

58. The angle of incidence on the reflection planes is $\theta = 63.8^\circ - 45.0^\circ = 18.8^\circ$, and the plane-plane separation is $d = a_0/\sqrt{2}$. Thus, using $2d \sin \theta = \lambda$, we get

$$a_0 = \sqrt{2}d = \frac{\sqrt{2}\lambda}{2 \sin \theta} = \frac{0.260 \text{ nm}}{\sqrt{2} \sin 18.8^\circ} = 0.570 \text{ nm} .$$