



Curriculum vitae of **Dr. Moumita Patra**

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Personal Details

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Degree

- Bachelor of Science (B. Sc.) Physics Honours University of Burdwan, India (2001-2004).
- Master of Science (M. Sc.) in Physics, University of Burdwan, India (2004-2006).
- Ph. D. (Experimental Physics), Indian Association for the Cultivation of Science, India (2006-2012).

Position

Junior Research Fellow, Indian Association for the Cultivation of Science, India (2006-2008).
Senior Research Fellow, Indian Association for the Cultivation of Science, India (2008-2010).
Assistance Professor, Raghunathpur College, Purulia, West Bengal (2010-till date).

Research Interest

- Nano, Bulk, Thin film preparation of perovskite and core-shell structure.
- Transport properties (resistivity, dielectric, magneto-resistance, specific heat measurement) and set-up preparation.
- Magnetic measurement (Exchange Bias, Magnetocaloric effect etc.).
- DFT analysis (Band structure, transport, thermoelectric properties etc.).

Awards

- Gold Medal in Physics (M. Sc.) from University of Burdwan (2006).
- Awarded Senior Research Fellowship by IACS, India (2008-2010).
- Awarded Junior Research Fellowship by IACS, India (2006-2008).
- Qualified in National Eligibility Test (NET) from CSIR-2006.

Research Project

- Fabrication and characterization of nanostructured perovskites with efficient thermoelectric as well as magnetodielectric properties, 01.04.2022-31.03.2025, UGC-DAE CSR.

Research Guidance

- Ongoing “Multifunctional Properties of Oxides: Nano, Bulk and Core shell structure” by Mr. Pritish Paul (Registration No: R/Ph.D/Regn./289/SKBU/2020).

Publications

Research papers

1. Asymmetrical phase separation in $Nd_{0.25}La_{0.25}Ca_{0.5}MnO_3$, K. De, M. Patra, S. Giri, S. Majumdar Solid state communications 142 (8), 457-461 (2007).
2. Exchange bias with Fe substitution in $LaMnO_3$, M. Patra, K. De, S. Majumdar, S. Giri, The European Physical Journal B-Condensed Matter and Complex Systems, 58 (4) 367-371 (2007).
3. Spin-glass like features in cluster-glass compounds $La_{1-\delta}Mn_{0.7}Fe_{0.3}O_3$, K. De, M. Patra, S. Majumdar, S. Giri, Journal of Physics D: Applied Physics 40 (24), 7614 (2007).
4. Particle size dependent exchange bias and cluster-glass states in $LaMn_{0.7}Fe_{0.3}O_3$, M. Thakur, M. Patra, K. De, S. Majumdar, S. Giri, Journal of Physics: Condensed Matter 20 (19), 195215 (2008).
5. Exchange bias in La-deficient cluster-glass compound $La_{0.87}Mn_{0.7}Fe_{0.3}O_3$, K. De, M. Patra, S. Majumdar, S. Giri, Journal of Physics D: Applied Physics 41 (17), 175007 (2008).
6. Multifunctionality attributed to the self-doping in polycrystalline $La_{0.9}MnO_3$: Coexistence of large magnetoresistance and magnetocaloric effect, M. Patra, K. De, S. Majumdar, S. Giri, Applied Physics Letters 94 (9), 092506 (2009).
7. Coexistence of superparamagnetic and superspin glass behaviors in $Co_{50}Ni_{50}$ nanoparticles embedded in the amorphous SiO_2 host, M. Thakur, M. Patra, S. Majumdar, S. Giri, Journal of Applied Physics 105 (7), 073905 (2009).
8. Exchange bias effect attributed to the spontaneous phase separation in polycrystalline $Nd_{0.88}Sr_{0.12}CoO_3$, M. Patra, S. Majumdar, S. Giri, Solid State Communications 149 (13), 501-504 (2009).
9. The exchange bias effect in phase separated $Nd_{1-x}Sr_xCoO_3$ at the spontaneous ferromagnetic/ferrimagnetic interface, M. Patra, M. Thakur, S. Majumdar, S. Giri, Journal of Physics: Condensed Matter 21 (23), 236004 (2009).
10. Spin polarized tunneling magnetoresistance in the self-doped manganite $La_{0.9}MnO_3$, M. Patra, A. Roy, K. De, S. Majumdar, S. Giri, Applied Physics Letters 94 (21), 212107 (2009).
11. Influence of cooling field on the magnetic properties of Ni/NiO nanostructure, M. Thakur, M. Patra, S. Majumdar, S. Giri, Journal of Alloys and Compounds 480 (2), 193-197 (2009).

