# EE 491 Weekly Report

Week 11: 11/4-11/10

**Group:** *May14-03* **Advisors:** *Dr. Sumit Chaudhary, John Carr* **Client:** *ISU NanoLab*

**Members:** *Andersen, Martin; Diallo, Mouhamadou; Rodriguez, Nicholas; Straquadine, Joshua (Leader)*

**Project Title:** *"Design and implementation of cryogenic current measurements on organic photovoltaic cells"*

## Weekly Summary

This week we tried a few more methods of achieving good thermal contact and enough contact force to achieve accurate temperature readings and finished our Design Documents

## Meetings

### 11/4 Lab Meeting

**Duration:** *2 hours* **Members Present:** *All*

**Purpose and Goals:**
At this meeting, we went into the lab and applied epoxy to the thermistor rig we had designed the previous day. We also ran a test of the system before we applied the epoxy.

**Achievements:**

- Showed that the rig we had required much more contact force, and hoped to apply said force to the top of the epoxy
- Successfully managed to apply epoxy to the sample as stress relief and in what we believed to be an even, flat contact surface.

### 11/7 Design Document Meeting

**Duration:** *2 hours* **Members Present:** *All*

**Purpose and Goals:**
We met up in Coover to discuss current progress on the Design Document, and where each member stood on what he had completed.

**Achievements:**

- Redistributed assigned sections after realizing that some had been missed
- Made progress towards a completed document, and developed a plan to finish it on our own

### 11/10 Lab Meeting

**Duration:** *6 hours* **Members Present:** *All*

**Purpose and Goals:**
We heard from our advisor that the epoxy applied on Monday was causing issues, so we came in to test it and to design a better solution.

**Achievements:**

- Ran a few tests and repeated our advisor's results
- Added the cold shroud and implemented a new clamping mechanism for ensuring contact between cold shroud and cryostat, which drastically improved results
- Built a new temperature sensor assembly for applying contact force while protecting the fragile resistor leads using heatshrink as stress relief, but ran out of liquid nitrogen and couldn't complete the test.

## Pending issues

Overall, things are working fairly well. Our only concern is that we've spent so much time proving that our original ideas didn't work that we had very little to report in our design document. We just need more time in lab and more time to formally document our work.

## Plans for next week

We plan to begin splitting the work up more, with the goals of proving out our temperature sensor setup and adding the electrical contact pin to it, as well as finalizing our cold-shroud design. We will also spend some time revising both of our major documents to reflect all of our recent changes, failures, and progress.

## Individual Contributions

- Andersen, Martin: Attended meetings, wrote thermal interface section of design document (10 hr)
- Diallo, Mouhamadou: Attended the meetings, helped design a new probe system, wrote electrical contact section of design document (12 hr)
- Rodriguez, Nicholas: Attended meetings, wrote cold shroud and thermal insulation section of design document, edited final document (12 hr)
- Straquadine, Joshua (Leader): Attended meetings, helped design new probe system, wrote remaining sections of design document, edited final document (14 hr)