



Nanosensors: Physical, Chemical, and Biological (Series in Sensors)

By Vinod Kumar Khanna



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Bringing together widely scattered information, **Nanosensors: Physical, Chemical, and Biological** explores sensor development in the nanotechnology age. This easy-to-read book presents a critical appraisal of the new opportunities in the area of sensors provided by nanotechnologies and nanotechnology-enabled advancements.

After introducing nanosensor classification and fundamental terms, the book outlines the properties of important nanomaterials and nanotechnologies used in nanosensor fabrication. Subsequent chapters are organized according to nanosensor type: physical (mechanical and acoustical, thermal and radiation, optical, and magnetic); chemical (atomic and molecular energies); and biological. The final chapter summarizes the current state of the field and discusses future trends.

A complete and authoritative guide to nanosensors, this book offers up-to-date information on the fabrication, properties, and operating mechanisms of these fast and reliable sensors. It addresses progress in the field, fundamental issues and challenges facing researchers, and prospects for future development.



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Editorial Review

Review

Khanna gathers and critically appraises research findings reflecting the impact of nanotechnology on sensors. He writes in a question-answer format, and acknowledges the interdisciplinary nature of nanotechnology by assuming no advanced knowledge in any particular field.

?SciTech News, Vol. 66, September 2012

With the burgeoning interest in sensor technology, students new to the field will find some part of this book as a readable and enjoyable introduction.

?Peter J. Dobson, *Contemporary Physics*, July 2012

Overviewing this highly interdisciplinary, fast-moving field in a format accessible to scientists from different disciplines is very challenging, but **Nanosensors: Physical, Chemical, and Biological** successfully achieves this challenge. ... a complete and authoritative guide to nanosensors ... The clear definitions, well-explained mathematical formulae, and well-designed illustrations make the book very easy to understand ... provides the reader with a very good understanding of the fundamental issues, challenges and recent progress in the field of nanosensors. ... a very good reference for scientists from different fields ... a very stimulating read thanks to the numerous question-and-answer sections. This is a recommended title for physicists, chemists, biologists working with sensors, or for any scientist or engineer with an interest in nanotechnology.

?Iulia Georgescu, The-Briefing.com, March 2012

The book has some significant strengths. Among them are its comprehensive coverage and its use of illustrative calculations to enhance the more descriptive sections. The depth of presentation ranges from the basic high school level to discussions of recent research literature. The book's most likely beneficiaries are researchers in either sensor technology or nanotechnology who want to see how the two fields complement each other and can be combined in new and interesting ways to tackle important applications

?Tony Cass, *Physics Today*, March 2012

About the Author

Vinod Kumar Khanna is chief scientist and head of the MEMS and Microsensors Group at CSIR-CEERI, where he has worked for over 30 years on the design, fabrication, and characterization of various solid-state devices. A fellow of the Institution of Electronics and Telecommunication Engineers (India), Dr. Khanna is also a life member of the Indian Physics Association, the Semiconductor Society (India), and the Indo-French Technical Association. His research interests include power semiconductor devices, MEMS, and microsensors.

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