites for Wastewater Treatment* ..... 37
*Practical Guide for Imaging of Soft Tissue Tumours* ..... 21
*Practical Guide to Effective Workplace Accident Investigation, A* ..... 2
*Practical Guide to Level Design, A* ..... 40
*Practical Guide to Scientific Writing in Chemistry, A* ..... 26
*Practitioner's Guide to Data Science* ..... 16
*Pragmatic Programmer for Machine Learning, The* ..... 31
*Primary Health Care and Population Mortality* ..... 17
*Probability Foundations for Engineers* ..... 7
*Python for Scientific Computing and Artificial Intelligence* ..... 31

## Q

*Quantum Computation* ..... 13
*Quantum Nature of Things, The* ..... 39
*Quantum Physics and Life* ..... 41

## R

*Racehorse, The* ..... 22
*Rare Lung Diseases* ..... 21
*Recycled Aggregate Concrete* ..... 37
*Regenerative Medicine* ..... 28
*Rhyacophilidae of India* ..... 41
*Risk Assessment for Environmental Health* ..... 28
*Rural Healthcare* ..... 17

## S

*Safety Engineering in the Oil and Gas Industry* ..... 3
*Safety Management Systems in Aviation* ..... 3
*Shortcut, The* ..... 31
*Smart Manufacturing* ..... 8
*Soft Tissue Filler Complications* ..... 21
*Solar Thermal Conversion Technologies for Industrial Process Heating* ..... 5
*Spatial Data Science* ..... 16
*Specialty Polymers* ..... 28
*Spectrophotometric Determination of Palladium & Platinum* ..... 29
*SPRING Forward for Girls* ..... 10
*Stieltjes Integral, The* ..... 14
*Stochastic Differential Equations for Science and Engineering* ..... 13
*Strelkauskas' Microbiology* ..... 22
*Sustainable Life Insurance* ..... 13
*Sustainable Nanomaterials for Biosystems Engineering* ..... 42
*Systems Approach to Astrobiology* ..... 38

## T

*Teaching Made Easy* ..... 17
*Technology and Sustainable Development* ..... 31
*Terrorism Awareness* ..... 34
*Textbook of Ion Channels Volume I* ..... 39
*Textbook of Ion Channels Volume II* ..... 39
*Textbook of Ion Channels Volume III* ..... 39
*Thermal and Catalytic Processing in Petroleum Refining Operations* ..... 5
*Thermal Physics Tutorials with Python Simulations* ..... 39
*Tidy Finance with R* ..... 16
*Tomorrow's Systems Engineering* ..... 8
*Tunnel Design Methods* ..... 5

## U

*Undergraduate Instrumental Analysis* ..... 29
*Understanding Nature* ..... 32
*Understanding Quantum Science* ..... 29
*Unifying Physics of Accelerators, Lasers and Plasma* ..... 40

## V

*Virtual Reality Usability Design* ..... 31
*Virus Detection* ..... 26

## W

*What Every Engineer Should Know About Data-Driven Analytics* ..... 3
*Which Treatment Is Best? Spoof or Proof?* ..... 18
*Why Elephants Cry* ..... 26
*Why the Dose Matters* ..... 26
*Wildfire Arson Prevention Guide* ..... 35
*Wrongful Convictions and Forensic Science Errors* ..... 35

## A

Abdollahi, Shima ... 10
Aftab, Tariq ... 42
Aguillón Gutiérrez, David Ramiro ... 23
Ahankari, Sandeep S. ... 37
Ahmad Wani, Sajad ... 9
Ahmed, Farah ... 4
Ajay, ... 36
Alos, Elisa ... 12
Alston, Frances ... 2
Antosh, Michael ... 38
Apichai, Benjamin ... 24
Appanna, Vasu D. ... 24
Arangala, Crista ... 13
Arjunan, T.V. ... 5
Arora, Rachna ... 32
Austen, Luke ... 18

## B

Bader, Teddy ... 18
Baker, Richard ... 17
Barbero, Ever J. ... 36
Bauer, Benjamin ... 40
Behan-Pelletier, Valerie ... 25
Belkhode, Pramod ... 7
Bertossi, Dario ... 21
Bez, Helmut ... 13
Bhuyan, Abani ... 36
Bianchi, Lynne M. ... 25
Biles, Clay W. ... 34
Bindi, Veronica ... 38
Bobet, Antonio ... 5
Boelsterli, Urs A. ... 26
Borrelli, Claire ... 19
Brokensha, Susan ... 30
Brown, Terry A. ... 24
Bruno, Thomas J. ... 29
Bryan, Jeff C. ... 27
Butters, Jerry ... 14

