Dr. Sanjeev Singh Yadav

Postdoctoral Research Associate

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EDUCATION

Ph.D. (Mechanical Engg.)	Indian Institute of Technology, Ropar	2018-2023
M. Tech. (Production/CIM)	National Institute of Technology, Warangal	2013-2015
B. Tech. (Mechanical Engg.)	Rajiv Gandhi Technical University, Bhopal	2009-2013

WORK EXPERIENCE/PROJECTS

Postdoctoral Research Associate **IISc, Bangalore** **2023 – Present**

Project Title: *Characterization and Assessment of the Crack Tip Plasticity using Digital Image Correlation (DIC) and Microstructural Techniques*

- Investigating and Analyzing the behavior of **different materials** using **various** experimental techniques such as ***DIC, SEM, EBSD,*** and ***TEM***.
- Trying to establish a relation between the plastic zone size and fatigue crack growth rate.
- Characterizing various materials' fatigue crack propagation behavior, especially near the threshold stress intensity range during different conditions.

Doctoral Research **Indian Institute of Technology (IIT), Ropar**

Project Title: *Masing and non-Masing Behaviors of Materials under Low Cycle Fatigue Loading*

- Develop a model for **predicting the fatigue life** of materials. It can be used for any material irrespective of the different kinds of behaviors under low cycle fatigue loading.
- Hand-on experience and expertise in fatigue testing and assessing **the material behavior** using various characterizing techniques such as **SEM, XRD, EBSD, TEM**, etc.
- Influence of the martensite fraction on cyclic plastic deformation study of the 304L SS materials using the **ABAQUS package**.

Masters Research **National Institute of Technology (NIT), Warangal**

Thesis Title: *Studies on the Mechanical Properties and Machinability of Hybrid Metal Matrix Composites.*

- Development of **metal matrix composites** by stir casting process for studying the various mechanical properties and further, the **microstructural investigation** has been conducted to understand the **primary cause of failure** under tensile and fatigue loading conditions**.**
- The **machinability aspect** of the **metal matrix composites** has been conducted, and the optimized cutting parameters have been identified.

SKILLS

- Mechanical Testing: Mechanical characterization of materials using various tests at room and high temperatures such as **Tensile, Compressive, LCF, HCF, CFI, Fatigue Crack Growth, Threshold, Fracture toughness, and hardness.**
- Characterization: Hands-on experience in materials characterization techniques: **Optical Microscopy**, **X-ray diffraction**, **Scanning Electron Microscopy, EBSD**, and **Transmission Electron Microscopy** (Only working Knowledge).

❋ Numerical Modeling	Experience in fatigue analysis using **Finite Element Modeling (ABAQUS).**
❋ Coding Skills	Working knowledge of coding in languages such as **Python** and **Matlab**.
❋ Software Skills	Working knowledge of design and analysis software such as **AutoCAD, ANSYS, Solidworks, Solid Edges, and ProE.**
❋ Simulation Skills	Working knowledge of manufacturing-related software: **MATLAB, CNC Simulator, Sprut CAM, and Master CAM.**

PUBLICATIONS

Journal Articles

1. **S.S. Yadav**, S.C. Roy, J. Veerababu, **S. Goyal**, Type-I to Type-II non-Masing behavior of 304L SS under low cycle fatigue: Material's internal changes, Int J Fatigue, 2023;175:107789. https://doi.org/10.1016/j.ijfatigue.2023.107789 (**Impact Factor 6**).
2. **S.S. Yadav**, S.C. Roy, S. Goyal, A comprehensive review and analysis of Masing/non-Masing behavior of materials under fatigue, Fatigue Fract. Eng. Mater. Struct. 46 (2023) 759–783. https://doi.org/10.1111/ffe.13906 (**Impact Factor 3.7**).
3. **S.S. Yadav**, S.C. Roy, J. Veerababu, S. Goyal, Quantitative Assessment and Analysis of Non-Masing Behavior of Materials under Fatigue, J. Mater. Eng. Perform. 30 (2021) 2102–2112. https://doi.org/10.1007/s11665-021-05494-w (**Impact Factor 2**).
4. **S.S. Yadav**, S.C. Roy, P. C. Chakraborti "Influence of Deformation-Induced Martensite on Non-Masing Behavior of 304L Stainless Steel" has been under review in the Journal of Materials Engineering and Performance (**Impact factor: 2**)

Conference Proceedings

1. **S.S. Yadav**, S.C. Roy, J. Veerababu, S. Goyal, Prediction of Cyclic Plastic Strain Energy Density and Fatigue Life of Non-Masing Behavior Materials Without Master Curve, Trans. Indian Natl. Acad. Eng. 7: 2022; 411–416. https://doi.org/10.1007/s41403-021-00274-3
2. **S.S. Yadav**, P. Naresh, A. Venugopal Rao, An Investigation on the Mechanical Properties of Hybrid Metal Matrix Composites, 17th ISME Conference on Advances in Mechanical Engineering, October 3-4, 2015 in Indian Institute of Technology Delhi, New Delhi.

SCHOLARSHIPS AND GRANTS

- ***MHRD scholarship*** for pursuing M.Tech (2013-15) and Ph.D. (2018-2023).

REFERENCES

- **Prof. Vikram Jayaram**, Honorary Professor, Department of Materials Engineering, Indian Institute of Science (IISc), Bangalore – 560012, India. ✉ qjayaram@iisc.ac.in
- **Prof. Praveen Kumar**, Professor, Department of Materials Engineering, Indian Institute of Science (IISc), Bangalore – 560012, India. ✉ praveenk@iisc.ac.in
- **Dr. Sunil Goyal,** Scientific Officer (G), Nuclear Fuel Complex, Kota Project, Rawatbhata Rajasthan – 323303, India. ✉ goyal@nfc.gov.in, goyal.igcar@gmail.com
- **Dr. Samir Chandra Roy**, Assistant Professor, Department of Mechanical Engineering, Indian Institute of Technology Ropar. Rupnagar Punjab – 140001, India. ✉ scroy@iitrpr.ac.in