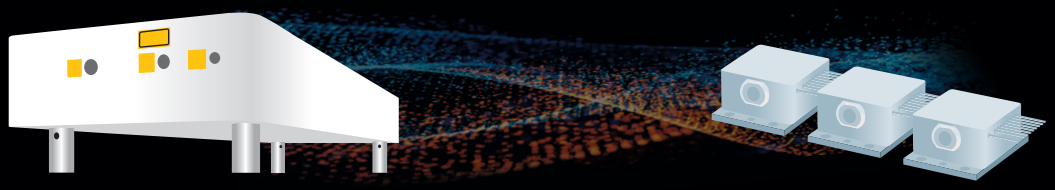
Chromacity™

Comparison Matrix



		Chromacity Mid-IR OPO	Quantum Cascade Laser Technology
Wavelength	✓	**Tunable between 4.5 - 12 µm, High power per nm**	Discrete wavelength with limited tunability per QCL module - Low power per nm
Maximum average power		100 mW 5 - 7 µm , 20 mW 12 µm	Typically 1 - 100 mW (pulsed)
Maximum peak power	✓	**100 - 500 W***	Max 30 W
Pulse duration	✓	**Quasi-CW, typically 2 - 5 ps**	CW or down to 20 ns
Repetition frequency	✓	**100 MHz available**	Normally CW, up to 1 MHz with correct drivers or modulators
Beam parameter (M^2)	✓	**<1.3****	Typically <1.5
Bandwidth	✓	**Broad bandwidth**	Narrow spectral linewidth
Installation	✓	**Minimal set-up required and remote installation capability available**	Requires integration into a stack with temperature control and optics
Cooling system	✓	**Air cooling**	Typically peltier/water cooling, cryogenic for terahertz applications
Complexity	✓	**Full wavelength coverage achieved with a single laser line**	Several modules coupled together and complex optical alignment required to achieve multiple wavelength coverage

✓ Superior Performance

* Based on 2 ps pulse duration and 100 MHz repetition frequency

** Approximation subject to revision with datasheet updates

Discover More

chromacitylasers.com/ultrafast-lasers/chromacity-opo/

QCL technologies have been used for stand-off detection measurements of water vapor, methane, nitrous oxide, and hydrogen peroxide. However, QCLs provide only a narrow linewidth, which limits their capability when it comes to the detection of multiple species. For spectroscopy applications that require high brightness and broad tunability, researchers often turn to optical parametric oscillators (OPOs), which are tunable over large wavelength ranges.