Curriculum Vitae

Pankaj Rawat

Project Scientist-I, Climate Change and Data Science Division, Indian Institute of Petroleum Dehradun, Uttarakhand, India-248001

Ph.D., Department of Metallurgical and Materials Engineering, Indian Institute of Technology Roorkee, India-247667

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Academic Qualifications

Program	Specialization	Institute/University	CGPA	Time Period
Ph.D.	Materials Science and Engineering	Indian Institute of Technology Roorkee, India	8.2/10	2015- June 2023
M.Tech	Industrial Metallurgy	Indian Institute of Technology Roorkee, India	7.2/10	2012-2014
B.Tech	Mechanical Engineering	College of Technology Pantnagar	6.43/10	2007-2011

Research Interests

Thermomechanical Processing, Phase Transformation, Dynamic recrystallization, Hot deformation modelling, Creep.

Research Publications

1. **P. Rawat**, U. Prakash*, V.V.S. Prasad, Microstructure and mechanical behaviour of Nb-containing high Al ferritic low density steels, **Materials Characterization**, 204 (2023) 113176.

2. **P. Rawat**, U. Prakash*, V. V. Satya Prasad, Studies on Hot Deformation Behavior and Dynamic Recrystallization in a High Al Ferritic Low-Density Steel, **Journal of Materials Engineering and Performance**, 32 (2023) 4541–4554.
3. **P. Rawat**, U. Prakash*, V.V.S. Prasad, Phase Transformation and Hot Working Studies on High-Al Fe-Al-Mn-C Ferritic Low-Density Steels, **Journal of Materials Engineering and Performance** ,30 (2021) 6297–6308.
4. **P. Rawat***, U. Prakash, V. V. Satya Prasad, Creep in high Al ferrite based low density steel, **Materials Today Proceedings**, 44 (2020) 4138–4142.
5. S. Bhan, **P. Rawat**, S. Das, S. Ghosh*, Origins of Strength, Strain Hardening, and Fracture Austenitic Low Density Steel, **Metall. Mater. Trans. A**. 54 (2023) 4080–4099.
6. S. Kumar*, B. Kumar, **P. Rawat**, Machine learning-assisted design of high-entropy alloys for optimal strength and ductility, **J. Alloys Compd.** 1007 (2024) 176282.
7. S. Hamid, R. Singh, **P. Rawat**, U. Prakash*, Evolution of Microstructure during Creep Deformation in a Forged 617 Superalloy, **Adv. Eng. Mater.** 2401983 (2024) 1–16.
8. A. Omar, **P. Rawat**, U. Prakash*, A Effect of microstructure on recovery in strain hardening rate in superalloy 625, **Mater. Sci. Eng. A**. 925 (2025) 147915.
9. P. Setia*, S.S. Singh, **P. Rawat***, N. Tripathi, S. Mukherjee, M. Kumar, T. Venkateswaran, Shashank Shekhar*, Mapping Dynamic Restoration Mechanisms and Flow Instability in 12Cr – 10Ni Maraging Steel : Microstructural Insights from EBSD , TEM , and XRD-Line Profile Analysis, **Metall. Mater. Trans. A.** 56 (2025) 1585–1604.
10. B.K. Mahanta, **P. Rawat***, S. Bhan, S. Roy, Advanced Modeling and Microstructural Insights into the Hot Deformation Behavior of Fe–11Al–5Mn–1Nb–1C Low-Density Steel, **Met. Mater. Int.** (2025)
11. **P. Rawat**, U. Prakash, V.V.S. Prasad, Dynamic Recrystallization in Nb-Containing High-Al Dual-Phase Low-Density Steels, **Steel Res. Int.** 2500068 (2025) 1
12. S. Vashistha, B.K. Mahanta, **P. Rawat**, K.V. Reddy, V.K. Singh, S.K. Singh, Deformation mechanisms and predictive modeling of AlCoCrFeNi HEA under hot working conditions, **J. Alloys Compd**. 1035 (2025) 181636.
13. Bashista Kumar Mahanta, **P. Rawat**, Shailesh Kumar Singh*, Sanjeev Kumar, Experimental and Machine Learning Approaches to Phase Prediction in High entropy alloy and Medium entropy alloy, **Materials Chemistry and Physics**, 347 (2026), 131403**.**
14. Prince Setia*, Nikhil Tripathi, Aman Gupta, **Pankaj Rawat**, Mirtunjay Kumar, Sandeep Sahu, Sudhanshu S. Singh, T. Venkateswaran, Shashank Shekhar*, In-situ Investigation of Microscale Deformation Mechanism of Individual Phases in Silicon Stainless Steel with varied Si Content, **Steel Research International,** 2025 **(accepted).**

.Manuscript under review/preparation

1. Predicting Grain Boundary Evolution via Evolutionary Deep Neural Network and mechanistic Insights into Dynamic Recrystallization of high Al Fe-11Al-5Mn-1C-1Nb low-density steel, **Pankaj Rawat***, Bashista Kumar Mahanta*, Sumit Bhan, Swagata Roy, Prince Setia, Jogender Singh (under review).

