

JOURNAL OF APPLIED MATERIAL SCIENCE



Contents

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Editorial 260301

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

Ahmad Allahbakhsh

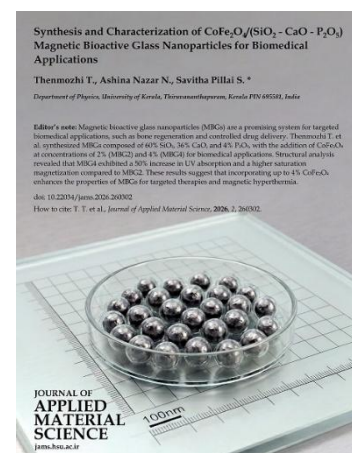
doi: 10.22034/jams.2026.260201

Synthesis and Characterization of CoFe₂O₄/(SiO₂ - CaO - P₂O₅) 260302 Magnetic Bioactive Glass Nanoparticles for Biomedical Applications

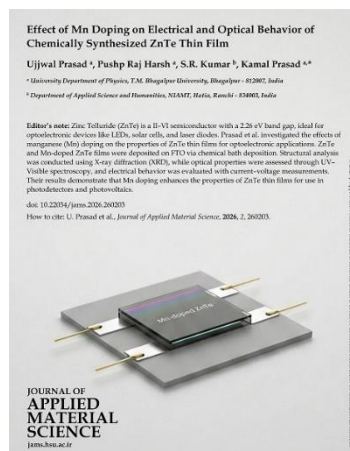
Thenmozhi T. et al. synthesized MBGs composed of 60% SiO₂, 36% CaO, and 4% P₂O₅, with the addition of CoFe₂O₄ at concentrations of 2% (MBG2) and 4% (MBG4) for biomedical applications. Structural analysis revealed that MBG4 exhibited a 50% increase in UV absorption and a higher saturation magnetization compared to MBG2. These results suggest that incorporating up to 4% CoFe₂O₄ enhances the properties of MBGs for targeted therapies and magnetic hyperthermia.

Thenmozhi T., Ashina Nazar N., Savitha Pillai S.

doi: 10.22034/jams.2026.260302



Comprehensive Structural Analysis of ZnTe and Mn-Doped ZnTe Thin Films 260303



Prasad et al. analyzed ZnTe and Mn-doped ZnTe thin films using X-ray diffraction, confirming a cubic phase and revealing lattice distortion due to Mn doping. Techniques showed that Mn increases microstrain and internal stress while reducing crystallite size. These changes are crucial for enhancing the optical, electronic, and magnetic properties of ZnTe, making it suitable for optoelectronic and spintronic applications.

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

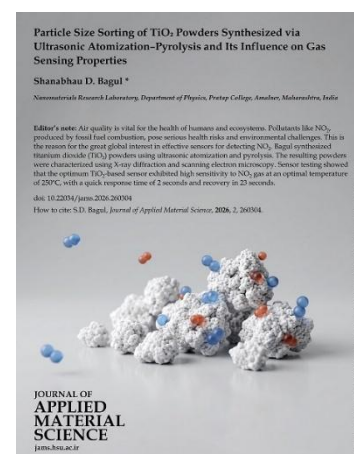
doi: 10.22034/jams.2026.260303

Particle Size Sorting of TiO₂ Powders Synthesized via Ultrasonic Atomization-Pyrolysis 260304 and Its Influence on Gas Sensing Properties

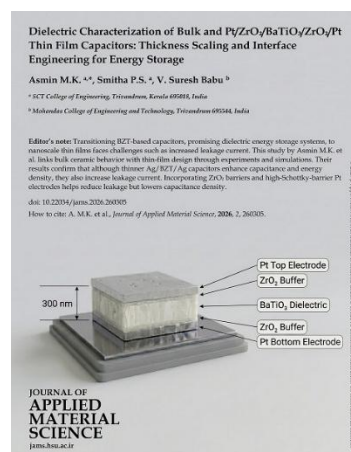
Pollutants like NO₂, produced by fossil fuel combustion, pose serious health risks and environmental challenges. This is the reason for the great global interest in effective sensors for detecting NO₂. Bagul synthesized titanium dioxide (TiO₂) powders using ultrasonic atomization and pyrolysis. The resulting powders were characterized using X-ray diffraction and scanning electron microscopy. Sensor testing showed that the optimum TiO₂-based sensor exhibited high sensitivity to NO₂ gas at an optimal temperature of 250°C, with a quick response time of 2 seconds and recovery in 23 seconds.

