DUAL-WAVELENGTH FIBER LASERS FOR **CARS & SRS** MICROSCOPY

WinWinTec INTERNATIONAL GROUP

afs Member of the TRUMPF Group

	DWFL-2022s	DWFL-2022i	DWFL-2010	DWFL-2010 SRS
Tuning range (wavenumbers)	600cm^{-1} ... 2250cm^{-1}		2750cm^{-1} ... 3150cm^{-1}	600cm^{-1} ... 3300cm^{-1}
Output wavelength range (pump)	845nm...992nm	1039nm...1053nm	775nm...806nm	Typically between 600nm and 1100nm
Output wavelength range (Stokes)	1027nm...1033nm	1039nm...1053nm	1120nm...1350nm	Typically between 600nm and 1100nm
Spectral width (pump)	<15cm^{-1}	<6cm^{-1}	<45cm^{-1}	<15cm^{-1}
Spectral width (Stokes)	<6cm^{-1}	<3cm^{-1}	<15cm^{-1}	<10cm^{-1}
Repetition rate (pump)	Typically 10MHz			18MHz
Repetition rate (Stokes)	Typically 10MHz			36MHz
Tuning speed	<5s for a scan over the entire tuning range			
Average power (pump)	>50mW	>100mW	>100mW	>200mW
Average power (Stokes)	>100mW	>30mW	>150mW	>500mW
Average power stability	<1.5% RMS over 1h			
Pulse duration (pump)	<30ps	<70ps	<40ps	
Pulse duration (Stokes)	<70ps	<30ps	<40ps	
Polarization	Linear			
Beam quality (pump & Stokes)	M^2 < 1.3 (fiber-coupled)			M^2 < 1.3
Spatial overlap	Overlapped or independent outputs possible			
Temporal overlap	Passively overlapped or actively adjustable to compensate dispersion effects in attached microscope			
SRS extension	Available as options RIN <-145dBc/Hz at $f_{rep}/2$	-	-	Available as options RIN < -145dBc/Hz at $f_{rep}/2$
Power tunability	Outputs can be tuned independently from 0 to full power while maintaining pulse duration and bandwidth			
Control interface	Software, RS232, USB, customizable			
Dimensions (W × D × H)	Approx. 400mm × 350mm × 150mm			Approx. 750mm × 750mm × 250mm
Mass	<20kg			<70kg
Miscellaneous	<500W power consumption / air-cooled / <1min warm-up time			

