

EPIC Members New Product Release October
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Compact Narrow-Linewidth Swept Source Laser for the C-Band
#ChilasCOMET

Dimitri Geskus
CTO at Chilas B.V.

Characteristics of Hybrid integrated external cavity laser

3 main characteristics of hybrid integrated external cavity lasers:

High output powers

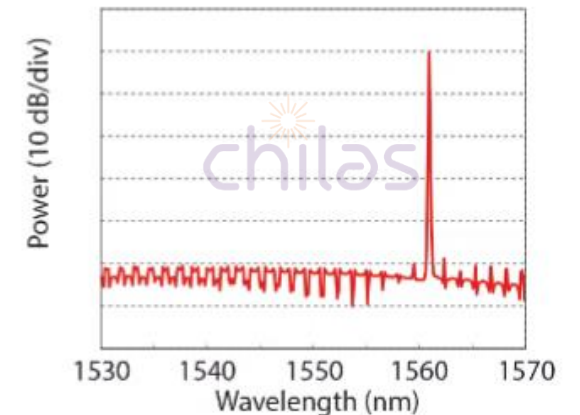
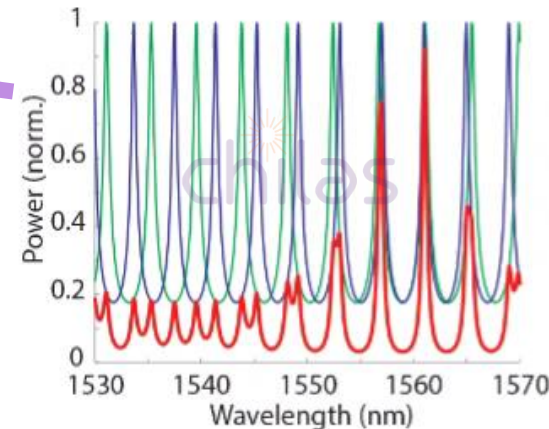
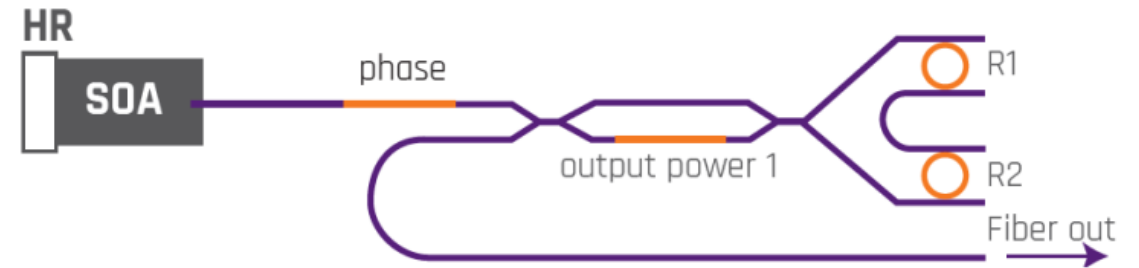
Provided by the InP semiconductor optical amplifier (SOA) gain medium

Ultra narrow linewidth

Thanks to low loss Si_3N_4 waveguide circuit as external cavity.

Broad tuning of the wavelength

Due to two coupled micro-ring resonators (MRRs) with slightly different FSR in the cavity exploiting the Vernier effect.

