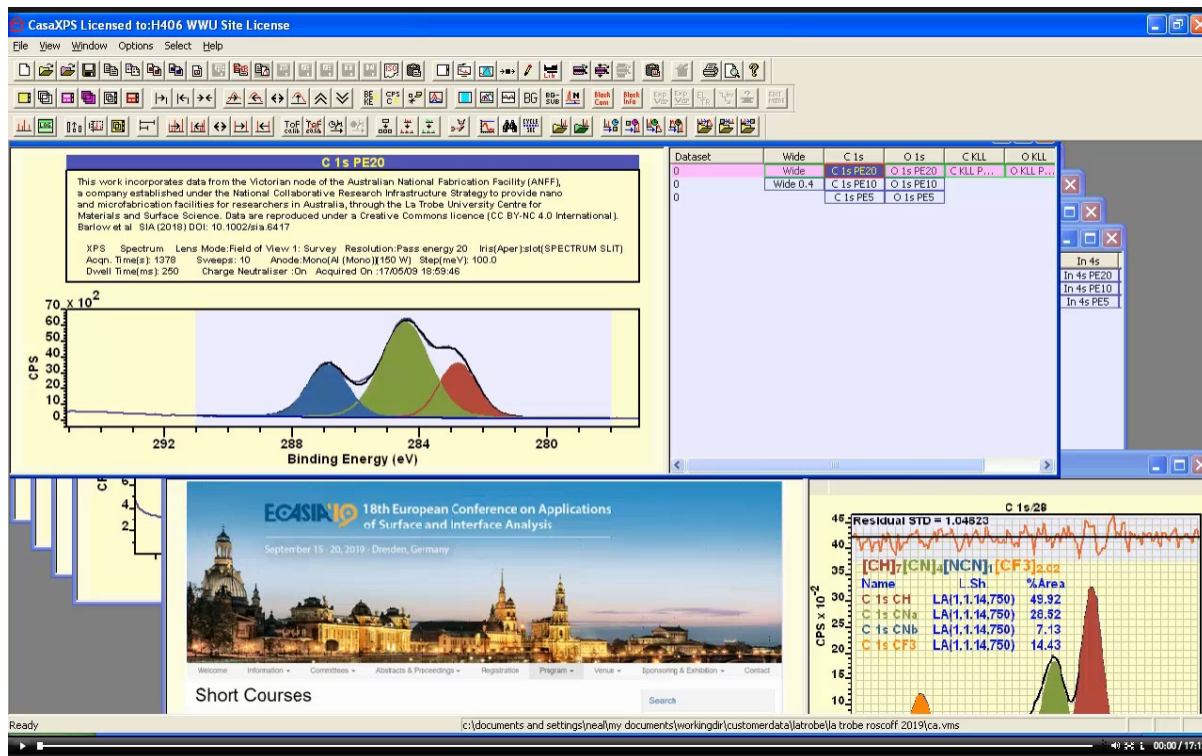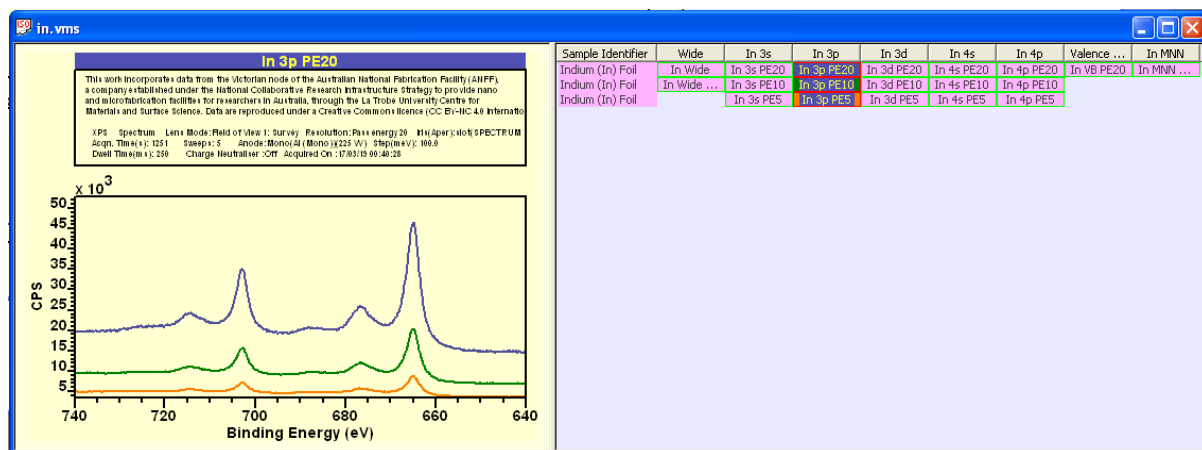# CasaXPS Overview



CasaXPS is a multiple document interface. This means the main CasaXPS window manages lists of open VAMAS files as a parent window for separate child windows which in turn manage data in VAMAS (ISO14976) format.



Within CasaXPS these child windows are referred to as Experiment Windows since each child window represents a view into a VAMAS file contain one or more spectra or images. Experiment windows are divided into two panes. The right hand pane of an experiment window displays an array of rectangles displaying the VAMAS block identifier string for each measurement saved as a VAMAS block of data within a VAMAS file. Data are displayed in the left hand pane in display tiles.

Display tiles are arranged within a sequence of display pages. Each display page is tiled with one or more display tiles. Each display tile can display one or more spectra or images.
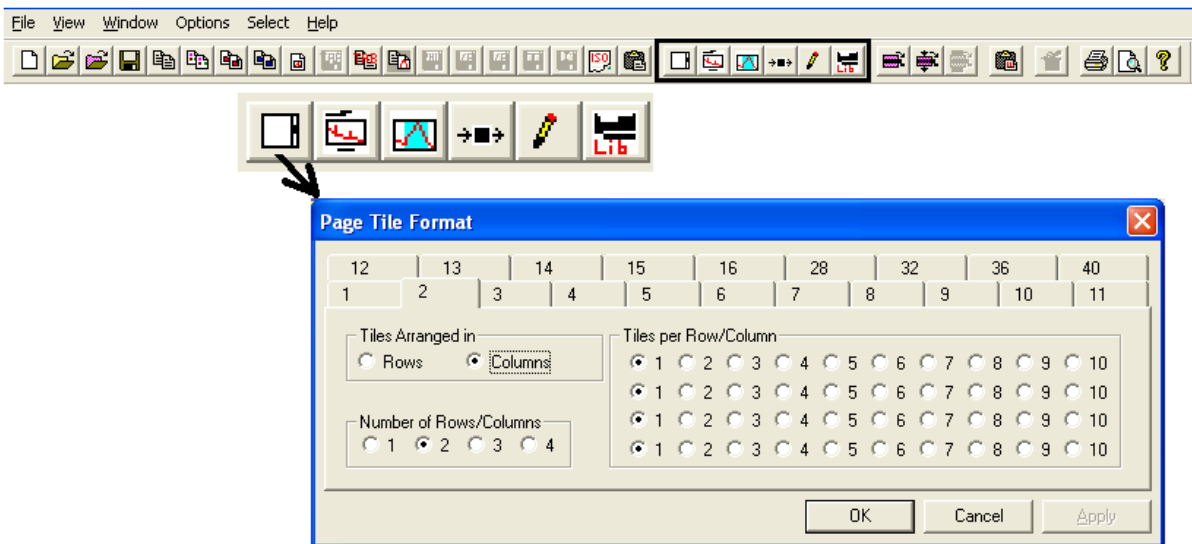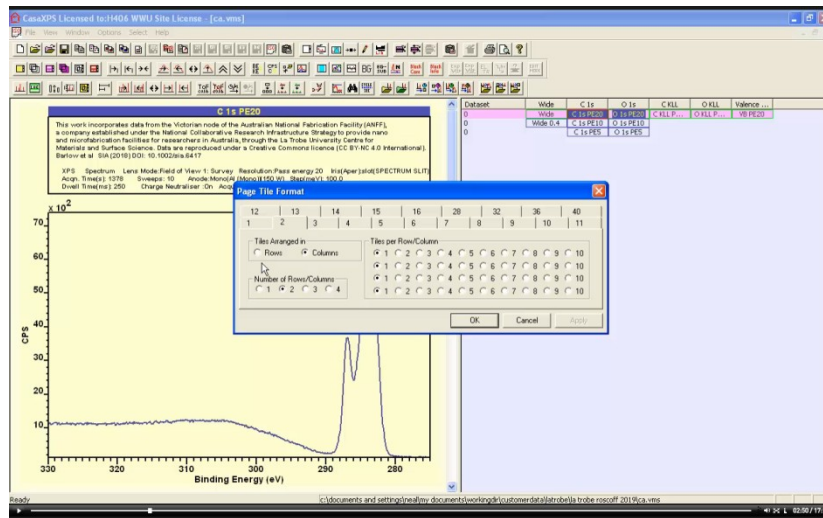




Two display tiles per display page arranged in columns allows two VAMAS blocks to be displayed next to each other.
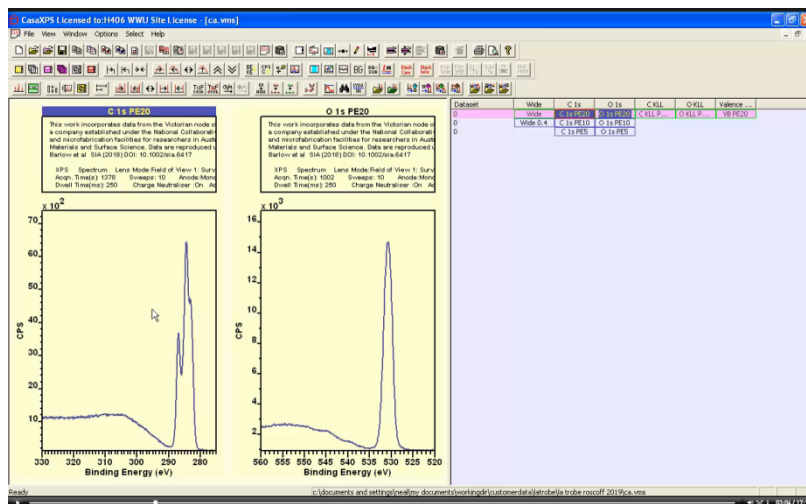
The number of display tiles per display page is adjusted using the Page Tile Format dialog window available from the Options menu or via a top toolbar button.

