

## **Modern Electron is looking for Materials Engineer – High Temperature**

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.

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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. Venture capital funding is committed to our vision. We are in 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:**

- Hands-on experience with high temperature (>900°C) materials intended to maintain mechanical integrity under extreme temperatures and temperature gradients.
- Experience with high temperature (>900°C) material corrosion and high temperature material compatibility with various environments (e.g. gas mixtures, vacuum, etc.)
- Experience with methods to join metal-to-metal & metal-to-ceramic at >900°C, e.g. brazing.
- Experience and understanding of various material welding techniques that can withstand high temperatures (>900°C) and thermal stresses.
- Experience with material characterization and engineering qualification methods for ceramics, refractory alloys and environmental barrier coatings.
- Experience with ultra-high temperature coatings.
- FEA modeling and implementing practical solutions for thermal & mechanical stress reduction.
- Hands-on expertise fabricating prototypes for test machining, CNC, welding, brazing, soldering, forming, etc.

### **DESIRED SKILLS, KNOWLEDGE & ABILITIES**

- Subject matter expertise in metallurgical sciences, and corrosion and adhesion performance of metal substrates and coatings in high temperature environments.

- Experience designing, prototyping, and testing hermetically sealed vacuum packages for vacuum electronics, accelerometers, high temperature sensors, NEMS/MEMS, integrated circuits (IC), 3D ICs, and/or other devices.
- Experience with high temperature (>700°C) devices such as hot cathode vacuum electronics, solid oxide fuel cells (SOFCs), high temperature capacitors, rocket engines, gas turbines, and/or high temperature sensors (e.g. accelerometers).
- Experience with high temperature (>700°C) heat engines such as thermophotovoltaic generators, thermionic converters, or thermoelectric generators.
- Expertise in process integration, yield improvement, design for manufacturability, and design for reliability.
- Background in high temperature coatings, and experience with material selection for operation in extreme conditions (e.g. combustors and turbines)

**MINIMUM QUALIFICATIONS:**

- B.S. in Mechanical Engineering, Material Science, Metallurgy, Applied Physics, Electrical Engineering or related field.**AND**
- At least 10 years of experience in high temperature materials applications, material integration under extreme temperature conditions, high temperature coatings and/or packaging and encapsulation of vacuum electronics.

We are an equal opportunity employer