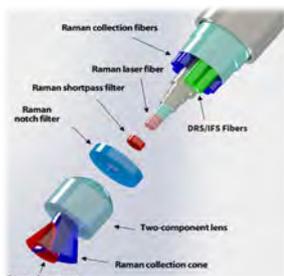


# ENDOSCOPIC Raman Spectrometer

- Ideal tools for medical research

## Overview

The ENDOSCOPIC Raman Spectrometer is a volume phase holographic transmission grating based instrument that has been optimized for use with Multi-Line high performance fiber optic probes. Housed in a robust all aluminum

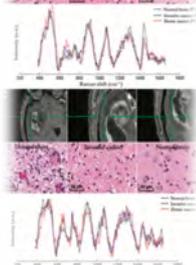
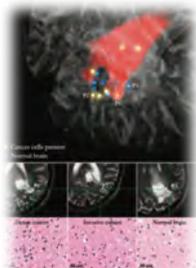


housing, this instrument has been designed to fill the need for applications requiring high sensitivity measurements with fast acquisition times. The ENDOSCOPIC Raman Spectrometer system incorporates the spectrograph, laser blocking filter and CCD in a rigid enclosure with a support ledge for auxiliary equipment such as power supplies. The f/2.2 design is optically matched for the Multi-line of fiber optic probes. Paired with high performance CCD camera and proprietary connector system, the ENDOSCOPIC Raman Spectrometer provides the fastest, highest S/N ratio collection of fiber optic probe based Raman data available today. When combined with one of Multi-Line high performance Raman filtered fiber optic probes, the ENDOSCOPIC Raman Spectrometer will provide the opportunity to explore applications previously not possible. Primarily developed for medical research applications, we offer the smallest commercially available Raman filtered fiber optic probes. Medical procedures that require flexible endoscopic probes are now possible that also enable short integration times and high signal quality.

## Spectrometer Multi-Fiber Input



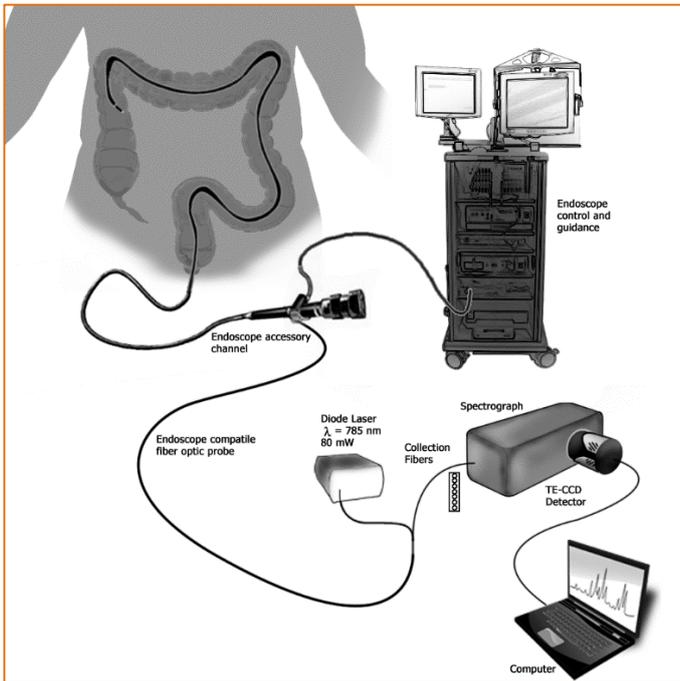
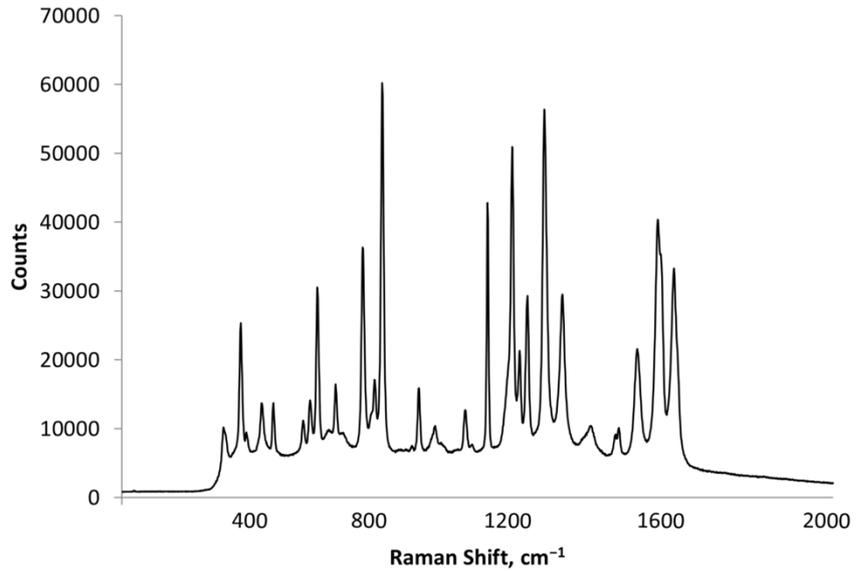
The ENDOSCOPIC Raman Spectrometer features a multi-fiber optical connector assembly containing a keyed connector for a fiber optic probe. This keyed multi-fiber connector utilizes a connector that easily plugs into and unplugs from the connector housing while ensuring highly repeatable fiber positioning into the spectrometer. The multi-fiber optical connector assembly guides light rays from the fiber optic probe assembly into the spectrometer in a consistent repeatable fashion reducing data variability often associated with other spectrometer input designs. The technology is very beneficial in applications requiring frequent probe removal, such as sterilization procedures, to ensure consistent fiber orientation to the spectrometer slit upon re-insertion. The multi-fiber optical connector assembly does not contain any optical elements between the connector and the connector housing or the mechanical slit. This direct input results in short acquisition times and high signal-to-noise ratios for the spectrometer. (Note: Other probe interfaces such as SMA and ferrules are available.)



