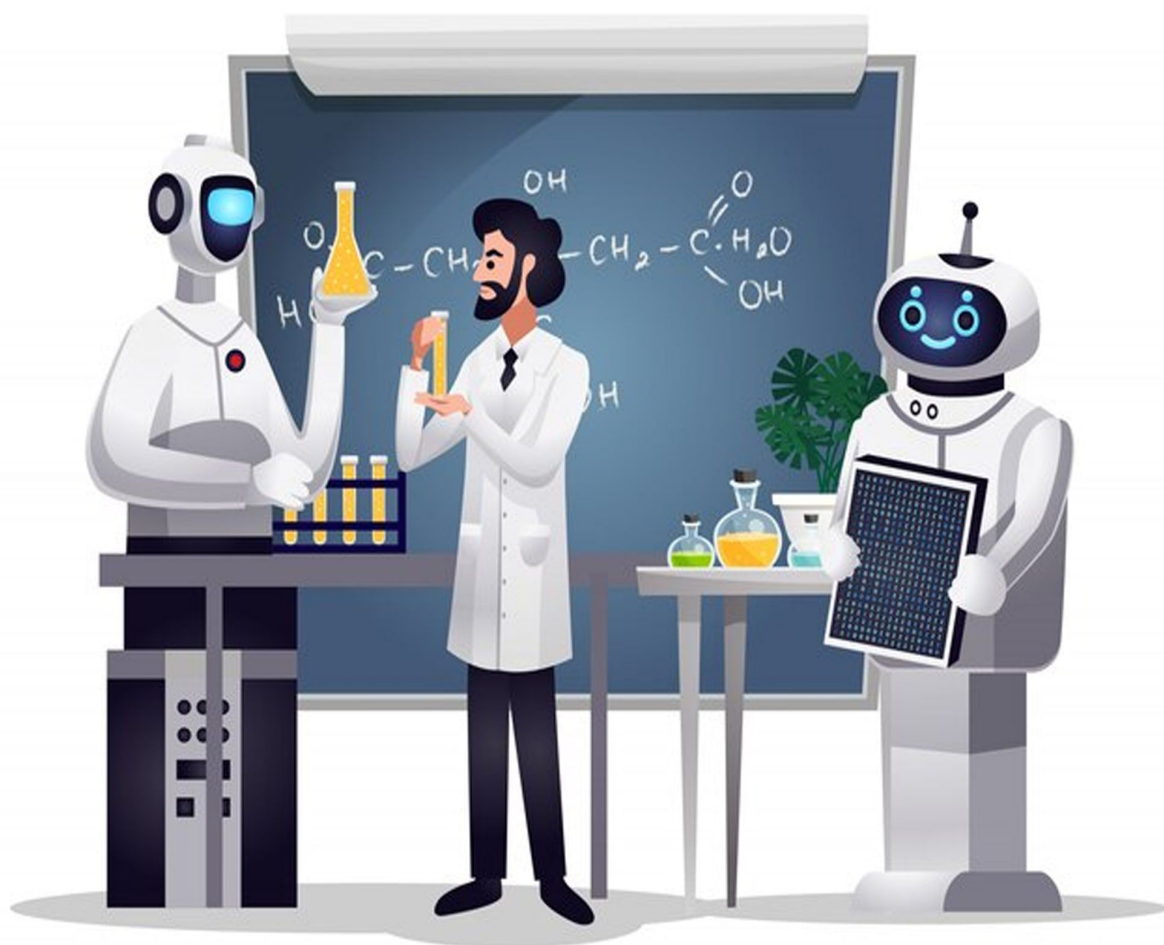


Volume 3, Book 22, 2024, IIP Series

Futuristic Trends in **Chemical Material Sciences & Nano Technology**



Futuristic Trends in

CHEMICAL, MATERIAL SCIENCES & NANO TECHNOLOGY

Volume 3, Book 22, 2024, IIP Series



Title of the Book: Futuristic Trends in Chemical Material Sciences & Nano Technology

Edition: Volume 3, Book 22, 2024, IIP Series

Copyright © 2024 Authors

No part of this book may be reproduced or transmitted in any form by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owners and publisher.

Disclaimer

The authors are solely responsible for the contents published in this book. The publisher or editors do not take any responsibility for the same in any manner. Errors, if any, are purely unintentional and readers are requested to communicate such errors to the editors or publishers to avoid discrepancies in future.

E-ISBN: 978-93-5747-708-6

Publisher, Printed at & Distribution by:

Selfypage Developers Pvt. Ltd.,
Pushpagiri Complex,
Beside SBI Housing Board,
K.M. Road Chikkamagaluru, Karnataka.
Tel.: +91-8861518868
E-mail: info@iipseries.org

IMPRINT: I I P Iterative International Publishers

PREFACE

Chemical, Material Sciences & Nano technology book series aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of Chemical, Material Sciences & Nano technology. The field of advanced and applied Chemical, Material Sciences & Nano technology has not only helped the development in various fields in Science and Technology but also contributes the improvement of the quality of human life to a great extent. The focus of the book would be on state-of-the-art technologies and advances in Chemical, Material Sciences & Nano technology and to provides a remarkable opportunity for the academic, research and industrial communities to address new challenges and share solutions and discuss future research directions in the below field but not limited to

1. Analytical Chemistry
2. Electrochemistry
3. Environmental Chemistry
4. Inorganic Chemistry
5. Materials Chemistry
6. Natural Products Chemistry
7. Organic Chemistry
8. Physical Chemistry
9. Sensors
10. Theoretical Chemistry
11. Nanostructures
12. Nanosciences
13. Nanotechnology
14. Materials Sciences
15. Applications