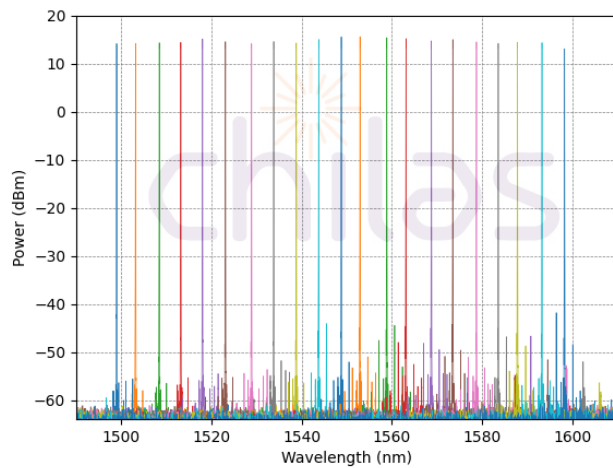


Chilas Featured Products

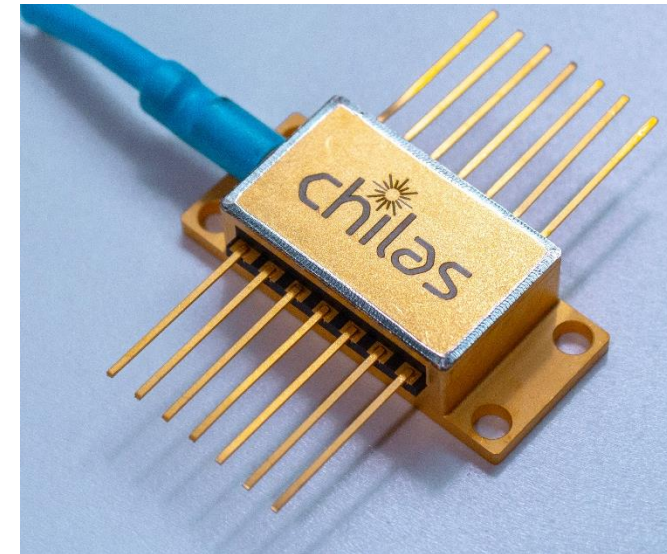
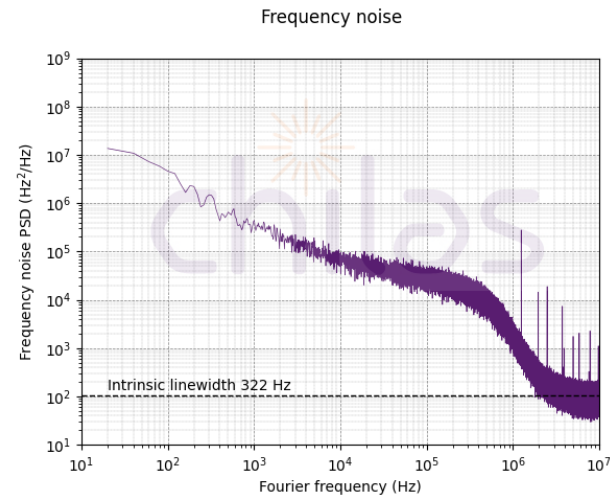
	Chilas Fixed 1550nm	CT3 100nm	Chilas COMET Swept source
Wavelength	Anywhere in C-band +/- 10pm	1490nm – 1590nm	Full C-band (40nm/s)
Power	> 13 dBm	> 13 dBm	> 13 dBm
Linewidth	< 5 kHz	< 5 kHz	< 5 kHz



CT3 100nm spectrum



Ultra Narrow Linewidth



Chilas COMET: Compact Swept Source Laser



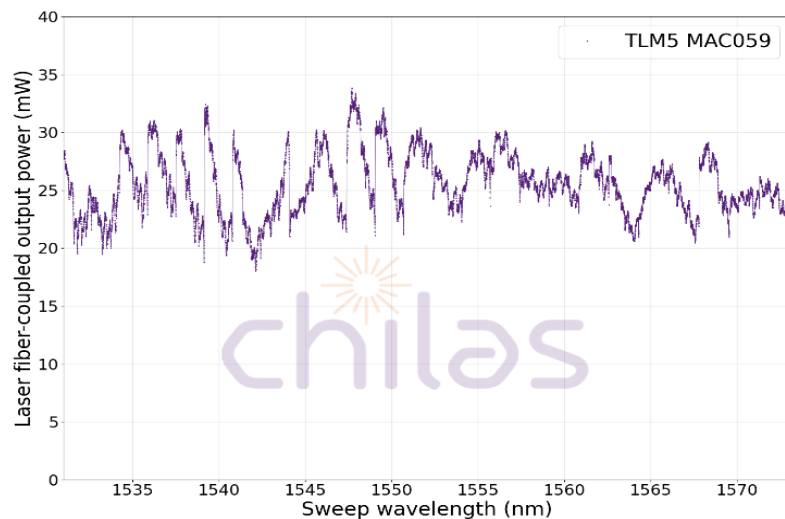
Parameter	Specification
Wavelength range	C-band (1528-1568 nm)
Wavelength grid	4 pm
Intrinsic linewidth	< 5 kHz
Fiber Output Power	≥ 13 dBm
Swiping speed	40 nm/s
Package	100*60*20 mm
Fiber type	PM FC/APC

