

A miniature microscope for fluorescence imaging

Client: Prof. Matthew Merrins

Advisor: Professor Jeremy Rogers

Team:

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Kadina Johnston	kejohnston2@wisc.edu (Communicator)
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Problem Statement: An affordable miniature fluorescence microscope needs to be developed the excitation source should be an LED with a wavelength of 430nm and filters will be required to filter 470 nm and 535 nm light.

Last Week's Goals: Figure out what design idea the client preferred.

Summary of Team Role Accomplishments:

- John: John completed the future work and potential road block slides. Also completed the future work and conclusions for the mid-semester report.
- Kadina: Set up meeting with the client
- Kaitlyn: Kaitlyn updated the team website with past progress reports.
- Zach: Attended second BSAC meeting

Summary of Design Accomplishments:

- Team meet with the client
- Team made progress on mid semester report
- Team has a rough draft of the presentation

This Week's Goals/Individual Goals:

Kaitlyn: My goal this week was to start the preliminary paper and read the review article Professor Merrins gave to us.

Kadina: My goal this week is to finalize the optical filters we will need to order as well as email Prof. Merrins to order LEDs.

Zach: My goal this week is to work on the preliminary paper and model out the microscope stand so we can order and fab right away.

John: My goal this week is to find an optical filter that will block an potential light from the excitation source. I also want to start looking into circuitry to control motors/solenoids.

Project Difficulties:

One of the challenges we will face going forward will be dealing with the potential of bleed through of the excitation source to the detector. This can be accomplished by either having an excitation filter or having a filter that will block unnecessary light to the detector.

Same Challenges:

- Picking out a specific tube lense

New Challenges:

- Design a rack and pinion system to finely adjust the stage
- Address the problem of bleed through
- Automate the image processing.

Tasks Completed by Team Members:

Kaitlyn: Kaitlyn did the background information on the preliminary report. Met with the team on Monday and presented our three designs to Professor Merrins.

Kadina: Kadina set up a meeting with the client. Worked on presentation.

Zach: Zach did some research on a mechanism to move the optical filters. He started a preliminary CAD model, and met with the client to see how to proceed.

John: John, along with Kaitlyn and Zach, met with the client. John also wrote future work for the mid semester report and completed future work for the presentation.