SCHOLARLY PUBLICATIONS
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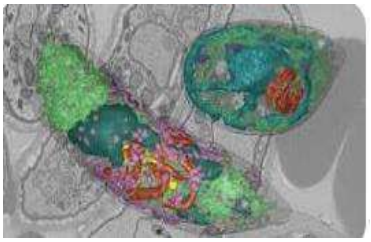
Journal Name: Nature Communications **IF: 14.7**

Title: Evidence of isospin-symmetry violation in high-energy collisions of atomic nuclei

Author: Zwaska R.; Zviagina A.; Zimmerman E.D.; Zherebtsova E.; Zaitsev A.; WyszyÅ„ski O.; WÃ³jcik K.; Witek K.; Wickremasinghe A.; Volkov V.; Vitiuk O.; Vechernin V.V.; VeberiÄ D.; Valiev F.F.; Urbaniak M.; Unger M.; Tveter I.C.; Andronov E.V.; Amin N.; Allison K.K.; Adrich P.; Adhikary H.; Giacosa F.; Gorenstein M.; Poberezhniuk R.; Samanta S.

Details: Volume 16, Issue 1, December 2025

Abstract: Strong interactions preserve an approximate isospin symmetry between up (u) and down (d) quarks, part of the more general flavor symmetry. In the case of K meson production, if this isospin symmetry were exact, it would result in equal numbers of charged (K^+ and K^-) and neutral (K^0 and K^-0) mesons produced in collisions of isospin-symmetric atomic nuclei. Here, we report results on the relative abundance of charged over neutral K meson production in argon and scandium nuclei collisions at a center-of-mass energy of 11.9 GeV per nucleon pair. We find that the production of K^+ and K^- mesons at mid-rapidity is (18.4 ± 6.1)% higher than that of the neutral K mesons. Although with large uncertainties, earlier data on nucleus-nucleus collisions in the collision center-of-mass energy range 2.6<sNN<200 GeV are consistent with the present result. Using well-established models for hadron production, we demonstrate that known isospin-symmetry breaking effects and the initial nuclei containing more neutrons than protons lead only to a small (few percent) deviation of the charged-to-neutral kaon ratio from unity at high energies. Thus, they cannot explain the measurements. The significance of the flavor-symmetry violation beyond the known effects is 4.7σ when the compilation of world data with uncertainties quoted by the experiments is used. New systematic, high-precision measurements and theoretical efforts are needed to establish the origin of the observed large isospin-symmetry breaking.



URL: https://www.nature.com/articles/s41467-025-57234-6

Journal Name: Journal of Alloys and Compounds **IF: 6.3**

Title: Enhanced low-frequency microwave absorption using MAPbIâ‚ƒ@rGO nanocomposites

Author: Barik R.; Das D.; Barik R.; Sahoo S.; Bhuyan M.; Sahu P.; Parashar S.K.S.; Sahoo D.

Details: Volume 1037, August 2025

Abstract: $MAPbI_3$@rGO nanocomposites were synthesized and incorporated into an epoxy matrix to develop a robust material with enhanced microwave absorption properties. Structural and morphological analyses using XRD, FTIR, FE-SEM, HR-TEM, and XPS confirmed the successful formation of the $MAPbI_3$@rGO composites, revealing uniform dispersion of $MAPbI_3$ nanoparticles on rGO sheets, reduced particle size, and consistent elemental composition. The performance of $MAPbI_3$@rGO composite was evaluated in the X-band with a frequency range (8.2–12.4 GHz), showing a significant improvement in microwave absorption with the inclusion of reduced graphene oxide (rGO). The as-obtained perovskite, amalgamated with rGO exhibits an extremely low reflection loss value of −83 dB at 8.7 GHz when the absorber thickness is 4 mm, ranking it as one of the most attractive absorbers reported to date. The $MAPbI_3$@rGO composite demonstrates an impressive broadband response, covering a wide frequency range of 8–10 GHz, making it highly suitable for advanced high-frequency applications. Mechanisms, including dielectric loss, various internal reflections, effective impedance matching, and synergistic interactions within the composite structure, are responsible for the observed enhanced absorption performance. These results highlight the potential of materials based on $MAPbI_3$@rGO for applications involving microwave absorption.

