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Characterization Of Quantum Cascade Lasers On Silicon

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Leonardo DRS
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Lasers: Compact

Widely Tailorable

Light Sources from 3

to 300 μm The History

of Quantum Cascade

Lasers: 20 Years of

Research at the

Center for Quantum

Devices ESE

319-Quantum

Cascade Lasers

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Lasers: From Lab

Curiosity to Tools (Or
How to Convert Ideas
into Products) What is

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CASCADE LASER?

What does

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mean? QUANTUM

CASCADE LASER

meaning Quantum

Cascade Laser Oct 8

Science Sunday -

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Lasers Federico

Capasso on the

quantum cascade

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THz Gap with

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Lasers Simulation of a

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Laser How lasers work (in theory)

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CONFINEMENT AND

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LASERS How Lasers Work - A Complete Guide laser principle

How a Laser Works

Kumar Patel on the development of the CO₂ laser
Terahertz Camera - Live See-through imaging

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~~Quantum Cascade Lasers
Measurement of Casimir Forces
Federico Capasso~~

Quantum Materials |
QuTech Academy

TeraSense terahertz
imaging camera Part 3
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Lasers: Compact
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to 300 μm Quantum
Well Laser Quantum
cascade laser 3rd
year project Quantum
Cascade Laser
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Leonardo DRS and
Daylight Solutions -
Quantum Cascade
Laser Technology
Plasma Etching for~~

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Fabrication of Low
Dissipation Single
Mode Quantum
Cascade Lasers
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Vacuum viewport for
Quantum Cascade
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Characterization Of
Quantum Cascade
Lasers

Quantum cascade
lasers are
semiconductor lasers

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Quantum Cascade Lasers On Silicon
that emit in the mid- to far-infrared portion of the electromagnetic spectrum and were first demonstrated by Jerome Faist, Federico Capasso, Deborah Sivco, Carlo Sirtori, Albert Hutchinson, and Alfred Cho at Bell Laboratories in 1994. Unlike typical interband

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semiconductor lasers that emit electromagnetic radiation through the recombination of electron-hole pairs across the material band gap, QCLs are unipolar and laser emission is achieved

...

Quantum cascade laser - Wikipedia

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Characterization of
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Lasers on Silicon
Daniel Leon-Gijon

Electrical Engineer

Mentors: Alexander

Spott & Robert Zhang

Faculty Advisor:

Professor John E.

Bowers

Characterization of
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Lasers on Silicon

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Based on this characterization system, the characteristics of gas source MBE grown InAlAs/InGaAs/InP quantum cascade lasers, especially their thermal property, have been evaluated. The results show that in the combination of $I-P$, $I-V$ and spectral measurements at

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various driving pulse parameters, the thermal resistance, lasing conditions as well as spectral character of the devices could be deduced.

Characterization of
InAlAs/InGaAs/InP
mid-infrared quantum

...

PDF | Quantum

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cascade lasers are coherent light sources that rely on intrasubband transition in periodic semiconductor quantum well structures. They... | Find, read and cite all the research you ...

(PDF) Thermal characterization of quantum cascade

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Quantum Cascade Lasers (QCLs) are capable of reaching Watt level output power at room temperature, cw operation but are limited to the spectral region of above 3.5 microns. Recently, Shterengas et al fabricated type-I quantum well cascade

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Quantum Well Cascade Lasers On Silicon
diodes that emit below 3 microns with output power near 590 mW and improved conversion efficiency compared to single-stage type-I diodes.

Characterization of new type-I quantum well cascade lasers
Characterization of mid-infrared quantum

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Quantum Cascade Lasers . By

David Patrick

Burghoff.Quantum

cascade lasers

provide some of the highest output powers available for light in the mid-infrared range (from 3 to 8 μm). As many of their applications require portability, designs that have a high wall-plug efficiency are

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essential, and were ...

Cascade Lasers

Characterization of
mid-infrared quantum
cascade lasers -

CORE

Because of the lack of
light source in the mid-
infrared range

(wavelengths of 3-30

μm), the mid-infrared

quantum cascade

lasers with high

quality radiation are

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playing important roles in several research fields such as chemical and biochemical spectroscopy, free space gas sensing and communication.

