System AES Energy calibration for 11-500A

Procedure:

Safety Warning: **This unit produces high under normal circumstances, and possibly higher voltages if defective. Refer service and adjustment to qualified personnel. Use extreme caution when making these adjustments.**

1. Load a sample of pure copper.
2. If you are using AugerMap software, set the magnification to 10,000X and use the Area Scan mode to minimize sample topography effect on the Auger signal. Or set 20-070A to Spot Mode.
3. Perform an elastic peak alignment and adjust the Z axis sample position to obtain maximum counts and best peak shape.
4. Sputter the sample clean until no carbon or oxygen is present.
5. Re-acquire the elastic peak to ensure that the sample is at the optimum position: highest counts and best peak shape. When the elastic peak is differentiated, the positive and negative excursions should be equal and symmetrical.
6. **From this point on, do not move the sample**!
7. With the beam voltage at 2kV, acquire a survey from 30eV to 1030eV, using .5eV/step, 50 ms/point.
8. Differentiate the survey and check the peak positions against the correct values as listed in the PHI handbook or other reference. A typical value is 920eV for the high energy peak and 60eV for the low energy peak on copper.
9. ***Note***: If using AugerScan software, you can simply adjust the scale factor in the AES Hardware Properties dialog box rather than adjusting the 11-500A.
   If necessary, adjust P3 on the 682 board for proper peak position on the high energy peak. You can acquire an alignment with a range of 900 to 940, .5eV/step, 15ms/point and do the adjustment in real time. For copper, set the n/e peak to approximately 917eV. When differentiated, the high energy Cu peak should be 920eV.
10. Acquire another survey and check that the differentiated peak positions are correct. Document the results for future reference and file it in the system calibration log.
11. Acquire another elastic peak, **but do not move the sample**!
12. If the elastic peak is not centered at 2kV, then adjust P9 on the 664 board in the 18-080 electron gun control until the peak is centered at 2kV. (Or P1 in the 11-010 control)

Calibration is complete.

From this point on, every-time you set the elastic peak, the sample will be at the focal point of the analyzer

Adjustment Summary Table

Board Number	Potentiometer Number	Description
682	P2	Zero Adjust
682	P1	Gain Adjust
682	P4	EXT mode Zero Adjust
682	P3	EXT mode Gain Adjust
519	P2	Scale Factor Adjust

Adjust P2 on 682 board for +2ev when lower limit knob is fully CCW.
Adjust P2 on 519 board so that DPM matches the AES energy, for instance the 920ev Copper peak.
Adjust P4 on the 682 board in the EXT mode so that the 60ev low energy Copper peak is correct when using the PC to acquire data. (You may also need to adjust P2 on the 682 board as well).
Adjust P3 on the 682 board in the EXT mode so that the 920ev high energy Copper peak is correct when in the PC mode.