The left hand pane can display more than one display page. If more than one display page is displayed then a scrollbar is added to the left hand pane and left-clicking the mouse within the background to the scrollbar steps up and down through a list of display pages.
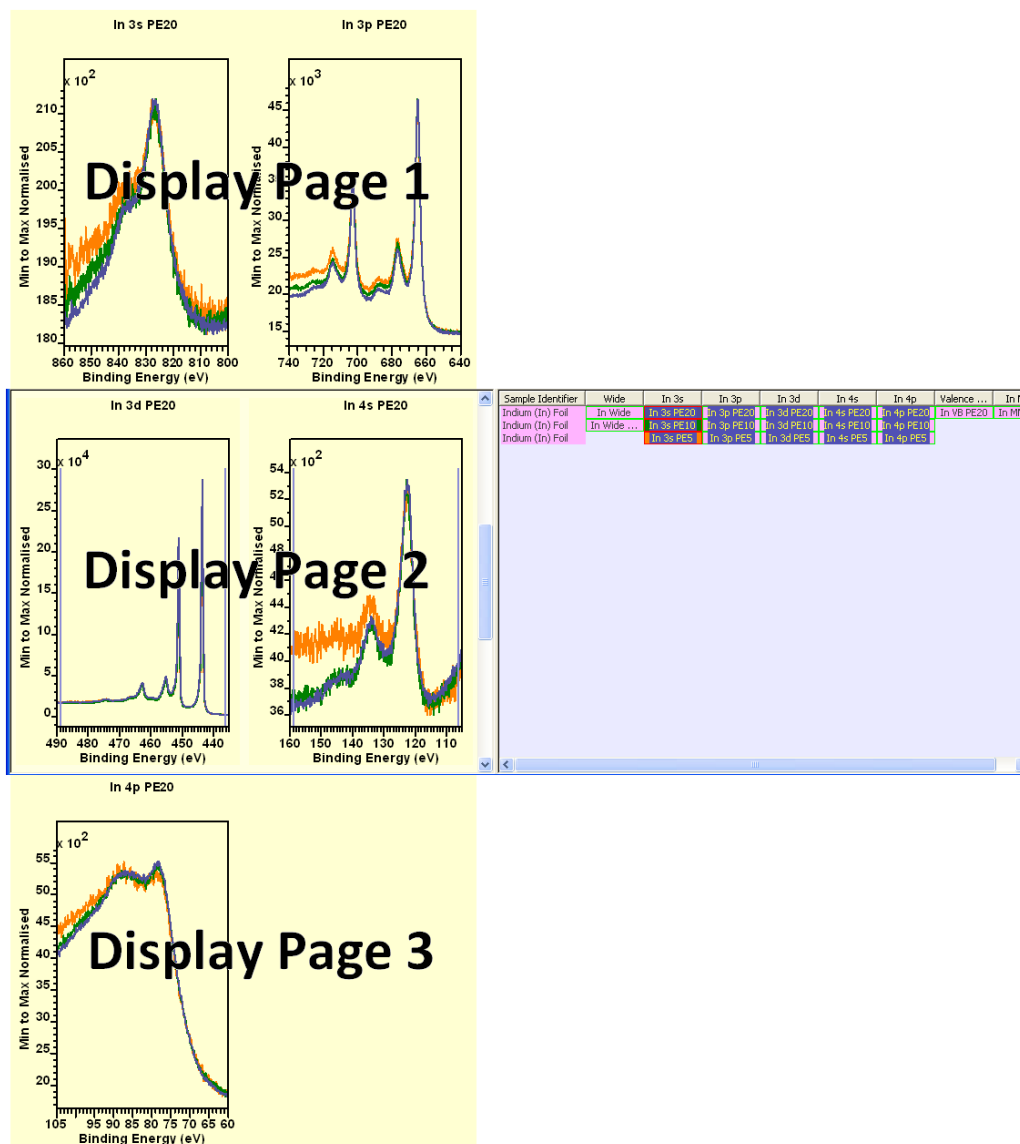


