



## MINUTES OF THE 67<sup>th</sup> ANNUAL CNC/CIE MEETING

2022-November-21

The 67<sup>th</sup> annual meeting of the Canadian National Committee of the Commission Internationale de l'Éclairage (CNC/CIE) was held on Monday, November, 21, 2022 on the Zoom videoconferencing platform arranged and hosted by J.A. Veitch.

**Note:** the following acronyms may be used in this report:

AIC	International Colour Association
CIE	Commission Internationale de l'Éclairage
CIE-BA	CIE Board of Administration
CIE-CB	CIE Central Bureau
CIE-DD	CIE Division Director
CNC/CIE	Canadian National Committee of the CIE
CNC-BA	Canadian National Committee Board of Administration
CoP	CNC/CIE Code of Procedure
CIE-USNC	US National Committee of the CIE
IES	Illuminating Engineering Society
ISO	International Organization for Standardization
IRO	International Relations Office of the NRC
MC	Membership Committee
NC	CIE National Committee
NRC	National Research Council of Canada
NRC-IAO	National Research Council International Affiliations Office
NRC-METRO	NRC Metrology Research Centre
NRC-CONST	NRC Construction Research Centre
NRCan	Natural Resources Canada
SCC	Standards Council of Canada
TC	CIE Technical Committee
WG	Working Group



## 1. Call-to-Order and Approval of Agenda:

The 67<sup>th</sup> annual meeting of the CNC/CIE was called to order at 13:00 EST on Friday, November 21, 2022 by J. Hovis, President. S. Coyle motioned to accept the agenda, A. Gartner seconded the motion and the motion was carried unanimously.

## 2. Post-AIC Report from Award Recipient

S. Mazur was the student supported by the CNC/CIE to attend the AIC 2022 conference from June 13-16. She stated that attending the conference had a beneficial effect on her research as she was exposed to a new interdisciplinary perspective of colour that enhanced her knowledge and understanding on what colours are and incorporated ideas from different fields into her colour research. She thanked the CNC/CIE for supporting her at the conference.

## 3. Minutes of the 66<sup>th</sup> Annual CNC/CIE Meeting

### 3.1 Action Items

*Action items (2020-AI-1-4 and 2021-AI-1-2) from the 66<sup>th</sup> annual meeting minutes (see Appendix C of the Minutes of the 66<sup>th</sup> Annual Meeting) were discussed. 2021-AI-1 and 2021-AI-2 are closed. 2020-AI-2 is not completed and is still open. 2020-AI-4 is still open. 2020-AI-1 is closed as there is now a bilingual candidate assisting S.M. McFadden with translating CIE documents into French.*

### 3.2 Matters Arising

There were no matters arising from the minutes of the 66<sup>th</sup> Annual CNC/CIE Meeting.

## 4. President's Report:

J. Hovis presented his report with discussion and is attached as [Appendix D](#).

## 5. Vice-President's Report:

J.A. Veitch presented her report with discussion and is attached as [Appendix E](#).

## 6. Secretary's Report

A. Ghaemi presented his report with discussion and is attached as [Appendix F](#).

## 7. Treasurer's Report:

S. Coyle presented her report with discussion and is attached as [Appendix G](#). She noted that the opening balance (29 September 2021) was \$27,284.18. She then explained that the income



from publication sales was a credit on account from CIE-CB of EUR 994.98 or \$1365.03 CAD. She then went over the expenses that totaled \$2961.98. The next income (loss) for the year was - \$1596.95 which means the ending balance (October 28 2022) is now \$25,687.23. J.A. Veitch asked S. Coyle if there was a wire transfer of funds from the CIE-CB to the CNC-CIE account and S. Coyle responded by stating that no transfer had taken place. S. Coyle agreed to follow up with the CIE-CB about the wire-transfer issue.

**ACTION ITEM (2022-AI-1):** S. Coyle will follow up with the CIE-CB about the missing wire transfer of funds from the CIE-CB account to the CNC/CIE account.

## **8. Reports from Division Members**

### **8.1 Division 1: Vision and Colour**

J. Hovis stated that he did not attend the Division 1 meeting held on Friday, 5<sup>th</sup> of August 2022 and that S.M. McFadden served as his delegate. He highlighted the results of the survey for updating the CIE research strategy and the four themes that emerged: (1) Cone-Fundamental based Colorimetry, (2) Advanced Color Appearance Model, (3) Visual Appearance: Perception, Measurement and Metrics and (4) Colour Difference Equations. He then reviewed the new work items in preparation and highlighted the various new TCs that were being proposed. He then noted that JTC-8 Terminology for Light and Lighting is looking for a new chair to replace S.M. McFadden, and asked that any Division 1 members in attendance that are interested in the position to contact him.

### **8.2 Division 2: Physical Measurement of Light and Radiation**

J.C. Zwinkels was not able to attend the meeting so J.A. Veitch gave the presentation on Division 2 activities. Division 2 had 2 meetings this year; L. Sandilands attended the first Division 2 meeting as proxy and J.A. Veitch attended the second Division 2 meeting. J.A. Veitch stated that TC-292 International Standard Format for Electronic Transfer of Luminaire Optical Data that was chaired by I. Ashdown was closed and that a new TC (with new chairperson and terms of reference) will be formed in the future. J.A. Veitch noted that the second Division 2 meeting was held in person and that this was the first in-person meeting that the CIE has held since 2019. She also noted that there will soon be a call for nomination for a new Division 2 director, as the current director is not standing for another term, and that an internal ballot will be distributed.

### **8.3 Division 3: Interior Environment and Lighting Design**

J.A. Veitch highlighted the creation of a new TCs; (1) Review of Regional Daylight Requirements to Assess the Feasibility of Global Harmonization on Daylighting. She also noted that there is a ballot for a new TC called Resilient Lighting which would have a Canadian member (A. Silbiger). Division 3 had a single publication this year, a report on Non-Visual Effects of Lighting. This is a joint ISO-CIE document (21783). J.A. Veitch noted that there will be a



change in Division director next year, and that the internal ballot for the selection of a new director will be happening soon.

A. Silbiger, the Canadian member for the proposed TC Resilient Lighting then spoke. He stated that the TC was focused on emergency lighting in buildings during power failures caused by natural disasters (including earthquakes, typhoons, concentrated heavy rain, etc.). This new TC would cover both Division 3 and Division 4 work as exterior lighting can suffer from these disasters as well. He stated that emergency lighting in buildings during power failure or evacuation are regulated by each country's building code and are standardized by ISO but that there is no standardized approach for emergency lighting in buildings during natural disasters. He stated the need for input from CNC/CIE members and asked those who have experience in this field to contact him.

#### **8.4 Division 4: Transportation and Exterior Applications**

C. Suvagau began his report on Division 4 by going over the most recent hybrid-meeting held on 23-34 September 2022 in Prague. He noted that the Division Secretary has been replaced and that there is a call for nominating candidates for the Division Director position for the term 2023-2027. He then explained the new Division 4 publication CIE 234:2021 Discomfort Glare in Road Lighting and Vehicle Lighting. He then went over some TCs with advanced reports/publications describing their scope, chair and the current status of these documents.

