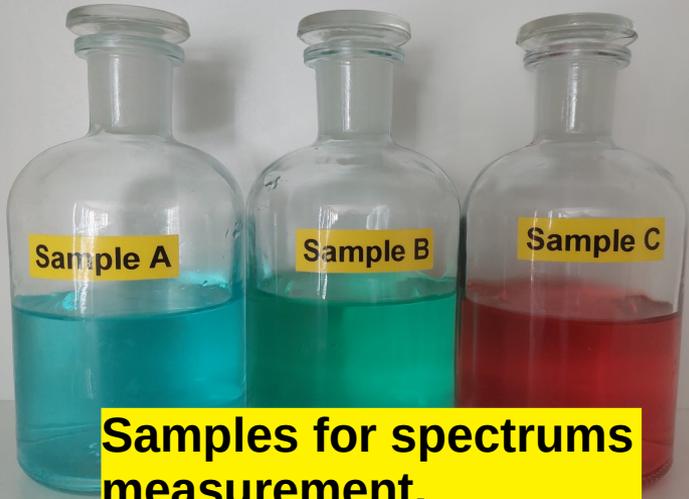




Spectrophotometry

Sample preparation.



Samples for spectrums measurement.

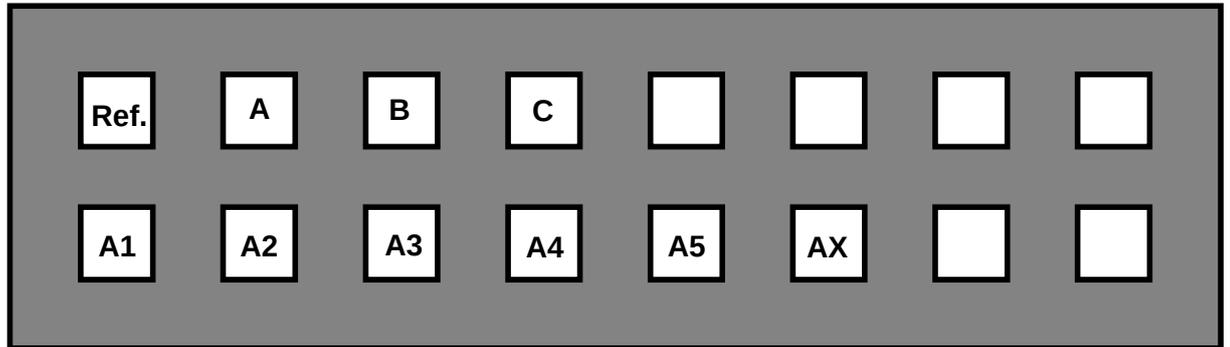
Prepare a cuvette rack with sample before starting the measurement.

Use distilled water as a reference sample.

Rinse the individual cuvettes after all measurements have been completed.

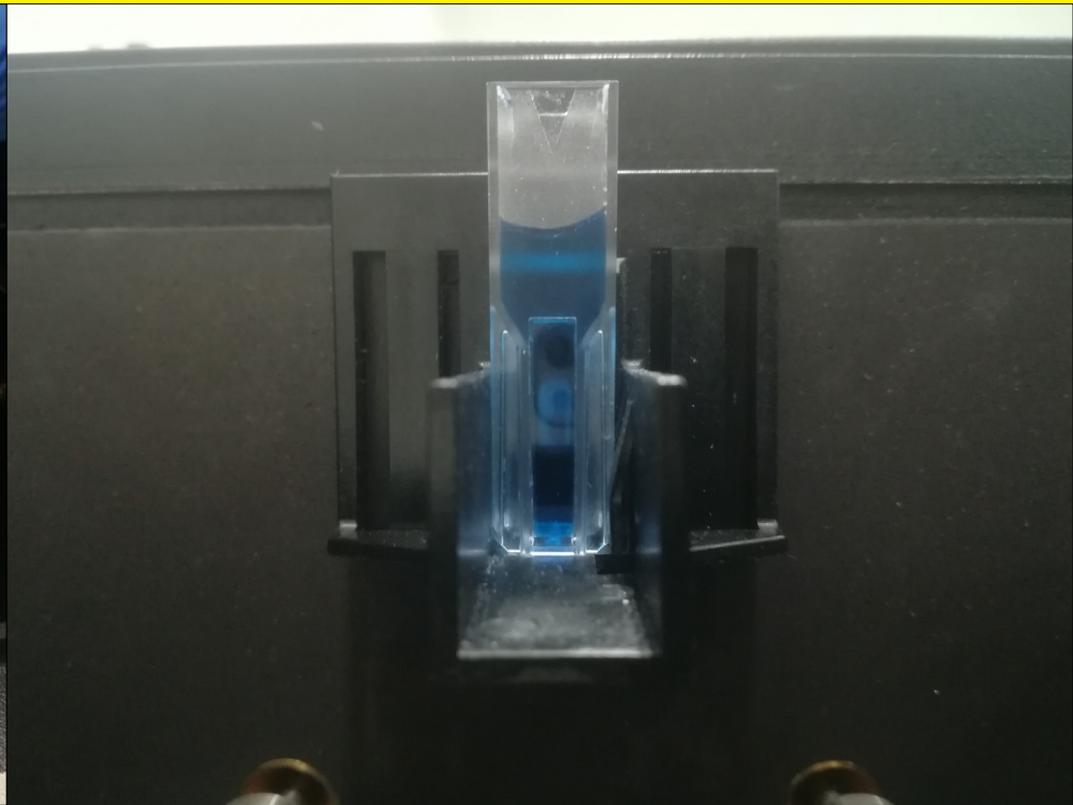
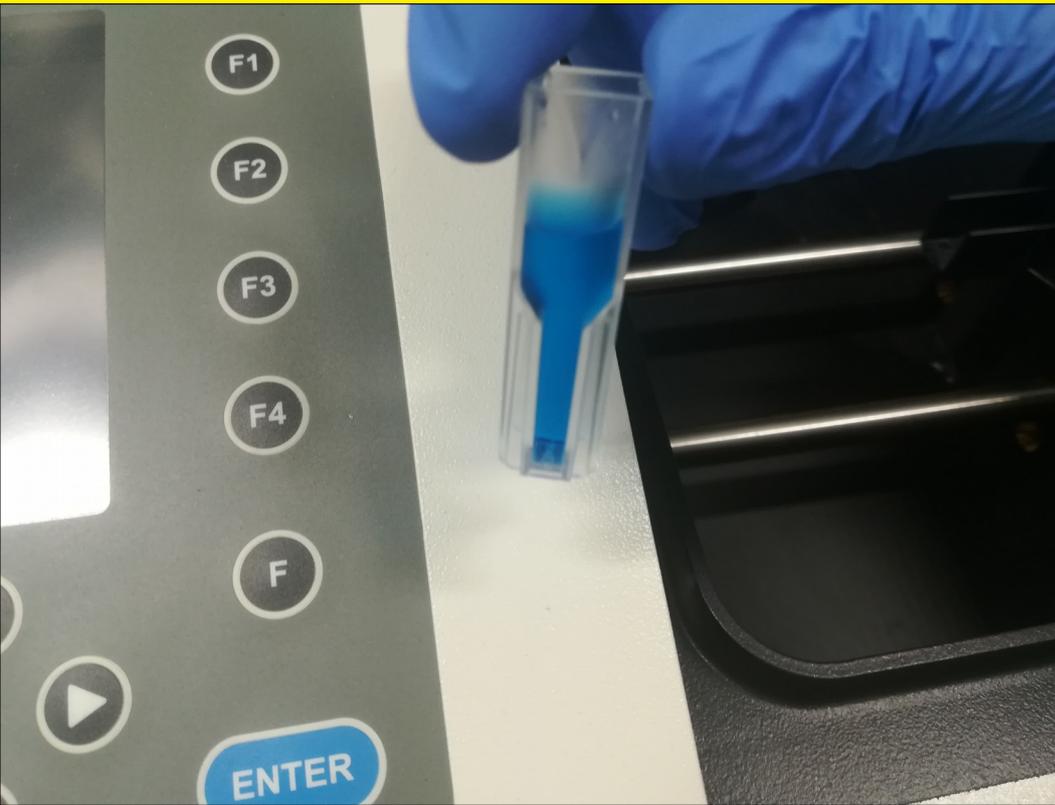


Samples for concentration determination.



Inserting the cuvette into the spectrophotometer.

Insert the cuvette as close to the wall of the holder as possible so that the light beam passes through the wider part of the narrowed bottom of the cuvette.



Spectrophotometer initialization.



Recycle Bin



Acrobat Reader DC



picture1



Záloha



Praktika_CZ



Practicals_EN



Google Chrome



WinASPECT

Location: WinASPECT (C:\Program Files (x86)\WinASPECT)



OBS Studio



GIMP 2.10.20



Microsoft Edge



LibreOffice 6.4



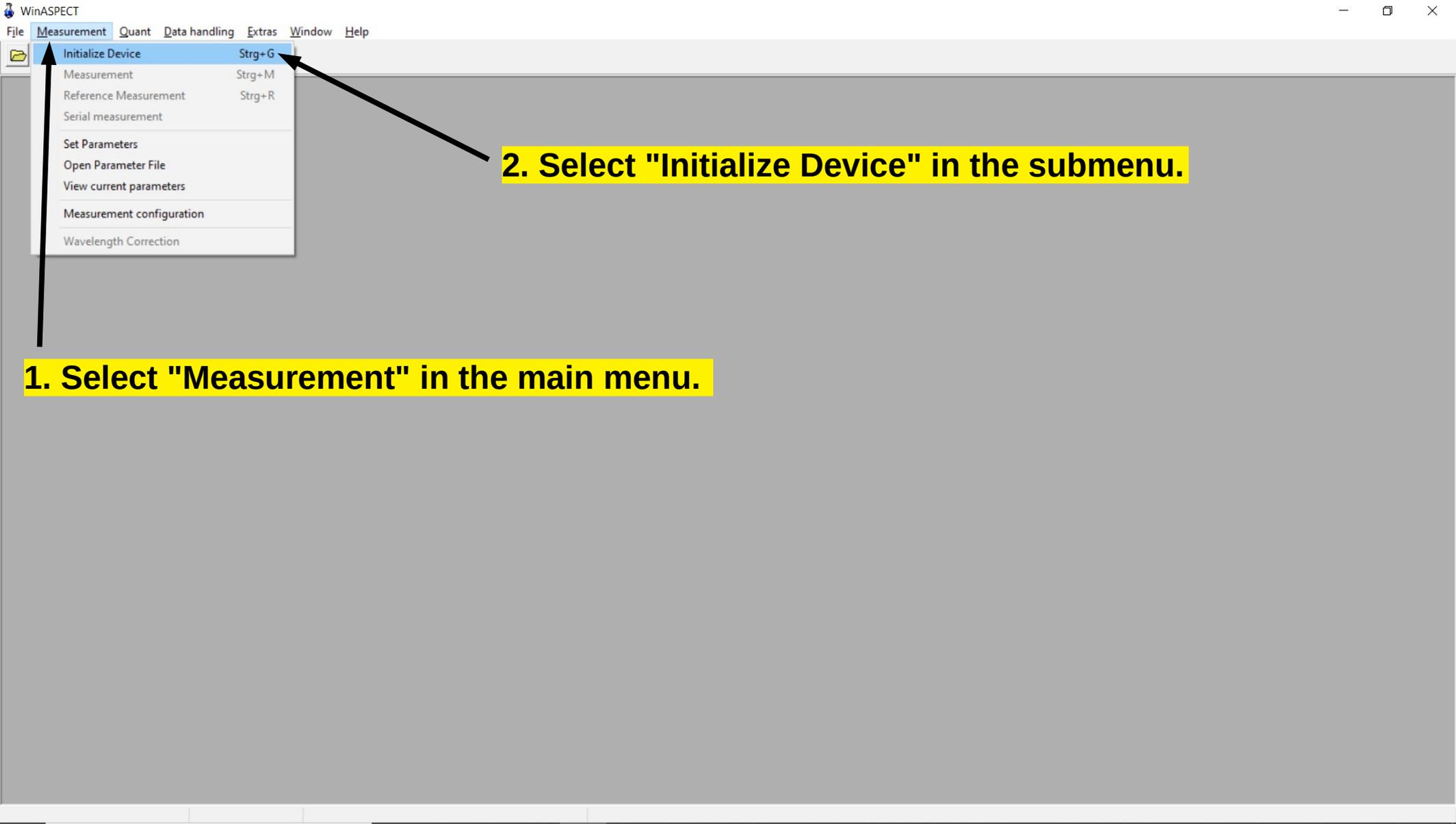
Firefox

Turn on the SPECORD 40 and wait 2 minutes to startup the device.

Click on the WinASPECT icon after starting the device.

