

*EE/CprE/SE 491 WEEKLY REPORT 2 - sday18-24*

9/10/17 – 9/16/17

*Project title: Optical force transducer for visualizing cell mechanotransduction in 3D*

*Client: LIOS Lab*

*Advisor: Prof Meng Lu*

*Team Members/Role:*

**Quan Wang --- fabrication and process development**

**Yalun Tang --- fabrication and process development**

**Jiameng Li --- theory and numerical modeling**

**Qinming Zhang --- theory and numerical modeling**

o **Weekly Summary**

**Preparation for nanofiber**

**Nanoparticles**

**Solidworks design**

**COMSOL modeling**

o **Past week accomplishments**

- Yalun Tang:
  1. Removed the coating from the optical fiber
  2. Finished reflection 2
  
- Quan Wang:
  1. Removed the coating layer of the optical fiber
  2. Finished reflection 2, understood the efficient way of design thinking
  3. Learned how to use fluorescence microscope, and the use of different fiber connector(FC)
  
- Jiameng Li:
  1. Writing reflection about our team goal and individual task
  2. Design model to optimize the first fiber
  3. Meeting Dr. Lu with the challenging question on COMSOL
  
- Qinming Zhang:
  1. Design and fabricate the fixture to hold the fiber
  2. Draw the fixture in 3D using SolidWorks
  3. Finish reflection 2

- Group:
  1. Finished presentation powerpoint on Monday
  2. Had a group meeting for the reflection 2
  3. The initial preparation of optical fiber is finished
  4. The basic model for the optical fiber was built in Comsol, and single nanoparticle was added

o **Pending issues**

1. Optical fiber issue: difficult to remove the cladding from the optical fiber
2. Comsol issue: we have problems to set up the inflow and outflow of the optical fiber model

o **Individual contributions**

| Team member   | Contribution  | Weekly hours | Total hours |
|---------------|---|--------------|-------------|
| Yalun Tang    | Removed the coating from the fiber, presentation powerpoint   | 7            | 15          |
| Quan Wang     | Removed the coating from the fiber, learned how to handle fluorescence microscope and planned surface chemistry of fiber              | 7            | 15          |
| Jiameng Li    | Learning basic material which is useful the concept of our project. Discuss the modeling COMSOL software                              | 8            | 16          |
| Qinming Zhang | Use solidwork to design the holder for the fiber so that we can put the fiber on the microscope, and then use cnc to make the holder. | 8            | 16          |

o **Plan for coming week**

- Yalun Tang and Quan Wang:
  1. Install a connector at one of the fiber's ends

2. Try to use flame to remove the cladding of the optical fiber

- Jiameng Li and Qinming Zhang:

1. Change the parameter of the model in the Comsol simulation, find the best parameter

### **O Summary of weekly advisor meeting**

First, all of us finish individual reflection, and we understood how we can work on the senior design project. Second, we started preparing materials for the optical fiber experiment, and we also started designing the numerical model for the nanofiber. We have accomplished the goal of the week which is to prepare a bare optical fiber and create a simple numerical model in Comsol for the optical fiber and nanoparticles.