

MCA operational notes

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Hardware connection setup

1. Power on the MCA (rear rocker switch).
2. Start > programs > PGT > HWSuper. On the menu, be sure the following items are checked: serial port, PGT, Com1 (baud rate for Compton 19k, for X-ray 115k). Then push Update, see "verified" message. Finally, push Close button at lower right, to close HWSuper (important).

Software setup

1. Start > programs > PGT > QMCA
2. Maximize the window. If it is not maximized, several important functions may be inaccessible. Also, check that the presets are OK, by clicking the 3rd icon from the left. Should have "live time" enable = off.
3. Holding the cursor over any button on the toolbars will tell you its function.
4. Click the eraser icon to clear any previously recorded spectra.
5. Click (toggle) the spectrum info/auxiliary primary/etc icon (upper left side of the screen, green lines on a black background) until a series of tabs appears below, and click on ADC2. Set group size to 2048 and conversion gain to 2048.
6. You may wish to open the icon for spectrum info/auxiliary primary/ to make adjustments to free up space.
7. Use the horizontal axis compression and expansion icons (arrows near the upper right-hand corner of the screen), so that all 2048 channels are in view. The vertical compression and expansion icons do the same for the vertical axis. To move the horizontal view from left to right, use the slider just below the spectrum (note: it won't be there if the view is maximized).

Date analysis tools

1. You can specify Regions of Interest (ROIs) by holding CTRL and dragging through a peak in the spectrum. Repeat for multiple ROIs.
2. Move the cursor into any ROI and read the values for keV, channel #, total counts, centroid and FWHM of that ROI, in the boxes at the bottom.
3. Scale calibration: from the menu at the top, click Setup, Manual Calibrate, Energy by Centroids. Enter the known energy (in keV) for each peak (ROI). You can use a linear or quadratic fit, and see the statistics for the quality of fit.

Saving and exporting files

1. Go to File (top menu), click Save As Spectrum, in ANS file format (native for QCMA program).
2. Also click Save As *.asc for export to any other program.
3. From Excel, open the *.asc files. Select all files of interest in the dialog box at this point, and handle them as a batch.
4. The *.asc file uses leading spaces in the numbers. You can parse this as: Delimited/Space/"Treat consecutive delimiters as one"/ etc., but you will find the column shifted below 1000 counts. You may instead wish to parse this as Fixed – you need only specify the first column spot as 10, say. This will chop up the header, but it is still readable.
5. From Excel you can manipulate, label, etc. data for copy/paste into Kaleidagraph or Graphical Analysis.