Optical Radiation News

Published by the COUNCIL for OPTICAL RADIATION MEASUREMENTS (www.cormusa.org) to report items of interest in optical radiation measurements. Inquiries may be directed to the Editor, John D. Bullough, Lighting Research Center, Rensselaer Polytechnic Institute, 21 Union St., Troy, NY 12180. Tel: 518-687-7100 Fax: 518-687-7120 e-mail: bulloj@rpi.edu.

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Announcement and Call for Papers

CORM 2019 Annual Technical Conference
and 12th Biennial Joint Meeting of the CNC/CIE and USNC/CIE
October 28 – 31, 2019
National Research Council, Ottawa, Ontario, Canada

Monday, Oct. 28	AM: CORM 2019 - Sessions I & II PM: CORM 2019 – Session III PM: CORM 9th Report – Invited Talks
Tues, Oct. 29	AM: CORM 2019 - Session IV AM – Lunch: CIE/CORM Joint Poster Session PM: CIE/CORM – Joint Sessions V & VI 6:00 PM: Evening – CIE/CORM Joint Reception (Museum of History) 7:00 PM: Franc Grum Memorial Lecture and Banquet (Museum of History) – Guest Speaker: Dr. Ian Ashdown (President, SunTracker Technologies)
Wed, Oct. 30	AM: CIE/CORM – Joint Sessions VII & VIII Lunch: CORM Business Meeting & Poster Award Announcement PM: NRC Lab Tours PM: CORM BOD Meeting
Thurs, Oct. 31	AM: CNC-USNC/CIE Plenary PM: Separate CNC and USNC/CIE Meetings

Conference Themes:
The session themes for CORM 2019 are:

- Session I: Current Research Activities at NMIs
- Session II: Environmental Radiometry
- Session III: UV and IR Radiation – Measurements, Concerns & Applications
- Session IV: Optical Properties of Materials.

There will also be invited talks on Priority Needs identified in the CORM 9th Report.

The session themes for CIE/CORM Joint Technical conference are:

- Session V: LED Lighting for Specialized, Industrial or Commercial Applications
- Session VI: Health and Well-Being Responses to Light and their Measurement
- Session VII: Interior and Exterior Lighting
- Session VIII: Vision and Colour

There will also be a CIE/CORM Joint Poster Session for Students/Emerging Professionals.

Session Chairs:

- CORM Session I: Dr. Angela Gamouras; angela.gamouras@nrc-cnrc.gc.ca
- CORM Session II: Dr. Carol Johnson; carol.johnson@nist.gov
- CORM Session III: Dr. David Sliney; david.sliney@att.net
- CORM Session IV: Dr. Heather Patrick; heather.patrick@nist.gov
- CIE/CORM Poster Session: Mark Jongewaard; mark@ltioptics.com

- CIE/CORM Session V: Yuqin Zong; yuqin.zong@nist.gov
- CIE/CORM Session VI: Dr. Jennifer Veitch; jennifer.veitch@nrc-cnrc.gc.ca
- CIE/CORM Session VII: Dr. Venkat Venkataramanam; vvenkat@imc.utoronto.ca
- CIE/CORM Session VIII: Dr. Jeffery Hovis; jeffery.hovis@uwaterloo.ca

Presentations and Posters:
Please send your abstract, via e-mail, to the relevant Session Chair indicated above. Please include a title, author(s) and a 150 word abstract.

Important Dates:
Abstracts are due **Friday, Aug. 9**. Presentation materials and presenter biography are due **Friday, Sept. 27**. Early-bird Registration Due **Wednesday, Sept. 4.** Late Registration (no exceptions) Due **Wednesday, Oct. 2.**

Proceedings:
PDF copies of the Conference presentations will be provided to attendees on USB drives at the Conference. As well, presentations of interest to the CORM, CNC/CIE and CIE-USNC communities will be placed on our respective websites. As such, your permission is requested to save and publish your 2019 presentation in pdf format on one or more of the participating organizations websites. A Presentation Release Request Form will be supplied to all presenters.

