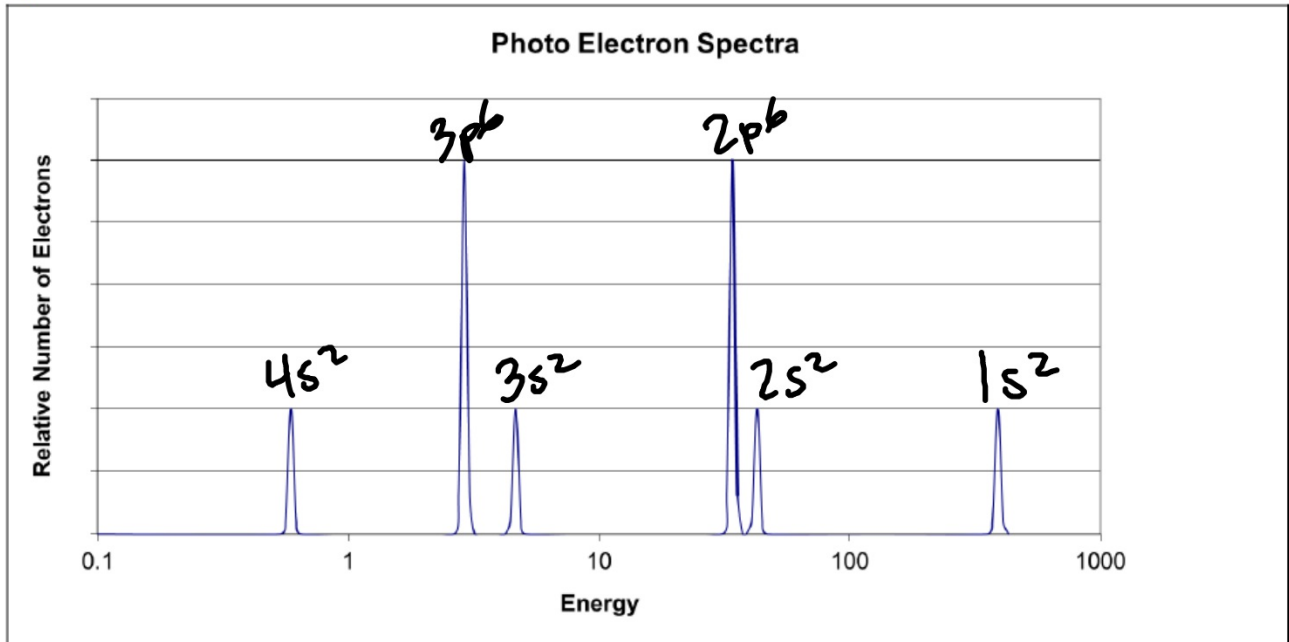


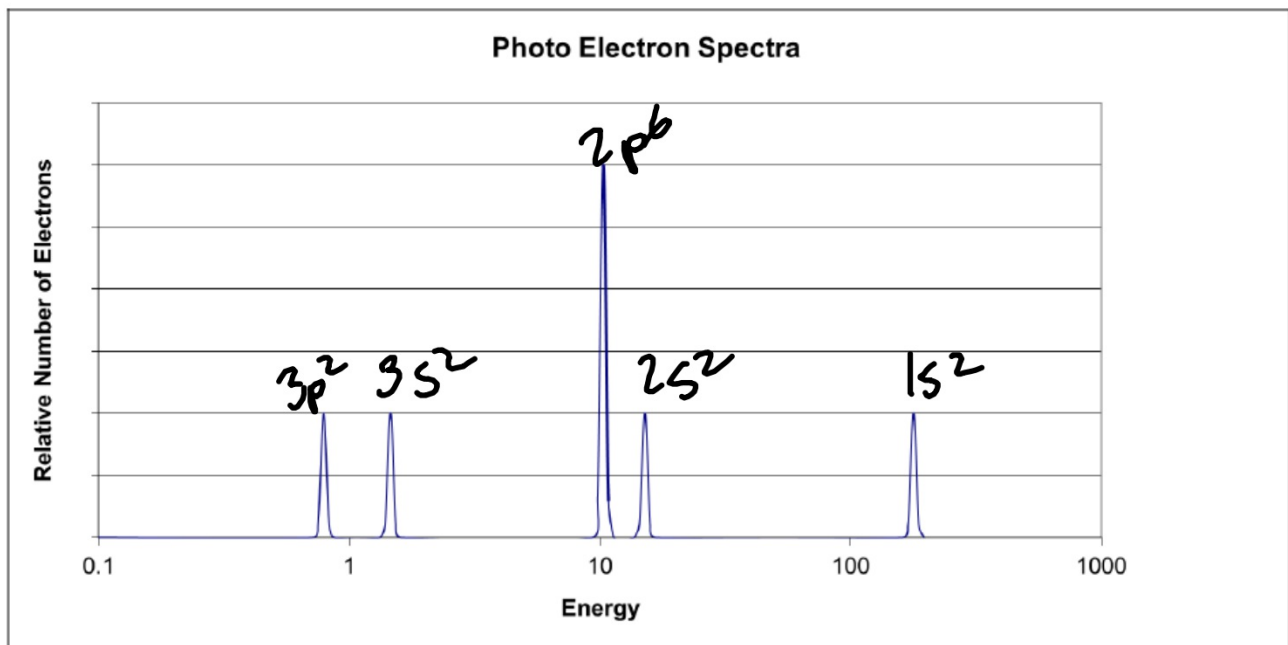
Spectrum #1



of valence electrons: 2

element: Ca

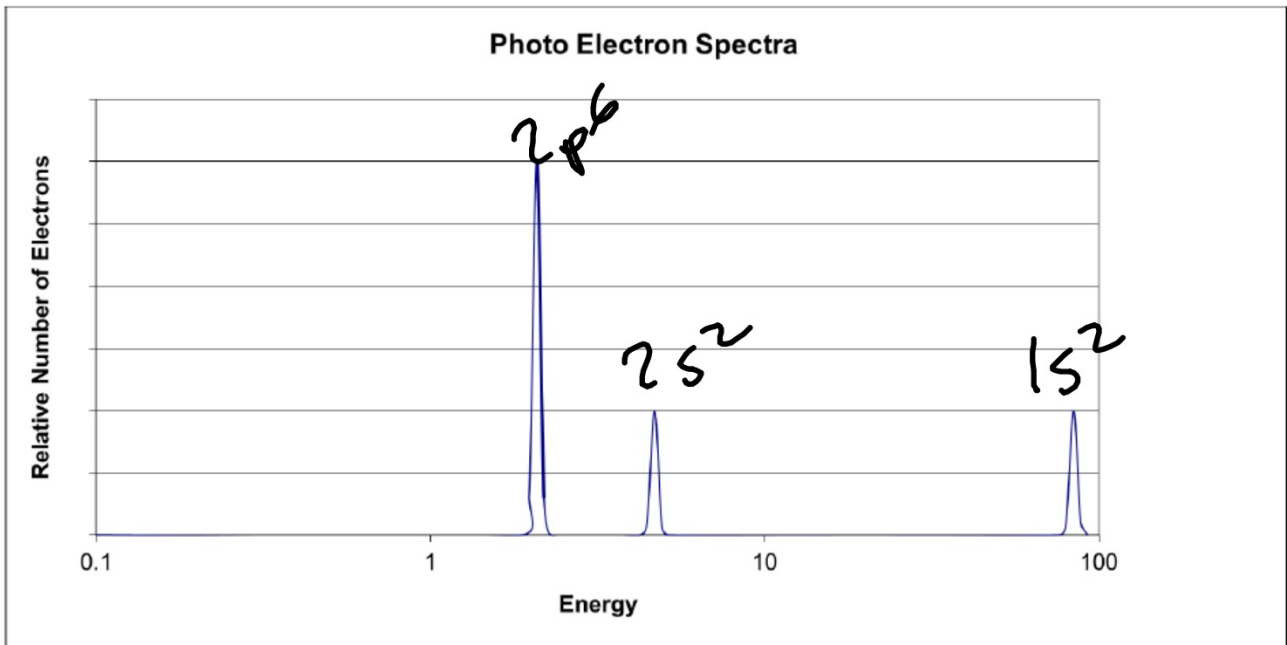
Spectrum #2



of valence electrons: 4

element: Si

