

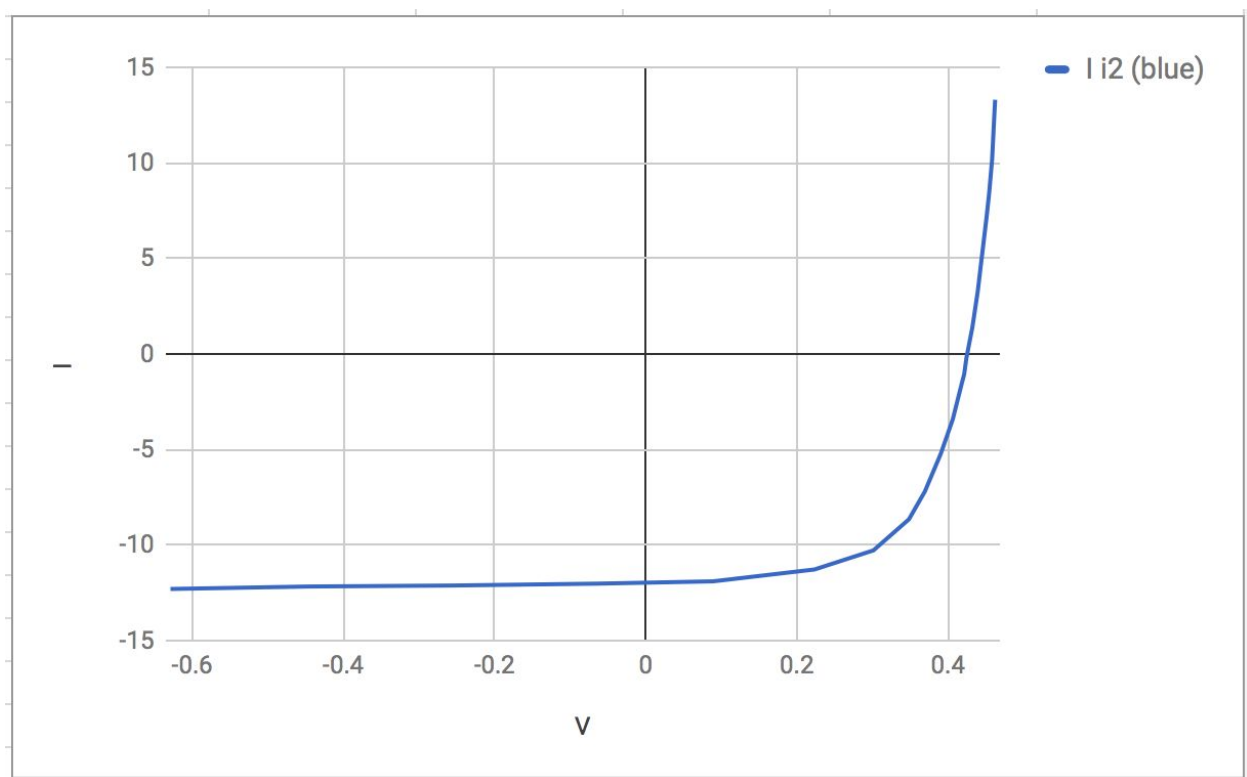
EE 236 Lab Report
Basic Electronic Devices