URL: https://www.sciencedirect.com/science/article/pii/S0925838825038198?via%3Dihub

SCHOLARLY PUBLICATIONS
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Journal Name: Surface and Coatings Technology **IF: 6.1**

Title: Unveiling the synergy of MXene supported ZIF-8 hybrid catalyst for enhanced oxygen evolution reaction

Author: Azmi Z.; Deepak D.; Kadadevar A.; Chowdhury A.; Nair M.G.; Roy S.S.; Das A.; Mohapatra S.R.

Details: Volume 512, September 2025

Abstract: The oxygen evolution reaction (OER) is a critical process in sustainable energy technologies, but its sluggish kinetics necessitate efficient, non-precious metal catalysts. ZIF-8 has recently gained attention as a model electrocatalyst due to its porous structure, functional channels, and high Brunauer-Emett-Teller (BET) surface area. However, its poor conductivity and aggregation hinder its OER performance. MXene, a family of multifunctional 2D material with rich surface chemistry, shows great promise as a catalyst support material. This study presents the synthesis of ZIF-8 and MXene composites (MXene@ZIF-8) with varying ZIF-8 concentrations while maintaining a constant MXene mass to evaluate the supportive function of MXene in improving the OER performance of the composite. The optimized MXene@ZIF-8 (1:5) catalyst achieved superior performance, with a reduced overpotential (330 mV) and Tafel slope (149.79 mV/dec) compared to ZIF-8 (579 mV, 351.38 mV/dec) and MXene (613 mV, 400.02 mV/dec). It also exhibited exceptional durability, maintaining stability at 10 mA/cm^2 for 50 h in alkaline condition. The enhanced performance stems from its increased BET and electrochemically active surface areas. The incorporation of MXene introduces mesopores, increases pore volume, enhances hydrophilicity, and reduces charge transfer resistance, collectively facilitating efficient electrolyte diffusion and reactant accessibility. This study underscores MXene's potential as an efficient and cost-effective support material for advancing OER catalysts, facilitating the development of advanced sustainable energy solutions.

URL: https://www.sciencedirect.com/science/article/pii/S0257897225006759?via%3Dihub

SCHOLARLY PUBLICATIONS
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Journal Name: Materials Research Bulletin **IF: 5.3**

Title: In situ Raman and electric modulus study of NBT-ST-KNN ceramics: An insight into temperature evolution of relaxor dynamics

Author: Singha A.; Praharaj S.; Rout D.

Details: Volume 190, October 2025, 113534

Abstract: Polar nanoregions (PNRs) are often argued to be the key factor in enhancing the functional properties of relaxor-based ferroelectrics. The creation and relaxation of these polar entities are believed to be strongly temperature-dependent, but the explanation is still unclear. In this investigation we have chosen a well-established relaxor system $(0.8\text{-}x)(Na_{0.5}Bi_{0.5})TiO_3\text{-}0.2SrTiO_3\text{-}x(K_{0.5}Na_{0.5})NbO_3$; (x = 0.005, 0.01, 0.04 and 0.1) to probe into the thermal dynamics of PNRs using in-situ Raman and electric modulus formalism. The Raman spectra segregate into different temperature zones corresponding to ferroelectric-relaxor transition ($T_{F\text{-}R}$), maximum dielectric constant (T_m) and Burn's temperature (T_B). A closer introspection of width and position of peak peaks around these temperatures depicts the existence of local structural heterogeneities. Further, the frequency-dependent electric modulus, M"(f) study demarcates high-frequency shoulder (related to PNR relaxation) from intermediate frequency peak corresponding to bulk response. Analysis of Z"(f) and M"(f) predict temperature evolution of long-range ordered regions to localized relaxations.

