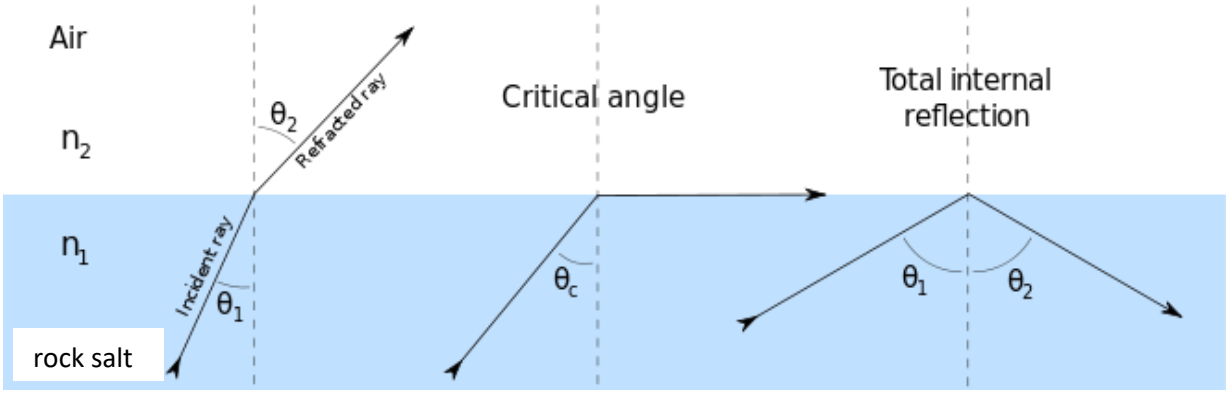
Answer on Question#82170 - Physics - Optics

Calculate the critical angle for light passing from rock salt into air given that the refractive index of rock salt is 1.54

Solution:



The critical angle θ_c occurs when the angle of refraction is equal to $90°$.

According to the Snell's law we obtain

$$n_1 \sin\theta_c = n_2 \sin 90° = n_2$$

$$\theta_c = \operatorname{asin}\frac{n_2}{n_1}$$

Since $n_1 = 1.54$ and $n_2 = 1$, we obtain

$$\theta_c = \operatorname{asin}\frac{1}{1.54} = 40.5°$$

Answer: $40.5°$.