Solution

The band gap in Si is 1.1 eV at room temperature. What is the reddest color (*i.e.*, the longest wavelength) that you could use to excite an electron to the conduction band?

Hint: Si is used in the pixels of your digital camera.

a. 500 nm b. 700 nm **c. 1100 nm**

Remember the relation between photon energy and wavelength:

$\lambda = hc/E = 1240\ \text{eV}\cdot\text{nm} / 1.1\ \text{eV} = 1127\ \text{nm}$

DEMO