Kalstein

MetaSpec Pro (Software)

Instruction Manual

Thank you very much for purchasing our Kalstein's Software MetaSpec Pro.

Please read the "Operating Instructions" and "Warranty" before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the "Warranty" at a hand place for future reference.

Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.

Kalstein

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Contents

1 Introduction

MetaSpec Pro analysis software is a new version of PC software for UV-Vis or Visible spectrophotometer written by professional software engineers of our company.

The MetaSpec Pro analysis software has powerful functions, such as instrument control, measurement, data analysis and data processing. User management, file security and 3D spectrogram are also available.

The main measurement functions contain Standard Curve, Photometric Analysis, Quantitative Analysis, Kinetics Analysis, Wavelength Scan, Multi-wavelength Analysis and DNA/Protein Analysis.

With this software, user can control the instrument, set parameters, complete measurement and other relative operation conveniently.

2 Installation

This chapter will show users the requirement of system configuration and the steps of installation and uninstall for MetaSpec Pro analysis software.

2.1 System configuration Requirement

Following system configuration of PC is required:

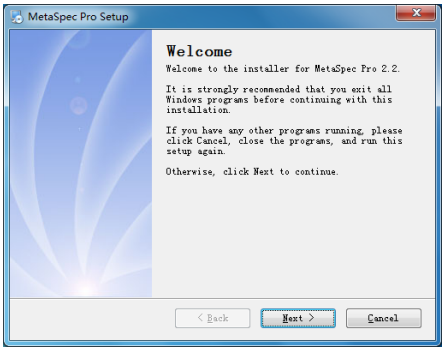
- ✧ Core i3 dual-core or faster processor
- ✧ CD-ROM drive
- ✧ 2 USB interface
- ✧ 2G or more RAM
- ✧ 1G or more hard disk space
- ✧ Microsoft Windows 7 or Windows 8 operating system (Also support Windows XP)

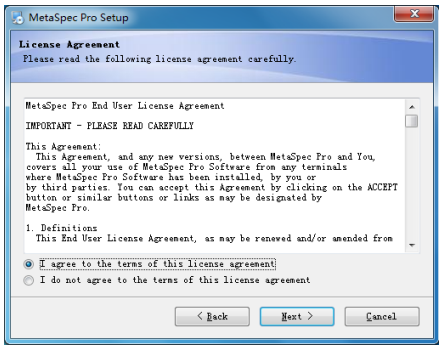
2.2 Software Installation

Install MetaSpec Pro analysis software with following steps:

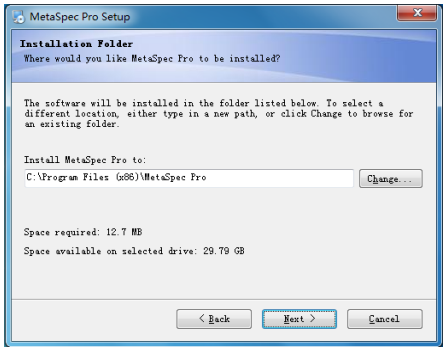
Step 1: Put the CD of MetaSpec Pro analysis software into CD-ROM drive of PC.

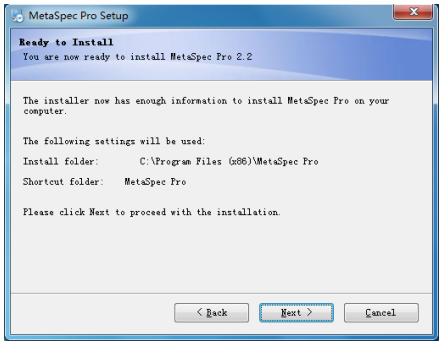
Step 2: In the CD-ROM root directory, double-click “MetaSpec_Pro_EN_Setup.exe.” to start the installation progress. Click [Next] in the setup dialog, select “I accept the terms in the license agreement”, and click [Next] to continue the installation progress.

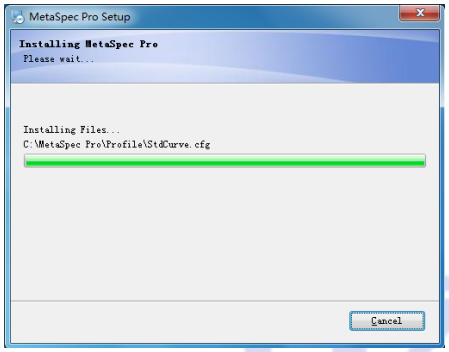


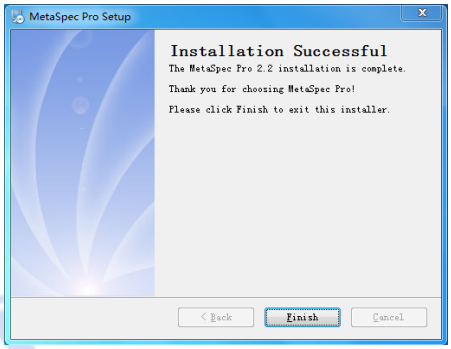


Step 3: Click [change…] button to select the installation directory, then click [Next], it's ready to install MetaSpec Pro analysis software. Click [Next] to proceed with the installation. It will create a shortcut folder on the Desktop after installing files, and then it will suggest that the installation is successful.

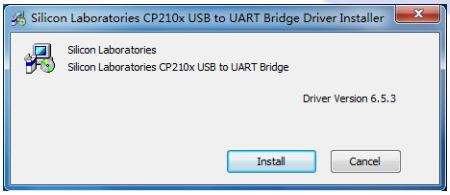


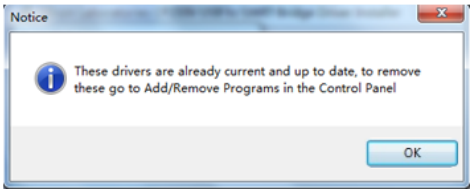






Step 4: The final installation process contains the installation of CP210x USB driver, click [Install] to install it. If the CP210x USB driver has already installed, it will give a notice, just click [OK] to update the driver.





At last, click [Finish] to exit the installation process of MetaSpec Pro analysis software.

2.3 Software Uninstall

There are two ways to safely uninstall MetaSpec Pro analysis software.

One way, through [Control Panel], enter the [Add or Remove Programs] dialog, select [MetaSpec Pro], and click the [uninstall] button.

The other way, in the [Start] menu, select [MetaSpec Pro] and [Uninstall MetaSpec Pro] in [All Programs], and the uninstall progress will automatically uninstall the MetaSpec Pro software.

3 Basic Application

This chapter will show users the basic application of MetaSpec Pro analysis software, such as how to run the software, be familiar with the interface and tools, and manage the user information.

3.1 Run the software.

There are two ways to run MetaSpec Pro analysis software. Make sure that the UV Key has already been inserted to user's computer, then, run MetaSpec Pro analysis software.

One way, double-click the shortcut icon 

on the Desktop to run the program.

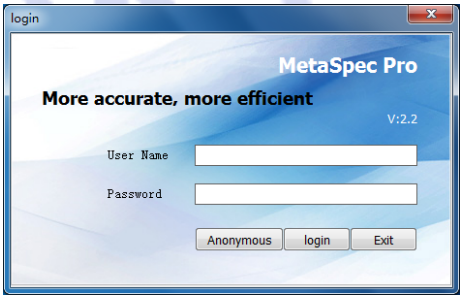
The other way, in the [Start] menu-> [All Programs] -> [MetaSpec Pro] -> [MetaSpec Pro], click [MetaSpec Pro] to run the program.

For the first launch, user can login the system with the username "admin" and password "a12345".

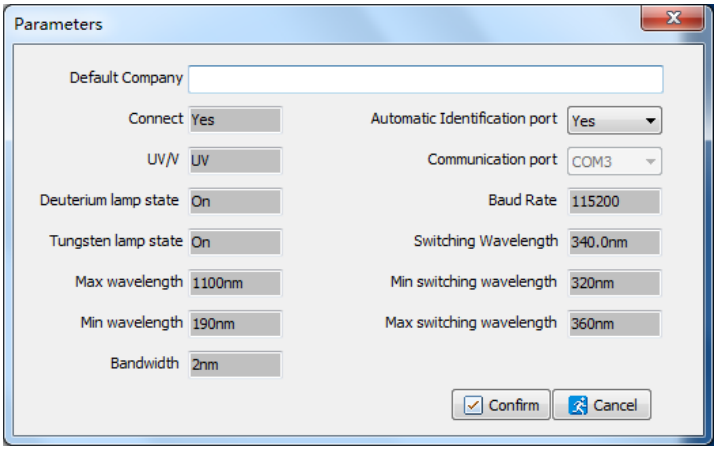
User also can click the button 

in the login window to enter the main interface of the software. For the next launch, user can login the system with a new username and a new password. About modification of the username and password, please refer to chapter 3.4.

Note: Only administrators have the right to manage the user and user privileges. Login with the username "admin" and password "a12345" is suggested for the first launch.



When entering the interface of the software, a window for parameters of the device will be shown.

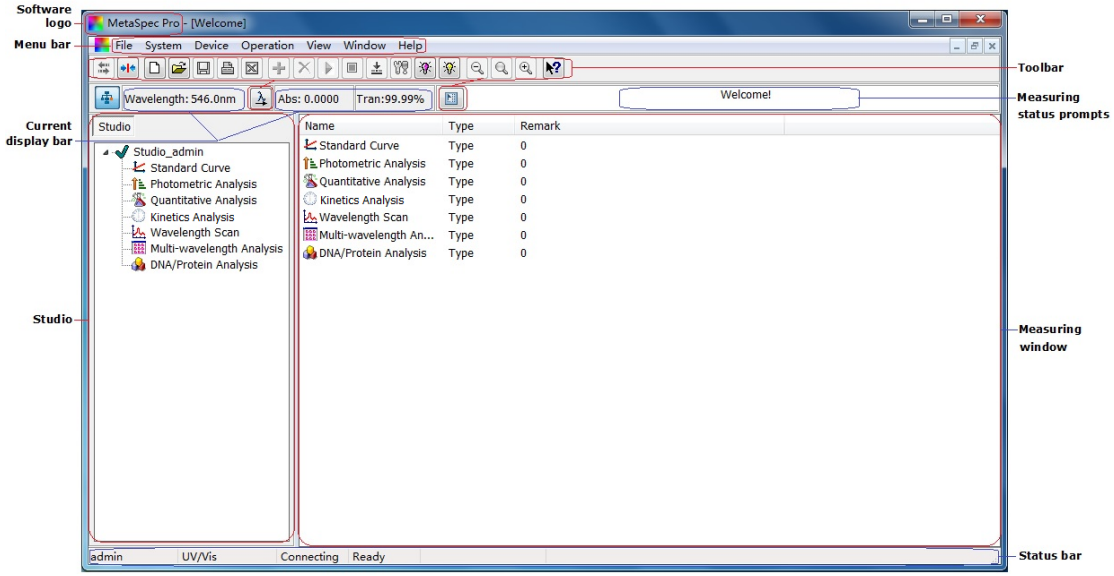


User can view the parameters and modify the Company name. Whether choose the Automatic

Identification port or not also can be set up. Finally, click the button Confirm to exit the parameters window. User also can close the window directly without any modification.

3.2 Main interface

The main interface of the software is described as following:



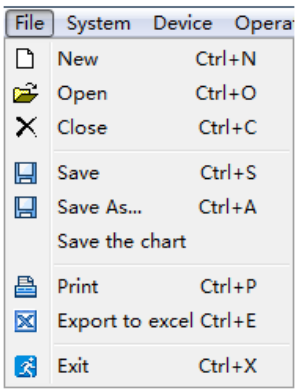
3.3 Menu bar and Toolbar

This software provides the Menu bar and Toolbar to user for easy access to different functions. At the same time, the pop-up menu of right click includes most commonly used functions to speed up user's operation.

