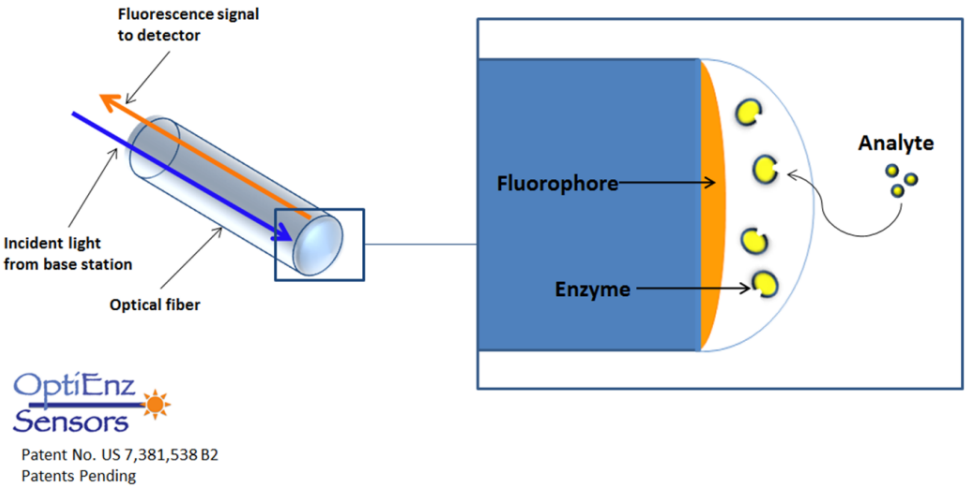
Reardon Group
Undergraduate Research Position

OPTICAL ENZYMATIC BIOSENSORS FOR REAL-TIME IN-SITU CHEMICAL MEASUREMENTS
Mentor: Dr. Brian Heinze, Postdoctoral Fellow

PROJECT DESCRIPTION

The goal of this project is to develop optical biosensors for real-time in-situ organic chemical measurements. The biosensors consist of an optical fiber with two functional layers immobilized onto the fiber tip. The first layer is composed of an oxygen-sensitive or pH-sensitive fluorophore. The second layer contains an enzyme that catalyzes a reaction specific to a given target analyte, causing a change in oxygen concentration or pH, thus changing the emission intensity of the immobilized fluorophore and producing a quantifiable signal (see figure below).



RESPONSIBILITIES

The undergraduate researcher will work on many different aspects of the project, including bacterial cell culture, enzyme production and characterization, fluorescent dye preparation and immobilization in polymer matrices, preparation of standards, lab cleaning and maintenance, and sensor testing.

QUALIFICATIONS

Required: Two semesters of general chemistry lecture and lab. Strong analytical skills. Ability to work independently. At least 10 hrs per week availability.

Desired: One or more semesters of cell biology or microbiology coursework, and related lab work.

Note: Hazardous waste training will be required for this position with training provided through CSU's Environmental Health Services program.

START DATE

This position is available immediately.

QUESTIONS AND APPLICATION

Questions and a Reardon Group Undergraduate Research application form (next page) should be sent to: Dr. Brian Heinze, heinze@mail.colostate.edu

Application for undergraduate research position in the Reardon Group
(please return this form to the contact person shown for the specific position)

Which project are you applying for?

Name:

Email address:

Major:

Minor(s) (if any):

Expected graduation date:

1. What course topics do you like the most?
2. Are there particular research topics that interest you?
3. At this time, what are your career goals?
4. Have you thought about attending graduate school? In what field(s)?
5. What do you want to accomplish in a research project? (i.e., why do you want to do this?)
6. When would you like to participate in a research project?
   - Spring 2012 ☐
   - Summer 2012 ☐
   - Fall 2012 ☐
   - Spring 2013 ☐
   - Other:

7. What form of payment/credit would you like to have for research? Check as many of the following as apply to you.
   - Paid
     - Necessary ☐
     - Nice but not necessary ☐
   - Course credit
     - HONR 499 ☐
     - Independent study ☐
     - Other ☐
   - Volunteer ☐

8. Please describe briefly any experience(s) you have had with the following:
   - Laboratory coursework
   - Research

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