Spectrometer

Visible Light Spectrometer

V4.7

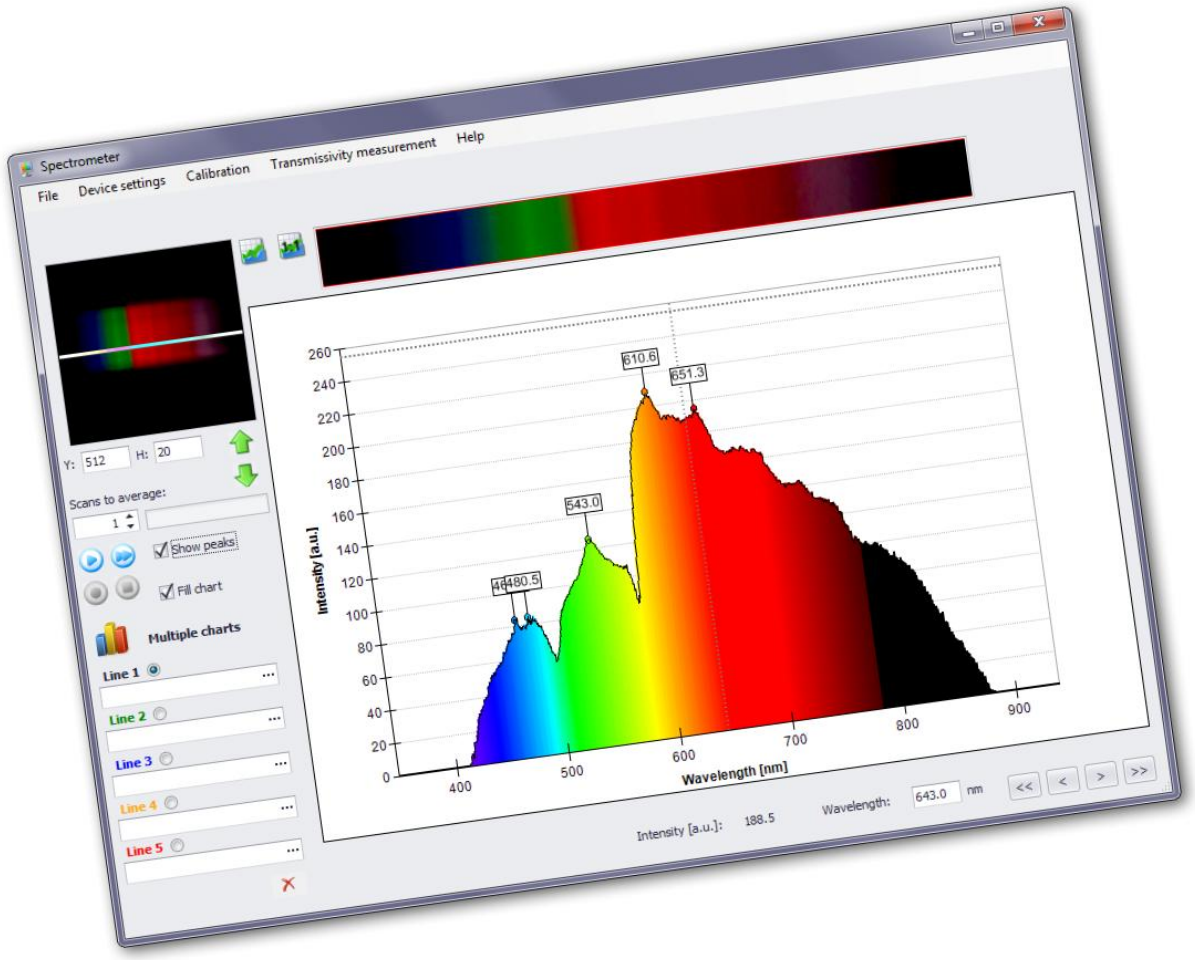


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Package Contents

Spectrometer package contains the following items:

- Documentation
- Calibration report (separate paper or label on the Spectrometer device)
- Installation CD
- The Spectrometer device
- Fiber optics cable

If any of the above items is damaged or missing, contact your retailer.



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Manual Driver and Application installation

Application installation contains also driver installation, so you don't need to install the driver separately. If you want to install all components, skip this chapter and go directly to 'Application Installation' chapter.

To install the driver of Spectrometer device separately, follow the instructions below:

1. Turn on the computer.
2. Insert the provided software CD into CD-ROM drive.
3. Go to the 'customer/Camera/CameraDriver' folder and run the exe file.
4. Follow the on-screen instructions to continue the driver installation.
5. Click 'Finish' to complete the installation and restart the system if needed.
6. Connect the Spectrometer device to the USB port (if not already connected).
7. Once the Spectrometer device is connected to the computer, the system will detect the new USB device and configure the device automatically.

To install just the Spectrometer application (driver already installed/software upgrade), follow the instructions below:

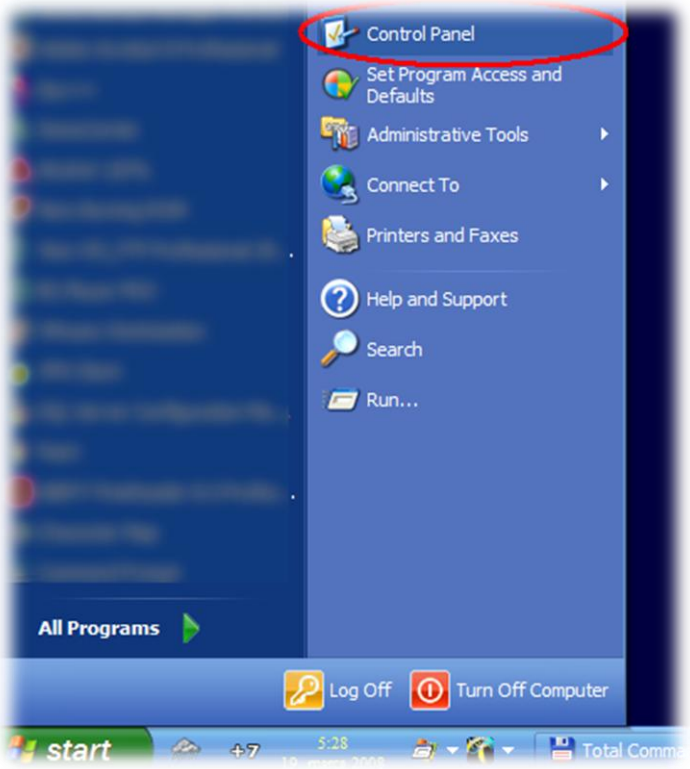
1. Turn on the computer.
2. Insert the provided software CD into CD-ROM drive.
3. Go to the 'customer' folder and run the setup.exe.
4. Follow the on-screen instructions to continue the application installation.
5. Connect the Spectrometer device to the USB port (if not already connected).
6. Once the Spectrometer device is connected to the computer, the system will detect the new USB device and configure the device automatically.