FUJITSU

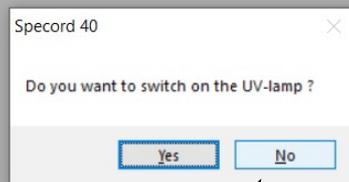
shaping tomorrow with you



- Initialize Device Strg+G
- Measurement Strg+M
- Reference Measurement Strg+R
- Serial measurement
- Set Parameters
- Open Parameter File
- View current parameters
- Measurement configuration
- Wavelength Correction

1. Select "Measurement" in the main menu.

2. Select "Initialize Device" in the submenu.



Press the "No" button to switch off the UV lamp.



Current parameters

Specord 40

Designation	SPECORD 40 - 232F139
Title	Calibration
Operator	X00
Date/Time	09/10/2021 09:52
Display	Absorbance
Correction	Reference
Lamp change at	320 nm

Meas. mode	Wavelengths
Wavelength [nm]	812
Integration time [s]	0.2

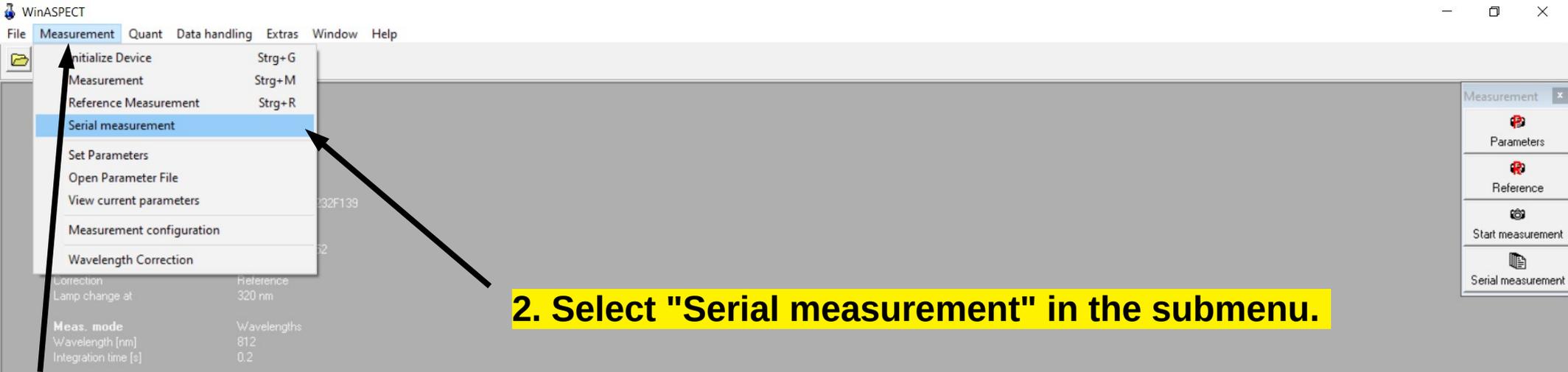
Measurement x

- Parameters
- Reference
- Start measurement
- Serial measurement



Press the "OK" button to confirm a successful initialization.

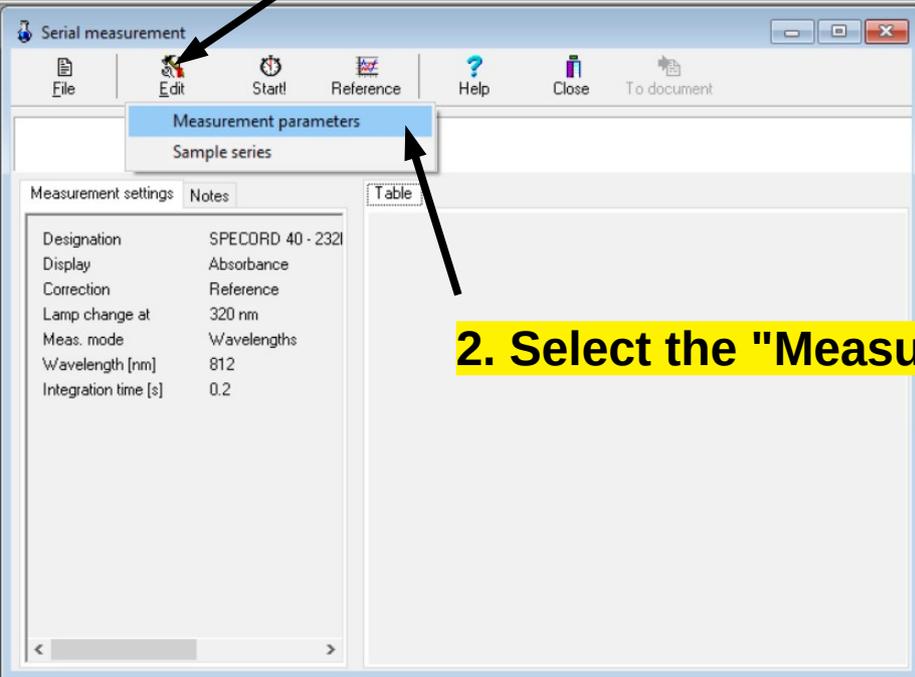
**Measurement of absorbance
spectrums of samples A, B and C.**



1. Select "Measurement" in the main menu.

2. Select "Serial measurement" in the submenu.

1. Click on the "Edit" icon in the "Serial measurement" subwindow.



2. Select the "Measurement parameters" item from the icon menu.



Serial measurement

File Edit Start Reference Help Close To document

Measurement settings Notes Table

Designation	SPECORD 40 - 2321
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Wavelengths
Wavelength [nm]	812
Integration time [s]	0.2

Click on the "New" icon in the "Specord 40" subwindow.

Specord 40 - C:\Users\Specord40\Documents\Praktika_CZ\Kantori\X00_C.par

OK Cancel New Open Save Save as... Help Print

Settings Device Mode Accessories

Title Calibration

Operator X00

Cycle Mode

- None
- Manual
- Automatic
- Time controlled

Number 3

Interval time [s] 1

Display

- Transmittance
- Absorbance
- Energy
- Reflectance

Min: 0

Max: 3

Correction

- No
- Standard
- Reference
- Special

Open

saved New



Serial measurement

File Edit Start! Reference Help Close To document

Measurement settings Notes Table

Designation	SPECORD 40 - 2321
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Wavelengths
Wavelength [nm]	812
Integration time [s]	0.2

Select the "Settings" tab in the "Specord 40" subwindow and set the corresponding values.

Specord 40 - untitled.par

Settings Device Mode Accessories

Title Spectrums

Operator 00X

Cycle Mode

- None
- Manual
- Automatic
- Time controlled

Number 3

Interval time [s] 1

Display

- Transmittance
- Absorbance
- Energy
- Reflectance

Min: 0.0

Max: 3.0

Correction

- No
- Standard
- Reference
- Special

Open

Title: Spectrums

Operator: Team name

Cycle Node: None

Display: Absorbance

Correction: Reference



Serial measurement

File Edit Start! Reference Help Close To document

Measurement settings Notes Table

Designation	SPECORD 40 - 2321
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Wavelengths
Wavelength [nm]	812
Integration time [s]	0.2

In the next step, select the “Mode” tab in the “Specord 40” subwindow and set the corresponding values.

Specord 40 - untitled.par

OK Cancel Save Open Save as... Help Print

Settings Device **Mode** Accessories

Meas. mode Scan Mode

Scan Mode

Range [nm] 375 - 1100

Delta lambda [nm] 1,0

Speed [nm/s] 50,0

Integration time [s] 0.02

not saved

Meas. mode: *Scan Mode*

Range [nm]: *375 -1100*

Delta lambda [nm]: *1.0*

Speed [nm/s]: *50.0*



Serial measurement

File Edit Start Reference Help Close To document

Measurement settings Notes Table

Designation	SPECORD 40 - 2321
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Wavelengths
Wavelength [nm]	812
Integration time [s]	0.2

Click on the "Save as ..." icon.



Specord 40 - untitled.par

OK Cancel New Open Save Save as... Help Print

Settings Device Mode Accessories

Meas. mode Scan Mode

Scan Mode

Range [nm] 375 - 1100

Delta lambda [nm] 1,0

Speed [nm/s] 50,0

Integration time [s] 0.02

not saved Save as...

Save the file in the directory Documents\Practicals_EN\GroupXX, where XX is the group number.

Serial measurement

File Edit Start! Reference Help Close To document

Measurement settings Notes Table

Designation	SPECORD 40 - 232I
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Wavelengths
Wavelength [nm]	812
Integration time [s]	0.2

OK

Settings

Scan

not saved

Save file

Save in: Katori

Name	Date modified	Type	Size
No items match your search.			

File name: 00X_S

Save as type: Parameterfile

Save Cancel

File name: Team name + _S (The file name consists of the team name and the _S suffix)

Finally, press the "Save" button.



Serial measurement

File Edit Start Reference Help Close To document

Measurement settings Notes Table

Designation	SPECORD 40 - 2321
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Wavelengths
Wavelength [nm]	812
Integration time [s]	0.2

Click on the "OK" icon.

Specord 40 ... (Users\Specord40\Documents\Praktika_CZ\Kantori\00X_S.par)

OK Cancel New Open Save Save as... Help Print

Settings Device Mode Accessories

Meas. mode Scan Mode

Scan Mode

Range [nm] 375 - 1100

Delta lambda [nm] 1,0

Speed [nm/s] 50,0

Integration time [s] 0.02

saved OK

1. Click on the "Edit" icon.

The screenshot shows the 'Serial measurement' window in WinASPECT. The 'Edit' icon in the toolbar is highlighted, and its context menu is open, showing 'Measurement parameters' and 'Sample series'. The 'Sample series' option is selected. The 'Measurement settings' table is visible on the left side of the window.

Measurement settings	Notes
Designation	SPECORD 40 - 2321
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Scan Mode
Range [nm]	375 - 1100
Delta lambda [nm]	1
Speed [nm/s]	50

2. Select "Sample series" from the icon menu.



Serial measurement

File Edit Start! Reference Help Close To document

Measurement settings Notes Table

Designation	SPECORD 40 - 232I
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Scan Mode
Range [nm]	375 - 1100
Delta lambda [nm]	1
Speed [nm/s]	50

Select the "General" tab in the "Serial measurement" subwindow and set the corresponding values.

Serial measurement

General Samples Extras

Description
Spectrums A, B and C

Operator
00X

Notes

OK Cancel

Description: *Spectrums A, B and C*

Operator: *Identification of your team*



Serial measurement

File Edit Start! Reference Help Close To document

Measurement settings Notes Table

Designation	SPECORD 40 - 2321
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Scan Mode
Range [nm]	375 - 1100
Delta lambda [nm]	1
Speed [nm/s]	50

1. In the next step, select the "Samples" tab in the "Serial measurement" subwindow.

2. Set "Number of measurements" to 3.

Serial measurement

General Samples Extras

Number of measurements: 3

Automatic sample names
 Table of sample names

1.	Sample 1
2.	Sample 2
3.	Sample 3

OK Cancel

3. Select the "Table of samples names" radio button.

4. Fill in the sample names corresponding to the sample bottle labels.

5. Finally, press the "OK" button and the "Serial measurement" subwindow will close.



Serial measurement

File Edit Start Reference Help Close To document

Spectrums A, B and C
00X

Measurement settings Notes Table

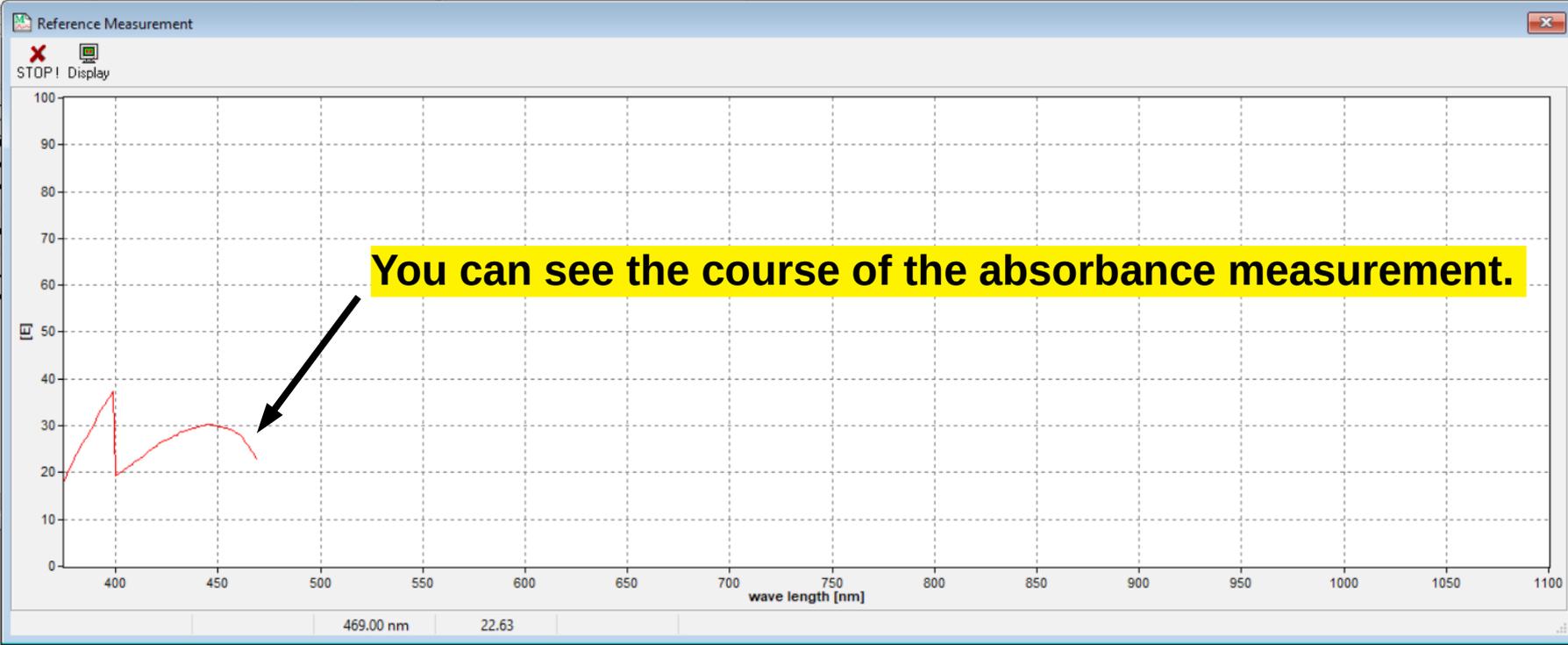
Designation	SPECORD 40 - 2321
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Scan Mode
Range [nm]	375 - 1100
Delta lambda [nm]	1
Speed [nm/s]	50

Include the reference sample and click on the "Reference" icon.

