

*Futuristic Trends in*  
**Physical Sciences**

*Volume 3, Book 1, 2024, IIP Series*



*Futuristic Trends in*

# **PHYSICAL SCIENCES**

*Volume 3, Book 1, 2024, IIP Series*



**Title of the Book: Futuristic Trends in Physical Sciences**

**Edition: Volume 3, Book 1, 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: 978-93-5747-862-5**

**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

Physical Sciences 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 Physical Sciences. The field of advanced physical sciences 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 Physical Sciences. It also focuses on a range of issues but not limited to

1. Astrophysics
2. Atmospheric and Space Physics
3. Atomic & Molecular Physics
4. Biophysics
5. Condensed Matter & Materials Physics
6. General & Interdisciplinary Physics
7. Quantum Science & Technology
8. Nonlinear Dynamics & Complex Systems
9. Nuclear Physics
10. Optics and Spectroscopy
11. Particle Physics
12. Plasma Physics
13. Relativity & Cosmology
14. Statistical Physics

# **EDITORIAL BOARD MEMBERS**

## **Dr. Arun Kumar Singh**

Head and Associate Professor  
School of Science, ISBM University  
Nawapara (Kosmi), Tehsil – Chhura  
District- Gariyaband, Chhattisgarh, India

## **Dr. Sharanappa Chapi**

Assistant Professor  
Department of Physics  
B.M.S. College of Engineering  
Bull Temple Road, Basavanagudi  
Bangalore - 560019, Karnataka, INDIA

## **Dr. Himanshu Kumar Pandey**

Assistant Professor  
University Department of Mathematics  
Ranchi University Ranchi

## **Mrs.Viji Sridhar**

Teacher  
Bal Bharati Public School  
Chander Nagar Po  
Brij Vihar Ghaziabad Up

# CONTENTS

	<b>Page No.</b>
<b>Chapter 1</b> CONTROLLABLE SYNTHESIS AND CHARACTERIZATION OF CU-COZNF <sub>2</sub> O <sub>4</sub> NANO FERRITES BY AUTO-COMBUSTION ROUTE.....	<b>1-6</b>
<b>Chapter 2</b> INTRINSIC SHAPE OF ELLIPTICAL GALAXIES.....	<b>7-27</b>
<b>Chapter 3</b> PHYSICO-CHEMICAL TEST OF DIFFERENT EDIBLE OILS.....	<b>28-38</b>
<b>Chapter 4</b> LUMINESCENCE MATERIALS USED FOR DOSIMETER AND APPLICATIONS: A COMPREHENSIVE REVIEW.....	<b>39-84</b>
<b>Chapter 5</b> TELESCOPE DEVELOPMENT FOR MAKING SMALL OBSERVATIONS...	<b>85-109</b>
<b>Chapter 6</b> WIRELESS COMMUNICATION SYSTEM.....	<b>110-126</b>
<b>Chapter 7</b> RELIABILITY ANALYSIS OF COMPLEX SYSTEMS WITH STOCHASTIC DEPENDENCIES.....	<b>125-162</b>
<b>Chapter 8</b> SOLAR CELL AND ITS APPLICATIONS.....	<b>163-178</b>
<b>Chapter 9</b> ASTROBOTANY: UNRAVELING THE PHARMACY OF SPACE.....	<b>179-190</b>
<b>Chapter 10</b> HEART DISEASE PREDICTION USING FUZZY LOGIC.....	<b>191-199</b>
<b>Chapter 11</b> THE ROLE OF SEMICONDUCTORS IN OPTOELECTRONIC DEVICES.....	<b>200-215</b>

<b>Chapter 12</b> NANOELECTRONICS AND EMERGING TECHNOLOGIES: A PARADIGM SHIFT IN ELECTRONICS.....	<b>216-231</b>
<b>Chapter 13</b> INTERNET OF THINGS (IOT) AND SMART WORLD.....	<b>232-265</b>
<b>Chapter 14</b> MORPHOLOGY OF GALAXIES.....	<b>266-273</b>
<b>Chapter 15</b> NEUTRON STARS AND THEIR PROPERTIES.....	<b>274-330</b>
<b>Chapter 16</b> EXPLORING THE WORLD OF SUPRAMOLECULAR CHEMISTRY: FROM NON-COVALENT INTERACTIONS TO BIOMIMETIC APPLICATIONS.....	<b>331-345</b>
<b>Chapter 17</b> MULTIFACETED CHARACTERIZATION OF MATERIALS: INSIGHTS FROM PARTICLE SIZE, SURFACE AREA, PORE STRUCTURE, AND BEYOND.....	<b>346-365</b>
<b>Chapter 18</b> ASTRONOMICAL IMAGE PROCESSING USING LINUX.....	<b>366-391</b>







*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 Physical Sciences*

*Volume 3 Book 1, 2024, IIP Series*

ISBN : 978-93-5747-862-5