Award for Best Poster:
New for CORM 2019 is an award ($300 USD) for the best poster presented at the CIE/CORM Joint Poster Session for Students/Emerging Professionals.

Want to Exhibit your Products or Services?
This year's CORM and CIE/CORM Technical Conference will include exhibit opportunities. Attendees can reserve a 6' table with power to exhibit their products or services. There will be time for all attendees to visit the exhibits during breaks and at lunch at the 100 Sussex location and at the CIE/CORM Joint Reception at the Museum of History. Add the exhibit table to your registration for only $750 CAD (~$580 USD). Contact Tim Moggridge with your exhibit questions.

Registration: Registration is now open at the following link: https://www.eventbrite.ca/e/corm-2019-annual-technical-conference-and-12th-biennial-joint-meeting-of-the-cnccie-and-cie-usnc-tickets-62055576901. The EventBrite registration page includes useful information and links on the conference venue, list of Ottawa downtown hotels, guidelines for presenters, speaker requirements form, and details of the exhibit opportunities. This registration link will also be available at the websites of CORM (www.cormusa.org), the CNC/CIE (www.cnc-cie.ca), and the CIE-USNC (www.cie-usnc.org).

CORM 2019 Conference Coordinators:

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Shirley Coyle (Shirley.coyle@cree.com)

NEWS FROM THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

Photonic Dosimetry

Presently, a complicated measurement chain is needed to transfer national primary standards for absorbed dose, based on large Co-60 sources, to industrial and medical applications that use accelerators. Differences in energy spectra between these accelerator-based radiations and Co-60 can be quite significant, and necessitate correction factors that introduce additional uncertainties into measurement results. Moreover, the reliance on radionuclide sources carries significant financial costs and security concerns. These limitations and concerns have motivated researchers to develop novel pathways for realizing NIST-traceability for absorbed dose that would simplify the measurement chain and reduce dependence on radionuclides like Co-60. Such work is being undertaken by the Photonic Dosimetry project within the "NIST-on-a-Chip" program, which seeks to put measurement standards and sensors in the hands of end users. Towards this end, we have been testing the ability of various photonic devices to provide metrology-grade measurements of radiation quantities in high-radiation environments. Our recent results have indicated the challenges (non-linear dependence on radiation dose in fiber Bragg gratings) and opportunities (negligible radiation damage in silicon-on-insulator photonic resonators) for developing a variety of technologies, including calorimeters and integrating dosimeters, for medical and industrial dosimetry applications. [POC: Ronald Tosh, 301-975-5591, ronald.tosh@nist.gov]

Precise Temperature Measurement with Infrared Light

Members of NIST Sensor Science Division published an Optics Express paper that was publicized in phys.org [1] describing a new design for thermal-infrared radiation thermometer and sensors. In this design, critical optical elements such as the field stop, Lyot stop, collimating lens, and detector, are placed inside a thermally stabilized assembly that is controlled using thermo-electric coolers and thermistors. The radiation thermometer, which operates at room temperature, utilizes a pyroelectric detector which is spectral filtered from 8 µm to 14 µm and ZnSe lenses. The assembled radiation thermometer is calibrated using both variable-temperature fluid-bath and heat-pipe blackbodies from -45 °C to 75 °C and the use of a modified-Planck function and these blackbodies. The noise-equivalent temperature difference of this device is < 1 mK when measuring room- temperature objects and about 3 mK when measuring objects at -30 °C. The size-of-source effect both with and without the Lyot stop has been measured. This new design, during operations without the need for cryogenic cooling, demonstrates both sub millikelvin temperature measurement resolution with few millikelvin, week-long stable operations while measuring ambient-temperature objects.