Characterization and Theoretical Study of Mid-infrared ...

The growth and characterization of

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Quantum cascade (QC) lasers based on InGaAs/InAlAs material system are investigated.

Pronounced intersubband absorption from stacked active region of QC structure is used to monitor the wavelength of QC laser and disclose the material quality.

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Growth and characterization of InGaAs/InAlAs quantum ...

Characterization of InAlAs/InGaAs/InP mid-infrared quantum cascade lasers.

Zhang YG(1), Nan KJ, Li AZ. Author

information: (1)State Key Laboratory of Functional Materials

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for Informatics,
Shanghai Institute of
Microsystem and
Information

Technology, Chinese
Academy of Sciences,
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Characterization of
InAlAs/InGaAs/InP
mid-infrared quantum

...

External cavity

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Quantum cascade lasers (ECQCLs) provide a versatile infrared laser source for spectroscopy of molecules. Recent work in our laboratory has demonstrated rapid swept-wavelength tuning for broadband spectroscopy and sensing in both point and standoff

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measurements.

2703227. M.

Characterization of high-explosive detonations using ... Secondary ion mass spectrometry is applied to the depth profiling of the superlattice active region of lattice matched ($0.92 \mu\text{m}$) Al_{0.48}In_{0.52}As/In

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0.53 Ga 0.47 As/InP quantum cascade lasers. The developed measurement procedure is capable of characterizing the quality of each individual layer in the superlattice region, including layers as thin as 0.7 nm.

Characterization of the superlattice region

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of a quantum ...

The experimental part reports the whole process of the mid-infrared quantum cascade lasers completed at the University of Waterloo. In summary, the design, optimization, fabrication and characterization of the mid-infrared quantum

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Quantum Cascade Lasers is
verified and improved.
en: dc.language.iso:
en: en: dc.publisher:
University of
Waterloo: en: dc ...

Characterization and
Theoretical Study of
Mid-infrared ...

In quantum cascade
lasers, the
wavelength, entirely
determined by

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Quantum confinement, can be tailored from the mid-infrared to the submillimeter wave region in the same heterostructure material....

Characterization of InAlAs/InGaAs/InP mid-infrared quantum ...

The growth and characterization of

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Quantum cascade (QC) lasers based on InGaAs/InAlAs material system are investigated. Pronounced intersubband absorption from stacked active region of QC structure is used to monitor the wavelength of QC laser and disclose the material quality.

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Growth and characterization of InGaAs/InAlAs quantum ...

We have studied the current- and temperature-driven frequency tunability of quantum cascade lasers operating at 2.5 THz. The design of the active medium follows the so-called

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bound-to-continuum approach. One laser has a Fabry-Perot type resonator. It operates on several modes simultaneously. The other has a distributed feedback structure on top of the active medium which leads to single mode ...

Spectral

Page 34/40

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Characterization of terahertz quantum cascade ...

We report the time resolved characterization of Fabry-Perot quantum cascade lasers (FP-QCLs). We are developing a custom-built broadband laser source in the Mid-LWIR range by combining several

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high power FP-QCLs for a single snapshot application. This white light source would enable not only stand-off detection applications in a single snapshot but also new data collection modalities such as ...

Time resolved
characterization of

Read Book Characterization Of

Fabry-Perot quantum

Cascade Lasers

characterization of

QCLs provides a

mode for comparing

different device

designs, packaging

geometries and con-

tributes to increasing

reliability and

performance of QC

lasers. This paper

describes the

development of the

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Instrumentation for accurate and fast evaluation of thermal characteristics of semiconductor lasers based on thermoreflectance

CCD thermoreflectance spectroscopy as a tool for thermal ...
In this paper, the frequency

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Characteristics of a terahertz quantum-cascade laser (QCL) operating around 2.5-THz in the pulsed regime have been studied by means of a heterodyne detection by using an optically pumped molecular laser as the local oscillator. The absolute frequency of the QCL can be

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determined with an accuracy of 1 MHz due to the pulse-to-pulse jitter of the QCL.

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