Spectrometer

Visible Light Spectrometer

V3.1

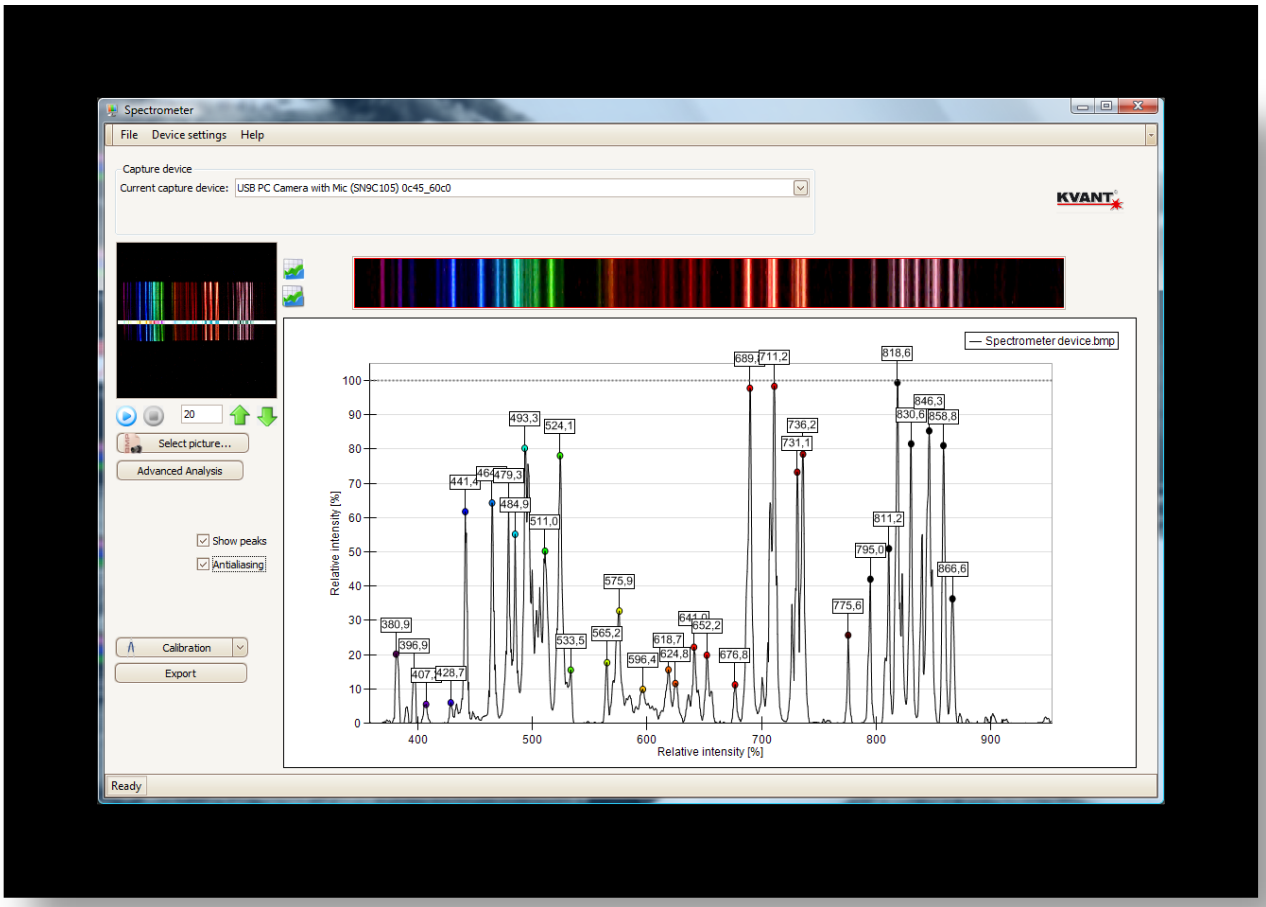


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Package contents

Check your spectrometer package for the following items:

- Documentation
- Calibration report (separate paper or attached 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 also contains 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 'Camera/CameraDriver' folder and run the exe.
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:

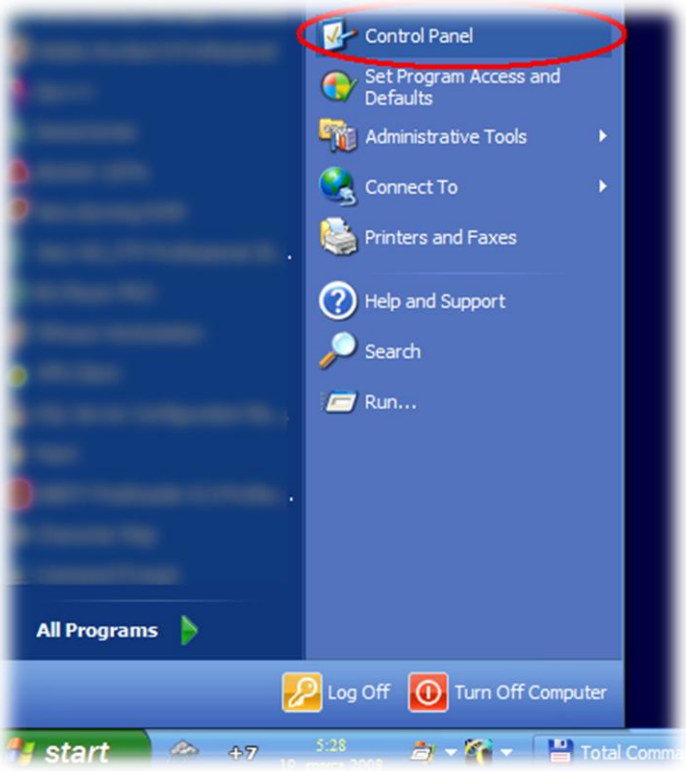
1. Turn on the computer.
2. Insert the provided software CD into CD-ROM drive.
3. Go to the root folder and run the setup.exe.
4. Follow the on-screen instructions to continue the application installation.
5. Connect the Spectrometer device to the USB port (if not already connected).
6. Once the Spectrometer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

