Research & Development Engineer 2 (4757C) - NanoLab
University of California, Berkeley

Job Title	Research & Development Engineer 2 (4757C) - NanoLab
Department	
Institution	University of California, Berkeley Berkeley, California
Date Posted	Feb. 18, 2025
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Professional Staff Professional Staff
Academic Field(s)	Research/Technical/Laboratory Research/Technical/Laboratory
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Job Description

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About Berkeley

At the University of California, Berkeley, we are dedicated to fostering a community where everyone feels welcome and can thrive. Our culture of openness, freedom and belonging make it a special place for students, faculty and staff.

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As a world-leading institution, Berkeley is known for its academic and research excellence, public mission, diverse student body, and commitment to equity and social justice. Since our founding in 1868, we have driven innovation, creating global intellectual, economic and social value.

We are looking for applicants who reflect California's diversity and want to be part of an inclusive, equity-focused community that views education as a matter of social justice. Please consider whether your values align with our Guiding Values and Principles, Principles of Community, and Strategic Plan.

At UC Berkeley, we believe that learning is a fundamental part of working, and provide space for supportive colleague communities via numerous employee resource groups (staff organizations). Our goal is for everyone on the Berkeley campus to feel supported and equipped to realize their full potential. We actively support this by providing all of our full-time staff employees with at least 80 hours (10 days) of paid time per year to engage in professional development activities. Find out more about how you can grow your career at UC Berkeley.

Departmental Overview

The College of Engineering at UC Berkeley provides oversight support for this independently managed recharge operation - the Marvell Nanofabrication Laboratory (NanoLab). Semiconductor research facilities are among the most complex, costly, and technically demanding research facilities. The NanoLab is an interdisciplinary recharge facility whose primary goals are to foster research and education in the areas of semiconductor manufacturing, micro/nanofabrication techniques and interdisciplinary application of microfabrication. The laboratory is a unique 15,000 sq. ft. ultra-clean, particle-free facility that houses over 170 pieces of semiconductor process equipment which serve the research needs of more than 500 researchers, faculty and approved startups.

This position is integral for successful operations and involves professional engineering and engineering technician support as part of academic instructional lab and/or research projects and programs. Engineering activities include the design, construction, testing of experimental systems, operation of analytical systems, establishment of performance specifications, and documentation. Under minimal direction of the Research and Development Engineering Manager this position is responsible to provide professional engineering development and maintenance support of facilities and equipment in the NanoLab.

Application Review Date

The First Review Date for this job is: February 28, 2025 - Open Until Filled

Responsibilities

30% Equipment and Process Development:

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- Provide full range of professional engineering services to research projects; meet with research staff in the design and development phase. Meet with Principal Investigators and/or faculty and research personnel with administrative responsibility for the research program or teaching facility. Meet with graduate researchers and principal investigators to design equipment modifications to meet special semiconductor process needs or to resolve equipment issues.
- Site new equipment; modify and upgrade existing equipment and their ancillary systems. Upgrade tasks may include but are not limited to - determine project specifications and parameters. Prepare CAD and hand drawings and schematics as needed. Submit machine shop orders for the custom fabrication of assemblies and parts. Design, construct, assemble and test experimental equipment and systems. Assist in developing recipes. Use critical thinking to solve complex problems. Work in teams as required. Contribute designs to develop and improve tools and tool reliability.

30% Equipment Troubleshooting and Repair. Sample subsystems:

- Troubleshoot and repair electronics. This includes but is not limited to DC, RF, and microwave power supplies; matching networks, logic and control systems.
- Troubleshoot and repair mid-range, high, and ultra-high high vacuum systems. This includes but is not limited to pumping systems (cryopumps; ionpumps; turbo-molecular pumps; oil, perfluorinated ether and nitrogen cooled rotary vane pumps); associated valves, manifolds and control systems; gauging and pressure control systems. Calibrate and repair vacuum metrology. Detect and resolve vacuum leak issues.
- Troubleshoot and repair high-purity, inert, non-toxic, corrosive and toxic gas delivery systems. This includes but is not limited to temperature based mass flow controllers, pressure based gas flow controllers, pneumatic and manual valving, and all associated plumbing.
- Troubleshoot and repair temperature maintenance systems. This includes but is not limited to water, glycol, freon, and peltier based cooling systems; resistance, induction and, infrared heating systems; thermocouple, RTD, and optical pyrometer temperature measurement systems.
- For all subsystems troubleshoot and repair logic based control systems, low voltage cabling, calibrate components as required, recommend component upgrades.

15% Perform design, construction, assembly and testing of complex experimental equipment and instrument systems. Equipment Maintenance and Sustaining Operations Schedule and perform preventative maintenance. Maintain a spare parts inventory. Provide part numbers for purchase. Liaison with vendors for support services. Identify second source (non OEM) suppliers especially for legacy equipment. Network with similar academic laboratories for best practice recommendations.

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Support equipment operating systems and programmable logic controllers. Work as a team member with the NanoLab computer support staff as needed. Backup software and hard drives.

