UV-6300PC Spectrophotometer

Instruction Manual

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CE

Legal Address of Manufacturer

Europe

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Part 1: Spectrophotometer

Safety Information

Please follow the guidelines below, and read this manual in its entirety to ensure safe operation of the unit.

VWR issues the following recommendations with regard to the use of the UV-6300PC Spectrophotometer.

- Do not open the device.
- Disconnect the device from the mains supply before carrying out maintenance work or changing the fuses.
- The inside of the device is a high-voltage area.
- Do not use the device if it is damaged, especially if the main power cable is in any way damaged or defective.
- Repairs may only be carried out by the service technicians from your local VWR office and authorized contractual partners.
- The device must be connected to a power outlet that has a protective ground connection.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

- Do not allow any liquid to enter the device.
- Do not operate the device in a hazardous location or potentially explosive environment.

Package Contents

Description	Quantity
Spectrophotometer	1PC
Glass Cuvette	4PCS
Quartz Cuvette	2PCS
USB Disk	1PC
Power Cord (Euro Plug)	1PC
Power Cord (UK Plug)	1PC
Power Cord (CH Plug)	1PC
USB Cable	1PC
CD-ROM	1PC
Quick Manual	1PC
Instruction Manual	1PC
Dust Cover	1PC

Unpacking

Open the package and carefully check the enclosed items against the packing list. If any of the items are missing or damaged please contact your local VWR office and authorized contractual partners.

Installation

Placement

Place the instrument carefully on a stable surface.

Install printer (optional)

Check to confirm instrument power switch is turned off, connect the printer's data cable to the instrument's parallel port.

Link the power cord

Check to confirm the instrument power switch is turned off, and the power cord is plugged into two separate power interfaces and the power supply socket apparatus.

Symbols and Conventions

The following chart is an illustrated glossary of the symbols that are used in this manual.

	**CAUTION** This symbol indicates a potential risk and alerts you to proceed with caution
	**CAUTION** This symbol indicates the presence of high voltage and alerts you to proceed with caution
	**CAUTION** This symbol indicates risks associated with hot surfaces

Specifications

Optical System	Double Beam
Wavelength Range	190–1100 nm
Band Width	1 nm
Stray Light	≤0.05%T @ 220 nm & 360 nm
Photometric Range	0 to 200%T,-0.3 to 3.0 A, 0 to 9999 C
Wavelength Accuracy	±0.3 nm
Photometric Accuracy	±0.3%T or ±0.002 A@1A
Baseline	0.001 A (200 to 1000 nm)
Stability	0.001 A/h @ 500 nm
Memory	32K (internal), Unlimited (USB disk)
Language	English, French, German, Spanish
Display	320×240 Dots Matrix LCD
Interface	USB, Parallel
Measuring Procedure	Photometry, Quantitation, Wavelength Scan, Kinetics, DNA/Protein, Multi-wavelength
Power Supply	AC 110/220 V, 50/60 Hz
Dimension	590×420×260 mm
Weight	26 kg
Work Environment	15 to 35 ℃, 15 to 70% relative humidity
Store Environment	-10 to 50 ℃, 15 to 70% relative humidity

This instrument is compliant to the European Directives on

Low Voltage Directive 2006/95/EC

Electromagnetic compatibility 2004/108/EC

Restriction on use of Hazardous Substances RoHS 2011/65/EU and their amendments.

Overview

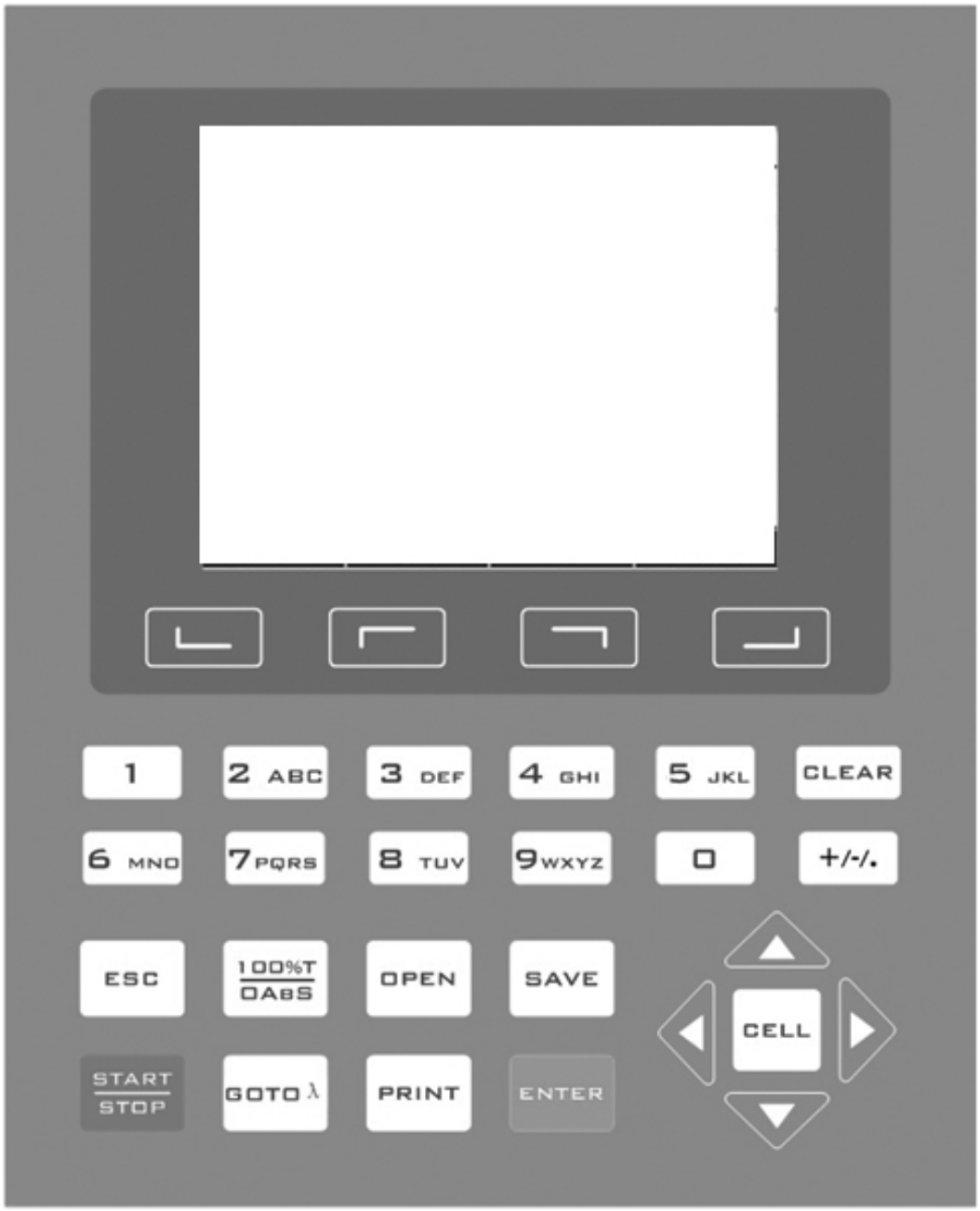
UV-6300PC Spectrophotometer used in chemistry, pharmaceuticals, biochemical, metallurgy, light industry, textile, material, environments, medical, education and some other fields for quality control laboratories.

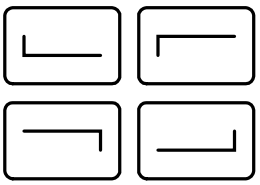
Description of Buttons and Switches

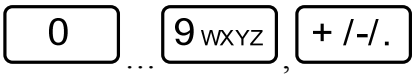
Front View

Rear View

Operational Keys



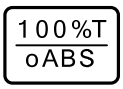
Key	Functions
	**Function keys: Functions on-screen prompts**



Numeric keys: Enter numbers and letters

CLEAR key: Delete the input value or stored data

ESC key: Return to previous interface



100%T/0Abs key: Blank

OPEN key: Open files stored in internal memory

SAVE key: Save files to internal memory

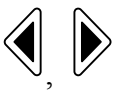
START/STOP key: Start/Stop testing

GOTO λ key: Set wavelength

PRINT key: Print measuring result

ENTER key: Confirm operation

CELL key: Select/Deselect auto-cell holder



RIGHT, LEFT keys: Search peak/valley and set X scale

UP, DOWN keys: Scroll menu/data and set Y scale

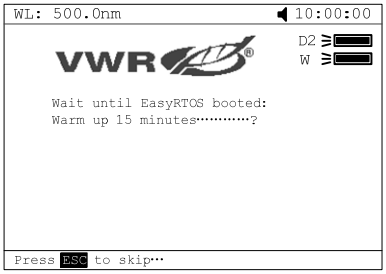
Getting Started

The following chart describes the basic operation of the instrument.

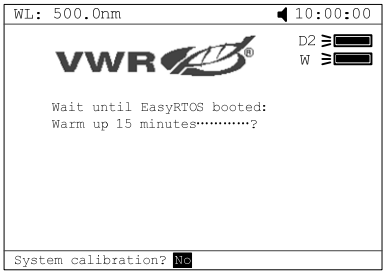
Turn on and self-check

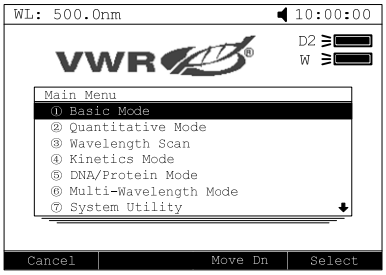
Switch on the power. The instrument begins to self-check and perform 15 minutes' warm-up. Self-check includes the following steps:

Turn on lamps → RAM Check → Start RTOS kernel→ Initialize Comm. Port → Initialize Printer → Initialize AD → System position → Warm up.



After warm-up, the instrument will ask the user to re-calibrate the system. The user can decide if they need to re-calibrate the system or not. After this step, the instrument is ready to work normally.





Important Guidelines

- Reagents and dilution buffers can cause cauterization and other damage to health.
- Samples (nucleic acids, proteins, bacteria cultures) can be infectious and cause serious damage to health.
- During sample preparation, measuring procedures and maintenance and cleaning work, observe all local laboratory safety precautions (e.g. wear protective clothing and gloves, use of disinfectant) regarding the handling of sample material.
- Dispose of measuring solutions and cleaning and disinfectant materials in accordance with the relevant local laboratory regulations.

General Operating Instructions

Select application

Main menu, press numeric keys or use the ▲, ▼ keys to select the corresponding menu, then press ENTER to enter.

Set wavelength

Press GOTO λ to set wavelength, use numeric keys to input the values, press ENTER to confirm and go to the point you set, then carry out the blank automatically.

Set parameters

In different application, press function key to set parameters, press ▲, ▼ to choose or input the values by numeric keys, press ENTER to enter into, press ESC to return.

Set auto-cell holder

Press CELL to activate the auto-cell holder and press the relevant numeric key (1–8) to make corresponding cell position at the light path. Press CELL again to deactivate the auto-cell holder.

Delete the input value

Press ◄ to delete a character, press CLEAR to delete all the characters.

Delete the test results and stored data

Press CLEAR to delete the test result or stored data. If the USB disk was installed, the data will be deleted from the USB disk, otherwise the data will be deleted in the internal memory.

Blank

Put the reference in the main light path and reference light path, press 100%T/oABS to carry out the blank.

Measure samples

Put the sample in the main light path and reference in the reference light path, press START/STOP to measure.

Print the test results

Press PRINT to print the test results.

Store the test results

Press SAVE to store the test results, input the file name using the numeric keys and press ENTER to save. If the USB disk was installed, the data will save in the USB disk, otherwise the data will save in the internal memory.

Load the stored file

In the test interface, press OPEN to go into the file selecting interface, press ▲, ▼ to select the file you want, press ENTER to open. If the USB disk was installed, the data will open from the USB disk, otherwise the data will open from the internal memory.

Operation

Self-check

Remove all the blocks in the light path and close the lid of the compartment. Switch on the power supply to begin the self-test.

Warm-up

After self-test, the instrument goes into pre-ready state. For accurate test results, at least 30 minutes of warm-up is required.

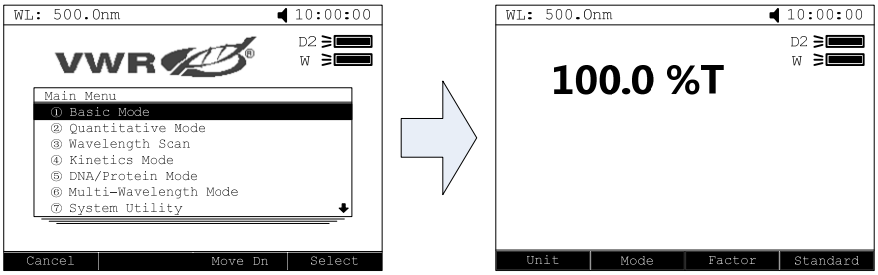
Check the cuvettes

The cuvettes must be clear with no remains of previous samples on the surface. Only silicon (quartz) cuvettes are permitted to be used in the range of UV area.

Basic Mode

1. Enter into Basic Mode

Main menu, press numeric key [1] or ▲, ▼ to select Basic Mode, then press [ENTER] to enter.



2. Set photometric mode

Press [⌐] to set photometric mode. Press ▲, ▼ to select Abs., T% or Conc./Factor and press [ENTER] to confirm. If you choose Abs. or T%, please go directly to step 5.

3. Set concentration unit

Press [⌙] to set concentration unit. Press ▲, ▼ to choose unit, then press [ENTER] to confirm. You can also choose Other to input the self-defined unit.

4. Set Factor or Standard

There are two possible methods:

Method 1:Input Factor F

Press [¬] to set F. Input the value of F using the numeric keypad, press [ENTER] to confirm. The F value will then be displayed on the screen.

Method 2: Standards Mark

Put the reference sample in the light path and calibrate 100%T/0Abs; put the standard sample in the light path, press [_] to start the mark. Input the concentration value of the standard and press [ENTER] to confirm; it will then be displayed on the screen.

5. Set wavelength

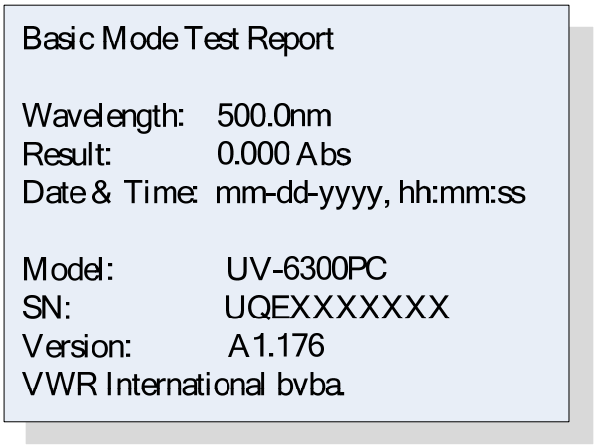
Press [GOTO λ] to set the wavelength, input the value by the numeric keypad, then press [ENTER] to confirm.

6. Measurement samples

Put the sample to be measured in the main light path and put reference in the reference light path; the result is then displayed on the screen automatically.

7. Print the test results

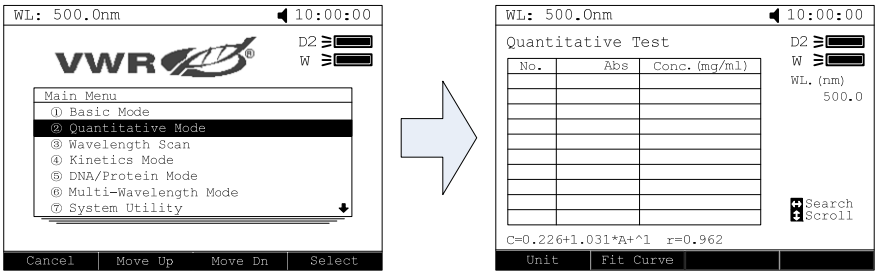
Press [PRINT] to print the test results.



Quantitative Mode

1. Enter into Quantitative Mode

Main menu, press [2 ABC] or press ▲, ▼ to select Quantitative Mode, then press [ENTER] to confirm.

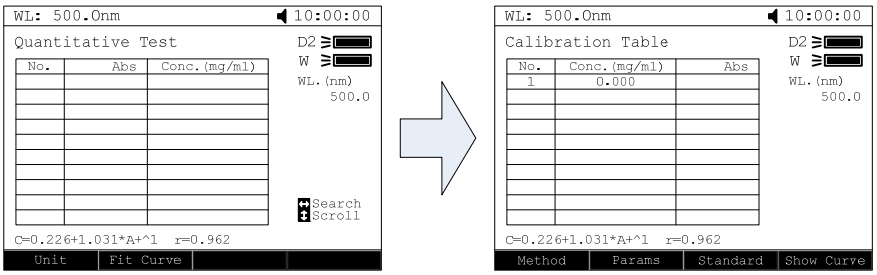


2. Set unit

Press [⌐] to set concentration unit, press ▲, ▼ to select and press [ENTER] to confirm.

3. Set up standard curve or load the stored curves

Press [⌐] to enter the setup interface. Two methods are then available.



Set up standard curve:

Method 1: Input regression equation

1) **Set Fit Curve method.** Press [⌙] to set Fit Curve method, use ▲, ▼ to choose the method and press [ENTER] to confirm.

