Measuring an absorption spectrum with the Thunder Optics spectrophotometer

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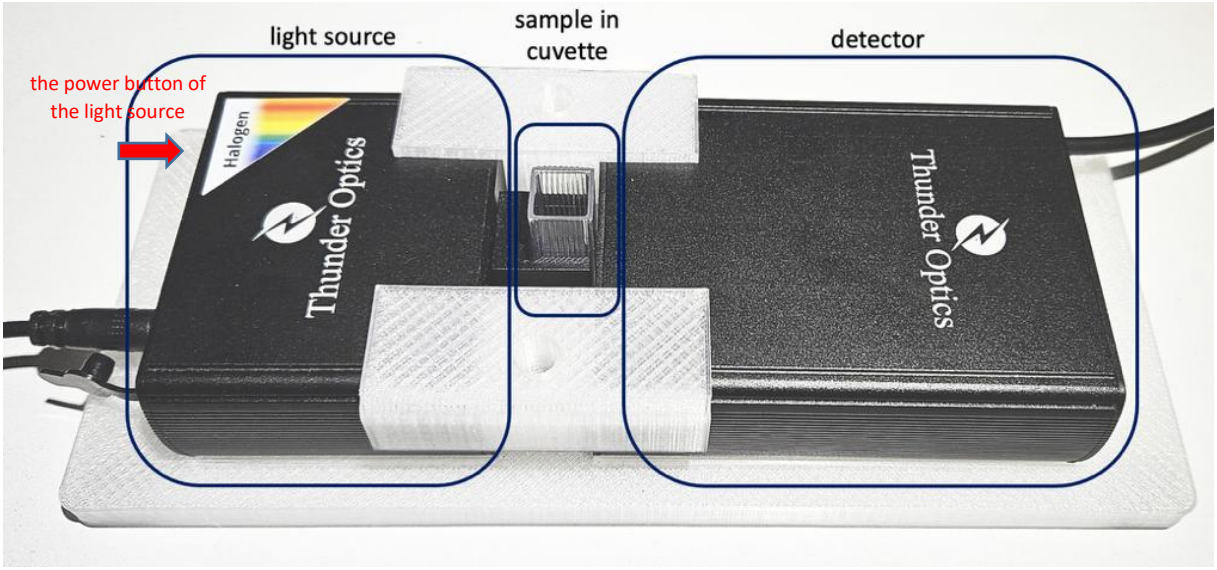
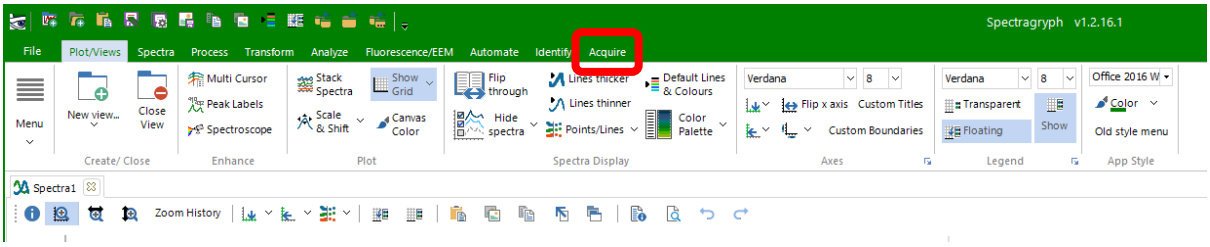
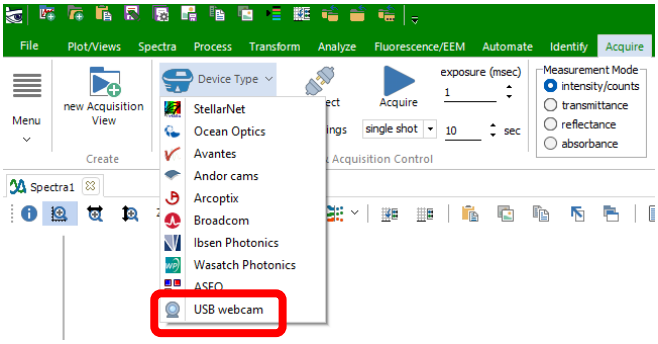
The measurement setup:

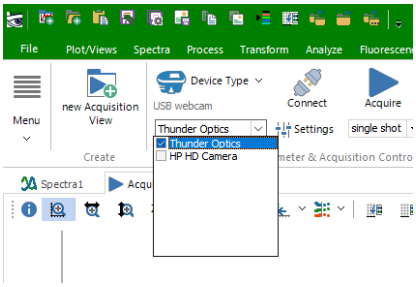


1. Launch the **Spectragryph software**.
2. To connect the spectrophotometer, click on the last item, **Acquire**.

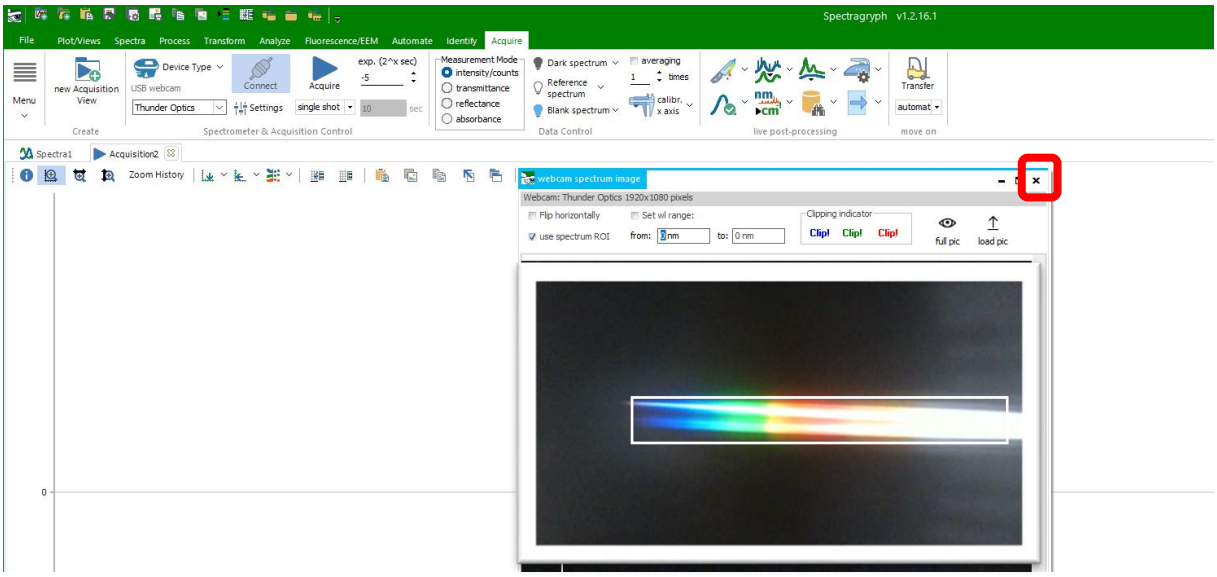


3. Select the device type: **USB webcam**. If necessary, check the **“Thunder Optics”** device.

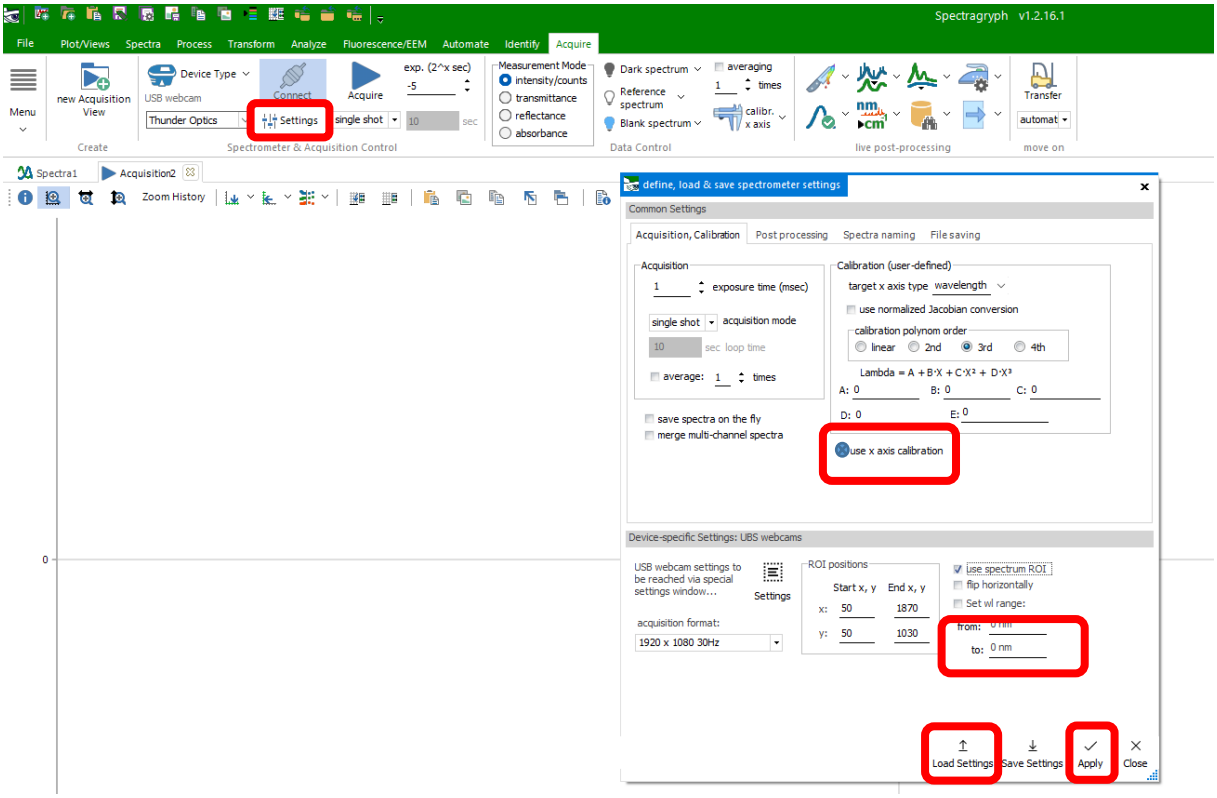




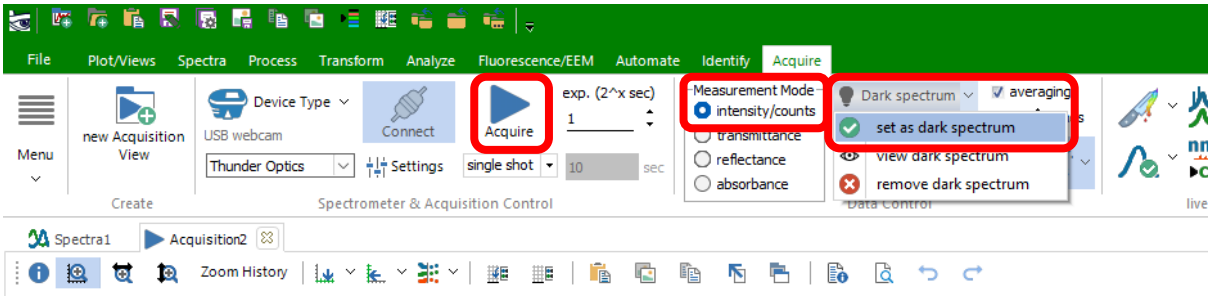
4. Click **Connect** and a new window will open (webcam spectrum image) showing a **snapshot of the webcam detector**. Wait a few seconds if necessary. **Close the window with the „x" to confirm the recommended settings.**



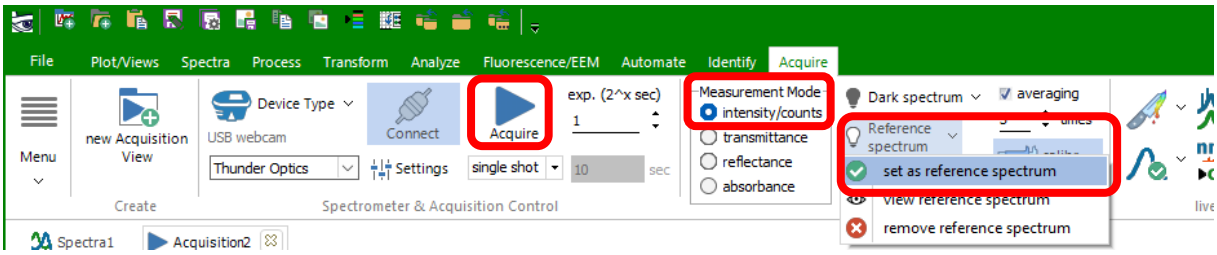
