

# BWSpec® Release Notes

## Version 4.15\_22 – Date of Release: 09/10/2024

This document provides release notes for BWSpec®, a data acquisition software for B&W Tek spectrometer, NIR and Raman system products. This document details the changes in version 4.15\_22 over the previously officially released version of BWSpec 4.15\_10.

### Update Instructions:

- **When updating directly from 4.15\_8 or later:** user can directly upgrade from the existing version by running the setup.exe file using Windows administrative privilege.
- **For installed BWSpec version earlier than 4.15\_8:** It is highly recommended to uninstall the current version before installing this version.

## Compatibility

1. This version is aimed to support all the Raman systems and spectrometer modules supported in 4.15\_3. Please see the release information below for details.
2. Added compatibility for the following spectrometer models: BTC281N, BTC283N, BTC284N, and BTC286N.

## Enhancement and New Features

| # | Classification | Details                                                                                                                                               |
|---|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | [New]          | When instrument status is offline, performance validation records can be accessed.                                                                    |
| 2 | [New]          | Minimum integration times for the following models have been changed: BTC281N: 200us, BTC283N: 20us, BTC284N: 200us, BTC286N: 30us;                   |
| 3 | [UPDATE]       | For Raman Shift and Laser Wavelength calibrations, the useful range to determine optimal Integration Time is changed to 350 – 2000 cm <sup>-1</sup> . |
| 4 | [UPDATE]       | In Performance, when generating a PVR, the spectral range is editable and will determine the useful range for auto-integration.                       |
| 5 | [UPDATE]       | In Performance, each peak has its own variation Vs. Ref and variation Vs. Last limit which can be edited by the user (excluding the main peak).       |
| 6 | [UPDATE]       | In Performance, the three peaks for Photometric Precision are mandatorily selected.                                                                   |
| 7 | [UPDATE]       | User must select a Ratio 3 File to enable Relative Intensity Correction in Batch Process / Re-Process regardless of file type.                        |
| 8 | [UPDATE]       | The Chemometrics checkbox is removed from Experiment Setup and Batch Re-Process.                                                                      |

## Bug Fixes

| #  | Classification | Details                                                                                                                                                                          |
|----|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | [FIX]          | Fixed the issue where a small screen would obscure the Spectrometer Control Panel without a scroll bar.                                                                          |
| 2  | [FIX]          | Fixed the bug where BWSpec would crash if Workspace was changed when all chart forms are closed.                                                                                 |
| 3  | [FIX]          | Fixed the bug where the Analytics tab did not appear when performing a Batch Re-process with Peak Monitor enabled.                                                               |
| 4  | [FIX]          | Fixed the bug where using Timeline Load to Batch Re-process x number of spectra more than once causes x number of overwrite messages.                                            |
| 5  | [FIX]          | Fixed the bug that caused BWSpec to freeze when stopping a Continuous Scan.                                                                                                      |
| 6  | [FIX]          | Fixed the issue with the Temperature Set function for BTC283N preventing the temperature from being set correctly.                                                               |
| 7  | [FIX]          | Fixed the bug where interlock status was not being read correctly.                                                                                                               |
| 8  | [FIX]          | Fixed the bug where stopping a scan while BWSpec was determining auto-integration time froze BWSpec.                                                                             |
| 9  | [FIX]          | Fixed the bug where disconnecting then reconnecting an i-Raman Plus-532 caused the laser control to disappear.                                                                   |
| 10 | [FIX]          | Fixed the bug in Timeline Load where a Batch Re-Process configuration with Relative Intensity Correction enabled will cause a fail message to appear for every loaded .TXTR file |

