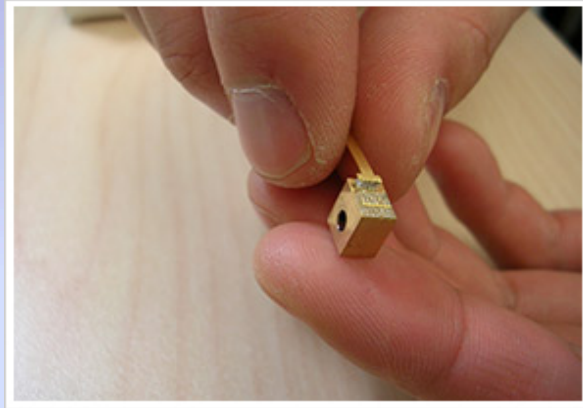




Instrumentation for Durability and Longevity Testing of InGaAs/InAlAs Quantum Cascade Lasers



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Goal

To create an automated and isolated system to test the reliability of Quantum Cascade Lasers (QCLs)

Use the results of tests performed by the setup to help with the engineering of future QCLs

Why?

Most QCLs grown are only studied in a short period of time. They are needed only to see how they can be better engineered to make QCLs more optimal. This takes at most a few hours or days.

Durability testing is needed

- ❖ “Burn-in” effect
- ❖ Long term effects to temperature and current
- ❖ Overheating
- ❖ Power failures





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Setup:

Thermoelectric cooler, temperature controller, power supplies, laser with mount, power meter + more

Methodology:

The setup needed severe modifications-

Problems:

- ❖ Condensation on TE-cooler
- ❖ Overheating of system
- ❖ Overheating of laser
- ❖ Contact between laser and rest of setup



How did I solve these problems?
What does the end result contain?

Testing results – How durable can QCLs be and what affects them the most?

Visit my poster for more details!