Chilas COMET: Compact Swept Source Laser



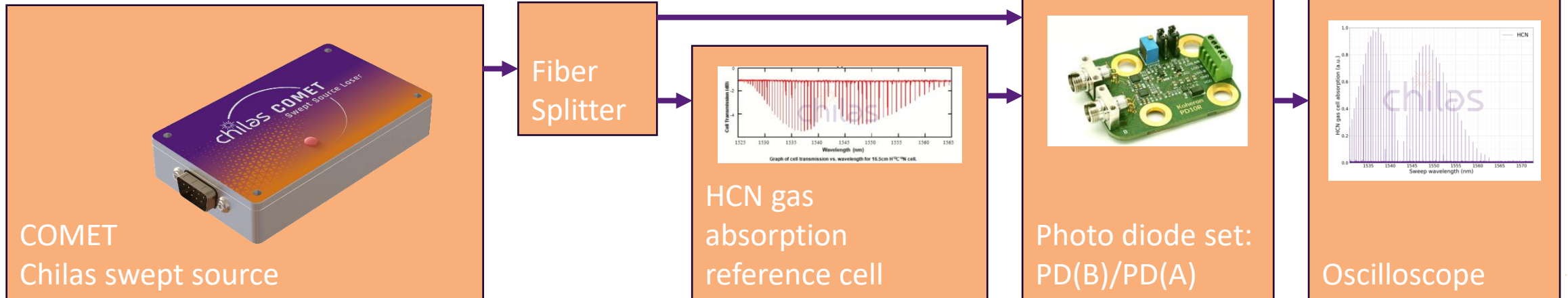
No mechanical tuning elements:

1. Giving **instantaneous range reset** and no delay between end and start of scan: resulting in a nearly **100% duty cycle**
2. **High reproducibility** from scan to scan
3. Compact and robust chip-based form factor: **ready for high volume applications**
4. Easily tailored to **drive nearly any application**



Performance demonstration: scan of HCN gas absorption reference cell

- Demonstration Setup: detecting the absorption peaks
- Laser scans continuous over the C-band
- Measurement done using a set of photo diodes and an oscilloscope



Demo HCN absorption cel (C-band)