Display pages are added to the left hand pane by making a selection of VAMAS blocks using the right hand pane before pressing a display toolbar button.
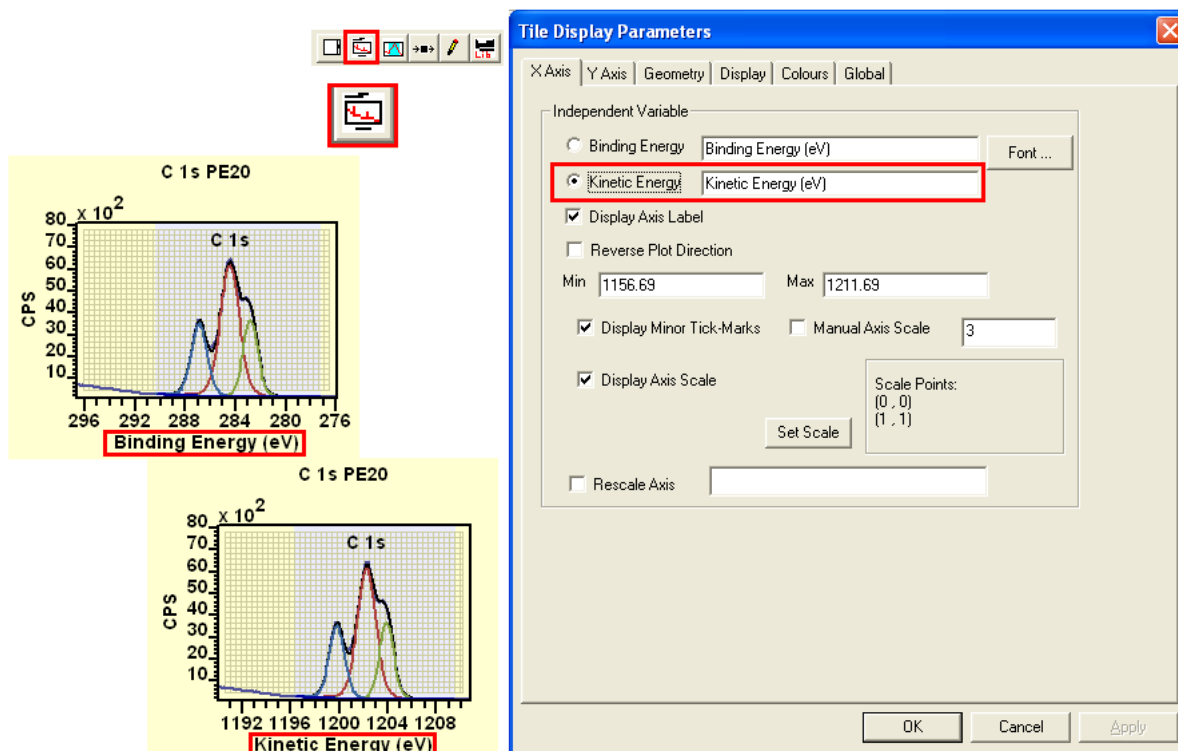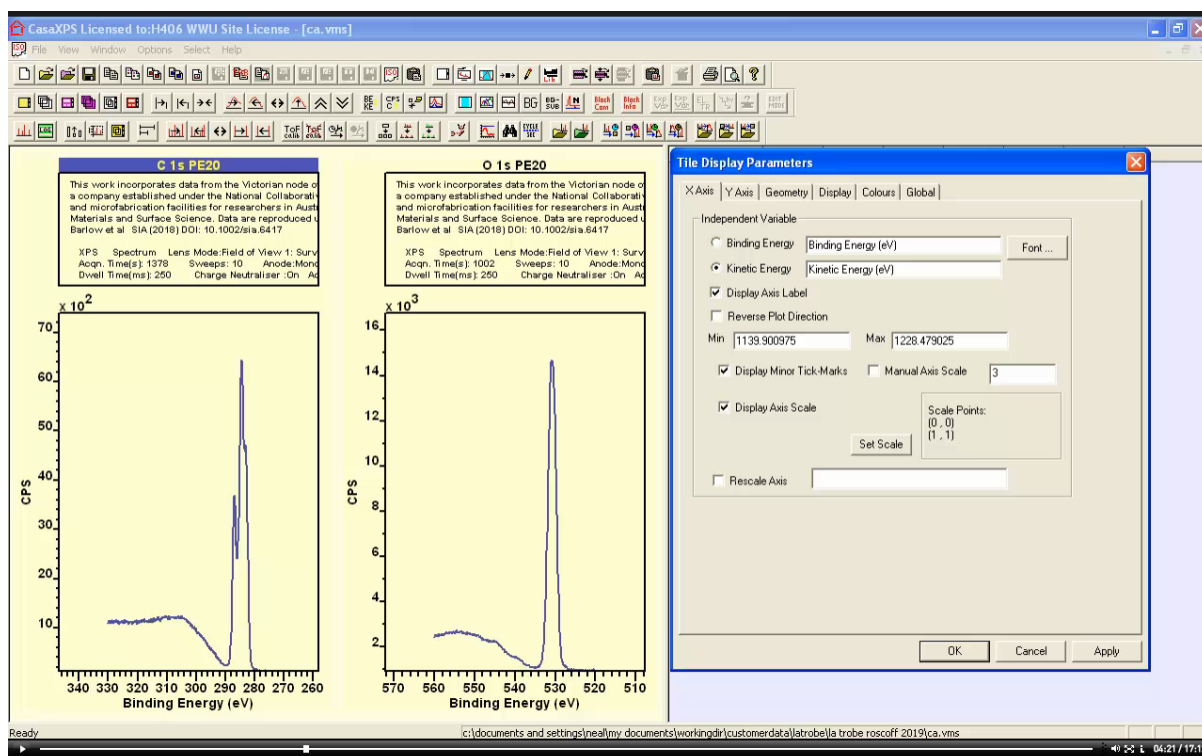
Tile Display Parameters dialog window includes a set of property pages with display options for data displayed in a display tile. Fonts, labels, colours, line widths, display ranges for kinetic or binding energy and counts per second or counts per bin are changed using settings on these property pages. Many display settings can be switched between using toolbar buttons on the second toolbar of CasaXPS.
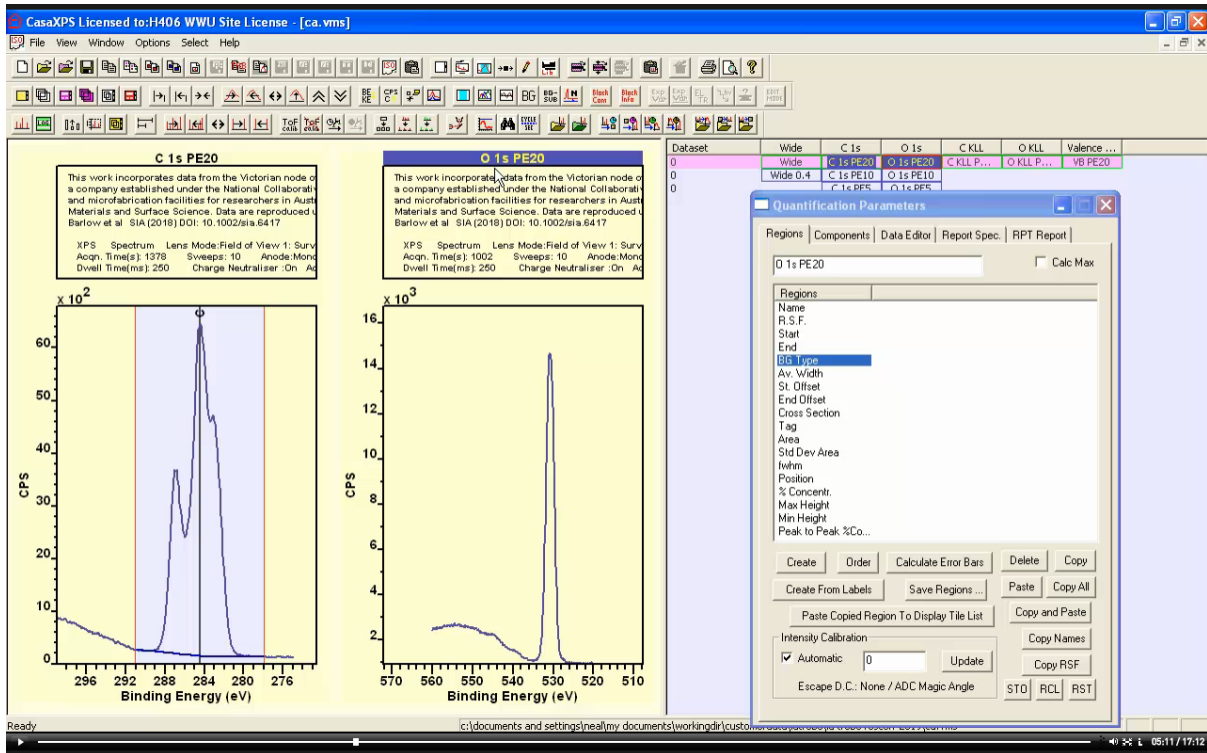
The active display tile is the tile with a highlighted title. The Quantifications Parameters dialog window, Regions property page displays the VAMAS block identifier string for the VAMAS block displayed in the active display tile. A peak model is created for spectra within a VAMAS block using the tables for parameters displayed on the Regions and Components property pages. Regions define the background and components representing distinct signal in a peak model are added to the active VAMAS block through the Regions and Components property pages.
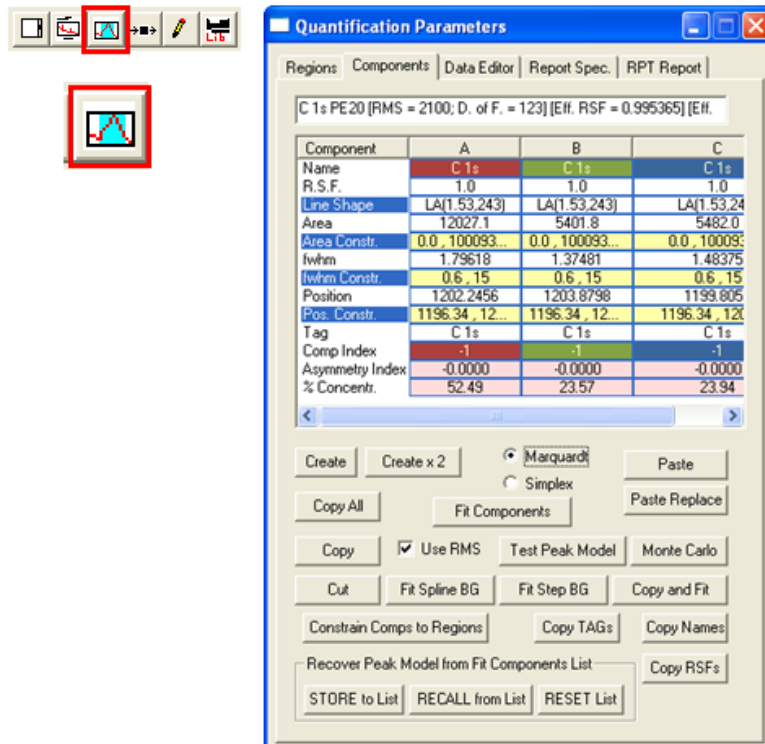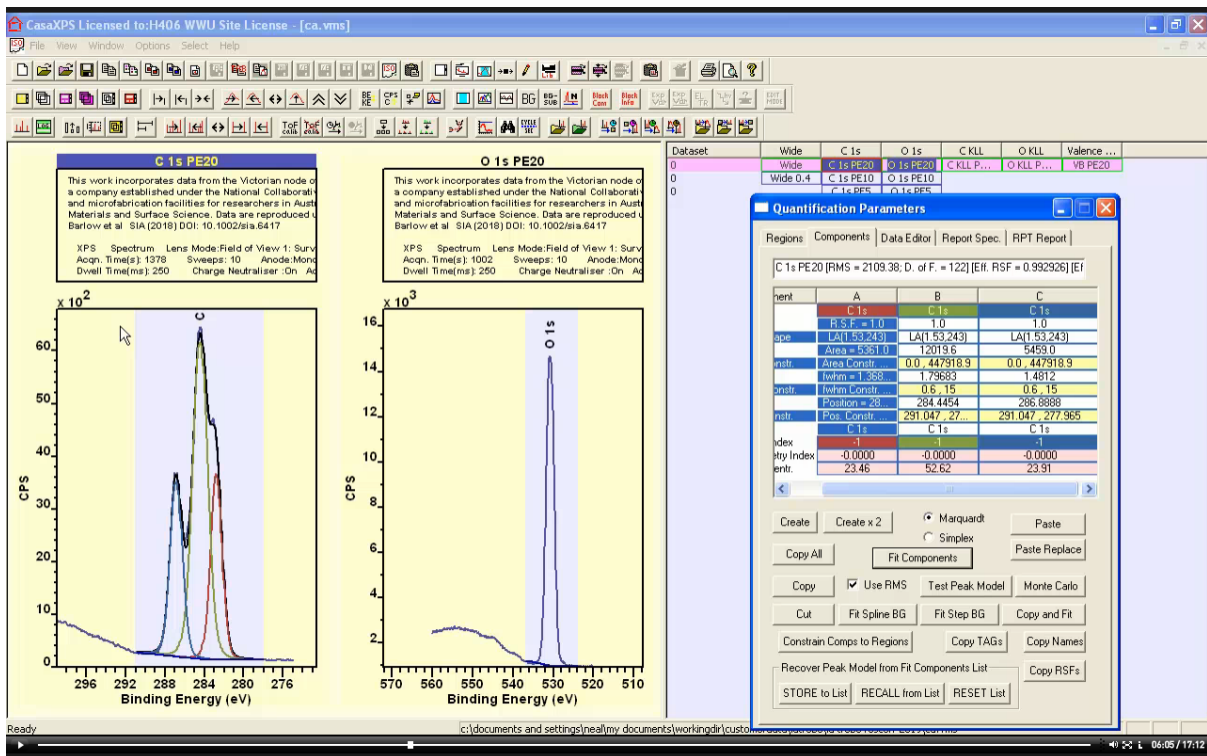
Both Regions and Components property pages include a text field in which a string is display that indicates the VAMAS block identifier for the active VAMAS block as defined by the title for the set of display tiles. Placing the mouse over a display tile then pressing the left-mouse button selects the indicated display tile as the active tile. The active VAMAS block within the active tile is the source for the string entered on the Quantification Parameters dialog window Regions and Components property pages.

