

SpectroLink™

Digitize your UV-Vis workflow



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1. Disclaimer

The information in this document is subject to change without notice and does not represent a commitment on the part of Copenhagen Nanosystems ApS.

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Document authored by:

Copenhagen Nanosystems ApS, Hørmarken 2, DK-3520 Farum, Denmark

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2. Safety information

To avoid damaging your device, accessories or any connected devices, and to reduce the risk of personal injury, discomfort, property damage or other potential hazards, follow the precautions below.

Handling

Handle your SpectroLink™ with care. Do not drop, bend, burn, crush or puncture it. Do not use a device with a damaged enclosure.

Be sure that the SpectroLink™ device, power adapter, and cable is kept safe from physical damage during operation. Using a damaged product may cause injury. Do not expose your device to moisture or liquids, which can cause a short circuit or overheating. If your device gets wet, do not attempt to dry it using an external heat source.

SpectroLink™ is designed to operate in a dry, indoor environment with ambient temperatures between 0 °C and 50 °C and should be stored in ambient temperatures between -20 °C and 70 °C. Do not cover your SpectroLink™ during operation as this may damage the product or pose a potential risk of fire. Keep your device away from heat sources and out of direct sunlight.

All peripherals, such as spectrophotometers, used with this product should comply with relevant standards for the country of use and be marked accordingly to ensure that safety and performance requirements are met.

Repair & service

Do not attempt to repair your SpectroLink™ yourself. Disassembling the device may cause injury to you or damage your device.

Contact customer service and do not use your device if it isn't working properly or has been damaged.

For online help and support, visit: spectrolink.cphnano.com.

To reach an expert, visit: <https://knowledge.cphnano.com/en/pages/support-for-spectrolink>.

Powering your device

Only power your SpectroLink™ with the included power adapter and cable. Failure to do so can cause fire, electric shock, injury, or damage to the device and the accessories.

Using a damaged cable or power adapter can cause fire, electric shock, injury, or damage to your device or other property. When powering the device make sure the power adapter is plugged into a socket near the device and is easily accessible.

Do not attempt to take apart or open the power adapter. Contact with live wires and components can expose you to life-threatening electrical shock.

The power adapter may become warm when in use and should not be covered. Take care to keep the power adapter in an open space with access to free air in order to ventilate it in the best possible manner. Be sure to not expose the power adapter to extreme heat conditions.

When disconnecting the power adapter from a power outlet, be sure that the plug pulls out straight directly from the wall. Pull on the adapter, never on the cable. Do not twist or pinch the cable, and do not force a connector into a port.

Radio frequency interference

Observe rules that prohibit the use of wireless technology (e.g. WiFi). Your device is designed to comply with regulations governing radio frequency emissions but use of wireless devices can negatively affect other electronic equipment.

Medical device interference

Your device uses radios and other components that emit electromagnetic fields. These electromagnetic fields and magnets may interfere with pacemakers and other implanted medical devices. Always keep the product and its power adapter at a safe distance away from the pacemaker or other implanted medical device. If you have questions about using your device with or near your pacemaker or other implanted medical device, consult your healthcare provider before using your product. If you suspect your product is interfering with your pacemaker or other implanted medical devices, turn off your device and consult your physician for information specific to your medical device.

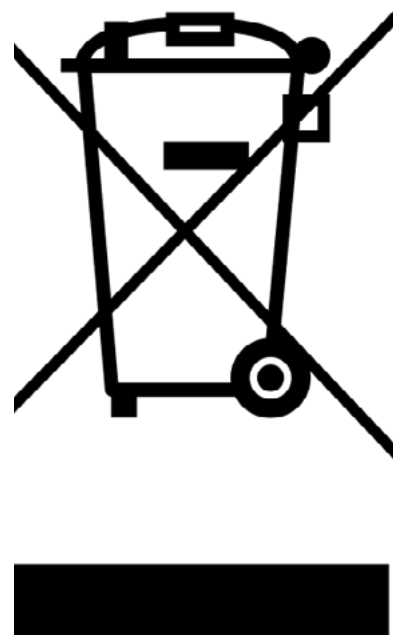
Child safety

This device is not a toy. Your product may contain (or may come with) small parts, plastic elements, and parts with sharp edges that may cause an injury or create a choking hazard. Children have strangled on cords and cables. Keep SpectroLink™'s cables out of the reach of children and do not allow them to play with the device or its accessories. They could hurt themselves or others or could accidentally damage the product. Consult a physician immediately if small parts are swallowed.

