

## Senior Characterization Engineer – Stability

Here at Rayleigh Solar Tech Inc. Our mission is to be the lowest-cost provider of clean electrons to drastically increase access to renewable energy and enable the green technology transition. Our company is united by our commitment to change the planet for the better. We push the boundaries of what's possible, our passion for deep tech to solve hard engineering problems, our insatiable curiosity that forces us to ask questions, and our relentless drive for excellence in everything we touch.

### Summary:

Are you an expert in advanced characterization techniques with a passion for improving the stability of perovskite solar cells? Join our team as a **Senior Characterization Engineer**, where you will lead efforts to analyze and understand degradation mechanisms, extract key performance parameters, and optimize stability through data-driven insights. Your expertise will be instrumental in guiding material selection, device architecture, and process improvements to enhance long-term reliability. If you thrive at the intersection of hands-on experimentation, data analysis, and strategic problem-solving, we'd love to have you on board!

### Responsibilities:

- Lead the development and application of advanced characterization methodologies to investigate perovskite solar cell stability, extract critical degradation metrics, and provide insights for material and device optimization.
- Design and execute stability studies under accelerated aging conditions (e.g., damp heat, light soaking, light cycling) to assess perovskite degradation pathways.
- Utilize a range of electrical, optical, and structural characterization techniques (e.g., JV, MPPT, impedance spectroscopy, TPV, TPC, EQE, XRD, EL, PL, TRPL) to monitor device evolution over time.
- Identify and quantify dominant degradation mechanisms, such as ion migration, phase segregation, interfacial instability, etc.
- Correlate stability data with material and process variations to provide actionable insights for improved device robustness.
- Develop and implement SOPs for reliability testing and data collection.

- Work with modeling engineer to correlate experimental stability data with theoretical predictions of perovskite degradation pathways. Provide experimental characterization data for validation and refinement of computational models.
- Work closely with material scientists and device engineers to translate characterization findings into stability-driven material and process optimizations.
- Mentor junior engineers and contribute to internal knowledge-sharing on best practices in stability characterization.
- Stability Assessment Accuracy – Correlation between characterization insights and real-world device performance.
- Failure Mode Identification – Number of degradation pathways identified and mitigated.
- Impact on Stability Improvements – % increase in operational lifetime based on characterization-driven optimizations.
- Efficiency of Characterization Workflows – Reduction in time required for stability assessments while maintaining data quality.
- Collaboration & Knowledge Transfer – Effectiveness of reports, experimental guidance, and mentorship provided.

#### **Core Competencies:**

- **Critical Problem-Solving:** Ability to identify the right questions and engage the right people at the right time.
- **Curiosity & Inventiveness:** Strong desire to innovate and drive new solutions to complex challenges.
- **Execution & Follow-Through:** Commitment to delivering results and empowering others to do the same.
- **Structured Approach:** Ability to bring order and clarity to complex tasks through methodical processes, mentorship, and documentation.
- **Teamwork:** Proven ability to work effectively across cross-functional teams, including product design, quality, production, supply chain, and external vendors.

#### **Qualifications:**

- 5+ years of experience in advanced characterization techniques applied to optoelectronic or photovoltaic devices.

- Bachelor's degree in an engineering discipline or similar technical field with 5+ years of relevant experience in the solar industry, OR
  - Master's degree with 2+ years of relevant experience OR
  - Ph.D. directly related to stability testing of solar cells and modules.
- Strong background in perovskite, organic, or thin-film photovoltaics with emphasis on stability and degradation analysis.
- Deep expertise in stability testing methodologies for perovskite solar cells.
- Proficiency in characterization techniques such as JV, MPPT, impedance spectroscopy, EQE, XRD, PL, TRPL, and SEM.
- Experience designing and executing accelerated aging tests for long-term reliability assessments.
- Strong data analysis skills using Python, MATLAB, or similar tools for processing large datasets and identifying trends.
- Familiarity with statistical modeling, machine learning, or AI-driven approaches for predictive stability analysis.
- Proven track record of extracting and interpreting key degradation mechanisms to improve device stability.

### **Diversity & Inclusion**

At Rayleigh, we know that diversity makes a strong team. We encourage all qualified applicants to apply for this position and we will never discriminate against race, ethnicity, gender identity, gender expression, sexual orientation, disability, religion, marital status or family status. Instead, we work to celebrate the things that make us unique and create an inclusive environment for all employees.

Don't meet all the requirements outlined above but still find yourself excited about this position and Rayleigh's mission? If you believe that you have the skills and experience to excel in this role, we would love to see your application!

### **To apply**

Submit your resume and cover letter in one PDF file to [careers@rayleighsolartech.com](mailto:careers@rayleighsolartech.com). We are unable to accept applications in any other document format.