



OPERATION INSTRUCTIONS

UVSoftware

VIS-723G UV/VIS SPECTROPHOTOMETER

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Chapter 1 Software Functions

This software is used for PC control of spectrophotometers model VIS-723G.

There are four modes for PC control analysis: Wavelength Scan, Photometric Measurement, Kinetics Measurement and Quantitative Measurement. Data processing, save, load and report printing etc can also be realized.

Chapter 2 Installation and Un-installation of the Software

2.1. Installation of the software

1. Put the software CD into the CD-ROM.
2. Double click the CD-ROM icon in "My Computer". Find the "setup.exe" file and double click it. Finish installation procedures according to the prompts.

2.2. Un-installation of the software

1. "Start"--"Settings"--"Control Panel", Double click "Add/Del Program";
2. Find the program to be deleted, select it and click "Delete". Uninstall it according to the prompts.
3. Find the root directory of the UVSoftware and delete the directory completely at start menu.

Chapter 3 Initial Setting and Online Testing

3.1. Registration of the instrument

Before register, check the communication port. If the port is USB port, you need to install USB driver in the attached CD.

First connect instrument with computer, then connect the power supply cable. Switch on instrument, After instrument is turned on, you can run software.

After entering the interface of software, click “System settings” and enter “General” to set communication port and instrument information, see as Fig.1,

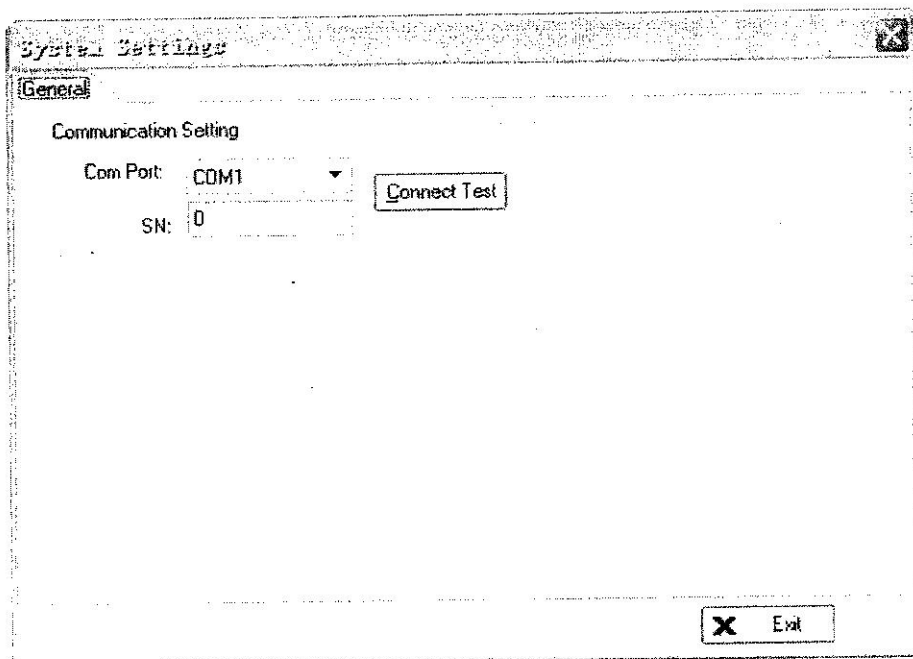


Fig. 1

Choose the communication port that instrument is using, and input serial number of instrument, then click “Connect Test”. If succeed, the following information will come out. See as in Fig. 2.

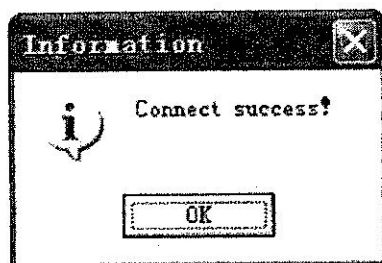


Fig.2

After setting all these above, click "OK" to confirm. At the lower right corner of main interface, serial number of instrument will appear, see in Fig.4.

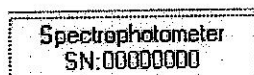


Fig.3

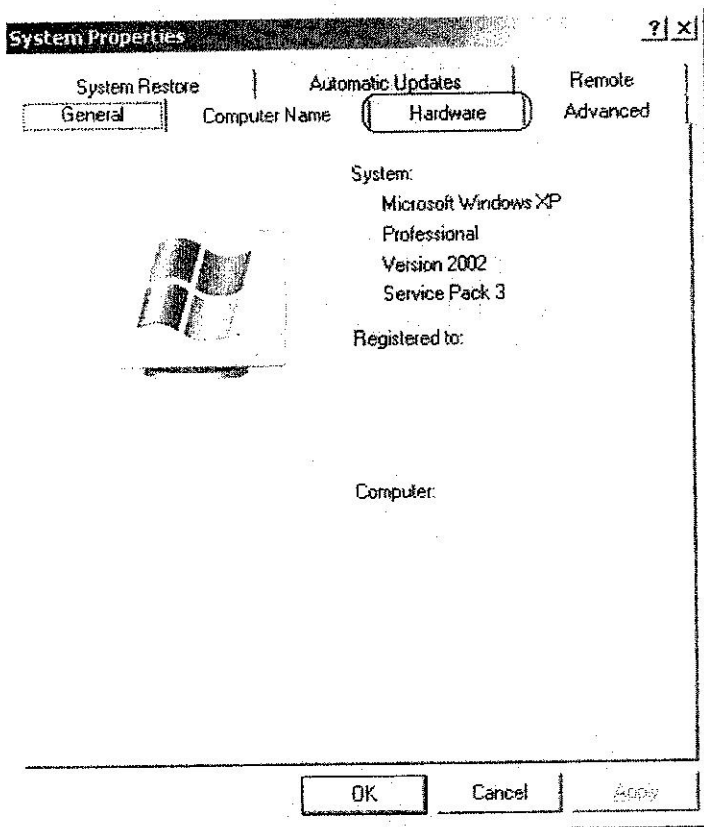
If connection succeeds in test interface, then "Connect" button on main interface will become unable, see Fig.5. Then, user only needs to run initialization, besides, once initialization is succeed, system will store the setting as default, then for later operation, user do not need to input parameter every time.



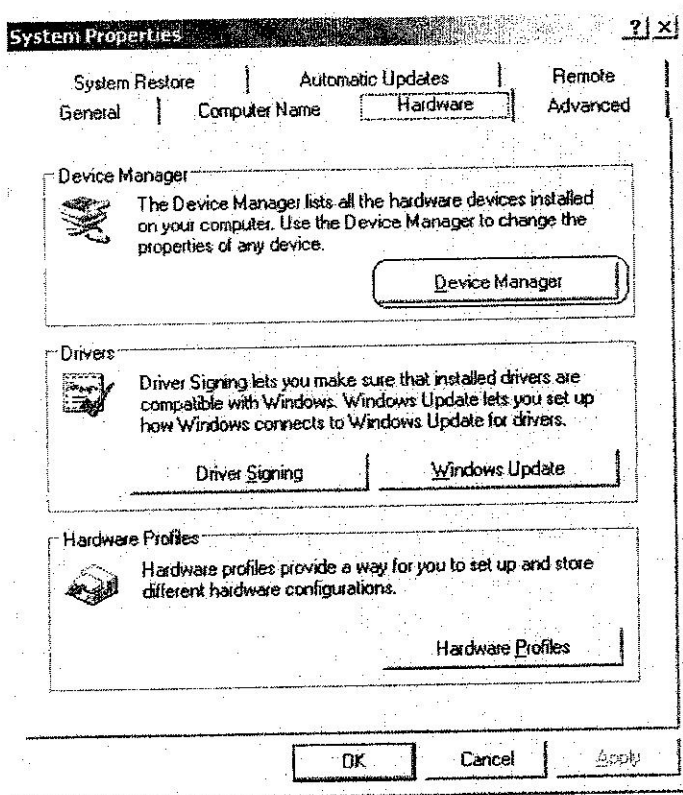
Fig.4

How to Find the communication port used by Spectrophotometer (under Windows XP)

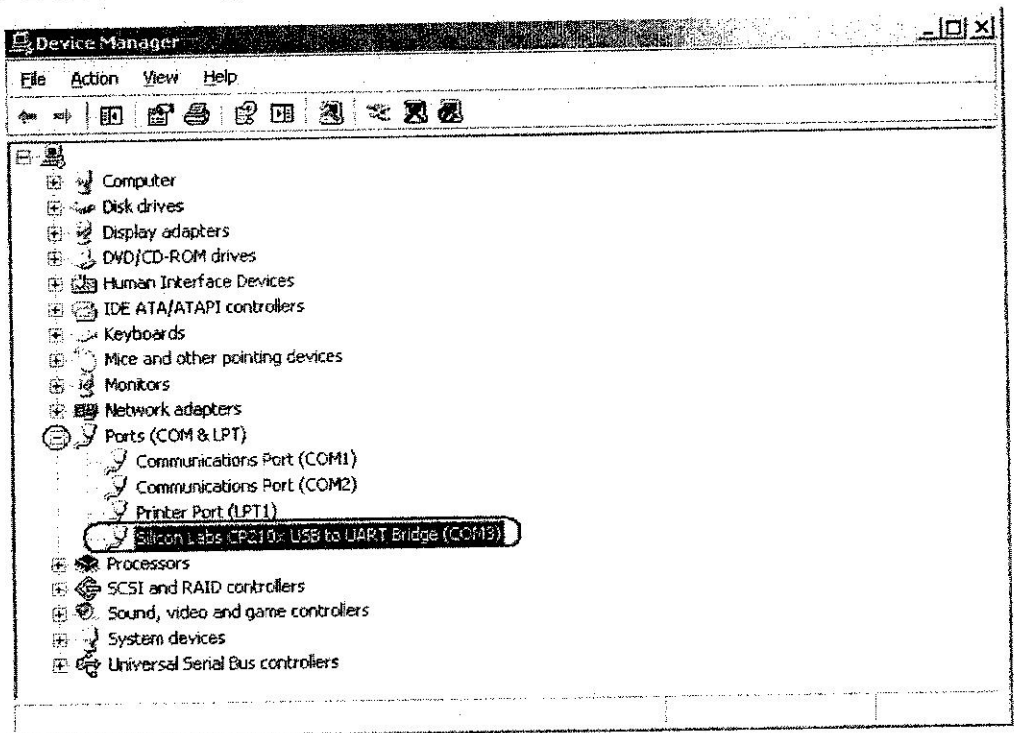
- 1) Right-click "My Computer" Icon on the desktop, then select "Properties" to display the following window.



