Department of Physics

BIT Mesra, Ranchi

Research Ppaers Published by Faculty members

**July 2024**

1. Krishna Kumar Keshri, Manoj Kumar Rout, **Sunita Keshri,** Single phase metamaterial behavior in Ag+ and Ti4+ doped cobalt ferrites, Materials Chemistry and Physics, 320, 129382, July, 2024, <https://doi.org/10.1016/j.matchemphys.2024.129382>
2. Ranbir Kumar, Deep Shikha, **Sanjay Kumar Sinha**, Antioxidant properties and thrombogenic evaluation of Copper-Manganese Alloy-Doped hydroxyapatite in comparison to un-doped hydroxyapatite, Inorganic Chemistry Communications, Volume 165, 2024, 112490, Jul-2024, <https://doi.org/10.1016/j.inoche.2024.112490>
3. Priyanka Mahesha, Suresh D Kulkarni, **Rajeev K. Sinha**, Nitin Shetty, A selective bis-thiophene chalcone based spectrofluorimetric sensor for Fe3+, Luminscence, 39(7), e4823, July 2024, <https://doi.org/10.1002/bio.4823>
4. M. Lavanya, Bhavya Hegde, Santhosh. L. Gaonkar, M.C. Gowri Shankar, **Rajeev K. Sinha,** P. Preethi. Kumari, Corrosion Mitigation of 6061 Aluminium Alloy Hybrid Metal Matrix Composite Using a Green Inhibitor: Experimental and Theoretical Investigations, Mater. Res. Express, 11, 076510, July 2024, <https://doi.org/10.1088/2053-1591/ad5e5f>
5. **R. K. Dewanjee,** CMS Collaboration, Searchfor Top Quark associated Higgs Boson production Using Full Run-2 Data in CMS, Springer Proceedings in Physics, Vol. 304, Pg. 162, Iss. 2024, July 2024, 10.1007/978-981-97-0289-3
6. **R. K. Dewanjee,** CMS Collaboration , Test of lepton flavor universality in B^(+/-) --> K^(+/-) Mu^(+)Mu^(-) and B^(+/-) --> K^(+/-) e^(+)e^(-) decays in proton-proton collisions at sqrt(s) = 13 TeV, Reports on Progress in Physics (IOP Science), Vol. 87, Pg. 077802, July 2024, No. 7, 10.1088/1361-6633/ad4e65

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1. Somita Dhal &  **R.K. Paul,** A study of cosmic microwave background using non-extensive statistics, Experimental Astronomy, 57( 3), June 2024, <https://doi.org/10.1007/s10686-024-09943-x>
2. P. Bhagavath, M. K. Sonali, **Rajeev K. Sinha,** New Hydrogen bonded liquid crystal supramolecular systems: Role of (+I)-alkoxy substituents in promoting molecular ordering, June 2024, <https://doi.org/10.1007/s10973-024-13254-w>
3. M K Sonali, **Rajeev K. Sinha,** Silpa Elizabeth Peter, N. Anilkumar, Nirmal Mazumder, Sindhoora Kaniyala Melanthota, Mohammed Azeezulla Nazrulla, Poornima Bhagavath, Analyzing the impact of the size of fluoro and chloro substituents on induced mesomorphism in hydrogen bonded liquid crystals, RSC Adv., 14, 20398-20409, June 2024, <https://doi.org/10.1039/D3RA08569D>
4. Prajna N. D. and **Rajeev K. Sinha**, Shape controlled synthesis and bulk refractive index sensitivity studies of gold nanoparticles for LSPR-based sensing, Plasmonics, June 2024 , <https://doi.org/10.1007/s11468-024-02387-1>
5. Kumar Anand, **Rishi Sharma**, Neelima Sharma, Recent advancements in natural polymers-based self-healing nano-materials for wound dressing., J Biomed Mater Res. , 112, e35435, 6 , June 2024, <https://doi.org/10.1002/jbm.b.35435>
6. Manu Priyadarshani, Kumari Neha, Rupali Rani, and **Rishi Sharma**, A Systematic Investigation of the Structural Changes in Chemically and Thermally Reduced Graphene Oxide using Raman and XRD, Surface Review and Letters, 2024, <https://doi.org/10.1142/S0218625X24501051>
7. Debidatta Behera, Dhan Raj Lawati, M Agouri, A Abbassi, S Taj, B Manaut, **Sanat Kumar Mukherjee**, A DFT insight into the physical features of alkaline based perovskite compounds AInBr3 (A = K, Rb), Solid State Ionics, Vol: 409, Page: 116513, June 2024, <https://doi.org/10.1016/j.ssi.2024.116513>
8. Jisha Annie Abraham, Debidatta Behera, Kshitij Srivastava, Anshuman Srivastava, Ramesh Sharma, Murefah mana Al-Anazy, E El Shiekh, **Sanat Kumar Mukherjee**, Insight into the structural, elastic, lattice dynamical, optical, and thermoelectric properties of novel Heusler alloy LiCaBi by first-principles approach, Chinese Journal of Physics, Vol: 89, Page: 859-870, June 2024, <https://doi.org/10.1016/j.cjph.2023.10.021>
9. **R. K. Dewanjee,** CMS Collaboration , Extracting the speed of sound in quark-gluon plasma with ultrarelativistic lead-lead collisions at the LHC, Reports on Progress in Physics (IOP Science), Vol. 87, Pg. 077801, No. 7, June 2024, 10.1088/1361-6633/ad4b9b
10. **R. K. Dewanjee,** CMS Collaboration , Nonresonant central exclusive production of charged-hadron pairs in proton-proton collisions at sqrt(s) = 13 TeV, Phys.Rev. D, Vol.109, Pg. 112013, Issu. 11, June 2024, 10.1103/PhysRevD.109.112013,