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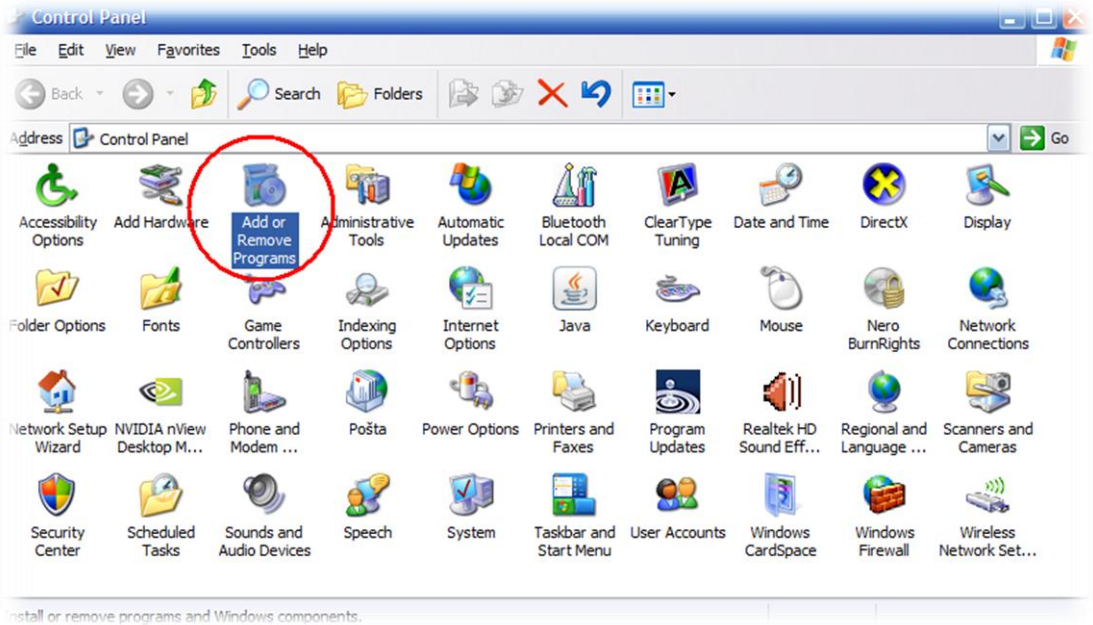
Manual Application Installation

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

- Go to the Control Panel

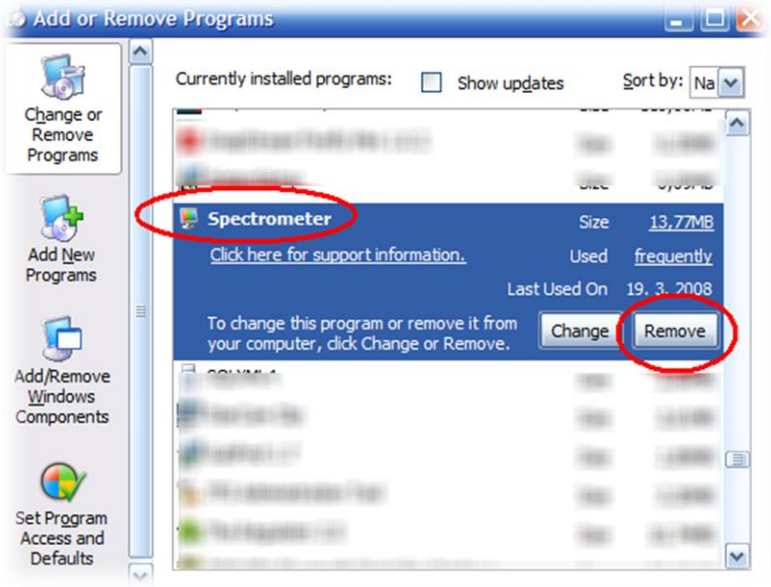


- Double click on the 'Add or Remove Programs'



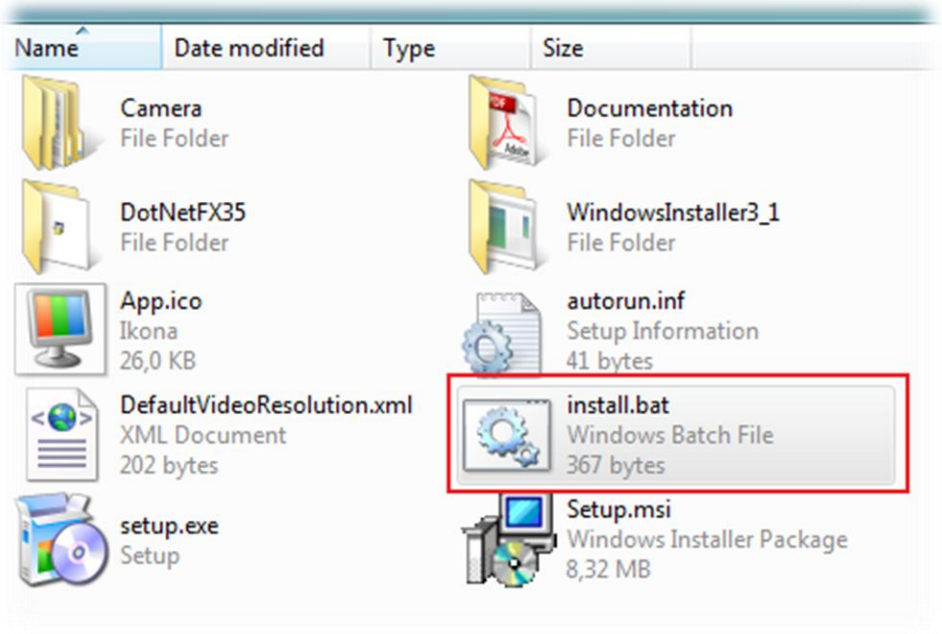
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- Find the Spectrometer application and click ‘Remove’



2. Now, if not already installed, install the driver for the Spectrometer device. You can find it on the installation CD in directory ‘Driver’. Run ‘autorun.exe’.