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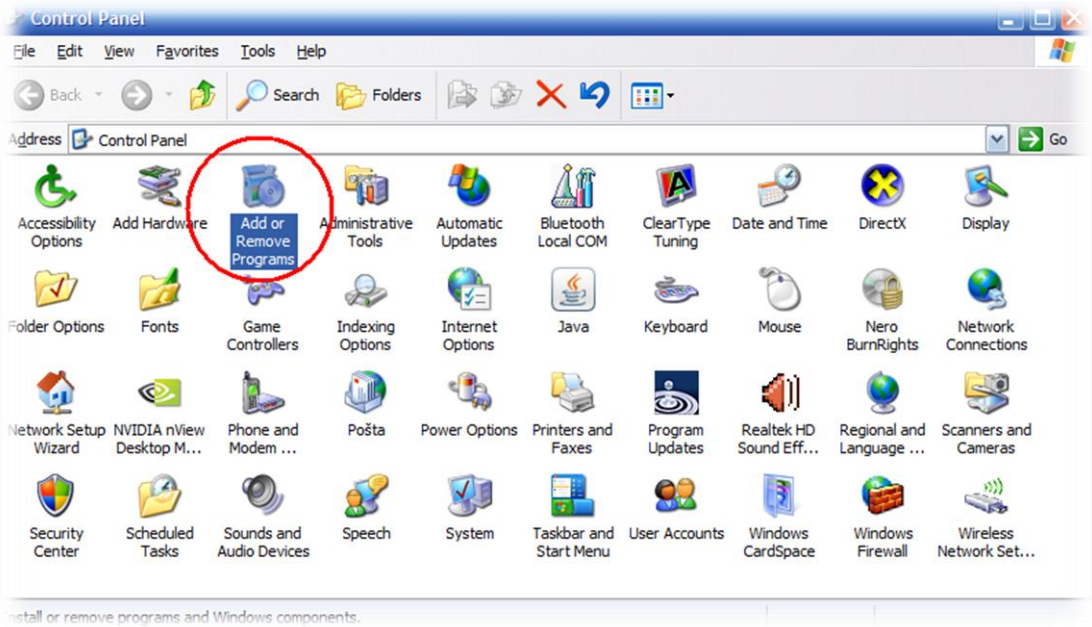
Manual Application Installation

1. Before installing the Spectrometer, **uninstall** any previously installed versions of the application:

- Go to the Control Panel

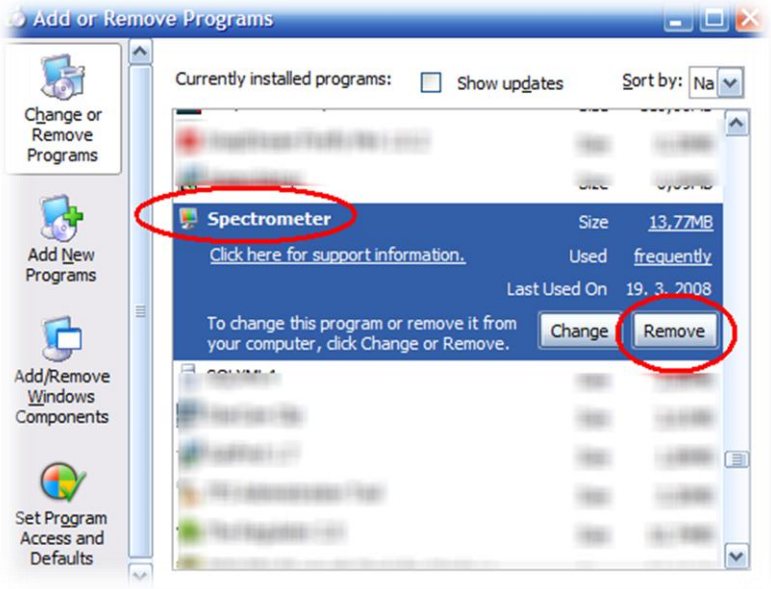


- Double click on the 'Add or Remove Programs'



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- Find the Spectrometer application and click ‘Remove’



2. Run ‘autorun.exe’ from the root folder on the CD and follow the instruction.

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First Start of the Application

After the installation process is completed, the application is ready to operate with included spectrometer device. To start the application click the Spectrometer icon on your desktop

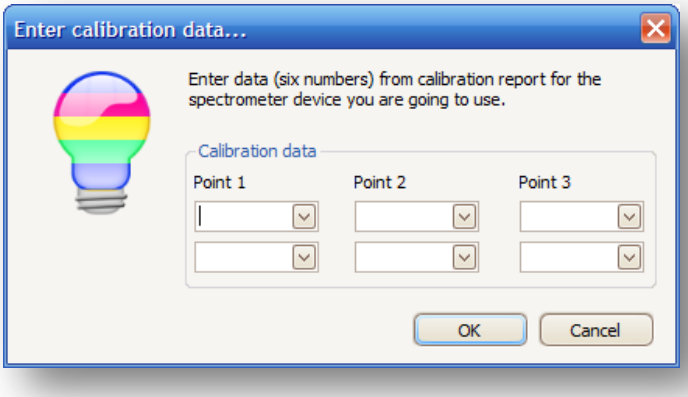


or go to the Start menu -> All Programs



It is important to attach the spectrometer device prior to starting the application; otherwise the application will not recognize the spectrometer device.

After the installation, **at the first application startup**, the user is prompted to enter the calibration data corresponding to the spectrometer device. Calibration data are printed on the ***Calibration report*** included with the spectrometer device.

