



mirSense
laser is smart

Increasingly Important Role for Mid-Infrared Photonics (February 3rd 2021)

M. CARRAS

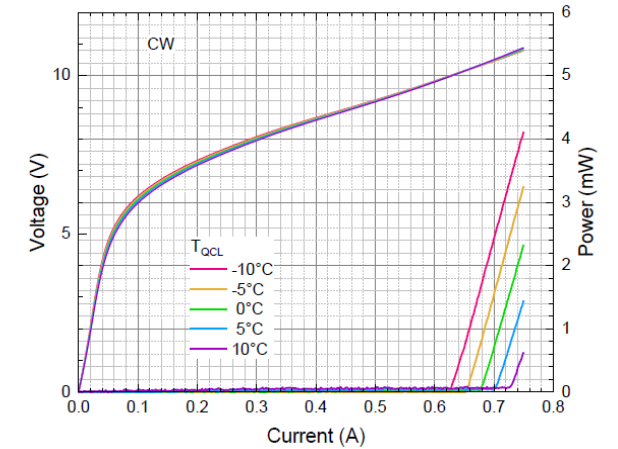
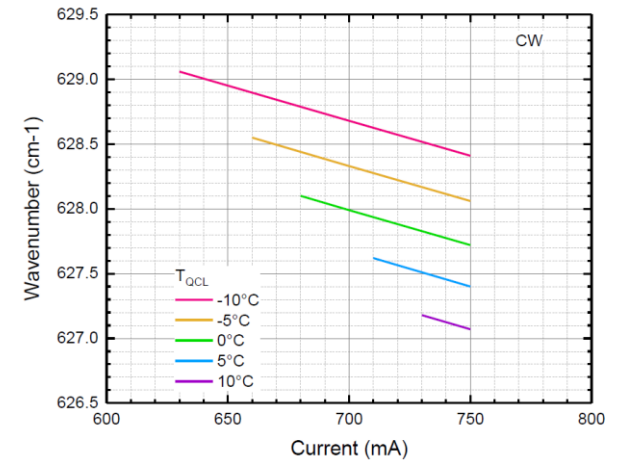
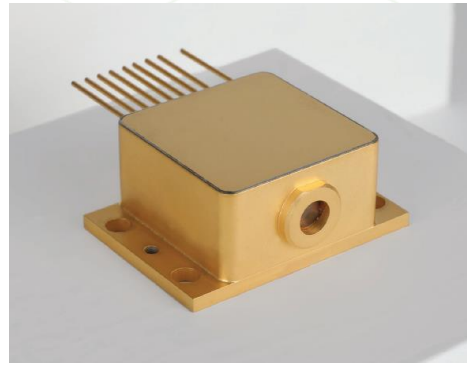
mirSense product line

QCL products

- High power lasers (powerMir™)
- DFB Lasers (uniMir™)

QCL based Gaz sensors

- Gaz analyser multiSense™
- Sensor mirChip™



DFB CW QCL laser

Laser type	QCL single mode DFB
Mode of operation	CW
Typical Optical Power at 628 cm ⁻¹	2 mW (with the base plate of the HHL-package at +20°C)
Full accessible wavelength range	627 - 629 cm ⁻¹
Continuous tuning range	> 0.5 cm ⁻¹
Side mode suppression ratio	SMSR > 25 dB
Linewidth (FWHM)	< 100 Mhz (free-running with suitable electronics)
Divergence	< 10mrad
Beam quality	TM00
Output beam diameter (window output)	Typically 4 mm
Polarization	Linear vertically polarized

- 10 to 17 μm CW
- 10 to 25 μm QCW/pulsed

POWERMIR

by mirSense

QCW QCL

Maximum Average Optical Power levels available

> 1W

Mode of operation

QCW

Central wavelength^(b)