3. To install the Spectrometer, execute **‘install.bat’** program and follow the installation wizard.



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Application startup

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

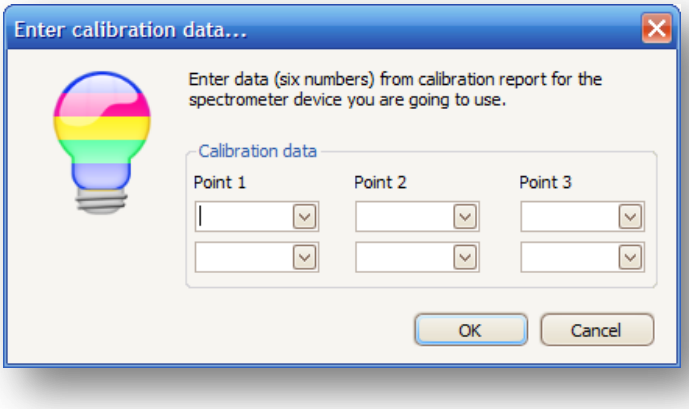


or go to the Start menu -> All Programs



It is important to have attached the spectrometer device prior starting the application. Otherwise, the application will not recognize the spectrometer device.

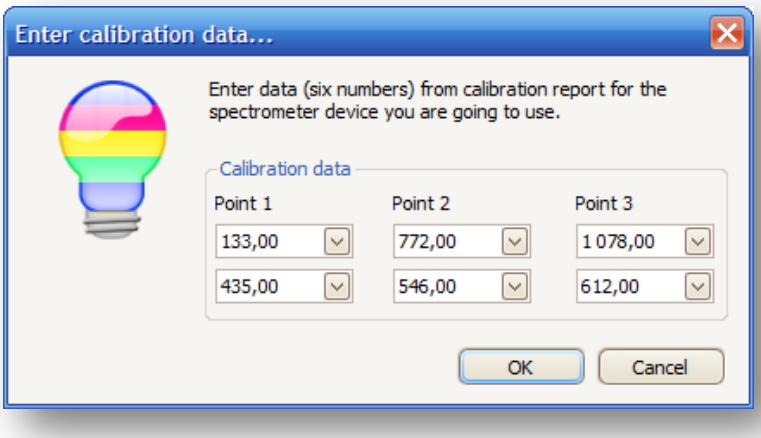
After installation, **at the first application startup**, the user is prompted to enter data corresponding to the spectrometer device. The data are printed on the ***Calibration Report*** included with the spectrometer device.



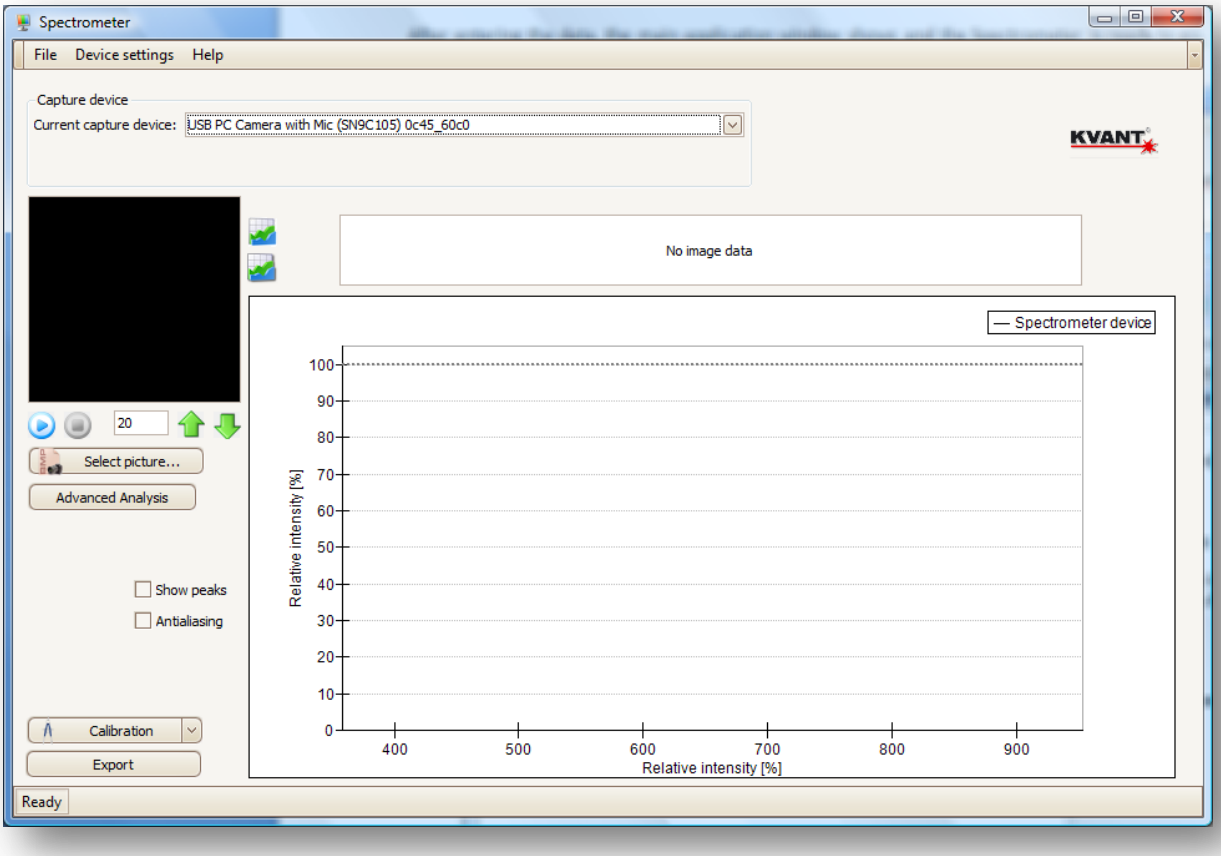
Sample calibration report (the real one for your spectrometer device is included separately):

It is important to write the numbers from the calibration report at the exact position to the dialog:

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After entering the data, the main application window shows and the Spectrometer is ready to go.