[1] https://phys.org/news/2019-05-precise-temperature-invisible.html

For further information, contact Howard Yoon, 301-975-2482 (howard.yoon@nist.gov)

Presentations at the 29th Quadrennial Session of the International Commission on Illumination (CIE)

The 29th Quadrennial Session of the International Commission on Illumination (CIE) was held from June 14 to 22, 2019 in Washington DC. Presentations from NIST authors included the following titles:

- Innovative Approaches to Combat Healthcare-Associated Infections Using Standards Developed through Industry and U.S. Federal Collaboration, by C.C. Miller et al.
- Solid-State Lighting Measurement Assurance Program Summary with Analysis of Metadata, by M.E. Nadal et al.
- Not All 60 Hz Electricity is the Same – Complications in Measuring Solid-State Lighting Products, by B.K. Tsai et al.
- Calibration of Spectroradiometers Using Tunable Lasers, by Y. Zong et al.

Further information can be found at http://washington2019.cie.co.at/

NIST Measurement Services: Photometric Calibrations
NIST has published Special Publication (NST SP-250-96) describing NIST calibration services for submitted artifacts for luminous intensity, illuminance, color temperature, total luminous flux, luminous exposure and luminance and for issued calibrated standards for luminous intensity, luminance, and color temperature. The procedures, equipment, and techniques used to perform these calibrations are described in the publication. Detailed estimates and procedures for determining uncertainties of the reported values are also presented along with the internal quality control procedures. The publication is available at https://doi.org/10.6028/NIST.SP.250-95. [POCs, Cameron Miller (cameron.miller@nist.gov), Maria Nadal, Benjamin Tsai, and Yuqin Zong]

Visual Evaluation of CIE 2015 Cone Fundamental-Based 10° Color Matching Functions for Lighting Applications
The CIE 2015 cone fundamental-based color-matching functions (CMFs), especially the 10° CMFs, are expected to improve color matching in lighting applications. The chromaticity specifications for lighting products are based on the CIE 1931 CMFs (2° observer) and are given by correlated color temperature (CCT) and the distance from Planckian locus (Duv). To study the impact of introducing the CIE 2015 CMFs, computational analyses were first made to determine the degree of changes of CCT and Duv values for various LED lighting products. The results showed significant changes in both CCT and Duv. Then vision experiments were conducted to compare the CIE 2015 CMFs and the CIE 1931 CMFs for visual color matching of lights with various spectral distributions. The results showed that CIE 2015 10° CMFs performed better overall but also that there is a strong dependence on the age of subjects and the spectral distribution of light sources. [POCs: Yoshi Ohno (ohno@nist.gov) and Y.Kawashima, NIST; Y. Oh, and Y. Kwak, Ulsan National Institute of Science and Technology, Ulsan, South Korea]

Standard LEDS with Superior Long-term Stability
A large-chip standard LED with superior long-term stability have been developed at NIST. The standard LED uses a large, specialty die rated for 50 W but is operated under 3 W to eliminate aging effect. The standard LED was seasoned for one year and measured for its long-term stability for three years. The measurement result shows that the long-term stability is on the level of 0.1 % in the three-year time. The LED can be used as a transfer standard for luminous intensity, luminance, and total luminous flux. [POCs: Yuqin Zong (yuqin.zong@nist.gov), Weiqiang Zhao, C. Cameron Miller, NIST]

Successful NASA ER-2 Aircraft Flight Provides First Data Set of NIST Lunar Irradiance Measurements Near the Top of the Atmosphere

The reflectance of the moon is stable to a part in 10^8 per year, and as such the moon is routinely viewed by many Earth-viewing satellites to track optical/infrared relative sensor stability. To fully use the moon as a celestial spectral irradiance standard, calibration against NIST standards from ground-based observatories is an ongoing project. A major limiting factor for lunar calibration measurement from ground-based observatories has always been correction of the Earth's atmosphere. It has long been recognized that a better way to calibrate the lunar irradiance is from above the atmosphere, or as high up as one can get. In August a team of NIST scientists from the Sensor Science Division did just that: In the early-morning hours of August 2, NIST made the first spectral lunar irradiance measurements from above the Earth's atmosphere from a NASA ER-2 aircraft flying at 20 km altitude (which is above most of the atmosphere). A team of scientists from the Sensor Science Division developed a specialized instrument, called Air-LUSI (LUnar Spectral Irradiance), over the course of the past year. This involved integrating a NIST-calibrated spectrometer, integrating sphere, and custom-designed telescope system into a wing-pod of the ER-2 aircraft, re-calibrating it on-site at NASA Armstrong Flight Research Center in Palmdale, California, and programming its computer to operate autonomously to track the moon and measure lunar irradiance during the flight. These data, as well as additional data to be collected in the winter on follow-on flights, will act as tie points for validating and correcting the ongoing NIST mountain-based measurements. [POC: Steve Brown, steven.brown@nist.gov, 301-975-5167 and John Woodward, john.woodward@nist.gov, 301-975-5495].