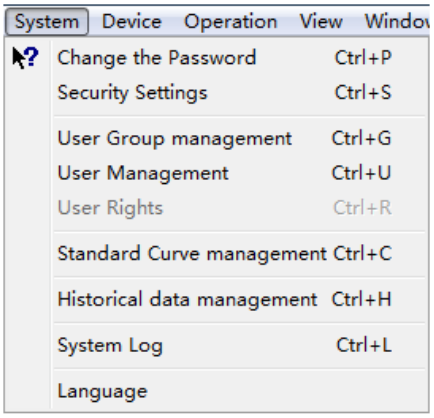
3.3.1 Menu bar

The menu bar contains File, System, Device, Operation, View, Window and Help, respectively shows as following:

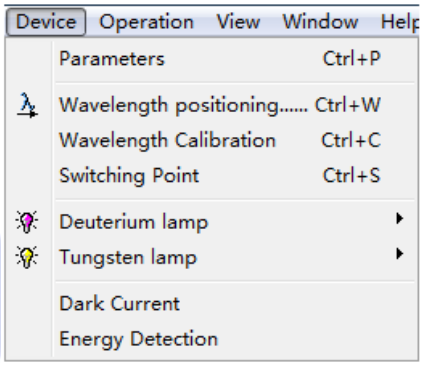
1) File & the drop-down menu



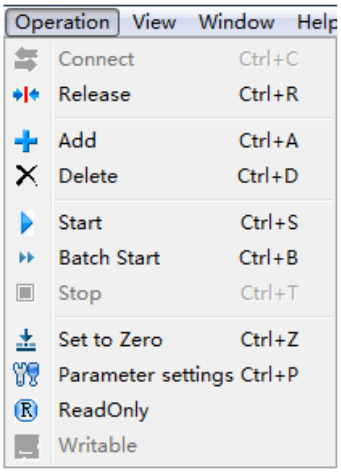
2) System & the drop-down menu



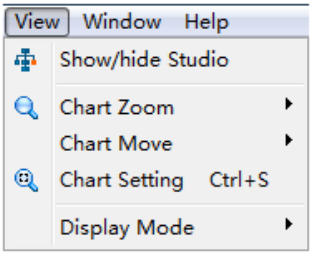
3) Device & the drop-down menu



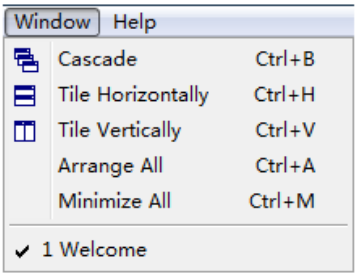
4) Operation & the drop-down menu



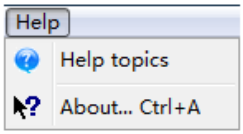
5) View & the drop-down menu



6) Window & the drop-down menu



7) Help & the drop-down menu



3.3.2 Toolbar

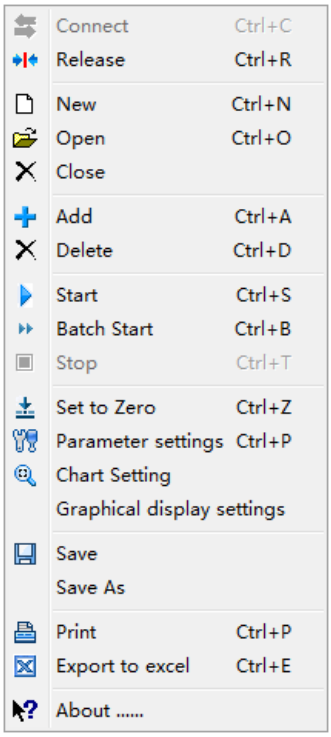
The toolbar contains all icons that described as following:

Item	List	Icon	descriptions
File management	New		Create a new file.
	Open		Open the file with saved test data.
	Save		Save the file with test data.
	Print		Print the test report.
	Export		Export the test report to Excel.
Operation	Connect		Connect the device.
	Release		Release the device.
	Add		Add a row to the datasheet for a new test.
	Delete		Delete the test record.
	Start		Start the measurement.
	Batch start		Start a batch measurement.
	Stop		Stop the measurement.
	Zero / Baseline		Set zero and do blank calibration or baseline calibration.
	Set wavelength		Set the operating wavelength.
	Read only		The file can be read only.
	Writable		The file is writable and can be modified.
	User privileges		Set user privileges.

Item	List	Icon	descriptions
Information viewing	Parameter settings		View the parameter settings.
	Tungsten lamp		Show the status (on/off) of tungsten lamp.
	Deuterium lamp		Show the status (on/off) of deuterium lamp.
	About		Software version information and product ID information.
	Message list		Report messages about running conditions of the software.
Spectrum management	Zoom in		Zoom in the spectrum.
	Reset		Reset the spectrum.
	Zoom out		Zoom out the spectrum.
	Move left		Make the spectrum move left.
	Move up		Make the spectrum move up.
	Move down		Make the spectrum move down.
	Move right		Make the spectrum move right.
	Graph settings		Set graphical parameters.
Display mode	Absorbance		Choose absorbance as displaying mode.
	Transmittance		Choose transmittance as displaying mode.
	Concentration		Choose concentration as displaying mode.

3.3.3 Pop-up menu of right click.

When right click at the data sheet in the measuring window, there will be a pop-up menu that includes most commonly used functions to speed up user's operation. The pop-up menu of right click is shown as following:

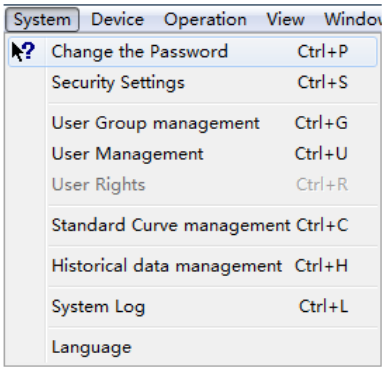


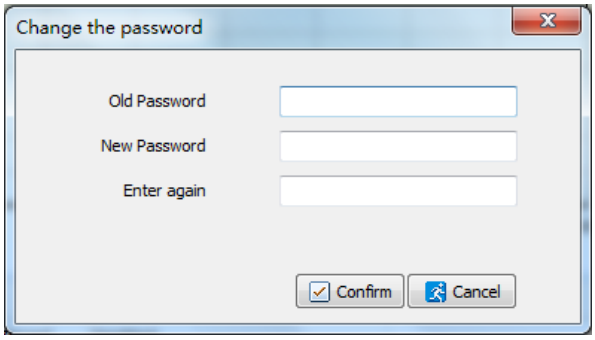
3.4 User and User Privileges

In the system of MetaSpec Pro analysis software, the management of user and user privileges is based on user groups. Create user groups first and set the user privileges. Then, create user data. The user privileges are determined by the user group that the user belongs to. There are two default user groups in the system, administrator group and guest group. The administrator group has the most privileges, and the default privileges can't be edited. Only the users in administrator group can enter following interfaces: Security Settings, User Group management, User Management and User Rights.

3.4.1 Password modification

Select the main menu [System] -> [Change the Password] and enter the password modification window. Input the old password and the new password, then input the new password again, and click the button Confirm to complete the modification. So that user can launch the system with the new password next time.

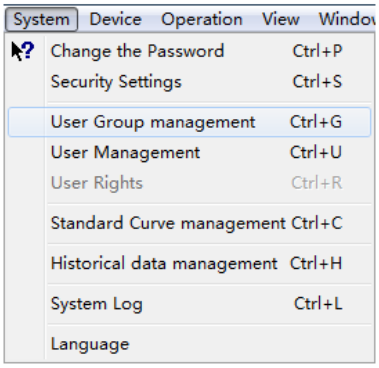


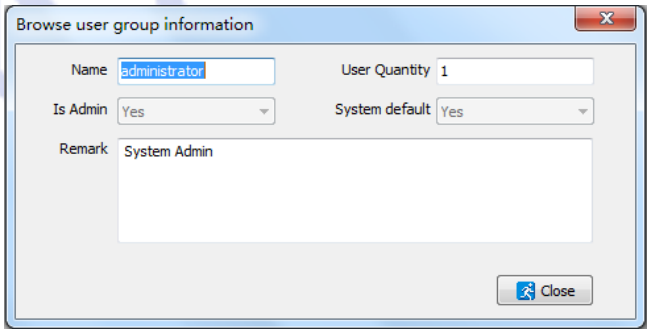


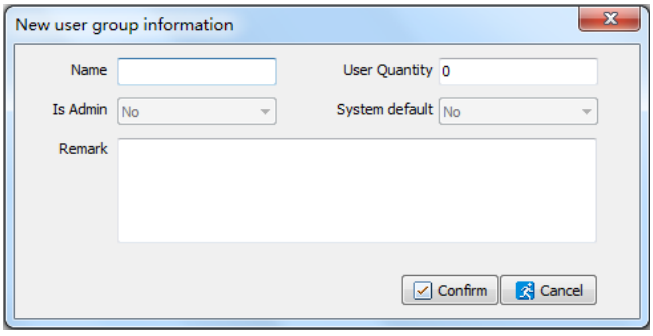
3.4.2 User group management

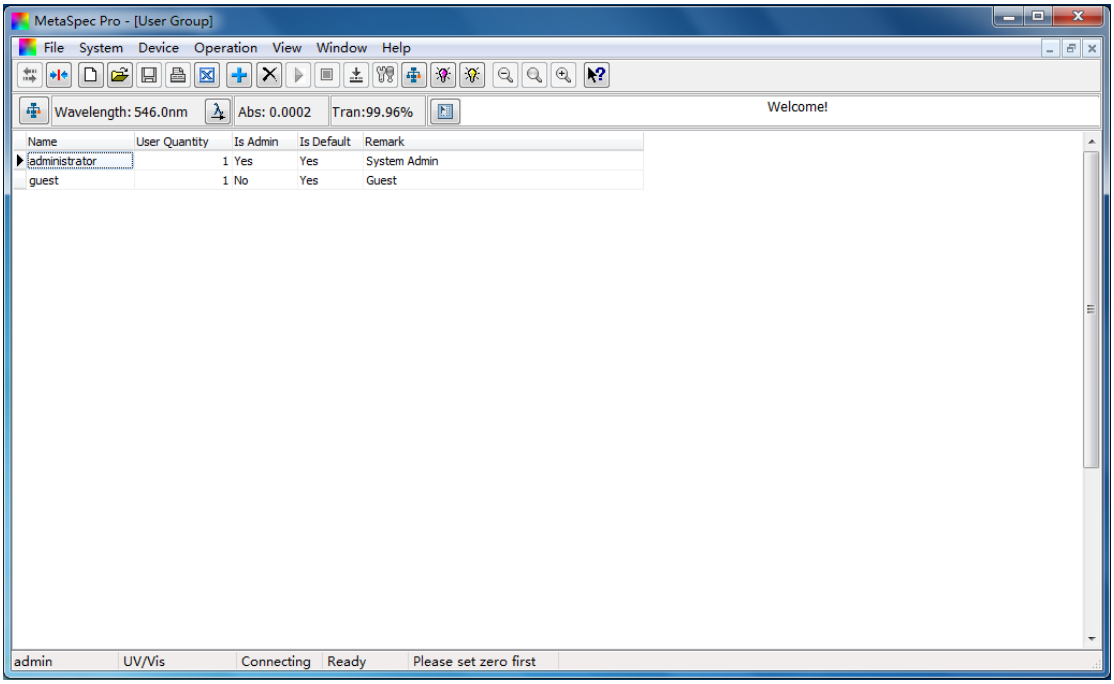
Select the main menu [System] -> [User Group management] and enter the user group management window. There are two default user groups in the system, administrator group and guest group. User can browse the information of each user group by double click when the cursor points to the corresponding group.

User can click the shortcut icon in the toolbar to create a new user group. Input the group name and user quantity, then click the button Confirm to save the new information.



