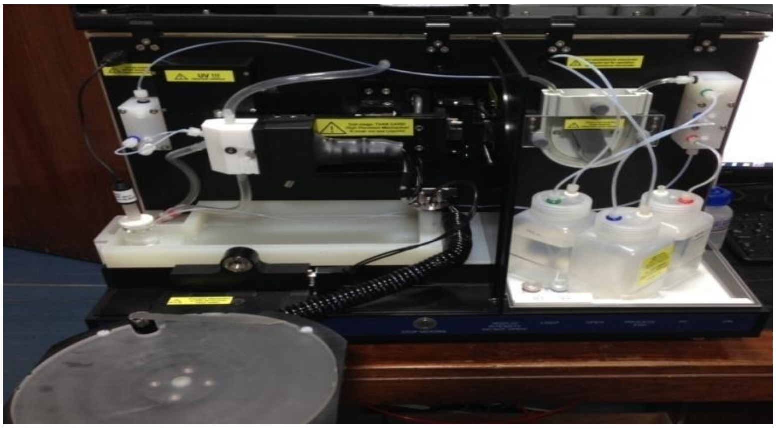
Measurement of: Junction depth in silicon solar cell

Equipment: Electrochemical Capacitance Voltage Profiler (Model CVP21, M/s WEP, Germany)

Property Measured: Carrier concentration as a function of depth (n- and p-conductivity type)

Photograph



Basic Principle: Doping profile is measured by Electrochemical Capacitance Voltage (ECV) Profiling. This technique is used to measure the active carrier concentration profiles in semi-conductor layers. It uses an electrolyte-semiconductor Schottky contact to create a depletion region, a region which is empty of conducting electrons and holes, but contains ionized donors and electrically active defects or traps and behaves like a capacitor. The capacitance measurement provides information about doping. Depth profiling is achieved by electrolytically etching the semiconductor between the capacitance measurements.

Capabilities: Depth profile and junction depth determination

1. Carrier concentration 10^{13}-10^{20} cm^{-3}
2. Depth: 0.05 µm to 20 µm

Sample Requirement: Sample Size: 4 cm^2 to 180 cm^2 wafer