3. Disposal and recycling information

The WEEE symbol above means that according to local laws and regulations, your product should be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities for safe disposal or recycling.

It is the responsibility of the user to dispose of the equipment using a designated collection point or service for separate recycling of waste electrical and electronic equipment (WEEE) according to local laws. Proper collection and recycling of your equipment helps ensure electrical and electronic equipment (EEE) waste is recycled in a manner that conserves valuable materials and protects human health and the environment.



4. Warranty

This product has a 2 year limited guarantee of conformity in accordance with the European directive 1999/44/EC, which is supplied by the manufacturer for products sold within the European Union.

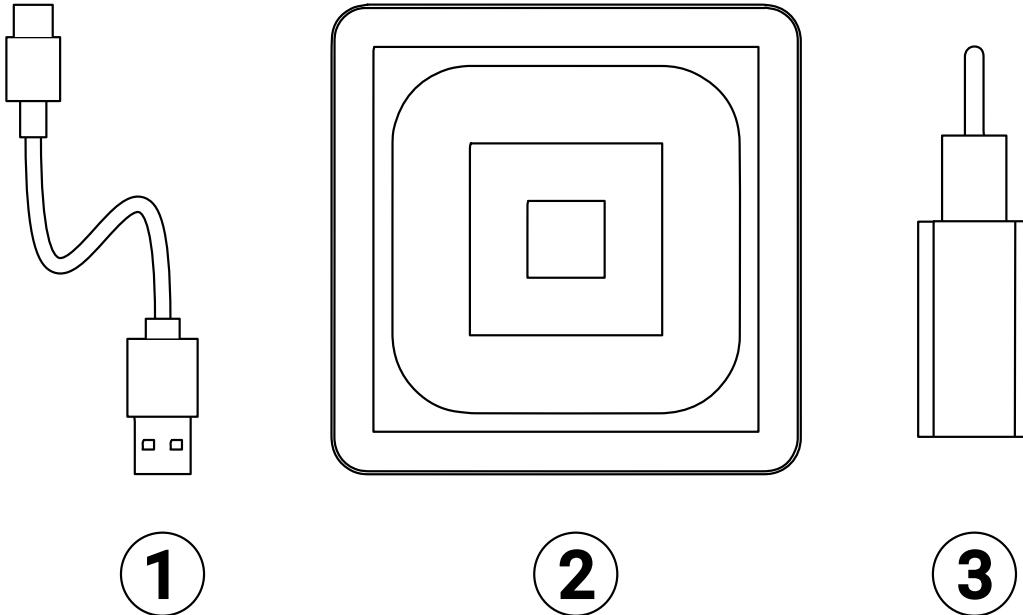
5. Welcome to SpectroLink™

Thank you for choosing SpectroLink™. It is because of customers like you that we can continue to build deep-tech based laboratory solutions that significantly increases productivity and lowers downtime in the laboratories around the world. SpectroLink™ is your new streaming device between the online laboratory workspace, SpectroWorks™ and your spectrophotometer. It cuts away the use of platform dependent software by offering a clean and user-friendly end-to-end experience between you and your spectrophotometer through SpectroWorks™.

This documentation provides you with all the information needed for you to get started with doing measurements on your spectrophotometer using SpectroLink™ and SpectroWorks™.

6. What is in the box

1. 1x 1m USB-A to USB-C cable for power (1)
2. 1x SpectroLink™ (2)
3. 1x Power adapter (3)



7. Prerequisites

- Your SpectroLink™ along with its box contents.
- A currently supported spectrophotometer with USB connectivity.
- Check yours at:
<https://spectrolink.cphnano.com/supported-spectrophotometers>
 - We also have a guide for setting good parameters before measurements for each supported spectrophotometer (more on this later).
- Any internet ready device with a suitably sized screen for using SpectroWorks™ (tablet, laptop etc.).
- Access to the internet via ethernet or WiFi.