2) **Set wavelength.** Press [GOTO ∧] to set wavelength. Use ▲, ▼ to choose measure method, then press [ENTER] to confirm. Input the wavelength value required and press [ENTER] to confirm.

3) **Input the factor of the regression equation.** Press [⌐] and input the factors, then press [ENTER] to confirm.

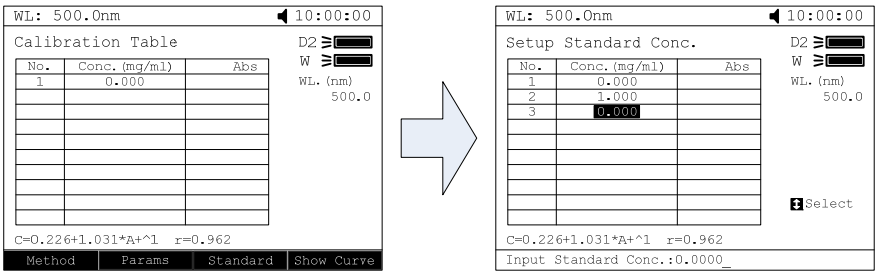
Method 2: Use standard samples

1) **Set fit method.** Press [⌙] to set fit method, press ▲, ▼ to choose fit method, then press [ENTER] to confirm.

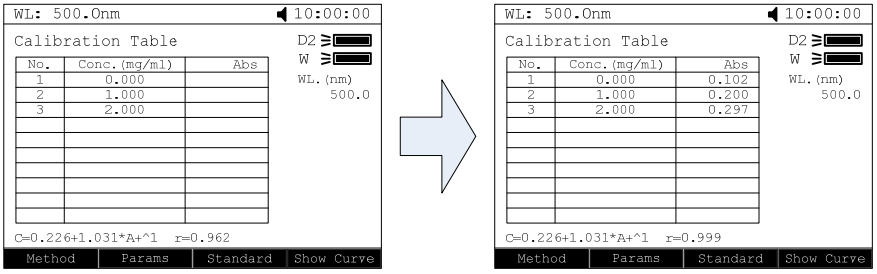
2) **Set wavelength.** Press [GOTO ∧] to enter the wavelength setting interface, press ▲, ▼ to select measure method and press [ENTER] to confirm. Input the value of the wavelength and press [ENTER] to confirm.

3) **Set up standard samples.** Press [⌐] to set up standard, input the concentrations of corresponding standard samples according the indication and press [ENTER] to confirm. users

can use ▲, ▼ to select the value that they have just input and press [CLEAR] to delete, then input a new value and press [ENTER] to confirm. Press [ESC] to cancel after all the values have been input.

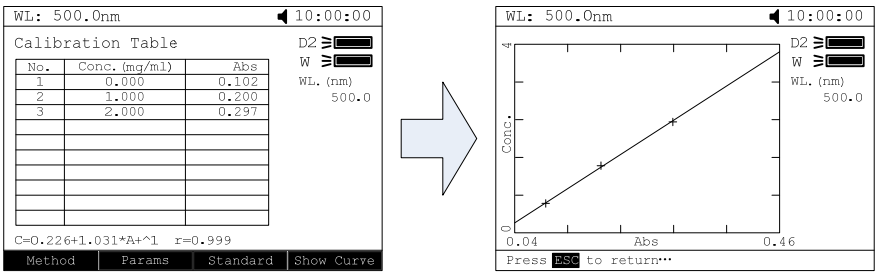


4) **Calibrate standard samples.** Put the corresponding standard samples in the main light path and the reference in the reference light path as the screen indicates and press [START/STOP] to measure. The Abs value will then appear in the corresponding table.



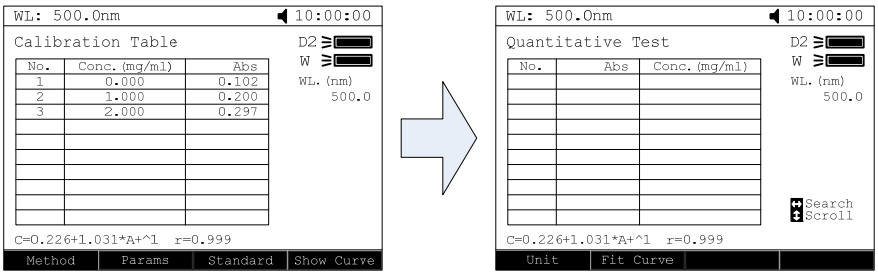
Load the stored curves

In the Calibration Table interface, press [OPEN] to enter the selected file's interface. Use ▲, ▼ to select the curve required and press [ENTER] to load. Users can press [↵] to view the curve or press [ESC] to cancel.



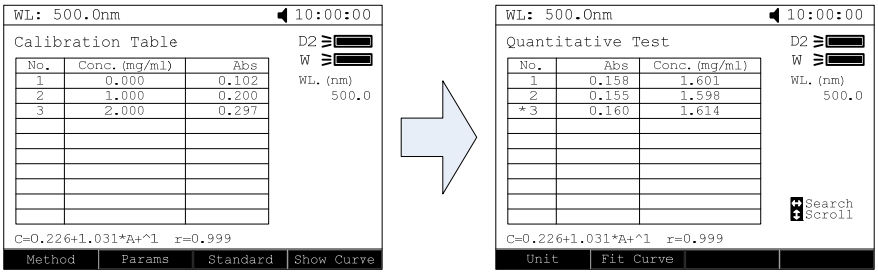
4. Return the sample measurement interface

In the Calibration Table interface, press ESC to return to the Quantitative Test interface.



5. Measure samples

Place the sample to be tested in the main light path and reference in the reference light path, then press START/STOP to measure. The test result will then be displayed in the data sheet. Repeat this step until all the samples have been measured.



6. Print the test results

Press PRINT to print the test results.

Quantitative Test Report

File Name: Abc
Date & Time: mm-dd-yyyy, hh:mm:ss

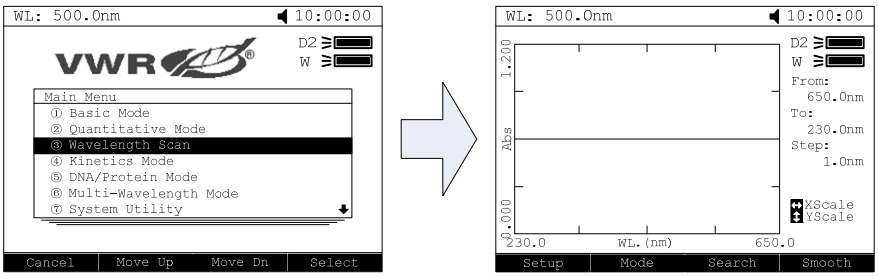
No.	500.0nm	Abs(eff)	C(mg/L)
1	0.212	0.212	0.212
2	0.210	0.210	0.210
3	0.209	0.209	0.209

Fitting Params:
C=1.000*A^1
r=1.000
Model: UV-6300PC
SN: UQEXXXXXXX
Version: A1.176
VWR International bvba

Wavelength Scan

1. Enter the wavelength scan interface

Main menu, press numeric key 3 DEF or ▲, ▼ to select Wavelength Scan and press ENTER to enter.



2. Parameters setup

Press ⌐ to set parameters, set scan from, scan to, scan step and scan speed, then press ENTER to confirm.

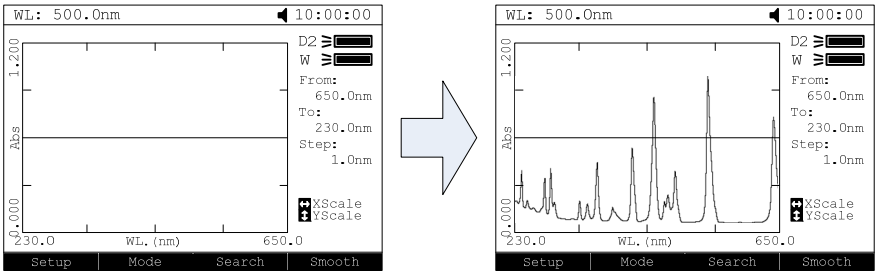
3. Set photometric mode

Press ⌐ to set photometric mode, choose T%, Abs. or E and press ENTER to confirm.

4. Scan samples

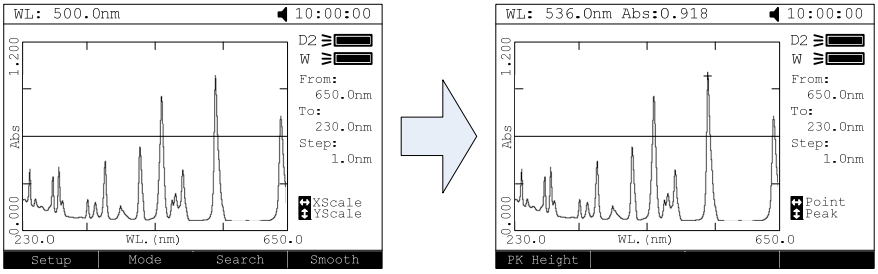
Put the sample to be measured in the main light path and put reference in the reference light path, press

START STOP to scan the sample, or press ESC to cancel.



5. Search peaks

After scanning, press ⌐ to go into peak search mode. Press ⌙ to set peak height, input the peak height and press ENTER to confirm. Press ◀, ▶ to display the value of every wavelength point. Press ▲, ▼ to display the value of every peak.

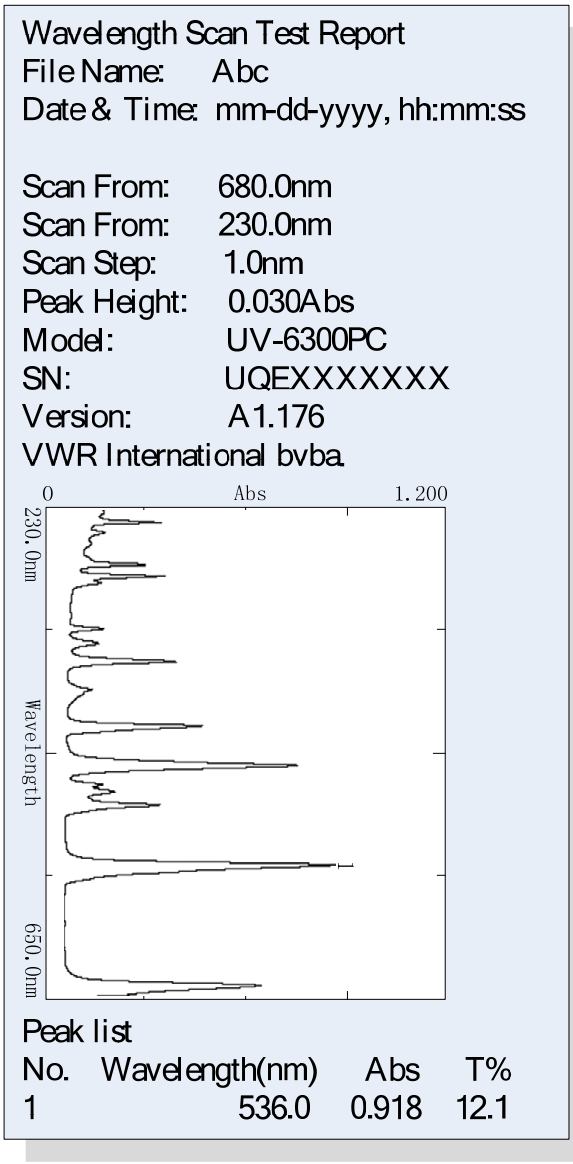


6. Smooth the curve

After scanning, if there are many burrs visible, press ⌐ to smooth the curve.

7. Print the test results

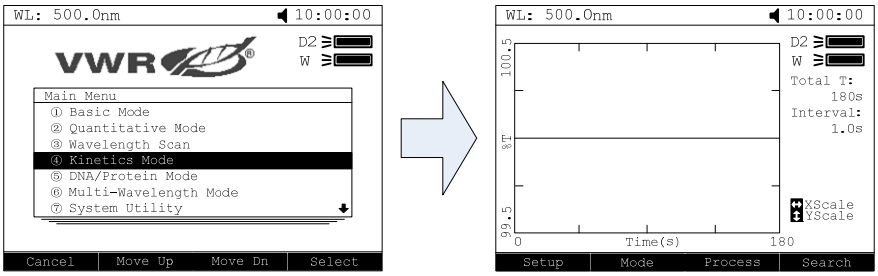
After scanning, press PRINT to print the test results.



Kinetics

1. Enter Kinetics Mode

Main menu, press 4 GHI or ▲, ▼ to select Kinetics Mode and press ENTER to confirm.



2. Setup parameters

Press [⌐] to set parameters, input the corresponding values of Total Time, Delay Time and Time Intervals according the on-screen indications. Press [ENTER] to confirm.

3. Set photometric mode

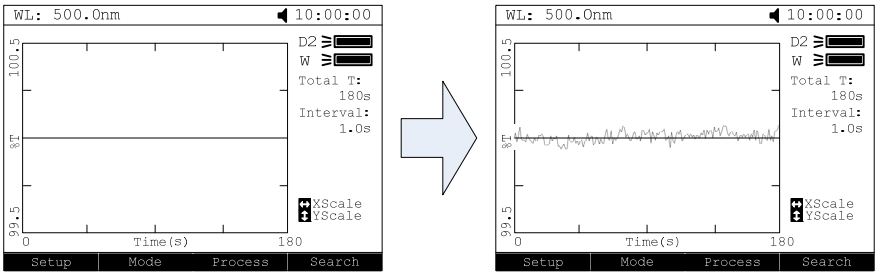
Press [¬] to set photometric mode, choose T% or Abs. and press [ENTER] to confirm.

4. Set wavelength

Press [GOTO λ] to set wavelength, input the value of the wavelength using the numeric keypad and press [ENTER] to confirm.

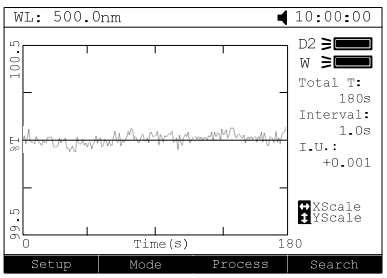
5. Measure samples

Put the sample to be measured in the main light path and put reference in the reference light path, press [START/STOP] to begin the test, or press [ESC] to cancel.



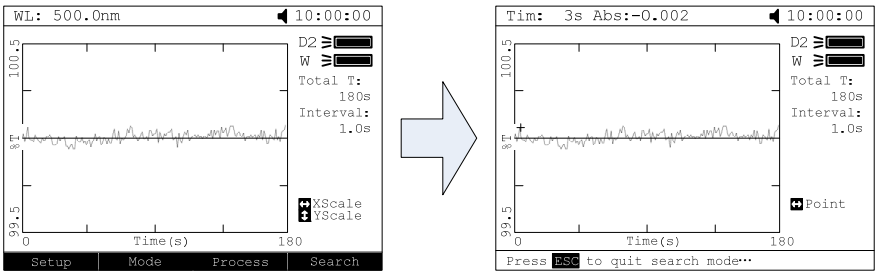
6. Calculate response rate

After scanning, users can calculate the response rate of a particular period by pressing [¬] to go into Process interface. Input the values for Begin Time, End Time and Factor separately and press [ENTER] to confirm. The value of I.U. will then be displayed on the screen.



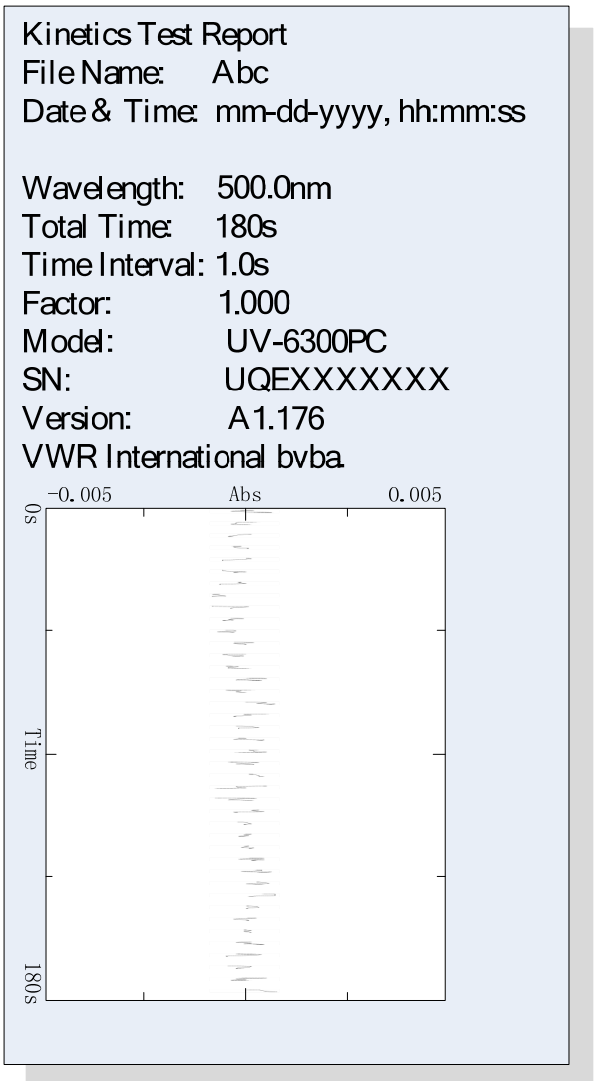
7. Search peaks

After scanning has finished, press ⏎ to go into search mode. Press ◀,▶ to search the value of every point.



