Acton Research SpectraPro® monochromators and spectrographs use diffraction to separate polychromatic “white” light into individual wavelengths. When polychromatic light encounters the grating it is dispersed so that each wavelength reflects from the grating at a slightly different angle. The monochromator or spectrograph then reimages dispersed light so that individual wavelengths (or a desired band of wavelengths) can be directed to a detection system or sample. Roper Scientific/Acton Research offers over 100 high-performance gratings for the SpectraPro line of monochromators and spectrographs.

**Selecting the Proper Grating**

| Groove density (or groove frequency): | Groove density affects the mechanical scanning range and the dispersion properties of a system. It is an important factor in determining the resolution capabilities of a monochromator. Higher groove densities result in greater dispersion and higher resolution capabilities. Select a grating that delivers the required dispersion when using a CCD or array detector, or the required resolution (with appropriate slit width) when using a monochromator. |
| Mechanical scanning range: | Refers to the mechanical rotation capability (not the operating or optimum range) of a grating drive system with a specific grating installed. Select a grating groove density that allows operation over your required wavelength region. |
| Blaze wavelength: | Diffraction grating efficiency plays an important role in monochromator or spectrograph throughput. Efficiency at a particular wavelength is largely a function of the blaze wavelength if the grating is ruled, or modulation if the grating is holographic. Select a blaze wavelength that encompasses the total wavelength region of your application(s), and if possible, favors the short wavelength side of the spectral region to be covered (see Grating Efficiency Curves). |
| Quantum wavelength range: | Normally determined by the blaze wavelength. Select a grating with maximum efficiency over the required wavelength region for your application(s). |

**Advantages of Multiple-Grating Turrets**

Quite often it becomes necessary to select two or three gratings to achieve efficient light throughput over a broad spectral region. That’s why SpectraPro monochromators and spectrographs are equipped with multiple-grating turrets as a standard feature. Turrets make grating changes an easy push-button or computer-controlled operation, while reducing the risk of handling the delicate gratings.

Contact your local Roper Scientific sales representative for assistance in selecting the best gratings for your applications.
Grating Efficiency Curves*

* The grating curves show typical relative efficiency for the various blaze wavelengths for selected gratings and should be used as a comparison guide only.

**Optimal Working Range for the Most Commonly Requested Gratings**

<table>
<thead>
<tr>
<th>Blaze</th>
<th>50 g/mm</th>
<th>75 g/mm</th>
<th>150 g/mm</th>
<th>300 g/mm</th>
<th>600 g/mm</th>
<th>1200 g/mm</th>
<th>1800 g/mm</th>
<th>2400 g/mm</th>
<th>3600 g/mm</th>
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<tbody>
<tr>
<td>250 nm</td>
<td>190-450 nm</td>
<td>200-500 nm</td>
<td>300-600 nm</td>
<td>400-1000 nm</td>
<td>500-1500 nm</td>
<td>600-2000 nm</td>
<td>700-2500 nm</td>
<td>800-3000 nm</td>
<td>900-3500 nm</td>
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<tr>
<td>300 nm</td>
<td>200-500 nm</td>
<td>300-600 nm</td>
<td>500-1200 nm</td>
<td>650-1600 nm</td>
<td>750-1800 nm</td>
<td>850-2200 nm</td>
<td>950-2700 nm</td>
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<td>500-1200 nm</td>
<td>750-2000 nm</td>
<td>900-2400 nm</td>
<td>1050-2800 nm</td>
<td>1200-3200 nm</td>
<td>1350-3600 nm</td>
<td>1500-4000 nm</td>
<td>1650-4400 nm</td>
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<td>600 nm</td>
<td>400-1200 nm</td>
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<td>750-2400 nm</td>
<td>900-3000 nm</td>
<td>1050-3600 nm</td>
<td>1200-4200 nm</td>
<td>1350-4800 nm</td>
<td>1500-5400 nm</td>
<td>1650-6000 nm</td>
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<td>1000-3600 nm</td>
<td>1200-4800 nm</td>
<td>1450-6000 nm</td>
<td>1700-7200 nm</td>
<td>1950-8400 nm</td>
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<td>475-1300 nm</td>
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<td>2450-10800 nm</td>
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<td>190-400 nm; 450-1400 nm</td>
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