

# *How to Run the CASPiE Raman Instrument*



You will use the CASPiE Raman spectrometer to collect vibrational spectra of your samples.

For detailed information about the CASPiE Raman instrument and vibrational spectroscopy see

[http://www.caspie.org/instrument\\_tutorials.htm](http://www.caspie.org/instrument_tutorials.htm)

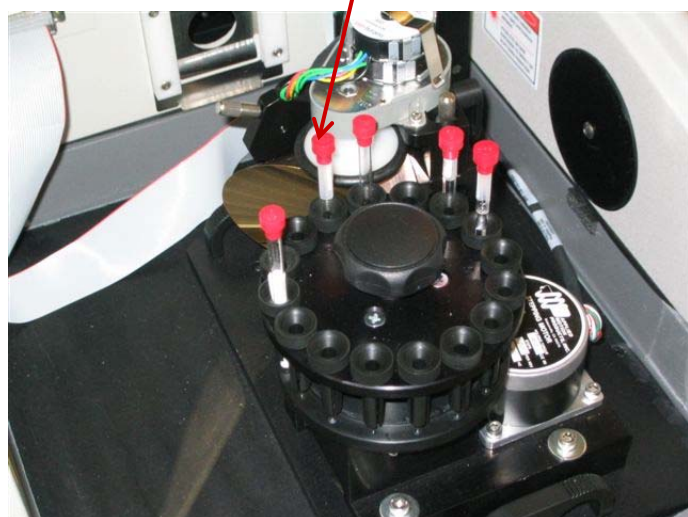
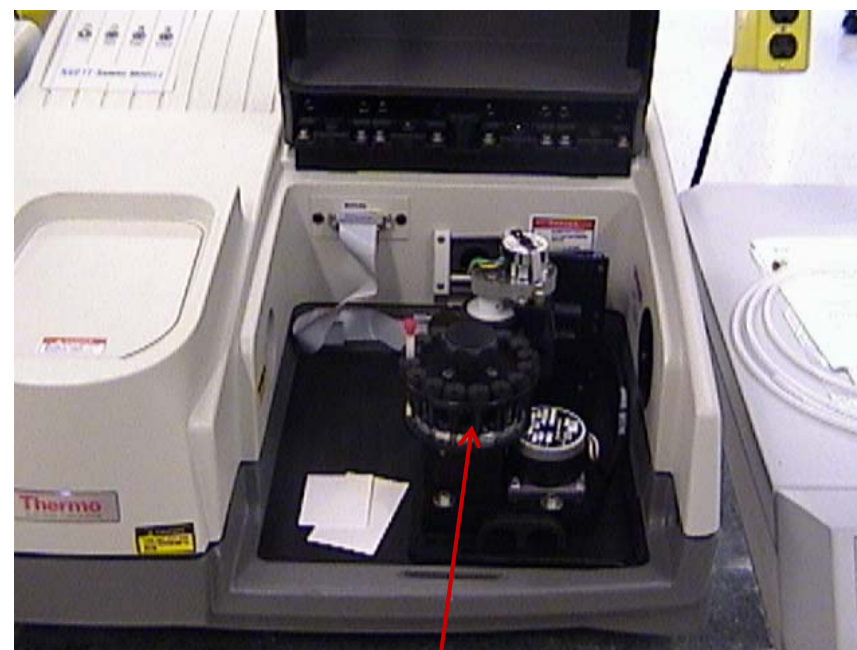
## **Please Note:**

**DO NOT** make any changes to the instrument that are not instructed in this document. Others will use the instrument after you. Be courteous to your fellow students and leave them a usable instrument!



# *The Raman Autosampler*

The Raman spectrometer is equipped with a 16-place circular autosampler. The samples you send are loaded into the autosampler wheel in positions 2-16. A sulfur standard is always available in position 1.



Raman autosampler wheel

Sample tubes



# Load the CASPiE Instrument Site

- To open the Raman control software launch your web browser and navigate to the CASPiE instrument network website at <https://instruments.caspie.org>.
- Enter your account information to login.

The screenshot shows a Windows Internet Explorer browser window with the address bar displaying <https://instruments.caspie.org/Citrix/MetaFrame/auth/login.aspx>. The browser's search bar contains "Google" and the address bar includes navigation buttons (back, forward, go), a search icon, and various utility icons like "Bookmarks", "86 blocked", "Check", "AutoLink", "AutoFill", and "Send to".

The main content area of the browser displays the CASPiE logo on the left and the text "Web Interface for MetaFrame® Presentation Server" on the right. Below this, there is a "Log in" section on the left and a "Welcome Authorized Users of CASPiE Instrumentation" section on the right.

**Log in**

User name:

Password:

Advanced Options >>>

**Welcome Authorized Users of CASPiE Instrumentation**

Please enter your account credentials then click Login to get access to your reserved instrument time. If you have trouble logging in, contact [Debbie Steffen](#) by email or phone (765-494-4959)

**Message Center**

The Message Center displays any information or error messages that may occur.

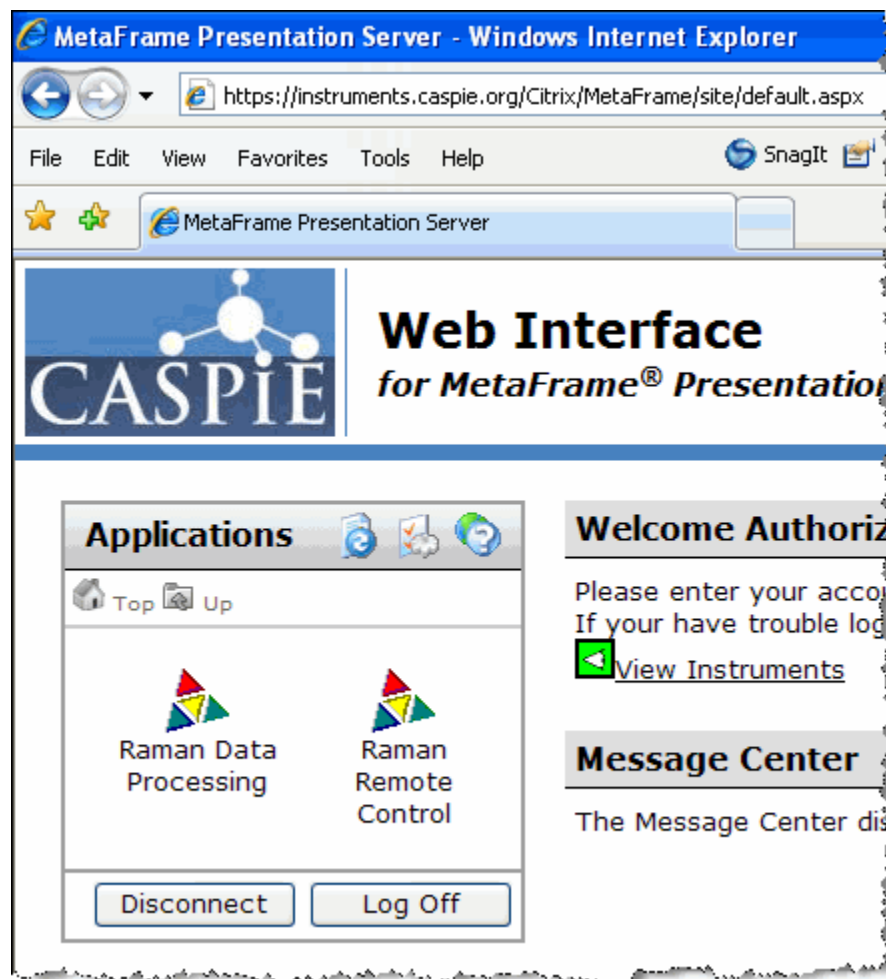
# The Raman Control Software



The software used to control the Raman instrument is called '**Raman Remote Control**'.

You will only have access to the Raman instrument for remote control during your scheduled hours.

You will also see the icon for Raman data processing. You will always have access to the Raman data processing software during a CASPIE module.