URL: https://www.sciencedirect.com/science/article/pii/S0025540825002429?via%3Dihub

SCHOLARLY PUBLICATIONS
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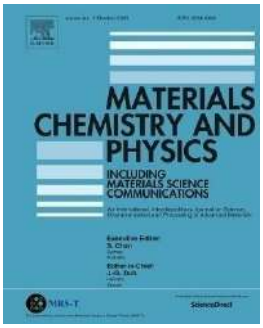
Journal Name: Materials Chemistry and Physics **IF: 4.7**

Title: Insights into the structural and functional properties of potassium based complex perovskite ceramic: dielectric, optical, morphological and electrical perspectives for potential applications.

Author: Rout S.; Moharana K.; Priyadarshini L.; Parida A.K.; Choudhary R.N.P.; Biswal L.

Details: Volume 3431, October 2025, Article number 131050

Abstract: An alkali metal-based compound featuring a disordered complex perovskite structure was successfully synthesized through the conventional solid state reaction technique. Structural characterization using X-ray diffraction (XRD) at room temperature confirmed the formation of a cubic phase with Fm-3m space group symmetry. Rietveld refinement of the XRD data validated the proposed crystal structure. Raman spectroscopy at room temperature further corroborated the XRD findings, supporting the proposed symmetry and structure. Surface morphology and microstructure of the synthesized compound were examined using field emission scanning electron microscopy (FE-SEM) providing insights into the surface features and the overall grain structure of the compound. Energy dispersive X-ray (EDX) analysis was employed to get semi-quantitative information on the distribution of elements and their respective weight percentages indicating successful synthesis of the target material. Optical characterization via UV–visible absorption spectroscopy revealed a direct band gap of 3.20 eV, indicating potential applications in optoelectronic and photovoltaic devices due to its suitability for light absorption and energy conversion. The electrical properties were systematically investigated using complex impedance spectroscopy (CIS), which evaluated dielectric and relaxation behavior across varying temperatures and frequencies. The material demonstrated a stable dielectric response under high-frequency and high-temperature conditions, making it promising for advanced electronic applications. Impedance analysis indicated a negative temperature coefficient of resistance (NTCR), with the bulk effect being the primary contributor to the overall electrical behavior.



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SCHOLARLY PUBLICATIONS
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Journal Name: Materials Today Communications **IF: 4.5**

Title: Synthesis of ferroelectric Bi0.5Na0.5TiO3 ink towards fabrication of a flexible piezoelectric nanogenerator for bio-mechanical energy harvesting.

Author: Das B.; Mohanty S.; Das D.; Parashar S.K.S.

Details: Volume 47, July 2025, Article number 113040

Abstract: Bismuth sodium titanate (BNT) is a widely studied multiferroic material known for its strong ferroelectric and piezoelectric properties, making it a promising candidate for piezoelectric nanogenerators (PENGs). In this study, BNT nanoparticles (BNT NPs) were synthesized using a simple hydrothermal method. The phase purity of the synthesized BNT NPs was verified using X-ray diffraction (XRD) analysis. The inks were prepared by combining BNT NPs with ethanol, glycerol, and ethylene glycol, where the BNT NPs served as the active component imparting piezoelectric properties to the ink. Among the ink formulations, INK: III, containing 30 wt% BNT NPs, exhibited superior piezoelectric and rheological characteristics. For PENG fabrication, the BNT ink was spin-coated onto a polydimethylsiloxane (PDMS) substrate, followed by encapsulation with PDMS and subsequent corona poling. The poled PENG device demonstrated enhanced piezoelectric performance, generating a peak output voltage value of 18.3 V under a human finger-tapping force.

URL: https://www.sciencedirect.com/science/article/pii/S2352492825015521?via%3Dihub

SCHOLARLY PUBLICATIONS
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Journal Name: Materials Today Communications **IF: 4.5**

Title: Effect of Ca2â€¯+ ion on structural, optical and electrical properties of lead free NBT ceramics

Author: Moharana K.; Rout S.; Priyadarshini L.; Choudhary R.N.P.; Parida A.K.; Mangal S.; Biswal L.

