

# Analytical Instrumentation

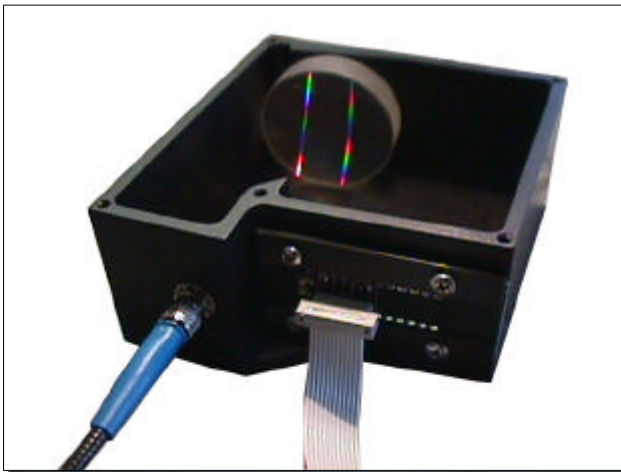
Surf the New Wave in Portable Fiber Optic Spectrometry



## Concave Grating Spectrometers for UV-VIS & NIR

The BLACK-Comet spectrometer series offers low cost, research grade performance in a small, ruggedized package. The instruments are exceptionally robust with no moving parts and are packaged in a small metal enclosure for a variety of spectroscopy applications in field, research lab, factory process, and QA/QC environments.

Each spectrometer utilizes a 40mm diameter concave grating with aberration correction to provide superb spectral imaging. This significantly improves spectral shapes by reducing coma and astigmatism present in



plane grating miniature spectrometer designs. The flat field spectrograph architecture does not utilize mirrors and therefore provides the lowest possible stray light in the UV. StellarNet's patented optical design with permanent alignment employs no grating adjustments to provide unbeatable thermal stability minimizing wavelength drift from temperature. A multi-band filter is integrated into the spectrograph to provide order sorting and prevent optical aliasing. The instruments optical input is a standard SMA-905 connector, using single strand fiber optic cable with typical silica core diameters of

400um, 600um, and 1000um. Each spectrometer connects via the supplied USB2 cable and requires no external power supply. ThermoElectric Cooling (TEC) is optional and can be added to any of the models. Six different models are available, ranging from the -HR high resolution series to the -SR wide range models - perfect for any application!

**BLACK-Comet Model and Resolution Table**

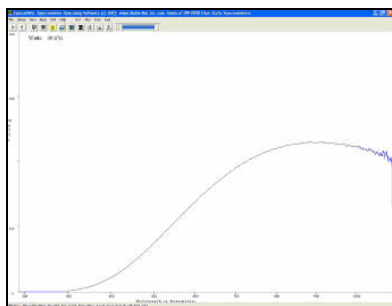
| Model      | Wavelength Range | Estimated resolving resolution based on slit size |            |           |           |           |
|------------|------------------|---|------------|-----------|-----------|-----------|
|            |                  | Slit-200um  | Slit-100um | Slit-50um | Slit-25um | Slit-14um |
| BLK-C      | 190-850nm        | 6.0   | 3.0        | 1.5       | 0.85      | 0.75      |
| BLK-CXR    | 280-900nm        | 6.0   | 3.0        | 1.5       | 0.85      | 0.75      |
| BLK-C-SR   | 200-1080nm       | 8.0   | 4.0        | 2.0       | 1.4       | 1.3       |
| BLK-CXR-SR | 220-1100nm       | 8.0   | 4.0        | 2.0       | 1.4       | 1.3       |
| BLK-HR-UV  | 200-600nm        | 3.0   | 1.5        | 0.7       | 0.5       | 0.4       |
| BLK-HR-VIS | 350-780nm        | 3.0   | 1.5        | 0.7       | 0.5       | 0.4       |



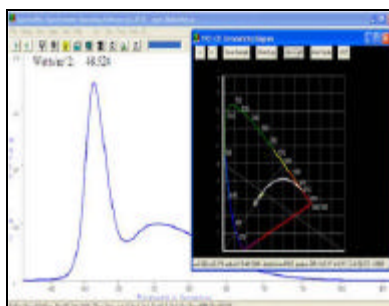
## **StellarNet BLACK-Comet Concave Grating Spectrometers for UV-VIS & NIR**

StellarNet offers a variety of fiber optic sampling accessories for a multitude of applications with the BLACK-Comet spectrometer series. For SpectroRadiometric measurements, StellarNet offers NIST calibrated integrating spheres, cosine receptors, and lens attachments. High performance light sources, optical fibers, probes, and transmission/reflectance fixtures are available for any Optical Metrology and Colorimetry application. StellarNet also offers cuvette holders, dip probes, and flow cells for SpectroChemistry and Fluorimetry measurements.

