

Hot Topics

[Minutes of CIE-USNC Annual Meeting, October 2015](#)

[Select Presentations and Posters from 10th Biennial Joint CNC/CIE and CIE-USNC Technical Conference, October 2015](#)

[Registration Open for IES Symposium on Light + Color in April 2016](#)

[Save the date: 4th CIE Expert Symposium on Colour and Visual Appearance in September 2016](#)

[CIE 2016 Registration Now Open - Lighting Quality & Energy Efficiency in March 2016](#)

Message from CIE President



Happy New Year to you all. 2016 will be another busy year. The [CIE Lighting Quality and Energy Efficiency conference in Melbourne](#) is less than a couple of months away, and I look forward very much to the outcome of this conference.

It is the fourth one, and in BA we are discussing possibly changing its format for the future conferences of this series. In September, the Fourth Tutorial and Expert Symposium on Color and Visual Appearance (D1/D2) is scheduled in Prague, Czech Republic. Division 1 will also meet there. As one of BA activities, CIE research strategies are being developed to facilitate research of topics in high priority, which will be fed to future TCs and expected to speed up publication of CIE technical reports and standards needed in the industry.

Looking back the history, CIE celebrated its Centenary just a few years ago in 2013 and is starting its new century of existence. In its long history the CIE has been well established as the international scientific body for light and lighting, publishing numerous Technical Reports. In recent years CIE has also established its position as the international standardizing body for light and lighting, publishing many International Standards, as recognized by the ISO. CIE recently started a new structure of cooperation with ISO (TC274) for developing standards for lighting applications. CIE recently created a new structure, Joint TCs (JTCs), in which members from multiple Divisions and/or from other organizations cooperate on CIE work at drafting stages. This facilitates horizontal work across the Divisions. We also started publishing CIE's position statements since last year. With such position statements we intend to convey important

Upcoming Events

[CIE 2016 Lighting Quality and Energy Efficiency Conference, March 3 – 5, 2016, Melbourne, Australia](#)

[IES Research Symposium III – Light + Color Symposium, April 3 – 5, 2016, Gaithersburg, Maryland](#)

[4th CIE Expert Symposium on Colour and Visual Appearance, September 5 – 7, 2016, Prague, Czech Republic](#)

information on specific issues or questions very quickly to the industry. The one on [CRI and color quality metrics](#) was developed and published in three weeks.

While keeping the strong activities of CIE going as has been established, it is my goal for this quadrennium to make further improvements to speed up CIE work, to adapt better to the changing needs as the revolution of lighting by LEDs unfolds. There are still many issues on quality of LED lighting products, and improved or new lighting metrics and recommendations are in urgent need. In some cases, the old metrics are not sufficient for LED products (e.g., color rendering, glare); in other cases, LED products create new problems (e.g., flicker) or new effects (white light in street lighting). There also arise questions on the photobiological safety and non-visual effects of LED products. There are still challenges in measurements after [CIE So25](#) was published. With the new technologies the style of lighting is changing (e.g., colour-tunable luminaires, adaptive lighting controls, and health applications). With the performance of LED products significantly increased recently, lighting manufacturers are looking for high quality of lighting in many aspects, thus metrics are increasingly important. These create challenges for CIE to respond quickly to the needs and adapt to the fast changes in the industry needs while ensuring scientific excellence in our work and advancing fundamental research.

I am happy to see that CIE-USNC is much better organized and working very active now, thanks to many peoples' efforts. I look forward to working together with all those active in CIE-USNC this year so we can contribute to meeting these goals and making CIE an even better organization.

Yoshi Ohno
CIE President

New Publications

[Fundamental Chromaticity Diagram with Physiological Axes – Part 2: Spectral Luminous Efficiency Functions and Chromaticity Diagrams – CIE 170-2:2015](#)

[ILV: International Lighting Vocabulary – Supplement 1: Light Emitting Diodes \(LEDs\) and LED Assemblies – Terms and Definitions, 2015 – CIE S 017-SP1/E:2015](#)

Message from Past CIE-USNC President



The gavel has been passed and the future is bright.

