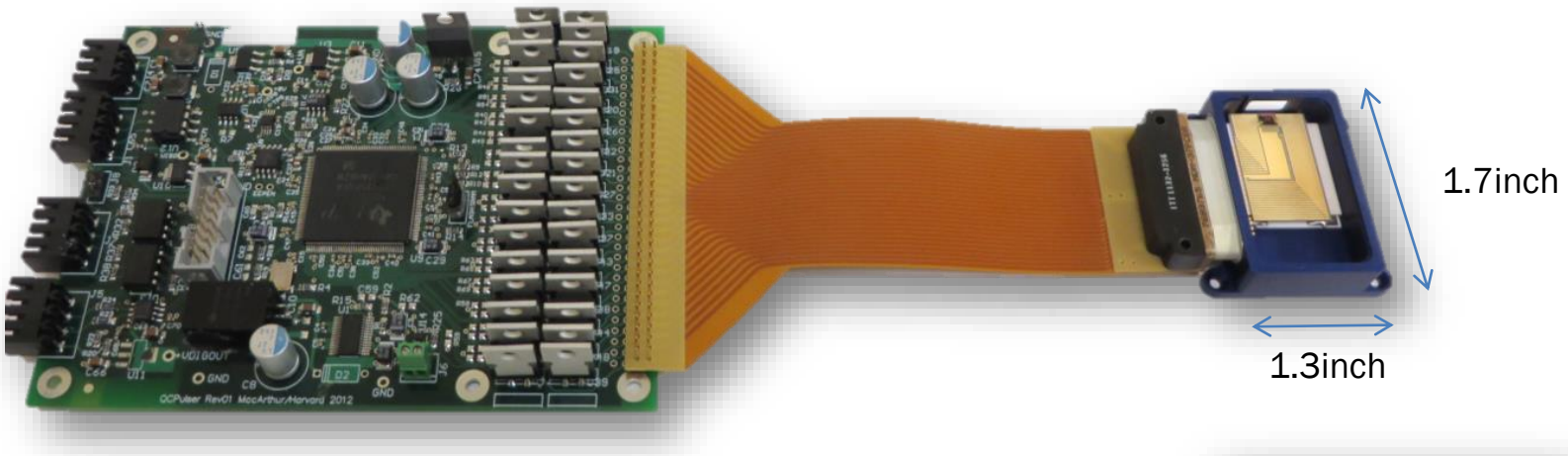
EOS PHOTONICS

Compact and Rugged Setups

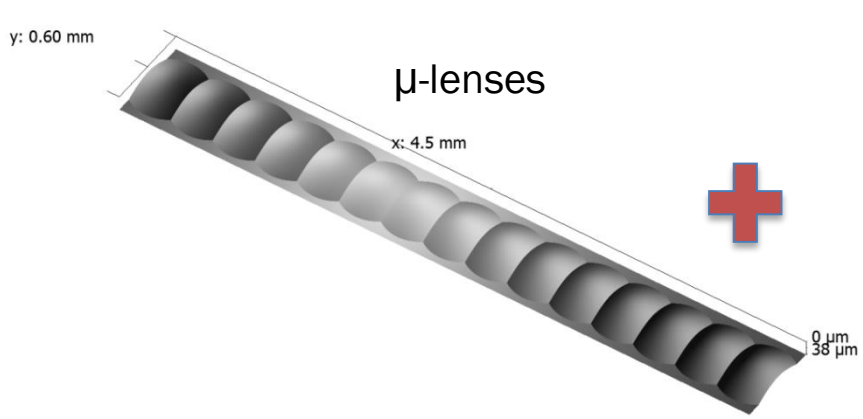


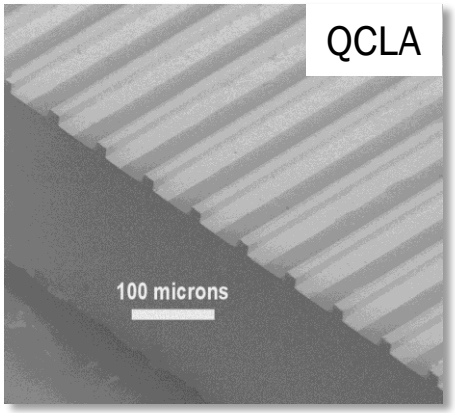
- Packaged 100 cm^{-1} arrays available from Eos (200cm^{-1} coming soon).
- QCL pulser and software for high speed DAQ/fitting also available for easy integration.