10% May provide engineering information and advice to Principal Investigators and / or other faculty and research personnel with administrative responsibility for the research program or teaching facility. Understand and use the Mercury database to mark equipment status, enable tools, enter comments and problem reports and add needed support documents. Writes annual report and additional reports as needed. Write, edit and revise equipment manuals, support documents, startup and shutdown procedures.

5%Gather, analyze, prepare and summarize annual and semi-annual reports. Assist in the development of, and follow standard operating procedures and best known methods for safety and to prevent injuries. Practice and comply with safe working practices to assure personal safety and safety to the lab environment for colleagues and researchers. Understand and work within guidelines to protect the environment.

5% Provide direction, guidance and training to less experienced engineers, staff and students. Offer instruction and training in support of staff development and equipment, support, and repair.

5%May implement related business processes.
Required Qualifications

- Thorough knowledge necessary to apply principles, practices and procedures in the completion of assignments.
- Demonstrated organizational and decision-making abilities to prioritize competing work assignments in order to meet deadlines and adherence to quality standards.
- Strong analytical and judgment skills to independently conduct analyses and develop appropriate recommendations.
- Effective written and verbal communication and presentation skills.
- Ability to work in a collaborative manner; identify challenges and barriers and recommend resolutions.
- Ability to lead and influence others.
- Ability to make appropriate recommendations to improve equipment and laboratory operations.
- Ability to work alone (or in a team) to identify issues, recommend solutions, solve problems and produce results.
- Ability to meet deadlines and adhere to high standards of reliability, quality and cleanliness.
- Effective computer use, writing skills and the ability to verbally communicate with colleagues, researchers and vendors.

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- A.A.S, E.E.T. or Bachelor's degree in science or engineering, or equivalent industrial experience and a proven track record of semiconductor equipment support and facilities engineering.
- Experience in the repair, modification, trouble shooting and support of DC, RF, microwave, high-voltage and other electronic circuits.
- PC/logic control experience.
- Experience with mechanical systems and robotics as pertains to wafer transport and handling.
- A working understanding of high vacuum components, pumps, systems, vacuum gauging, leak detection and vacuum science.
- Experience with high-purity gas delivery, gas manifolds, mass flow controllers and gas control mechanism.
- Experience with thin film deposition equipment via physical vapor deposition (PVD), chemical vapor deposition (PECVD and LPCVD), atomic layer deposition (ALD).
- Familiarity with thin films etching via gas phase plasma processing (RIE, DRIE, pulsed gas DRIE).

Salary & Benefits

For information on the comprehensive benefits package offered by the University, please visit the University of California's Compensation & Benefits website.

Under California law, the University of California, Berkeley is required to provide a reasonable estimate of the compensation range for this role and should not offer a salary outside of the range posted in this job announcement. This range takes into account the wide range of factors that are considered in making compensation decisions including but not limited to experience, skills, knowledge, abilities, education, licensure and certifications, analysis of internal equity, and other business and organizational needs. It is not typical for an individual to be offered a salary at or near the top of the range for a position. Salary offers are determined based on final candidate qualifications and experience.

The budgeted salary or hourly range that the University reasonably expects to pay for this position is $80,400 to $112,900 yearly ($6,700.00 to $9,408.34 monthly). This is a 100% FTE career position eligible for full benefits. This position is FLSA Exempt and paid monthly.

Conviction History Background

This is a designated position requiring fingerprinting and a background check due to the nature of the job responsibilities. Berkeley does hire people with conviction histories and reviews information received in the context of the job responsibilities. The University reserves the right to make employment contingent upon successful completion of the background check.

Misconduct Disclosure

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As a condition of employment, the final candidate who accepts a conditional offer of employment will be required to disclose if they have been subject to any final administrative or judicial decisions within the last seven years determining that they committed any misconduct; received notice of any allegations or are currently the subject of any administrative or disciplinary proceedings involving misconduct; have left a position after receiving notice of allegations or while under investigation in an administrative or disciplinary proceeding involving misconduct; or have filed an appeal of a finding of misconduct with a previous employer.

"Misconduct" means any violation of the policies or laws governing conduct at the applicant's previous place of employment, including, but not limited to, violations of policies or laws prohibiting sexual harassment, sexual assault, or other forms of harassment, discrimination, dishonesty, or unethical conduct, as defined by the employer. For reference, below are UC's policies addressing some forms of misconduct:

UC Sexual Violence and Sexual Harassment Policy
UC Anti-Discrimination Policy
Abusive Conduct in the Workplace

Equal Employment Opportunity

The University of California is an Equal Opportunity/Affirmative Action Employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability, or protected veteran status. For more information about your rights as an applicant, please see the U.S. Equal Employment Opportunity Commission poster.

The University of California's Affirmative Action policy.

The University of California's Anti-Discrimination policy.

To apply, visit
https://careerspub.universityofcalifornia.edu/psc/ucb/EMPLOYEE/HRMS/c/HRS_HRAM_FL.HRS_CG_S

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Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact

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University of California, Berkeley
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