The Acton LS 785 from Princeton Instruments is a powerful lens-based instrument ideal for spectroscopists working in the near-IR region. The LS 785 is a high-throughput tunable Raman spectrometer that features a micrometer controlled grating, allowing the user to access the NIR between 750 nm and 1100 nm. At an aperture of f/2, the LS 785 is perfectly matched to an optical fiber input and offers >4X the throughput of a standard f/4 mirror-based spectrograph. With its fast AR-coated compound lenses from our Acton Optics group, and a custom gold-coated grating, the LS 785 provides the highest throughput and best imaging commercially available in the NIR.

**APPLICATIONS**

- NIR Raman spectroscopy

**FEATURES**

- Complete system offerings with Princeton Instruments deep depletion CCD detectors
- Working range between 750 nm and 1100 nm, with micrometer adjustable coverage
- NIR optimized f/2 refractive optics
- Gold-coated 1200 gr/mm grating
- Optional 830 gr/mm grating
- Custom designed AR coatings
- Optional: LightField® 64-bit software with IntelliCal™ spectrograph calibration system
- Wide range of accessories available

**BENEFITS**

- Choose from various camera models for the highest performance and sensitivity, with a peak QE of 95%
- Provides wide spectral coverage when using lasers from 785nm to 830nm: with Raman shifts of 126 cm\(^{-1}\) to 2340 cm\(^{-1}\) with 785nm excitation and 126 cm\(^{-1}\) to 2040 cm\(^{-1}\) with 830nm excitation
- Provides the highest throughput and imaging quality available in the NIR
- Offers the highest efficiency as well as the flattest response in the working spectral region, with resolution of 5 cm\(^{-1}\) or better
- Every optical surface in the lens assemblies has over 99% transmission throughout the entire working range of the spectrograph
- Powerful cutting-edge user interface, complete control over spectrometers & cameras, easy-to-use tools for experimental setup, data acquisition and post-processing.
- Including slit shutter, fiber adapters, edge/notch filter assemblies

**SPECIFICATIONS**

- Aperture Ratio: f/2
- Spectral Resolution: 5 cm\(^{-1}\) with 25 micron fiber
- Dispersion (nm/mm): 6.12 nm/mm at 900 nm
- Wavelength Coverage: 785 - 1100 nm
- Image Curvature: 2.5 Pixels or less
- Astigmatism: 120 μm or less with 1200 gr/mm grating
- Total System Throughput: 68% or greater
- Dimensions: Height: 6", Width: 18", Depth: 12", Weight: 24.5 lbs (11.2 kg)
Outstanding Spectral Resolution

5 cm\(^{-1}\) resolution accommodates a wide variety of NIR Raman applications

Superb spectral resolution across the entire focal plane

Outstanding Image Performance

An array of 200 \(\mu\)m fibers imaged across the 27 x 4 mm focal plane demonstrates outstanding field flatness and imaging quality

Selected Ne Lamp Spectral Lines

Model ARC 446-070
Raman Filter Chamber

Model FC-446-021-U:
Universal Fiber Adapter
Will accommodate SMA, FC or 10 mm ferrules

Raman Shift Coverage

<table>
<thead>
<tr>
<th>Excitation Wavelength (nm)</th>
<th>Working Range (cm(^{-1})) *</th>
<th>Coverage (cm(^{-1}))</th>
<th>Lowest Range Covered (cm(^{-1}))</th>
<th>Highest Range Covered (cm(^{-1}))</th>
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</thead>
<tbody>
<tr>
<td>785</td>
<td>126 to 3635</td>
<td>3500</td>
<td>126 to 2340</td>
<td>2000 to 3635</td>
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<tr>
<td>830</td>
<td>126 to 2950</td>
<td>2824</td>
<td>126 to 2040</td>
<td>1400 to 2950</td>
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</tbody>
</table>

* With optional edge filter assembly.
Acton LS 785 with Universal Fiber Adapter and PIXIS 400BR_eXcelon Deep Depletion CCD Camera

Acton LS 785 Spectrometer Configurations

The Acton LS 785 can be purchased with a Princeton Instruments PIXIS or PyLoN deep depletion CCD detector, creating a complete system. The PIXIS and PyLoN® deep depletion CCDs are proprietary CCDs that feature dual readout amplifiers (low noise and high capacity) and 3 software selectable gains for superior sensitivity or high signal to noise.

**CCD SPECIFICATIONS** (See individual CCD datasheets for more information)

<table>
<thead>
<tr>
<th>Models</th>
<th>CCD Detector</th>
<th>Pixel Formats available (model)</th>
<th>Pixel Size (μm)</th>
<th>Image Area (mm x mm)</th>
<th>Max. Cooling</th>
<th>Peak QE @ 800nm</th>
<th>Typical Dark Current</th>
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</thead>
<tbody>
<tr>
<td>100BR_eXcelon</td>
<td>PIXIS</td>
<td>1340 x 100 1340 x 400</td>
<td>20 x 20 20 x 20</td>
<td>26.8 x 2.0 26.8 x 8.0</td>
<td>-80°C -75°C</td>
<td>98% 98%</td>
<td>0.03 e-/p/s 0.03 e-/p/s</td>
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<tr>
<td>400BR_eXcelon</td>
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<tr>
<td>100BR_eXcelon</td>
<td>PyLoN</td>
<td>1340 x 100 1340 x 400</td>
<td>20 x 20 20 x 20</td>
<td>26.8 x 2.0 26.8 x 8.0</td>
<td>-120°C -120°C</td>
<td>98% 98%</td>
<td>2 e-/p/hr 2 e-/p/hr</td>
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