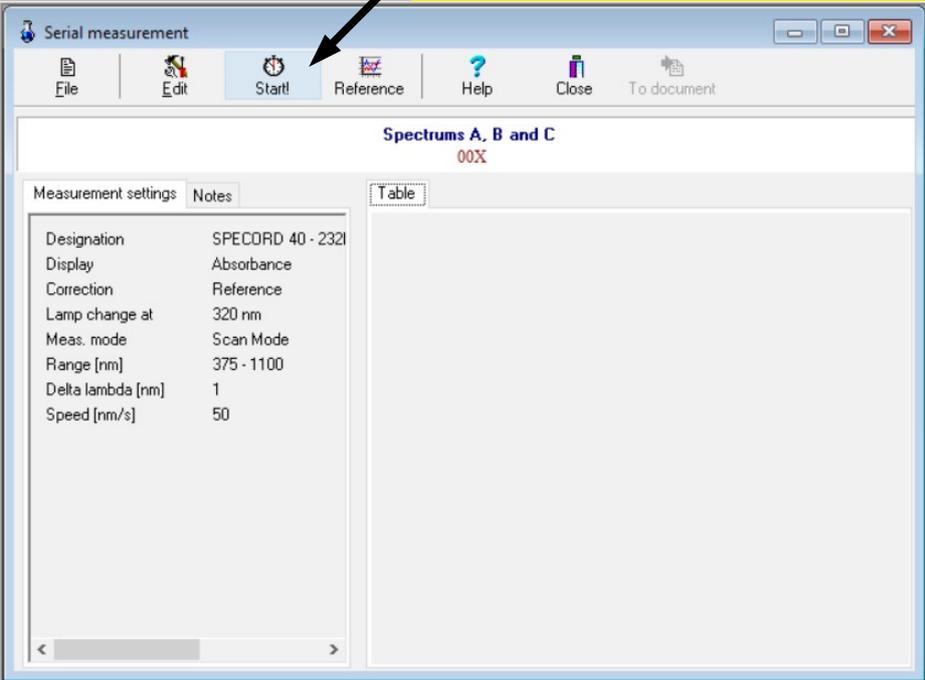


Serial measurement [min] [max] [close]

[stop] [help] [info] [display]



Click on the "Start" icon.



The screenshot shows the 'Serial measurement' window in WinASPECT. The window title is 'Serial measurement'. The menu bar includes File, Edit, Start!, Reference, Help, Close, and To document. The 'Start!' icon is highlighted with a yellow box and an arrow pointing to it. The main area is titled 'Spectrums A, B and C' with '00X' below it. There are two tabs: 'Measurement settings' and 'Notes'. The 'Measurement settings' tab is active, showing a list of parameters and their values:

Designation	SPECORD 40 - 2321
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Scan Mode
Range [nm]	375 - 1100
Delta lambda [nm]	1
Speed [nm/s]	50

To the right of the settings is a 'Table' tab, which is currently empty. A horizontal scrollbar is visible at the bottom of the settings area.



Serial measurement

File Edit Start! Reference Help Close To document

Spectrums A, B and C
00X

Measurement settings Notes Table

Designation	SPECORD 40 - 232I
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Scan Mode
Range [nm]	375 - 1100
Delta lambda [nm]	1
Speed [nm/s]	50

A request to insert sample A appears.

Information

Please insert first sample.:
Sample 1

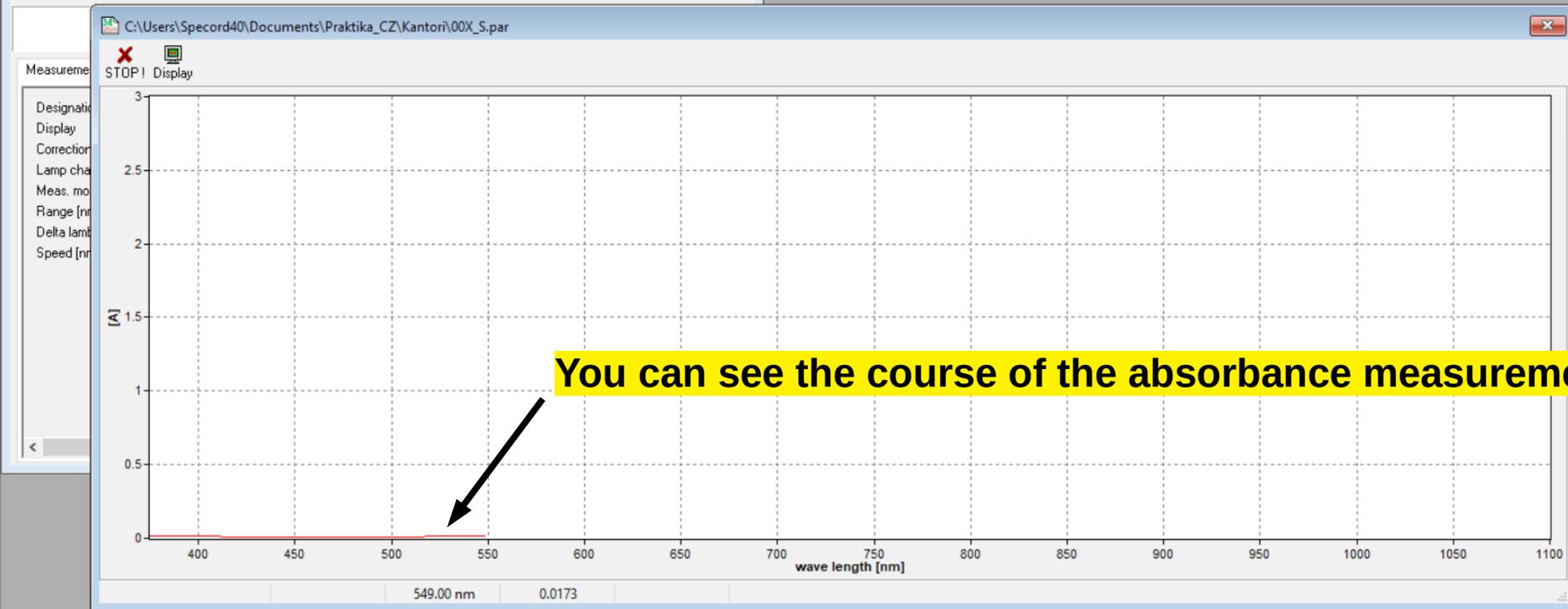
OK Cancel

Insert sample A and press the "OK" button.



Serial measurement

File Edit Start Reference Help Close To document





Serial measurement

File Edit Start! Reference Help Close To document

Spectrums A, B and C
00X

Measurement settings Notes

Designation SPECORD 40 - 2321
Display Absorbance
Correction Reference
Lamp change at 320 nm
Meas. mode Scan Mode
Range [nm] 375 - 1100
Delta lambda [nm] 1
Speed [nm/s] 50

Table Grafic

		375.0 nm	376.0 nm	377.0 nm	3
1	Sample 1	0.0126	0.0129	0.0130	0

A request to insert sample B appears.

Information

Please insert next sample:
Sample 2

OK Cancel

Insert sample B and press the "OK" button.



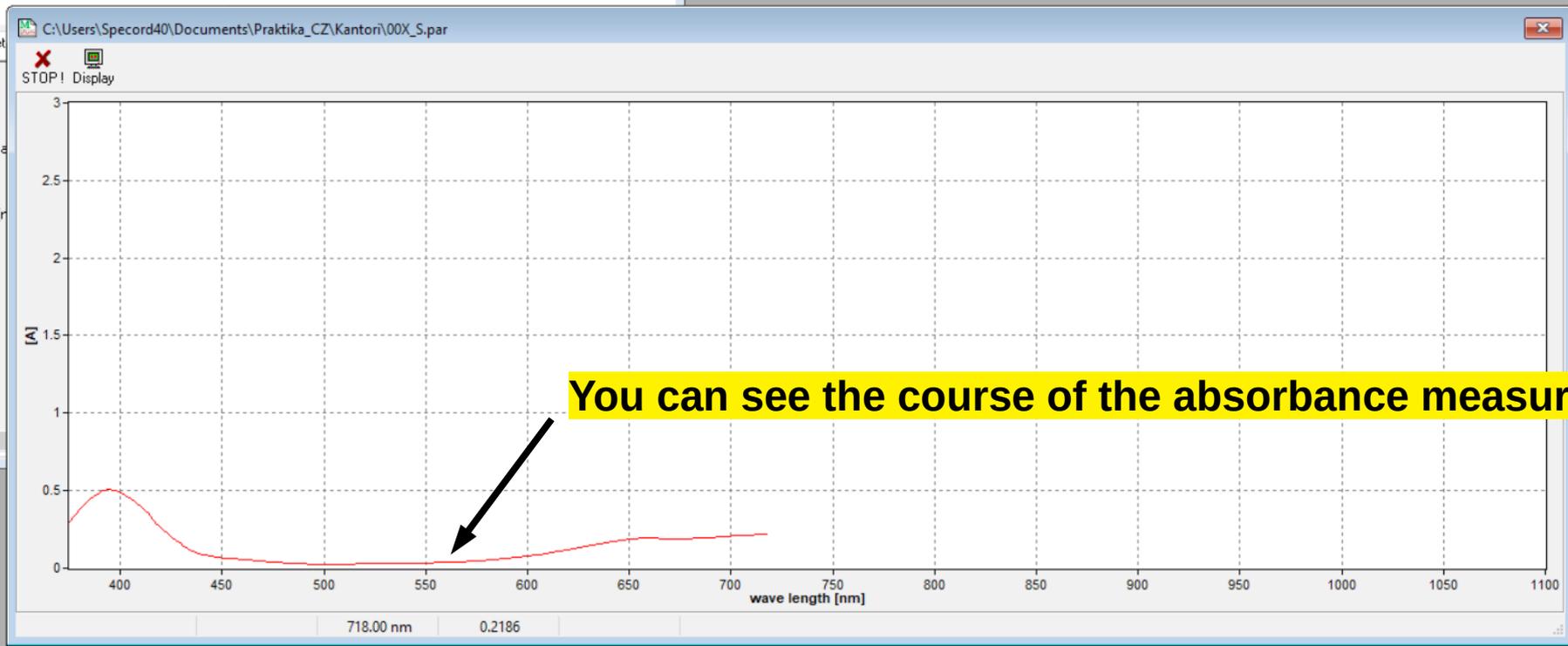
Serial measurement

File Edit Start! Reference Help Close To document

Spectrums A, B and C

Measurement set

- Designation
- Display
- Correction
- Lamp change a
- Meas. mode
- Range [nm]
- Delta lambda [n
- Speed [nm/s]





Serial measurement

File Edit Start Reference Help Close To document

Spectrums A, B and C
00X

Measurement settings Notes

Designation SPECORD 40 - 2321
Display Absorbance
Correction Reference
Lamp change at 320 nm
Meas. mode Scan Mode
Range [nm] 375 - 1100
Delta lambda [nm] 1
Speed [nm/s] 50

Table Grafik

		375.0 nm	376.0 nm	377.0 nm	3
1	Sample 1	0.0126	0.0129	0.0130	0
2	Sample 2	0.3013	0.3163	0.3319	0

A request to insert sample C appears.

Information

Please insert next sample:
Sample 3

OK Cancel

Insert sample C and press the "OK" button.



Serial measurement

File Edit Start! Reference Help Close To document

Spectrums A, B and C
00X

- Measurement settings
- Designation
 - Display
 - Correction
 - Lamp change at
 - Meas. mode
 - Range [nm]
 - Delta lambda [nm]
 - Speed [nm/s]



You can see the course of the absorbance measurement.



