SOP of Raman Spectroscope (UniNano Tech/UniD2G)

Instrument Introduction:

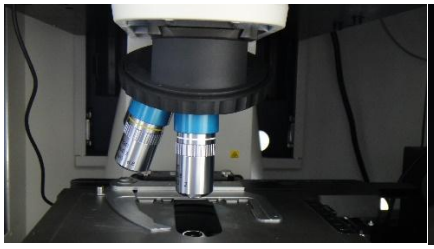
This instrument is Micro-Raman analysis system. In the following, we will briefly introduce the analysis parts of the whole system.

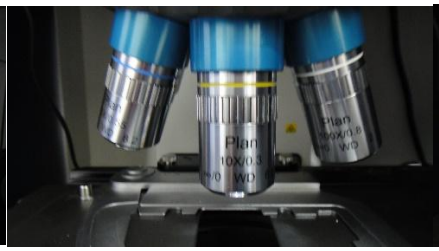
1. The Raman spectroscope contains one computer and a main analysis chamber. The spectrometer and laser source (wavelength=532 nm) are assembled inside the analysis chamber.

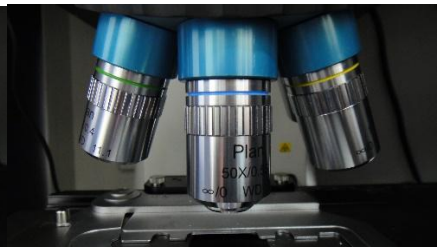
2. In the front side of analysis chamber, there are three switches: **LASER**, **CCD** and **LAMP**. **LASER** switch controls the power ON/OFF of laser light source. **CCD** controls the function of CCD. **LAMP** controls the function of white light.

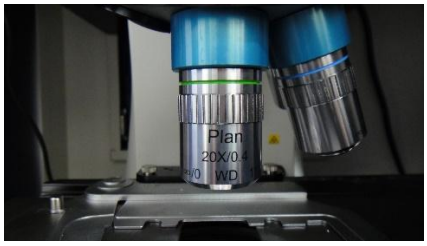
3. Outside of main analysis chamber, there is a black box to control the intensity of white light source.

4. This Raman system has an optical microscope with 4 optical lens for use. The magnifications are **10x**, **20x**, **50x and 100x**.




Plan
10X/0.4


Plan


Plan
20X/0.4

Operation procedures

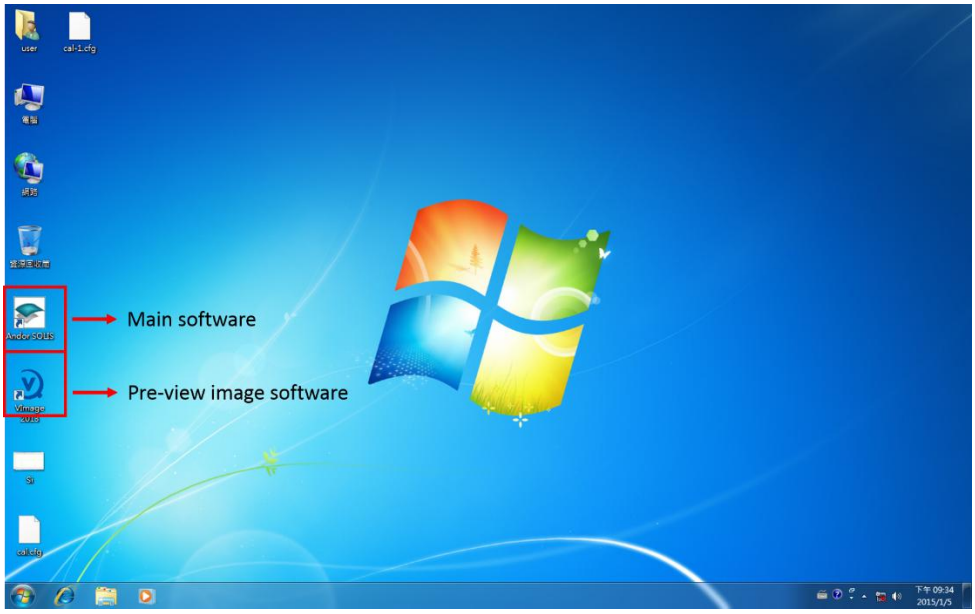
1. Turn-on the switches of “**LASER**”, “**CCD**” and “**LAMP**” for use.