## Known issues

| # | Classification | Details                                                                                                                                                                                                                                                                                                     |
|---|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | [Known Issues] | Right-clicking on the microscope image and selecting Save Image does not save the image.                                                                                                                                                                                                                    |
| 2 | [Known Issues] | Batch Process function is not compatible with data with two columns.                                                                                                                                                                                                                                        |
| 3 | [Known Issues] | DIY Raman system response might be slow when hardware settings are open and ratio files are being created                                                                                                                                                                                                   |
| 4 | [Known Issues] | For i-Raman Plus, BWSpec might become non-responsive if the user unplugs the USB cable, then plug it back in immediately. Users need to restart the instrument                                                                                                                                              |
| 5 | [Known Issues] | When using a DIY setup if the common setting for "Close Laser After Data Scan" is unchecked, the laser may turn itself off after a few scans. If that happens, turn the laser back on using the laser button, then it will not turn off on its own again.                                                   |
| 6 | [Known Issues] | Running Sol HT models BTC281N, BTC284N, BTC286N with External trigger enabled: The device requires an additional External Trigger event after pressing STOP scan button. The software will freeze until this External Trigger is received by the spectrometer, or the spectrometer power and USB is cycled. |
| 7 | [Known Issues] | When initializing a IPS USB laser, any scan taken prior to initialization will display the incorrect RamanShift in the software. In this case, clear all spectra before initializing the IPS laser.                                                                                                         |
| 8 | [Known Issues] | Batch Process in the Spectral Function menu and Timeline Load in the File menu are not compatible. Using one after another causes the Spectrum List Panel and chart to clear. It is recommended to only use one function at a time.                                                                         |

## Version 4.15\_10 – Date of Release: 07/15/2023

This document provides release notes for BWSpec®, a data acquisition software for B&W Tek spectrometer, NIR and Raman system products. This document details the changes in version 4.15\_10 over the previously officially released version of BWSpec 4.15\_8.

### Update Instructions:

- **When updating directly from 4.15\_8:** user can directly upgrade from the existing version by running the setup.exe file using Windows administrative privilege.
- **For installed BWSpec version earlier than 4.15\_8:** It is highly recommended to uninstall the current version before installing this version.

### Compatibility

This version is aimed to support all the Raman systems and spectrometer modules supported in 4.15\_3. Please see the release information below for details.

### Enhancement and New Features

| # | Classification | Details                                                                                                                                                                                                                                  |
|---|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | [UPDATE]       | The spectrum chart display is set to show anti-aliased line style by default.                                                                                                                                                            |
| 2 | [UPDATE]       | States of Reference and Linearity Correction are removed from the bottom status bar in Raman workspace as they are not relevant in Raman devices.                                                                                        |
| 3 | [UPDATE]       | When “Automatically Take Dark After Data Scan” is enabled, the Acquire Dark button is disabled so that the integration time of the dark scan will always be the same as the regular scan.                                                |
| 4 | [UPDATE]       | Closing the Workspace window that appears when opening BWSpec will close BWSpec.                                                                                                                                                         |
| 5 | [New]          | A Stop button has been added for Raman Shift calibration so new A Coefficients are not generated if the user decides to cancel the calibration. User still need to wait until the scan finishes, but the new A coefficients won't apply. |
| 6 | [UPDATE]       | When Auto Time is enabled, the manual integration time button is disabled automatically.                                                                                                                                                 |
| 7 | [New]          | User can use the shortcut Ctrl+W to switch between workspaces when the Main Form has focus.                                                                                                                                              |
| 8 | [UPDATE]       | Integration Time warning message pop-ups have been removed. Now, if an invalid Integration Time is entered by a user, the warning message will appear in the bottom status bar.                                                          |
| 9 | [New]          | The PVR files newly created from the latest BWSpec and Vision (version 4.1.1.362 or higher) are now compatible with either software.                                                                                                     |

## Bug Fixes

| #  | Classification | Details                                                                                                                                                                                                                            |
|----|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | [FIX]          | Fixed the bug of the laser power controls disappearing when an i-Raman is disconnected and reconnected;                                                                                                                            |
| 2  | [FIX]          | Fixed the bug in Peak Analysis that if a peak was deleted, it could not be added back;                                                                                                                                             |
| 3  | [FIX]          | Fixed the bug where deleting a peak from the Peak Analysis table did not delete the Peak Area Fill displayed in the chart;                                                                                                         |
| 4  | [FIX]          | Fixed the issue of the PVR file name changing when an existing PVR file is loaded and then viewed in the Performance Test module;                                                                                                  |
| 5  | [FIX]          | Fixed the bug where the laser controls in Hardware Setup would be re-enabled after a Timeline Experiment is set;                                                                                                                   |
| 6  | [FIX]          | Fixed the bug in Raman workspace where automatically taken dark scans were not overwriting the existing dark scan;                                                                                                                 |
| 7  | [FIX]          | Fixed the bug that BWSpec will crash if the user presses Update Settings in the Wavelength Calibration module when there isn't a spectrum loaded.                                                                                  |
| 8  | [FIX]          | Fixed the bug that deleting one row from the Peak Analysis table would delete two rows;                                                                                                                                            |
| 9  | [FIX]          | Fixed the bug where a scan would be acquired using Auto Time even though an Experiment with a fixed integration time was enabled. Now when the experiment setup with a fixed integration time is enabled, auto time won't be used. |
| 10 | [FIX]          | Fixed the bug that microsecond unit for integration time setting is not shown in Raman workspace when switching workspace from BWSpec to Raman;                                                                                    |