EDITORIAL BOARD MEMBERS

Dr. Madhumita Mukhopadhyay

Assistant Professor

Department of Materials Science & Technology

School of Applied Science & Technology

Maulana Abul Kalam Azad University of Technology (MAKAUT)

West Bengal, India

Dr. Sadia Batool

IPFP Fellow

Department of Chemistry

Rawalpindi Women University

Rawalpindi, Pakistan

Dr. Anshul Singh

Assistant Professor

Department of Chemistry

Baba Mastnath University

Rohtak, India

Prof. (Dr.) Hiren Doshi

Vice Chancellor

Vidhyadeep University

Kim, Surat Gujarat, India

Dr. Renu

Assistant Professor

MJP Rohilkhand University

Bareilly, India

Dr. Saikumar Manchala

Postdoctoral Researcher

CATRIN-RCPTM Palacky University

Olomouc, Czech Republic

Dr. Mehulkumar L. Savaliya

Assistant Professor

Department of Chemistry

SRICT- Institute of Science & Research

UPL University of Sustainable Technology

Vatara, Gujarat, India

Dr. Dinesh Kumar Chelike

Assistant Professor (Chemistry)

Rungta Institute of Engineering & Technology

Bhilai- Durg, Chhattisgarh, India

CONTENTS

PART 1		Page No.
Chapter 1 NANOTECHNOLOGY: A BOON FOR THE SCIENTIFIC DOMAIN.....		1-15
Chapter 2 INORGANIC NANOPARTICLES: A NEW PARADIGM IN ENERGY STORAGE.....		16-28
Chapter 3 A REVIEW ON ELECTRO CATALYSIS OF OXYGEN REDUCTION REACTION: ENABLING SUSTAINABLE FUTURE ENERGY.....		29-61
Chapter 4 ADVANCING FUNCTIONALIZATION OF POLYMER NANOCOMPOSITE.....		62-91
Chapter 5 GREEN CHEMISTRY: A FOOTSTEP TOWARDS SUSTAINABLE DEVELOPMENT.....		92-106
Chapter 6 NANOSENSORS: FUNDAMENTALS AND RECENT APPLICATIONS		107-122
Chapter 7 OVERVIEW OF TiO ₂ NANOSTRUCTURES, THEIR SYNTHESIS & POTENTIAL APPLICATIONS FOR SUSTAINABLE ENVIRONMENT		123-141
Chapter 8 SENSING TECHNOLOGIES: ADVANCED SENSOR TYPES AND THEIR APPLICATIONS.....		142-173
Chapter 9 MECHANISM OF COLLOIDAL COPPER/ COPPER OXIDE NANOPARTICLES MEDIATED BACTERICIDAL ACTIVITY AND ITS MULTI-DIMENSIONAL OUTLOOK IN FUTURE.....		174-184
PART 2		
Chapter 1 CARBON NANOTUBES: SYNTHETIC METHODS, FUNCTIONALIZATION AND EMERGING APPLICATIONS.....		185-208
Chapter 2 HYBRID INORGANIC-ORGANIC CYCLOPHOSPHAZENE-PHENOTHIAZINE BASED MATERIAL WITH TUNABLE YELLOW-GREEN EMITTING PROPERTIES.....		209-225

Chapter 3 EMERGING TECHNOLOGIES AND THEIR IMPACT ON BIOLOGICAL SCIENCE RESEARCH.....	226-255
Chapter 4 A BRIEF IDEA OF METAL COMPLEXES IN MEDICINAL CHEMISTRY: CURRENT STATUS AND FUTURE PROSPECTIVE.....	256-265
Chapter 5 SILSESQUIOXANES: SYNTHESIS, REACTIVITY AND APPLICATIONS IN MATERIALS CHEMISTRY.....	266-287
Chapter 6 DFT SIMULATION OF UV-VISIBLE SPECTRA AND NLO CHARACTERISTICS OF 2, 5- AND 2, 6-DIHYDROXYTOLUENES.....	288-292
Chapter 7 CONDUCTING POLYMERS FOR FLEXIBLE DEVICES.....	293-318
Chapter 8 THEORETICAL DETERMINATION OF NLO, CHEMICAL REACTIVITY AND TD PARAMETERS OF (1S*, 4R*,7S*)-(E)-7-(2,5- DIMETHOXYPHENYL)-3,3-DIMETHOXY-5- (2-NITROVINYL)BICYCLO[2.2.2]OCT-5-EN-2-ONE USING DFT METHOD.....	319-323
Chapter 9 SPECTROSCOPIC AND DFT STUDY OF (1R, 2R*, 4S*) -5-(5,5-DIMETHYL-1,3-DIOXAN-2-yl)- 8,8-DIMETHOXY-7- OXOBICYCLO[2.2.2]oct-5-en-2-yl CYANIDE.....	324-330



IIP Series is online, open access, peer-reviewed, interdisciplinary Journal. IIP Series provides a comprehensive solution for conferences and edited books that covers research topics across various scientific, technical, and medical disciplines. It aims at disseminating high-level research results and developments to researchers and research groups. It mainly focuses on presenting practical solutions for the current problems in Applied Sciences and Applied Social Sciences. It features original research work, reviews, case reports, tutorial papers, and accounts of practical developments.

Futuristic Trends in Chemical Material Sciences & Nano Technology

Volume 3 Book 22, 2024, IIP Series

ISBN : 978-93-5747-708-6



9 789357 477086