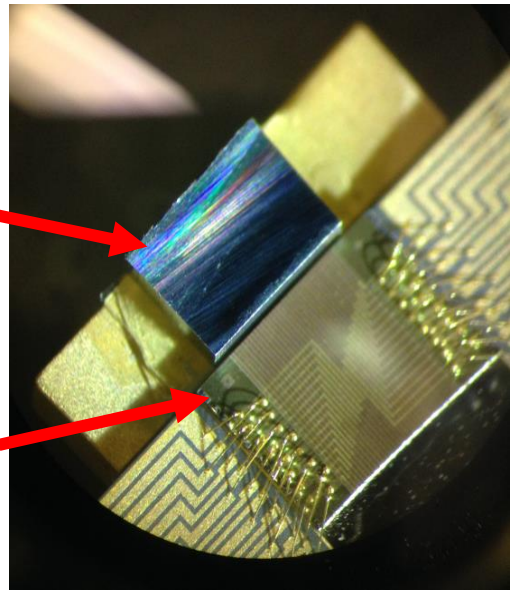
The Matchbox 100: Detailed Specs

Tuning Range	1000 cm^{-1} Between 100 – 1250 cm^{-1}
Laser	32 Laser Array >= 27 Unique functioning lasers including full documentation of each laser's performance.
Operation	Pulsed
Thermal	No Additional cooling if ambient < 30 °C
Optical	
Power	25 mW Peak power (Up to 5 mW Avg.)
Variability	< 0.1% Power variability Per Pulse
Linewidth	DFB Lasers; Typ. < 1 MHz depending on pulser characteristics
Polarization	Linear 100:1, vertical direction
Collimation	Built in microlens array
Beam Quality	TEM_{00} for Each Laser
Divergence	5° Typ. Divergence Fast Axis, 8° Slow Axis (with microlenses)
Electrical	
Pulse Width	Variable from 40 – 400 ns with supplied electronics. Full Characterization performed at 300 ns unless requested
Repetition	1-100 kHz per laser
Triggering	Internal, SMA trigger out to User
Interface	
Power	+ 28 VDC , <1 Amp (Supplies both pulser and TEC controller)
Computer	USB 2.0 Connection from any computer to the pulser (Type A to Type A termination on cable)
User Control	User controls pulse duration, duty cycle, tuning range

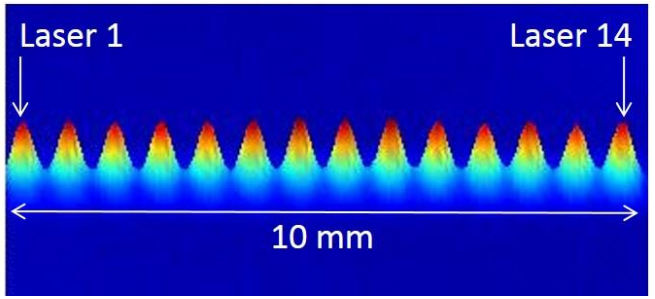
Matchbox 100: Integrated Microlenses





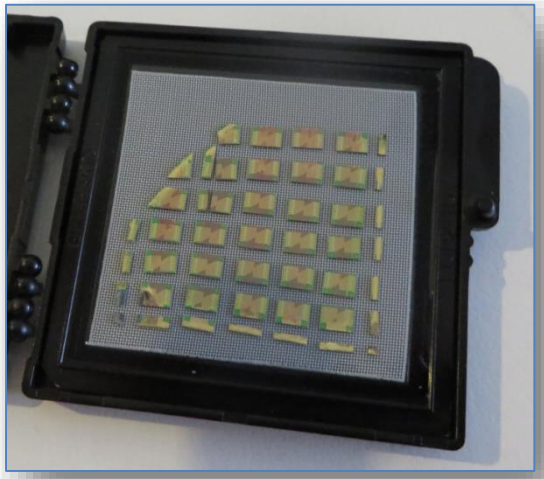


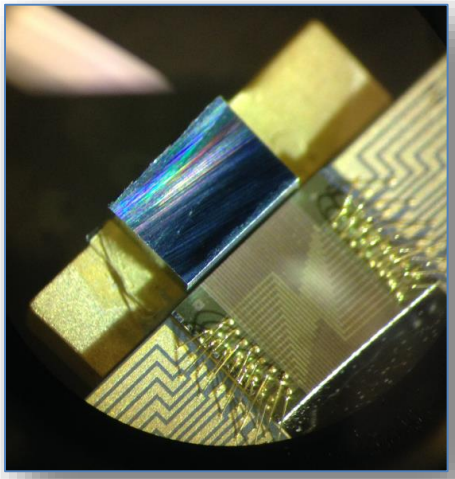
Quality Farfield Image



Eos's AR coated microlens arrays maximize performance and ease integration of QCLAs