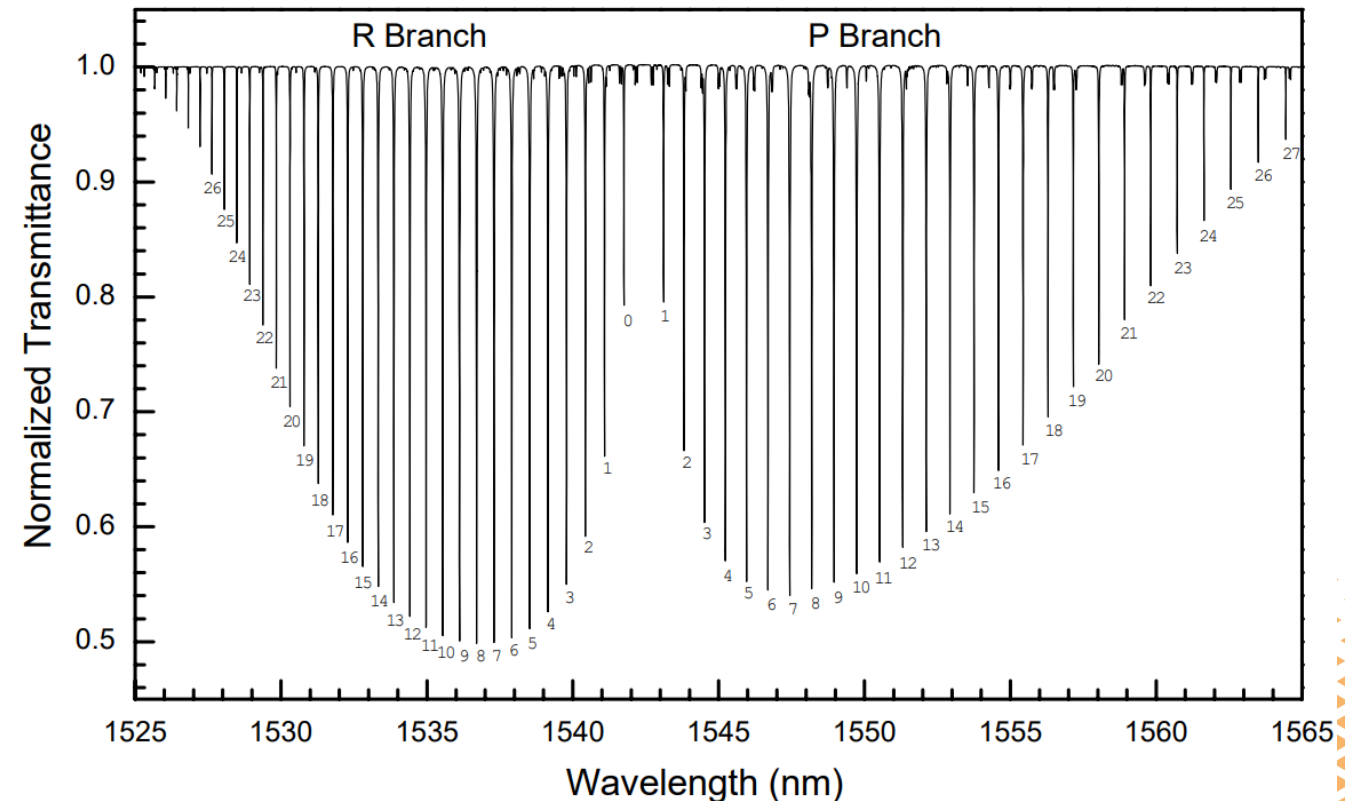
- All absorption lines resolved in a single second.