Peak models defined on the Quantification Parameters dialog window can be fitted to the active VAMAS block via the Components property page.
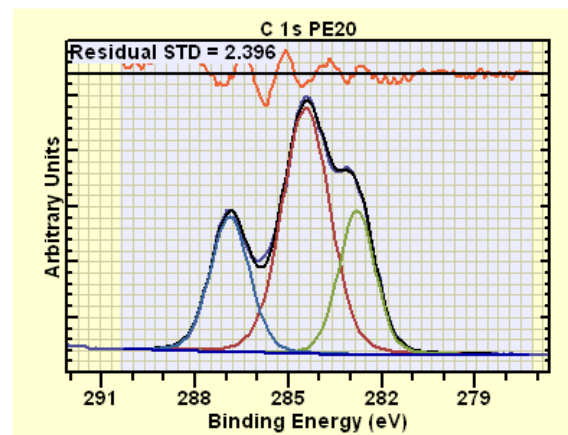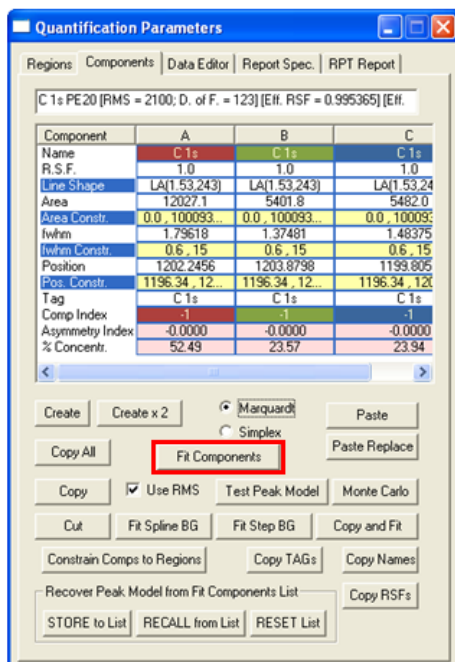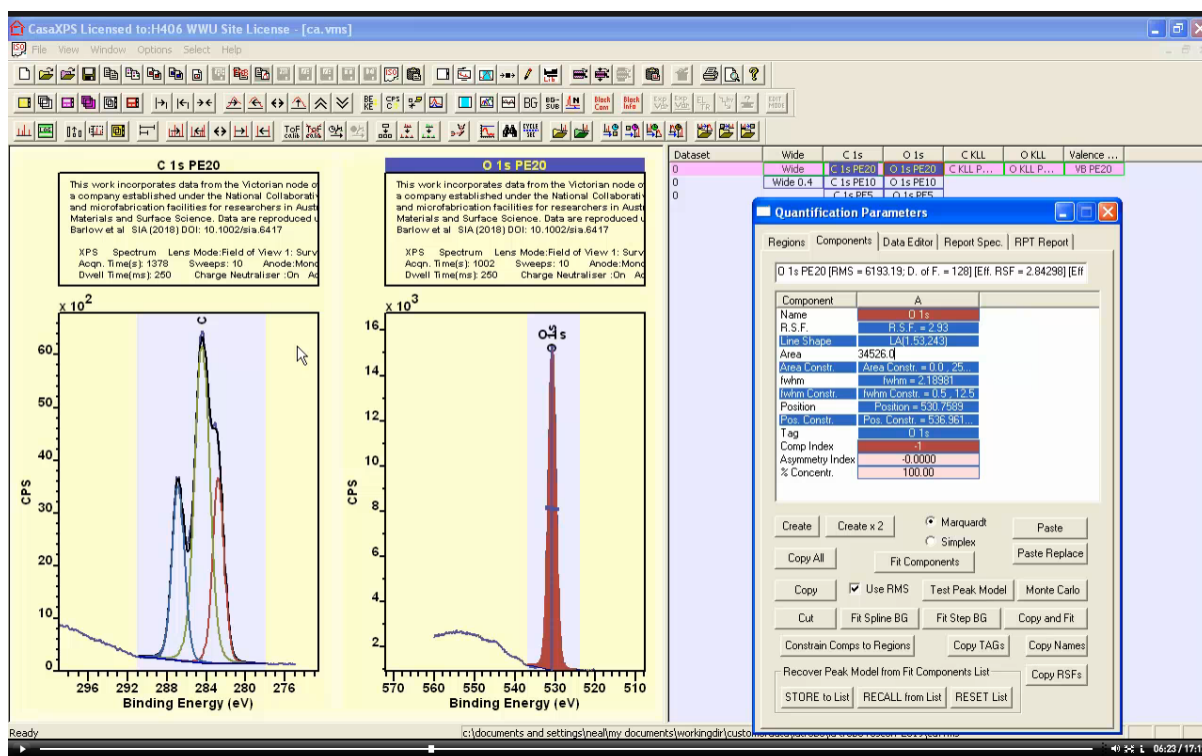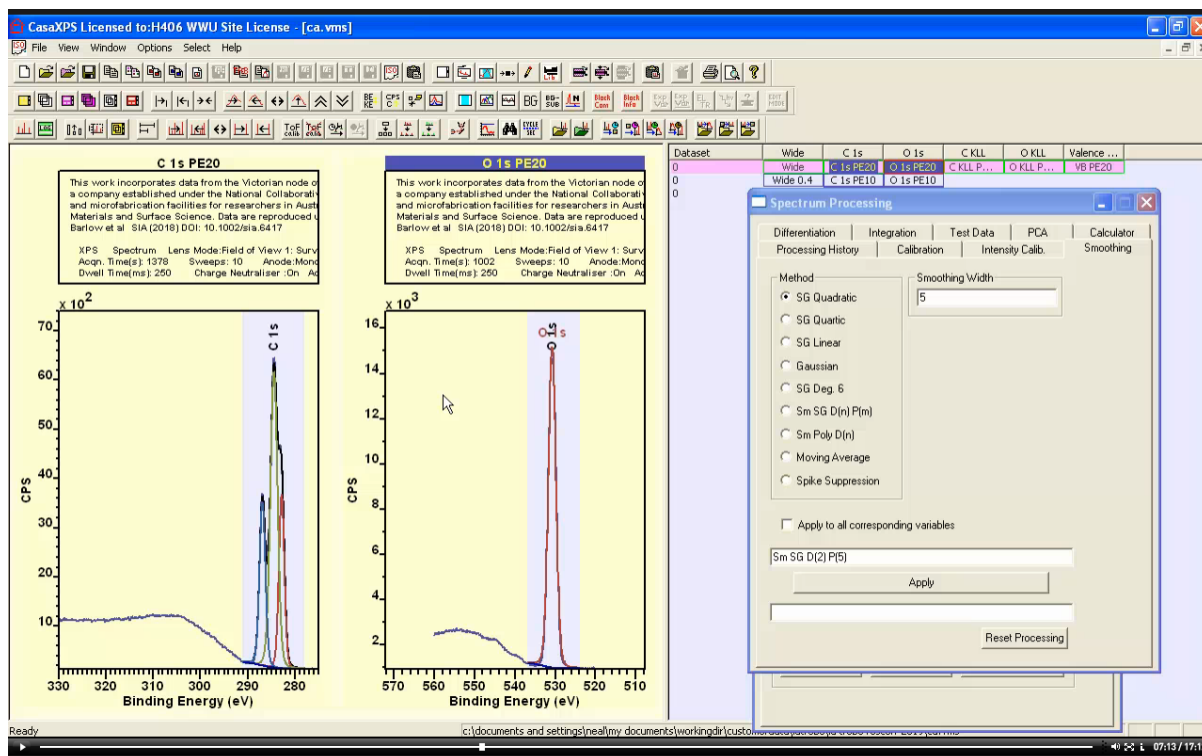
Component parameters defined on the Quantification Parameters Components property page include a component name, relative sensitivity factor, initial fitting parameters (area, fwhm and position), constraints for fitting parameters, a TAG string and a component index value.
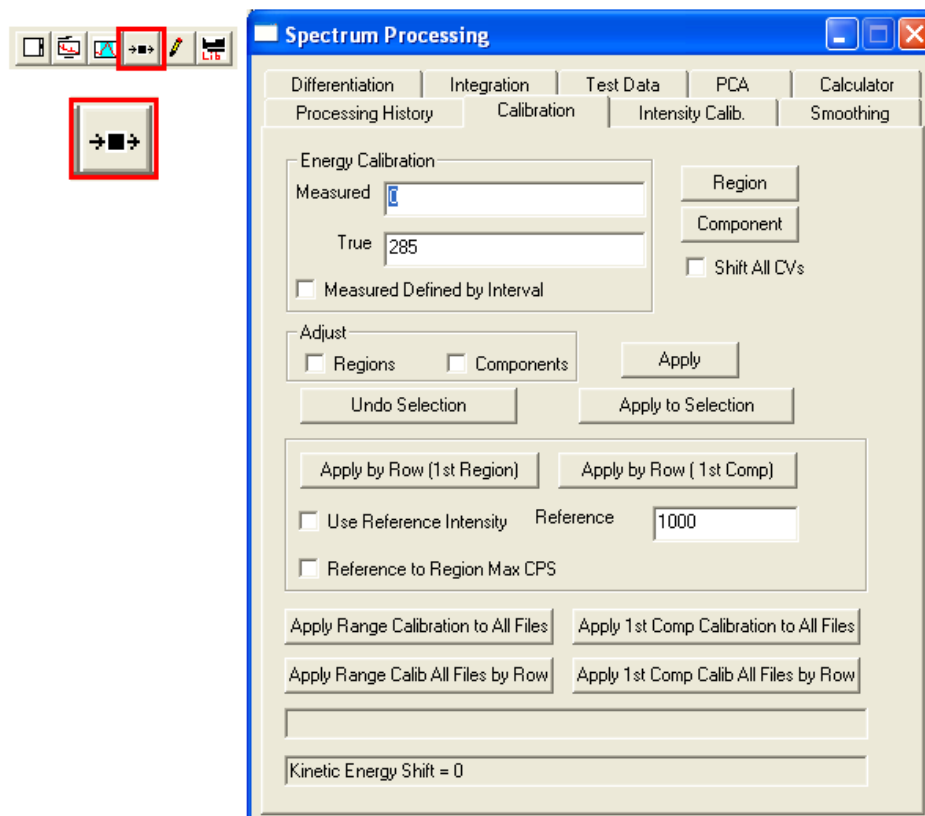