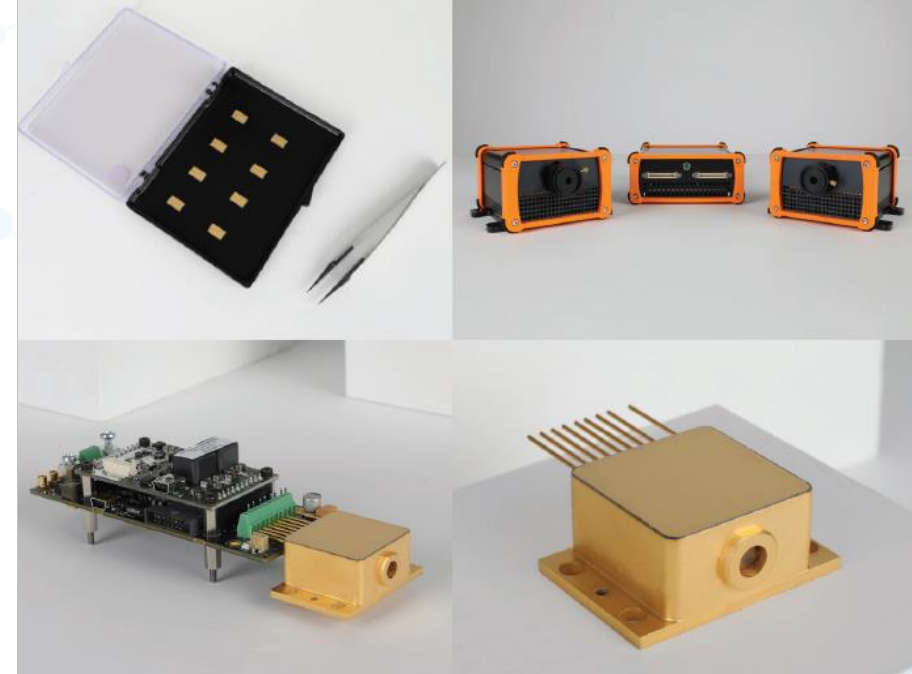
4 μ m, 4,6 μ m 9 μ m

Pulse frequency

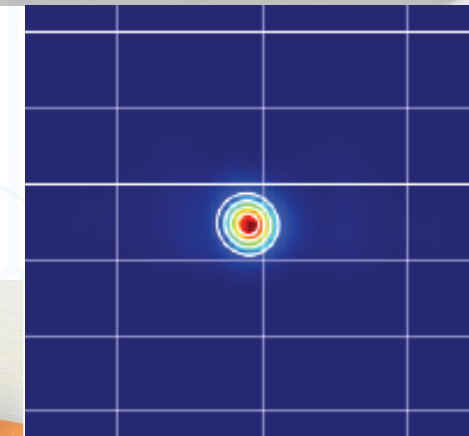
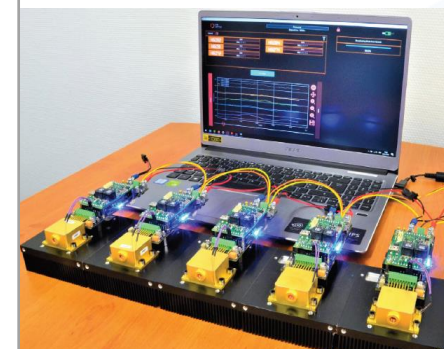
>1Mhz

Divergence for the lasers with standard beam

2x3mRad or
2.5mRad circular



Circular beam technology



QCL combination

MULTISENSE

by mirSense

Applications :

- Industrial processes (natural gas, biogas, gas purity, various gas streams...)
- Air (Leak detection, air quality...)
- Emissions (DeNO_x, Flue gas treatment, CEM's)

Technical Features

User Benefits

Trace analysis (down to ppm/ppb)
High precision (< 2 %)

Process optimization

Response time in seconds

Real time monitoring

Multiple lasers

Multigas sensor (2)

Low cell volume (1 ml)

Low extraction flow (<80 ml / min)
Reduced pumping, reduced environmental impact

No moving parts, no optics

Compact and robust sensor for industrial use

Bloc conception

Easy integration, operation, maintenance

Proprietary software (self-diagnostic, alarms)

