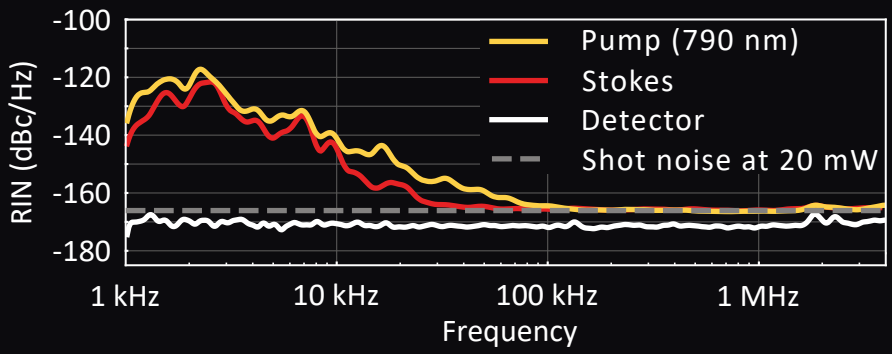
Alpha CRS

High speed coherent Raman imaging system

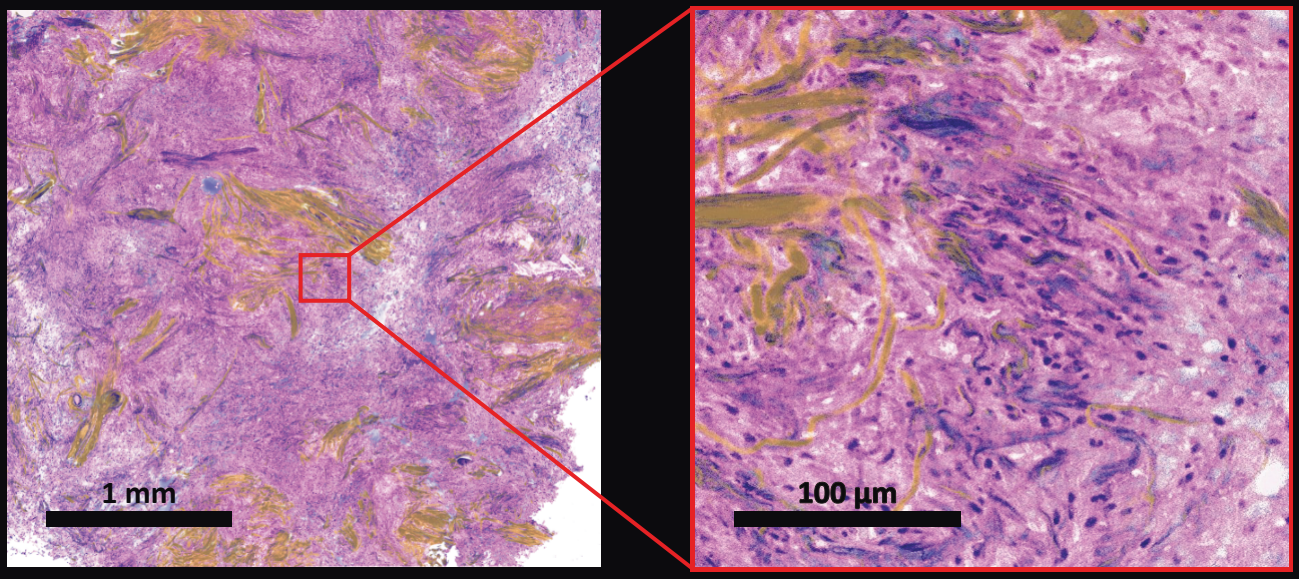
Optimized for fastest image acquisition

1. **Ultra-low relative intensity noise**
   -168 dBc/Hz
2. **Speed-optimized repetition rate**
   10 MHz
3. **SNR-optimized linewidth**
   20 cm^{-1}



Measured relative intensity noise (RIN) showing shot-noise limited operation above 50 kHz.

Application: Stimulated Raman histology



100 Mpx SRH image of brain tissue recorded at approximately 512 ns pixel dwell time (total measurement time was 2 minutes including mechanical repositioning). The image was recorded by the group of Dr. Sandro Heuke (CNRS, Marseille).

