

P #A

Ch 27 - Worksheet

$$v = 1.00 \times 10^6 \text{ m/s}$$

$$\phi_{Na} = 2.46 \text{ eV}$$

$$m_e = 9.11 \times 10^{-31} \text{ kg}$$

Find $KE_{\max}$:

$$KE = \frac{1}{2} \cdot m \cdot v^2$$

$$= \frac{1}{2} (9.11 \times 10^{-31} \text{ kg}) (1.00 \times 10^6 \text{ m/s})^2$$

$$= 4.555 \times 10^{-19} \text{ J}$$

Convert $KE_{\max}$ to eV:

$$KE = (4.555 \times 10^{-19} \text{ J}) \cdot \frac{1 \text{ eV}}{1.6 \times 10^{-19} \text{ J}}$$

$$KE = 2.84 \text{ eV}$$

Find λ :

$$KE_{\max} = h \cdot \frac{c}{\lambda} - \phi$$

$$(2.84 \text{ eV}) = \frac{(1240 \text{ eV} \cdot \text{nm})}{\lambda} - (2.46 \text{ eV})$$

$$\lambda = 234 \text{ nm}$$