

## MOCVD Film-deposition machine designer

Start on/after: April 30, 2021

For full consideration, apply by: March 30, 2021.

If a potentially good or excellent match, we will contact you within 1 week from applying.

Renaissance Fusion is radically reinventing High Temperature Superconducting (HTS) magnets. Its innovations will cost-effectively generate strong, high-precision magnetic fields in large volumes, as needed for magnetic confinement fusion (especially stellarators and tokamaks), medical imaging (Magnetic Resonance Imaging), mobility (the HyperLoop) and other applications. We are forming a team of the brightest, most driven scientists and engineers to bring these HTS magnets to the market in 3 years and bring fusion energy to the grid in 11 years.

We are henceforth looking for a talented engineer to work with the scientists holding the world-record for highest critical current-densities. The applicant will spur our in-house HTS manufacturing by designing Metal Organic Chemical Vapor Deposition (MOCVD) machines and processes capable of producing these high-performing films. Experience in film-deposition is key, but not necessarily for HTS films, and we welcome applications from the semiconductor community and other film-deposition industries.

Our team is young, agile, international and based in the exciting city of Grenoble, by the French Alps.

### **Responsibilities:**

- Individual research responsibilities
  - Design custom-made MOCVD machine for HTS film deposition.
  - Design other devices, e.g. for electropolishing, ion beam assisted deposition (IBAD), sputtering, etc.
  - Integrate all devices in an assembly line.
- Responsibilities as a team member
  - Work closely with Computational Fluid Dynamics (CFD), Finite Element Analysis (FEA) and other modelers, for instance to predict the uniformity of the flow and the thermal uniformity of the susceptor/heater/substrate.
  - Collaborate with physicists to translate the desired physical properties of the HTS film into MOCVD design features. Iteratively optimize parts of the MOCVD machine, based on measured film properties.
  - Collaborate with material scientists on material selection.
  - Collaborate with the external manufacturer and guide the custom-making of the machine according to Renaissance Fusion's needs.

### **Qualifications -essential:**

- 1 or more years of professional experience in designing, building and testing film-deposition machines.
- 1 or more years of professional experience in operating film-deposition machines.
- Master's degree in engineering, applied physics or related field (or Bachelor's degree + 2 years of professional experience).
- Outstanding GPA
- 1 or more years of professional experience using ANSYS, COMSOL or other Finite Element Analysis (FEA) software, or other numerical modeling of scientific or industrial relevance.
- Good written and oral communication skills.
- Ability to understand and clearly, concisely explain complicated technical concepts.
- Organizational and problem-solving skills, attention to detail and willingness to learn.
- Ability to work independently as well as in a team.

**Qualifications -desirable:**

- Research and/or manufacturing experience in HTS film deposition and/or superconductivity.
- 2 or more years of coding experience in Python, Matlab or other programming language.