NRC LIAISON REPORT

Few-Photon Metrology at NRC: Update

NRC has been continuing efforts in the establishment of a few-photon metrology capability for optical radiometry. In collaboration with NIST, NRC has established a new capability in single-photon detection. The construction of an optical fibre-coupled superconducting nanowire single-photon detector (SNSPD) system was completed at NIST Boulder in December 2018 and was successfully shipped to NRC in Ottawa, Canada (Fig. 1). This detector system contains high-efficiency single-photon detectors with wavelength sensitivity at 800 nm, 1064 nm and 1550 nm inside of a closed-cycle cryostat system. This detector system will be used for several purposes including as a reference standard fibre-coupled single-photon detector and in the characterization of NRC on-chip semiconductor nanowire quantum dot-based single-photon sources. These NRC-developed solid state single-photon sources have great potential to be used in absolute radiometry applications. NRC is working to evaluate these sources as new quantum standards as they may be utilized as deterministic photon sources for photodetector calibrations.

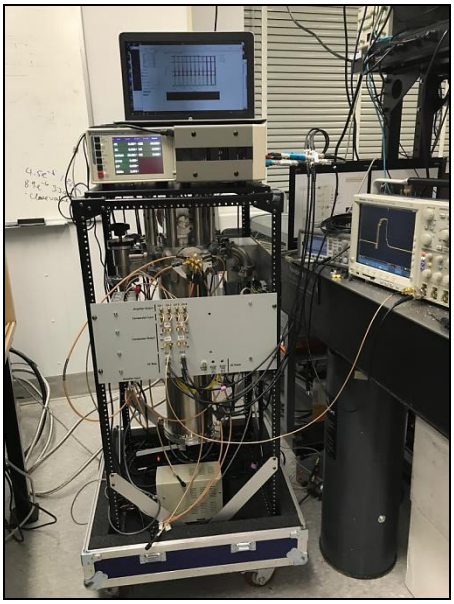

Fig 1. SNSPD system at NRC.

For further information, contact: Angela Gamouras, 613- 993-2489 (angela.gamouras@nrc-cnrc.gc.ca)

NRC-uOttawa Joint Centre for Extreme Photonics

The NRC and the University of Ottawa have created the NRC-uOttawa Joint Centre for Extreme Photonics (JCEP) that will foster increased collaboration between researchers at the two institutions. From NRC Metrology, Dr. Marina Gertsvolf and Dr. Angela Gamouras were named as JCEP Fellows. Dr. Gertsvolf will be working with Dr. Paul Corkum (uOttawa) on the development of solid state VUV frequency combs and Dr. Angela Gamouras will be working with Dr. Jean-Michel Ménard (uOttawa) on single-photon detection of terahertz radiation.

Postdoctoral fellow employment opportunities related to these projects will be advertised through the University of Ottawa in the summer of 2019.

For further information, contact: Angela Gamouras, 613- 993-2489 (angela.gamouras@nrc-cnrc.gc.ca)

CCPR-K3.2014 Key Comparison of Luminous Intensity: Update

NRC is serving as the pilot lab for the CCPR Key Comparison of luminous intensity using incandescent lamps as the travelling standards (CCPR –K3.2014). Twelve NMIs are participating in this international comparison and all the measurements (star comparison: travelling standards from NMI (round#1) to pilot and return to NMI (round#2)) have been completed. The measurements of all the participant lamps (68 lamps, 2 types) were performed at the pilot sequentially, using the same measurement setup for all lamps, over a time period of approximately 2 months. All of the CCPR pre-draft-A procedures have been completed. These involved verification of reported results, review of uncertainty budgets, review of relative data, identification of any outliers, and consistency check (using a Chi-Square (α=0.05) test) of the data. Participant consensus on this analysis is in its final stages. The Draft A comparison report (confidential for participants only) is in preparation.

