

ChemWiz User Guide

The ChemWiz Series 3 Handheld Absorbance Spectrophotometer is an easy-to-use, research-grade spectrophotometer for lab and field testing of chemical absorption with no additional setup required.



System Power & Spectrometer Engine Connection

The ChemWiz Handheld Absorbance Spectrophotometer is delivered pre-installed with the ChemWiz software. To begin your measurement, simply press the main system power button on the handheld case's right side, and the power button will illuminate. This turns on the main spectrometer engine and usually takes about 1 minute to initialize.

Next, you must turn on the system's Android tablet interface located on the top side of the touchscreen display. The tablet will then turn on and allow the normal operation of the Android system.

Once the spectrometer engine initializes, the Android tablet will automatically connect to the spectrometer's WiFi signal. You can verify or reconnect to your spectrometer engine at any time by reviewing the WiFi settings.

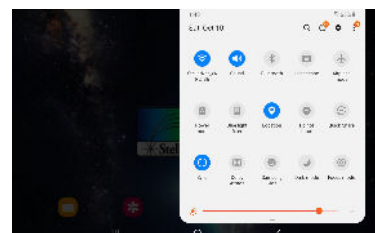
The WiFi network is StellarNet_zAP2_deviceID and the password is **stellarnet**. If the connection is lost, it could be because you: (1) Have added a stronger wireless network to your device and your system is connecting to that network automatically. Forgetting the other wireless network stored in your device will also allow you to automatically connect. (2) your spectrometer engine's main battery supply has been and you need to re-charge or plug-in to reconnect.

Launching the ChemWiz Software

The handheld system's software, named ChemWiz Pro, is located on your system's home screen and can be launched by pressing the icon.

This is the same App that is found on the Google Play and Apple Store for our WiFi-enabled spectrometers; however, we have tailored the graphics for an 8" touchscreen and upgraded and added many new features, such as continuous mode, snapshot, & multi-file review.

You can acquire full spectrum chemical analysis and the concentration of solids, liquids, and powders with the appropriate accessories.

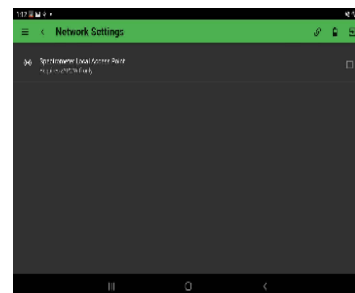


You are also able to measure absorption in real-time, create calibration methods and predict concentrations. You are able to save scope spectra, spectra, absorbance, and concentration data, and prediction results. Then you can export this information as .SSM, or .PRED or .ABS text data files, screenshots, and/or PDF reports with all the parameters listed. An integrated halogen light and included CUV-HH snap-on magnetic cuvette holder are included. There is the option to add a transmission dip probe for in-situ measurement and/or a snap-on reflectance fixture (RF-HH) for solid or powder samples.



Software and Spectrometer Engine Connection

Once the ChemWiz software has been successfully launched the first step is to verify the connection. Click the connection icon to visit the Network Settings menu option. There you can see your connection. For this device, the **Spectrometer Local Access Point** should be automatically checked. If there is a problem with the connection, then you can uncheck and recheck this option to re-establish the connection. If you cannot connect either (1) you are connected to a different wireless network or (2) your spectrometer engine's main battery supply is depleted.



Main System Button Overview



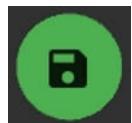
Capture - captures a single spectrum



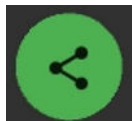
Continuous Mode Start/Stop - starts or stops the continuous capture of spectra



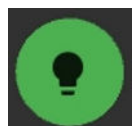
Expand Screen - expands screen to increase the size of the spectral plot



Save Data - saves spectral data as .SSM, IRR, screenshot, and PDF report with all parameters listed in the ChemWiz folder



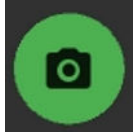
Share Data - saves spectral data as .SSM, IRR, screenshot, and PDF report with all parameters listed in the ChemWiz folder. SSM/IRR are .txt files that can be reviewed in SpectraWiz or Excel



Take Dark Spectrum - a dark spectrum should be taken after your Device Settings are changed and your system is optimized. Use the RS50 white reference spectrum, turn off the lamp and then click the icon



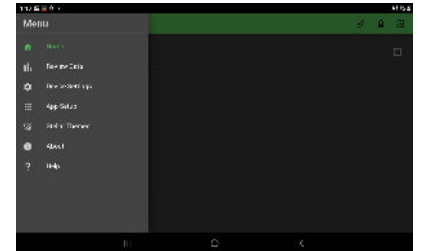
Take Light Spectrum - after a dark spectrum is taken the lamp should be turned on and the RS50 measured as your light spectrum



Snapshot - captures a snapshot of the spectrum and displays it as an overlay for future measurements until the snapshot is turned off or removed by clicking the button again

Main Menu

The left side menu is ChemWiz's main menu containing Review Data, Device Settings, App Setup, Stellar Themes, About and Help Section.



