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Double Refraction: - If the beam of unpolarised light is allowed to pass through an anisotropic crystal (Calcite or Quartz), it splits into two refracted beams instead of one. This phenomenon is called double refraction or bi-refringence.

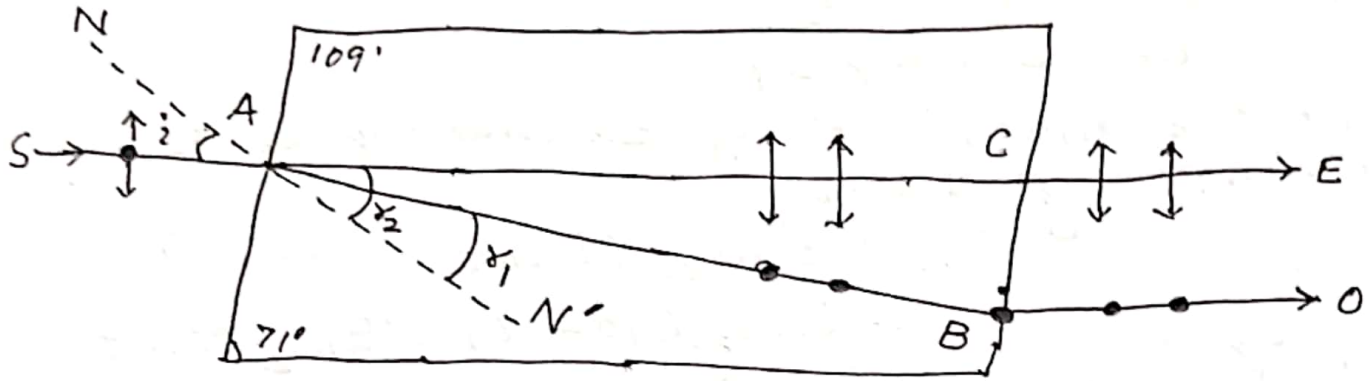


Fig. ① Principal section of Calcite ( $\text{CaCO}_3$ )

For O-ray,  $\frac{\sin i}{\sin r_1} = \text{Constant} \quad \text{--- (1)}$

and E-ray,  $\frac{\sin i}{\sin r_2} = \text{Constant} \quad \text{--- (2)}$

They are function of 'i'

When calcite crystal placed in front of a point marked on a paper, we will, in general see two images of the point. The appearance of the two images is due to the phenomenon of double refraction.

The O-ray is known as ordinary ray and E-ray is known as extra-ordinary ray. When the velocity of O-ray and E-ray is the same then it is called optic axis of the calcite crystal.