## System Performance

The spectrum demonstrates the quality of spectra obtained with the HT Raman Spectrometer and an Multi-line Raman filtered lensed 2.1mm O.D. fiber optic probe. All spectra are taken with a 785 nm laser at 25 mW as measured at the sample with a 50 micron slit. The spectrometer is equipped with an Andor iVac CCD camera. All spectra are raw, as- collected spectra.

Acetaminophen, 0.1 sec

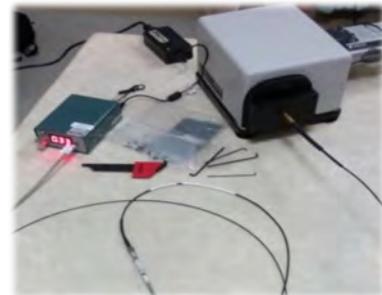


## System appearance

The endoscopic Multi-line Fiber probe can either be used independently or coupled to a standard clinical endoscope.

785 nm diode laser is coupled to one of fiber which is excitation source delivering laser power to the testing point. Raman signal will be collected by 7 fibers that surrounding the laser fiber.

The Raman signal will be finally collected and analyzed by the spectrometer equipping high performance CCD detector and computer system.





# Technical Data Sheet

## QUANTUMTECH

Endoscopic Raman Spectrometer

### Specifications

Raman Laser Wavelength	785nm
Spectral Range	-350 cm <sup>-1</sup> to 2,100 cm <sup>-1</sup> (807 nm to 940 nm)
Slit size	50-300 microns
f-number	f/2.2
Laser Blocking Filter	Optical Density > 6 at 785 nm
Grating	Volume phase holographic
Probe Connector	Keyed snap-in linear connector Up to (9) linear 300 micron core fibers
CCD Detector	Andor iVac CCD camera other cameras available
Recommended Operating Temperature Range	68 <sup>0</sup> F (min) / 77 <sup>0</sup> F (max) 20 <sup>0</sup> C (min) / 25 <sup>0</sup> C (max)
Relative Humidity	20 to 80%
Input Voltage	110-240 VAC 50-60 Hz

