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Spectroradiometer Directions

Your rental unit comes pre-assembled and pre-calibrated. If you disconnect the fiber or probe, the calibration may no longer be valid.

Be sure to install the software FIRST before plugging in the system. Go to the link below and download SPECTRASUITE. Be sure to pick the version that matches your PC operating system. We have software for 32 bit or 64 bit Windows, Linux and Mac. The screen shots below are the Windows version.

Spectrasuite ver 2 password

fg6zKWBukL

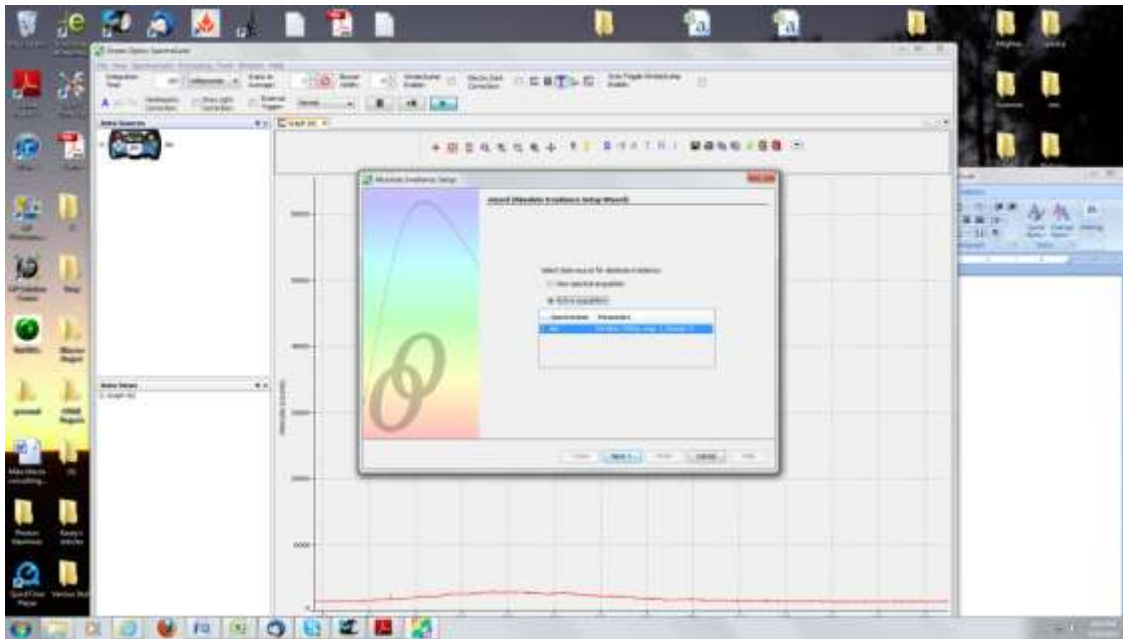
download software from:

<http://oceanoptics.com/support/software-downloads/#discontinued>

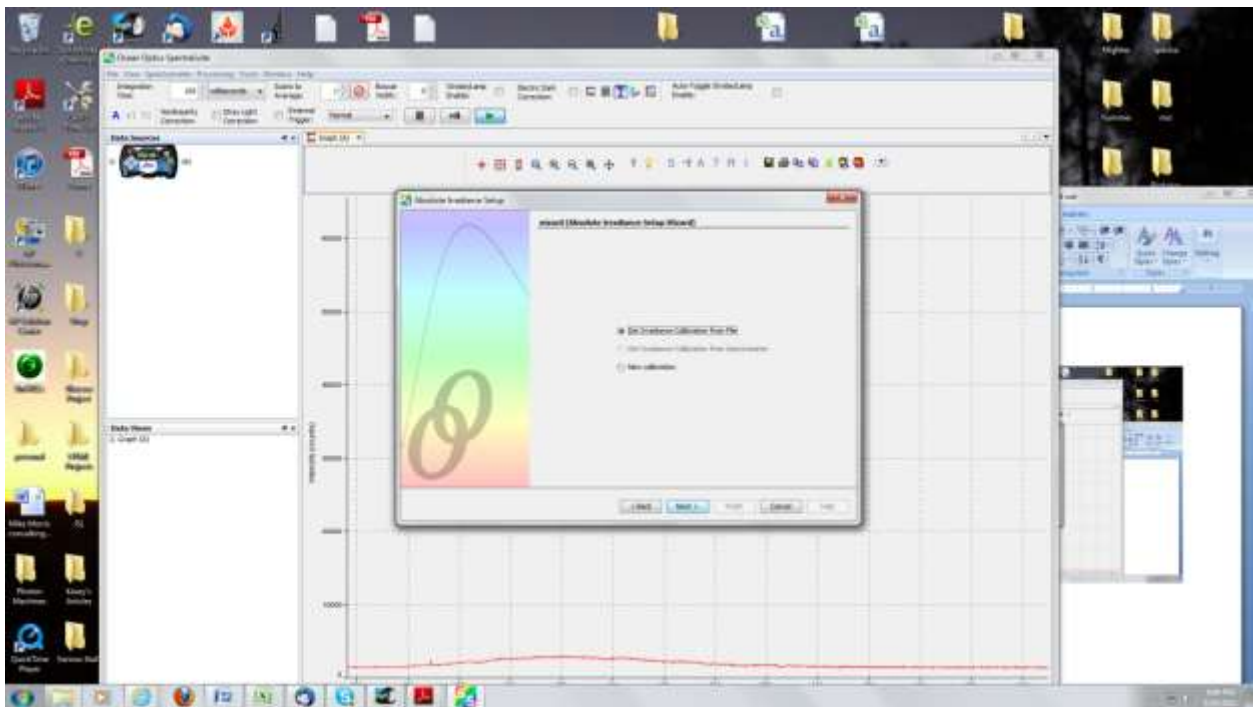
After the software is installed, plug in the Jaz unit with the USB cable. Then press the “on” button. The driver should install. If you have any problems with the installation, you can call the Ocean Optics tech Support folks (727-733-2447)

After the driver is installed, you can open Spectrasuite. You will see a picture of the HR4000 on the left, and a spectral window with an active trace on the right. You can point the cosine corrector at a light source to see the response. Set the boxcar width to “3”. Change the integration period to adjust to the light level you want to measure. Smaller is faster (like the shutter in a camera) and is less sensitive. Longer is more sensitive. If the signal hits the top (saturates) it becomes invalid data. You can also signal average (scans to average) to get better signal to noise. If you set this to 10 for example, you will see a screen refresh after 10 scans have been acquired and averaged. The more the better but it also slows down operation.

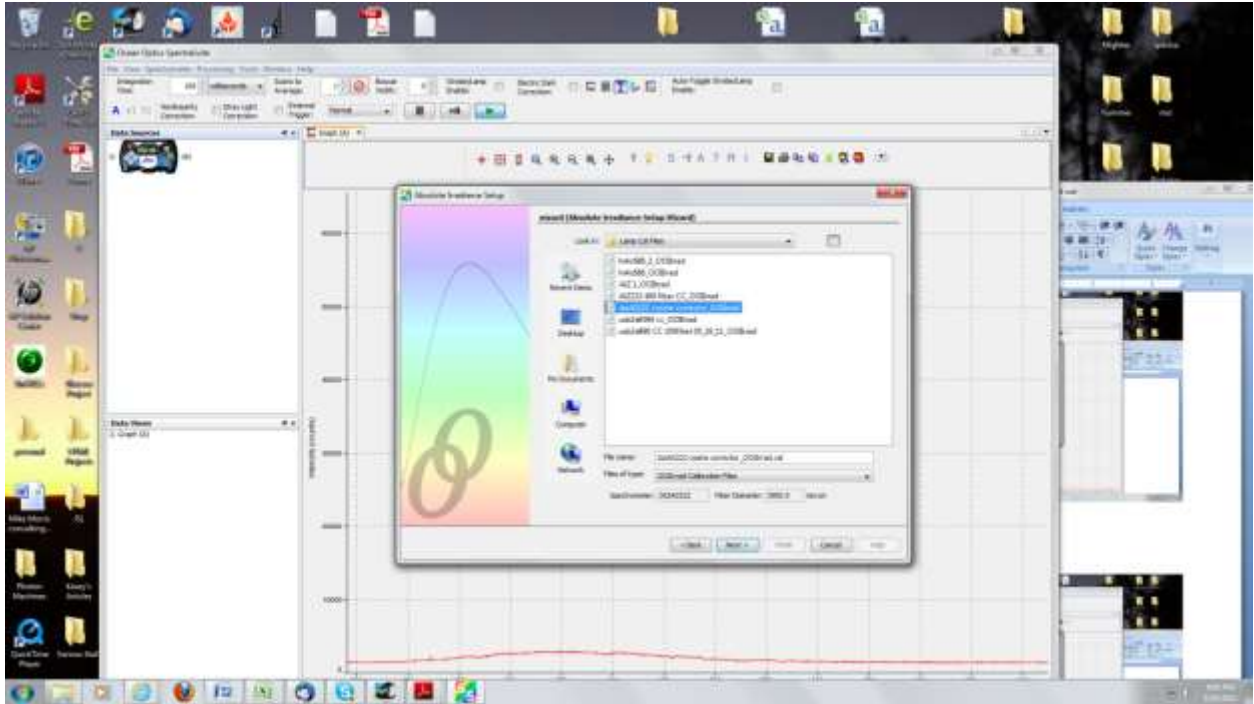
The first step to making a radiometric measurement is to press the “1” icon on the top bar (3rd from the left). A mouse hover will tell you the function of the icons. This one is for “New Irradiance Measurement.” A series of screens will appear to walk you through the process. The first asks for “new acquisition” vs “active acquisition”. Choose the Active acquisition and click “Next”



