

Phy100 Laboratory PIXE Experiment

Answer these questions on each of the spectra you have.

1. For the first spectrum with two peaks, use the modified Bohr formula to determine the element by calculating Z (and looking up the result in a periodic table) from the x-ray energy you measured.

The modified Bohr formula is:
$$\Delta E_{x\text{-ray}} = -13.6\text{eV} \times \left(\frac{1}{n_{\text{upper}}^2} - \frac{1}{n_{\text{lower}}^2} \right) \times (Z - 1)^2$$

2. For the second spectrum with three peaks, use the x-ray energy table and the columns labeled L_{a1} , L_{b1} , and L_{g1} to identify the element from the x-ray energy you measured.
3. For the third spectrum with many peaks, try to identify as many of them as possible using the table of x-ray energies. You will need to look down the columns labeled K_{a1} , K_{b1} , L_{a1} , L_{b1} , and L_{g1} .