Spectrum Processing dialog window is invoked from the toolbar or the Options menu.

Spectrum processing dialog window offers a similar logic to the Quantification Parameters dialog window, namely, spectrum processing options are offered via a set of property pages where each property page acts on data within the active display tile. There are a few exceptions to this rule but the vast majority of spectrum processing options act on the active VAMAS block displayed in the active display tile.
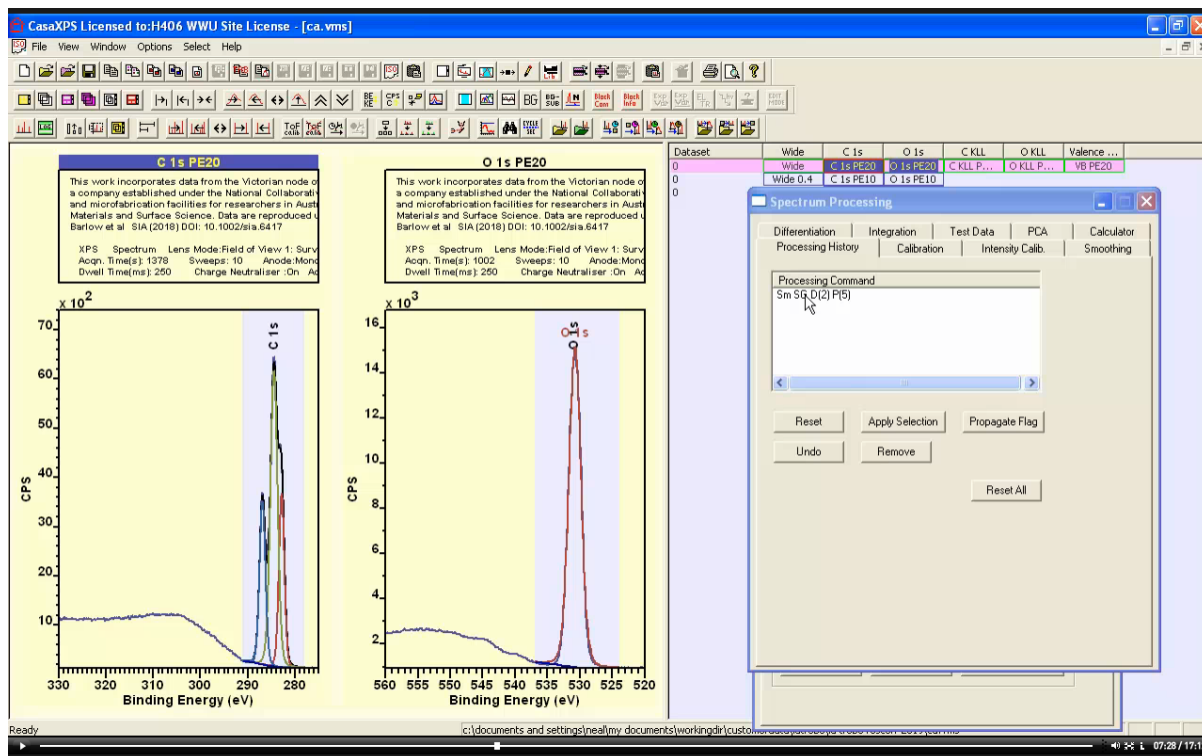
After a spectrum processing action has been applied to a VAMAS block a processing command string is added to the processing history for the VAMAS block and a list of processing commands for the active VAMAS block is displayed in a list on the Spectrum Processing History property page.





Annotation is added to the active VAMAS block using an analogous dialog window to Spectrum Processing where in the case of annotation the property pages are used to specify text in the form of tables, peak labels and general text.
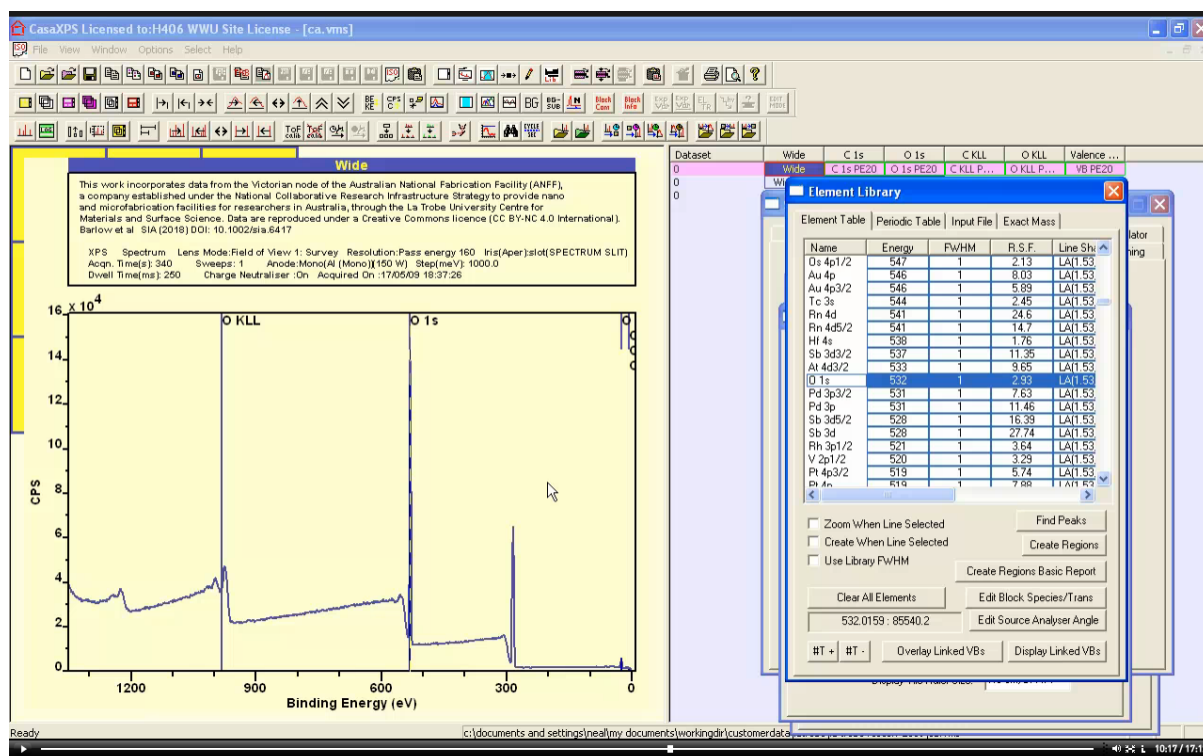
Element library comprising a list of photoemission lines assigned nominal binding energies for elements and transitions are displayed on the Element Library dialog window via the Element Table property page. These entries within the element library are used to identify elements associated with peaks within a photoemission spectrum and are also used to guide the creation of regions on a survey spectrum to permit the appropriate relative sensitivity factors to be entered for regions or components when created.

