



Nanostructures and Nanomaterials: Synthesis, Properties, and Applications (2nd Edition) (World Scientific Series in Nanoscience and Nanotechnology)

By Guozhong Cao, Ying Wang

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This is the 2nd edition of the original "*Nanostructures and Nanomaterials*" written by Guozhong Cao and published by Imperial College Press in 2004.

This important book focuses not only on the synthesis and fabrication of nanostructures and nanomaterials, but also includes properties and applications of nanostructures and nanomaterials, particularly inorganic nanomaterials. It provides balanced and comprehensive coverage of the fundamentals and processing techniques with regard to synthesis, characterization, properties, and applications of nanostructures and nanomaterials. Both chemical processing and lithographic techniques are presented in a systematic and coherent manner for the synthesis and fabrication of 0-D, 1-D, and 2-D nanostructures, as well as special nanomaterials such as carbon nanotubes and ordered mesoporous oxides. The book will serve as a general introduction to nanomaterials and nanotechnology for teaching and self-study purposes.

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Review

"This book does an excellent job of assembling a wide variety of synthetic techniques and describing how they can be applied to a range of materials for design on the nanoscale. The references range from the classic to the very recent, giving a broad perspective of the area, and an index provides cross-referencing." - Acta Physica Slovaca

"This book can be recommended to both students and researchers. It gives the basic information on fabrication and properties of nanostructures in a coherent way ... The relatively large number of figures makes the understanding of the subject easier. The reader has to also appreciate the extended list of references for each chapter ..." --Journal of the American Chemical Society

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From the Inside Flap

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About the Author

Dr. Ying Wang is an Assistant Professor of Mechanical Engineering at Louisiana State University since Fall 2008. She has worked extensively on novel nanomaterials synthesis for solar cells and lithium-ion batteries. Her recent awards include the Nanotechnology Graduate Research Award from the University of Washington Initiative Fund (UIF, 2005), a Graduate Fellowship from the PNNL-UW Joint Institute for Nanoscience (JIN, 2005), and a Ford Motor Company Fellowship (2004). She has published 20 journal papers, 8 conference proceedings, 5 book chapters, and has given over 20 invited seminars worldwide. Her paper on "Developments of Nanostructured Cathode Materials for High-Performance Lithium-Ion Batteries" is the Top 5 most downloaded paper in Advanced Materials in 2008 and is selected in the Special Issue "the Best of Advanced Materials" in 2009. Her paper on "Nanostructures and Enhanced Intercalation Properties of Vanadium Oxides" is the Top 5 most accessed paper in Chemistry of Materials in 2006. Dr Wang teaches the materials science classes (ME 3701: Materials Science Laboratory; ME 2733: Materials of Engineering).

Dr. Guozhong Cao is Boeing-Steiner Professor of Materials Science and Engineering and Adjunct Professor of Chemical and Mechanical Engineering at the University of Washington, Seattle, WA. He received his PhD from Eindhoven University of Technology (the Netherlands), MS from Shanghai Institute of Ceramics

and BS from East China University of Science and Technology (China). He has published over 250 refereed papers, written and edited 5 books and 3 conference proceedings, and presented more than 100 invited talks, keynote and plenary speeches, and seminars. His research has led to the creation of two spin-off companies on energy conversion and storage with over 30 patent applications. Currently, Dr. Cao serves as the editor of Annual Review of Nano Research and associate editor of Journal of Nanophotonics. His recent research is focused mainly on nanomaterials for solar cells, lithium ion batteries, supercapacitors, and hydrogen storage.

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