Serial measurement

File Edit Start! Reference Help Close To document

Spectrums A, B and C
00X

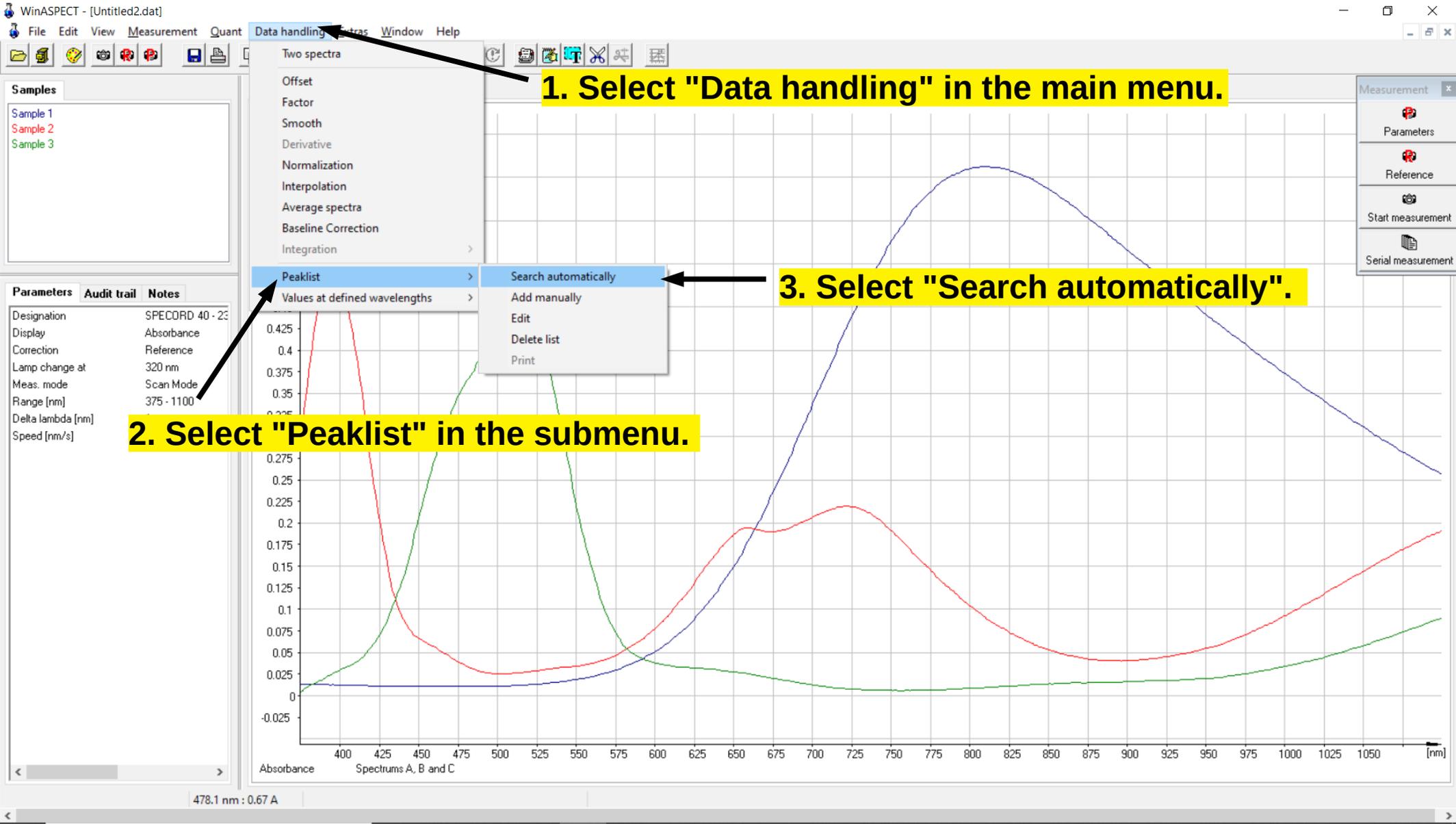
Measurement settings Notes

Designation SPECORD 40 - 2321
Display Absorbance
Correction Reference
Lamp change at 320 nm
Meas. mode Scan Mode
Range [nm] 375 - 1100
Delta lambda [nm] 1
Speed [nm/s] 50

Table Grafic

		375.0 nm	376.0 nm	377.0 nm	3
1	Sample 1	0.0126	0.0129	0.0130	0
2	Sample 2	0.3013	0.3163	0.3319	0
3	Sample 3	0.0049	0.0062	0.0079	0

Click on the "To document" icon after measuring the spectrums.





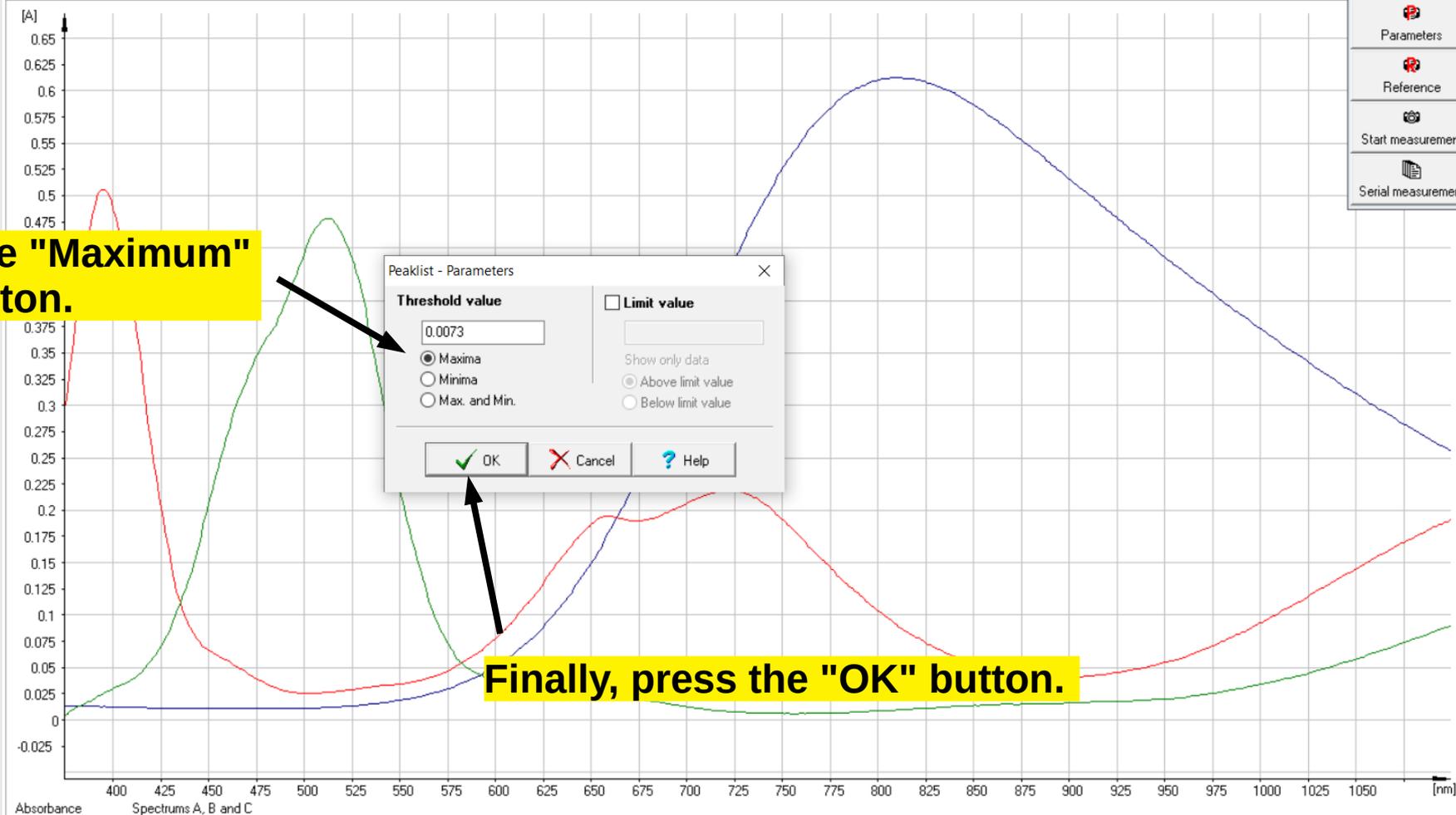
Samples

Sample 1
Sample 2
Sample 3

Parameters

Designation
Display
Correction
Lamp change at 350 nm
Meas. mode Scan Mode
Range [nm] 375 - 1100
Delta lambda [nm] 1
Speed [nm/s] 50

Transmittance Absorbance Values

**Select the "Maximum"
radio button.**

Peaklist - Parameters

Threshold value: 0.0073

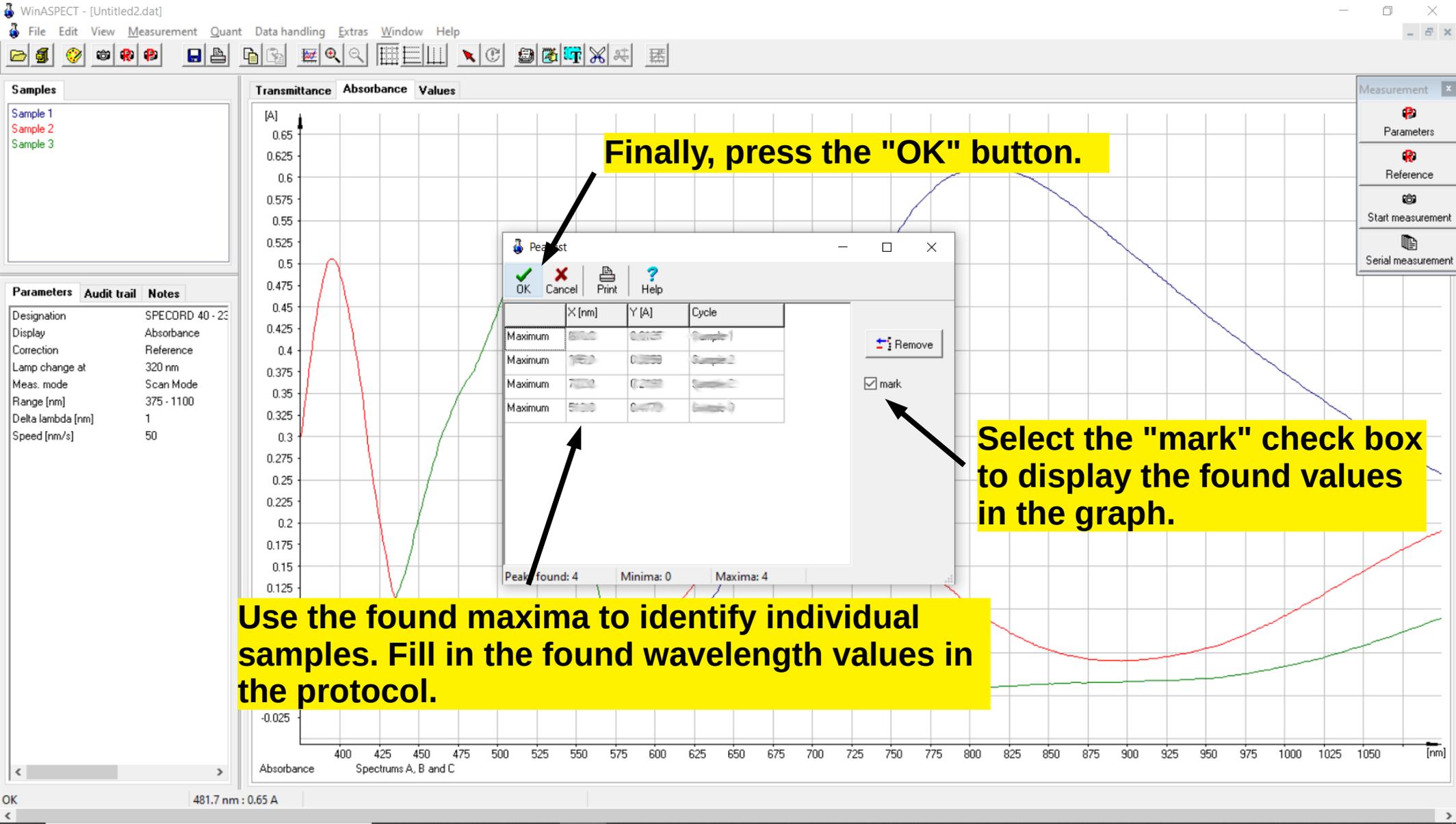
Maxima
 Minima
 Max. and Min.

Limit value

Show only data:
 Above limit value
 Below limit value

OK Cancel Help

Finally, press the "OK" button.