- 2) Click "Hardware" to display the following.



3) Click "**Device Manager**" button to display the following window.



Click at item "**Ports (COM & LPT)**" and find item "**Silicon Labs.....(COM?)**" as shown in the above figure. The COM port number (as "**COM3**" in the figure) is displayed. This port number should be input later as the communication port No. in the spectrophotometer PC control software

"UVSoftware".

3.2 Connection of instrument

Click "Connection" at the lower right corner of main interface, click "OK" after the following information comes out, see in Fig. 5. (if instrument is already connected, skip this step, go to the step of initialization.)

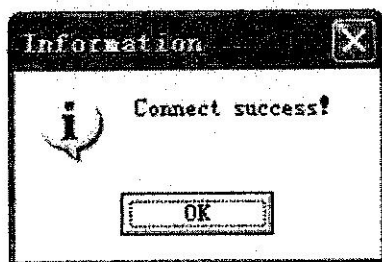


Fig.5

PS: if connection fails, shut off software and reboot instrument, rerun software again.

3.3 Initialization of the system

Click "Initialization" button on the lower-left corner of screen to start initialization, you can see the following information, see Fig.6.

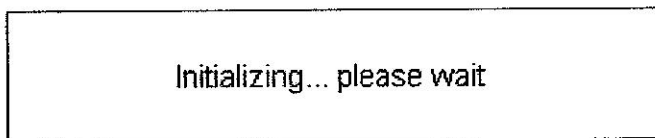


Fig. 6

If initialization is OK, it will inform you that initialization succeed. As shown in Fig. 7

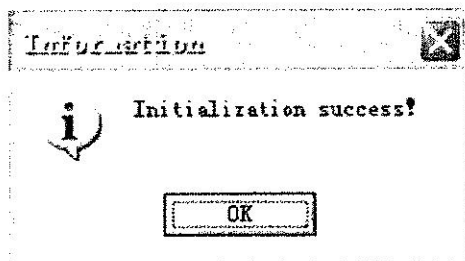
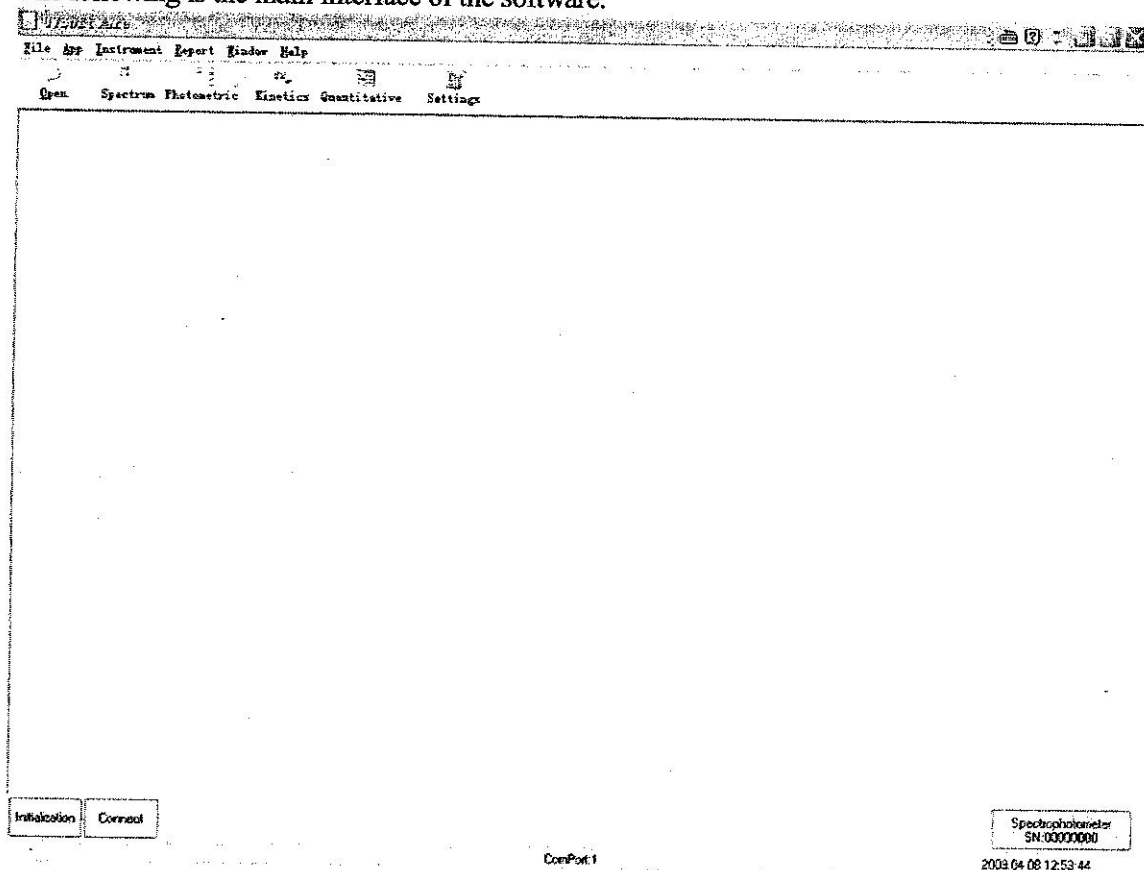


Fig. 7

Chapter 4 Functions and Applications of the software

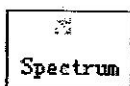
The following is the main interface of the software.



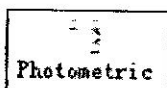
Introduction of software interface:



Open a file



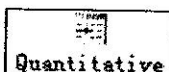
Spectrum scan button



Photometric measurement button



Kinetics measurement button

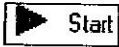
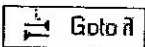


Quantitative measurement button

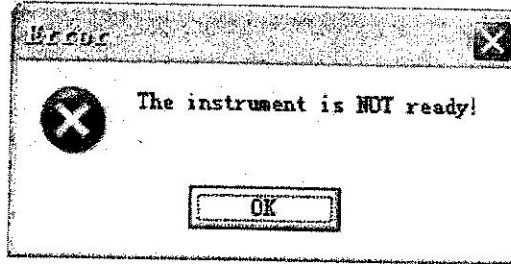


Parameter settings button

Attention:

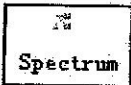
During all measurement, if  Start or  Goto is clicked, or the instrument is not

Initialized, system will inform as follow:

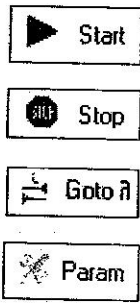
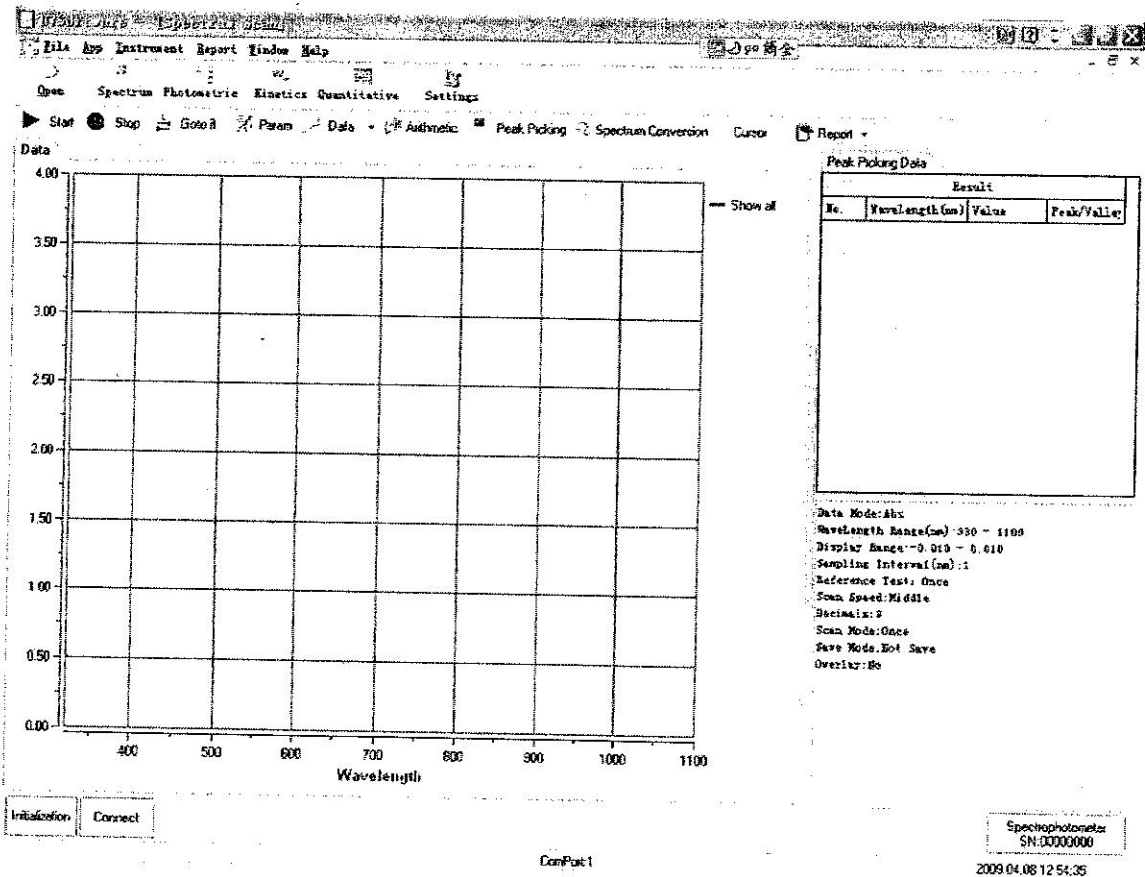


4.1 Spectrum scan

4.1.1 Enter spectrum scan mode



Click **Spectrum** button to enter spectrum scan mode, see in Fig. 8. Data page can see all spectrums, while spectrums will shown in others pages.