2. After turn-on the switch of “**LASER**”, the screen will show the following information for the laser light source.

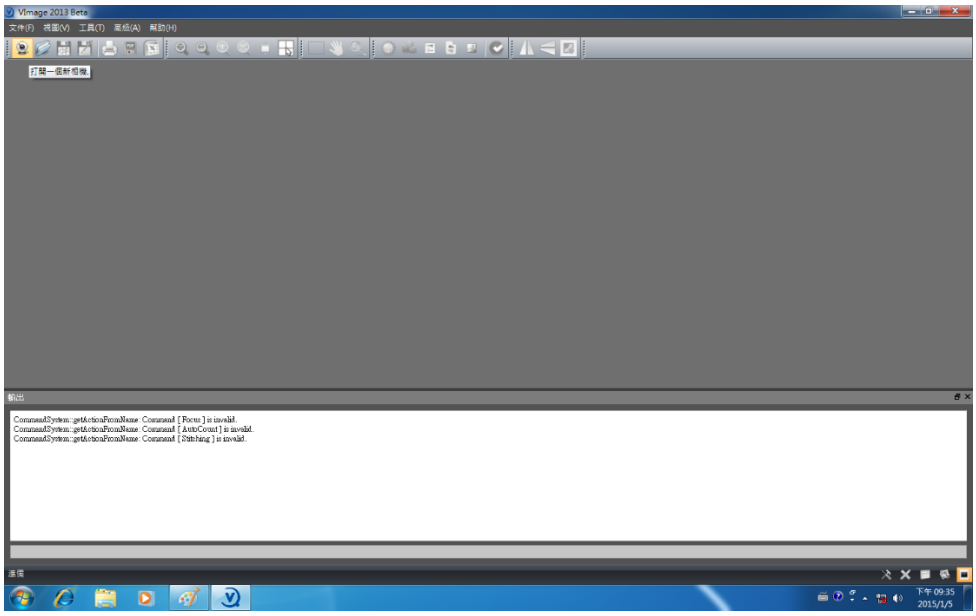
3. Press the “**MENU**”, the screen will show the power information of laser. Above is set-value and bottom is real-value. In this Raman spectroscope, we **FIX** the laser power in “**50 mW**” for user. **NOTE**: Please do not adjust the power of laser source. Only superuser can tune the power of laser source.

4. For sample observation, the user can turn-on the white light source switch from “**OFF**” to “**ON**” and tune the “**BRIGHTNESS knob**” to adjust the intensity of white light source.

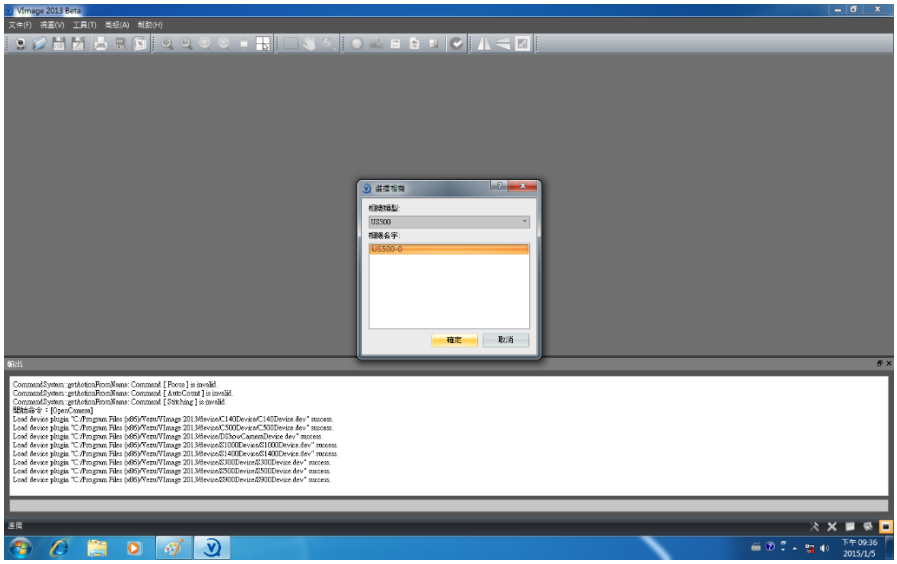
5. Turn-on the PC. There are two main software used for Raman spectroscopy analysis: **Ander SOLIS** and **Vimage 2013**.