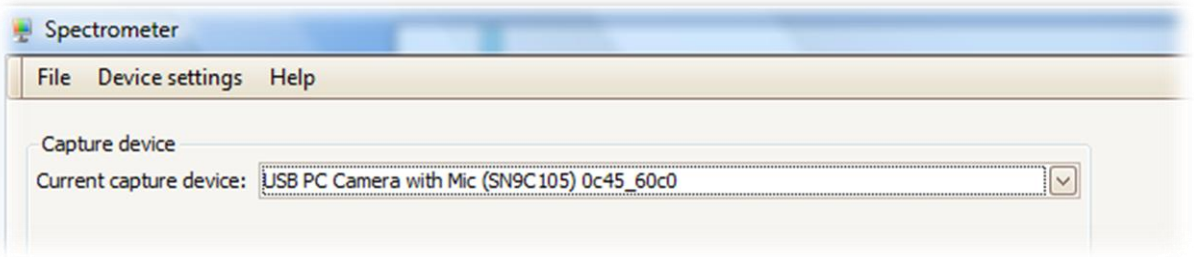


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Running the Spectrometer

To run the spectrometer, follow these steps:

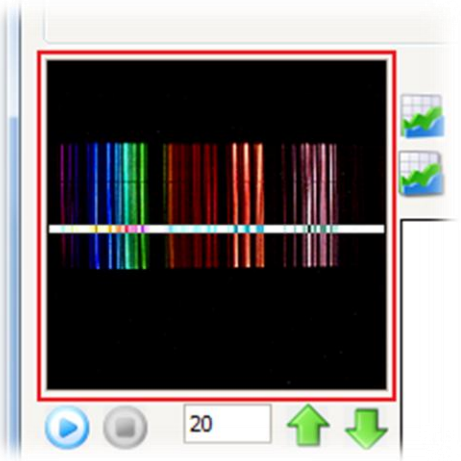
- Select video device



- Press the ‘play’ button

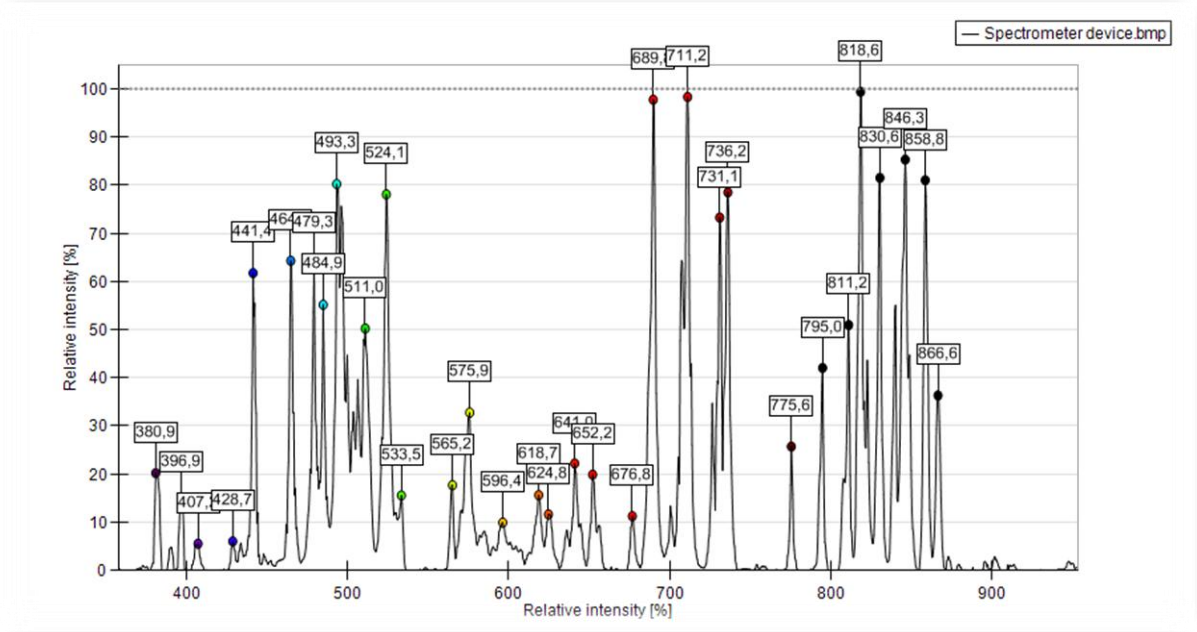


Now, the spectrometer should be running. In the preview window, you can see the light spectrum (depending on the light source)



