

42. (a) We use $eV = hc/\lambda_{\min}$ (see Eq. 41-23 and Eq. 39-4). The result of problem 3 in Chapter 39 is adapted to these units ($hc = 1240 \text{ eV}\cdot\text{nm} = 1240 \text{ keV}\cdot\text{pm}$).

$$\lambda_{\min} = \frac{hc}{eV} = \frac{1240 \text{ keV}\cdot\text{pm}}{50.0 \text{ keV}} = 24.8 \text{ pm} .$$

- (b) and (c) The values of λ for the K_{α} and K_{β} lines do not depend on the external potential and are therefore unchanged.