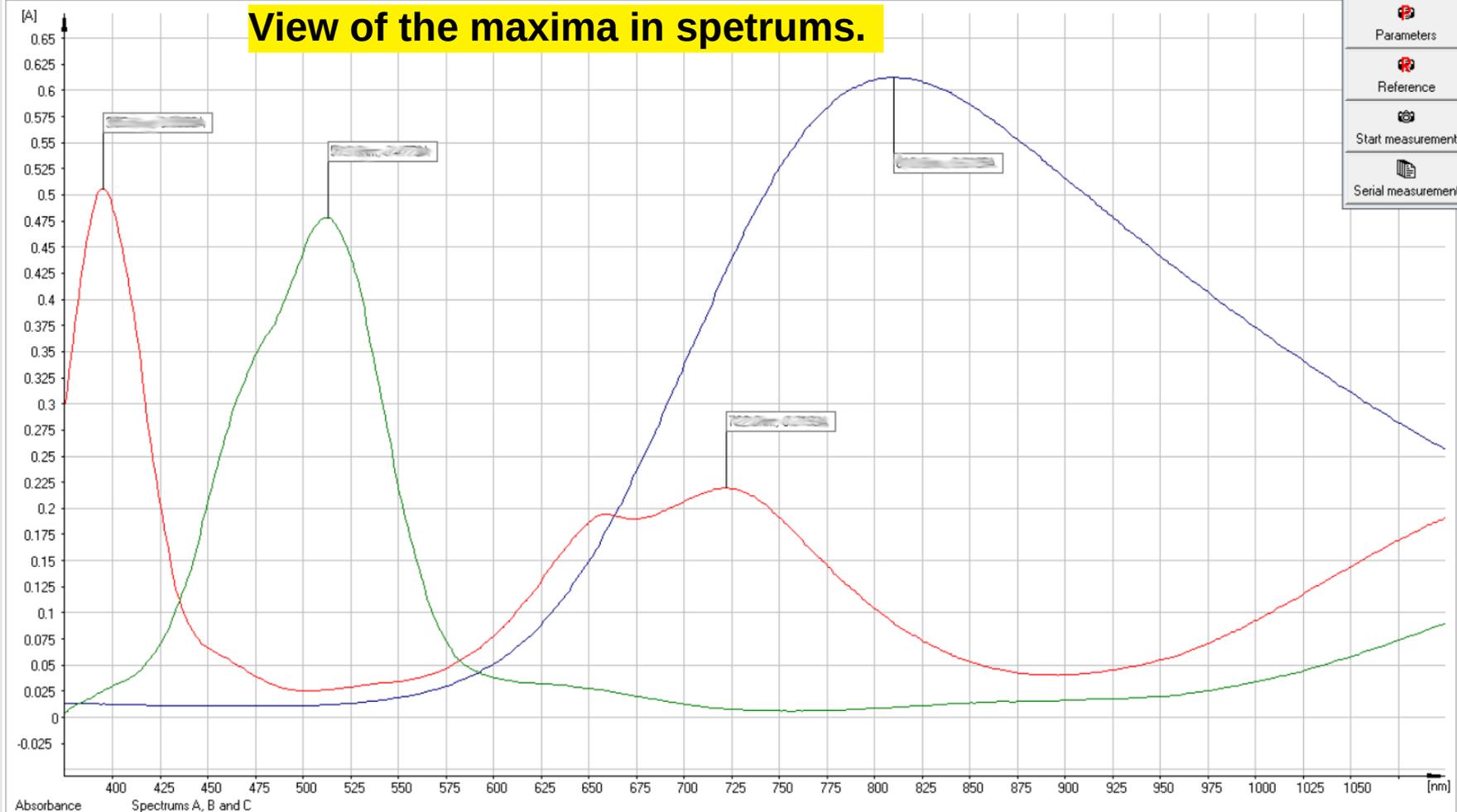
Samples

Sample 1
Sample 2
Sample 3

Parameters Audit trail Notes

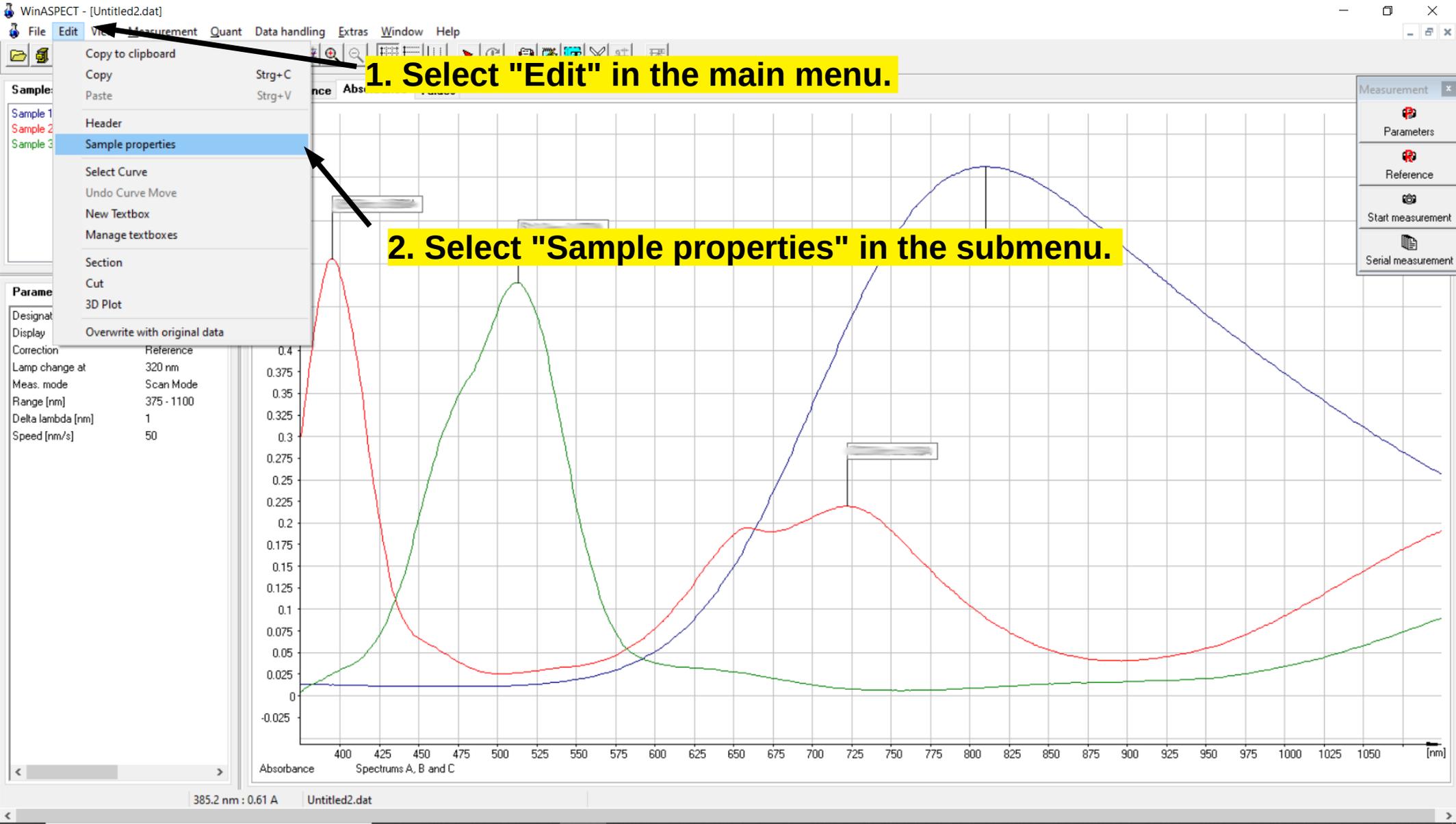
Designation	SPECORD 40 - 20
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Scan Mode
Range [nm]	375 - 1100
Delta lambda [nm]	1
Speed [nm/s]	50

Transmittance Absorbance Values



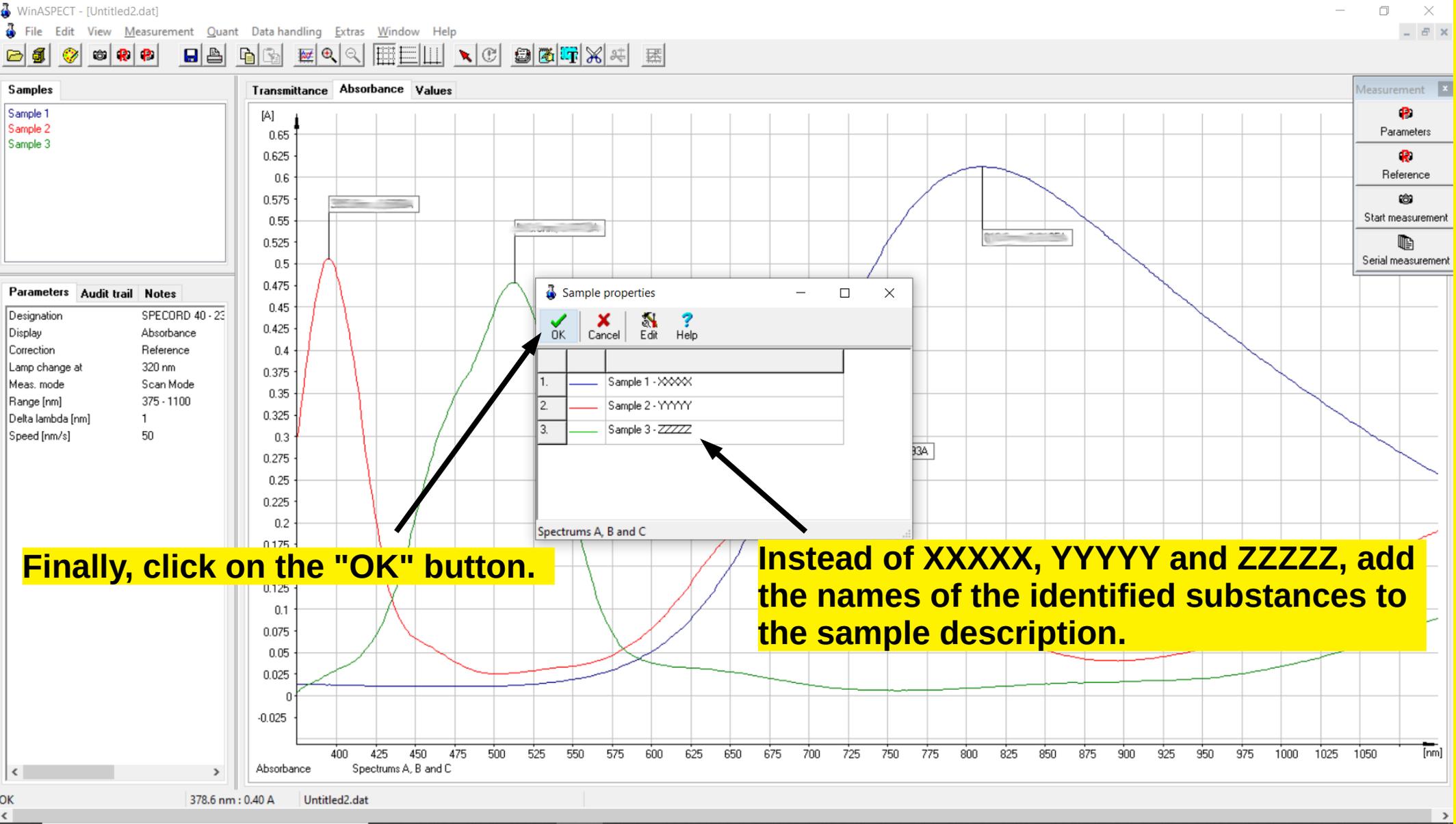
Measurement

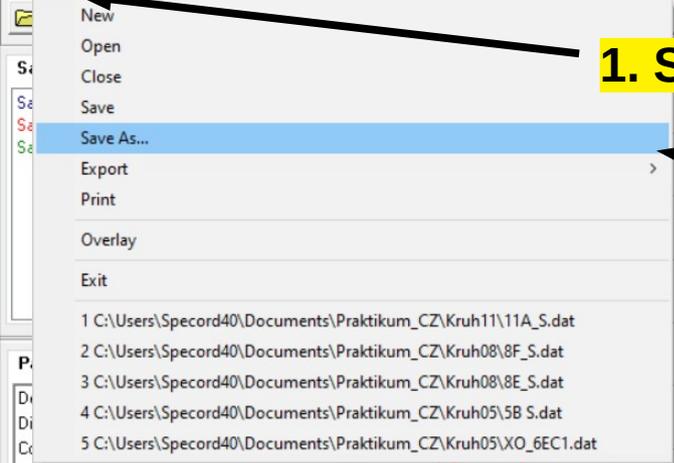
Parameters
Reference
Start measurement
Serial measurement



