



# Technical Specification Sheet MINI RUGGED SPECTROMETER SYSTEMS

A Universe of Spectrometer Systems

## Low Cost & Research Grade Raman Spectrometer Systems

StellarNet, Inc. has released a series of low cost and research grade spectrometer systems configured for Raman applications that perform quick identification of a variety of liquid, solid, or powder samples.

### StellarNet Raman System Features

- Compact & Research Grade for quick ID for a variety of liquid, solid, or powder samples
- Raman Systems include a high performance Raman spectrometer, High power Laser, and Raman probe
- Standard Raman wavelengths include 532, 785, and 1064nm with many custom options such as 405, 633, 637, 648, 830nm! – [Contactus@stellarNet.us](mailto:Contactus@stellarNet.us) for more options
- SpectraWiz ID Raman Library with Save and Search functionality included FREE!
- Microscope Accessory Pack available for micro Raman applications as well as affordable SERS strips for trace substance analysis



Raman Systems include a high performance Raman spectrometer, High Power Laser, and Raman probe - [Buy Online!](#)

### Raman Lasers

#### RAMULASER™ Raman Laser

- 785 & 1064nm Standard Wavelengths
- Couples easily to Raman probe and spectrometer
- Battery powered in Ruggedized metal case
- Raman Laser line 0.2nm FWHM over 50-100 deg F
- 499mWatt output with adjustable power

#### RAMULASER for Vials

- 785nm RAMULASER configured with vial holder in place of FC/APC
- Screw top vials handle both liquid, powder, and small solids such as pills
- Reduces cost & eliminates probe

#### Raman Laboratory Lasers

- Custom Raman Wavelengths
- Interchangeable Modules

### Raman Spectrometers

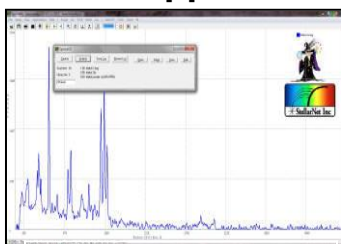


**Raman-HR-TEC** spectrometers include enhanced CCD array detectors for 785nm, 532nm, or a variety of custom wavelengths. They include advanced

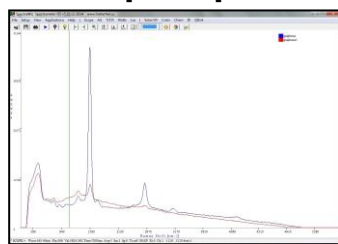
detector lens assemblies and a thermoelectric detector cooler (TEC) for enhanced sensitivity. The **Raman-HR-TEC-X2** is a new Raman spectrometer with a 2-stage detector TEC with -30 degree cooling from ambient for eXtreme noise reduction of over 80% at long exposures.

The **Raman-HR-TEC-IG** spectrometer includes a super cooled InGaAs photodiode array for 1064nm Raman where interference from sample fluorescence is minimized and virtually non-existent.

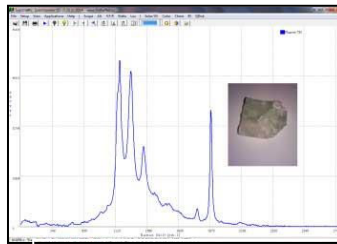
### Raman Applications & Sample Spectra



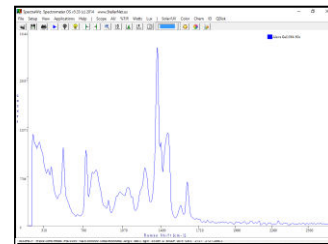
785nm Raman System  
Maltol Demo Sample



532nm Raman Spectra of  
Graphene & Graphite samples



785nm Raman Analysis of  
Gemstones - Fluorite



1064nm Raman of an Aleve  
Geltaf - minimize fluorescence

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# Raman System Accessories

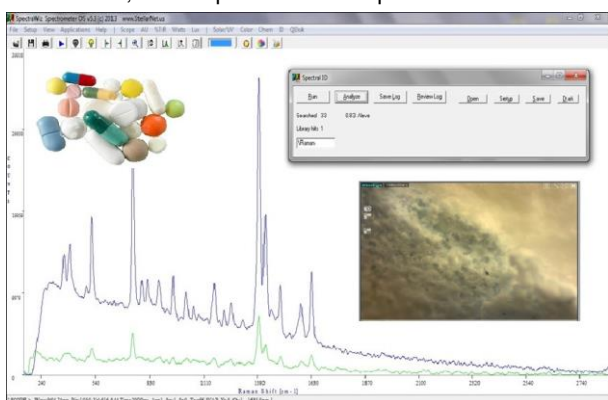
## Fiber Optic Raman Probe & Probe Holder