8. Print the test results

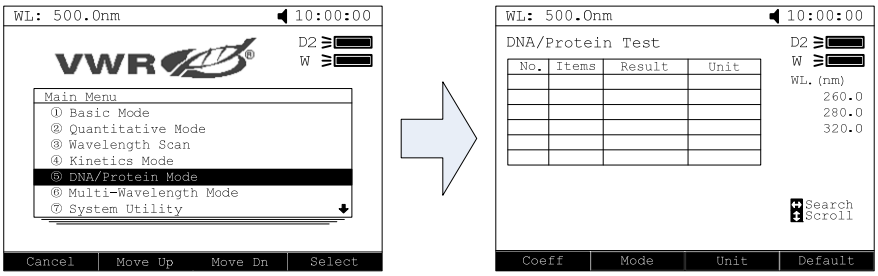
Press PRINT to print the test results.



DNA/Protein Mode

1. Enter DNA/Protein Mode

Main menu, press 5 JKL or ▲, ▼ to select DNA/Protein Mode and press ENTER to confirm.



2. Setup parameters

Press ⌐ to set coefficients, input all the values of f1 to f4 using the numeric keypad according the on-screen indications and press ENTER to confirm.

3. Choose measure method

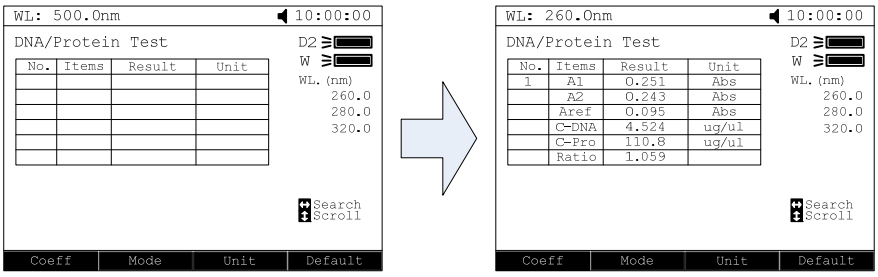
Press ⌐ to set method. Press ▲, ▼ to choose Absorbance Difference 1 or Absorbance Difference 2, then press ENTER to confirm. If you do not want to measure reference, use ▲, ▼ to select No, then press ENTER to confirm.

4. Set concentration unit

Press ⌐ to set concentration unit. Use ▲, ▼ to select unit and press ENTER to confirm.

5. Measure samples

Put the sample to be measured in the main light path and put reference in the reference light path, press START/STOP to measure. The result will be displayed in the data sheet.



6. Print the test results

Press PRINT to print the test results.

DNA / Protein Test Report

File Name: Abc
Date & Time: mm-dd-yyyy, hh:mm:ss

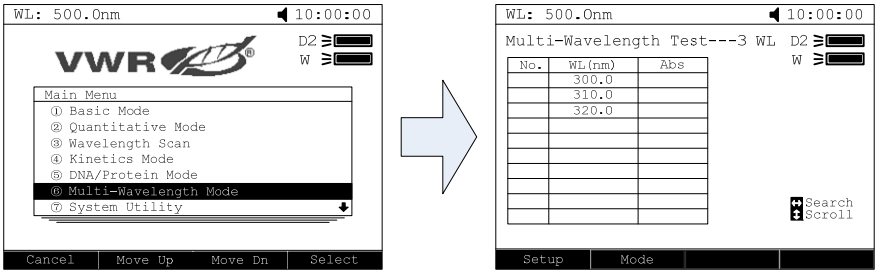
Sample---1
260.0nm 0.251Abs
280.0nm 0.243Abs
320.0nm 0.095Abs
C-DNA 4.524ug/mL
C-Pro 110.8ug/mL
Ratio 1.059

Unit: ug/mL
Model: UV-6300PC
SN: UQEXXXXXXX
Version: A1.176
VWR International bvba

Multi-Wavelength Mode

1. Enter Multi-Wavelength Mode

Main menu, press 6 MNO or ▲, ▼ to select Multi-Wavelength Mode and then press ENTER to enter the multi-wavelength measurement interface.



2. Set up wavelength

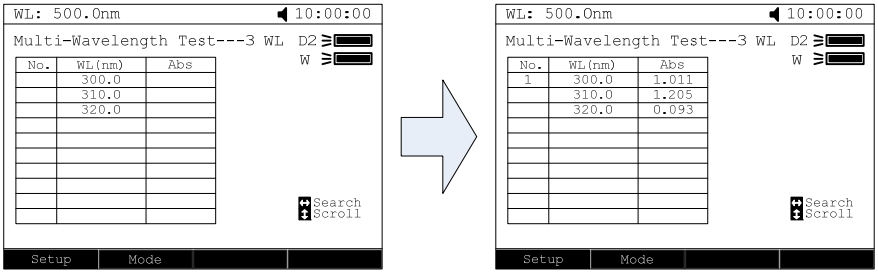
Press [ ] to enter the wavelength setting interface, then input all the wavelength values one by one using the numeric keypad. Press [ENTER] to confirm, or press [ESC] to return.

3. Set photometric mode

Press [ ] to set the photometric mode, use ▲, ▼ to select Abs. or T% mode, press [ENTER] to confirm.

4. Measure samples

Put the sample to be measured in the main light path and put reference in the reference light path, press [START/STOP] to measure, the test result will be displayed in the data table.



5. Print the test results

Press [PRINT] to print the test results.

Multi-Wavelength Test Report

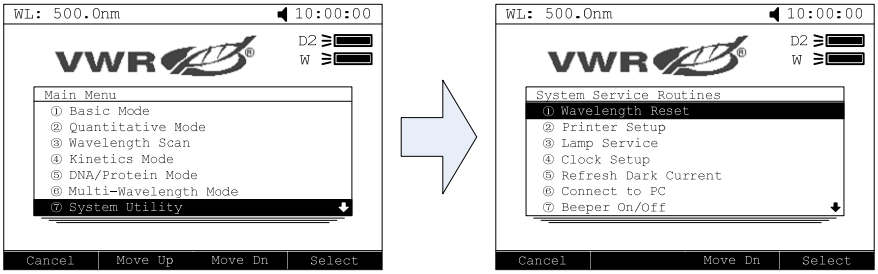
File Name: Abc
Date & Time: mm-dd-yyyy, hh:mm:ss

Sample---1
500.0nm 0.251Abs
510.0nm 0.243Abs

Unit: Abs
Model: UV-6300PC
SN: UQEXXXXXXX
Version: A1.176
VWR International bvba.

System Utility

Main menu, press 7 PQRS or use ▲, ▼ to select System Utility and press ENTER to confirm.

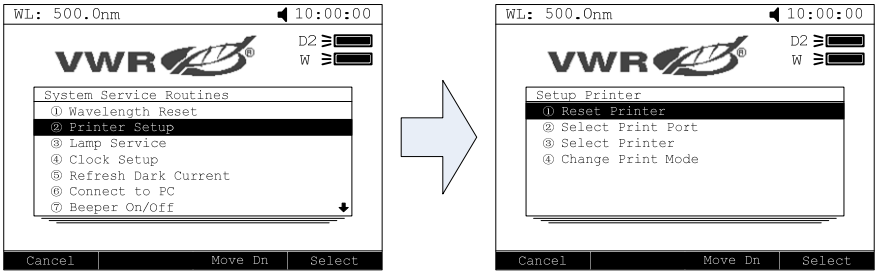


Wavelength Reset

Press 1 or use ▲, ▼ to select Wavelength Reset then press ENTER to begin the calibration. Note: During the course of the calibration procedure, opening the lid of the compartment is prohibited.

Printer Setup

Press 2 ABC or ▲, ▼ to select Printer Setup then press ENTER to confirm.



- **Reset Printer**

  Press [1] or use ▲, ▼ to select Reset Printer and press [ENTER] to confirm. Then the printer will be reset to its initial condition.

- **Select Print Port**

  Press [2 ABC] or use ▲, ▼ to choose Select Print Port and press [ENTER] to confirm. Use ▲, ▼ to choose LPT or Comm. and then press [ENTER] to confirm.

- **Select Printer**

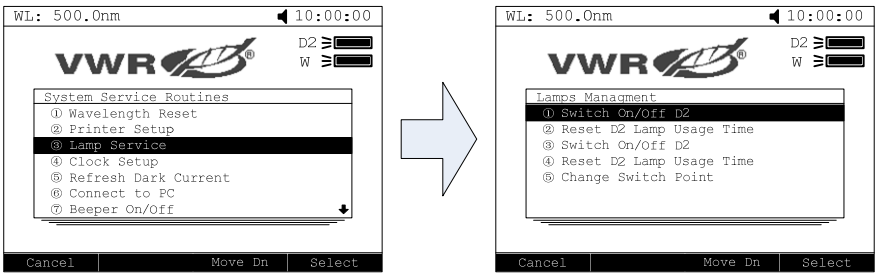
  Press [3 DEF] or use ▲, ▼ to choose Select Printer and press [ENTER] to confirm. Use ▲, ▼ to select the printer you wish to print from and then press [ENTER] to confirm.

- **Change Print Mode**

  Press [4 GHI] or use ▲, ▼ to select Change Print Mode and press [ENTER] to confirm. Two modes are available: Print Data Sheet and Print the Display Interface.

Lamp Service

Press [3 DEF] or use ▲, ▼ to select Lamp Service, press [ENTER] to enter the Lamps Management interface.



- **Switch On/Off D2 lamp**

  Press [1] or ▲, ▼ to select Switch On/Off D2, then press [ENTER] to switch on or switch off the D2 lamp.

- **Reset the usage time of D2 lamp**

Press 2 ABC or use ▲, ▼ to select Reset D2 Lamp Usage Time" and press ENTER. The D2 lamp's usage time will be displayed and the system will ask for confirmation that you want to reset the usage time. Press ▲, ▼ to select Yes, then press ENTER to confirm. The system will record the usage time from zero.

- **Switch On/Off W lamp**

  Press 3 DEF or use ▲, ▼ to select "Switch On/Off W Lamp" and press ENTER to switch on or switch off the W lamp.

- **Reset the W lamp usage time**

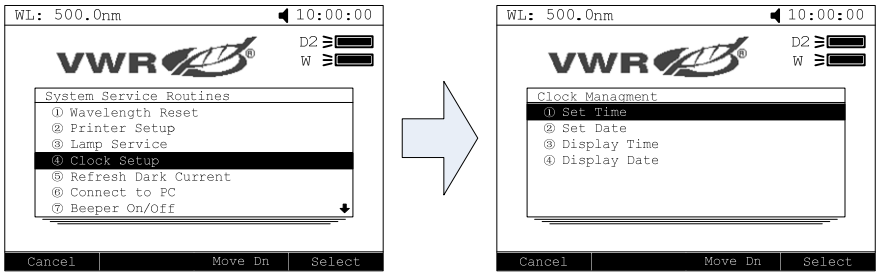
  Press 4 GHI or use ▲, ▼ to choose "Reset W lamp usage time" and press ENTER. The W lamp's usage time will then be displayed and the system will ask for confirmation that you want to reset the usage time. Press ▲, ▼ to select Yes and then press ENTER to confirm. The system will record the usage time from zero.

- **Change switch point**

  Press 5 JKL or use ▲, ▼ to choose Change Switch Point and press ENTER to confirm. Input the wavelength point value (325–375 nm) and press ENTER to confirm.

Clock Setup

Press 4 GHI or use ▲, ▼ to select Clock Setup, then press ENTER to enter the Clock Management interface.



- **Set time**

Press [1] or ▲, ▼ to select Set Time and press [ENTER] to confirm. Input the time (hour, minute, second) using the numeric keypad, then press [ENTER] to confirm and return automatically.

- **Set date**

  Press [2 ABC] or use ▲, ▼ to select Set Date and press [ENTER] to confirm. Input the date (year, month, day) using the numeric keypad, then press [ENTER] to confirm and return automatically.

- **Display time**

  Press [3 DEF] or use ▲, ▼ to select Display Time and press [ENTER] to confirm. Then the time will then be displayed in the top right corner.

- **Display date**

  Press [4 GHI] or use ▲, ▼ to select Display Date and press [ENTER] to confirm. The date will then be displayed in the top right corner.

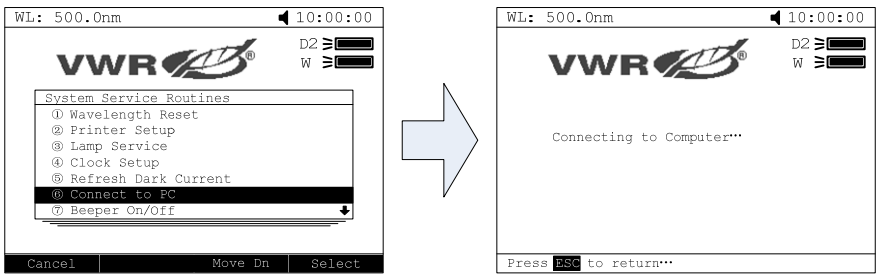
Refresh dark current

Press [5 JKL] or use ▲, ▼ to select Refresh Dark Current and press [ENTER] to confirm. The system will then begin to refresh the dark current.

Note: During this process, opening the lid of the compartment is prohibited.

Connect to PC

Press [6 MNO] or use ▲, ▼ to select Connect to PC, and press [ENTER] to confirm. When the instrument is connected to the PC, it displays “Controlled by PC”.



Beeper on/off

Press 7 PQRS or use ▲, ▼ to select Beeper On/Off and press ENTER to switch on or switch off the beeper.

Language selection

Press 8 TUV or use ▲, ▼ to choose Language Selection and press ENTER to enter the language selection interface, press ▲, ▼ to choose language **(**English, French, German, Spanish) and press ENTER to confirm. The interface will then change into the selected language.

Refresh system baseline

Press 9 WXYZ or use ▲, ▼ to select Refresh System Baseline and press ENTER to confirm. The system will then scan the baseline. Note: During this procedure, opening the lid of the compartment is prohibited.

Delete all saved files

Use ▲, ▼ to select “Delete All Saved Files” and press ENTER to confirm. The system will ask for confirmation that you want to delete all files. Use ▲, ▼ to select “Yes”, then all the files in the RAM will be deleted.

Restore default settings

Use ▲, ▼ to select Restore Default Settings and press ENTER to confirm. The system will then restore the initial settings.

Troubleshooting

Review the information in the table below to troubleshoot operating problems.

Problem	**Cause**	**Solution**
Power on, no response	Power cord connection is not reliable	Improve connectivity
	Fuse burning	Replace fuse
Measurement uncertainty	Warm-up period not long enough	Continue warm-up for more time

	Glass cuvettes used in UV range	Use quartz cuvettes
	Sample is not stable	Improve the sample
	The concentration of sample is too high	Dilute the sample
	Power supply voltage low or not stable	Improve the power supply
	Lamp damage or lamp life maturity	Replace lamp
Dark current error during self-check	The lid of the compartment is open during self-check	Close the lid, restart
System calibration failed	Something is blocking the light path	Remove it, calibrate again
Power on, back light is OK, but nothing displayed on the screen or display is not clear	Display contrast problem	Adjust the contrast potentiometer
Measurements inaccurate	Cuvettes were contaminated	Clean cuvettes
	Samples were contaminated	Improve samples
	Poor matching of the cuvettes	Improve the matching of the cuvettes
	Dark current error	Resample dark current

Repair and Maintenance

Daily maintenance

Check the compartment

After measurement, the cuvettes with sample solutions should be taken out of the compartment in good time, otherwise the volatilization of the solution may cause mould to form on the mirror. Users must pay attention to the corrosive sample and liquid which is easy to volatilize. Any solution remaining in the compartment should be wiped off immediately.

Surface clean

The cover of the instrument is painted. Please use a wet towel to wipe off the drips on the surface immediately. Organic solution must not be used to clean the cover. Please wipe off any dirt on the cover immediately.

Clean the cuvettes

After every test or after a solution change, the cuvettes should be cleaned carefully, otherwise any remains on the surface will cause measuring errors.

Check lamp

In Wavelength Scan mode, set the test parameters as follow:

Scan From: 500 nm

Scan To: 200 nm

Scan Step: 1 nm

Press numeric key 6, enter the amplifier of ADC as "0", and press the Enter key to start scanning energy. After the scan is finished, press the function key Search, then press <,> to browse the energy value point to point. Check the energy of the wavelength 500 nm and 200 nm, and check the energy. You will need to replace the W lamp in the following two cases:

Energy <20 from 500 to 340 nm W lamp is damaged

Energy <5000 at 500 nm W lamp energy is too low

You will need to replace the D2 lamp in the following two cases:

Energy <20 from 339 to 200 nm D2 lamp is damaged

Energy <1000 at 500 nm D2 lamp energy is too low

Spare Parts Replacement

Replace the fuse

Danger! Be sure to switch off the power and unplug the cord from the socket before replacement!

1. **Tools preparation**

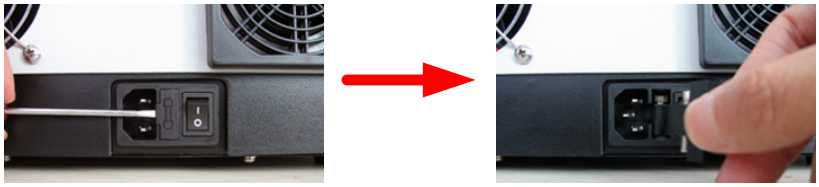
   Prepare a 3×75 Flat Blade screwdriver.