**May 2024**

1. Sangeeta Lakra, Sanat Kumar Mukherjee, First principle studies on structura,l, elastic, electronic, optical, and thermoelectric properties of new perovskite TlTaO3: For renewable energy applications, Journal of Computational Chemistry, Vol: 45, Page: 1008 - 1016, Issue: 13 May 2024, <https://doi.org/10.1002/jcc.27308>

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1. Ranbir Kumar, Deep Shikha, Sanjay Kumar Sinha, DPPH radical scavenging assay: A tool for evaluating antioxidant activity in 3 % cobalt – Doped hydroxyapatite for orthopaedic implants, Ceramics International, April 2024, Volume 50, Issue 8, Pages 13967-13973. <https://doi.org/10.1016/j.ceramint.2024.01.314>
2. M. K. Sonali, R. K. Sinha, S. D. Kulkarni, P. Bhagavath, The plinths of hydrogen-bonding in liquid crystals: Carboxylic acids as proton donors to emphasize on the hydrogen bonding in liquid crystals, J Mol. Struc., 1301, 137367, April 2024, <https://doi.org/10.1016/j.molstruc.2023.137367>
3. Sipun Mohanty, Sibasish Mandal, Rishi Sharma, Samrat Mukherjee, Correlating the structural and magnetic properties of the non-cubic double perovskites with Ir5+ ions, Solid State Sciences, 150, 107480, April 2024, <https://doi.org/10.1016/j.solidstatesciences.2024.107480>
4. S Suvarna and **M Priya**, Role of range of interaction potential on structure and dynamics of a one-component system of particles interacting via Mie potential, AIP Advances , 14, 045030 (4) , April 2024, <https://doi.org/10.1063/5.0199631>
5. SST Nibhanupudi\*, Anupam Roy\*, S Chowdhury, R Schalip, MJ Coupin, KC Matthews, MH Alam, B Satpati, HCP Movva, CJ Luth, S Wu, JH Warner, SK Banerjee, Low-temperature synthesis of WSe2 by selenization process under ultra-high vacuum for BEOL compatible reconfigurable neuron, ACS Applied Materials & Interfaces, Volume: 16, Page: 22326-22333, Issue: 17. April 2024, <https://doi.org/10.1021/acsami.3c18446>

**March 2024**

1. Pranjali Bhattacharjee, Somita dhal & **R.K. Paul,**  Utilizing blackbody radiation inversion to attain an upper bound on the mass of photon using cosmic microwave background radiation, The European Physical Journal Plus, 139(3) March 2024, <https://doi.org/10.1140/epjp/s13360-024-05026-0>
2. Ashutosh Kumar and **Sourabh Lahiri,** Thermodynamics of one- and two-qubit quantum refrigerators interacting with squeezed baths: a comparative study, Pramana Journal of Physics, Vol: 98, Page: 80 March 2024, 10.1007/s12043-024-02776-5
3. Kirti Sharma, **Pawan Tiwari,** and **Sanjay Kumar Sinha**, Support Vector and Linear Regression Machine Learning Model on Amperometric Signals to Predict Glucose Concentration and Hematocrit Volume, Majlesi Journal of Electrical Engineering, 18, 91, Issue 1, March 2024,  <https://doi.org/10.30486/mjee.2023.2004331.133>
4. **R. K. Dewanjee,** CMS Collaboration , Search for long-lived heavy neutral leptons with lepton flavour conserving or violating decays to a jet and a charged lepton, Journal of High Energy Physics, Vol.3, No. 5, Iss. 2024, March 2024, 10.1007/JHEP03(2024)10
5. Antariksha Mitra and **Suman Ghosh**, Signature quasinormal modes of Ellis-Bronnikov wormhole embedded in warped braneworld background, Physical Review D, 109, 064005 March 2024, <https://doi.org/10.1103/PhysRevD.109.064005>
6. SST Nibhanupudi\*, **Anupam Roy\*,** D Veksler, M Coupin, KC Matthews, M Disiena, Ansh, JV Singh, IR Gearba-Dolocan, J Warner, JP Kulkarni, G Bersuker, SK Banerjee, Ultra-fast switching memristors based on two-dimensional materials, Nature Communications, Volume: 15, Page: 2334, Issue: 1. March 2024, <https://doi.org/10.1038/s41467-024-46372-y>