1. Select "Edit" in the main menu.

2. Select "Sample properties" in the submenu.

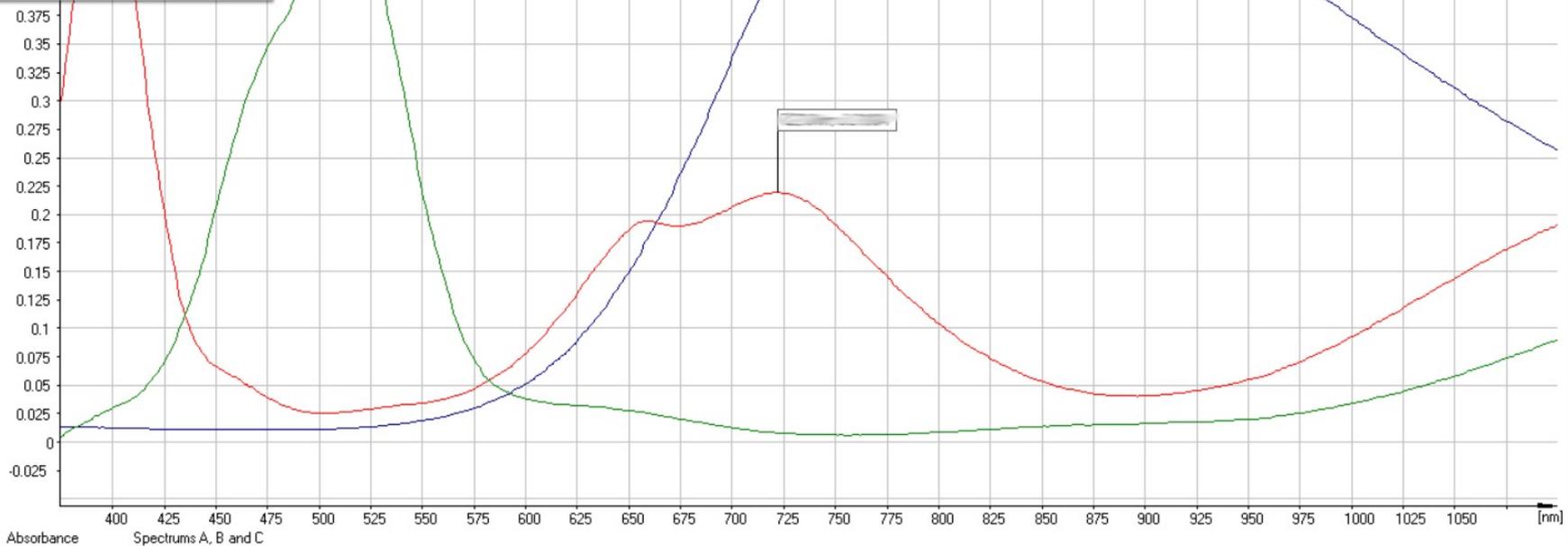




1. Select "File" in the main menu.

2. Select "Save as" in the submenu.

Lamp change at 320 nm
Meas. mode Scan Mode
Range [nm] 375 - 1100
Delta lambda [nm] 1
Speed [nm/s] 50



Measurement

Parameters

Reference

Start measurement

Serial measurement



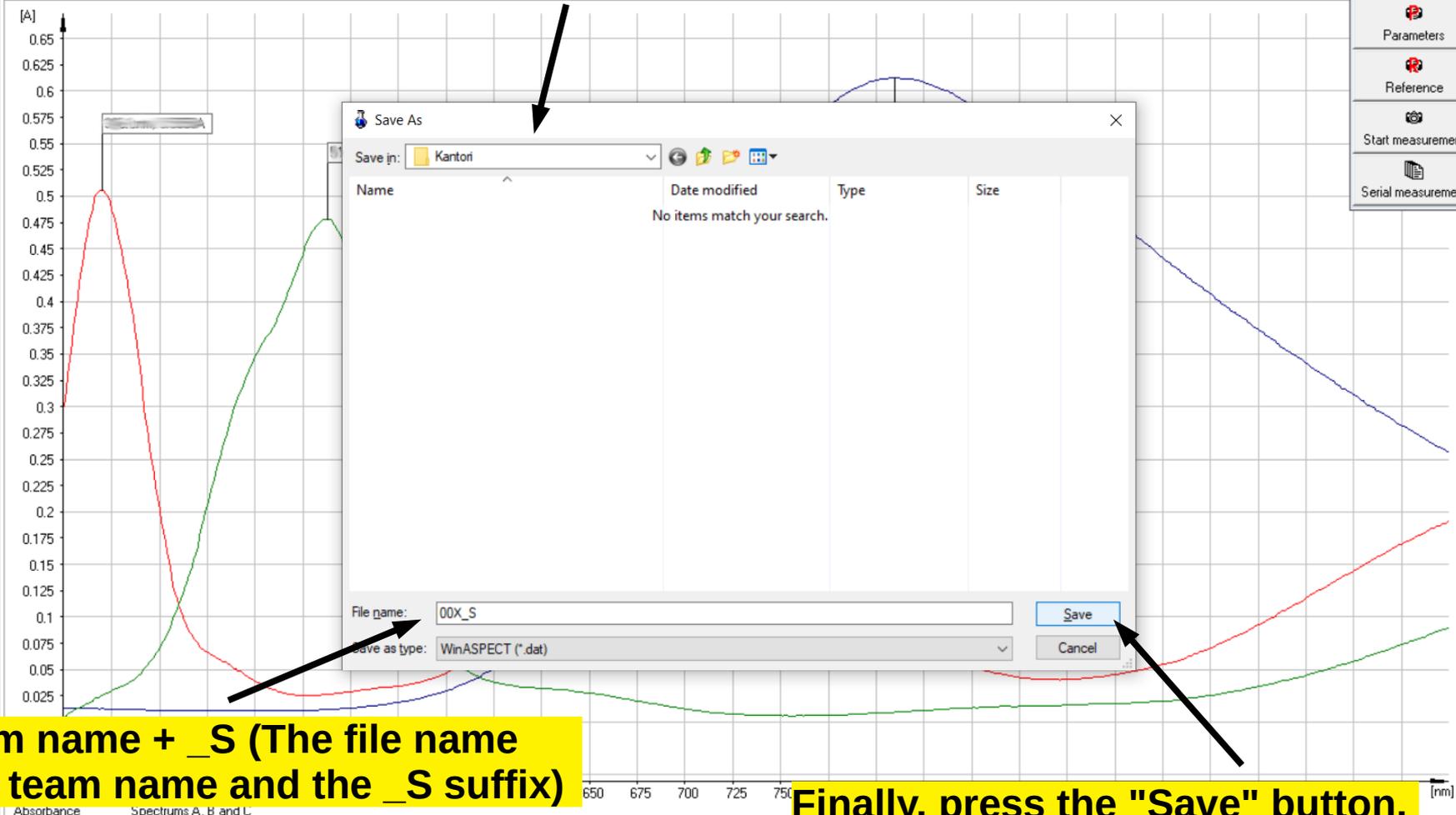
Samples

Sample 1 - XXXXX
Sample 2 - YYYYY
Sample 3 - ZZZZZ

Parameters Audit trail Notes

Designation	SPECORD 40 - 20
Display	Absorbance
Correction	Reference
Lamp change at	320 nm
Meas. mode	Scan Mode
Range [nm]	375 - 1100
Delta lambda [nm]	1
Speed [nm/s]	50

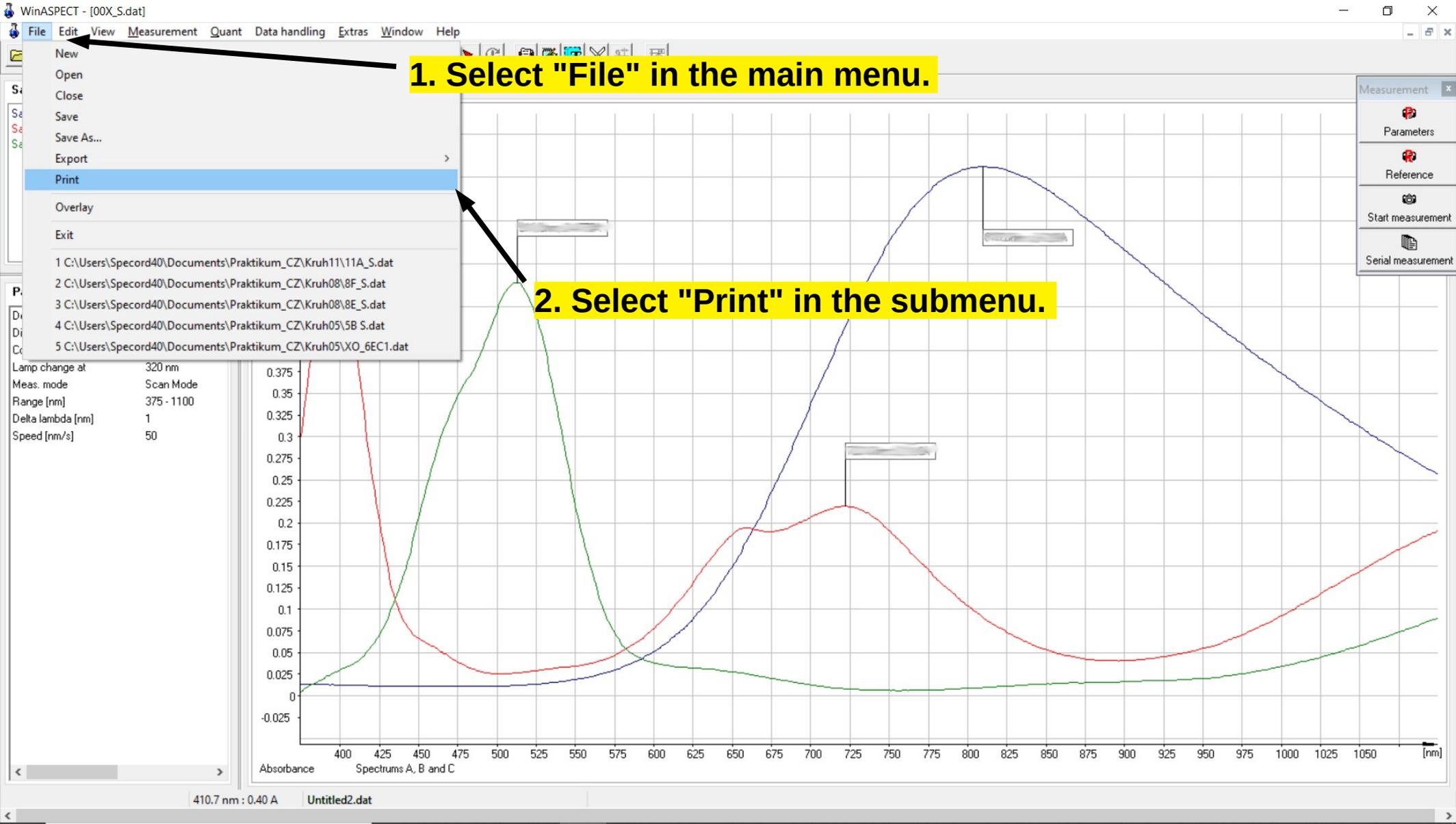
Transmittance Absorbance

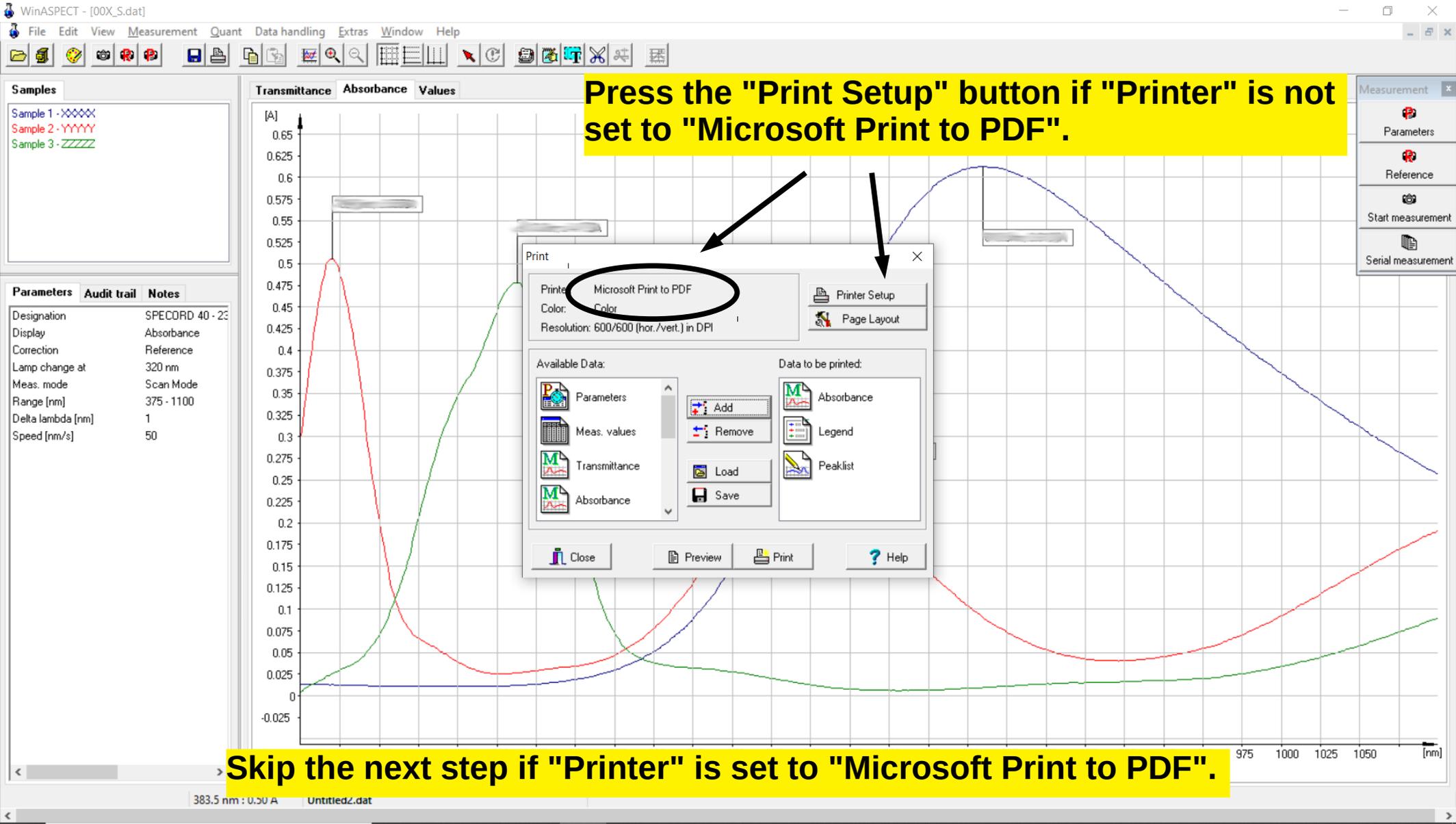


Save the file in the directory Documents\Practicals_EN\GroupXX, where XX is the group number.

