

FUNDAMENTALS OF BIONANOTECHNOLOGY

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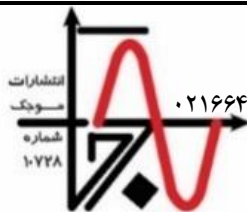
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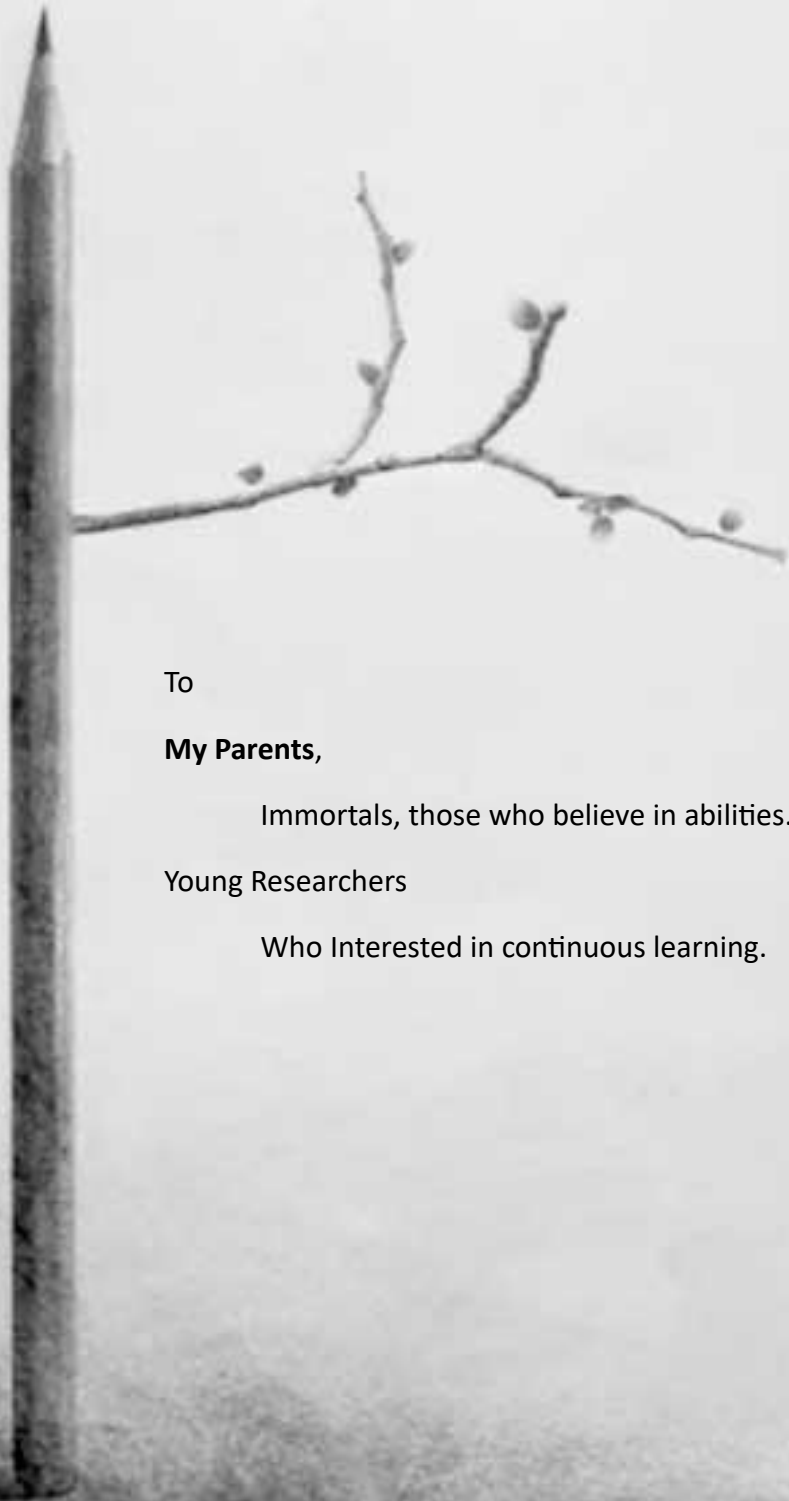
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کلیه حقوق مادی و معنوی این اثر برای انتشارات موجک محفوظ است. هیچ شخص حقیقی و حقوقی حق چاپ و تکثیر این اثر را به هر شکل و صورت اعم از فتوکپی، چاپ کتاب و ... را ندارد. متخلفین به موجب بند ۵ ماده قانون حمایت از ناشرین تحت پیگرد قانونی قرار می‌گیرند.