Shanabhau D. Bagul

doi: 10.22034/jams.2026.260304



Dielectric Characterization of Bulk and Pt/ZrO₂/BaTiO₃/ZrO₂/Pt Thin Film Capacitors: 260305 Thickness Scaling and Interface Engineering for Energy Storage



Transitioning BZT-based capacitors, promising dielectric energy storage systems, to nanoscale thin films faces challenges such as increased leakage current. This study by Asmin M.K. et al. links bulk ceramic behavior with thin-film design through experiments and simulations. Their results confirm that although thinner Ag/BZT/Ag capacitors enhance capacitance and energy density, they also increase leakage current. Incorporating ZrO₂ barriers and high-Schottky-barrier Pt electrodes helps reduce leakage but lowers capacitance density.

Asmin M.K., Smitha P.S., V. Suresh Babu

doi: 10.22034/jams.2026.260305

Corrosion Inhibition Performance of Waterborne Acrylic Copolymer Nanoparticles: 260306 Experimental and Theoretical Insights into Copolymer Composition

Samiei et al. investigated methyl methacrylate-butyl acrylate (MMA-co-BuA) copolymers as waterborne corrosion inhibitors for mild steel in 1 M HCl. Synthesized via miniemulsion polymerization, these copolymers show increased corrosion protection with higher MMA content, achieving an 82.7 % inhibition efficiency at an 80:20 MMA:BuA ratio. The reported enhanced performance is linked to improved polarity and interfacial interactions that strengthen the protective layer on the steel surface.

Mohammad Samiei, Golamali Farzi, Zeinab Jarrahi

doi: 10.22034/jams.2026.260306



Effect of Ethanolic Extract of *Melia Azedarach* Fruit on Enhancing the Performance 260307 of Epoxy Coating for Corrosion Prevention of Mild Steel in 3.5 wt% NaCl



Sheydaei evaluated the anti-corrosion potential of ethanolic extract from *Melia Azedarach* fruit on mild steel in 3.5 wt% NaCl. The extract was used as a green modifier for sodium montmorillonite (Na⁺-MMT), creating a novel nanofiller (MA-MMT) incorporated into an epoxy coating. X-ray diffraction (XRD) confirmed that *Melia Azedarach* compounds penetrated the clay galleries, and polarization results indicated improved corrosion resistance with increased MA-MMT content, confirming its role as a mixed-type inhibitor.

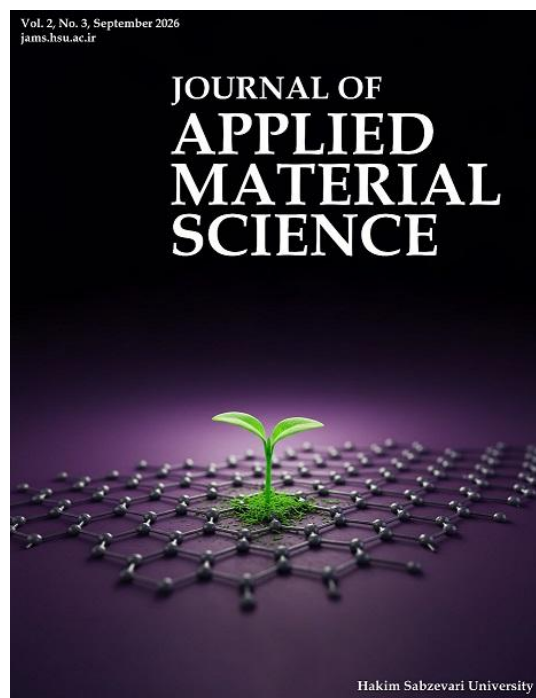
Milad Sheydaei

doi: 10.22034/jams.2026.260307

ABOUT COVER

Green and sustainable graphene-based nanostructures are garnering significant global interest for the development of next-generation advanced materials. The cover features an AI-generated image that combines themes of sustainability with graphene-based nanostructures, highlighting the importance of responsible synthesis and application of these systems.

(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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We began our journey on March 1st, 2025, and after a successful year of publication, we are excited to continue this path for the benefit of our authors and readers. The Journal of Applied Material Science publishes original research in the form of *communications* and *full papers*, as well as *reviews*, invited *mini-reviews*, and invited research news. Publication in this journal is **entirely free of charge**, and all accepted papers will be available online immediately after typesetting. Dr. Ahmad Allahbakhsh, along with an international team of editors, leads the journal to meet the highest publication standards. We are looking forward to receiving your submissions.

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