## Known issues

| # | Classification | Details                                                                                                                                                                                    |
|---|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | [Known Issues] | Right-clicking on the microscope image and selecting Save Image does not save the image.                                                                                                   |
| 2 | [Known Issues] | Batch Process function is not compatible with data with two columns.                                                                                                                       |
| 3 | [Known Issues] | DIY Raman system response might be slow when hardware settings are open and ratio files are being created                                                                                  |
| 4 | [Known Issues] | For i-Raman Plus, BWSpec might become non-responsive if the user unplugs the USB cable, then plug it back in immediately. Users need to restart the instrument then plug in the USB cable. |

Version 4.15\_8 – Date of Release: 3/31/2023

This document provides release notes for BWSpec®, a data acquisition software for B&W Tek spectrometer, NIR and Raman system products. This document details the changes in version 4.15\_8 over the previous officially released version of BWSpec 4.15\_3.

**Important Notice: it is highly recommended to follow these steps to update your BWSpec to the latest version:**

- 1. Backup your Ratio3 files from the BWSpec folder, which is typically located at C:\BWTEK\BWSpec\ratio\
- 2. Record settings of any Experiment Setup configurations currently in routine use
- 3. Uninstall the existing BWSpec
- 4. Completely delete the BWSpec folder, typically located at C:\BWTEK\BWSpec
- 5. Install the latest version of BWSpec
- 6. Reconfigure the probe setup with the Ratio3 file, and Experiment Setup for routine use

After update, user will need to reconfigure their Experiment Setup and Probe Setup configurations accordingly, as the previous Experiment Setup and Probe Setup settings might not work with the new BWSpec version.

Compatibility

This version is aimed to support all the Raman systems and spectrometer modules supported in 4.15\_3. Please see the release information on page 4 for details.

Enhancement and New Features

| # | Classification | Details                                                                                                                                                     |
|---|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | [UPDATE]       | Updated the User Interface icons to generate smoother experience.                                                                                           |
| 2 | [UPDATE]       | Updated the installation process so that USB drivers are automatically installed with Windows security certificates.                                        |
| 3 | [UPDATE]       | Updated the installation so that admin access check is automatically performed when double clicking setup.exe.                                              |
| 4 | [UPDATE]       | Improved the display and usage of the integration time box and time unit to avoid software conflicts during scan or when auto-integration time is selected. |
| 5 | [UPDATE]       | Improved the software interface to avoid crashing when i-Raman Prime is first connected within 5 minutes.                                                   |
| 6 | [UPDATE]       | Added Language Menu to support Chinese, Japanese, and English.                                                                                              |

Bug Fixes

| # | Classification | Details                                                                                                                                                                                             |
|---|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | [FIX]          | Fixed the bug that the software will crash if running in Korean Language Windows Environment                                                                                                        |
| 2 | [FIX]          | <b>Fixed the bug that rounding format of the Dark Subtracted column in txtr files is sometimes different. Now all the numbers are rounded to 4 digits after decimal.</b>                            |
| 3 | [FIX]          | <b>Fixed the bug that when PVR File is selected while the name is deleted, running Performance Validation will cause software crash; now the user cannot leave the pvr file name empty/deleted.</b> |
| 4 | [FIX]          | Fixed the bug that saving a PVR file and Raman Shift Calibration in 32-bit installation will cause unhandled exception;                                                                             |
| 5 | [FIX]          | Fixed the bug that Digital output 2 set to low for some OEM spectrometer versions might not work, including but not limited to BTC655, BTC115.                                                      |
| 6 | [FIX]          | Fixed the bug that operations on reading/writing on EEPROM of RS232 spectrometers may cause software crash;                                                                                         |
| 7 | [FIX]          | Fixed the bug that scans with averaging take much longer time than expected for RS232 spectrometers.                                                                                                |

Known Issues

| # | Classification | Details                                                                                                                                                                                      |
|---|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | [Known Issues] | Batch Process function is not compatible with data with two columns.                                                                                                                         |
| 2 | [Known Issues] | DIY Raman system response might be slow when hardware settings are open and ratio files are being created                                                                                    |
| 3 | [Known Issues] | For i-Raman series, BWSpec might become non-responsive if the user unplugs the USB cable, then plug it back in immediately. Users need to restart the instrument then plug in the USB cable. |

Version 4.15\_3 – Date of Release: 11/16/2022

This document provides release notes for BWSpec®, a data acquisition software for B&W Tek spectrometer, NIR and Raman system products. This document details the changes in version 4.15\_3 over the previous officially released version of BWSpec 4.11\_1.

