

## **Modern Electron is looking for Materials Engineer – Low Work Function**

We are a start up in Seattle dedicated to generating cheap, distributed, and reliable electricity for all. Expensive mechanical engines and turbines based on 19th-century technology are still used to generate >80% of today's electricity worldwide. Modern Electron seeks to revolutionize the industry with direct heat-to-electricity generators. >\$10 MM venture capital is committed to our vision. We do novel work at the intersection of nanofabrication, material science, thermal engineering, and vacuum science.

Visit us at <http://modernelectron.com/join-us/> to find out more.

A highly qualified materials engineer is needed to work on the product R&D team, and will be responsible for innovation and production of vacuum electronic devices using the company's groundbreaking technology and processes. Particular focus will be on integrating nanoscale device architectures with low workfunction materials.

Modern Electron has an immediate opening for a materials engineer. A highly qualified materials engineer is needed to work on the product R&D team, and will be responsible for innovation and production of vacuum electronic devices using the company's groundbreaking technology and processes. Particular focus will be on integrating nanoscale device architectures with low workfunction materials. You will work with a team of physicists, chemists, material scientists, electrical engineers, and technicians. This position will report to the CTO.

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. Venture capital funding is committed to our vision. We're at the early stage of commercialization, with 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 with thermionic cathodes, e.g. tungsten cathodes, oxide-coated cathodes, dispenser cathodes, lanthanum or cesium hexaboride cathodes
- Experience and knowledge with the surface chemistry, materials preparation, and physics of low work function and/or cathode materials (e.g. Cs, Ba, LaB<sub>6</sub>, CeB<sub>6</sub>, impregnated tungsten, scandate, multi-alkali, 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
- Programming skills for control systems and data acquisition systems for scientific instrumentation (LabView, Matlab)

### **DESIRED SKILLS AND 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 wafer scale vacuum encapsulation of MEMS/NEMS and other nano-/microelectronics

**MINIMUM QUALIFICATIONS:**

- B.S. in Physics, Electrical Engineering, Chemistry, Materials Science, or related field. Demonstrated experience with vacuum electronics.

**PREFERRED QUALIFICATIONS:**

- At least 6 years of post-bachelor (Ph.D. + work) experience with vacuum electronics and low work function materials.

We are an equal opportunity employer