

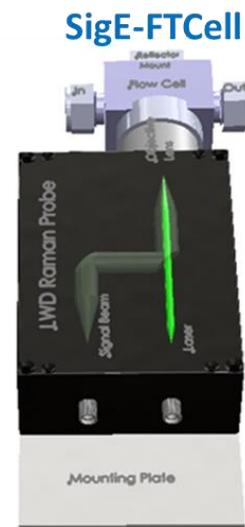


Gas-Phase Raman System

Fiber-coupled Gas-Phase Raman System (GRaman) is designed to provide an alternate and yet powerful analytical process gas monitoring system with many additional benefits. It features a high resolution and wide coverage spectrograph, which ensures that multiple gases can be identified independently without chromatographic separation. Another feature is its high throughput spectrograph with a deep cooled low noise and sensitive CCD detector, a high power 532 nm single mode laser, a high efficiency probe, and a gas cell with a signal enhancing accessory (SigE-FTCell), which allows gases to be measured down to tens ppm levels. Combined with fiber optics and sampling probes, the system can be easily and flexibly installed in remote locations. In addition, Multiplex Gas-Phase Raman System (MGRaman) with a parallel design provides up to 10 independent channels for simultaneous gas-phase Raman measurements at different locations, which simplifies operation and increases the value to own.

With the SpectraSoft software, users can easily select to make simultaneous or sequential Raman measurements at different locations/ports.

The Gas-Phase Raman system (GRaman or MGRaman) is an ideal tool for on-line gas-phase monitoring. It serves the analytical Raman markets in process monitoring and control in petrochemical, chemical, polymer, pharmaceutical, and bioprocessing industries.



GRaman-532 Benefits:

- High throughput, high sensitivity, and high power laser
- Robust design, no moving parts
- Built-in signal enhancing gas flow cell for easy integration
- Efficient operation with multiple monitoring spots in one unit
- Flexible sampling options
- High value to own

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Fiber-based Gas-Phase Raman System - Features and Specifications:

Item	Description	Features / Specifications
SF18	Lens-based grating spectrograph	<ul style="list-style-type: none"> • 85 mm focal length • Standard coverage 150 to 4300 cm^{-1} (other ranges available upon request) • All preset, no moving parts
Detector	TE deep cooled scientific CCD	<ul style="list-style-type: none"> • NIR enhanced front-illuminated sensor with no-etalonging • Peak QE > 55% at 650 nm • Permanent vacuum • Guaranteed TE cooling to -60°C at ambient temperature • 16-bit, 2 MHz and 100 kHz read-out: 3.5 e- rms (typical), 6 e- rms (max) 14 e- rms (typical), 20 e- rms (max) 0.001 e-/p/sec (typical); 0.006 e-/p/sec (max)
Lasers	532 nm	<ul style="list-style-type: none"> • 100 mW (higher power available upon request)
Flow Cell Assembly	FlowC-SigE	<ul style="list-style-type: none"> • 316 Stainless steel with sapphire windows, 2000 psi, 200 °C • ¼" compression fittings or other fittings upon request • Integrated signal enhancer (SigE) • Multiple light path to increase sensitivity
Sampling Probe	Choices of probes Fiber connector	<ul style="list-style-type: none"> • Collinear design/high throughput optics • Built-in laser line clean-up filter • Built-in deep narrow notch filter • > 20 mm working distance • High collection efficiency • No interference from other lights • OD > 6: maximum rejection of Rayleigh scattering and high transmission • Wide coverage from 40 cm^{-1} to 4400 cm^{-1} • Convenient SMA 905 or FC
User Interface	Computer Operating System SpectraSoft	PC Windows 7, 64 bit <ul style="list-style-type: none"> • Control of multiplex lasers and laser power, CCD gain and digitization, system calibration • Data processing: proprietary automatic background removal, spectrum averaging, normalization, overlay • Data analysis: peak identification, area, online monitoring
Physical	Width x Depth x Height	300 mm x 432 mm x 164 mm
Electrical	Input Voltage	100 – 240 V, 50 - 60 Hz

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