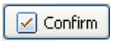


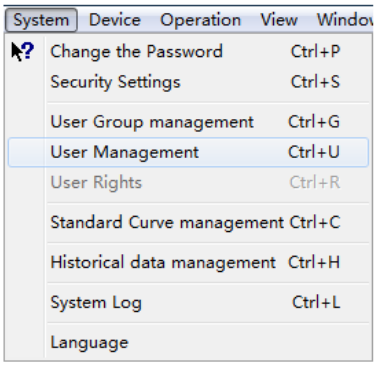


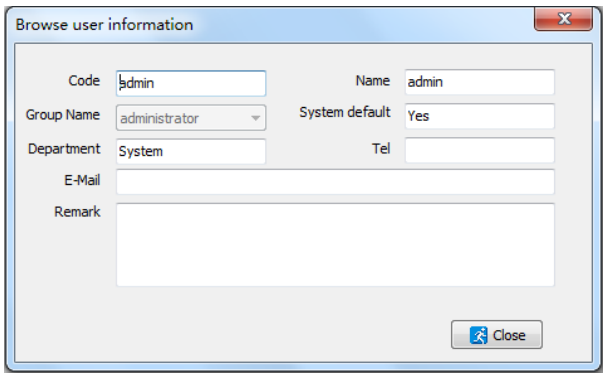


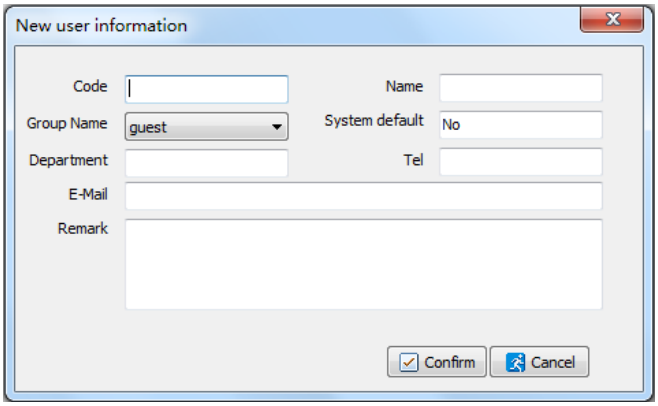
3.4.3 User management

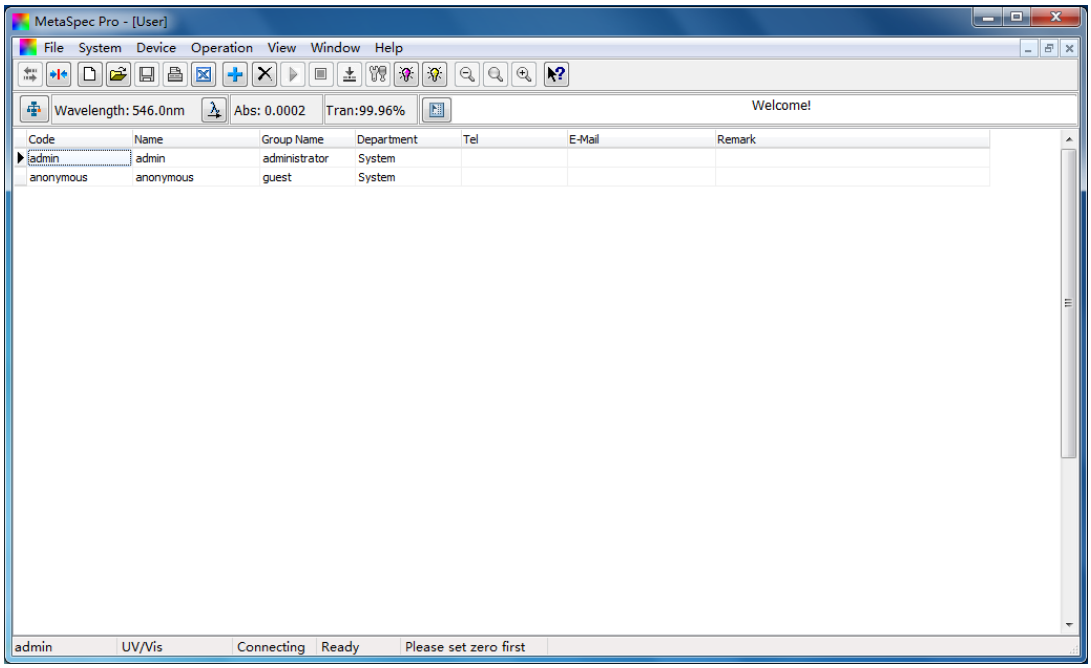
Select the main menu [System] -> [User Management] and enter the user management window. User can browse the information of each user by double click when the cursor points to the corresponding user.

User can click the shortcut icon  in the toolbar to create new user information, such as input Code, Name, Department, Tel (Telephone), E-mail, etc. Click the button  to save the information. User can login the system with the code as username and the new password a12345 so that the new information can be used on test report when printing.







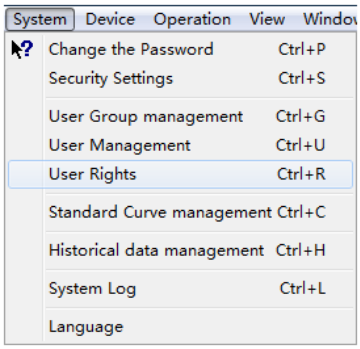


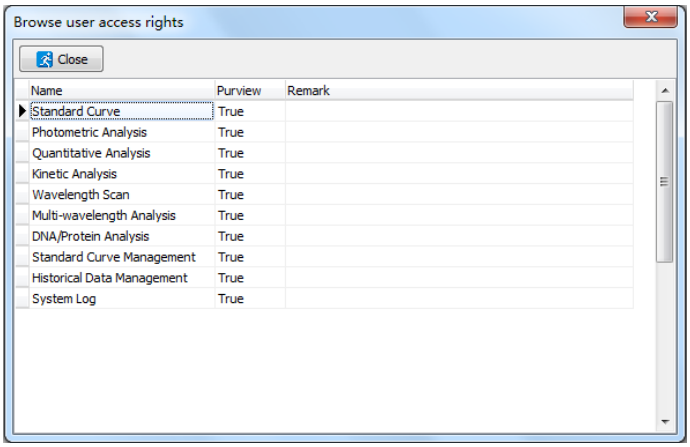
3.4.4 User rights

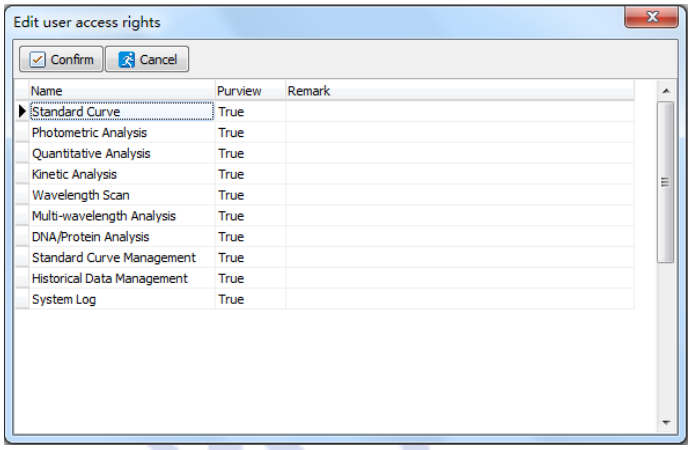
In the user group management interface, the further management of user rights is available. User can browse the user rights of administrator group without editing by clicking the shortcut icon  in the toolbar when the cursor points to administrator group. User can browse the user rights of guest group by clicking the shortcut icon  in the toolbar when the cursor points to guest group and edit the user access rights.

In the user access rights editing window, double click to change the status of user access right when the cursor points to the row that need editing, then click the button  to make sure the editing and exit the window.

It's also available to manage the user rights by selecting the main menu [System] -> [User Rights] when the cursor points to some group in the user group management interface.



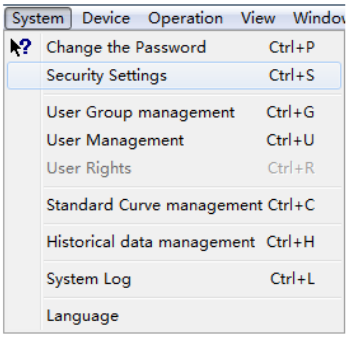


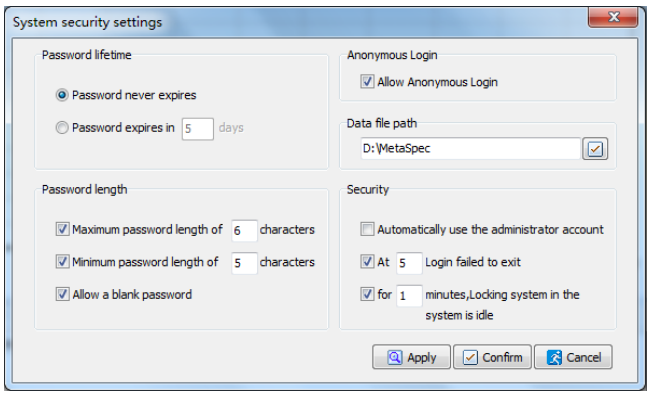


3.4.5 System security setting

Select the main menu [System] -> [Security Settings] and enter the security settings window. The system security such as Password lifetime, Password length, and Security can be set up.

The default path of the data file is “D:\MetaSpec”. The data will be saved in the folder of “DataFile” automatically. User also can save the file to another path.





3.5 Data processing

The MetaSpec Pro analysis software has a powerful function of Data processing, such as creating a new test file, Data saving, Data opening, Data printing, and exporting the data to Excel. The

graph also can be saved separately for subsequent processing.

All the spectra contain standard curve, time scanning curve and wavelength scanning curve can be zoomed in, zoomed out or reset freely. Moving left, right, up or down is also at will.

Graph settings, such as setting the coordinates range and 3D Effect is available.

For a wavelength scanning curve, peak and valley marking, and characteristic value marking are also available.

4 Instrument Control

This chapter will show users how to control the instrument with MetaSpec Pro analysis software, such as Connect/Release PC, set wavelength, set switching point of the light source, turn on/off Deuterium lamp and turn on/off Tungsten lamp.

4.1 Connect/Release PC

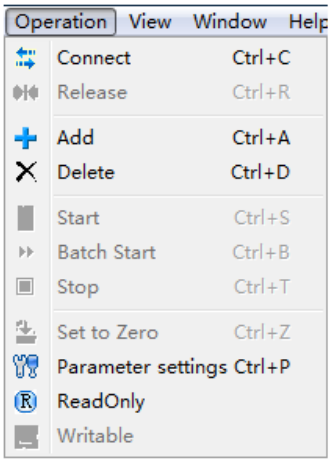
Connect PC: Before connecting, connect the instrument and PC with USB Cable， and insert the UV Key to user's computer. Switch on the power of the instrument. After Diagnostic program and Warm up procedure, it will go into the Main Menu.

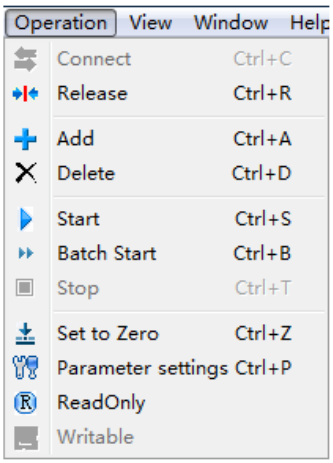
Fig. a Main menu of UV-5 series

Fig. b Main menu of UV-5100(B)

Then, run MetaSpec Pro analysis software, it will search the communication port, and connect the instrument automatically. Otherwise, click the shortcut icon [Connect] in the toolbar, or operate in the main menu [Operation] -> [Connect].

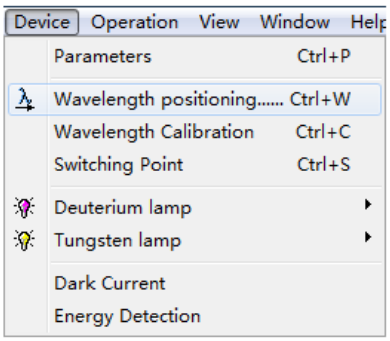
Release PC: Click the shortcut icon [Release] in the toolbar or operate in the main menu [Operation] -> [Release] to release the instrument.

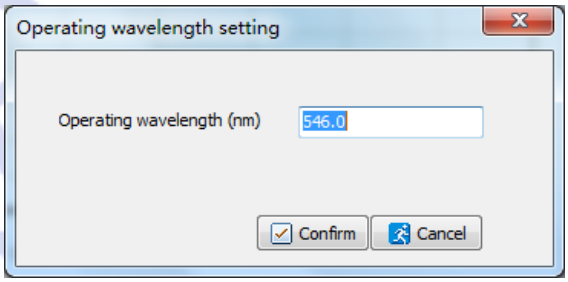


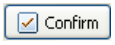


4.2 Set the wavelength.

Select the main menu [Device] -> [Wavelength positioning……] or click the shortcut icon  in the toolbar to set the operating wavelength, it will pop up a dialog.