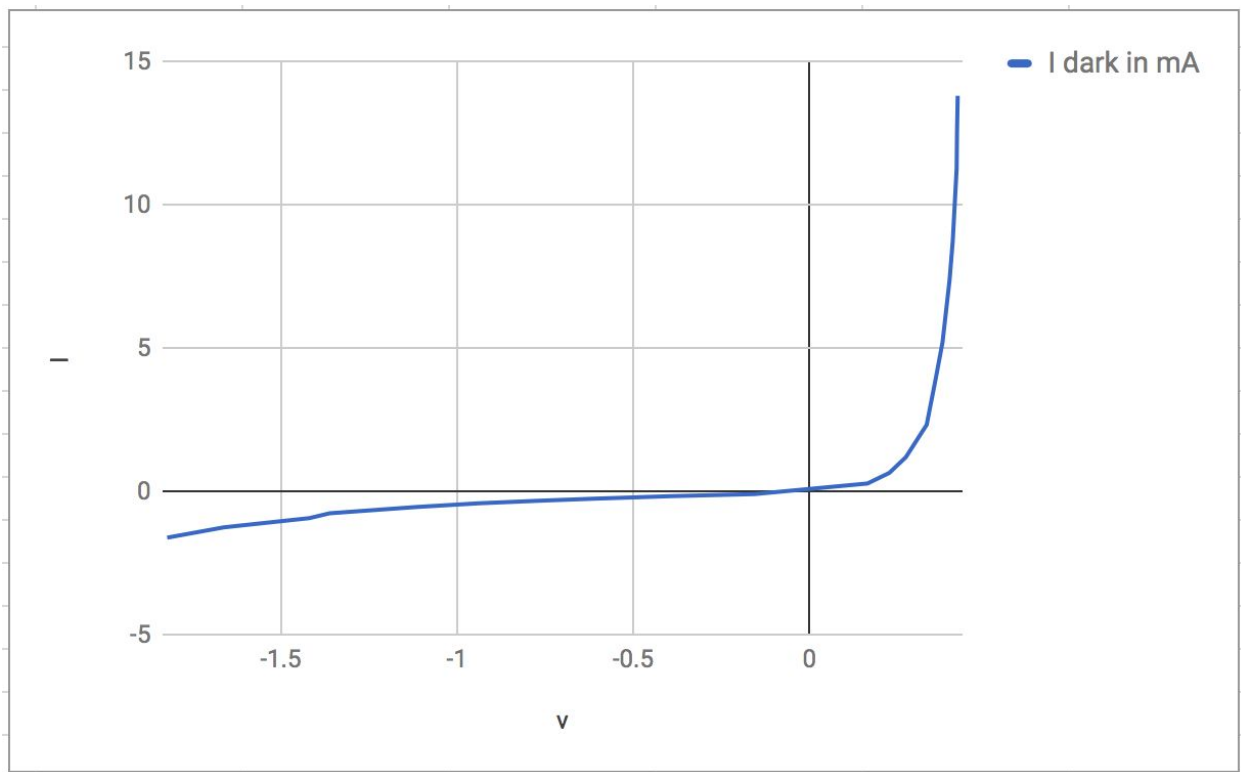
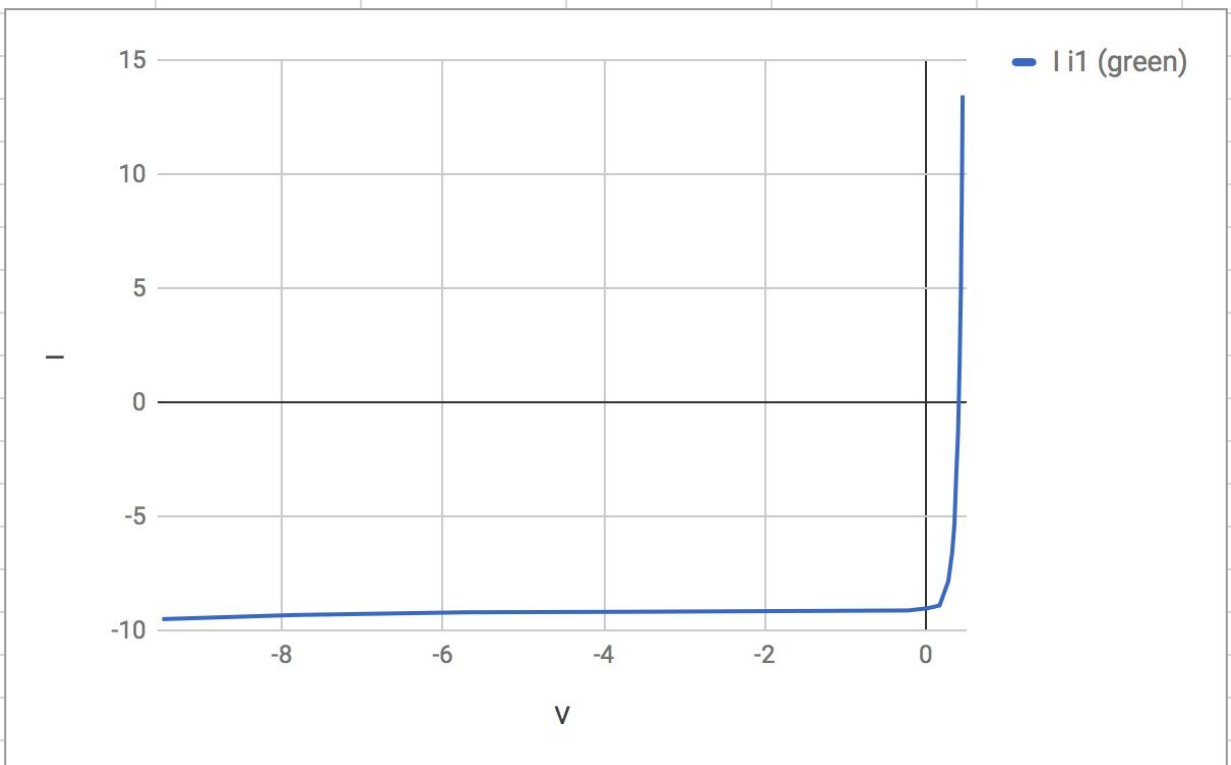
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