

2025-26 Publications

1. **Versatile Metal Phthalocyanine-Based Memristive Nanowire Network: Unraveling the Dynamics of Digital to Analog Switching** – S. Maity, A. Mandal, P. Pradhan, A. Ghosh, D. Topwal, B.K. Patra, and Tapobrata Som, *Small Science* 6, e202500424 (2026).
2. **Nanoscale resistive switching in mixed-valence CuO_x memristors for neuromorphic sensing–computing applications** – Rupam Mandal and Tapobrata Som, *Journal of Physics D: Applied Physics* 59, 025104 (2026).
3. **Tailoring resistive switching properties of $\text{Ga}_2\text{O}_{3-x}$ films: Role of growth parameters** – Ankita Ghosh, Rupam Mandal, Aparajita Mandal and Tapobrata Som, *Phys. Stat. Solidi (a)* 223, e202500539 (2026).
4. **Enhanced bio-synaptic plasticity behaviour through controlled defect migration in nano-columnar WO_{3-x} memristors** – Rupam Mandal, Aparajita Mandal, Tapobrata Som, *Applied Surface Science* 709, 163833 (2025).
5. **Strategy for One-Step Optimization of Metal Oxide Passivating Contact Materials for Si Heterojunction Solar Cells through Growth Angle Variation** – Aparajita Mandal, Alexis Franquet, Hans Hofsäss, Tapobrata Som, *Small* e05238 (2025).
6. **Volatile Mott breakdown in V-doped MnTi_2O_4 spinels**, A. Rahaman, P. Maji, S. Paria, S. Mahana, J. Brar, D. Topwal, R. Bindu and D. Choudhury, *Phys. Rev. B* **111**, 205128 (2025).
7. **Interplay of Jahn–Teller Distortion and Ionic Substitution: Probing Multifunctional Properties in Alkaline-Earth Hole Doped DyMnO_3 Multiferroics**, R. Mitra, A. Prusty, A. Gloskovskii, D. Topwal and U. Manju, *Phys. Status Solidi A* **222**, 2500366 (2025).
8. **On the observation of large magnetocrystalline anisotropy and microstructure dependent magnetic properties in (La, Co)- $\text{SrFe}_{12}\text{O}_{19}$** , S.N. Rout, S. Datta, D. Topwal and M. Kar, *Journal of Alloys and Compounds* **1039**, 183088 (2025).
9. **Giant Magnetocaloric Effect in Cr- and Fe-Substituted Frustrated Magnet Gadolinium Gallium Garnets, $\text{Gd}_3\text{Ga}_5\text{O}_{12}$, for Magnetic Cooling at Cryogenic Temperatures**, A. Prusty, S.R. Nayak, T. R. Senapati, K. Senapati, D. Topwal and U. Manju, *ACS Appl. Mater. Interfaces* **17**, 58432-58442 (2025).
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11. **Stability of the collinear up-up-down-down magnetic ordering in $\text{Ca}_3\text{CoMnO}_6$** , P. Pal, K. Patra, S. Nandy, S. Mahana, J.K. Dey, S. Chatterjee, C.L. Prajapat, T. Paramanik, D. Topwal, A. Das, P. Mahadevan and D. Choudhury, *Phys. Rev. B* **112**, 214448 (2025).
12. **Deciphering the Role of Strain Effect in the Evolution of the Electronic Structure in Organic Lead Halide Perovskites**, D. Kalita, D. Topwal and U. Manju, *J. Phys. Chem. C* **130**, 394-401 (2025).
13. **Investigation of magnetic phase transition and critical behavior in Cu_2OSeO_3 via magnetocaloric effect**, S. Mahana, P.K. Behera, K.C. Prusty, P. Nandi and D. Topwal *Journal of Magnetism and Magnetic Materials* **640**, 173791 (2025).
14. **Investigation of the Electronic Structure and Spin-State Crossover in LaCoO_3 Using Photoemission Spectroscopy**, S. Ghatak, A. Das, A. Gloskovskii and D. Topwal, *arXiv* (2026).
15. **Unusual magnetic and charge transport properties in In-Substituted Half-Metallic Kagome Ferromagnet $\text{Co}_3\text{Sn}_2\text{S}_2$** , K. Singh, S. Pradhan, K. Mukherjee, A.K. Nandy, S.D. Mahanti and D. Topwal, *arXiv* (2026).

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17. **CVD grown bilayer MoS_2 based artificial optoelectronic synapses for arithmetic computing and image recognition applications**; U. Patra, S. Sikdar, R. Padhan, A. Kaur, S. Sahoo, S. Dhar; *Journal of Physics D: Applied Physics*, 59 115301 (2026)
18. **Cerium Oxide Nanoparticles Embedded with Carbon Matrix for a Digital-Analog Integrated Memristor**; P. Sahu, H.N. Mohanty, S. Roy, S. Sahoo, R. Barik, A. Kumar, A.K. Panigrahi, R. Padhan, D. Sahoo, S. Sahoo; *ACS Applied Materials & Interfaces* 17, 44, 61364-61376 (2025)
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29. **Interplay of Kondo coupling and geometrical frustration in weakly coupled ruthenate pyrochlore** Sairam Ithineni, Soumyakanta Panda, Hanuma Kumar Dara, Ratiranjan Samal, Ajaya K Nayak, Niharika Mohapatra, Diptikanta Swain, D Samal $\text{Bi}_{1.1}\text{Nd}_{0.9}\text{Ru}_2\text{O}_7$, *Physical Review B*, 112, 214457 (2025).

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