Start measurement

Stop measurement

Wavelength locating

Parameter setting

 Data ▾

Save data

 Arithmetic

Spectrum arithmetic (+, -, *, /)

 Peak Picking

Peak picking

 Spec Conversion

Spectrum conversion

 Cursor

Display cursor

 Report ▾

Print report

4.1.2 Parameter setting

Click  Param to set parameter. See in Fig. 9.

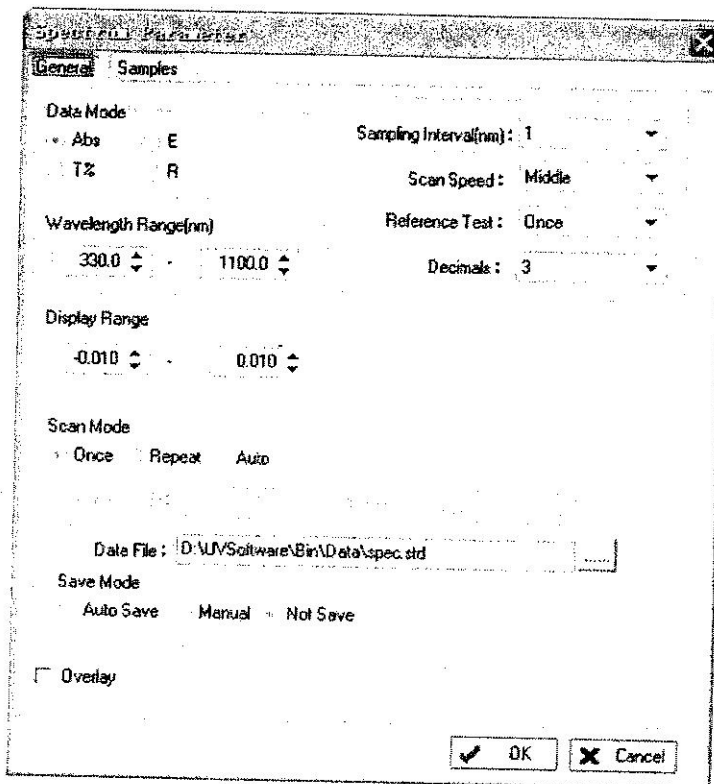
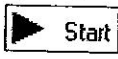


Fig. 9

In this window:

Reference Test: Once, after test complete, do not change any parameter, click  Start button to continue test will test sample directly, reference will not be tested; Repeat, after test complete, do not change any parameter, click  Start button to continue test will test reference before test sample.

Scan mode: Once, test one time; Repeat, test according to set time interval and test

time; Auto, test with set time interval till operator stop the test.

Save mode: Auto Save, after test, system will save automatically in the folder that user set, if scan mode is Repeat, name of saved file will be added “_1”, “_2” etc.; Manual, system will ask if you want to save result after a test; Not Save, system will not ask you to save result.

OverLay: by selecting this, all tested result will be shown on Data page, you can also use this function to see certain result on Data page manually.

Under this interface, you can select data mode: Abs, T% or Energy. Also you can set wavelength range and photometric range (display range), sampling interval, scan speed, reference test mode and decimals. After all parameter has set, click “OK”.

System will create automatically a new page Data1, and update the coordinates of spectrum (see 1 in Fig.10), the parameters that is set will be shown at right part (see 2 in Fig.10), test result will also be displayed at right part (see 3 in Fig.10), current wavelength will be shown at the top of interface (see 4 in Fig.10).

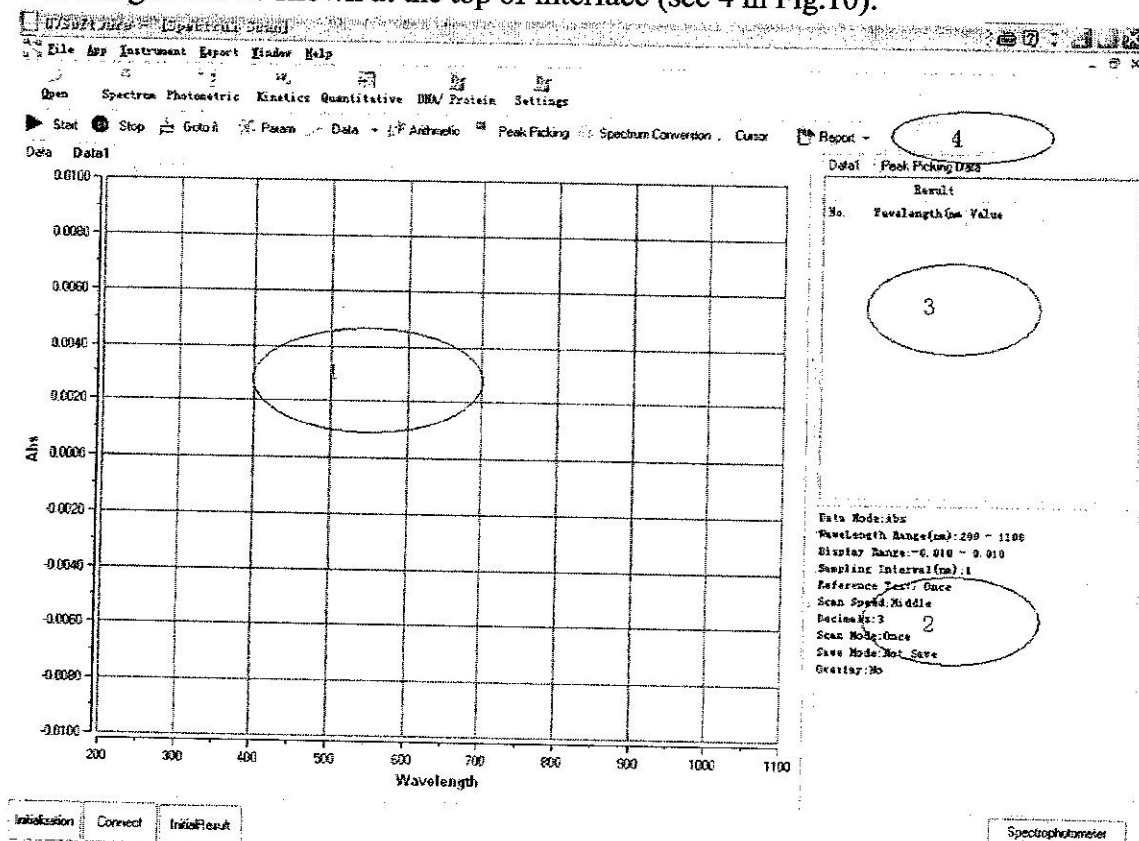
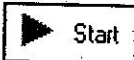


Fig. 10

4.1.3 Measurement

Click  to start measurement. System will inform you to pull reference into light

path, as Fig. 11 shows,

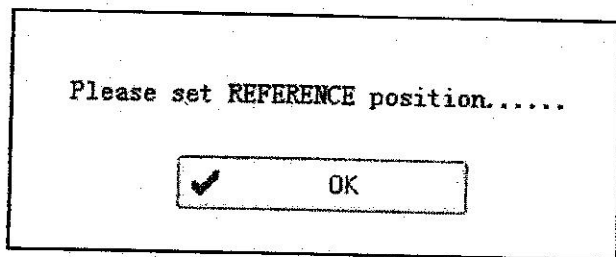


Fig. 11

Then pull reference into light path and click "OK".

After test of reference is finished, system will inform you to pull sample into light path, as Fig. 12 shows,

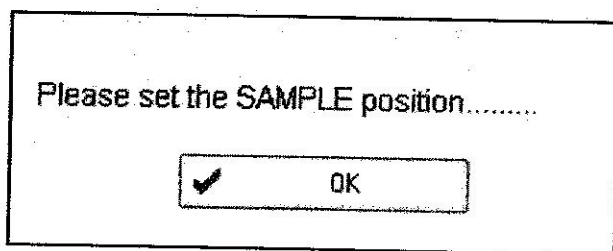


Fig. 12

Then pull sample into light path and click "OK" to finish test.

After test finished, system will inform you that scan is complete, click "OK", see as Fig. 13 shows.

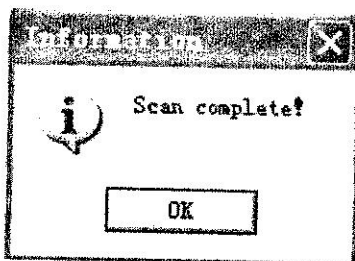


Fig. 13

Then the tested result and their corresponding spectrum will come out, as what Fig. 14 shows.