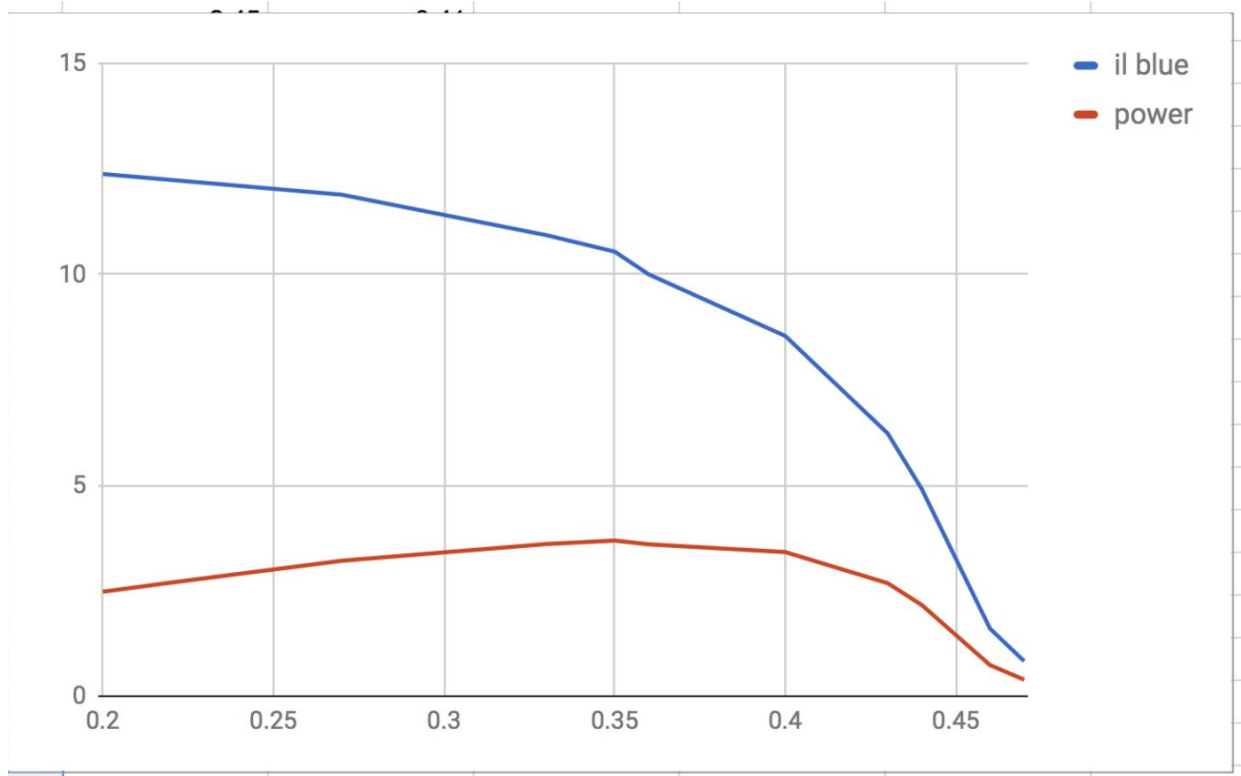
Experiment: Solar cell I/V characteristics and their dependence on series and shunt resistance

