

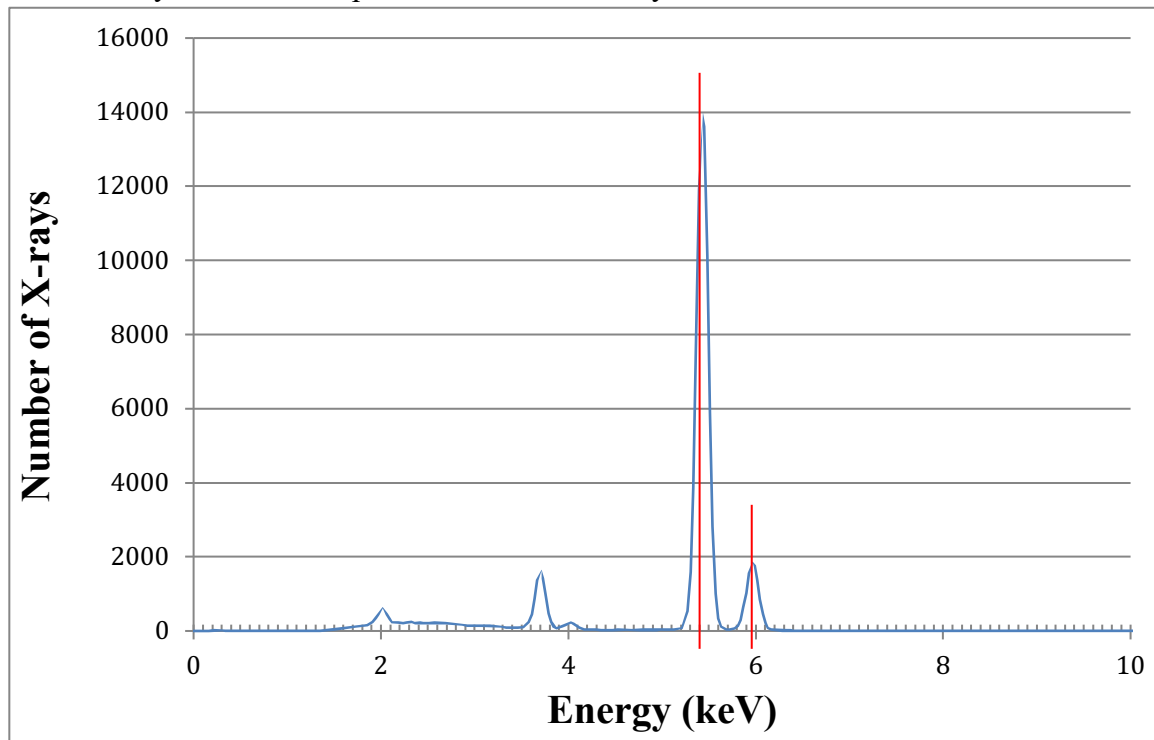
Name \_\_\_\_\_

*PIXE Homework #2 - Physics 100*

*Union College Fall 2025*

Due Date: Wednesday, September 10, 2025, in class. **Late Assignments are not accepted.**

1. Describe the PIXE process using words and/or diagrams. If you use a diagram, please explain what the diagram is about.
2. What are the  $K_\alpha$  and  $K_\beta$  transition energies for the following elements:  $^{40}_{20}\text{Ca}$ ,  $^{59}_{27}\text{Co}$ , and  $^{197}_{79}\text{Au}$ ? (Please use the unmodified equations given in the lecture and not the table of x-ray energies to do the calculation.)
3. Given the *PIXE* spectrum of a single element standard shown below, what is the element indicated by the red lines? Hint: Approximate the energy of the peaks and use the unmodified energy equations to determine the atomic number of the element. You may need to use a periodic table to identify the element.



4. Given the *PIXE* spectrum of a single element standard shown below, what is the element indicated by the red lines? Hint: Approximate the energy of the peaks and use the unmodified energy equations to determine the atomic number of the element. You may need to use a periodic table to identify the element.