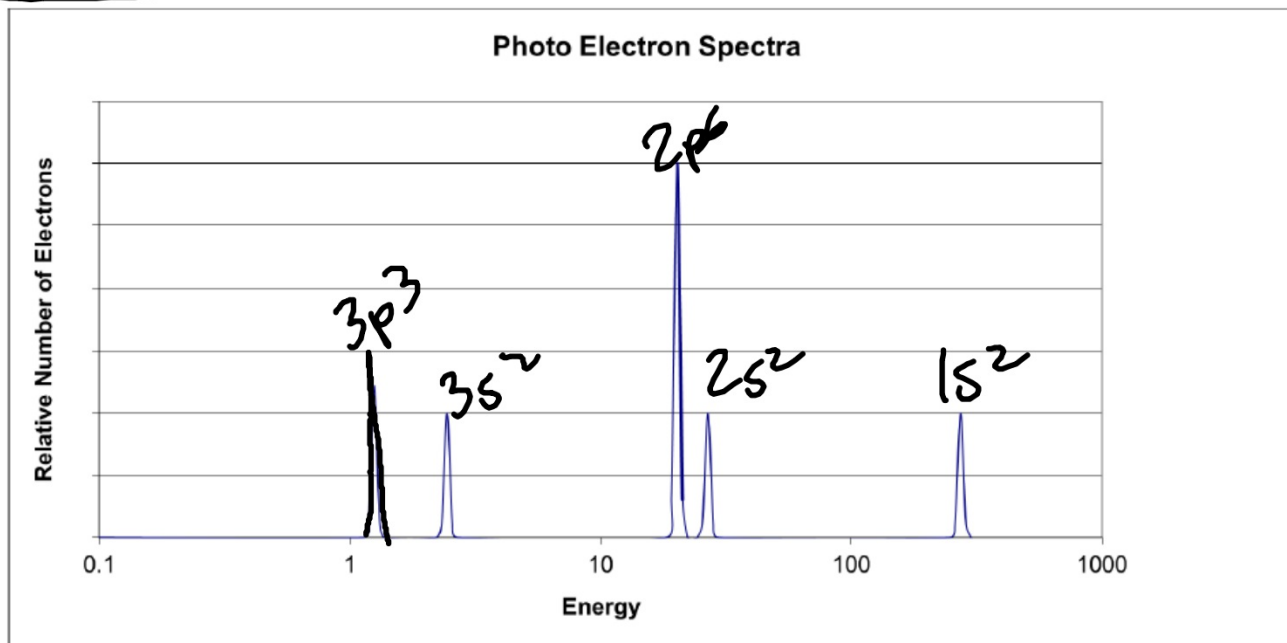
Spectrum #3



of valence electrons: 8

element: Ne

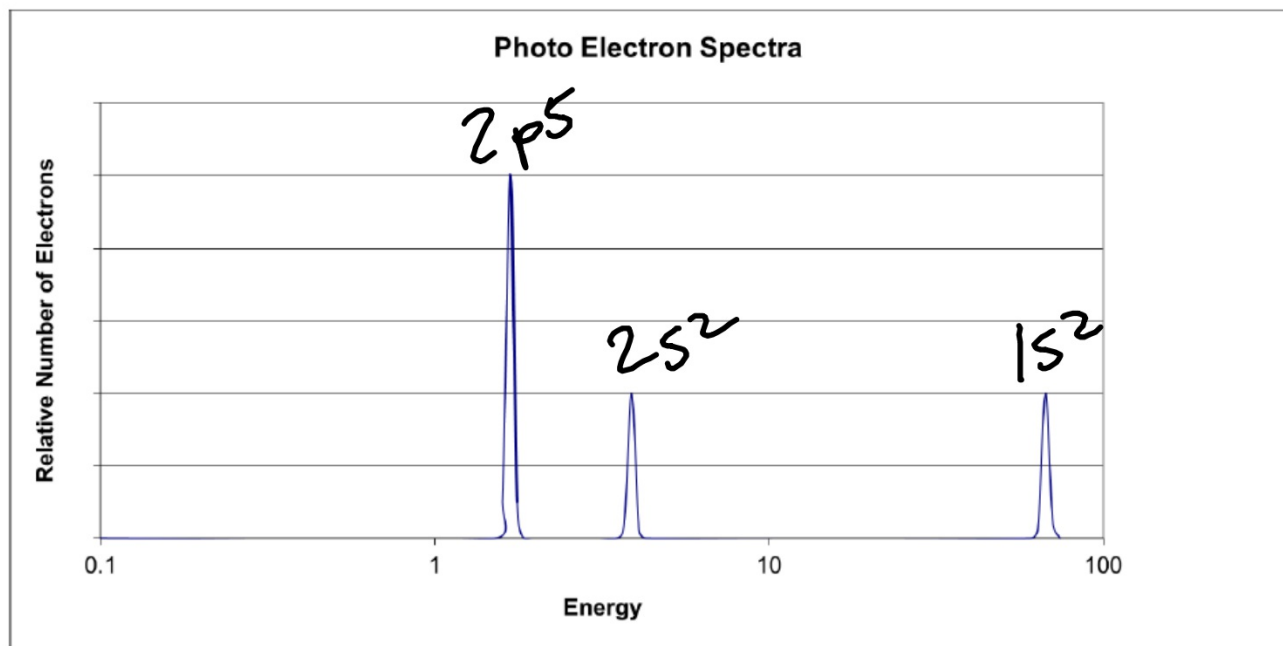
Spectrum #4



of valence electrons: 5

element: P

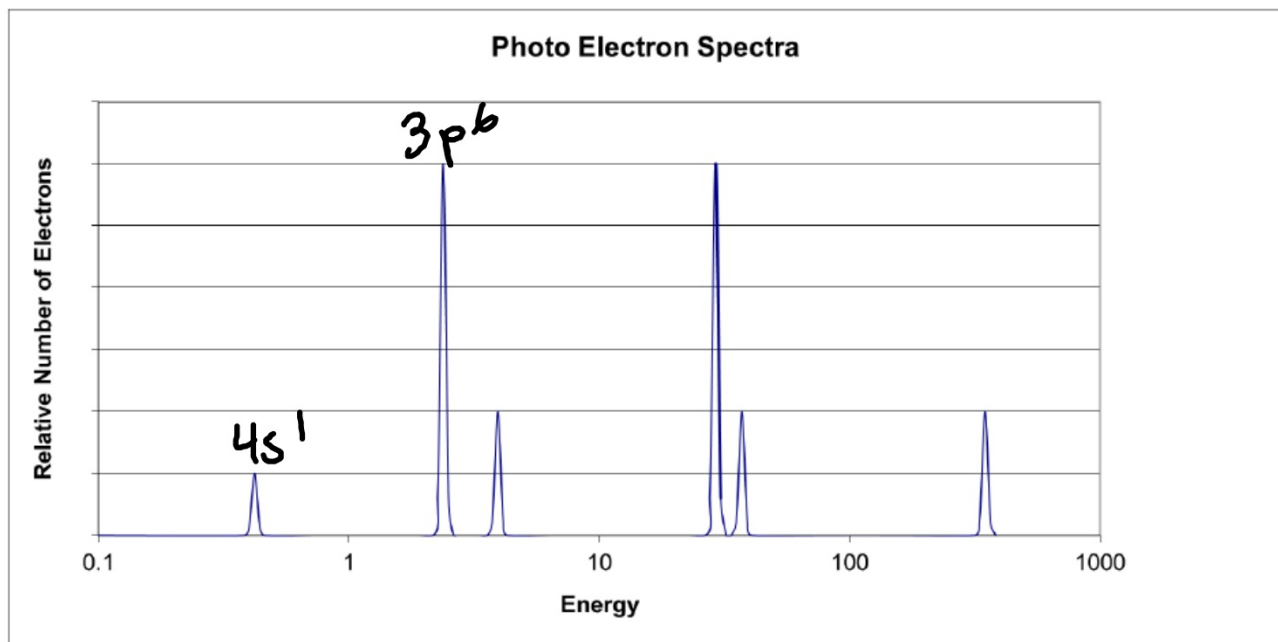
Spectrum #5



of valence electrons: 7