Q1. Plot the I-V characteristic of the solar cell that you measured from Part 1 for dark, intensity I_1 and Intensity I_2 .

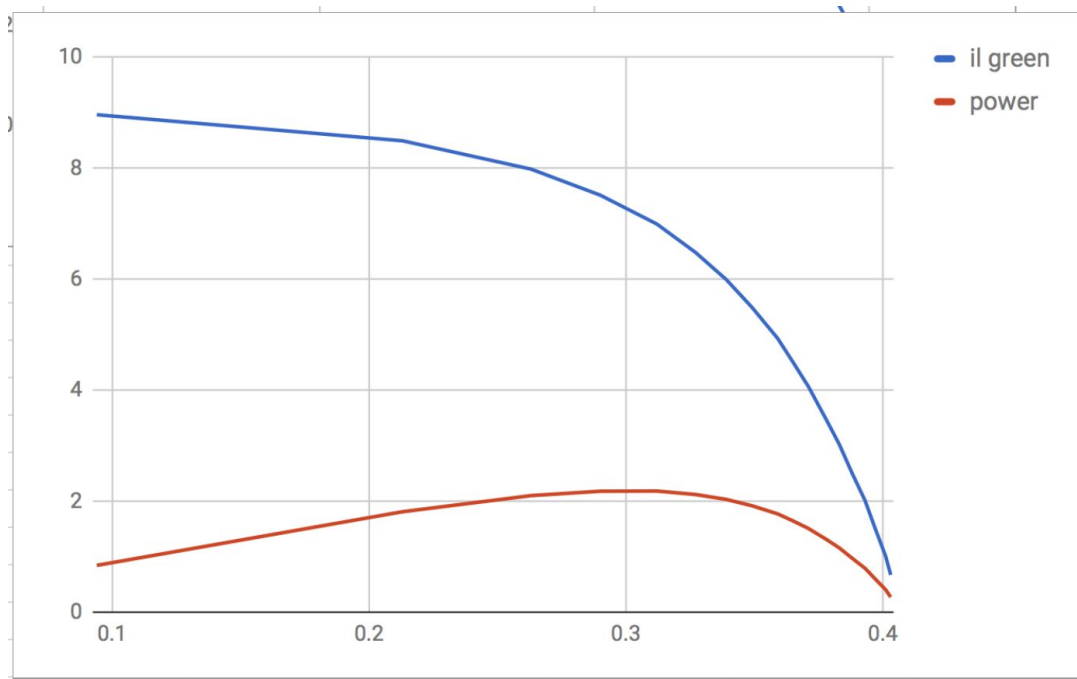




Q2. From the data from Part 2, Plot i as a function of V . From this graph find I_{sc} and V_{oc} for two intensities I_1 and I_2 .



