Microhydraulic Technology Engineer

Location: Lowell, MA
Team: CTO Organization – Advanced R&D

About Sangtera

Sangtera is developing a new class of precision microhydraulic actuators enabling next-generation robotic manipulation and high-precision positioning systems. Our technology combines MEMS fabrication, microfluidics, and electrowetting physics to create scalable actuator arrays capable of unprecedented precision and force density.

Our work spans fundamental physics, MEMS device engineering, and scalable manufacturing. The team operates at the intersection of microfluidics, surface science, and precision systems engineering to bring this technology from lab prototypes to manufacturable products.

Role Overview

Sangtera is seeking a Microhydraulic Technology Engineer to work on the core microhydraulic actuator technology. This role sits within the CTO organization, and is part of the Advanced R&D groups.

The position focuses on MEMS-based fluidic systems, particularly microhydraulic and electrowetting devices. The engineer will help troubleshoot and improve the device physics, fabrication process, and testing methodology of our microhydraulic systems.

This role requires both strong theoretical understanding and hands-on experimental capability, including MEMS device fabrication, microfluidic testing, and rapid iteration through short experimental loops.

Key Responsibilities

- Analyze and troubleshoot issues in microhydraulic MEMS devices, particularly related to fluidic behavior and device reliability
- Design and execute short-loop experiments to evaluate improvements to device physics, fabrication processes, and assembly techniques
- Work on MEMS devices from design through fabrication, integration, and testing

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- Investigate phenomena related to:
    - Electrowetting behavior
    - Surface charge effects
    - Debye layer interactions
    - Triple-phase line dynamics
- Analyze fluidic behavior including:
    - Laplace pressure effects
    - Surface tension phenomena
    - Two-phase flow dynamics
    - Emulsion formation and stability
    - Tribological effects in fluidic interfaces
- Develop experimental setups to evaluate microhydraulic device performance
- Contribute to GDS layout and MEMS design iterations
- Collaborate closely with reliability engineering and technology development teams to diagnose performance issues and guide process improvements
- Document results and communicate findings clearly across engineering teams

Required Qualifications

- Master's degree or higher in Electrical Engineering, Mechanical Engineering, or a related field
- Extensive experience with MEMS devices, including work across design, fabrication, and testing
- Experience working with fluidic MEMS systems
- Strong hands-on laboratory skills in device testing and characterization
- Experience diagnosing and troubleshooting microfluidic or MEMS system behavior
- Experience running short experimental development cycles

Desired Experience

- Experience with two-phase microfluidic systems
- Experience with electrowetting devices
- Knowledge of surface science relevant to microfluidic systems, including:
    - Surface charge effects
    - Debye layer behavior
    - Triple-phase line dynamics
- Experience with Laplace pressure, surface tension, and capillary phenomena
- Familiarity with emulsion science and tribology
- MEMS GDS layout experience

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What Makes This Role Unique

This position works directly on the core physics and technology of Sangtera's microhydraulic platform, bridging device physics, MEMS fabrication, and experimental validation. Engineers in this role will contribute directly to solving fundamental challenges that enable the technology to scale from prototype devices to manufacturable systems.

We value rigor, curiosity, and people who like building real things. If you enjoy turning complex, coupled physical systems into robust products, we'd love to talk.

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