

I-V Characteristics of Solar Cell (II)



General Aim

To study the illumination dependence and the exposed area dependence of the I-V characteristics of the solar cell.

Method

A simple dc circuit with bias voltage, solar cell, variable resistance, ammeter, voltmeter, lamp and ac power supply to operate the lamp, variable area chopper plate.

Learning Objectives (ILOs)

- Describe the construction and operation of the PV cell.
- Enumerates the different factors that may affect the operation of the PV cell.

Theoretical Background/Context

Solar cells are generally made from semiconducting materials, which are sensitive to structural and environmental factors, e.g, the light intensity, which depends on the power delivered by the solar cell.

Principle of Work

By varying the ac voltage applied to the cell and measuring the short circuit current as a function of the lamp' voltage, we can study the effect of the light intensity on the short circuit current obtained from the cell. In the second part, a chopper plate of controllable area limits the exposed area of the cell to the light intensity, allowing us to study the dependence of the I-V characteristics and the cell parameters maybe also studied.