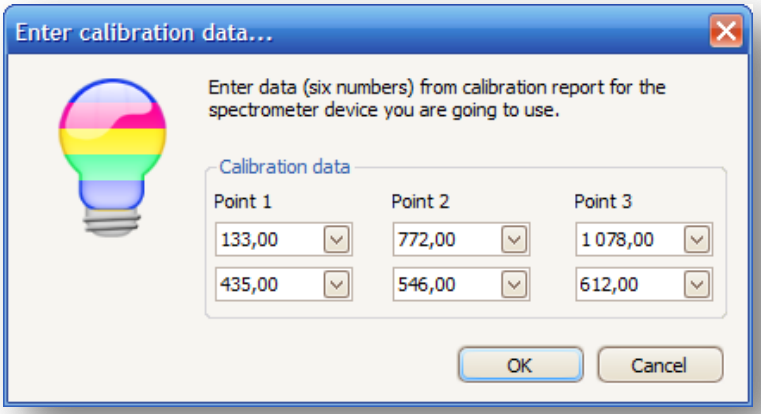


Example of the Calibration report (the Calibration report on your spectrometer device could differ from the one provided on the figure below):

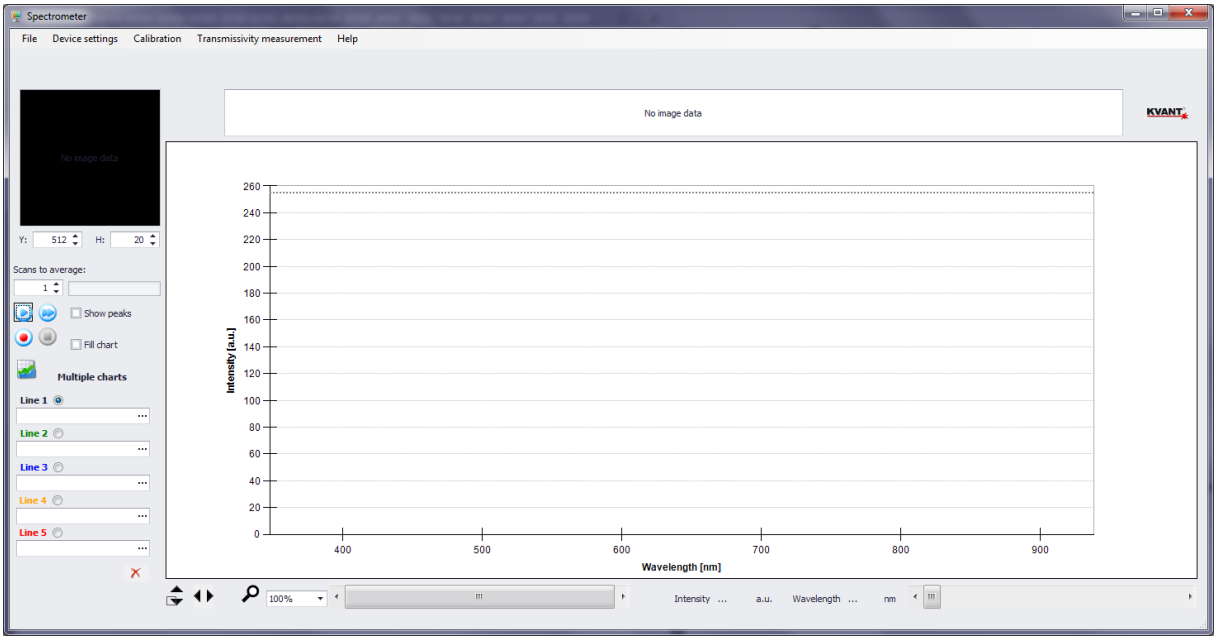


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It is important to enter the numbers from the Calibration report at the exact position to the dialog:



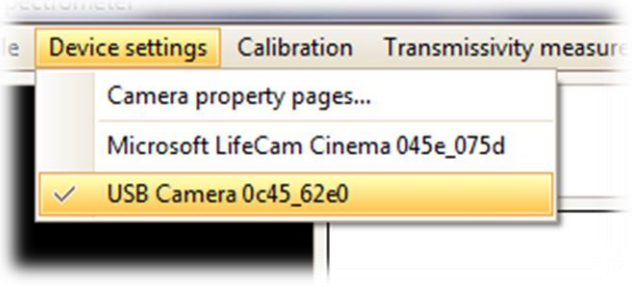
After entering the data the main application window appears and the Spectrometer is ready for use.



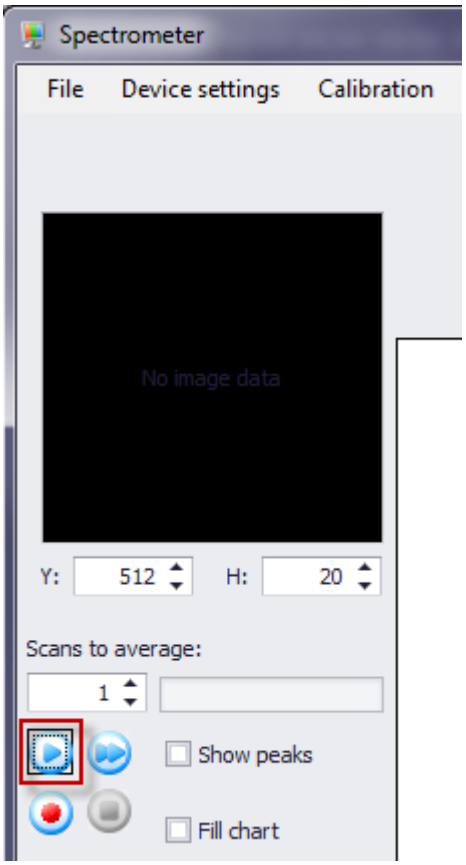
Running the Spectrometer

To run the spectrometer, follow these steps:

- Select video device

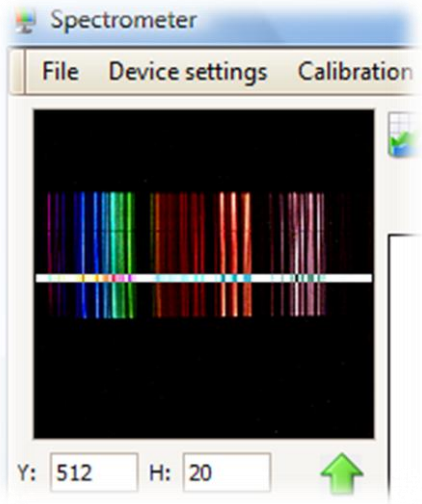


- Press the 'Play' button

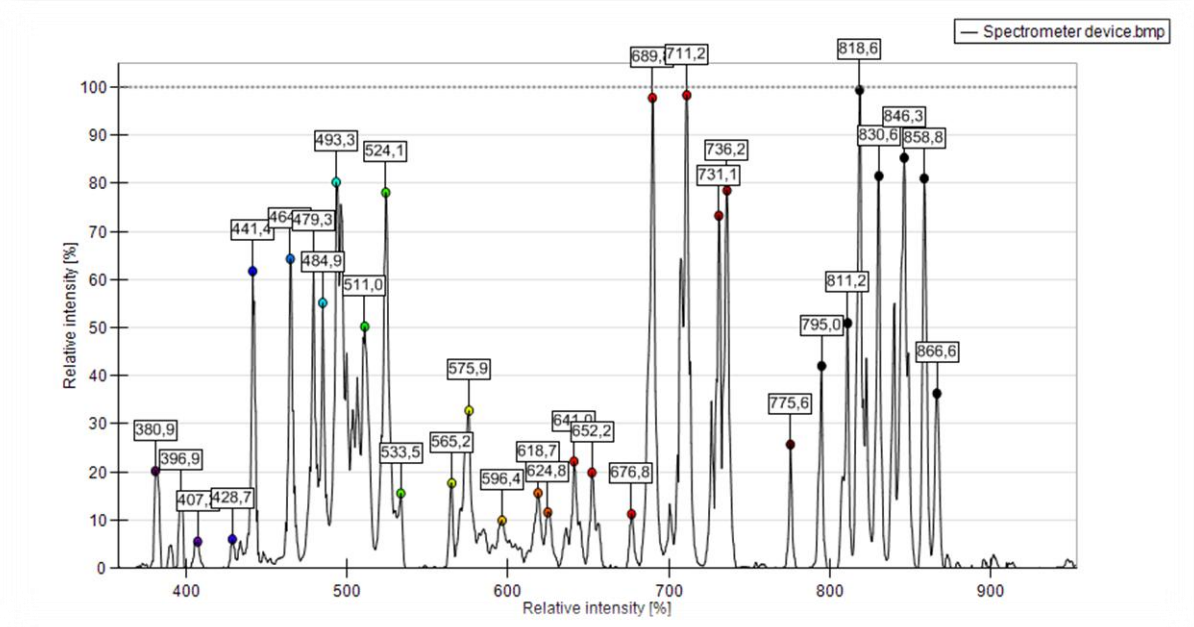


The spectrometer displays the recorded light spectrum in upper left corner of the preview window

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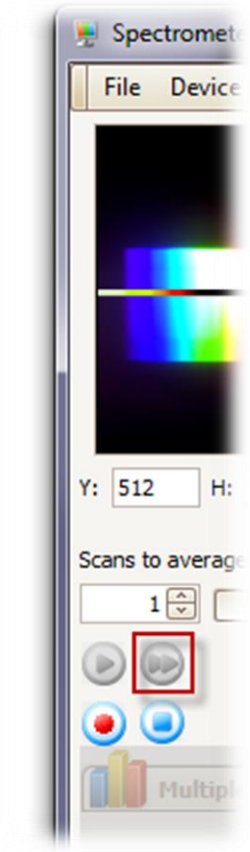


and also the chart representation of the spectrum.

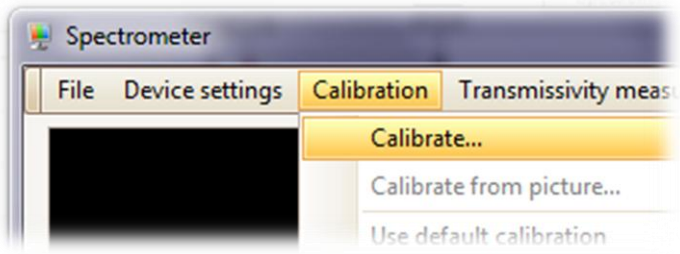


Custom calibration

1. Make sure the spectrometer is running (if not, press the ‘Fast Forward’ button).

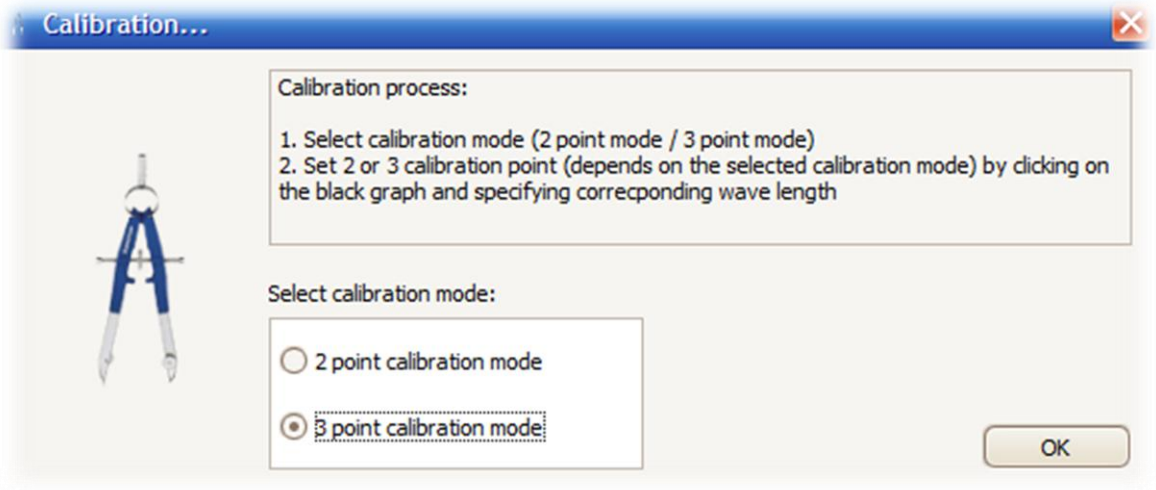


In ‘Calibration’ menu, select ‘Calibrate…’.