To

My Parents,

Immortals, those who believe in abilities.

Young Researchers

Who Interested in continuous learning.

Preface

I believe that a bright future for this Bionanotechnology is possible with the efforts and capabilities of researchers and scholars. To be extremely effective in various fields, especially treatment and community health.

The position of new technology has always had a deep and fundamental impact on the development and growth of science. Undoubtedly, in the last decade, nanotechnology has developed and progressed tremendously in the fields of laboratory and research, and it has caused the presence and appearance of various valuable, influential products and sometimes the beginning of a new world. In particular, these advances and laboratory productions have taken a step further and have entered concretely into today's industries. More surprisingly, the presence of this technology in the field of biotechnology, which covers natural materials, has led to the construction of new compounds, links, and structures.

These efforts and research have led to the formation of a new branch of technology called bio-nanotechnology, which tries to cover two broad areas of technology, nano-bio. The range of this new technology makes it possible to access and achieve targeted products and productions in the face of natural and unnatural resources. These achievements, on the one hand, have opened the way in the field of disease diagnosis, treatment, and drug production, and on the other hand, they have made progress in smart products and natural integration. Undoubtedly, this movement requires the explanation of new words and definitions in the expanding knowledge that can be seen in scientific articles and news.

By doing so, I aim to provide readers with a holistic understanding of the field, encompassing both the foundational principles and the latest

advancements. This comprehensive approach will equip individuals with the necessary knowledge to navigate and contribute to the rapidly evolving landscape of Bionanotechnology. Additionally, we have included practical examples and case studies throughout the series to further enhance readers' comprehension and application of these concepts in real-world scenarios.

In the series of books named “Fundamental of Bionanotechnology”, we decided to outline the structure of this technology on the one hand, and on the other hand, to briefly mention the new achievements of 2020-2023.

Book's Organization

A book for learning is the collection of Fundamental of Bionanotechnology books, the first volume of which is in front of you.

This book's organization is based on two guiding principles: first, a concept's definition and explanation, followed by references to recent experiments and new research on the topic. In this regard, each section begins by introducing the topic to the audience, followed by an explanation of scientific terms and research descriptions. The research results are then presented in that direction after a brief investigation.

This structure allows readers to grasp the theoretical foundation of the subject before delving into practical applications. By providing a comprehensive overview of both established concepts and cutting-edge research, the book aims to bridge the gap between theory and practice, fostering a deeper understanding of the topic for its readers. Additionally, the book includes practical examples and case studies to illustrate how the theories discussed can be applied in real-world scenarios. By combining theoretical knowledge with practical applications, readers can gain a comprehensive understanding of the topic and enhance their problem-solving skills.

This method helps the audience to create instant thinking and mental ideation, which leads them to further research and selective research.



We have included references related to each chapter's topic at the end to help readers gain a deeper understanding of the concepts. Interested readers are welcome to use these references to learn more about the topics covered.

Although the research given on each topic is based on the recent findings of researchers and scientists, which are mentioned here with respect for their efforts, we avoided referring to each of them in the main text so that the reader's mind does not get out of focus, but at the end of the book, they are listed in full. This approach allows readers to delve deeper into specific topics if they wish, without interrupting the flow of the main text. Additionally, by acknowledging and appreciating the contributions of researchers and scientists, we hope to inspire further exploration and curiosity in our readers.

We greatly appreciate the valuable contributions and feedback from our esteemed readers. Their expertise and insights will undoubtedly enhance the future editions of this book, ensuring its continuous improvement and relevance. We encourage them to reach out to us with any suggestions or additional material that can further enrich the content and make it even more comprehensive.

Seyed Morteza Zendehbad

July 2023

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Dr. Seyed Morteza Zendehbad is a biomedical engineer and researcher from Iran. He was born in 1982, and completed his undergraduate studies in Biomedical Engineering at State Engineering University of Armenia (SEUA) in 2009. He then pursued his Master's and PhD degrees in Biomedical Engineering & Bionanotechnology at Huazhong University of science and technology (HUST) in China, with a scholarship from the China Scholarship Council (CSC).

He graduated in 2016 and has since published 25 papers, 11 international conference proceedings and several books on various topics related to nanotechnology and Bionanotechnology, bio-electronic in nanotechnology, and biomedical devices. One of his notable achievements is his contribution to the education of future engineers and researchers in the field of materials science.

He has been teaching new subjects in this field, such as biomaterials, nanomaterials, and smart materials, since . Furthermore, he is also an active member of several national and international societies, such as AAS CIT, IEEE, EMB, INS, ISBME. His current research interests are focused on developing novel nanomaterials and devices for biomedical applications.