7.1 App for setting up WiFi on SpectroLink™

The WiFi setup is as follows:

Install the WiFi connect tool, BerryLan, on an Android or iOS based device from the Google Play or App Store.

Get it here or via the QR code below: <https://spectrolink.cphnano.com/setup>

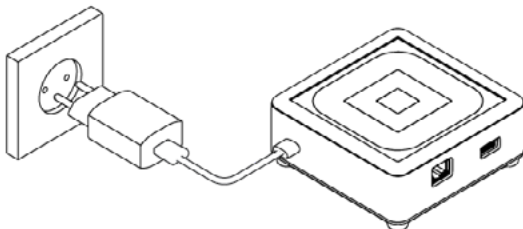
Everytime SpectroLink™ is powered on, it will enter a WiFi setup discovery mode lasting around **5 min.** SpectroLink™ will proceed to boot up and be ready for use if it is already connected to WiFi or ethernet.



8. Setting up SpectroLink™

1

Powering your device

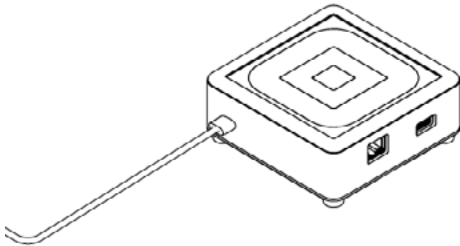


1. With the included power adapter and USB cable, connect the USB-A end of the cable to the power adapter.
2. Plug in the power adapter to a power adapter.
3. Connect the USB-C end of the cable to the socket of your SpectroLink™.



2

1. Make sure Bluetooth is enabled on your mobile device and enter the BerryLan app.
2. The app immediately starts searching for your SpectroLink™. It should appear as CPHNANO after around 50s from powering it on. Tap on it and proceed.
3. On the next view, the app asks you to choose an access point. Select the one you would like to connect with your SpectroLink™.
4. The app will prompt you to enter the password for your access point. Once it has been entered, your SpectroLink™ will proceed to start up and be ready to use.



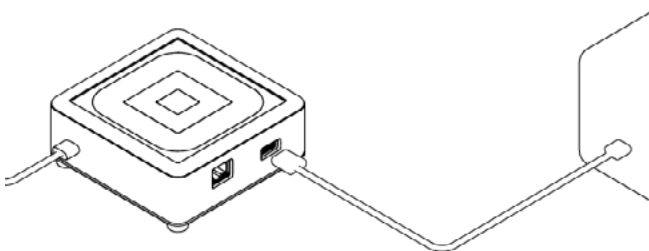
Ethernet setup

Another way of getting your SpectroLink™ online is using an ethernet cable. With an ethernet setup one can skip paragraph 2.

3

Connecting SpectroLink™ to the spectrophotometer

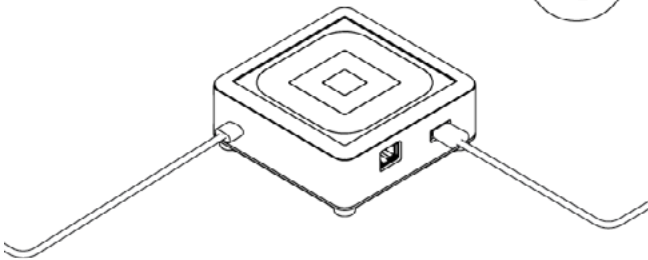
1. Connect the USB cable to the USB-A socket on your SpectroLink™ and the other end to the USB socket of your spectrophotometer.
2. Power on your spectrophotometer.
3. Enable USB mode on your spectrophotometer if available and necessary for USB communication.




4

Access SpectroLink™ in SpectroWorks™

Now you can access our online software [SpectroWorks.com](https://spectroworks.com) to start measuring, analyzing and reporting results.



1. From [SpectroWorks.com](https://spectroworks.com), click “**Log-in**” to access your SpectroWorks™ account. Here you can enter your login credentials or create an account.
2. You will either enter the last accessed project with the list of finished or ongoing workflows, or be directed to the project overview, where you can select a project or create a new one.