and also the chart representation of the spectrum

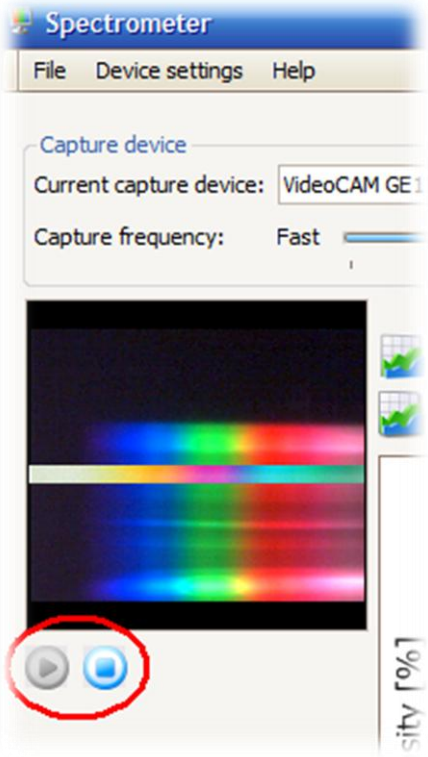
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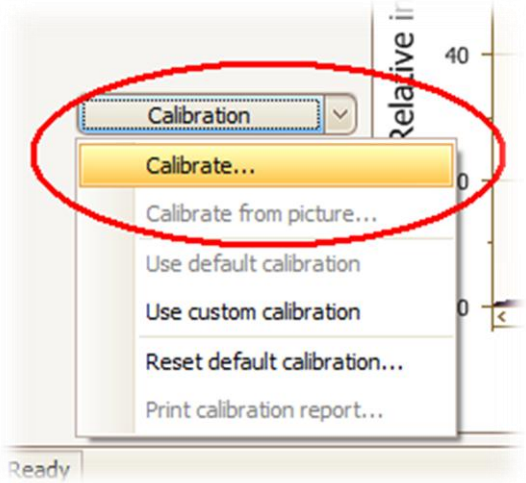
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Custom calibration

1. Ensure that the spectrometer is running (if not, press the ‘Play’ button).

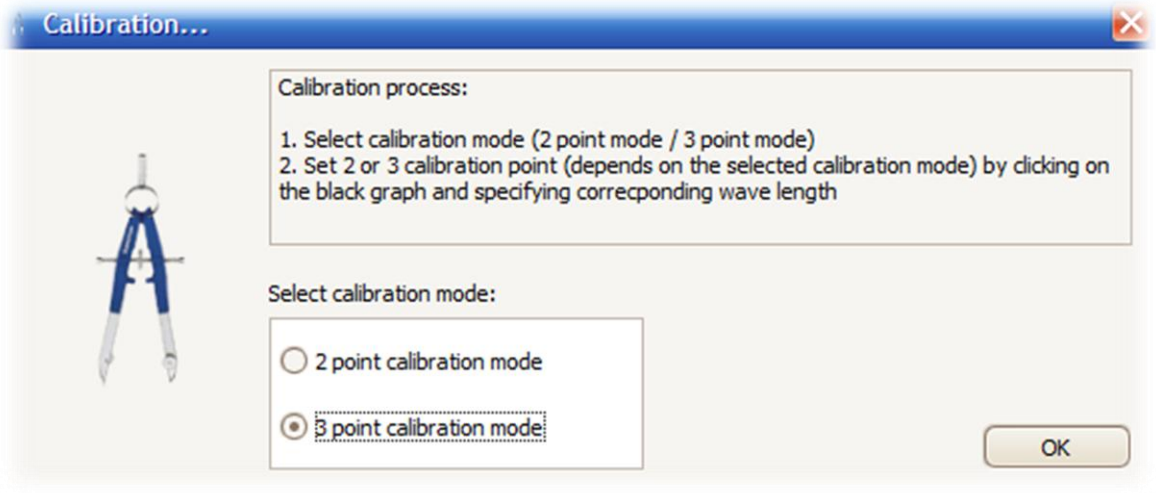


2. Click ‘Calibration’ button. Pop-up menu shows. Choose ‘Calibrate…’.



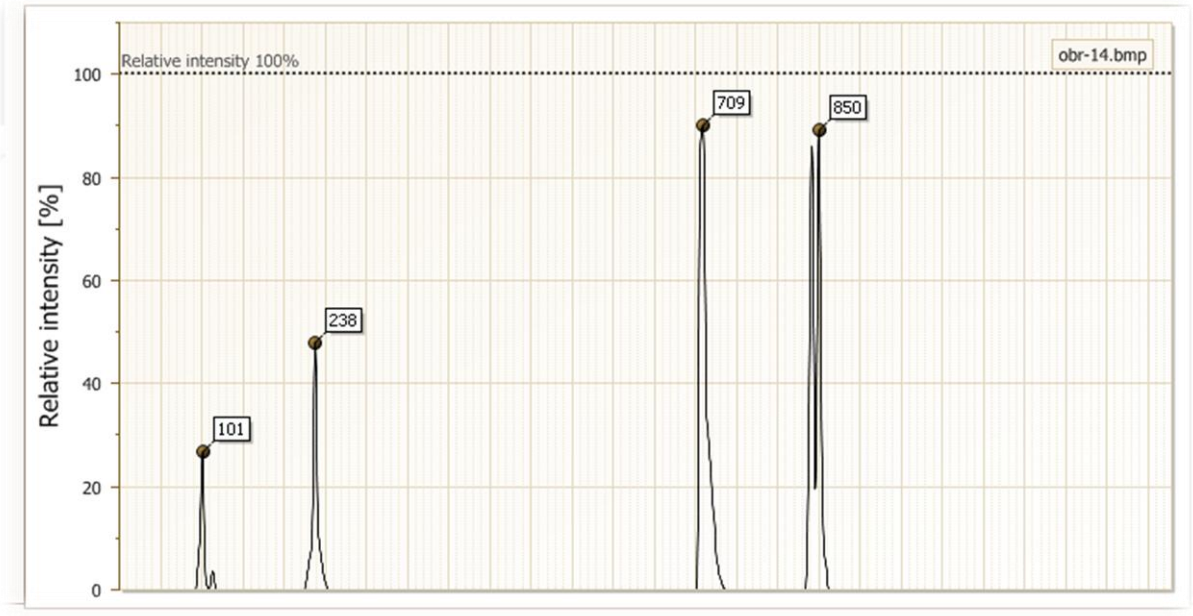
3. A message box shows informing you about steps needed to perform the custom calibration. Here, also choose how many calibration points will be selected.

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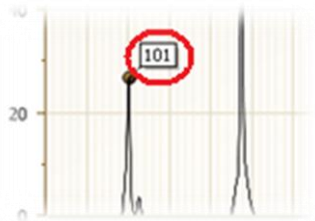
As it said, you would have to specify calibration points by clicking on the black chart and entering corresponding wave length.
For now, just click 'OK' on the information message box.