The element library displays a list of entries appropriate for data displayed in the active display tile. In particular the transitions display in the Element Table property page table correspond to library entries where the excitation source strings (for example "Al" for an aluminium anode x-ray gun) matches the element /transition field within the VAMAS block for the spectrum displayed in the active display tile.
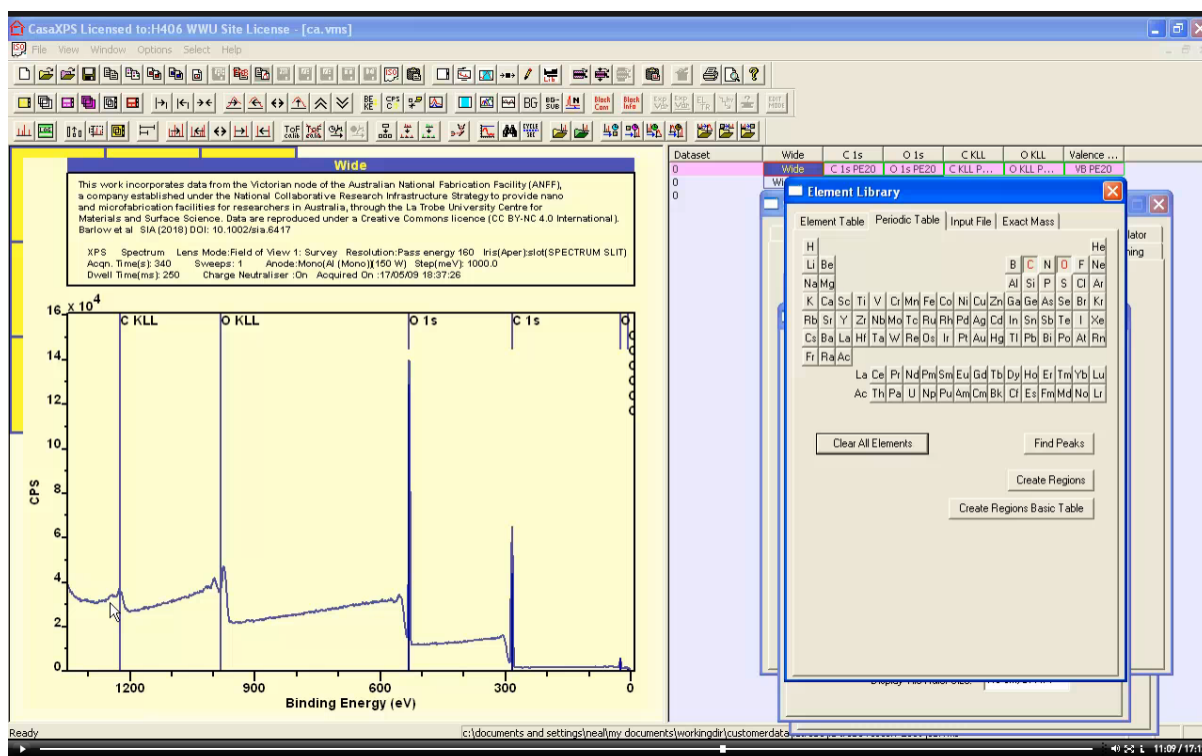
Markers are placed on the active display tile indicating transitions associated with a selected element in either the Element Table or chosen via buttons on the Periodic Table property page. Other property pages on the Element Library dialog window allow the loading and merging of new files containing lists of element/transitions.

The Exact Mass property page is designed for browsing ToF SIMS or general mass spectra.
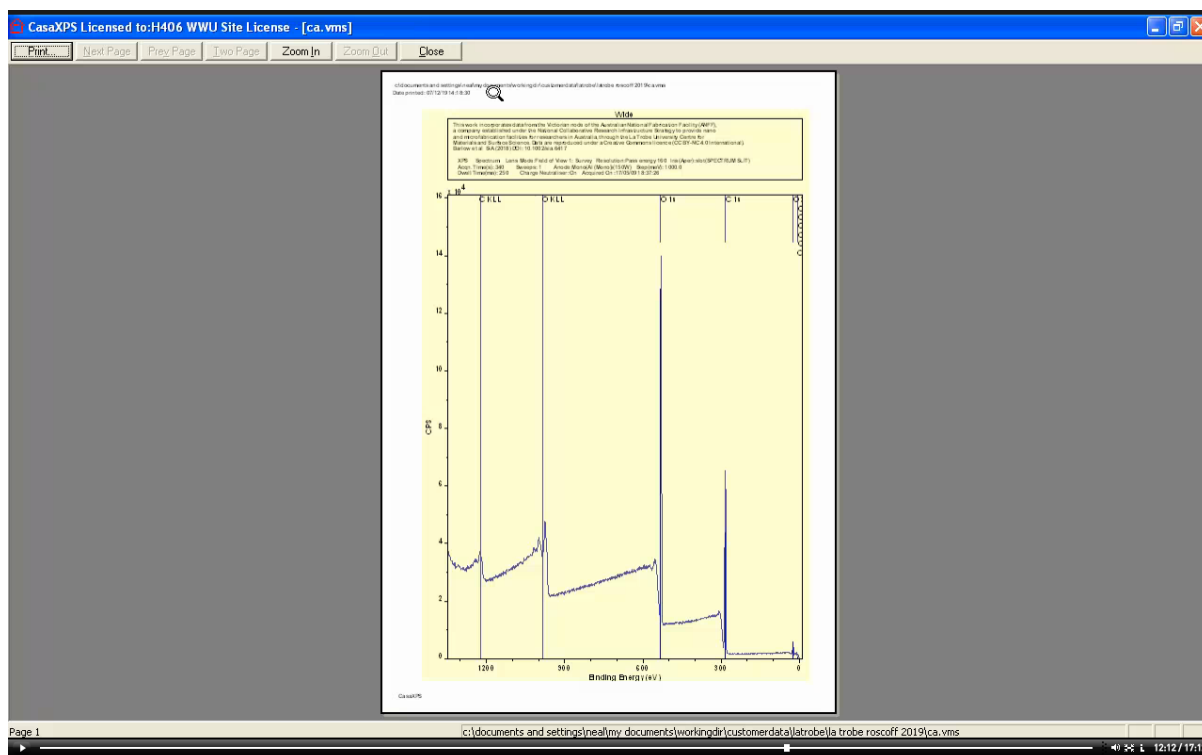
Toolbar buttons are also available to permit the printing of data. When the print toolbar button is selected the set of display pages of tiles is printed. The print preview button allows a preview of the pages and the appearance of these pages before actually being queued for printing to paper.
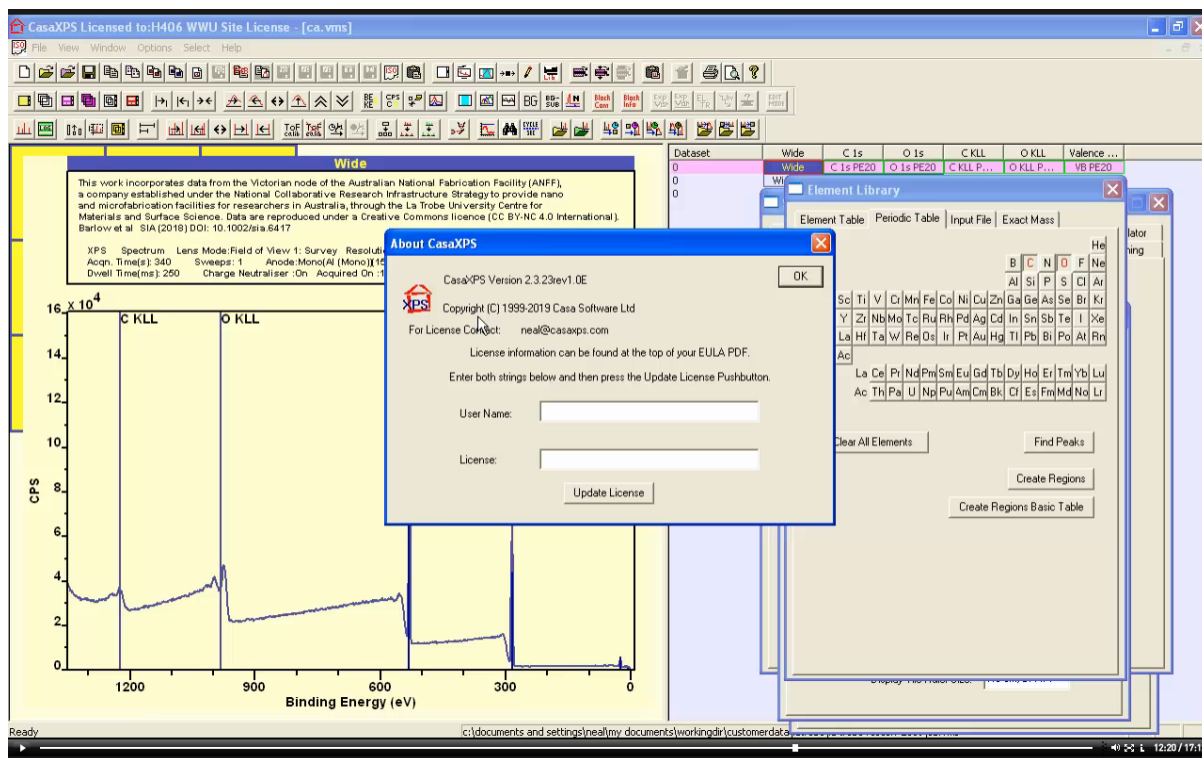


