Technical Solutions

Mechelle REC Calibration - Andor SOLIS Version and Broadband Calibration Source Type Considerations

Products Affected – Mechelle Spectrograph
Software Affected – SOLIS

Recent improvements to SOLIS software have provided a greater control over the type of calibration files which can be imported and how differing calibration sources, and their accompanying calibration file(s), are utilised in the software during the Relative Efficiency Correction (REC) calibration process.

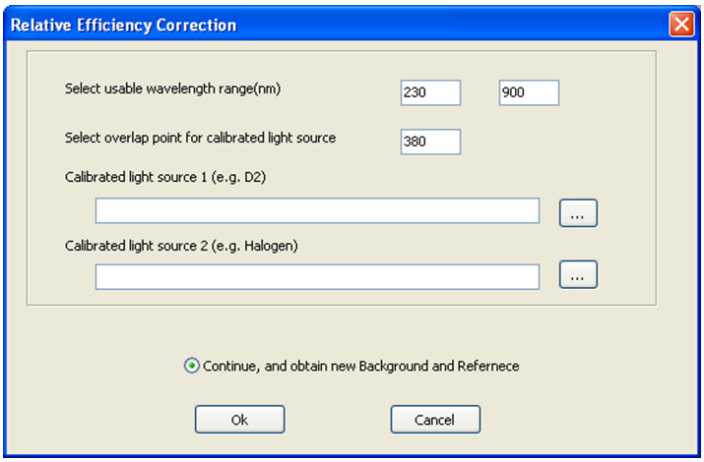
As of the date of publication of this document, the current version of SOLIS software is 4.22.30007. Furthermore, the recommended broadband calibration source solution provided by Andor for REC (intensity) calibration of the Mechelle spectrograph is the Ocean Optic SH2000-CAL-BAL Deuterium Tungsten-Halogen calibration lamps.

However please note that older systems (purchased pre-2012) may very well be operating older software than this, and/or may have been supplied with the older model Ocean Optics DH2000-CAL source which while provided a calibration output source, has not been balanced for better wavelength transition between lamp sources and does not contain spectral flattening filters to suppress visible output from the Deuterium source.

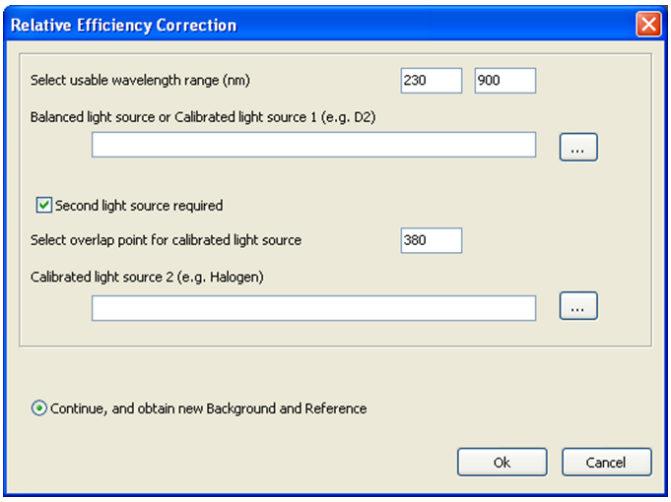
Note: In the DH2000-CAL lamp, the Deuterium and Tungsten-Halogen sources are calibrated and should be operated singularly, and as such, the lamp is provided with a separate calibration file for the UV (Deuterium) and visible (Tungsten-Halogen) sources. The DH2000-CAL-BAL lamp is calibrated with both sources operated together, therefore, this lamp should be operated with both sources on, and as such, the lamp is provide with a single calibration file.

Below, the subtle difference in SOLIS software for using these different sources will be described.

In SOLIS software versions pre-4.22, the Relative Efficiency Correction set=up window is as shown below, compared to the SOLIS 4.22 equivalent window.



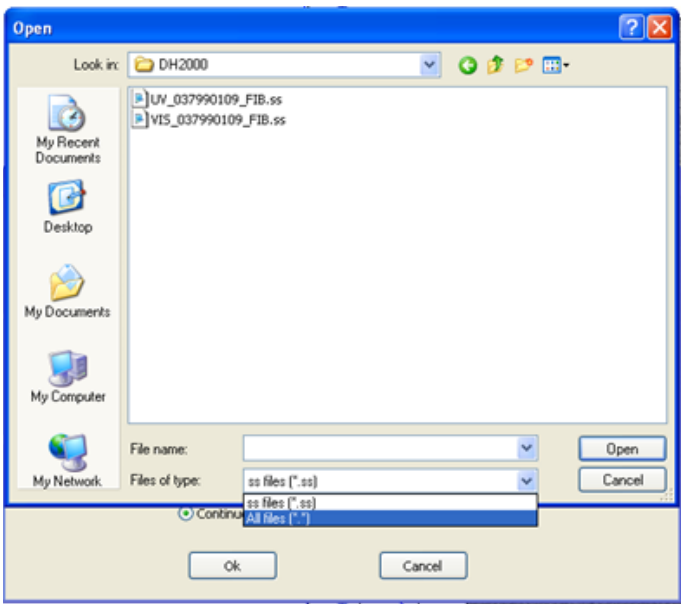
SOLIS version pre-4.22



SOLIS version 4.22

Note that the only difference in SOLIS 4.22, is inclusion of the 'Second light source required' option. If you are using a version of SOLIS pre-4.22, it is possible to use either DH2000 lamp. It is important to remember that if using a DH2000-CAL-BAL lamp, you will be required to split the single calibration files into two files with a crossover at an appropriate wavelength (likely 380 – 400 nm).

Furthermore, SOLIS software versions pre-4.22 will only accept .sis calibration files. Therefore, the .lamp files which are provided with the lamps from the manufacturer need to be converted to this format, (tab delimited and not scientific notation). Please see below.



SOLIS version pre-4.22

SOLIS version 4.22

For SOLIS software version 4.22 and beyond, the software will accept .sis and .lamp files and so .lamp files can be uploaded directly without any manipulation. Obviously, if you are using a DH2000-CAL lamp, the lamps must be operated separately, and as such, use the 'Second calibration source required' option.

If you are operating the DH2000-CAL-BAL lamp, you will only be requested to acquire a Reference 1 signal. The prompts to acquire your background and reference signal(s) are shown for reference below.