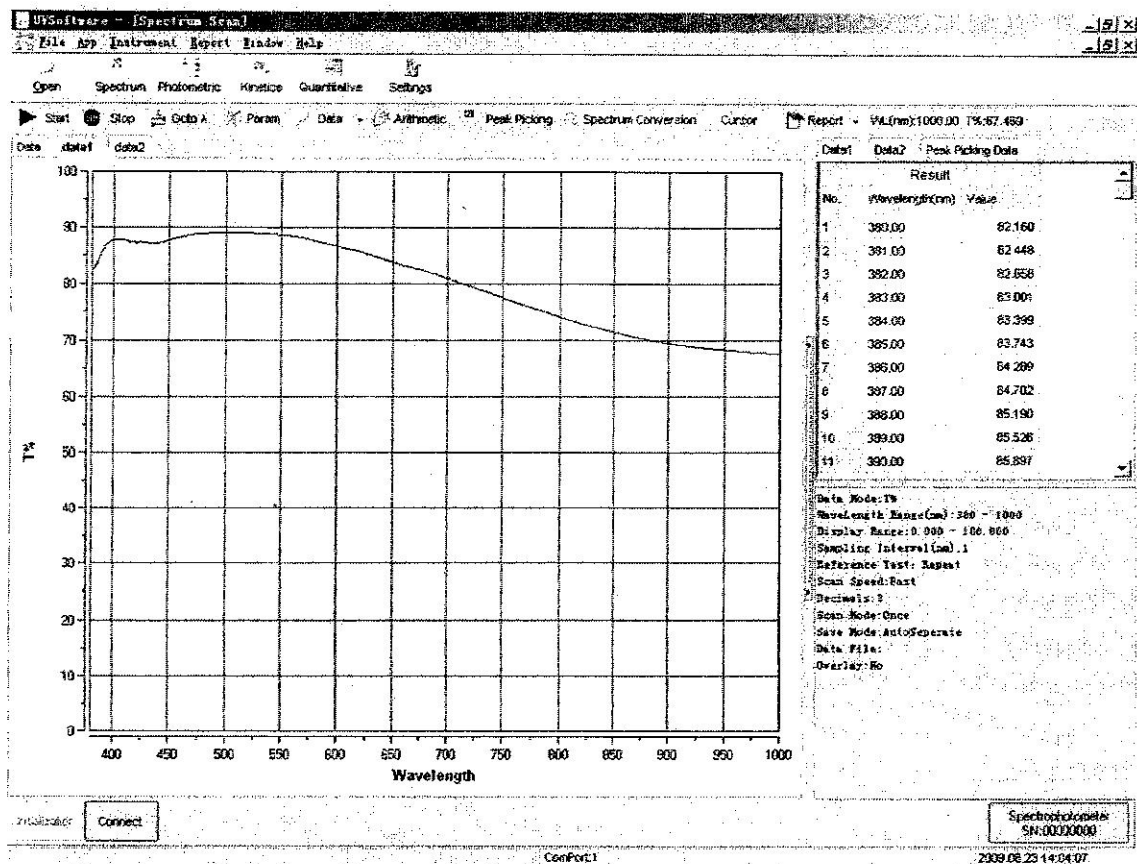
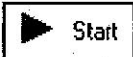


Fig. 14

Repeat test can be finished manually, after a scan is finish, click  Start to start. Also you can use auto repeat test, set same parameter as Once test, and select scan mode as “Repeat”, set time interval and repeat times. See Fig. 15, the setting is to test 1 time every 3 seconds, in all test 3 times.

Scan Mode

☐ Once ☒ Repeat

Time Interval(S) : Repeat Times(n) :

Data File :

Save Mode

☒ Auto Save ☐ Manual ☐ Not Save

Fig. 15

Notice:

When instrument is measuring, user clicks “Measure”, “Wavelength locating” or other function buttons, system will inform as Fig.16. Other operation shall be done after measurement complete.

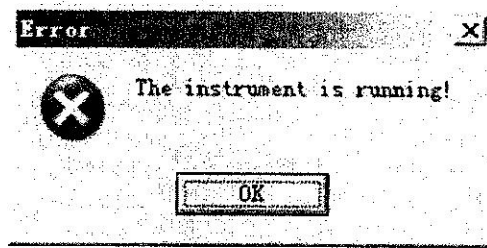


Fig. 16

If instrument is not initialized, then user click any function button, user will get information as Fig.17 shows.

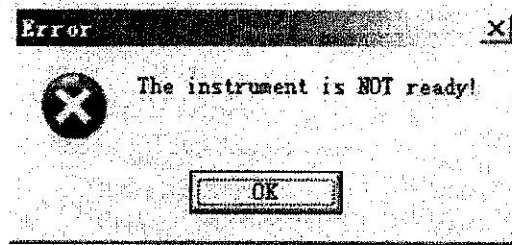
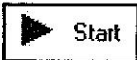
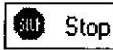
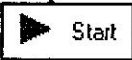


Fig. 17

Generally, Press  to start Repeat test after Once test, or select Repeat test and set its parameter to start repeat test. It would be better not to use Auto test.

After a test is finish, to start a new test, operator can click directly the parameter button to reset parameters, after setting, click "OK", then a new page for test will created automatically.

In the process of test or baseline test, if operator clicks  to stop, then if one does not escape this test window, system will clear all current data that is tested; if one click  again, system will restart the test.

After a test, change any of the parameters, a new test window will created. If any parameter of test mode, wavelength range, time interval or scan method of reference is changed, system will restart baseline test and start a new test; while changing other parameters will not restart baseline test.

When shutting off test window, system will inform you as Fig.18 shows. Select Y, system will stay on test window, user can save data according to their demand; if select N, system will quit directly.

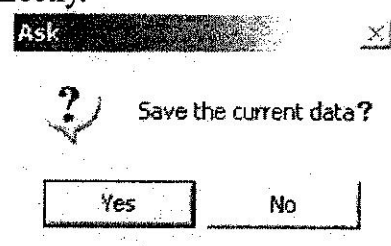


Fig. 18

4.1.4 Additional function

a. Spectrum adjustment

After measurement, right click mouse on spectrum, you will find the following menu, see Fig.19.

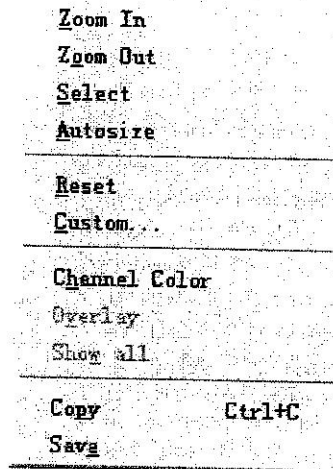


Fig. 19

In witch:

Select ---- Partly zoom in

Autosize ---- Adjust the spectrum to proper size automatically

Custom ---- Select a certain range for display, see in Fig. 20, after setting, click "OK", spectrum will be display follow the selected range

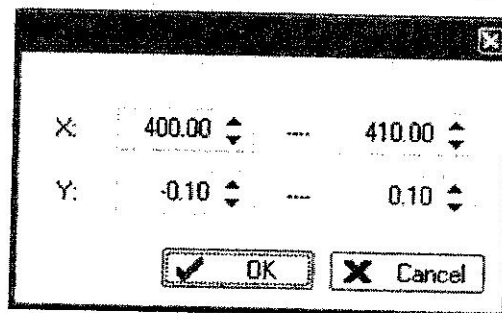


Fig. 20

Channel Color ---- set channel color for data page. See Fig.21, double click color button, color select window will appear, select the color you want, and click "OK".

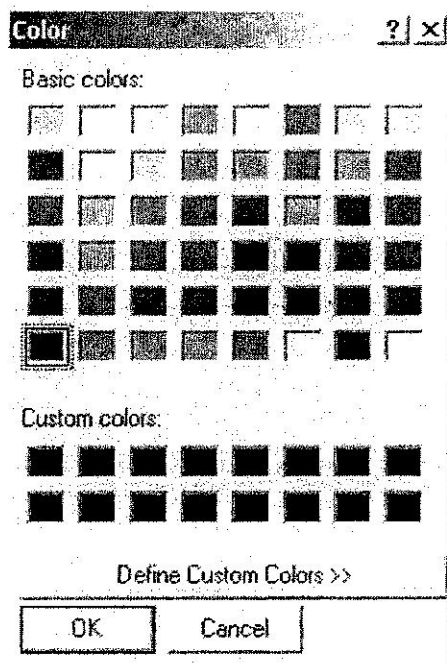
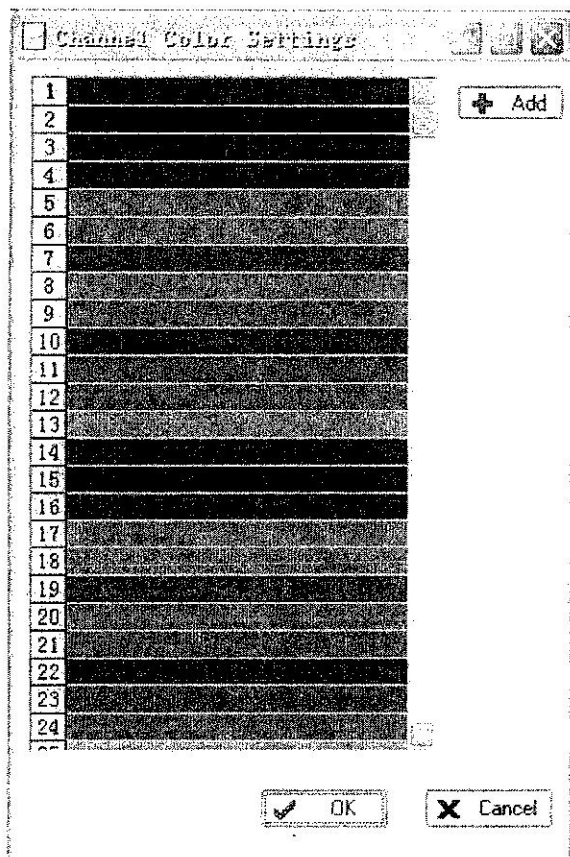


Fig. 21

Overlay --- Spectrum overlay can show all the test spectrum on one data page, see Fig.22, select spectrum you want to overlay (in Fig.21 R8-23-3 means property of page, 190~1100nm indicates wavelength range, 1 means time interval), click "OK". The overlay spectrum that you selected will be shown in Data page, see Fig.23.