**Important Notice: it is highly recommended to follow these steps to update your BWSpec to the latest version:**

- 1. Uninstall the existing BWSpec
- 2. Backup your Ratio3 files from the BWSpec folder, which is typically located at C:\BWTEK\BWSpec\ratio\
- 3. Completely delete the BWSpec folder, typically located at C:\BWTEK\BWSpec
- 4. Install the latest version of BWSpec

After update, user will need to reconfigure their experimental setup and probe setup accordingly, as the previous experimental setup and probe setup might not work with the new BWSpec version.

Compatibility

This version is aimed to support these following Raman system products:

| Product Name     | Model Number                       |
|------------------|------------------------------------|
| i-Raman Plus     | BWS465 series                      |
| i-Raman Pro      | BWS475-xxxS and BWS475-xxxH series |
| i-Raman Prime    | BWS475-xxxx-HT series              |
| i-Raman EX       | BWS485II, BWS485III                |
| PTRam            | BWS476-785H                        |
| STRam            | BWS475-785H-ST                     |
| STRam-1064       | BWS475-1064-ST                     |
| QTRam            | BWS475-785H-CU                     |
| Video microscope | BAC151C series                     |

And these following spectrometer modules:

| Product name | SP model     |
|--------------|--------------|
| Quest        | BRC112P-x    |
| Quest        | BRC113P-x    |
| Exemplar     | BRC115P-x    |
| BRC1K-P      | BRC1K-P      |
| i-trometer   | BRC642E      |
| Cypher       | BRC741E-512  |
| Cypher       | BRC741E-1024 |
| BRC813       | BRC813       |

|                  |         |
|------------------|---------|
| Glacier-X        | BTC112x |
| Glacier-T        | BTC162x |
| Sol1.7           | BTC261P |
| Sol2.2           | BTC262A |
| Sol2.6           | BTC263E |
| Sol HT           | BTC281N |
| Sol HT           | BTC282N |
| Sol HT           | BTC283N |
| Sol HT           | BTC284N |
| Sol HT           | BTC284P |
| Exemplar Plus LS | BTC645N |
| Exemplar Plus    | BTC655N |
| Exemplar T       | BTC665N |
| Exemplar HT      | BTC667N |
| Exemplar Pro     | BTC675N |

Enhancement and New Features

| #  | Classification | Details                                                                                                                                                                                                                                   |
|----|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | [UPDATE]       | Updated installation EULA, logo and company address                                                                                                                                                                                       |
| 2  | [UPDATE]       | <b>File:</b> “Save All data into a BIN file” and “Set Save Data Format” is now removed and replaced with function “Set Auto Save Data File”. User can use the new function to set data saving path and format, automatically or manually. |
| 3  | [UPDATE]       | Removed legacy data format BWRam across the board                                                                                                                                                                                         |
| 4  | [New]          | Added support to 2 column data format (simple txt, simple csv, and raw csv) generated from B&W Tek handheld device and software                                                                                                           |
| 5  | [UPDATE]       | Set txtr file as default at all data saving options;                                                                                                                                                                                      |
| 6  | [UPDATE]       | <b>File-&gt;Export Data</b> , Spectral Units now is changed to radio box; - only one spectral unit can be selected to avoid conflict                                                                                                      |
| 7  | [UPDATE]       | Removed duplicate warnings when two data files with the same name but different format are loaded to the software                                                                                                                         |
| 8  | [UPDATE]       | <b>View -&gt; Display Scales:</b> removed the table of Raman Excitation Laser Wavelength                                                                                                                                                  |
| 9  | [UPDATE]       | <b>Acquire</b> menu is renamed to <b>Acquisition</b>                                                                                                                                                                                      |
| 10 | [New]          | <b>Spectra Function:</b> added Enable/Disable Linearity correction, now available for individual scan for users who would like to acquire y-axis linearity corrected data.                                                                |
| 11 | [New]          | <b>Spectral Function:</b> added Enable/Disable Irradiance Calibration.                                                                                                                                                                    |
| 12 | [New]          | <b>Spectral Function:</b> added Enable/Disable Reference Material Correction                                                                                                                                                              |
| 13 | [New]          | <b>Spectral Function:</b> added Enable/Disable Relative Intensity Correction. User can select the ratio file and enable relative intensity correction at all time.                                                                        |