element: F

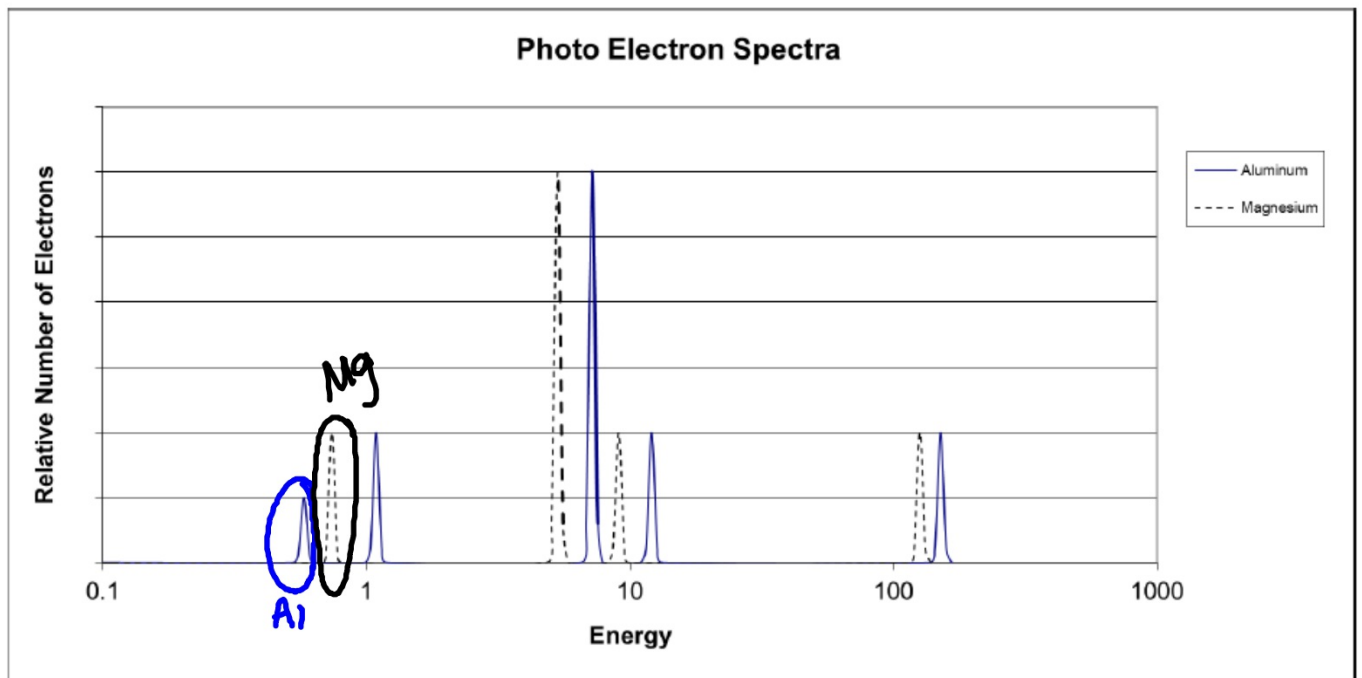
Spectrum #6



of valence electrons: 1

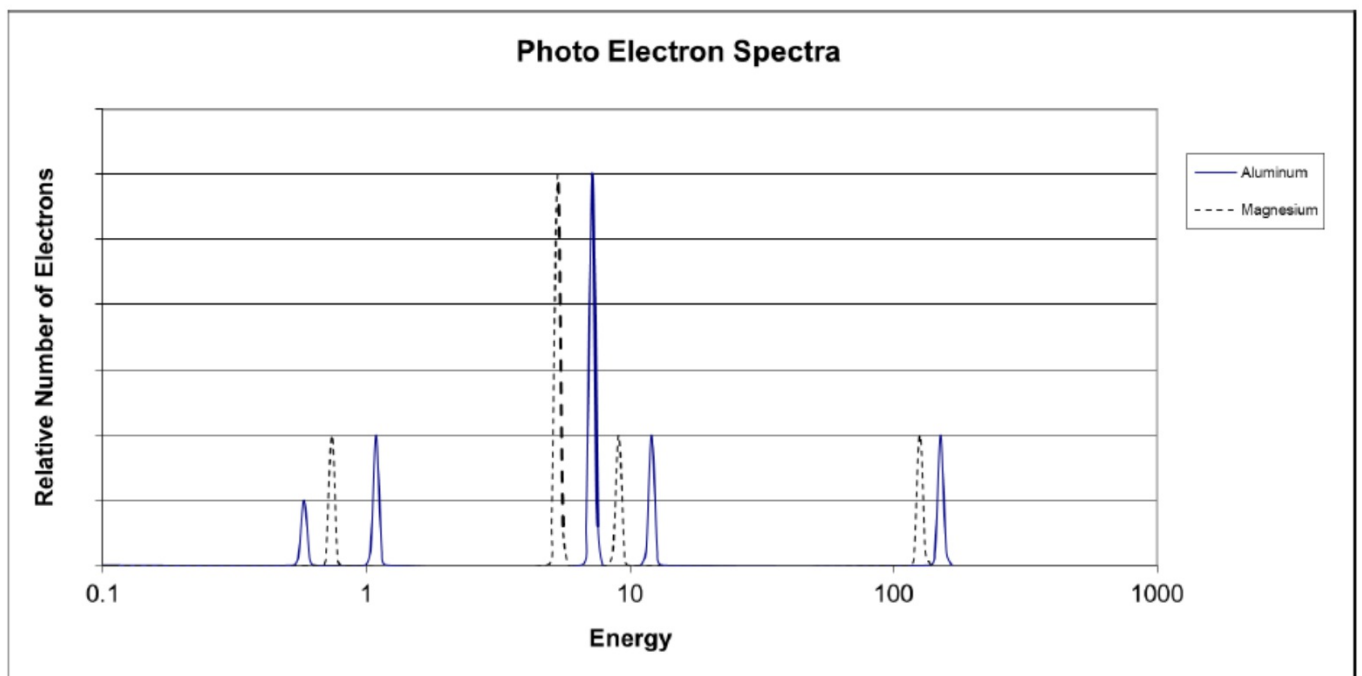
element: K

Spectrum #7: below are PES spectra for aluminum and magnesium.

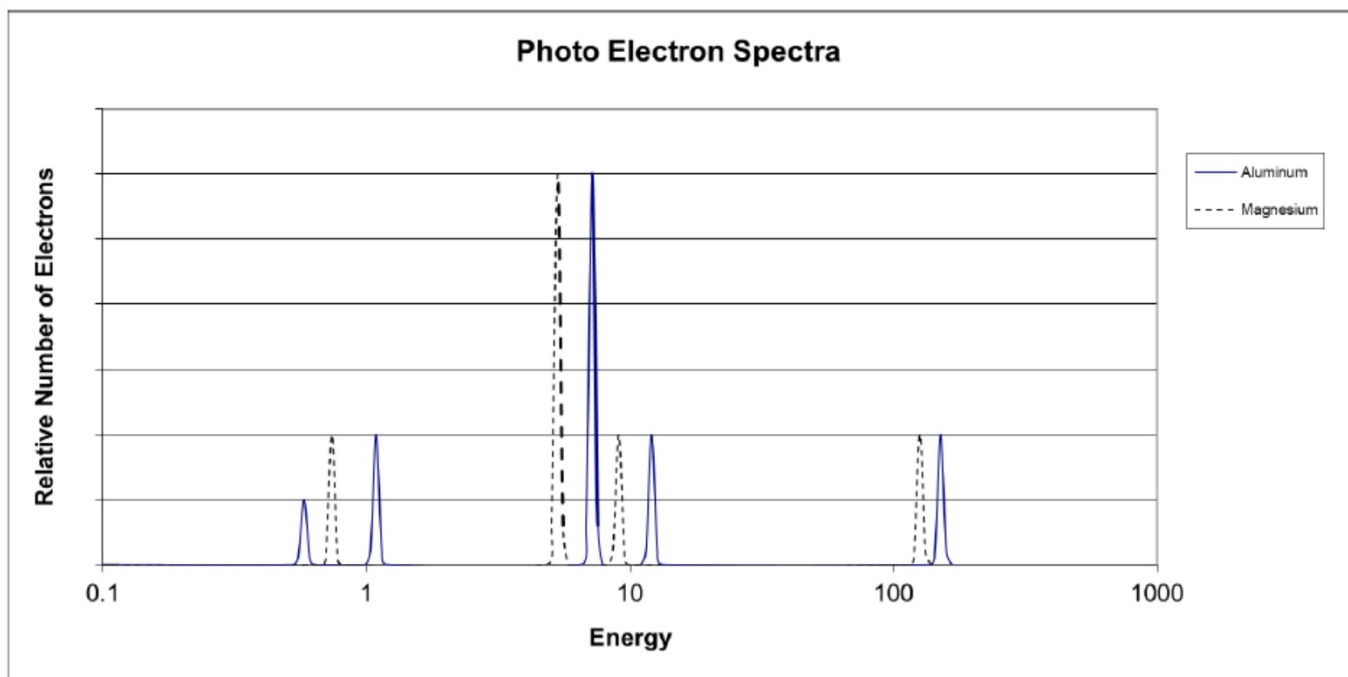


1. Label each peak with the correct sublevel.
2. Circle the peak containing the first electron to be removed from each atom.
3. Explain why aluminum has a lower first ionization energy than magnesium despite aluminum having more protons than magnesium.

Spectrum #7: below are PES spectra for aluminum and magnesium.



Spectrum #7: below are PES spectra for aluminum and magnesium.



3. Explain why aluminum has a lower first ionization energy than magnesium despite aluminum having more protons than magnesium.

The valence e^- of Mg is in the 3s sublevel whereas that of Al is in the 3p sublevel.

3s e^- are closer to the nucleus than 3p e^- .

\therefore 3s e^- have a stronger attraction to the nucleus & will require more E to be removed.