Prof. INDRAJIT NAIK

Name: Dr. Indrajit Naik

Designation: Professor of Physics

Qualification: M.Sc. (JNU), Ph.D. (JNU)

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Research Area of Interest

Experimental Condensed Matter Physics & Material Science

1. Strongly correlated electron materials
2. Quantum Magnetism
3. Dielectrics
4. Superconductivity

A: Journals

1. U. Mohanty, S. D. Kaushik, B. Dhal & **I. Naik** "Spin-reorientation and Magnetic Anisotropy in Ilmenite MnTi(Fe)O_3 System" *Journal of Magnetism & Magnetic Materials*, *642(6), 173874 (2026).*
2. U. Mohanty, **I. Naik** & S. D. Kaushik "Development of Hysteretic behavior in Ilmenite MnTi(Al)O_3 spin-glass system" *Physica B: Condensed Matter*, 699, *416869 (2025).*
3. C. Dash, G. Tripathy, P. Mohanty, A. Anupama, **I. Naik** & B. B. Sahu "Examining the Nuclear Structure and Decay Modes of $^{128\text{-}208}$Sm Isotopes" *International Journal of Modern Physics E*, *33(12), 2450061 (2024).*
4. C. Dash, G. Tripathy, **I. Naik** & B. B. Sahu "Study of Nuclear structure and decay modes of Hassium" *AIP Conference Proceedings*, *2901, 040020 (2023).*
5. C. Dash, R. R. Swain, G. Tripathy, **I. Naik** & B. B. Sahu "Scattering and Fusion reaction dynamics of O + Zr system around coulomb barrier" *Chinese Physics C*, *46(12), 124104 (2022).*
6. P. Patra, **I. Naik**, S. D. Kaushik & S. Mohanta "Crossover from meta-magnetic state to spin-glass behavior upon Ti-substitution for Mn in $CuMn_2O_4$" *Journal of Material Science: Material in Electronics*, *33(1), 554 (2022).*
7. P. Patra, S. D. Kaushik & **I. Naik** "Effect of Ti-substitution on structure and magnetic behavior of $CuMn_2O_4$" *AIP Conference Proceedings*, *2265, 030514 (2020).*

8. S. Mohanta, **I. Naik**, S. D. Kaushik, S. Mukherjee & P. Patra "Complex dielectric, impedance and electric modulus of $CuMn_2O_4$", *Journal of Electronic Materials, 49(1), 842 (2020).*
9. P. Patra, **I. Naik**, H. Bhatt & S. D. Kaushik "Structural, infra-red spectroscopy and magnetic properties of $ZnMn_2O_4$", *Physica B – Condensed Matter, 572, 199 (2019).*
10. U. Mohanty, S. D. Kaushik, H. Bhatt, M. N. Deo & **I. Naik** "Neutron diffraction and magnetic behavior of ilmenite $MnTiO_3$" *AIP Conference Proceedings, 2115, 030514 (2019).*
11. S. Mohanta, S. D. Kaushik & **I. Naik** "Coexistence of spin-canting and metamagnetism in tetragonal distorted spinel $CuMn_2O_4$", *Solid State Communications, 287, 94 (2019).*
12. **I. Naik** & S. Sethy "Strong electron-phonon interaction establishes correlation between superconducting and charge density wave states in $NbSe_2$", *Current Science, 114(4), 888 (2018).*
13. **I. Naik** "Polaronic effect on electrical conductivity and thermoelectric power in $Ga(Cu)V_4S_8$", *Journal of Electronic Materials, 47(1), 760 (2018).*
14. **I. Naik,** S. Mohanta & S. D. Kaushik "Structural and Magnetic properties of tetragonal distorted spinel $CuMn_2O_4$ prepared by single step method", *AIP Conference Proceedings, 1832,130013 (2017).*
15. **I. Naik**, "Weak localization and electron-electron interaction induce resistance minimum in 2H-$Ga_{0.20}NbSe_2$", *Materials Research Express, 3(12), 126506 (2016).*
16. **I. Naik** & A. K. Rastogi "Evidence for the complicated Fermi surface in 2H- & 4H-$NbSe_2$" *Bulletin of Materials Science, 39(5), 1335 (2016).*
17. **I. Naik**, S. Hansdah & A. K. Rastogi, "Electronic properties of GaV_4S_8: A percolation approach", *Pramana – Journal of Physics, 86(1), 127 (2016).*
18. **I. Naik,** "Thermal and Magnetic properties of GaV_4S_8", *Indian Journal of Cryogenics, 41(1), 151 (2016).*
19. **I. Naik,** "Response of magnetic field by conduction electrons at low temperature in 2H-$NbSe_2$", *Research & Reviews–Journal of Physics, 4(3), 1 (2015).*
20. **I. Naik** & A. K. Rastogi, "Experimental setup for the measurement of low temperature Seebeck coefficient of single crystal and bulk materials", *Journal of Control & Instrumentation, 5(2), 25 (2014).*
21. **I. Naik**, G. C. Tiwari, C. S. Yadav & A. K. Rastogi, "Effect of magnetic exchange interaction in resistivity on 2H–$Nb_{1-x}V_xSe_2$", *Indian Journal of Physics, 87, 1075 (2013).*

