



Press release – WaferCheck 150

For immediate release
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Measurement System for Time-Resolved Photoluminescence (TRPL)

PicoQuant introduces the new version of the Semiconductor Wafer Analysis System WaferCheck 150.

For high quality semiconductor devices such as heterojunction bipolar transistors, sensitive photodetectors, photovoltaic collectors, solar cells, efficient laser diodes or bright light emitting diodes, a precise measurement of the material characteristics is required. Among a variety of possible parameter to be tested, the electron-hole recombination rate is perhaps the most important one. Indeed the length of time a photo-excited carrier can remain in the conduction (=valence) band is an important parameter directly related to material quality, purity, doping level and device performance.

Among a variety of existing methods to measure the carrier lifetime, the TRPL as it is implemented on PicoQuant's WaferCheck 150 has many advantage over the other methods: it is contactless, highly sensitive, sub-nanosecond resolved, non destructive and it involves just light as a probe. Furthermore, it can be used on any type of sample, from raw material to devices and structures. The state of the art WaferCheck 150 allows TRPL to be used in any lab or production line in semiconductor research or manufacturing.

The Wafer Check 150 is designed for 10 cm wafers (other sizes on request) and allows TRPL on semiconductor material, for research, testing and quality control. The system is based on the method of Time-Correlated Single Photon Counting (TCSPC) and uses picosecond diode lasers as well as single photon sensitive detectors for highest accuracy and sensitivity.

The excitation source can be chosen among a variety of picosecond pulsed laser diode (LDH series) heads, covering a range of excitation wavelength from 375 nm to 800 nm. An integrated laser power meter allows a real time control of the excitation level.

The emission is spectrally filtered by high quality filters. As detector, a fast and reliable photomultiplier tube (PMT) can be used, allowing detection of decay times down to 60 ps. Even faster decays down to 10 ps can be resolved using a multi-channel plate photomultiplier (MCP-PMT). The high-end electronic stand-alone module PicoHarp 300 is used for recording fluorescence decays by means of Time-Correlated Single Photon Counting (TCSPC). All data acquisition functions of the WaferCheck 150 are controlled by an easy-to-use software for Windows and data analysis is done using FluoFit which allows analysis of complex decay patterns.

Attachement

picture of the product, 300 dpi

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About PicoQuant GmbH

PicoQuant GmbH is a research and development company, founded in 1996 and based in the Technology Park Berlin-Adlershof, Germany. Furthermore PicoQuant Photonics North America Inc. (PQPI) was established in April 2008. The company is leading in the field of Single Photon Counting Applications. The product line includes pulsed light sources, photon counting instrumentation, fluorescence lifetime spectrometer and time-resolved confocal microscopes. It employs around 40 people.