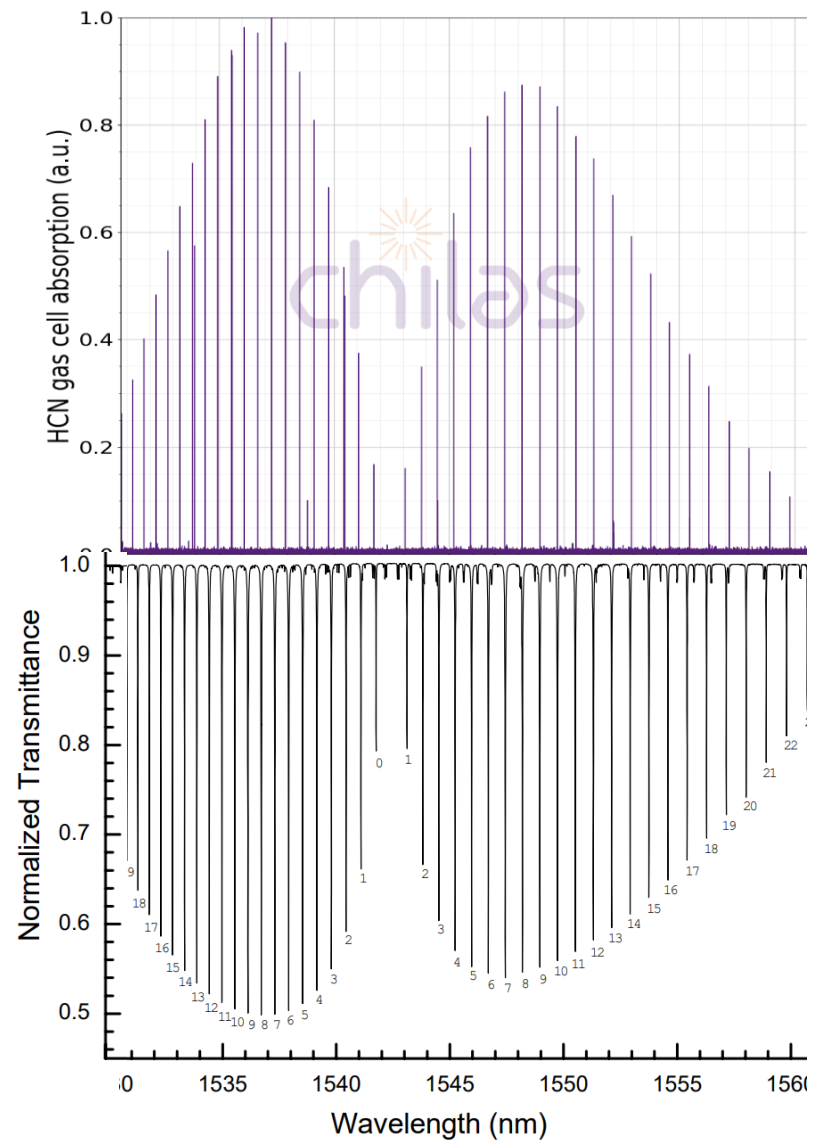
Measured absorption spectrum of an HCN gas cell using the Chilas COMET laser



Expected absorption spectrum of HCN gas cell.