Sign in with your email and password

Email

Password

[Forgot your password?](#)

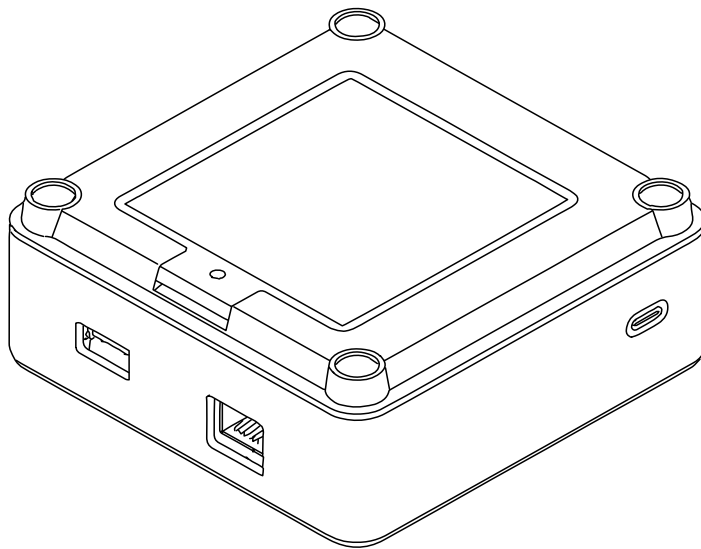
Sign in

Need an account? [Sign up](#)

3. In the tab menu on the top left, click on the “**SpectroLink™**” tab to see the SpectroLink™ grid view.

Each SpectroLink™ contains a unique device code that is located on the bottom of the unit. This code is used to link your SpectroLink™ to your SpectroWorks™ account and makes it visible on the grid.

This mechanism ensures that only authorized users who have registered the device can gain access to the SpectroLink™ on the network.



To register the device code of your SpectroLink™:

- a. Click on “**+ Add**” and simply enter the device code located on the bottom of your SpectroLink™.
- b. Click “**+ Add**” to confirm. This should add your SpectroLink™ to your list of registered devices. Click “**Close**”.
- c. Your SpectroLink™ should now be visible on the grid view and ready to use!