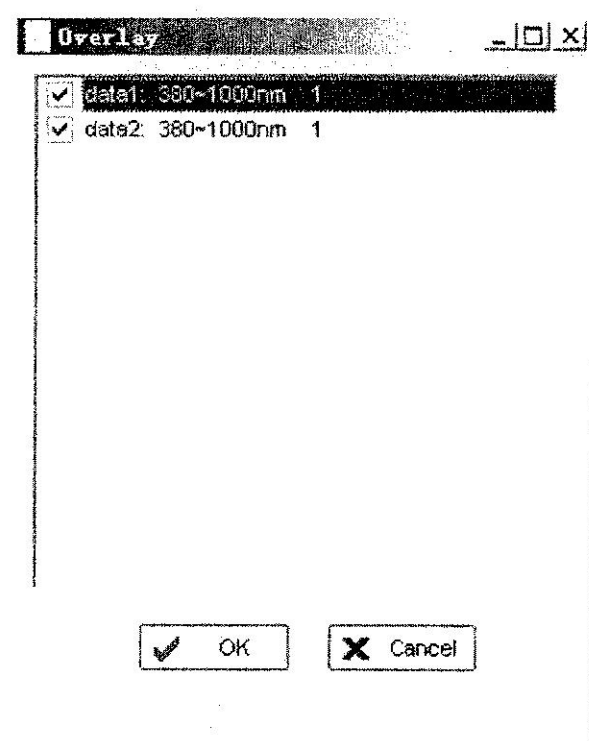


Fig. 22

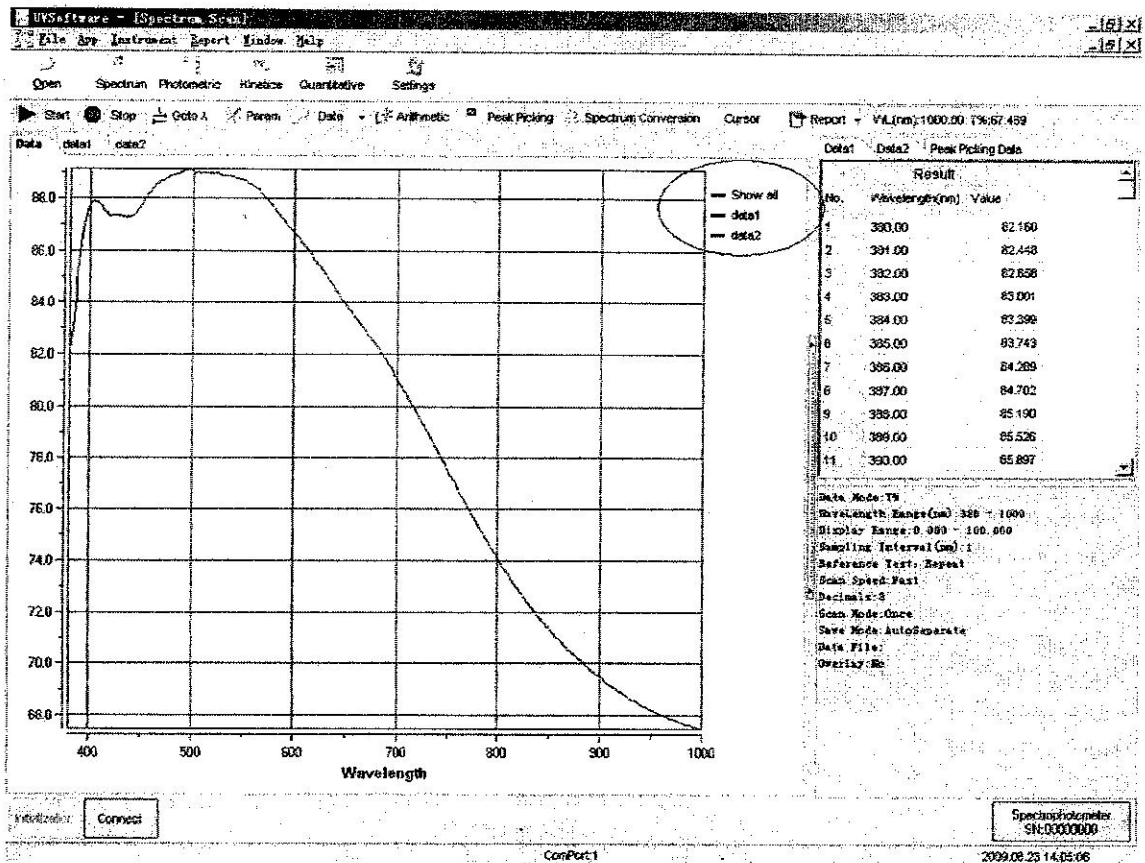


Fig. 23

By selecting from the marked toolbar in Fig.23 can display certain spectrum.

Click Overlay again to cancel spectrum overlay.

b. Cursor

Click  button on tool bar, vertical cursor will be displayed, you can observe data by moving your mouse, also you can use “←” & “→” to move cursor slowly. If you need to move cursor fast, press “Shift+←” & “Shift+→”.

c. Peak picking

Select the spectrum that you want to pick peak, click  Peak Picking button on tool bar, peak picking window will come out (this function is used for certain spectrum, not for overlay spectrum), see as in Fig. 24, then input threshold and click “OK”, system will mark peaks and valleys on spectrum, and list each of them in a table, see as Fig. 25 shows.

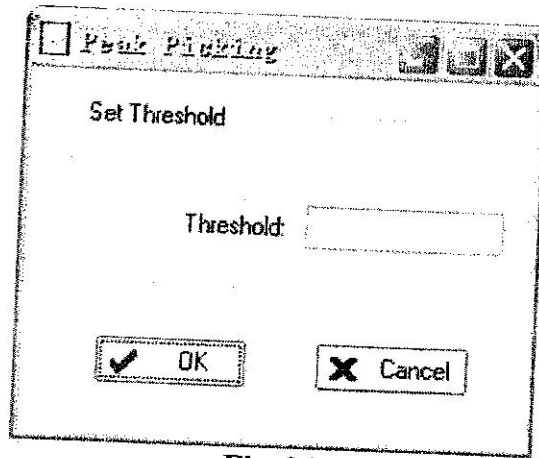


Fig. 24

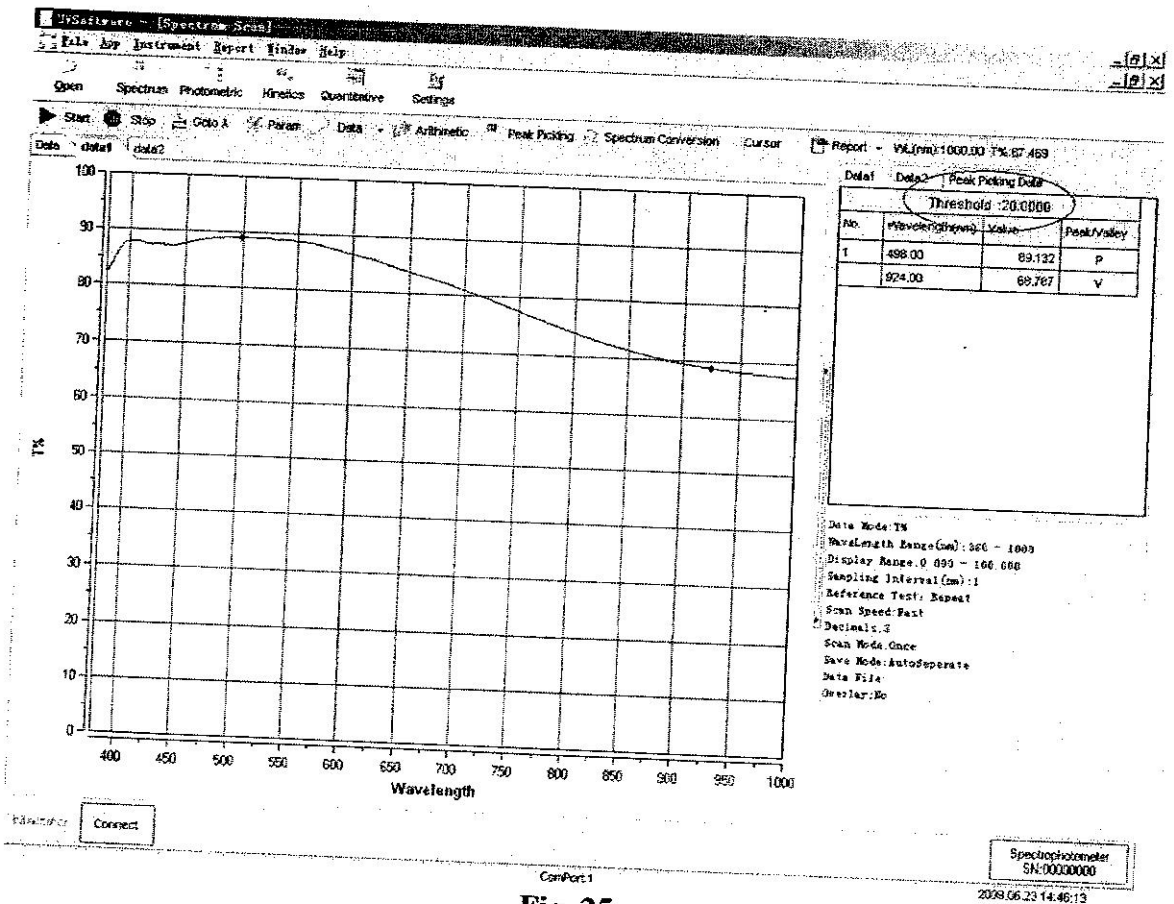


Fig. 25

If system did not find any peak because of improper threshold, system will inform you as Fig. 26.

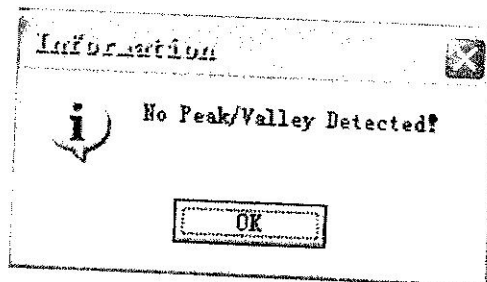


Fig. 26

When doing Peak Picking, if you stay in Data page (Overlay page), system will inform you to select the data you want to do peak picking, see the Fig.27.

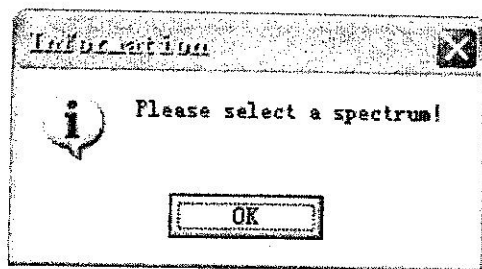


Fig. 27

d. Spectrum transfer

Spectrum transfer is to make conversion for scan of spectrum. It includes the following functions:

Abs<.....>T%: Conversion between absorption and transmittance

Logarithm: Take logarithm calculation on spectrum

Reciprocal: Take reciprocal calculation on spectrum

Smooth: Smoothen the curve and remove burr

Derivative: Take derivative calculation on spectrum, you can select $\Delta\lambda$ and order of derivative

$\Delta\lambda$: Interval when taking derivative calculation

Order of derivative can be selected directly

Attention: for "Abs<.....>T%", "Log", "Reciprocal" and "Smooth", just select and click "OK". But for "Derivative", do not forget to select $\Delta\lambda$ and order of derivative.

