



1

1 Quantum cascade lasers facilitate infrared spectroscopy of liquids, e. g. in process analytics.

© Hoda Bogdan – Fotolia.com

2 Compact quantum cascade laser modules of the Fraunhofer IAF can be customized to address various applications.

© Fraunhofer IAF



2

EXTERNAL CAVITY QUANTUM CASCADE LASERS

The quantum cascade lasers developed at Fraunhofer IAF cover a wavelength range from 4 – 11 μm and offer a broad spectral tuning range. Therefore they open completely new ways for infrared spectroscopy: from stand-off detection of explosives to time-dependent measurements of chemical reactions in aqueous solutions, the quantum cascade lasers offer a wide range of applications.

Fraunhofer Institute for Applied Solid State Physics IAF

Tullastrasse 72
79108 Freiburg, Germany

Contact

Dr. Ralf Ostendorf
(Business Unit Semiconductor Laser)

Phone +49 761 5159-638
ralf.ostendorf@iaf.fraunhofer.de

www.iaf.fraunhofer.de

Features

- Wavelength range from 4 – 11 μm
- Spectrally broad tuneable ($\geq 30\%$ of central wavelength)
- Typical output power 50 – 100 mW
- Linewidth $< 2\text{ cm}^{-1}$ (pulsed)
- Compact, robust modules
- Collimated output beam

Applications

- Detection of hazardous substances
- Infrared spectroscopy of liquids
- Continuous measurements in in- and online process control
- Food safety control
- Medical applications
- Environmental analysis