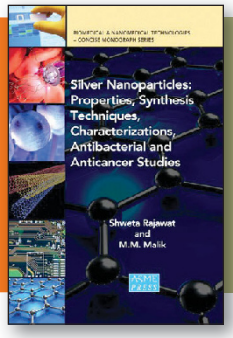
explains the classification and evolution of metamaterials. The author presents an interesting review about Emerging Functional Metadevices.

Chapter 2 describes the Design and Fabrication of Metamaterials and Metadevices. Chapters 3–11 include detailed descriptions of each type of metamaterials and metadevices.

In chapter 6, the author describes chiral metamaterials and metadevices and writes about a single gyrod metamaterial (a chiral structure that covers constant mean curvature). This structure can be found in nature in certain wing scales of butterfly species. The structure can be fabricated using different techniques (described in the book). This is a clear example that the best school is nature. If we observe it carefully and learn from it, we will realize efficient technological contributions that would require a minimum amount of energy and have a minimal impact on the environment.

The bibliographical references are more than adequate, appropriate to each of the sections of the book, and up to date. I enjoyed reading the book; concepts are explained well, with examples of a wide variety of functional metamaterials and metadevices applications. The audience for this book would be students, professionals, or researchers in the areas of physics, optoelectronic engineering, electronics, mechanics, materials engineering or nanotechnology.

***Reviewer: Miriam Sánchez Pozos**, Department of Mechanical Engineering and Sustainable Energy Engineering, Universidad Autónoma del Estado de México, Mexico.*



Silver Nanoparticles: Properties, Synthesis Techniques, Characterizations, Antibacterial and Anticancer Studies

Shweta Rajawat and M.M. Malik

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184 pages, $99.00
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This book provides a concise treatment of the properties, characterization techniques, preparation methods based on green chemistry, and biomedical applications of silver nanoparticles, with a focus on their antimicrobial and antitumor properties.

The authors begin with historical anecdotes of the medicinal use of silver in various forms, including colloidal silver and silver compounds. A brief introduction to the birth of nanotechnology follows, with succinct discussion on the unique properties of nano-sized materials compared to bulk materials, with a specific focus on silver nanoparticles. Green synthesis techniques are espoused, based on their more environmentally friendly principles, to reduce the usage of or eliminate the production of toxic substances.

The book progresses as an academic thesis by reviewing literature covering physical, chemical, and biological approaches for synthesis of silver nanoparticles. Readers who are familiar with synthesis techniques of nanoparticles may be better served with more current reviews in journals that also cover composite materials incorporating nano silver. However, readers who are seeking a brief introduction to this topic will find the discussion easy to follow.

The principles of green chemistry are further explored in the third and fourth chapters. Plant extracts from tea leaves, garlic, and onion are used as capping agents and/or reducing agents to form metallic silver nanoparticles. Furthermore, the use of silver precursors from discarded photographic and x-ray films are discussed in detail. Synthesis techniques covered include electrolytic deposition and the Tollens test. The silver nanomaterials are characterized by x-ray powder diffraction, UV-visible spectrophotometry, and electron microscopy, while challenge tests involving various microbes as well as two strains of tumor cells (MCF-7 and HeLa) demonstrate significant potency.

Readers who are actively working with nanoparticle synthesis will find the discussion easy to follow. This book is suitable for advanced undergraduate and graduate students, as well as researchers who are interested in the field.

***Reviewer: Maxine Yee**, University of Nottingham Malaysia.*