50. We use Eq. 37-31, Eq. 40-6, and the result of problem 3 in Chapter 39, adapted to these units ($hc = 1240\,\text{eV}\cdot\text{nm} = 1240\,\text{keV}\cdot\text{pm}$). Letting $2d\sin\theta = m\lambda = mhc/\Delta E$, where $\theta = 74.1°$, we solve for d:

$$d = \frac{mhc}{2\Delta E \sin\theta} = \frac{(1)(1240\,\text{keV}\cdot\text{nm})}{2(8.979\,\text{keV} - 0.951\,\text{keV})(\sin 74.1°)} = 80.3\ \text{pm}\ .$$