4. Now, a black chart shows.



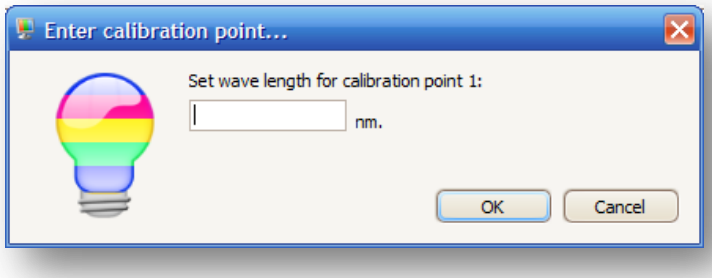
Here you have to specify three (or two – depends on the step 3) calibration points:

a. Click on the peak label where you know the wave length.



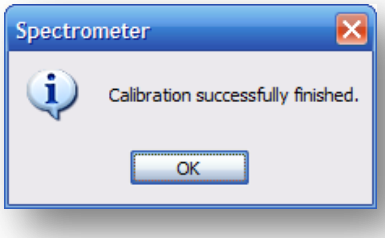
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b. A message box asking for wave length shows. Enter corresponding wave length for the point (peak) you just clicked.



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

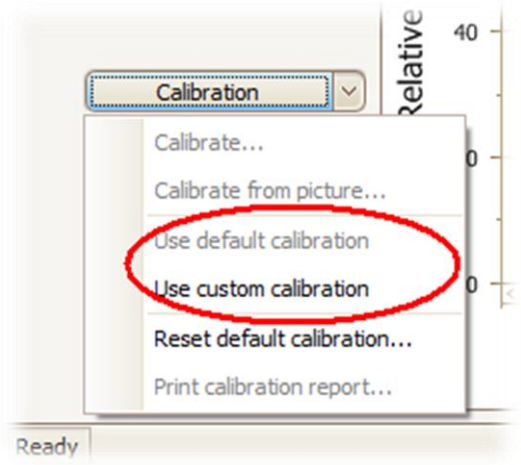
5. After you set all three calibration points, a notification message show. Just click 'OK' and you are done with the custom calibration.



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Switching calibrations

If you have done the custom calibration, you can choose which calibration to use. The default one or the custom. Click ‘Calibration’ button. Pop-up menu shows. Choose the calibration you want to use.



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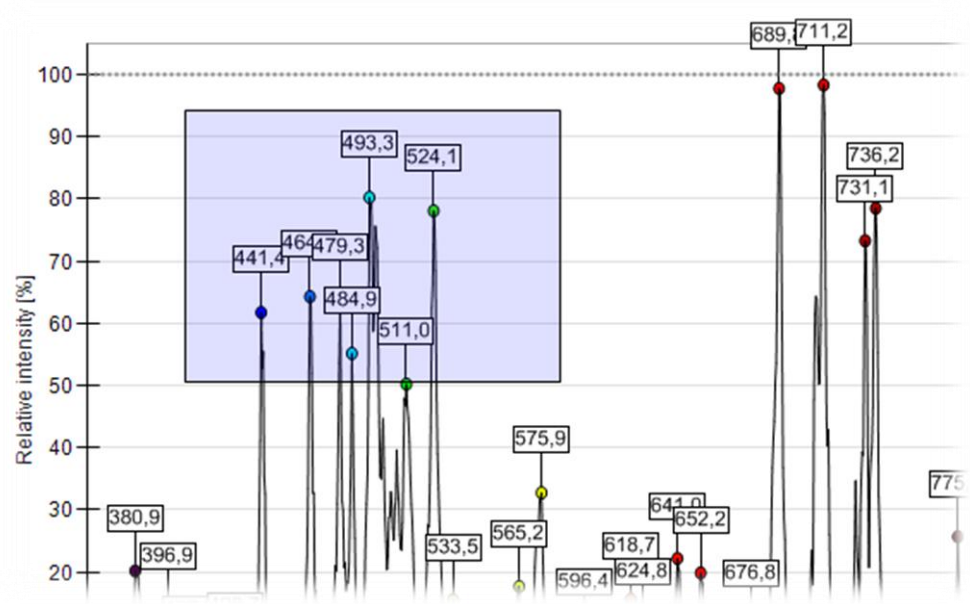
Zooming

Zooming is not available during calibration process.

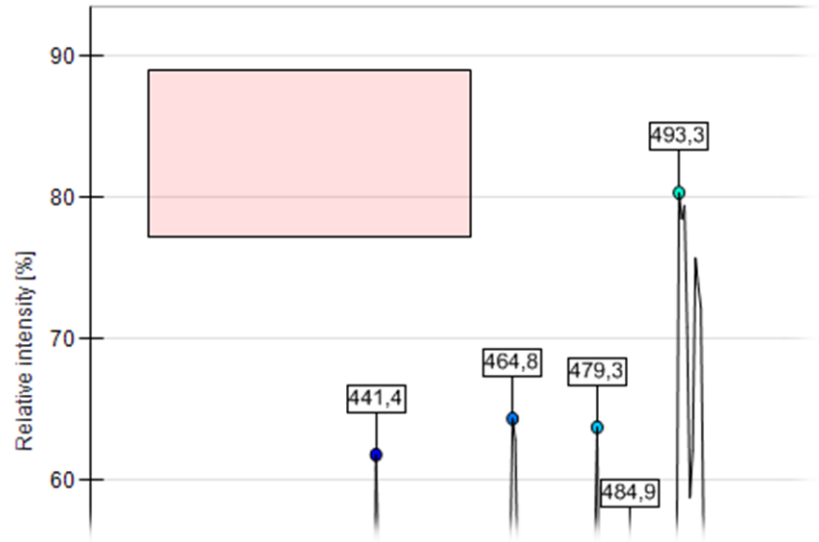
Zooming a Chart for Main window

To zoom in, just drug the mouse to the right. To zoom out, just drug the mouse to the left.