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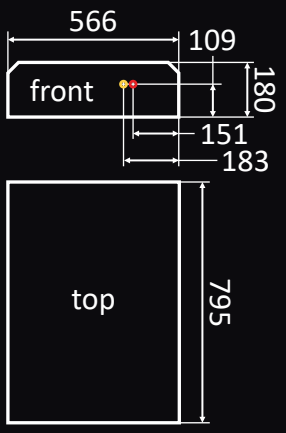
STUTTGART INSTRUMENTS
INFRARED LASERS

Specifications		
Stokes wavelength	1030 nm	
Stokes 2 wavelength*	1020 - 1035 nm	
Pump wavelength	700 - 980 nm	
Stokes shift	400 - 4500 cm^{-1}	
Pulse duration	1 ps	2 ps
Linewidth	< 25 cm^{-1}	< 12 cm^{-1}
TBP	< 0.6	
Repetition rate	10 MHz	
Stokes modulation	DC - 5 MHz	
RIN	< -168 dBc/Hz at 50 kHz - 5 MHz	
Beam pointing	< 30 µrad	
Power stability	< 0.5 %	
Spectral stability	σ_λ / λ < 0.01 %	

Output power	
1030 nm	1000 mW
1020 - 1035 nm**	300 mW
1029 nm (100 fs)*	500 mW
700 nm 800 nm 900 nm 950 nm	90 mW 300 mW 250 mW 200 mW



Pump & (dual) Stokes
100 fs bypass*

Scale 1:25
Dimensions in mm
Weight 80 kg

*optional
**fixed within given range

Customization options

1. Dual Stokes output
for simultaneous multi-band acquisition

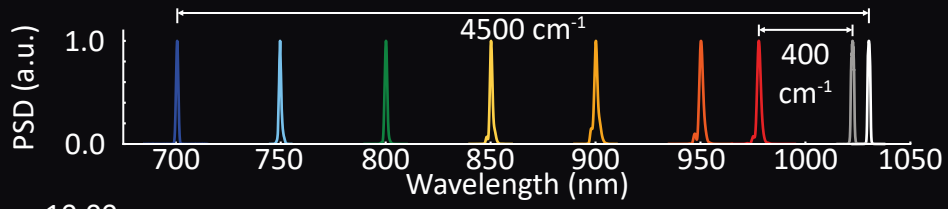
2. Beam combining and delay compensation
microscopy ready

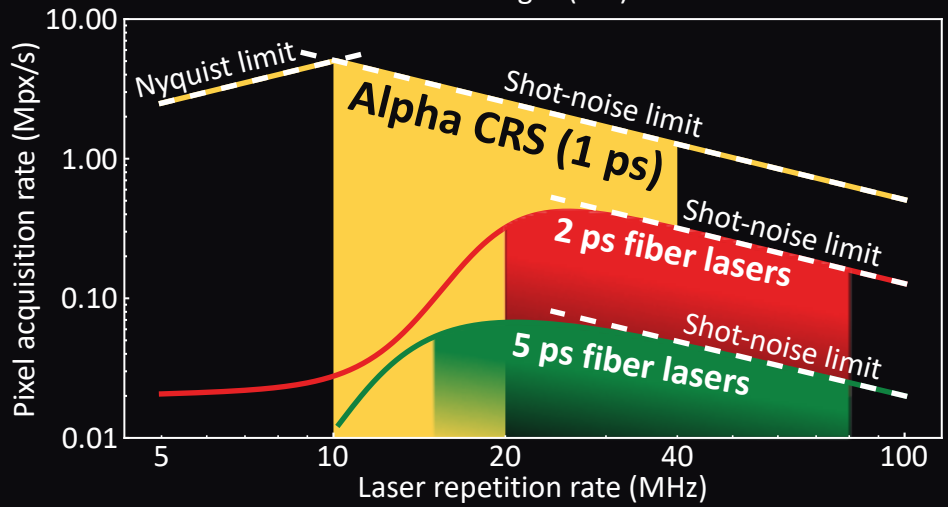
3. 100 fs bypass for broadband CARS

Flexible
Full Raman frequency range
400 - 4500 cm^{-1}

Robust
Low spectral drift
< 0.1 cm^{-1} / h

Simple
Single channel detection
Shot-noise limited





Acquisition rates for different laser systems for a fixed SNR of 50 in PMMA and average pump and Stokes powers of 20 mW.

Specifications are subject to change without notice.

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