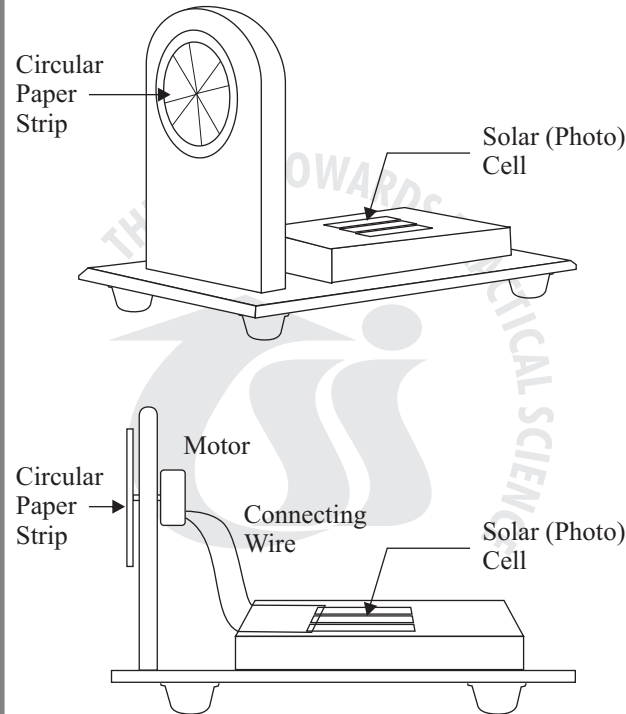


SOLAR CELL MODEL

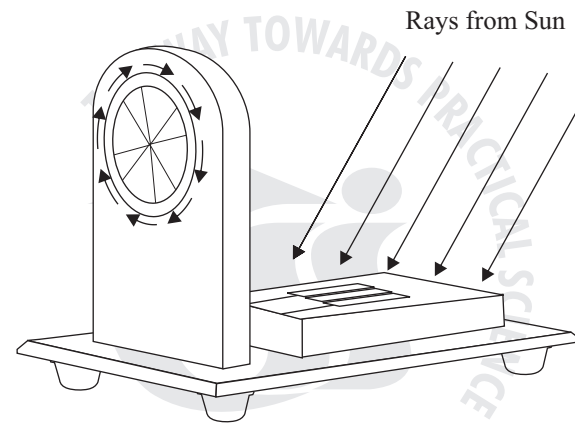
Photo Electric Effect

Assembly : Consists of 4 solar cells. Each cell is 30 mm in length and 6 mm in width. These 4 cells are connected in series. The cells are enclosed in a plastic case. The ends of the cells are connected to a DC motor. The cells and motor are fixed to a L shaped black acrylic assembly.

A circular paper strip is fixed to a plastic pulley. This pulley is inserted to the motor shaft.



To do and observe



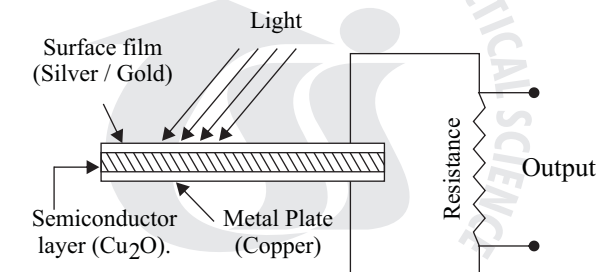
Hold the whole assembly exposed to the sunlight. As soon as the sunlight falls on the cells, you will notice that the circular paper strip starts rotating.

What is going on?

When sunlight falls on the solar cells, they generate electricity. Since these cells are connected to a DC motor, it starts rotating. This is seen by the rotation of the paper strip fixed to the motor.

SOLAR CELL : (Photovoltaic Cell)

It consists of a layer of semiconductor material spread over a metallic surface by heat treatment. In one type of the photovoltaic cell, the metal plate is made of copper and the semiconductor is cuprous oxide (Cu_2O). On the other side of the semiconductor there is a very thin layer of translucent deposit which allows the semiconductor to be illuminated by radiations. Light falling on the surface film (of Gold / Silver), penetrates into it and ejects photoelectrons from the semiconductor layer. These electrons move towards the surface film. Then the surface film becomes negatively charged and the metal plate becomes positively charged. So a potential difference is generated between the two and the current is set up in the external circuit. The strength of the current is proportional to the intensity of light. Photovoltaic cell converts light energy into electric energy.



- HALLWACH discovered that whenever light rays of suitable frequency are allowed to fall on metal plates, electrons are emitted out of the metal plates.
- On the basis of experiments LENARD gave laws of photo emission.
- Einstein (in 1905) explained photoelectric effect (or laws of photo emission) on the basis of Max Planck's Quantum Theory of Radiation for which he was awarded Nobel Prize.

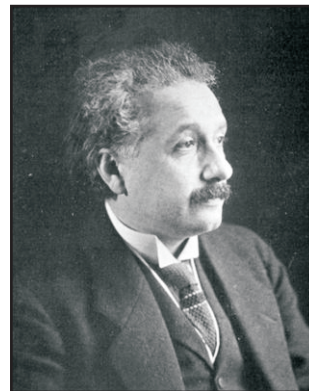


Phillip Lenard

Born June 7, 1862
 Pressburg, Hungary
 Died May 20, 1947 (aged 84)
 Messelhausen, Germany
 Field Physicist
 Known for Cathode rays (electron beams)
 Notable prizes Nobel Prize for Physics (1905)



TARANG SCIENTIFIC INSTRUMENTS



Einstein

Born March 14, 1879(1879-03-14)
 Ulm, Württemberg, Germany
 Died April 18, 1955 (aged 76)
 Princeton, New Jersey
 Known for General relativity
 Special relativity
 Brownian motion
 Photoelectric effect
 Mass-energy equivalence
 Einstein field equations
 Unified Field Theory
 Bose–Einstein statistics
 EPR paradox



TARANG SCIENTIFIC INSTRUMENTS



SOLAR CELL MODEL

TARANG SCIENTIFIC INSTRUMENTS

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