He concluded his presentation by highlighting other division news including the holding of a tutorial on urban lighting master planning and the drafting of a CIE position addressed to municipalities regarding roadway, transportation, area and other exterior lighting within the context of switching off lights due to the energy crisis in Europe.

#### **8.5 Division 6: Photobiology and Photochemistry**

S. Qutob highlighted the publication of a new CIE brochure (July 2022) and two Division 6 publications: (1) TC 6-64 CIE 245:2021 Optical Safety of Infrared Eye Trackers Applied for Extended Durations and (2) TC 6-52 CIE 247:2021 Guide for the Gonioradiometric Measurement of Upper Air Ultraviolet Germicidal Irradiation Luminaires. He noted that no new reportership topics were proposed, but there was some consideration of a TC reviewing the link between blue light phototherapy and retinopathy in preterm infants, which can also be a result of over-prescription of oxygen, which affects the retinal vessels. He then mentioned the four division reporterships and the four JTCs. He briefly described each of the Division reports and provided an overview of TCs. The presentation concluded with some ideas under discussion; (1) plans for new JTC D6/D2 on wearable light dosimetry (e.g., for tracking changes in circadian rhythm) and (2) a CIE tutorial on S 026/E:2018 *CIE System for Metrology of Optical Radiation for ipRGC-influenced Responses to Light*. J.A. Veitch stated that there will be an additional workshop on Metrology for Physiological Effects of Light on Animals which is expected to be held in summer 2023.



## 8.6 Division 8: Image Technology

There was no report for Division 8: Image Technology submitted. Division 8 member T. Akhavan did not attend the meeting.

## 9. Membership and Elections

### 9.1 Membership and Elections Subcommittees

M. Mossman presented her report and is attached as [Appendix I](#). It was noted that there are 12 CNC/CIE BoA members, 34 regular members (including the 12 BoA members) and 74 affiliate members. K. Niall stepped down as a CNC/CIE member after his term expired in 2022 and the CNC/CIE would like to thank him for his contributions throughout his membership term. There are 4 members whose terms expire at the end of 2022, and all of these members have indicated a willingness to renew their memberships for an additional 4-year term. Division 8 member T. Akhavan's term expires at the end of 2022 and there will be a ballot for her membership renewal for a 1-year term ending in 2023. There is a consideration for identifying affiliate Division members which will enable a greater collective effort and continuity by CNC participants in support of division activities. Establishing a geographic balance remains a priority; there is a need to recruit members from the Prairie provinces (Alberta, Saskatchewan and Manitoba). The Membership and Elections Subcommittees are involved in two major activities: (1) the task group on updating the code of procedure and (2) the updating of the membership database so that it is consistent to the code of procedure (i.e., how we categorize members, term expiration dates).

### 9.2 M & E Subcommittee Membership:

There was no discussion about Membership & Election Subcommittee membership.

## 10. NRC Annual Performance Review of the CNC/CIE

J. Hovis completed the Annual Performance Review questionnaire and submitted it to the NRC during February 2022. The CNC/CIE performed well. The only concern raised during the NRC annual performance review of the CNC/CIE related to the lack of geographical balance of the CNC/CIE membership (no members from Alberta, Saskatchewan or Manitoba).

The meeting was paused at 14:20 for a 5-minute break. The meeting resumed at 14:25.

## 11. Mirror Committee to ISO/TC 274

### 11.1 Chair's Report

J.A. Veitch mentioned that 11 ballots and/or comments were cast on behalf of the committee, following discussions by e-mail with committee members through the SCC hub. All



ballots were responded to and there are currently no open ballots. J.A. Veitch stated that T. Lau attended the ISO/TC 274 plenary meeting on behalf of the CNC-CIE for this year. The ISO/TC 274 plenary meeting for next year is scheduled to be held in person in Japan in June or July 2023. There needs to be a decision made on who will represent Canada as Head of Delegation at the 2023 plenary meeting. The Head of Delegation makes the commitment to attend and participate in the ISO/TC 274 plenary meeting and is responsible for casting Canada's vote at the meeting. J.A. Veitch mentioned that T. Lau had served as Head of Delegation in the past and proposed to appoint T. Lau as head of delegation for the 2023 plenary meeting of ISO/TC 274. S. Qutob proposed the motion to appoint T. Lau to represent Canada as the Head of Delegation at the 2023 ISO/TC 274 meeting. S. Coyle seconded the motion and the motion passed unanimously.

## **11.2 ISO TC 274 Business**

### **11.2.1 Chair Advisory Group**

J.A. Veitch stated that T. Lau is active in the CAG and JWG1 where he is leading a project to publish a document: *Light and lighting – Energy performance of lighting in buildings – Explanation and justification of ISO/CIE 20086*. T. Lau stated that the document was approved and is in preparation for publication. An Excel calculation tool is also in preparation.

### **11.2.2 JWG 1 (Energy Requirements for Lighting in Buildings)**

T. Lau is leading a project to publish a document: *Light and lighting – Energy performance of lighting in buildings – Explanation and justification of ISO/CIE 20086*.

### **11.2.3 WG 2 (Commissioning)**

Project (ISO/AWI TR 5911) will produce an ISO Technical Report to supplement ISO/TS 21274.

### **11.2.4 JWG 4 (Integrative Lighting)**

ISO/CIE TR 21783 *Light and lighting – Integrative lighting – Non-visual effects* was published in October 2022 and this working group is now closed.

### **11.2.5 JWG 5 (Lighting of Workplaces)**

The text for the full working document is with the secretariat for editorial work prior to it being circulated to the JWG.



## **11.2.6 Liaison Representatives**

### **11.2.6.1 ISO/TC 163 to ISO/TC 274**

T. Lau serves as a liaison between ISO/TC 163 to ISO/TC 274.

### **11.2.6.2 ISO/TC 274 to ISO/TC205/WG7**

C. Sampson resumed his post as this liaison representative in February 2021. This position will change in the coming months, as there will be a new JWG between ISO/TC 205 and ISO/TC 274 to replace this WG, and C. Sampson will be the TC 274 co-convenor of the new JWG.

## **11.2.7 Outstanding ballots/comments needing discussion**

There were no outstanding ballots/comments needing discussion.

## **11.3 SCC Matters**

### **11.3.1.1 MC Administration**

There was no discussion regarding MC Administration.

### **11.3.1.2 MC Accreditation & Financial Assistance**

In December 2021, J.A. Veitch completed the annual Application for Committee Accreditation (Annex C) and Financial Assistance for the fiscal year 2022-23. The application was successful (Annex D), receiving a score of 67.5/105. Rankings were not reported this year. The success is in part due to the renewed external stakeholder support from BC Hydro and CSA. Nonetheless, the SCC decided not to invoice external stakeholders because of the suspension of in-person meetings.

### **11.3.1.3 MC Membership & Balance**

There was no discussion regarding MC Membership & Balance.

## **12. Ad hoc Subcommittees**

### **12.1 Website Subcommittee:**

S.M. McFadden noted that the CNC/CIE website had an increase in usage this year and that the majority of those accessing the site were American. There were 13 CNC/CIE members that accessed the members-only area of the website at least once during the year.



