

Spekwin32, Guidance for:

Show Spectroscope View

Show Spectroscope View does:

Simulate the view through a visual hand-held spectroscope, based on current spectral data.

Sequence of steps:

1. Open your spectrum file (transmittance, absorbance, or fluorescence)
2. Activate Spectroscope View (F5 key)
3. Select desired display options
4. To compare with spectrum, use „Align“ button
5. Save as bmp file, copy to clipboard, or do a screenshot

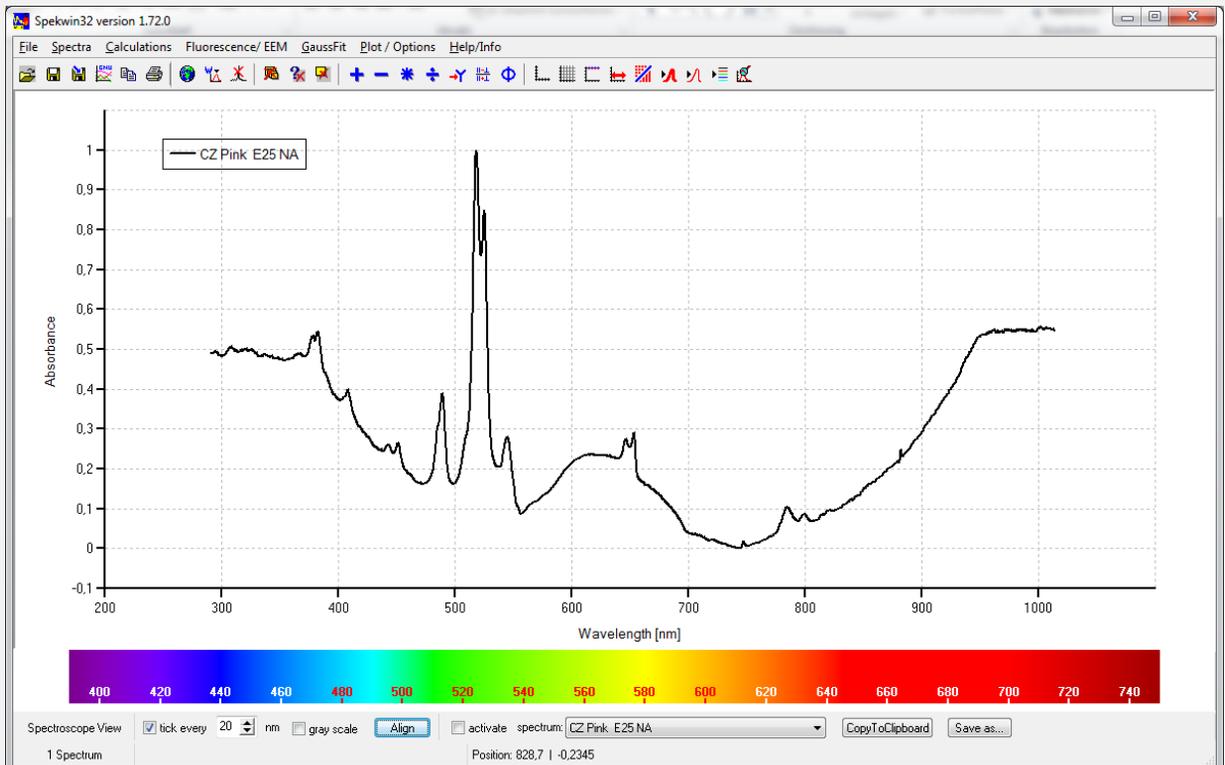
Following: Examples for producing visual spectra (spectral data taken from „David Vegh Collection“ collection, included in GL GemSpec Reference file collection, available from <https://www.cigem.ca/>)