Plug and play, user friendly interface, high reliability

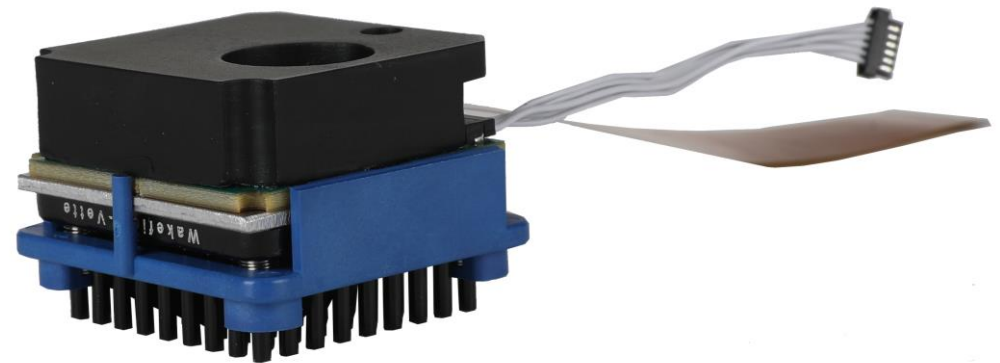
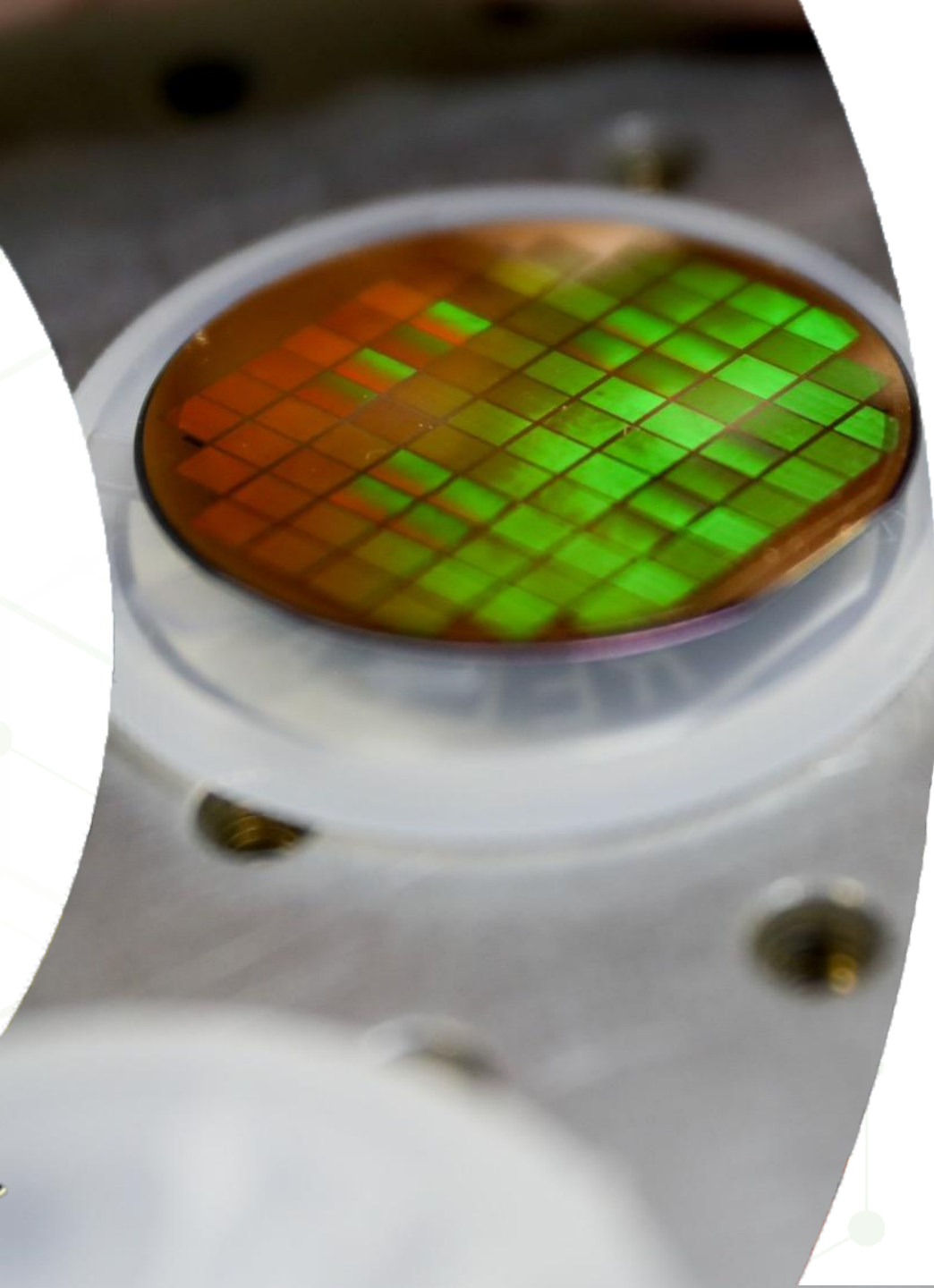
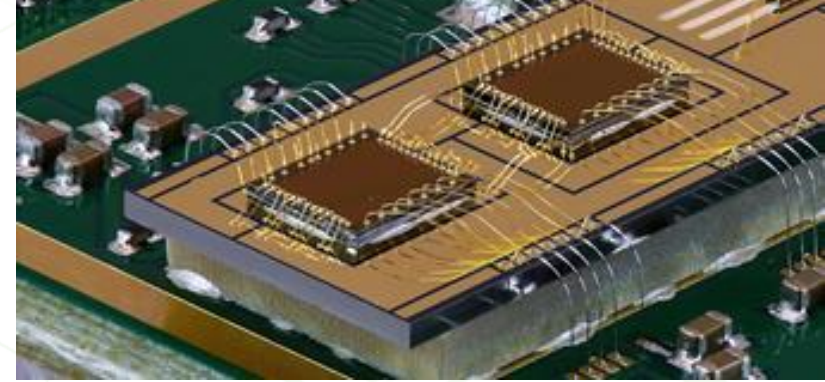
Miniaturized components, no consumables

Cost effective analyser (low CAPEX and OPEX),
fast return on investment



mirChips

QCL solution for large markets





mirSense
laser is smart