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## TM008 - Point imaging   WiRE™ 5

This document aims to show the WiRE™ 5.0 user how to set up a basic mapping measurement (point imaging). It assumes that the WiRE™ 5.0 software has been installed correctly with associated passwords and that the inVia instrument has an encoded mapping microscope stage.

Mapping set-up

1. Decide on the type of map data that is required and locate a suitable region over which to perform a map.

   Maps can be performed on multiple non-uniformly spaced points, at regular intervals along a line, or over an area in a regular array (X and Y can differ but are usually identical).

2. Choose the smallest region that satisfies the purpose of the map. This will allow better data to be collected, either by achieving a higher signal to noise or by improved spatial resolution, or both. This area can vary dramatically and will affect decisions on the step size to be used, objective, and time per spectrum.

3. With the region to be mapped in the field of view of the video camera, zero the XYZ co-ordinates using the [button icon] button. **Ensure that the correct objective magnification is shown in the Sample Review tool** (this affects the scaling shown in the Video viewer).

4. Select **Measurement….New…Map image acquisition** to initiate the Map Image window.
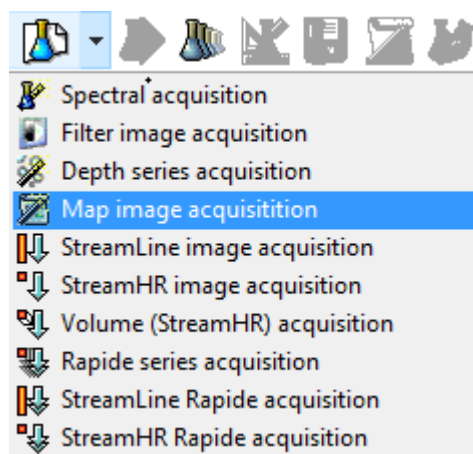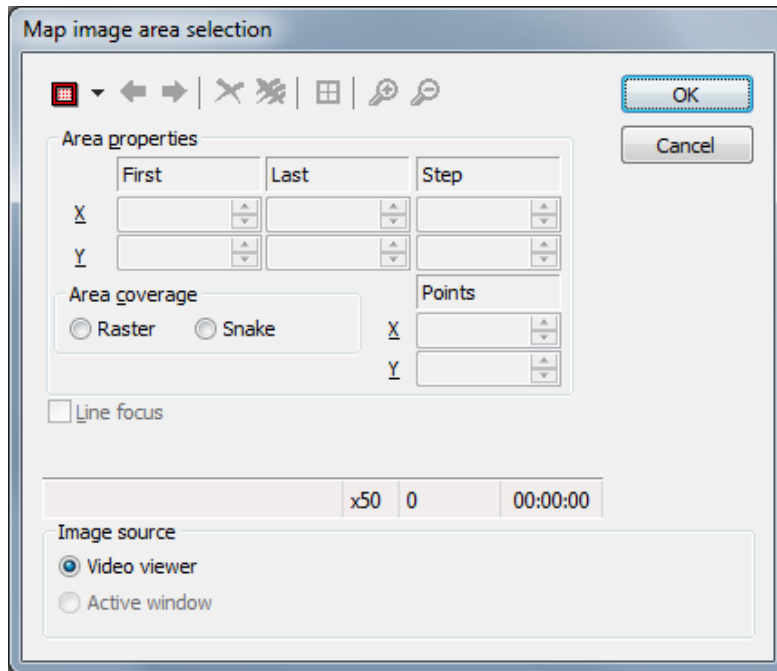
By default, the Image source is the live video viewer. A map can be defined over a larger area using a previously created montaged image. (To create a montaged image, please refer to module TM7.) If the active window contains a montage, the 'Active window' button will now be active in the Map Image window. Select it to use the montage image to define the mapping area.