|    |          |                                                                                                                                                                                                                                 |
|----|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | [New]    | <b>Spectral Function -&gt; Peak analysis:</b> Added checkbox of adding a peak manually and capability to remove a peak manually by right-clicking the peak record in the peak analysis table.                                   |
| 15 | [UPDATE] | <b>Spectral Function:</b> Baseline removal menu is now always visible                                                                                                                                                           |
| 16 | [New]    | <b>Tools:</b> Relative Intensity Correction: added standard material SRM2242a for 532nm Raman system relative intensity correction                                                                                              |
| 17 | [New]    | <b>Tools:</b> added Laser Wavelength Calibration to offer capability for user to manually adjust or auto calibrate laser excitation wavelength                                                                                  |
| 18 | [UPDATE] | <b>Tools:</b> Redesigned Performance Validation menu to better align with USP chapter <858> and EP 2.2.48 (see user manual for details)                                                                                         |
| 19 | [UPDATE] | <b>Tools:</b> Redesigned Raman Shift Calibration menu to better align with USP chapter <858> and EP 2.2.48 (see user manual for details) User can now save the new settings to local PC only, instead of saving them to EEPROM. |
| 20 | [UPDATE] | <b>Plug-in:</b> Removed legacy plug-ins including BAC151A Camera, BAC151B Camera                                                                                                                                                |
| 21 | [UPDATE] | <b>Setup:</b> Spectrometer Info is now moved under Hardware Setup                                                                                                                                                               |
| 22 | [New]    | <b>Setup -&gt; Flash Access:</b> added a function “Download All Data” to download all instrument EEPROM data for service analysis.                                                                                              |
| 23 | [New]    | <b>Setup-&gt;Hardware Setup-&gt; Spectrometer info,</b> added Hardware code and System Hardware Code, and button Write EEPROM                                                                                                   |
| 24 | [New]    | <b>Setup-&gt;Hardware Setup-&gt;Common Setting:</b> added checkbox of Enable Gain/Offset Adjust for specific InGaAs spectrometers                                                                                               |
| 25 | [UPDATE] | <b>Setup-&gt;Hardware Setup:</b> removed legacy functions including Common Setting -> Write EEPROM, Aux Port -> Multi-Purpose Pin section, Color Setup.                                                                         |
| 26 | [New]    | <b>Setup-&gt;Hardware Setup:</b> added new table Laser Setup to support multiple laser system                                                                                                                                   |
| 27 | [New]    | <b>Setup -&gt; Experiment Setup:</b> Added checkbox in Experiment to enable/disable Experiment, and added function to clear config file                                                                                         |
| 28 | [UPDATE] | <b>About:</b> moved to the main menu bar                                                                                                                                                                                        |
| 29 | [New]    | <b>Toolbar:</b> added Auto-saving button to turn on/off data auto-saving feature and the full function is configured under File menu->Set Auto Save Data File                                                                   |
| 30 | [New]    | <b>Status bar:</b> added warning message while waiting for external trigger signal to start an acquisition                                                                                                                      |
| 31 | [UPDATE] | <b>Status bar:</b> removed Dark compensate status                                                                                                                                                                               |
| 32 | [New]    | <b>Status bar:</b> added interlock information                                                                                                                                                                                  |
| 33 | [UPDATE] | Slightly modified how ratio data is displayed in the txtr format                                                                                                                                                                |
| 34 | [New]    | Added option of “Change Laser Excitation Wavelength” when right-click spectrum name on Spectrum List Panel. Support spectral file format that contains meta data such as txtr. Do not support simple txt, spc, csv format.      |