President **Jim Leland** met with me at a “barbecue summit” (our traditional meeting venue is a BBQ joint in Manchester, NH, which is about halfway between our homes) on December 3rd, where the official “passing of the gavel” and corporate records took place. We did a recap of the successful Annual Meeting in Toronto, held jointly with the Canadian National Committee, and began planning to continue the growth of the USNC and its return to financial stability. It was a significantly different atmosphere from that which existed four years ago. Although we are by no means out of the financial woods, we are paying our current CIE dues on a regular basis, have had our own **Dr. Yoshi Ohno** elected president of CIE (more due to his own abilities than anything we did), and USNC has been selected to be the host of the next CIE Quadrennial Session in 2019. None of this occurred by accident.

If you carefully look at the leadership of USNC for the next four years, you will see that it largely consists of a subset of those who worked incredibly hard to both rescue us from CIE suspension and to chart a new structure that has the potential to sustain us into the future. The best part is that they have been joined by some talented, committed and energetic individuals who have the abilities to ensure that the United States is well represented in the development and approval of international standards in light, lighting and color. We need to acknowledge the contributions of those who have agreed to serve as officers, members of the Executive Committee, and Technical Council members; they provide critical elements in our ability to give the United States a voice in international standards.

As past president, my primary role is to chair the Nominating

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Committee of our organization. Because it is essential that we continue to attract energetic and capable persons to our positions of leadership, I don't take this responsibility lightly. However, all of our members have a responsibility to contribute to the work of the USNC by, whenever possible, actively participating in CIE technical committees and USNC administrative committees as well by encouraging colleagues, employers and employees to financially support our efforts.

The next four years will be busy and exciting as we prepare to host the 2019 CIE Quadrennial Session. Please consider volunteering to assist on one of the committees that will be formed in the coming months.

With the International Year of Light coming to a close, let's keep the fires burning.

Alan Lewis
CIE-USNC Past President

2015 Annual Meeting



This year the Annual CIE-USNC Meeting was held in beautiful Toronto, Ontario, Canada, kindly hosted by the Canadian National Committee of the CIE, CNC/CIE. The CNC/CIE and CIE-USNC met in Toronto, October 18-20, 2015 for a 10th biennial joint meeting of the two CIE national committees. The CNC/CIE events were arranged by the CNC/CIE President, **Venkat Venkataramanan**, Ph.D.; CNC/CIE Vice-President, **Jennifer A. Veitch**, Ph.D.; and CNC/CIE Treasurer, **Sharon McFadden**.

Over the course of the event, attendees learned about the latest advances from leading North American researchers and practitioners in the science and art of light and lighting and heard updates from the Division meetings held during the 28th Quadrennial CIE session in July 2015 in Manchester, UK.

CIE Newsletters

[December 2015 #23 – CIE Newsletter – Year end message from the President, Letter from the General Secretary, Call for Experts for CIE TCs and Division News](#)

[October 2015 – CIE Position Statement on CRI and Colour Quality Metrics issued October 15, 2015](#)

[September 2015 #24 – Royal Society: Open Access Articles on “The biological impacts of artificial light”](#)

[September 2015 – Melbourne 2016 #03](#)

[June 2015 – CIE Statement on Non-Visual Effects of Light – Recommending Proper Light at the Proper Time](#)

Annual Business Meetings of the CNC/CIE and CIE-USNC were also held, providing attendees with updates on events and activities underway within the respective national committees.



*Welcome message from CNC/CIE President, **Venkat Venkataramanan, Ph.D.***



*Welcome message from CIE-USNC President, **Alan Lewis, O.D., Ph.D.***

The event started with a Welcome Reception on Sunday evening, October 18 at the hotel. Monday, October 19, was Technical Day featuring technical presentations on a broad range of topics, a poster session, and an exceptional student presentation by the winner of CNC/CIE IYL 2015 High School Science Competition. Select presentations and information about the posters shared on October 19 are available [here](#).

Tuesday, October 20, was CIE Business Day, which included a joint morning session of CNC/CIE and CIE-USNC followed by separate business meetings held by each national committee. During the CIE-USNC meeting, attendees heard updates from CIE-USNC President **Alan Lewis** and other members of the Executive Committee, including updates on membership, sponsors, financial reports, and installation of the 2015-2019 CIE-USNC Officers and Executive Committee. Visit the [Meetings section of the CIE-USNC website](#) to access the minutes.

