OVERVIEW

The Washington Technology Center (WTC) is a state-chartered economic development organization. WTC is committed to increasing innovation and technology throughout the state of Washington, in all industries and economic sectors.

WTC focuses on designing and implementing programs that directly impact Washington and Pacific Northwest companies, research institutions and entrepreneurs through our mission of sparking ideas, forming connections between people and resources, and fostering job growth to position Washington as a national technology leader.

The Research Engineer will support research efforts related to nanolithography for applications in microelectronic, micromechanical and microfluidic devices for sensor, optical and biomedical/biotechnology applications. The Research Engineer will design and conduct experiments in collaboration with internal engineering as well as external industrial and academic partners. The research engineer will be responsible for coordinating the installation, maintenance, and management of research equipment brought into the facility.

This position reports to the Manager, MicroFabrication Laboratory.

MAJOR DUTIES AND RESPONSIBILITIES:

The Research Engineer will focus on developing next generation nano scale lithography techniques. These include base-lining an existing e-beam lithography system, developing a multi pen dip pen lithography processes, and establishing a nano imprint lithography system. Application specific projects will leverage existing processes and expertise at the WTC, and will require close interaction with internal and external customers.

OTHER POSITION COMPONENTS

The Research Engineer will engage in these functions:

- E-beam lithography
  - Establish Manufacturability limits and standards for e-beam lithography (EBL)
  - Create 20-500 nm EBL Master for nano imprint lithography (NIL)
  - Establish 20 nm EBL Process

- Nano Imprint lithography
  - Modify EVG 620 hardware platform for UV NIL
  - Baseline NIL process
  - Develop 20 nm NIL process

- Dip Pen Lithography
  - Install Nanoscriptor DPN System for Use
Baseline Passive Multi Pen Array
- Install active 1D array and baseline
- Establish single pen process for 60 nm process
- Develop single pen 20 nm process
- Develop passive 2D array process
- Install sub micron resolution stage on DPN tool with high resolution optical alignment
- Baseline High Throughput Process

Application Specific Research
- DPN Parallel pen process using DNA based Inks
- Multi Pen Array with individually addressable pens
- Silicon Nano Wire tipped pens
- Continuous feed ink material
- DPL of DNA or Organic-based electronics below 50 nm
- NIL of DNA or Organic-based electronics below 50 nm
- Establish Process Module for high surface area support structures for catalysis
- EBL Lift off for Au film used as Silicon Nano Wire catalyst
- NIL Lift off for Au film used as Silicon Nano Wire catalyst
- Direct Inking of Au Nano particles
- Hierarchical Manufacturing of Organic Materials

CONTACTS AND INTERACTIONS

Primary Interactions Include:
- Closely interact with lab engineering to set daily priorities, understand process capabilities, resource allocations, and process cycle times.
- Maintain professional relationships with WTC key customers and stakeholders.
- Develop quarterly reports to federal funding agencies

QUALIFICATIONS

Education:
B.S., in engineering, science or related technical field. MS or PhD preferred

Work Experience/Skills:
2-4 years experience working on emerging lithography techniques applied to microelectronic or MEMS processes. Experience with FIE, Nanolinc, and EVG platforms a plus. Experience with e-beam lithography, Nano Imprint, and Dip Pen desired. Experience with performing researcher under DARPA or other federally funded projects is ideal.

Some knowledge of semiconductor processing, thin film and materials characterization. Knowledge of clean room practices and experience working in a clean room environment a plus. Proven success in understanding customer needs, and delivering a reliable product in a fast pace industrial environment. Experience with PC related hardware and software – CAD, data analysis, image processing. Excellent verbal and written communication required.
The Washington Technology Center is an equal opportunity, affirmative action employer with a policy of equal opportunity regardless of race, color, creed, religion, national origin, sex, sexual orientation, age, marital status, disability, or status as a disabled veteran or Vietnam era veteran.