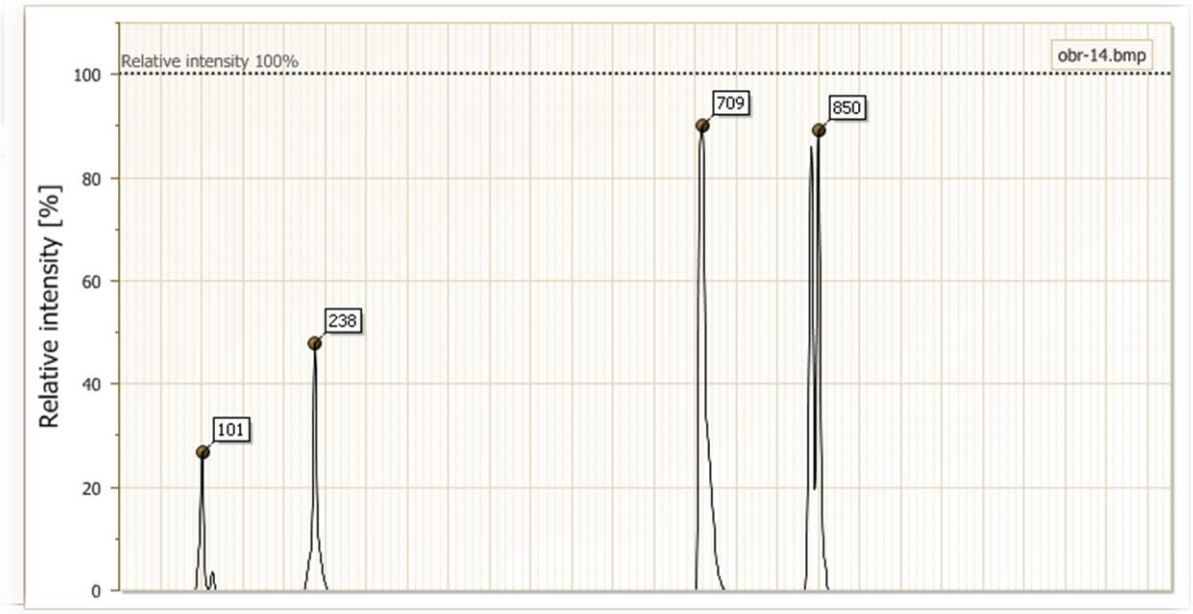


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2. A message box with information about the steps needed to perform the custom calibration appears. Choose how many calibration points will be used and click ‘OK’.

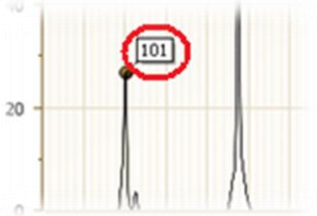


3. Now, a black chart appears. Specify calibration points by clicking on the black chart and enter the corresponding wavelength.



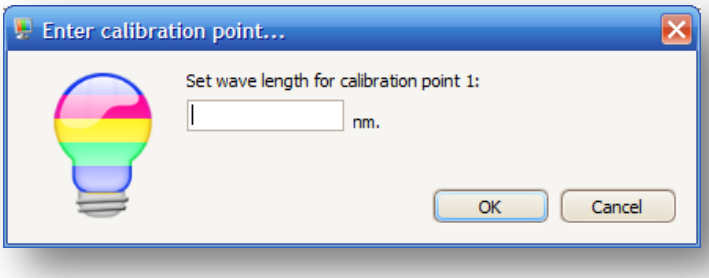
Specifying calibration points (three or two – depending on the step 3):

a. Click on the peak label with known wavelength.



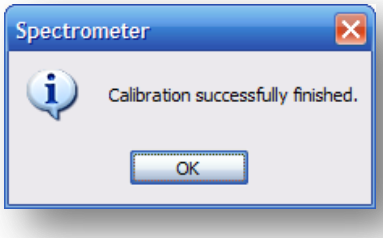
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b. A message box appears. Enter the corresponding wavelength for the point (peak) specified in step a. Click ‘OK’.



c. Repeat steps a, b for further point(s).

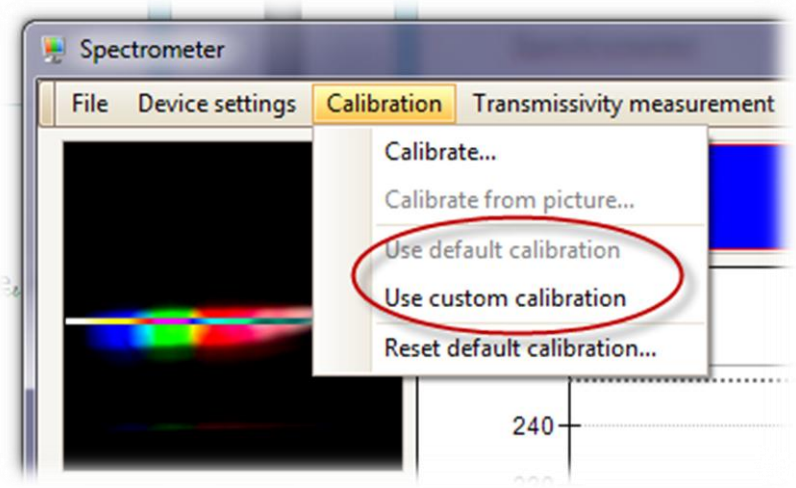
4. After setting all calibration points a notification message appears. Click ‘OK’ for finishing the custom calibration.



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Switching the Calibrations

In case the custom calibration is already set, option to choose between default and custom calibrations is enabled in ‘Calibration’ menu. Choose the calibration you want to use.



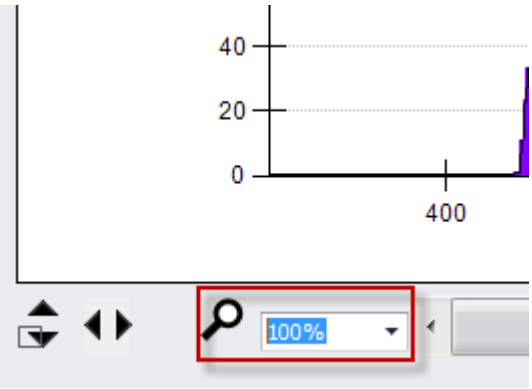
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Zooming & Scrolling

Zooming is not available during calibration process.

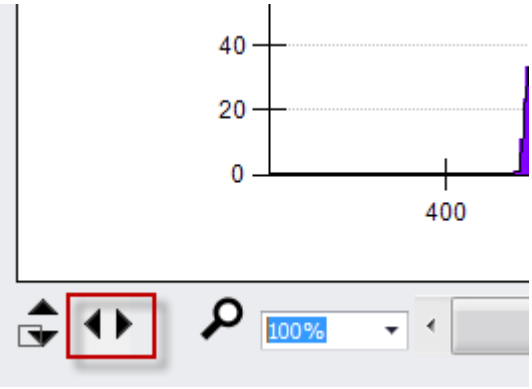
Zooming

In order to zoom in/out, select the desired zoom from the box:



Resetting Zoom

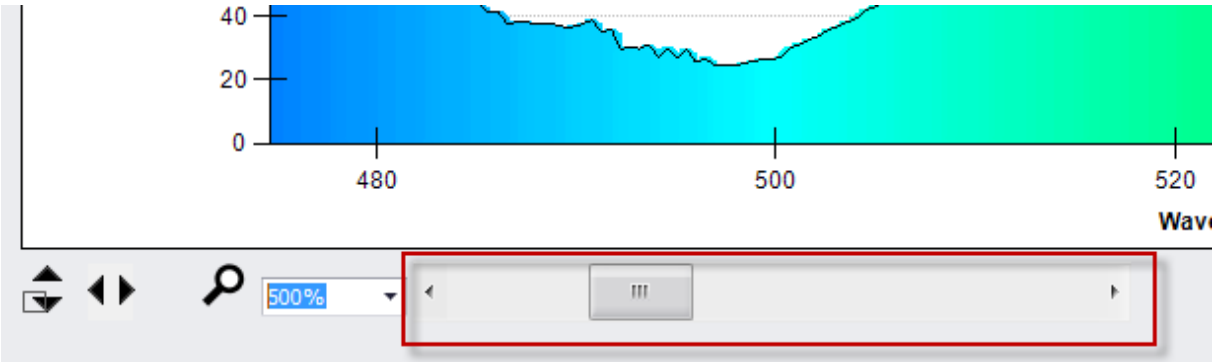
To reset the zoom to 100%, click the '< >' button.



Scrolling

While zoomed in, use the scroll control to move the chart:

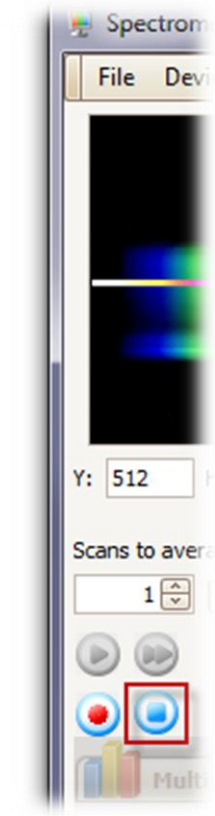
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Other controls

Stopping spectrometer

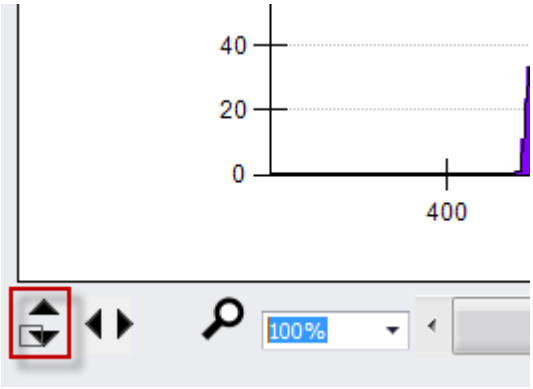
To stop the spectrometer, just press the 'Stop' button.



Automatic Y axis scaling

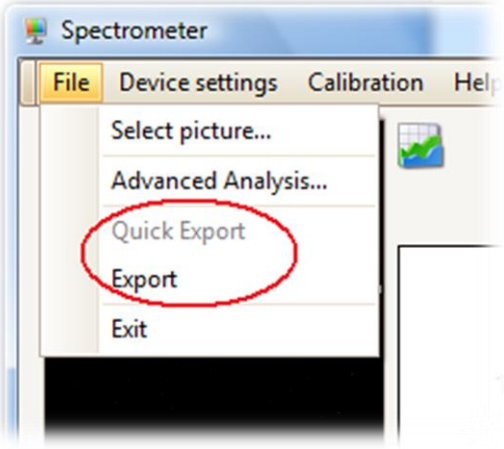
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Y axis scaling is available in automatic mode. Scaling can be used in both cases – while spectrometer is running or stopped. To turn the automatic scaling on or off, press the 'Scaling' button.

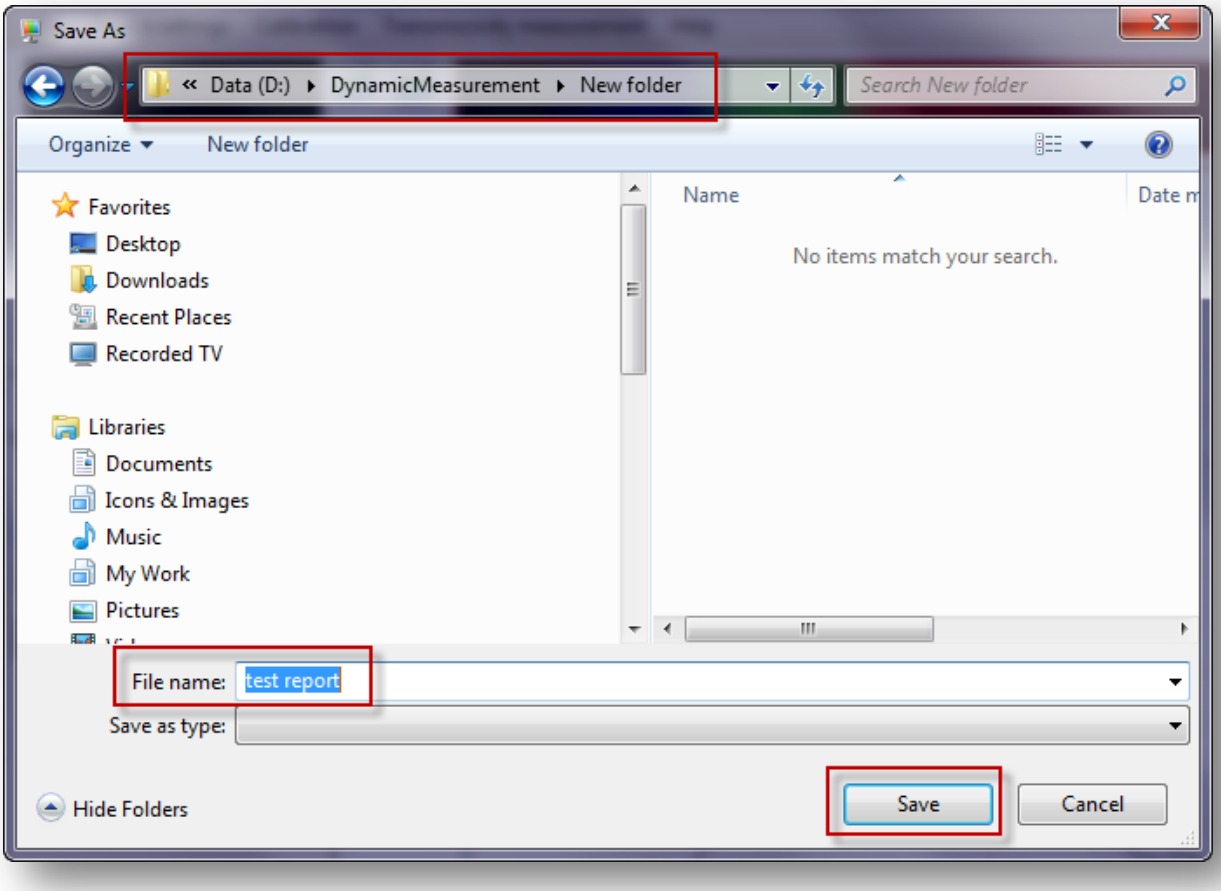


Export & Quick Export

The export functionality is available only in case the spectrometer is **stopped**. Execute 'Export' and specify export file name and destination directory.



