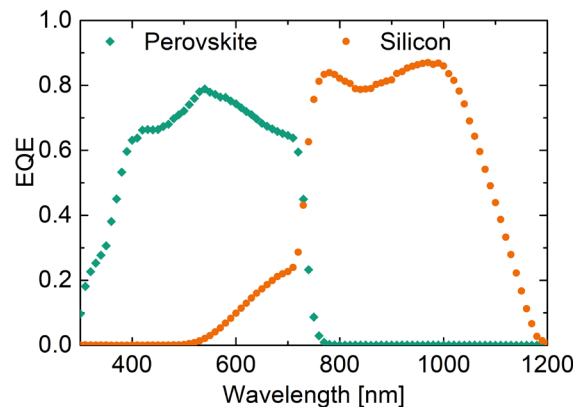


# SpecLab EQE Measurement System

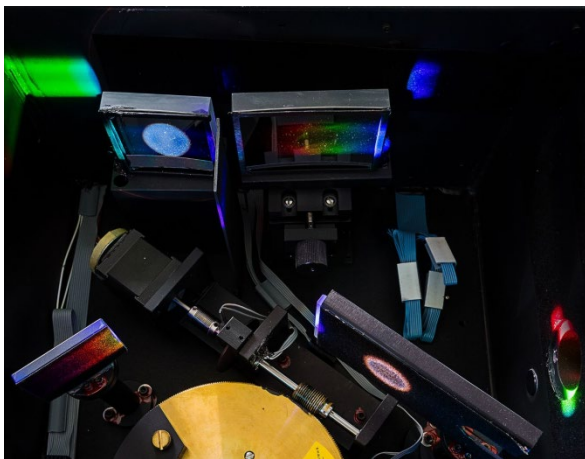
External quantum efficiency (EQE) measurements find widespread application for solar cell characterization. They yield depth dependent information on cell properties and quality and they enable single cell characterization in multi junction devices.

Fraunhofer ISE developed the SpecLab EQE system for the determination of the external quantum efficiency of solar cells. The use of high-quality individual components ensures a wide range of applications.

Single and multi-junction solar cells can be measured. Even the basic system with a single monochromator provides good resolution, dispersion and stray light suppression.



EQE of a perovskite/silicon tandem cell.



Inside the monochromator.

A hardware extension of the system makes it possible to perform constant photocurrent measurements (CPM). With the CPM method the sub bandgap absorption in a material can be measured. For example, the CPM method can be used to determine the number of defect states in the bandgap.

## Basic System Specifications

- measurement of single- and multi-junction cells
- 100 W Xe arc lamp with intensity controller
- single or double monochromator
- three gratings
- stray light  $< 3 \cdot 10^{-5}$  at 250 nm
- 0.1 nm wavelength resolution and accuracy
- single beam setup for EQE measurement
- bias illumination with color filters
- digital lock-in amplifier
- reference diode(s)
- full windows compatible measurement software with graphical user interface
- user manual

## Optional

- integrating sphere
- temperature controlled measurement block
- constant photocurrent method (CPM) extension



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