

Press Release

Polarization-controlled VCSEL testing

A new one-shot process makes it possible to exploit the full power efficiency of VCSELs/lasers, at the same time guaranteeing safe operation.

Munich, April 2022 – *At LASER WoP 2022 Instrument Systems will be presenting its latest VTC 4000 infrared camera for the near-field analysis of narrow-band emitters, e.g. VCSELs or lasers. Industry-standard VCSELs emit in more than one polarization state, each with different polarization angles, thus impeding error-free measurement. Thanks to a new one-shot process, the VTC 4000 simultaneously measures the spatial polarization of single emitters of an array and supplies the necessary information to reduce the polarization dependency of the measurement setup. This procedure minimizes the error budget of the VCSEL test system and provides highly accurate measured values for the eye safety of the laser source. This enables manufacturers to exploit the full power efficiency of VCSELs/lasers while guaranteeing safe operation. Come and visit us at Booth A6.221.*

VCSELs are components with an intrinsic single-longitudinal mode, and normally exhibit complex polarization properties. The light they emit is typically linearly polarized along one of two orthogonal directions. If the temperature or bias current changes, abrupt polarization switching can be observed. VCSELs thus emit in more than one polarization state, so that their polarization angle cannot be controlled. This polarization dependency should be taken into account in the measurement of magnitudes and absolute power, in order to minimize the error budget of the VCSEL test system and guarantee highly accurate readings.

The VTC 4000 near-field camera from Instrument Systems was specially developed for the ultrafast, precise 2D analysis of VCSEL arrays. It permits the polarization-controlled, simultaneous characterization of all relevant parameters for the single emitters of the array. Due to a unique calibration concept, the 2D quality analysis is performed with an unprecedented measurement accuracy. This concept is based on flat-field and polarization correction, and corrects the polarization dependence of the optical system. The VTC 4000 thus calibrated enables absolute measurement of power and the polarization properties of each single emitter within the field of view in a one-shot process.

Like all measuring equipment from Instrument Systems, the VTC 4000 camera is traceably calibrated to national standards (PTB) and delivers readings with absolute precision. Its minimum error budget for power measurement results in a measurement accuracy that is unmatched by any other VCSEL measuring system currently on the market.

Visit us at Booth A6.221 at LASER World of Photonics in Munich from 26–29 April 2022.

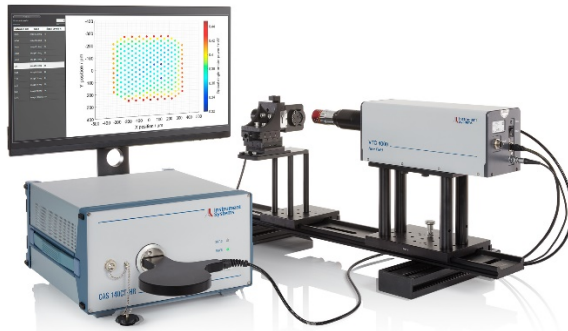


Figure: The VTC 4000 without fiber can determine the power, polarization and spatial radiation properties of single emitters. An additional fiber output also enables the analysis of wavelengths with a spectrometer.

Text material and images:

<https://instrumentsystems.owncloud.online/index.php/s/0JA3p1NGrx4ONH5>

Company portrait of Instrument Systems GmbH

Instrument Systems GmbH, founded in Munich in 1986, develops, manufactures and markets all-in-one solutions for light measurement applications. Its core products are array spectrometers and imaging colorimeters. The company's main fields of activity are LED/SSL and display metrology, spectral radiometry and photometry, as well as laser/VCSEL characterization where today Instrument Systems is one of the world's leading manufacturers. The Optronik line of products for the automotive industry and traffic technology is developed and marketed at its Berlin facility. Instrument Systems has been a wholly-owned subsidiary of the Konica Minolta Group since 2012.

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