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External Quantum Efficiency

The measurement of External Quantum Efficiency (EQE) is a useful tool to investigate the performance of photosensitive devices such as solar cells or CCD sensors. The quantum efficiency (QE) is defined as the percentage of photons that hit the active region of the device, that will contribute to the production of electron-hole-pairs. Since the measurement is dependent on the photons energy the EQE gives valuable information about the devices sensitivity to light of different wavelengths which can be of special interest for a variety of applications, e.g. photovoltaic research where the QE relates to the response of the solar cell to illumination at a specific wavelength.

The theoretical details of the QE measurement will be explained as well as the experimental setup that is available for use at the material science department. For further understanding the basic principles of Lock-In technology and spectral mismatch correction are described.