

# **Characterization/Materials Theory, Computation and Data Science/Nanomaterials**

MRS Advances Volume 10, Issue 12

Various Dates and Locations

ISBN: 979-8-3313-2708-8

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2025) by Springer Nature  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact Springer Nature  
at the address below.

Springer Nature  
The Campus 4 Crinan St.  
London N1 9XW  
United Kingdom

[www.springernature.com](http://www.springernature.com)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

|                                                                                                                                                                     |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Investigation of Annealing Effect on the Structural and Optical Properties of CdS Nanoparticles Prepared Through Green Synthesis Approach: A Comparative Study..... | 1457 |
| <i>Parimal Tudu</i>                                                                                                                                                 |      |
| Improving the Surface Treatment of Mannii Rattan Fibers for the Reinforcement of Composite Materials Using Weibull Analysis .....                                   | 1465 |
| <i>Yannick Mama Mama</i>                                                                                                                                            |      |
| Cobalt-Molybdenum (CoMo) Thin Films: Unveiling Structural, Electronic, and Magnetic Insights Via Experimental and Theoretical Approaches.....                       | 1473 |
| <i>Zakia. Fekih</i>                                                                                                                                                 |      |
| Exploring the Physical Characteristics of Chalcogenide SrZrS <sub>3</sub> Perovskite: Insights for Photovoltaic Use.....                                            | 1479 |
| <i>Md. Zillur Rahman</i>                                                                                                                                            |      |
| Angular Dependence of Four Mechanical Properties of Graphynes .....                                                                                                 | 1487 |
| <i>Guilherme B. Kanegae</i>                                                                                                                                         |      |
| Accelerating Materials Recipe Acquisition Via LLM-Mediated Reinforcement Learning .....                                                                             | 1493 |
| <i>Andrew J. Lew</i>                                                                                                                                                |      |
| Interfacial Properties of Composites Based on h-BN and c-BN as a Function of Temperature: A Molecular Dynamics Study .....                                          | 1501 |
| <i>Pedro Altero Parra</i>                                                                                                                                           |      |
| Impact of Short Reaction Times on the Structural Control of Hydrothermally Synthesized Rod-Shaped ZnO Arrays .....                                                  | 1506 |
| <i>F. C. Sánchez-Vargas</i>                                                                                                                                         |      |
| Numerical Modeling of Temperature Distribution and Its Influence on Microstructure in Laser-Sintered Bulk Ceramics.....                                             | 1513 |
| <i>M. J. M. Nascimento</i>                                                                                                                                          |      |
| Design and Modeling of Scandium-Alloyed Wurtzite III-Nitrides Based Ferroelectric Heterostructure for Power Efficient Applications.....                             | 1521 |
| <i>Ruilin Wang</i>                                                                                                                                                  |      |
| Development and Analysis of Newly Designed ZnO and CuO Nanocomposite for Latent Fingerprint Detection.....                                                          | 1527 |
| <i>Akshara Johari</i>                                                                                                                                               |      |
| Impact of Temperature on the Performance of Efficient GaInP Single-Junction Solar Cells with Double Back Surface Field.....                                         | 1536 |
| <i>Ramesh Kumar</i>                                                                                                                                                 |      |
| Room Temperature Chemical Deposition of ZnO: Role of Alkaline pH in the Formation of Highly Crystalline Films Without Complexing Agent.....                         | 1545 |
| <i>I. J. Gonzalez-Chan</i>                                                                                                                                          |      |
| Laser Engraved Graphene-Based Ink-Modified Flexible Electrochemical L-Lactate Sensor .....                                                                          | 1552 |
| <i>G. M. Mehedi Hossain</i>                                                                                                                                         |      |

|                                                                                                                                                                                                   |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Green Synthesis, Characterization and in Vitro Anticancer Activity of Iron Oxide Nanoparticles ( $\alpha$ -Fe <sub>2</sub> O <sub>3</sub> ) Derived from Sandalwood (Santalum Album) Extract..... | 1558 |
| <i>Vandana Sharma</i>                                                                                                                                                                             |      |

|                                                                                                                    |      |
|--------------------------------------------------------------------------------------------------------------------|------|
| Advancing Liquid-Phase Electron Microscopy: Low-Voltage Electron Microscopy Paired with Graphene Liquid Cells..... | 1564 |
| <i>Emad Shahnaim</i>                                                                                               |      |

|                                                                                                                            |      |
|----------------------------------------------------------------------------------------------------------------------------|------|
| Dielectric and Small Angle Neutron Scattering Analysis of Molded and 3D Printed Polypropylene-graphene Nanocomposites..... | 1570 |
| <i>Radha Perumal Ramasamy</i>                                                                                              |      |

## **Author Index**