Mirza Faizaan, Ph.D. (Pending)

Materials Researcher | Additive Manufacturing | Polymer Composites
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PROFESSIONAL SUMMARY

Materials researcher with 5+ years of experience in additive manufacturing (FDM/SLA), polymer/fibre composites, and mechanical/material characterization (µ-CT, SEM, FTIR, XRD, DSC, UTM). Skilled in MATLAB, SolidWorks, ANSYS, and image analysis tools like ImageJ and GIMP. Experienced in polymer extrusion, lattice structure design, and static simulations aligned with ASTM testing standards. Recognized for cross-functional collaboration, technical leadership, and academic rigor in R&D environments. Looking forward to take on engineering roles in materials and design.

CORE SKILLS

- Additive Manufacturing (MEX-AM, SLA)
- Polymer Extrusion & Compounding (Single & Twin-Screw)
- Mechanical Testing: UTM, FAVIMAT
- Material Characterization: µ-CT, SEM, XRD, FTIR, WAXS, DSC
- CAD/CAE: SolidWorks, CATIA, Ansys (Static Structural)
- Programming & Data Analysis: MATLAB, Minitab, OriginLab.
- Image Processing: ImageJ, GIMP
- MS Office Suite: Excel, Word, PowerPoint

ACHIEVEMENTS

- Published 3 peer-reviewed papers, 2 research manuscripts in the pipeline, 1 design patent, and recipient of Best Paper Award at ICCCMEH 2024).
- Published review paper in *Progress in Additive Manufacturing* with SJR 0.994 (2024) on effect of printing parameters on FDM based short fibre reinforced PLA composites

PROFESSIONAL EXPERIENCE

Casual Research Assistant
Carbon Nexus, Deakin University, VIC, Australia
Oct 2023 – Apr 2024

- Produced PAN-based precursor fibres for SABIC using wet spinning methods.
- Performed sample preparation, FAVIMAT tensile testing, microscopy, and density analysis across carbon fibre processing stages.

Freelance 3D Printing Service Operator
Manipal, KA, India
Nov 2024 – Present

- Delivered end-to-end 3D printing solutions, managing sourcing, client communication, quotation, and QA for diverse prototyping needs.

Project Intern – Assembly & Automation
Automotive Axles Ltd., Mysore, India
Nov 2018 – Jul 2019

- Reduced robotic welding cycle time from 227s to <200s through ECRS and hardware optimization.

Project Intern – Quality Improvement
TVS Motor Company Ltd., Mysore, India
May 2018 – Oct 2018

- Eliminated crankshaft bearing rework via SOPs and operator training tools.
- Improved assembly flow using value stream mapping techniques.

Teaching Assistant
Manipal Institute of Technology, Manipal, India
Oct 2017 – Apr 2018

- Assisted undergraduate automotive engineering labs in, enhancing student understanding of experimental procedures.

TEST SCORES

- IELTS (Academic): 8.0 (2020)
- GRE: 305 (2019)

RESEARCH EXPERIENCE

Doctoral Researcher
Manipal Institute of Technology, & Institute for Frontier Materials
Jan 2020 – Mar 2025
(Pending Evaluation)

- Established structure property relationships for tensile performance and void morphology across nozzle diameters and layer thicknesses; found print parameters affect tensile performance by <6%
- Developed MATLAB tools to streamline tensile, FTIR, XRD, and DSC data analysis.
- Designed, simulated and experimentally validated closed-cell lattice structures; achieved ~30% weight reduction with ~60% compressive strength retention.
- Extruded short fiber-reinforced Basalt/PLA composites filament
- Assessed temporal evolution of FDM-PLA degradation under prolonged UV/RH weathering.

Academic Project – B.E Final Year
Dayananda Sagar College of Engineering
2016 – 2017

- Investigated wear reduction in Al-20Si engine blocks using laser surface treatment achieving up to 92% increase in hardness and enhanced oil retention through microstructural refinement.
- Conducted tribological testing (microhardness, sliding wear, surface roughness) and optimized laser parameters using DOE and ANOVA.

CERTIFICATIONS

- Additive Technologies in Metallurgy, Coursera (2021)
- MATLAB Fundamentals, MathWorks (2021)
- Scientific Writing & Publishing, Nature Masterclass (2021)
- Safety Training, Deakin University (2023)
- Research Integrity Training, Deakin University (2021)

EDUCATION

Ph.D. (Materials Engineering)
Manipal Institute of Technology / Institute for Frontier Materials (*Thesis Submitted*)
2020 – 2025

M.Tech. in Automobile Engineering
Manipal Institute of Technology, Manipal
2017 – 2019

B.E. in Automobile Engineering
Dayananda Sagar College of Engineering, Bangalore
2013 – 2017

SELECTED PUBLICATIONS & PATENTS

- Mirza, F., Baloor Shenoy, S., Nunna, S. et al. A study on the overall variance and void architecture on MEX-PLA tensile properties through printing parameter optimisation. Scientific Reports (2024).Link to paper [Q1]
- Mirza, F., Baloor Shenoy, S., Nunna, S. et al. Effect of material extrusion process parameters on tensile performance of pristine and discontinuous fibre reinforced PLA composites: A review. Prog Addit Manuf (2024). Link to paper [Q1]
- "Tensile sample mount for accelerated weathering chamber" bearing design patent number: 383798-001, Patent and Design Journal, Intellectual property India, India.

REFERENCES

Available upon request