

BioMEMS and Biosystem Senior Project

Senior Design Project: Control and Actuation System for BioMEMS Lab-on-a-Chip for Clinical Diagnostics

Project Description:

Students will be responsible for designing and implementing a motorized control system that will rotate a circular plastic BioMEMS chip over a stationary sensor photodiode while fluid flow through microfluidic channels is controlled by mechanically actuated valves. This system will require the integration of the following components:

1. Microfluidic Chip
2. Simple Labview control program
3. Stepper motor
4. Photodiode
5. Microactuators
6. Black box enclosure.
7. Power Source

Big picture:

This project is part of a larger project that is geared towards creating a microfluidic system that continuously monitors protein or some other analyte in a fluid sample such as blood.

Benefits to undergraduate students:

- Work in a multidisciplinary team from Engineering and Medicine
- Hands-on fabrication experience
- Learn about microfluidics and microactuators
- Development of basic control system
- Create a tangible product
- Better opportunity to move to biomedical or health care applications
- Possible publications

Requirements:

- ☺ 2-3 highly motivated undergraduate students as a team
- ☺ A strong desire to do something meaningful during your senior design project
- ☺ 10 hrs/week averaged over 3 quarters

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Modern Health Monitoring Protocol

