



Gold Nanoparticles for Physics, Chemistry and Biology

By Catherine Louis, Olivier Pluchery

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The fascination with gold is a story which spans millennia, however scientists have recently found a new interest for gold when it is divided into miniscule grains, such as gold nanoparticles. This scientific enthusiasm started in various fields of science in the middle of the 1980s and the present book offers a panorama of the major scientific achievements obtained with gold nanoparticles.

Various topics are reviewed such as: gold nanoparticle preparation methods, their plasmon resonance and thermo-optical properties, their catalytic properties, their use in biology and medicine as well as their possible toxicity and, finally, their future technological applications. The book also contains an in-depth study of the use of gold nanoparticles throughout the ages, starting from times where the concept of nanoparticles was beyond the realm of human imagination. All these topics are presented by world-class scientists within a set of self-contained chapters.

This book may be used as an advanced textbook by graduate students and scientists who need an introduction to gold nanoparticles. It is also suitable for experts in the related areas of chemistry, biology, material science, optics and physics, who are interested in broadening their knowledge and who wish to have an overview of the subject. Each chapter gradually leads the reader from the basics of a topic towards some of the current scientific challenges in the area. The necessary background material to achieve a solid understanding of each topic and the scientific literature to go further in the field is provided.

Readership: Graduate students, young scientists and experts in related areas of chemistry, biology, material science and physics who need an introduction to gold nanoparticles.

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Editorial Review

From the Inside Flap

In 2006, "Or-Nano," a French scientific network on gold nanoparticles was created in France. The research group saw the need for a gathering of specialists on gold nanoparticles to facilitate deeper scientific exchange between the different scientific communities. The result is this book which provides a broad introduction to the fascinating and beautiful world of gold nanoparticles.

This volume traces the fascinating history of gold nanoparticles which began in ancient times with red ruby glass, and reached its zenith at the end of the 17th century. It also provides an in-depth investigation into the use of gold nanoparticles over the ages an important aspect that is almost never treated in scientific books. Each chapter provides a lucid overview of the different aspects of gold nanoparticles including synthesis, optical and thermal properties, interaction with surfaces, catalysis, reactivity, biosensors, and nanomedicine. There is an ample focus on promising fields where gold nanoparticles are already creating breakthroughs such as in catalysis, cancer therapy and plasmonics. The issue of toxicity is also discussed comprehensively.

The work may be used as an advanced textbook by graduate students and young scientists who need an introduction to gold nanoparticles. It will also be suitable for experts in the related areas of chemistry, biology, material science, and physics, who are interested to broaden their knowledge and provide an overview of the subject. The explanations in the book are detailed enough to capture the interest of the reader, and complete enough to provide the necessary background material needed to delve further into the subject and explore the literature.

Users Review

From reader reviews:

Carrie Freeman:

Book is written, printed, or descriptive for everything. You can understand everything you want by a publication. Book has a different type. As it is known to us that book is important matter to bring us around the world. Close to that you can your reading proficiency was fluently. A reserve Gold Nanoparticles for Physics, Chemistry and Biology will make you to always be smarter. You can feel a lot more confidence if you can know about everything. But some of you think that open or reading the book make you bored. It's not make you fun. Why they may be thought like that? Have you trying to find best book or appropriate book with you?

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