

## Fiber Spectrometer

Our spectrometer RIS Series developed by the Research India Innovation group (**RI Instruments & Innovation India**) which apply to the field of Material science, food safety, environmental sciences and more.

Spectrometer with 3648 pixels CCD linear array detector has high resolution up to 0.02 nm (FWHM). The system includes incident slit, collimating mirror, dispersion element (grating), focusing optical system and detector. Light is collected through the optical fiber into the spectrometer slit then the spectral information can be read out by the software.

Our Thermoelectric cooling is available  
70% increased S/N at long exposure  
CCD cooled down (-40 °C) & (-35 °C)  
High Sensitivity for low light applications



Our products let you take the power of spectroscopy wherever you need to go.



Research  
and Science



Authentication and  
Anti-Counterfeit



Defense and  
Security



Biotechnology



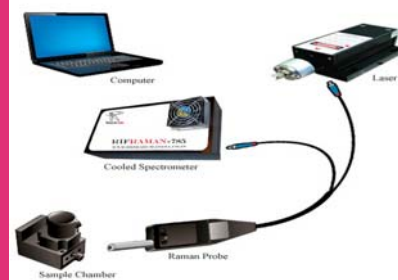
Research India

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RIFRAMAN - Fiber Optic Based  
Raman System, available version  
532 & 785 nm

## Features

Detector	:	Toshiba TCD1304 linear array
Detector range	:	200 – 1100 nm
Pixels	:	3648
Sensitivity	:	130 photons/count at 400 nm 60 photons/count at 600 nm
TEC Cooled	:	-35 °C **/-40°C ** (Optional)
Design	:	Czerny-Turner
Fiber optic connector	:	SMA 905 to single-strand optical fiber (0.22 NA)
Wavelength range	:	200- 1100 nm (Grating Dependent)
Slit	:	10, 25, 50, 100 or 200 µm wide slits
Optical Resolution	:	0.02 – 8.4 nm
Signal-to-noise ratio	:	450: 1 Full Signal, 10000:1 (avg)
A/D Resolution	:	16 Bit
Dark Noise	:	50 RMS counts
Dynamic range:	:	3.4 x 10 <sup>6</sup> (system); 1300:1 for single acquisition
Integration Time	:	2 ms – 20 sec
Stray light:	:	<0.05% at 600 nm; <0.10% at 435 nm
Corrected Linearity	:	< 99.8%
Power Consumption	:	250mA @ 5 VDC
Data Transfer Speed	:	50 ms
Trigger Modes	:	3 modes - Optional
Operating System	:	Windows 10 / 8 / 7 (32 & 64 Bit)
Software	:	RI Spectra Analysis
Computer Interfaces:	:	USB 2.0, 480 Mbps
Temperature:	:	-30 °C to +70 °C Storage & -10 °C to +50 °C Operation
Humidity	:	0%-90% non-condensing

- (1) Spectral range and spectral resolution can be customized
- (2) \*\* TE Cooled Spectrometer (-T35 & -T40)
  - I. 70% increased S/N at long exposures
  - II. High Sensitivity for low light applications



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Desktop Vibration Isolation Module

## Software Features:

Instrument Control & Data Collection parameters are user-definable, such as Exposure time, dark correction, signal averaging, spectral smoothing, Automatic Saved Spectra. Graphics saved in .txt format and be opened in any Third-Party Software E.g. Origin, Excel and other data processing software.

Special features:

1. Save BMP & TXT
2. Save 380- 760nm normalized to intensity\*\*\*
3. Automatic Baseline correction
4. Gaussian Approximation
5. Calculate Spectral Energy Distribution\*\*\*
6. Calculate concentration in Absorbance Mode
7. Color space & Absolute Irradiation Measurements (W/cm<sup>2</sup>/nm)\*\*\*
8. Editable data collection parameters per channel, such as detector integration time, auto-dark correction, signal averaging and spectral smoothing.
9. Display data in transmittance, absorbance, Reflectance or relative irradiance mode
10. Mouse drag controls movement of a data cursor for instantaneous readout of wavelength- and Y-axis magnitude
11. Automatic save spectra periodically (save a spectrum every x seconds).
12. **Custom made modifications are possible**  
\*\*\*-Optional

## Variant available

- RIS Series (50 mm Focal Length)
- RIAS Series (75 mm Focal Length)
- RIHS Series high resolution (150 mm input & output focal length)

## Characteristic

Probes can be connected externally

Simple, fast measurement and easy operation

Flexible and stable sampling, various forms in analyzing sample



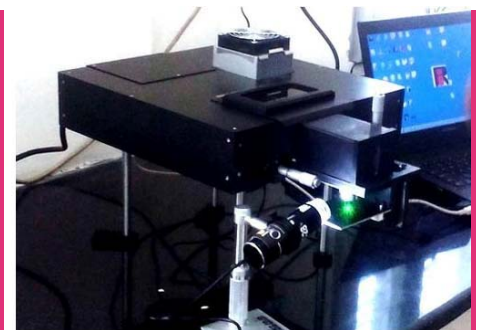
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RIRAMAN (upgrade mapping)  
Direct coupled optics. No optical  
fiber based delivery or collection