Select spectrum you want to transfer, click  Spec Conversion button on tool bar then spectrum conversion window will come out, see as shown in Fig. 28. Select the function you need, and click "OK" button, then system will show the changed spectrum. For example, in Fig. 28 we select ABS<---->T%, then click "OK" button, the changed spectrum will become as what we can see in Fig. 29. Save of changed spectrum is same as that before changed.

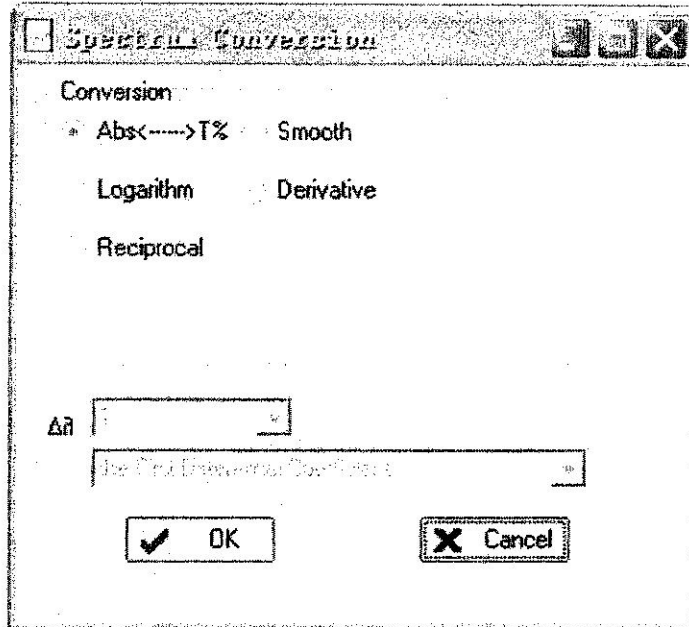


Fig.28

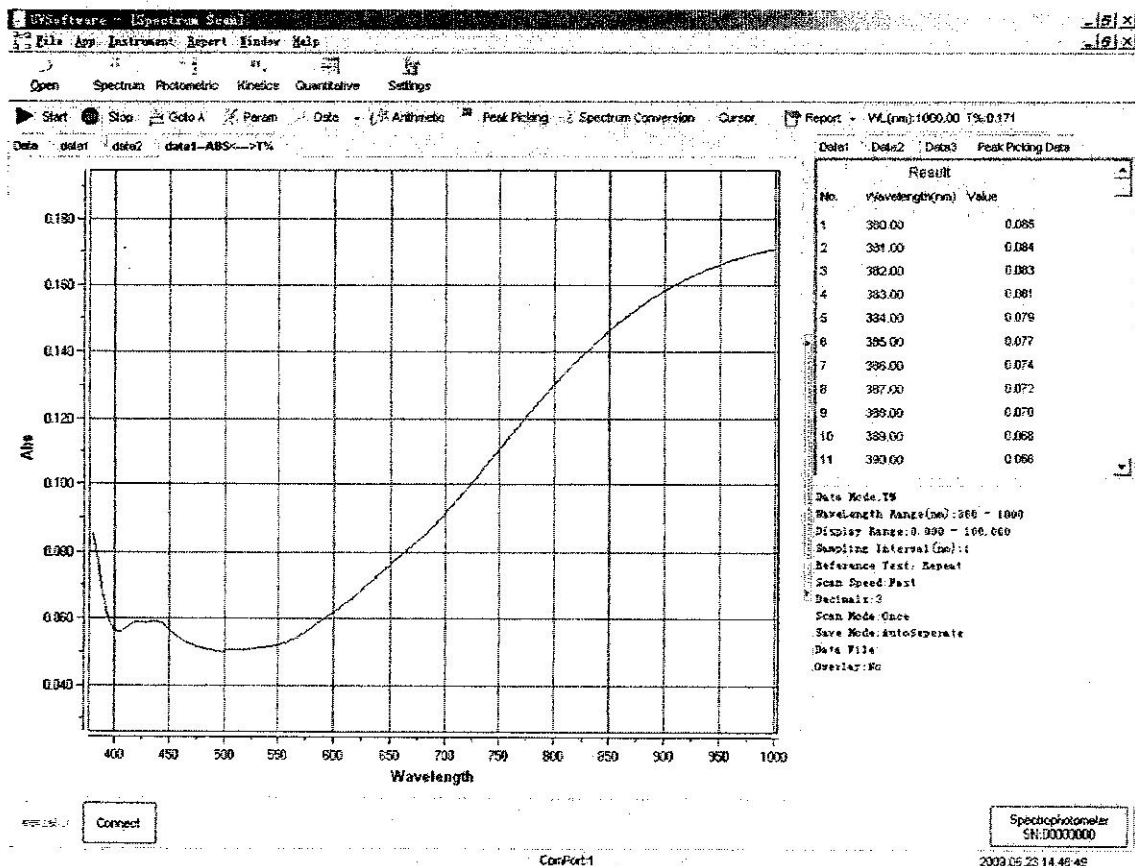


Fig. 29

If you do spectrum conversion on Data page (overlay page), system will inform you as Fig.30 shows. Then please select a certain page to do this conversion.

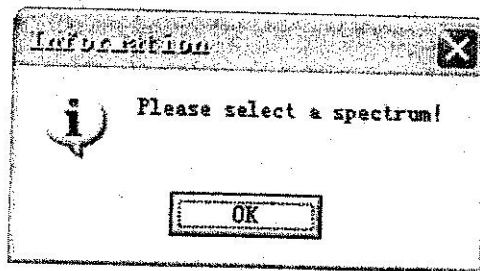


Fig. 30

e. Arithmetic Function

Click  Arithmetic button on tool bar, Spectrum Arithmetic window will come out, here we can do arithmetic for the spectrum, see Fig.31. Select the spectrum you need to operate, and select the function, then click "OK". A new page will created to show the new spectrum, see Fig.32.

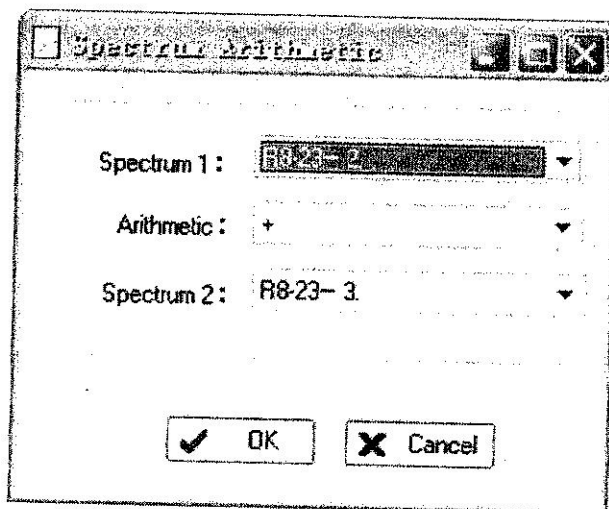


Fig. 31

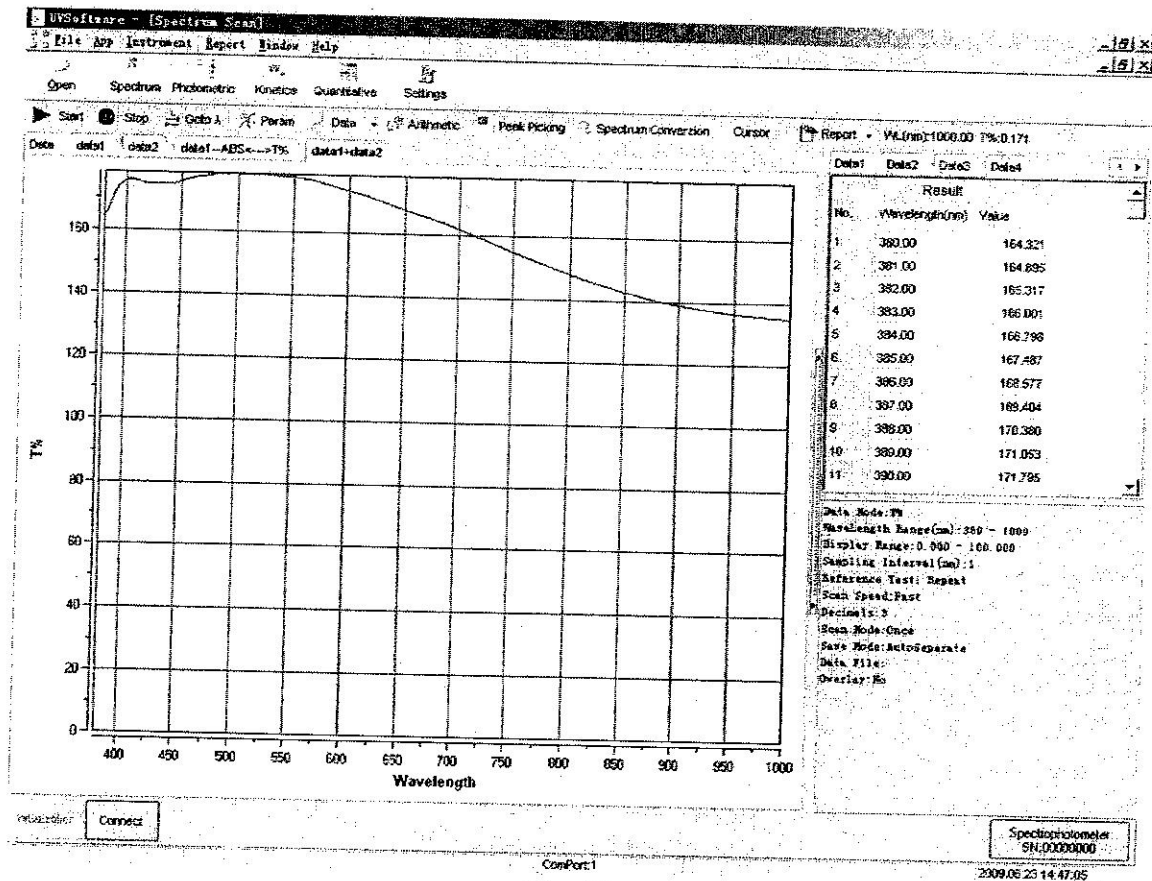
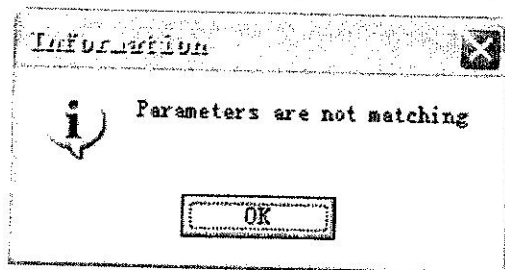
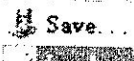