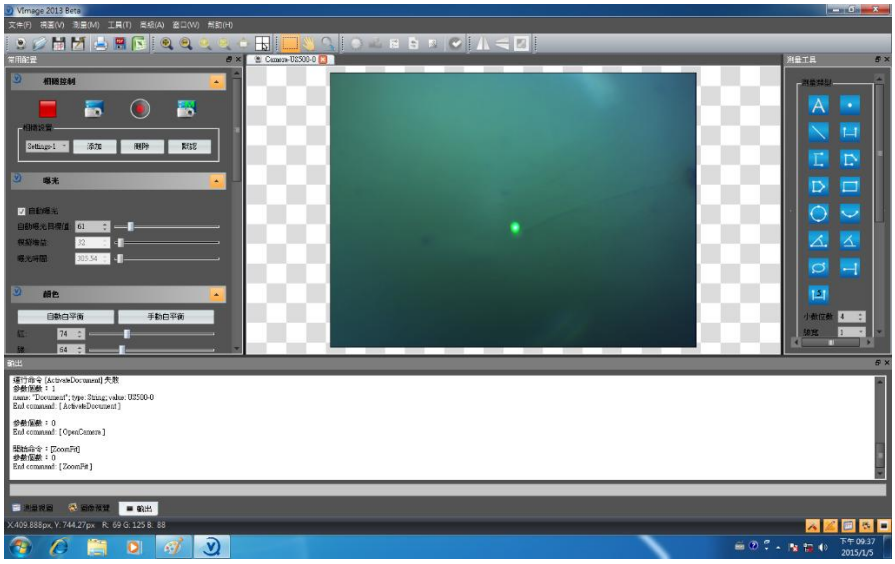
6. Open the "**Vimage 2013**" for pre-view the image of interested sample. After opening, press to pre-view image of sample.



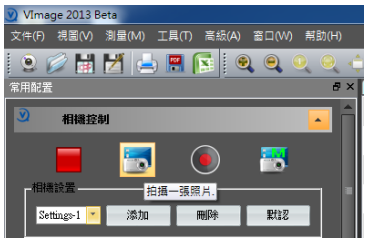
7. After pressing the icon, the screen will show a window. Please press "確定" for confirm it.



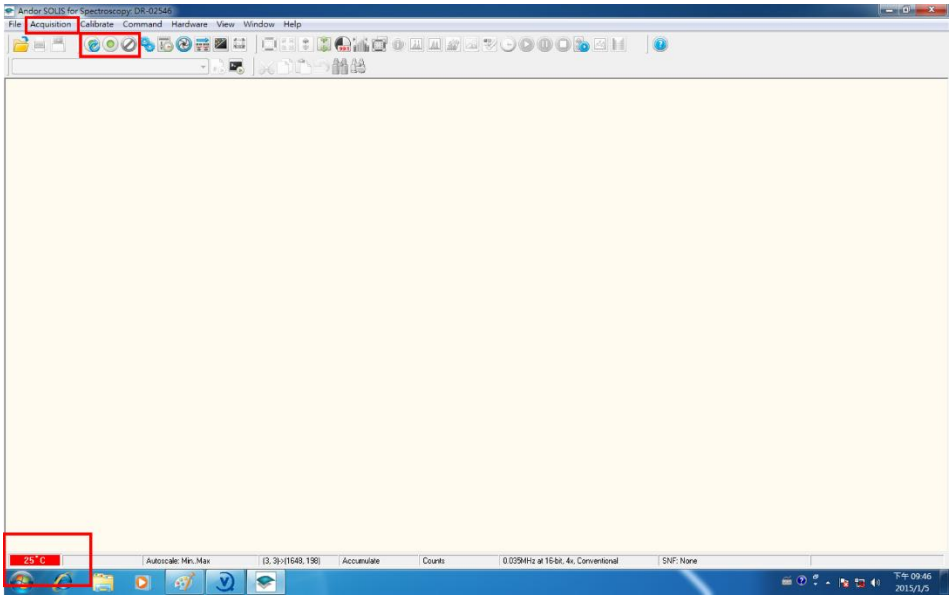
8. Then the screen will show the following figure for use. Please use the microscope stage to search the interested area for analysis and use the **knob of microscope** to focus the image of sample, as shown in the following figure. In the corrected focus adjust, the user can find a "**green spot**" in the screen. The "green spot" is laser spot.