2. **Switch off the power supply**

   Switch off the power supply and unplug the socket.

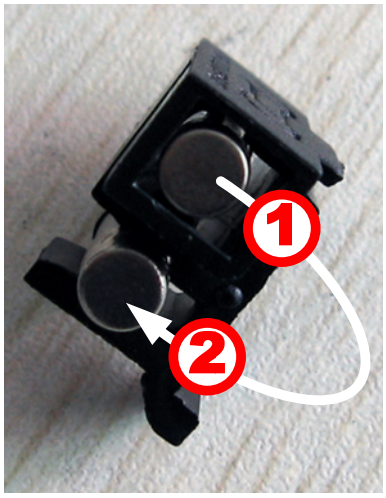
3. **Take out the fuse seat**

   Take out the fuse seat using a screwdriver.



4. **Replace the fuse**

   Take the new fuse (3.15 A/250 V) and place it into the working position.



5. **Reset the fuse seat**

   Replace the fuse seat in the power socket.

6. **Switch on the power**

   Plug the cord into the socket and switch on the power.

Replace lamps

Hot！ Wait 20 minutes before opening the lamp chamber after power off to avoid scalding!

1. **Tools preparation**

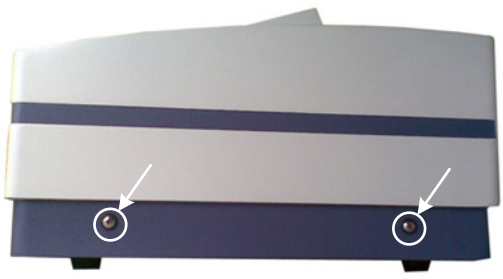
   Prepare a 6×150 mm cross blade screwdriver and a pair of gloves.

2. **Power off**

   Switch off the power supply and unplug the cord from the socket.

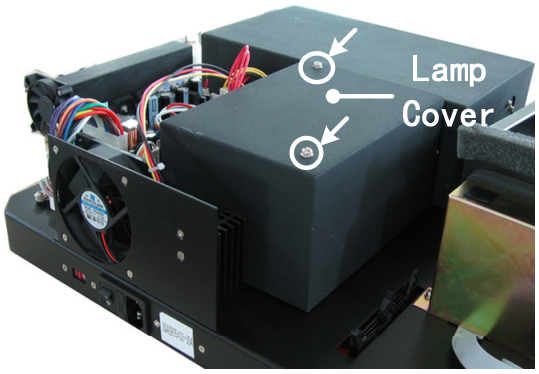
3. **Open the cover**

   Unscrew the 4 screws indicated (2 screws on each side) and remove the cover.



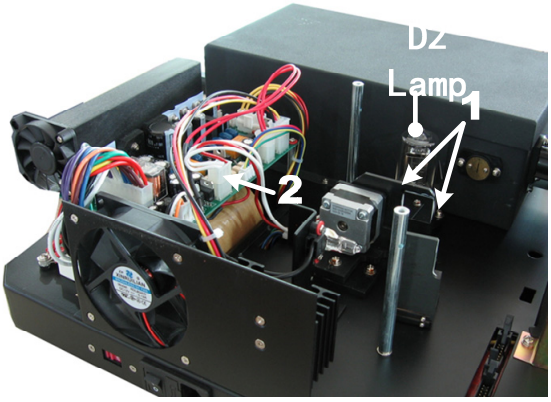
4. **Open the cover of the light chamber**

   Unscrew the 2 screws on the light chamber cover and remove it.



5. Replace the D2 lamp

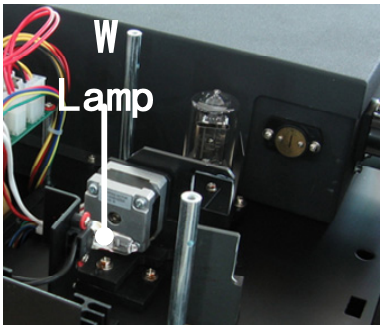
Unscrew the 2 screws on the D2 Flange (No.1), unplug the connector in the power board (No.2) and remove the D2 lamp. Wearing a cotton glove, remove and replace the lamp bulb. Fix the 2 screws and plug in the connector again.



6. Replace W lamp

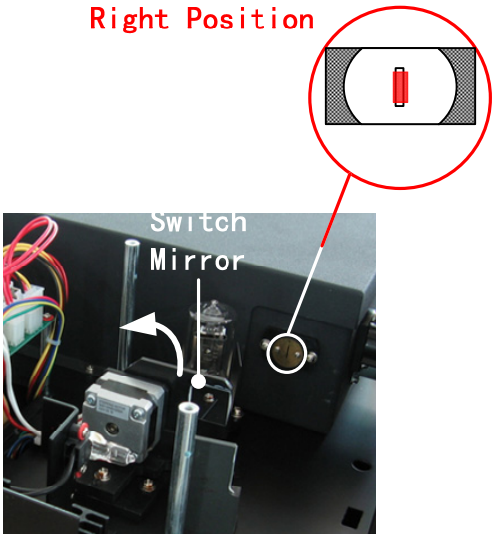
The tungsten lamp is equipped with a blue-grey silicon coating by manufacturer. This coating is only a transport safety device. It can be removed with the first change of lamp bulb.

Pull out the defective W lamp using a cotton glove. Insert the new W lamp as deep as possible on the lamp seat. Be sure to keep the filament in the same direction as the previous one faced.



7. Adjust the position of the W lamp

Switch on the power (the switch mirror should be placed to the position as indicated). Observe the entrance facular: it should be in the centre of the entrance hole. If the facular deviates to the left or right, loosen the No.1 screws in Fig. 5-8 and move the lamp seat to the left or right until it is flush with the centre of the slot. Then fix the screws. If the facular deviates up or down, loosen the No.2 screws and move the lamp seat up or down until the facular is flush with the centre of the slot. Then fix the No.2 screws again.



8. Finish

Reset the cover of the light chamber and fix the screws. Reset the cover of the instrument and fix the screws. Finally, recover the pole in the compartment.

Replace the battery

Be sure to switch off the power supply and unplug the cord from the socket before opening the bottom cover！

1. Prepare the tools

Prepare a 6×150mm cross blade screwdriver.

2. Switch off the power supply

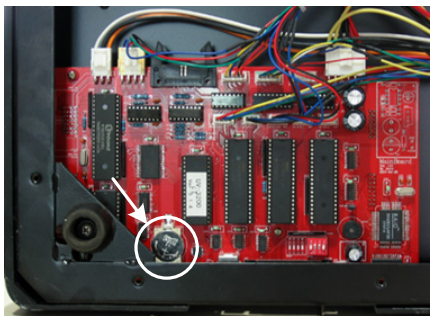
Switch off the power supply and unplug the cord from the socket

3. Open the bottom cover plate

Unscrew all the screws indicated then remove the bottom plate.

4. **Replace the battery**

   Remove the old battery and replace it with a new one.



5. **Finish**

   Reattach the bottom plate and fix all the screws.

Accessories and Spare Parts

Description	Quantity	Cat. No.
CELL HOLDER, 4-CELL, 10 MM	1PC	634-6057
CELL HOLDER, 4-CELL, 10 TO 50 MM	1PC	634-6045
CELL HOLDER, 4-CELL, 10 TO 100 MM	1PC	634-6046
CELL HOLDER, 1-CELL, 100 MM	1PC	634-6047
CELL HOLDER, FOR CYLINDRICAL CELL	1PC	634-6048
CELL HOLDER, WATER-JACKETED, 1 CELL, 10 MM	1PC	634-6049
CELL HOLDER, WATER-JACKED, 4 CELL, 10 MM	1PC	634-6050
CELL HOLDER FOR TEST TUBES	1PC	634-6051
CELL HOLDER, SOLID SAMPLE	1PC	634-6052
CELL HOLDER FOR MICRO CELLS, BEAM HEIGHT: 15 MM	1PC	634-6062

CELL HOLDER, 8-POSITION AUTO CELL CHANGER	1PC	634-6064
CUVETTE, SQUARE. GLASS, 10 MM	4PCS	634-6013
CUVETTE, SQUARE. GLASS, 20 MM	2PCS	634-6014
CUVETTE, SQUARE. GLASS, 30 MM	2PCS	634-6015
CUVETTE, SQUARE. GLASS, 50 MM	2PCS	634-6016
CUVETTE, SQUARE. GLASS, 100 MM	1PC	634-6017
CUVETTE, SQUARE. QUARTZ, 10 MM	2PCS	634-6018
CUVETTE, SQUARE. QUARTZ, 20 MM	2PCS	634-6019
CUVETTE, SQUARE. QUARTZ, 30 MM	2PCS	634-6020
CUVETTE, SQUARE. QUARTZ, 50 MM	2PCS	634-6021
CUVETTE, SQUARE. QUARTZ, 100 MM	1PC	634-6022
CELL, QUARTZ, 100 UL, 10 MM, BEAM HEIGHT: 15 MM	1PC	634-0688
CELL, QUARTZ, 200 UL, 10 MM, BEAM HEIGHT: 15 MM	1PC	634-0689
CELL, QUARTZ, 500 UL, 10 MM	1PC	634-6025
FLOW CELL, 5 MM, GLASS, BEAM HEIGHT: 15 MM	1PC	634-0690
FLOW CELL, 10 MM, GLASS, BEAM HEIGHT: 15 MM	1PC	634-0691
FLOW CELL, 20 MM, GLASS, BEAM HEIGHT: 15 MM	1PC	634-0692
FLOW CELL, 30 MM, GLASS, BEAM HEIGHT: 15 MM	1PC	634-0693
FLOW CELL, 5 MM, QUARTZ, BEAM HEIGHT: 15 MM	1PC	634-0694
FLOW CELL, 10 MM, QUARTZ, BEAM HEIGHT: 15 MM	1PC	634-0695
FLOW CELL, 20 MM, QUARTZ, BEAM HEIGHT: 15 MM	1PC	634-0696
FLOW CELL, 30 MM, QUARTZ, BEAM HEIGHT: 15 MM	1PC	634-0697
PELTIER UNIT, BEAM HEIGHT: 15 MM	1PC	634-6069
SIPPER UNIT WITHOUT TEMP. CONTROL, BEAM HEIGHT: 15 MM	1PC	634-6070
SIPPER UNIT WITH PELTIER TEMP. CONTROL, BEAM HEIGHT: 15 MM	1PC	634-6071
LAMP, HALOGEN, 12 V/20 W	1PC	634-0776
LAMP, DEUTERIUM	1PC	634-6038
PRINTER, THERMAL PRINTER	1PC	634-6039
DUST COVER	1PC	634-6044
FUSE, 3.15 A/250 V	1PC	634-0651
FUSE, 500 MA/250 V	1PC	634-0652
BATTERY, 3 V, CR2032	1PC	634-0653

Part 2: Software

Functions

This section introduces the functions of the UV-Vis Analyst.

Main Functions

Single wavelength photometric measurement

- Go to a desired wavelength quickly and conveniently.
- Photometric value display mode can be changed (%Transmittance or Absorbance).

Fixed points measurement

Multi-wavelength photometric measurement

- Up to 20 wavelength points can be set.
- Results will be grouped into a table format automatically.

Concentration measurement

- 2 methods to set the regression curve.

  Up to 20 standards to set the regression curve. The UV-Vis Analyst will calculate the working curve using a linear equation that fits the data. Enter factor values to generate regression curve.
- 3 methods for curve fit.

  Linear fit, quadratic fit and cubic fit.

Wavelength scanning

- Allows user to set scan step (0.1, 0.2, 0.5, 1.0 and 5.0 nm).
- Spectrum display mode can be changed (Wavelength-%Transmittance or Wavelength-Absorbance).
- Peaks and valleys will be automatically detected after scanning (user can define the peak threshold).
- Powerful spectrum processing functions are provided.

Time scanning

- Allows user to set scan interval (0.5, 1.0, 2.0, 5.0, 10, 30 and 60 s).
- Spectrum display mode can be changed (Time-%Transmittance or Time-Absorbance).
- Peaks and valleys will be automatically detected after scanning (user can define the peak threshold).
- Powerful spectrum processing functions are provided.

DNA/Protein measurement

- Wavelength points and ratios can be set up.
- Results will be grouped into a table format automatically.

Spectrum processing function

Trace a spectrum

The cursor can be moved to a desired point in the spectrum displayed on the screen and the photometric data at this point is displayed.

Automatic peak detection

After scanning is complete, peaks and valleys can be automatically detected and listed in a table format. They will also be labelled on the spectrum.

Scale expansion

Simultaneous expansion of the X and Y axes are provided with the Zoom function. Display range can also be changed though the Display Setup function.

Differentiation

You can calculate and display the first up to the fourth derivative spectrum for a given spectrum. Derivative spectrum is useful for enhancing spectrum data that are not readily apparent in an absorbance spectrum.

Calculate spectrum

You can calculate addition, subtraction, multiplication and division between two spectra with the resulting data displayed on the screen.

System check and calibration function

Instrument validity check

Up to 10 wavelength points can be set in the instrument validity mode. Two methods can be selected (Photometric Validity measurement and Wavelength Validity measurement) and tolerance can be entered. Results will be grouped into a table format automatically.

Dark current check

You can resample the dark current of the instrument.

Spectrum bandwidth check

A special scan for checking spectrum bandwidth that will calculate the spectrum bandwidth value automatically.

Energy of light sources check

Allows the user to scan the energy of light sources with a fixed gain (0–7).

Reset wavelength

Allows the user to relocate the wavelength 656.1 nm.

Installation

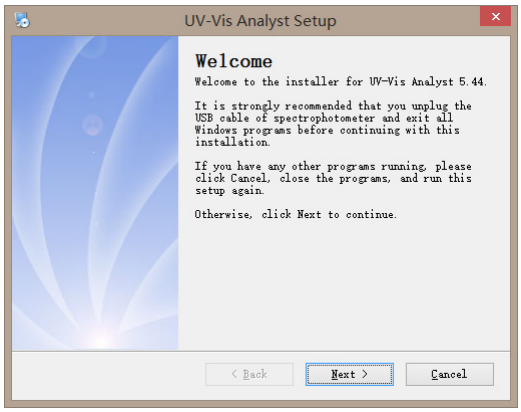
This section describes how to set up the UV-Vis Analyst to PC.

PC system requirements

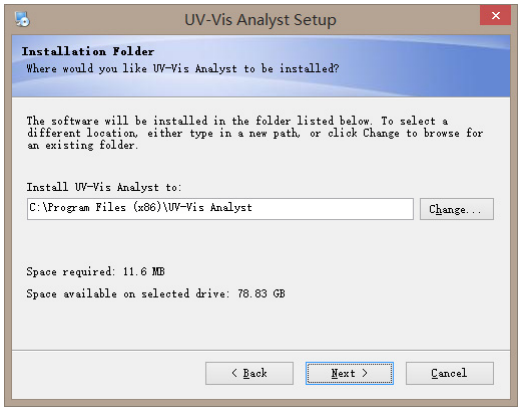
- Pentium or above PC;
- CD-ROM;
- USB Ports.
- 512 MB memory (1 GB or above is strongly recommended);
- 50 MB or above hard disk space;
- Microsoft Windows XP/Vista/7/8.