22. **I. Naik** & A. K. Rastogi, "Charge density Wave and superconductivity in 2H- & 4H-$NbSe_2$: A Revisit", *Pramana – Journal of Physics, 76 (6), 957(2011).*
23. **I. Naik**, "Upper critical field of 2H-$NbSe_2$: Effect of Ga – intercalation", *AIP Conference Proceedings, 1349, 883 (2011).*
24. **I. Naik** & A. K. Rastogi, "Transport properties of 2H-$NbSe_2$: Effect of Ga – intercalation", *Physica B – Condensed Matter, 405, 955 (2010).*
25. **I. Naik,** C. S. Yadav & A. K. Rastogi, "A crossover from incoherent-metal to Fermi-liquid behavior in CuV_2S_4; Transport and magnetic properties upon substituting Zn for Cu", *Phys. Rev. B, 75, 115122 (2007).*

B: Conference/Seminar/Symposium publications

1. C. Dash, A. Anupama, N. Kar, Z. Naik, **I. Naik**, & B. B. Sahu "Signatures of Shell Closure in Fm From Nuclear Observables" *Proceeding of the DAE Nuclear Physics Symposium, 69, 221 –222 (2025)*
2. C. Dash, G. Tripathy, A. Anupama, **I. Naik** & B. B. Sahu "Nuclear Structure of even-even Nd Isotopes" *Proceeding of the DAE Nuclear Physics Symposium, 68, 243 –244 (2024)*
3. C. Dash, G. Tripathy, **I. Naik** & B. B. Sahu "Nuclear Structure of even-even $^{128\text{-}208}Sm_{62}$ Isotopes" *Proceeding of the DAE Nuclear Physics Symposium, 67, 173 –174 (2023)*
4. C. Dash, **I. Naik** G. Tripathy, A. Anupam & B. B. Sahu "Cluster Decay Study of $^{240\text{-}259}Es_{99}$ Isotopes" *Proceeding of the DAE Nuclear Phy,sics Symposium, 67, 137 –138 (2023)*
5. C. Dash, G. Tripathy, **I. Naik** & B. B. Sahu "Probing the Shell Structures of $^{250\text{-}339}Hs_{108}$ Isotopes" *Proceeding of the DAE Nuclear Physics Symposium, 66, 210 –211 (2022).*
6. C. Dash, **I. Naik** & B. B. Sahu, "Shell Closure at N~154 of Es Element" *Proceeding of the DAE Nuclear Physics Symposium, 65, 176 – 177 (2021).*
7. C. Dash, **I. Naik** & B. B. Sahu, "Structural Study of Es-isotopes from α-decay modes" *Proceeding of the DAE Nuclear Physics Symposium, 65, 94 – 95 (2021).*
8. C. Dash, P. K. Moharana, **I. Naik** & B. B. Sahu, "Ground State Properties of Es Isotopes" *Proceeding of the DAE Nuclear Physics Symposium, 64, 312 – 313 (2019).*
9. R. R. Swain, C. Dash, P. K. Moharana, **I. Naik** & B. B. Sahu, "Possible shell or sub-shell closure around A = 220" *Proceeding of the DAE Nuclear Physics Symposium, 63, 142 – 143 (2018).*
10. **I. Naik,** "Anisotropic Coherence Length Related to Upper Critical Field in $NbSe_2$", *Proceeding of the Orissa Physical Society National Seminar, 84–86, (2015).* **ISBN**: 978-2-642-24819-5
11. **I. Naik,** "Comparative study between 2H-$NbSe_2$ and 2H-$TaSe_2$: Superconductivity and charge density wave" *Orissa Journal of Physics, 22(1), 143–148 (2015).* **ISSN:**0974-8202

