



ProCeas H2S

VERY LOW CONCENTRATIONS (Non HC's Matrices)

ProCeas H2S: A Novel LASER Infrared Spectrometer for Gas Analysis Unmatched Selectivity, Levels of Detection and Measurement Speed ProCeas® H₂S: Dihydrogen Sulfide Analyzer

Patented OFCEAS Technology

The ProCeas CO enables the detection and quantification of Carbon Monoxide at very low concentrations (0-200 ppb). The ProCeas CO relies on the patented Optical Feedback Cavity Enhanced Absorption Spectroscopy (OFCEAS) technology. This is a LASER Infrared technology, solely relying on a LASER as light source to scan the sample.

Sensitivity & Dynamic Range

The gas cell is equipped with extremely high reflectivity mirrors (>99.99%), enabling pathlength ranging from 1,000 to 10,000 meters (1-10 km; 0.6 – 6.2 miles) in a measurement vessel featuring an internal volume of only 15 mL. This gas sampling technique is known as Enhanced Cavity.

This unique combination of high reflectivity, small volume and very long pathlength enables unmatched sensitivity (parts-per-billion) in very short times of integration (< 1 second).

When dealing with higher concentration range measurement (parts-per-million), alternate mirrors can be selected to reduce the number of reflections (and therefore pathlength), thus providing the analyzer with a dynamic range greater than 10⁴.

Instrumental Response Drift

The infrared source is a non-pulsed LASER which provides the analyzer with great metrological stability as a function of time. As a result, there is no instrumental response zero drift. The benefit is that calibration re-certifications are seldom needed (several months can elapse between calibration accuracy re-certifications without affecting the analytical performance of the analyzer).

Selectivity / False Positive Response Rate

The main technological difference between OFCEAS and Cavity Ring Down Spectroscopy (CRDS) is the patented **Feedback** technology allowing to tune the LASER and the measurement vessel to their resonance frequencies. This yields a 200 data points extremely high resolution spectrum, resulting in an optical resolution of 10 KHz (compared to the optical resolution of 1 MHz – 1,000 KHz – of the CRDS technology). This 100x improvement factor in optical resolution combined with the spectral range covered guarantees single analyte selectivity and lack of false positive response due to the presence of spectroscopically interfering chemicals in the sample matrix.

Patented Low Pressure Sampling

Ap2e's patented low pressure (100 mbar) sampling system frees the integration from problems associated to high water vapor concentration and subsequent transfer line heating requirements.

Low pressure sampling allows to work at temperatures much lower than the dew point temperature without risk of water condensation in the lines and / or optics.

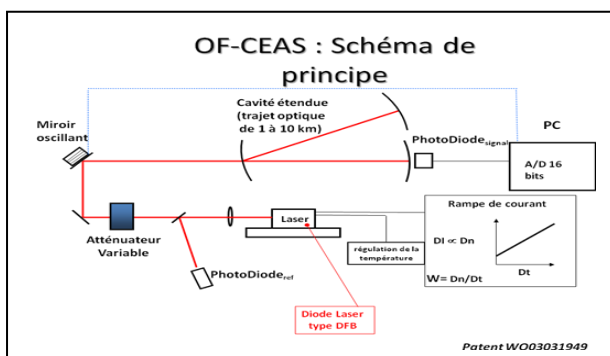
Ap2e's patented low pressure sampling system frees the user from the installation and maintenance costs of high temperature sample transfer lines.

Speed of Analysis

Low pressure sampling system allows for faster sample transfer times (typically less than 0.5 seconds per meter of line).

OFCEAS technology, when used with a low volume gas cell, allows for extreme sensitivity with integration times less than 1 second.

The ProCeas H₂S, by integrating both patented technologies into one dedicated complete analytical solutions, enables **true real time measurement**.



ProCeas H₂S - Advantages

- Chemical Selectivity (No False Positive)
- Extremely low LOD's (measured in ppb's)
- Wide Dynamic Range (ppb to ppm; range > 10⁴)
- Short Response Time
- No Instrumental Response Drift
- Intrinsic Robustness of the Technology & Design
- Reduced Maintenance
- Ambient Temperature Sampling

:: AP2E ::

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S.A.S au capital de 246 670 € – Siret : 491 649 067 00023 – N° TVA : FR36491649067

Product Specifications

Sampling

Flow Rate	3 – 9 Liters / Hour
Maximum Operating Temperature	600°C (~ 1,000F)
Maximum Operating Humidity (absolute)	25% vol. (contact us for feasibility estimate if above)
Measurement Operating Pressure	X atm ± 100 mbar

Pre-Installation & Installation Requirements

Operating Temperature	Standard : 15 – 25°C (59 – 77 F) Optional : 10 – 40 °C (50 – 104F)
Sampling Line :	
• Temperature > 10°C and H ₂ O < 20 % vol.	Simple polymer line
• Temperature < 10°C or H ₂ O > 20 % vol.	Heated transfer line (40°C - 104F)
Power Requirements	200 W
Power Supply	110 – 220V / 50 – 60 Hz
Compressed Air (dry; without oil residues)	1 – 6 bar capacity (not provided)

Dimensions & Weight

Dimensions	9" Rack integration (face: 4U; depth 545 mm / 21.7")
Weight	30 kg - 66 lbs

Computer & Software

Local Display & Control	5.7" color touch screen
Local Software	Win ProCeas ©; OS: Windows © XP © 32-bit

Data I/O's

Digital I/O's (Ethernet; RS232; RS485)	MODBUS (standard) Other digital I/O's available on request.
Analog I/O's	Optional.

Analytical Specifications

Measurement Technology	Laser OFCEAS (Optical Feedback Cavity Enhanced Absorption Spectroscopy; Patent No. WO03031949)
Wavelength	1.57 µm
Chemical measured	Dihydrogen Sulfide (H ₂ S) in non hydrocarbon matrices
Calibration Range	0 – 200 ppb
Repeatability	< 0.5% of maximum concentration in calibration range.
Zero drift	None (absolute measurement; OFCEAS intrinsic property)
LOD	2 ppb @ 60 second integration time. 5 ppb @ 10 second integration time.

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