Install UV-Vis Analyst

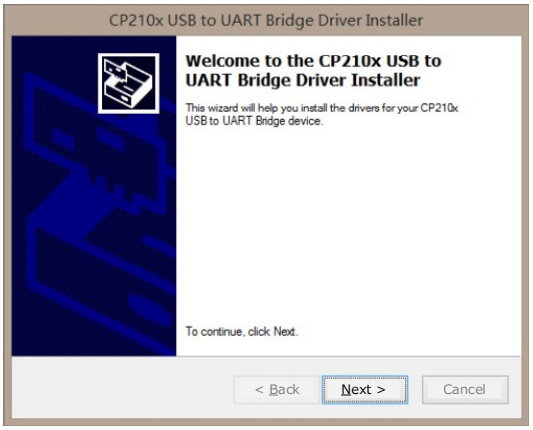
1. Put UV-Vis Analyst disc in the CD-ROM;
2. Double-click to open the CD-ROM, then double-click **Setup.exe** under the root directory of the CD to start installation. Click **Next**;



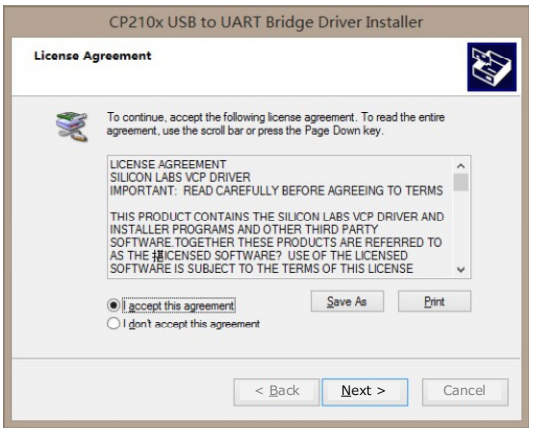
3. Choose install path, then click **Next** to copy files to PC;



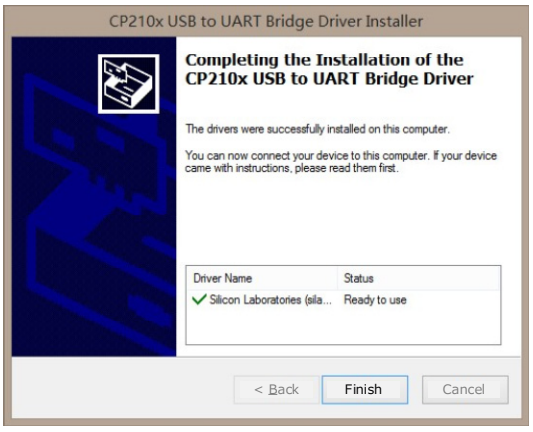
4. After all files of UV-Vis Analyst have been copied, it will start to install the USB drive. Click **Next**;



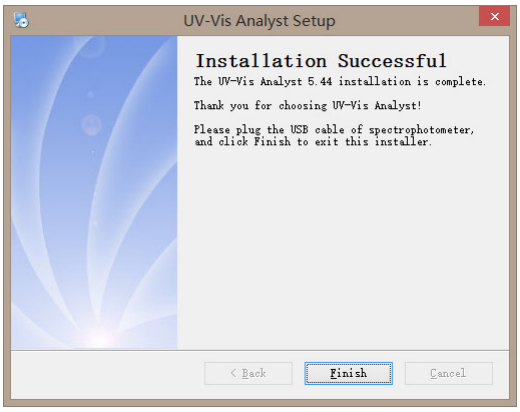
5. Select “I accept this agreement”. Click **Next** to copy files to PC;



6. Click **Finish** to finish installation of the USB drive;



7. Click **Finish** to complete the setup.



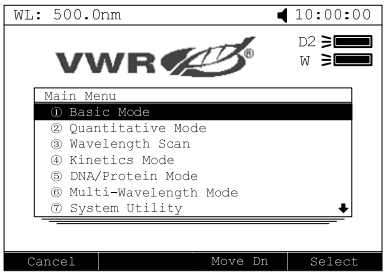
Uninstall UV-Vis Analyst

Start → All Programs → UV-Vis Analyst → Uninstall **UV-Vis Analyst** to remove.

Run UV-Vis Analyst

Before you run UV-Vis Analyst, please check the following:

- ***Computer is connected to spectrophotometer using the USB cable;***
- ***Spectrophotometer is on main interface.***

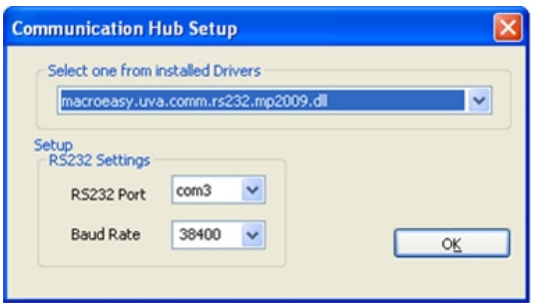


There are two ways to start the UV-Vis Analyst:

- Double-click shortcut icon  on the desktop.
- Start → All Programs → UV-Vis Analyst → **UV-Vis Analyst**.

Set up communication port

Start the **UV-Vis Analyst**, then on the **UV-Photometer** menu, click **Comm. Port Setup** to bring up the following box; select the Comm. Port and Baud Rate (38400), and click **OK**.

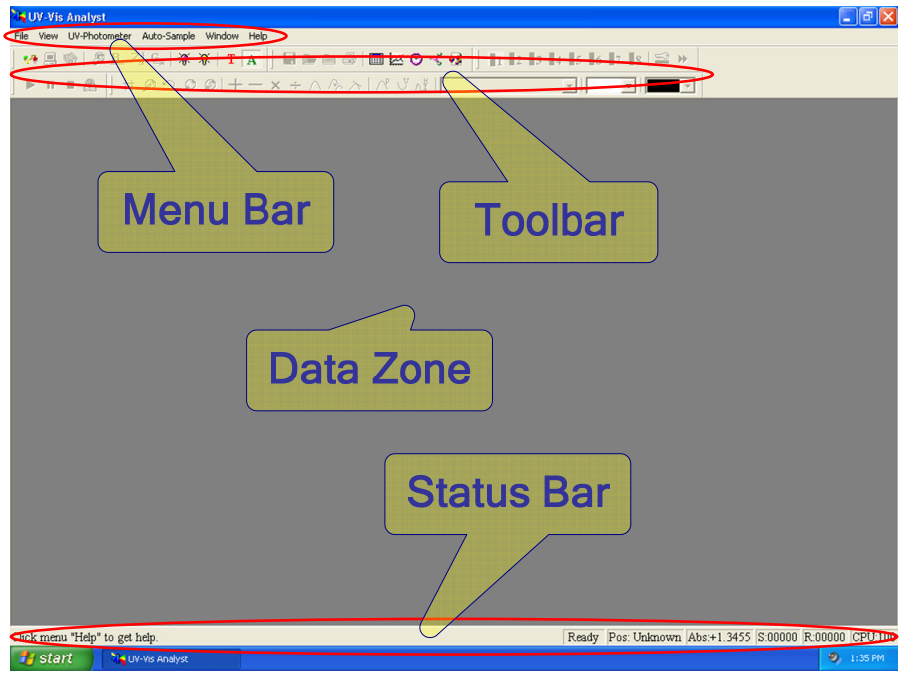


Introduction

We will introduce the UV-Vis Analyst in this chapter.

Main Interface

This is the main interface after starting.



Menu bar and toolbar

Menu bar and **toolbar** are both provided in the software offering you two ways to select a desired function.

- On the menu bar, use your keypad or mouse to select the desired function.
- Almost all the functions listed in the menu bar can be reached by clicking a corresponding button in the toolbar.

Main Menu	Sub Menu	Tool	Function
File	New		New fixed points measurement
			New wavelength scan measurement
			New time scan measurement
			New DNA/protein measurement

			New instrument validity
	Open…		Open a spectrum/data file
	Close		Close current measurement
	Save		Save current measurement
	Save As…		Save current measurement with a new file name
	Open file from UV-Photometer		Open a file saved in instrument
	Export		Export data or method
	Print…		Print test report
	Print Setup…		Set up printer
	Exit		Exit UV-Vis analyst
View	Status Bar		Display/hide status bar
	Status of Spectrophotometer		Display status of spectrophotometer
	Status font		Set up font of status bar
	Customize		Define the information of display and print
	Peaks		Mark peak value
	Valleys		Mark valley value
	Magnify		Magnify the area selected
	Restore		Restore the default parameters of display
	Search		Search peak/valley one by one

UV-Photometer	Link Spectrophotometer		Connect to the instrument
	Reset Spectrophotometer		Reset parameters of instrument
	Escape		Stop current measurement
	View Dark Current		Retest the dark current
	Set Amplifier		Reset amplifier
	Locate 656.1 nm		Relocate 656.1 nm
	Calibrate System Baseline		Scan system baseline
	Automatic Blank Calibration		Carry out the blank
	Slit Bandwidth *		Set slit bandwidth (0.5, 1, 2, 4, 5)
	Set Unit		Set unit
	Turn on/off W lamp		Turn on/off W lamp
	Turn on/off D2 lamp		Turn on/off D2 lamp
	D2/W Switch Point		Set switch point of D2/W
	Comm. Port Setup		Set up comm. port
	Change Password		Set/change login password
Auto-sample	Locate Cell **		Locate cell (1–8) to light path
	Setup Multicell **		Set up multicell
	Autorun **		Measure multi samples automatically
Scan	Start		Start a measurement

	Stop		Stop a measurement
	Service		Measure spectrum and scan energy
Settings	Display Range		Set up scan display parameters
	Peak Height		Define peak/valley threshold
Compute	Add		Add two spectra
	Sub		Subtract one spectrum from another
	Multiply		Multiply two spectra
	Divide		Divide one spectrum from another
	Moving Window Averaging		Smooth a spectrum with the moving window averaging method
	Savitzky-Golay Smoothing Filter		Smooth a spectrum with the Savitzky-Golay smoothing filter
	Derivate		Derivative of a spectrum
	Resample		Resample a spectrum
Window	New Window		New measurement window as current
	Cascade		Multi windows display in a cascade
	Tile		Multi windows display in tiled form
	Arrange Icons		Arrange all icons minimized
	Split		Split display area
Help	About UV-Vis Analyst		Display information about UV-Vis Analyst
			Set up measurement parameters

			Modify a measurement result
			Delete results selected
			Set and go to one wavelength
			Display instrument CPU information
			Delete current spectrum
			Display result as mode %T
			Display result as mode Abs
			Undo scale

Note: * *Only for the model with Variable Slit*

** *Only for the model with 8-Cell Auto Charger*

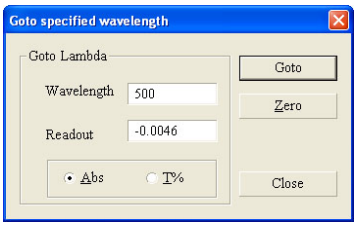
Operation

This chapter describes how to use UV-Vis Analyst.

Single wavelength photometric measurement

The UV-Vis Analyst provides a convenient method to measure photometric value at a fixed wavelength.

1. Click  on the toolbar to display **Goto specified wavelength**.



2. Enter the desired wavelength position, click **Goto**. The minimum wavelength step is 0.1 nm in a range 190–1100 nm.

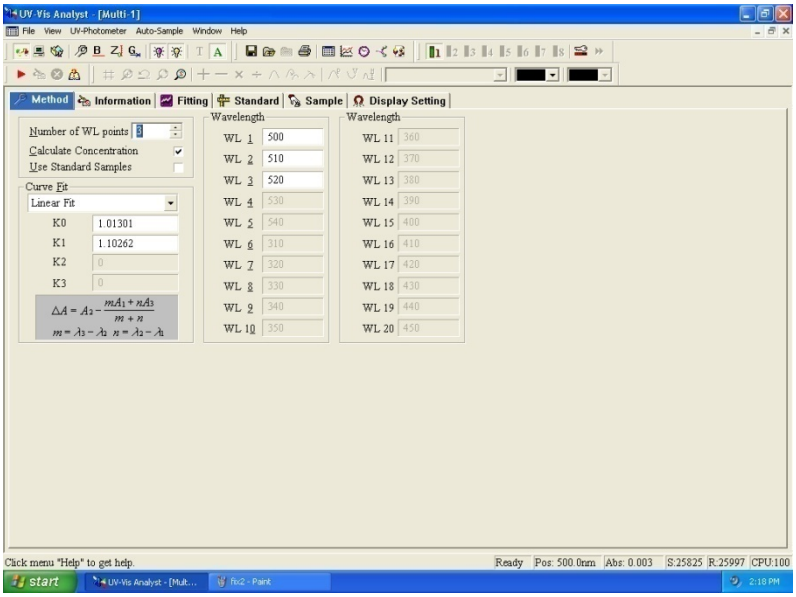
3. Place a sample in the sample compartment and a reference in the reference compartment. The wavelength position and photometric value will be displayed in the **Readout** box.

Fixed point measurement

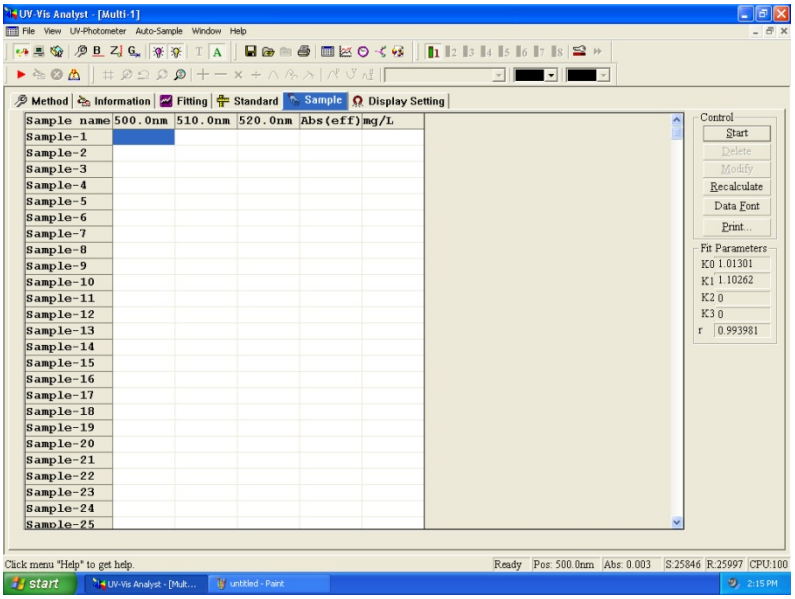
This UV-Vis Analyst performs fixed wavelength measurement at 1–20 points and defines how to analyse unknown compounds against calibration standards.

Multi-wavelength photometric measurement

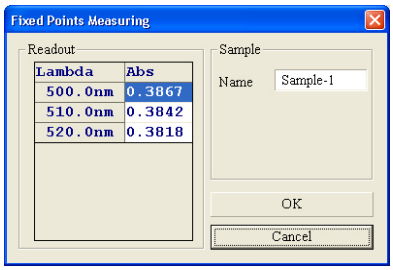
1. Click  on the toolbar to display the following form.



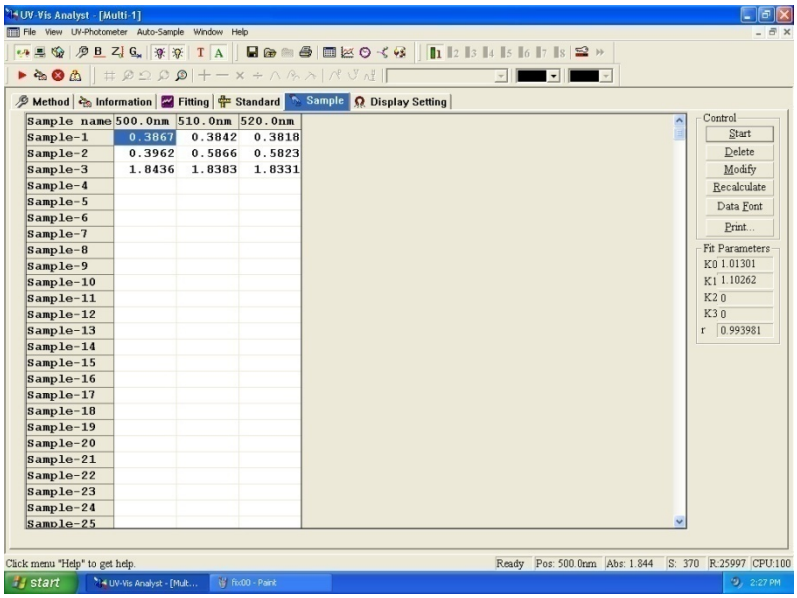
2. Click the **Method** tab.
3. Enter the number of wavelength points in the **Number of WL Points** box, or click the **up/down** arrows next to the box set the wavelength points. Leave the two boxes **Calculate Concentration** and **Use Standard Samples**.
4. Enter the wavelength in the **Wavelength** box.
5. Place a reference in the reference compartment.
6. Click the **Sample** tab. It will display the following. The control menu contains six buttons: **Start**, **Delete**, **Modify**, **Recalculate**, **Data Font and Print**.



7. Place a sample in the sample compartment. Click **Start** or  to run a new measurement. The display will change to the following. Enter the sample name in the **Name** box.



8. Click **OK**. The photometric data for sample will be listed in the **Sample** table.
9. Repeat steps 7 and 8 to measure all samples.



Concentration measurement

Set up linear regression curve

There are two methods available to set up the linear regression curve. You can use standards to set up the regression curve or just enter the parameters manually. Use the following steps to select the method you wish to use.

1. Click  on the toolbar.
2. Click the **Method** tab.
3. Enter the number of wavelength points in the **Number of Points** box, or click the **up/down** arrow next to this box. With two wavelengths, the absorbance at the second reference wavelength is subtracted from the first to correct for background absorbance. With three wavelengths, the baseline between the first and third wavelengths is calculated and its value at the second wavelength is subtracted from the absorbance at the second wavelength to give the peak height.
4. Enter the wavelengths in the **Wavelength** boxes.
5. Tick the **Calculate Concentration** tick box to activate concentration calculation.
6. Set up the linear regression curve.

   Method 1: Set up the linear regression curve with prepared standards.

   *(1) Tick the **Use Standard Samples** tick box.*

   (2) Place the reference into the reference holder.