For further information, contact Arnold Gaertner, 613-993-9344, (Arnold.gaertner@nrc-cnrc.gc.ca).

New NRC Calibration Services for Absolute Specular Reflectance in the IR Range

Complementing the long-established NRC absolute specular reflectance capabilities in the UV-visible-NIR region, we have extended these capabilities to the IR from 16 to 200 micrometers for selectable angles of incidence. These absolute measurements are performed using an IR reflectometer based upon the VW method to calibrate the absolute specular reflectance of an NRC aluminized reference mirror for the desired angle of incidence which is used, in turn, to calibrate client samples. This method has also been applied to our own metal oxide samples of Mgo, Mno and NiO. Representative results are shown in Fig. 2 for the MgO sample measured for an angle of incidence of 30 degrees. The large peak in reflectance that is observed at the short wavelength side is due to the LO and TO optic phonons in MgO. An analysis of this range in collaboration with Professor Guolin Yu of the Shanghai Institute for Infrared Physics has provided more accurate values for the frequency and damping for the phonon modes and other dielectric material properties for MgO. The oscillations to longer wavelength are due to interference effects in the approximately 1 mm thick plane parallel sample.

For further information, contact Nelson Rowell, 613-993-2377, (nelson.rowell@nrc-cnrc.gc.ca)

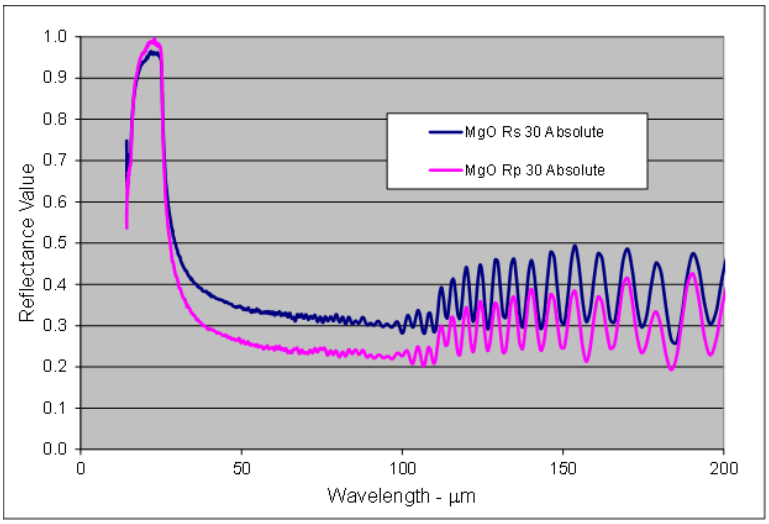

Fig 2. Absolute specular reflectance of MgO in the IR region (16 to 200 micrometres) for an angle of incidence of 30 degrees (s- and p-polarized components).

Development of New NRC Absolute Diffuse Reflectometer: Update

NRC continues the development of a new monochromator-based absolute reflectometer. The new reference instrument is based on the modified Sharp-Little sphere method and will realize an absolute diffuse reflectance scale in the d:0 geometry across the UV-VIS-NIR spectral range. The system is currently operational and preliminary reflectance data has been collected in the visible spectral range. Present activities are focussed on validating the new instrument in comparison with NRC's existing absolute diffuse reflectance scale and on developing a detailed uncertainty budget that includes characterization of various integrating sphere asymmetry and non-ideality effects, such as the influence of finite port thickness, sphere coating inhomogeneity and baffle design. Reference: L.J. Sandilands, E. Côté, and J.C. Zwinkels, "Design and characterization of a new absolute diffuse reflectance reference instrument at the NRC." In *Reflection, Scattering, and Diffraction from Surfaces VI* (Vol. 10750, p. 107500G). SPIE 2018.