- Connects to 785nm Laser accessory via FC/APC fiber optic connector and spectrometer via SMA 905
- Rigid probe length is 100mm with integrated Raman filters for 200 cm<sup>-1</sup> and f/2 collection optics
- Excitation fiber is 100um diameter and read fiber to spectrometer is 600um core diameter
- Probe diameter is 4mm with 2 meter fiber length and has laser blocking switch for simple reference
- Integrated filters for laser line (with O.D. > 6) and notch filter to remove quartz spectral contributions
- Working distance to sample is 4.5mm with field depth of +/- 1mm for penetration of sample container (additional lens options available)
- Required probe holder for solids like pills or vials (1/2 inch diameter with lids) for liquids and powders

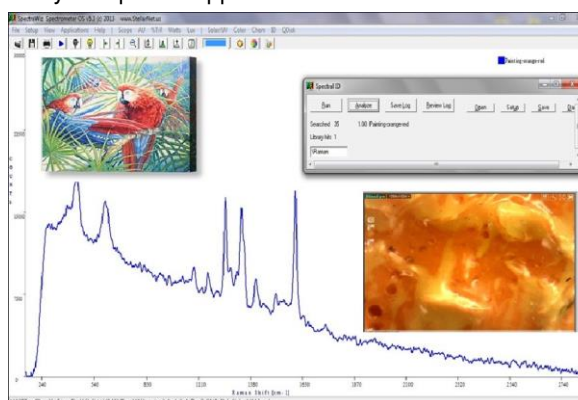


## StellarSCOPE Microscope Accessory- [more info](#)

- Couple Spectrometers & Light Sources to high performance Microscopes
- Perform Raman on a micro spot and capture high resolution images, video, and time lapse video
- System equipped with an Olympus research microscope with 4, 10, & 40x objectives, CMOS 1.3 Mpixel Camera, optical switch, and required SMA couplers & attachment accessories for your specific application



**Raman Spectra of Pharmaceutical Testing** – Additional applications include counterfeit detection & unknown narcotics screening



**Art Authentication- StellarSCOPE @ 10x zoom** coupled to a 785nm Raman Spectrometer allows art experts to analyze for sample chemical composition & authenticity.

## Specification

## Raman Configured Spectrometers

Optical Resolution:	4 cm <sup>-1</sup> or 8 cm <sup>-1</sup> (range dependent)	Dimensions:	1x3x5 inch (smallest)
Signal to Noise:	1000:1, TEC option >80% noise reduction	Weight:	14 ounces
Detector Type:	Enhanced CCD or InGaAs 512/1024p	Power Consumption:	<100mA, 5VDC for TECs
Diffraction Gratings:	1200 g/mm with gold surface	Fiber Optic Input:	SMA905
Spectral Range @785nm	200-2750 cm <sup>-1</sup> -or- 200-3200 cm <sup>-1</sup>	Interface:	USB-2
Stray Light:	<0.05%	Operating Systems:	WinXP, Vista, Win7, 8, 10
Exposure Times:	to 20sec -or- to 60 sec w/ TEC	Software:	SpectraWiz, LabView,

\* Above specs are for typical Raman configured spectrometers. Certain wavelengths may differ. [Contactus@StellarNet.us](mailto:Contactus@StellarNet.us) for more details

Item	Description
Raman-SR	Raman Standard Resolution for 200-3200 cm <sup>-1</sup> @ 785nm with 8 cm <sup>-1</sup> resolution via CCD
Raman-HR-TEC	Raman High Resolution for 200-2750 cm <sup>-1</sup> @ 785nm with 4 cm <sup>-1</sup> resolution. Enhanced CCD with TEC for -15 deg and 50% noise reductions at long exposures (>3seconds)
Raman-HR-TEC-X2	Raman High Resolution & eXtreme Sensitivity for 200-2750 cm <sup>-1</sup> @ 785nm with 4 cm <sup>-1</sup> resolution. 2-Stage TEC for -30 deg and >80% noise reduction at long exposures.
Raman-SR-TEC-IG	Standard Res for 200-2250 cm <sup>-1</sup> @ 1064nm with 22 cm <sup>-1</sup> resolution 512 pix IG PDA + TEC
Raman-HR-TEC-IG	High Res for 200-2250 cm <sup>-1</sup> @ 1064nm with 11 cm <sup>-1</sup> resolution via PDA with TEC cooled 1024 pixel InGaAs photodiode array. Minimize fluorescence via 1064nm laser!

All data and statements contained herein are subject to change in accordance with StellarNet's policy of continual product improvement. Please contact us about availability of additional laser frequencies used for Raman such as 405 / 633 / 638 / 647 / 830 / etc...

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