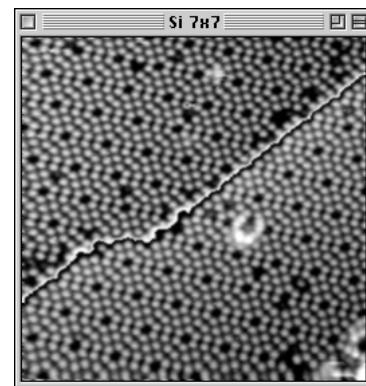


Image SXM

An Overview for New Users

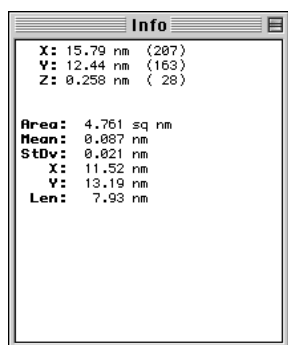
Files, Images and Windows

All images supported by Image SXM can be loaded from the **Open...** menu item. SXM image files have the filetype 'iSXM' and creator 'Imag' and can be opened by double-clicking on their icons in the Finder. To ensure that your SXM images have the correct filetype and creator set, see the on-line Help (p24 and p44–45). The files in a folder can be viewed as thumbnail images using **Browse... (⌘B)**. The next or previous file in a folder can be opened using the shortcut ⌘-cursor arrows.



When an SXM image is loaded, the parameters that specify the calibration of the axes are read from the file header or associated parameter file. Images are saved as PICT or TIFF files, with the calibration data stored in the file headers.

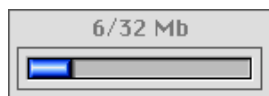
Images are usually displayed in separate windows. Alternatively, multiple images loaded from a single file can be displayed as a set, or stack, of images in a single window.



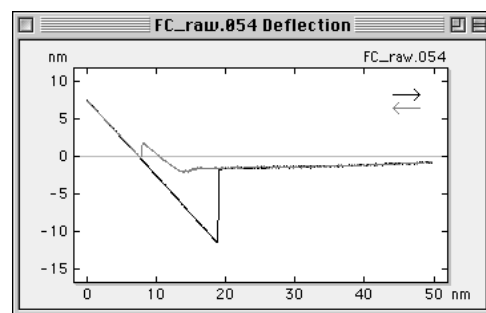
When the cursor is over an image window, the xyz coordinates of the pixel under the cursor is displayed in the Info window (left). This window is also used to display the results of the most recent measurements.

The Results window keeps a record of the results of all (image analysis) measurements. The Session Log window keeps a record of all (image processing) operations applied to images.

In addition to SXM images, Image SXM can load and display associated data such as STS spectra and SFM force curves (right).

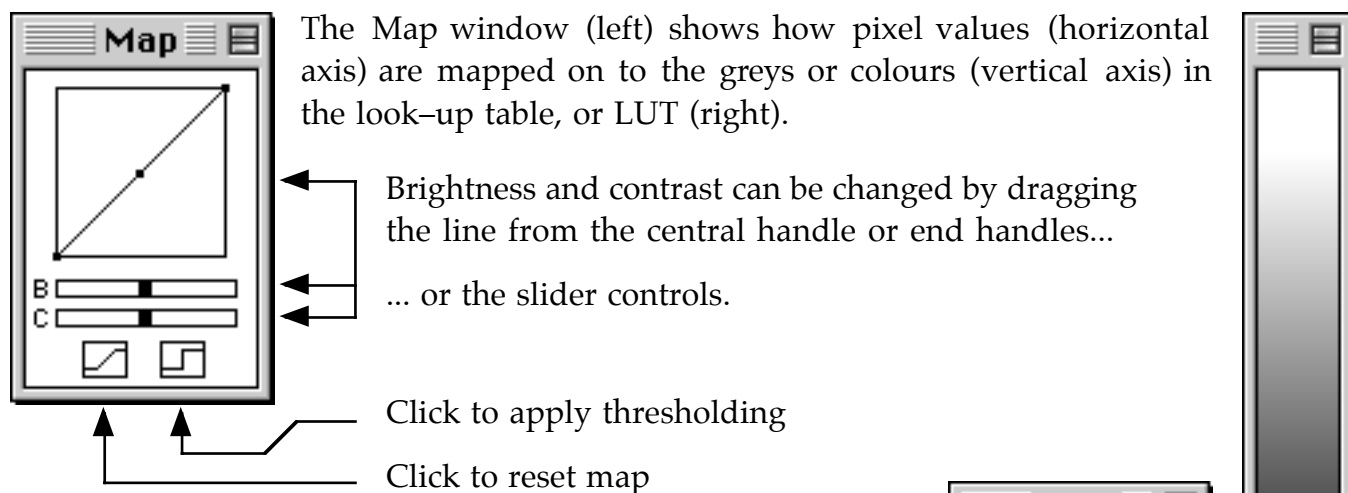


The Memory Usage window (left) indicates the memory used by the application code, image buffers and