5. With the white light image selected, select a map type from the Map Image window:

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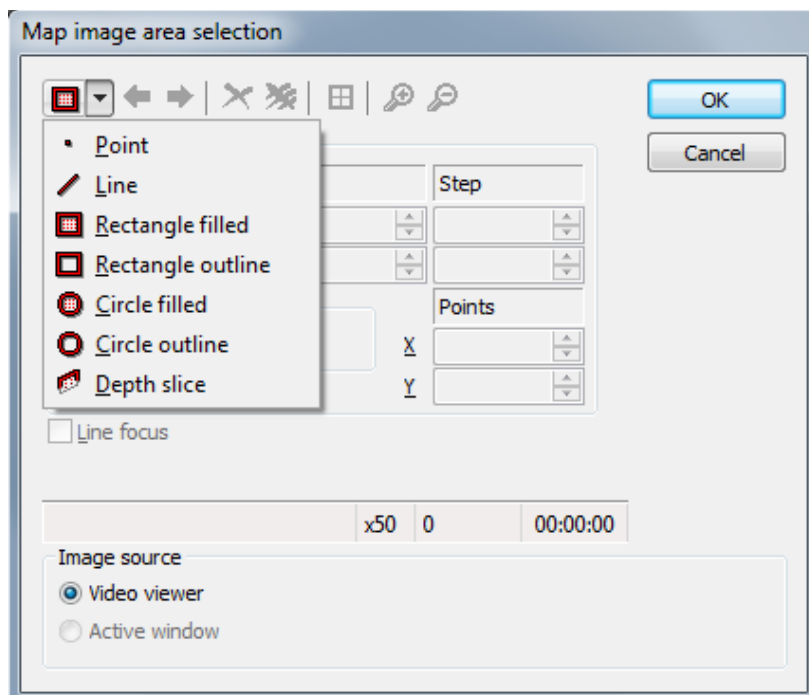
Point – The user can define multiple points on the base image; analyses will be performed sequentially. The XY co-ordinates are reported in the Map Image window. The blue arrows cycle through the points. The z value is fixed for each point.

Line – The user defines a straight line on the base image using the left mouse button (click and drag).

**Rectangle** – Either filled or perimeter. The user defines a rectangular area using the left mouse button.

The first and last XY co-ordinates can be 'rounded' up / down or adjusted by typing directly into the boxes. For lines and areas, X and Y step sizes can be adjusted in the Map Image window. (The default step size is 1 µm.) The map data density is reduced by increasing the step size.

Raster and Snake refer to the direction pattern in which a filled area is mapped. If the **FocusTrack** function is used, the area coverage options should be set to Snake.

The ✖ button removes a co-ordinate point. The ⊞ button toggles the mapping grid on and off.