File name: Team name + _S (The file name consists of the team name and the _S suffix)

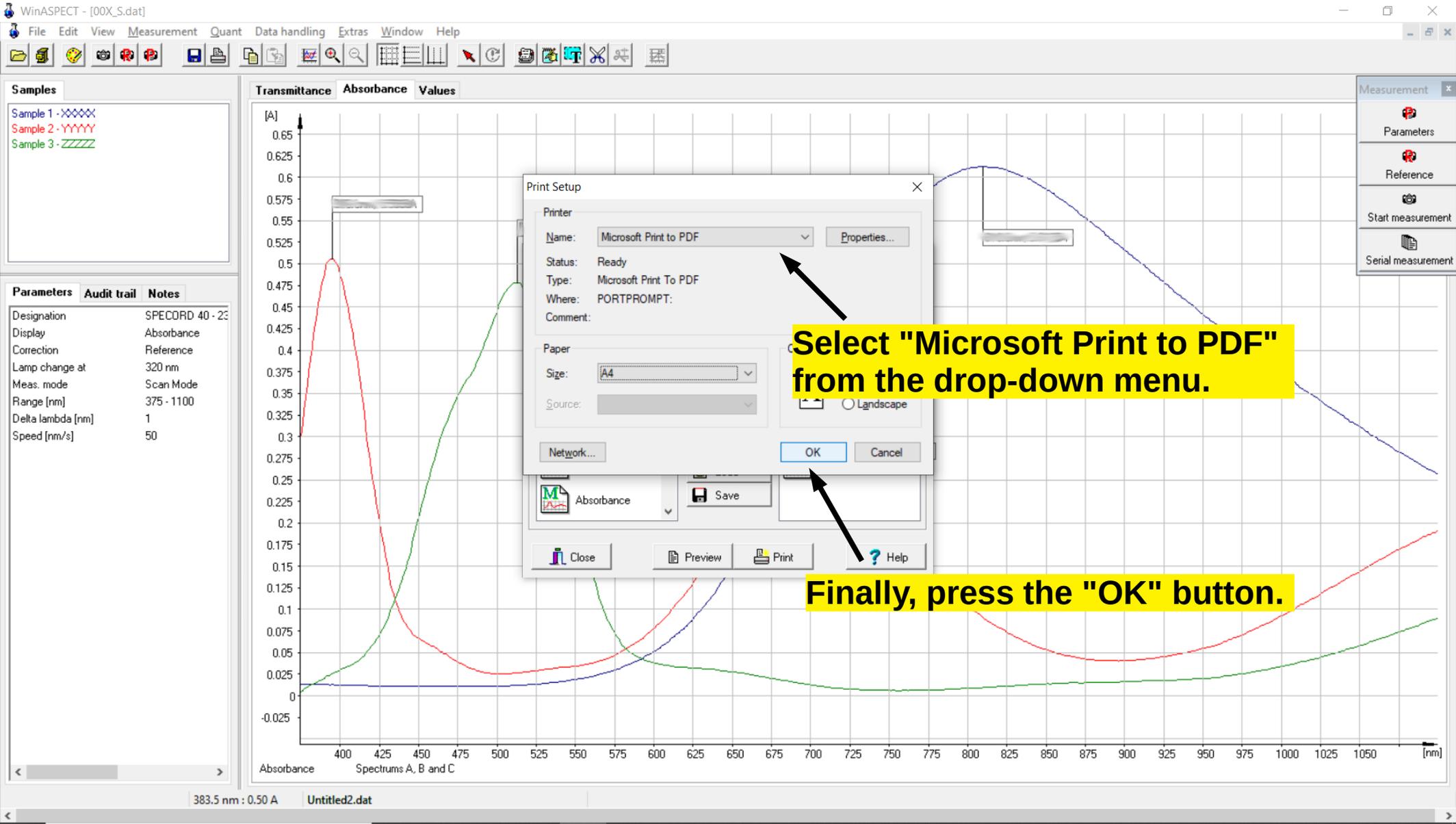
Finally, press the "Save" button.



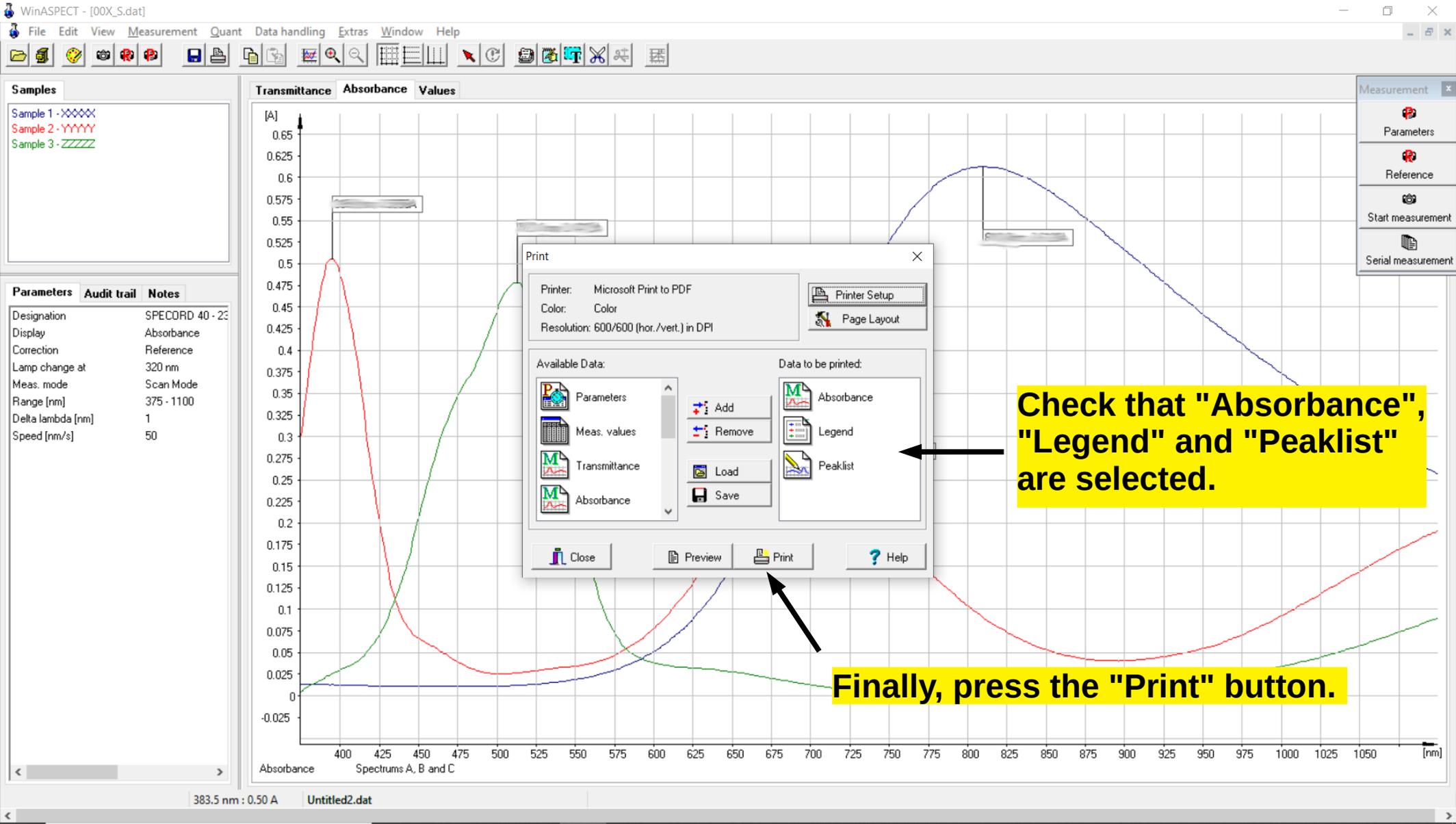


Press the "Print Setup" button if "Printer" is not set to "Microsoft Print to PDF".

Skip the next step if "Printer" is set to "Microsoft Print to PDF".



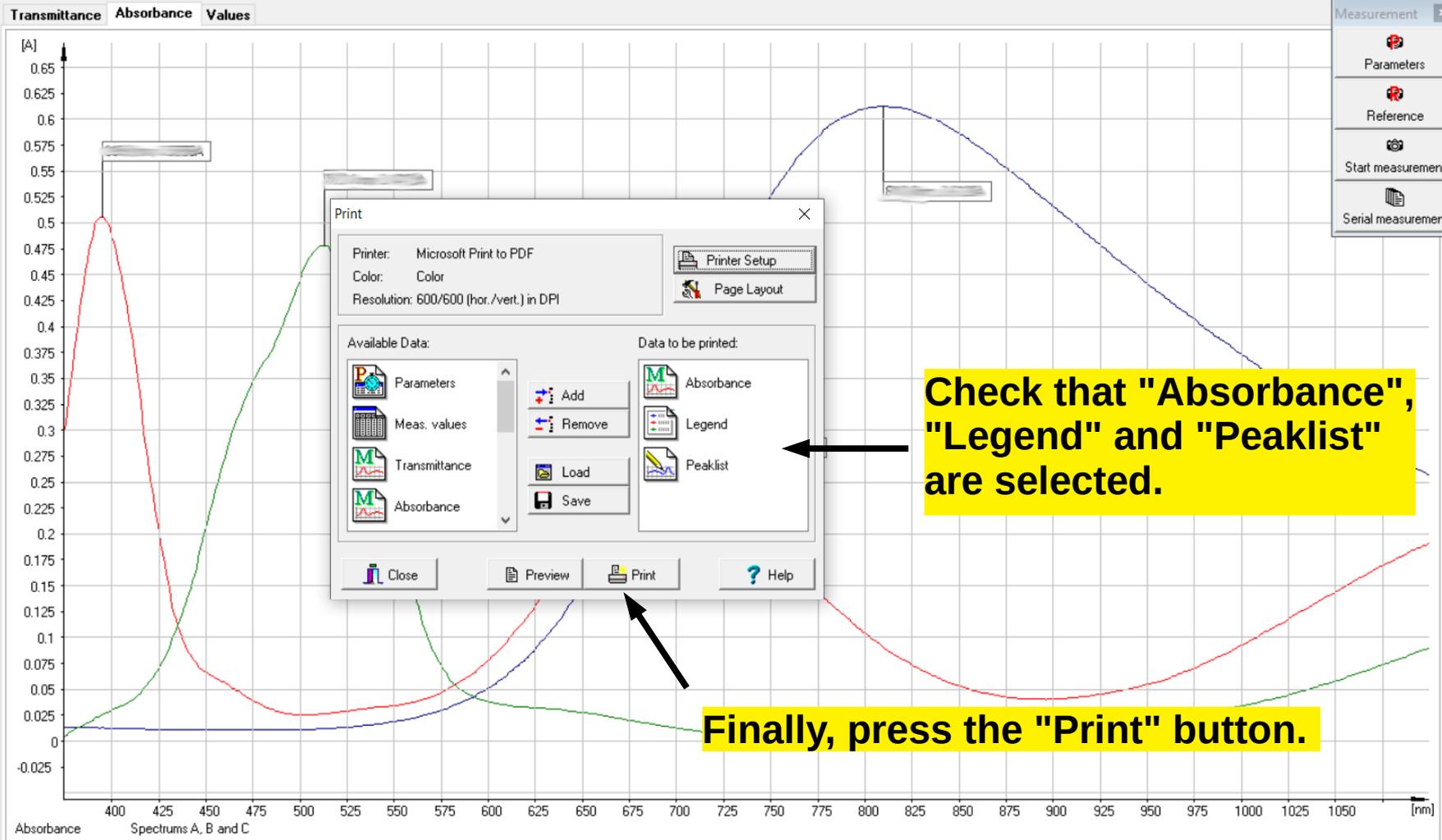
Parameters	Audit trail	Notes
Designation	SPECORD 40 - 20	
Display	Absorbance	
Correction	Reference	
Lamp change at	320 nm	
Meas. mode	Scan Mode	
Range [nm]	375 - 1100	
Delta lambda [nm]	1	
Speed [nm/s]	50	