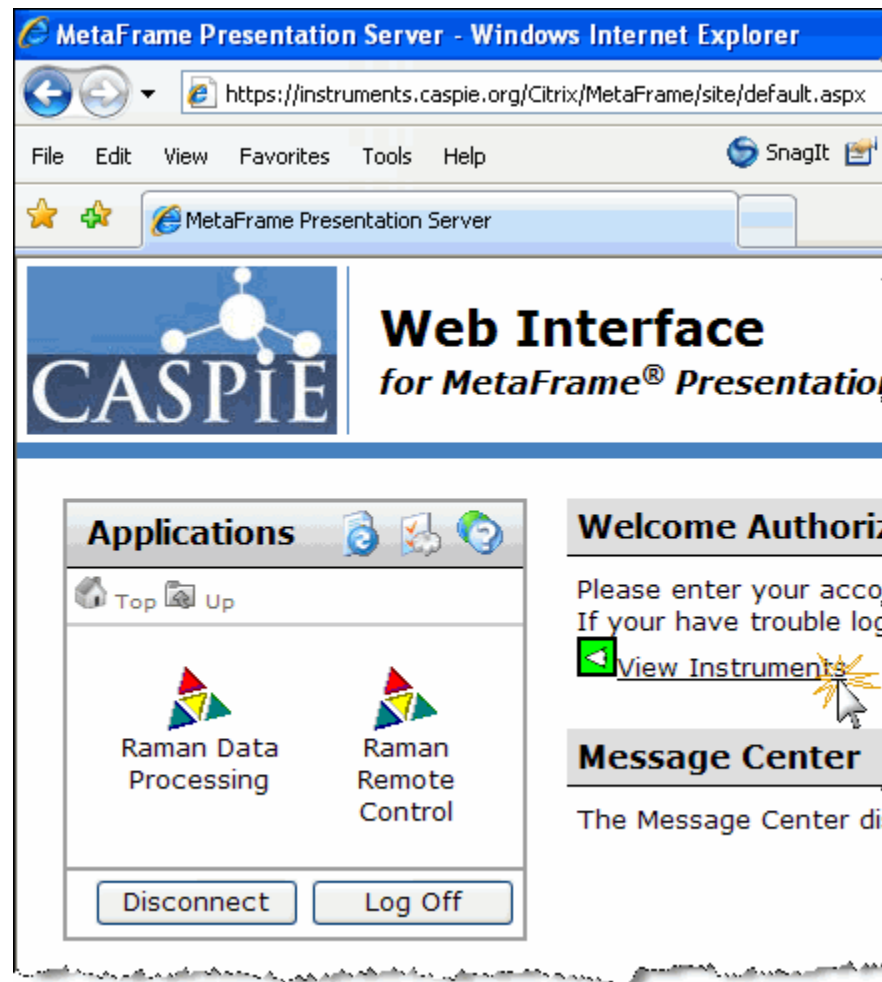
# The Raman Camera



While you are using the Raman spectrometer you can view the actual instrument live via an internet camera. (Note that Java is required for loading the camera image.)

The camera is accessed via the link labeled 'View Instruments' next to the green eye.

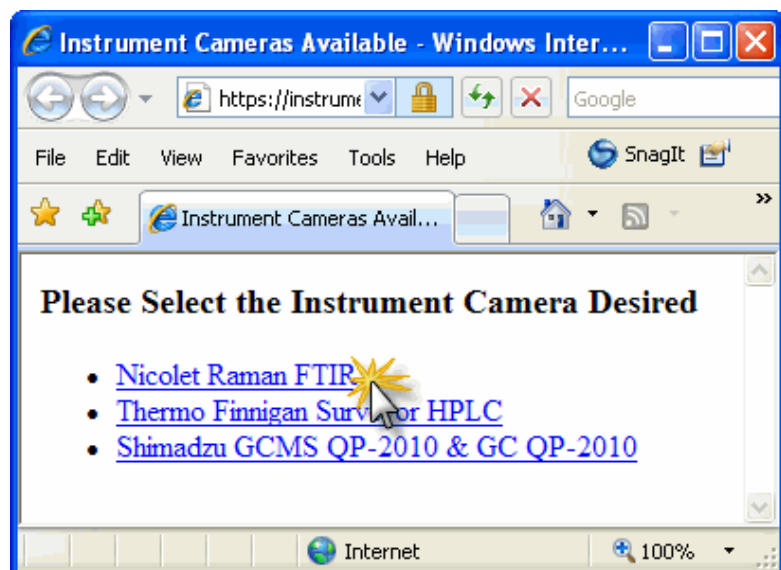
When you click the link another browser window will open.



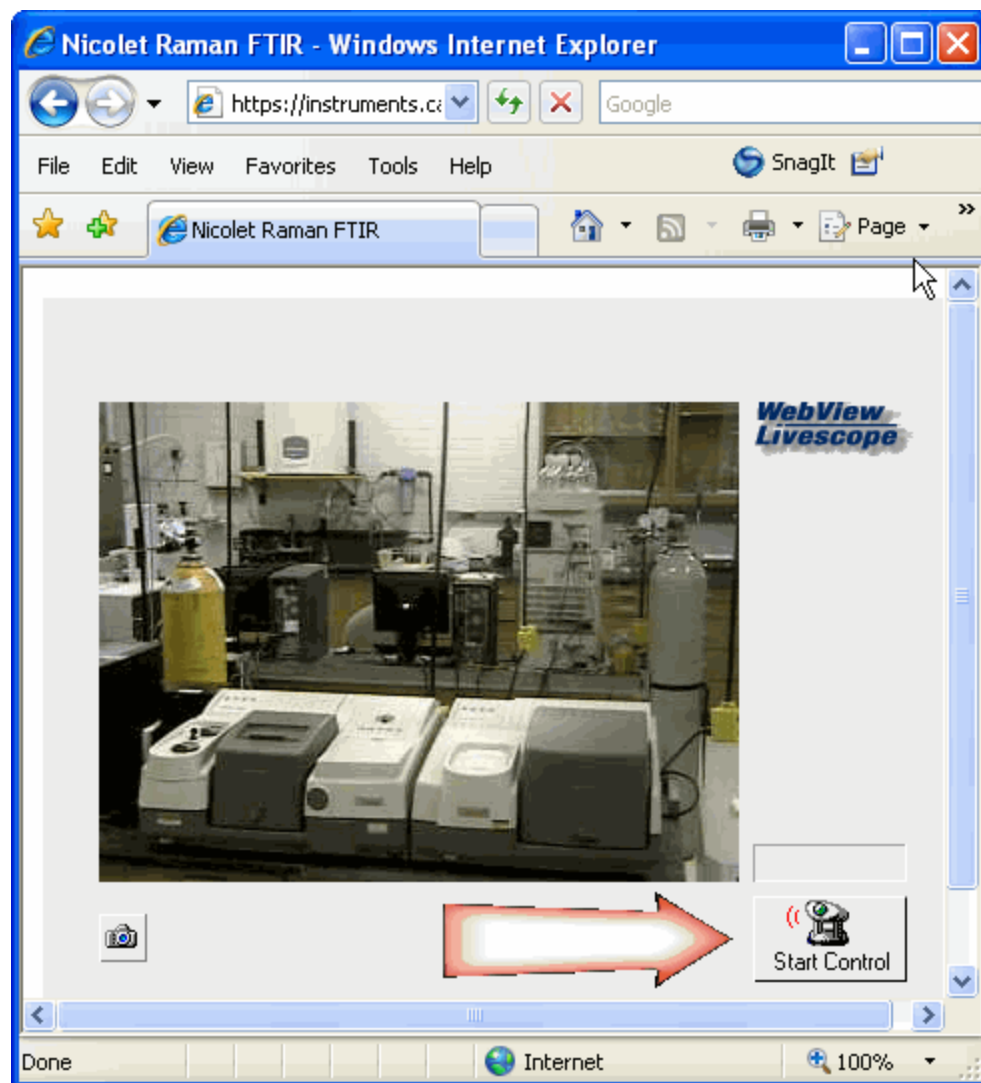
# The Raman Camera

- In the 'Instrument Cameras Available' browser window (a) click on the 'Nicolet Raman FTIR' link to load the camera image.
- To control the camera position click on the 'Start Control' button (b). You may have to click it twice.

(a)



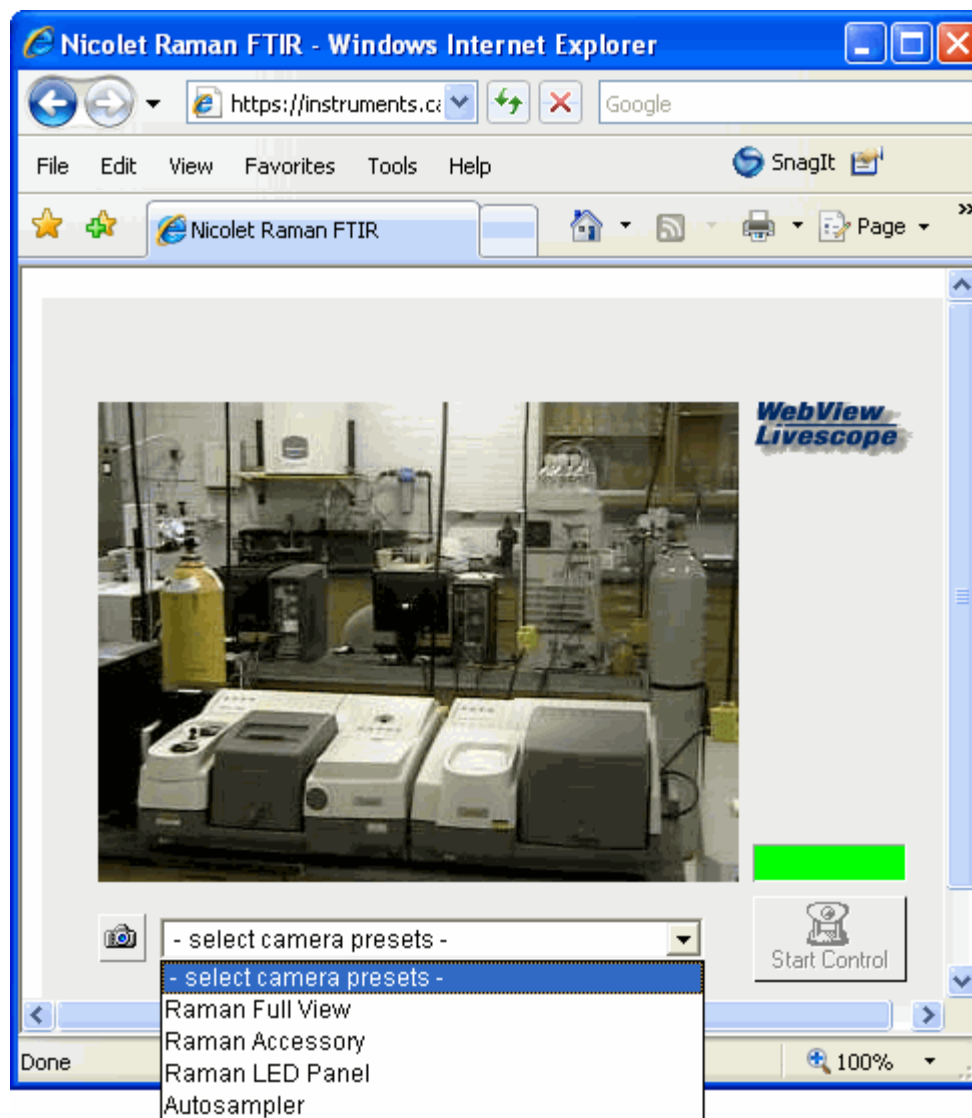
(b)



# The Raman Camera Presets



- When you have control of the camera there will be a green countdown clock above the 'Start Control' button.
- Click on the '- select camera presets' drop down and select one of the presets to move the camera to a different position.
- Only preset positions are available for viewing.