12. Exchange bias effect involved with tunneling magnetoresistance in polycrystalline $La_{0.88}Sr_{0.12}CoO_3$, M. Patra, S. Majumdar, S. Giri, EPL (Europhysics Letters) 87 (5), 58002 (2009).
13. Exchange bias effect and intragranular magnetoresistance in $Nd_{0.84}Sr_{0.16}CoO_3$, M. Patra, S. Majumdar, S. Giri, Journal of Physics: Condensed Matter 21 (48), 486003 (2009).
14. Exchange bias effect at the irregular interfaces between Co and CoO nanostructures, S. Das, M. Patra, S. Majumdar, S. Giri, Journal of Alloys and Compounds 488 (1), 27-30 (2009).
15. Cluster-glass-like state and exchange bias effect in spontaneously phase separated, $Pr_{0.7}Sr_{0.3}CoO_3$, M. Patra, S. Majumdar, S. Giri, Journal of Applied Physics 107 (3), 033912 (2010).
16. Grain size effect on the magnetic cluster-glass properties of $La_{0.88}Sr_{0.12}CoO_3$, M. Patra, S. Majumdar, S. Giri, Journal of Physics: Condensed Matter 22 (11), 116001 (2010).
17. Anomalous magnetic field dependence of magnetocaloric effect at low temperature in $Pr_{0.52}Sr_{0.48}MnO_3$ single crystal, M. Patra, S. Majumdar, S. Giri, G.N. Iles, T Chatterji, Journal of applied physics 107 (7), 076101 (2010).
18. Anisotropic Magnetocaloric Effect in Single-crystalline $Pr_{0.52}Sr_{0.48}MnO_3$, M. Patra, S. Majumdar, S. Giri, G.N. Iles, T. Chatterji, Journal of superconductivity and novel magnetism 24 (1), 775-777 (2011).
19. Iron nanoparticles from an electrochemical route, R. Ray, S. Das, M. Patra, M. Thakur, Nanoscience Methods 1 (1), 1-8 (2012).
20. Magnetocaloric effect in RAl_2 (R= Nd, Sm, and Tm): Promising for cryogenic refrigeration close to liquid helium temperature, M. Patra, S. Majumdar, S. Giri, Y. Xiao, T. Chatterji Journal of Alloys and Compounds 531, 55-58 (2012).
21. Glassy magnetic phase driven by short-range charge and magnetic ordering in nanocrystalline $La_{1/3}Sr_{2/3}FeO_{3-\delta}$: Magnetization, Mössbauer, and polarized neutron studies, S. Sabyasachi, M. Patra, S. Majumdar, S. Giri, S. Das, V.S. Amaral, O. Iglesias, W. Borghols, T. Chatterji Physical Review B 86 (10), 104416 (2012).
22. Constricted double loop hysteresis and exchange bias attributed to the surface anisotropy in nanocrystalline $La_{1/3}Sr_{2/3}Fe_{1-x}Cr_xO_3$, S. Sabyasachi, M. Patra, S. Majumdar, S. Giri, Journal of Magnetism and Magnetic Materials 344, 20-24 (2013)
23. Synthesis, structural characterization and biological activity of a trinuclear zinc (II) complex: DNA interaction study and antimicrobial activity, B. Biswas, N. Kole, M. Patra, S. Dutta, M. Ganguly, Journal of Chemical Sciences 125 (6), 1445-1453 (2013).
24. Magnetic, magnetocaloric and magnetoresistive properties of cubic Laves phase $HoAl_2$ single crystal, M. Patra, S. Majumdar, S. Giri, Y. Xiao, T. Chatterji Journal of Physics: Condensed Matter 26 (4), 046004 (2014).
25. Size effect on magnetic phase coexistence in $Pr_{0.5}Sr_{0.5}Mn_{1-x}Cr_xO_3$, M. Patra, S. Sabyasachi, S. Majumdar, S. Giri, A. Kumar, S.M. Yusuf, V. Siruguri, Materials Research Express 1 (3), 036109 (2014).
26. Tuning of magnetocaloric effect in $Pr_{0.5}Sr_{0.5}MnO_3$ with minimal Cr substitution, M. Patra, S. Majumdar, S. Giri, Physica B: Condensed Matter 448, 297-299 (2014).
27. A perfectly linear trinuclear zinc-Schiff base complex: Synthesis, luminescence property and photocatalytic activity of zinc oxide nanoparticle, D. Dey, G. Kaur, M. Patra, A.R. Choudhury, N. Kole, B. Biswas, Inorganica Chimica Acta 421, 335-341 (2014)

