

JP3 Raman Spectrometer

The versatility of Raman Spectroscopy, paired with JP3's proven technical excellence and software infrastructure



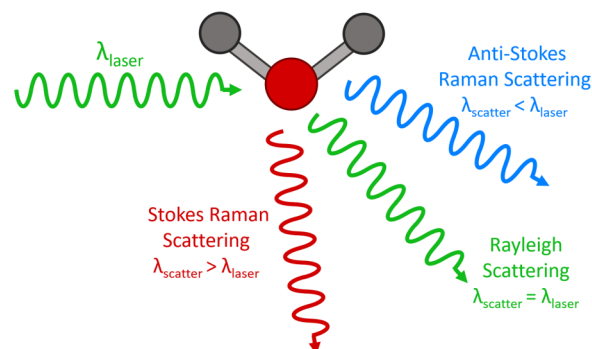
Critical Data. Real Time.

Designed for Fast and Accurate Measurement Capabilities

The JP3 Raman Spectrometer is the most powerful Raman system for process analysis in the oil and gas industry. Using a field-proven spectrometer system and seamlessly integrated with JP3's advanced data analytics software, infrastructure, and support, JP3 is leading the way to bring this versatile technology to the Oil & Gas industry.

Using a different form of light spectroscopy, Raman analyzers perform similarly to Near-Infrared spectroscopic analyzers (the system used in the JP3 Verax), but with the additional ability to measure chemical species that NIR does not, such as nitrogen and hydrogen.

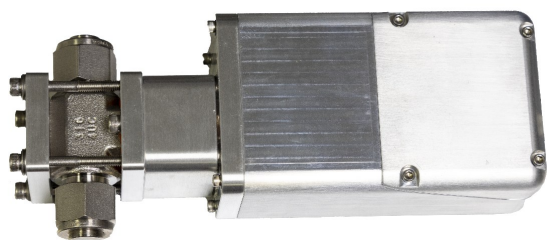
Compared to other technologies, Raman analysis does not require extensive sample conditioning or sample handling; just point laser light at the sample and collect the scattered light. The Raman probe can be located far away from the laser source and detector, connected by fiber optic. This allows the Raman to be installed in a convenient location, either general purpose or a Class I Division 2 area with JP3's optional hazardous area enclosure.



Raman Light Scattering



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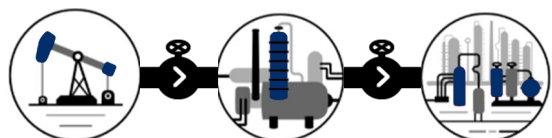


JP3 Raman Flow Cell & Probe

Non-Contact Optical Probe

A Raman system's success hinges on the effectiveness of its optical probe: maximizing the collection of Raman-shifted light is critical to rapid, high-quality results.

JP3's non-contact optical probe provides a number of advantages over typical immersion probes. Since the optical components are not wetted—the light passes through a sightglass—maintenance is simpler and focal length is optimized for throughput. The probe may also be removed from the sample line without requiring a line break. This further improves reliability and reduces maintenance requirements.



Upstream Midstream Downstream



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JP3 Raman Analyzer Specifications

Instrument Parameter	JP3 Raman Spectrometer
Laser: Wavelength, Power	785 nm, 5mW to 495mW adjustable maximum power
Spectral Range, Resolution	200 cm^{-1} – 3300 cm^{-1} Range, <8 cm^{-1} Resolution
Wavenumber Stability	$\pm 0.1 \text{ cm}^{-1}$
Y-Axis Dynamic Range	Up to 45,000 counts pre-calibration
Dispersive Element	High Throughput Virtual Slit (HTVS)
Probe	Non-contact optical probe w/sapphire sight glass, adjustable 9.6mm focal depth
Enclosure Dimensions	16" x 12" x 6" (w x d x h), 12lb; 19" rackmount compatible
Fibers	FC/PC connection, 100 μm core excitation, 300 μm core collection
Communications	LAN (Gigabit Ethernet), OPC-UA, Modbus TCP, Viper Insight™ Direct Access
Measured Species	Hydrocarbons (C1 - C9+); N ₂ , CO ₂ , H ₂ , O ₂ , many more
Measured Range	0-100% for all measured species
Area Classification	General Purpose; Ambient 0-30C; Temp-controlled Class I Div 2 enclosure optional
Power requirement	120/240VAC

JP3 Raman Probe Specifications

Parameter	JP3 Raman Probe
Process Connections	1/2", 3/8", or 1/4" Swagelok Fittings
Probe Dimensions	4" x 3" x 7" (w x d x h), 4lb
Operating Temperature Range	-4°F to 200°F (higher range optional)
Process Pressure Range	0—1750psi standard, 0—4000psi optional
Compatible Wavelength Range	500-1100nm
Focal Depth	9.6mm, Adjustable
Wetted Body Material	316L Stainless Steel or Hastelloy C
Wetted Sightglass Material	Optical-grade Sapphire w/ Kalrez O-rings
Fiber Optic Cable	FC/PC 105 μm NA=0.22 fiber optic cable for excitation FC/PC 300 μm NA=0.22 fiber optic cable for collection
Enclosure Rating	Intrinsically Safe, NEMA 4X, IP66 probe body
Safety Feature	Optional Laser Interlock



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