Fig. 32

But if the wavelength range, time interval and scan mode of spectrum you selected are different, arithmetic function will not work. System will inform you as follow.



f. Save data

Click  button on tool bar, select load  from pull-down menu to load a spectrum; by Export function operator can export the data to Excel.

g. Data and spectrum copy

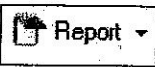
Spectrum copy, right click mouse on spectrum, select "Copy", then you can paste the spectrum into Word or Excel file.

Save spectrum as picture, right click mouse then select save, spectrum can be saved as bmp, jpg, emf or png format.

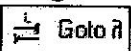
Copy data in table, use "Ctrl+A" to select all data, then use "Ctrl+C" to copy; or use

mouse select data you need, right click mouse to select copy.

h. Report print

Click  on tool bar, select  to preview the report.

i. Wavelength locating

Select  on tool bar, the following window will come out, see Fig.33. Input the wavelength that needs locating, click "OK", after the instrument gets to the set wavelength, this window will shut off automatically.

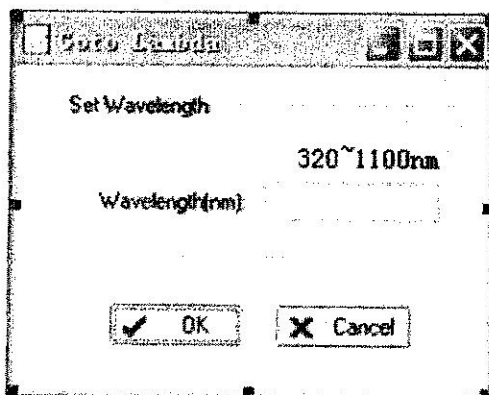
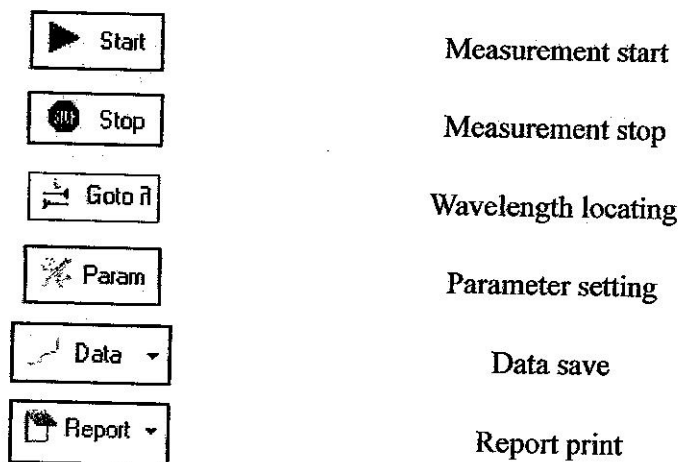
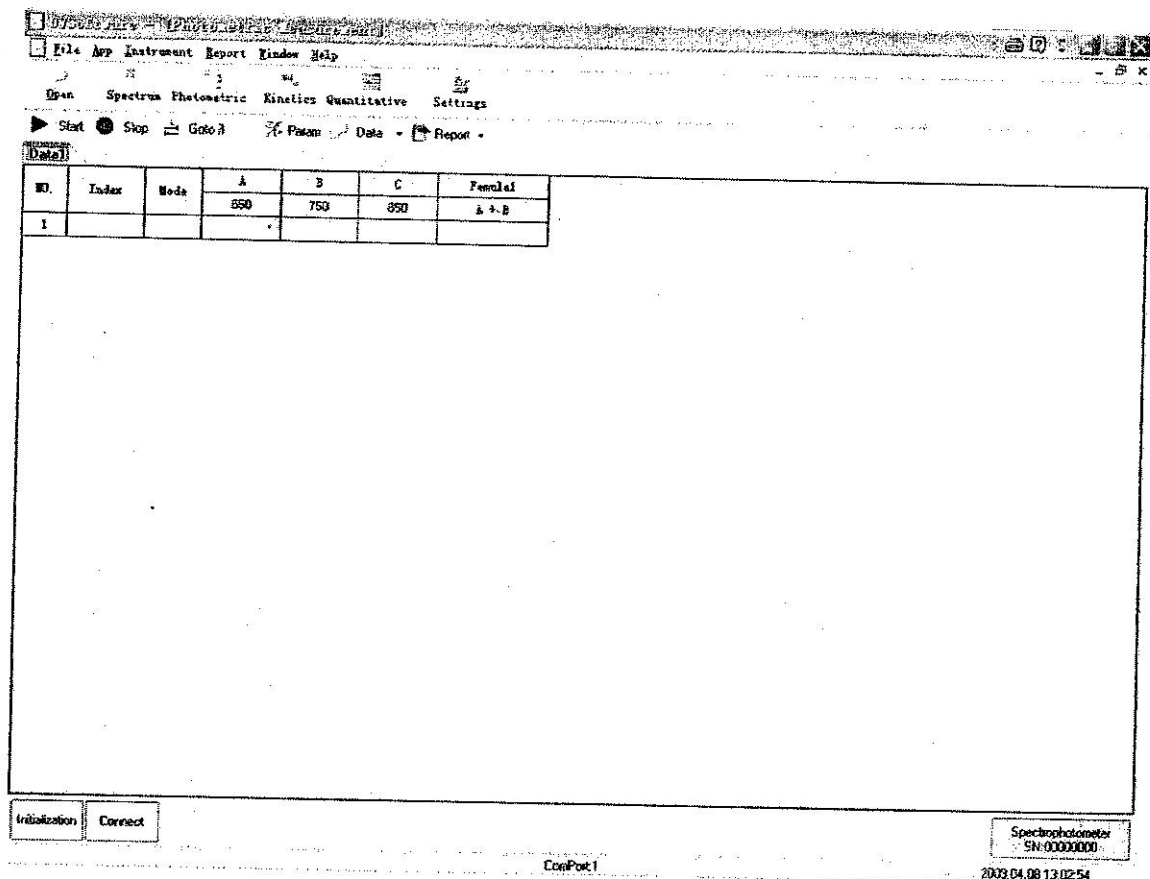


Fig. 33

4.2 Photometric measurement

4.2.1 Enter photometric measurement mode

Click  to enter photometric measurement mode.



4.2.2 Parameter setting

Click Param button on tool bar to start set parameter, see in Fig. 34 shows.

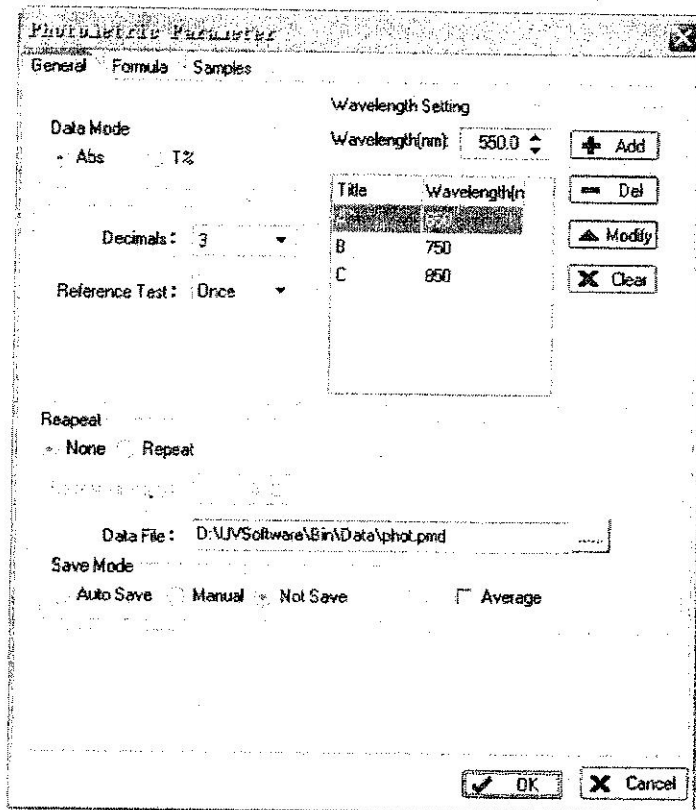


Fig. 34

In this window, you can select measurement mode: enter normal mode to set the following parameter, absorption and transmittance, select decimal point and reference test method, also you can set wavelength.

	Add a wavelength, click this button will add a number of wavelength
	Delete a wavelength
	Change a wavelength, select the wavelength you want to change, then input new wavelength
	This button will delete all wavelength

In "Formula" column, input title of formula and its calculating formula, then click "Add". See as in Fig. 35.