12. **I. Naik,** "Electrical transport properties on $Ga_{1-x}Cu_xV_4S_8$", *Orissa Journal of Physics, 20, 203 – 207 (2013)*. **ISSN:** 0974-8202
13. **I. Naik** & C. S. Yadav, "Evidence for the magnetic exchange interaction in 2H-$Nb_{1-x}V_xSe_2$", *Orissa Journal of Physics, 19(1), 27 – 30 (2012)*. **ISSN:** 0974-8202
14. **I. Naik** & A. K. Rastogi, "Electrical conductivity and magnetic properties of CuV_2S_4", *Orissa Journal of Physics, 16, 109 – 114 (2009)*. **ISSN:** 0974-8202
15. **I. Naik** & A. K. Rastogi, "Transport Properties of GaV_4S_8", *Proceeding of the DAE Solid State Physics Symposium, 53, 961 – 962 (2008)*. **ISBN**: 978-81-8372-044-1
16. C. S. Yadav, **I. Naik**, S. Patnaik & A. K. Rastogi, "Electronic Transitions in Fe-intercalated 1T-VSe_2", *Proceeding of the DAE Solid State Physics Symposium, 49, 717 – 718 (2004)*. **ISBN**: 81-8372-000-5

C: Books Authored

1. **I. Naik**, "*Solid State Physics*" Kunal Books Publisher, First edition (2016). **ISBN**: 978-93-82420-95-8

D: Awards/Honours/Fellowships

1. **Visiting Scientist**: Tata Institute of Fundamental Research, Mumbai
2. **JRF-NET**: CSIR-UGC, New Delhi

E: Research Projects

Title of the Project	Funding Agency	Period	Amounts	Status
Exploration of structural, magnetic and dielectric behaviors by substituting Al & Mn in $CoTiO_3$	UGC-DAECSR, Mumbai Centre CRS/2023-24/03/1203	01/04/2025 Continuing	45,000/-	Ongoing as PI
Effect of magnetic and non-magnetic element (Zn, Al and Fe) substitution on synthesis and characterization of $MnTiO_3$	DST-SERB, New Delhi EEQ/2019/000217	17/12/2019 17/12/2022	39,78,000/- (Major Project)	Completed as PI
Studying effect of non-magnetic element (A = Ti, Zn) substitution in spinel $CuMn_2O_4$ by employing neutron diffraction	UGC-DAECSR, Mumbai Centre CRS-M-229	01/01/2016 31/12/2019	8,71,298/- (Major Project)	Completed as P.I.
Synthesis and characterization of superconducting transition-metal dichalcogenide	UGC, New Delhi 34-507/2008 (SR)	01/02/2009 31/01/2011	1, 31,000/- (Minor Project)	Completed as P.I.

E: Ph.D. Guided

Sl. No.	Name of Students'	Title of Thesis	Remarks
01	Srikrushna Mohanta	Study of structural, transport, magnetic and dielectric properties on $CuMn_2O_4$	Awarded (2019)
02	Priyabrata Patra	Study of structural, magnetic and dielectric properties on $Cu_{1-x}Zn_x\{Mn(Ti)\}_2O_4$	Awarded (2022)
03	Chinmayee Dash	Nuclear structure and decay modes of heavy and super heavy elements	Awarded (2025)
04	Upendra Mohanty	Effect of Al and Fe substitution on structural, electrical and magnetic properties in $MnTiO_3$	Submitted (2025)

F: Administrative Responsibilities

Sl. No.	Position	From	To
01	COORDINATOR, SOCIAL WORK DEPARTMENT	2025	CONTINUING
02	NODAL OFFICER, PM-USHA	2024	CONTINUING
03	COORDINATOR, AISHE	2023	2026
04	HEAD, PHYSICS DEPARTMENT	2022	2024
05	SECRETARY SPORTS COUNCIL	2020	2022
06	ASSISTANT DIRECTOR, DDCE	2009	2022
07	OIC CULTURAL ACTIVITY	2007	2008

Indrajit Naik
15/05/2026