## C

Callis, TC ... 11
Carballar-Lejarazú, Rebeca ... 40
Carbó, Antonio Doménech ... 35
Castellini, Michael ... 25
Catchpole, Brian ... 22
Chambers, John ... 19
Chastain, C. B. ... 22
Chaudhary, Aryan ... 42
Chenier, Tracey ... 22
Cherian, Sujith V. ... 21
Chia Ho, Yeek ... 4
Choudhuri, Anirban Hom ... 20
Christian, Jr., Donnell R. ... 33
Claus, Juergen ... 41
Constantinou, Costas S. ... 16
Convertito, Gregory ... 14
Cox, Jim ... 17
Cristianini, Nello ... 31
Cruz, Antonio ... 23

## D

Davis, Jerry ... 32
Davis, Wayne L. ... 34
Deatherage, Jr., Robert H. ... 34
Dhotre, Prashant Shantaram ... 5
Din Dar, Mehraj U. ... 42
Dixon, Martyn R. ... 12
Dodgeon, Jan ... 19
Donald, Kelling J. ... 27
Downs, Jaclyn ... 19
Duncan, Christopher D. ... 32

## E

Eisner, Howard ... 8
El Morr, Christo ... 29
Elliott, Paul ... 17
Ernberg, Ingemar ... 41
Ervin, Gary N. ... 25

## F

Fahnert, Beatrix ... 22
Falkinham, III, Joseph O. ... 41
Ferrier, David E. K. ... 24
Fontanella, Giovanni ... 20
Fried, Robert ... 11

## G

Gerhard, David ... 31
Gorini, Catherine A. ... 12
Goswami, Ajay Kumar ... 29
Gothandam, K. M. ... 23
Goyal, Megh R. ... 42
Green, Steven ... 3
Groutas, William C. ... 28
Guerra, David V. ... 38
Gupta, Harun ... 21
Gupta, Ram K. ... 28
Gupta, Ram K. ... 35
Gupta, Ram K. ... 37
Gupta, Ram K. ... 37

## H

Hacking, Craig ... 20
Hancock, John T. ... 26
Haque, Ahteshamul ... 6
Harder, Jenny ... 40
Haros, Claudia M. ... 10
Hastings, Janna ... 30
Hayes, A. Wallace ... 24
Henson, Shandelle M. ... 13
Hernan, Miguel A. ... 14
Hey, Tony ... 38
Hunacek, Mark ... 12

## I

Ismail, Hamid D. ... 30

## J

Jia, Huijue ... 41
Ju, Jian ... 9
Jung, Joey ... 4
Jungić, Veselin ... 11

## K

Kalife, Aymeric ... 13
Kanegaonkar, Rahul ... 17
Karim, Ramin ... 6
Katina, Polinpapilinho F. ... 6
Keydana, Sigrid ... 15
Khan, Wasim Ahmed ... 7
Kharab, Abdelwahab ... 11
King, Samuel ... 40
Kolb, Vera M. ... 38
Kouh, Minjoon ... 39
Kour, Jasmeet ... 10
Kumar, Santosh ... 9
Kumar, Sunil ... 4

## L

Lamprou, Dimitrios ... 27
Lauritzen, Steffen ... 15
Lawrence, Calvin ... 31
Leong, Eng-Choon ... 5
Lin, Hui ... 16
Lin, Sarah ... 15
Liu, Andy ... 13
Loghem, Jani van ... 21
Lydyard, Peter ... 19
Lynch, Stephen ... 31

## M

Madnani, Nina ... 18
Mahler, Donald A. ... 20
Majid Baba, Mubashir ... 42
Makul, Natt ... 37
Malik, Junaid Ahmad ... 42
Manahan, Stanley E ... 27
Mattingly, William ... 15
Maxwell, Virginia M. ... 34
McKinnon, Ron C. ... 2
McKinnon, Ron C. ... 3
Meade, Thomas J. ... 28
Medina Ariza, Juan ... 14
Megill, Anna ... 40
Minkoff, Eli ... 23
Mitsotakis, Dimitrios ... 11
Mohammed, Nabil ... 6
Mohan, Syam ... 8
Mohanna, Kay ... 17
Moore, Elaine A. ... 27
Morgan, John ... 35
Mrugalska, Beata ... 2

