

Answer on Question #55098, Physics Optics

a nicol prism as well as a tourmaline plate produce plane polarized light. what is the difference between the actions of these two?

Answer:

Nicols is polarization device. It is based on the principle of action which are the effects of double refraction and total internal reflection (see Fig.1).

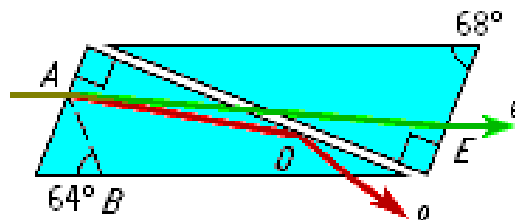


Fig.1 The scheme of Nicols.

Red ray is an ordinary ray (horizontal polarization), green ray is unusual (vertical polarization)

Tourmaline plate is cut in a way that limits its plate, parallel to the crystallographic axis. Light passes through the plate, undergoing a slight weakening. For plate light vibrations occur only in one plane, they are linearly polarized.

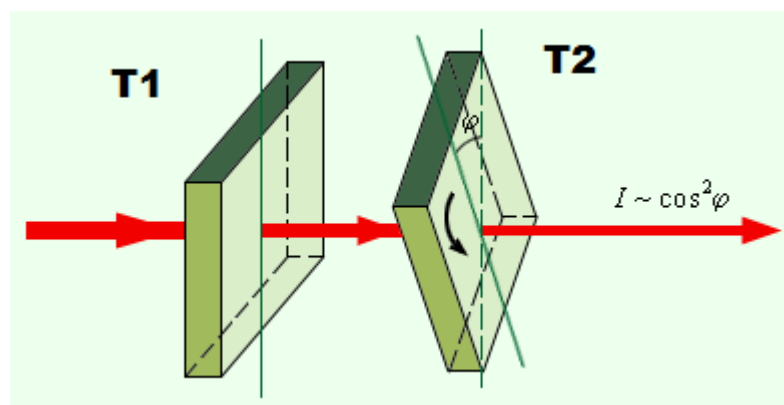


Fig.2 Tourmaline plate

Tourmaline plates. Checking is performed by means of the second plate such as tourmaline, which is installed parallel to the first, but is rotated in its plane at 90° . The first plate T1 is called a polarizer, second T2 - analyzer, since it is used to determine the plane of oscillation (see Fig.2).

In one case, the polarization separation is performed through total internal reflection. In the second case, we use another crystals with rotated axis.