

## Lab 6: Photodiode

### Objective:

The purpose of this lab is to display the principles of a photodiode and to see how light of different energy affects the performance of a photodiode.

### General Safety Guidelines:

Do not shine flashlight in your eye.

### Lab Equipment:

Flashlight with band pass filters at 880nm, 940nm and 1064nm, voltmeter, photodiode connected to bnc plug.

### Procedure:

1. Obtain a photodiode connected to a bnc plug from your TA. With banana clips connect the photodiode to a voltmeter.
2. Then obtain a flashlight for each wavelength (880nm, 940nm 1064nm) from your TA. Hold the 880nm flashlight directly above the photodiode and record the voltage reading displayed on the voltmeter (If voltage is negative you have your diode hooked up backwards).
3. Repeat for the other two wavelengths.

### Data and Analysis:

Your data can be taken in the following form:

Wavelength (nm)	Voltage (V)
880	
940	
1064	

You need to calculate the energy of the light at each wavelength and the corresponding photodiode current. Use  $I_0 = 10^{-14}$  A.

Plot Current vs. Energy for your three data points