

# EDS\_Cal-Std\_Mod<sup>©</sup>

A Utility for Adjusting JEOL's  
Standardless, EDS Data (Cal-Std)

McSwiggen & Associates

# Introduction

JEOL supplies EDS calibration data for every element so that standardless, semi-quantitative, EDS analyses can be run. Most of these data are from pure elements. Because of this, in some circumstances, they may not produce adequate results when analyzing complex phases. As most probe operators know, many materials require standards of similar composition to the unknown in order to get good results. One solution is to replace the EDS calibration data with the user's data (see JEOL manual: EDS\_OperationProgram.pdf). If a user is going to do this, they must make sure that their standard does not have any peak overlaps. If the user's standard is not suitable as a primary standard, it still may be useable as a secondary standard in coordination with this program EDS\_Cal-Std\_Mod. Instead of replacing the JEOL data, this program allows the user to adjust the JEOL standard data until correct results are obtained on the secondary standards.

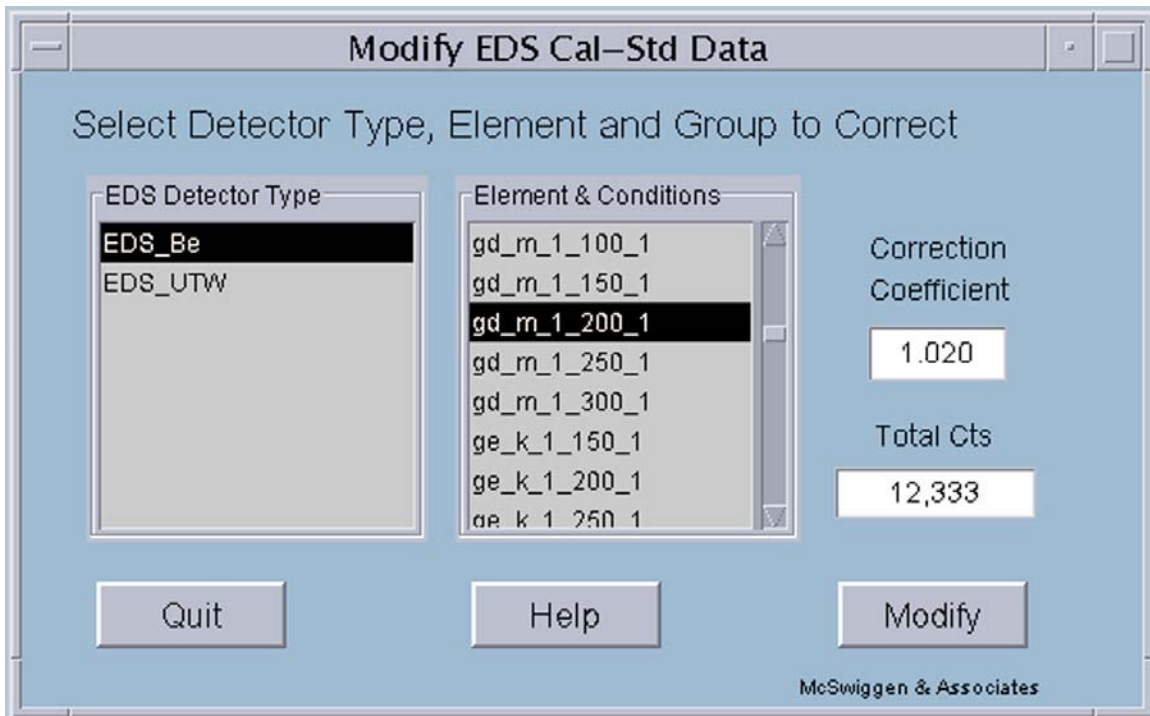
# Installation

Installation instructions:

- 1) Copy the file *EDS\_Cal-Std\_Mod.tar* to your user directory.
- 2) Open a terminal window and uncompress the file.  
    `> tar -xvf EDS_Cal-Std_Mod.tar`  
This will extract two files: *runEDS\_Cal-Std\_Mod.sh* and *EDS\_Cal-Std\_Mod.jar*
- 3) Open the File Manager window and move (Selected > Move to ...) the file *runEDS\_Cal-Std\_Mod.sh* to the directory: `/usr/local/bin`
- 4) Now change to the directory `/opt`
- 5) Create a new directory (File >> New Folder) in the `/opt` directory called "McSAssoc"
- 6) Move *EDS\_Cal-Std\_Mod.jar* into `/opt/McSAssoc`
- 7) Add the program to the EPMA menu:
  - a) Go to the main EPMA menu and select:  
    > Initialize > Soft Config > Util Menu  
    A file will open up.
  - b) Add the following line to the bottom of the file.  
  

```
T      :Factory(EDS)Mod      : /usr/local/bin/runEDS_Cal-Std_Mod.sh:      3:
```
- c) Now go to File > Save(needed) and save the file.
- d) Close the window.
- e) Go to main EPMA menu > Configure > Update Menu ...
- 8) The program should now be ready to run. Go to the Utility menu and at the bottom should be the new item "Factory(EDS)Mod". Select it and the program should run.

# Operation



When *EDS\_Cal-Std\_mod* runs it displays two data sets, one for EDS detectors with ultra-thin windows (EDS\_UTW), and the other for EDS detectors with Be windows (EDS\_Be). Select the appropriate one for your system. Now select the element and desired operating conditions that you would like to modify. Most of the elements have been standardized at 10, 15, 20, 25 and 30 kV.

The program will display the total X-ray counts that occurs within the element's ROI ("Total Cts"). The user must now enter the desired coefficient to which the data set will be corrected, and then click on the Modify button. A new total will then be displayed and the Modify button will be disabled to eliminate the possibility of multiple clicking. The "Total Cts" value is only used to show the user the magnitude of change that has taken place. Selecting another element will re-enable the Modify button.

When done adjusting the element data sets, just click on the Quit button to get out of the program.

# FAQs

**Question:**

What does the nomenclature **al\_k\_1\_150\_1** mean?

**Answer:**

This is the directory name for a set of standard data, where

al = element

k = X-ray line

1 = 0.1 eV/channel

150 = 15.0 kV accelerating voltage

1 = aperture number

All of the data is collected using aperture 1. The software will correct for any other aperture setting. This highlights the importance of calibrating the EDS apertures.