

University of Delaware
Position Description

Position Title: Lithography Engineer
Grade: 33E

The University of Delaware (UD) Nanofabrication Facility is a 8,500 sq. ft. laboratory whose primary objective is to enable UD to attract and retain top caliber faculty and to provide the infrastructure necessary to enable existing and new faculty and researchers in the tri-state area and beyond to undertake competitive research and development in the growing number of fields that rely on nanofabrication.

The facility has been open for business since 2016 and is equipped with state-of-the-art equipment for electron-beam and optical lithography, deposition, etching, thermal processing, metrology and packaging; the vast majority of the tools were purchased new. The Facility is staffed by one Process Engineer, one Process Specialist, and one Facility Specialist. Administrative and financial support is provided centrally.

Under limited direction from the Nanofabrication Facility Director, the Lithography Engineer is responsible for specifying, acquiring, installing, qualifying, operating, developing processes, and providing training on equipment worth approximately five million dollars. The engineer provides expert guidance to existing and prospective users on the materials and techniques best suited to meet their research needs. The engineer continually develops new processes to push the state of the art in order to attract and serve both internal and external customers. The engineer has primary responsibility for the lithography service provided to those customers. The Lithography Engineer is also expected to assist in proposal preparation including preliminary investigation and writing.

MAJOR RESPONSIBILITIES:

- Responsible for the day to day supervision of the operation, maintenance, and training of the lithography equipment housed in UD's Nanofabrication Facility.
- Works closely with academic and industrial users to advise and enable their research; acts as a resource for process flow planning and optimization.
- Develops, documents, and continuously improves lithographic processes and techniques to be incorporated by researchers into their work.
- Oversees training and demonstration of instrument operation procedures to UD undergraduate and graduate students, post-doctoral and other researchers, faculty members, and external users.
- Participates in the evaluation and selection of major new equipment. Plans, directs and organizes the installation and qualification of multimillion-dollar instruments.
- Identifies degradation of equipment performance compared to specifications and develops maintenance standards. Troubleshoots, maintains, and repairs defective instruments either using in-house resources or through manufacturers' service and assures minimum instrument

downtime. Supervises and coordinates manufacturer service technicians during repair and maintenance procedures.

- Maintains personal competence and a broad knowledge of state-of-the-art nanofabrication techniques and equipment by involvement in professional activities, including attending conferences, user's meetings and training, reviewing papers, etc.
- Assists facility director and other staff with the development and enforcing of safety and operational protocols.
- Coordinates the scheduling and tracks the usage of the lithographic equipment.
- Performs other job-related duties as assigned.

QUALIFICATIONS:

- Master's degree in physics, engineering, or related field with at least six years of experience with electron-beam lithography (EBL) equipment and processes. Ph.D. preferred.
- In-depth knowledge of the fundamentals as well as recent advances in the applications of lithographic techniques.
- Extensive hands-on experience with 100 kV EBL systems preferred.
- Strong mechanical inclination and troubleshooting skills.
- Ability to coordinate technical personnel to effect repairs and maintenance of complex equipment.
- Strong attention to detail, persistence, follow through, and the ability to work with minimal supervision.
- High energy, self-motivated with strong communication skills and personal work ethic, and a strong sense of ownership.
- Ability to work collaboratively with a wide variety of personnel at multiple levels of expertise.
- Project management skills to prioritize and organize work, analyze and solve problems, and make sound decisions.
- Competence in investigation, analysis and logic to coordinate scientific research.
- Broad nanofabrication experience in terms of both process development and equipment troubleshooting/maintenance/repair.
- Experience with specifying, purchasing, installing, and qualifying a wide range of nanofabrication equipment (lithography, deposition, etch, metrology, inspection).

SPECIAL REQUIREMENTS:

- The work environment requires extensive safety training, wearing protective equipment, handling of chemicals and hazardous gases, and includes exposure to moving machinery and high noise levels.
- The position involves the use of tools requiring high dexterity and requires standing, bending, crouching, stooping, and occasionally lifting 25-50 lbs.

Review of applications will begin on July 1, 2020 and continue until the position is filled.