For General Medicine

Topic of section: Refractometry

Topic of lab work: Determination of the liquid refractive index with refractometer

Aim: determine the refractive index of the solution with unknown concentration by refractometer.

Theory:

1. Give definitions of the absolute refractive index and the relative one.
2. Write down the Snell's law (light refraction law).
3. Explain conditions for observation of the light total internal reflection phenomenon. How to calculate the critical angle of total internal reflection?
4. Describe the working principle of refractometer.

Practical part:

Table 1. The results of the measurements

C,%	0	C_1=	C_2=	C_3=	C_x
N					
K	–				$k_{average}$ =

Solve the problem:

1. The refraction index of a solution is equal to 1.38. Other solution of the same substance has the refraction index of 1.43. How many times do solution concentrations differ, if for water the refraction index is equal to 1.33. *Answer:2 times*
2. Light beam is incident from the air to camphor at an angle 40° and refracts in this medium at an angle 24° 35′. Determine the critical angle of refraction. *Answer: 40°20'*

Literature: Physical principles of refractometry and endoscopy: учеб.-метод. Пособие / Л.В. Кухаренко, О.В. Недзьведь. – Минск: БГМУ. 2015. – 16 с.