Details: Volume 27, July 2025

Abstract: Metal-organic frameworks (MOFs) are gaining attention as multifunctional nanomaterials for biomedical applications due to their porosity, tunable structure, and potential for molecular-level imaging. In this study, we synthesized green-emitting, water-dispersible manganese-based MOF (Mn-MOF) nanoparticles for live-cell imaging and investigated their interactions with human serum albumin (HSA). Spectroscopic analyses revealed high-affinity binding, with fluorescence quenching constants in the range of 10^{13}. A red shift in emission and circular dichroism data confirmed that HSA retained its native conformation, underscoring the structural compatibility of Mn-MOFs. Biocompatibility was assessed using HeLa, A549, and chondrocyte cell lines. Cytotoxicity assays showed high cell viability at moderate concentrations and early time points. Nanoparticle size (~18 nm by DLS; <10 nm by TEM) likely facilitated cellular uptake while minimizing toxicity. Confocal microscopy and flow cytometry revealed efficient internalization via multiple endocytic pathways, with perinuclear localization and no significant morphological changes. However, higher concentrations decreased cell adhesion and viability, indicating a dose-dependent toxicity threshold. These results demonstrate that Mn-MOF nanoparticles maintain protein integrity and exhibit low cytotoxicity, supporting their potential as safe, effective platforms for live-cell imaging and targeted delivery in nanomedicine.

URL: https://www.sciencedirect.com/science/article/pii/S2352492825016307?via%3Dihub

Journal Name: Materials Today Communications **IF: 4.5**

Title: The structural and electrical properties of BiFeO3 - Bi0.5K0.5TiO3 - BaTiO3 based solid solutions at the morphotropic phase boundary

Author: Katragadda, N; Kumar, S; Tulasirao, P; Zhang, WG; Halasyamani, PS; Nanda, J; Pradhan, GK; Manjón-Sanz, AM; Mandal, P

Details: Volume 27, July 2025

Abstract: Piezoelectric ceramics such as PbZr1-xTixO3 (PZT) show enhanced electro-mechanical properties at morphotropic phase boundary (MPB) separating two ferroelectric polar phases in the compositional phase diagram. Designing MPB in Pb-free perovskite oxide is challenging due to the lack of suitable polar tetragonal oxide with high Curie temperature. In this study, we explored the BiFeO3 - Bi0.5K0.5TiO3 - BaTiO3 ternary phase diagram and searched for Bi-rich perovskite oxides as candidates for piezoceramics near MPB. The phase diagram offers a Bi-rich polar tetragonal (T[001]) phase [0.75BaTiO3-0.25(K0.5Bi0.5)TiO3] and a well-known rhombohedral (R[111]) phase BiFeO3. A solid solution is observed in the entire range between the T[001] phase and the R[111] phase. Structural investigation through powder diffraction and Raman spectroscopy studies suggests the existence of a complex region (MPB), well separated by the rhombohedral and tetragonal phases. The composition (Bi0.670K0.050Ba0.280) (Fe0.62Ti0.38)O3 at the MPB shows a large signal piezoelectric coefficient of d & lowast;33 = 41.5 pm/V at room temperature.

URL: https://www.sciencedirect.com/science/article/pii/S2352492825015429?via%3Dihub

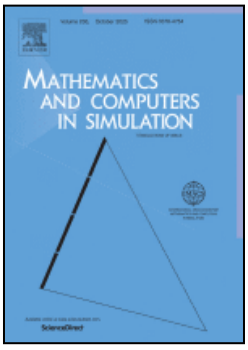
Journal Name: Mathematics and Computers in Simulation **IF: 4.4**

Title: Optimization of a price break policy and advertisement effort based non-instantaneous deteriorating inventory problem with partial backlogged via metaheuristic algorithms

Author: Mondal R.; Manna A.K.; Akhtar M.; Bhunia A.K.

Details: Volume 236, October 2025, Pages 221-247

Abstract: Repeated advertisements of an item in different media, displayed stock in a decorated showroom, and also price break policies play a vital role in an inventory control system. Also, the relationship between products' selling price and market demand is conflicting when all other factors are fixed. Thus, the incorporation of advertisement policy and price break facility in a business is more realistic. This work investigates an inventory problem for non-instantaneous deteriorating items with advertisement and displayed inventory level dependent demand under price break facility. Moreover, partially backlogged shortages and transportation cost for replenishing items are considered in the proposed inventory model. Based on the customer's demand and storage space of the shop, several cases and sub-cases are considered. In this study, different metaheuristic algorithms are considered for maximizing the average profit in each scenario. Then, considering one numerical example, the proposed model is justified. Finally, the sensitivity analysis is carried out to investigate the impact of model parameters on the policy of optimality and a fruitful conclusion is drawn.