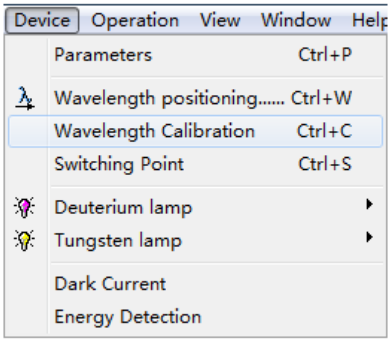


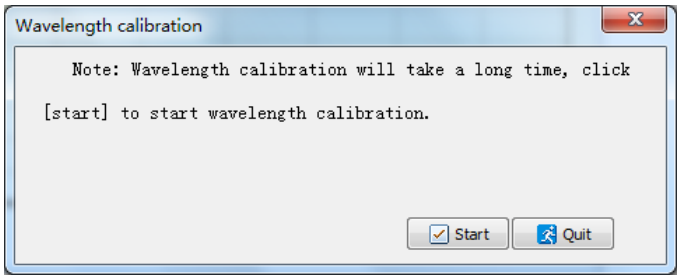


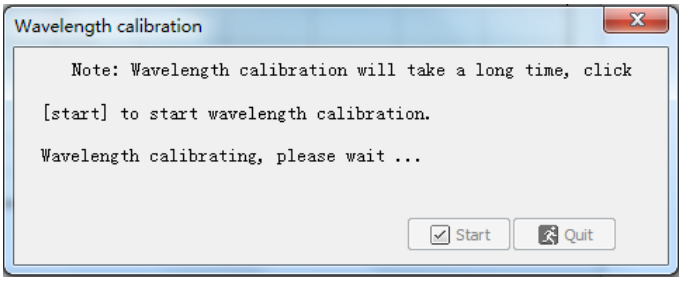
Input the wavelength value and click the button  to confirm the setting. Then, the device will go to the setting position, and it will be shown in the current display bar.

4.3 Calibrate the wavelength.

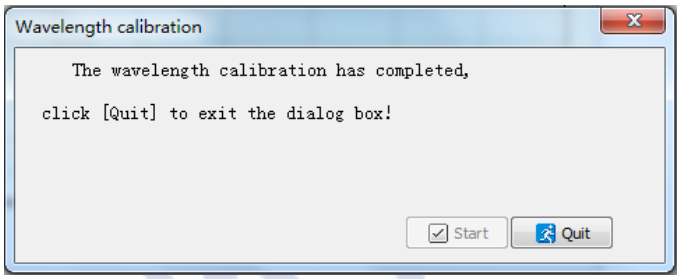
Select the main menu [Device] -> [Wavelength Calibration] to calibrate the wavelength. There will be a dialog. Click the button  to start the calibration, a further message will be given.







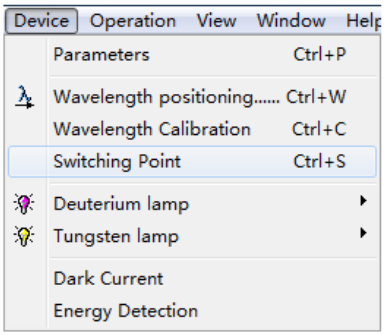
After the calibration has completed, another message will be given:

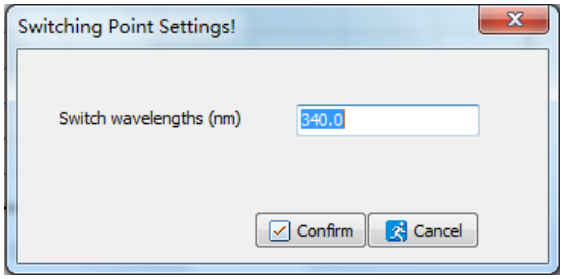


Click the button  to exit the dialog of wavelength calibration.

4.4 Set switching point of the light source.

Select the main menu [Device] -> [Switching Point] to set the switching point of the light source. The valid range is from 320nm to 360nm.

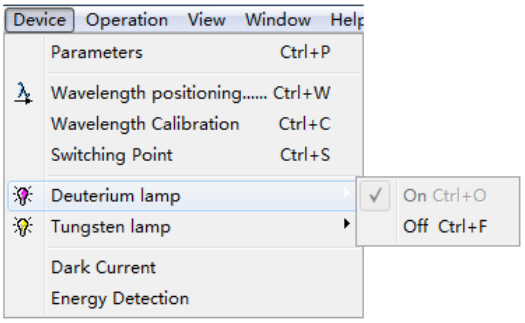


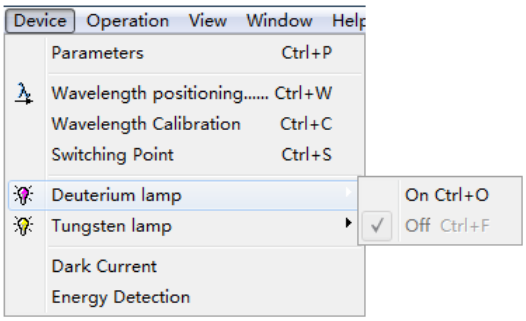


4.5 Turn on/off Deuterium lamp.

Select the main menu [Device] -> [Deuterium lamp] -> [Off] to turn off Deuterium lamp. Then, the status of Deuterium lamp will be shown as  in the toolbar. Otherwise, select the main menu

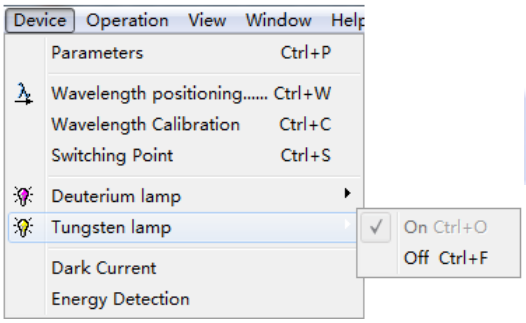
[Device] -> [Deuterium lamp] -> [On] to turn on Deuterium lamp. Then, the status of Deuterium lamp will be shown as  in the toolbar.

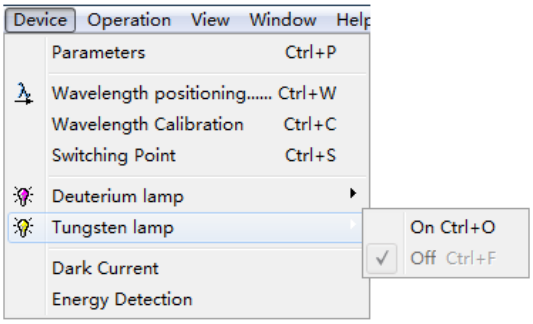




4.6 Turn on/off Tungsten lamp.

Select the main menu [Device] -> [Tungsten lamp] -> [Off] to turn off Tungsten lamp. Then, the status of Tungsten lamp will be shown as  in the toolbar. Otherwise, select the main menu [Device] -> [Tungsten lamp] -> [On] to turn on Tungsten lamp. Then, the status of Tungsten lamp will be shown as  in the toolbar.

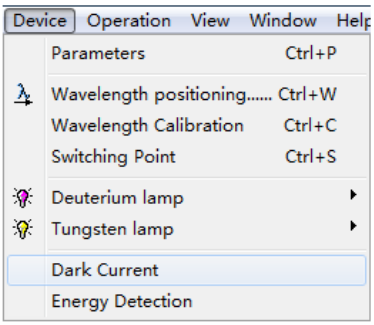


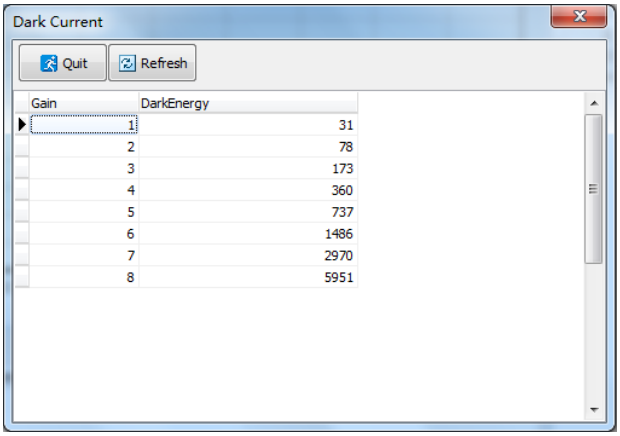


4.7 Dark Current Detection

Select the main menu [Device] -> [Dark Current] to detect the dark current. The system will read the dark energy at different gain automatically. User can read the data of dark current again by clicking the button 

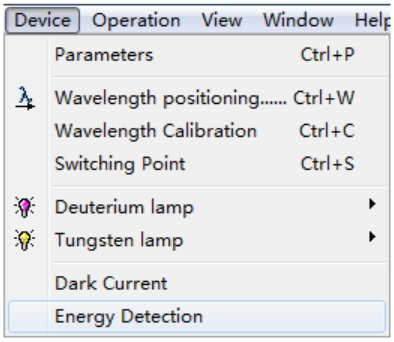
in the dark current displaying window.

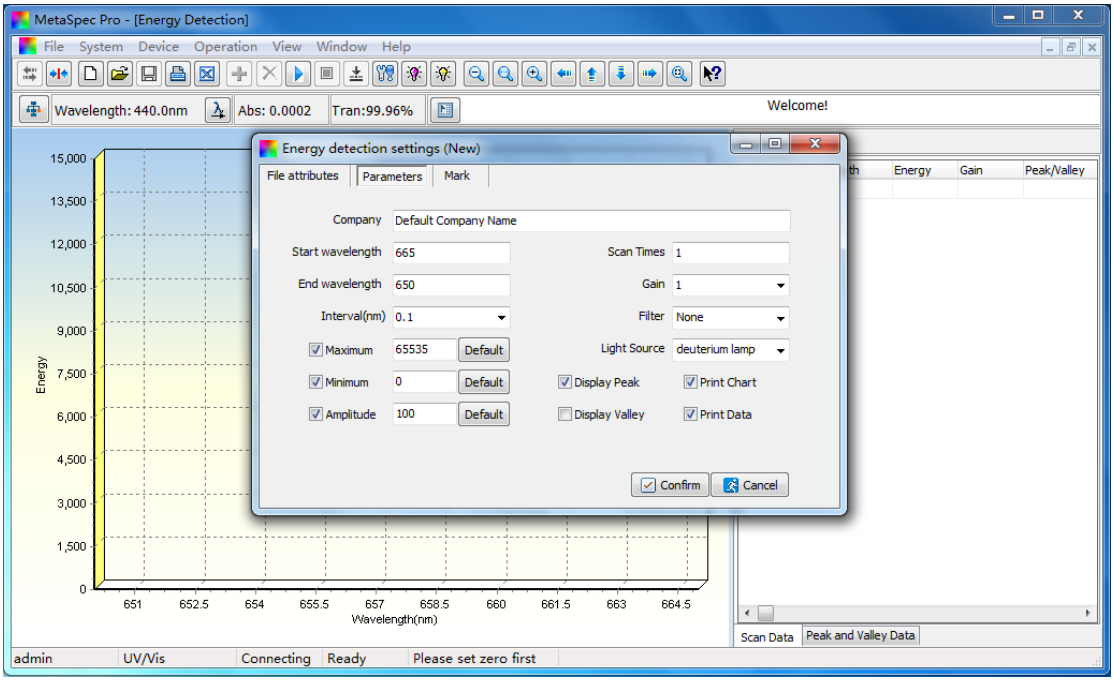




4.8 Energy Detection

User can do energy scanning by the function of energy detection. The self-testing of bandwidth also can be done. Select the main menu [Device] -> [Energy Detection] to enter the interface of energy detection. User can set scanning parameters such as Start wavelength, End wavelength, Interval and Scan times, and select suitable Light Source in the energy detection setting window.





5 Measurement Operation

This chapter will show users the main measurement functions of the software such as Standard Curve, Photometric Analysis, Quantitative Analysis, Kinetics Analysis, Wavelength Scan, Multi-wavelength Analysis and DNA/Protein Analysis.

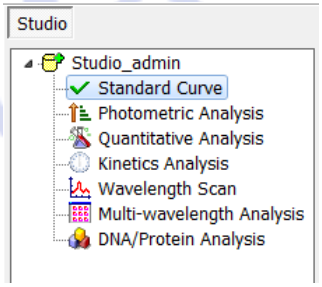
It contains all the procedures of each measurement function. The operations are also available through pop-up menu of right click in the data sheet after entering each measurement interface.

