

Dr. NEERAJ SRIVASTAVA

Assistant Professor

Department of Mechanical Engineering,
SVNIT Surat, India

Mobile No. +91 9696350479

Email: neeraj.s@med.svnit.ac.in, neerajajai@gmail.com

URL: https://www.researchgate.net/profile/Neeraj_Srivastava7

<https://scholar.google.co.in/citations?user=NyTDZfcAAAAJ&hl=en>



Area of Interest (Research)

To develop **light alloys**, **composites** and **foams** for automobile and aerospace applications using conventional and non-conventional (ultrasonic solidification, and directional) solidification techniques.

Microstructural and mechanical characterization of materials, Engineering materials: Al alloys and Mg Alloys, Bio materials, Metal matrix composites.

Experience

- Worked as a Post-Doctoral fellow in Department of Mechanical Engineering, IIT Bombay, India Feb 4, 2019 to May 17, 2021

Educational Qualification

- Ph.D., Indian Institute of Technology (IIT) Roorkee, India, 2018.
- M.Tech, (CGPA-8.61), Indian Institute of Technology (IIT), Roorkee, India, 2012.
- B.Tech, Mechanical Engineering, C.S.J.M. University, India, 2008.

Research Publications

- **N. Srivastava**, S. Bhagavath, S. Karagadde, Effect of in situ Al₃Zr particles on controlling the pore morphology of Al6061 alloy foams, *Materials Today Communications (Elsevier)*, Nov 2020. **Impact factor- 2.678**
- **N. Srivastava** and G.P. Chaudhari, Grain refinement in ultrasonicated binary aluminium alloys, *Journal of Crystal Growth (Elsevier)*, Vol. 532, pp. 125415, 2020. **Impact factor- 1.632**
- **N. Srivastava** and G.P. Chaudhari, Effect of ultrasonic treatment on the mechanical behavior of Al-Ni alloys, *Materials Science & Technology (Taylor and Francis)*, Vol. 35 pp. 1239–1247, 2019. **Impact factor- 1.835**
- **N. Srivastava** and G.P. Chaudhari, Microstructural evolution and mechanical behavior of ultrasonically synthesized Al6061-nano alumina composites, *Materials Science & Engineering A*

(Elsevier), Vol. 724, pp. 199–207, 2018. **Impact factor- 4.652**

- **N. Srivastava**, G.P. Chaudhari, M. Qian, Grain refinement of binary Al-Si, Al-Cu and Al-Ni alloys fabricated by ultrasound solidification technique, *Journal of Materials Processing Technology (Elsevier)*, Vol. 249, pp. 367–378, 2017. **Impact factor- 4.178**
- **N. Srivastava** and G.P. Chaudhari, Strengthening in Al alloy nanocomposites fabricated by ultrasound assisted solidification technique, in *Materials Science & Engineering A (Elsevier)*, Vol. 651, pp. 241-247, 2016. **Impact factor- 4.669**
- A. Khandelwal, K. Mani, **N. Srivastava**, R. Gupta, G.P. Chaudhari, Mechanical behavior of AZ31/Al₂O₃ magnesium alloy nanocomposites prepared using ultrasound assisted stir casting, *Composites Part B (Elsevier)*, Vol. 123, pp. 64-73, 2017. **Impact factor- 7.635**
- **N. Srivastava**, G.P. Chaudhari, R. Gupta, Effect of solute and high power ultrasound on mechanical properties of Al-Si alloys with different solute concentrations, *IOP Conf. Series: Materials Science and Engineering*, Vol. 330, 012023, 2018.
- M. C. Dixit, **N. Srivastava**, S.K. Rajput, Modeling of flow stress of AA6061 under hot compression using artificial neural network, *Materials Today: Proceedings (Elsevier)*, Vol. 4, pp. 1964–1971, 2017.

Postdoc Research Work

- Worked on fabricating of light alloys foams, sandwich foams and *in situ* composites foams for automobile and aerospace applications using solidification techniques (DST project).
- The details of activities involved in developing the laboratory facility are as follows:
 - Finalization of the design of a. Directional solidification setup b. Induction furnace c. Muffle furnace
 - Development of the microstructural examination facilities
 - Procurement documentation
 - Installation and commissioning of machine
 - Maintenance of equipment's

Ph.D. Research Work (Ultrasonic processing of Aluminium alloy melts)

Thus, the objectives of this work were to fabricate the aluminium alloys and its nano-composites for aerospace and automobile applications:

- To study the combined effect of solute content and UST on microstructure of binary Al alloys.
- To investigate the dominant grain refinement mechanism.
- To study the mechanical behavior of ultrasonically treated binary aluminium alloys.
- To investigate the dispersion of nano-particles in aluminium alloy when UST is performed.

