

# SE 100

## Echelle Spectrograph

### Small and Affordable



SE 100

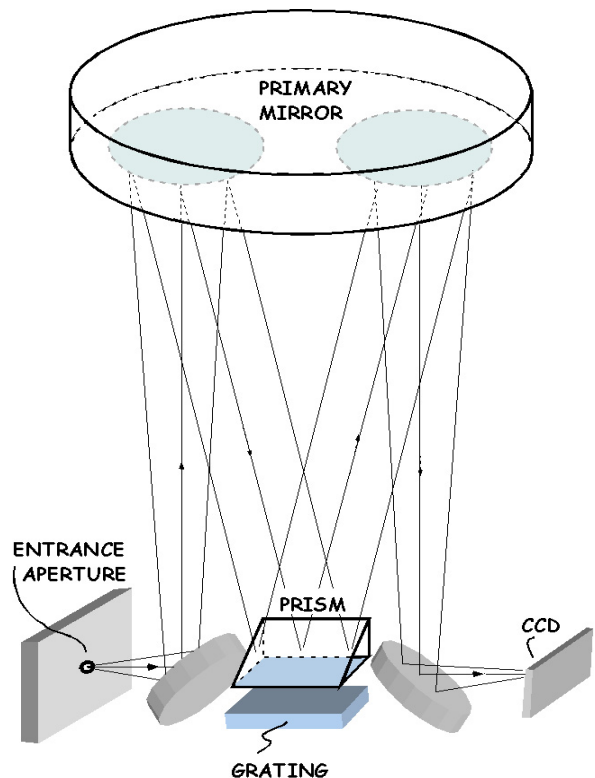
SE 200

The SE 100 represents a compact and low-cost alternative to the proven SE 200 system. It has all the advantages of the SE 200 compared to standard scanning Czerny-Turner spectrographs. The SE 100 achieves high spectral resolution over the entire wavelength range of the CCD with *no moving parts*. The system is ideal for both general spectroscopy applications and Laser Induced Breakdown Spectroscopy. The SE 100 is the first echelle spectrograph to be designed specifically for EMCCD (electron-multiplied CCD) cameras. EMCCDs cost less and have higher resolution than standard ICCD cameras.

Multiple orders of diffraction from the echelle grating are separated by a cross-dispersing prism before they are imaged onto the CCD. The detector chip effectively becomes an array of many thousands of pixels, which sample wavelengths in a range up to 190-1100 nm. The SE 100 monitors the entire spectrum continually. Spectra are recorded with maximum accuracy, even when the light source or sample changes over time.

*The SE 100 is manufactured by Optomechanics Research Inc. and is protected by U.S. Patent 6,628,383. Software for the instrument and CCD camera is written by Rhea Corp. and Catalina Scientific Instruments, LLC.*

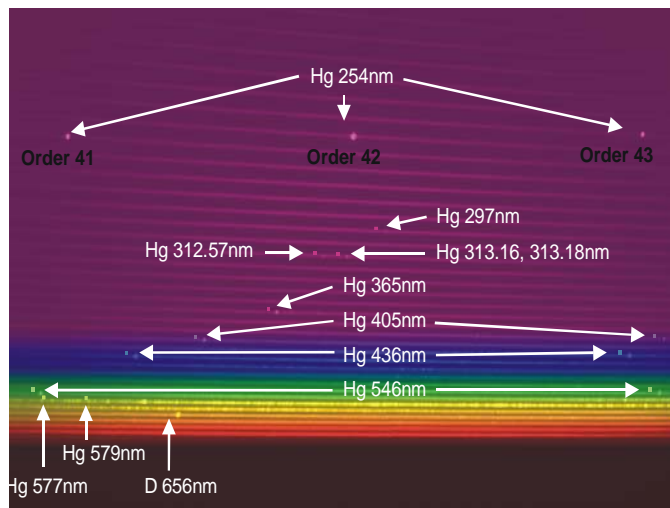
- Very efficient and compact
- Lowest cost for any echelle
- Designed for use with high QE, **gateable** EMCCD cameras
- No mechanical scanning - get the entire spectrum in one exposure
- Covers the entire range of the CCD detector (UV-VIS-NIR) with completely linearized spectra in wavelength or Raman  $\text{cm}^{-1}$  shift
- Interchangeable dispersion modules and entrance slits adapt to many user applications



