

NEERAJ KUMAR

MECHANICAL ENGINEER



RESEARCH INTERESTS

Microstructure analysis, surface engineering, and mechanical properties evaluation of advanced materials. Development and characterization of environmentally friendly energy storage systems, Hydrogen storage materials and composites, and enhancing adsorption potential. Sustainable manufacturing and waste to resource technologies. Welding and Joining processes (friction stir welding).

RESEARCH & PROJECT EXPERIENCE

Doctor of Philosophy (PhD) (October 2025 – pursuing)

Technological University of Shannon (TUS), Moylish Campus (Ireland)

- Development and Characterization of Environmentally Friendly Hydrogen Storage Composites with Enhanced Adsorption Capacity

M. TECH RESEARCH PROJECT (2021 -2022)

Study of Microstructure, Defects and Mechanical Properties of Friction Stir Welded Magnesium Plates

- Conducted Friction Stir Welding of Magnesium plates under varying tool profiles and welding parameters.
- Analyzed weld microstructures and defect formation through comparative studies.
- Evaluated mechanical properties of welds, focusing on Hardness distribution across joints.

B. TECH PROJECTS

- **Smart Traffic Management System using RFID Tags, Arduino, and Ultrasonic Sensors (2019)**: Developed a prototype intelligent traffic control system to optimize vehicle flow
- **Making Particle Boards from Rice Stubble to Counter Air Pollution through Stubble Burning (2020)**: Designed and fabricated particle boards from rice stubble as a sustainable alternative to conventional materials.

INTERNSHIP

Vardhan Consulting Engineering, 2021 {Waste to Energy: Urban Waste Management}

- Explored strategies for converting municipal solid waste into usable energy forms and gained exposure to energy recovery processes.

SKILLS

- **Materials Characterization**: Microstructure analysis, hardness testing, and defect evaluation. Familiar with experimental techniques for various Mechanical property evaluation.
- **Manufacturing & Workshop**: Hands-on experience with welding, additive manufacturing, and heat treatment processes.
- **Software & Tools**: MATLAB, SolidWorks, ANSYS, and AutoCAD.
- Experienced in technical documentation and academic writing.

CONTACT

neeraj251999@gmail.com /
k00339006@student.tus.ie

(+353) 894069408

Limerick, Ireland

EDUCATION

PhD (October 2025 – pursuing)

B.Tech-M.Tech (Dual Degree) in Mechanical Engineering, IIT Ropar

M.Tech Project (2021-2022)

- 1st Sem Grade 'B'
- 2nd Sem Grade 'B-'

B.Tech + M.Tech (2017-2022)

- CGPA 6.35

Schooling:

Higher Secondary (2017)- 83.4%

Secondary (2015)- 10 CGPA

ABOUT ME

I enjoy working in teams and actively contribute to creating a supportive, positive research environment. I value knowledge-sharing, adaptability, and persistence in overcoming challenges, and I am eager to apply these qualities to advance innovative research. My enthusiasm for experimental work, combined with a proactive and helpful attitude, makes me well-suited to contribute meaningfully to both scientific progress and team success.

RELEVANT COURSEWORK

Manufacturing Technologies

Materials Science and Eng.

Micro-manufacturing

Design of Machine Elements

Additive Manufacturing

Analysis of Forming, Casting and

Joining processes.