

# Review

## Application for Bragg Scattering, Thin Films, and CD's

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$$\lambda = 650nm$$

$$k = 2$$

$$d = 1.15 \times 10^{-3}cm$$

$$\begin{aligned}\sin \theta &= \frac{k\lambda}{d} \\ &= \frac{2(650nm)}{1.15 \times 10^{-3}cm} \\ &= 6.49^\circ\end{aligned}\tag{1}$$

$$d = \frac{1}{2500}cm = 4.00 \times 10^{-6}m$$

$$k = 3$$

$$\theta = 12^\circ$$

$$\begin{aligned}\sin \theta &= \frac{k\lambda}{d} \\ \sin 22^\circ &= \frac{1(650nm)}{d} \\ d &= 3.13 \times 10^{-6}m \\ \sin \theta &= \frac{4(650nm)}{3.13 \times 10^{-6}m} \\ \sin \theta &= 0.831 \\ \theta &= 56^\circ\end{aligned}\tag{2}$$

$$d = \frac{1}{10000}cm = 1.0 \times 10^{-6}m$$

$$k = 1$$

$$\theta_1 = 31.2^\circ$$

$$\theta_2 = 36.4^\circ$$

$$\theta_3 = 47.5^\circ$$

SSS

$$\sin \theta_1 = \frac{k\lambda_1}{d}$$

$$\sin 31.2^\circ = \frac{1\lambda_1}{1.0 \times 10^{-6}m} \tag{3}$$

$$\lambda_1 = \sin 31.2^\circ \times 1.0 \times 10^{-6}m$$

$$\lambda_1 = 518nm$$

$$d = \frac{1}{10000}cm$$