Technical Solutions

Manual X-Calibration of a Spectrograph

Products Affected – All Shamrock Spectrographs / Selected Third Party Spectrographs
Software Affected – SOLIS

Implementation of the Manual X-Calibration function to manually calibrate a wavelength range using a specific calibration source.

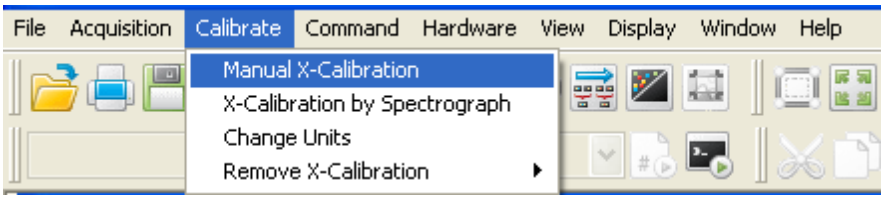
Connect the calibration light source to your spectrograph input.

Select the appropriate grating and turret position in order to acquire signal across the wavelength range required.

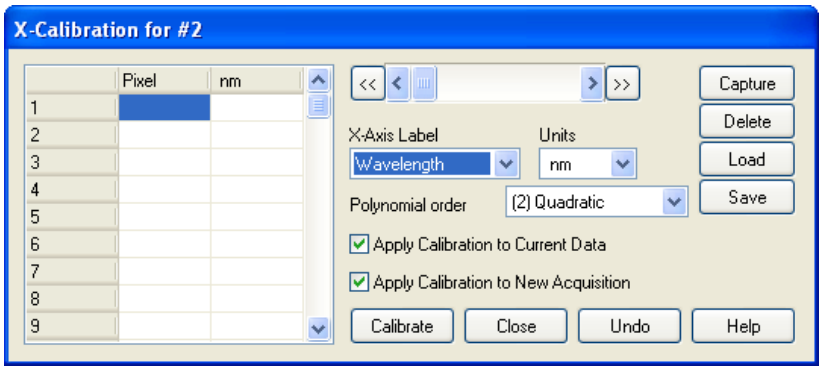
Optimise the camera acquisition settings to maximise the acquired signal.

Take signal acquisition.

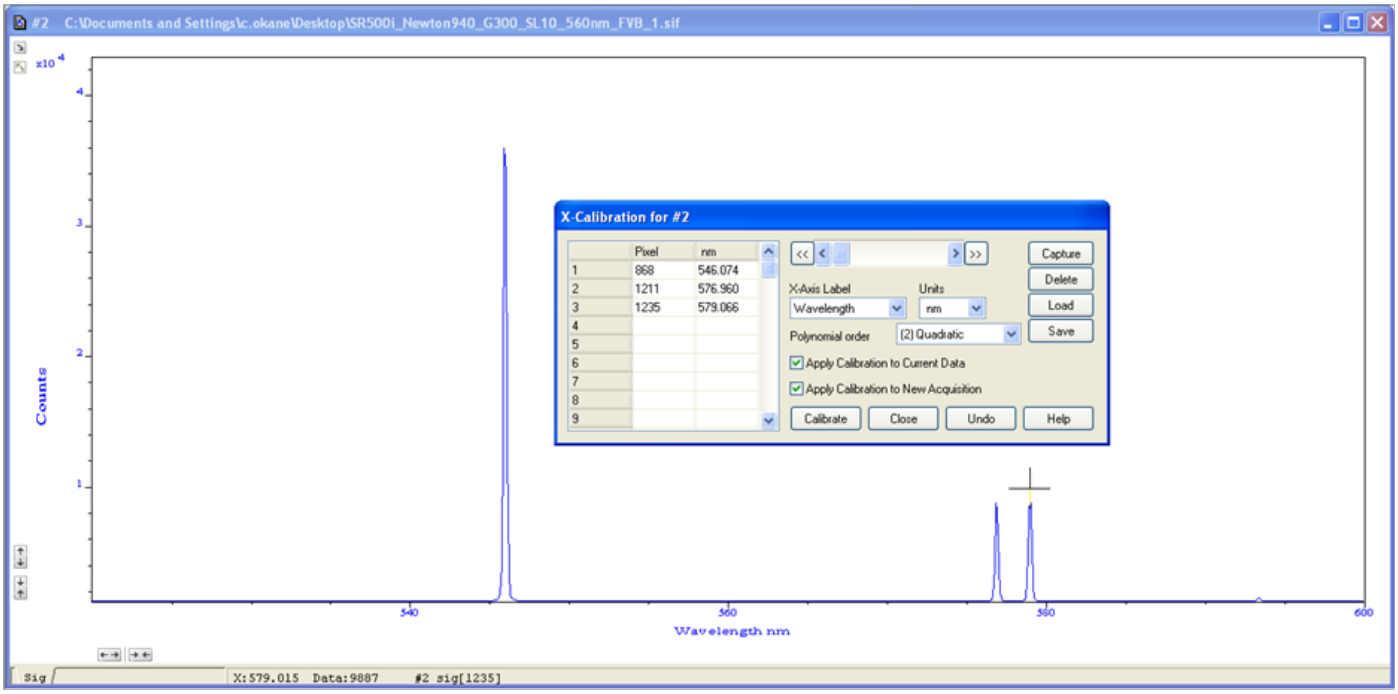
Select ‘Calibrate’, then ‘Manual X-Calibration’, as below.



