CytoViva®

Instructions for operating the HSI SWIR System on the Xenics camera and N17E Spectrograph

Xenica Xeva specs:

Array Specifications	Xeva-1.7-320
Array type	InGaAs
Spectral band	0.9 µm to 1.7 µm (VisNIR optional 0.4 to 1.7 µm)
Resolution	320 x 256
Pixel pitch	30 µm
Array cooling	TE1-cooled (Optional: TE3)
Pixel operability	> 99 %

N17E Spectrograph specs:

| Specifications	
Optical Characteristics	
Spectral Range	900 - 1700 nm
Spectral Dispersion	110 nm/mm
Spectral Resolution	5 nm (w/ 30 µm slit)
Spatial Resolution	RMS spot radius < 15 µm
Image Size (Spectral x Spatial)	max. 7.6 x 14.2 mm
Numerical Aperture	F/2.0
Optical Input	Telecentric
Average Diffraction Efficiency	> 50%, independent of polarization
Stray Light	< 0.5% (halogen lamp, 1400 nm long-pass filter)
Slit Width, default	30 µm (50, 80 and 150 µm available on request)
Slit Length	14.3 mm
Magnification	1:1

**So the first thing you will do is install the Xenics Xeneth software to drive the camera.
The ONLY version that works is this version: Xeneth 2.4.0.287
Make sure you install everything with the default settings.
Carroll and Elyse will put this version on the USB stick that comes with the camera so you don't install the wrong one!

*Once the Xeneth software is installed you can open it to make sure the camera is being recognized by the computer. Make sure it is connected and the power is on!

1. Access the ENVI main menu tool bar as usual to the "CytoViva HSI Microscope Controls.
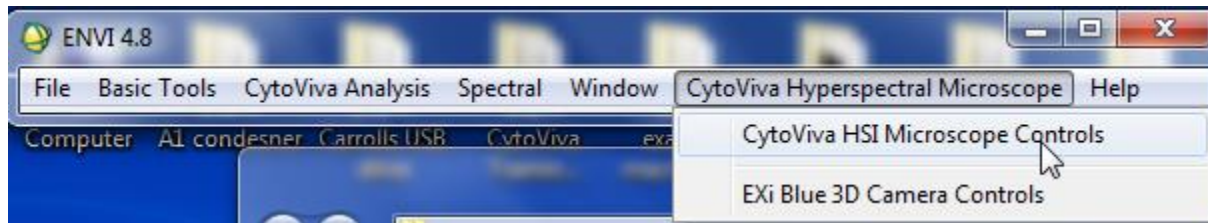

