Light Mechanics
Laser Reengineered

Light Mechanics Pvt. Ltd.
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Job Title: Research Scholar/ Research Scientist

Company: Light Mechanics Pvt. Ltd.

Location: Bangalore

Employment Type: Full-time

Industry: Laser Systems, Industrial Automation & Engineering Solutions

Website: www.lightmech.com

Education: PhD in Laser Science / Laser-Material Interaction

About Light Mechanics

Light Mechanics specialises in industrial laser applications (welding, cladding, surface engineering), automation systems, and advanced materials processing. We seek to deepen our materials-science capabilities to optimise welding and laser processes specially to reduce heat-affected-zone (HAZ), improve microstructure, grain orientation and performance across metals, alloys, composites, and other material types.

Position Overview

We are looking for a highly motivated individual with a **PhD (or near completion) in Metallurgical & Materials Engineering (or closely related area) from MME department**. The candidate will work on laser-material interaction projects, with a focus on welding/melting, HAZ control, microstructure/grain-orientation analysis, cross-sectional metallography and process optimisation for industrial laser systems. This role bridges fundamental materials science (grain evolution, thermal effects, metallography) with applied engineering (laser welding, manufacturing).

Key Responsibilities

- Perform cross-sectional metallographic studies of welds and heat-affected zones: prepare specimens, optical microscopy, SEM/EDS, grain size/orientation analysis, hardness mapping, etc.
- Analyse how laser welding / laser processing parameters affect microstructure, grain orientation, phase transformations, porosity, HAZ width etc.
- Propose and test strategies to reduce HAZ, refine grain structure, improve mechanical/tensile strength, and enhance weld integrity when using industrial laser systems.
- Design experiments involving different materials (metals, alloys, composites) and multi-material joints to assess laser-material behaviour.
- Collaborate with the laser process team to align materials research with laser parameter optimisation (power, speed, focal position, shielding, etc).
- Interpret results, produce technical reports, present findings, and publish in peer-reviewed journals.
- Contribute to intellectual property efforts: patents or process innovations arising from the work.
- Mentor junior engineers/technicians in materials characterisation and metallographic workflows.

Desired Candidate Profile

- PhD in Metallurgical & Materials Engineering (or related discipline) from MME department.

- Candidate should have completed *pre-synopsis* stage (i.e., near completion) or recently awarded PhD.
- Minimum of **2 publications** in reputed international journals in areas such as welding metallurgy, laser-material interaction, microstructure-property relationships, grain orientation studies, etc.
- Strong understanding of metallurgical principles including solidification, heat transfer, and surface engineering with the ability to apply them to real-world laser welding and cladding processes.
- Patent filing or granted patent(s) in relevant fields will be a strong plus.
- Strong experience in metallurgy: metallographic preparation, optical microscopy, SEM/EDS, hardness testing, grain orientation/texture analysis, phase analysis.
- Good understanding of welding metallurgy: heat-affected zones, thermal cycles, grain growth, phase transformations, residual stresses.
- Experience (or at least understanding) of laser-material interaction: how lasers influence melting, heat-input, cooling rates, porosity, HAZ.
- Ability to link materials science insights with process engineering and manufacturing applications.
- Excellent analytical skills, documentation skills, good communication, and the ability to work in interdisciplinary teams (laser engineers, automation engineers, material scientists).

Why Join Light Mechanics

- Opportunity to work on cutting-edge industrial laser systems and materials processing challenges.
- Direct involvement in R&D that moves into commercial manufacturing.
- Environment encouraging innovation, publications, and patents.
- Collaboration opportunities with academia + industry.

Other benefits:

- Benefits: Health insurance, Training and career development programs.