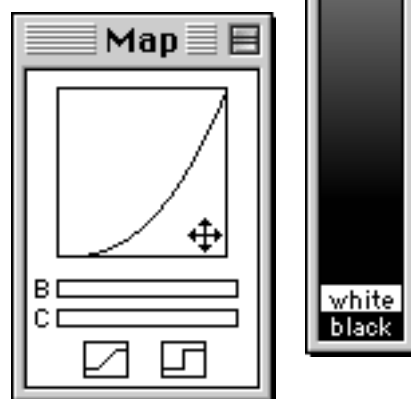
open windows as a fraction of the total memory allocated to Image SXM. (Note that this applies only to the application running under Mac OS 9 — when running under Mac OS X the memory available is 2 Gb). The image buffers should be set from the **Preferences...** menu item to a value greater than the size of the largest image with which the user usually works.

Contrast, Brightness and Enhancing Image Detail



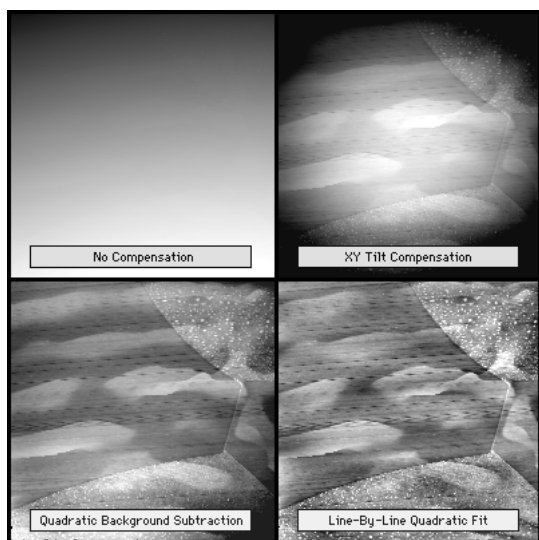
The mapping between pixel values and LUT values can be non-linear: Option-click in the Map window to specify a custom mapping; Control-click in the Map window to change the gamma of the mapping function (right). This can be used to enhance image detail that would be difficult to see if displayed with a linear LUT.

Changing these settings changes only the display. To apply these changes to the image data itself, select **Apply LUT (⌘L)**.



Images can be displayed in greyscale or using one of the preset colour tables, which include copies of the colour tables used with Digital Instruments SPMs. The colour tables can be customised by the user and saved for later use.

Compensating For Tilted or Curved Images



SXM images can be loaded with automatic or manual compensation for tilt or curvature of the images. The compensation can be applied by taking into account all of the pixel values in the image, or only those specified within a user-selected region of interest. The compensation can be applied line-by-line to compensate for changes in tip geometry. For more information on image compensation, see the on-line Help (p27-28).

The Tool Palette

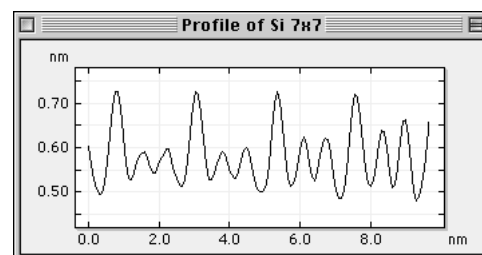
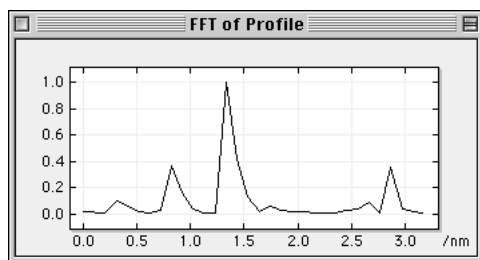


The default tool is the Rectangle Selection Tool, shown highlighted in the Tool window (left). This is used to select rectangular regions of interest (ROIs).

Pressing the Shift key constrains the selection to be square. Pressing the 'F' key constrains the selection to be a square whose side is an integer power of two, making it suitable for subsequent calculations of FFTs.

The Rectangle, Oval, Polygon and Freehand Selection Tools (below the Rectangle Selection Tool) can be used separately or combined: Press Control to add the current selection to an existing ROI; press Option to subtract the current selection from an existing ROI.

The Line Selection Tool (right) is used to select lines for Profile Plots (far right). Pressing the Shift key constrains the selected line to be horizontal or vertical.



Pressing the 'F' key constrains the length of the line selection to be an integer power of two. A Profile Plot made from such a line can be FFT'd (left).

Moving the cursor over a Profile Plot window will display the coordinates of the plot values in the Info window.

The Profile Plot (and FFT) will update continuously as the line selected is moved or edited. Pressing the Option key will freeze the previous profile and superimpose the current profile in a different colour.

Use the help tags or see the NIH Image documentation for the function of the other tools in the palette and for help with the original NIH Image commands.

SEM and SPM Menus

The function of each of the items in the SEM and SPM menus, together with items added to other menus, is described in the on-line 'Image SXM Help' pages and by help tags.

The syntax of the SXM macro commands and functions are described in the on-line 'SXM Macro Help' pages.

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