3-42. When light of wavelength 450 nm is incident on potassium, photoelectrons with stopping potential of 0.52 V are emitted. If the wavelength of the incident light is changed to 300 nm, the stopping potential is 1.90 V. Using *only* these numbers together with the values of the speed of light and the electron charge, (*a*) find the work function of potassium and (*b*) compute a value for Planck's constant.

3-49. Show that the maximum kinetic energy E_k, called the Compton edge, that a recoiling electron can carry away from a Compton scattering event is given by

$$E_k = \frac{hf}{1 + mc^2/2hf} = \frac{2E_\gamma^2}{2E_\gamma + mc^2}$$