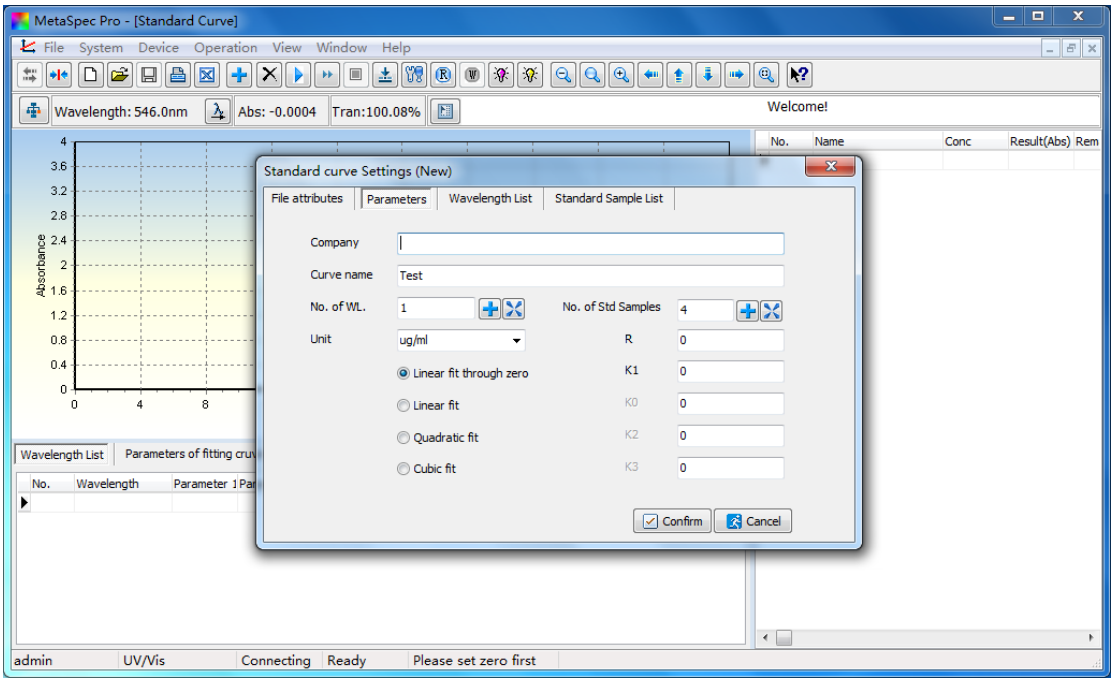
5.1 Standard Curve

A calibration curve will be established by measuring the absorbance of a group of standard solutions. Four fitting methods as following can be chosen to establish the standard curve: Linear fit through zero, Linear fit, Quadratic fit and Cubic fit.

5.1.1 Measurement for Standard Curve

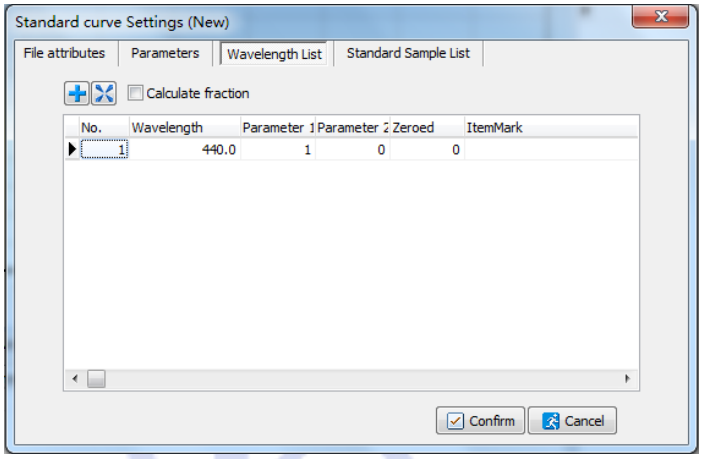
1. Select Standard Curve in the Studio and click the shortcut icon in the toolbar to set parameters and create a new standard curve file. User also can double click Standard Curve in the Studio directly to create a new file. There will be a child window for standard curve settings.



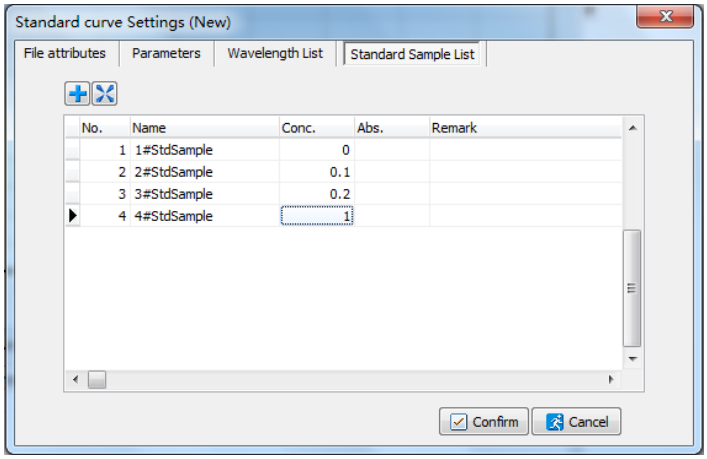


2. Set parameters such as choosing Fitting method and Unit, setting Number of wavelengths and Number of standard samples.

3. Set up the wavelength(s) and calculation parameters in the window of Wavelength list: Click the setting bar and input the wavelength value when the cursor points to it, and press Enter key to confirm the setting. Set the calculation parameters with the same operations. User can click the shortcut icon  and set up more wavelengths, the wavelength also can be deleted by clicking the shortcut icon  .



4. Set up the concentration of standard samples in the window of Standard sample list: Click the setting bar and input the values of standard concentration when the cursor points to Conc. Column, and press Enter key to confirm each setting. User can click the shortcut icon  and set up more standard samples, the standard samples also can be deleted by clicking the shortcut icon  .



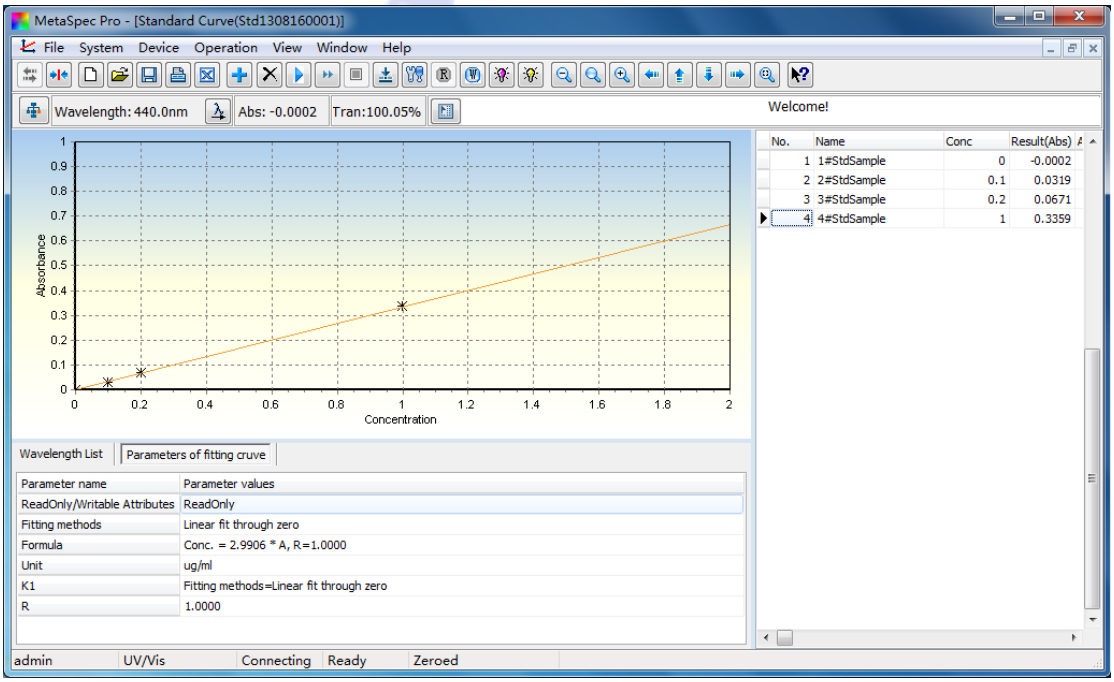
Then, confirm the settings by clicking the button  in the child window.

5. Put the Reference solution of standard samples into the light path, click the shortcut icon in the toolbar, the device will go to the operating wavelength first, then the system will calibrate the blank and set to 0.000Abs/100.0%T.

6. Measuring with single wavelength: Put one Standard sample solution into the light path and click the shortcut icon in the toolbar to start the measurement when the cursor points to the corresponding concentration. The absorbance (Abs) will be recorded in Abs. column. Measure other Standard sample solutions with the same operations.

   Click the shortcut icon in the toolbar to start a batch measurement if measuring with several wavelengths.

   User can view the standard curve in graphics area after all standard samples have been measured. And the parameters of fitting curve containing correlation coefficient will be shown in the window below the graphics area.



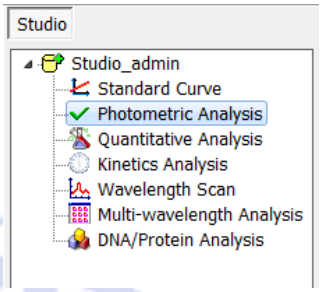
7. After the measurement is completed, click the shortcut icon in the toolbar to save the test data. The file will be saved in ". Std" format. Click the shortcut icon in the toolbar to print the test report. The data also can be exported to Excel by clicking the shortcut icon in the toolbar.

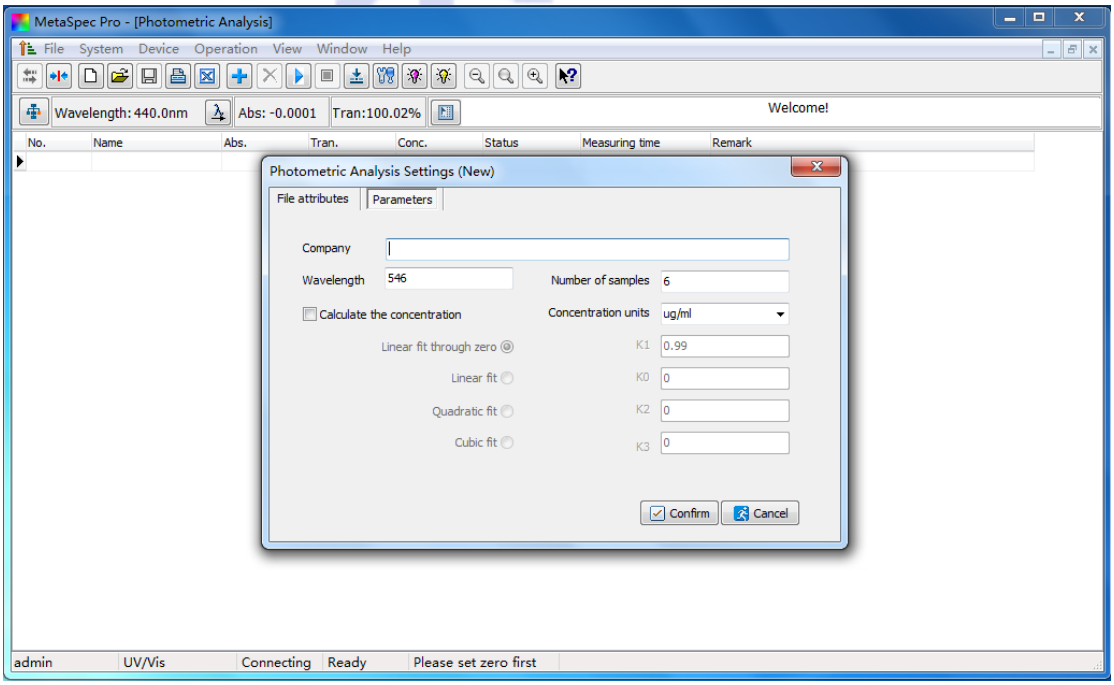
5.2 Photometric Analysis

The values of Absorbance (Abs) and Transmittance (T) are available with this function. The value of concentration is also available by selecting the option of “Calculate the concentration”.

