Primer on Semiconductors: Lecture 2.2 Short Problem

Mark Lundstrom
Purdue University, Fall 2018

Provide a numerical answer to the question below.

To be significant, quantized energy levels must be comparable to the thermal energy, which is eV at 300 K. Consider a semiconductor quantum well with and nm.

1) What is the value of the ground state energy, E_1, in eV?

To be distinct, energy levels much be separated in energy by about .

2) For this quantum well, what is the value of E_2, in eV?

3) Repeat problems 1) and 2) for a quantum well with W = 5 nm.