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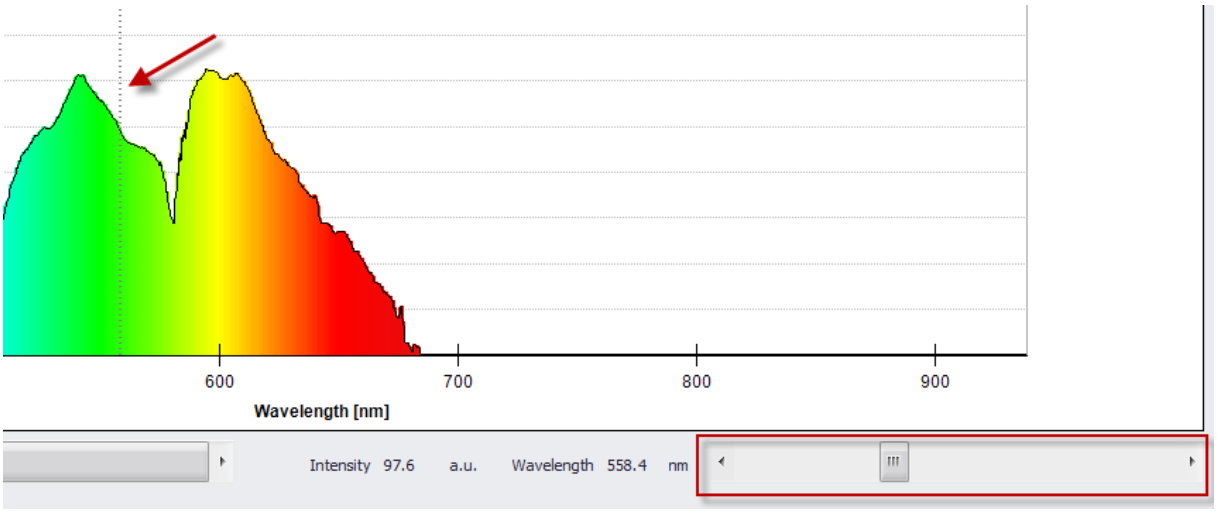


Once export file name and directory are specified, you can use 'Quick Export' without additional specification (saved files will be automatically marked by ascending numbers).

Cursor position

The functionality displays intensity for corresponding (specified) wavelength. The cursor shows the specified wavelength position in the graph. Mouse cursor or scroll control can be used to move the cursor in the graph.

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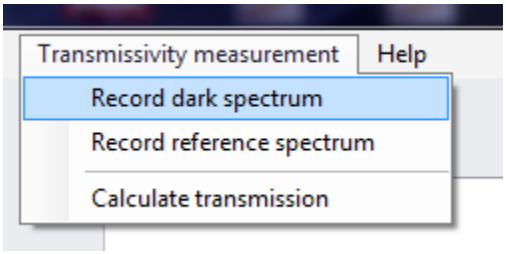
Transmissivity measurement

Initial setup of transmissivity measurement:

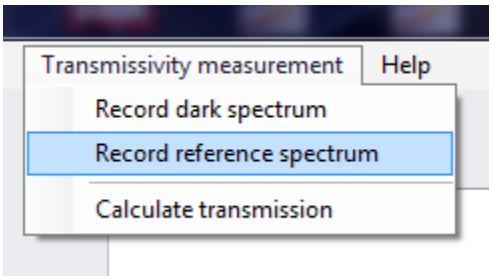
1. Press the ‘Fast Forward’ button



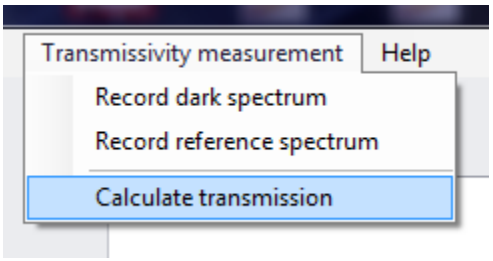
2. Record the dark spectrum



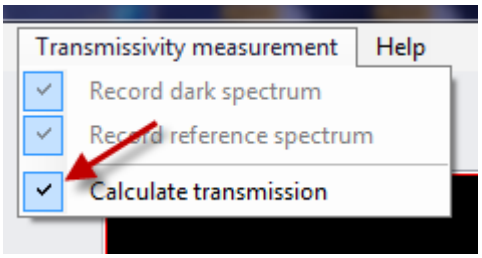
3. Record the reference spectrum



4. Start transmission measurement

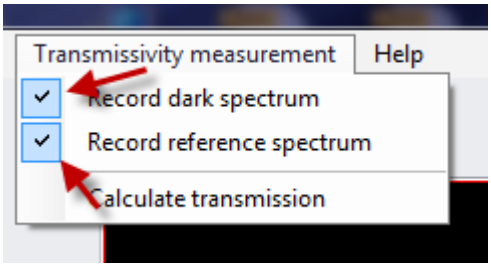


In order to stop the transmission measurement, uncheck the ‘Calculate transmission’



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The check marks for dark/reference spectrum indicates, that the corresponding spectrum was already captured



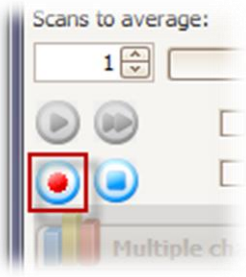
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Dynamic measurement and multiple charts

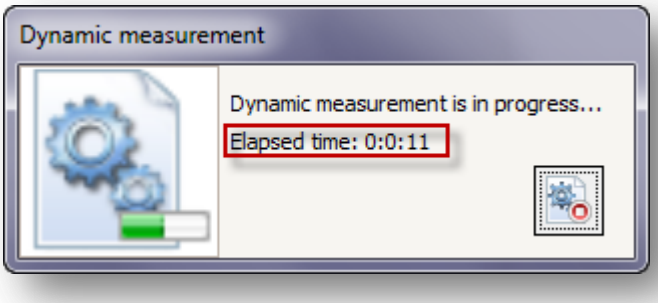
Dynamic measurement feature allows automatic sequential saving of the spectrum images. The amount of images saved per second depends on the utilized hardware.

