

CIE-USNC Annual Meeting
November 17, 2020 (Virtual)



Division 2

Physical Measurement of Light and Radiation

Report to CIE-USNC Annual Meeting

Yuqin Zong
D2 Country Member USA

2019 - 2023 Division 2 Officers

Division Director	Tony Bergen (AU)
Division Secretary	Dong-Hoon Lee (KR)
Division Editor	Thiago Menegotto (BR)
Associate Director	Hiroshi Shitomi (JP)
Associate Director	Armin Sperling (DE)
Associate Director	Joanne Zwinkels (CA)

D2 Technical Committees

2-59 Characterisation of Imaging Luminance Measurement Devices

2-62 Imaging-Photometer-Based Near-Field Goniophotometry

2-67 Photometry of Lighting and Light-Signalling Devices for Road Vehicles

2-68 Optical Measurement Methods for OLEDs used for Lighting

2-75 Photometry of curved and flexible OLED and LED sources

2-77 Fundamental Concepts

2-78 The Goniophotometry of Lamps and Luminaires

2-79 Integrating sphere photometry and spectroradiometry

2-80 Spectroradiometric measurement of light sources.

2-81 Update of CIE 065:1985 (Absolute Radiometers)

2-82 Revision of CIE S 014-2

2-84 Recommendations on LED package test data reporting

<http://cie.co.at/technical-work/divisions/division2/technical-committees>

D2 Technical Committees

2-85 Recommendation on the geometrical parameters for the measurement of the Bidirectional Reflectance Distribution Function (BRDF)

2-86 Glare Measurement by Imaging Luminance Measurement Device (ILMD)

2-89 Measurement of Temporal Light Modulation of Light Sources and Lighting Systems

2-90 LED Reference Spectrum for Photometer Calibration

2-91 Optical Measurement Methods of LED Packages and LED Arrays

2-92 International Standard Format for the Electronic Transfer of Luminaire Optical Data

2-93 Revision of ISO 23539:2005(E) / CIE S 010/E:2004 Photometry - The CIE system of physical photometry

2-94 Measurement of Total Transmittance, Diffuse Transmittance and Transmittance Haze

JTC 01 (D4/D1/D2) Implementation of CIE 191:2010 Mesopic Photometry in Outdoor Lighting

JTC 08 (D1/D2/D3/D4/D5/D6/D8) Terminology in light and lighting

JTC 12 (D2/D1/D8) The measurement of sparkle and graininess

JTC 17 (D1/D2/D8) Gloss measurement and gloss perception: A framework for the definition and standardization of visual cues to gloss

JTC19 (D6/D2) Terms and Definitions of Horticultural Lighting

D2 Technical Committees

- **TC 2-87** was closed
- **TC 2-62**, from Udo Krüger to Knut Bredemeier
- **TC 2-86**, from Chris Chen to Jan Wienold
- Four TCs are assigned as urgent TCs: **TC 2-86**, **TC 2-89**, **TC 2-90**, **TC 2-93**.

Current US participation in D2 activities

Activity	Title	US Member
	CIE	Y. Ohno (past president)
L2-1	CCPR - Consultative Committee of Photometry and Radiometry	Y. Ohno (liaison)
L2-5	ISO on reflectance and transmittance issues	D. Rich (liaison)
TC 2-59	Characterisation of Imaging Luminance Measurement Devices	Y. Zong (member)
TC 2-62	Imaging-Photometer-Based Near-Field Goniophotometry	Y. Zong (member)
TC 2-78	The Goniophotometry of Lamps and Luminaires	Y. Zong, not an official member
TC 2-79	Integrating sphere photometry and spectroradiometry	Y. Zong, Y. Ohno (members)
TC 2-80	Spectroradiometric measurement of light sources	Y. Zong (member)
TC 2-84	Recommendations on LED package test data reporting	Y. Zong (member)
TC 2-90	LED Reference Spectrum for Photometer Calibration	Y. Zong (member)
TC 2-91	Optical Measurement Methods of LED Packages and LED Arrays	Y. Zong (member)
TC 2-93	Revision of ISO 23539:2005(E) / CIE S 010/E:2004 Photometry - The CIE system of physical photometry	Y. Ohno (member)

* **G. Eppeldauer retired.**

* **The list may not be complete; Richard Austin and Tom Larason may be members of some TCs.**

2019 - 2020 D2 Publications

- **CIE 241:2020** Recommended reference solar spectra for industrial applications
- **CIE 239:2020** Goniospectroradiometry of optical radiation sources
- **CIE 238:2020** Characterization of AC-driven LEDs for SSL applications
- **CIE 237:2020** Non-linearity of optical detector systems
- **CIE 235: 2019** Optical measurement of LED modules and light engines
- **CIE S 025-SP1/E:2019** Test method for OLED luminaire and OLED light sources
- **CIE TN 010:2019** Determination of the optical beam axis, center beam intensity, and beam angle of directional light sources
- **CIE TN 009:2019** The use of “accuracy” and related terms in the specifications of testing and measurement equipment

