

# MODERN ELECTRON

## R&D SCIENTIST – ELECTRON BEAM

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A highly-qualified scientist is needed to work on the product R&D team, and will be responsible for innovation, testing, and production of vacuum microelectronics & nanoelectronic devices using the company's cutting edge technology and processes. Particular focus will be on designing, simulating, and testing nanoscale and microscale vacuum electronic components and electron beam systems.

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Modern Electron is a start-up company dedicated to generating cheap, modular, and reliable electricity for all. Expensive mechanical engines and turbines based on 19th-century technology still generate the majority of the power used worldwide. We seek to replace them with paper thin heat-to-electricity generators. >\$10MM venture capital is committed to our vision. We have enormous potential for learning, impact, and growth in a small and collaborative team setting. We value our ability to move fast to outpace larger companies and achieve what they cannot.

### ESSENTIAL SKILLS, KNOWLEDGE, AND ABILITIES:

- Experience setting up complex physical measurements for nanoelectronics or microelectronics and interpreting data.
- Deep understanding of the physics of low energy charged particle systems (electron beam and/or ion beam optics) and electron/solid interactions.
- Experience operating and physical understanding of low energy charged particle beam systems, such as diffraction, imaging, and/or spectroscopy systems (e.g. low energy electron diffraction (LEED), low energy ion scattering (LEIS), Auger electron spectroscopy, helium ion microscope, low-energy electron microscopy (LEEM), photoemission electron microscopy (PEEM/PEM), work function measurements, etc.)
- Extensive expertise and experience with design, purchase, assembly, and integration of high vacuum and ultra-high vacuum equipment, and improvements/maintenance of these systems
- Basic programming for data acquisition for scientific instrumentation (LabView, Matlab, etc.) and/or data analysis and visualization (Matlab, Python, etc.)

### DESIRED SKILLS & EXPERIENCE:

- Experience with commercial vacuum electronic devices, e.g. field emission tips, klystrons, gyrotrons, traveling wave tubes and/or photocathodes
- Experience with R&D in field emission and thermionic emission
- Experience with R&D in thermionic energy conversion
- Experience with low work function and/or cathode materials (e.g. Cs, Ba, LaB6, CeB6, impregnated tungsten, scandate, multi-alkali, etc.)

- Familiarity with MEMS/NEMS, nano- or microfabrication, and/or other nano-/microelectronics

**MINIMUM QUALIFICATIONS:**

- Ph.D. or equivalent in Physics, Electrical Engineering, Applied Physics, Physical Chemistry, or related field. Demonstrated experience setting up complex physical measurements and interpreting data.

We are an equal opportunity employer