**February 2024**

1. Mohamedi Mohamed Walid, Rajan Singh, Nebatti Ech-Chergui Abdelkader, **Sanat Kumar Mukherjee**, Katarzyna Stefańczyk, Kadari Sadek Ali, Mohammed Reda Chellali, Bencherif Kaddour, Kouider Driss-Khodja, Amrani Bouhalouane Insights into spray-coated p-type Li-doped ZnO thin films: An examination of structural, chemical, optical, and electrical characteristics, MRS Advances, Page: 1-7, Feb 2024, <https://link.springer.com/article/10.1557/s43580-024-00805-4>
2. Debidatta Behera, Tesfaye Abebe Geleta, I Allaoui, Mohamed Khuili, **Sanat Kumar Mukherjee,** Boumaza Akila, Samah Al-Qaisi First-principle analysis of optical and thermoelectric properties in alkaline-based perovskite compounds AInCl3 (A = K, Rb), The European Physical Journal Plus, Vol: 139, Page: 127, Issue: 2, Feb 2024, <https://doi.org/10.1140/epjp/s13360-024-04921-w>
3. Aradhana Kumari, Md. Samsuzzaman, Arnab Saha, **Sourabh Lahiri** Stochastic heat engine using multiple interacting active particles, Physica A, Vol: 636, Page: 129575, Feb 2024, 10.1016/j.physa.2024.129575
4. Urmimala Dey, Jeroen van den Brink, **Rajyavardhan Ray** Correlation between electronic polarization and shift current in cubic and hexagonal semiconductors LiZn⁢𝑋 (𝑋=P,As,Sb) Phys. Rev. Materials, Vol 8, pp 25001 Feb 2024, <https://doi.org/10.1103/PhysRevMaterials.8.025001>

**January 2024**

1. Cheviri Ghanashyam, **Rajeev K. Sinha,** and Aseefhali Bankapur, Surface-Plasmon-Polaritons for Reversible Assembly of Gold Nanoparticles, In Situ Nanogap Tuning, and SERS, Small Methods. 8 (1), 2301086, January 2024, <https://doi.org/10.1002/smtd.202301086>
2. Manu PriyaDarshani**, Rishi Sharma** Controlling the bandgap of graphene oxide via varying KMnO4, Optical Materials, 147, 114634 January 2024, <https://doi.org/10.1016/j.optmat.2023.114634>
3. Debidatta Behera, M Boudjelal, M Batouche, T Seddik, Dj Hemidi, **Sanat Kumar Mukherjee,** First principle studies on structural, electronic, elastic, optical, and thermoelectric properties of XGeCl3 (X = Rb/Cs): Promising compounds for green energy application, International Journal of Quantum Chemistry, Vol: 124, Page: e27342, Issue: 1 January 2024, <https://doi.org/10.1002/qua.27342>
4. Meriem Lakhdari, Khadidja Hadj Larbi, Abdelkader Nebatti Ech-chergui, Farid Habelhames, Nourddine Benaioun, Jean Michel Nunzi, **Sanat Kumar Mukherjee**, Mehdi Adjdir, Investigation on the electrocatalytic oxidation of alcohol using zinc oxide thinfilms deposited by pulsed electrodeposition on an indium tin oxide surface, Revista Mexicana de Física, Vol: 70, Page: 011005, Issue: 1 Jan-Feb January 2024, <https://doi.org/10.31349/RevMexFis.70.011005>
5. **Sourabh Lahiri** and Shamik Gupta, Efficiency of a microscopic heat engine subjected to stochastic resetting, Physica Review E, Vol: 109, Page: 014129 January 2924, 10.1103/PhysRevE.109.014129
6. S Das, S Suvarna, and **M Priya** Diffusion in a complex mixture with random pairwise interparticle interactions, AIP Conference Prceedings, 2995, 020011 (1) January 2024, <https://doi.org/10.1063/5.0178056>