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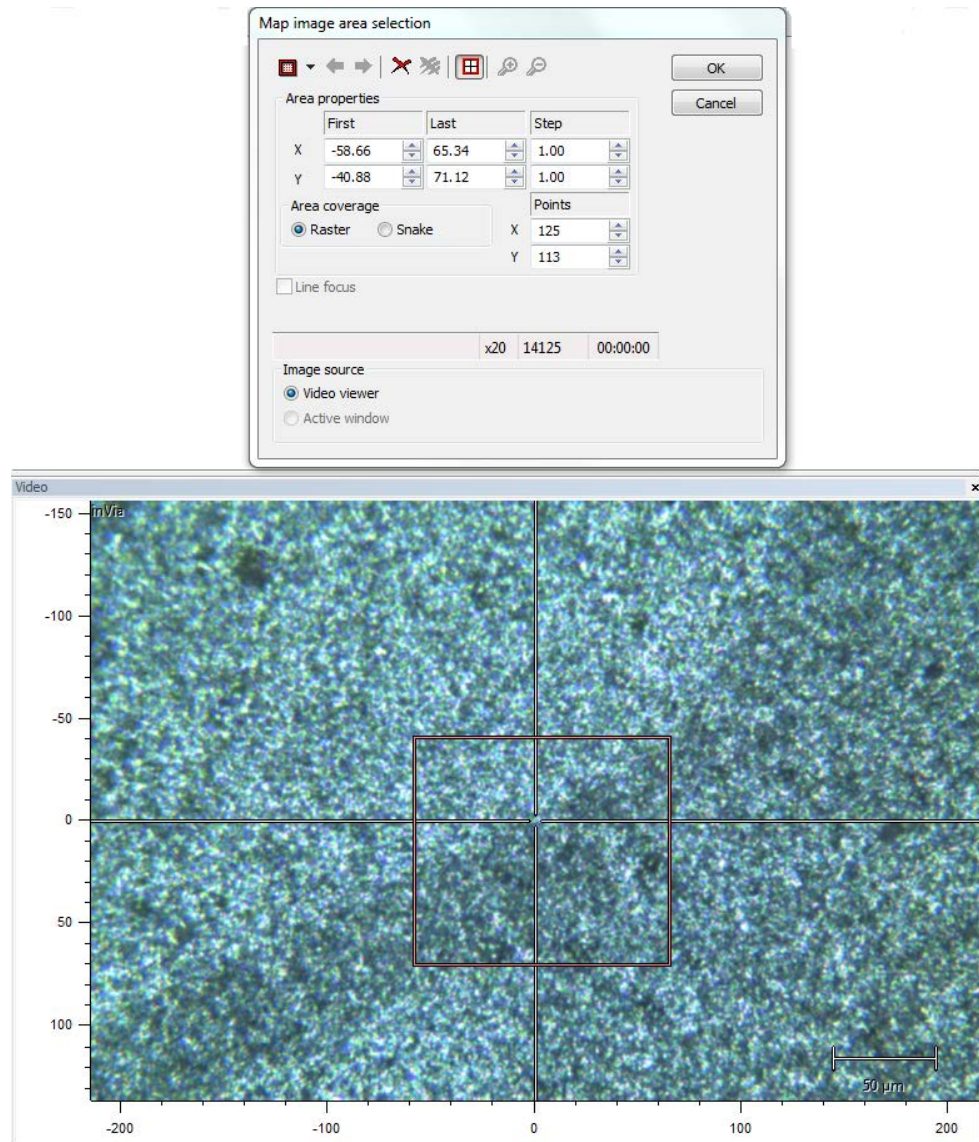
6. When the map is defined, and **OK** is pressed, the Map Measurement Setup window is activated. The Range, Acquisition, File, FocusTrack and Advanced tabs will be familiar to the user as they are identical to those that appear in the general Spectral Acquisition setup. The Area setup tab allows the user to review the map area settings i.e. co-ordinates, and XY step sizes.

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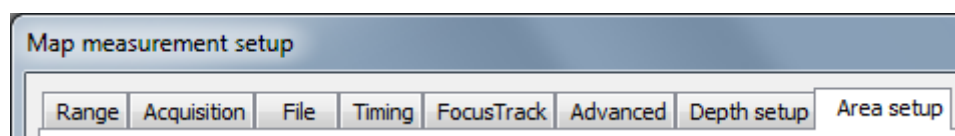
7. Set the experimental conditions (derived from single Spectral Acquisition measurements on the sample), while bearing in mind the total time for mapping.

   To minimise the map acquisition time, you should aim to acquire spectra with a data quality which is as low as possible whilst still producing the desired information. It may be useful to perform Static Grating measurements as this requires less time than an Extended Grating measurement (SynchroScan). The Area Setup tab allows modification of the defined map area, including the co-ordinates and step sizes.

8. Once **OK** is pressed, the mapping measurement can be started using the button.

   A new viewer opens with the base image on the left, and the spectrum acquired at each point on the right hand side. The lower portion of the window gives information on the current acquisition and time remaining for the measurement to complete.

9. Once map data collection has finished, a Map Review window opens showing the base white light image and the spectrum corresponding to the current cursor position.
   (Tip: On loading a saved map dataset, this view can be regained by selecting **View…View map data**).

It is possible to recover files which have not been saved for a period of up to 7 days (see module TM18).