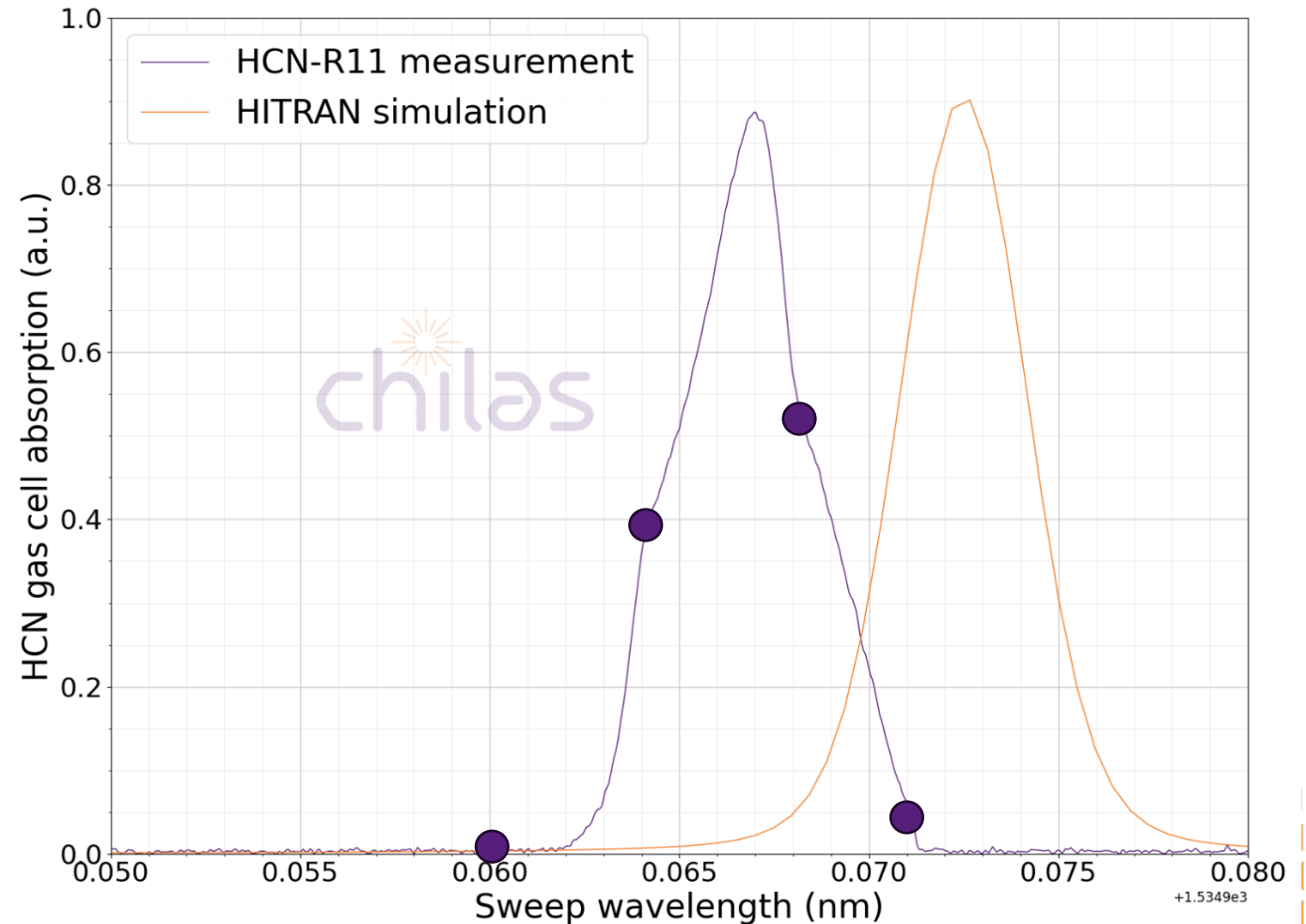
Source: www.nist.gov/system/files/documents/srm/SP260-137.pdf





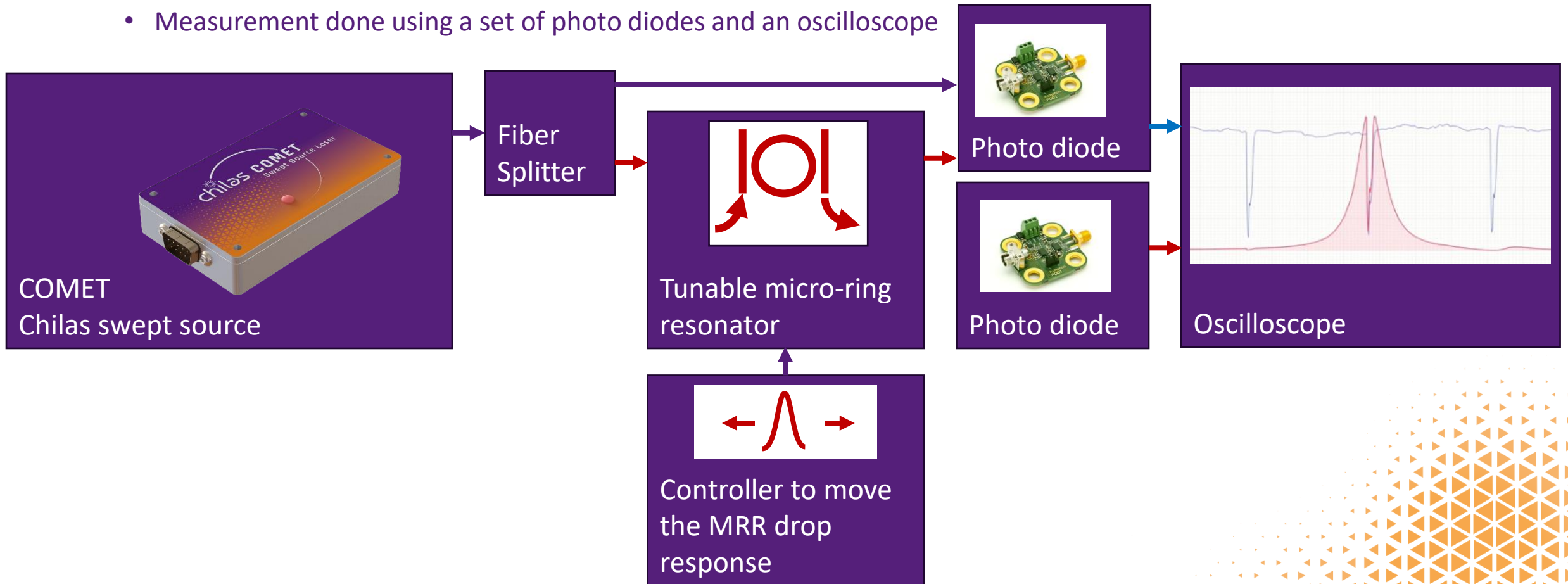
Demo HCN absorption cel (C-band)