2. Strength-ductility synergy in B2-strengthened light-weight steel through localized strain partitioning at the γ/B2 stringer interface, Sumit Bhan, **Pankaj Rawat***(under review)**.**
3. Microstructural evolution with varying annealing time and its effect on mechanical performance of Nb containing austenitic low density steel, **Pankaj Rawat***, Sumit Bhan*, Anand Omar, Prince Setia (in progress).
4. Enhanced strength-ductility trade-off alloy via tailoring a cryoprocessed heterostructure in a FeMnCoCr based medium entropy alloy, **Pankaj Rawat***, Shailesh Kumar Singh*, K. Vijay Reddy (in progress).

International Conferences

1. **P. Rawat**, U. Prakash, V. V. Satya Prasad, Deformation induced martensitic transformation in High Al ferritic low density steels, **AMPCO'22**, October 17th-19th, Indian Institute of Technology Roorkee, India (2022).
2. **P. Rawat**, U. Prakash, V. V. Satya Prasad**,** Creep in high Al ferrite based low density steel, **iCADMA2020**, Nov 5th- 6th, NIT Jaipur (2020).

Patents filed/granted

1. HIGH ENTROPY BASED Cr-Cu-Mn-Ni ALLOY SYSTEM AND PROCESS FOR PREPARATION THEREOF, Shailesh Kumar Singh, Bashista Kumar Mahanta, Sanjeev Kumar, **Pankaj Rawat**, Harender Singh Bisht, Sunil Kumar Pathak, Indian Patent, Application No. 202411102374, 2024 **(Filed)**.
2. A LOW-DENSITY STEEL WITH EXCELLENT STRENGTH-ELONGATION COMBINATION AND ITS METHOD OF PREPARATION THEREOF, S. Bhan, **P. Rawat**, S. Das, S.Ghosh, Indian Patent, Application No. 202311065276, 2023 **(granted)**.

Book chapters

1. **Pankaj Rawat**, Sunil K Pathak and Shailesh Kumar Singh*, "Post-processing of High Entropy Alloy based coatings" in **"**High-Entropy Alloy Coatings – Fundamentals and Applications", CRC press. 10.1201/9781003559627-18

Experimental and Analytical Skills

- Scanning electron microscope- Skilled at SEM (Zeiss Evo18) for Imaging (SE and BSE), Energy-dispersive X-ray spectroscopy (EDS), Electron Backscatter Diffraction (EBSD) and fractography.
- X-ray Diffraction- Skilled at XRD PANalytical- Phase Identification, Rietveld refinement.
- Transmission electron microscopy – BF/DF imaging and corresponding SADP analysis, HR-TEM FFT analysis.
- Universal INSTRON Tensile Testing System (UTM) - Compression testing, Tensile test.

- Vickers Hardness Tester (Struers).
- Struers Lectropol-5 - Electropolishing and Electroetching.
- Lieca Optical microscope.
- Skilled at various characterization and analytical software packages (HighScore Plus, TSL OIM-7.3 EDAX, Thermocalc, ImageJ, OriginLab, etc.).
- All EDM wire cut operations with AutoCAD programming for simple and profile cuts.

Professional Activities

- Reviewer for Journal of Materials Engineering and Performance, Springer.
- Reviewer for Materials Characterization journal.
- Reviewer for Materials Science and Engineering A journal.

Teaching experience

Lovely Professional University (LPU), Phagwara, Punjab, India-144411
Assistant Professor, 21st July 2014 - 30th Nov 2015
School of Mechanical Engineering.

- Taught Engineering Materials, Manufacturing Engineering, Non-Traditional Machining, Project and Production Management subjects to B. Tech undergraduate students.
- GATE preparation classes for final year students.
- Adopted distinctive teaching methodologies and assist more than 150+ students to prepare for National and State competitive exams like GATE, PSPCL etc.
- Organized healthy group discussions, and counsel troubled students.

Position of Responsibility

- **Currently working as Project Scientist-I in Climate Change and Data Science (CCDS) Division, Indian Institute of Petroleum, Dehradun on development of novel HEAs for hydrogen storage application.**
- Worked as Senior Project Associate at Advance Tribology Research Centre, Indian Institute of Petroleum, Dehradun.
- Student advisor for several sections during teaching.
- Chief examiner of materials science course for one semester during teaching.
- Volunteer team member of Advances in Materials & Processing: Challenges & Opportunities (AMPCO2017), an international conference organized by Metallurgical and Materials Engineering Department, IIT Roorkee.

Awards and achievements

- Received **Anusandhan National Research Foundation National Postdoctoral Fellowship (ANRF-NPDF), 2025** Joined Materials Science Centre, IIT Kharagpur on 15/12/2025 under mentorship of Dr. Shibayan Roy.

- GATE 2012: GATE SCORE-529

Personal Information

- ***Date of Birth:*** July 20th, 1988
- ***Father Name:*** Mr. Ram Singh Rawat
- ***Mother Name:*** Mrs. Rukma Rawat
- ***Nationality:*** Indian
- ***Sex:*** Male
- ***Marital Status:*** Married
- ***Languages Known:*** English, Hindi

Contact Address

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References

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5. **Dr. Shailesh Kumar Singh**
   Principal Scientist
   Climate change and Data Science division,
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Declaration

I hereby declare that the information furnished above is accurate to the best of my knowledge. I take entire liability for the correctness of the information provided.

Place: Dehradun, India (**Pankaj Rawat**)
Date: November 17th, 2025