

EE 491 Weekly Report

Week 3: 9/9-9/15

Group: *May14-03*

Advisors: *Dr. Sumit Chaudhary, John Carr*

Client: *ISU NanoLab*

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

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

Weekly Summary

This week we are still in the planning stages. We got together and discussed the research we've been conducting on the cryostat systems, low-temperature current measurement systems, and trap level spectroscopy measurements, visited the lab with John Carr, who showed us all of the equipment we had available. Through that meeting we were able to further define the metrics of our project.

Meetings

9/9 Group Meeting

Duration: *45 min*

Members Present: *All*

Purpose and Goals:

Discuss our research and developments up to this point, and to establish a strategy for getting into the lab to execute the project. Also, decide on a time for our bi-weekly advisor meeting.

Achievements:

- We're now all on the same page as far as our conceptual knowledge of cryostats and the measurements we're trying to conduct at those temperatures
- Final decided appointment for bi-weekly advisor meetings, Friday, 3:00 PM
- Lab Times:
 - Martin and Josh, Tuesday, Thursday 11:00 to 2:00
 - Mouhamadou and Nick, Thursday, 2:00-4:00
- Weekly Group Meetings, Monday, 7:00 PM, Thursdays at 7:00 PM as needed

9/15 Lab Visit with John

Duration: *1 hour*

Members Present: *All*

Purpose and Goals:

Get our first hands-on experience with the lab equipment and discover the true design problems and specifications we'll be working with. Once we get a good feeling for how the test rig is actually set up, we'll have a much easier time actually beginning the design process.

Achievements:

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Pending issues

Half of the equipment we need (the suggested current meter and the computer with the proper control software) are locked in a different room than the rest of the equipment. We may at some point have to relocate all of the equipment to the locked room with the computer, and then we would have to get key-card access to the room.

Plans for next week

Our next week will be spent brainstorming ideas about and searching for equipment for the cooling problem. We need to look into thermal contact pastes or other materials which offer high heat conductivity around 80 K and under 10^{-3} Torr, as well as a reliable thermometer unit from room temperature down to liquid nitrogen temperatures. Any other methods of cooling the sample more efficiently are also under consideration this week.

Individual Contributions

Andersen, Martin: Attended the meetings, research (3 hr)

Diallo, Mouhamadou: Attended the meetings, research (3 hr)

Rodriguez, Nicholas: Attended the meetings, research (3 hr)

Straquadine, Joshua: Attended the meetings, research (3 hr)