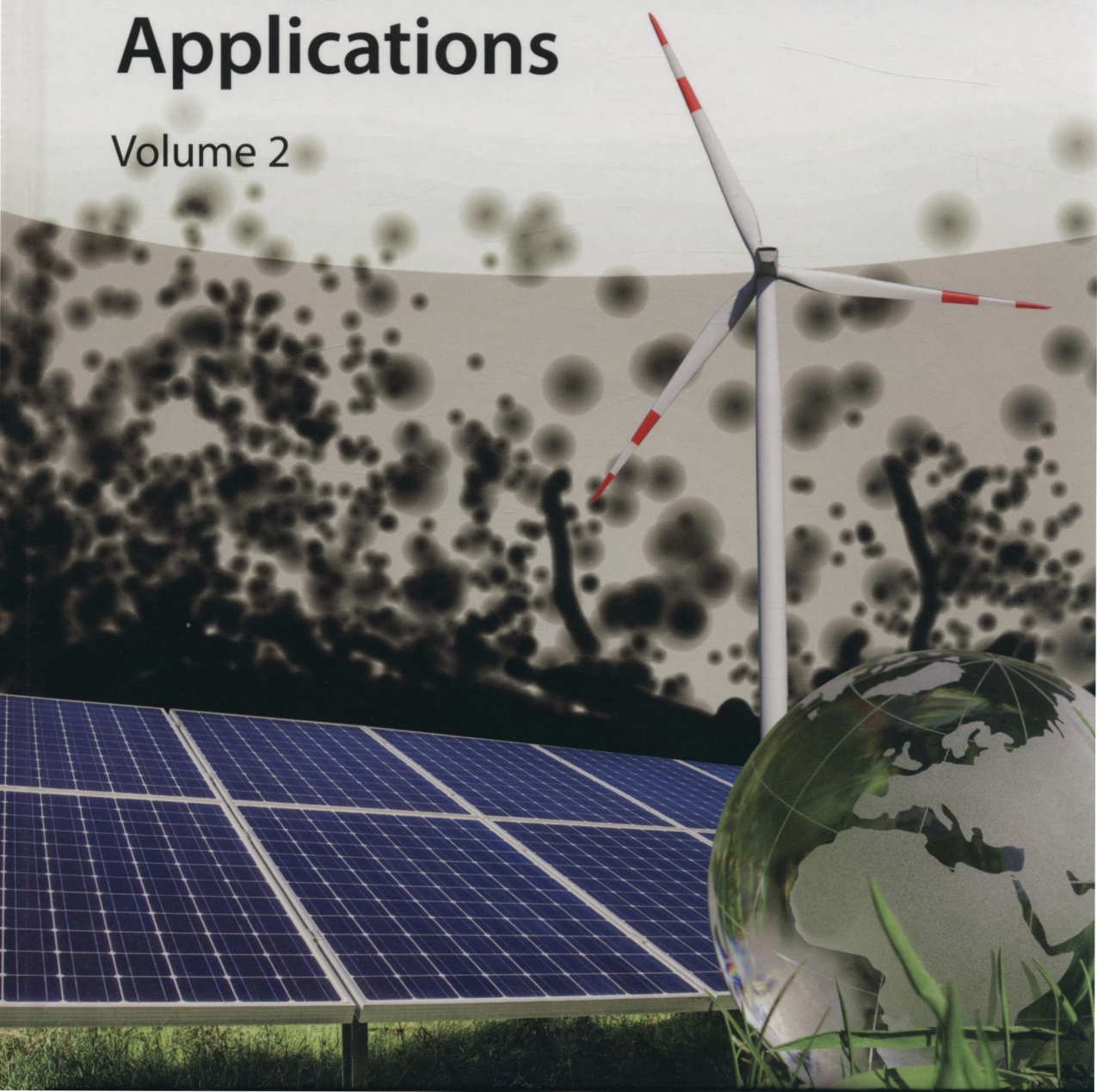


Edited by  
Zhanhu Guo, Yuan Chen, and Na Luna Lu

# Multifunctional Nanocomposites for Energy and Environmental Applications

Volume 2





**F**ocusing on real applications of nanocomposites and nanotechnologies for sustainable development, this book shows how nanocomposites can help to solve energy and environmental problems, including a broad overview of energy-related applications and a unique selection of environmental topics.