5.2.1 Measurement for Photometric Analysis

1. Select Photometric Analysis in the Studio and click the shortcut icon  in the toolbar to set parameters and create a new photometric analysis file. User also can double click Photometric Analysis in the Studio directly to create a new file. There will be a child window for photometric analysis settings.





2. Set parameters such as Wavelength, Number of samples and concentration calculating factors if choosing “Calculate the concentration”. Then, confirm the settings by clicking the button  in the child window.

3. Put the Reference solution into the light path, click the shortcut icon  in the toolbar, the device will go to the operating wavelength first, then the system will calibrate the blank and

set to 0.000Abs/100.0%T.

4. Put the Sample solution into the light path, click the shortcut icon  in the toolbar to start the measurement. The result containing Absorbance (Abs.) and Transmittance (Tran.) will be displayed in the data sheet. If the option of "Calculate the concentration" was chosen, the Concentration (Conc.) result will be displayed together. User can click the shortcut icon  in the toolbar and measure more samples, the sample record also can be deleted by clicking the shortcut icon  in the toolbar.

5. After the measurement is completed, click the shortcut icon  in the toolbar to save the test data. The file will be saved in ". Pht" format. Click the shortcut icon  in the toolbar to print the test report. The data also can be exported to Excel by clicking the shortcut icon  in the toolbar.

5.3 Quantitative Analysis

Two methods can be chosen for quantitative analysis: Standard Curve method and Coefficient method.

1) Standard Curve method

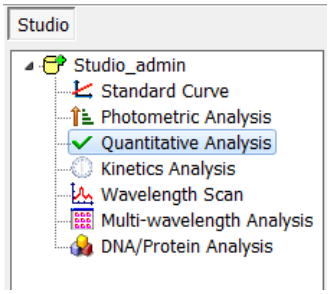
About Standard curve, please refer to chapter 5.1. User can load the standard curve that has already been established and saved before, and measure samples with the same parameters.

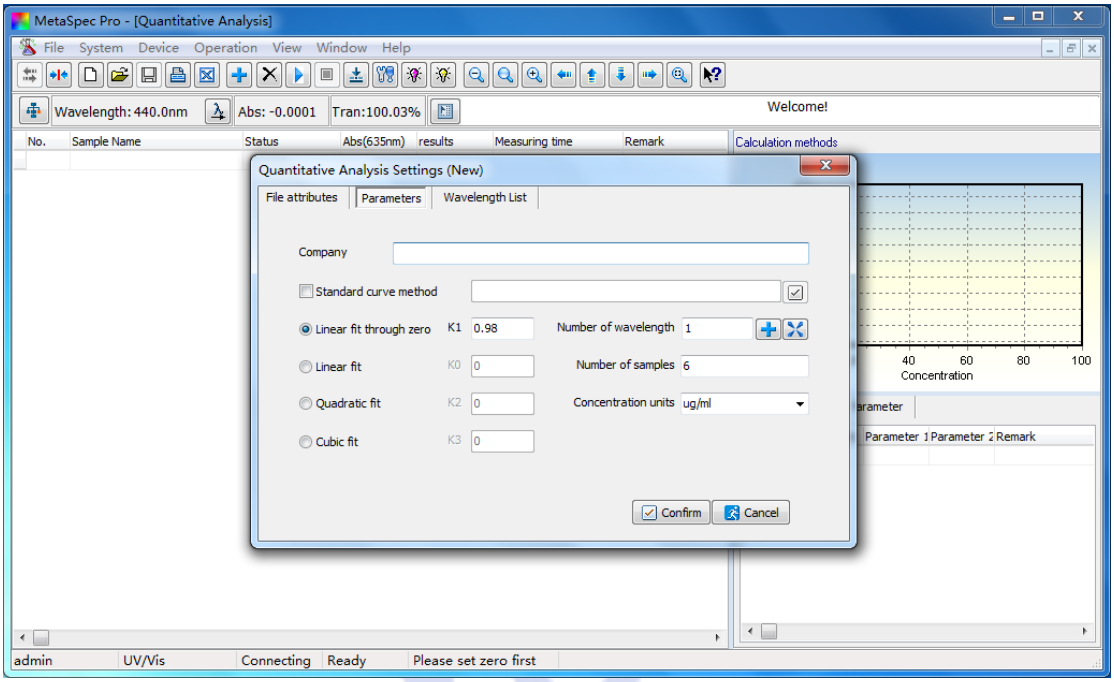
2) Coefficient method

Coefficient method is a simple application of standard curve. Just choose the suitable calculation method and input the coefficient(s) of the equation in the parameter setting window, then begin the test.

5.3.1 Measurement for Quantitative Analysis

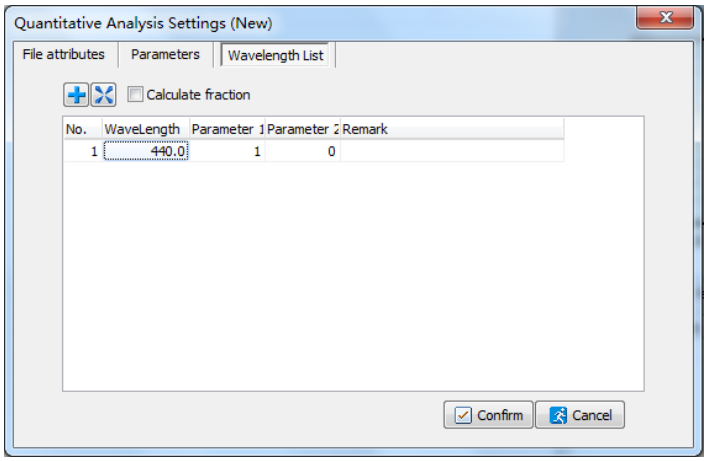
1. Select Quantitative Analysis in the Studio and click the shortcut icon  in the toolbar to set parameters and create a new quantitative analysis file. User also can double click Quantitative Analysis in the Studio directly to create a new file. There will be a child window for quantitative analysis settings.





2. In the child window, set parameters such as choosing Calculation method, number of wavelengths, setting Wavelength(s), Number of samples and selecting suitable Concentration units. Load the standard curve by clicking the button  under the choice box if Standard curve method was chosen as the calculation method. Otherwise, select the fitting method and set the factors.

3. Set up the wavelength(s) and calculation parameters in the window of Wavelength list: Click the setting bar and input the wavelength value when the cursor points to it, and press Enter key to confirm the setting. Set the calculation parameters with the same operations. User can click the shortcut icon  and set up more wavelengths, the wavelength also can be deleted by clicking the shortcut icon  .

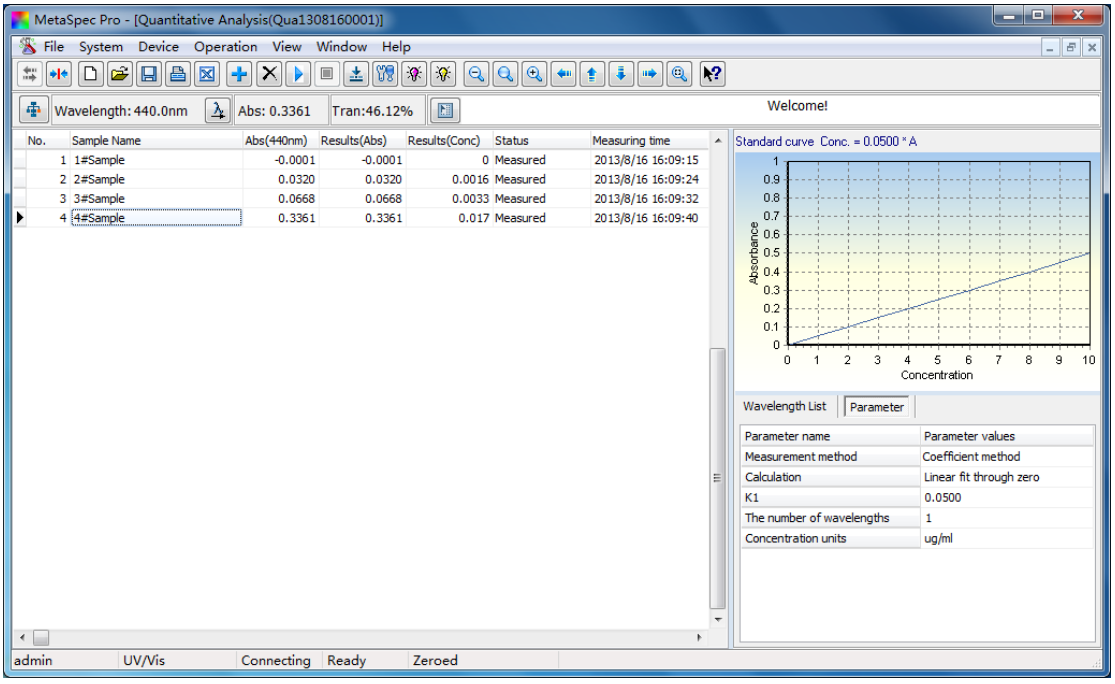


Then, confirm the settings by clicking the button Confirm in the child window.

Note: When Standard curve method was chosen, the parameter(s) of wavelength(s) has also been saved with the standard curve. So, user needn't set the wavelength(s) anymore.

4. Put the Reference solution into the light path, click the shortcut icon in the toolbar, the system will calibrate the blank and set to 0.000Abs/100.0%T at the operating wavelength.

5. Put the Sample solution into the light path and click the shortcut icon in the toolbar to start the measurement. The result containing Absorbance (Abs.) and Concentration (Conc.) will be displayed in the data sheet.



6. After the measurement is completed, click the shortcut icon in the toolbar to save the test

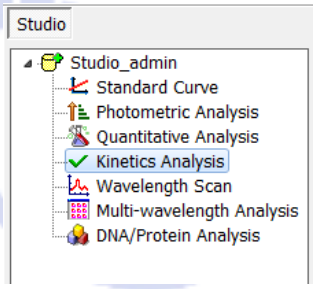
data. The file will be saved in “Qua” format. Click the shortcut icon in the toolbar to print the test report. The data also can be exported to Excel by clicking the shortcut icon in the toolbar.

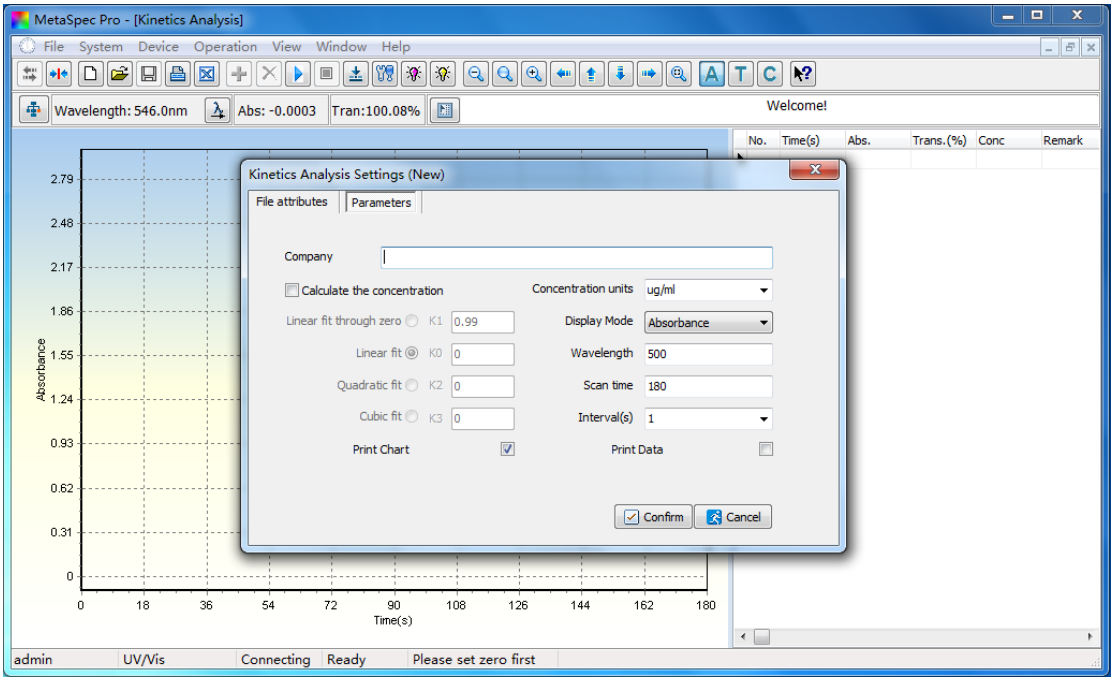
5.4 Kinetics Analysis

For Kinetics Analysis, user can view the variation tendency of a sample at a specific wavelength in a certain time range. Just do time scan with absorbance or transmittance mode. Time scan with concentration mode is also available by selecting the option of “Calculate the concentration”.

