

Sharjah International Conference on Physics of Advanced Materials 2023

Journal of Physics: Conference Series Volume 2751

Sharjah, United Arab Emirates
25-27 April 2023

ISBN: 978-1-7138-9737-8
ISSN: 1742-6588

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.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: <http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

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

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

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
Web: www.proceedings.com

TABLE OF CONTENTS

Preface

Peer Review Statement

Linear vs. Non-Linear Behaviour in Ion Irradiation Nanostructuring of Nickel and Silicon Surfaces.....	1
<i>Mogtaba B. Mekki, Michael R. C. Hunt</i>	
Investigating Antitumor Therapeutic Efficacy using Magnetic Hyperthermia of Fe ₃ O ₄ Nanoparticles.....	11
<i>Venkatesha Narayanaswamy, Jayalakshmi Jagal, Imaddin A. Al-Omari, Hafsa Khurshid, Mohamed Haider, Ihab M. Obaidat, Bashar Issa</i>	
Generation of Nanoparticles from FeCu Powder using Femtosecond Laser.....	20
<i>M. Alawadhi, A. Yassine</i>	
Oxidative Stripping of Starch-AgNPs for Nanomolar Indirect Electrochemical Sensing of BSA using an L-Cysteine Modified Glassy Carbon Electrode	32
<i>Rania Ziad, A.-N. Kawde, Ayman Abdelhamid, Kais Daoudi</i>	
Enhancing Aqueous Zn-Mn Battery Performance using Na ⁺ Ion Conducting Ceramic Membrane.....	39
<i>S. T. Senthilkumar, Hussain Alawadhi, Anis Allagui</i>	
Topological Spin-Torque in Non-Collinear Anti-Ferromagnetic 3Q State	47
<i>Adel Abbout</i>	
Silicon/Silver Nanocomposite-Based Surface-Enhanced Raman Spectroscopy (SERS) Biosensor for Ultrasensitive Direct Detection of Deafness Mutations in Real System.....	52
<i>Arwa Al Safadi, Krithikadevi Ramachandran, Abdelaziz Tlili, Kais Daoudi</i>	
Co-Al Layered Double Oxide Activated Carbon Composite for Eliminating Lead Ions from Water	60
<i>Alaa Abushawish, Anjaneyulu Chatla, Ismail W. Almanassra, Abdallah Shanableh, Muataz Ali Atieh</i>	
Effect of Heat Treatments on Microstructure and Mechanical Properties of Fe-Mn-Ni-Al-Gd Shape Memory Alloy	75
<i>Faisal Mustafa, Mehmet Egilmez, Wael Abuzaid, Sami El-Khatib</i>	
Thermal Properties of Backfill Material for Underground Heat Exchange Applications	85
<i>Bashir M. Suleiman, Daniil Moraitis, Mohamed I. Abdel-Fattah, Atta G. Attaelmanan, Hamdan Hamdan, Marwan Alzaylaie</i>	
Effect of Gd, V, and Y Alloying on the Corrosion Properties of Fe-Mn-Ni-Al Fe-Based Shape Memory Alloy	90
<i>Faisal Mustafa, Shahbaz Ahmad, Arhum Hassan, Mehmet Egilmez, Sami El-Khatib, Taleb Ibrahim</i>	
Light Absorption Enhancement in Dye-Sensitized Solar Cells using Thin Nanostructured Photoelectrodes	100
<i>Maitha S. Alqaydi, Saad Oboudi, Di Zhang</i>	
New 2D penta-SiPN: A Wide and Indirect Bandgap Semiconductor	105
<i>I. A. Qattan, Shambhu B. Sharma, K. C. Santosh, Sufian Abedrabbo</i>	

