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TM032 – Dynamic mapping WiRE™ 5

This document aims to show the WiRE™ user how to use the dynamic mapping function to preview and create Raman images from multifile Raman data (2D area). It assumes that the WiRE™ 5 software has been installed correctly with the required passwords and that the inVia instrument has an encoded mapping microscope stage.

Creating images using dynamic mapping

Once data has been collected as a mapping type measurement (see modules TM008, TM009, and TM010) dynamic mapping can be used to preview and create a Raman image derived from the raw data. Images can be created based on the following map types:

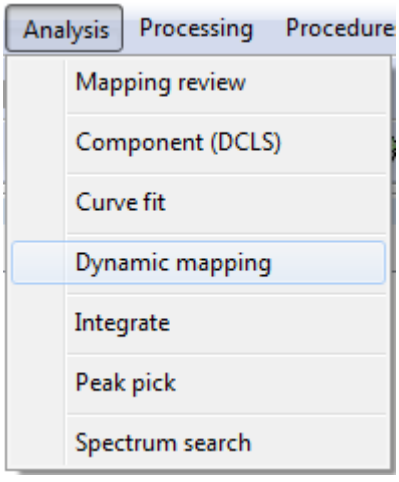
- Intensity at point
- Signal to baseline
- Signal to axis

Data must be in a multifile format and must represent a 2D area. The parameters on which the Raman image is based can be altered by the user. The image updates 'live', enabling the user to view the effect of altering these parameters on the image. Seeing how the image changes can provide information on data integrity (e.g. potential sample damage) and variation in component presence and distribution. Images of particular interest can be subsequently viewed in the Map Review. The dynamic mapping function works optimally for noise filtered data if spectral signal to noise is low (see TM013).