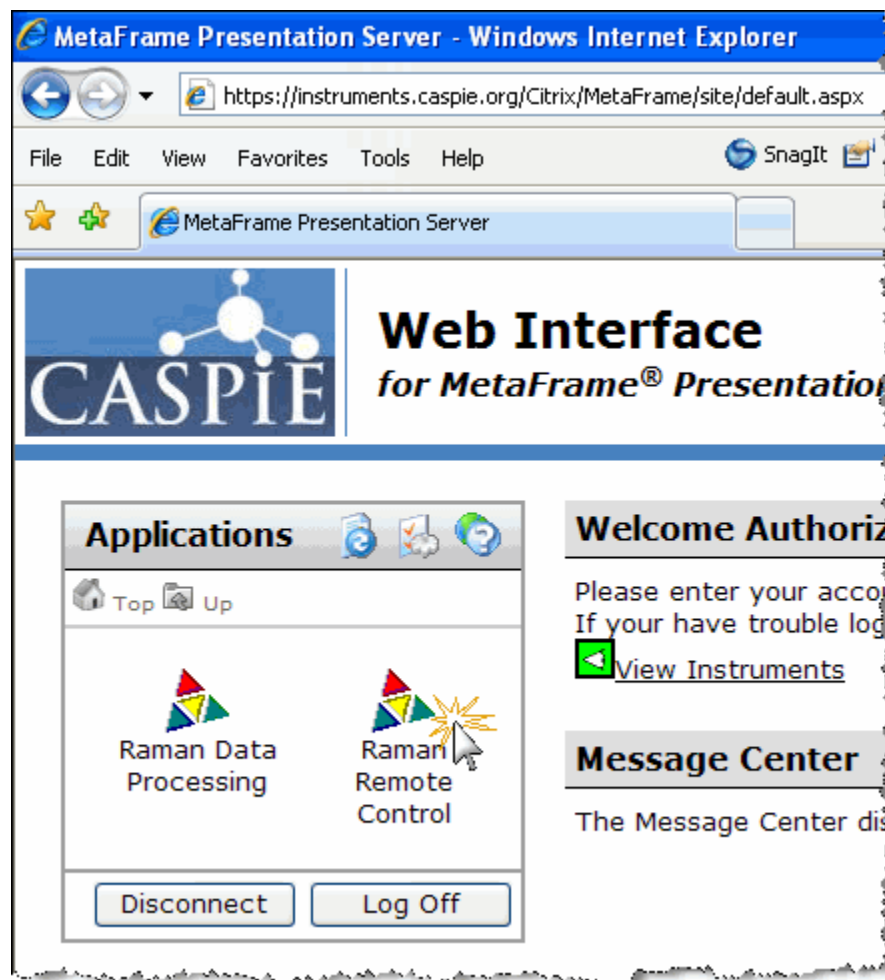


# Launch Raman Control Software



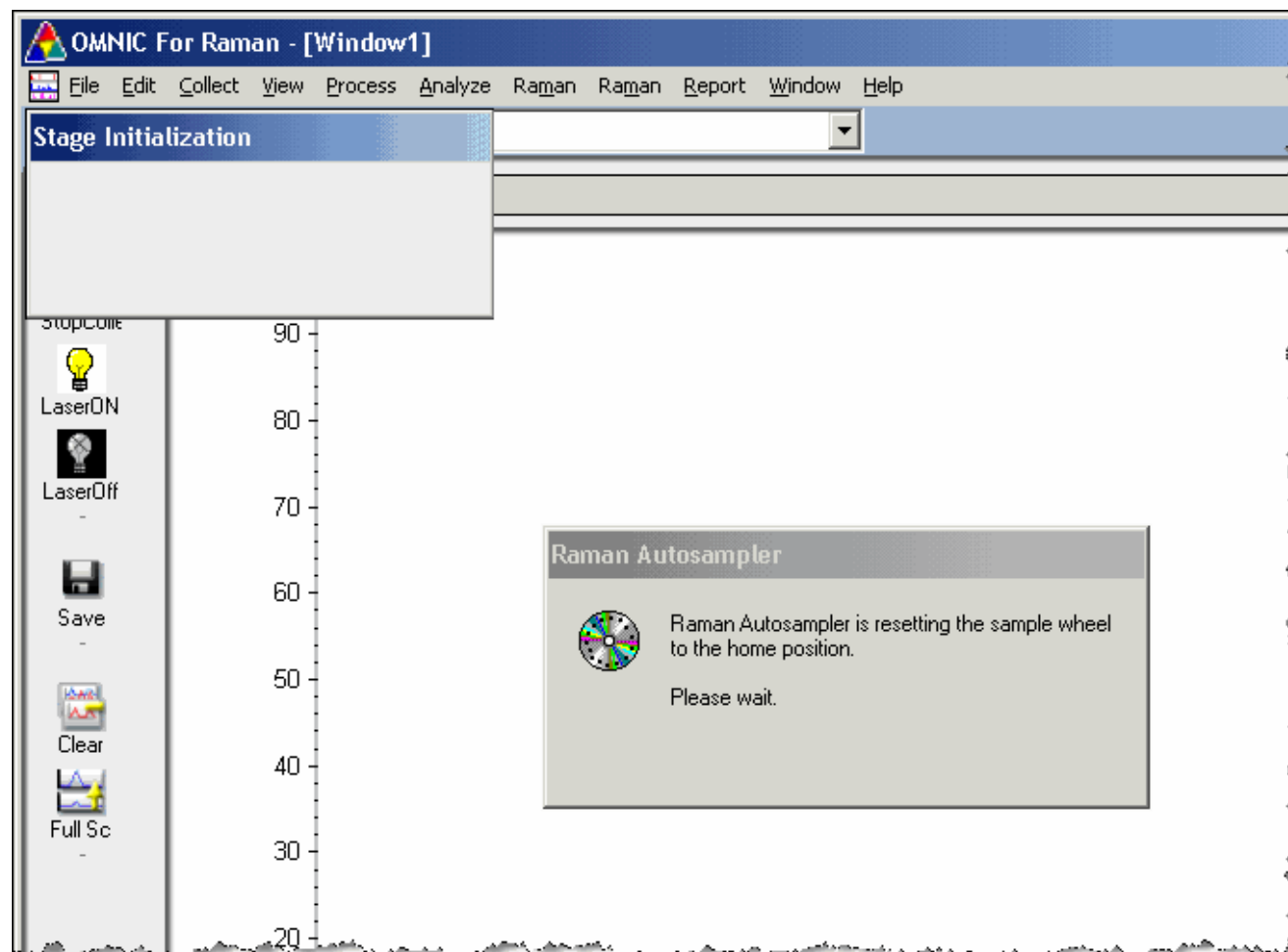
Click once on the 'Raman Remote Control' icon to connect to the Raman instrument.

*Important Note:*  
You must have the Citrix plugin installed on your computer to proceed!



# Stage Initialization

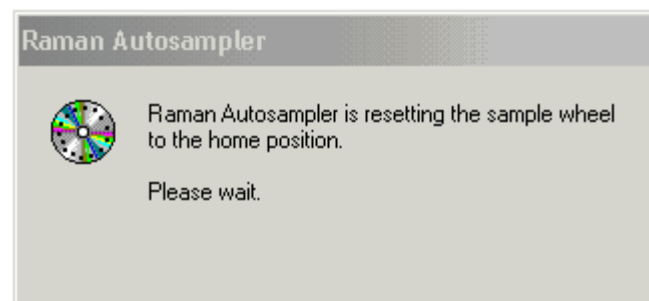
- When the Raman software launches, the autosampler goes through an initialization. This will take about a minute to complete.
- Do not try to use the software during initialization.
- There will be three window boxes; 'OMNIC for Raman,' 'Stage Initialization,' and 'Raman Autosampler.'
- After about a minute only the 'OMNIC for Raman' window will remain.



