



American Lightweight Materials
Manufacturing Innovation Institute

Position: Materials Engineer

Department: Manufacturing Engineering

Reporting To: Engineering Manager, Materials Testing

Job Location:

LIFT ALMMII Headquarters
1400 Rosa Parks Blvd
Detroit, MI 48216

Scope of Work & Purpose:

LIFT is seeking a materials engineer to perform microstructural, chemical, and thermodynamic analyses of various material systems in the LIFT materials laboratory. The applicant will be responsible for understanding and educating themselves on each of the alloy systems as we engage in them, analyzing and interpreting microstructure and chemistry, and conducting various destructive and non-destructive tests.

Core LIFT activities including Advanced Metallics Production and Processing (AMPP), Integrated Computational Materials Engineering (ICME – virtual materials design), and Hypersonic and Extreme Environment Testing (HEET), will position LIFT at the center of accelerated materials development, both nationally and globally.

KEY RESPONSIBILITIES & DUTIES

- **Testing and Development:**
 - Perform thermodynamic analysis (TGA/DSC/DTA/TMA), chemical testing (SEM/EDS, GD-OES, XRF, LALI-TOF-MS, combustion, etc.), rheometry, and metallography of various materials in accordance with applicable standards.
 - Support experiment design, sample and data collection, and evaluation of novel alloy systems and analytical techniques.
 - Evaluate, compare, and provide technical recommendations for equipment selection and purchasing decisions.
 - Work closely with suppliers and project teams to refine test techniques and make suggestions for equipment updates.
- **Safety, Lab Maintenance, 5S, and Compliance:**
 - Adhere to safety protocols including proper PPE usage to minimize risks associated with a manufacturing environment.
 - Participate in regular safety inspections and audits to identify potential hazards and ensure adherence to safety regulations.
 - Track and lead routine and preventative maintenance activities to ensure safety, quality, and reduce downtime.
 - Maintain equipment calibrations to ensure quality test results
 - Follow procedures for sorting, set in order, shine, standardize, and sustain to ensure a safe and organized work environment.
- **Working Conditions:**
 - This position will work in a combination of lab, shop, and office environments.
 - May require occasional (<10%) travel to test sites, vendors, or partner facilities.
 - Work with advanced analytical equipment and production equipment as needed.

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313-309-9003

PREFERRED QUALIFICATIONS AND COMPETENCIES:

- **Education and Experience:**
 - B.S. degree in metallurgical engineering, materials science, chemistry, chemical engineering or related field and 4-10 years of relevant experience (minimum).
 - M.S. or Ph.D. degree in metallurgical engineering, materials science, chemistry, chemical engineering or related field and 1-5 years of relevant experience (preferred).
 - Experience in novel analytical procedure development (preferred).
 - Experience working with multiple stakeholders from a wide range of backgrounds from industry to government
- **Knowledge & Skills:**
 - Knowledge of metallurgy in any of the following alloy systems is a plus: Mg, Al, Fe, Ni, Co, Ti, Zr, Hf, Ta, Nb, W, or CMC.
 - Experience with various materials laboratory characterization techniques including: chemical testing; thermal analysis; microscopy; and metallography. Experience with advanced characterization techniques including: SEM/EDS/EBSD, TGA/DTA/DSC/TG-DSC/TG-DTA, dilatometry, and powder XRD. Metal powder characterization, mechanical testing, and CMC precursor testing would be helpful.
 - Strong documentation and basic computer skills (e.g., MS Office, equipment software).
 - Ability to compare technical specifications and evaluate equipment performance in a structured way.
- **Personal Attributes**
 - Detail-oriented with a strong focus on data and equipment reliability.
 - Analytical mindset and interest in technology evaluation and continuous improvement.
 - Strong communication skills for working with engineers, vendors, and internal stakeholders.
 - Able to work independently and manage multiple tasks and priorities.

About LIFT:

LIFT, operated by the American Lightweight Materials Manufacturing Innovation Institute (ALMMII), is a nonprofit, public-private partnership, national advanced manufacturing innovation institute. As the national advanced materials manufacturing innovation institute, LIFT is an accelerator convening and connecting government, industry and academia in the fields of advanced materials, manufacturing processes, systems engineering and talent development to enhance America's manufacturing competitiveness, national economy and national security.