Sandeep Kumar Sahni

Postdoctoral Research Associate, Western University, Canada
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RESEARCH INTERESTS

Computational materials science, Molecular dynamics simulations, Mechanical behavior of Materials, Powder metallurgy processing

EDUCATION

Indian Institute of Technology, Kanpur, India — Jan 2019 — Oct 2024
PhD in Materials Science and Engineering — Cumulative GPA: 9.20/10.00
Thesis Title: Investigation of Sintering and Deformation Behavior of Iron-Nickel Alloy (Fe35Ni) via Experiments and Molecular Dynamics Simulations

National Institute of Technology, Rourkela, India — Jul 2014 — Jun 2016
M.Tech in Metallurgical and Materials Engineering — Cumulative GPA: 8.86/10.00
Thesis Title: Texture and microstructure development during hot rolling of CP-Titanium

Uttar Pradesh Technical University, Lucknow, India — Jul 2009 — Jun 2013
B. Tech in Mechanical Engineering — Percentage: 73.25 %
Thesis Title: Design and Analysis of Peltier Refrigerator

EXPERIENCE

Western University — London, Ontario, Canada
Postdoctoral associate — Jan 2025 - Cont...

Indian Institute of Technology Kanpur — Kanpur, India
Senior Project Associate — Oct 2024 - Dec 2024

DIET (JNTU) Hyderabad — Hyderabad, India
Lecturer - Mechanical Engineering — Aug 2016 - Jan 2018

Prashant Generator Co. Pvt. Ltd. — Preet Vihar, Delhi, India
Quality Engineer — Jul 2013 - Jun 2014

PROFESSIONAL EXPERIENCES

Student session chair — Mar 9-10, 2024

- **Student session chair** for computational materials science session at **National Symposium of Research Scholars** held at Department of Materials Science and Engineering, Indian Institute of Technology Kanpur

Invited speaker — Feb 16, 2024

- Hindustan Aeronautics Limited (HAL) TAD Kanpur during **Productivity Week 2024**, delivering a keynote address on the topic **"Leveraging Artificial Intelligence for Enhanced Productivity"**

Research work evaluator — Nov 3-4, 2022

- **KVS Lucknow Region** in **Regional Level of** 30^{th} **National Children Science Congress** on the focal theme **Understanding Ecosystem for Health and Well-Being**

Student Volunteer Mar 8-13, 2021

- QIP Short-Term Course on **Theoretical and Practical Perspectives on Materials Manufacturing Technology (TPPMMT-2021)** at Department of Materials Science and Engineering

Student tutor

- TA201A: Manufacturing science & Technology, IIT Kanpur Jan 2022 - May 2022
- TA201P: Introduction to Manufacturing processes, IIT Kanpur Jun 2021 - Jul 2021
- TA201T: Manufacturing processes -I, IIT Kanpur Aug 2020 - Dec 2020

Workshpos & Training

- Workshop on Characterization of Coating Materials May 9, 2023
- Launch Workshop on Collaboration between IIT Kanpur and BIS on Standardization & Conformity Assessment Mar 2, 2023
- QIP Short-Term Course on Theoretical and Practical Perspectives on Materials Manufacturing Technology (TPPMMT-2021) at Department of Materials Science and Engineering Mar 8-13, 2021
- 3 Days e-Training cum Workshop on SEM. MA@IIT Kanpur Jul 27-29, 2020
- e-Training on Python Programming, Great Learning
- Industrial Training at Riddhi Ford Pvt. Ltd, New Delhi Jun 16 - Jul 19, 2012
- Industrial Training at DLW (Diesel Locomotive Works), Varanasi Jun 27 - Jul 23, 2011
- Workshop on Nanotechnology Nov 15, 2009

PUBLICATIONS

Journal paper

Published

- **Sahni, S.K.**, Upadhyaya, A., and Bhowmick, S. (2025) Exploring the Influence of Rolling Conditions on the Texture and Mechanical Properties of Sintered Fe36Ni Alloy. J. of Materi Eng and Perform. https://doi.org/10.1007/s11665-025-11167-9
- Panda, S.S., **Sahni, S.**, Mangam, S., Jayabalan, B., Mukherjee, S., Jain, J. and Singh, S.S. (2024), High-Temperature Hardness Anomaly in Ti–Ni–Fe-Based Multiphase Intermetallic. Adv. Eng. Mater. 2401562.
https://doi.org/10.1002/adem.202401562
- Panda, S. S., **Sahni, S.K.**, Jayabalan,B., Subhakar, M., Mukherjee S., Jain, J., and Singh S.S. Deformation characteristics of Ti-Ni-Fe based multiphase intermetallic: Experiments and Atomistic Simulation. J. Alloys Compd., 177402, 0925-8388 (2024).
https://doi.org/10.1016/j.jallcom.2024.177402.
- **Sahni, S.K.**, Bhowmick, S. and Upadhyaya, A. The Role of Phase Fraction on the Deformation Behavior and Tensile Properties of Dual-Phase Polycrystalline Fe-Ni Alloy: A Molecular Dynamics Simulation Study. Mater Chem Phys 129538, 0254-0584 (2024).
https://doi.org/10.1016/j.matchemphys.2024.129538
- **Sahni, S.K.**, Bhowmick, S. and Upadhyaya, A. Molecular dynamics simulations of solid-state sintering in Fe35Ni alloy: understanding the process at the atomic scale. J Mater Sci 59, 2954–2973 (2024).
https://doi.org/10.1007/s10853-024-09404-y
- **Sahni, S.K.**, Bhowmick, S. and Upadhyaya, A. Understanding Deformation Behavior in Sintered Fe36Ni Alloy Through Nanoindentation Experiments and Molecular Dynamics Simulation. Adv. Eng. Mater., 26: 2301460 (2024).
https://doi.org/10.1002/adem.202301460