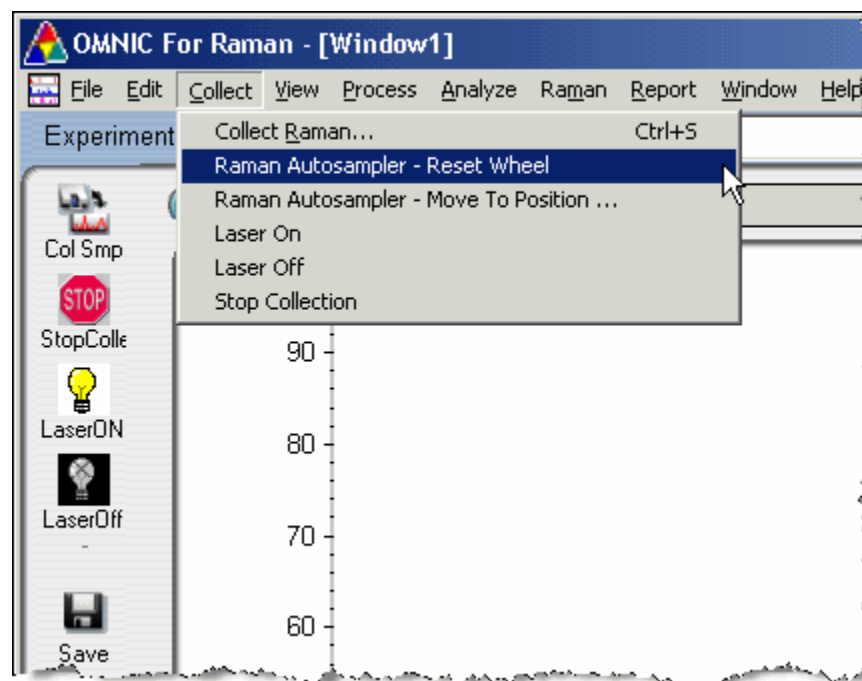
# Autosampler Wheel Reset

- ***If and only if*** the 'Raman Autosampler' window (a) does not disappear after about a minute you will need to reset the wheel.
- To reset the wheel, select Collect | Raman Autosampler – Reset Wheel (b).

(a)

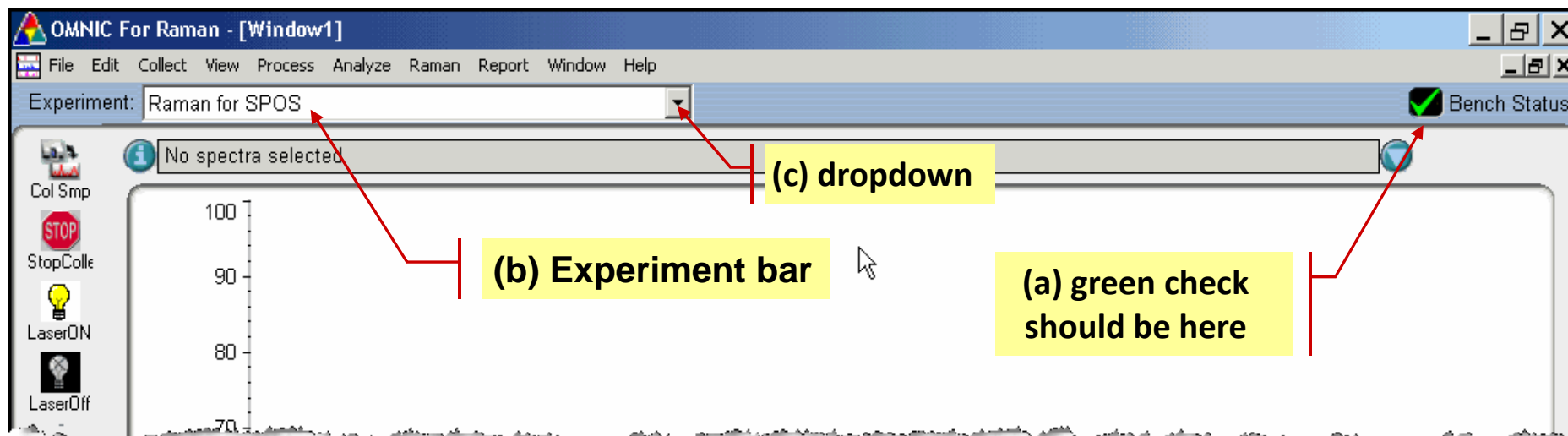


(b)



# The OMNIC for Raman Window

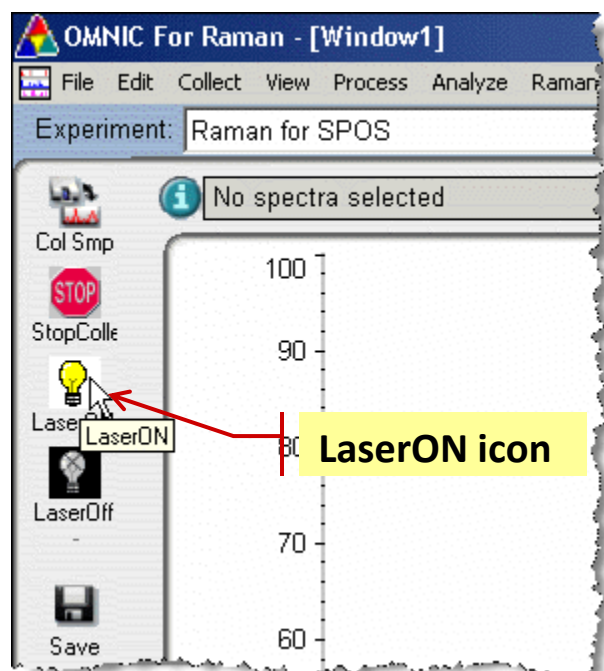
- When initialization is complete the screen should appear as below. The green check (a) indicates communication to the Raman instrument.
- 'Raman for SPOS' should appear in the Experiment bar(b); if it does not, select it from the drop down (c).



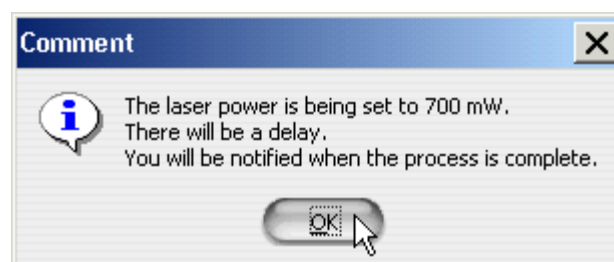
# Turn on the Laser

- Click the “Laser ON” button to turn on the laser (a). The laser power will be set automatically to 0.7 W. You can also find the Laser ON command in the “Collect” menu.
- There is a delay associated with turning on the laser. A dialogue notifies the user (b).
- When the laser power is set and the instrument is ready, a dialogue will appear (c). Do not attempt to collect a spectrum until you have seen the “Laser is set.” dialogue.

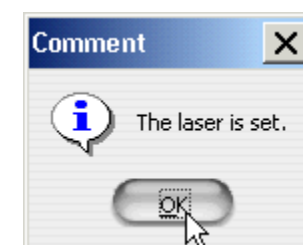
(a)



(b)



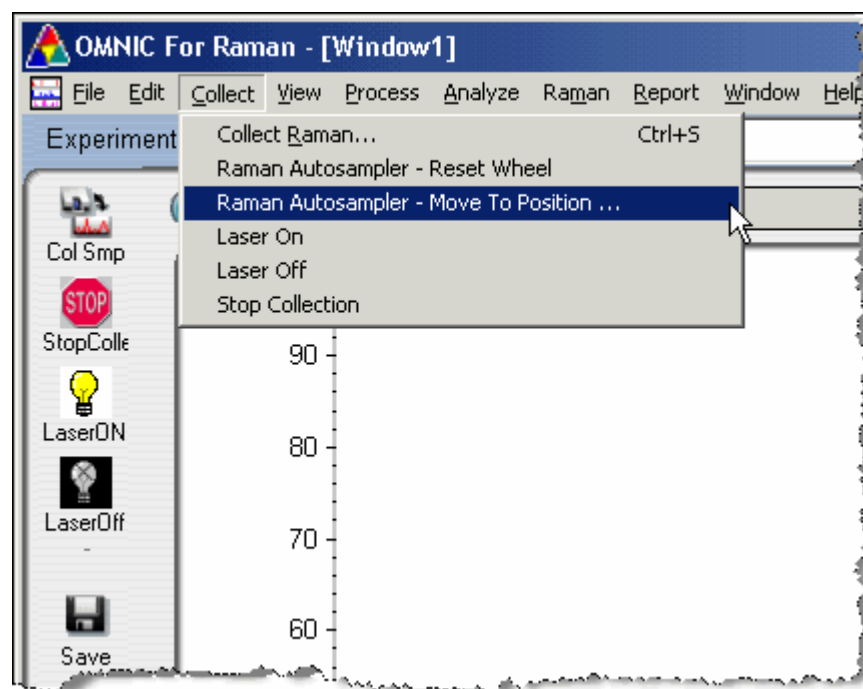
(c)



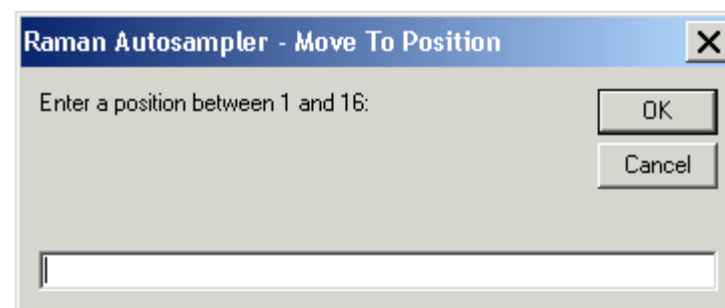
# Move Autosampler

- There is a sulfur standard in position 1 of the autosampler which can be used to verify proper operation of the instrument.
- Move the autosampler wheel to position 1 by selecting “Collect | Raman Autosampler- Move to Position...” (a) and enter ‘1’ in the box (b).
- When the wheel is finished moving a confirmation dialogue will appear (c).

