

Press Release

Spectral characterization of VCSELs, microLEDs and AR/VR displays

At SPIE Photonics West 2023, Instrument Systems will be displaying fast, high-resolution spectroradiometers in combination with innovative camera systems for the measurement of VCSELs, microLEDs and AR/VR displays.

Munich, December 2022 – *At booth 4106 at SPIE Photonics West 2023 (USA) Instrument Systems will be showcasing its premium-class spectroradiometers and combined measurement solutions with absolutely calibrated cameras. Different model variants of the spectrally enhanced LumiTop 2D imaging colorimeter are available and are ideally suited to μ LED array testing. The LumiTop AR/VR with periscope lens permits parallel 2-eye measurements for AR/VR headsets, even in confined spaces. Thanks to the innovative one-shot process, the VTC infrared camera simultaneously measures the spatial polarization of the individual emitters of a VCSEL array and delivers the information necessary to reduce the polarization dependence of the measurement setup. All systems are available for lab use and production applications with a focus on faster takt times. At the concurrent SPIE AR/VR/MR conference, Instrument Systems will be contributing a poster presentation on the subject of “Validating distortion measurements of wide-field-of-view near-eye displays.”*

Optical tests for AR/VR headsets

A perfect user experience with AR/VR headsets calls for extensive fast, high-precision optical testing in production. With this challenge in mind, Instrument Systems offers the specially developed LumiTop AR/VR 2D imaging colorimeter. The AR/VR lens of the LumiTop simulates the human eye as realistically as possible and measures color and luminance as seen by the eye. The unique periscope design enables synchronized 2-eye measurements. The proven LumiTop principle guarantees fast, traceable and highly accurate measurements. Instrument Systems will also be contributing a technical talk at the concurrent SPIE AR/VR/MR Conference. The subject of the paper delivered by Dr. Tobias Steinell will be “Validating distortion measurements of wide-field-of-view near-eye displays.”

Polarization-controlled VCSEL testing

At Photonics West 2023 Instrument Systems will be presenting its recent award-winning VTC 4000 infrared camera for the near-field analysis of narrow-band emitters such as VCSELs or lasers. Industry-standard VCSELs emit in more than one polarization state with different polarization angles, thus obstructing error-free measurement. Thanks to the innovative one-shot process, the VTC 4000 simultaneously measures the spatial polarization of individual emitters of an array and delivers the necessary information, in order to reduce the polarization dependence of the measurement setup. This procedure minimizes the error budget of the VCSEL test system and delivers highly accurate readings for eye safety of the

laser source. Manufacturers can then exploit the full performance efficiency of VCSELs/lasers while guaranteeing safe operation.

Measurement system for μ LED testing cancels out heating effect

The spectrally enhanced LumiTop 4000 2D imaging colorimeter is perfectly suited to the testing of μ LED arrays in AFS applications. The 12 MP camera simultaneously measures the individual LEDs of the array and, due to its high measurement speed, avoids the temperature dependence of high-performance LEDs. In combination with a CAS 140D high-end spectroradiometer, the system – calibrated to luminance (in cd/m^2) – delivers highly accurate readings. It is thus ideal for the quality control of uniformity, brightness and color in μ LED arrays.

SPIE Photonics West 2023, Booth 4106

28 January – 2 February 2023, San Francisco, USA

SPIE AR/VR/MR, Booth 107

30 January – 1 February 2023, San Francisco, USA

Daily poster session, Presentation 12449-110, 5:30 - 7:00 PM PST

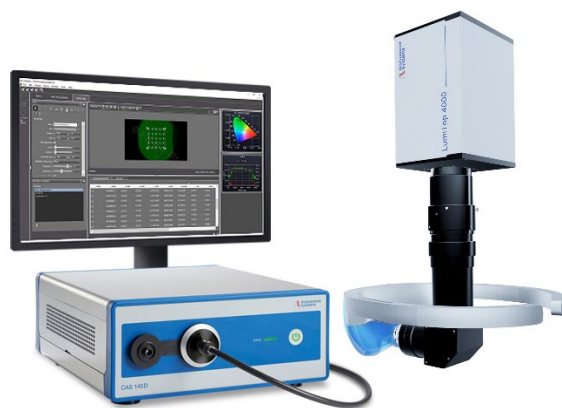


Figure: LumiTop system for the measurement of AR/VR displays.

Text material and images:

<https://instrumentsystems.owncloud.online/index.php/s/4YtZLNMG2nLp244>

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 Instrument Systems is today 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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