

80. For $\lambda = 0.10$ nm, we have scattering for order m , and for $\lambda' = 0.075$ nm, we have scattering for order m' . From Eq. 37-31, we see that we must require

$$m\lambda = m'\lambda'$$

which suggests (looking for the smallest integer solutions) that $m = 3$ and $m' = 4$. Returning with this result and with $d = 0.25$ nm to Eq. 37-31, we obtain

$$\theta = \sin^{-1} \frac{m\lambda}{2d} = 37^\circ .$$

Studying Figure 37-26, we conclude that the angle between incident and scattered beams is $180^\circ - 2\theta = 106^\circ$.