

Dr. Suhail Ahmed Manroo



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Education:

Doctor of Philosophy (PhD)

Specialization: Manufacturing Engineering, Surface Composites, Processing materials, Modeling , Tribology
National Institute of Technology Srinagar, J&K, India
2017-2022

M-Tech

Specialization: Mechanical System Design
National Institute of Technology Srinagar, J&K, India
2013-2015

Bachelor of Engineering (B.E)

Specialization: Mechanical Engineering
Kashmir University, J&K, India
2007-2011

Experience:

- **Currently working as Lecturer (Contractual) in Institute of Technology, University of Kashmir, J&K, India**

Job description: Involved in teaching courses like the Mechanical Measurements and Instrumentation, Power plant Engineering, Workshop Practice, Automotive Braking and Steering system to undergraduate students of Mechanical Engineering.

- **September 2019-August 2022**

Worked as a **Senior Research Fellow (SRF)** in the Department of Mechanical Engineering, NIT Srinagar, J&K, India

Job description: Involved in research on Fabrication of nano-surface composites by Friction Stir Processing leading to the award of Ph.D. degree in Mechanical Engineering. Extensively worked on the micro structural features, Mechanical properties, Corrosion and Wear properties of the new developed composite materials on Rare-earth ZE41- Magnesium alloy.

I have developed codes in Matlab for modeling and prediction of grain size and hardness using Power law and Artificial intelligence techniques and the developed codes can be used for prediction of other properties without carrying out the experimentation. I have worked with my supervisors and drafted several research proposals that are currently under consideration for approval and funding in various Indian Government departments like DST-SERB, ICMR and DST-Hub.

An important part of my research involved the drafting, reviewing, communicating of research papers to various journals and conferences. I have exclusively used the Latex software to write my papers, reports, presentations and theses.

- **September 2017-September 2019**

Worked as a **Junior Research Fellow (JRF)** in the Department of Mechanical Engineering, NIT Srinagar, J&K, India

Job description: Involved in the identification of potential research problems in the areas of processing materials by Friction Stir Processing. I was responsible for carrying out an exhaustive experimentation that could lead to the development of new light weight materials which when used in the vehicles making them more economic and reducing the problems of carbon dioxide emissions . I have successfully purchased the material, equipment and items from various Indian states and also from foreign countries like the Manchester Uk.. I was also involved in assisting undergraduate and post-graduate students of Mechanical Engineering in their degree projects.

- **March 2017-August 2017**

Worked as a **Lecturer (Contractual)** at the National Institute of Technology (NIT), Srinagar, J&K, India.

Job description: Involved in teaching courses like the Mechatronics, Engineering Drawing, Strength of Materials, Thermal Engineering, Fluid Mechanics, etc. to undergraduate students of Mechanical Engineering and Electrical Engineering. Furthermore, I was in charge of the allied course laboratories and was involved in demonstrating various laboratory equipment like the Universal tensile testing machine, Charpy and Izod toughness testing machine, torsion testing machine, Bernoulli apparatus, flow measurement apparatus, pipe flow apparatus, Reynolds number apparatus, etc. I directly supervised the experiments that were carried out in these laboratories.

- **November 2011-July 2013**

Worked as Assistant Professor at the SSM College of Engineering & Technology.

Technical Skills:

- Matlab
- Latex
- AutoCAD
- Microsoft Office

Current Research:

My current research is focused on:

Developing hybrid composites of ZE41 magnesium alloy for orthopaedic implant applications by friction stir processing, Application of machine learning in mechanical engineering, Applied mathematics, and Optimization.