Samples

- Sample 1 - XXXXX
- Sample 2 - YYYYY
- Sample 3 - ZZZZZ

Parameters	Audit trail	Notes
Designation	SPECORD 40 - 20	
Display	Absorbance	
Correction	Reference	
Lamp change at	320 nm	
Meas. mode	Scan Mode	
Range [nm]	375 - 1100	
Delta lambda [nm]	1	
Speed [nm/s]	50	



Print

Printer: Microsoft Print to PDF
Color: Color
Resolution: 600/600 (hor./vert.) in DPI

Printer Setup
Page Layout

Available Data:

- Parameters
- Meas. values
- Transmittance
- Absorbance

Data to be printed:

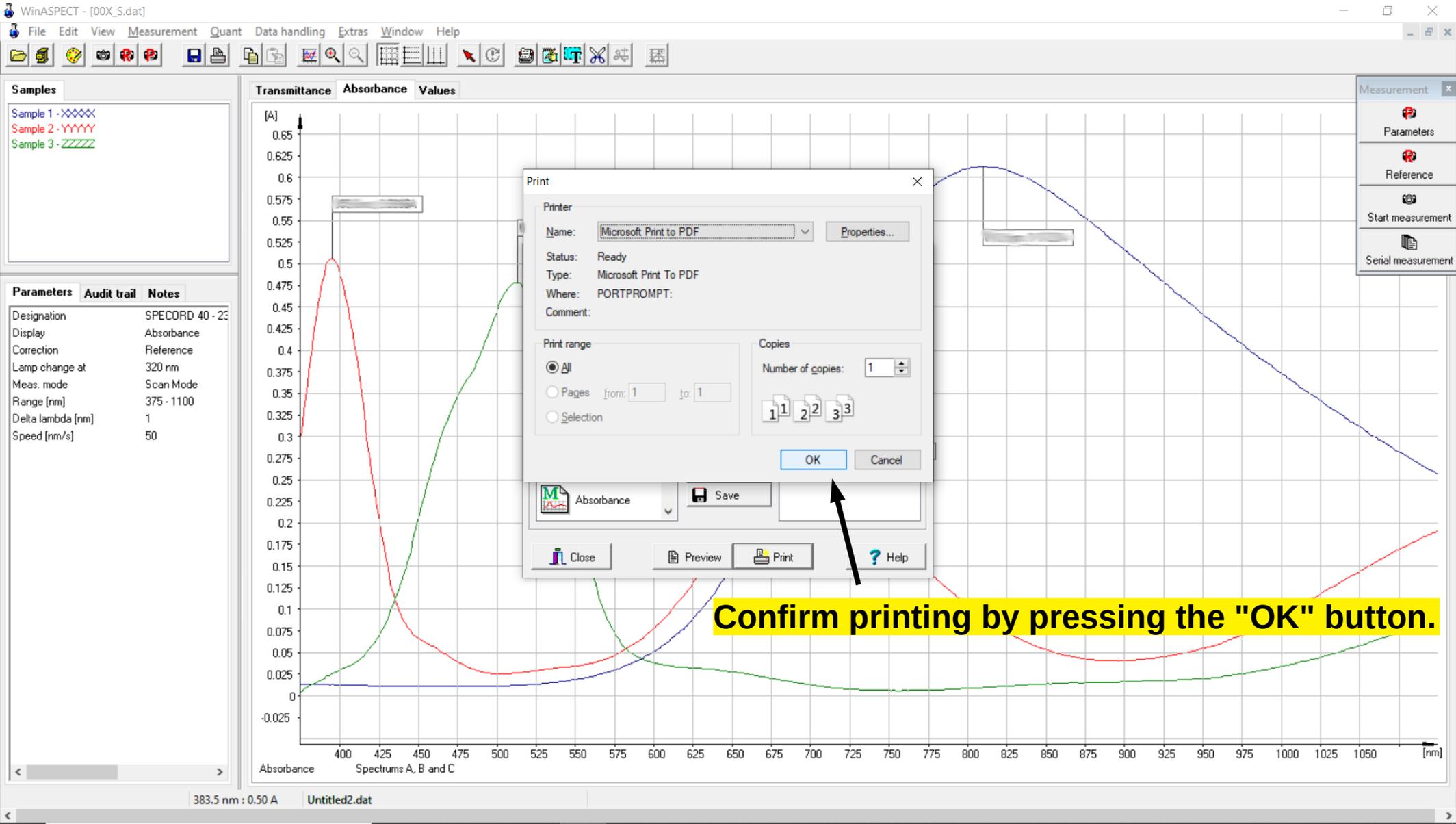
- Absorbance
- Legend
- Peaklist

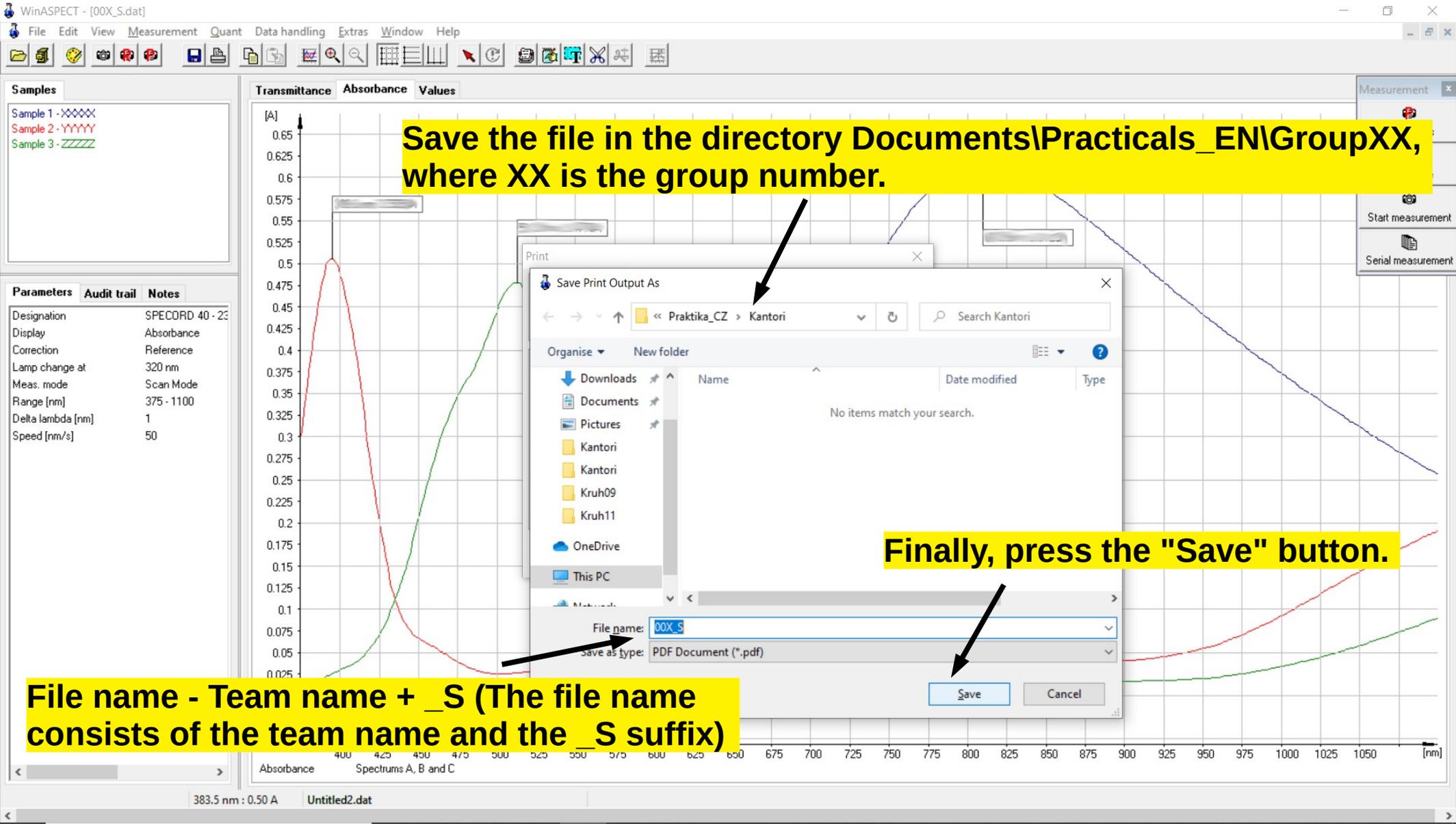
Add Remove Load Save

Close Preview Print Help

Check that "Absorbance", "Legend" and "Peaklist" are selected.

Finally, press the "Print" button.

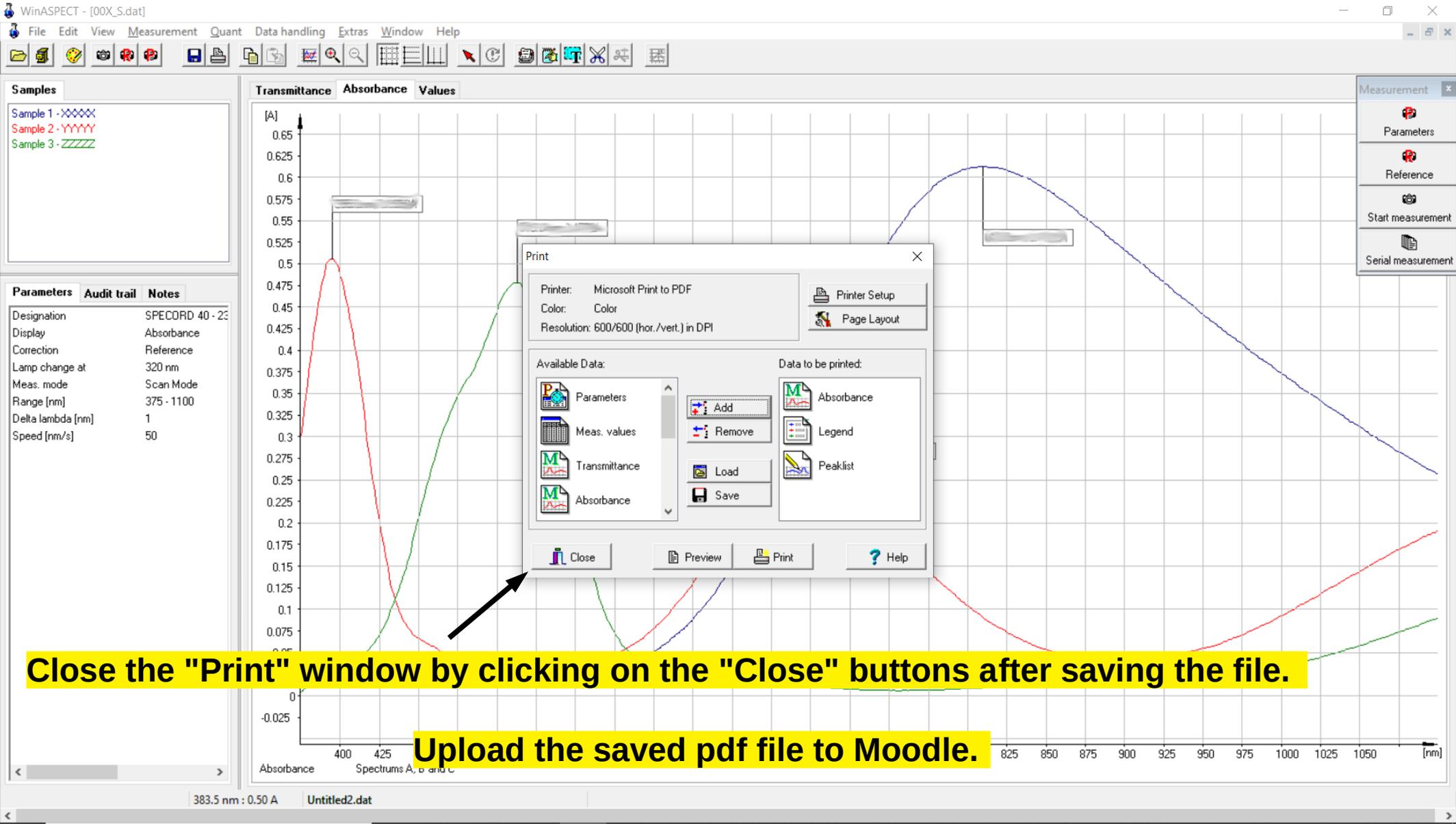




Save the file in the directory Documents\Practicals_EN\GroupXX, where XX is the group number.

Finally, press the "Save" button.

File name - Team name + _S (The file name consists of the team name and the _S suffix)



The end