For further information, contact: Luke Sandilands, 613- 990-8990 (luke.sandilands@nrc-cnrc.gc.ca).

NRC Replacement of Fluorescent Lighting with LEDs

NRC has launched a lighting retrofit project to upgrade the lighting in all its buildings from fluorescent lighting fixtures to light emitting diodes (LEDs) to improve the quality of lighting, reduce costs and reduce green-house gases. For some laboratories that require low UV content to minimize UV-induced degradation processes, there is concern about the spectral content of the new LED fixtures, which are intended for general office and lab use. In these cases, special-purpose low UV LED fixtures are being considered. To characterize the spectral content of these LED systems, equipment is being set up in the NRC photometry and spectroradiometry labs to measure the spectral irradiance of these general lighting LED replacement fixtures, as well as the proposed special-purpose low UV LED fixtures, over the spectral range from ~ 250 to 1000 nm.

For further information, contact Arnold Gaertner, 613-993-9344, (Arnold.gaertner@nrc-cnrc.gc.ca), or Amin Rasoulof, 613-991-2399, (amin.rasoulof@nrc-cnrc.gc.ca).

Recent Advances in Solid State Science

In collaboration with University researchers (UBC and University of Regina), NRC has carried out spectral regular reflectance and transmittance measurements of thin silicon films grown at temperatures ranging from 98 °C to 572 °C by ultra-high-vacuum evaporation on fused quartz substrates. These data have been analyzed to determine how the spectral dependence of the optical functions (refractive index and extinction coefficient) of these films is affected by the growth temperature. In particular, the extinction coefficient decreases as the growth temperature increases, whereas the refractive index generally decreases (Fig. 3). These results are important for optimizing growth conditions for silicon film-based device applications requiring a high refractive index.

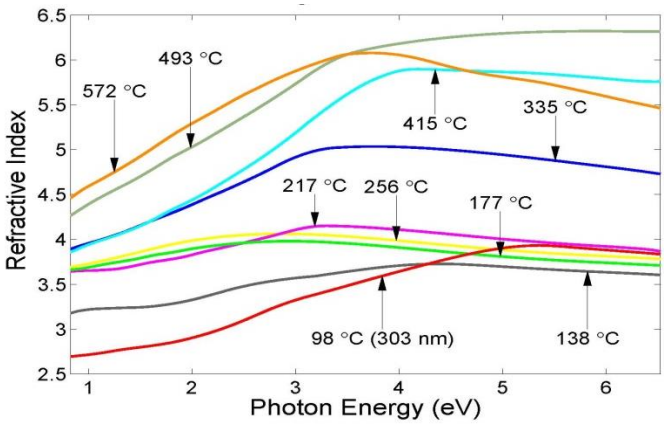

Fig 3. Spectral dependence of the refractive index of silicon thin-films as a function of growth temperatures ranging from 98 °C to 572 °C.

For further information, contact Joanne Zwinkels, 613-993-9363 (Joanne.zwinkels@nrc-cnrc.gc.ca)

In collaboration with Sichuan University (China), NRC (Nelson Rowell) has been carrying out analysis of the UV optical absorption and photoluminescence data of their novel II-VI semiconductor clusters and quantum dots. In particular, the effect of an isomorphic change in particle shape, such as from spherical to cylindrical, has been investigated on the bandgap energy, i.e. where the absorption peaks. This collaboration has resulted in several recent joint publications including:

- "Thermally-Induced Reversible Structural Isomerization in Colloidal Semiconductor CdS Magic-Size Clusters", B Zhang, T Zhu, M Ou, N Rowell, H Fan, J Han, L Tan, MT Dove, Y Ren, et al., *Nature Communications* 9, 2499 (2018).
- "Formation of Colloidal Alloy Semiconductor CdTeSe Magic-Size Clusters at Room Temperature", D Gao, X Hao, N Rowell, T Kreouzis, D Lockwood, S Han, H Fan, H Zhang, C Zhang, Y Jiang, J Zeng, M Zhang and K Yu, *Nature Communications* 10, 1674, (2019).
- "Photoluminescent Colloidal Nanohelices Self-Assembled from CdSe Magic-Size Clusters via Nanoplatelets", Y Liu, N Rowell, M Willis, M Zhang, S Wang, H Fan, W Huang, X Chen, K Yu, *J. Phys. Chem. Lett.*, 10, 2794, (2019).
- "One-Step Approach to Single-Ensemble CdS Magic-Size Clusters with Enhanced Production Yields", J Zhang, L Li, N Rowell, T Kreouzis, M Willis, H Fan, C Zhang, W Huang, M Zhang, K Yu, *J. Phys. Chem. Lett.*, 10, 2725, (2019).

Other recent NRC collaborative research papers on optical properties of semiconductors:

- "Editors' Choice—Optical Emission from Germanium Nanocrystals", NL Rowell, DJ Lockwood, DC Houghton, JP Noël, JM Baribeau, *ECS Journal of Solid State Science and Technology* 7, R195, (2018).
- "Direct-Gap Photoluminescence from a Si-Ge Multilayer Super Unit Cell Grown on Si0. 4Ge0. 6", DJ Lockwood, NL Rowell, L Favre, A Ronda, I Berbezier, *ECS Journal of Solid State Science and Technology* 7, R115 (2018).

For further information, please contact Nelson Rowell, 613-993-2377, (nelson.rowell@nrc-cnrc.gc.ca)

UPCOMING IES MEETINGS CALENDAR

The Illuminating Engineering Society (IES) is sponsoring the following meetings and conferences in 2019:

2019 IES Annual Conference
August 8-10, 2019
Louisville, KY
www.ies.org/events/annual-conference

2019 IES Street and Area Lighting Conference
September 22-25, 2019
San Diego, CA
www.ies.org/events/street-area-lighting-conference

2019 Annual IES Aviation Lighting Committee Fall Technology Meeting
October 19-25, 2019
Monterey, CA
www.iesalc.org/technology-meetings

NEWS FROM THE CIE

International Commission on Illumination
Commission Internationale de l'Eclairage
Internationale Beleuchtungskommission

Upcoming Events

CIE NC Russia - International Scientific and Technical Greenhouses Lighting Conference
September 9-10, 2019
Moscow, Russia
http://hlconf2019.vnisi.ru/en.php

Second Junior Balkan Conference on Lighting
September 19-21, 2019
Plovdiv, Bulgaria
https://blj2019.nko.bg/

5th CIE Expert Symposium on Colour and Visual Appearance
April 20 - 24, 2020
Hong Kong
http://bit.ly/2KBBLI9

New Publications

Proceedings of the CIE 29th Quadrennial Session
http://www.cie.co.at/publications/cie-session-washington-2019

CIE 233:2019 Calibration, Characterization and Use of Array Spectroradiometers
http://www.cie.co.at/publications/calibration-characterization-and-use-array-spectroradiometers

CIE 232:2019 Discomfort Caused by Glare from Luminaires with a Non-Uniform Source Luminance
http://www.cie.co.at/publications/discomfort-caused-glare-luminaires-non-uniform-source-luminance

CIE 231:2019 CIE Classification System of Illuminance and Luminance Meters
http://www.cie.co.at/publications/cie-classification-system-illuminance-and-luminance-meters

ISO/CIE 17166:2019(E) Erythema Reference Action Spectrum and Standard Erythema Dose
http://www.cie.co.at/publications/erythema-reference-action-spectrum-and-standard-erythema-dose-0

CIE 018:2019 The Basis of Physical Photometry, 3rd Edition
http://www.cie.co.at/publications/basis-physical-photometry-3rd-edition

CIE 083:2019 Guide for the Lighting of Sports Events for Colour Television and Film Systems, 3rd Edition
http://www.cie.co.at/publications/guide-lighting-sports-events-colour-television-and-film-systems-3rd-edition

Position Statement on the Blue Light Hazard (April 23, 2019)
http://www.cie.co.at/publications/position-statement-blue-light-hazard-april-23-2019

