**WS 21.1 Quantization of Energy**

1. According to the classical theory of physics, the energy radiated by a blackbody approaches infinity as the wavelength of the emitted light approaches zero.

a. Why was this considered a problem for classical physics?

b. Max Planck solved this problem in 1900. What was the key to the solution?

c. How does Planck’s assumption solve the “ultraviolet catastrophe”?

1. A ringing bell oscillates at 440 Hz.

a. How much energy (in joules) is carried away in a one-quantum change of this system?

b. Convert your answer to units of electron-volts.

1. The equation for the maximum kinetic energy of an ejected photoelectron is KEmax = hf - hft. (φ)

a. Rearrange this equation to solve for the work function.

b. If photoelectrons with 2.55 eV of maximum kinetic energy are observed when a 1.17 X 1015 Hz light is used, find the work function of the metal.