

Preferences - Analysis

Analysis Tab:

Peak Search/ROI

Background: The [peak search](#) routine and [ROI info](#) calculations perform background subtraction. You may set the number of points that the routine will use to fit a function to the background. The range of this parameter is 1 - 10 points. In general, users use a small number when the spectrum does not have a high background, and they use a larger number when the peaks are riding on a higher background.

Good Peak Value: The peak is considered valid after the background is subtracted and the Net Area exceeds the threshold set by the good peak level. The range of this parameter is 0 - 33,554,432. Good Peak Value must be entered as an integer value. This is used in the ROI details table accessed from the [Define ROI](#) dialog and for the library to determine if the peak is acceptable when displaying the library label.

Sensitivity: The peak search routine sensitivity is set on a scale from 1 to 20, with 1 being the most restricted in the identification of peaks in the spectra. That is, the lowest sensitivity yields the most statistically significant peaks. This is the same as the Sensitivity setting in the [Peak Search](#) dialog. It can be set in either place. (see [Peak Search](#) for more details)

FWHM (Channels): The default setting for Peak Search FWHM is entered in this edit box. The range for this parameter is an integer greater than or equal to 2. This is the same as the Width setting in the [Peak Search](#) dialog. It can be set in either place. (see [Peak Search](#) for more details)

FWHM Calc. Method: Sets the algorithm to use for the FWHM calculation. Normal, Smoothing, Percent (%), or Gauss can be selected. When Smoothing is selected, use the **FWHM No. of Smooths** fields to set either a 3-point or 5-point smooth. The Smooth algorithm smooths the data in the ROI before calculating the FWHM. This is advantageous when analyzing peaks with low count rates and total counts. Note that when using smoothing, you are changing the data in the display, so the select pane will show the smoothed counts. (Also see [Peak Calculations](#).)

Centroid Calc. Method: Selects the centroid calculation method. See the [Peak Calculations](#) section for a description of the formulae used.

Library

Library: Set the default directory for the library files, the default library to use if **Load on startup** is checked, and the **Sensitivity** of the library scan which determines how many library points are displayed when the Show Library function is called from the Analyze menu. (see below)

Library files are ASCII text files that link a name to an associated unit/channel. After a calibration has been done, a library can be opened to identify the ROIs that have been created. For example: If the **Xray-Ka1.lib** library is loaded, which lists K α x-ray line energies, when the cursor is moved over an ROI the program will look up the centroid energy of the ROI in the library and display the tag associated with it. So, if an ROI has a calibrated centroid of 6.4 keV and the above library is opened, the [info pane](#) will display **Ka1 – Fe 6.4**, which is the 6.4 keV line (ka1) of Iron (Fe).

Users may create their own libraries for use with PMCA. The library must list the values in the desired units followed by a comma. The values must be listed in ascending order. The label for the peak should follow the comma.

Repeat Measurements (MCA8000A/DP4/PX4)

Multiple spectrum measurements can be taken over a period of time. **Repeat Measurements** along with presets determine how multiple spectrum measurements will be taken.

Repeat Measurements Setup

- setup the acquisition device (MCA8000A/DP4/PX4)
- connect to the device
- verify the device is properly setup and can acquire a spectrum
- stop the acquisition (start/stop button on the toolbar)
- set a preset (stops the acquisition when repeat measurements is running)
- configure the repeat measurement settings

Repeat measurements controls.

Enable: Enables repeat measurements on the next start of acquisition. Repeat measurements are enabled for one series run only. When completed the checkbox becomes unchecked.

File Save Directory: The directory where the repeat measurement files are stored.

Default Filename: Holds the default root filename. The naming convention for the spectra file path is:

filesave_directory_path\filenameFILENUMBER.mca

For example:

filesave_directory_path = c:\plotsave

filename = testplot

Would generate:

c:\plotsave\ testplot01.mca

c:\plotsave\ testplot02.mca ...

Number of Loops: Holds the number of loops (acquisitions) requested for the repeat measurements test set.

Delay Between Loops: Holds the number of seconds delay between the test cycles.

Starting Time to Peak (DP4/PX4): Selects the initial pulse time to peak sequence value. The Spectrum resolution tests begin at this value and increments through each larger value until all the values greater than or equal to the selected value have been tested or the number of loops has been exceeded.

Spectrum Resolution Test Option (DP4/PX4): Enables the spectrum resolution tests.

Repeat Measurements Results

Repeat measurements returns the spectrum plots (MCA files) and a SpectrumData.csv file. SpectrumData.csv is in Comma Separated Values (CSV) file format.

SpectrumData.csv Fields:

- Plot Filename
- Date Time Stamp
- Total Counts
- Centroid
- FWHM

- . Net Area
- . Uncertainty
- . Net Rate
- . Gross Area

Spectrum Resolution Test Results (DP4/PX4)

The spectrum resolution tests return the spectrum plots (MCA files) and a SpectrumResTest.csv file. SpectrumResTest.csv is in Comma Separated Values (CSV) file format.

SpectrumResTest.csv Fields:

- . Plot Filename
- . Date Time Stamp
- . Total Counts
- . Centroid
- . FWHM
- . Net Area
- . Uncertainty
- . Net Rate
- . Gross Area
- . Peak Time
- . Flattop