

## **EE / CprE / SE 491 - sddec24-21**

### **CdSe Solar Cell**

#### **Week 6 Report**

Mar 6 – Mar 12

Client: Vikram Dalal

Faculty Advisor: Vikram Dalal

#### **Team Members:**

Payton Bills – Team Lead | Client Interaction

Anders Peterson – Client Interaction | Component design

Michael Thomas – Individual Component Design | Testing

Drew Jensen – Individual Component Design | Testing

Jacob Steffens – Simulation research | Research aid discovery and distribution

Jonathan Timm – Simulation research | Simulation testing

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#### **Past Week Accomplishments**

- Learned about sputtering and how to use the sputtering machine.  
This is one of the machines available in the MRC for us to use when we fabricate our cell later.
- Learned more about how temperature affects solar cells and how this knowledge can be applied to the design of PV thermal collectors, testing the density of states of PN junctions, and how to estimate the fill factor efficiency of the cell.

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## Pending Issues

We need a more defined list of deliverables, as one of the things we are struggling with right now is having direction on what exactly to work on other than general research. We need to make a timeline of when we want certain deliverables done by.

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## Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Payton Bills	Worked on lightning talks, design reports, and a deliverable report on SQ limit	6	33
Anders Peterson	Worked in the MRC over spring break, and learned about the process that the current grad students working on CdSe use. I learned how to deposit the material and performed a deposition of Indium Tin Oxide (ITO). This is a potential contact that would be used on our final solar cell.	10	41
Michael Thomas	Researched how temperature affects solar cells and found three sources that had good information on it. Research Gate has information on what ambient factors need to be accounted for and how current PV thermal collectors work to combat rising temps. Bagheri's thesis shows how to measure the density of states of our PN junction through capacitance using the CFT method. PV education mentions how temperature can directly impact the fill factor efficiency of a solar cell, that it more directly affects open circuit voltage, and how to plot an estimate for how much it affects the open circuit voltage.	6	34
Drew Jensen	Not much to report, very little done before and over break. Read a little bit, but nothing major.	1	24
Jacob Steffens	Nothing to really report. Continued with last week's objective.	2	23
Jonathan Timm	Did not accomplish a whole lot over break.	3	27

	Spent some time reading about solar farms and watched some lectures/videos on semiconductor physics		
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### **Plans for Coming Week**

This coming week we will begin to make a rough design of the device structure. This will help us to gain a better understanding of which processes and machines we will have to learn and study.

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### **Gitlab Activity Summary**

No activity to report.

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