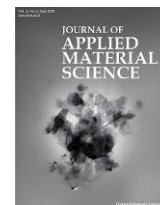


# JOURNAL OF APPLIED MATERIAL SCIENCE





## Contents

### Volume 2, No. 2, June 2026

#### Editorial ..... 260201

Aims and scope of the journal, a brief submission guideline, and the list of the editorial board.

Ahmad Allahbakhsh

doi: 10.22034/jams.2026.260201

#### Near-Infrared Fluorescence Imaging in Biomedicine ..... 260202

Near-infrared (NIR) light (700-1700 nm) is beneficial in biomedical research for deep tissue imaging and therapy, with minimal scattering and phototoxicity. Advances in nanomaterials enable localized therapeutic effects, but many technologies are still in pre-clinical stages due to challenges like immune interactions. This review by Pothal et al. covers NIR principles, materials designs, applications in cancer theranostics, neuroregeneration, and biosensing, and strategies for improved safety in NIR nanomedicine.

Pritiman Pothal, Suraj Pratap Singh, Akhil Khajuria, Pavitra Ranawat, Ravi Pratap Barnwal, Gurlal Singh

doi: 10.22034/jams.2026.260202



#### Effect of Mn Doping on Electrical and Optical Behavior of Chemically Synthesized ZnTe Thin Film ..... 260203

##### Effect of Mn Doping on Electrical and Optical Behavior of Chemically Synthesized ZnTe Thin Film

Ujjwal Prasad\*, Pushp Raj Harsh\*, S.R. Kumar\*, Kamal Prasad\*\*

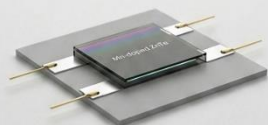
\*University Department of Physics, T.M. Bhagelpr University, Bhagalpur - 812007, India

\*\*Department of Applied Science and Humanities, NEAMT, Raichur - 576005, India

Editor's note: Zinc Telluride (ZnTe) is a II-VI semiconductor with a 2.26 eV band gap, ideal for optoelectronic devices like LEDs, solar cells, and laser diodes. Prasad et al. investigated the effects of manganese (Mn) doping on the properties of ZnTe thin films for optoelectronic applications. ZnTe and Manganese-doped ZnTe films were deposited on FTO via chemical bath deposition. Structural analysis was conducted using X-ray diffraction (XRD), while optical properties were assessed through UV-Visible spectroscopy, and electrical behavior was evaluated with current-voltage measurements. Their results demonstrate that Mn doping enhances the properties of ZnTe thin films for use in photodetectors and photovoltaics.

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Prasad et al. investigated the effects of manganese (Mn) doping on the properties of ZnTe thin films for optoelectronic applications. ZnTe and Mn-doped ZnTe films were deposited on FTO via chemical bath deposition. Structural analysis was conducted using X-ray diffraction (XRD), while optical properties were assessed through UV-Visible spectroscopy, and electrical behavior was evaluated with current-voltage measurements. Their results demonstrate that Mn doping enhances the properties of ZnTe thin films for use in photodetectors and photovoltaics.

Ujjwal Prasad, Pushp Raj Harsh, S.R. Kumar, Kamal Prasad

doi: 10.22034/jams.2026.260203

**Low-Cost Biochar Adsorbents for Wastewater Remediation: Case Studies ..... 260204 on Ibuprofen, Sulfamethoxazole, and Diclofenac**

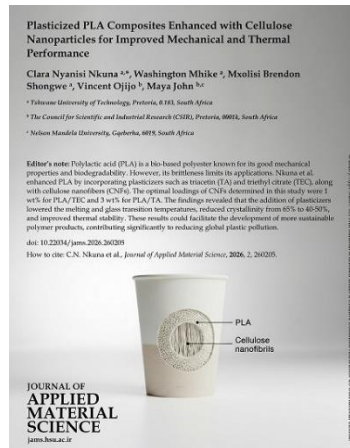
This review by Nosa-Ihaza et al. explores low-cost biochar adsorbents made from biomass, highlighting how production methods affect their effectiveness in removing drugs such as ibuprofen, sulfamethoxazole, and diclofenac. Key factors include the biochar's surface area and properties, as well as conditions like pH and dosage. The review also discusses regeneration methods and the need for standardized testing to establish biochar as a viable wastewater treatment solution.