## **12.2 Code of Procedure Revision**

M. Mossman, S.M. McFadden, S. Coyle and V. Venkataramanan were involved in the revision to the CoP that took place this year. There were 2 major goals with the CoP revisions: (1) to make the CoP consistent with the CIE documents and (2) identify and remove unnecessary procedural details. M. Mossman stated that these removed procedural details will be included in a parallel document (working document) used for individuals in committees and not in the CoP. M. Mossman noted that the revised CoP clarifies previously ambiguous member details and distinguishes between members that were nominated/elected and those that are members because of their participation in a CNC/CIE TC or WG. There is a suggestion to change 2 terminologies; (1) the CoP will become a term of reference (ToR) because this provides a more accurate description of what this document is to the CNC/CIE and (2) the Board of Administration (BoA) will become the Board. M. Mossman noted that an important structural change to the CoP will be the combining of the current membership subcommittee and the election subcommittee into a single membership and elections subcommittee because of the high level of overlap between the two committees. J. Hovis stated that members should expect a final draft of the revised CoP to be circulated to members for voting in January 2023.

## **12.3 Events Subcommittee (AIC 2022 Liaison)**

V. Venkataramanan provided an overview of the CNC/CIE involvement with AIC 2022. The report is attached in Appendix K.

## **12.4 Lighting Course Update**

J. Hovis stated that the lighting course is still in development and he is optimistic that the course can be completed by the end of 2023.

## **13. Other Business**

### **13.1 Correspondence**

J. Hovis reiterated that the CNC/CIE is looking for more members from the Praire provinces (Alberta, Saskatchewan and Manitoba) to better balance the geographical representation of the CNC/CIE. J. Hovis noted that T. Akhavan will serve one more year (2023) as Division 8 member and that there is a need to find another CNC/CIE member that can act as Division 8 member.

### **13.2 Date and Place for next year's meeting**

J. Hovis noted that the cost of an in-person meeting in November at the University of Waterloo would cost approximately \$30000 for 100 attendees. He further noted that the largest expenses would be for food, hotel room accommodations and transportation from





the University to the airport. The cost of renting a conference room at the University for 3 days would be \$2000. J. Hovis stated that the registration fee for an in-person meeting would be on the order of \$200-\$225 per person. J.A. Veitch stated that a poll should be circulated by USNC and CORM to their respective members alongside a poll from the CNC/CIE to their members regarding their preference toward attending an in-person or virtual meeting.

ACTION ITEM (2022-AI-2): A. Ghaemi will contact the USNC and CORM to circulate a ballot to their respective members on whether they prefer an in-person or online meeting and on what dates those meetings should take place. A. Ghaemi will also circulate the same ballot to the CNC/CIE members and affiliates.

#### **14. Any Other Business**

J.A. Veitch noted that the 30<sup>th</sup> Quadrennial Session of the CIE would be taking place from September 18 to 20, 2023 in Ljubljana, Slovenia and this would be an opportunity to provide financial support for a student to attend the meeting. It was decided that the student application to the meeting would include an abstract submission. After discussion it was decided that the CNC/CIE would provide \$750 to support a student to attend the CIE 2023 conference.

Moved (J.A. Veitch/S. Qutob): The CNC/CIE will provide \$750 to support a student to attend the CIE 2023 conference. The motion was carried unanimously.

V. Venkaramanan proposed moving the some or all of the CNC/CIE's funds into a GIC for a year (or shorter term) to offset the costs of inflation. S. Coyle stated that she would ask the bank about the different options (i.e., GIC, high-interest savings account, etc.) available to offset the cost of inflation.

ACTION ITEM (2022-AI-3): S. Coyle will contact TD Bank about the different products available (i.e., high-interest savings account, GICs, etc.) to offset the cost of inflation.

#### **14.1 Adjournment**

J. Hovis adjourned the meeting at 15:35.



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



Canadian National Committee Comité national canadien

**Ali Ghaemi**

Administrator, Canadian National Committee of the CIE

Email: [CNC-CIE-Secretariat@nrc-cnrc.gc.ca](mailto:CNC-CIE-Secretariat@nrc-cnrc.gc.ca)

**CNC/CIE 67th Annual General Meeting**

**Proposed Agenda**

DATE: Monday, Nov. 21, 2022

TIME: 13:00-16:00 EST [10:00 – 12:00 PST]

LOCATION: Zoom (link provided to meeting registrants)

RSVP: Ali Ghaemi  
Administrator, Canadian National Committee of the CIE  
Tel: 613-991-4162  
Email: [CNC-CIE-Secretariat@nrc-cnrc.gc.ca](mailto:CNC-CIE-Secretariat@nrc-cnrc.gc.ca)

**<http://www.cnc-cie.ca/>**

PROPOSED AGENDA: (see next page)



## CNC/CIE 67<sup>th</sup> Annual Meeting

2022-Nov-21

### Agenda

1. Call to Order and Approval of Agenda J. Hovis
2. Post-AIC report from award recipient Sandra Muzer
3. Minutes of the [66th Annual CNC/CIE](#) meeting J. Hovis
  - 3.1. Action items
  - 3.2. Matters arising
4. President's report J. Hovis
5. Vice-President's report J. A. Veitch
6. Secretary's report A. Ghaemi
7. Treasurer's Report S. Coyle
8. Reports from Division Members
  - 8.1. Division 1: Vision and Colour J. Hovis
  - 8.2. Division 2: Physical Measurement of Light and Radiation J.C. Zwinkels
  - 8.3. Division 3: Interior Environment and Lighting Design J.A. Veitch
  - 8.4. Division 4: Transportation and Exterior Applications C. Suvagau
  - 8.5. Division 6: Photobiology and Photochemistry S. Qutob
  - 8.6. Division 8: Image Technology TBA
9. Membership and Elections
  - 9.1. Membership and Elections Subcommittees M. Mossman
  - 9.2. M & E Subcommittee Membership M. Mossman
10. NRC Annual Performance Review of the CNC/CIE J. Hovis
11. Mirror committee to ISO/TC 274 J. A. Veitch
  - 11.1. Chair's report J.A. Veitch
  - 11.2. ISO TC 274 Business
    - 11.2.1. Chair Advisory Group T. Lau
    - 11.2.2. JWG 1 (Energy Requirements for Lighting in Buildings) T. Lau
    - 11.2.3. WG 2 (Commissioning) T. Lau
    - 11.2.4. JWG 4 (Integrative Lighting) J. A. Veitch



11.2.5.	JWG 5 (Lighting of Workplaces)	J. A. Veitch
11.2.6.	Liaison Representatives	
11.2.6.1.	ISO/TC 163 to ISO/TC 274	T. Lau
11.2.6.2.	ISO/TC 274 to ISO/TC205/WG7	C. Sampson
11.2.7.	Outstanding ballots/comments needing discussion	
11.3.	SCC Matters	J. A. Veitch
11.3.1.1.	MC Administration	
11.3.1.2.	MC Accreditation & Financial Assistance	
11.3.1.3.	MC Membership & Balance	
12.	Ad hoc Subcommittees	
12.1.	Website Subcommittee	S. McFadden
12.2.	Code of Procedures Revision	S. McFadden
12.3.	Events Subcommittee (AIC 20220 liaison)	V. Venkataramanan
12.4.	Lighting Course Update	J. Hovis
13.	Other Business	J. Hovis
13.1.	Correspondence	
13.2.	Date and Place for next year's meeting	
14.	Any other business	
14.1.	Adjournment	J. Hovis