(a)



(b)



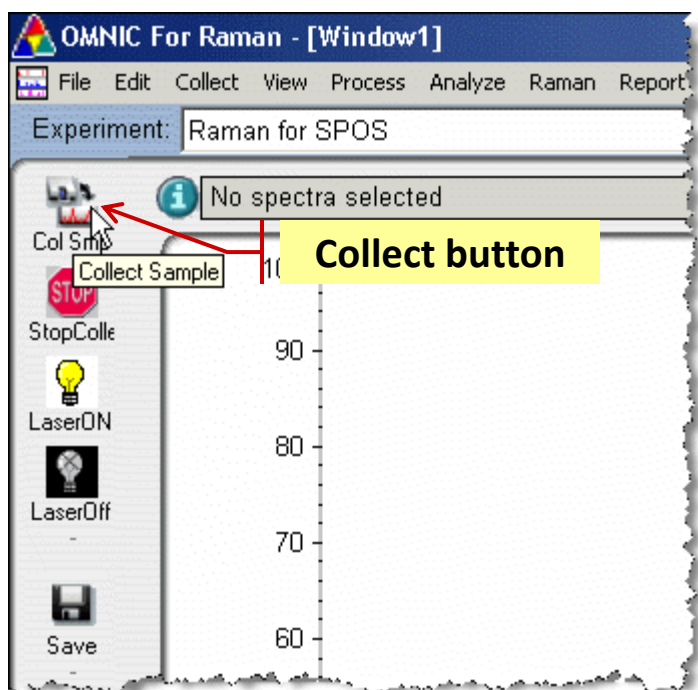
(c)



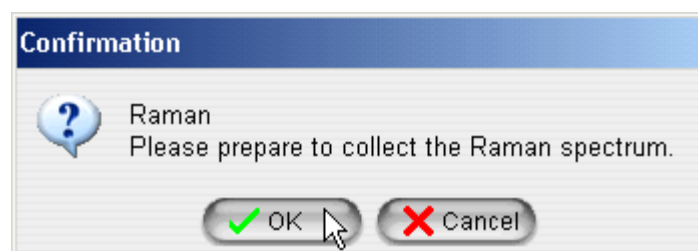
# Collect Sulfur Spectrum

- Collect a Raman spectrum of the sulfur standard by clicking the “Collect” button (a).
- Collection may also be initiated by selecting “Collect | Collect Raman” from the menu.
- Click OK in the “Confirmation” dialog (b) to initiate collection.
- Collect a sulfur spectrum when you start each session to verify instrument performance or whenever you are unsure how the instrument is responding.

(a)

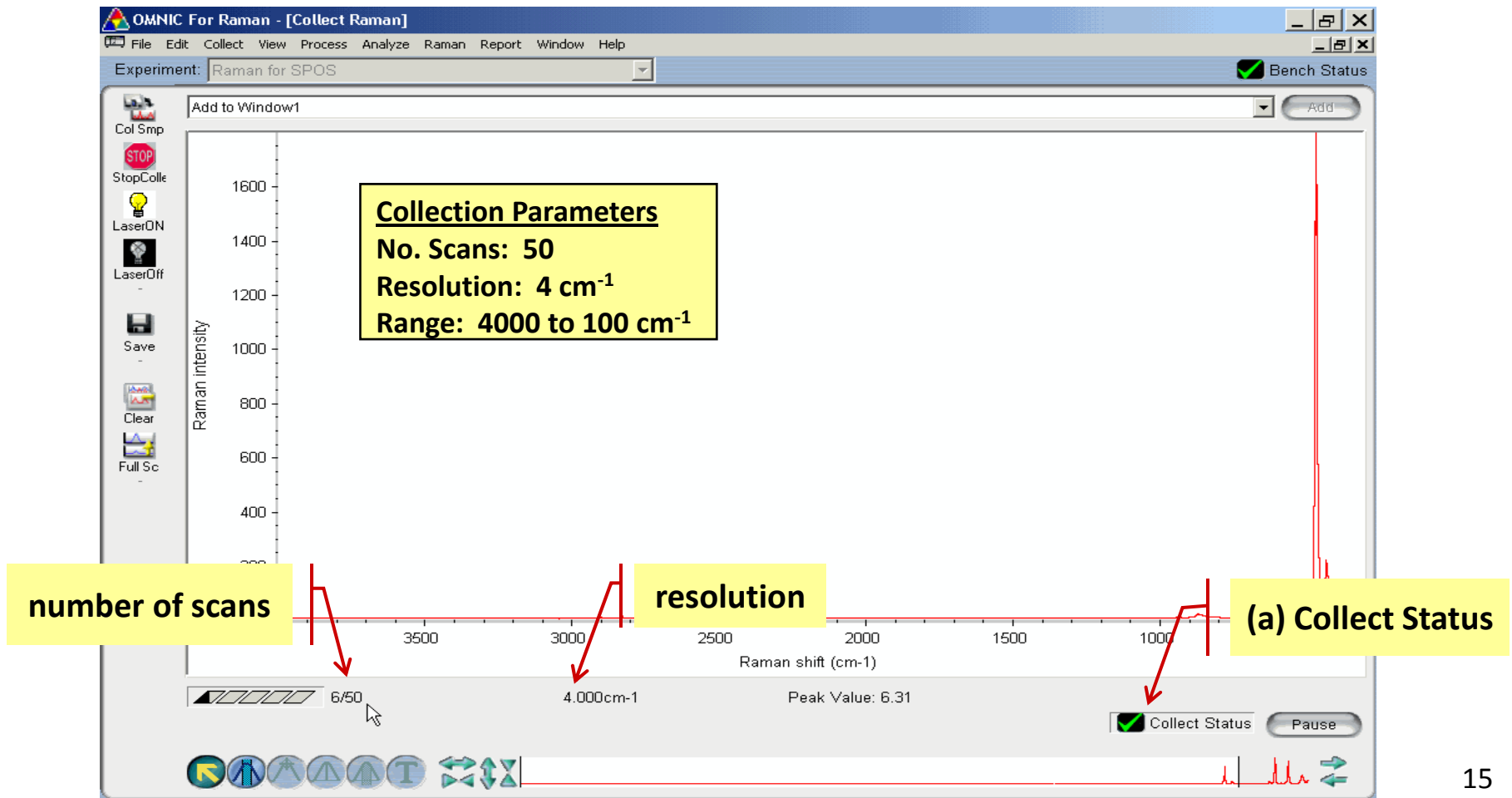


(b)



# Collect Raman Window

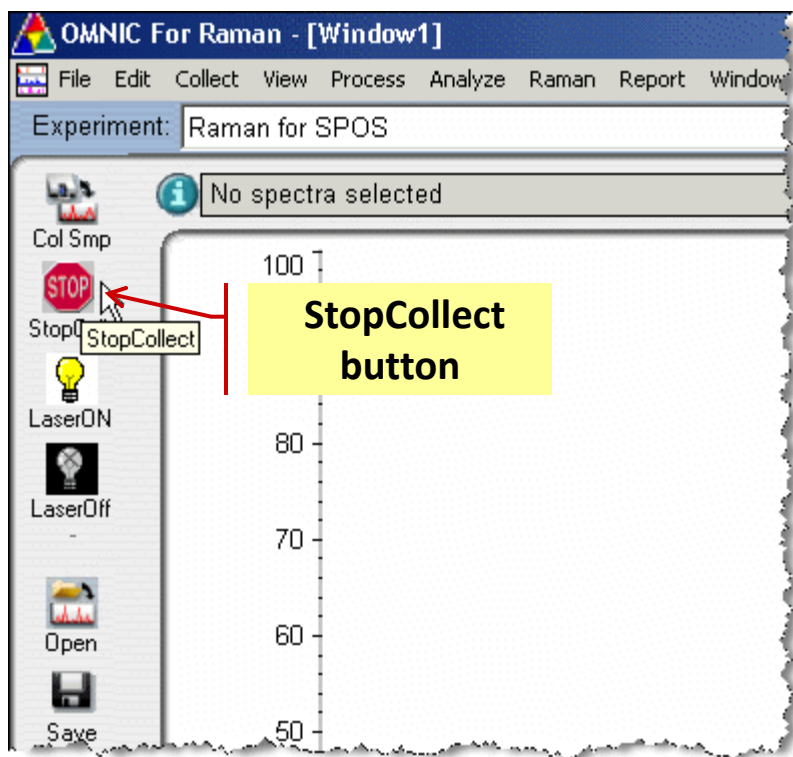
- The “Collect Raman” window will show an updated display of the collected data from 4000- 400  $\text{cm}^{-1}$ . (The actual collect range is from 4000-100  $\text{cm}^{-1}$ .)
- When collection is proceeding properly there will be a green check in the “Collect Status” (a) box.
- If there is a red X in the “Collect Status” box you must stop collecting and try again; [see the next page](#) to find out how.