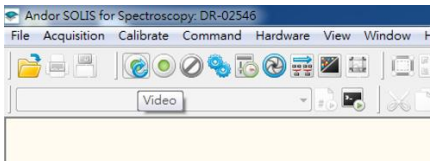


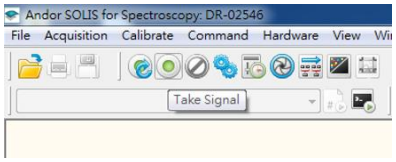
9. In "Vimage 2013", the user can use or to record the image of interested sample.

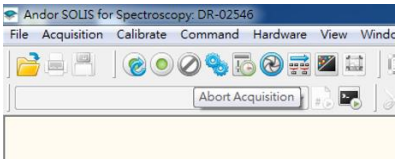


10. After choosing the interested area, starting the "**Ander SOLIS**" software for Raman spectrum analysis. In this software, the user will use the following functions: **Acquisition, Video, Take Signal, Abort Acquisition**. In addition, all of analyses will be started when the CCD temperature achieves **-40°C**.

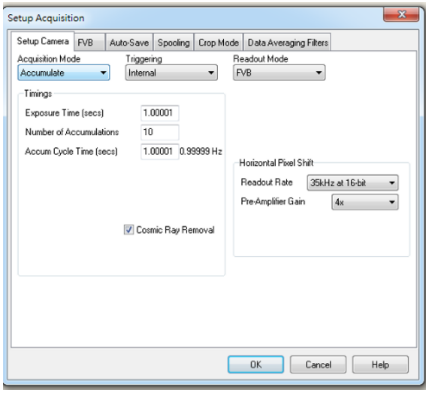


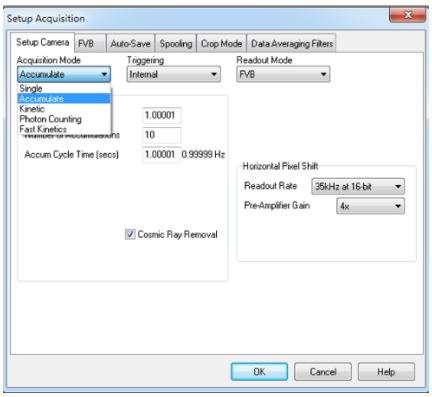




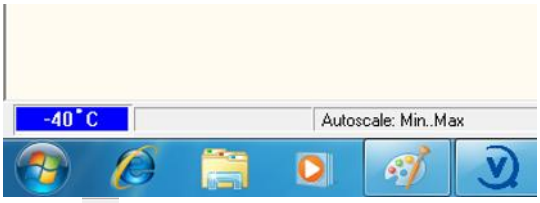


11. In the "**Acquisition**" window, the user can choose different mode for analysis. In general, the user can choose "**Accumulate**" mode for analysis. In this mode, the user need to set: **exposure time**, **Number of Accumulation** and **Accum Cycle Time**. In addition, the user need to confirm the function of "**Cosmic Ray Removal**" be chosen and the **Readout Rate** is **39KHz at 16-bit**.

