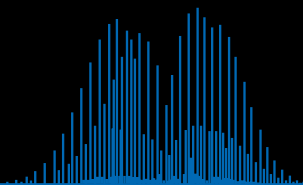


# stretch.



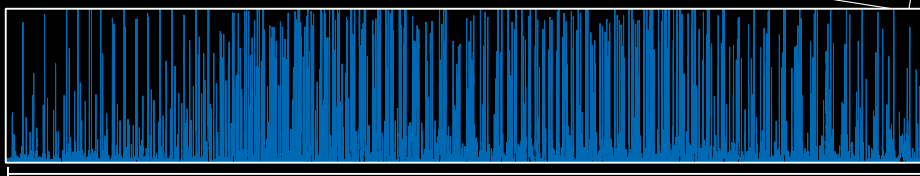
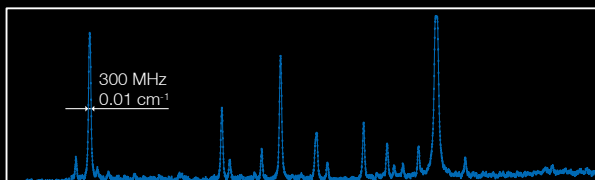
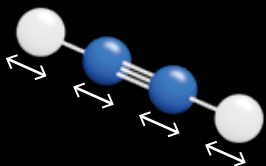
Fully-automated tuning at high resolution

**2500 – 6900  $\text{cm}^{-1}$**

CW optical parametric oscillator



For continuous molecular spectroscopy of “stretch” vibrations...



145 nm  
157  $\text{cm}^{-1}$

... over a very wide range

Convince yourself with a  
free live or virtual demo!



[www.toptica.com/TOPO](http://www.toptica.com/TOPO)

# TOPO

## Widely Tunable CW OPO



Class 4 Laser Product EN 60825-1:2014.  
Visible or invisible laser radiation. Avoid direct exposure to beam. WARNING – Class 4: DANGER – visible or invisible laser radiation when open. Avoid exposure to the beam.

DLC TOPO	Signal	Idler
Coarse tuning range*	1.45 – 2.07 $\mu\text{m}$ 4830 – 6900 $\text{cm}^{-1}$	2.19 – 4.00 $\mu\text{m}$ 2500 – 4570 $\text{cm}^{-1}$
Output power**	2 W	1 W
Linewidth	< 100 kHz < $1 \times 10^{-5} \text{ cm}^{-1}$	2 MHz < $1 \times 10^{-4} \text{ cm}^{-1}$
Mode hop free tuning range***	< 1 GHz < $0.04 \text{ cm}^{-1}$	up to 300 GHz**** up to $10 \text{ cm}^{-1}$
Beam Quality Factor M2**	< 1.2	< 1.2
Frequency modulation and lock	PZT modulation	PZT modulation, Pump frequency modulation
Control interfaces	DLC pro touchscreen, PC software, Ethernet, USB, analog remote control	

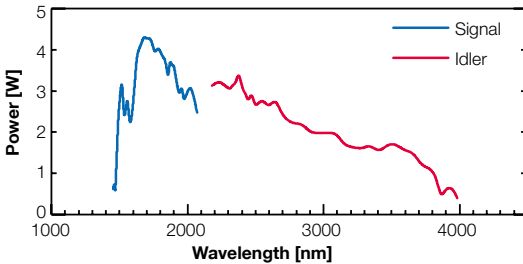
\* Course tuning is established by full automatic crystal shifting and temperature control. No optics exchange necessary

\*\* Specifications valid 1.53 - 2  $\mu\text{m}$ , 2.2 - 3.6  $\mu\text{m}$

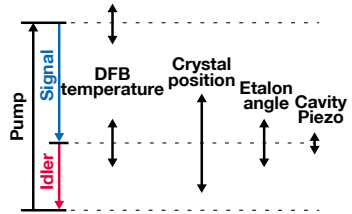
\*\*\* Fine tuning is established via pump tuning (idler) and PZT tuning (signal and idler)

\*\*\*\* 30 GHz - 300 GHz, depending on output wavelength

Characteristic tuning curve.



Energy level diagram including influence of tuning mechanisms.



System diagram

