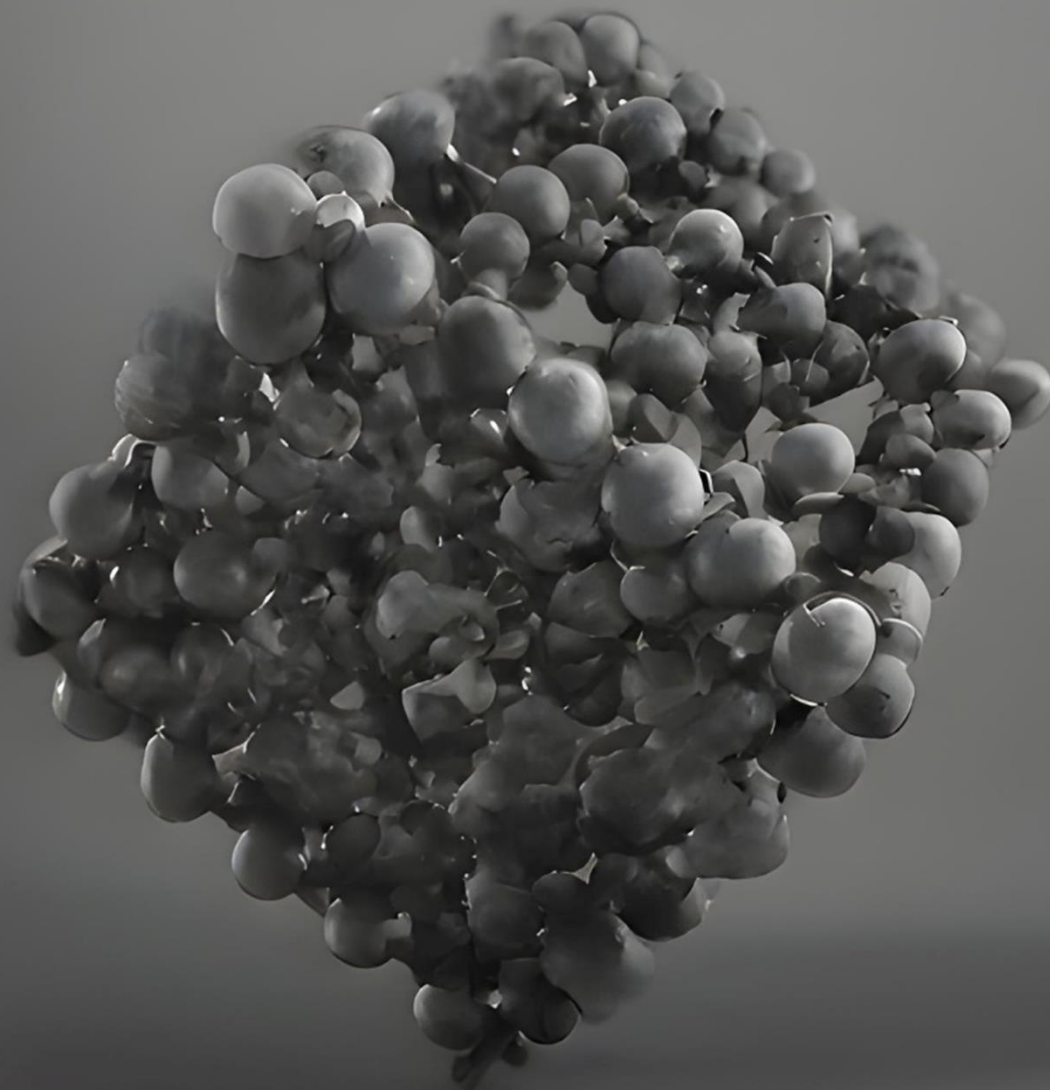
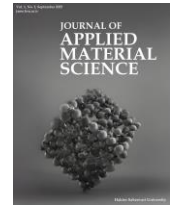


JOURNAL OF APPLIED MATERIAL SCIENCE





Contents

Volume 1, No. 3, September 2025

Editorial 210142

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

Ahmad Allahbakhsh

doi: 10.22034/jams.2025.210142

Microplastics: Pollution of the Modern World 210143

Microplastics, due to their small size and lightweight nature, have raised significant health concerns in recent years. They can influence our lives both directly and indirectly, making responsible management of plastic waste more important than ever. In this invited mini-review, Sheydaei discusses microplastic pollution and its sources, as well as the effects of microplastics on marine organisms.