28. Synthesis and Characterization of a Flower-Structured Ferromagnetic Nickel Oxide Nanoparticle: Investigation of Photocatalytic Activity, D. Dey, S. Das, M. Patra, N. Kole, B. Biswas, *Journal of Organic & Inorganic Chemistry* (2015).
29. Biomolecular Spectroscopy, S. Pal, B. Chowdhury, M. Patra, M. Maji, B. Biswas, *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 144, 148-154 (2015).
30. Ligand centered radical pathway in catechol oxidase activity with a trinuclear zinc-based model: Synthesis, structural characterization and luminescence properties, S. Pal, B. Chowdhury, M. Patra, M. Maji, B. Biswas, *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 144, 148-154 (2015).
31. Synthesis, structural characterization and CH activation property of a tetra-iron (III) cluster, D. Dey, M. Patra, A. Al-Hunaiti, H. R. Yadav, A. Al-mherat, S. Arar, M. Maji, A. Roy Choudhury, B. Biswas, *Journal of Molecular Structure* 1180, 220-226 (2019).
32. Particle size dependent resistivity in $Pr_{0.7}Sr_{0.3}CoO_3$, M. Patra, *Journal of Scientific Enquiry* 2, 78-81 (2022).
33. Investigation of large dielectric permittivity and relaxation behavior of $DyMnO_3$ single crystal, M. Patra, A Midya, P Mandal, *Solid State Communications* 353, 114845 (2022).
34. Magnetocaloric Effect in Half-Doped and Self-Doped Manganites: A Study to Green Refrigeration, M. Patra, *Magnetocaloric Effect in Half-Doped and Self-Doped Manganites: A Study to Green Refrigeration*, M Patra, *Curr World Environ* 18, 2 (2023).
35. Magnetic Solids as Next-Generation Refrigerants: Advancements and Opportunities in Magnetocaloric Materials, M. Patra, *PANCHAKOTesSAYS* 14 (1), 17-22 (2023).
36. Maxwell–Wagner-type relaxation behavior through impedance spectral analysis of $YMnO_3$ single crystal, A. Midya, B. Mandal, M. Patra, *Journal of the Korean Physical Society* 83 (5), 381-385, (2023).
37. Effect of Grain Size on Resistivity and Voltage-Dependent Dynamic Conductance in Nanocrystalline $Nd_{0.6}Sr_{0.4}CoO_3$, P. Paul, A. Midya, S.C. De, M. Patra, *Journal of the Korean Physical Society* 83 (5), 381-385 (2023).
38. First-principles investigation of thermoelectric properties in sulfur-doped ZrO_2 , B. Mandal, M. Patra, P.K. Kuiri, A. Midya, *Computational and Theoretical Chemistry* 1232, 114447 (2024).

