

53. Bragg's law gives the condition for a diffraction maximum:

$$2d \sin \theta = m\lambda$$

where  $d$  is the spacing of the crystal planes and  $\lambda$  is the wavelength. The angle  $\theta$  is measured from the surfaces of the planes. For a second-order reflection  $m = 2$ , so

$$d = \frac{m\lambda}{2 \sin \theta} = \frac{2(0.12 \times 10^{-9} \text{ m})}{2 \sin 28^\circ} = 2.56 \times 10^{-10} \text{ m} = 256 \text{ pm} .$$