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In an external cavity (EC) quantum cascade laser, the quantum cascade device serves as the laser gain medium. One, or both, of the waveguide facets has an anti-reflection coating that defeats the optical cavity action of the cleaved facets. Mirrors are then arranged in a configuration external to the QC device to create the optical cavity.

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Based on a quantum cascade laser (QCL) emitting mid-infrared light, the researchers developed a basic optical neuron system operating 10,000 × faster than biological neurons. Their report is...

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~~Quantum cascade lasers (QCLs) exhibit extreme pulses~~

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Applications

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Quantum cascade lasers (QCLs) are semiconductor lasers 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 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 ...

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A Quantum Cascade Laser (QCL) is a type of semiconductor laser that emits light in the mid- to far-infrared portion of the electromagnetic spectrum. Quantum cascade lasers offer many benefits: They are tunable across the mid-infrared spectrum from 5.5 to 11.0 μm (900 cm^{-1} to 1800 cm^{-1}); provide a rapid response time; and provide spectral brightness that is significantly brighter than even a ...

~~Terahertz Quantum Cascade Laser~~
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Frequency combs are widely-used, high-precision tools for measuring and detecting different frequencies — a.k.a. colors — of light. Unlike conventional lasers, which emit a

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single frequency, these lasers emit multiple frequencies in lockstep, evenly spaced to resemble the teeth of a comb. We study in particular quantum cascade laser frequency combs operating in a strategic region of the electromagnetic spectrum - the mid-infrared - which allows to detect molecular fingerprints of plenty ...

~~Frequency combs, quantum cascade lasers, and RF photonics ...~~

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A strain-balanced, AlInAs/InGaAs/InP quantum cascade laser structure, designed for light emission at 4.0 μm using nonresonant extraction design approach, was grown by molecular beam epitaxy. Laser devices were processed in buried heterostructure geometry. An air-cooled laser system incorporating a 10-mm \times 11.5- μm laser with antireflection-coated front facet and high-reflection-coated back

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tiny chip-embedded semiconductor
laser devices, were first invented in
2002, but adapting them to operate
far above 200 K proved to be so
difficult that many ...

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Quantum cascade lasers (QCLs) are a
type of semiconductor laser which
utilizes epitaxially grown quantum
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states. They were first demonstrated in 1994 by the Bell Labs Team of Jérôme Faist, Federico Capasso, Deborah, Sivco, Carlo Sirtori, Albert Hutchinson, and Alfred Cho [1].

~~Quantum Cascade Laser Technology (QCLs) | QCL Chips ...~~

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sources overcome this problem by offering higher signal intensities. In particular, the difference-frequency method is a powerful way to...

Applications

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Quantum cascade lasers (QCLs) are based on a fundamentally different principle to 'classic' semiconductor lasers, that is, they use only one type of charge carriers, electrons, using intersubband transitions, so they can be called unipolar lasers. QCLs were conceived in the early 1970s.

~~An Overview on Quantum Cascade Lasers: Origins and ...~~

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