2. When multiple cameras are plugged in it will give you options for which camera to access. Select the Xeva camera.

3. The Xenics camera will start up and you should hear the fan start running. Then this control box will appear. The camera may take a few minutes to cool and the "Temperature Ready:" light will turn green when ready. Then hit the "Settings" button so you can setup the NUC calibration file for the camera.
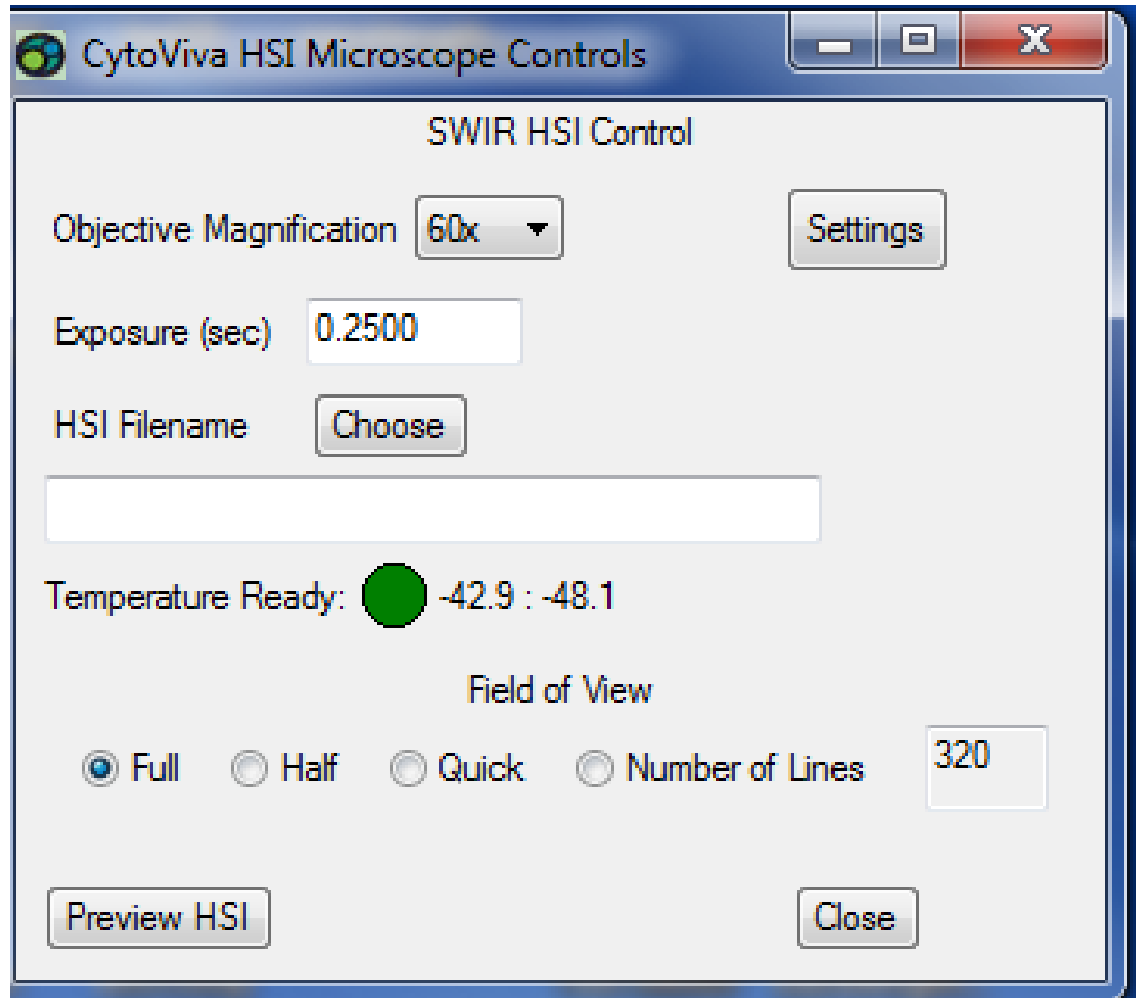
4. Here you will need to set the NUC Calibration file for the camera to use. NUC stands for "Non-Uniformity Correction". This is a file made by Xenics that corrects for the non-uniformity of the SWIR sensor. Hit the "Browse" button to navigate to where the NUC files are.
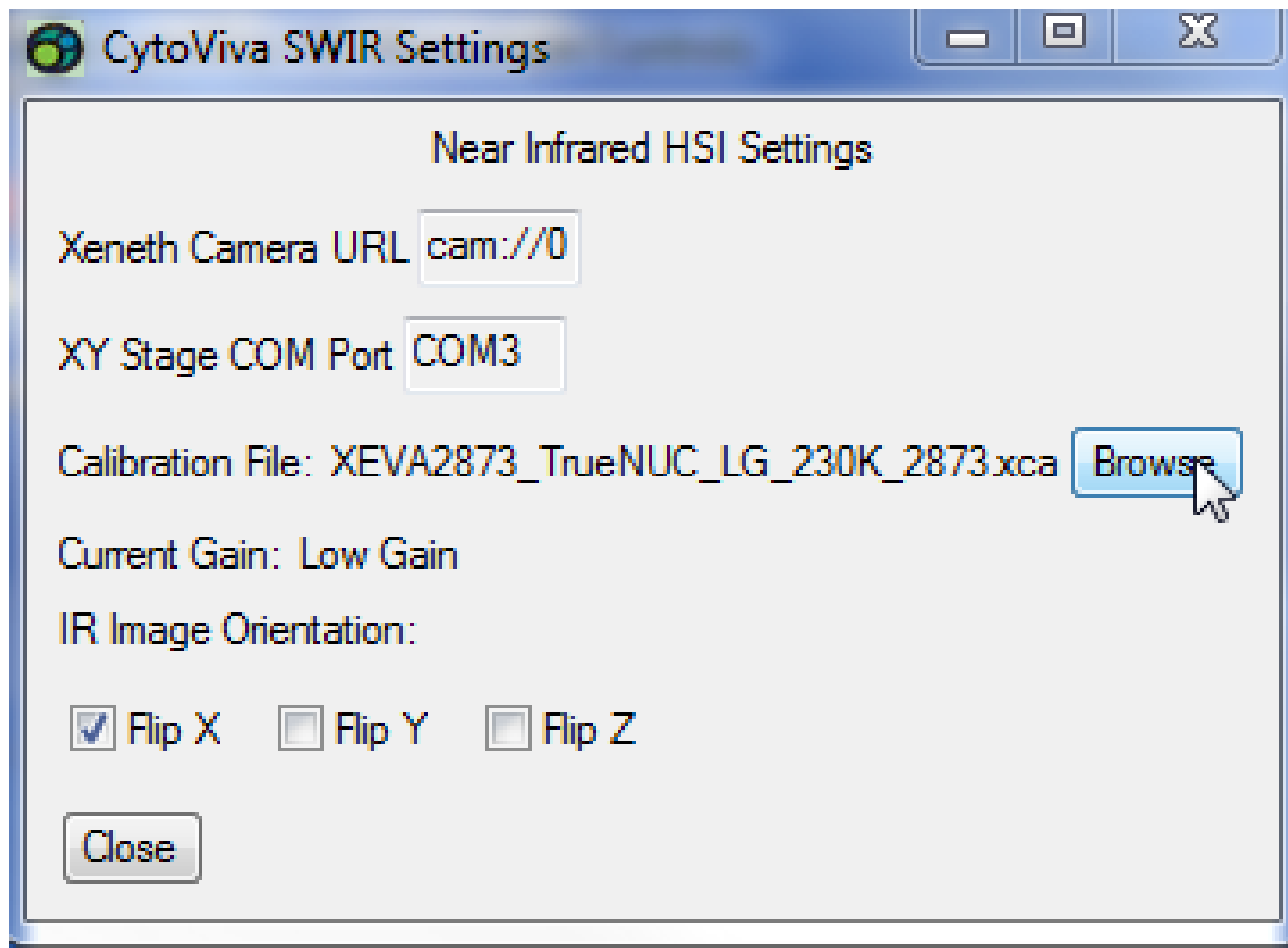
