



Spectrometer Configuration Guide

Quickly design the perfect Raman spectrometer for your application using our many build-to-print configuration options. Need help selecting the best design options for your sample? Contact us for expert advice & testing.

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λ_{ex}	DETECTOR COOLING			RANGE		SAMPLE COUPLING			SLIT SIZES
	Ambient (no cooling)	Regulated $T_d = 10^\circ\text{C}$	TEC $T_d = -15^\circ\text{C}$	Standard ($\sim 2000\text{ cm}^{-1}$)	Extended ($\sim 4000\text{ cm}^{-1}$)	SMA Fiber Coupled †	Free Space Coupled	Integrated Laser**	
	A	R	C	SR	ER	S	F	L	
405 nm	•	•	•	•	o	•	•	o	10 μm 25 μm 50 μm 100 μm 200 μm
532 nm	•	•	•	•	•	•	•	o	
633 nm	•	•	•	•	o	•	•	•	
785 nm	•	•	•	•	•	•	•	•	
830 nm	•	•	•	•	o	•	•	•	
1064 nm	–	–	•	•	–	•	•	•	

• Standard o Custom – Not applicable

† Optimized 0.36 NA probes available

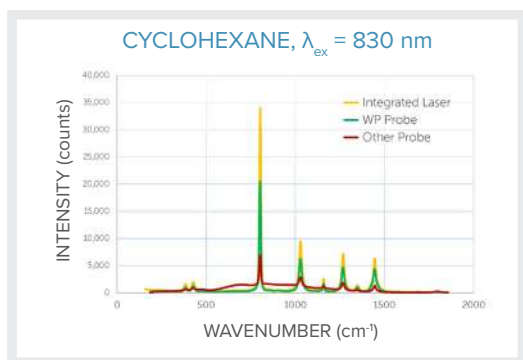
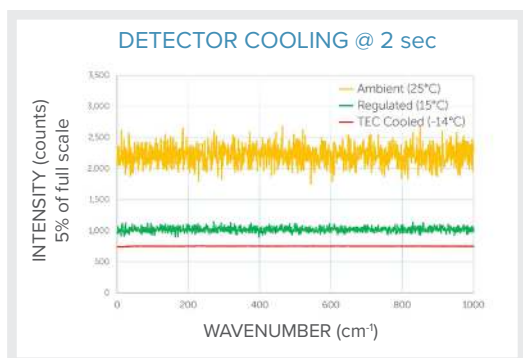
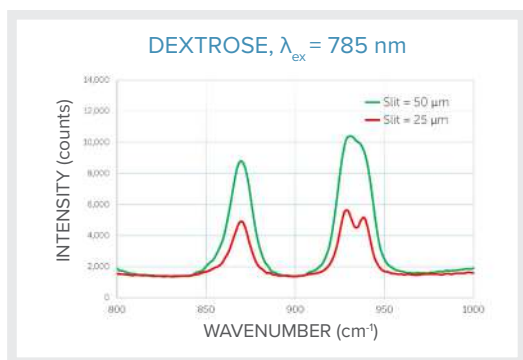
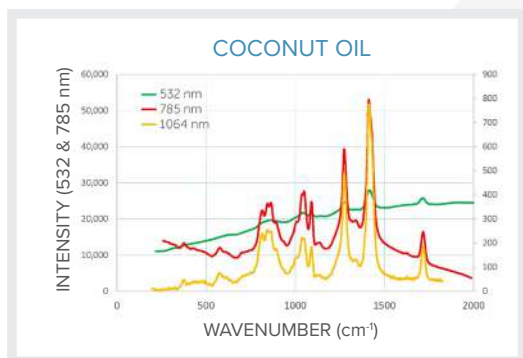
† Optimized 0.36 NA probes available

** For OEM use only

OEM CUSTOMIZATION

At Wasatch Photonics, we go beyond custom to create unique, bespoke spectrometers and integrated system designs for our OEMs. We'll share our deep understanding of optical design and spectroscopy, working with you as a collaborator to create products that will differentiate you in your marketplace. From custom form factors, gratings, detectors, and sample coupling optics to proprietary electronics and interfaces, we can develop a solution perfectly suited to your application.





EXCITATION WAVELENGTH

405 & 532 nm: Maximizes signal for inorganic samples.

633, 785 & 830 nm: Balances signal & fluorescence in organics (633 nm yields good signal from many SERS samples).

1064 nm: Best fluorescence suppression for organic samples. Our WP 1064 Raman spectrometer series offers the best SNR and shortest acquisition times available on the market.

RANGE & RESOLUTION

Standard Range (up to 2000 cm⁻¹): Covers the fingerprint region. Ideal for material ID, inspection & many research applications.

Extended Range (up to 4000 cm⁻¹): Covers the high wavenumber region. Favored for biomedical applications and general R&D.

Resolution: Defined by slit size (10-200 μ m available). A smaller slit improves resolving power, while a larger slit increases signal.

DETECTOR COOLING

Ambient (no cooling): Good SNR. Best for teaching and R&D labs.

Regulated ($T_{det} = 10^{\circ}\text{C}$): Fixed dark noise for improved spectral reproducibility & SNR. Great for variable environments.

TEC Cooled ($T_{det} = -15^{\circ}\text{C}$): Lowest dark noise for highest SNR and lowest limits of detection. Delivers superior performance at high integration times and outstanding reproducibility.

SAMPLE COUPLING

Fiber coupled: Simplifies sample alignment in the lab or field. Use our matched high NA probes for best sensitivity & SNR.

Free space coupling: Design your own sampling optics to benefit from our 0.36 NA input. Great for OEM integration or research.

Integrated laser: A compact design, turnkey laser control, and optimized coupling optics for best-in-class SNR. For OEM use only.

Wasatch Photonics offers the expertise to find your optimal Raman solution. Contact us to get started!

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