Milad Sheydaei

doi: 10.22034/jams.2025.210143



Fluoride Adsorption Behavior in Cost-effective Plant-based Bio-sorbents 210144



The detrimental effects of excessive fluoride on the health of both humans and animals through drinking-water sources are evident, particularly regarding dental and skeletal fluorosis. This underscores the critical need for stringent control of fluoride concentration levels in drinking water. In their study, Visarapu et al. presented various plant-based biosorbents for fluoride removal, and their results demonstrated that Hibiscus leaves achieved a high fluoride removal efficiency with an impressively low dosage of just 1 g.

Malathi Visarapu, Anna Tanuja Safala B., Bharath Kumar Ch., Madhavi Vemula

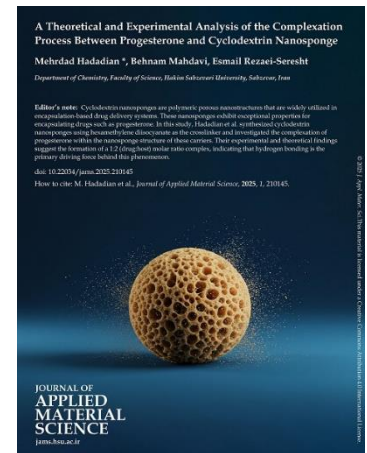
doi: 10.22034/jams.2025.210144

A Theoretical and Experimental Analysis of the Complexation Process 210145 Between Progesterone and Cyclodextrin Nanosponge

In this study, Hadadian et al. synthesized cyclodextrin nanosponges using hexamethylene diisocyanate as the crosslinker and investigated the complexation of progesterone within the nanosponge structure of these carriers. Their experimental and theoretical findings suggest the formation of a 1:2 (drug:host) molar ratio complex, indicating that hydrogen bonding is the primary driving force behind this phenomenon.

Mehrdad Hadadian, Behnam Mahdavi, Esmail Rezaei-Seresht

doi: 10.22034/jams.2025.210145



Antibacterial/Magnetic Iron Oxide Nanoparticles: A Comprehensive Review of 210146 Synthesis Methods, Doping Effects, Antibacterial Properties, and Applications in Medical and Food Industries



In this systematic review, Hosseinzadeh provided a detailed overview of recent studies on the effects of various dopants on the antibacterial mechanisms of magnetic nanoparticles. These dopants boosted the antibacterial activity of these nanoparticles for a variety of applications in clinical, food, and environmental fields, such as drug delivery systems, coatings for implants, wound healing, and antimicrobial packaging.

Hamid Hosseinzadeh

doi: 10.22034/jams.2025.210146

Effect of CoCl₂ Doping on the Optical and Electrical Properties of PEO Polymer 210147 Films for Optoelectronic Applications

Roopa K. V. and Subramanya K. investigated the doping of PEO films with cobaltous chloride (CoCl₂) at various concentrations. Their findings indicated that the interaction between Co²⁺ ions and the ether groups of PEO results in the formation of metal-ligand coordination bonds within the doped PEO films. This interaction significantly enhances the electrical conductivity and ion mobility of the CoCl₂-doped PEO films and results in a redshift in the absorption edge of these films.