To zoom in:



To zoom out:

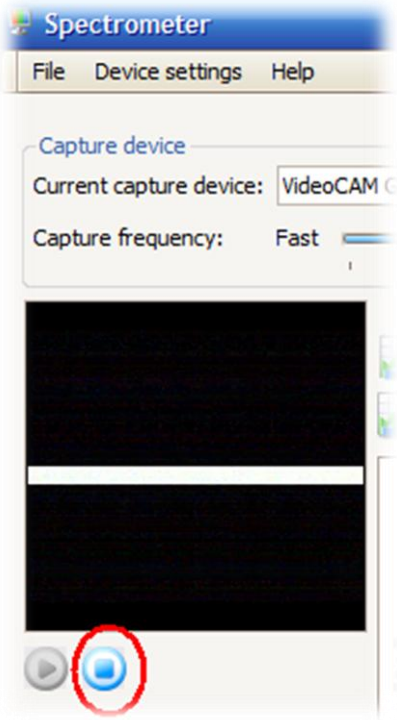


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Other controls

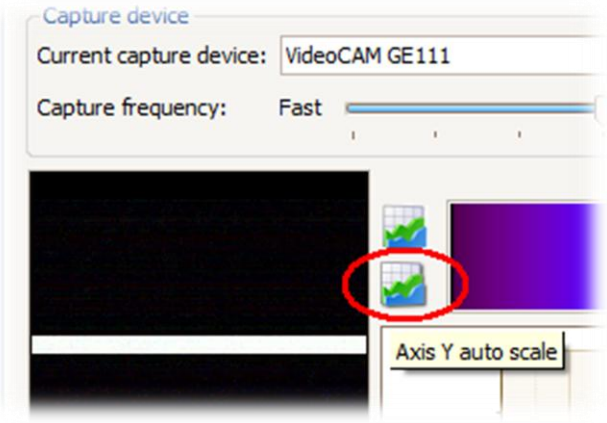
Stopping spectrometer

To stop the spectrometer, just press the ‘stop’ button



Automatic Y axis scaling

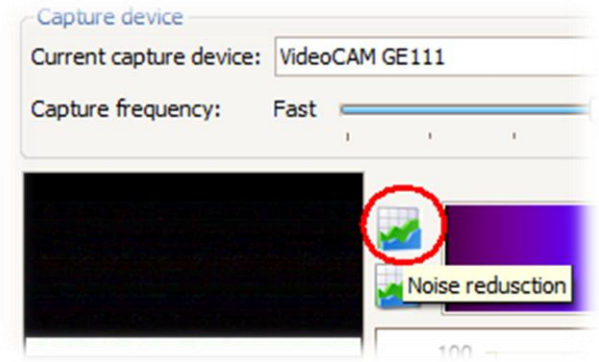
The automatic Y axis scaling is available for running spectrometer and also for stopped. Just press the lower chart button.



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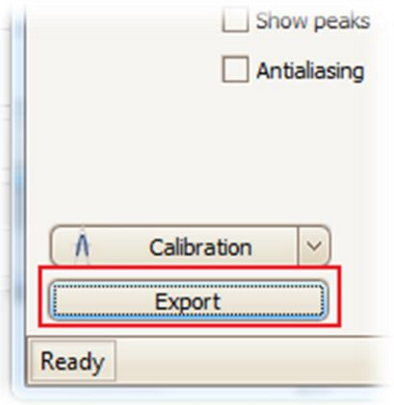
Noise reduction

The noise reduction is available for running spectrometer and also for stopped. Just press the upper chart button.



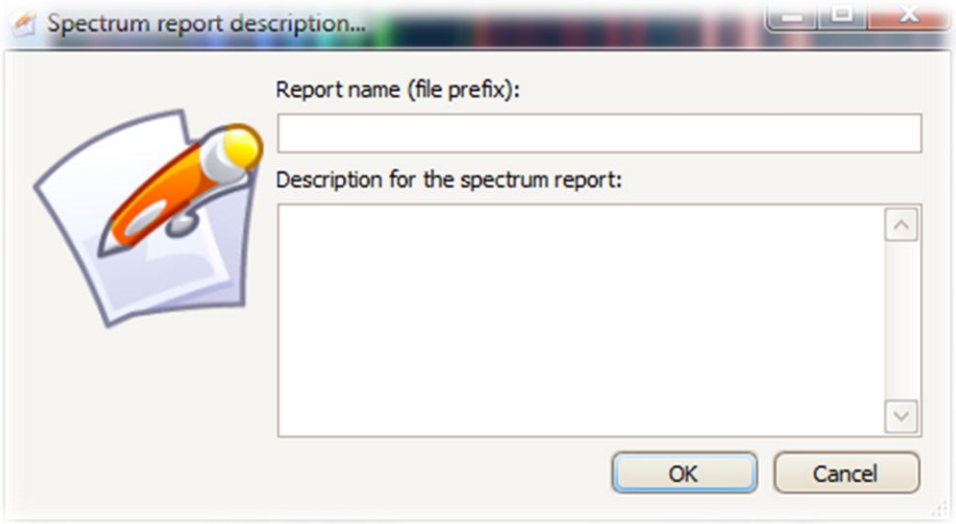
Exporting

The export functionality is **available only for stopped** spectrometer.

