

16. (a) Since $E_{\text{ph}} = h/\lambda = 1240 \text{ eV} \cdot \text{nm}/680 \text{ nm} = 1.82 \text{ eV} < \Phi = 2.28 \text{ eV}$, there is no photoelectric emission. The result of problem 3 is used in our calculation.
- (b) The cutoff wavelength is the longest wavelength of photons which will cause photoelectric emission. In sodium, this is given by $E_{\text{ph}} = hc/\lambda_{\text{max}} = \Phi$, or $\lambda_{\text{max}} = hc/\Phi = (1240 \text{ eV} \cdot \text{nm})/2.28 \text{ eV} = 544 \text{ nm}$. This corresponds to the color green.