5. Click on **Settings**. Here, select the **Load Settings** option, then load the **x-scale calibration file corresponding to the spectrometer** based on the serial number of the device (sticked to the device housing). Check that "**use x axis calibration**" is checked, and do not change the other settings. Finally, click **Apply**.



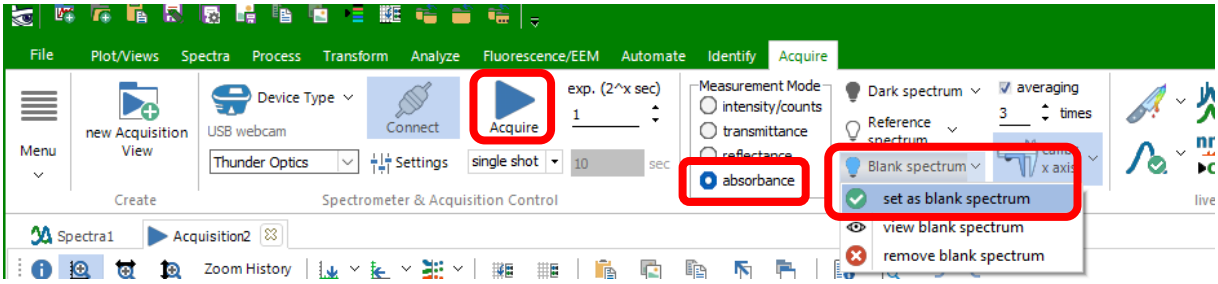
6. Recording a dark background (**Dark spectrum**). To do this, the **illuminating light source must be turned off**, **cover the cuvette holder with your hand**, make sure that the device is in intensity measurement mode (**Intensity**), then click **Acquire**. After recording the dark spectrum, set it as a dark spectrum (by clicking on the down arrow on the right next to the "Dark spectrum": **set as dark spectrum**). If any error message appears, acknowledge it.



