Compton Edge Energy Measurement

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1 Introduction

When gamma radiation passes through matter, it undergoes absorption primarily by Compton, photoelectric, and pair-production interactions. In this lab, we will the same data from the previous lab to analyze compton edge of Cesium source.

2 Experimental Setup & Procedure

We firstly placed the Cesium sample 2cm from the NaI detector. After some adjustments to ensure that the figure displayed was clearly visible, we left the sample long enough for the plot to be clear.

3 Data & Analysis

After doing the experiment, we got this graph for Cesium:

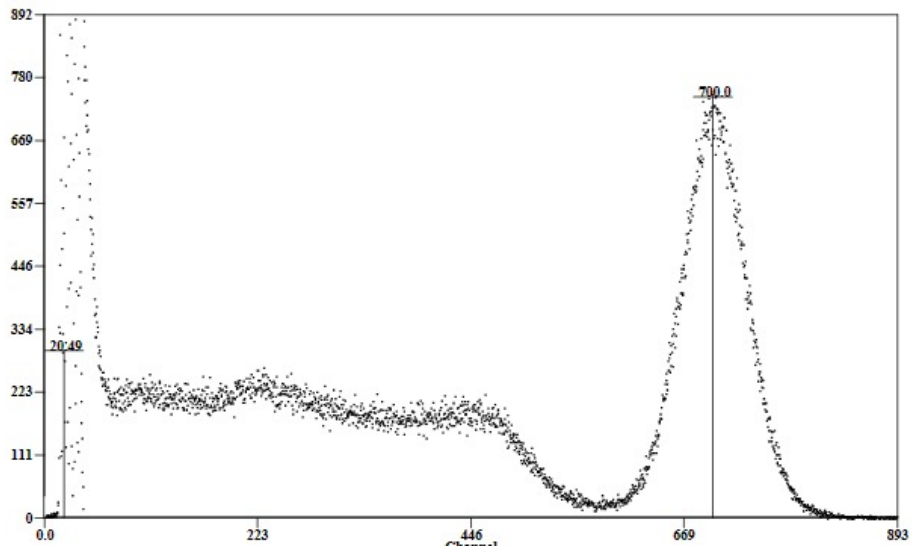

Figure 1. Cesium Gamma spectroscopy, we can see a peak at ≈ 700 and compton edge at ≈ 1100

Now we will fill this table and it will give us an idea about thecompton edge of Cesium.

Peaks	Energy (keV)	Channel No	FWHM Energy (keV)
Photopeak	662	1605	371
Compton Edge	450	1100	110

Table 1. Channels locations with their energy

We can now do a two points calibration for the energies and channels using two peaks, the main peak and Compton's

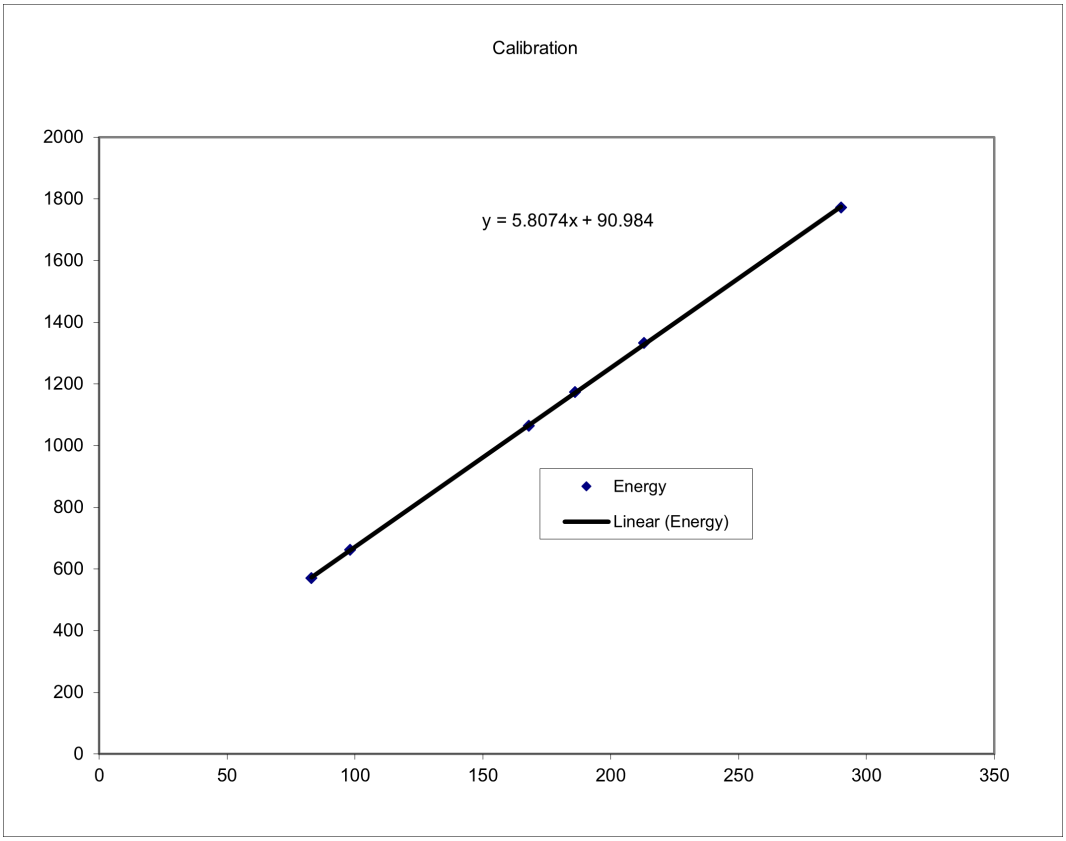

Figure 2. Energy Vs. Channel

4 Conclusion

This experiment is simple, it is basically more in depth analysis of the previous data which we only considered the main peak of the spectrum. When scattered electrons extend the wavelength of an electromagnetic wave, this is known as the Compton Edge effect. The energy is lowered as a result, which is what we investigated in today's lab.