

21. The speed  $v$  of the electron satisfies  $K_{\max} = \frac{1}{2}m_e v^2 = \frac{1}{2}(m_e c^2)(v/c)^2 = E_{\text{photon}} - \Phi$ . Using Table 38-3, we find

$$v = c \sqrt{\frac{2(E_{\text{photon}} - \Phi)}{m_e c^2}} = (2.998 \times 10^8 \text{ m/s}) \sqrt{\frac{2(5.80 \text{ eV} - 4.50 \text{ eV})}{511 \times 10^3 \text{ eV}}} = 6.76 \times 10^5 \text{ m/s} .$$