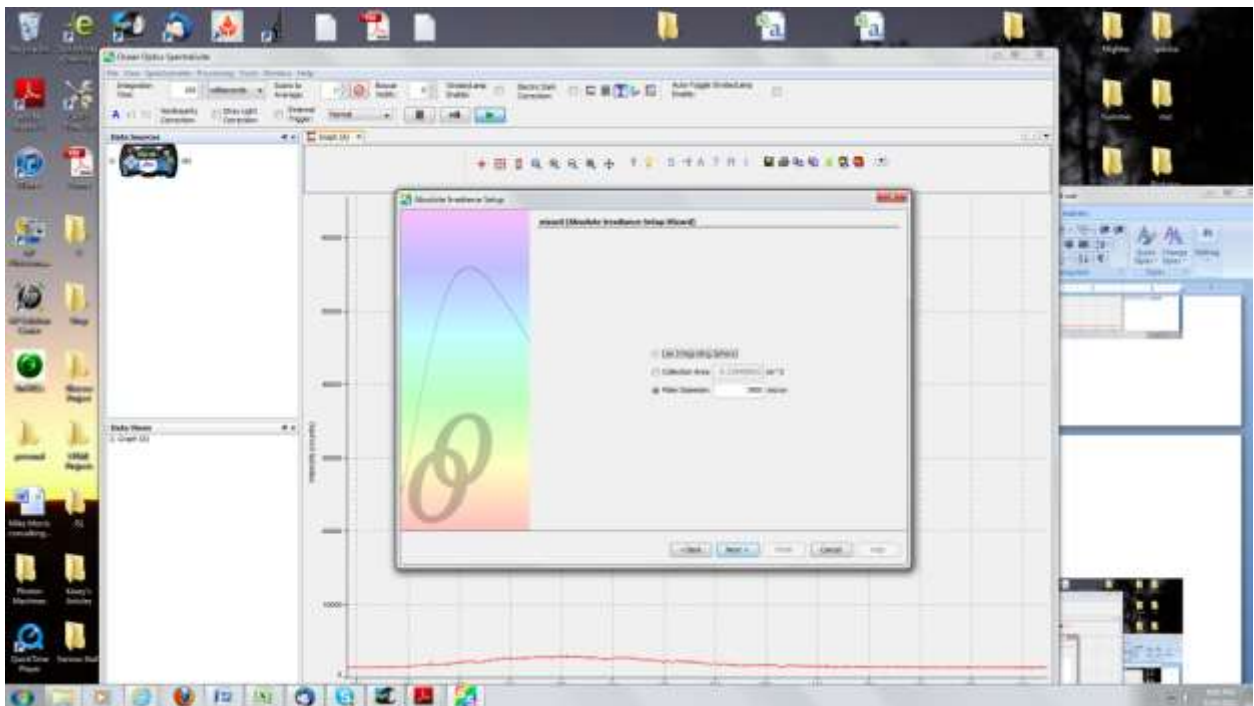
Now you choose "Get Irradiance Calibration from File" The file would have been emailed to you. It has a name with OOIIRad in it.