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



Canadian National Committee Comité national canadien

**Ali Ghaemi**

Administrator, Canadian National Committee of the CIE

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- APPENDIX B: Attendees to the 67<sup>th</sup> CNC/CIE Annual Meeting
- APPENDIX C: Action Items from the 67<sup>th</sup> CNC/CIE Annual Meeting
- APPENDIX D: President's Report
- APPENDIX E: Vice-President's Report
- APPENDIX F: Secretary's Report
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- APPENDIX H: CNC/CIE Web Site Report
- APPENDIX I: CNC/CIE Membership Subcommittee Report
- APPENDIX J: MC-ISO-TC 274 Chair's Report
- APPENDIX K: CNC/CIE Support for AIC 2022 Conference

Division Member Reports



**APPENDIX B**  
**CNC/CIE 67<sup>th</sup> Annual Meeting**  
**Attendees**

<b>Name</b>	<b>CNC/CIE Affiliation</b>	<b>Other Affiliation</b>
Ali Ghaemi	Administrator	NRC-MSS
Jennifer Veitch	Vice-President, Division 3 Rep.	NRC-Construction
Jeff Hovis	President, Division 1 Rep.	University of Waterloo
Shirley Coyle	Board of Administration, Treasurer	Cree Lighting
Arnold Gaertner	Board of Administration	NRC-MSS
Shirley Coyle	Board of Administration, Treasurer	Cree Lighting
Sandra Muzar	Student, Attended AIC 2022 Conference	University of Waterloo
Deborah Gottesman	Member	Independent Consultant
Kris Poduska	Member	Memorial University
Michele Mossman	Board of Administration	U of British Columbia
Sharon McFadden	Member	Retired
Venkat Venktaramanan	Board of Administration	McRae Imaging Inc.
Rob Kent	Affiliate	Envari
Lorne Whitehead	Board of Administration	U of British Columbia
Sami Qutob	Board of Administration, Division 6 Rep.	Health Canada
Yong Zheng	Affiliate	Durham Region Ontario
Andrew Silbiger	Member	Andrew Silbiger Management Inc.
Cristian Suvagau	Board of Administration, Division 4 Rep.	BC Hydro
Li-Lin Tay	Member	NRC-MSS
Alex Craig	-	NRC-IAO



## APPENDIX C

### Action Items from the 67<sup>th</sup> Annual Meeting of the CNC/CIE

Action Item	Responsible	Action	Status
2020-AI-2	J.A. Veitch	Develop a system for disseminating a call for experts and press releases to relevant groups that are interested in the activity of the CNC-CIE.	OPEN
2020-AI-3	All	Recruit Canadian organizations and individuals involved in the light and lighting community for the purposes of expanding the affiliates list and the outreach of CNC-CIE activity.	OPEN
2020-AI-4	V. Venkaramanan and C. Suvagau	V. Venkaramanan and C. Suvagau will get in touch with contacts in Western Canada about joining the CIE with the intention of improving geographic representation.	OPEN
2022-AI-1	S. Coyle	S. Coyle will follow up with the CIE-CB about the missing wire transfer of funds from the CIE-CB account to the CNC/CIE account.	OPEN
2022-AI-2	A. Ghaemi	A. Ghaemi will contact the USNC and CORM to circulate a ballot to their respective members on whether they prefer an in-person or online meeting and on what dates those meetings should take place. A. Ghaemi will also circulate the same ballot to the CNC/CIE members and affiliates.	OPEN
2022-AI-3	S. Coyle	S. Coyle will contact TD Bank about the different products available (i.e., high-interest savings account, GICs, etc.) to offset the cost of inflation.	OPEN



## APPENDIX D

### CNC/CIE President's Report November 21, 2022

Jeff Hovis

[jhovis@uwaterloo.ca](mailto:jhovis@uwaterloo.ca)

It is good to see that life is "returning" to the new normal, with more in-person events and people returning to their offices at least a few days a week.

In early May, I had a web conference with Dr. Terrie Romano and Geoffroy Lambrecht from International Relations at the National Research Council regarding our annual performance review. No concerns were expressed, and we received a favorable mention in the NRC International Relations Annual Report for developing the lighting course.

Highlights from the Central Bureau include,

Peter Zwick, the CIE Technical Manager, retired in June.

Mohammad Shahidul Islam, known as Shahidul, is the new CIE Technical Manager.

Kees Teunissen has been elected to the Board of Administration without Portfolio.

The Organization's By-laws and Code of Procedures are in the final revision.

The CIE is now a full member of the International Science Council. The International Science Council web site is <https://council.science> if you want more information about the organization.

If you are interested in learning more about Technical Committees and what they do, you should check out the new webpage, "Getting Involved Technical Work" <https://cie.co.at/technical-work/getting-involved-technical-work>

There is also a brochure that you can download that overviews the CIE  
[https://files.cie.co.at/CIE\\_Brochure\\_July\\_2022.pdf](https://files.cie.co.at/CIE_Brochure_July_2022.pdf)

The treasury is in good shape.

Updating research strategies continues

A reminder that the CIE will write Support of Research letters for projects that align with the research strategies

In 2020, the Central Bureau offered a free copy of a "best of the CIE " publication is continuing.

The 30th Quadrennial Session of the CIE - CIE 2023 will be in Ljubljana, Slovenia starting September 18, 2023

<https://slovenia2023.cie.co.at/>

The Colour Research Society of Canada organized the AIC 2022 meeting in Toronto in June. It was an online event. We were a sponsor of the event and provided two student awards for outstanding papers. Venkat Venkataramanan was on the organizing committee. Tom Butters (through his company) and Venkat Venkataramanan (CNC-CIE) organized a panel on light and color.

The CNC-CIE Board of Administration met 4 times in the past year online. We will try to continue this practice in the upcoming year. If an issue that you think needs to be discussed by the Board, bring it to one of the board member's attention or email [CNC-CIE-Secretariat](mailto:CNC-CIE-Secretariat), and we will add it to the agenda for the next meeting.

Finally, I thank everyone for their help, participation, and ideas this year. On behalf of the CNC-CIE, we hope everyone stays safe and healthy.





## APPENDIX E

### CNC/CIE Vice-President's Report November 2022

Jennifer A. Veitch, Ph.D.

[j\\_a\\_veitch@jdarchitect.ca](mailto:j_a_veitch@jdarchitect.ca) / [jennifer.veitch@nrc-cnrc.gc.ca](mailto:jennifer.veitch@nrc-cnrc.gc.ca)

In my capacity as Vice-President of the CNC/CIE, this year I undertook four tasks (as I did last year also).