Electronic, Mechanical, and Thermoelectric Properties of Ge/Zn Co-Doped SnSe: First-Principles Calculations.....	112
<i>N. Al Bouzieh, M. Benkraouda, N. Amrane</i>	
Comparing the Plasmon Dispersion in Graphene and MoS ₂ Nanoribbons Array Under Electromagnetic Excitation	120
<i>Omnia Samy, Amine El Moutaouakil</i>	
Upper Subcell Impacts on Perovskite/u-CIGS Tandem Solar Cell Performance	125
<i>Nour Boukortt, Yaser M. Abdulraheem, Salvatore Patanè, Trupti R. Lenka, Rabin Paul, Amal M. Alamri, Malak Wafi, Mariam Ali Mohammad, Anfal Almuraished, Noor Alenezi, Latifa Alameeri, Zainab Alenezi, Wissem Nasri, Baghdad Hadri</i>	
Investigation of Gamma Induced Effects on the Properties of Gamma Irradiated Ce ₂ S ₃ Thin Films	135
<i>S. Aldawood</i>	
The Scalability of Third Generation Photovoltaics: Deposition Techniques and Modularity	140
<i>Mohamad Ayoub, Adnan Alashkar, Ayman Mdallal, Taleb Ibrahim, Mustafa Khamis, Abdul H. Alami</i>	
Fabrication of Surface Enhanced Raman Spectroscopy Based Sensor using Ag NPs on Copper Tape Flexible Substrate	149
<i>P. Mohamed Shameer, K. Vijai Anand, Soumya Columbus, Hussain Alawadhi, Mounir Gaidi</i>	
Fast and Facile Synthesis of Passivated Perovskite Single Crystals with Zn-Porphyrin Derivatives.....	155
<i>Abdul K. K. Soopy, Bhaskar Parida, Adel Najar</i>	
Parametric Study of Bio-Char Production from the Co-Pyrolysis of Tire and Coffee Wastes via Fixed Bed Reactor	161
<i>Martina Žabčić, Lina Hilal, Lisandra Rocha-Meneses, Abrar Inayat, Chaouki Ghenai, Abdallah Shanableh</i>	
Highly Ordered TiO ₂ Nanotubes Decorated with Plasmonic Silver Nanoparticles (TiO ₂ /Ag) for Ultra-Sensitive SERS Detection of Textile Dye Contaminant Rhodamine 6 G	169
<i>Krithikadevi Ramachandran, Ameni Rebhi, Khaled Trabelsi, Anouar Hajjaji, Bernabé M. Soucase, Brahim Bessais, Mounir Gaidi</i>	
Development and Characterization of a Clay-Graphite-CeO ₂ Composite Electrode for Simultaneous Detection of Heavy Metals	176
<i>Sondos Nizar, Abderrazek El-Kordy, Abdelaziz Elgammouz, Abdelnasser Kawde, Tahar Laoui</i>	
Prospective of Biochar Material Production and Process Optimization using Co-Pyrolysis Approach: A Mini-Review	189
<i>Mohamed Dafalla, Abrar Inayat, Farrukh Jamil, Chaouki Ghennai</i>	
Efficient Cooling for Agricultural Greenhouses in Hot Climates: A Novel Water Light Filter Design.....	203
<i>Jihad H. Alsadah</i>	
Removal of Rhodamine B and Alizarin Red from Aqueous Solutions by Oxidized Carbon Nanotubes: Kinetics and Isotherm Study	217
<i>Abdelrahman K. A. Khalil, Ismail W. Almanassra, Anjaneyulu Chatla, Muataz Ali Atieh, Tahar Laoui</i>	
The Effect of Antioxidants on the Stability of Perovskite Solar Cells.....	226
<i>Fatima Alzubaidi, Di Zhang, Nouar Tabet</i>	

Flexural Response of Sandwich Structures Comprising Topologically Perturbed Cores	235
<i>Omar Al Osman, Maen Alkhader, Wael Abuzaid</i>	
LIPSS Formation on Ni Surface using Mixed Near-Infrared Laser Beam Harmonics.....	244
<i>Baha Khalil, Ali S. Alnaser</i>	
Enhanced Photocatalytic Activities of LaCoO ₃ Perovskite Nanostructures for Degrading Cationic and Anionic Dyes	250
<i>Muhammed Irshad, Soumya Columbus, Javad B. M. Parambath</i>	
A Study on Plasminogen-Ag Nanoparticles Interaction and Its Application in Sensor Development.....	258
<i>A. Abdelhamid, H. Boukhatem, A. Elgamouz, K. Bajou</i>	

Author Index