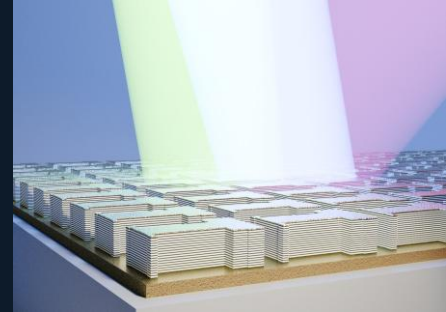


Thelioz 1.0

Continuously tunable CW terahertz source



2–15 THz

Frequency Range

$\geq 100 \mu\text{W}$

CW output
at peak of tuning curve

$< 100 \text{ MHz}$

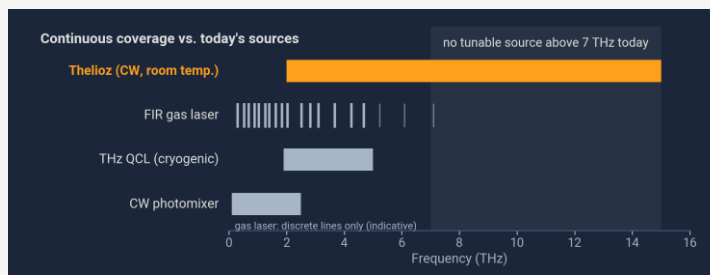
Linewidth

Class 1M

Laser Safety Classification

Product Overview

- The first tunable table-top source for 2–15 THz.** One instrument covers what used to take a gas laser, a QCL and a photomixer together, with no gap in between.
- Dial any frequency and read your signal.** Software-commanded tuning and full automation mean that you can set up a full-band sweep and acquire data without constant supervision.
- Room temperature and Class 1M.** No cryostat, no laser gas, no realignment ritual: just switch on and measure.
- Born from a Nature Photonics breakthrough.** Our patented metasurface source brings the 7–15 THz window, until now reserved for synchrotrons and free-electron lasers, to your bench.
- Made for your optics.** Linearly polarized Gaussian beam, built-in modulation with lock-in reference, Python API.



Why Thelioz Outperforms

- Versus FIR gas lasers:** fixed lines, gas changes and a CO_2 pump give way to gapless 2–15 THz tuning in a sealed benchtop unit.
- Versus THz QCLs:** four times the frequency span without the need for cryogenics.
- Versus CW photomixers:** Thelioz delivers μW -class power up to 15 THz compared to a frequency ceiling of 2–3 THz.
- Versus synchrotron and FEL beamtime:** no proposal cycle, no travel; continuous 7–15 THz coverage on your own optical table whenever you need it.
- Only Thelioz** tunes continuously through 7–15 THz. No other table-top source does.

Applications

- 2D-material photocurrent spectroscopy
- THz detector characterization
- High-resolution gas spectroscopy

Specifications

Optical output	Specification
Frequency range	2–15 THz, continuous
Guaranteed tuning window	$\geq 5 \text{ THz}$, configurable
Peak output power (CW)	$\geq 50 \mu\text{W}$ ($\geq 100 \mu\text{W}$ option, $300 \mu\text{W}$ typical)
Residual pump radiation	better than -30 dB
Linewidth (FWHM)	$\leq 100 \text{ MHz}$ (10 MHz demonstrated)
Polarization	linear
Tuning and stability	
Frequency step size	$\leq 30 \text{ GHz}$
Settling time, any frequency	$\leq 1 \text{ s}$
Absolute frequency accuracy	$\pm 3 \text{ GHz}$
Power stability, 12 h	$\leq 5 \%$
Beam and interfaces	
Beam profile	$M^2 \leq 1.2$
Beam diameter / divergence	$\leq 18 \text{ mm} / \leq 10 \text{ mrad}$, configurable
Modulation and sync	Electronic power modulation, lock-in ref., trigger, optical modulation optional
Control	Python API, GUI
Operation and physical	
Operation mode	CW or pulsed (100 Hz – 1 MHz)
Laser safety class	4 / 1M (IEC 60825-1) optional
Footprint / weight	$\leq 0.8 \times 1 \text{ m}$, $\leq 60 \text{ kg}$
Supply / cooling	230 V, $\leq 2.5 \text{ kW}$; chiller included

Options

- High-power output** up to $100 \mu\text{W}$ within the tuning window
- Point-source output** and custom beam waists for tight focusing
- Absolute frequency reference** and calibrated attenuator
- Pulsed mode, external MIR pumps**
- Custom optics and specification upon request**

Scope of Delivery

Included: source head, controller, closed-loop chiller, dry-gas purge unit, Python API and GUI, calibration certificate, on-site installation and training.

Warranty and service: 12 months; annual service contract and remote diagnostics available.

- THz-EPR and magneto-spectroscopy
- Near-field / s-SNOM illumination
- Heterodyne local oscillator

Request a Quote or a Letter of Support

Grant applicants: budgetary quote for your cost plan, letter of support and a delivery schedule aligned to your project timeline.

Feasibility first: record a first scan on your own samples on our system in Garching before you commit.



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Book a 30-min call

cal.eu/felix.rauh/30min