- **Sahni, S. K.**, Bhowmick, S., and Upadhyaya, A. Exploring Sintering, Densification, and Mechanical Behaviour of Invar Alloys through Molecular Dynamics Simulations. Diffusion and Defect Data, Solid State Data. Part B, Solid State Phenomena/Solid State Phenomena, 357, 107–112. (2024) https://doi.org/10.4028/p-3otzjc
- Sahoo, S. K., Sabat, R., **Sahni, S. K.**, and Suwas, S. Texture and microstructure evolution of commercially pure titanium during hot rolling: Role of strain-paths. Materials & Design, 91, 58–71 (2016).
https://doi.org/10.1016/j.matdes.2015.11.073
- Mishra, J. K., **Sahni, S. K.**, Sabat, R., Hiwarkar, V., and Sahoo, S. K. Effect of Cross-Rolling on microstructure, texture and magnetic properties of Non-Oriented electrical steels. Materials Research, 20(1), 218–224 (2016).
https://doi.org/10.1590/1980-5373-mr-2016-0437

In-Progress

- **Sahni, S.K.**, Abdolvand, H. Atomistic Insights into Radiation Tolerance and Dislocation Plasticity of SiC Polytypes for Nuclear Applications. **(Under review Eur. J. Mech. A-Solids)**

Conference Paper
Published

- Panda, S. S. **Sahni, S. K.** Subhakar, M. Jain, J. and Singh, S. S. (2023). Microstructure and mechanical properties of dual Two-Phase (B2+DO24) TI45FE5NI50 Intermetallic Alloy. In Springer proceedings in physics (pp. 9–14).
https://doi.org/10.1007/978-981-99-1971-0-2

Conferences presentations

- **Oral presentation** on Exploring Sintering, Densification, and Mechanical Behaviour of Invar Alloys through Molecular Dynamics Simulations in **2024 the 7^{th} International Conference on Smart Materials Applications (ICSMA 2024)** held at National University of Singapore, Singapore Jan 14 - 16, 2024
- **Poster presentation** on Sintering phenomena and mechanical behaviour of many Fe-35%Ni alloys nanoparticles: A molecular dynamics study in **Institute Research Symposium '23** held at IIT Kanpur Jan 7-8, 2023
- **Oral presentation** on Molecular dynamics simulation-based sintering behavior study of Fe-35%Ni alloys many particles system in **International Conference on Frontiers in Materials Engineering** held at MEMS IIT Indore Dec 14-16, 2022
- **Poster presentation** in **Research Scholar Day, "PADARTH-2022** organized by Department of Materials Science and Engineering, IIT Kanpur May 7, 2022

SKILLS

- **Simulation tool:** LAMMPS, OVITO, Atomsk
- **Programming:** Python, LaTeX
- **Misc.:** HighScore Plus, OriginLab, Niget, MTEX, Office 356, Academic Research, Teaching, Training, Consultation.

REFERENCES

Prof. Anish Upadhyaya
Professor, Department of Materials Science and Engineering, Indian Institute of Technology, Kanpur, India
E-mail: anishu@iitk.ac.in

Scholar Profiles: IIT Kanpur - A. Upadhyaya — Google Scholar

Prof. Somnath Bhowmick
Professor, Department of Materials Science and Engineering, Indian Institute of Technology, Kanpur, India
E-mail: bsomnath@iitk.ac.in
Scholar Profiles: IIT Kanpur - S. Bhowmick — Google Scholar

Prof. Santosh Kumar Sahoo
Associate Professor, Department of Metallurgical & Materials Engineering, National Institute of Technology Rourkela, India
E-mail: santoshsahoo@nitrkl.ac.in
Scholar Profiles: NIT Rourkela - S. K. Sahoo — Google Scholar

PERSONAL DETAILS

- **Father name**: Subhash Chandra Sahni
- **Mother name**: Manjoo Kumari
- **Date of Birth**: 12-Sept-1991
- **Nationality**: Indian
- **Address**: Village Pohila, Post Mahuapar, Barhalganj, Gorakhpur U.P.-273402
- **Marital Status**: Married
- **Contact No.**: +91-7392848010

DECLARATION

I hereby declare that the details furnished above are true and correct to the best of my knowledge. In case any of the above information is found to be false or misleading, I am aware that I may be held liable for it.

Place: Kanpur, India
Date: September 22, 2025 **Sandeep Kumar Sahni**