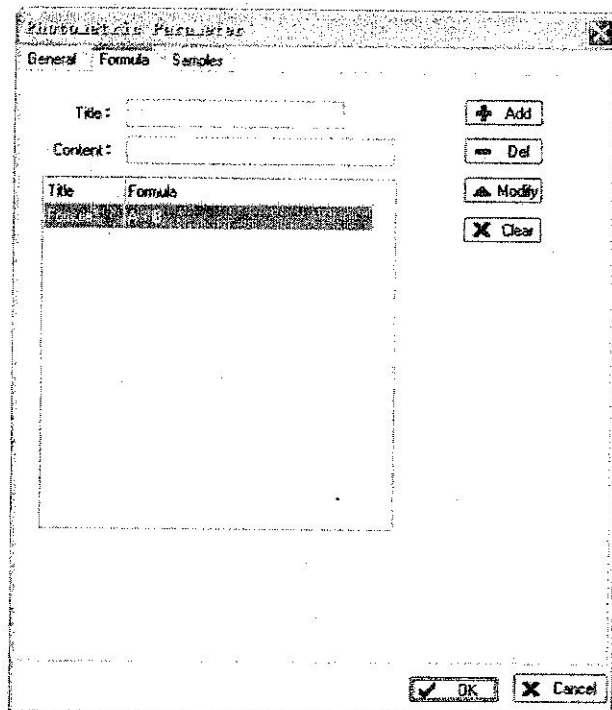


Fig. 35

After all parameter setting is finished, click "OK".

Notice:

When setting parameters, same wavelength can not be set, if same wavelength is set, when clicking OK to confirm wavelength, system will inform you as follows:

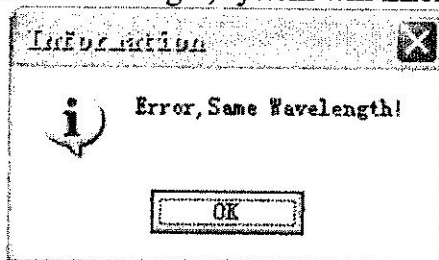


Fig. 36

The maximum piece of wavelength or formula is 7, if more than 7 pieces is set, the following information will come out:

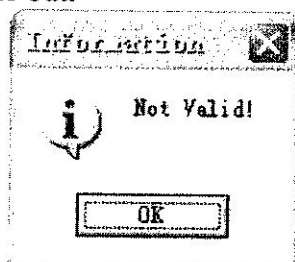
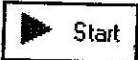


Fig. 37

The formula is used to do arithmetic with the test result, so when inputting formula, the letters shall be strictly same as the test result, if not, system will not calculate it. For example, 2 results have been tested: A & B, then in the formula, only A & B is

valid, any other letters are not valid.

4.2.3 Measurement

Click  to start measurement. System will inform you to pull reference into light path, as Fig. 38 shows,

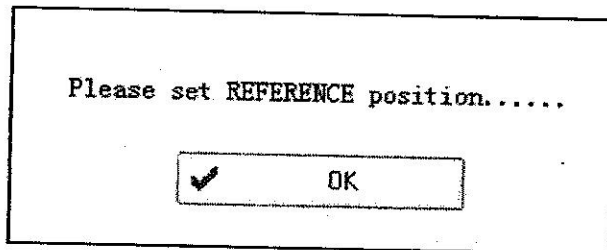


Fig. 38

Then pull reference into light path and click "OK".

After measurement of reference, system will inform you to pull sample into light path, as Fig. 39 shows,

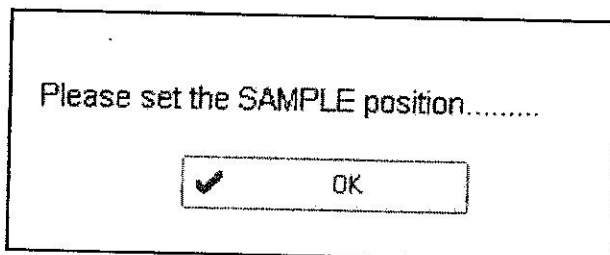


Fig. 39

Then pull in sample and click "OK".

After scan is complete, system will inform you, click "OK". See as Fig. 40 shows.

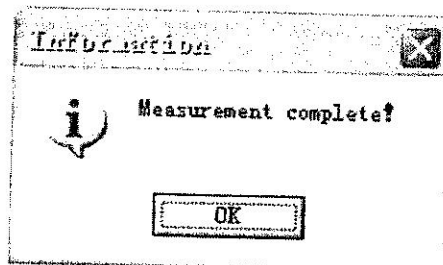


Fig. 40

After that, test result will be displayed. See as what Fig. 41 shows.

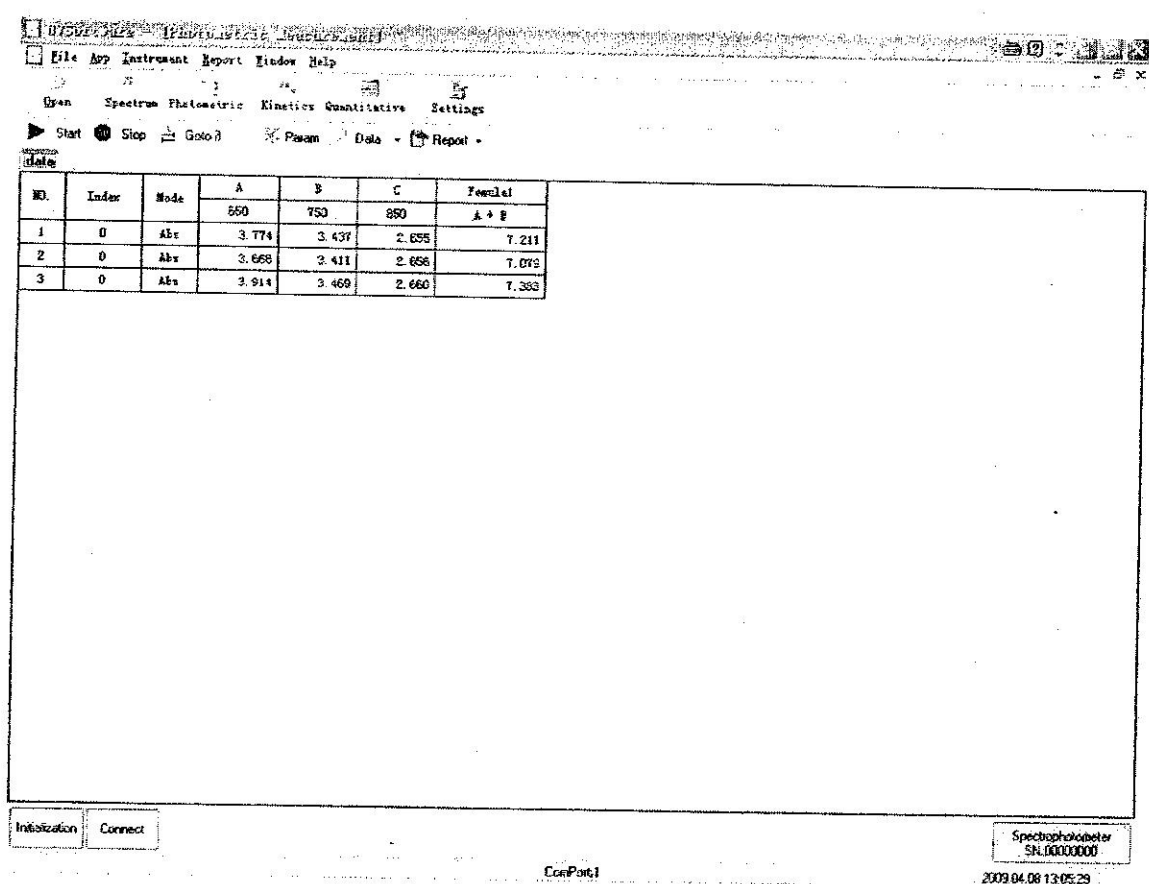
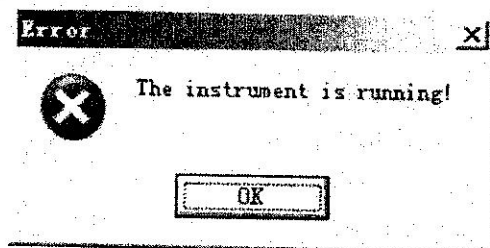


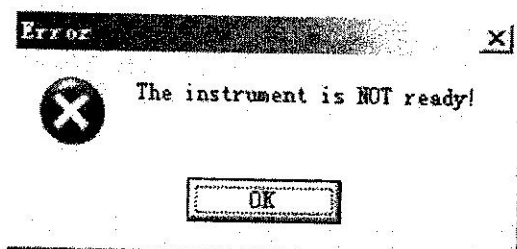
Fig. 41

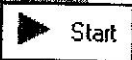
Notice:

When instrument is measuring, user clicks “Measure”, “Wavelength locating” or other function buttons, system will inform as follow. Other operation shall be done after measurement complete.

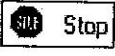


If instrument is not initialized, then user click any function button, user will get information as follow.



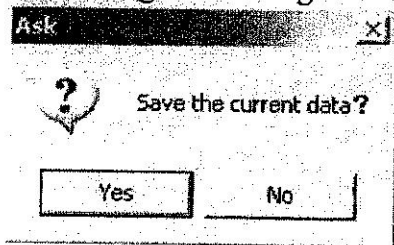
Generally, if repeat test is needed, operator can click  Start button to continue test; or select Repeat and its repeat time in parameter setting to finish test.

After test finish, if a new test is needed, it is not necessary to quit test window, by click parameter to enter parameter setting window, set new parameter then click “OK” button, system will create a new test page.

During the process of zeroing or testing, if user presses  button to stop without quitting the test window, system will clear all the current data. Click  button again will make system restart test again.

After a test, change of any parameters will make system create a new test page. If test mode, wavelength, reference test mode is changed, system will rerun zero and then start new test; others doesn't require re-zero.

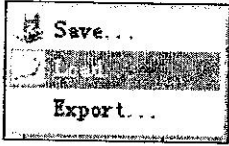
When shutting off test page, user will get following information,



Select “Yes” to remain in test window, and user can save the test result manually; click “No” to quit test page.

4.2.4 Additional function

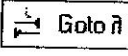
a. Data save and export

Click  on tool bar, select , select “save” to save spectrum; select “Export” to export to excel.

b. Data copy

Copy all data: click “Ctrl+A” to select all data, click “Ctrl+C” to copy data; or use mouse to choose, then right click to copy data.

c. Wavelength locating

Click  button on tool bar, the following window will come out, see Fig.42.