DIS 025-SP1/E:2019 Test Method for OLED Luminaires and OLED Light Sources
http://www.cie.co.at/publications/test-method-oled-luminaires-and-oled-light-sources

ISO/CIE 20086:2019(E) Light and Lighting — Energy Performance of Lighting in Buildings
http://www.cie.co.at/publications/light-and-lighting-energy-performance-lighting-buildings

For information on all of the CIE technical publications, visit:
http://www.cie.co.at/publications

OTHER NEWS…

White Paper on Photometric File Representation for Non-Standard Luminaire Shapes
A new white paper has been written to show the importance of luminous geometry in lighting simulations based on IES photometric files. The white paper shows that simulations can include large errors when using products such as ring luminaires that cannot be described with the simplified luminous dimensions of IES files. The intent of the white paper is to be useful for people in the lighting industry about this issue and to provide data to help demonstrate how photometric data files could be improved for better accuracy when luminaires have non-standard shapes. The paper is freely available online at:
http://webcdn2.ltioptics.com/Photometric-File-Representation-for-Non-Standard-Luminaire-Shapes.pdf

Lighting Research Center to Hold 2019 Summit
The Lighting Research Center (LRC) at Rensselaer Polytechnic Institute will hold its 2019 Summit from October 15-17 in Troy, New York. The Summit aims to inspire discussion and shape the future of lighting, where the industry plays a strategic, recognized role in benefiting society and the environment — from improving human health to enhancing food production to managing clean energy in the new electric grid. This event is open to LRC Partners, Alliance Members, and LRC Members. Nine (9) CEU credits are available through participation at the 3-day Summit. For more information visit:
https://www.lrc.rpi.edu/summit/

Purpose of the Council for Optical Radiation Measurements (CORM)

The Council for Optical Radiation Measurements is a non-profit organization with the following aims:

1. To establish and publish consensus among interested parties on national, industrial and academic requirements for physical standards, calibration services, and inter-laboratory collaboration programs in the fields of optical radiation measurement, including measurement of the transmittance and reflectance properties of materials, measurement of radiant sources, and characterization of optical detectors used for the measurement of these properties.
2. To establish national consensus on the priorities for these requirements.
3. To maintain liaison with the National Institute of Standards and Technology (NIST) and The National Research Council Canada (NRC) and to advise the Institute(s) of requirements and priorities.
4. To cooperate with other organizations, both public and private, to accomplish these objectives for the direct and indirect benefit of the public at large.
5. To assure that information on existing or proposed standards, calibration services, collaboration programs, and its own activities is widely disseminated to interested parties.
6. To answer inquiries about such standards activities or to forward such inquiries to the appropriate agencies.

Optical Radiation News Editorial Policy

Optical Radiation News (ORN) is published semi-annually each year. ORN reports upcoming technical meetings and news from NIST and other national metrology laboratories. News relating to the status and progress in optical radiation metrology from affiliated organizations, including, but not limited to, the *Commission International De Éclairage* (International Commission on Illumination, CIE), Inter-Society Color Council (ISCC), Lamp Testing Engineers Conference (LTEC), etc., is welcome. No commercial advertising, endorsements, or contributions with commercial content are included in ORN. Unsolicited contributions are subject to review and approval by the editor, CORM publications committee, and /or executive board prior to publication. Anonymous contributions will not be accepted. Contact information for a submission is required and will be published. ORN is included free with CORM membership.

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ORN is published in English. Deadlines for submission of News items and announcements concerning optical radiation metrology are 1 March and 1 September. Items may be submitted to the editor in via fax or e-mail attachments in plain ASCII text or common electronic word processing file formats, preferably Microsoft Word® or Corel WordPerfect®. Contributions should be in 12 point Times New Roman font with simple formatting, e.g., the "Normal" style and template in Word. *Use of complex style templates and formatting is strongly discouraged*. Submissions with high quality pertinent electronic graphics are welcome, however digital photographs and graphics will be reproduced in black-and-white or grayscale. Graphics included in hardcopy submissions via fax will not be reproduced. Submissions are credited to organizations, rather than individuals.

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