Version information for CasaXPS is available on the About Dialog of CasaXPS. The About Dialog window is invoked via the toolbar button or using the Help menu. License information that enables full functionality of CasaXPS is entered on the About Dialog of CasaXPS.
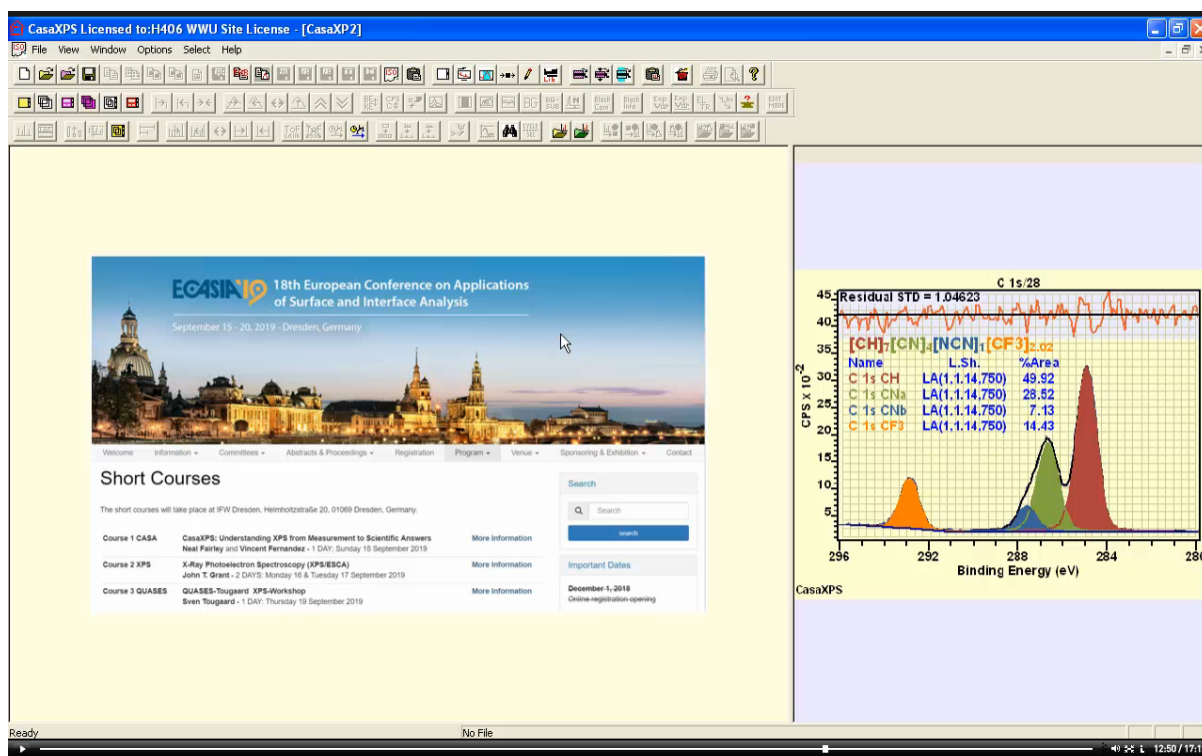
An empty experiment window, in the sense that no VAMAS data are associated with the window, displays bitmap images placed in the CasaXPS.DEF directory. The right hand pane shows an image in a file called CasaXPS.DEF\Message.bmp while the left hand pane displays a list of bitmaps in a directory called CasaXPS.DEF\SlideShow. The keyboard PageUp and PageDown buttons allow the viewing of bitmap files in alphabetical order to be displayed in the left hand pane.
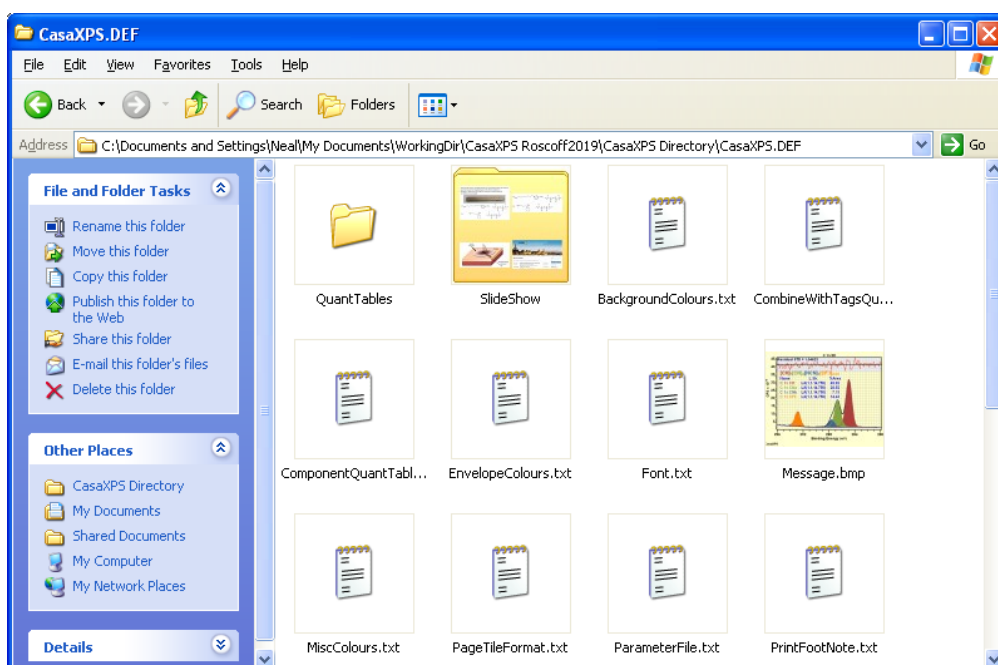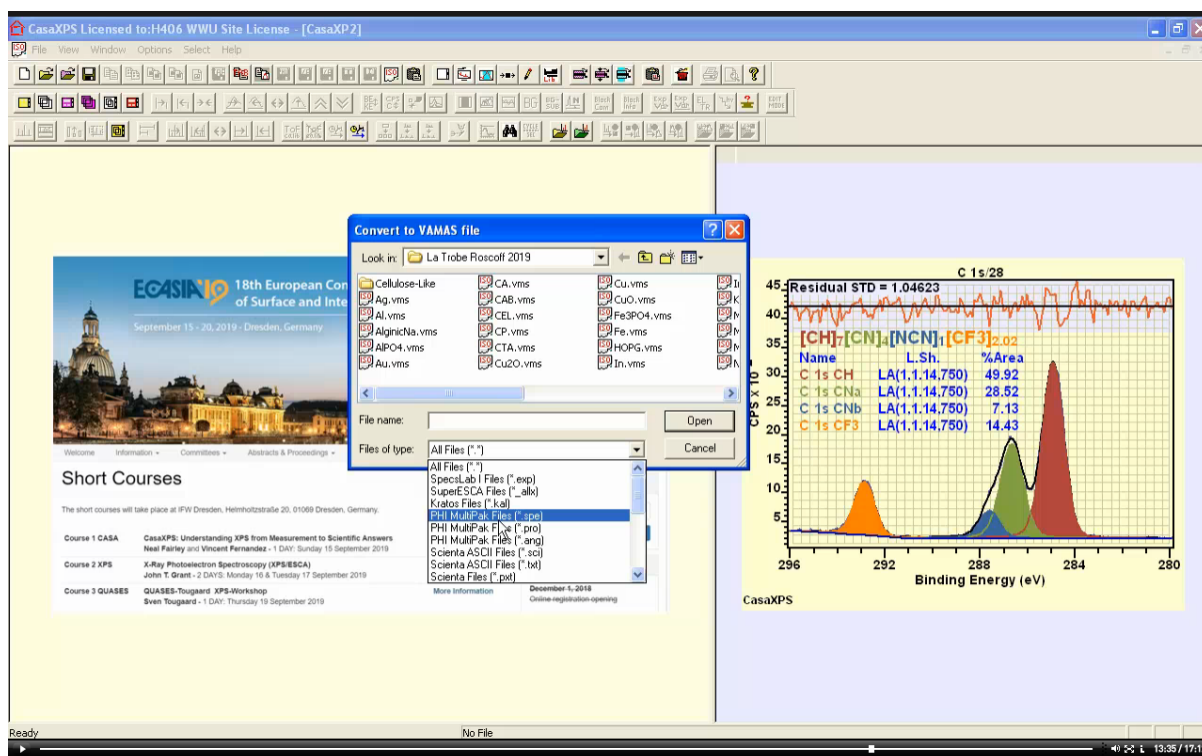
Data not already in VAMAS format must be converted to VAMAS format. The Convert toolbar button invoked the Convert to VAMAS file dialog window that allows the selection of a file in a range of formats known to CasaXPS that can be converted to VAMAS format. The selected file is read by CasaXPS and, if possible, converted data in VAMAS format is written back to the same directory as the original data file.
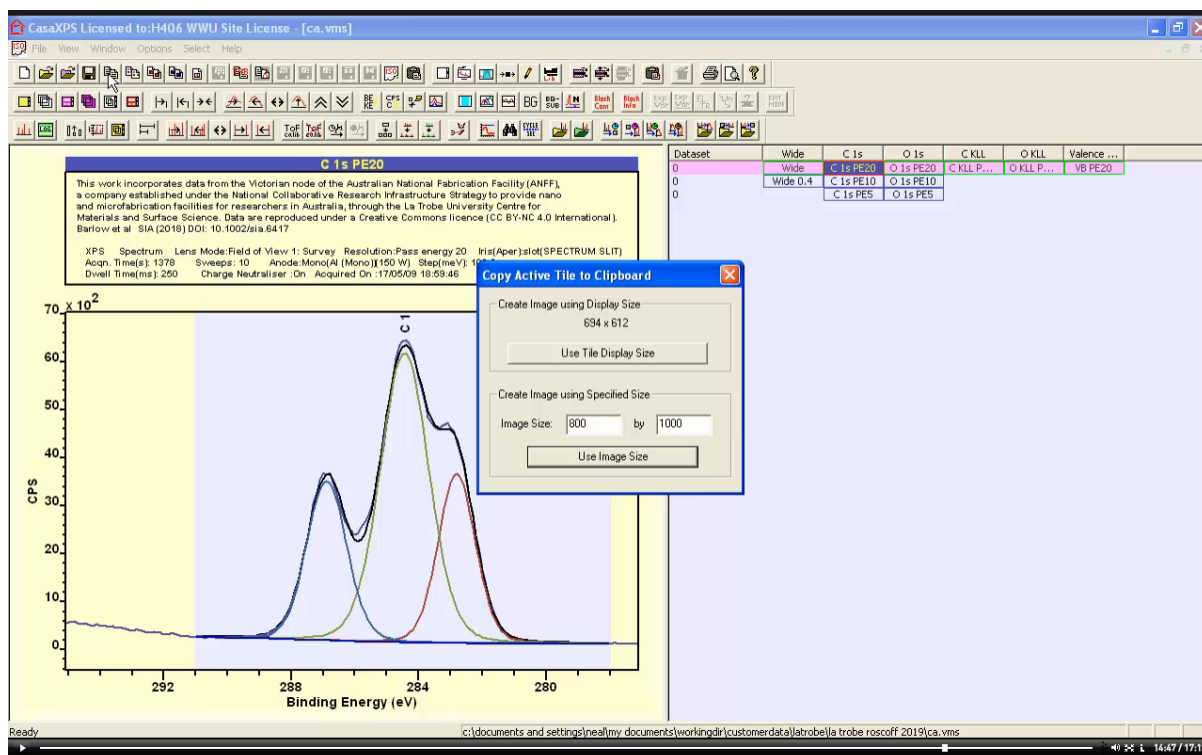
Once data are prepared in a form suitable for export, graphical data in the form of an enhanced meta file (EMF vector drawing instructions interpreted by Microsoft software) or as a bitmap can be copied through the clipboard and pasted into another software package such as Word, Excel, PowerPoint or MSPaint.
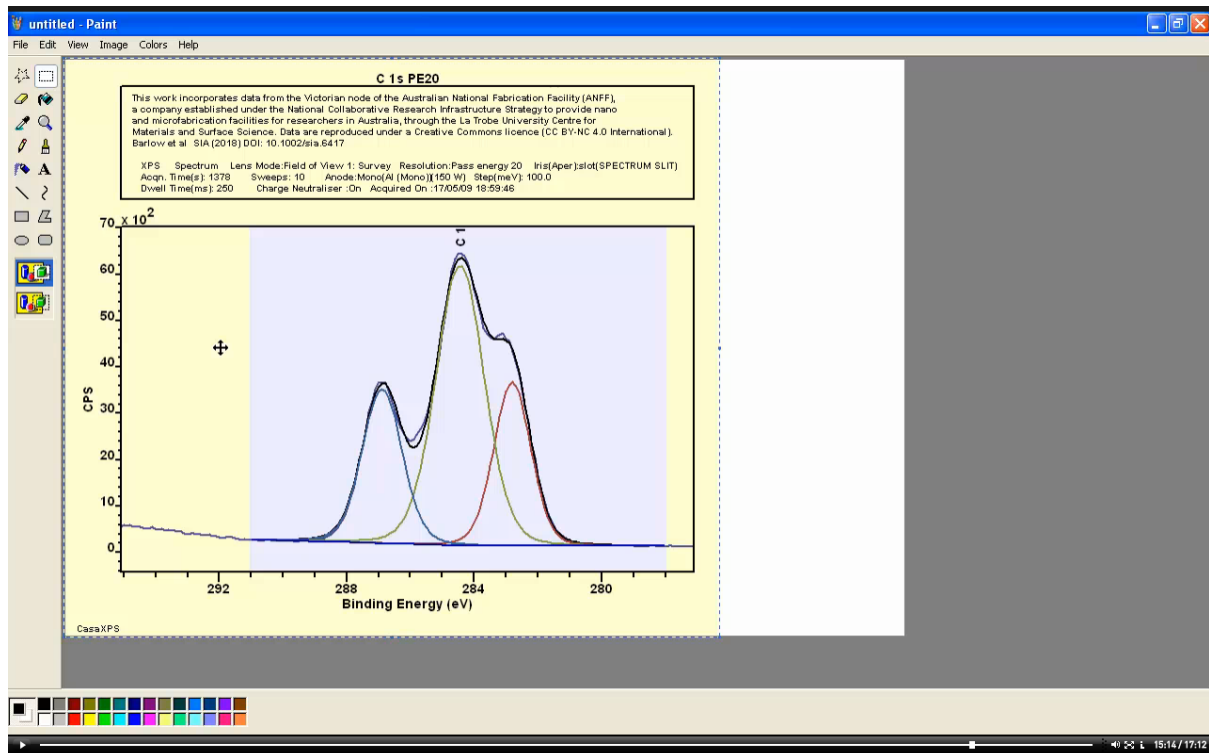


