$$\mathbf{E}_R = \tilde{E}_{0R} e^{i(k_R z - \omega_R t)} \hat{n}_R$$
$$\mathbf{E}_T = \tilde{E}_{0T} e^{i(k_T z - \omega_T t)} \hat{n}_T$$

For our reflected and transmitted waves, we found that $\omega_R = \omega_T = \omega_I$. What can we now conclude about the *wavelengths* of the transmitted and reflected waves?

A. $\lambda_R = \lambda_T = \lambda_I$
B. $\lambda_R = \lambda_T \neq \lambda_I$
C. $\lambda_R \neq \lambda_T = \lambda_I$
D. $\lambda_R = \lambda_I \neq \lambda_T$
E. Need more information

For light at normal incidence, we found:

$$R = \frac{(n_1 - n_2)^2}{(n_1 + n_2)^2}, \quad T = \frac{4n_1 n_2}{(n_1 + n_2)^2}$$

What gives a large transmission of light at normal incidence?

A) When $v_1 >> v_2$
B) When $v_2 >> v_1$
C) When v is very *different* in the two media
D) When v is nearly the *same* in the two media
E) More than one of these

For light at normal incidence, we found:

$$R = \frac{(n_1 - n_2)^2}{(n_1 + n_2)^2}, \quad T = \frac{4n_1 n_2}{(n_1 + n_2)^2}$$

What gives a large reflection of light at normal incidence?

A) When $v_1 >> v_2$
B) When $v_2 >> v_1$
C) When v is very *different* in the two media
D) When v is nearly the *same* in the two media
E) More than one of these

In the case where medium 1 had a very slow wave velocity and medium 2 had a much higher wave velocity, we found that R approaches 1 and T approaches 0. In the opposite case, where the wave velocity in medium 1 is much higher than that in 2, we expect

A. R approaches 1, T approaches 0
B. R approaches 0, T approaches 1
C. R approaches 1/2, T approaches 1/2
D. Not enough information to tell

Reflection across contexts

Mechanical waves (strings, geological imaging)

Electronics

Quantum mechanics

Fiber optics