5. Navigate to the folders in the image below and select the XEVA file that says "1S-HG". This file will allow exposures for up to 1 second and operate the camera in High Gain mode. Once this file is selected it will always be the default file. This "1S-HG" file is made specifically for CytoViva so Elyse will make sure it is on the same USB stick that comes with the camera. You can copy it into this directory so it is easy to find. Once its in this folder it should stay there.
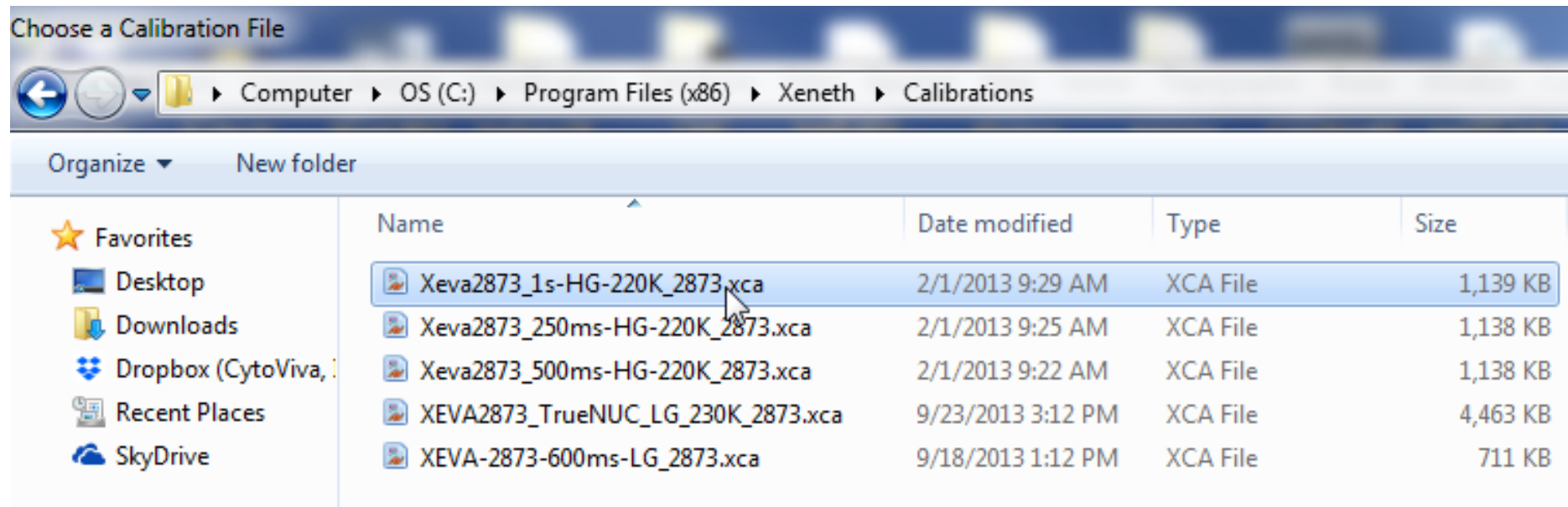
6. Once the correct NUC file is selected you can select your magnification, exposure, number of lines, etc. as usual and then do a Preview. This is what the preview window will look like. It will show the intensity AND a preview of the spectrum!