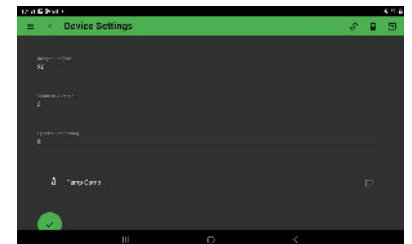
Review Data

Selecting the Review Data menu option allows you to browse all of the existing saved spectra that you have taken. All systems will also be delivered with DEMO spectral data. This option lists all the .ABS files that are located in the ChemWiz folder. Select multiple files and use the check button to view overlaid spectra.



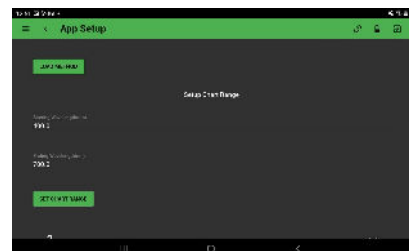
Device Settings

The Device Settings menu option allows you complete control of the absorbance spectrometer parameters. These are integration or exposure time, scans to average, and pixel smoothing. You can also toggle on and off temperature compensation. Device setting parameters are saved to a system configuration file and are remembered when the software is re-opened. Once your settings are optimized you rarely have to change them.



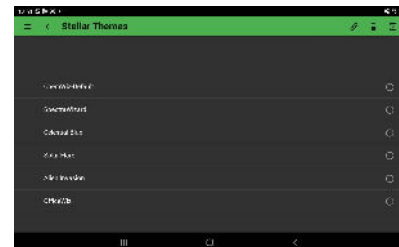
App Setup

The App Setup menu option allows you to load or reload a saved method for prediction. Once you load the method, the method name will appear on the Predictor tab and will be ready for the sample prediction. All methods and saved files will be found in your ChemWiz directory. In this menu, you can adjust the chart wavelength and turn on or off the beginners mode and chart cursor.



Stellar Themes

This menu option allows you to choose the color theme of the app! Choose from SpectraWizard purple, Celestial blue, Solar Flare red, Alien Invasion green, and Office Wiz white. Or design your own color to go along with your company or university.



Measurement Procedure

1. Turn on the ChemWiz's main spectrometer engine (right side power button) and tablet (top)
2. Launch the ChemWiz App
3. Verify software and spectrometer engine connection
4. Snap on the cuvette holder, place the empty cuvette in the cuvette holder and collect a spectrum by clicking the **Capture** button
5. Verify your Device Settings are properly set and push the **Take Light Spectrum** button. The white light reflectance spectrum is optimized. Typically, 50ms integration time, 5 sample averages, and 3 smoothing are best. However, the setting can be adjusted for different sample types. These settings should be saved to your systems configuration file and automatically be set upon system initialization. If they are not, you can easily re-set the parameters and exit the software and they will automatically be updated.
6. With the empty cuvette in the cuvette holder, turn off the lamp source and press the **Take Dark Spectrum** button. The ChemWiz App will update the Scope and Absorbance graph.
7. Save Data as .SSM, .PRED., .ABS, Screenshot, or PDF report with all parameters listed
8. Saved Data can be loaded for review in the App Setup menu
9. Share via E-mail or transfer via USB. Note: if you share via email and change the WiFi network you will have to re-connect to the device in order to begin collecting spectral data again



Create Method Procedure

1. Once the reference and the dark data are captured. Tap the "Method Builder" tab on the right panel
2. Place the cuvette that contains the sample into the cuvette holder
3. Click the **Capture** button to collect the spectrum data
4. Enter the concentration value for the sample in the text field
5. Click the "Add Data" button to add the sample to the method builder
6. Repeat Steps 2 through 5 until all the desired samples are added
7. Click the "Create Method" button to create a method using the added data.
8. In the popup window, enter the wavelength that needs to be monitored as well as the method name. Then click the "Save" button to compute and save the method
9. Computed slope, constant and coefficient of determination (R square) will be displayed for the goodness of the method,
10. Newly created method will be automatically loaded for the prediction. If not, saved method can be loaded in the App Setup as well in by tap on the "Model" in the Predictor tab.
11. Place the unknown concentration sample into the cuvette holder
12. Navigate to "Predictor" tab, and press the **Capture** button to make the concentration prediction

