

The measurement of the spectral irradiance of light sources requires a spectroradiometer - which is a spectrometer calibrated with respect to wavelength and spectral irradiance.

Usually, a spectrometer is delivered with a wavelength calibration. This calibration is obtained by measuring distinct emission lines of known wavelengths and interpolating between them.

However, in general, the measured spectrum does not represent the true spectrum of interest since all optical components along the light path (including mirrors, filters, diffraction gratings) as well as the detector have their own spectral characteristics and thereby affect the measurement results.

In order to resolve this issue, a transfer function linking the arbitrary intensity scale of the detector to a physically meaningful scale is required. Such a transfer function is determined by measuring the spectral irradiance of a calibrated light source. ISFH offers such measurements as a service.

For spectrometers with known transfer function, ISFH is accredited to test the accuracy of the measurement of the spectral irradiance in an ISO 17025 certified measurement procedure.



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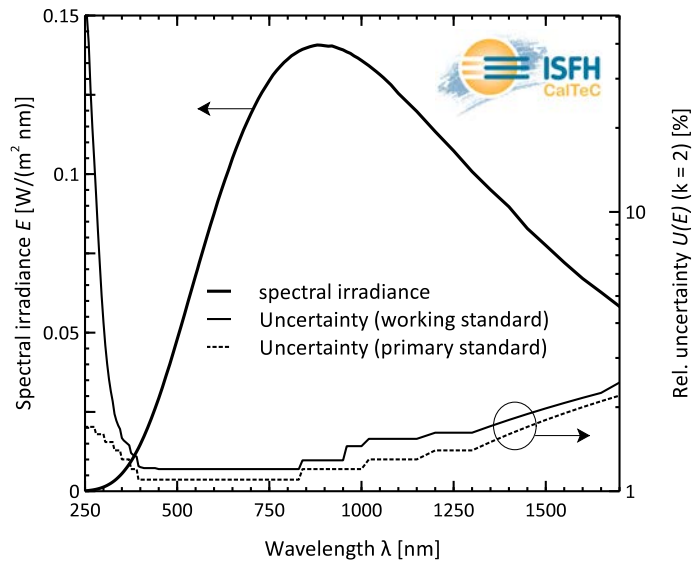
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Spectroradiometric measurements



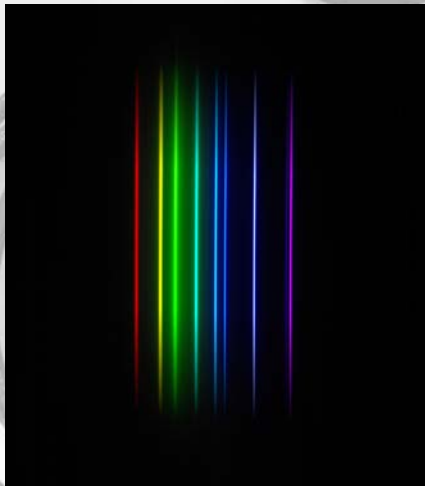


You operate a spectrometer with diffuser or fiber optics and want to measure spectral irradiance in absolute units? ISFH provides the required transfer function which transforms your spectrometer into a spectroradiometer.

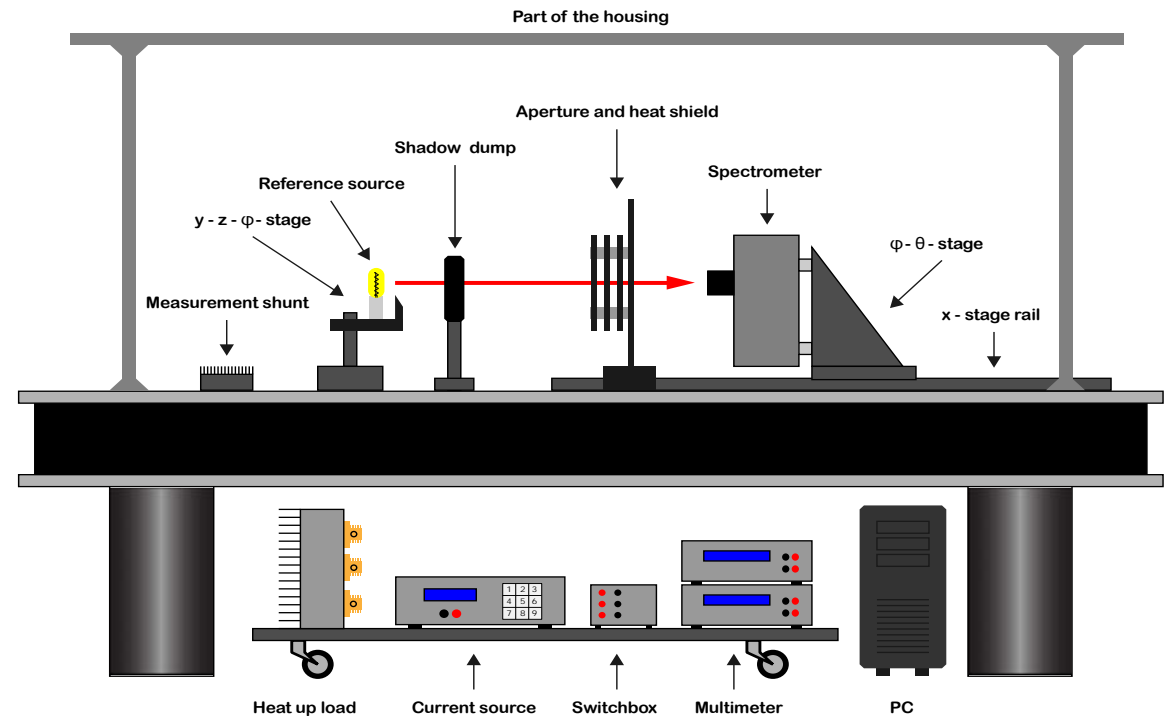
In a first step we measure the known spectral irradiance of a 250 W tungsten halogen lamp in a distance of 300 mm from the light source for wavelengths between 300 and 1700 nm. The spectral irradiance of the lamp is traceable to a primary PTB* calibration. In a second step we calculate the transfer function to allow for measurements in absolute units of $\text{W}/(\text{m}^2 \text{ nm})$. In a third step the correct measurement of the spectral irradiance of a reference light source is tested in an ISO 17025 certified procedure.

As an additional service we offer to test the correct wavelength determination of your spectrometer. For this test we use the emission lines of a mercury reference light source.

Spectrum of a tungsten halogen reference light source



Spectrum of a mercury reference light source



Setup for precise spectroradiometric measurements at ISFH CalTeC.

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