



## Green Nanotechnology: Solutions for Sustainability and Energy in the Built Environment

By Geoffrey B. Smith, Claes-Goran S. Granqvist

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A first step in developing a clean and sustainable future is to think differently about everyday products, in particular how they influence energy use. **Green Nanotechnology: Solutions for Sustainability and Energy in the Built Environment** explores the science and technology of tiny structures that have a huge potential to improve quality of life while simultaneously achieving reductions in the use of fossil fuels. This book examines energy flows in nature and how the optical properties of materials can be designed to harmonize with those flows. It then discusses the properties that can be achieved in real materials to take advantage of nature's energy flows.

The authors cohesively examine a number of topics, highlighting their applications and the significance of their nano features. They provide a cursory discussion of well-reviewed subjects such as nanostructured solar cells and turn their attention to timely topics such as methods for preventing excessive temperature and approaches to passive cooling. The book identifies key materials and elucidates how their properties can be understood in terms of contemporary materials physics and chemistry. It concludes with a detailed description of a scenario for future buildings that use much less energy while also providing better comfort.

A valuable side effect of most nanotechnologies is that they inherently put us in closer touch with the natural world. With broad coverage of how nanoparticles impact energy use in the built environment, this book opens readers' eyes to a fascinating vision of how technology and nanoscience can merge and lead to commodity-scale products that help preserve our planet.

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## **Green Nanotechnology: Solutions for Sustainability and Energy in the Built Environment** By Geoffrey B. Smith, Claes-Goran S. Granqvist Bibliography

- Sales Rank: #4197800 in Books
- Published on: 2010-09-29
- Original language: English
- Number of items: 1
- Dimensions: 9.30" h x 1.10" w x 6.20" l, 1.75 pounds
- Binding: Hardcover
- 472 pages

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#### Review

Both Smith and Granqvist, the two authors of the book, are eminent optical scientists with a longstanding fondness for the visible and infrared properties of particulate composite materials. ... All technoscientists, not only physicists and materials researchers, would do well to read the list of 17 characteristics that the Smith–Granqvist vision possesses. These characteristics delineate a blueprint for research directions ... . Remarkable features of this book are the bridges built throughout the volume with contemporary research topics through call-out boxes. ... The book is profusely illustrated, mostly in black and white but also with 10 pages of multicolored illustrations. Occasional flashes of quiet humor grace the book ... . Another remarkable feature of this book is its price. ... Other academic publishers should take note. ...  
?Akhlesh Lakhtakia, Pennsylvania State University, *Journal of Nanophotonics*, Vol. 5, 2011

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