   *(3) Click the **Standard** tab.*

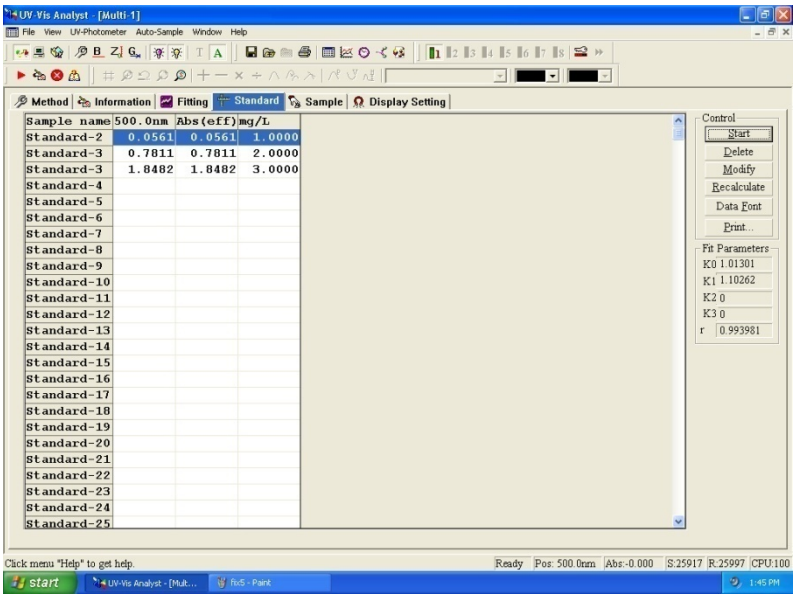
   *(4) Place Standard 1 in the sample compartment. Click **Start** to run a measurement.*

   *(5) Enter the concentration value of Standard 1 in the **Conc.** box.*

   *(6) Enter the sample name for the standard in the **Name** box.*

   *(7) Click **OK**. The photometric data, ⊿A and concentration will be shown in the standard table.*

(8) *Repeat steps 4–7 to measure all the prepared standards.*



(9) *Click **down** arrow in **Curve Fit** box to select curve fit method.*

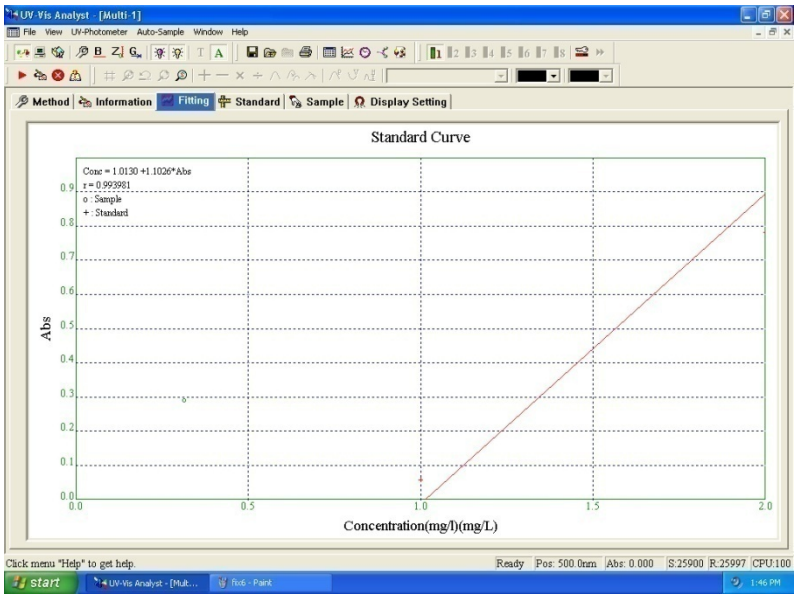
Method 2: Input the factor of the linear regression curve.

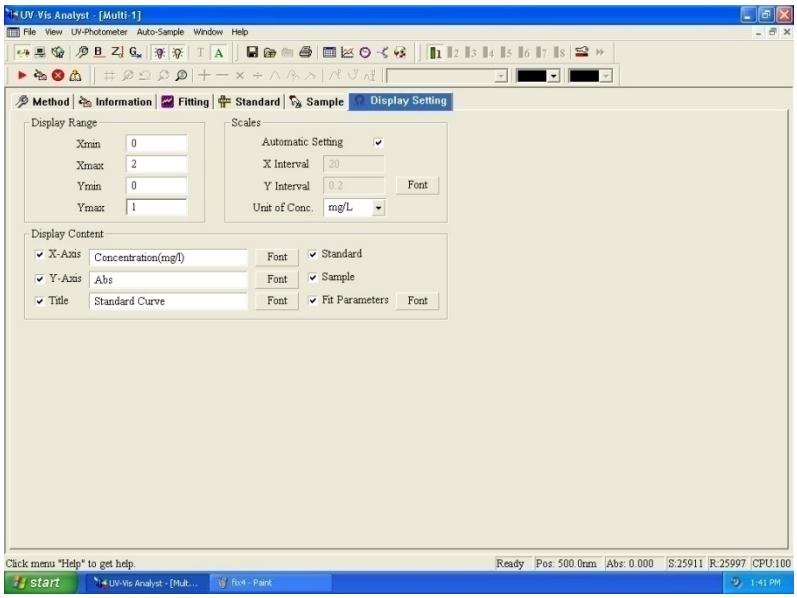
(1) *Leave the **Use Standard Samples** tick box unticked.*

(2) *Click **down** arrow in **Curve Fit** box to select curve fit method.*

(3) *Input the factor of the linear regression curve.*

7. Click **Fitting** tab to view the ***linear regression curve***. Click **Display Setting** tab to set the display parameters and unit of concentration.

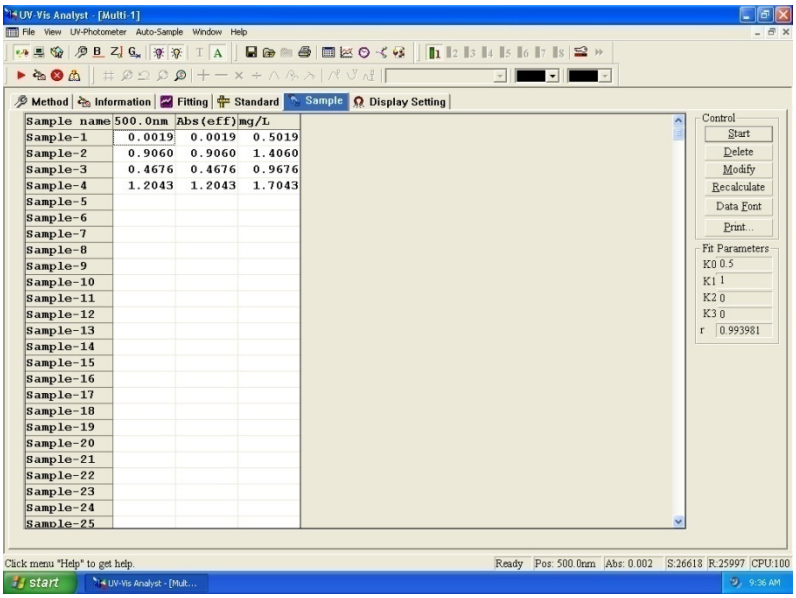




Measure concentration by using the linear regression curve

The following procedure describes how to measure concentration of samples.

1. Set up linear regression curve or click  to open a file of linear regression curve (*.QUA).
2. Place reference into the reference holder.
3. Click the **Sample** tab.
4. Place Sample 1 into the sample holder.
5. Click **Start** to run a measurement.
6. UV-Vis Application software will display the photometric value of Sample 1 at the fixed wavelength positions automatically. Enter the sample name in the **Name** box. The default is **Sample-1**.
7. Click **OK**. The photometric result for Sample-1 will be listed in the sample data. Delta Abs. and concentration value of Sample-1 will also be displayed in columns 3 and 4.
8. Repeat steps 4–7 to measure remaining samples.

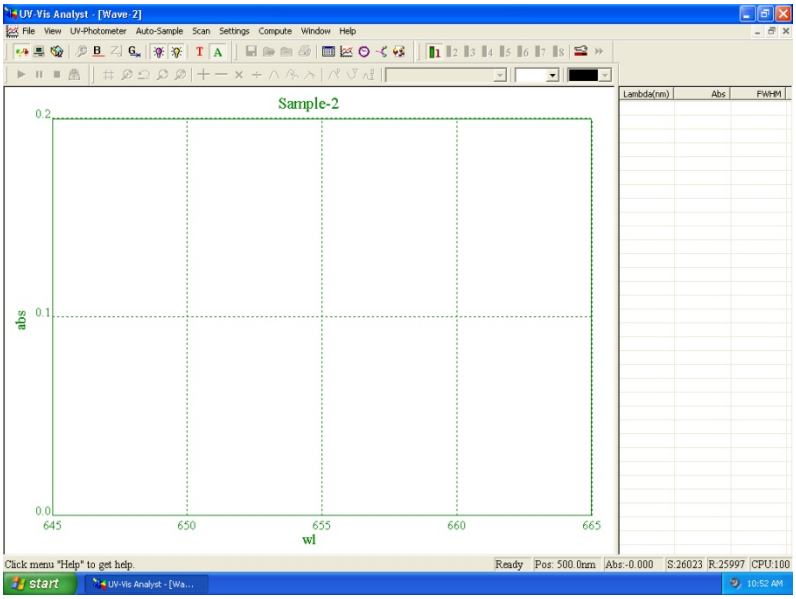


Wavelength Scanning

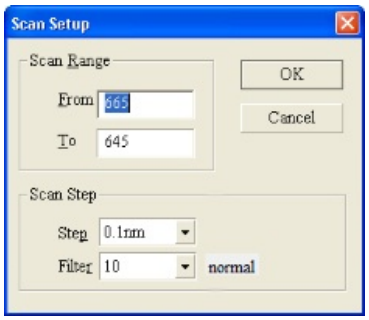
This chapter describes how to collect a spectrum while using Wavelength Scan function.

Scan sample

1. Click  on the toolbar to new a sample scan measurement to display the following form.

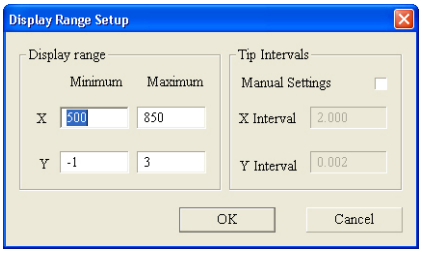


2. Click  on the toolbar to display the following form. Input start wavelength in **From** box (range: 190–1100 nm), end wavelength in **To** box (range: 190–1100 nm), select scan interval (0.1, 0.2, 0.5, 1.0, 2.0 or 5.0 nm) and filter times (5, 10, 30 or 50), click **OK**.



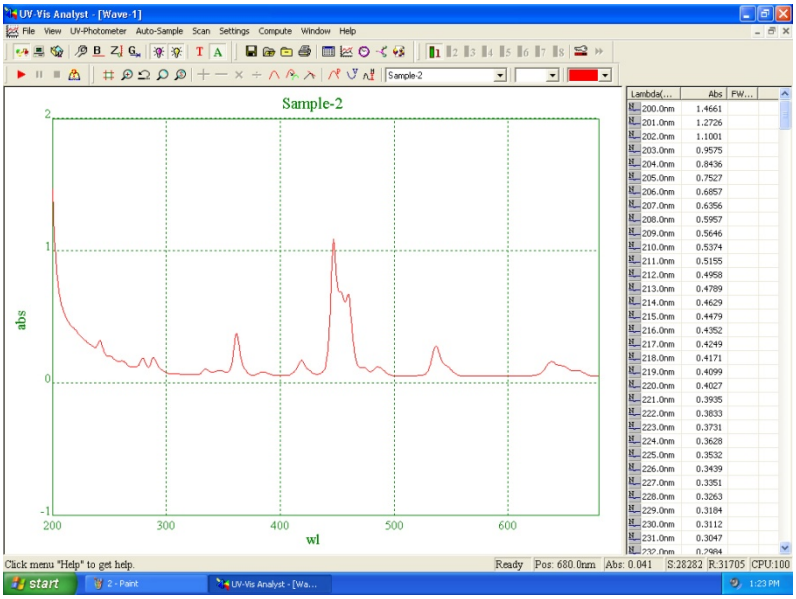
3. Click  on the toolbar to select %Transmittance mode or click  to select Absorbance mode.

4. Click  on the toolbar to set display parameters.



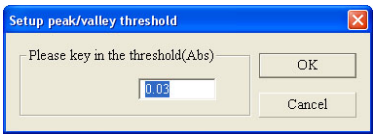
5. Place reference into the reference holder.

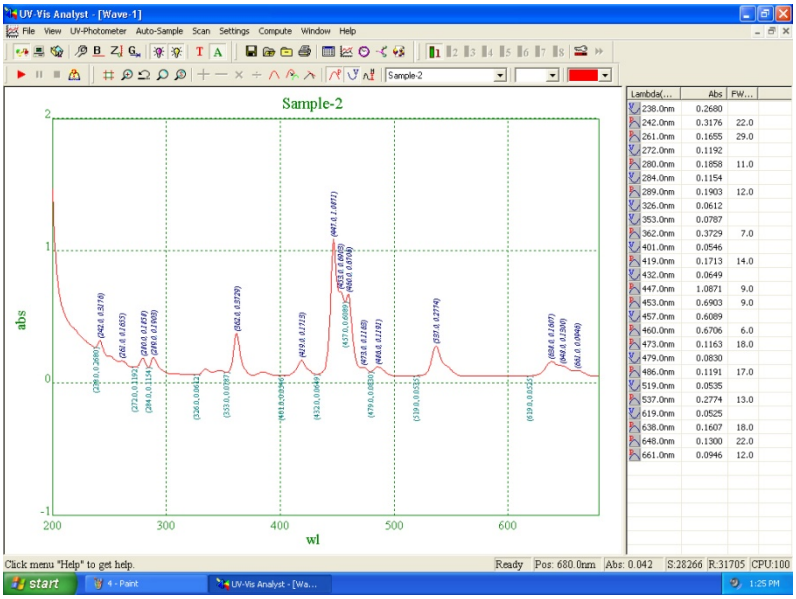
6. Place sample into the sample holder. Click  to scan sample, the real time spectrum will be displayed. Click  to cancel while scanning.



Auto list peaks and valleys

Click  on the toolbar to set the peak/Valley threshold (range: 0 to 1.000, step: 0.001), input the threshold value, click **OK**. Click  to list peaks and click  to list valleys.





Rescale

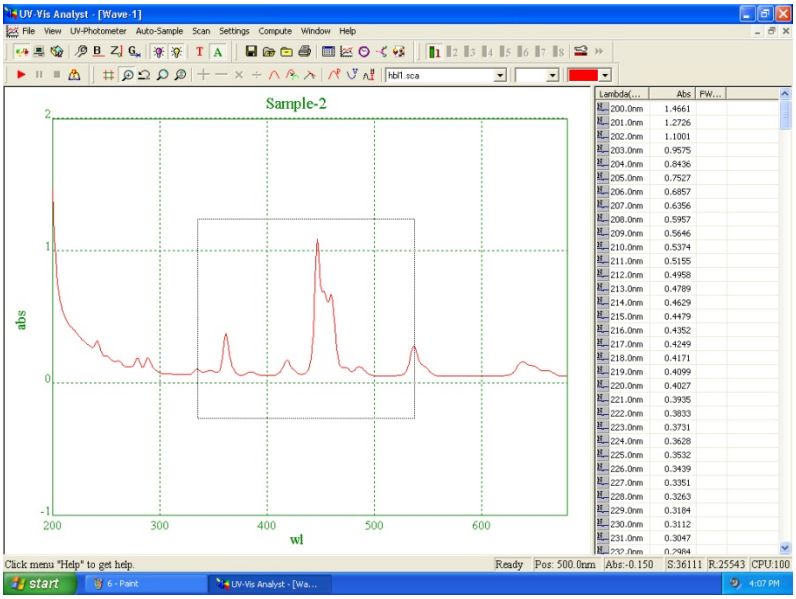
Click  on the toolbar to set the new parameters for display.

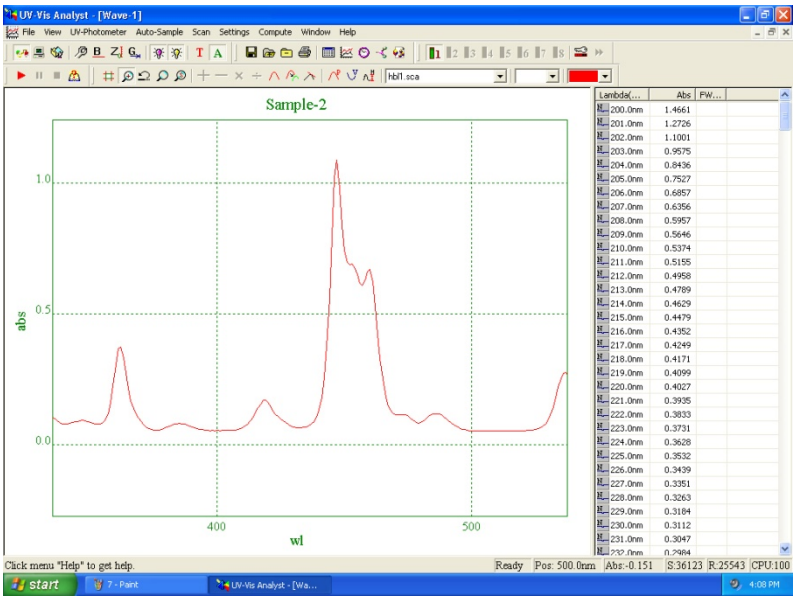
Original scales

Click  on the toolbar to restore the default display settings.