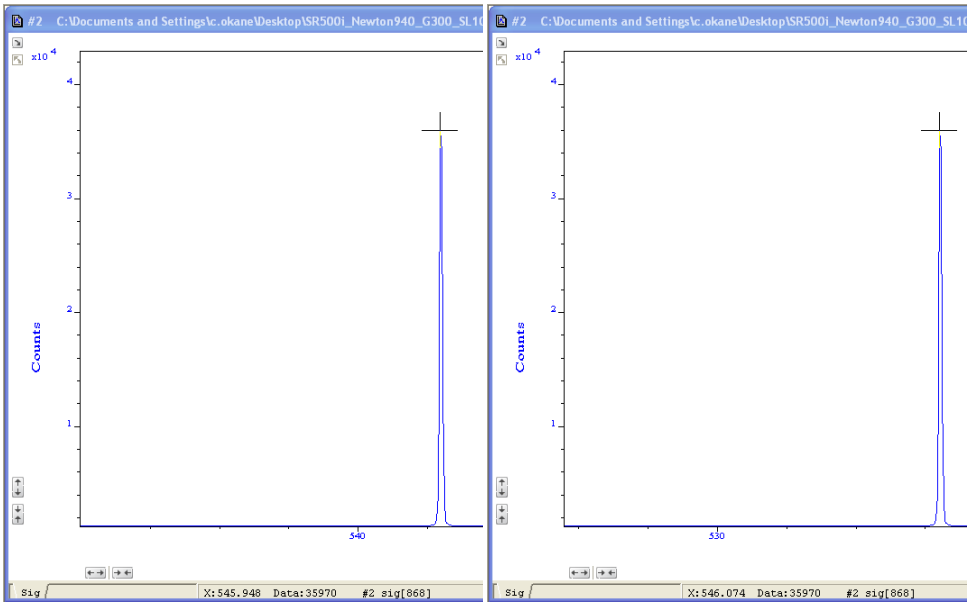
In the ‘Manual X-Calibration’ window, a number of options can be selected such as the units of the X-axis, the type polynomial fit to be applied (linear, quadratic, cubic) and the ability to apply this calibration to current data and new acquisitions.



In the example below, a spectra of a HgAr calibration source is displayed with the wavelength range of 520 nm to 600 nm. For each spectral line or calibration point, place the cursor at the peak maxima and select the ‘Capture’ button. This inserts the corresponding pixel number into the table, beside which you can then type in manually the associated wavelength.



Once the desired number of point have been narrated with the appropriate wavelengths, the 'Manual X-Calibration' can then be applied by selecting the 'Calibrate' button. As you can be observed below, the software applies the required dispersion to the open data.



After performing a Manual X-calibration, this can be saved for application to other datasets which are of identical wavelength ranges.

This .cfg file should not be confused with the main configuration file accessed through the 'File' drop down menu. This is instead a truncated version which can only be loaded through the 'Manual X-Calibration' window as it only contains the calibration data.