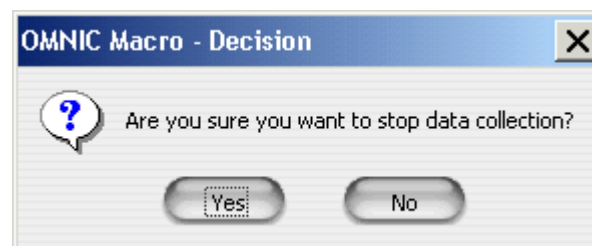
# Stopping Data Collection

- *If and only if* you get a red X in the Collect Status box click on the ‘Stop Collect’ button (a).
- A dialogue window will ask for confirmation to stop data collection (b). Click ‘Yes’.
- A confirmation window will ask if you want to keep the spectrum (c). Click ‘No’.
- Now click on the Collect Sample button (see page 14) to start data collection again.

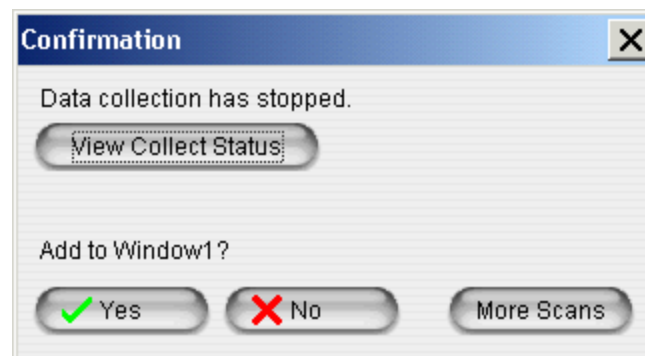
(a)



(b)



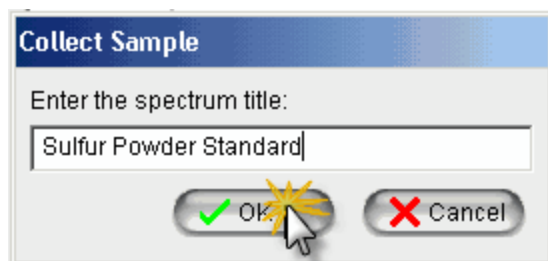
(c)



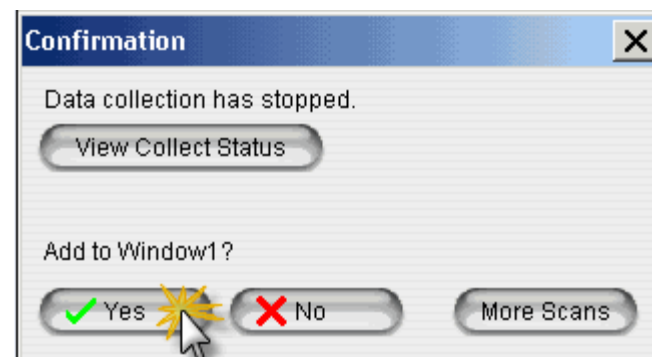
# Spectrum Title

- When data collection is complete you will be prompted to name the spectrum (a).
- Click “Yes” to add the collected spectrum to the display window (b).
- Note that this process does not save the spectrum to a file; it only adds it to the display window.

(a)

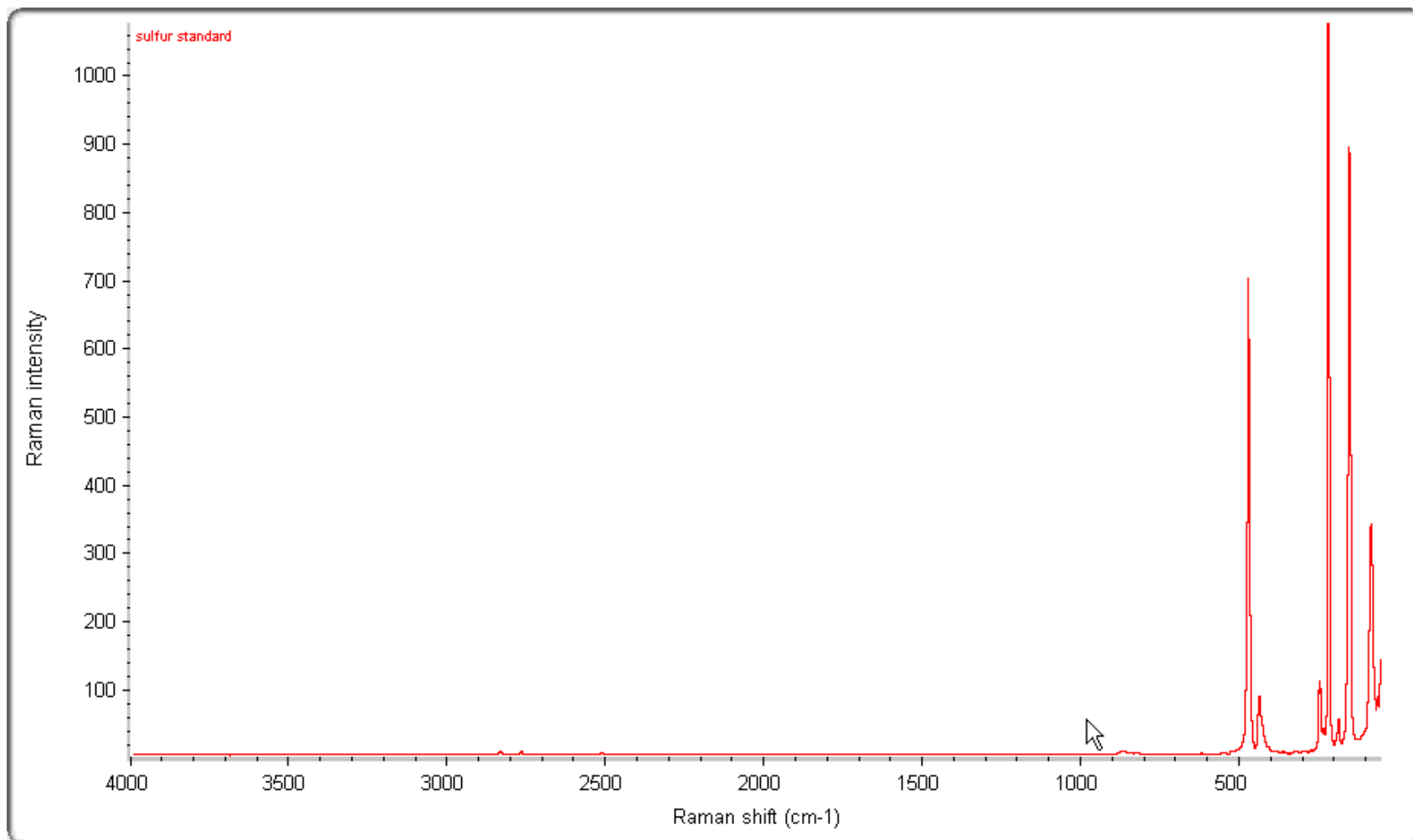


(b)



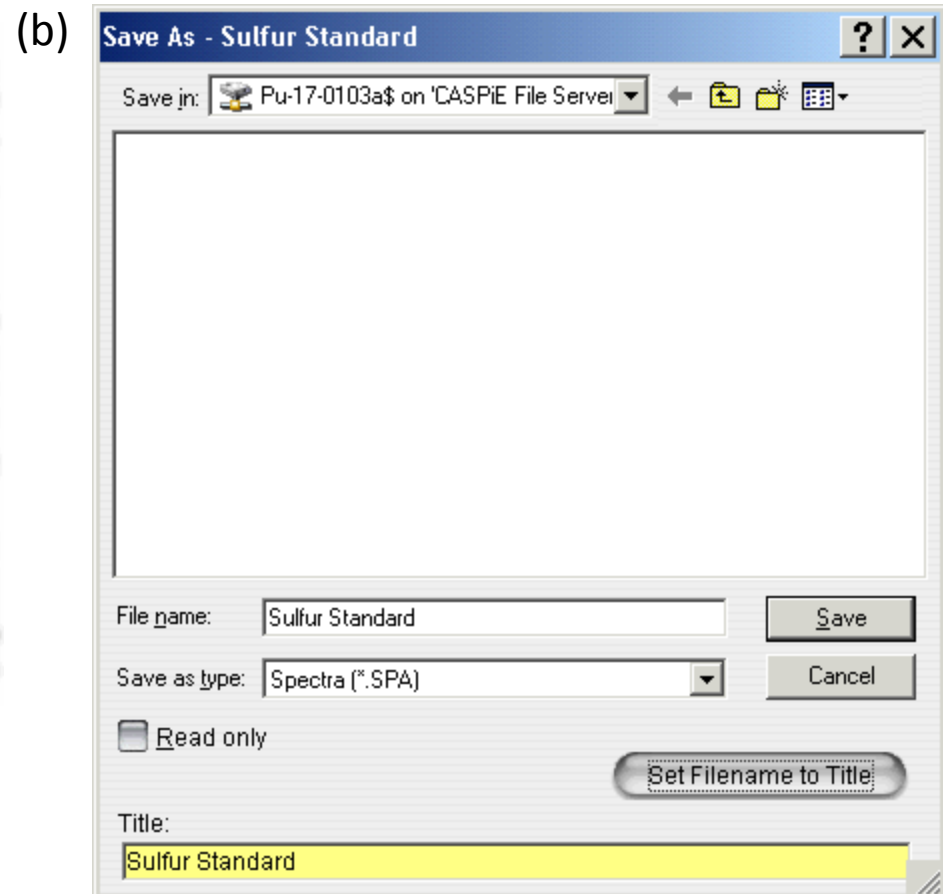
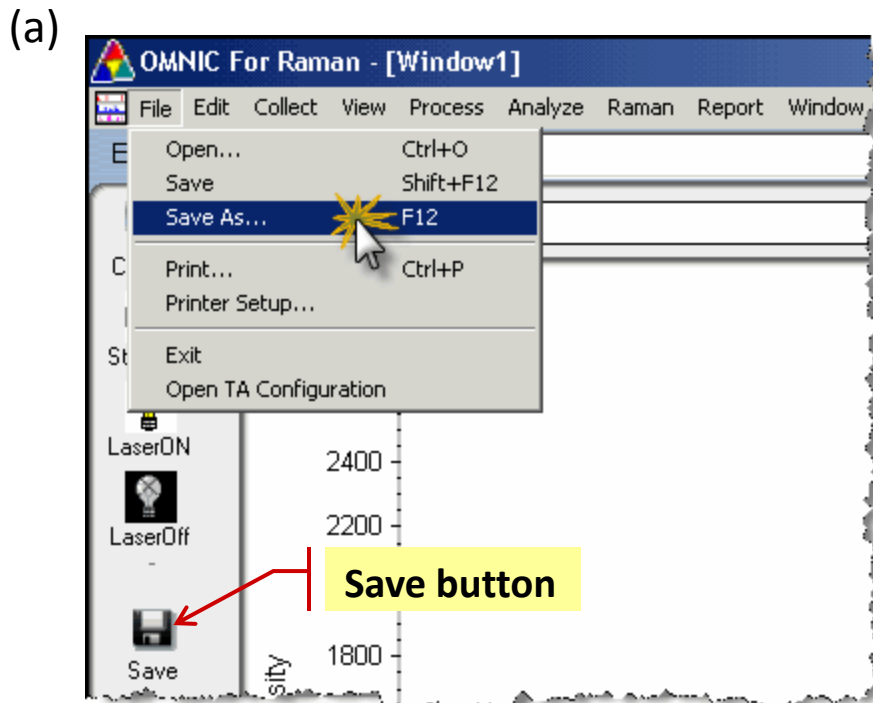
# Sulfur Spectrum