Zoom selected area

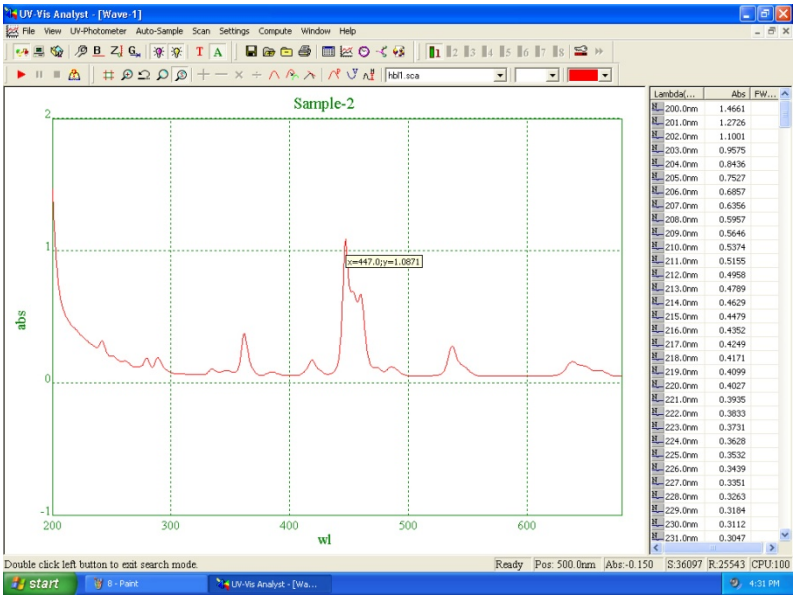
Click  on the toolbar to activate zoom function. Position the cursor in the upper-left corner of the area you want to select. Hold the left mouse button to drag the cursor to outline the spectrum area you want to enlarge. Release the mouse button. The part of the spectrum which is displayed within the outlined area will be enlarged. Click  to undo scale. To cancel zoom to click  again.





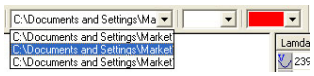
Trace a spectrum

Click  on the toolbar, a crosshair cursor appears, move the cursor on the spectrum. Move the crosshair cursor left or right on the spectrum. The data in the cursor window indicate the X-axis and Y-axis values for the current cursor location. Press ESC key to release the crosshair cursor.



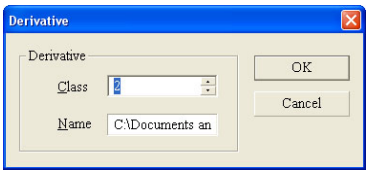
Select a spectrum as current

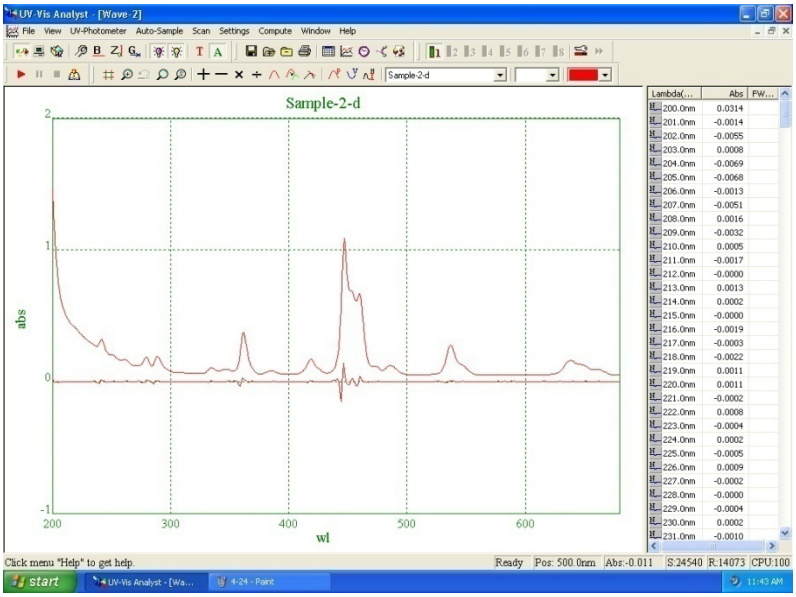
As UV-Vis Application software can display several spectra overlaid on the screen, you should specify the spectrum you wish to process. Click the **down** arrow on the toolbar. All spectra will be listed in the drop-down menu. Click the spectrum you want to select. Its name will be listed in the Name Box and it will be referred to as **Current Spectrum**.



Derivative

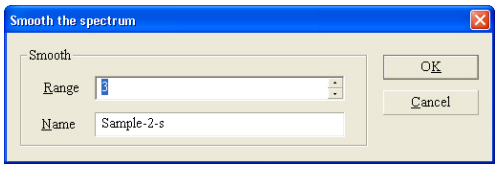
Click  on the toolbar. The following dialogue box appears. Enter the class of derivative (1–10, depending on whether first, second, … tenth derivative is required) and a name for the result spectrum, then click **OK**. The result spectrum will be displayed overlaid with the original one.

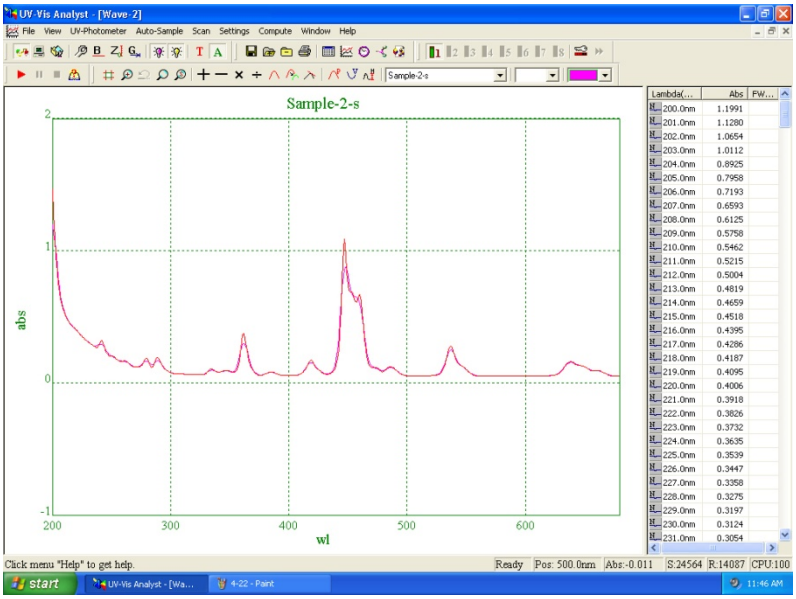




4.3.2.1 Moving window averaging

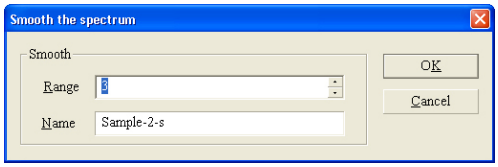
Click  on the toolbar. The following dialogue box will be displayed. Click **up/down** arrow of the **Range** box to select range value, enter a file name in the **Name** box, click **OK**. The result spectrum will be displayed overlaid with the original one.

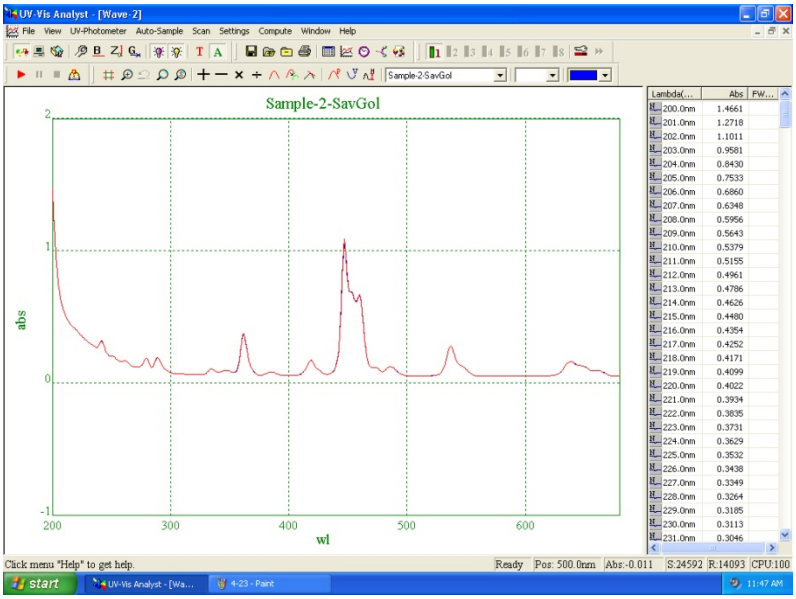




Savitzky-Golay Smoothing Filter

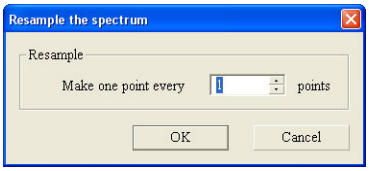
On the **Computer** menu, click **Savitzky-Golay Smoothing Filter**. The following dialogue box will be displayed. Click **up/down** arrow to select the parameters, enter a file name in the Name of Result box, click **OK**. The result spectrum will be displayed overlaid with the original one.

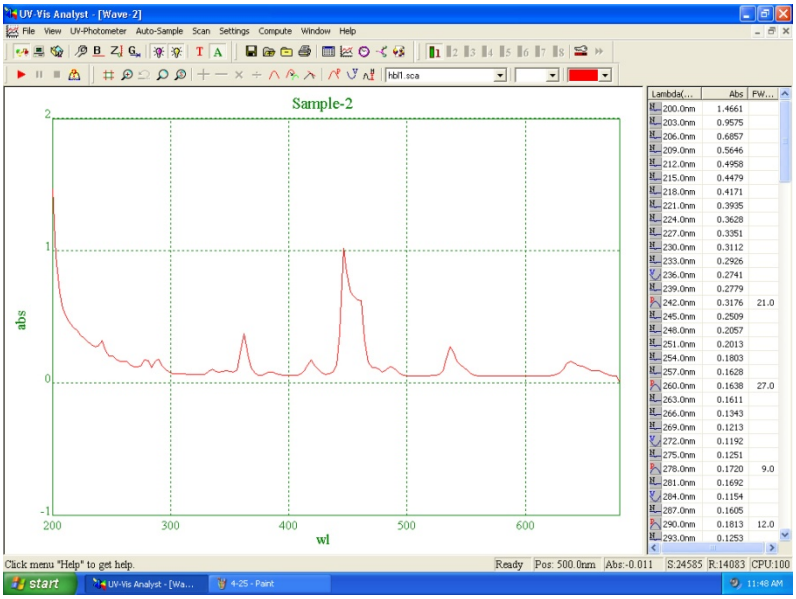




Resample

Click  on the toolbar. The following dialogue box will be displayed. Click **Up/Down** arrow to select Sample times. Click **OK**. The new spectrum is displayed.



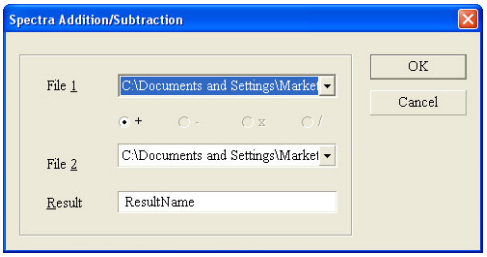


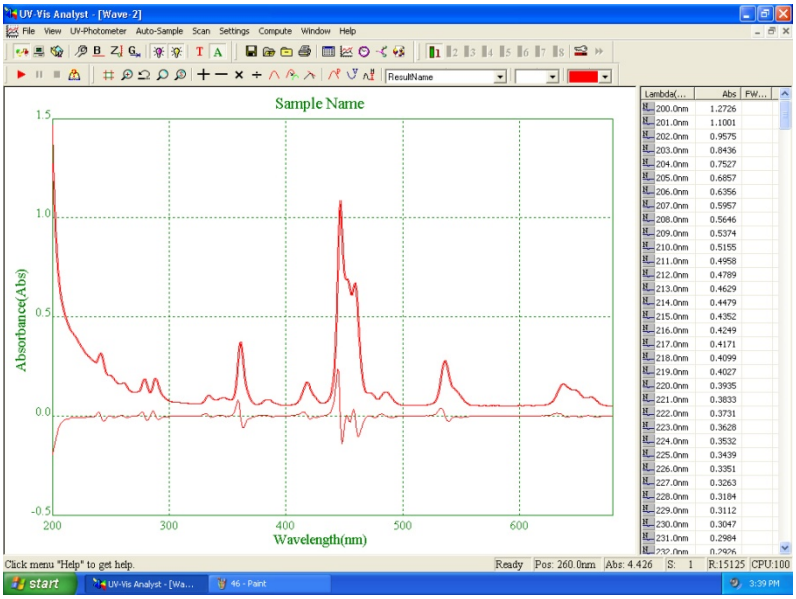
Spectrum addition

Spectrum addition can assist in the development of artificial spectrum in multi-component mixtures.

Click  on the toolbar. The following dialogue box will be displayed. Click the **down** arrow next to **File 1** to select a spectrum and define it as source 1. Select a spectrum for **File 2** in the same way. It will not allow you to select the same spectrum twice. Enter a name for the **Result** spectrum and click **OK**. The result spectrum will be displayed on the screen.

UV-Vis Analyst will only add, subtract, multiply and divide two spectra that are already displayed on the screen. Before arithmetic processing, load or collect two spectra from memory.

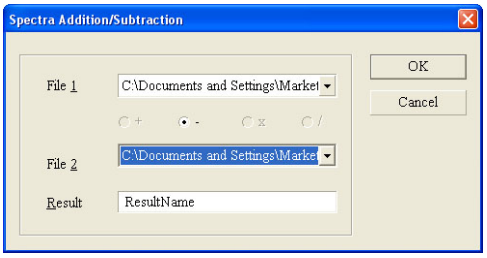


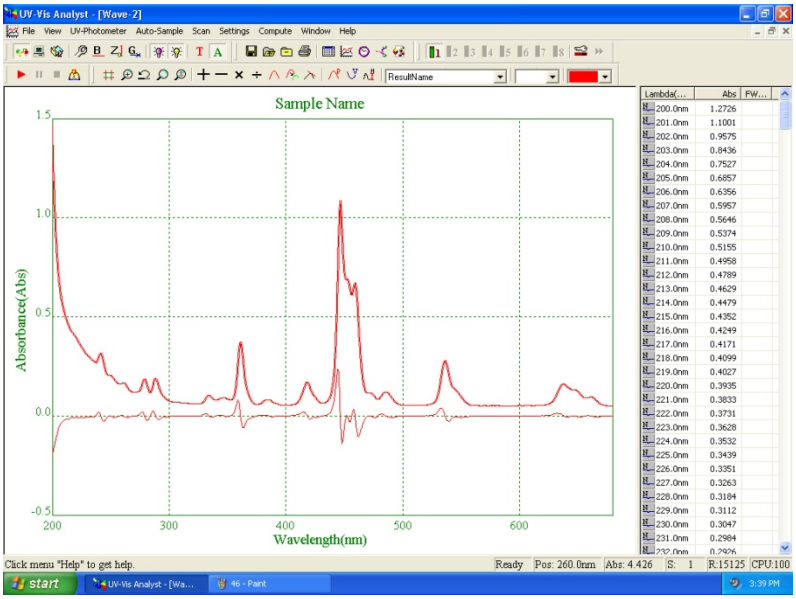


Spectrum subtraction

Subtracting one spectrum from another is a classic technique to offset spectrum interference from the spectrum of interest.

Click on the toolbar. The following dialogue box will be displayed. Click the **down** arrow next to **File 1** to select a spectrum and define it as source 1. Select a spectrum for **File 2** in the same way. It will not allow you to select the same spectrum twice. Enter a name for the **Result** spectrum and click **OK**. The result spectrum will be displayed on the screen.

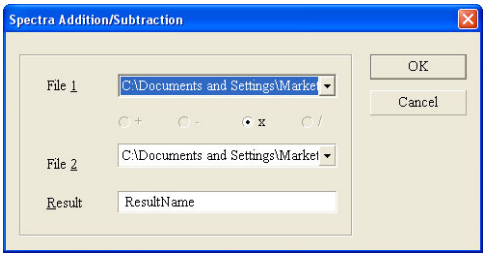


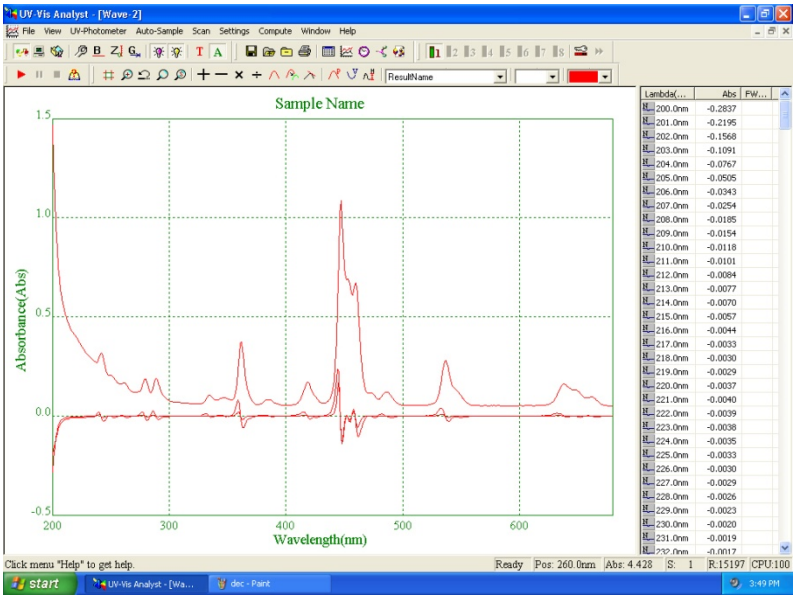


Spectrum multiplication

Multiplying spectra can assist in the development of artificial structure of a spectrum in multi-component mixtures.