9. Using your SpectroLink™ device

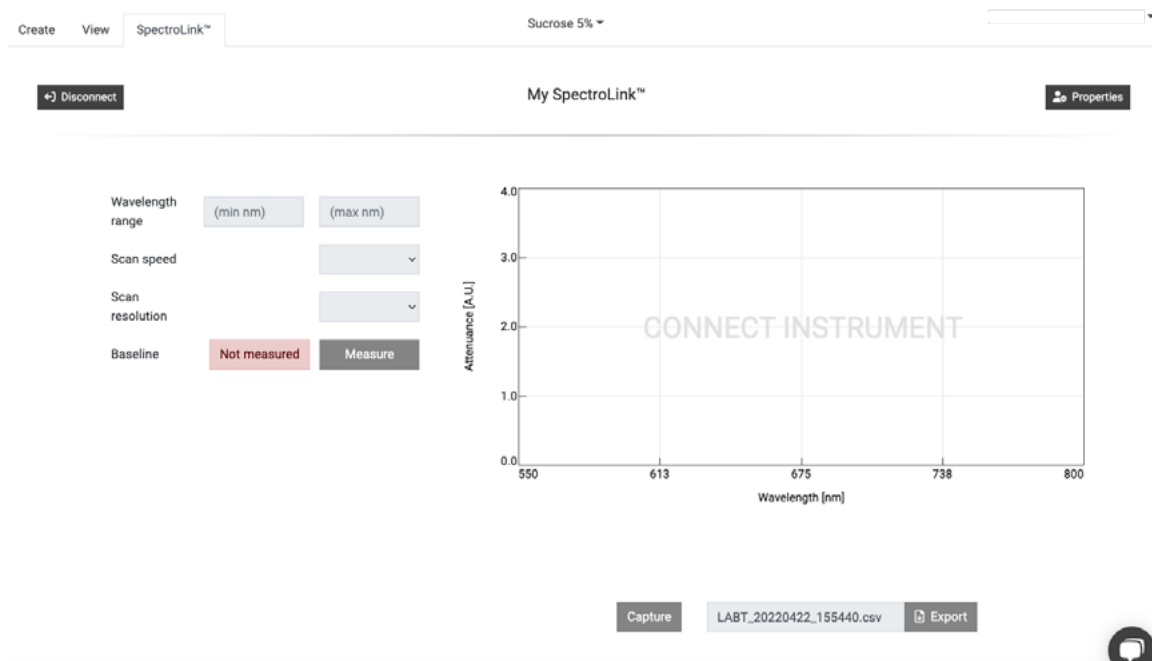
9.1. Creating a new project

To create a new project, click **“New”**. A results modal appears. Name your project and select the type of results you’d like to see for the measurements. This can always be changed later. Notice that the type of results depends on the cuvette type used.

Add results		Search		Selected results	
Attenuance (A.U.)	Sample property	<input type="checkbox"/> One <input type="checkbox"/> S <input type="checkbox"/> BC	Add	<input checked="" type="checkbox"/> Refractive Index	<input type="checkbox"/>
Degrees Brix (°Bx)	Sample property	<input type="checkbox"/> One <input type="checkbox"/> S	Add	<input type="checkbox"/> Reference fit quality	<input type="checkbox"/>
Mean Particle Diameter	Scattering param...	<input type="checkbox"/> S	Add	<input type="checkbox"/> Sample fit quality	<input type="checkbox"/>
Particle Concentration	Scattering param...	<input type="checkbox"/> S	Add		
Protein Concentration	Sample property	<input type="checkbox"/> One <input type="checkbox"/> S	Add		
RMSE reference fit	Data quality control	<input type="checkbox"/> One <input type="checkbox"/> S	Add		
RMSE sample fit	Data quality control	<input type="checkbox"/> One <input type="checkbox"/> S	Add		
RMSE scattering fit	Data quality control	<input type="checkbox"/> S	Add		
Reference fit quality (%)	Data quality control	<input type="checkbox"/> One <input type="checkbox"/> S	Add		
Refractive Index (nD)	Sample property	<input type="checkbox"/> One <input type="checkbox"/> S	Add		
Sample Angle of Incide...	Scattering param...	<input type="checkbox"/> S	Add		
Sample Mean Angle of ...	Scattering param...	<input type="checkbox"/> S	Add		
Sample fit quality (%)	Data quality control	<input type="checkbox"/> One <input type="checkbox"/> S	Add		
Scattering fit quality (%)	Data quality control	<input type="checkbox"/> S	Add		
Siva distribution fit qual	Data quality control	<input type="checkbox"/> S	Add		

9.2. The SpectroLink™ dashboard

From the grid view, click on your SpectroLink™. It will appear with the default name: “My SpectroLink™”. The SpectroLink™ dashboard will either show you a frozen view if your spectrophotometer is not connected or the normal view to control it, if it is connected. In the attached image below is an example of a dashboard with no spectrophotometer connected to your SpectroLink™.



Any interactions with SpectroLink™ are controlled through the user interface of SpectroWorks™. Depending on the spectrophotometer used, the user interface of the SpectroLink™ dashboard changes according to what your instrument supports. This is to declutter the interface and make it easier to navigate.

9.2.1. Dashboard controls

On the SpectroLink™ dashboard you can set various settings on your spectrophotometer and set it up for measurements. On the left is a parameter and controls section, where you can set the background, wavelength range etc. The right side of the dashboard contains a plotter canvas, where easy single shot spectrum can be captured and also exported directly by using the buttons below the canvas. This canvas can also be used to gauge how well you have set the parameters for your spectrophotometer.

If you are using your SpectroLink™ for the first time with your spectrophotometer, it is recommended to check the parameters and set the required baseline etc. depending on your spectrophotometer type before you proceed to do measurement flows.