Reviews

- Exchange bias effect in alloys and compounds, S. Giri, M. Patra, S. Majumdar, *Journal of Physics: Condensed Matter* 23 (7), 073201 (2011).

Seminar, Workshop and Conferences Attended

1. Exchange bias with Fe substitution in $LaMnO_3$ M. Patra, K. De, S. Majumdar, and S. Giri, 52nd DAE Solid State Physics Symposium, December 27-31, 2007, University of Mysore, Mysore, India. (Poster Presentation)
2. Large magnetocaloric effect in the self doped manganite $La_{0.9}MnO_3$. M.Patra, K.De, S.Majumdar, and S.Giri, Indo-Singapore Joint Physics Symposium, 2009, January 6-8, 2009, S.N.B.N.C.B.S, JD Block, Sector III, Salt Lake, Kolkata - 700098, India. (Poster Presentation)

3. Exchange bias effect involved with tunneling magnetoresistance in polycrystalline $R_{1-x}Sr_xCoO_3$ (R = La, Nd). M.Patra, S.Majumdar, and S.Giri, Foundation Day In-house Symposium, 2009, July 29, Indian Association for the Cultivation Of Science, Jadavpur, Kolkata - 700 032, India. (Poster Presentation)
4. Multifunctionality attributed to the self doping in $La_{0.9}MnO_3$. M.Patra, S.Majumdar, and S.Giri, Colloquium for Young Physicists, 2009, August 20-21, 2009, Lecture Hall, Saha Institute Of Nuclear Physics, 1/AF Bidhannagar, Kolkata -700 064, India. (Oral Presentation)
5. Anisotropic Magnetocaloric effect in Single crystalline $Pr_{0.48}Sr_{0.52}MnO_3$. M.Patra, S.Majumdar, and S.Giri, International Conference on Superconductivity and Magnetism , 2010, 25-30 April 2010, Antalya, Turkey (Poster Presentation)
6. Tuning of magnetocaloric effect in $Pr_{0.5}Sr_{0.5}MnO_3$ with minimal Cr substitution, International conference on Magnetic materials and Application, 2013, Department of Physics, IITG and Magnetic Society of India.
7. Enhanced butterfly like Magnetoresistance in $Pr_{0.5}Sr_{0.5}Mn_{0.95}Cr_{0.05}O_3$ compound, Recent Trends in Advanced functional materials, 13th-14th Jan,2020, Department of Physics, Midnapore College (Autonomous).
8. Self-doping in $LaMnO_3$ leads to improvement in multifunctional properties, CCWM-2022, Dept of Chemistry, Raghunathpur College.
9. Magnetocaloric effect in manganites: A sustainable method of cooling, Trends in Sustainable Design, Technology and Innovation November,2022, BC college, Asansol.
10. Recent trends in magnetocaloric materials: An approach for sustainable and environment friendly cooling system, ICESCC-2-3 March,2023, Centre for natural and applied sciences & IQAC, Raja Narendralal Khan Women's College.

Proceedings chapters

- Spin glass like features in cluster glass compounds $La_{1-\delta}Mn_{0.7}Fe_{0.3}O_3$, K. De, M. Patra, A. Karmakar, S. Majumdar, S. Giri, Proceedings of the DAE solid state physics symposium. V. 52 (2007).
- Magnetic properties of sol-gel derived Gd_2O_3 nanoparticles, R. Ray, S. Biswas, S. Das, M. Patra, AIP Conference Proceedings 1447 (1), 319-320 (2012).
- Intrinsic nonlinear I-V characteristics in charge-ordered $Nd_{0.25}La_{0.25}Ca_{0.5}MnO_3$. M Patra, P Paul, March-2020, Proceedings of NCFMSP-2020.

Citations and h-index

1229 citations and h-index 19 as of May 13, 2024

<https://scholar.google.co.in/citations?user=BIGZy7sAAAAJ&hl=en>

Miscellaneous

Reviewer of paper submitted to Physica A