DAD Integration
ENGR 1182.03
Lecture
Learning Objectives of Lab

- Students will finish building and calibrating the Fluorescein Detection Circuit by connecting the DAD to the Binary Voltmeter circuit.

- Learn the importance of calibration.
Circuit Schematic
Detection Alignment Device (DAD)

- Chip Holder
- Alignment Holes
- Detector Slot
- Blue LED Chamber
DAD Connection

- After completing the circuit testing from Lab 3, connect the detection alignment device (DAD) in place of the potentiometer.
  - Be careful with polarity (instructors need to check before applying power!)
  - Connect extender leads from DAD LED and photodetector to appropriate pins of prototype board. Silver mark on leads is ground connection.
  - Be sure to measure the 47 Ohm resistor.

- Do not touch the pins on leads from the DAD!!!
DAD Verification

Fluorescein Detection Circuit

Check DAD - Polarity is critical. Have instructors check.
Integration and Calibration

- Clean and place chip with chipholder on DAD. Choose placement for best alignment of photodetector under detection well. Rotate for best alignment.
  - Don’t forget to put a drop of water between the chip and the chipholder bottom.
- Obtain DI water and 5ml sample of 1000 ppm fluorescein from front of lab.
- Create 4 samples of fluorescein using your syringes and the glass vials provided.
  - The three samples should be 750 ppm, 500 ppm, 250 and 125 ppm. These will be re-used in future labs. Mark their concentrations.
Calibration

- Using readings of known concentrations of fluorescein, a calibration curve is created.
- The equation associated with the curve can be used to extrapolate values of unknown concentrations of fluorescein from the known values.
Calibration of LOC

- First use *Di water* to fill the detection well in the chip. Cover with bucket and obtain the LED readout. This is your baseline value (ideally less than 8).
  - For each sample fill the detection well, cover DAD, obtain corresponding LED readout.
  - Repeat this step for each sample as time allows and record on your lab worksheet.
  - Average the values for each concentration.
  - Construct a calibration curve of average LED readout vs. concentration.