The sulfur spectrum should look like this. If you get something that looks different, make sure the autosampler is in position 1 and try the collection again.



# Save Sulfur Spectrum

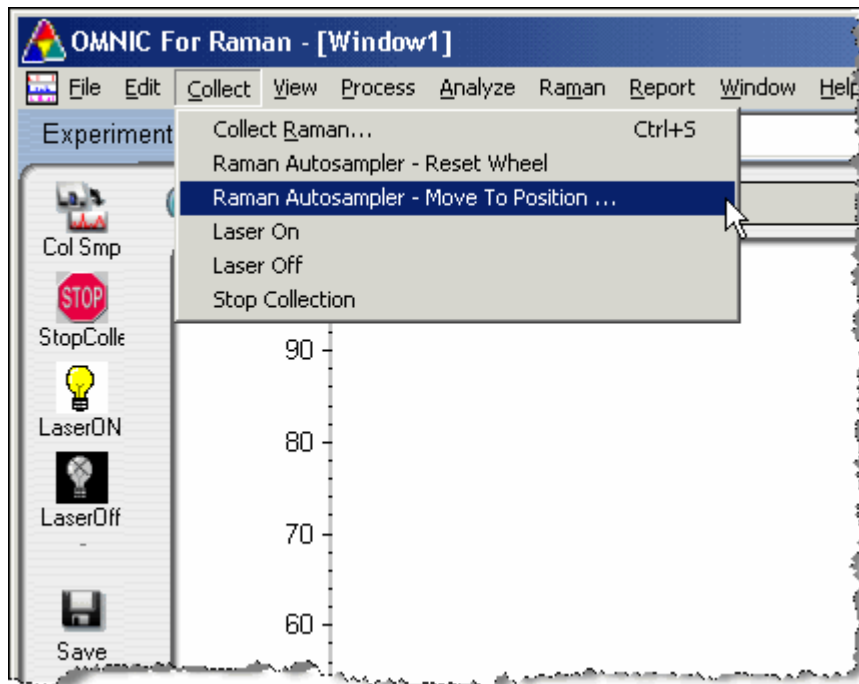
- Save a copy of the sulfur standard spectrum for future reference. You need only save the standard spectrum once.
- Click the “Save” button or select File | Save As... from the menu (a).
- Name the file in the Save As window (b). If you wish to give the file the same name as the spectrum title click on the ‘Set Filename to Title’ button.



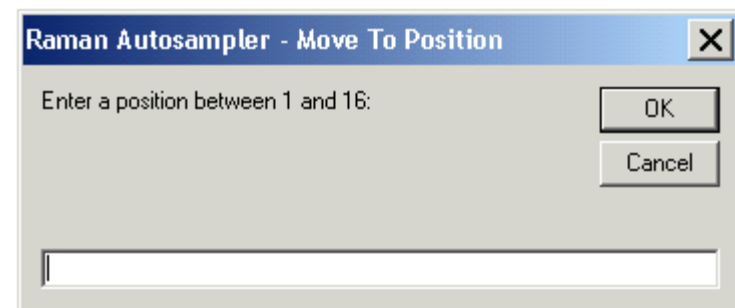
# Move Autosampler to Sample Position

- You are now ready to take a spectrum of your sample. You must move the autosampler wheel to the position of your sample. Your instructor will tell you the position of your sample.
- To move the autosampler select Collect | Raman Autosampler-Move To Position (a).
- Enter the position number in the Raman Autosampler-Move To Position window box (b).
- A dialogue will inform you when the wheel is in place and the current position number (c).

(a)



(b)

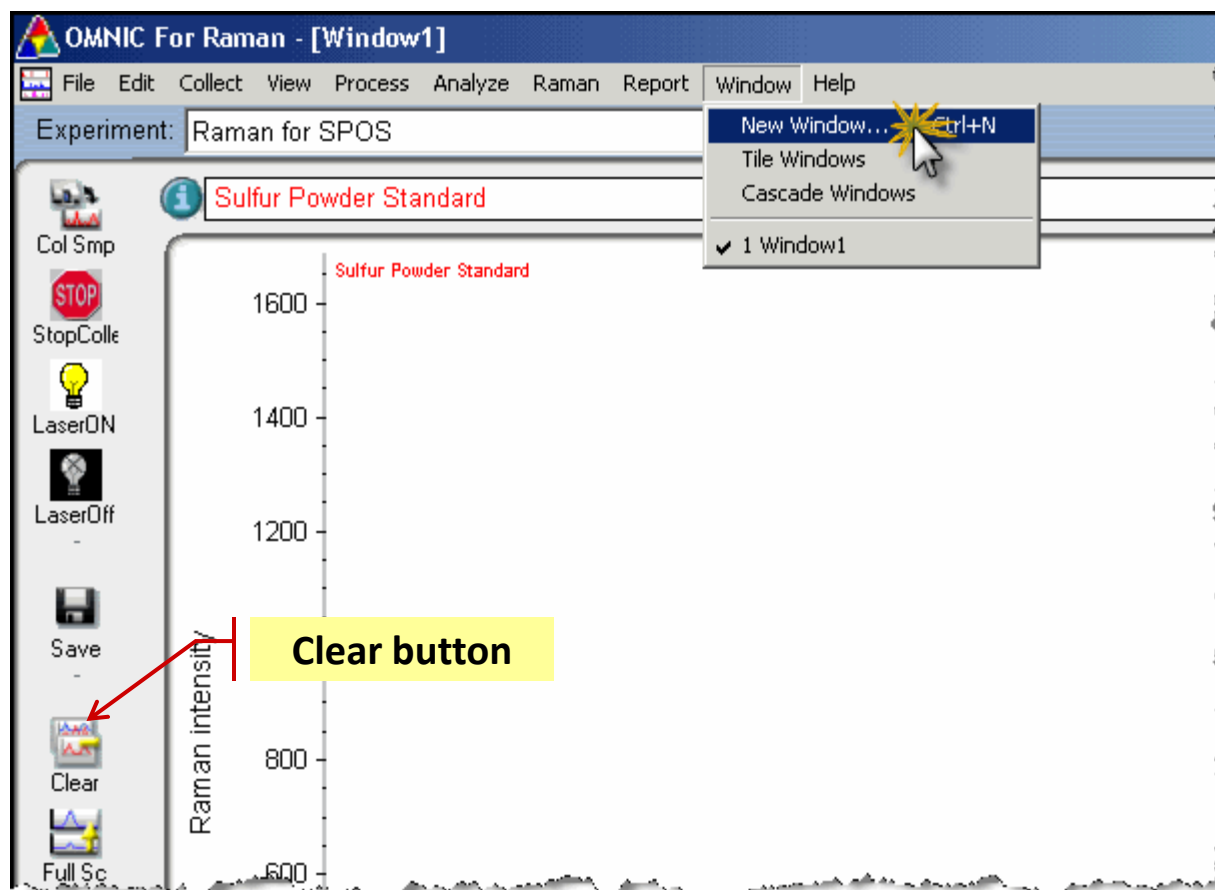


(c)



