Laboratory research №4.7.3 on «Polarization»

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Brewster's angle

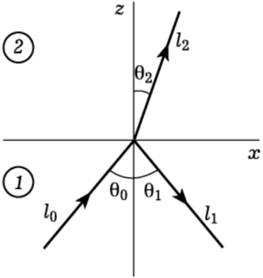

Figure 1: 0 stands for a in-going wave, 1 stands for a transmitted wave, 2 stand for a reflected wave.

The angular encounter of the light with a plane is described as

$$R_{\perp} = \frac{sin^2(\theta_2 - \theta_0)}{\sin^2(\theta_2 + \theta_0)}, \quad R_{\parallel} = \frac{\mathrm{tg}^2(\theta_2 - \theta_0)}{\mathrm{tg}^2(\theta_2 + \theta_0)}. \tag{1}$$

Brewster's angle

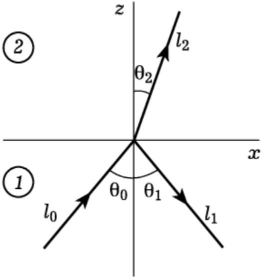

Figure 2: 0 stands for a in-going wave, 1 stands for a transmitted wave, 2 stand for a reflected wave.

An incredible aspect describes the $\theta_p = \theta_0$ wich gives $\theta_0 + \theta_2 = \pi/2$. With this and Snell's law we obtain:

$$\operatorname{tg} \theta_p = \sqrt{\frac{\varepsilon_2}{\varepsilon_1}} = n. \qquad (2)$$

Where θ_p is the angle of polarization or *Brewster's angle.*

Brewster's angle

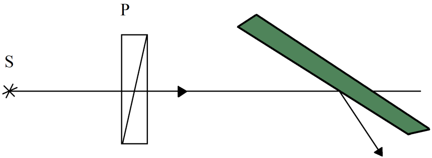

Figure 3: By rotating green ebonite plain we obtain several angles.

(to be continued)

$$n = 239,$$

which is close to the real ebonite's refraction index.

Conclusions and thoughts