- Comparison between **COMET measurement** /Theoretical model (HITRAN)
- Resolution not limited by Laser < 5 kHz linewidth
- 4 pm scan step size visible
Continuous sweep between sample points
- Offset 6 pm
Probably caused by a time delay in synchronization.



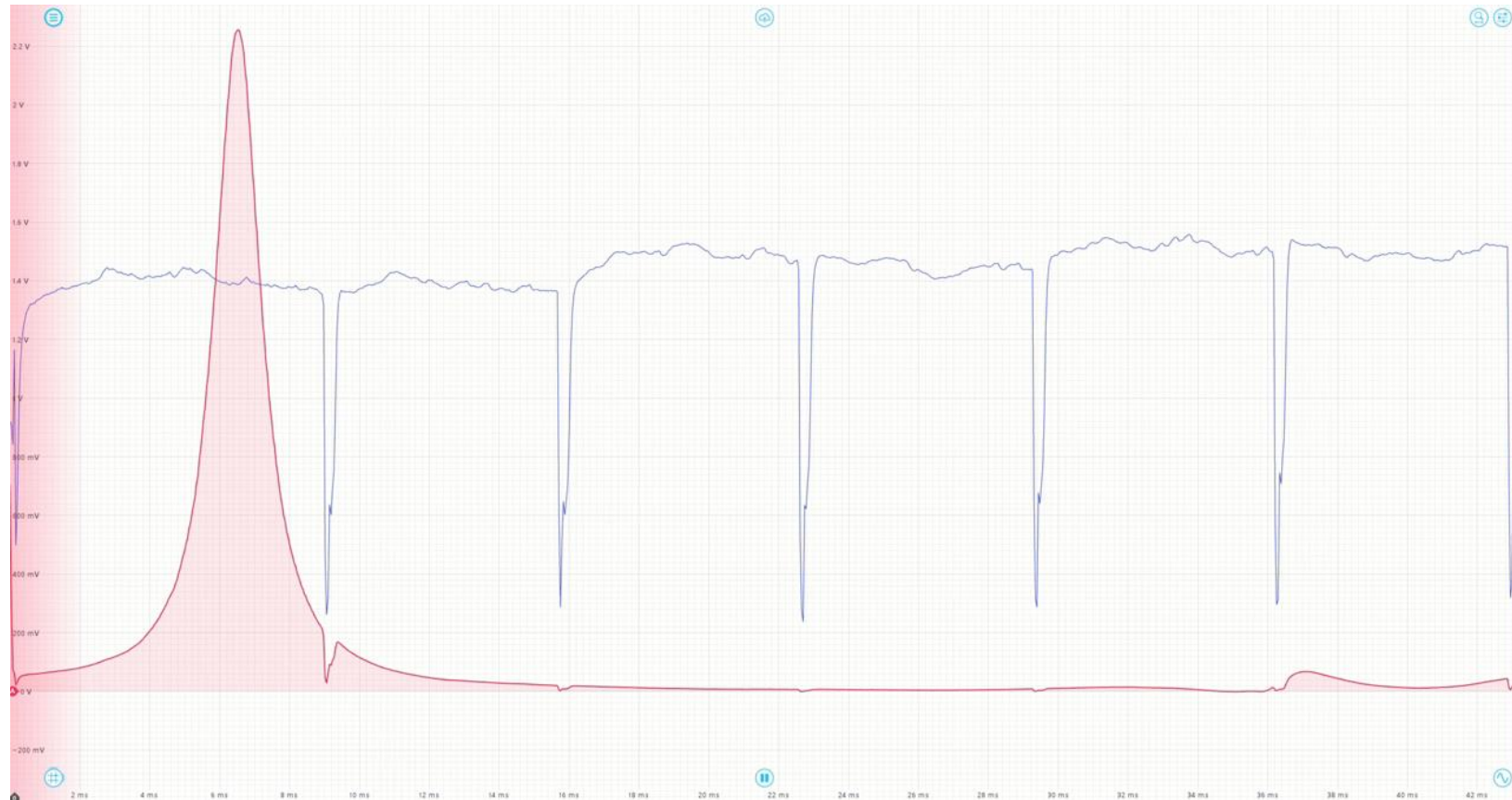
Setup for demonstration: Tunable MRR drop response