9.2.2. Scanning spectrophotometer

For a scanning instrument, you will usually find the following parameters in the dashboard:

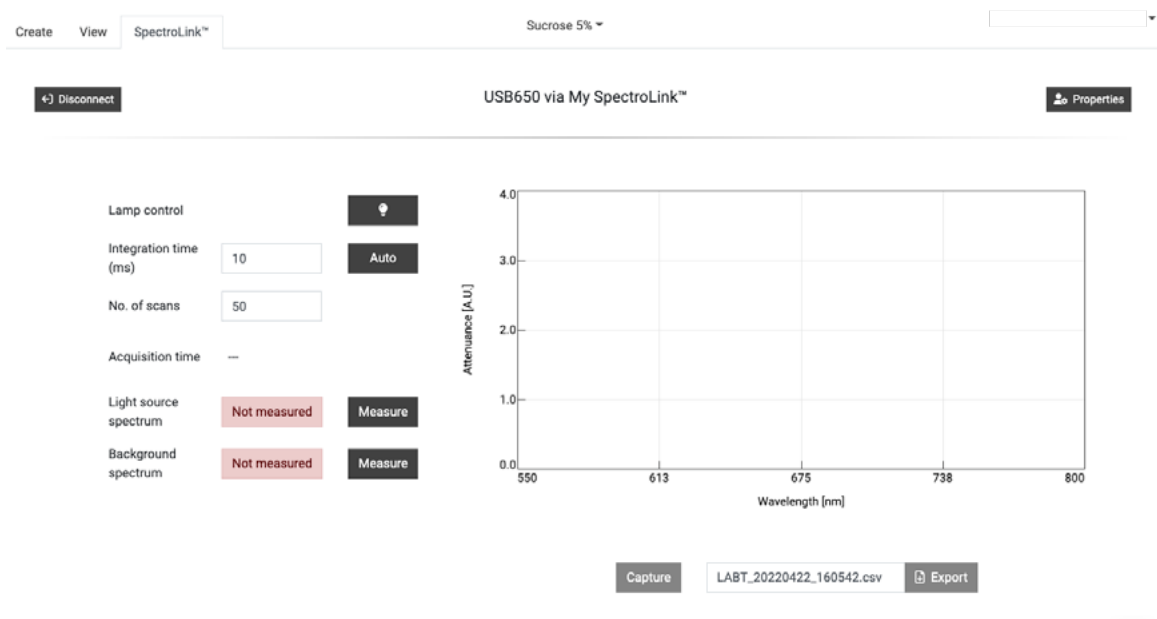
- Wavelength range (nm)
- Scan speeds
- Scan resolutions
- Setting the baseline



9.2.3. Diode array spectrophotometer

For a diode array type spectrophotometer, you will typically find these parameters and controls in the dashboard:

- Lamp control (ON/OFF)
- Integration time (ms)
- No. of scans
- Setting the light source spectrum
- Setting the background spectrum



9.3. SpectroLink™ properties

On the top right corner of the SpectroLink™ dashboard, there is a “Properties” button that opens a modal for settings related to your SpectroLink™. Here it is possible to:

- View system information about your SpectroLink like serial no. hardware version and current software version.
- View system information about your Spectrophotometer like serial number and range etc.
- Set your own SpectroLink™ name (recommended during first setup)
- Set network discovery (more on this below)
- Shutdown your SpectroLink™
- Restart your SpectroLink™

The screenshot shows the SpectroLink™ dashboard with two main sections: System information and Device settings.

System information

Instrument	
Model:	USB650
Serial:	USB2G55043
Wavelength range:	199-893 nm

SpectroLink™	
Serial:	136b8dddcfb9
HW version:	1.0.0
SW version:	0.1.17

Device settings

Name	My SpectroLink™	Save
------	-----------------	------

Network discovery: ☒

Lets any user on the network connect to this device without needing the device code.

Note: This should only be used on trusted and secured networks.

At the bottom, there are three buttons: Restart, Shutdown, and Close.

9.4. Network discovery

For certain use cases you may want your SpectroLink™ to be visible for all SpectroWorks™ users on the same network. They can in this case see and access the SpectroLink™ without registering its device code. Assuming you are on a secure network you can enable “Network discovery” from the Properties screen in the SpectroLink™ dashboard.