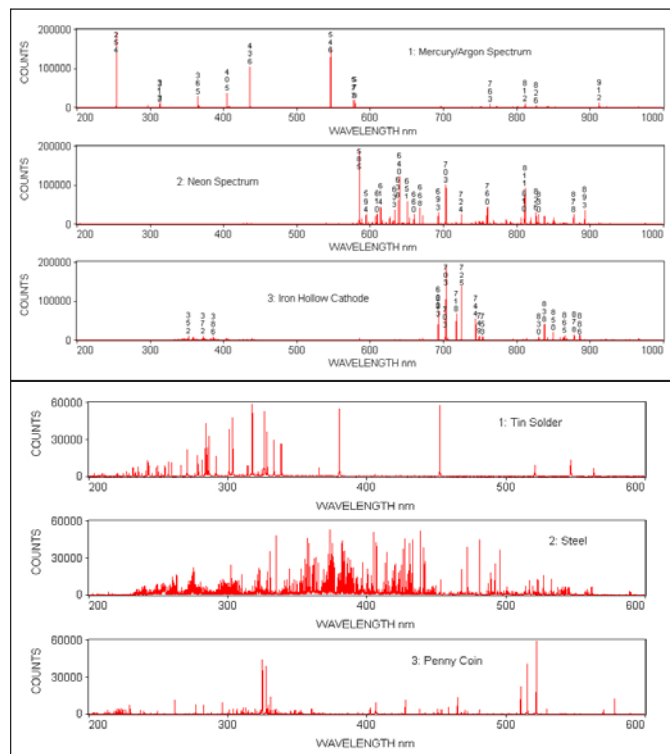
SE 100 optical layout

## KestrelSpec™ Software

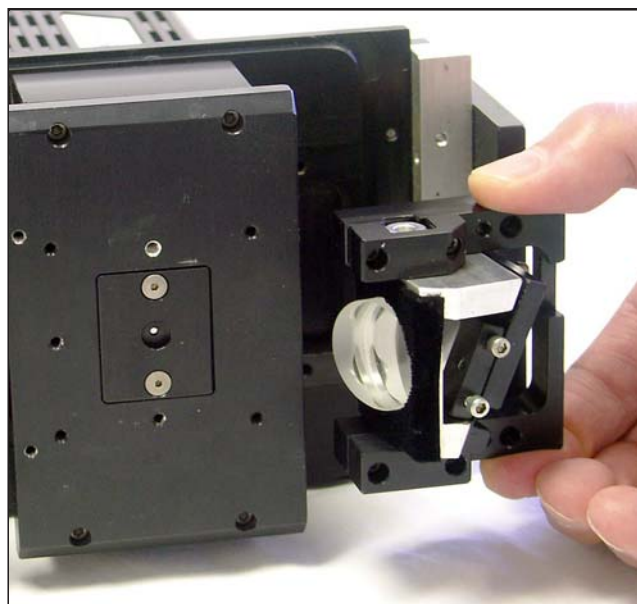
The SE 100 system is controlled by industry-standard KestrelSpec software, with complete real-time camera control and spectral acquisition. Our unique "2-point calibration" is performed in seconds with high accuracy. Spectral diffraction orders are automatically linked, linearized and plotted as data is acquired. Image and spectral data can be easily exported as ASCII files. An Element Identification tool with a user-editable reference library can identify the elements in atomic emission spectra for applications such as LIBS.



*Deuterium, Tungsten and Mercury Image*



*Linked and linearized spectra and LIBS sample spectra*



*Interchangeable SE 100 Dispersion Modules*

## SE 100 Specifications

- Interchangeable Dispersion Modules\*
  - Basic: 350nm - 1100nm range; large order separation;  $\lambda/\Delta\lambda$  is about 3500
  - Standard: 190nm - 1100nm range; largest order separation;  $\lambda/\Delta\lambda$  is about 1800
  - UV/VIS: 190nm - 1100nm range; moderate order separation;  $\lambda/\Delta\lambda$  is about 3200
- Focal length: 100mm
- Dimensions (spectrograph only): 4.375(w) x 1.666(d) x 7.065(h) inches
- Weight: 2 lbs. (spectrograph only)
- Interchangeable entrance slits
- Fiber optic input accessory

\*Values shown are typical. Resolving power ( $\lambda/\Delta\lambda$ ) and wavelength coverage assumes a 8 x 8 mm CCD with 8 x 8 micron pixels and a 25 x 25 micron slit.  $\Delta\lambda$  is the FWHM peak width in nm and  $\lambda$  is the wavelength.

## Computer System Requirements

- Windows™ 98/Me/2000/XP
- Appropriate digital interface for CCD

For more information please contact:

**Catalina Scientific Instruments**  
1870 W. Prince Road, Suite 21  
Tucson, AZ 85705 USA

Tel: 520 571 8000  
Fax: 520 571 0120  
Web: [www.catalinasci.com](http://www.catalinasci.com)  
E-mail: [info@catalinasci.com](mailto:info@catalinasci.com)