

Dr. Pachineela Rambabu

M.Sc.(UoH), M.Tech.(IIT Delhi), Ph.D. (IIT Hyderabad)

Assistant Professor
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India, Phone: +91-9074508220

Email: rams.hcu@gmail.com

Institution: Department of Pure and Applied Physics
Guru Ghasidas University (A Central University)

Google Scholar: <https://scholar.google.com/citations?user=zvTGgi0AAAAJ&hl=en>



UG/PG Teaching experience: 12+ years

Projects/Consultancy:

1. Funding Agency: **DST-SERB, Government of India (#EEQ/2023/000179)**

Title of The Project: **Exploring novel topological phases in magnetic Heusler alloys for future spintronic technologies through first principles calculations**

Total Grant: **36.14 Lakhs**

Duration: **Jan2024 onwards**

Research Guidance:

1. Guiding 1 Ph.D. student
2. Guided 15 M.Sc. students for their dissertations.

Research Interests: Spintronics, topological materials, superconductivity using Density Functional Theory calculations.

Academic Qualification:

Degree	Year	Subject	University/Institution	% of marks
Ph.D.	2023	Physics	IIT Hyderabad	CGPA 8.9/10 in course work
M. Tech.	2007-2009	Solid State Materials	IIT Delhi	CGPA 7.47/10
M. Sc.	2005-2007	Physics	University of Hyderabad, India	CGPA 8.3/10
B. Sc.	2002-2005	Physics, Mathematics, Computer Science	Kakatiya University, India	89.55%
Higher Secondary (10+ 2)	2000-2002	Physics, Math, Chemistry	Board of Intermediate Education, Andhra Pradesh	90.30%
High School (Class X)	1999-2000	Mathematics, General Science, Social Sciences	SSC Board, Andhra Pradesh	80.83

Thesis title: “First Principles Calculations of intermetallic Heusler and A-15 compounds”

Supervisor: Prof. V. Kanchana

Department of Physics, Indian Institute of Technology Hyderabad, Telangana, India.

Skills:

1. Work experience with ab-initio packages VASP, Wien2k, Quantum espresso, QuantumATK, SPRKKR, phonopy, phono3py etc for exploring electronic, magnetic, optical, phonon and many other properties.
2. Wannier90 and wannier_tools packages for exploring topological properties.
3. Python, Fortran 90 and MATLAB utilization for numerical calculations, for data analysis and organization.
4. Experience on handling and maintenance of clusters at IIT Hyderabad, IISER Kolkata etc.

Work experience:

S.No.	Positions held	Name of the Institute	From	To	Pay Scale
1	Assistant Professor	Guru Ghasidas University, Bilaspur	17.08.2011	till date	11 th level, 7 th CPC

Professional Recognition/Award/Fellowships:

S.No.	Name of Award	Awarding Agency	Year
1	CSIR-UGC-JRF-NET (Physical Sciences)	CSIR-UGC	December, 2006
2	GATE (Physics)	MHRD, Government of India	February, 2007

Publications (List of papers published in SCI Journals, in year wise descending order).

1. **P. Rambabu**, Anusree C.V. , M. Manivel Raja, V. Kanchana. "Anomalous transverse effects in nodal line compounds Co_2TaX ($X = \text{Al}, \text{Ga}$)." **Journal of Magnetism and Magnetic Materials** 562 (2022): 169766.
2. **P. Rambabu**, Anusree C.V. , M. Manivel Raja, V. Kanchana. "Anomalous Hall and Nernst Conductivities in Co_2NbGa : A first principles study." **Journal of Magnetism and Magnetic Materials** 538 (2021): 168303.
3. **P. Rambabu**, Giuseppe Zollo, V. Kanchana. "Electronic topological transitions and vibrational properties of A-15 type X_3Y ($X = \text{V}, \text{Cr}$ and Mo ; $\text{Y} = \text{Os}, \text{Ir}$ and Pt) compounds: A first-principles study." **Journal of Physics and Chemistry of Solids** 152 (2021) 109953.

4. Priyanath Mal, Bipul Das, G. Bera, **P. Rambabu**, G. R. Turpu, C. V. Tomy, and Pradip Das. "Observation of 2D transport in Sn-and In-doped $\text{Bi}_{2-x}\text{Sb}_x\text{Te}_{3-y}\text{Se}_y$ topological insulator." **Journal of Applied Physics** 129.9 (2021): 095702.
5. Antu Laha, **P. Rambabu**, V. Kanchana, L. Petit, Z. Szotek, and Z. Hossain. "Experimental and theoretical study of the correlated compound YbCdSn : Evidence for large magnetoresistance and mass enhancement." **Physical Review B** 102.23 (2020): 235135.
6. Aradhya Mishra, Archana Panigrahi, Priyanath Mal, Santosh Penta, G. Padmaja, Ganesh Bera, Pradip Das, **P. Rambabu**, Goverdhan Reddy Turpu. "Rapid photodegradation of methylene blue dye by rGO- V_2O_5 nano composite." **Journal of Alloys and Compounds** 842 (2020) 155746.
7. Priyanath Mal, Bipul Das, G Bera, **P Rambabu**, G R Turpu, C V Tomy and Pradip Das. "Spin splitted topological surface states in PbBi_4Te_7 ." **Journal of Physics D: Applied Physics** 53.48 (2020): 484003.
8. **P. Rambabu**, B. Anuroopa, M. Manivel Raja, V. Kanchana. "Enhanced Curie temperature and spin polarization in Co-based compounds under pressure: A first principles investigation." **Solid State Sciences** 105 (2020) 106257.
9. Ganesh Bera, Aradhya Mishra, Priyanath Mal, Pradip Das, G. Padmaja, **P.Rambabu** and G. R. Turpu. "Methylene Blue Dye Degradation by Bulk, Nano FeVO_4 and rGO- FeVO_4 ." **AIP Conference Proceedings** 2220 (2020) 080070.
10. Ganesh Bera, V. R. Reddy, P. Rambabu, P. Mal, P. Das, G. Padmaja and G. R. Turpu. "Low temperature synthesis of FeVO_4 through mechano milling assisted solid state reaction method." **AIP Conference Proceedings** 2115, (2019) 030110.
11. Antu Laha, Sudip Malick, Ratnadwip Singha, Prabhat Mandal, **P Rambabu**, V Kanchana, Z Hossain. "Magnetotransport properties of the correlated topological nodal-line semimetal YbCdGe ." **Physical Review B** 99.24 (2019): 241102.
12. Swati Deswal, Sachin Kumar Singh, **P Rambabu**, Priyangi Kulkarni, G Vaitheeswaran, B Praveenkumar, Satishchandra Ogale, Ramamoorthy Boomishankar. "Flexible Composite Energy Harvesters from Ferroelectric A_2MX_4 -Type Hybrid Halogenometallates." **Chemistry of Materials** 31.12 (2019): 4545-4552.
13. **P. Rambabu**, V. Kanchana. "Electronic Topological Transitions in CuNiMnAl and CuNiMnSn under pressure from first principles study." **Solid State Sciences** 80 (2018) 92-100.