1. I supported the co-ordination and administration of the CNC/CIE as an outreach activity within NRC Metrology. Dr. Li-lin Tay, Team Lead of the Photometry and Spectrophotometry team, has overall responsibility for the CNC/CIE as an activity.
2. I assisted as needed to support the President, Administrator, and Treasurer in the ongoing work of CNC/CIE business. This includes monitoring the CNC/CIE mailbox when the Administrator is unavailable, confirming that our procedures (e.g., for ballots) follow our Code of Procedure, and contributing to the discussions related to our co-sponsorship of the AIC 2022 conference.
3. I served as Chair of the Canadian mirror committee to ISO-TC 274. Details of this committee's work will be discussed during this meeting under MC-ISO-TC 274 business.
4. I contributed to the preparation of input to the annual performance report (APR) to the NRC Government and International Affiliations Office (NRC-GIA), which was led by the President.



## APPENDIX F

### CNC/CIE Secretary's Report November 2022

Ali Ghaemi

CNC-CIE-Secretariat@nrc-cnrc.gc.ca

I have acted as the CNC/CIE Secretary since October 2021. Some of the tasks that were completed since that time are listed below:

#### 1- Communications

- a. CIE notifications, announcements and Press Releases were distributed by the CIE-CB to the NC's via email with supporting documents available on the CIE website ([www.cie.co.at](http://www.cie.co.at)) using Collaboration Tools. These documents were downloaded and made available on the CNC/CIE website. General interest documents with no commercial content were downloaded and redistributed to the CNC/CIE-ALL contacts list, while letter ballots were distributed to Members or the Board of Administration as required.
- b. In communication with the Secretary, please use the NRC email address CNC-CIE-Secretariat@nrc-cnrc.gc.ca. Both the Secretary and Vice-President have access to this mailbox which is monitored at a minimum, every few days.

#### 2- Letter Ballots

- a. CIE Ballots: National Committee Letter Ballots circulated by the CIE Central Bureau were distributed to members for voting. Decisions were taken based on the consensus of those voting, as per the CNC/CIE Code of Procedure. Letter ballots for 2021/22 were
  - i. NC LB2104 Selection of a CIE publication for distribution by NCs and ANCs in 2022: publication [CIE 234:2019 A Guide to Urban Lighting Masterplanning](#) was selected and made available to 37 members, 8 members requested a copy of the publication.
  - ii. LB NC2202 NC Ballot confirmation of review of on the revised CIE Statutes and By-laws: Comments submitted.
  - iii. LBs NC2205, BA2221, D01-2206 Ballot on ISO/CIE DIS 23603:2022: Disapproved with comments.
  - iv. LB NC2206 Appointment of Kees Teunissen to the BA: Approved
  - v. LBs NC2106, BA2136, D02-2113 Ballot on CIE DIS 027:2021 of TC 2-67: Approved
  - vi. LB NC2203 Ballot on ISO/CIE FDIS 11664-6:2022: Deadline is December 22, 2022



- 3- **Annual Performance Review of the CNC/CIE:** The president provided the completed APR questionnaire to report on the 2021 calendar year to the International Innovation Office of the National Research Council.
- 4- **Requests for Funding:** The CNC/CIE provided a cash contribution of \$1500 to the AIC 2022 conference. The CNC/CIE also contributed \$50 toward sponsoring a student to attend the AIC 2022 conference virtually. An additional \$394.98 was awarded for a student oral presentation and poster at the AIC 2022 conference (\$150 USD each).
- 5- **CNC/CIE Website:** The website operates at the web address of [www.cnc-cie.ca](http://www.cnc-cie.ca). See the separate Website subcommittee report.
- 6- **Mailing Lists:** At the present time 4 mailing lists are maintained: Members (34), Affiliates (74), Board of Administration (12) and All (108). Affiliates and all receive CIE material (press releases of CIE publications) and notices of conferences. Members and Board of Administration receive more CNC information including ballots, and the Minutes of the annual meeting a related information.



## APPENDIX G

### CNC/CIE Treasurer's Report to the CNC/CIE 67th Annual Meeting

21 November 2022

The financial statement for the period 29 September 2021 to 28 October 2022 is presented below.

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<b>Opening Balance (29 September 2021)</b>	<b>\$27,284.18</b>
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**Income:**

*Income from publication sales (credit on acct from  
CIE Central Bureau of EUR 994.98):*

\$1365.03

<b>Total Income:</b>	<b>\$1365.03</b>
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**Expenses:**

*PPT Templates for CNC-CIE Lighting Course*

\$1017.00

*Student Sponsorship AIC2022 Registration:*

\$50.00

*AIC2022 Sponsorship Fee*

\$1500.00

*CNC-CIE Student Awards 2022 (2 @ \$150USD)*

\$394.98

<b>Total Expenses:</b>	<b>\$2961.98</b>
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<b>Net Income (Loss):</b>	<b>-\$1596.95</b>
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<b>Ending Balance (October 28 2022)</b>	<b>\$25,687.23</b>
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Respectfully submitted,

Shirley Coyle  
Treasurer, CNC/CIE  
Scoyle6889@gmail.com



## APPENDIX H

### CNC/CIE Web Site Report November 2022

Sharon McFadden and Jennifer Veitch

#### Domain

We are and will remain [www.cnc-cie.ca](http://www.cnc-cie.ca).

#### Usage

Usage increased over the past year. During the last 12 months we averaged 279 unique visits and 360 visits per month as compared to 210 unique visits and 274 visits in 2020. About 15% of the visits or 53 per month lasted longer than 30 seconds. On average, 6 pages were viewed per visit. Americans were the most frequent visitors with Canadians second. Australia was third.

Thirteen members logged into the members only area at least once during the past year. Members can retrieve their usernames and passwords using the built-in retrieval facility, or they may contact the Secretariat for more information.

#### Content

- Sharon continues to upload press releases for new publications and provide direct access to free CIE publications on the website.
- As well as providing information on CIE events, Sharon posts notices about relevant national and international lighting events. Members are encouraged to send information on lighting events to have them put on the website.

We encourage all members to visit the website and offer suggestions for improvements and additions.

#### History of Lighting in Canada

No progress was made on the project this year. There is much still to do! If you have an interest, or if you know someone who does, we do have lots of material that could be compiled. It would be an interesting student project.

#### Maintenance

The cost for the domain registration, site hosting, and maintenance remains low, at ~\$100 per year. I recommend we keep our current arrangement, which seems to be working well.



## APPENDIX I

### CNC/CIE Membership Subcommittee – Chair’s Report November 2022

Prepared by: Michele Mossman

#### Current CNC/CIE Membership

The current membership includes:

- 12 Members of the CNC/CIE Board of Administration
- 34 Members (includes the 12 Members of the Board of Administration)
- 74 Affiliates

The current CNC/CIE Board of Administration Members are:

<u>Member name</u>	<u>Board of Administration role</u>	<u>Term expires</u>
Jeff Hovis	President and Division 1 member	2023
Jennifer Veitch	Vice President and Division 3 member	2023
Ali Ghaemi	Secretary	2023
Shirley Coyle	Treasurer	2023
Joanne Zwinkels	Division 2 member	2023
Cristian Suvagau	Division 4 member	2023
Sami Qutob	Division 6 member	2023
Tara Akhavan	Division 8 member	2022
Arnold Gaertner	Member at Large	2023
Michele Mossman	Member at Large	2024
Venkat Venkataramanan	Member at Large	2023
Lorne Whitehead	ex-officio, CIE Vice President	2023

Geographic representation: The CIE/CNC aims to have as diverse geographic representation as possible. Currently, the geographic representation of the 34 CNC/CIE Members is: British Columbia (7), Newfoundland (1), Ontario (21), Prince Edward Island (1), and Quebec (4).