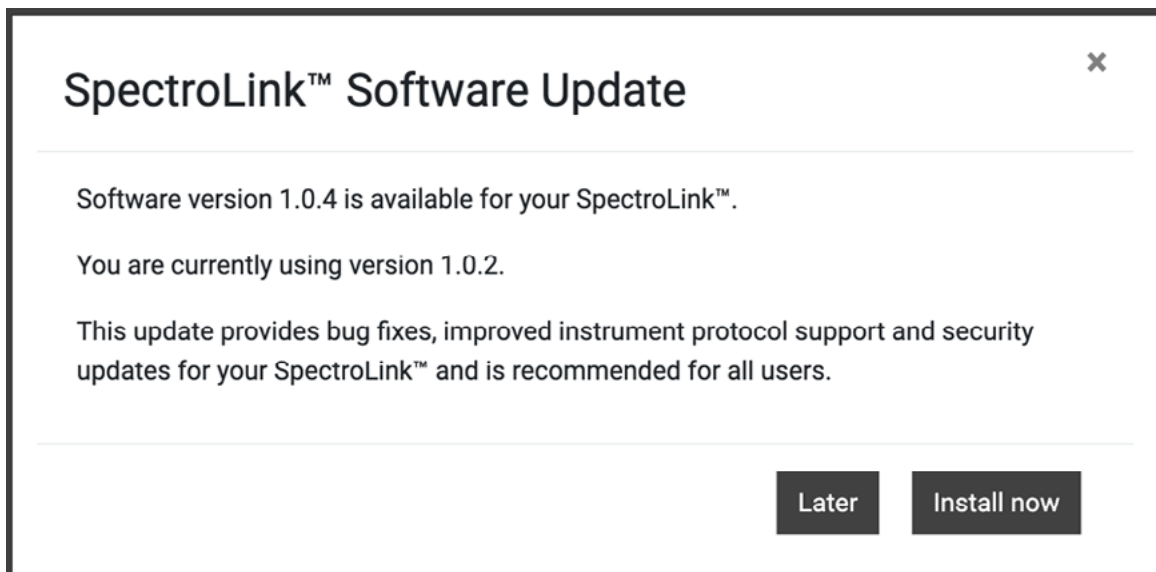
9.5. Adding a new wireless access point

When your SpectroLink™ is set up to use WiFi, it will automatically connect to any of the available and saved networks that you have already registered your SpectroLink™ with when it is starting up. However, to add another access point, your SpectroLink™ is discoverable for the first **3 minutes** when powered on:

1. Restart your SpectroLink™. This can be done from the properties modal from the SpectroLink™ dashboard.
2. Repeat section 9.2. from step 1.

9.6. Software updates

To provide the best service and support, we are constantly working on capabilities of your SpectroLink™ by providing software updates over the air. Depending on the update type, these updates can extend the functionality of your SpectroLink™ by extending the range of supported spectrophotometers, while providing bug fixes and other overall improvements to the product.



If a new version is available, you will be prompted to update once you access your SpectroLink™. It will state your current version and what version you will be upgrading to. Clicking "**Install now**" will trigger the installation process:

1. Your SpectroLink™ will initiate the update process. You will be redirected to a view that shows the whole process.
2. After the update is complete, your SpectroLink™ will restart and send you back to the dashboard.

10. Tutorial

Once you've set the parameters of your choice for your spectrophotometer, we can now try our first sample measurement.

Please visit our knowledge base for information, tutorials and FAQs on SpectroWorks™ and our other products via:

<https://knowledge.cphnano.com/en/pages>.

10.1. Setup spectrophotometer for measurement

Before performing measurements it is important to set your spectrophotometer up for good parameters that increase the quality of the spectrum captured. Please refer to our list of supported spectrophotometers to find a tutorial for your particular spectrophotometer at:

<https://spectrolink.cphnano.com/supported-spectrophotometers>.

Turn on the spectrophotometer and set to USB mode if required. Connect it to your SpectroLink™.

Access SpectroWorks™, find your SpectroLink™ and go to the dashboard. Prepare your spectrophotometer by setting various parameters.

Visit: <https://spectrolink.cphnano.com/supported-spectrophotometers> to see a tutorial for your spectrophotometer.

After your spectrophotometer has been set up, proceed to the next section to test a basic measurement flow.

