TAREA 4

17

$$v_f = \sqrt{\frac{g\lambda}{2\pi}} = \frac{\omega}{k}, \quad k = \frac{2\pi}{\lambda}$$

$$\sqrt{g/k} = \frac{\omega}{k} \rightarrow \omega^2 = gk$$

$$v_g = \frac{d\omega}{dk} \qquad \omega = \sqrt{gk}$$

$$v_g = \sqrt{g}\,\frac{1}{2}\,\frac{1}{\sqrt{k}} = \frac{1}{2}\sqrt{\frac{g}{k}} = \frac{1}{2}v_f$$

24

$$KE = 0.05\,eV, \quad \gamma = 1$$

$$\lambda = \frac{h}{mv} \quad ; \quad KE = \frac{1}{2}mv^2$$

$$mv = \sqrt{2mKE}$$

$$\lambda = \frac{h}{\sqrt{2mKE}}$$

Dada la ec. de Bragg

$$n\lambda = 2d\sin\phi \quad , n = 1$$

$$\frac{h}{\sqrt{2mKE}} = 2d\sin\phi \rightarrow \phi = \sin^{-1}\left(\frac{h}{2d\sqrt{2mKE}}\right)$$

$$\boxed{\phi = 13.65^\circ}$$