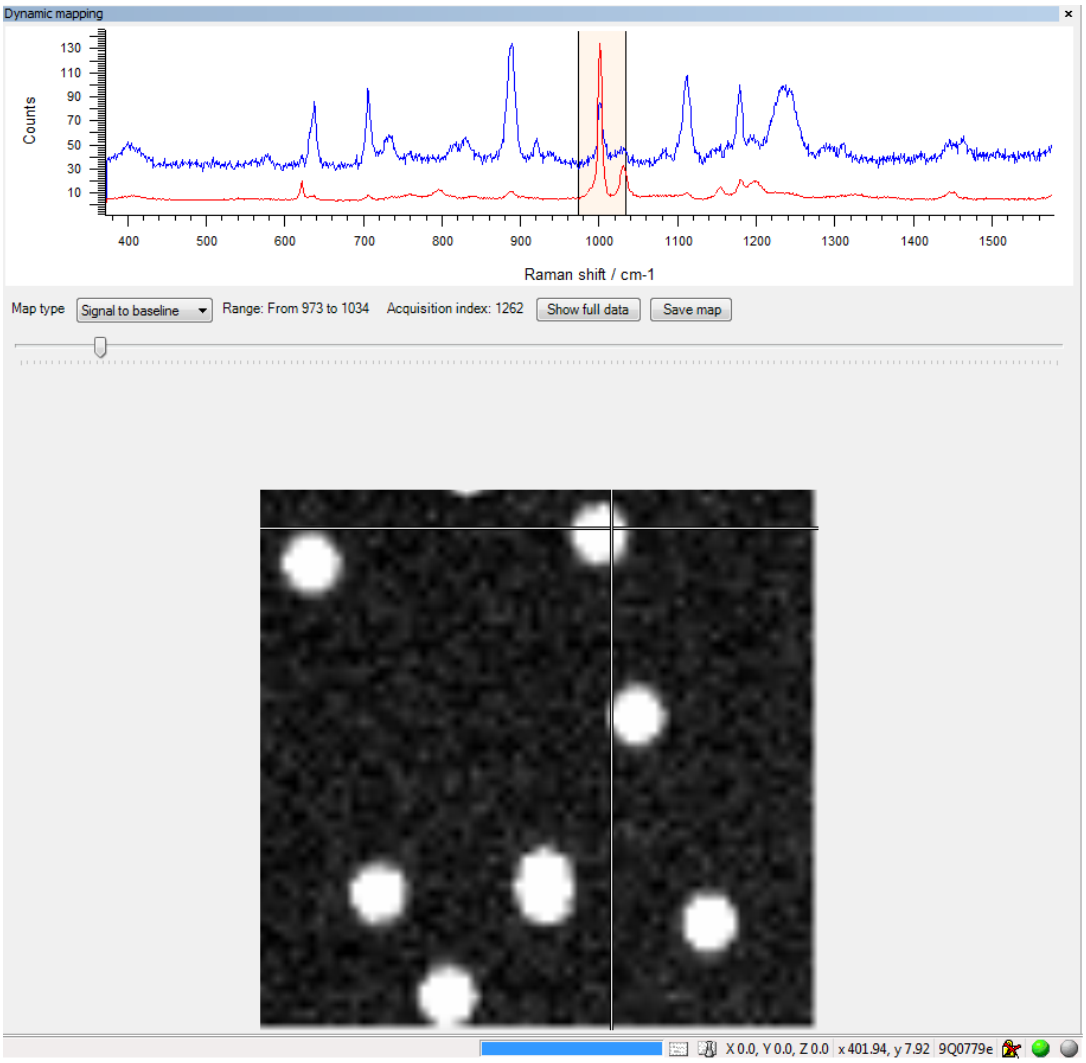
Using dynamic mapping

- From **File…Open in new window** select the mapping data .wdf file. A Spectrum Viewer will open and display the first subfile in the dataset.

- Select **Analysis….Dynamic mapping**



The dynamic mapping viewer window will open, displaying a spectrum viewer in the top half and a Raman image in the lower half. The spectrum viewer will contain the selected spectrum (red) and the average of all spectra across the map (blue). The selected spectrum can be changed using the slider bar, or by clicking on the image to view the spectrum at that point. The acquisition index displays the acquisition number of the selected spectrum within the map file. Note selecting 'Crosshair' from the context menu will turn the image crosshair on, enabling the user to view the position of the selected spectrum within the image.

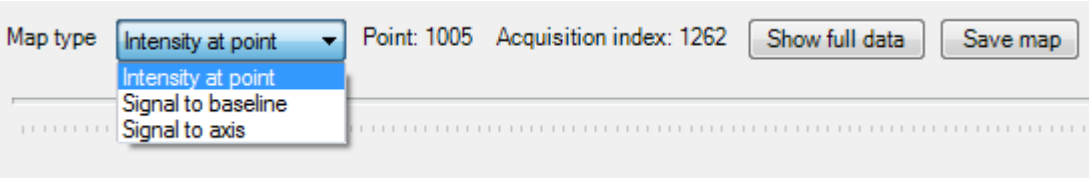


- The image can be viewed overlaid on the white light image by selecting 'White light image' from the context menu. The image LUT is also accessed from this menu (see TM018) and is otherwise set to 5% to 95% distribution.

- Selecting 'Stretch image' from the context menu will stretch the image so that it fills the entire width of the dynamic mapping viewer. Note that, in viewing the image in this way, the aspect ratio will be typically lost.

- The default image is created using the 'Signal to baseline' map type, where the upper and lower limits are placed at 30 cm^{-1} either side of the spectrums' central wavenumber (actual values are displayed in the 'Range' field). The user may alter the upper and lower limits by using the mouse to click and drag the limit bars to the desired values. It is possible to 'zoom in' on the spectrum to more accurately place the limits. Clicking in the middle of the range allows the user to drag the whole range to a new spectral position. The image will update live as the range is altered and/or moved. Note the 'Signal to axis' map type is manipulated in much the same way as 'Signal to baseline'.

- The user may choose to set the map type as 'Intensity at point', in which case the frequency of the Raman band at which the image is based (the 'point') is shown by the cursor position and is displayed in the 'Point' field. The initial value will be the centre of the range as set by the user in the previous map mode, or in the centre of the spectral range if no change was made prior to entering this map mode. The frequency of the Raman band to map can be changed by dragging the cursor to the desired position. It is possible to 'zoom in' on the spectrum to more accurately place the cursor. The image will update live as the frequency of the Raman band is changed.



- Clicking **Show full data** minimises subsampling to show the image with its maximum spatial resolution, allowing the user to preview the image exactly as it will be saved. Where the map file contains a large number of spectra, the displayed image is automatically sub-sampled during interaction to ensure changes occur quickly in relation to the specified spectrum position.

- Once the user has set the desired map type, and range/point at which to create the image, click **Save map**. A progress bar indicates the process of building the image.

- The image can be viewed by selecting the  button and highlighting the icon in the 'Map selection' window that corresponds to the image just created (see TM014).