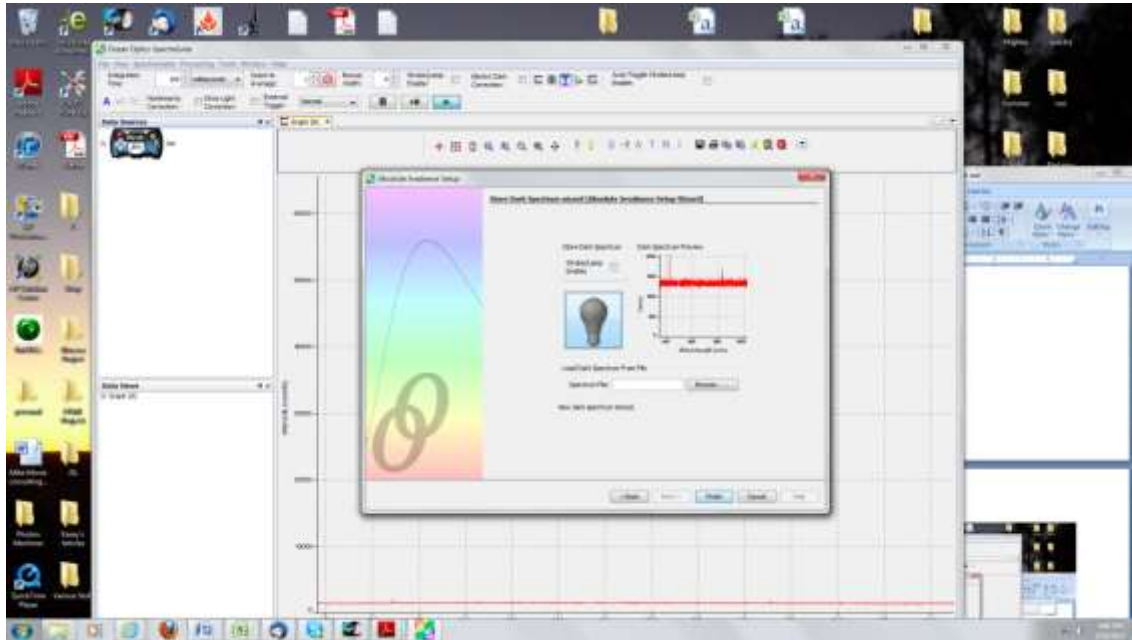
Now find the file. The file window defaults to a JAZ type file... change to file type to "all file types"



Your calibration was done with a cosine corrector. The active diameter of this sensor is 3900 microns. This should appear but if not you can enter that as the fiber diameter.