#### Changes to membership

Keith Niall has chosen to step down from the role as CNC Member. On behalf of the CNC/CIE, the Executive committee would like to express their sincere appreciation to Keith for the many valuable contributions he made to the CIE during his tenure as a CNC/CIE member.



Six Affiliates were removed from the list during 2022, either because of relocation or because we were no longer able to reach them at their contact email address, and three individuals joined as new Affiliates.

### **Membership nominations:**

Members: The following four members whose current terms expire at the end of 2022 are willing to renew for another 4-year term as Member:

- Ian Ashdown
- Deborah Gottesman
- Barbara Kolesnik
- Li-Lin Tay

Division Member: Tara Akhavan is currently CNC/CIE Division Member for CIE Division 8 (Image Technology), and her 4-year term in this role expires this year. Tara is willing to renew as Division 8 member for an additional year, which will bring the term expiry date in alignment with those of the other Division members.

Pages 3 and 4 of this report include brief bios for these nominees.

### **Membership activities for consideration during 2023:**

- The current terms for all CNC/CIE Officers and Division members expire at the end of 2023. We will begin recruitment efforts in early 2023 to identify interested candidates for all open positions.
- We are considering identifying individuals as Affiliate Division members, to enable greater collective effort and continuity by CNC/CIE participants in support of Division activities.
- Geographic representation remains a priority and we will continue our efforts to increase membership from Alberta, Saskatchewan, and Manitoba, as well as Atlantic Canada.
- We have the option to recruit up to 4 additional Members at Large for the Board of Administration. This is not essential, but is an opportunity to increase diversity on the Board, including geographic representation.
- A task group is working on updating the Code of Procedures, and during 2023 we will update the membership database to be consistent with any changes in the Code of Procedures that relate to membership.
- We are working to fill in missing mailing address information on the membership database.



## **Brief biographies for 2022 CNC member renewal nominees:**

### Ian Ashdown

Ian Ashdown has been involved in lighting research and development since 1980. His research interests include near-field photometry and radiometry, holographic diffusers, micro-LEDs and LED packaging, electric lighting and daylighting simulation software, lighting control, horticultural lighting, astronomical light pollution, circadian-based lighting, and ultraviolet and visible light disinfection. He is a Fellow of the Illuminating Engineering Society and Chair of the IES Horticultural Lighting Committee. He currently holds 77 lighting-related patents.

### Deborah Gottesman

Deborah Gottesman has a unique contextual understanding of lighting from all perspectives; her career spans over 30 years in all facets of the lighting industry, including design, engineering, management, education, and manufacturing. Since establishing Gottesman Associates (an architectural lighting design practice) in 1999, Deborah's creative, rigorous, passionate and client-driven approach have brought award-winning lighting designs to a wide range of satisfied and repeat clients.

An electrical engineer with an MBA in Real Property, Deborah has successfully worked on projects in many sectors, and has taught lighting at all levels to a wide audience from students at colleges and universities to senior architects.

Deborah currently is a member of the CNC/CIE and sits on the international Technical Committee 3-59: The Integration of Daylight and Electric Light and is a collaborator on the CNC/CIE lighting course.

### Barbara Kolesnik

Barbara Kolesnik, M.Sc., P.Eng. is the Manager of Electrical Engineering with AECOM's Transportation Sector in Mississauga. Her experience includes preliminary and detail designs on a variety of projects involving decorative and conventional street lighting, high mast highway illumination, underpass lighting and temporary and permanent traffic signals. Barbara also conducts economic evaluations for various lighting systems and provides input into preliminary design reports and studies.

Barbara specializes in application of lighting policies, including Illuminating Engineering Society of North America (IESNA) RP-8-21 Standard Practice for Roadway Lighting and TAC Edition 2006 with respect to illuminance and luminance level criteria selection, glare and light trespass prevention methods and implementation of LED technology.

Barbara has over 40 years of experience in the preliminary and detail design of illumination and traffic signals for various municipalities and regions, including City of Brampton, City of Toronto, City of Markham, City of Windsor, City of Brantford, Town of Oakville, Town of Richmond Hill, Region of Peel, Region of York, Halton Region and the Ministry of Transportation, Ontario.





## Li-Lin Tay

Li-Lin Tay is a senior research officer and the Team Leader of Photometry and Spectrophotometry at the Metrology Research Centre, National Research Council Canada. Her team is responsible for the realization of the SI base unit of Candela and many of its associated derived units. Dr. Tay holds a B.Sc. in Physics and Ph.D. in Physical Chemistry, both from University of Toronto. She joined the NRC in 2002 as a research associate and lead the research effort on light scattering of quantum confined semiconductor devices.

Dr. Tay has been the Team Leader of Photometry and Spectrophotometry since 2016. She has been leading the team in the research and development of the state-of-the-art optical radiation measurement capabilities, solid-state-lighting standards and advanced optical spectroscopies in support of Canada's commitment to the international committee on Weights and Measures Mutual Recognition Arrangement and NRC's services for a broad base of National and international clients. Her own research is focused on the development surface enhanced spectroscopy and Raman Metrology. She is well recognized for her work in the optical properties of plasmonic nanostructures, surface enhanced Raman scattering (SERS) and their application in field deployable chemical and biological sensing. She has published over 90 peer reviewed publications as well as numerous book chapters and technical reports.

Dr. Tay serves on several national and international committees and working groups. Among others she is the Canadian delegate to the Consultative Committee of Photometry and Radiometry (CCPR), chair of the Raman task group in the Consultative Committee for the Amount of Substances: Metrology in Chemistry and Biology (CCQM-BIPM), chair of the ASTM E13 technical committee on Molecular Spectroscopy and Separation Science and the Canadian co-chair of the steering committee of the Versailles Project on Advanced Materials and Standards (VAMAS).

## Tara Akhavan

Tara Akhavan, Ph.D. is a visionary award-winner technology entrepreneur and pioneer in the field of Perceptual Display Processing for the automotive industry. She is the President and CEO of Faurecia IRYStec Inc. (formerly known as IRYStec Inc.), an innovation center that got acquired by Faurecia in April 2020. Tara founded IRYStec in 2015 and served as CTO for 5 years introducing eye-friendly display technology to the automotive industry. IRYStec's first product was introduced to the market in August 2020 in all Daimler Mercedes-Benz E-Class Convertible cars worldwide. IRYStec won the prestigious PACE award in 2021 for its innovative Perceptual Display Platform product introduced to the market in collaboration with Daimler. Tara has been recognized as the Automotive Inspiration of the Year (under 40) by Informa Tech Automotive Award 2021 as well as the Entrepreneur of the Year in 2019 by EoY Canada as well as the founder of top 20 Innovative start-ups in Canada in 2018 by CIX, the Canadian's Largest Investor Conference.