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Journal Name: Journal of Physics and Chemistry of Solids **IF: 4.3**

Title: Correlation-driven interface magnetism and conductivity in CaNbO3/Ca2VMoO6 perovskite oxide heterostructure: An ab initio approach

Author: Priyambada A.; Parida

Details: Volume 203, August 2025

Abstract: In this work, we investigate the effect of strong electron correlation on the structural, magnetic, and electronic properties at the interface of the $CaNbO_3/Ca_2VMoO_6$ heterostructure using the density functional approach. The heterostructure is designed along the (010) direction. The relaxed heterostructure is also found to be stable in the orthorhombic phase as the bulk individuals. The transition metal–oxygen bond lengths vary more along the y-axis, than the other two perpendicular axes. This makes the octahedra in this heterostructure more distorted than that of bulk constituents. The individual compounds, i.e., $CaNbO_3$ and Ca_2VMoO_6, exhibit G-type antiferromagnetic and ferromagnetic behavior, respectively, at their ground state. Conversely, in the heterostructure, $CaNbO_3$ experiences a spin-flip, converting the compound to a ferromagnetic material, whereas, the spin alignment of Ca_2VMoO_6 remains unchanged. The spins of $CaNbO_3$ and Ca_2VMoO_6 are aligned in the opposite direction, making the interface of the heterostructure antiferromagnetic. The electronic behavior of the heterostructure is obtained to be metallic. The reason behind the metallicity is found to be the partially occupied t_{2g} orbital of Mo atoms, which is clear from the spin-orbital projected density of states, and orbital-projected electronic band structure diagrams with U = 7 eV.

URL: https://www.sciencedirect.com/science/article/pii/S0022369725001829?via%3Dihub

SCHOLARLY PUBLICATIONS
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Journal Name: Materials Chemistry and Physics **IF: 4.3**

Title: Exploring the role of strong electron correlation on the structural, magnetic, and electronic properties of CaNbO3/La2MnVO6 perovskite oxide heterostructure: An ab initio study

Author: Priyambada A.; Parida P.

Details: Volume 342, 15 September 2025, 130912

Abstract: In this work, we have investigated the structural, magnetic, and electronic properties at the interface of $CaNbO_3/La_2MnVO_6$ oxide heterostructure using density functional theory considering the strong correlation effect. The heterostructure is found to be stable in orthorhombic symmetry same as the bulk individuals. The heterostructure is designed along the (010) direction, hence it is associated with longitudinal strain along y-axis. Therefore, the variation in transition metal and oxygen bond lengths is more along (010) compared to other directions. As a result, the heterostructure possesses more distorted octahedra than the bulk compounds. The spin of the Nb atom present at the Nb–Mn interface is flipped due to strong ferromagnetic coupling, whereas, that in the V–Nb interface remain unchanged. The electronic behavior of the heterostructure is found to conducting, whereas, $CaNbO_3$ and La_2MnVO_6 are found to be insulator and conductor, respectively. The reason for the conducting nature of this heterostructure is partially filled Mn e_g orbital at the Fermi level.

URL: https://www.scopus.com/pages/publications/105004416836

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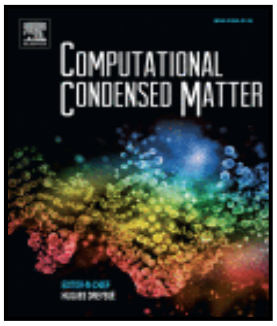
Journal Name: Computational Condensed Matter **IF: 3.9**

Title: Thermodynamic stability and gap modulation in defect and Zn-substituted CuAl2X4 (X = S, Se, and Te) chalcopyrite compounds

Author: Nayak A.; Behera S.S.; Priyambada A.; Parida P.