Bug Fixes

| # | Classification | Details |
|---|----------------|---------|
|---|----------------|---------|

|    |       |                                                                                                                                                                                                                                                                                                                                                                  |
|----|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | [FIX] | Fixed the bug that txtr data file ratio3 and dark subtracted data might not be saved properly due to rounding issues.                                                                                                                                                                                                                                            |
| 2  | [FIX] | Fixed the bug in File->File Convert that if the to-be-generated TXTR filename already exists in target folder, software will crash;                                                                                                                                                                                                                              |
| 3  | [FIX] | Fixed the bug that loaded SPC file cannot be displayed correctly if this data was previously saved in 0.1 or 0.2 interval;                                                                                                                                                                                                                                       |
| 4  | [FIX] | Fixed the bug that if the selected spectrum filename or its directory contains space, exporting to Excel( File->Excel) will cause error;                                                                                                                                                                                                                         |
| 5  | [FIX] | Fixed the bug that if both External trigger and Auto time are enabled, when press Scan button, it will start to automatically set integration time even before press the trigger;                                                                                                                                                                                |
| 6  | [FIX] | Fixed the bug that any editing in Timeline Load and Batch Process will cause software crash;                                                                                                                                                                                                                                                                     |
| 7  | [FIX] | Fixed the bug that Do/Undo buttons are missing in Spectral Function->Batch Process...                                                                                                                                                                                                                                                                            |
| 8  | [FIX] | Fixed the bug that using timeline with i-Raman Plus with external trigger might cause software crash                                                                                                                                                                                                                                                             |
| 9  | [FIX] | Fixed the bug that In Raman Workspace, with experiment enabled, after both the signal and the dark scans are completed, if change both the integration time and the Relative Intensity Correction setting and then acquire new spectrum using overlay, software assumes the change is applied to previous completed spectrum and forces you to acquire new dark. |
| 10 | [FIX] | Fixed the bug that clicking Export (to Excel) in Peak Analysis will cause software crash.                                                                                                                                                                                                                                                                        |
| 11 | [FIX] | Fixed the bug that when using Experiment Timeline, the saved spc file might not have the correct integration time unit.                                                                                                                                                                                                                                          |

Version 4.11\_1 - Date of Release: 03/18/2019

This document provides release notes for BWSpec®, a data acquisition and analysis software for B&W Tek spectrometer, NIR and Raman system products. These release notes detail the changes in version 4.11\_1 over the previously released version of BWSpec 4.11.

\*\*A listing of software updates for BWSpec 4.10 and for this version, BWSpec 4.11\_1 are included in the BWSpec User Manual\*\*

**CAUTION:**

Refer to Doc# 290020239 *BWSpec Software and Hardware Installation Guide* and follow the instructions to perform software and driver installation or updates.

Release History Table

|              |           |           |            |           |
|--------------|-----------|-----------|------------|-----------|
| Release Date | 6/19/2017 | 8/31/2017 | 11/29/2018 | 3/18/2019 |
| Version      | 4.10      | 4.10_4    | 4.11       | 4.11_1    |

Enhancement and New Features

General Functionality

| # | Classification | Details                                                            |
|---|----------------|--------------------------------------------------------------------|
| 1 | [NEW]          | Add BAC151C Support                                                |
| 2 | [UPDATE]       | New End User Licensing Agreement (accepted at BWSpec Installation) |

Version 4.11 - Date of release: 11/29/2018

## Enhancement and New Features

### General Functionality

| # | Classification | Details                                                                                                                                                                                      |
|---|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | [FIX]          | <i>Pulse Output</i> function now properly compares the current set Integration Time to the Total Pulse Train Time. Error message will appear if Pulse Train is longer than Integration Time. |
| 2 | [FIX]          | <i>*.txt</i> to <i>*.txtr</i> file conversion tool has been improved to properly load files with short filenames.                                                                            |
| 3 | [FIX]          | A bug causing BAC151A-A cameras to not appear in BWSpec is now resolved.                                                                                                                     |
| 4 | [FIX]          | Excel Export of Analytical Data will rename the exported file to "Excel_Analytical" rather than use the selected spectra name to avoid confusion.                                            |
| 5 | [FIX]          | Software Set TE Cooled Spectrometers running on computers with non-U.S. number format setting will now properly set and read TE Cooler Temperatures.                                         |
| 6 | [FIX]          | An issue related to an incorrect maximum integration time setting for Sol 1.7-256 spectrometers has been fixed                                                                               |
| 7 | [FIX]          | An issue of unexpected software error with i-Raman EX systems following creation of a probe setup has been fixed.                                                                            |

