Answer on Question 52459, Physics, Optics

Question:

Beyond the critical angle, a ray of light moving from dense to rare medium suffers:

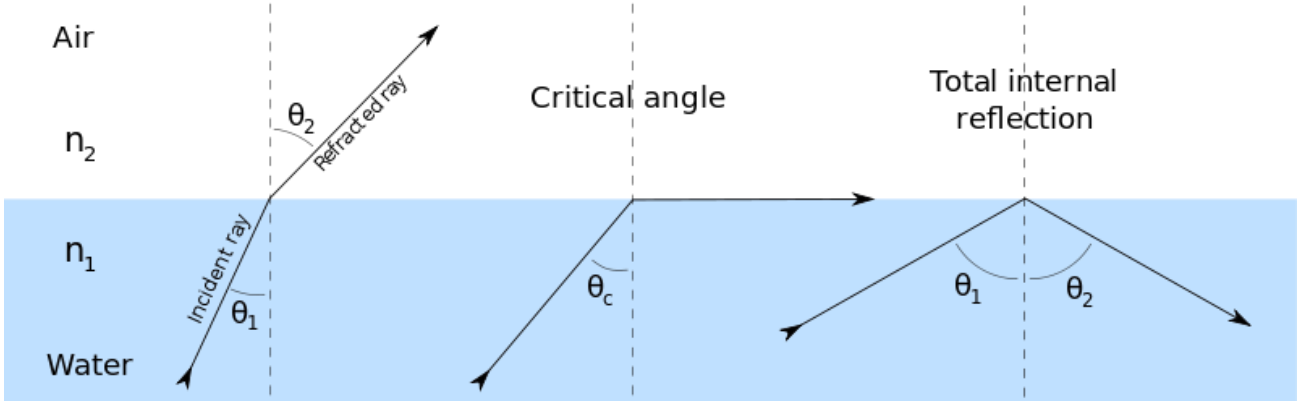
a) diffraction

b) polarization

c) total internal reflection

d) total internal refraction

Answer:



The total internal reflection occurs when light attempts to move from a denser medium to a rarer medium (for example, from water with $n_1 = 1.33$ to air with $n_2 = 1.0$). As we can see in the picture, if we keep on increasing the angle of incidence, there comes an angle of incidence where the ray does not enter the second medium, but grazes its surface (thus, the angle of refraction is 90°). The angle of incidence for which the angle of refraction is 90° is called the critical angle θ_c. Beyond the critical angle (i.e. when $\theta_1 > \theta_c$), the ray of light will get reflected back in the same medium. This phenomenon is called the total internal reflection.

Therefore, the correct answer is **c) total internal reflection.**