CIE-USNC Officers

President	James E. Leland
Senior Vice-President	David Sliney
Vice-President, Communication	Kosta Papamichael
Vice-President, Membership	Hyman Kaplan
CIE-USNC Secretary	Randi K. Myers
CIE-USNC Treasurer	Ronald B. Gibbons

CIE-USNC Members at Large

2014-2016 - **Mojtaba Navvab**

2015-2016 - **Philip Wychorski**

2015-2017 - **Michael Jouaneh**

2015-2017 - Open

2015-2018 - **Karl Citek**

2015-2018 - Open

The UNESCO designation of 2015 as the International Year

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of Light (<http://www.light2015.org>) has been celebrated across the globe, and the CNC/CIE marked this notable global celebration impressively. On Monday evening, October 19, CNC/CIE hosted a public lecture on *The Power of Light to Influence Human Health* featuring **George C. Brainard**, Ph.D., of the Department of Neurology, Jefferson Medical College, Thomas Jefferson University. At the Medical Sciences Building at the University of Toronto, **Dr. Brainard** discussed the engaging topic of light as a potent stimulus for regulating human physiology and behavior.



Recognition of Student Paper Winner by CNC/CIE, IYL2015 Event

The CIE-USNC Executive Committee is looking forward to its next Annual Meeting in the fall of 2016. Visit the [CIE-USNC website](#) or monitor future issues of this newsletter for details in the coming months. Hope to see you there!

Randi Myers
CIE-USNC Secretary

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Technical Council News

Division I

Color & Color Vision



The activities of Division I are now into full swing again. **Peter Hanselaer** is the new Division Editor. As one of his first activities he is preparing the 2016 Division Activity Report. He hopes to have the report available on the website about the beginning of February. During the closing months of 2015 the BA approved the formation of the new or replacement TCs and Reporterships for the division (See below) and an updated schedule has been released for the 2016 Division I meeting, please note the change.

The BA has approved the formation of 3 new (or replacement TCs):

- **TCI-95** (Replacing the closed TC I.77) on *The Validity of the CIE Whiteness and Tint Equations* is chaired by **Robert Hirschler**. The terms of reference are: Based on published and new experimental work the TC shall seek to recommend modifications to the existing CIE Whiteness and Tint Equations to extend their application to illuminants other than D65. Furthermore the TC shall review the restrictions imposed on the validity of the equations to samples that are measured on the same instrument at nearly the same time, and review the colorimetric limits hitherto set. If enough experimental data justify it, the TC may recommend modifications to the current CIE Equations for Whiteness and Tint. **If you are interested in joining this TC please contact Robert at robert.hirschler@hunetkft.hu.**
- **TCI-96** (Replacing the closed TC I.75) on *A Comprehensive Model of Colour Vision* is chaired by **Ming Ronnier Luo**. The terms of reference are: Based on the published work

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and new experimental work should seek to recommend a model or models of colour vision that predicts of the appearance of coloured stimuli viewed in typical laboratory conditions. This shall include stimuli that appear as both related and unrelated colours, that are viewed under illumination from photopic down to scotopic levels, and that have varying size. The model shall also include a uniform colour space.

- **TC1-97** (Replacing the closed TC 1.82) on *Age- and Field-Size-Parameterised Calculation of Cone-Fundamental-Based Spectral Tristimulus Values* is chaired by **Jan Henrik Wold**. The terms of reference are: 1) Following on from CIE TR 170, to recommend a procedure for calculating XYZ-like colour matching functions from cone fundamentals, as a function of age and field size and 2) To deliver a computer program for the calculations.

Two more new Reporterships were formed in addition to the two formed at the 2015 Division meeting. The new reporterships are:

- **R1-65** (replacing closed TC 1.61) on *Categorical Colour Identification* - **Taiichiro Ishida** is the reporter and the terms of reference are: To write a report describing a colour categorization map for photopic and mesopic illumination levels.
- **R1-66** (replacing TC1.67) on *The effect of dynamic and stereo visual images on human health* - **Hiroyasu Ujike** is the reporter. The terms of reference include: To write a report that describes the physiological and psychophysical effects of dynamic and stereo visual images in terms of photosensitive seizures, visually induced motion sickness and eyestrain.