Prior to founding IRYStec, she was awarded for scaling an Operations and Maintenance Center (OMC) product in the Telecommunications industry, all the way from analysis and design to deployment in a 3GPP mobile network with 20 million subscribers. Tara obtained a bachelor's degree in Computer Engineering, a master's degree in Artificial Intelligence and a Ph.D. in



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



Canadian National Committee Comité national canadien

Image Processing and Computer Vision from Vienna University of Technology. Tara is the Canadian Committee member for International Committee for Illumination (CIE) and the Marketing Vice-Chair for the Society of Information Displays (SID).



## APPENDIX J

### MC-ISO-TC 274 Chair's Report November 21, 2022

Jennifer A. Veitch, Ph.D.

[j\\_a\\_veitch@idarchitect.ca](mailto:j_a_veitch@idarchitect.ca) | [jennifer.veitch@nrc-cnrc.gc.ca](mailto:jennifer.veitch@nrc-cnrc.gc.ca)

#### A. Membership

Chair: Jennifer Veitch  
Vice-Chair: Jeff Hovis  
Members: Ian Ashdown  
Shirley Coyle  
Chad Greene  
Toby Lau  
Lisa Mak  
Sharon McFadden  
Sami Qutob  
Conor Sampson  
Cristian Suvagau  
Venkat Venkataramanan

Any Canadian is welcome to join, but especially anyone already affiliated with the CNC/CIE. It does require a separate application to the SCC, which can be done here: <https://www.scc.ca/en/standards/committees/iso-tc-274-light-and-lighting>.

#### B. Activities

##### 1. Ballots

I have cast 11 ballots and/or comments on behalf of the committee (see Annex for the full report), following discussions by e-mail with committee members or through the SCC Hub. We responded to all ballots. There are no open ballots at present. The number of ballots was lower than in the two previous years (16 total in 2021 and in 2020).

I thank the committee members for their participation. This demonstration of our activity is among the measures of our evaluation by SCC.

##### 2. ISO/TC 274 Plenary meeting

This year's meeting was a hybrid one, with the in-person attendance in London and others attending online. Toby Lau served again as our Head of Delegation, attending online.

The meeting was accompanied by a workshop on Ambient Lighting, to explore whether there is sufficient information to merit a new standards activity in ISO/TC 274. Presentations were given by Tommy Goven (SE), Peter Boyce (GB), and Peter Raynham (GB).

The 2023 meeting is expected to be held in Japan in June or July 2023, in conjunction with a plenary meeting of IEC/TC 34. The exact date and location will depend on decisions taken by IEC/TC 34.

**Decision to be taken:** Who will represent Canada as our Head of Delegation at the 2023 plenary meeting?



### 3. Contributions to ISO/TC 274

We have strong participation in the parent committee in ISO, although additional volunteer experts are always welcome:

<i>Current Activities</i>			<i>Comment</i>
ISO/TC 274 CAG	Chair Advisory Group	T. Lau	
ISO/TC 274-JWG 1 [CIE JTC 6 (CIE-ISO)]	Energy performance of lighting in buildings	T. Lau	In addition to the project on the line below, this group also is working on ISO/CIE AWI 10916, <i>Calculation of the impact of daylight utilization on the net and final energy demand for lighting</i> . It has been approved for a DIS.
	ISO/CIE AWI TR 3092 <i>Light and lighting – Energy performance of lighting in buildings – Explanation and justification of ISO/CIE 20086</i>	T. Lau – Project leader	The document was approved and is in preparation for publication. An Excel calculation tool is in preparation.
ISO/TC 274 WG 2	Commissioning process of lighting systems	T. Lau	Project (ISO/AWI TR 5911) will produce an ISO Technical Report to supplement ISO/TS 21274 .
ISO/TC 274 JWG 4 [CIE JTC 14 (CIE-ISO)]	Integrative lighting	J. Veitch	ISO/CIE TR 21783 <i>Light and lighting - Integrative lighting - Non-visual effects</i> was published in October 2022 and this JWG has been closed.
ISO/TC 274 JWG 5 [CIE JTC 15 (CIE-ISO)]	Lighting for workplaces	J. Veitch	The text for the full WD is with the secretariat for editorial work prior to it being circulated to the JWG.
ISO/TC 163	Liaison representative from ISO TC 163 to ISO TC 274	T. Lau	Presented a report on ISO/TC274 at the ISO/TC 163 virtual plenary meeting in September. The Liaison report is available from the Chair.
ISO/TC 205/WG 10 [Commissioning]	Liaison representative from ISO TC 274 to ISO TC 205/WG10	T. Lau	.
ISO /TC 274	Liaison representative from ISO TC 274 to ISO TC 205/WG 7	C. Sampson	Conor resumed his post as this liaison representative in February 2021. This position will change in the coming months, as there is to be a new JWG between ISO/TC 205 and ISO/TC 274 to replace this WG, and Conor will be the TC 274 co-convenor of the new JWG.

#### C. Relations between the CNC/CIE and SCC:

##### 1. Mirror committee accreditation and funding

In December 2021, on our behalf, I completed our annual Application for Committee Accreditation [Annex C] and Financial Assistance for the fiscal year 2022-23. It is not appended because there were minimal changes from the prior year. We were successful [Annex D], receiving a score of 67.5 out of a possible 105. Rankings were not reported this year. The success is in part thanks to our renewed external stakeholder support from BC Hydro and CSA. Nonetheless, the SCC decided not to invoice external stakeholders because of the suspension of in-person meetings.

##### 2. Registration of CNC/CIE as a Standards Administering Organization

I reported this last year and have made no progress on this item. I was waiting for the CNC/CIE Secretary to become comfortable in the role before formally adding these new tasks. Now that we are again without a Secretary of the CNC/CIE, I will again set this aside until there is greater stability.



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



Canadian National Committee Comité national canadien

The CNC/CIE had applied in 2019 to the SCC for recognition as a Standards Administering Organization. This would be advantageous because it would confirm the Secretariat of the CNC/CIE as the administering entity overseeing the MC and would confirm our Code of Procedure terms that govern such matters as the selection of the Chair and Vice-Chair of the mirror committee.

The application requires modification, which continues to be held up at my end because of other duties. However, one of the modifications concerned the need for an internal archiving system that members could query in case of interest. We now have server space on an NRC server (DocZone) for the CNC/CIE, accessible to me and to the CNC/CIE Secretary. This should facilitate resolving this matter, and I hope to resubmit the application in the coming months.

#### **D. Other organizations in liaison**

We continue to have an informal liaison with CSA C419, with several members in common. Through the work of Toby Lau, some of the CSA work on energy efficiency is receiving favourable attention in ISO/TC 274/JWG 1, and this is welcomed by CSA.

I gave a presentation to the Electro-Federation of Canada Lighting Section on 2022-03-31 about lighting standards development in Canada. I hope to expand the membership of our committee by furthering this relationship.