Motivation

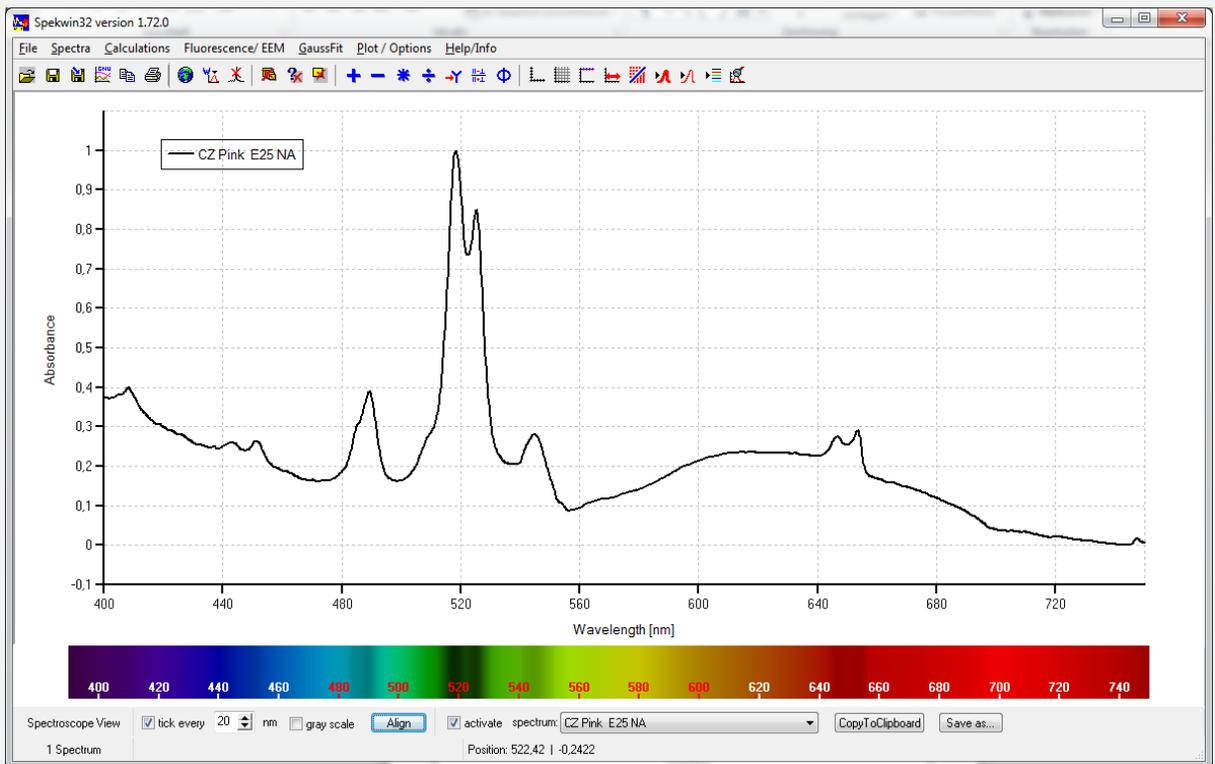
In some areas (like schools, gemology), the use of hand-held visual spectrometers is still widespread. Gradually, software-driven spectrometers gain ground. For users of visual spectrometers, it is often hard to recognize the patterns described in the textbooks. The Spekwin32 „spectroscope view“ function will assist in learning both ways of viewing and evaluating spectra, by „translating“ the spectral output of spectrometers to the visual appearance within the spectroscope.

How to do it

- Open your spectrum file (absorbance or transmittance type, will also work for fluorescence data)
- From the „Options/ Plot“ menu, activate the „Show Spectroscope View“ function
- You will see something like in the screenshot below:



- In the area below the spectrum plot, you see the „rainbow“ of the full spectrum, together with some options to select
- Use the „Align“ button to match the spectrum plot’s wavelength range to the rainbow spectrum
- With the „activate“ checkbox, the rainbow gets transformed into the spectroscope view for the spectrum selected in the dropdown box at the right
- Now, the rainbow spectrum has changed:



- You see: higher absorbance values give darker parts

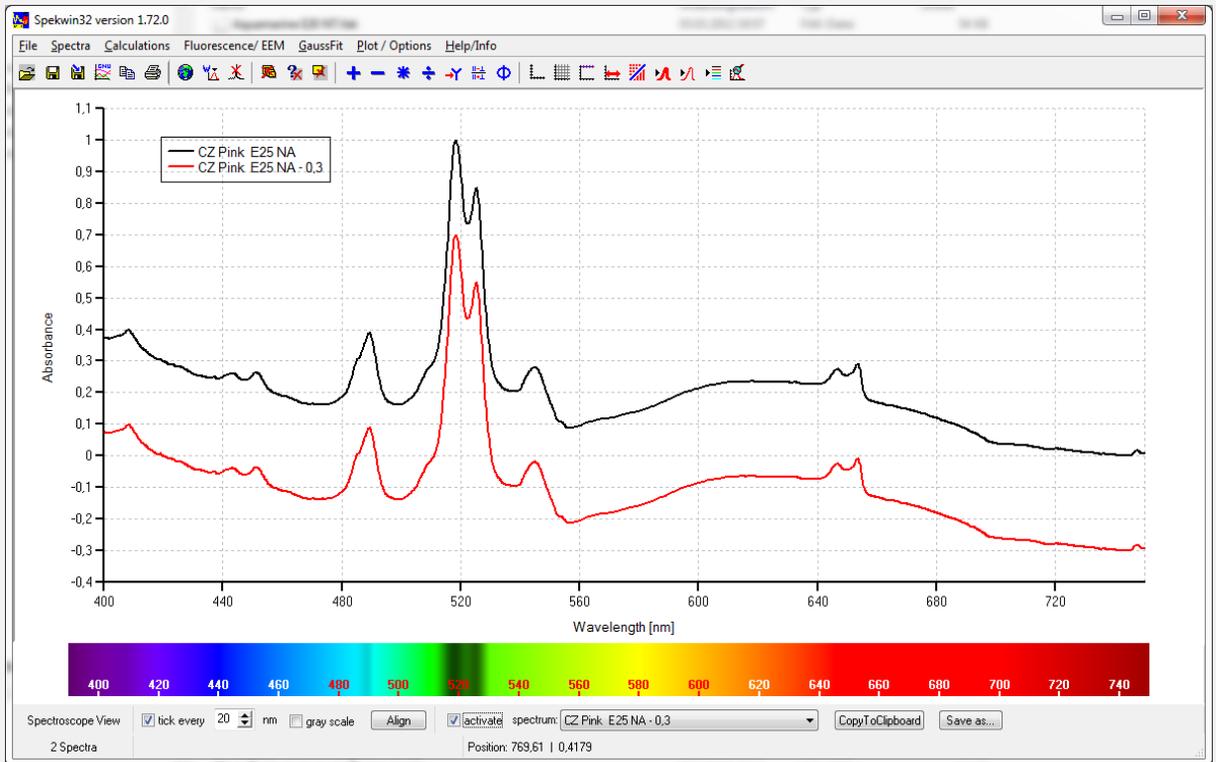
Options

- „gray scale“ for black&white display
- „tick“ for display with or without ticks
- the tick distance is adjustable
- „CopyToClipboard“ places the rainbow onto the clipboard
- „Save as...“ allows to save the rainbow as *.bmp file

Pitfalls & Problems - 1

Absorbance values below zero (or transmittance values greater than 1) make no sense physically.

Spectrum areas with such values will have **no effect** onto the rainbow spectrum! See example below:

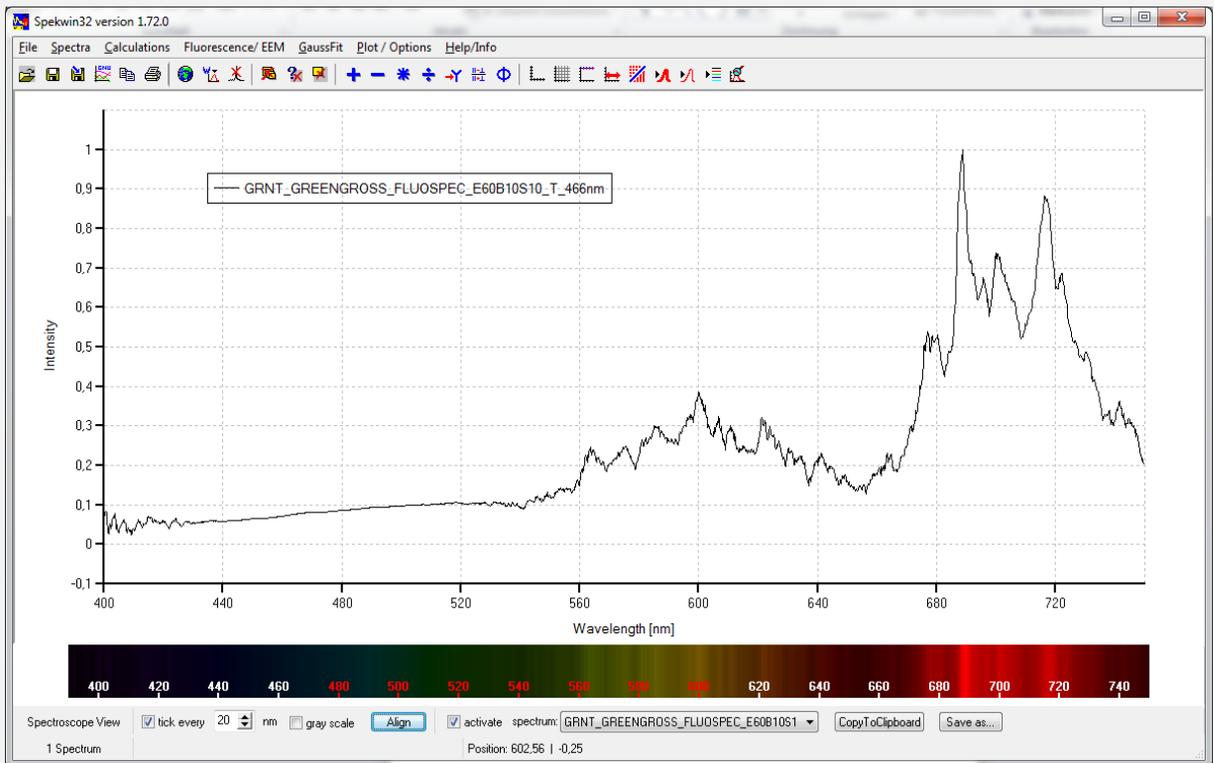


Pitfalls & Problems - 2

For fluorescence data with „intensity“ as y axis type, please normalize the data, so that the highest peak keeps below 1. Otherwise, the rainbow will look weird (call it bug, if you like...).

Pitfalls & Problems – 3

Noise within the spectrum will translate into many fine lines within the rainbow spectrum. These are pure artifacts coming from limited detector sensitivity and/ or low light intensity. These lines have no physical meaning, you will not see them through a spectroscope! The only remedy: improve your measurement technique!



Summary:

The „Spectroscope View“ gives the connection between measured spectra from a spectrometer and the visual appearance through a hand-held spectroscope.