

# CdSe Solar Cell Fabrication

Project Plan

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# Project Overview

- Cadmium Selenide is an undeveloped solar cell material that could help increase the efficiency of silicon solar cells.
- Very little work has been done to develop the fabrication process for CdSe solar cells.
- Major companies like first solar are starting to show interest in the material.
- It is suspected that CdSe can be manufactured in a similar process as CdTe, a material with a well defined process.
- It is our goal to fabricate a CdSe cell with 5% efficiency and write a well written report on everything we learn through our fabrication process.

# Project management style

- Agile ~ There is no set path that we are taking, as each person has their main “mini project” or part, and others help if needed
- This is more flexible, so if one person finishes their project quickly, then they can jump over to someone else and help them
- It doesn't depend on strict timeline changes

# Task Decomposition

## 1. Fabrication

- a. Create a device structure
  - i. 2 terminal vs 4 terminal device
  - ii. Type of junction and what material
- b. Create a manufacturing process

## 2. Economic Analysis

- a. Cost of a typical Silicon or CdTe solar farm (cost per MW)
- b. Projected cost of a Silicon plus CdSe solar farm (cost per MW)

# Key milestones, metrics, and evaluation criteria

- Sample solar cell operation
  - At the minimum, we want to create a functional solar cell by the end of next semester
  - We will be evaluated based on the efficiency our cell gets
- Determination of the scenarios in which CdSe cells would be viable
  - Where would they be used
  - Where are they most cost effective

# Key risks and risk mitigation steps

- Unorganization
  - This style has a higher potential to be unorganized
  - Mitigated by having weekly meetings, with predetermined deliverables and deadlines
- Less accountability
  - Each team member has a deliverable that they are working on

# Conclusions

- Agile management style to give more flexibility
- Two major parts of the project: Fabrication and economic analysis
- There will be collaboration between the two parts to encourage accountability and organization