Ocean Insight | HR Series Spectrometers

High Resolution in a Compact Instrument

HR series spectrometers are small-footprint, high-resolution instruments well suited for applications such as wavelength characterization of lasers and LEDs, gas and plasma analysis, and determination of elemental atomic emission lines. Depending on the HR spectrometer model and configuration, optical resolution of <0.5 nm (FWHM) is possible.

At a Glance

HR2000+ SERIES

Spectrometer options: User-configured; enhanced-sensitivity (-ES); extended-wave-length range (CG)
Detector: 2048-element linear silicon CCD array
Wavelength range: Configuration-dependent, within 200-1100 nm
Optical resolution: ~0.9 nm (FWHM)
Integration time: 1 ms-65 seconds
SNR (at full signal): 250:1 (full signal)
Triggering: Multiple modes available

HR4000 SERIES

Spectrometer options: User-configured; extended-wavelength range (CG)
Detector: 3648-element linear silicon CCD array
Wavelength range: Configuration-dependent, within 200-1100 nm
Optical resolution: <0.5 nm (FWHM)
Integration time: 4 ms-20 seconds
SNR (at full signal): 300:1 (full signal))
Triggering: Multiple modes available

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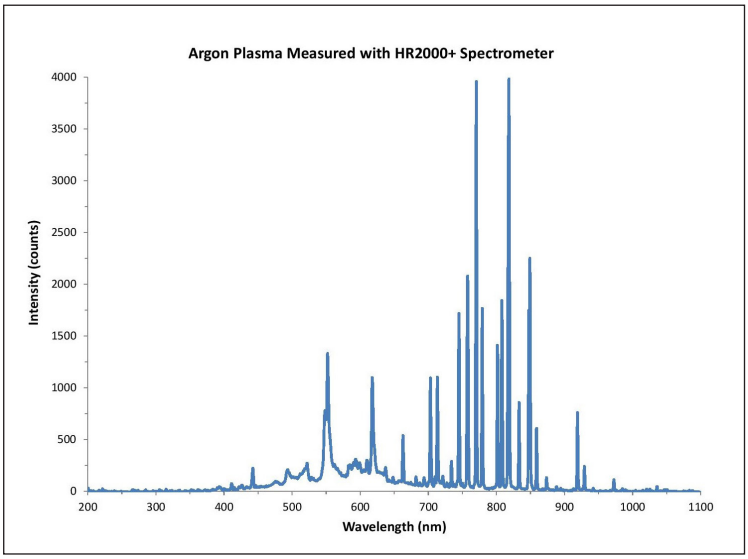
High Resolution, Triggering Versatility

With high-resolution performance and high-speed acquisition capabilities, the HR spectrometers are ideal for applications where closely aligned spectral features must be resolved and high light levels may saturate detectors.

Also, HR spectrometers have triggering functions to provide accurate timing and synchronization between the spectrometer and other devices. Four low-jitter trigger modes and normal (free-running spectral acquisition) operating modes are possible. The spectrometer can be triggered so that sending the spectrometer a pulse causes it to do something such as a turn off/on a light source, activate a laser, or start or end spectral acquisition.



An HR2000+ spectrometer measured an argon plasma in a contained reaction chamber. The strong spectral lines from 690-900 nm are emission lines from neutral Argon (Ar I) with the lower intensity lines from 400-650 nm resulting from the singly ionized Argon atoms (Ar II).

Example Applications

- Gas absorbance
- Emission line analysis
- Laser characterization
- Laser-induced breakdown spectroscopy (LIBS)
- Plasma monitoring
- Solar irradiance measurement
- Thin film measurements

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