

Introduction to Glass Refraction

When light rays travel from one optical medium to another optical medium, they change the direction of their original path in the first medium, and go into a different direction in the second medium. This is the bending of light rays as they travel from one optical medium to another. This phenomenon exhibited by light rays is called refraction of light.

Explanation about Refraction of Glass

Glass is an optical medium. Light can travel through it. Therefore we are able to see through a plane glass. But when we see through a glass, and then remove it and see with the naked eyes, our eyes experience a difference in the view. We observe a little “shift” of the view when we remove the glass. Why does this occur? This is due to the phenomenon of glass refraction. The light rays coming from the other side, when pass through a glass, get bent at a fixed angle, and thus, when we remove the glass, there is a slight shift of the image in view. Thus, glass refraction is the phenomenon of bending of light rays when they travel into glass from another optical medium.

Reason for the Occurrence of Refraction in Glass

The reason behind bending of light rays is that the speed of light rays is different in different optical media. For example, in air the speed of light is 3×10^8 m/s, in water it is 2.25×10^8 m/s, and in glass it is 2×10^8 m/s. Due to this difference between the speed of light in different media, when light rays travel from one medium to another medium, they change the direction of traveling when they enter the second medium.

Refractive Index of Glass

The refractive index is a constant for a given pair of optical substances. The absolute refractive index of a substance indicates the ratio of the speed of light in air to that in given optical medium. Thus,

Refractive index of glass is = Speed of light in air / Speed of light in glass.

More is the refractive index of a medium, the more is the light ray refracted in that medium. The refractive index of glass is 1.5.

A Simple Ray Diagram to Explain Glass Refraction:

This diagram represents glass refraction. The single ray drawn represents the path of a light ray from air into glass. The original path of the light ray, which should have been its path inside the glass is represented by the dotted line.

