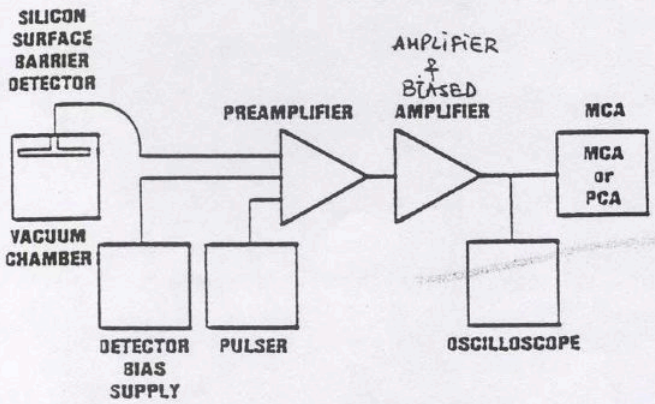


Figure 3.5. Alpha Spectroscopy System with Multichannel Analyzer (MCA).

resistor of the preamplifier as a result of detector leakage current.

Note, whenever you pump down or let the chamber up to air, it is imperative that the Bias supply be turned off. It can be turned on only when the system is under vacuum or at atmospheric pressure. If these procedures are not followed, the detector and the preamp could be damaged.

3. Set the input polarity of the amplifier to positive. The baseline restorer should be set to AUTO. The output from the amplifier to the MCA should be unipolar. Use 1000 channels for the MCA.

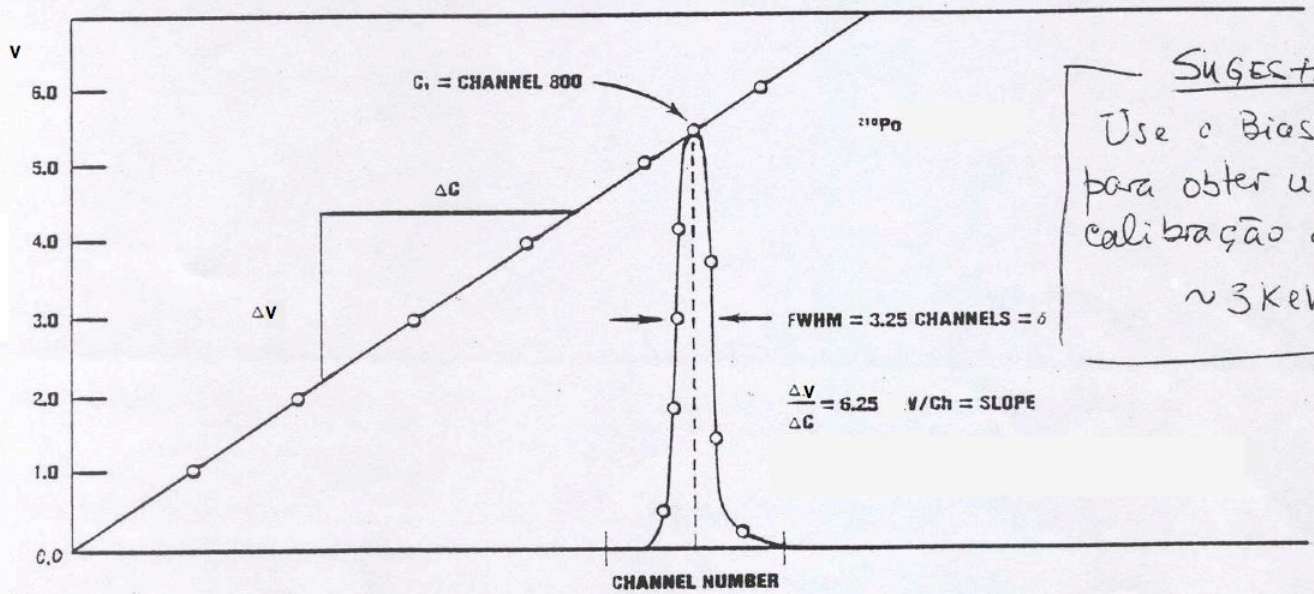
4. Adjust the coarse and fine gain of the amplifier so that the output pulses are about 4V in amplitude. The alphas from ^{210}Po have a discrete energy of 5305 keV. The output of the amplifier will be a single isolated pulse height and easy to observe with the scope.

5. Turn on the MCA or PCA and you will see a single peak that comes in around mid scale. Adjust the gain of the amp such that the ^{210}Po alphas fall approximately in channel 800.

6. Accumulate a spectrum for a time period long enough to have 500 counts in the peak channel. This should take only a few minutes. Use the cursor of the MCA to determine the centroid channel of the peak. If your MCA has a centroid finding program, the centroid can easily and accurately be found by using this program. Once this centroid channel is found, it should be labeled C_1.

7. Turn on the relay of the pulse generator. Set its polarity to negative. The (C) output of the pulser should be fed into the preamp. Set the pulse height dial at $^{531}/_{1000}$. The pulse height dial is a ten-turn potentiometer. Each turn corresponds to 100 divisions. Full scale on the dial is therefore 1000 divisions. $^{531}/_{1000}$ is 53% of full scale. Now adjust the attenuation switches and the CAL screwdriver adjustment until the pulser peak falls at exactly C_1 in the MCA. You have now calibrated the pulser pulse height dial so that $^{531}/_{1000}$ divisions is equal to 5305 keV. Each division is then 10 keV. It is now quite easy to generate a 4 MeV pulse by setting the pulse height dial at $^{400}/_{1000}$, etc.

8. Erase the MCA and set the pulse height dial on the pulser at $^{100}/_{1000}$ (1 MeV) and accumulate for a period of time (about 1.5 minutes) long enough to determine the centroid of the peak. Repeat for the other pulse height settings in Table 3.1. Fill in the rest of Table 3.1.



SUGESTÃO:
Use o Bias Amplif para obter uma calibração de ~3 keV/canal

Figure 3.6. Calibration curve for the Pulse Generator showing a ^{210}Po spectra and the Resolution of the detector.