## N

Nachlas, Joel A. ... 7
Nayik, Gulzar Ahmad ... 8
Nehra, Manju ... 9
Nemeth, Charles P. ... 34

## O

O'Callaghan, Miriam ... 30
O'Connell, P. Ronan ... 18
Okedu, Kenneth ... 6
Ozguven, Mehmet ... 10

## P

Panchal, Dilbagh ... 7
Parameswaranpillai, Jyotishkumar ... 37
Parey, Sajad Hussain ... 41
Parnell, Katie J. ... 2
Pascal, Steven M. ... 29
Pebesma, Edzer ... 16
Polkowski, Zdzislaw ... 7
Primorac, Dragan ... 33
Pritsker, Boris ... 12

## Q

Qiu, Tingting ... 28
Quazi, Hebab A. ... 8

## R

Raghab Mohapatra, Prasanta ... 19
Raj, G.R. Arun ... 23
Ramadan, Mohamed Fawzy ... 10
Ramzan, Pieter H. L. ... 22
Raol, Jitendra R. ... 5
Rattigan, Benedict ... 14
Reitano, Robert R. ... 12
Rembielak, Agata ... 21
Rey, Sergio ... 15
Robinson, T R ... 39
Robson, Mark G. ... 28
Romaniuk, Scott N ... 33
Romaniuk, Scott N. ... 34
Roth, Michael W. ... 39
Rowe, Leanne ... 17

## S

Sabnis, R.W. ... 27
Sacco, William K. ... 32
Sachdev, Mukta ... 20
Sagadevan, Suresh ... 36
Salguero Bodes, Francisco Javier ... 23
Sayem, Abu Sadat Muhammad ... 7
Scheuch, Christoph ... 16
Schlossberger, Eugene ... 3
Schwabish, Jonathan ... 30
Scrucca, Luca ... 15
Scutari, Marco ... 31
Seaborg, David ... 25
Selvamuthukumaran, M. ... 8
Sergeyev, Sergey V. ... 38
Seryi, Andrei ... 40
Shamil, Eamon ... 18
Shen, Cai ... 4
Shields, Andrea ... 21
Shin, Don Donghee ... 30
Sijtsma, Klaas ... 16
Singh, Rupinder ... 6
Smith, Michael B. ... 28
Sohn, H. Y. ... 36
Soliman, Karam F.A. ... 9
Sotoodeh, Karan ... 3
Speight, James G. ... 5
Srinivasan, Satish Mahadevan ... 3
Staroszczyk, Hanna ... 9
Steier, Gabriela ... 22
Stejskal, Susan M. ... 33
Stolzer, Alan J ... 3
Suckow, Mark A. ... 26
Swauger, Steve ... 2
Sætra, Henrik Skaug ... 31
Søraa, Roger ... 29

## T

Tang, Wan ... 14
Taylor, Duncan ... 33
Thygesen, Uffe Høgsbro ... 13
Timbrell, John ... 24
Tran, Ngoc Thanh Thuy ... 36
Tsang, Edward P K ... 29
Tyowua, Andrew Terhemen ... 26

## V

van den Toorn, Pieter C. ... 41
van Loghem, Jani ... 18
Vidlock, Kathryn ... 10
Villaescusa, Ernesto ... 8
Vinayak, Jangam ... 4

## W

Wagner, Scott A. ... 33
Wakelin, Sarah H. ... 20
Weber, Louise M. ... 32
White, Robert E. ... 11
Wick, Charles H. ... 26
Wimberly, Michael C. ... 32
Wiser, Mark F ... 16
Woods, AFSM, Richard ... 35

## X

Xiang, Dong ... 35

## Y

Yates, Paul C. ... 26
Young, Mark S. ... 2
Yurchenko, Sergey ... 37

## Z

Zamora, Gil ... 35
Zheng, Jie ... 39
Zheng, Jie ... 39
Zheng, Jie ... 39
Zlatanova, Jordanka ... 25