



## SAR 2023-24 Self Assessment Report

### CRITERION 6 Faculty Profile & Research Activities

#### Sub-criterion 6.9

#### Number of Books Published/ Chapters in Books

Sr.No	Teachers' Name	No. of Chapter in Books	Chapter Name
1	Prof. Amit Kumar Sharma	1	Perovskite Materials for Photovoltaic Application
2	Dr. Kumari Sujata	1	पर्यावरण संकट का स्वरूप:वर्तमान समय में

CPC STM MEMBER 2024	
SUBJECTS	
Agriculture & Allied Sciences	
Allied Health	
Alternative & Complementary Medicine	
Animal Studies & Veterinary Sciences	
Anthropology	
Archaeology	
Bioinformatics	
Biology	
Biomedical Engineering/Nanotechnology	
Biotechnology	
Business Management	
Chemical Engineering	
Chemistry	
Chemoinformatics	
Communication & Language Studies	
Computer Science & Information Management	
COVID and Pandemic Issues	
Criminal Justice & Criminology	
Economics & Finance	
Education	
Electronics and Communications Technology	
Energy Science	
Engineering	
Environmental Health	
Environmental Science/Climate Change & Mitigation	
Fisheries Science & Marine Biology	
Food Chemistry & Science	
Hospitality & Tourism	
Law	
Library & Information Science	
Materials Science	
Mathematics	
Mechanical Engineering	
Media & Communications	
Medicine & Health Sciences	
Nanomedicine	
Nanotechnology	
Nutrition, Dietetics & Health	
Pharmaceutical Science & Technology	
Physics	
Plant Science & Botany	
Political Science / International Relations	
Polymer Science	
Psychology, Psychiatry & Mental Health	
Security & Disaster Management	
Sociology, Social Work & Social Welfare	
Soil & Water Conservation	
Urban Planning	
Viticulture & Enology	

## Materials Science

### Advanced Materials for Next-Generation Technologies

Challenges and New Prospects

Editors: Shrikanth Kulkarni, PhD  
Vipul Srivastava, PhD  
Rabah Khenata, PhD  
Yarub Al-Douri, PhD

Ordering Info/Buy Book



In Production  
Pub Date: Forthcoming  
December 2024  
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E-Book ISBN: 9781003558712  
Pages: Est. 366pp w/index  
Binding Type: Hardback / ebook  
Notes: 9 color and 73 b/w illustrations

Advanced materials exhibiting novel properties with increased functionality are the future of technology. These materials have the potential to improve people's quality of life as well as to make affordable sustainable materials a reality. This new book, **Advanced Materials for Next-Generation Technologies: Challenges and New Prospects**, presents an enlightening insight into the advances in materials with special reference to their structure, physical behaviors, and applications.

This book sheds light on the organizational and orientational order of the atoms responsible for characteristics and distinct architectures in these materials. It also discusses how the materials can be maneuvered for attaining structural optimality. It explores novel materials for new technologies that make use of their interesting and exciting properties, such as electronic band structure, band gap, half-metallicity, multi-ferroic behavior, piezoelectricity, thermoelectricity, thermodynamics, optoelectronic behavior, and more.

The book details novel materials for applications in frontier areas, discussing perovskites as promising materials for the future technology. It also discusses synthesis protocols for the design and development of some novel materials, spinel material synthesis and its structural analysis, green synthesis of metal oxides, etc. The book explores the property profiles of the materials for behavioral change, discussing materials such as ZnO nanostructures, ternary iron arsenide  $\text{CaFe}_2\text{As}_2$ , Cs-based halide double perovskites etc., and presenting a comprehensive pool of information on the latest advancements in this growing field.

The book will be of interest to researchers, academicians, and scientists in the field of materials science and technology, computational physics, industrial technology, and related fields.

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##### Preface

#### PART I: INTRODUCTION OF MATERIALS FOR TECHNOLOGIES

##### 1. Perovskite Pathways: A New Way for a Sustainable Technological Future

Prabhjot and Sahendra P. Sharma

##### 2. Perovskites as a Multifunctional Wonder Material: Categories and Applications

Anjana Nair V. J., Heera S., Arya Mohan, and Deepa K. G.

##### 3. Perovskites Are the Future for Upcoming Technologies

Parvesh K. Choudhary, Shweta Dhakia, Ankur Taya, Sarvesh Kumar, and Manish K. Khatiyap

##### 4. Perovskite Materials for Photovoltaic Applications

Shmit Kumar Sharma, Sangeeta Prasher, and Mukesh Kumar

#### PART II: STRUCTURE, SYNTHESIS, AND PROCESSING OF THE MATERIALS

##### 5. Structural Analysis of Spinel Material

Farzana Farooq, Prabhpreet Kaur, and Suman Rani

##### 6. Green Synthesis of Metal Oxides for Grow Light

Jasmeen Kaur and Suman Rani

##### 7. Materials Processing of Metals, Ceramics, and Polymers for Industrial Products

Riyadh A. Al-Samarai and Y. Al-Douri

#### PART III: PHYSICAL PROPERTIES OF THE MATERIALS

##### 8. Morphological Analysis and Optical Studies of ZnO Nanostructure

Y. Al Douri, Riyadh A. Al-Samarai, and Vipul Srivastava



## संसाधन प्रबंधन मुद्दे एवं चुनौतियाँ

सम्पादक

प्रेम सोनवाल

सहायक आचार्य, भूगोल विभाग  
शहीद कैप्टन रिपुदमन सिंह राजकीय महाविद्यालय  
सवाई माधोपुर (राज.)

शिवम् बुक हाउस (प्रा.) लिमिटेड, जयपुर

