

SWIR QD Device Engineer Intern

Company: AilumiQ INC.

Location: Taipei City, Taiwan (Room 1007, NTU Excellence Research Building, No. 18, Siyuan Rd., Zhongzheng Dist.)

Employment Type: Internship (Full-time or Part-time; minimum 3 days/week, duration: 3–6 months)

About AilumiQ

AilumiQ is an innovative Deep-Tech startup dedicated to revolutionizing the production of advanced materials, with a strong focus on next-generation Quantum Dot (QD) technologies. We are building an AI-driven automated platform to achieve unprecedented precision, efficiency, and scalability in material synthesis. Our mission is to break through the limits of conventional manufacturing methods and unlock the full potential of quantum dots across various cutting-edge applications. Join our dynamic team and help shape the future of advanced materials!

Job Overview

We are looking for a passionate and driven **SWIR QD Device Engineer Intern** to support the development, fabrication, and characterization of high-performance optoelectronic devices based on synthesized lead sulfide quantum dots (PbS QDs). In this role, you will work closely with senior engineers in cleanroom and glovebox environments, gaining hands-on experience in transforming frontier material science into real-world Short-Wave Infrared (SWIR) photodetector devices.

Key Responsibilities

- **Device Fabrication Support:** Assist in executing wet-chemistry thin-film deposition techniques (such as spin-coating and doctor-blading) for multilayer PbS QD active layers and transport layers inside inert-gas gloveboxes.
- **Process Optimization:** Support the execution and refinement of device fabrication workflows, including ligand exchange, annealing processes, solvent selection, and electrode deposition (e.g., thermal evaporation, sputtering).
- **Optoelectronic Characterization:** Conduct daily electrical and optical measurements of completed devices, including I-V curve analysis, External Quantum Efficiency (EQE), spectral response, and responsivity measurements.
- **Material & Film Analysis:** Help analyze thin-film properties using advanced analytical tools (e.g., AFM/SEM, XRD/TEM, UV-Vis-NIR absorption/photoluminescence spectroscopy) to evaluate the relationship between material quality and device performance.
- **Failure Analysis Support:** Assist senior engineers in systematic troubleshooting and failure analysis to identify performance bottlenecks in device architectures and fabrication processes.
- **Documentation & Reporting:** Maintain meticulous records of experimental data and

process parameters, and present progress updates during technical team meetings.

- **Cross-Functional Collaboration:** Work closely with the QD Synthesis and AI/Automation teams to test new material batches and provide device-level feedback.

Qualifications & Preferred Skills

- **Academic Background:** Currently enrolled student (Undergraduate, Master's, or Ph.D.) in Materials Science, Electrical Engineering, Physics, Chemistry, Chemical Engineering, or a related field.
- **Laboratory Experience:** Hands-on lab experience or academic project work in thin-film optoelectronic devices (e.g., QLEDs, solar cells, photodetectors) is highly preferred.
- **Core Knowledge:** Foundational understanding of semiconductor physics, colloidal quantum dots (specifically PbS QDs), surface ligands, and thin-film processes.
- **Environment Adaptability:** Willingness or prior experience working with air/moisture-sensitive materials inside inert-gas gloveboxes.
- **Data Analysis:** Experience with data analysis and plotting tools such as Python (NumPy, SciPy), MATLAB, Excel, or Origin.

Benefits & Perks

- Flexible working hours to accommodate academic schedules.
- Unlimited snack bar and coffee station.
- Open-plan office environment and regular team dinners/social events.
- Priority consideration for full-time employment opportunities upon graduation based on performance.
- Annual external training budget to support continuous skill development.

How to Apply

Please send your CV/Resume along with a cover letter detailing relevant coursework or laboratory project experience to hire@ailumiq.com.