Research Interests:

- Nano- surface composites
- Magnesium alloy orthopedic implants
- Mathematical Modeling

Research Publications:

1. **Ahmed, Suhail, Manroo**, Vinayak Malik, and Babar Ahmad. "Surface moderation and composite fabrication of die-cast magnesium alloys via friction stir processing: a review." *Advances in Materials and Processing Technologies* 8.4 (2022): 3635-3655.
2. **Manroo, Suhail Ahmed**, Noor Zaman Khan, and Babar Ahmad. "Mechanical, wear, and corrosion properties investigation of ZE41/TiB2 surface composites fabricated by friction stir processing." *Journal of Manufacturing Science and Engineering* 144.11 (2022): 111010.
3. **Manroo, Suhail Ahmed**, and Suhail Ganiny. "A coupled multi-linear regression and genetic algorithm-based modelling and optimisation of surface roughness in machining of brass." *International Journal of Swarm Intelligence* 7.2 (2022): 123-140.
4. **Manroo, Suhail Ahmed**, Noor Zaman Khan, and Babar Ahmad. "Study on surface modification and fabrication of surface composites of magnesium alloys by friction stir processing: a review." *Journal of Engineering and Applied Science* 69.1 (2022): 1-23.

5. **Manroo, Suhail Ahmed**, et al. "Effect of process parameters on surface composite fabrication of newly commercialized Mg-ZE41 alloy by friction stir processing (FSP): microstructural development and microhardness." *World Journal of Engineering* ahead-of-print (2022).
6. **Manroo, Suhail Ahmed**, and Vinayak Malik. "Modeling and Prediction of Grain Size and Hardness of ZE41/ZrO₂ Nano-surface Composite Using Multiple Regression, Power Law and Artificial Intelligence Techniques." *Transactions of the Indian Institute of Metals* 75.8 (2022): 2051-2059.
7. **Manroo, Suhail Ahmed**, Noor Zaman Khan, and Babar Ahmad. "Effect of Nano-ZrO₂ Additions on Fabrication of ZrO₂/ZE41 Surface Composites by Friction Stir Processing." *Transactions of the Indian Institute of Metals* 75.5 (2022): 1181-1194.
8. **Manroo, Suhail Ahmed**, Noor Zaman Khan, and Babar Ahmad. "Development of Nano-Composites on Rare-Earth Mg-ZE41 Alloy Via Friction Stir Processing (FSP): Microstructure, Mechanical, and Tribological Properties." *JOM* 74.5 (2022): 2047-2062.
9. **Manroo, Suhail**, and Suhail Ganiny. "Modeling and Optimization of Surface Roughness in Machining of Brass Using Multi-linear Regression in Conjunction With Genetic Algorithm." *Intelligent Algorithms for Analysis and Control of Dynamical Systems* (2021): 145-155.
10. Mushtaq, Zahid, M. Hanief, and **Suhail Ahmed Manroo**. "Prediction of friction and wear during ball-on-flat sliding using multiple regression and ANN: Modeling and experimental validation." *Jurnal Tribologi* 28 (2021): 117-128.
11. Nisar, L., Thoker, A. N., Sanjum, A., Parray, M. R., Khan, N. Z., & **Manroo, S. A.** (2022). Defects analysis in friction stir processing of magnesium based surface composites. *Materials Today: Proceedings*, 62, 158-162.

Research Projects (Submitted/Under Consideration for Funding)

- Developing hybrid composites of ZE41 magnesium alloy for orthopaedic implant applications by friction stir processing (NPDF)

Books Published

- Modeling & Optimization of Surface Roughness During Turning Operation- An Experimental-Data Driven Approach, **Suhail Ahmed Manroo***, Suhail Ganiny, **Lambert Academic Publishing** (11.01.2023)

Workshops/STC's Attended:

- **A Five Day Workshop on Process Control**

Organized By: Department of Chemical Engineering, NIT Srinagar, J&K, 13-17 November, 2017.

- **A Short-term Course on Transport Processes**

Organized By: Department of Chemical Engineering, NIT Srinagar, J&K, 20-24 February, 2018.

Reviewed for Journals

- Archives of Metallurgy and Materials, Springer
- Alloys and Compounds, Elsevier
- World Journal of Engineering, Emerald

Courses Taught:

At Undergraduate Level:

- Strength of Materials (Mechanical Engineering)
- Basic and Applied Thermodynamics (Mechanical Engineering)
- Heat Transfer (Mechanical Engineering)
- Fluid Mechanics (Mechanical Engineering)
- Engineering Mechanics (Mechanical Engineering)
- Thermal Power Engineering (Electrical Engineering)

At Senior Secondary Level:

- Physics
- Mathematics

Languages:

- English
- Urdu
- Hindi
- Kashmiri