

A miniature microscope for fluorescence imaging

Client: Prof. Matthew Merrins

Advisor: Professor Jeremy Rogers

Team:

John Rupel	jrupel@wisc.edu (Team Leader)
Kadina Johnston	kejohnston2@wisc.edu (Communicator)
Zach Alden	zalden@wisc.edu (BSAC)
Kaitlyn Gabardi	gabardi@wisc.edu (BWIG/BPAG)

Date: 01/08/2017- 02/14/2017

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: Order LEDs and LED driver, start the filter swap design and focusing mechanism

Summary of Team Role Accomplishments:

- John: John along with Kadina developed a list of potential tube lenses to use with design.
- Kadina: Together, John and I worked on creating a list of potential tube lenses to use. Also attempted to use OSLO. Tried to order camera, but the website only took pay pal.
- Kaitlyn: Made a solidworks model of the filter swap with Zach.
- Zach: Made a solidworks model of the filter swap with Kaitlyn.

Summary of Design Accomplishments:

This Week's Goals/Individual Goals:

Kaitlyn: Find a motor that will work well for controlling the swapping of filters. Also work together with Zach to have an updated solidworks model of the potential microscope system.

Kadina: Figure out how to use OSLO to simulate tube lens. If LEDs arrive this week, rig up a system to test LEDs.

Zach: Find a motor that will work well for controlling the swapping of filters. Also work together with Kaitlyn continue to update a solidworks model of the microscope system.

John: My goal this week to find a way to order our desired camera with a credit card and not through paypal as well as simulate our tube lenses with OSLO.

Project Difficulties:

Attempted to order the camera; however the website we wanted to order from only takes paypal. OSLO only runs on Windows. John needs to use bootcamp to install Windows then install OSLO. Kadina and John tried to use OSLO. They were confused.

Same Challenges:

- Picking out a specific tube lens with proper focal length.
- Automate image processing
- Address potential bleed through

New Challenges:

- Need a new place to order camera from.
- Waiting for LEDs to arrive
- Need to pick a motor

Tasks Completed by Team Members:

Kaitlyn: Created a Solidworks model of the filter swap. Started research on potential motors to use swap filters.

Kadina: Kadina along with John made a list of potential tube lenses to run simulations on. Attempted to order camera

Zach: Zach continued examining the stand set-up. Created a Solidworks model of the filter swap.

John: John along with Kadina made a list of potential tube lenses to run simulations on.