Details: Volume 27, July 2025

Abstract: In this study, we have examined the structural and electronic properties of defect and Zn-substituted $CuAl_2X_4$ (X = S, Se, and Te) chalcopyrite type compounds using the density functional formalism within the pseudopotential framework, employing plane waves as the basis set. All calculations are carried out using the ab initio lattice parameters. The structural analysis indicates that $CuAl_2X_4$ (X = S, Se, and Te) exhibits tetrahedral distortion due to the presence of vacancy sites. However, with the substitution of Zn atoms at the vacancy sites, the tetrahedra remain distorted. The values of lattice constants are more in the substituted compounds than that of the defect compounds. Both the defect and substituted compounds are thermodynamically stable, as evidenced by their negative cohesive energy values. The analysis of electronic behavior reveals that these compounds are conducting in nature, however, in the defect compounds, the Fermi level is close to the valence band, whereas, in the substituted compounds, the Fermi level lies in the conduction band region. The presence of Zn atoms reduces the electronic band gap than that of the defect compounds.



URL: https://www.sciencedirect.com/science/article/pii/S2352214325000668?via%3Dihub

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Journal Name: Membranes **IF: 3.6**

Title: DPPC Membrane Under Lateral Compression and Stretching to Extreme Limits: Phase Transitions and Rupture

Author: Das S.; Karayiannis N.C.; Roy S.

Details: May 2025

Abstract: Dipalmitoylphosphatidylcholine (DPPC), is one of the key bilayer membranes of the phosphatidylcholine (PC) family which constitutes 40–50% of total cellular phospholipids in mammal cells. We investigate the behavior of an initially planar DPPC membrane under lateral pressures from −200 to 150 bar at 323 K using microsecond-scale simulations. We identify, with very high precision, the pressure range for the occurrence of critical phenomena, mainly undulation and rupture. Notably, under compression, the membrane initially thickens, leading to a phase transition to an undulated state between 40 and 50 bar, as gauged by the sharp changes in the diverse structural metrics. Stretching induces systematic membrane thinning, with rupture becoming probable at −170 bar and certain at −200 bar. The reverse compression cycle shows pressure hysteresis with a 10-bar shift, while the reverse stretching cycle retraces the pathway. System size has a minimal impact on the observed trends. Under extreme mechanical stress, particularly near critical phenomena, simulation times on the order of microsecond are needed to accurately capture phase behavior and structural alterations. This work provides important insights into understanding membrane behavior under extreme conditions, which are relevant to numerous biological and technological applications.

URL: https://www.mdpi.com/2077-0375/15/6/161

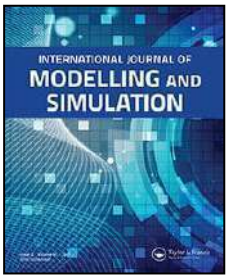
Journal Name: International Journal of Modelling and Simulation **IF: 3.1**

Title: Qualitative analysis of magnetohydrodynamics Powellâ€“Eyring fluid with variable electrical conductivity

Author: Swain S.; Sarkar S.; Sahoo B.; Makinde O.D.

Details: Volume 45, Issue 2, 2025

Abstract: The non-Newtonian fluid model helps to visualize the fluid movements in modern industrial materials for the enhancement of work productivity. Therefore, this numerical investigation examines the flow behaviour of Powell–Eyring fluid over the stretching sheet with variable electric conductivity and thermal radiation. We have used the Lie group analysis method to reduce the governing momentum and energy equations into ordinary differential equations (ODEs). The resultant system is then numerically solved using the shifted Chebyshev collocation method. The accuracy of the numerical method has been verified by comparing the current work to existing literature, and it is found to be in excellent agreement. The effects of rheological parameters like stretching sheet parameter, magnetic field parameter, material parameters, suction/injection parameter, radiation parameter and Prandtl number on fluid velocity and temperature profiles are examined in detail through tables and graphs. The main motivation behind this study is to examine the effects of Lorentz force on fluid velocity and temperature in the presence of thermal radiation, which has several industrial applications. It is observed that the velocity profile decreases when the magnetic field parameter increases. Furthermore, it is noticed that increasing thermal radiation parameter increases the temperature profile.