Click  on the toolbar. The following dialogue box will be displayed. Click the **down** arrow next to **File 1** to select a spectrum and define it as source 1. Select a spectrum for **File 2** in the same way. It will not allow you to select the same spectrum twice. Enter a name for the **Result** spectrum and click **OK**. The result spectrum will be displayed on the screen.

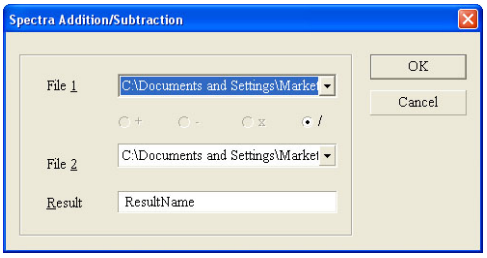


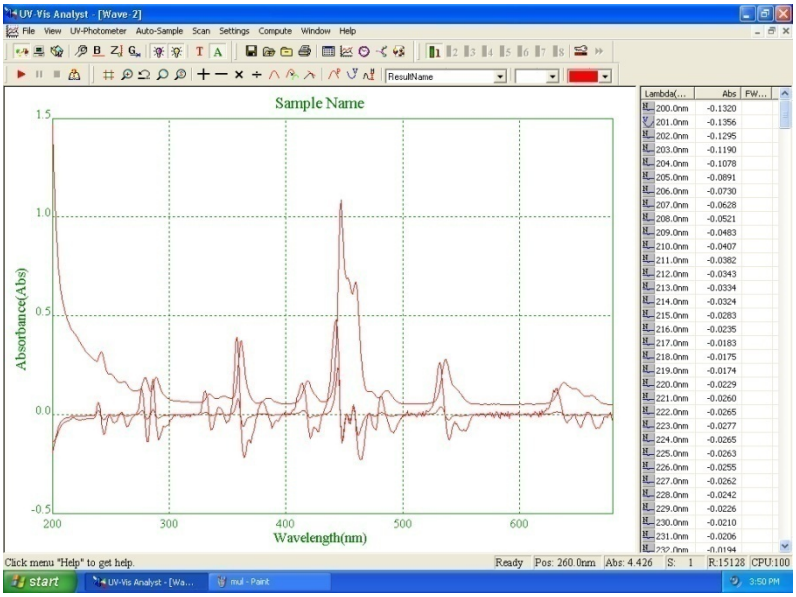


Spectrum division

Dividing one spectrum from another is a classic technique to offset spectrum interference from the spectrum of interest.

Click  on the toolbar. The following dialogue box will be displayed. Click the **down** arrow next to **File 1** to select a spectrum and define it as source 1. Select a spectrum for **File 2** in the same way. It will not allow you to select the same spectrum twice. Enter a name for the **Result** spectrum and click **OK**. The result spectrum will be displayed on the screen.



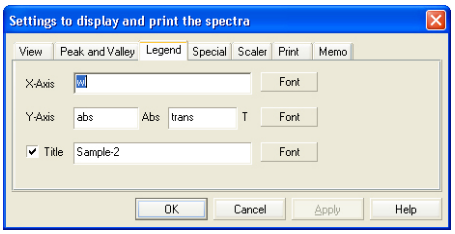


Unload a spectrum

Select the spectrum you want to unload as the **Current Spectrum,** Click  on the toolbar to remove the spectrum from the display.

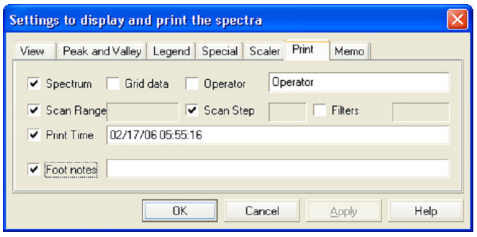
Define display information

Click  on the toolbar to display the **Settings to display and print the spectra** form, click the **Legend** tab, enter the information for display.



Edit print information

Click  on the toolbar to display the **Settings to display and print the spectra** form, click the **Print** tab, enter the information for printout.

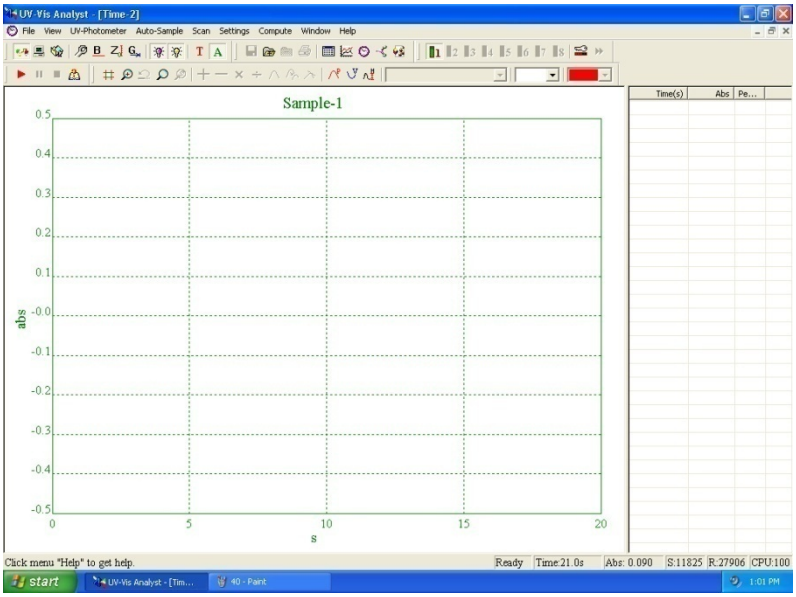


Time Scanning (Kinetic Analysis)

This chapter describes how to obtain the absorbance or transmittance value for a sample as a function of time at a given wavelength.

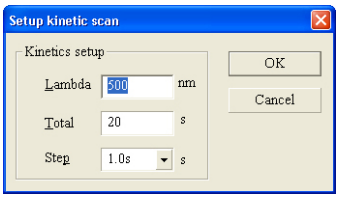
Scan sample

1. Click  on the toolbar, the following dialogue box will appear.

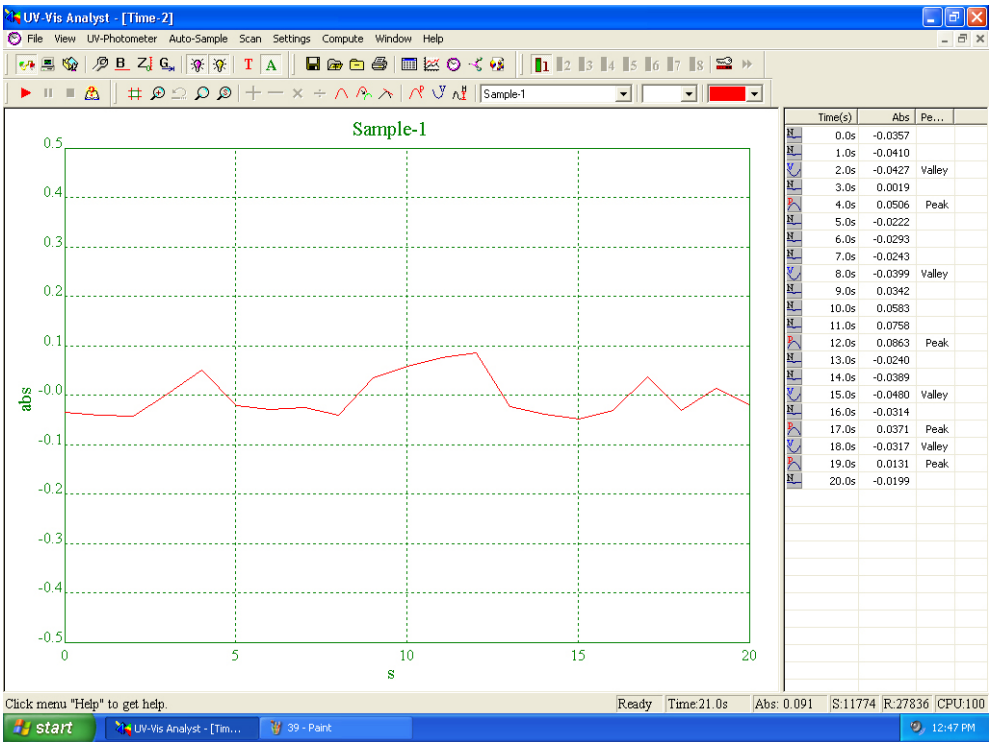


2. Click  on the toolbar to select the %transmittance mode or click  to select the absorbance mode.

3. Click  on the toolbar. The following dialogue box will be displayed. Key in the wavelength, total time (in seconds) and scan step in the dialogue box. The wavelength range should be within 190 to 1100 nm. The upper limit for total time is 100000 s. Seven scan intervals can be selected from 0.5S, 1S, 2S, 5S, 10S, 30S and 60S. Click **OK**.

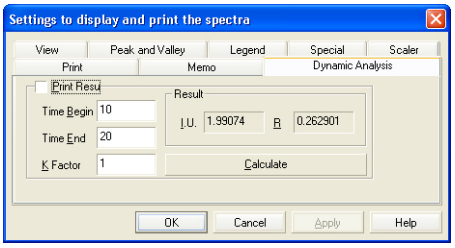


4. Place a reference in the reference holder.
5. Take out the blank in the sample holder, place a sample in it and close the cover.
6. Place a sample in the sample holder. Click  on the toolbar. The instrument will start scanning automatically. The graph will be displayed on the screen during time scanning. You can stop scanning by clicking  .



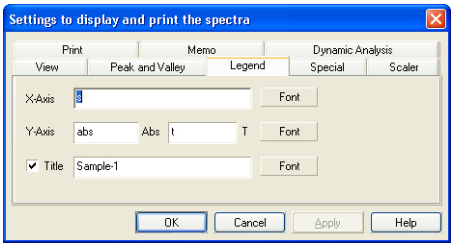
Calculate rate

Click  on the toolbar to display the **Settings to display and print the spectra** form, click the **Dynamic Analysis** tab, enter the start time in **Time Begin** box, enter the end time in **Time End** box, and enter the K factor in **K Factor** box, click **Calculate**, the result will be displayed.



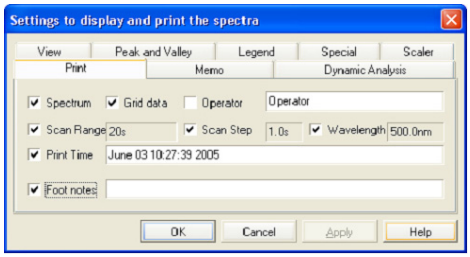
Define display information

Click  on the toolbar to display the **Settings to display and print the spectra** form, click the **Legend** tab, enter the information for display.



Edit print information

Click  on the toolbar to display the **Settings to display and print the spectra** form, click the **Legend** tab, enter the information for display.

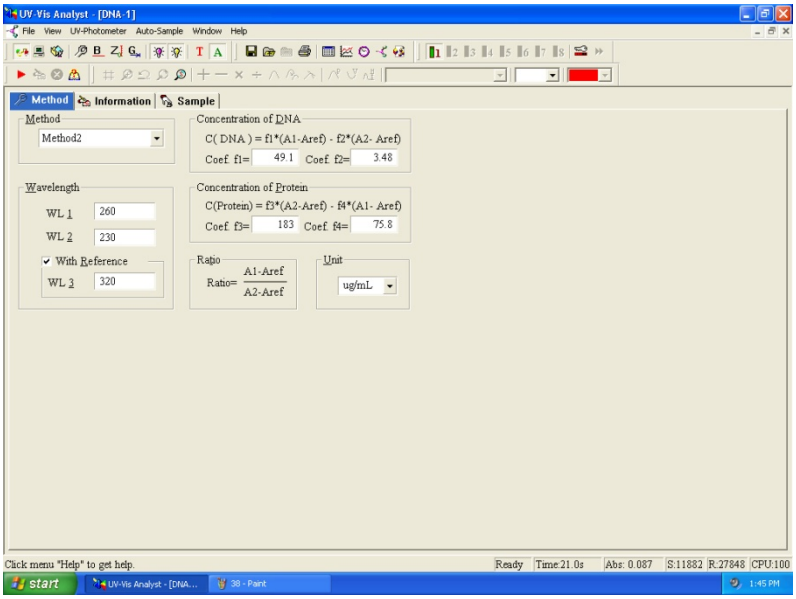


DNA/Protein Measurement

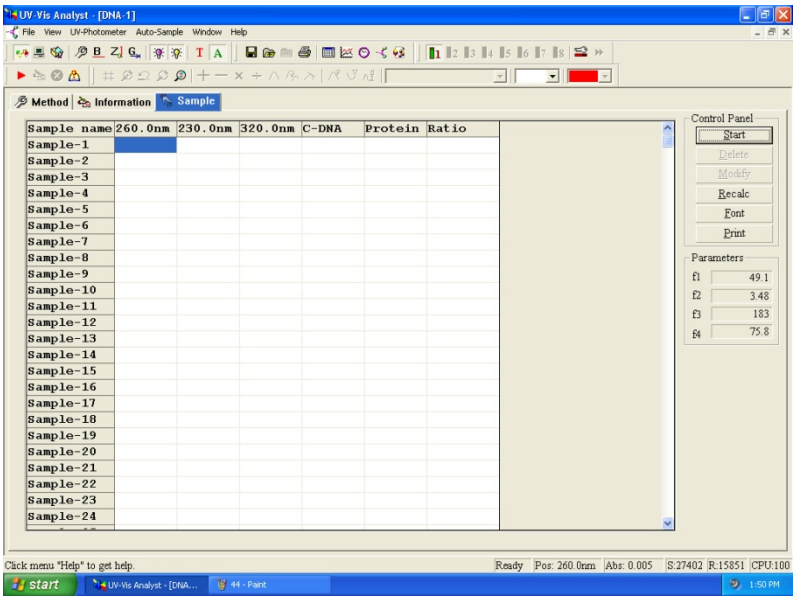
This chapter describes how to perform DNA/Protein measurement.

DNA/protein measurement

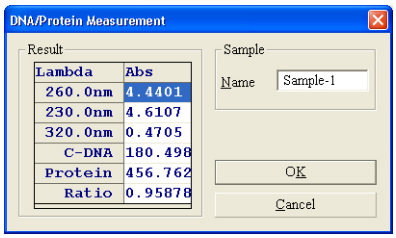
1. Click  on the toolbar, the following dialogue box will appear.



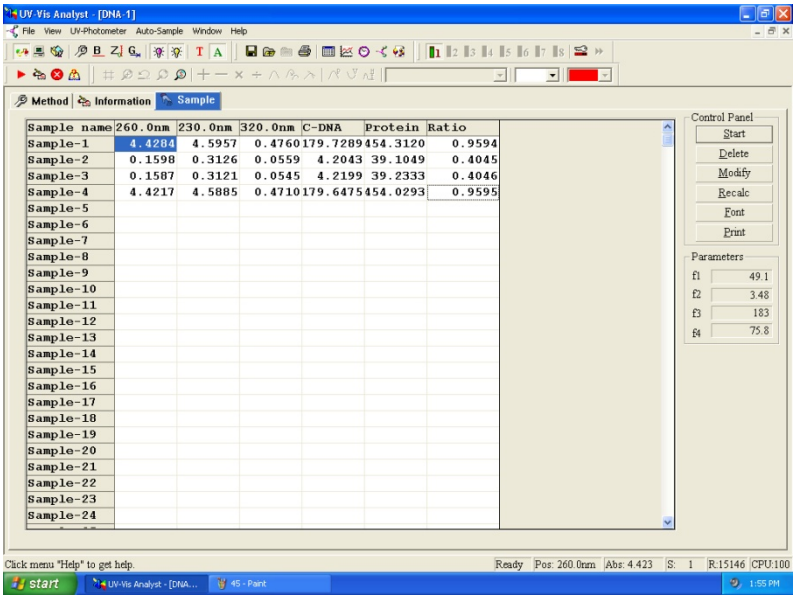
2. Click the **down** arrows of the **method** to select the **test method**. Enter the wavelength position in the **Wavelength** box. Enter the value of **DNA/Protein Conc**.
3. Place a reference in the reference holder.
4. Click the **Sample** tab. It will display the following. The control menu contains six buttons: **Start**, **Delete**, **Modify**, **Recalculate**, **Font** and **Print**.



5. Place a sample in the sample holder. Click **Start** or  to run a new measurement. The display will change to the following.



6. The UV-Vis Analyst will read the photometric value of **sample 1** at the fixed wavelength automatically. Enter the sample name in the **Name** box. Click **OK** after the measurement is complete. The photometric data for **sample 1** will be listed in the sample table.
7. Repeat steps 5 and 6 to test all samples.



Appendix 1

Methods of Quantitative Analysis

Single Wavelength Method： Abs.=A1

Double Wavelengths Method： Abs.=m*A1-n*A2

Three Wavelengths Method： Abs.=A1-(W1-W2)*(A2-A3)/(W2-W3)-A3

Technical service

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VWR International warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, VWR will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid, except to the extent, the defect of the product is not due to such non-performance.

Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

Compliance with local laws and regulations

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorisations necessary to run or use the Product in its local environment. VWR will not be held liable for any related omission or for not obtaining the required approval or authorisation, unless any refusal is due to a defect of the product.

Equipment disposal

This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.
Instead it's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.
For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you

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