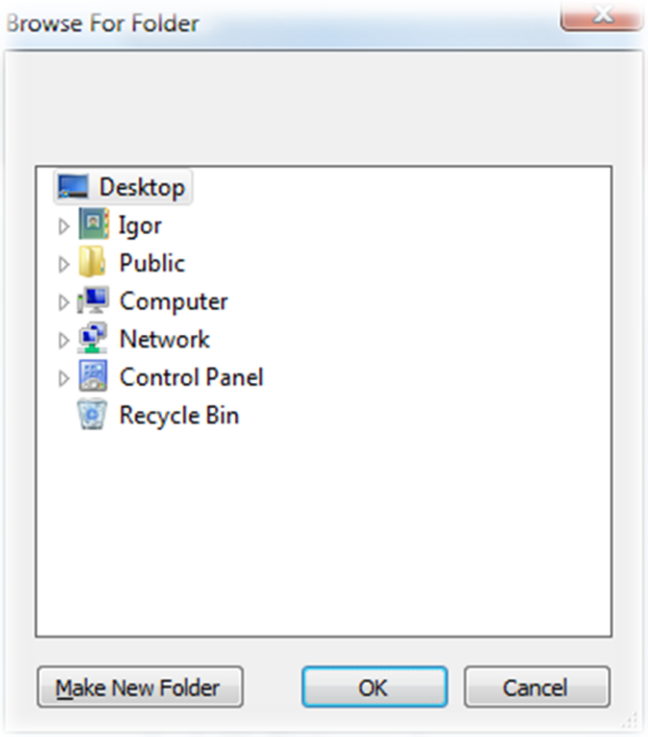


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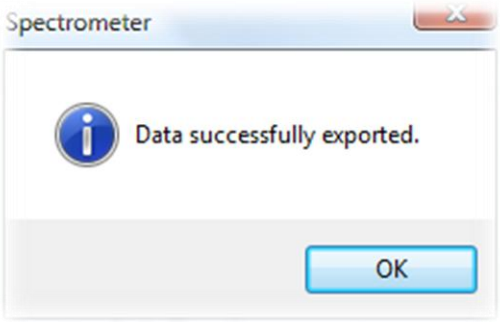
Specify report name and description. The report name will act also as prefix to exported files, so you can distinguish exports.



After that, select destination directory



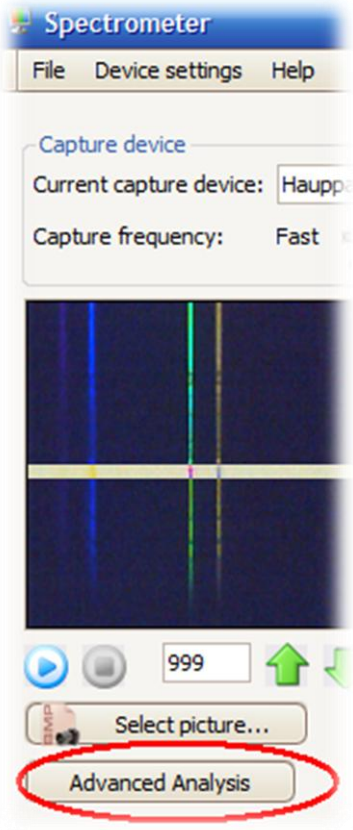
And export is generated. That, you are notified about finished operation.



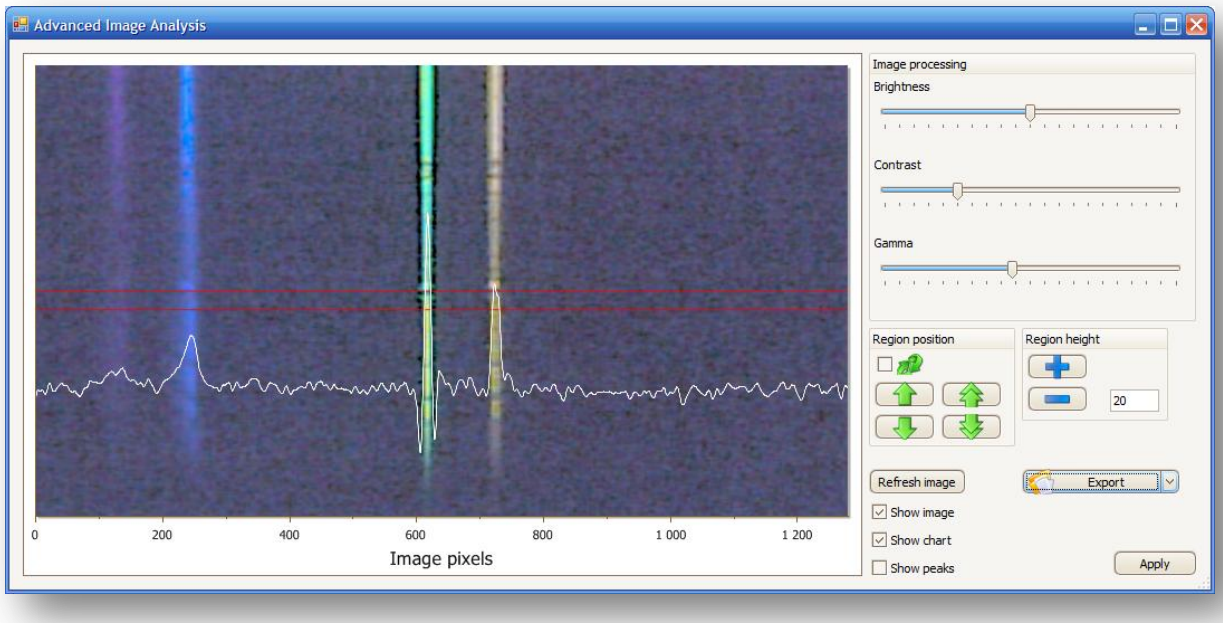
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Advanced analysis

With the advanced analysis functionality, you can ‘play’ with the source image and analyze the effect on the spectrum chart. To enter the advanced analysis, press the button:



Now, the analysis windows show.



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In the windows, you can adjust brightness, contrast and gamma of the source image. Also, you can ‘play’ with the processing region (red rectangle) by setting his position (Region position) and size (Region height).

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System requirements

Requirements for the target computer where the Spectrometer application will be installed.

Minimal system requirements

The minimal requirements for the target computer. Not matching any requirement point, the application may not install or function correctly.

Important: The minimal requirements are not suitable for fast, responding and 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 2.0 (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

This is the best choice for fast, responsible and long term application running.

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 2.0 (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

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- Hard driver: 300 MB free space
- USB 2.0 connector
- CD-ROM drive for software installation

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