URL: https://www.tandfonline.com/doi/full/10.1080/02286203.2023.2231613

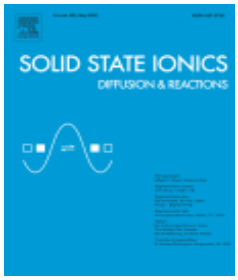
Journal Name: Solid State Ionics **IF: 3.0**

Title: Exploring structural, optical, dielectric and electrical attributes of a La based complex perovskite

Author: Priyadarshini L.; Biswal L.; Rout S.; Moharana K.; Parida A.K.; Choudhary R.N.P.; Satpathy S.K.

Details: Volume 45, Issue 2, 2025

Abstract: A rare-earth based novel compound with a disordered perovskite structure has been synthesised using the conventional solid-state reaction approach. The structural phase of the compound is analysed using room temperature X-ray diffraction (XRD) data. The refinement of XRD data suggested formation of compound in trigonal phase with R-3c symmetry. Position of peaks in Raman spectra obtained at room temperature further support the proposition of above structure and symmetry of formation. Using scanning electron microscope (SEM) images, the microstructure of the compound and the surface morphology is revealed. EDX analysis presented semi-quantitative information on distribution and weight percentage of elements present, from which the synthesis of the expected compound is substantiated. Examination of optical characteristics via UV–Visible absorption spectroscopy revealed a band gap of 3.2 eV suggesting possible potential applications in optoelectronic and photovoltaic devices. The electric polarisation and relaxation phenomena prevailing in the material as a function of frequency and temperature are extensively studied using data acquired via complex impedance spectroscopy (CIS) technique. A temperature and frequency stable dielectric response in high frequency region recommends use of compound for application at high frequency and temperature. Dominating bulk contribution to overall electrical response and negative temperature coefficient of resistance (NTCR) behaviour is observed. The frequency-dependent ac conductivity data adheres to Jonscher's power law. To estimate the activation energy, which facilitates the identification of the specific charges involved in the ac conduction process, the temperature-dependant ac conductivity data is utilised



URL: https://www.sciencedirect.com/science/article/pii/S0167273825000591?via%3Dihub

SCHOLARLY PUBLICATIONS
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Journal Name: Malaria Journal **IF: 3.0**

Title: A review on the ethnomedicinal plants used for the traditional treatment of malaria in the Mayurbhanj district of Odisha, India

Author: Behera, SK; Subudhi, L; Mohapatra, S; Panda, AK

Details: Volume 24, July 2025

Abstract: Malaria is one of the leading causes of death in the tropics and subtropics. Though Odisha has seen a decline in malaria cases over the past few years, it remains a contributing factor in deciding India's malaria journey. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)-based systematic review aims to investigate and compile the ethnomedicinal evidence-based documented research data on anti-malarial medicinal plants in Mayurbhanj, Odisha. An extensive literature survey was conducted using online databases, following the PRISMA-Protocols (PRISMA-P) guidelines for anti-malarial prophylaxis and diagnosis using the ethnomedicinal plants in Mayurbhanj. Using appropriate exclusion and inclusion criteria, 20 literature/book chapters were included in the study. Origin 2024b was used for the analysis of the ethnomedicinal information. The study identified 40 plant species used by traditional healers in anti-malarial treatment. These 40 plant species belong to 24 families, the majority of which are the Acanthaceae and Apocyanaceae. Most of the formulations came from a decoction, paste, juice and powder. It was interesting to note that the formulations were predominantly provided by oral route. The leaves and roots were the significant parts used by the healers for the anti-malarial treatment. However, no side effects were reported for these plants. The review highlights the rich variety of ethnomedicinal plants and their recipes for anti-malarial treatment in Mayurbhanj. The disease still plagues Odisha, necessitating study on dispersed ethnomedicinal studies for a better therapeutic comprehension of the diagnosis. This will aid diagnosis and boost tribal knowledge and culture.

URL: https://malariajournal.biomedcentral.com/articles/10.1186/s12936-025-05477-5