CLASS-10 PHYSICAL SCIENCES

NEW TEXT BOOK

2014 - 2015

CHAPTER: 05 – REFRACTION OF LIGHT AT PLANE SURFACES

PERIOD PLAN-02 : Refractive index

Refractive indexes of some material media

Affecting factors of refractive index

Relative refractive index

Content Analysis	Class Room Environment	Teaching Learning Material
Refractive index: Light travels in vacuum with a speed nearly equal to c = $3x10^8$ m/s. The speed of light is smaller than 'c' in other transparent media. Let 'v' be the speed of light in a certain medium. Absolute refractive index = Speed of light in vacuum/ Speed of light in medium. n = c/v The refractive index 'n' means that the speed of light in that medium is nth part of speed of light in vacuum. For example the refractive index of glass is 3/2 .Then the speed of light in glass is (2/3) of 3 $x10^8$ m/s equal to 2 $x10^8$ m/s.	**Conversation:** About refractive index of a medium. **Explanation:** About the velocity of light in different mediums.	chart
Refractive indexes of some material media: An optically denser medium may not possess greater mass density. For example, kerosene with high refractive index is optically denser than water although its mass density is less than water.	**Explanation:** About the refractive indices of some materials. Air 1.003 — Canada balsam 1.53 Ice 1.31 — Rock salt 1.54 Water 1.33 — CS_2 1.63 Kerosene 1.44 — Dense flint glass 1.65 Fused quartz 1.46 — Ruby 1.71 Turpentine oil 1.47 — Sapphire 1.77 Crown glass 1.52 — Diamond 2.42 Benzene 1.50	Chart
Affecting factors of refractive index: Refractive index depends on the following factors. (1) nature of material (2) wavelength of light used.	**Conversation:** About the affecting factors of refractive index.	
Relative refractive index: The refractive index of a medium with respect to another medium is defined as the ratio of speed of light in the first medium to the speed of light in the second medium. Let v_1 and v_2 be the speeds of light in the first and second media respectively. Then, Refractive index of second medium with respect to first medium is given by $n_{21} = \frac{speed\ of\ light\ in\ first\ medium}{speed\ of\ light\ in\ second\ medium}$ $n_{21} = \frac{v_1}{v_2} = \frac{n_2}{n_1}$	**Conversation:** About the refraction according	Chart

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