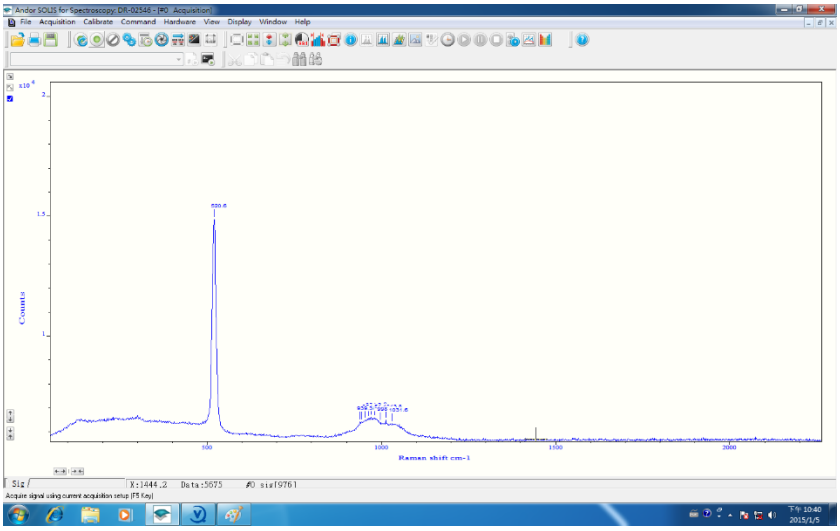




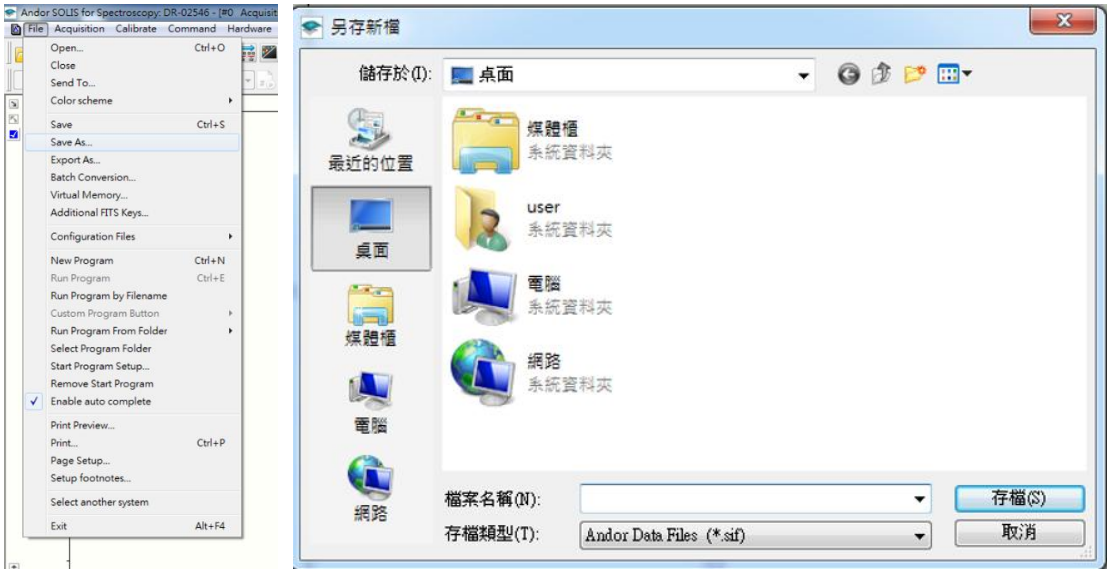
12. When **CCD temperature** achieves "**-40°C**", the user can analyze the sample.



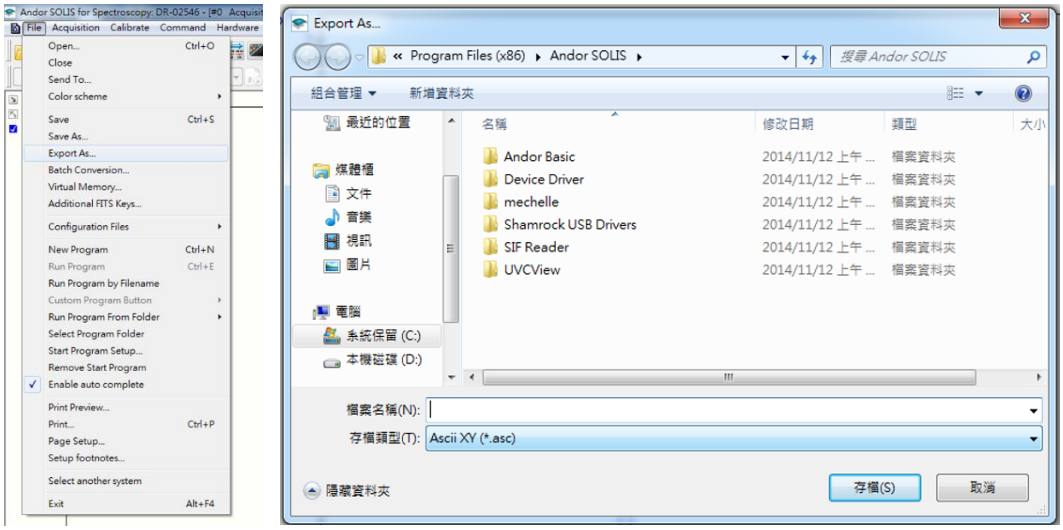
13. When user press "**Video**" icon , he/she can obtain the Raman spectrum in real time. When use press "**Take Signal**" icon , the Raman spectrum can be taken for analysis. Finish analysis, the Raman spectrum is shown as the following figure.



14. After analysis, the user can use “File/**Save As…**” function to save the **original file** (.sif).



15. Or use “File/**Export As…**” to exchange the original file format as **ASCII format** (.asc) for save.



16. Finish analysis, turn-off the **software** and **PC**, then turn-off **LASER** and **LAMP** switches. After waiting for “**1 min”** to turn-off the switch of **CCD**.