- Demonstration Setup: detecting the **tuned drop response of an MRR**
- Laser scans continuous over 1.7 nm subsection (~24Hz rep. rate)
- Measurement done using a set of photo diodes and an oscilloscope



Subsection scan demo sampling MRR response

- Laser scans continuous over 1.7 nm subsection (~24Hz rep. rate)
- Red moving curve is the **MRR drop response**



Turnkey lab solution

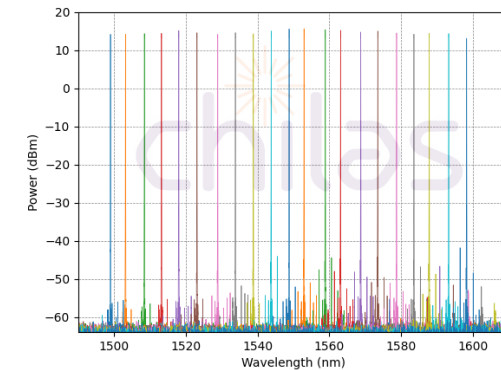
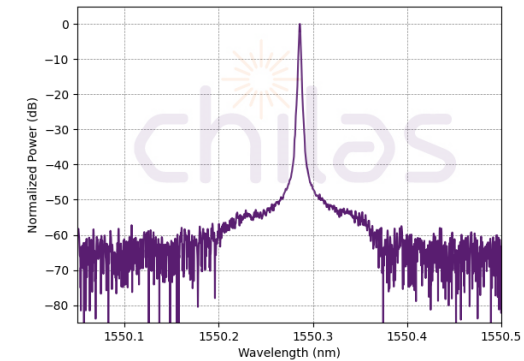
- USB Interface board control for computer (Python)
- Analog input/output for sweep synchronization
- Modulation input on request



Applications range

The 1 kHz intrinsic linewidth X wide tuning range makes the #ChilasCOMET ideal for:

1. Spectroscopy
2. Optical Coherence Tomography (OCT)
3. Fiber Bragg grating sensors (FBGS)
4. Terahertz generation
5. LiDAR
6. Photonic Device testing (e.g. high Q ring resonators)
7. Source for Optical Spectrum Analyzers



Get in contact with us!

For any kinds of requests, find us at: info@chilasbv.com or via the **Contact form** on our website.



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