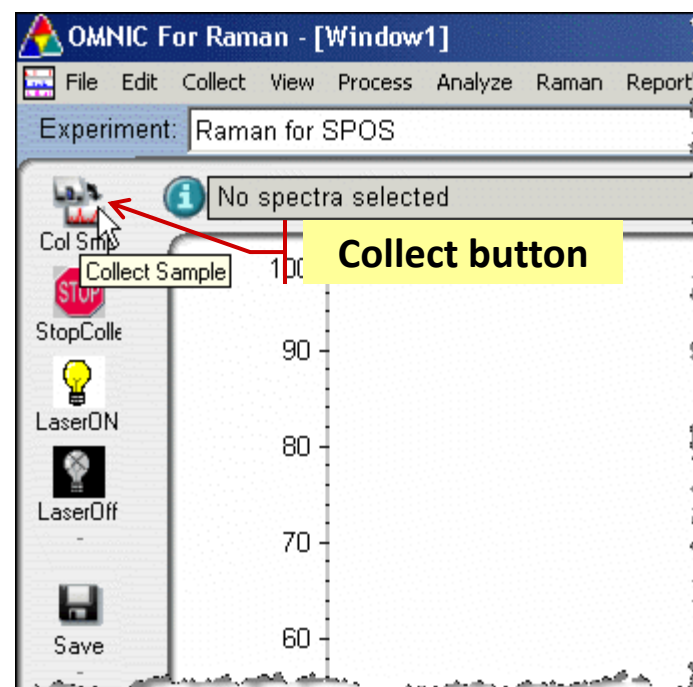
# New Window

- You may add additional spectra to the current window or open a new display window. Select **Window | New Window** to open a new one.
- If you do not wish to keep the standard spectrum in the current display window you can clear it using the clear button on the tool bar or from the Edit menu. Note that the clear function works on the red (active) spectrum.



# Collect Sample Spectrum

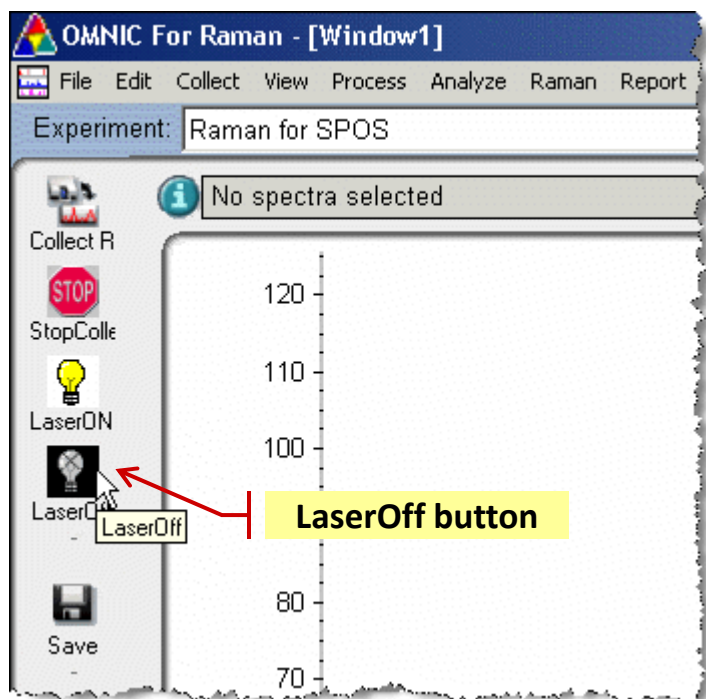
- Collect a Raman spectrum of your sample by clicking the “Collect” button.
- Continue with the same procedure used to collect and save the sulfur standard spectrum.
- Repeat until you have collected and saved spectra for all your samples.
- You are not permitted to process and print data during a remote control connection to the instrument.
- You must work up your data using the data processing copy of the Raman software. See the [“Raman Data Processing”](#) tutorial.



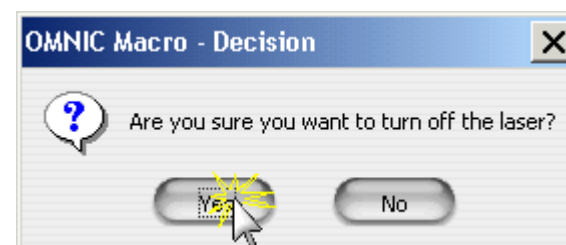
# Turn off Laser

- When you have finished collecting data, turn off the laser by clicking the 'Laser Off' button (a). A dialogue will ask for confirmation to turn off the laser; click yes (b).
- The 'Laser Off' command may also be found in the Collect menu.
- It is critical that you turn off the laser when you are finished collecting spectra. Leaving the laser on for extended periods will shorten its usable lifetime.

(a)



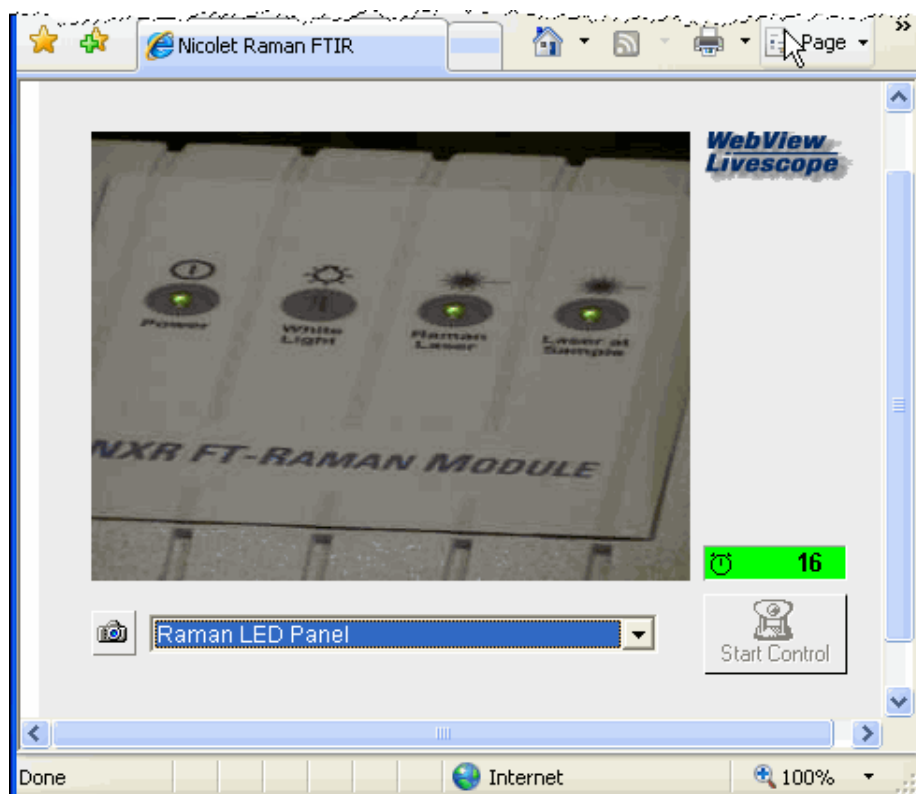
(b)



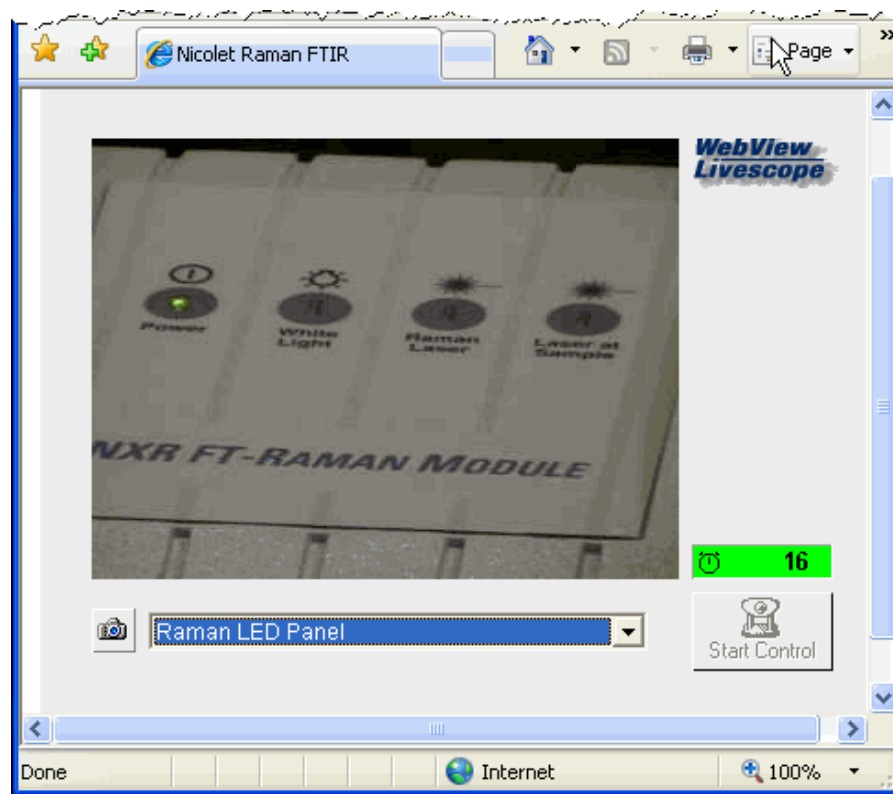
# Verify Laser Off

- To verify that the laser is turned off go to the Raman instrument internet camera web page.
- Select the 'Raman LED Panel' camera preset.
- When the laser is on the camera image will look like figure (a).
- When the laser is off the camera image will look like figure (b).

(a)



(b)



# Ending Your Session

- Exit OMNIC as you would any other application by selecting “File | Exit.”