- To study the structure-mechanical property relationship in ultrasonically treated nano-particles dispersed aluminium alloy composites.

M.Tech Thesis Work

Studies on bulk Mg alloy composites fabricated by ultrasonic dispersion solidification

technique: TiC-AS41 magnesium alloy matrix composites will be fabricated using ultrasound assisted solidification technique. The creep behaviour of AS41 magnesium alloy and ultrasonically processed TiC/AS41 composites will be investigated under conditions of constant compressive stress at temperatures up to 200 deg C.

Technical Skills

Casting experience in Mg and Al alloys and their composites & foams, XRD analysis, Optical Microscope, Scanning Electron Microscope (**SEM**), Energy dispersive spectroscopy (**EDS**), Electron back Scattered Diffraction (**EBSD**), 2D X- ray tomography (**XRT**), Transmission electron microscope (**TEM**), Heat Treatment of light alloys and metal matrix composites, Tribology of Materials, Failure Analysis, Mechanical Testing, Fractography, Mechanical and microstructural behavior of materials, **Image J** analysis.

Laboratory Teaching Assistantship Experience

- *Solidification of light alloy foams*, sandwich foams and *in situ* composites using conventional and directional solidification techniques: [Feb 2019-May 2021], IIT Bombay, Mumbai.
- *Materials Characterization Laboratory*: Technical operator of “Scanning Electron Microscope” (SEM), Energy Dispersive spectroscopy (EDS), and Electron Back Scattered Diffraction (EBSD): [2012-2017], IIT Roorkee.
- *Processing of Materials via solidification route*: [July 2012 – April 2018], IIT Roorkee.

Awards / Scholarships / Academic Achievements:

- Awarded second prize in Microstructure competition at NMD ATM 2021, IIT Bombay, Mumbai.
- Young Scientist Travel Grant, July 31, 2019, Science and Engineering Research Board, DST, New Delhi, India.
- MHRD (Government of India) Scholarship for Ph.D.
- MHRD (Government of India) Scholarship for M.Tech. (PG course).
- Secured highest CGPA in M.Tech in Department of Metallurgical & Materials Engineering.
- Qualified GATE-2012 examination.

International Conference/Workshops:

- **N. Srivastava**, S. Bhagavath, S. Karagadde, “Effect of in-situ formed Al_3Zr , Al_3Ti , and hybrid (Al_3Zr + Al_3Ti) particles on the microstructure and mechanical properties of Al-5wt.%Cu alloy”, in conference (*IIT Bombay, Mumbai, NMD ATM 2020*), 2021.
- S. Bhagavath, **N. Srivastava**, S. Karagadde, Three-dimensional characterization of in-situ composite Aluminium foam, in conference (*IIT Bombay, Mumbai, NMD ATM 2020*), 2021.
- S. Bhagavath, Z. Gong, S. Nonni, T. Wigger, S. Shah, S. Marussi, **N. Srivastava**, S. Karagadde, P. Lee, “Deformation induced crack growth in semi-solid die cast Aluminum alloys”, in International conference (*TMS annual meet, San Diego, USA*), 2020.
- **N. Srivastava**, G.P. Chaudhari, S. Karagadde, ‘Grain growth restriction in ultrasonicated binary aluminium alloys’, in International conference (*EUROMAT 2019, Stockholm, Sweden*), 2019.
- **N. Srivastava**, G.P. Chaudhari, ‘Mechanical behavior of ultrasonically processed Al6061-nano alumina composites’, in International conference (*AMPCO, IIT Roorkee, India*), 2017.
- **N. Srivastava**, R. Gupta, G.P. Chaudhari, ‘Effect of solute and high power ultrasound on mechanical properties of Al-Si alloys with different solute concentrations’, in International Conference (*ICRAMME, Hyderabad, India*), 2017.
- **N. Srivastava**, G.P. Chaudhari, ‘Effect of power ultrasound on solidification of Al-Cu alloys with different solute concentrations, in International Conference (*PFAM, IIT ROORKEE, India*), 2014.
- **N. Srivastava**, G.P. Chaudhari, ‘Effect of power ultrasound on solidification of Al alloys with different solute concentrations’, in International conference (*NMD-ATM, IIT BHU, India*), 2013.
- P.P. Bhingole, G.P. Chaudhari, **N. Srivastava**, ‘Systematic analysis of Ultrasonic Processing on microstructural changes in AZ31 magnesium alloy’, in International conference (*AMPCO, IIT Roorkee, India*), 2012.
- **N. Srivastava**, G.P. Chaudhari, S.K. Nath, ‘Ultrasonically Processed AS41 Magnesium Alloy Matrix Composites’, in International Conference (*TMS annual meeting-2012, U.S.A*), 2012.
- Participated in TEQIP workshop on High resolution X-ray and electron diffraction in IIT Kanpur, India, Feb 2016.