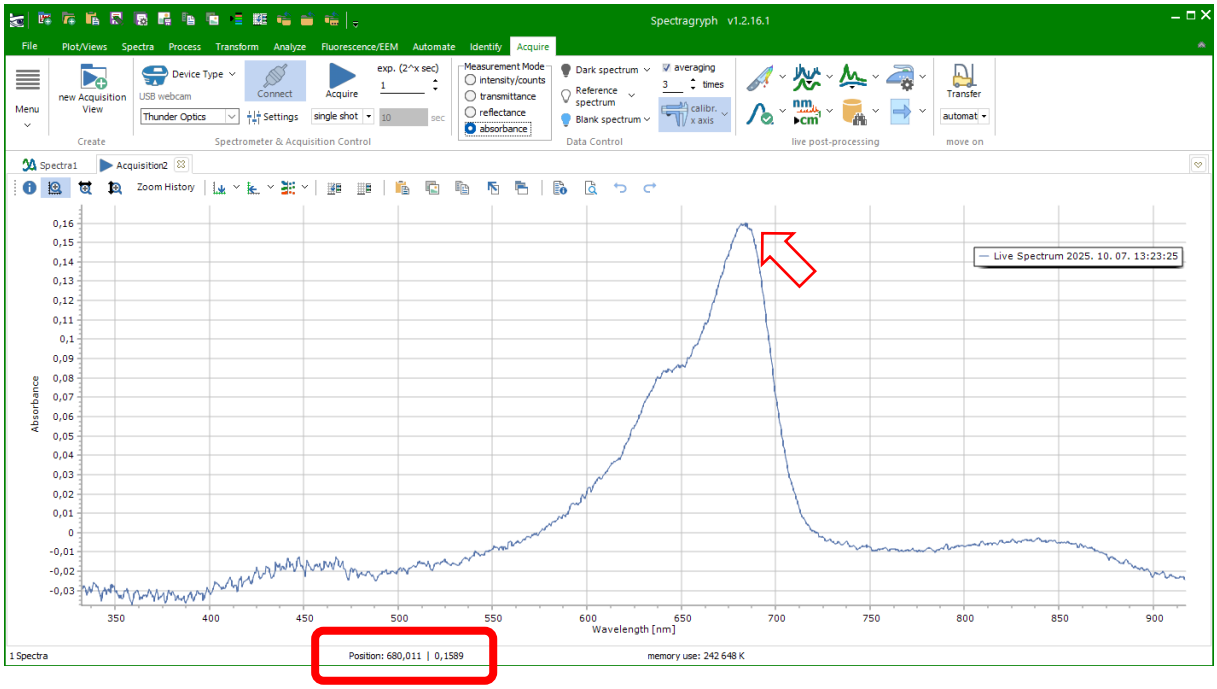
7. Recording a reference spectrum (**Reference spectrum**). To do this, **turn on the light source**, **place a cuvette filled with distilled water** (2-3 ml liquid with a transfer pipette) in the optical path, then click **Acquire** in **Intensity mode**. After the spectrum is displayed: click the down arrow on the right next to the "Reference spectrum": **set as reference spectrum**. If any error message appears, acknowledge it.



8. Background recording (**Blank spectrum**). **Keep the cuvette filled with distilled water in the light path** (light source on), but select the "**absorbance**" mode, then click **Acquire**. After the spectrum is displayed: click the down arrow on the right next to the "Blank spectrum": **set as blank spectrum**. If any error message appears, acknowledge it.



9. Recording the **absorption spectrum of the most concentrated methylene blue solution**. **Absorbance mode**. After the measurement, it is advisable to read the absorbance values corresponding to the recommended wavelengths. To read, **simply navigate to the curve at the appropriate wavelength with the mouse cursor and read the absorbance** by rounding it. *Attention: the mouse cursor does not follow the curve, we have to keep the cursor on the line!*



10. Measure the **absorbance of methylene blue solutions of known concentration** (in ascending order of concentration). After the measurement, it is advisable to immediately read the absorbance value corresponding to the maximum.
11. Measurement of a **methylene blue solution of unknown concentration**. After the measurement, it is advisable to immediately read the absorbance value corresponding to the maximum.