14. Ganesh Bera, V. R. Reddy, **P. Rambabu**, P. Mal, Pradip Das, N. Mohapatra, G. Padmaja, and G. R. Turpu. "Triclinic–monoclinic–orthorhombic (T-M-O) structural transitions in phase diagram of $\text{FeVO}_4\text{-CrVO}_4$ solid solutions." **Journal of Applied Physics** 122 (2017) 115101.
15. Priyanath Mal, G Bera, **P Rambabu**, G R Turpu, Brahmananda Chakraborty, Lavanya M Ramaniah, R P Singh, Pintu Sen and Pradip Das. "Electronic, magnetic and spectroscopic properties of doped $\text{Mn}_{(1-x)}\text{A}_x\text{WO}_4$ (A = Co, Cu, Ni and Fe) multiferroic: an experimental and DFT study." **J. Phys.: Condens. Matter** 29 (2017) 075901.
16. Priyanath Mal, **P. Rambabu**, G. R.Turpu, A. K. Gupta, Brahmananda Chakraborty, Pintu Sen and Pradip Das. "Energy band gap and spectroscopic studies in $\text{Mn}_{1-x}\text{Cu}_x\text{WO}_4$ ($0 \leq x \leq 0.125$)." **AIP Conference Proceedings** 1728 (2016) 020323.
17. **P. Rambabu**, Sunil. K. Srivastava, Pradip Das and Goverdhan Reddy Turpu. "rGO- SnO_2 Composites for Supercapacitor Applications." **IOP Conf. Series: Materials Science and Engineering** 149 (2016) 012169.
18. Ganesh Bera, Sourav Sinha, **P. Rambabu**, P. Das, A. K. Gupta, and G. R. Turpu. "Structural characterization of FeVO_4 synthesized by co-precipitation method." **AIP Conference Proceedings** 1728 (2016) 020284.
19. **P. Rambabu**, S. K. Srivastava, and G. R. Turpu. "Study of photo catalytic degradation of an industrial dye Ujala Supreme and Methyl Orange using SnO_2 -rGO composites." **AIP Conference Proceedings** 1728 (2016) 020375.
20. M Hayne, R J Young, E P Smakman, T Nowozin, P Hodgson, J K Garleff, **P Rambabu**, P M Koenraad, A Marent, L Bonato, A Schliwa and D Bimberg. "The structural, electronic and optical properties of GaSb/GaAs nanostructures for charge-based memory." **J. Phys. D: Appl. Phys.** 46 (2013) 264001.
21. E. P. Smakman, J. K. Garleff, R. J. Young, M. Hayne, **P. Rambabu**, and P. M. Koenraad. "GaSb/GaAs quantum dot formation and demolition studied with cross-sectional scanning tunneling microscopy." **Appl. Phys. Lett.** 100 (2012) 142116.

Conferences/Invited lectures:

1.Title of the Paper presented: Electronic Structure Studies of Unstrained and Strained Li_2MnO_3 .

International conference on ACCMS-2016 organized by SRM University, Chennai on 22/09/2016.

2. Title of the Paper presented: Metallization of Antiferromagnetic semiconductor NaMnBi under Pressure.

International conference on ICMAGMA-2018 organized by NISER, Bhubaneswar, India on 09/12/2018.

3. Title of the Paper presented: Intrinsic Anomalous (Hall, Nernst) effects in Half-metallic Co₂ZrAl from First Principles Calculations.

International conference on FIMTA-2022 organized by CSIR-IMMT Campus, Bhubaneswar, India on 03/08/2022.

4. Invited Lecture: Hands on Training: Density Function Theory (DFT).

7 Days Workshop on “Material Characterization Techniques” Under the Scheme Synergistic Training Program Utilizing the Scientific and Technological Infrastructure (STUTI-2022) organized by Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur, India on 01/11/2022.

Administrative Experience:

1. Incharge, Departmental website, Pure and Applied Physics, GGV.
2019- till date

2. Member, Board of Studies (BOS), Pure and Applied Physics, GGV.
2021- till date

3. Member, Departmental Research Committee (DRC), Pure and Applied Physics, GGV.
2023- till date

4. Assistant Center Superintendent, Exams, GGV.
2015, 2016 and 2023

5. Member, Physical Verification Committee, GGV.
2023

[Dr. P. Rambabu]