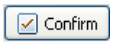
5.4.1 Measurement for Kinetics Analysis

1. Select Kinetics Analysis in the Studio and click the shortcut icon in the toolbar to set parameters and create a new kinetics analysis file. User also can double click Kinetics Analysis in the Studio directly to create a new file. There will be a child window for kinetics analysis settings.





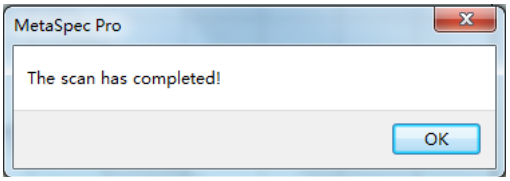
2. Set parameters such as Wavelength, Number of scanning, Interval(s), and concentration calculation factors if choosing “Calculate the concentration”. Select the Display mode such as

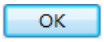
Absorbance, Transmittance and Concentration. Then, confirm the settings by clicking the button 

in the child window.

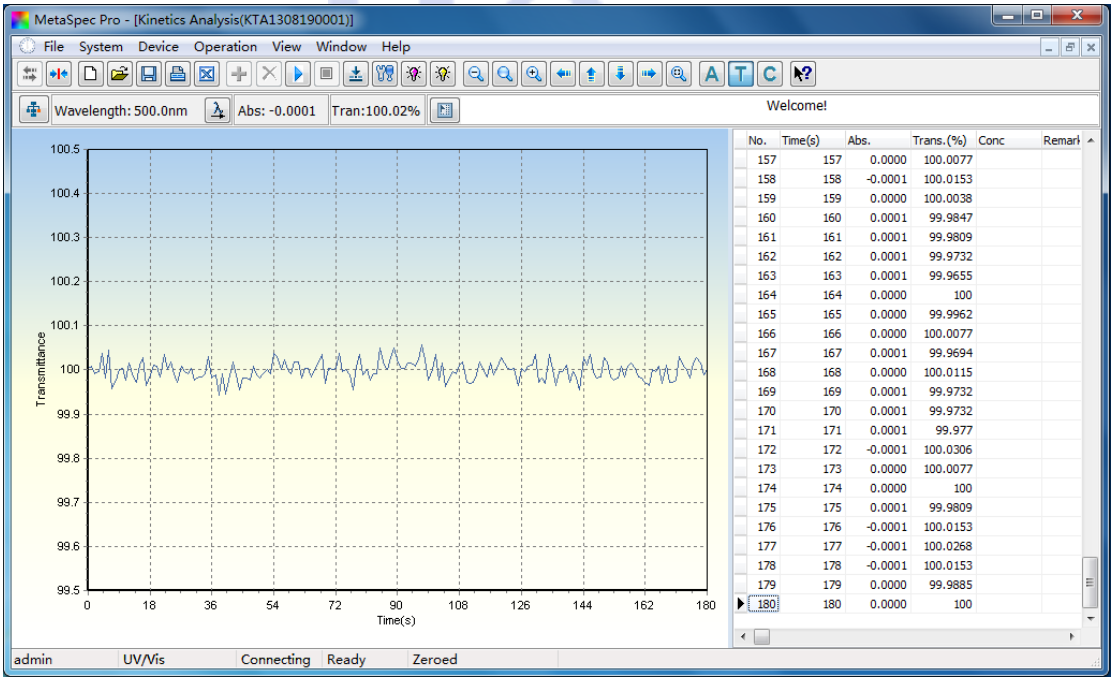
3. Put the Reference solution into the light path, click the shortcut icon  in the toolbar, the system will calibrate the blank and set to 0.000Abs/100.0%T at the operating wavelength.

4. Put the Sample solution into the light path and click the shortcut icon  in the toolbar to start time scanning. There will be a real-time spectrum with chosen display mode in the graphics area and data containing Absorbance (Abs.) and Transmittance (Tran.) in the data sheet. When the scan is completed, there will be a dialog as following:



Click the button 

to exit the dialog. User can view the scanning result. If the option of “Calculate the concentration” was chosen, the Concentration (Conc.) result will also be displayed in the data sheet.



5. After the measurement is completed, click the shortcut icon  in the toolbar to save the test data. The file will be saved in “KAT” format. Click the shortcut icon  in the toolbar to print the test report. The data also can be exported to Excel by clicking the shortcut icon  in the toolbar.

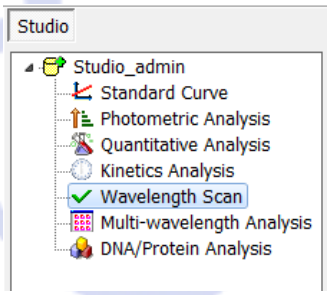
5.5 Wavelength Scan

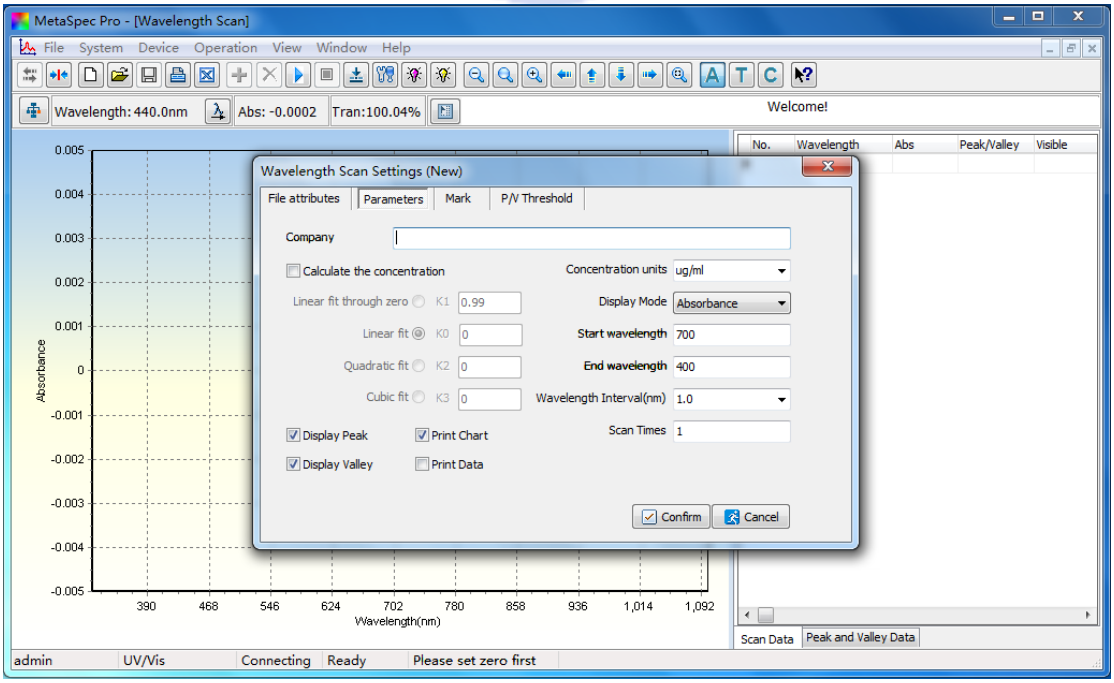
A curve of absorbance or transmittance in a certain wavelength range is available with wavelength scan. A curve of concentration is also available by selecting the option of “Calculate the concentration”. User can do qualitative analysis such as to determine components of a simple sample by this function.

It provides users with more convenience. For example, peak(s) and valley(s) can be marked in a characteristic spectrum. Several spectrum curves can be scanned and shown in the same graph. User also can view 3D spectrogram if 3D setting is chosen as a graphics parameter.

5.5.1 Measurement for Wavelength Scan

1. Select Wavelength Scan in the Studio and click the shortcut icon in the toolbar to set parameters and create a new wavelength scan file. User also can double click Wavelength Scan in the Studio directly to create a new file. There will be a child window for wavelength scan settings.

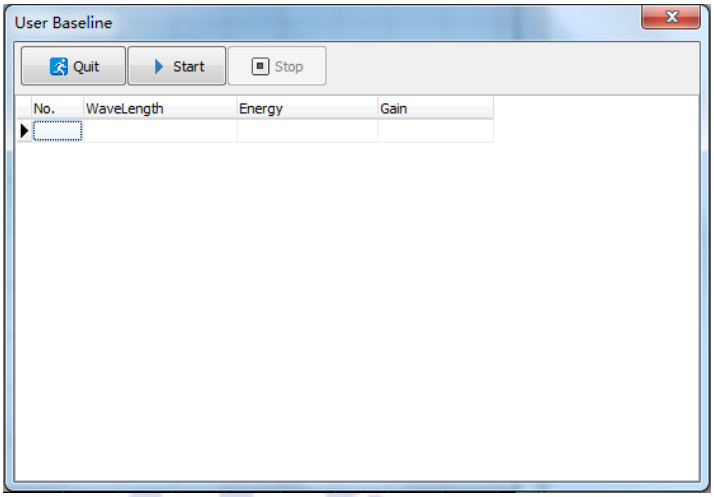




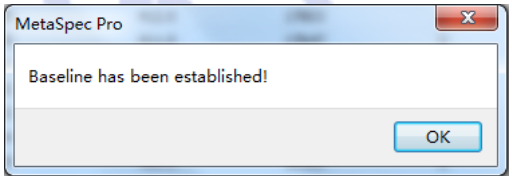
2. Set parameters such as Start wavelength, End wavelength, Wavelength Interval(nm), Scan Times and concentration calculating factors if choosing “Calculate the concentration”, select

the Display mode such as Absorbance, Transmittance and Concentration. Then, confirm the settings by clicking the button Confirm in the child window.

3. Put the Reference solution into the light path, click the shortcut icon in the toolbar, it will pop up a dialog, click the button Start, the system will calibrate the baseline in the setting wavelength range.

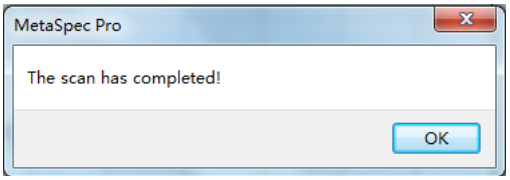


After the baseline calibration is completed, it will show a dialog as following:

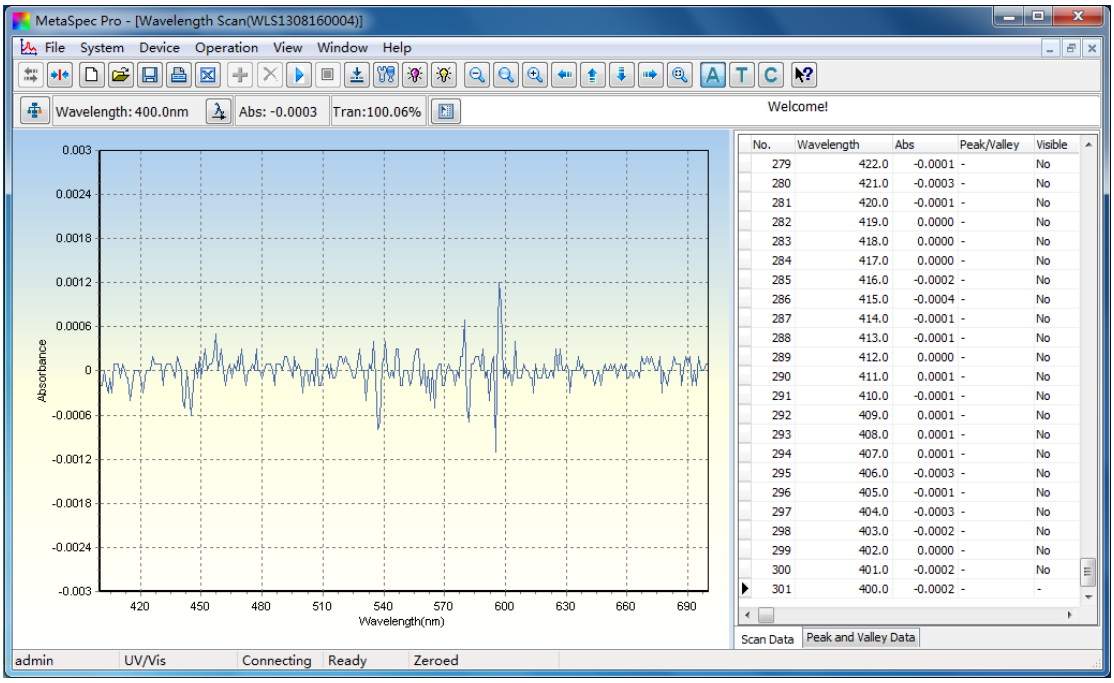


Click the button OK to exit the dialog.