-The 2 red lines around the signal in the intensity box show the lowest and highest points in the histogram. You can move these around to see the signal better in the preview window! Here I moved the one on the right towards the left to show more signal. This camera is not as sensitive as the VNIR cameras so this is expected!
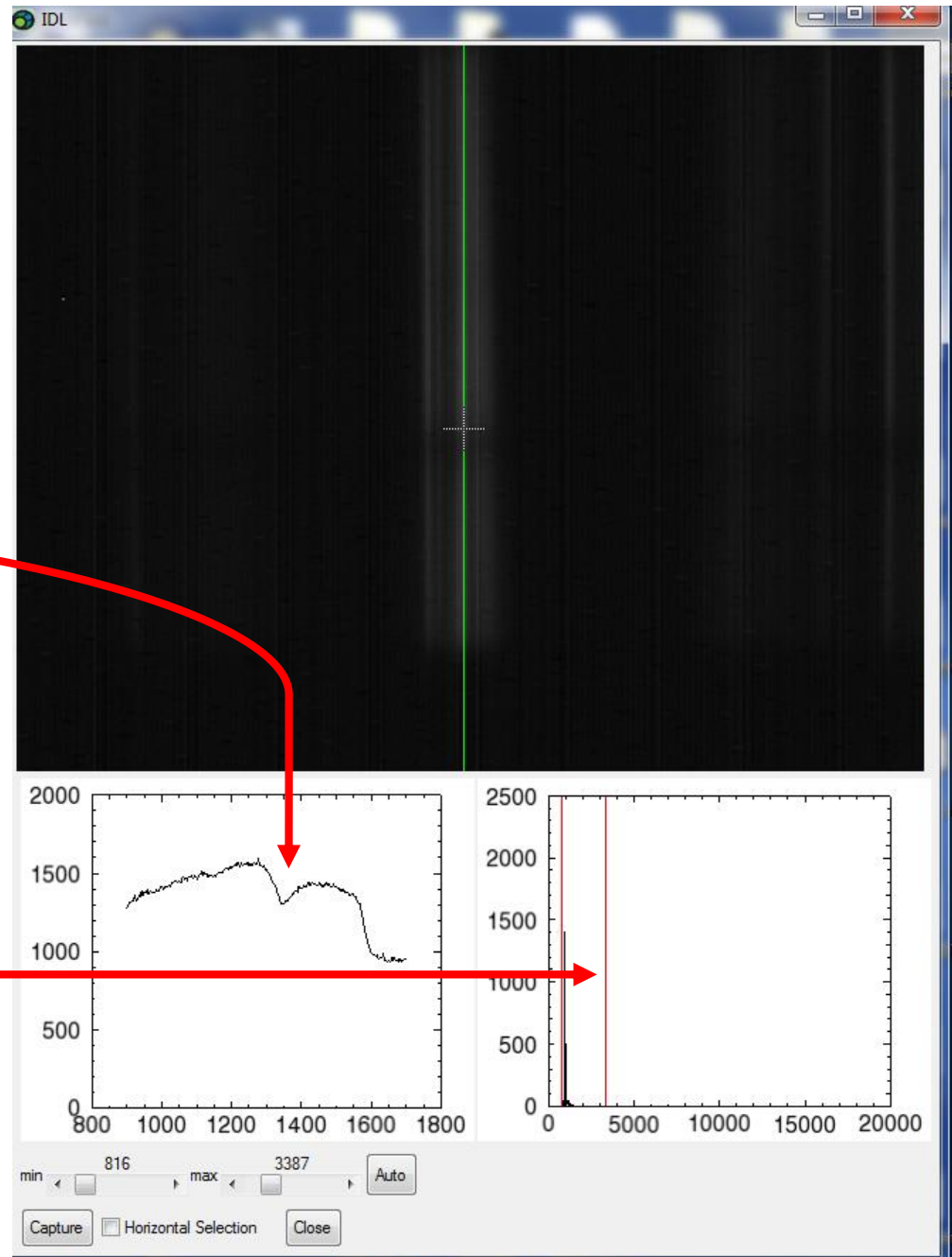