VL is on x axis

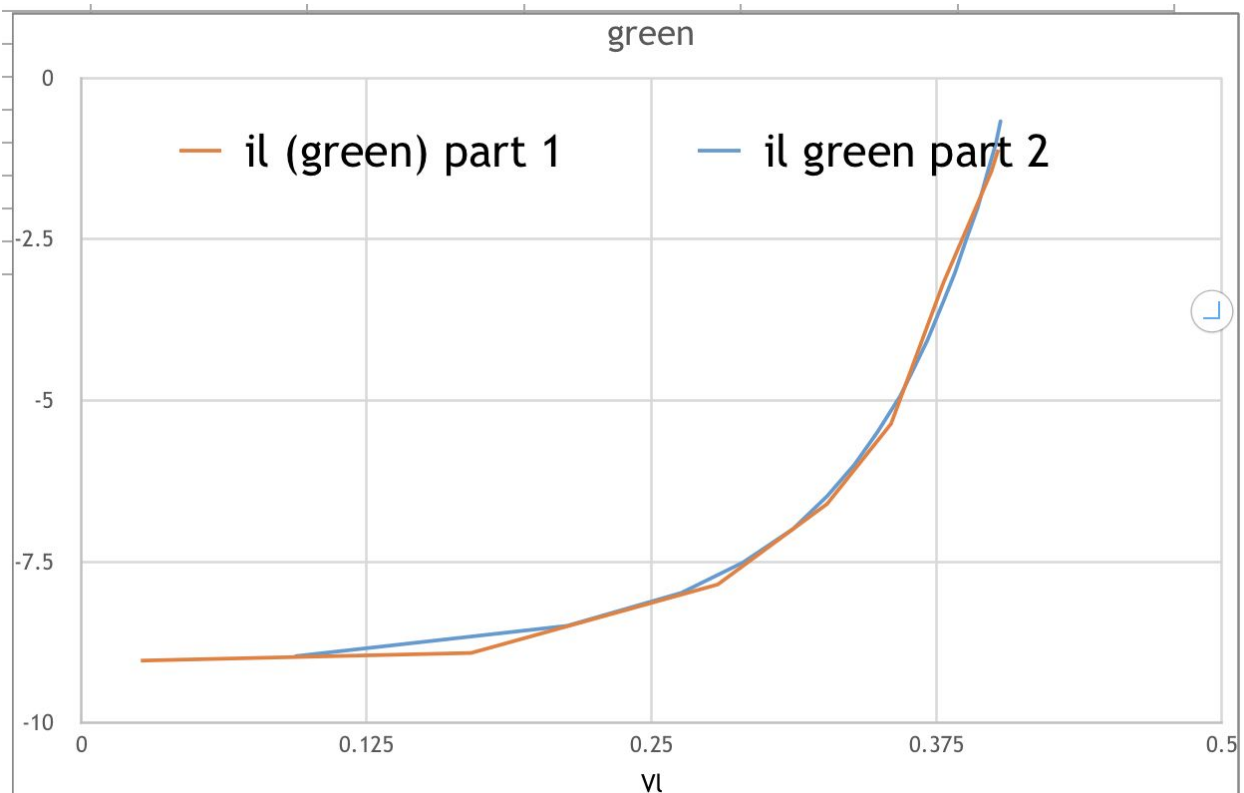


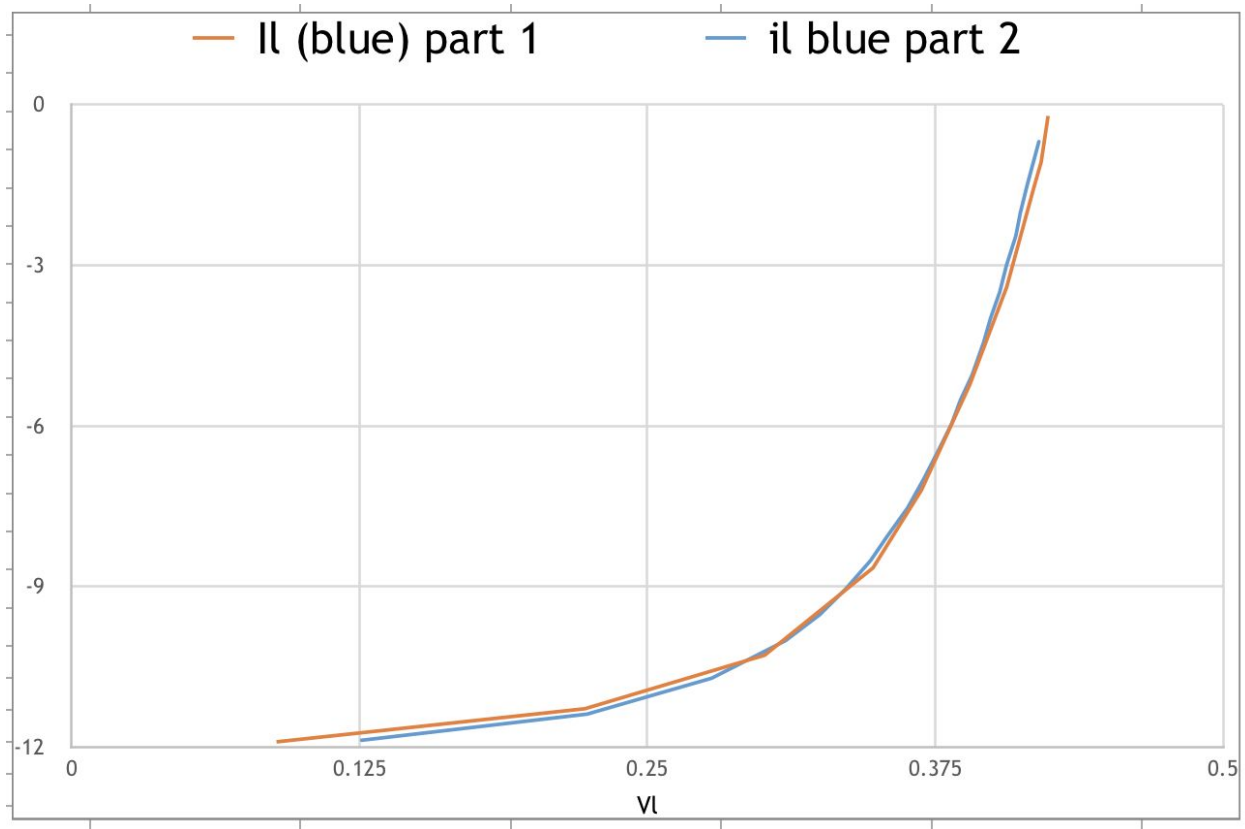
VL is on x axis

Q3. Using the data collected in Part 2, plot Power P as a function of V on the same plot obtained above. Determine the voltage V_{MP} at which the power P reaches maximum. Find the current I_{MP} at the maximum power point. Using I_{MP} and V_{MP} , calculate the fillfactor as, $FF = I_{MP} * V_{MP} / (I_{sc} * V_{oc})$.

Intensity	V_{oc}	$I_{sc}(mA)$	V_{mp}	$I_{mp}(mA)$	FF
green	0.429	9.83	0.311	6.41	0.472
blue	0.474	13.01	0.353	9.09	0.5203348933

Q4. Superimpose the readings of Part 1 obtained in the fourth quadrant and readings obtained in Part 2. Do they match?





Q5 Plot I_{sc} v/s light intensity (LED current) and V_{oc} v/s log intensity (LED current). Comment on the nature of the graph.

Comments:

V_{oc} increases logarithmically with I_{led} . I_d varies exponentially with V_d , and I_d and I_{led} are linear so So logarithmic variation is justified.

I_{sc} increases linearly with I_{led} , increasing I_{led} increases the intensity of incident light generated thus IL increases linearly.