10.2. Basic measurement


1. Go to the “**Create**” tab located in the top left.

CreateViewSpectroLink™

Sucrose 5% ▾

Get started with full spectrum analysis

Choose cuvette type



Basic cuvette

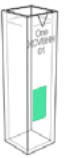
Absorbance spectroscopy

Attenuance (absorbance or OD)

Transmittance

Full spectrum

Specific wavelengths



NanoCuvette™ One

Label-free spectroscopy (full spectrum)

Surface refractive index range: 1.0 - 1.6 nD


Absorbance at 300 - 1100 nm

0.5 µL and 2 mL measurements

Unique ID for traceability

Access all features of SpectroWorks™

+ All basic cuvette features



NanoCuvette™ S

Label-free spectroscopy (full spectrum)

Surface refractive index range: 1.0 - 1.6 nD

Absorbance at 190 - 1100 nm

50 µL - 200 µL measurements

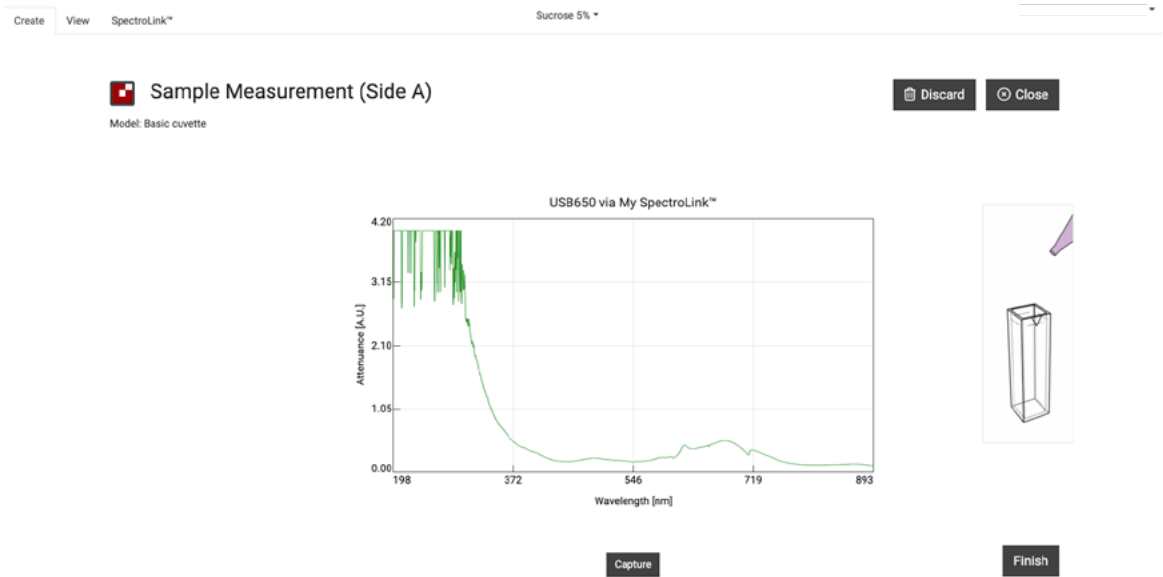
20 nm - 20 µm size distributions (d)

Unique ID for traceability

Access all features of SpectroWorks™

+ All basic cuvette features

2. Get hold of a basic cuvette or just use any NanoCuvette™ for testing. This example uses a NanoCuvette™ One.
3. Use a sample of your choice and place the cuvette in the clear path (where the light path does not go through the crystal) in your spectrophotometer. For basic cuvettes any direction is fine.
4. Note: since this is a test, it is also fine with measuring the empty NanoCuvette™ One where the light path goes through the crystal.
5. Click on “**Capture**” on the bottom of the empty canvas.



6. Your SpectroLink™ will now communicate with your Spectrophotometer to ask for a spectrum, your instrument performs the measurement and during the measurement the canvas will get plotted with the attenuance spectrum.
7. Once the capture has completed, proceed by clicking **“Finish”** in the bottom right corner.
8. You will now be presented with a report summary of your measurement. Here you can add metadata in the “Sample attributes” section and notes to your liking. It is also possible to download the file you captured during measurement in the “Files” menu (the three horizontal dots) under “Experiment setup” and all the measurement data and fits in the menu (the three vertical dots) on the top right of the “Plots” section. Anything that is written in the summary is auto-saved.