A bitmap of the active display tile is placed on the clipboard using the Copy toolbar button. The bitmap can be transferred into MS Paint, for example, using the Paste option.
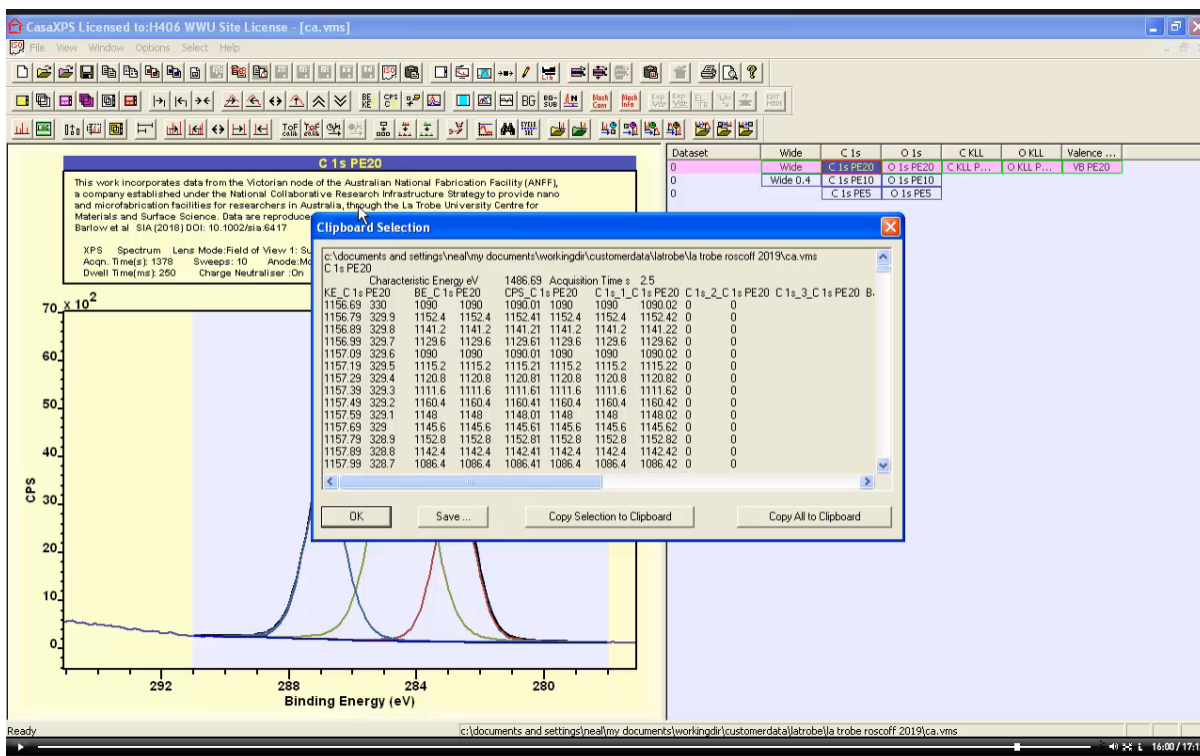
Data fitted with component peaks are exported via toolbar buttons through the clipboard or via TAB spaced ASCII format file. ASCII data for spectra, components, backgrounds etc are presented is a format to permit the plotting of these data in other software.
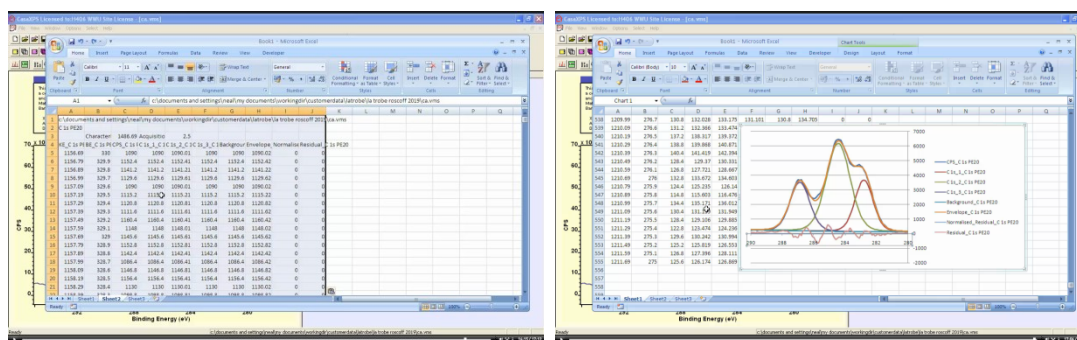


Data from a peak model placed on the clipboard can be pasted into Excel.