Dynamic measurement

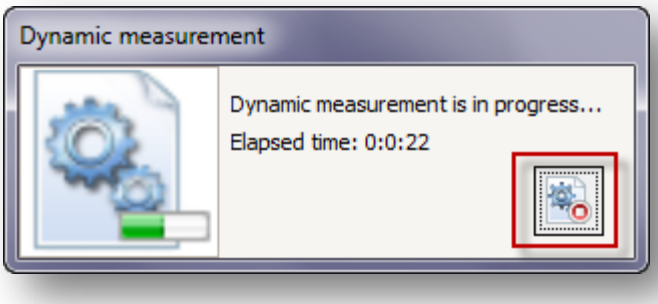
Click the 'Record' button to start the operation.



Spectrum is displayed during the dynamic measurement in the background. The progress of the operation is defined by the elapsed time indicated in the notification window.



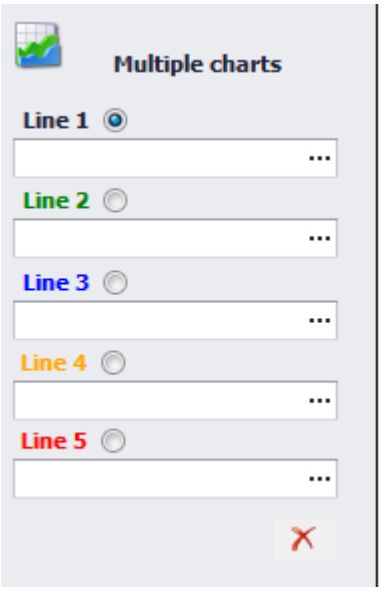
Press the 'Stop' button in the progress window to stop the dynamic measurement.

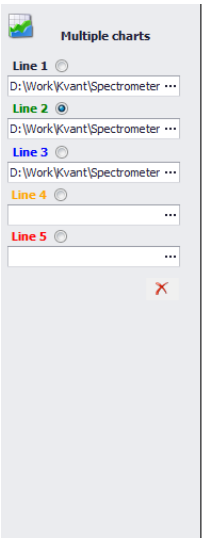


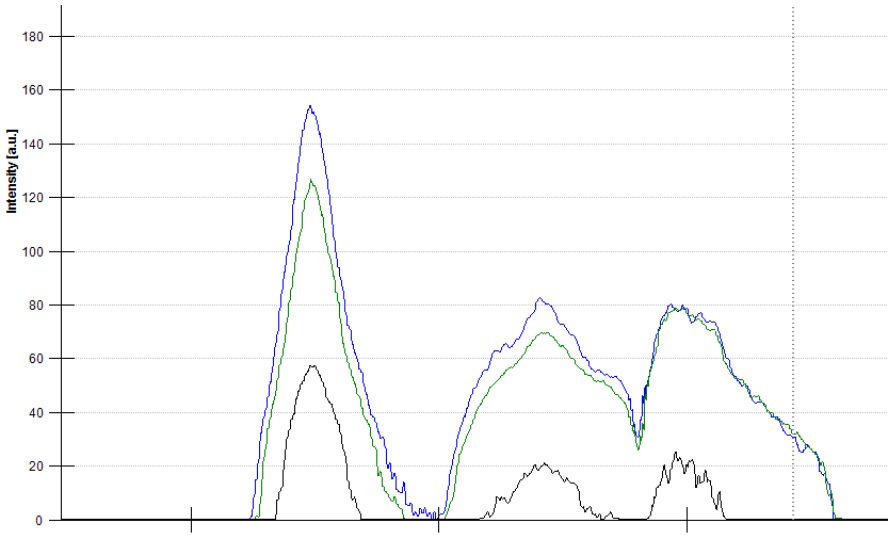
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Multiple charts

After stopping the dynamic measurement up to five spectra can be specified for review in the ‘Multiple charts’ tab.

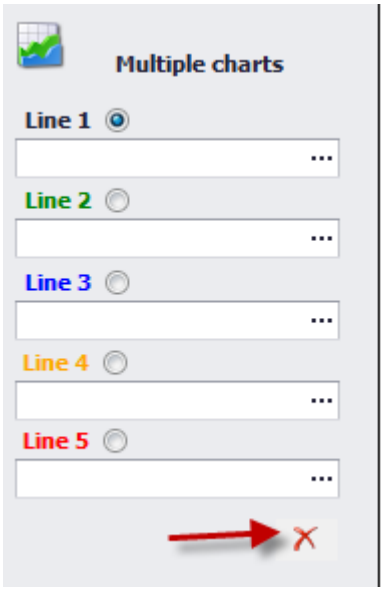






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To clear multiple charts tab, press the ‘Clear all lines (multiple charts)’ button



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System requirements

Minimal system requirements

Minimal system requirements are essential for correct running of the application. Mismatching any requirement point may lead to problems with installation or incorrect operation of the application.

Important: The minimal requirements are not sufficient for the fast response of the application and are not recommended for long term application running.

Software (operating system)

- Operating system: Microsoft Windows XP Professional SP2 32bit
- File system: FAT32
- Windows Installer 3.0 (may be included in the installation package)
- Internet Explorer 5.01
- Microsoft .NET Framework 4.0 (may be included in the installation package)

Hardware

- Memory: 256 MB
- Processor: Intel Pentium 4 800 MHz or equivalent
- Graphics resolution: 1024 x 768
- Video accelerator with 32 MB
- Hard driver: 300 MB free space
- USB 2.0 connector
- CD-ROM drive for software installation

Recommended system requirements

Software (operating system)

- Operating system: Microsoft Windows XP Professional SP2 32bit
- File system: NTFS
- Windows Installer 3.1 (may be included in the installation package)
- Internet Explorer 5.01
- Microsoft .NET Framework 4.0 (may be included in the installation package)

Hardware

- Memory: 512 MB
- Processor: Intel Pentium Core 2 Duo 2 GHz or equivalent
- Graphics resolution: 1024 x 768
- Video accelerator with 256 MB
- Hard driver: 300 MB free space
- USB 2.0 connector
- CD-ROM drive for software installation

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