There is a schedule change for the 2016 Division 1 meeting. Now the date of the symposium is set at the week beginning the 5th September. The week's events will be comprised of:

- One day tutorial on basics of goniospectrophotometric reflectance measurements.

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- Two day symposium on Appearance - Included in the symposium are the proposed topics of: 1) Visual perception of materials: Color, Gloss, Texture, Translucency, 2) Physical measurement using optical Instrumentation – characterization, implementation, 3) Digital rendering of optical properties, 4) Optical properties of novel materials, current and future trends.
- Division 1 meeting on the Thursday plus TC meetings on the Thursday and Friday (if required).

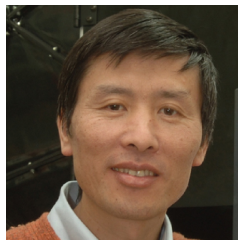
We invite all members and interested parties to attend the Prague meetings in September.

Ellen Carter
CIE-USNC Division 1 Member

Division 2

Physical Measurement of Light & Radiation

New TCs proposed



Six new D2 TCs were proposed in the CIE D2 meeting in June-July 2015, Manchester, UK. Five of them, listed below, have gone through the commenting period and are now in the stage of Division ballot for approval with the deadline January 15, 2016.

1. *CIE Standard on test methods for OLED light sources.* (**Guy Vandermeersch**, Belgium)
2. *Recommendations on LED package test data reporting.* (**Andras Poppe**, Hungary)
3. *Recommendation on the geometrical parameters for the measurement of the Bidirectional Reflectance Distribution Function*

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(BRDF). (**Gaël Obein**, France)

4. Glare Measurement by Imaging Luminance Measurement Device (ILMD). (**Cheng-Hsien Chen**, Taiwan)

5. Broadband UV LED radiometric measurements between 320 nm and 420 nm. (**George Eppeldauer**, USA)

CIE Tutorial and Symposium in November

Division 2 held another CIE Tutorial and Symposium on the CIE S₀₂₅ LED Lamps, LED Luminaires and LED Modules Test Method Standard, November 24 to 26, 2015, for further needs addressed after the successful CIE D₂ Tutorial and Expert Symposium on Measurement Uncertainties in Photometry and Radiometry for Industry in September 2014 in Vienna. This event was hosted by PTB (national metrology institute for Germany) in Braunschweig, Germany, attended by about 60 participants, aiming at promoting and providing education on CIE S₀₂₅, published earlier in 2015. This standard is expected for wide use in the lighting industry, in particular by testing-laboratory engineers and researchers for solid state lighting (SSL) products. While there are regional standards on SSL test methods available (e.g., IES LM-79), international test method standards are in need for global harmonization of testing laboratory accreditation and SSL regulations. CIE S₀₂₅ is the first CIE standard of this kind. The first two days of the event were for tutorial including lectures and laboratory sessions. The third day was a scientific symposium with contributed paper presentations and open discussions.

The Tutorial was opened with greetings by President of PTB, Prof. Dr. **Joachim Ullrich**, by CIE Division 2 Director, **P. Blattner**, and CIE President, **Y. Ohno**. On the first day, six lectures were given on the details and related measurement techniques for each topic (integrating sphere, goniophotometry, spectral measurement, electrical measurement, etc) relevant to CIE S₀₂₅. **Ohno** was one of the lecturers. On the 2nd day, three laboratory sessions were provided for measurements with goniophotometer,

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contact **Konstantinos**

Papamichael at

kpapamichael@ucdavis.edu.

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integrating sphere, and spectroradiometer, using laboratories in PTB, by PTB staff members. There was also a training session on uncertainty evaluation. Third day was for paper sessions of 11 contributed papers and open discussion. There are still remaining issues in CIE S025, such as validation of near-field goniophotometers, validation of correction for goniophotometers rotating the luminaire, variation in results due to different AC power supplies, and difficulty in uncertainty budget (for color quantities, goniophotometry, etc.) in testing laboratories. The contributed papers addressed some of these issues, and there were useful discussions.

