

Omega Proof of Concepts and Presentation Guidelines – Semiconductor Devices

Omega Exploration Proof of Concepts Tasks

Complete the following tasks and include them in your Lab 02 Parts C & D Proof of Concepts submission as concept #8.

1. Relate how a diode works as it relates to the I-V characteristic diagram (label the I-V characteristic diagram, describe the regions as best you can and try to explain why it works that way!...if you don't mention the words "hole" and "depletion", you are doing it wrong!)
2. Relate a clean room piece of equipment from your tour to how a diode is created and how it works
3. Write a Plus, Delta, Kaizen (see [Metacognition](#) for definitions) for your clean room tour experience. Do this as a group and include it in your Proof of Concepts document.

Presentation Standards

- 1. I can explain the goal of the project.**
- 2. I can illustrate how a diode works in a way that makes sense to me.**

You can do this with drawings, diagrams, snapshots of figures (reference them!), etc. For example, you can explain how each of the different regimes function (breakdown, reverse bias and forward bias) and why they work that way. Some hints: you will definitely need to illustrate something with holes and electrons. You may also run into the concept of energy band diagrams.
- 3. For a piece of clean room equipment I saw during my clean room tour: I can describe it, what it does, and explain how it relates to how diodes work or how they are made.**

For example, if you learn about the different parts of a diode, you can relate a machine to a particular part of the diode, and then explain how that part enables a diode to function.
- 4. I can discuss aspects of my clean room tour or diode physics research that I didn't understand.**

List phrases, words, concepts, etc. that you came across during your diode exploration that you don't understand. You don't necessarily have to define them, but we want to see how far you explored and where you got stuck.
- 5. I can briefly mention or discuss new concepts or ideas I learned about that are beyond the content of Intro to ECSE.**
- 6. I can articulate at least ONE question based on my experience doing the Omega Exploration.**