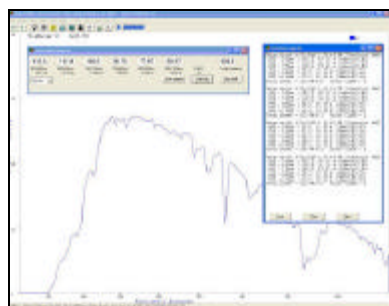
The SpectraWiz® software package, included free with every spectrometer, has many applications for spectroscopy. SpectroRadiometry applications include user defined calibrated absolute intensity modes (Watt/m<sup>2</sup>, Lumen, Radiant/Luminous Flux, etc), CIELAB color analysis and color rendering, UVa/UVb/UVc monitoring, and solar simulator classification. Standard Optical Spectral Analysis tools such as FWHM, centroid, and peak wavelength are available with more advanced features such as baseline correction, data smoothing, spectral derivatives, and episodic data capture also included. ChemWiz® concentration analyzer creates a PLS method save and recall with concentration display the SpectraWiz ID® application provides element identification for LIBS/Plasma and OES. StellarNet also provides a developer's toolbox of source codes, customizable demo programs, and full spectroscopy programs in LabVIEW, Visual Basic, Delphi Pascal, and MS Visual C- **All with your BLACK-Comet spectrometer.**



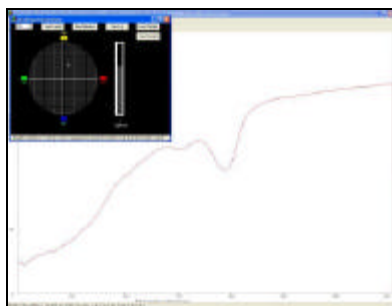
SpectroRadiometry  
Tungsten-Halogen Lamp Spectra



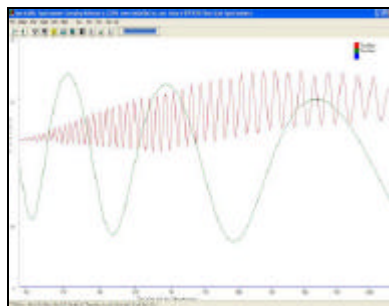
LED Metrology  
Complete Analysis Systems



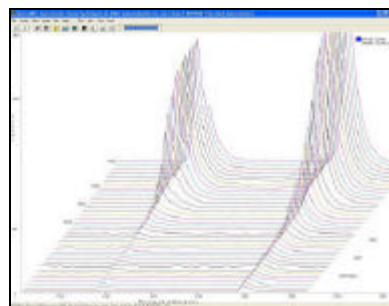
Solar Irradiance Measurements  
and Simulator Classification



Reflectance Spectra and  
Colorimetric Data for a Red  
Habanero Pepper



Metrology of Films, Filters, and  
Optical Components



Absorbance Chemistry and  
Fluorimetry with high speed data  
collection for kinetic study

### **Specifications**

|                       |                              |                                |                               |
|-----------------------|------------------------------|--------------------------------|-------------------------------|
| Dynamic range:        | 2000:1 with 6 decades        | Dimensions:                    | 69mm x 100mm x 150 mm         |
| Optical resolution:   | see resolution table         | Power consumption:             | <100mA via USB2               |
| Detector type:        | 2048 pixel CCD/PDA (opt)     | Interface:                     | USB2 cable                    |
| Pixel size:           | 14um wide x 200um tall       | Digitizer:                     | 16-bit @ 2.5MHz rate          |
| Detector Integration: | 1ms to 65s                   | Stray light:                   | 0.02% at 435nm; 0.2% at 200nm |
| Slit size options:    | 14, 25, 50, 100, or 200um    | Fiber optic input:             | SMA905                        |
| Concave Grating:      | Aberration corrected         | Signal to noise:               | 1000:1                        |
| Grating type:         | Holographic, 590g/mm         | Operating systems:             | Win98/Me/00/XP/Vista/7        |
| Spectrograph:         | f/2, Flat field - no mirrors | Software included:             | SpectraWiz program & apps     |
| Order sorting filter: | Integrated multi-band        | Also <b>free</b> programs for: | LabView/VC/VBA/Delphi         |



14390 Carlson Circle, Tampa, Florida, 33626 USA  
Voice: +1-813-855-8687 Fax: +1-813-855-2279

www.StellarNet.us  
ContactUs@StellarNet.us