4. Put the Sample solution into the light path, click the shortcut icon in the toolbar to start wavelength scanning. There will be a real-time spectrum with chosen display mode in the graphics area and data containing Wavelength, and Absorbance (Abs.) or Transmittance (Tran.) in the data sheet. When the scan is completed, there will be a dialog as following:



Click the button OK to exit the dialog. User can view the scanning result. If the option of “Calculate the concentration” was chosen, the Concentration (Conc.) result also can be displayed in the data sheet.



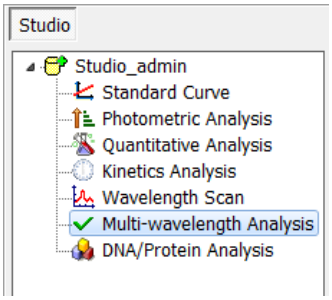
5. After the measurement is completed, click the shortcut icon in the toolbar to save the test data. The file will be saved in "WLS" format. Click the shortcut icon in the toolbar to print the test report. The data also can be exported to Excel by clicking the shortcut icon in the toolbar.

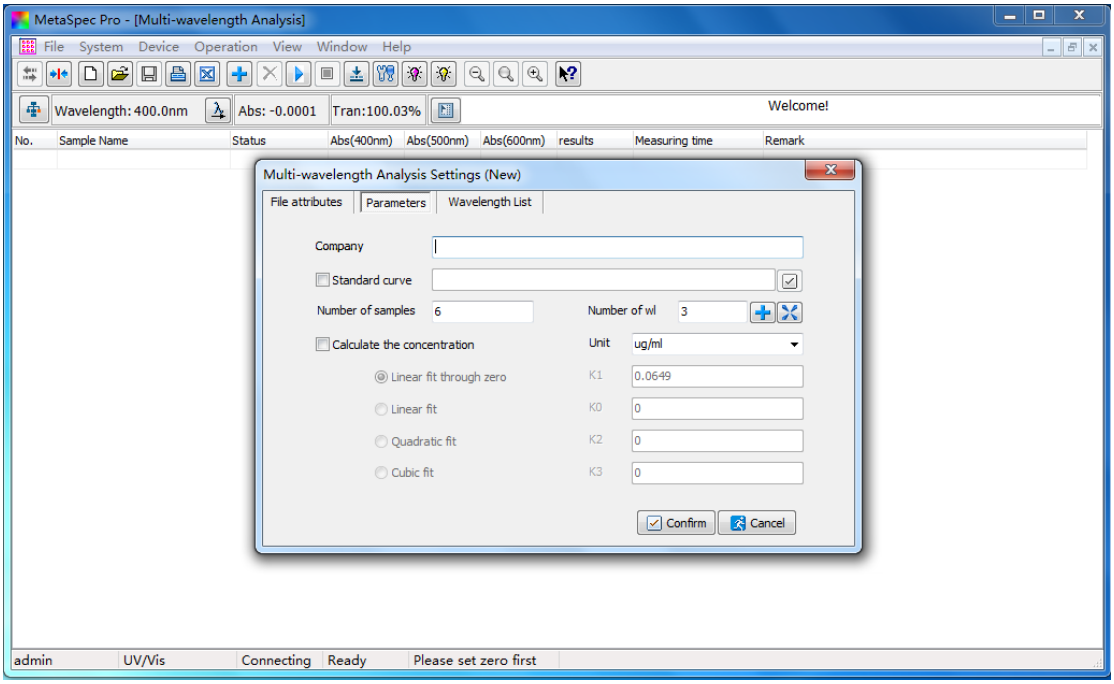
5.6 Multi-wavelength Analysis

Absorbance at several wavelengths can be quickly obtained with multi-wavelength Analysis, and the Result (Abs.) will be calculated at the same time. User also can-do quantitative analysis with this function.

5.6.1 Measurement for Multi-wavelength Analysis

1. Select Multi-wavelength Analysis in the Studio and click the shortcut icon in the toolbar to set parameters and create a new multi-wavelength analysis file. User also can double click Multi-wavelength Analysis in the Studio directly to create a new file. There will be a child window for multi-wavelength analysis settings.

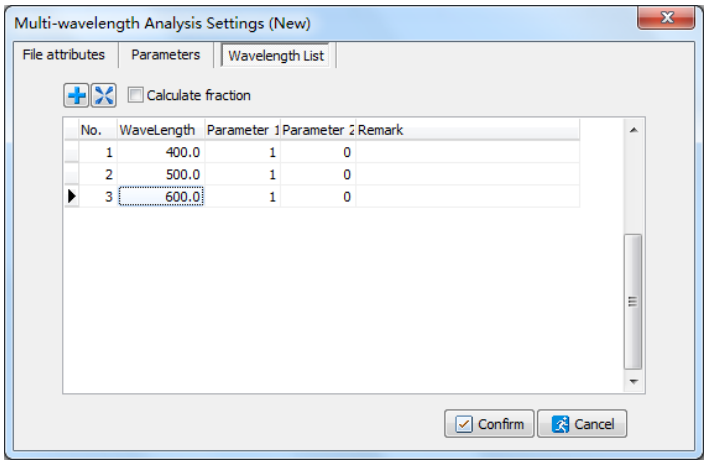




2. In the child window, set parameters such as Number of wavelength and Number of samples.

   If quantitative analysis with this function will be done, the option of "Calculate the concentration" should be chosen. Load the standard curve by clicking the button  under the choice box when Standard curve method was chosen as the calculation method. If Coefficient was chosen as the calculation method, select the fitting method and set the factors.

3. Set up the wavelength(s) and calculation parameters in the window of Wavelength list: Click the setting bar and input the wavelength value when the cursor points to it, and press Enter key to confirm the setting. Set the calculation parameters with the same operations. User can click the shortcut icon  and set up more wavelengths, the wavelength also can be deleted by clicking the shortcut icon  .



Then, confirm the settings by clicking the button  in the child window.

Note: When doing quantitative analysis with the function of Multi-wavelength Analysis, and Standard curve method was chosen, the parameter(s) of wavelength(s) has also been saved with the standard curve. So, user needn't set the wavelength(s) anymore.

4. Put the Reference solution into the light path, click the shortcut icon  in the toolbar, the system will calibrate the blank and set to 0.000Abs/100.0%T at each setting wavelength.

5. Put the Sample solution into the light path, click the shortcut icon  in the toolbar to start the measurement. Absorbance (Abs.) at each wavelength and the Result (Abs) will be displayed in the data sheet. If the option of "Calculate the concentration" was chosen, the Result (Conc.) will be displayed together. User can click the shortcut icon  in the toolbar and measure more samples, the sample record also can be deleted by clicking the shortcut icon  in the toolbar.

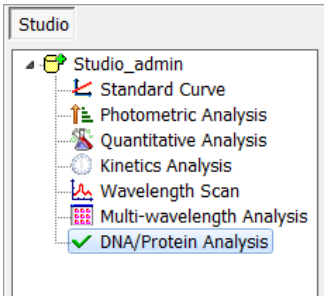
6. After the measurement is completed, click the shortcut icon  in the toolbar to save the test data. The file will be saved in "MWL" format. Click the shortcut icon  in the toolbar to print the test report. The data also can be exported to Excel by clicking the shortcut icon  in the toolbar.

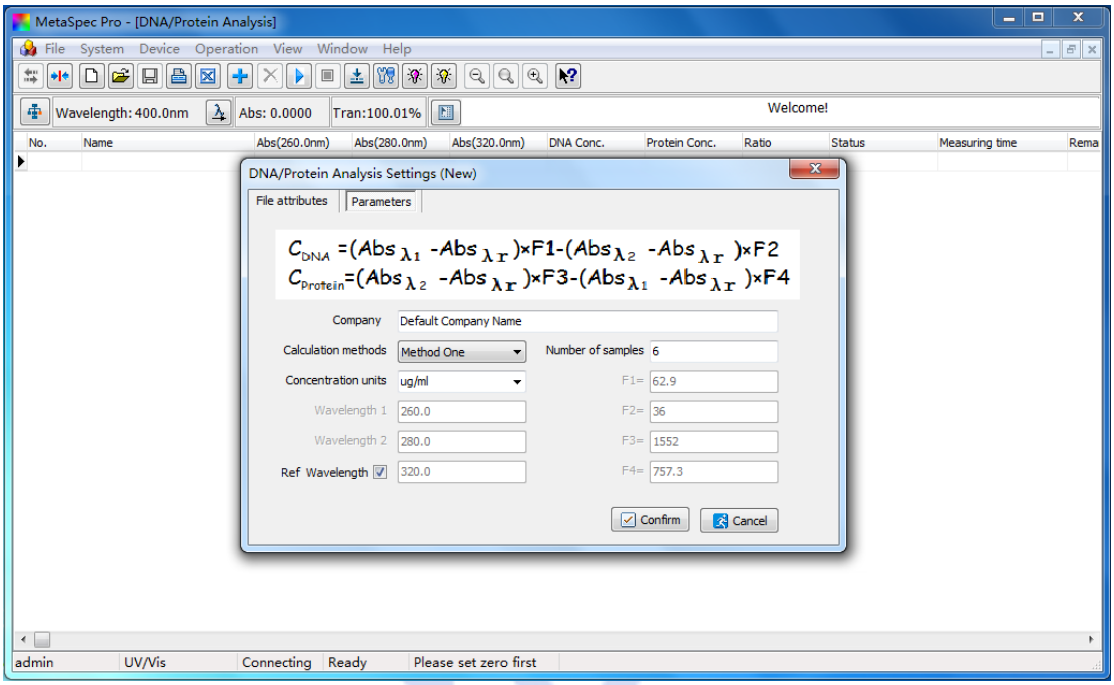
5.7 DNA/Protein Analysis

Quantitative analysis and purity test for DNA and protein is available with DNA/Protein Analysis. There are three Calculation methods for choosing: Method one, Method two, and Custom method. The concentration of DNA and protein and the ratio result depend on the chosen calculation method.

5.7.1 Measurement for DNA/Protein Analysis

1. Select DNA/Protein Analysis in the Studio and click the shortcut icon  in the toolbar to set parameters and create a new DNA/Protein analysis file. User also can double click DNA/Protein Analysis in the Studio directly to create a new file. There will be a child window for DNA/Protein analysis settings.





2. Select the Calculation methods, Concentration units and choose whether calibrating with “Ref Wavelength” or not. Input the wavelengths and calculation factors if the Custom method is chosen. Then, set the Number of samples and confirm the settings by clicking  button in the child window.

3. Put the Reference solution into the light path, click the shortcut icon  in the toolbar, the system will calibrate the blank and set to 0.000Abs/100.0%T at each setting wavelength.

4. Put the Sample solution into the light path, click the shortcut icon  in the toolbar to start the measurement. Absorbance (Abs.) at each wavelength, the concentration of DNA (DNA Conc.), the concentration of protein (Protein Conc.), and the ratio will be displayed in the data sheet. User can click the shortcut icon  in the toolbar and measure more samples, the sample record also can be deleted by clicking the shortcut icon  in the toolbar.

5. After the measurement is completed, click the shortcut icon  in the toolbar to save the test

data. The file will be saved in “DNA” format. Click the shortcut icon  in the toolbar to print the test report. The data also can be exported to Excel by clicking the shortcut icon  in the toolbar.