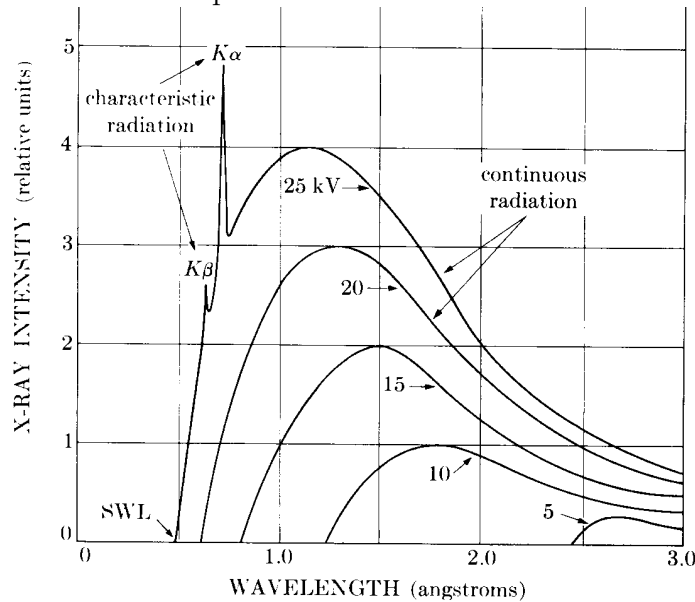


Xrays and Neutrons

1. Explain the difference between how brehmstrahlung and characteristic x-rays are produced.
2. Find the wavelengths of the K_α and K_β characteristic x-rays for the following elements: (Ni,Cu,Mo).
3. Consider the following graph which shows the intensity of xrays emitted by a certain element as a function of wavelength for various electron gun acceleration potentials.



- (a) What is the target element?
 - (b) What is the equation that connection between the short wave cut off (λ_{SWL}) of the brehmstrahlung spectrum and the accelerating voltage of the x-ray tube. Calculate (λ_{SWL}) for electrons accelerated at 5,10,15,20 and 25 kV and compare to the figure above.
4. What are the main differences between neutrons and xrays?
 5. Calculate the wavelength for a neutron of kinetic energy 4meV.