While this event had a good turnout, there were only two participants from USA. We hope to have a similar CIE tutorials and/or symposia in USA on measurement of LED and SSL products to provide education opportunities and promote work of CIE in USA.

Future D2 meetings

- **March 2016, Melbourne, Australia**
D2 meeting in conjunction with CIE LQ&EE
- **September 5–9, 2016, Prague, Czech Republic**
[4th CIE D1/D2 Expert Symposium on Appearance and D1 meetings](#)
- **October 2017, Jeju, Korea**
D2 meeting in conjunction with CIE Midterm
- **2018** D2 meeting (and possibly a D2 symposium) proposed by Netherlands

Yoshi Ohno & Yuqin Zong

CIE-USNC Division 2 Members

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Division 3

Interior Environment & Lighting Design



It's a new year and already clear that considerable CIE (and other) technical activity was going on during the fall and into the holiday season. Even though the subject of light and color is not specifically in the scope of Division 3, the color characteristics of light are certainly of critical importance to the Division because of its charge to be concerned with the satisfaction of occupants of buildings with their environment including the effects of both daylighting and electric lighting. Accordingly, the October [CIE Position Statement on CRI and Colour Quality Metrics](#) has been a subject of considerable Division discussion and the subject will be on the agendas of several upcoming CIE meetings including the [Lighting Quality and Energy Efficiency Conference, March 3-5, 2016 in Melbourne](#) and the [4th CIE Tutorial and Symposium on Colour and Visual Appearance, September 5-7, 2016 in Prague](#). In the U.S., the subject is included at the [IES Research Symposium, Light+Color scheduled for April 3-5, 2016](#).

CIE Division 3 will not meet in person, but via Webex in June, 2016. The meeting day and time have not yet been set.

In the CIE/USA, Division 3 will be participating, as usual, in the U.S. TAG for the review of joint ISO/CIE standards. **Phil Wychorski**, the administrator of the TAG is organizing the annual meeting of the TAG for February. I am a voting member.

Such work is of new importance to the CIE/USA because of a new agreement between the CIE and ISO TC 274. As reported by Dr. **Jennifer Veitch**, Division 3 Director, in the minutes of the 2015 Division 3 meeting, "Applications standards are to be led by ISO TC 274 but developed in collaboration with CIE D3. We are establishing new liaisons with other ISO committees whose scopes of work encompass lighting topics, whereas previously our connections were

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informal. Over time, I expect the result to be a shift in the composition of Division 3 activities, with a greater number of joint activities and liaisons that develop standards and a relatively smaller number of regular TCs writing technical reports.”

Terry McGowan
CIE-USNC Division 3 Member

US TAG for Joint ISO/CIE Standards Committee Report



The U.S. TAG for Joint ISO/CIE Standards Committee has completed the following tasks in 2015:

1. On January 22, 2015 the TAG held its annual meeting via teleconference. A meeting agenda, updated list of TAG members and the previous TAG meeting minutes were distributed prior to the meeting. The teleconference meeting was attended by 12 TAG members.
2. On January 29, 2015 the TAG Administrator sent the following documents to ANSI:
 - 2015 TAG Procedural Compliance Report
 - 2014 TAG Annual Report to ANSI
 - Current List of TAG Members
3. On February 23, 2015 a TAG Membership Letter Ballot was sent to all current TAG members. **Dr. Yuqin Zong** of NIST is on the ballot to fill the TAG Division 2 position.
4. On February 23, 2015 the TAG Administrator sent out a voting ballot to review/revise the current version of the TAG Operating Procedures.

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5. In April 2015 the TAG Operating Procedures were approved with several editorial corrections.
6. In June of 2015 the TAG was notified that **Dr. Yuqin Zong** had been elected to the position of TAG Division 2 primary member. **Dr. Zong** was notified of his election to the TAG.
7. In late July 2015 the CIE/USA President received a request from the CIE to vote on CIE FDIS 024/E:2015 of TC2-66 with a deadline of August 8, 2015.
8. On October 18, 2015 the TAG Chairman sent a note to the CIE/USA President requesting that the CIE/USA Executive Committee discuss the payment of ANSI dues for 2016 and the need for TAG Officer elections.

Philip F. Wychorski

Administrator/Chairman

US TAG for Joint ISO/CIE Standards

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