7. You can also check the "Horizontal Selection" box and see the horizontal intensity profile of what's in the preview window.
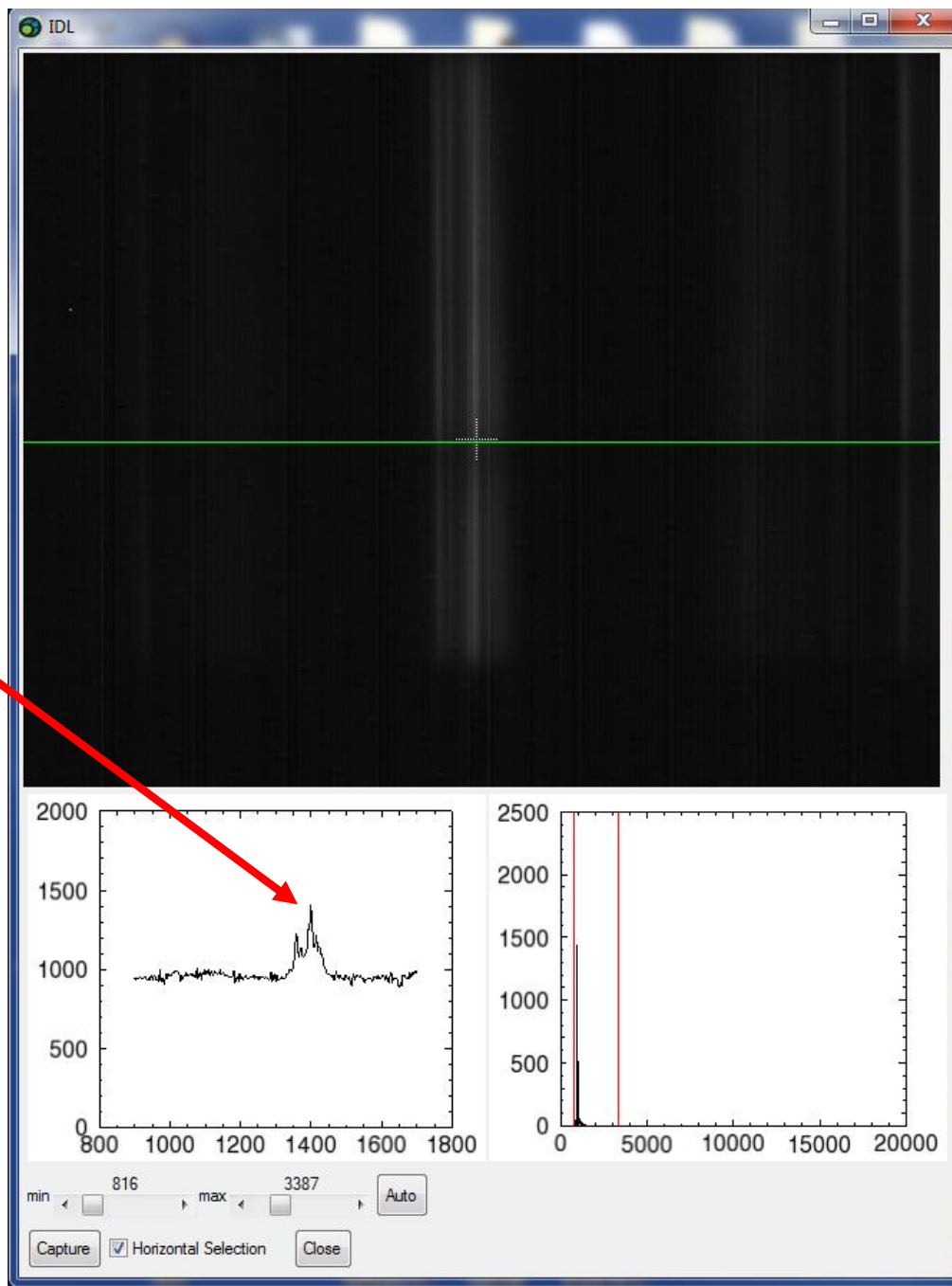
8. The scan will complete and open in ENVI just like the VNIR system.

This is a scan of some MWCNT's. It is normal for the images to look a bit noisier with the SWIR system! This dip around 1350nm is normal in all data. This is due to the OH content in the liquid light guide. Even fiber optic light cables have this phenomena.