Roopa K. V., Subramanya Kilarkaje

doi: 10.22034/jams.2025.210147



**Investigation of Wear Resistance and Corrosion of Ni-PTFE Composite Coatings 210148
 Prepared by Electrodeposition Method**



An investigation was conducted by Wetwet on the impact of varying concentrations of polytetrafluoroethylene (PTFE) particles on the corrosion inhibition and wear resistance of nickel-based coatings applied to a St37 steel substrate. The results indicate that achieving an optimal concentration of PTFE through the electrodeposition coating process significantly enhances the wear resistance and corrosion inhibition performance of nickel-based coatings. This makes the final coating ideal for developing metal-based infrastructures that require corrosion resistance.

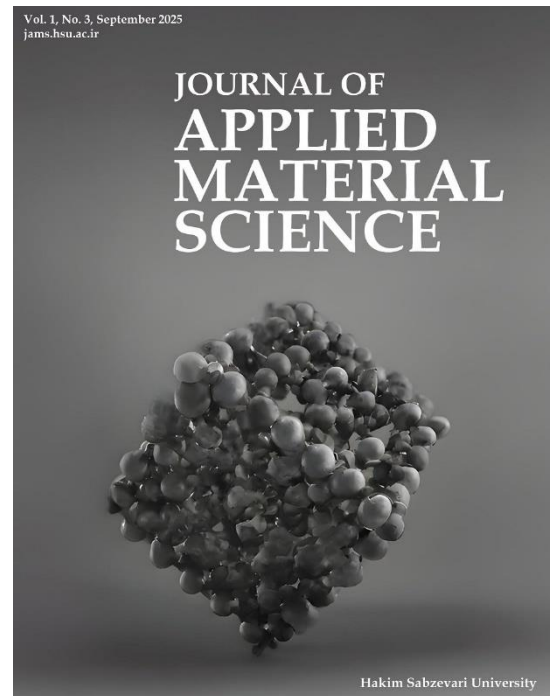
Zainab Wetwet

doi: 10.22034/jams.2025.210148

ABOUT COVER

The proper selection of elements in a unit cell directly influences the predictions made by an analytical model. Various classes of elements, which represent the solid and fluid phases involved in thermal and electrical conductivity, have been used in the literature to develop different types of analytical models. The cover features a regenerated image based on a unit cell containing spherical elements, aimed at predicting the thermal conductivity of porous materials.

(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.)



Journal of Applied Material Science:

an *open-access* platform to publish scientific developments in all aspects of material science under the *highest publication standards* and the *fastest peer-review process*

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.

Editor-in-Chief: Dr. Ahmad Allahbakhsh (Hakim Sabzevari University)

Director in charge: Prof. Gholamali Farzi (Hakim Sabzevari University)

International Editorial Board Members:

Prof. Ahmad Reza Bahramian (Tarbiat Modares University),
 Prof. Mohammadhosein (Momo) Safari (Hasselt University),
 Prof. Denis Rodrigue (Laval University),
 Prof. Ursula Windberger (Medical University of Vienna),
 Prof. Gholamali Farzi (Hakim Sabzevari University),
 Prof. Sabu Thomas (Mahatma Gandhi University),
 Dr. Hamidreza Oveisi (Hakim Sabzevari University),
 Prof. Manoj Balachandran (CHRIST University),
 Dr. Rasoul Esmaeely Neisiany (Hakim Sabzevari University),
 Prof. Raffaella Mancuso (University of Calabria),
 Dr. Ahmad Allahbakhsh (Hakim Sabzevari University)

Journal of Applied Material Science is an open-access journal, which means that all content is freely available without charge to the users and institutions. Users are allowed to read, download, copy, distribute, print, search, or link to the full texts of the articles, or use them for any other lawful purpose, without asking prior permission from the publisher or the author. This is in accordance with the BOAI definition of open access. Authors are free to deposit a copy of their paper (Published version, Version of Record) in an institutional or other repository of their choice.

To submit a manuscript: Please consult the **aim and scope** of the journal at:
https://jams.hsu.ac.ir/journal/aim_scope

Guide for Authors is available at: <https://jams.hsu.ac.ir/journal/authors.note>

To **submit** your paper, please visit: <https://jams.hsu.ac.ir/author>