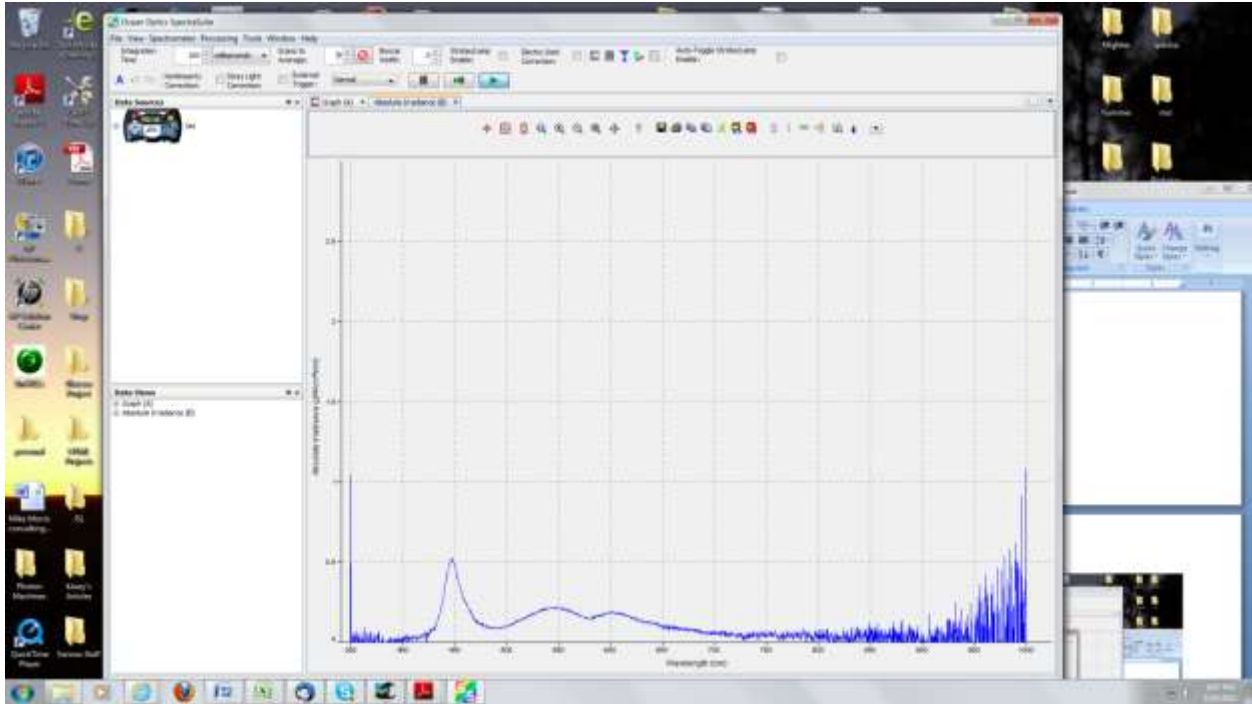


Now you need to store a dark spectrum. Cover the cosine corrector with something opaque. The result will be shown in the window, scaled to the level. It should look more or less flat with pixel to pixel variation as shown in the image below. If light is leaking in you would see something like a spectral shape. You can re-do this as often as you need until you are confident. Hit NEXT.



Now the spectra appears in radiometric terms. The vertical axis is irradiance – power per unit area striking the cosine corrector. The cosine corrector is response to the component of energy that's normal to its surface. So, when the surface is perpendicular to the light beam you get maximum signal.

You may have to re-scale the graph at this point. The graph scaling icons are above the graph. The 3rd in from the left is the vertical rescale button. The leftmost gets you back to default.



If you are interested in just radiometric data you are ready to take measurements.

If you are interested in further calculations can look at photopic data, CIE color and other variations (see below)