Eos' DFB Arrays: Key Features

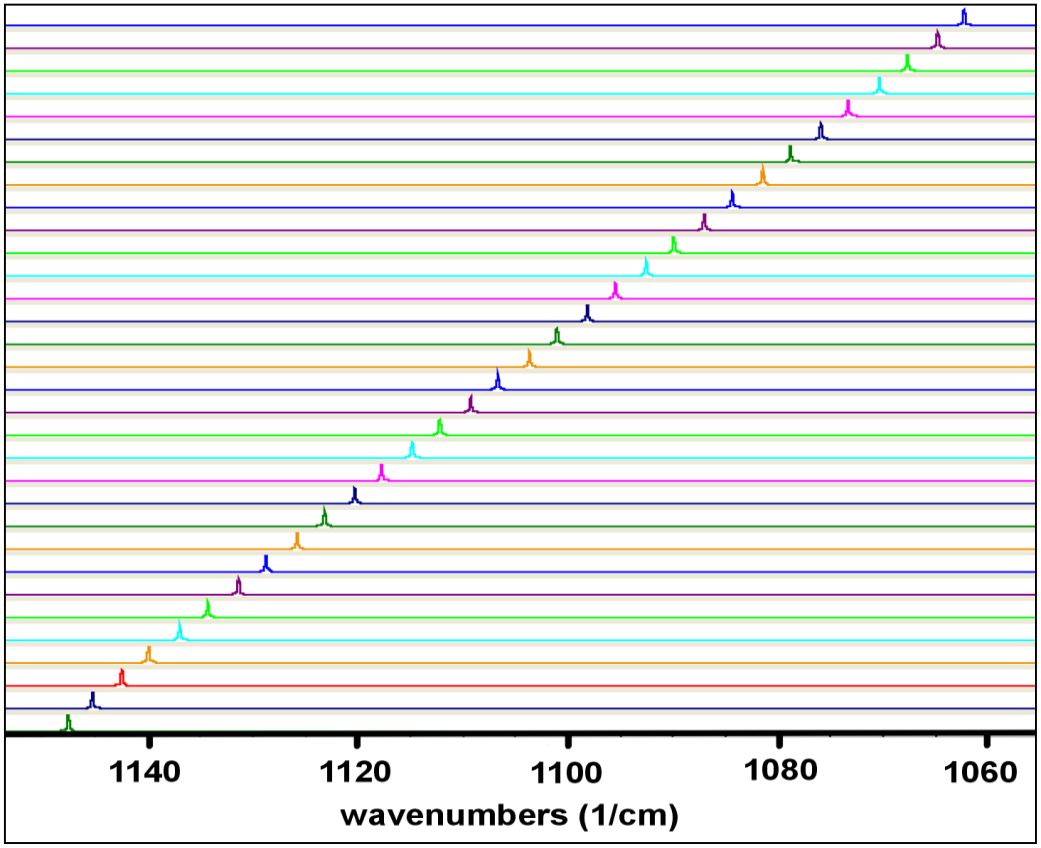




- **Ruggedness**: Eos's QCL Arrays have **no moving parts**

  → insert readily in portable and handheld systems
- **Tuning:** Shot-to-shot amplitude and wavelength variability below 0.1%; great operational flexibility: laser can be fired in any order
- **Speed**: Less than 1 ms for 100 cm^{-1} scan (> 1kHz), up to 100 kHz depending on mode of operation
- **Power Scaling:** Array technology is most straightforward means to increase mid-IR power on target
- **Price**: Cost-effective scalable manufacturing using the same facilities and platforms that are used for telecom lasers and many other commercial products

Array Applications: Spectroscopy



- Condensed Matter: Broad Absorption Features
  → Discrete Tuning Sufficient
- Gas Spectroscopy: Continuous tuning required
  - DC Bias Current / TEC Tuning
  - Intrapulse Spectroscopy