### BAC151x LED Illumination and Shutter Control

| # | Classification | Details                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | [UPDATE]       | Changes in LED Illumination control behavior: <ol style="list-style-type: none"> <li>1. To enable LED Illumination control, BAC151x Plug-in must be enabled in the <i>Plug-in Manager</i>.</li> <li>2. If LED is turned on before taking any scan, it will turn off automatically during the scan, then back on after the scan. If the LED is manually turned off using BWSpec Checkbox, it will stay off until it is manually turned on.</li> </ol> |
| 9 | [KNOWN ISSUE]  | It is not possible to run spectrometers with built-in shutter and BAC151x camera concurrently. To enable shutter control for select spectrometers with built-in shutter, the BAC151x Plug-in must be disabled in the <i>Plug-in Manager</i> , and vice versa.                                                                                                                                                                                        |

### Experiment Setup

| # | Classification | Details                                                                                                                                                                                                                                                                                                                                                                              |
|---|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | [NEW]          | <i>Sample Information Form</i> now added to <i>Experiment Setup</i> . Detailed information about a run can now be saved in <i>*.txtr</i> file type, and information can be read back by checking the <i>Spectrum Information Panel</i> .<br>Information that can be saved is: <u>Run Name</u> ; <u>Product Name</u> ; <u>Batch#</u> ; <u>Lot#</u> ; <u>Supplier</u> ; <u>Notes</u> . |

|   |       |                                                                                                                                                                                                                                |
|---|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | [NEW] | Manual Peak Area Calculation is now added to Experiment Setup > Peak Monitor Setup. This allows user to manually select the “Zero” points, and area calculation starting and ending points.                                    |
| 3 | [FIX] | Fixed an issue where Experiment/Batch Process configuration files were not saving properly. Configuration files now save the current workspace setting (BWSpec or Raman) and they cannot be loaded in any different workspace. |
| 4 | [FIX] | When Chinese language and Raman Workspace is set, the Peak Monitoring Source is now locked to “Dark Subtracted (Processed)” instead of “Raw Data”                                                                              |

## Version 4.10\_04 - Date of release: 08/31/2017

This document provides release notes for BWSpec®, Spectrometer Data Acquisition and Analysis Software Program, version 4.10\_4 over the previously released version of BWSpec 4.10.

### Bug Fixes

#### General

1. LED Illumination control fixed for models: BWS415 (i-Raman), BWS465 (i-Raman Plus), BWS475 (i-Raman Pro), BWS485 (i-Raman EX). LED Illumination now always turns off during data and Dark scans, and reverts back to the state before the scan.  
LED Illumination manual control checkbox now appears when BAC151X plugin is enabled in Raman Workspace. If LED Illumination is manually turned off, it will stay off until manually turned back on.
2. Decimal value is not allowed in Integration Time input box anymore to resolve software freeze.
3. Various editorial changes, including updated BWTEK logo and certain terminology.

#### Product Model BTR115

1. Laser now does not turn on and off automatically for each scan during Timeline process.
2. Removed the configuration checkbox for “Open Laser on Data Scan” and “Close Laser After Data Scan” in Hardware Setup > Common.

#### Product Model BTC261P

1. Fixed the issue where x-axis scale range always reverts to displaying full range instead of the factory set range.
2. Integration Time Unit can no longer set to microsecond (μs) in Raman Workspace.

### Enhancement and New Feature

1. Command Center (a feature for BWS496 (TacticID)) now allows for custom Library spectra download in addition to No Match spectra.
2. Japanese version is now available (license required).

### Known Issues

1. Timeline chart time axis is relative to the time of first spectrum acquisition, does not report real time.
2. Spectrum cannot be saved with a file name already in use by another one listed in Spectrum List Panel.
3. In Spectrum List Panel if a spectrum name is expanded to show the details and it is at the top of the field, clicking the "-" to collapse the field can uncheck all spectra.
4. Colorimetry Color Space v' value calculation is incorrect.
5. When using Pulse Output (a Multi-Purpose Pin function under Setup > Hardware Setup > AuxPort), the total pulse duration value in microsecond (μs) is incorrectly compared to the input value of Integration Time. It does not consider the set Integration Time unit, causing an error message, and inability to use the function.
6. PC may experience unexpected crash when using RS232 communication based spectrometers (ex: BRC113P, BTC113P...etc.) under certain operations forcing PC restart.