

## **Spectroradiometric, Photometric & Colorimetric Capabilities of Ocean Optics SpectraSuite Software**

Based upon measurements of spectral irradiance in the 380-780nm visible wavelength range, SpectraSuite software will calculate a whole gamut of spectroradiometric, photometric and colorimetric parameters.

The hardware necessary for such measurements would typically comprise:

“Tethered” spectrometer, e.g. USB2000+, GRATING # 3 (350-1000nm), SLIT 25, L2, DET2B-350-1000, QP400-2-VIS/BX, CC-3, SPEC-CAL (300-1050nm) or LS-1-CAL plus SPECTRASUITE

Portable spectrometer, e.g. JAZ-EL350, JAZ-A-IRRAD, QP400-2-VIS/BX, CC-3, SPEC-CAL (300-1050nm) or LS-1-CAL

Optional integrating sphere (e.g. FOIS-1 plus LS-1-CAL-INT or a Labsphere system)

### **Measurement Parameters:**

#### **1. Spectroradiometric**

- ▶ Spectral irradiance ( $\mu\text{W}/\text{cm}^2.\text{nm}$ )
- ▶ Spectral radiant flux ( $\mu\text{W}/\text{nm}$  – with integrating sphere)
- ▶ Integrated spectral irradiance ( $\mu\text{W}/\text{cm}^2$ , integrated between user-defined limits)
- ▶ Spectral radiant energy ( $\mu\text{J}/\text{cm}^2.\text{nm}$ )
- ▶ Integrated spectral radiant energy ( $\mu\text{J}/\text{cm}^2$ , integrated between user-defined limits)
- ▶ Irradiance on a logarithmic scale (dBm)
- ▶ Photons/ $\text{cm}^2.\text{s}$
- ▶ Moles of photons
- ▶ eV
- ▶ PAR (photosynthetically active radiation), 400-700nm with optional PARSpec module

#### **2. Photometric**

- ▶ Luminous flux (lumens – with integrating sphere)
- ▶ Illuminance (lux)
- ▶ Luminous intensity (cd)
- ▶ Photopic and scotopic standard observer functions

#### **3. Colorimetric**

- ▶ CIE Tristimulus values, XYZ
- ▶ CIE 1931 2° chromaticity, xyz
- ▶ CIE 1960 10° chromaticity, uvw
- ▶ CIE 1976 10° chromaticity,  $u'v'w'$
- ▶ Colour rendering (CRI),  $R_a$  and  $R_{1-14}$
- ▶ Correlated Colour Temperature (CCT, Kelvin)
- ▶ Dominant wavelength & purity
- ▶ CIE whiteness & tint
- ▶ Hunter Lab  $L^*a^*b^*$
- ▶ CIELAB hue-angle & chroma