TOTAL: 4 TRs, 1 CIE Standard, 2 TNs

<http://cie.co.at/technical-work/divisions/division2/division-publication>

2019 - 2020 Meetings

July 28, 2020

CIE Tutorials on Colorimetry and Visual Appearance

- Measurement BRDF and sparkle and graininess

<http://cie.co.at/news/cie-tutorials-colorimetry-and-visual-appearance>

CIE Colorimetry

Convener: Professor Youngshin Kwak

3D Printing

Convener: Dr Kaida Xiao

Measurement of Advanced BRDF

Convener: Dr Gael Obein

Measurement of Sparkle and Graininess

Convener: Dr Alejandro Ferrero

August 25-26, 2020

CIE/ICNIRP online tutorial on the measurement of optical radiation and its effects on photobiological systems

<http://cie.co.at/news/cieicnirp-online-tutorial-measurement-optical-radiation-and-its-effects-photobiological-systems>

General Topics
<i>Introduction and welcome</i> – Tony Bergen (AU), Luc Schlangen (NL)
<i>Looking to the future - what are pressing research needs?</i> – Jennifer Veitch (CA)
<i>Wrap-up: Summary and conclusion</i> – Tony Bergen (AU), Luc Schlangen (NL)

Division 6 Topics (Photobiology and Photochemistry)	Division 2 Topics (Physical Measurement of Light and Radiation)
<i>Why do we do the measurements, what do we need to measure?</i> – John O'Hagan (GB)	<i>Fundamentals of measurement, terms, units and traceability</i> – Peter Blattner (CH)
<i>Fundamental processes in photobiology</i> – Nigel Cridland (GB)	<i>Fundamentals of measurement uncertainty</i> – Tony Bergen (AU)
<i>Action spectra and dose-response relationships in human photobiology</i> – Frank de Gruijl (NL)	<i>Types of detectors and detector technologies</i> – Dong-Hoon Lee (KR)
<i>Introduction to ICNIRP and recommended exposure limits</i> – Sharon Miller (US)	<i>Types of spectrometers, their characterization, calibration and use</i> – Ralf Zuber (DE), Peter Sperfeld (DE)
<i>Blue Light Hazard - What does it really mean?</i> – John O'Hagan (GB)	<i>Other types of measurement equipment</i> – Anders Thorseth (DK)
<i>Rod-, cone- and melanopsin-based metrology (CIE S 026) to quantify light for its non-visual responses</i> – Luc Schlangen (NL)	<i>Gathering personal light exposure data</i> – Juliëtte van Duijnhoven (NL)
<i>Circadian and sleep effects of short wavelength light</i> – Christian Cajochen (CH)	<i>Wearable light sensors</i> – Vineetha Kalevala (MY)
<i>The Importance of spectral bandwidth in determining action spectra and safety measurements – with special emphasis on the inactivation of SARS-CoV-2 by sunlight</i> – David Sliney (US)	<i>Worked example of measurements to IEC 62471/CIE S 009 Photobiological safety of lamps and lamp systems</i> – Leslie Lyons (GB)
<i>Radiance, blue-light hazard and retinal thermal hazard</i> – Karl Schulmeister (AT)	<i>Photobiological safety of (LED) lamps and lamp systems: informative parts within the IEC 62471/CIE S 009 revision</i> – Hiroshi Shitomi (JP)
<i>Photobiological safety of (LED) lamps and lamp systems: normative parts within the IEC 62471/CIE S 009 revision</i> – John O'Hagan (GB)	<i>How to report measurements: the importance of a uniform language</i> – Mariëlle Aarts (NL)

November 12-13, 2020

CIE workshop on the calculation and measurement of obtrusive lighting

<http://cie.co.at/news/cie-workshop-calculation-and-measurement-obtrusive-lighting>

	WORKSHOP ON CALCULATION AND MEASUREMENT OF OBTRUSIVE LIGHT	
	Thursday 12.11.2020	Friday 13.11.2020
Morning	General aspects and considerations	Measurement instrumentation and methods
Afternoon	Calculation models and tools Practical calculation	Effects of obtrusive light to humans, fauna and flora
Evening	Practical measurement	Summary and outcomes

CIE D2 Annual Meeting

Part 1: July 16, 2020, status review

Part 2: August 27, 2020, planning

- **One (1) new TC and One (1) new JTC proposals**
- **Three (3) new reportership proposals**

New TC for Revision of CIE S 023/E:2013

- Proposal by
- **Title:** Revision of ISO/CIE 19476:2014: Characterisation of the performance of illuminance meters and luminance meters
- **Proposed TCC:**
- **Status:**
Commenting and ballot will start soon

New JTC (D3/D2) proposal

- Proposal by: D3
- Title: **Spectral daylight characteristics**
- ToR:
- Scope:
- Proposed TCC:

New D2 Reportships

- **Terminology in single/few photon metrology**
Dong-Hoon Lee (KR)
- **Validation of a novel web platform for the calculation of CIE quantities**
Manuel Spitschan (UK)
- **Temperature quantities used in colour appearance properties of light sources**
Richard Young (UK)

Future D2 Meetings and Symposia

- 2021** **D2 meetings** in connection with **CIE Midterm Meeting**
September 26 – October 2, 2021
Kuala Lumpur, MALASIA
- 2023** **D2 meetings** in connection with **CIE 2023, 30th**
September 2023 **Quadrennial Session**, SLOVENIA

THANK YOU