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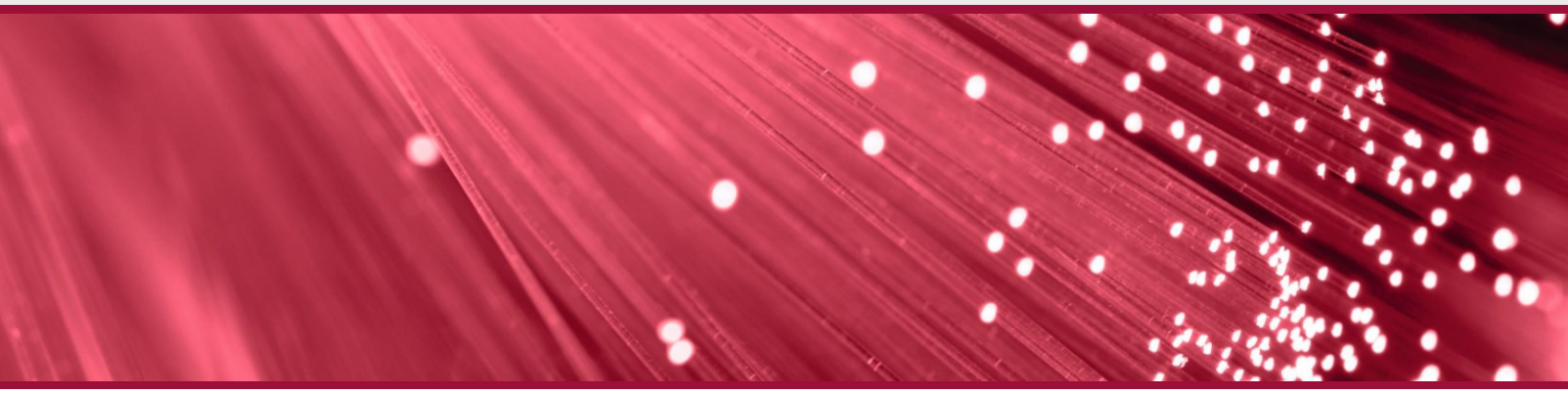
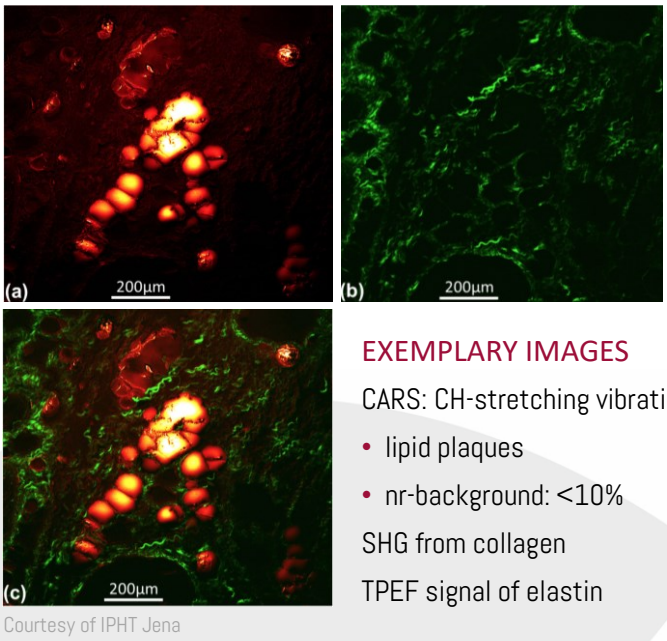


ADVANTAGES OF DUAL-WAVELENGTH SOURCES FROM AFS

- Intrinsically synchronized pulses
- Alignment-free all-fiber frequency conversion
- Compact & robust
- Tuning over entire range within seconds
- NO warmup time
- Fiber-coupled output options available
- Easy-to-use control software

APPLICATIONS

- CARS spectroscopy and microscopy
- Microscopic multi-modal nonlinear imaging (CARS, SHG, TPEF)
- SRS microscopy



Courtesy of IPHT Jena

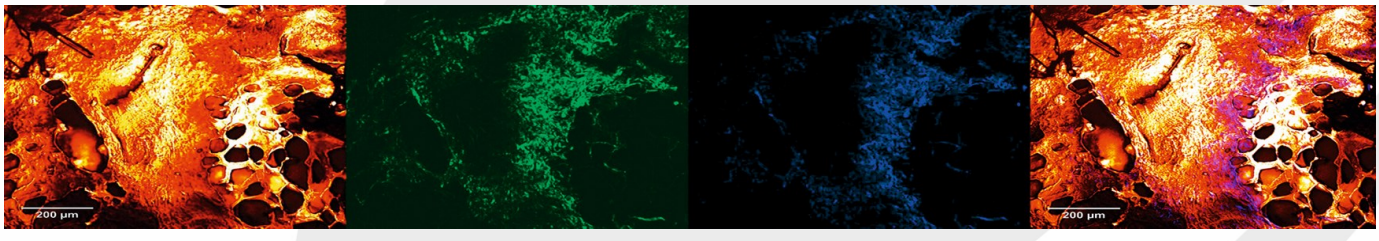
EXEMPLARY IMAGES

CARS: CH-stretching vibrations

- lipid plaques
- nr-background: <10%

SHG from collagen

TPEF signal of elastin



Multimodal composite image of human connective tissue showing an overlay of CARS (red), SHG (blue) and TPEF (green) signals. Courtesy of IPHT Jena

MORE INFORMATION

www.afs-jena.de | www.winwintec.com

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