Clearly structured, the first part covers such energy-related applications as lithium ion batteries, solar cells, catalysis, thermoelectric waste heat harvesting and water splitting, while the second part provides unique perspectives on environmental fields, including nuclear waste management and carbon dioxide capture and storage.

The result is a successful combination of fundamentals for newcomers to the field and the latest results for experienced scientists, engineers, and industry researchers.



**Zhanhu Guo** is Associate Professor in the Department of Chemical and Biomolecular Engineering at The University of Tennessee, Knoxville, USA. He received his PhD in chemical engineering from Louisiana State University, USA, followed by postdoctoral studies in mechanical and aerospace engineering at the University of California, Los Angeles, USA. He was the Chair of the Composite Division of the American Institute of Chemical Engineers in 2010-2011. Dr. Guo's Integrated Composites Laboratory focuses on multifunctional nanocomposites for energy, environmental and electronic devices applications.



**Yuan Chen** is Professor in the School of Chemical and Biomolecular Engineering at The University of Sydney, Australia. He received his PhD in chemical engineering from Yale University. Before joining The University of Sydney, he was Associate Professor at Nanyang Technological University, Singapore, where he served as Head of the Chemical and Biomolecular Engineering Division in 2011-2014. His research focuses on carbon nanomaterials for sustainable energy and environmental applications. He received several awards including Australian Research Council Future Fellowship in 2017 and Young Scientist Awards by the Singapore National Academy of Science in 2011.



**Na (Luna) Lu** is an associate professor of the Lyles School of Civil Engineering and School of Materials Engineering at Purdue University. She has research interests/expertise in using nanotechnology to tailor a materials' (electrical, thermal, mechanical, and optical) properties for renewable energy applications, in particular, thermoelectric, piezoelectric and solar cells. Fundamentally, her group studies electron, phonon, and photon transport mechanisms for a given materials system, and designs the transport properties to meet the targeted performance. Her research work has been featured in national and regional media. She is the recipient of a 2014 National Science Foundation Yong Investigator CAREER Award.

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*Edited by Zhanhu Guo, Yuan Chen,  
and Na Luna Lu*

*Volume 2*

**WILEY-VCH**

## Editors

### **Prof. Zhanhu Guo**

University of Tennessee  
Chemical and Biomolecular Engineering  
322 Dougherty Engineering Building  
Knoxville, TN 37996  
USA

### **Prof. Yuan Chen**

The University of Sydney  
School of Chemical & Biomolecular Engineering  
Chemical Engineering Building J01  
Cnr Shepherd St & Lander St  
2008 Darlingtown, NSW  
Australia

### **Prof. Na Luna Lu**

Purdue University  
Lyles School of Civil Engineering  
550 Stadium Mall Dr.  
West Lafayette  
IN 47907  
USA

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## Preface

Advances in energy and environmental engineering materials are one of the crucial prerequisites for the protection of the sustainable ecology. Scientists and engineers in the energy sector are exploring for new reserves of oil and gas, processing these raw materials into fuels and other useful chemicals, and developing new technologies like solar photovoltaic cells, wind turbine, batteries, and fuel cells that are sustainable and more environmentally sound. Meanwhile, numerous researchers are getting involved in improving the environment, minimizing waste, and protecting the personal health and safety of humans and the surrounding communities through process monitoring and control and by designing new processes that are more efficient and take advantage of sustainable raw materials. At present, nanocomposites have expanded into almost every aspect of science and applications worldwide with various functions produced by well-developed innovative nanotechnologies. The multifunctional nanocomposites made a great contribution to progress the energy and environmental applications in the last two decades. Currently, a great understanding of the potential and challenge of nanomaterials for energy and environmental applications is highly expected for both academic and industrial uses. Therefore, we gathered the preminent researchers around the world to present the cutting edge of what they have investigated. The publication of this book will accelerate the spread of excellent ideas that are currently trickling through the scientific literature.

In preparing this book, we have been ably assisted by Dr Xingru Yan, who, among other contributors, has been largely responsible for organizing all chapters, compiling all the problems, and restructuring one or two of the chapters. Finally, I would like to thank all the authors who squeezed valuable time out of their busy lives to contribute to this book and those reviewers who gave invaluable critical comments on the manuscripts. Many thanks for your hard work.

June 16, 2017  
Chemical and Biomolecular  
Engineering Department  
University of Tennessee Knoxville,  
TN 37996, USA

*Zhanhu Guo, PhD; Xingru Yan, PhD*





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