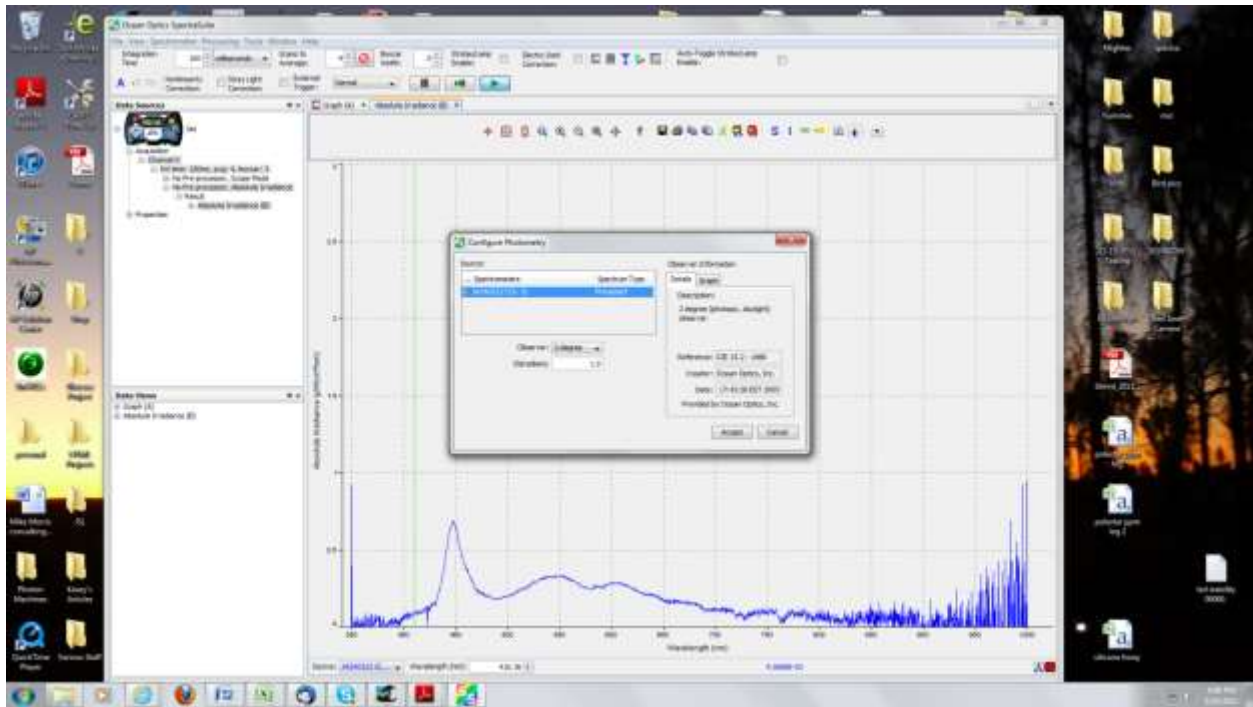
Additional Information

Radiometric data tells you optical power. Photopic data is weighted by the average human eye response. To get photopic data, click on the candle icon. There are two selections to make. One is the observer (2 degree is for normal distance vision. 10 degree is for what things look like when they are very close to the eye.). Steradians are the solid angle that your cosine corrector makes when viewing a light source. As the cosine corrector is moved further away, the solid angle gets smaller. The default is 1 but that's not going to be correct. You need this value if you are trying to measure brightness, as brightness is defined as photopic energy per steradian. To calculate the solid angle in steradians (W) for the cosine corrector with radius r, at a distance R from the point source use this (approximate) formula:

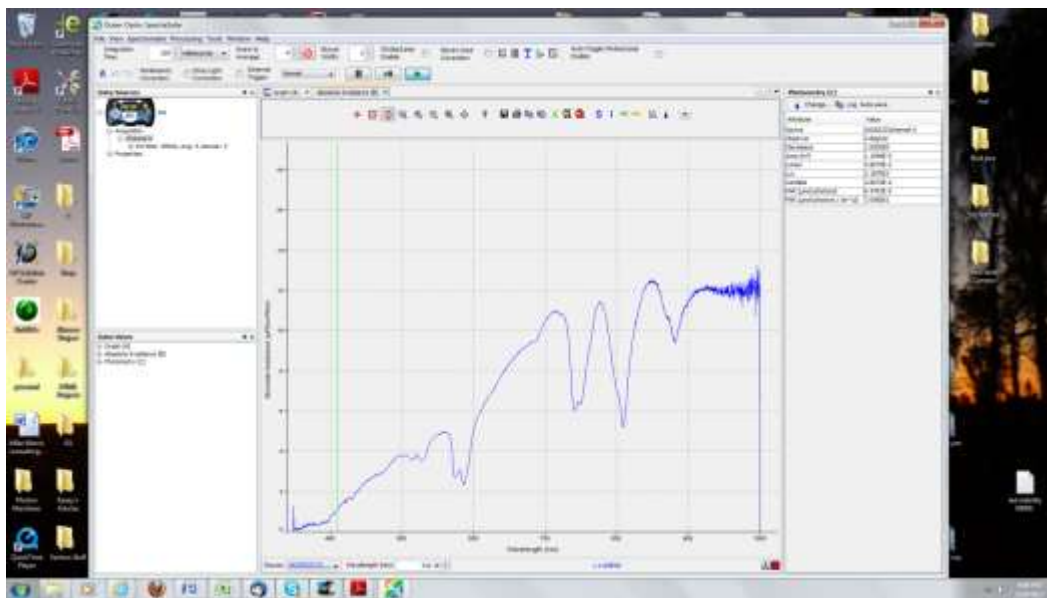
$$(1) W = \pi \cdot r^2 / R^2$$

The cosine corrector radius is 1.95mm. Here are a few values:

Distance to cosine corrector (mm)	100	75	50	25
Cosine corrector radius	1.95	1.95	1.95	1.95
PI r ² /R ²	0.001195	0.002124	0.004778	0.019113



Now the photopic units appear in the right hand pane.



Other general directions:

Download the manual for Spectrasuite at: <http://www.oceanoptics.com/technical.asp>

Here are some useful videos:

<http://spectroscopytv.com/2009/02/10/radiometric-calibration-using-a-cosine-corrector/>

<http://spectroscopytv.com/2009/02/13/led-measurement-using-an-integrating-sphere/>