Eloghosa Nosa-Ihaza, Godsent Shepherd-Moses, Archana Sharma

doi: 10.22034/jams.2026.260204



**Plasticized PLA Composites Enhanced with Cellulose Nanoparticles ..... 260205 for Improved Mechanical and Thermal Performance**



Nkuna et al. enhanced PLA by incorporating plasticizers such as triacetin (TA) and triethyl citrate (TEC), along with cellulose nanofibers (CNFs). The optimal loadings of CNFs determined in this study were 1 wt% for PLA/TEC and 3 wt% for PLA/TA. The findings revealed that the addition of plasticizers lowered the melting and glass transition temperatures, reduced crystallinity from 65% to 40-50%, and improved thermal stability. These results could facilitate the development of more sustainable polymer products, contributing significantly to reducing global plastic pollution.

Clara Nyanisi Nkuna, Washington Mhike, Mxolisi Brendon Shongwe, Vincent Ojijo, Maya John

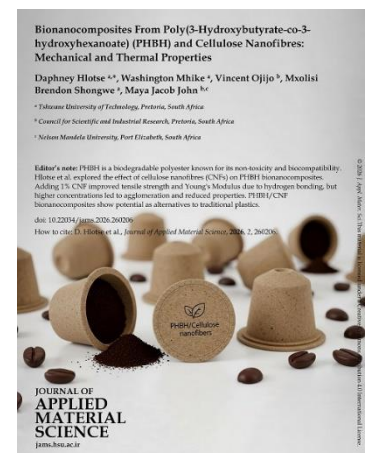
doi: 10.22034/jams.2026.260205

**Bionanocomposites From Poly(3-Hydroxybutyrate-co-3-hydroxyhexanoate) (PHBH) ..... 260206 and Cellulose Nanofibres: Mechanical and Thermal Properties**

PHBH is a biodegradable polyester known for its non-toxicity and biocompatibility. Hlotse et al. explored the effect of cellulose nanofibres (CNFs) on PHBH bionanocomposites. Adding 1% CNF improved tensile strength and Young's Modulus due to hydrogen bonding, but higher concentrations led to agglomeration and reduced properties. PHBH/CNF bionanocomposites show potential as alternatives to traditional plastics.

Daphney Hlotse, Washington Mhike, Vincent Ojijo, Mxolisi Brendon Shongwe, Maya Jacob John

doi: 10.22034/jams.2026.260206



**Electrochemical Exfoliation of Graphene in Aqueous Media ..... 260207**



Harsh et al. presented an efficient method for synthesizing low-defect graphene via electrochemical exfoliation in water. Applying voltage with elevated temperature (75°C) enhanced production efficiency and yielded high-quality graphene with large crystallite size, suitable for energy storage and sensors. The findings support future advancements in materials development.

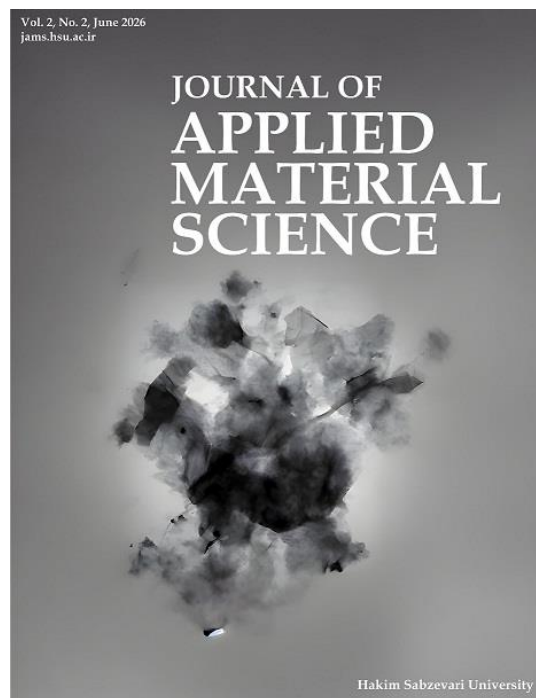
Pushp Raj Harsh, Ujjwal Prasad, S.R. Kumar, Nandu B. Chaure, Kamal Prasad

**doi: 10.22034/jams.2026.260207**

**ABOUT COVER**

Graphene, the thinnest two-dimensional carbon structure in the world, has opened up a wide range of possibilities for advanced engineering and industrial applications. The cover features a colored, processed transmission electron microscopy (TEM) image of reduced graphene oxide nanosheets, which were obtained through the environmentally friendly reduction of graphene oxide nanosheets synthesized using the well-known Hummers' method.

(Note: The covers of this journal are created in part using artificial intelligence (AI) technologies, with direct human supervision. AI and AI-assisted technologies are permitted only for generating graphical abstract suggestions. If such technologies are used in the manuscript preparation, it must be clearly disclosed in the Acknowledgments section.)



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