

## Implementation of a new method for measuring quantum efficiency

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In this research, the design and manufacturing process of solar cell is an important method of solar cell characterization in different wavelengths. This measurement gives researchers important information about light absorption and energy conversion in the solar cell. This method is quantum efficiency measurement, EQE or IPCE. Device designed and built using a set of light-emitting diodes whose light is parallelized using an equalizer, can provide monochromatic light in 17 separate wavelengths in the range of 390 to 940 nm, which can be used together with a reference solar cell, this system can be used to measure the quantum efficiency of various types of solar cells and photo electrochemical cells for hydrogen production.

### Technical Specifications

- . Voltage: 220 V AC
- . Electricity Power consumption: 10 watts
- . Wavelength range: 390 to 940 nm
- . Number of wavelengths: 17 wavelengths
- . Dimensions of the light beam: 4 square centimeters

It has software that can be installed on Windows operating systems

### The technical complications of such a device include the following:

- Designing a light source with a suitable spectrum
- Light source design with uniform spatial distribution
- Designing the optical system for uniformizing the output light beam
- Suitable power supply for halogen lamps with good time stability



Figure 1. Quantum efficiency measuring device at opticoniroo company

## References

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