#### **E. Upcoming actions and issues**

Staffing changes at the SCC have given us a new project manager, Alex Craig. I have not yet had a chance to meet with him.



Annex A – Record of MC-ISO-TC274 Voting between 2021-11-05 and 2021-11-21

Item #	Title	Circulated	SCC due date	Questions	Vote	Date ballot cast
N809	New JWG with ISO/TC 205	2022-08-22	2022-09-05	1 Do you agree with Draft Resolution 142/2022 to establish a Joint Working Group "Indoor visual environment" with ISO/TC 205, details see N 809. Yes No Abstain 2 Do you agree with Draft Resolution 143/2022 to appoint Conor Sampson as co-convenor of the new JWG, details see N 809. Yes No Abstain (* ) A Comment is required for this answer value.	1. Yes 2. Yes	2022-09-05
N780	ISO TS 7127 BIM properties for lighting	2022-06-02	2022-07-02	1 Do you approve the draft to proceed to DTS ballot and/or have any comments? Yes No * Abstain (* ) A Comment is required for this answer value.	No	2022-07-05
	ISO 30061:2007 Emergency Lighting	2022-04-14	2022-08-18	o. Question Possible options 1 Recommended action Withdraw * Revise/Amend * Confirm Abstain due to lack of consensus Abstain due to lack of national expert input Stabilize 2 Has this International Standard been adopted or is it intended to be adopted in the future as a national standard or other publication? Yes * No * If not, what is used instead 3 Is the national publication identical to the International Standard or was it modified?1 Identical Modified * 4 If this International Standard has not been nationally adopted, is it applied or used in your country without national adoption or are products/processes/services used	1. Revise/Amend * 2. No. (National Building Code provides the model code) 3. N/A 4. No 5. No. 6. No	2022-08-19



Item #	Title	Circulated	SCC due date	Questions	Vote	Date ballot cast
	<p>Systematic Review of ISO/TC 22012:2019 Light and lighting — Maintenance factor determination — Way of working</p>	<p>2022-01-14</p>	<p>2022-05-20</p>	<p>in your country based on this standard?2 Yes No *</p> <p>5 Is this International Standard, or its national adoption, referenced in regulations in your country? Yes No *</p> <p>6 If the committee decides to revise or amend, do you propose an expert and/or project leader for the development of that project? Yes (name(s) and proposed role(s): expert or project leader) * No (* ) A Comment is required for this answer value. (1) This question only appears if the answer to question 2 is "Yes" (2) This question only appears if the answer to question 2 is "No"</p> <p>o. Question Possible options 1 Recommended action Withdraw *</p> <p>Revise/Amend * Confirm Abstain due to lack of consensus Abstain due to lack of national expert input Stabilize 2 Has this International Standard been adopted or is it intended to be adopted in the future as a national standard or other publication? Yes *</p> <p>No * If not, what is used instead 3 Is the national publication identical to the International Standard or was it modified?1 Identical Modified *</p> <p>4 If this International Standard has not been nationally adopted, is it applied or used in your country without national adoption or are products/processes/services used in your country based on this standard?2 Yes No *</p> <p>5 Is this International Standard, or its national adoption, referenced in regulations in your country? Yes No *</p> <p>6 If the committee decides to revise or amend, do you propose an expert and/or project leader for the development of that project? Yes (name(s) and proposed role(s): expert or project leader) * No (* ) A Comment is required for this answer value. (1) This question only appears if the answer to question 2 is "Yes"</p>	<p>o. Question Possible options 1 Recommended action Revise/Amend *</p> <p>2 Has this International Standard been adopted or is it intended to be adopted in the future as a national standard or other publication? No * If not, what is used instead</p> <p>3 Is the national publication identical to the International Standard or was it modified?</p> <p>4 If this International Standard has not been nationally adopted, is it applied or used in your country without national adoption or are products/processes/services used in your country based on this standard?2</p> <p>No *</p> <p>5 Is this International Standard, or its national adoption, referenced in regulations in your country? No *</p> <p>6 If the committee decides to revise or amend, do you propose an expert and/or project</p>	<p>2022-05-20</p>



Item #	Title	Circulated	SCC due date	Questions	Vote	Date ballot cast
				(2) This question only appears if the answer to question 2 is "No"	leader for the development of that project? No (* ) A Comment is required for this answer value. (1) This question only appears if the answer to question 2 is "Yes" (2) This question only appears if the answer to question 2 is "No"	
N758	Commenting on ISO/TC 274 strategic business plan	2022-04-07	2022-05-05	1 Do you have any comments on the CAG proposal for the updated SBP? No Yes * Abstain	No	2022-05-08
N747	Internal ballot on ISO/CIE DTR 3092	2022-02-25	2022-04-10	No. Question Possible options 1 Do you approve the draft for publication? Approval Approval with comments* Disapproval* Abstention (* ) A Comment is required for this position.	Approval with comments	2022-04-08
N746	10th Plenary Meeting - Ballot on approval of a hybrid meeting	2022-02-11	2022-02-13	Do you approve to hold the 10th plenary meeting as a hybrid meeting in London from 13th to 17th June?  Yes No * Abstain  Is your delegation willing to participate physically (expression of interest, no final registration)  Yes No, but virtual Not at all Do you have any additional comments? Yes * No	1. Yes 2. No, but virtual 3. Yes, comment attached	2022-02-11
N741	systematic review of ISO/CIE 28077:2016 -	2021-11-11	2022-02-03	o. Question Possible options 1 Recommended action Withdraw	1. Revise/Amend * 2. No.	2022-01-28





Item #	Title	Circulated	SCC due date	Questions	Vote	Date ballot cast
	Photocarcinogenesis action spectrum (non-melanoma skin cancers) (CIE lead)			<p>*</p> <p>Revise/Amend *</p> <p>Confirm</p> <p>Abstain due to lack of consensus</p> <p>Abstain due to lack of national expert input</p> <p>Stabilize</p> <p>2 Has this International Standard been adopted or is it intended to be adopted in the future as a national standard or other publication? Yes *</p> <p>No * If not, what is used instead</p> <p>3 Is the national publication identical to the International Standard or was it modified?1</p> <p>Identical</p> <p>Modified *</p> <p>4 If this International Standard has not been nationally adopted, is it applied or used in your country without national adoption or are products/processes/services used in your country based on this standard?2 Yes</p> <p>No *</p> <p>5 Is this International Standard, or its national adoption, referenced in regulations in your country? Yes</p> <p>No *</p> <p>6 If the committee decides to revise or amend, do you propose an expert and/or project leader for the development of that project? Yes (name(s) and proposed role(s): expert or project leader) *</p> <p>No</p> <p>(* ) A Comment is required for this answer value.</p> <p>(1) This question only appears if the answer to question 2 is "Yes"</p> <p>(2) This question only appears if the answer to question 2 is "No"</p>	<p>3. N/A</p> <p>4. Yes.</p> <p>5. Yes. CSA Group documents reference it.</p> <p>6. Yes. Dr. Sami Qutob, Health Canada.</p>	
N73 3	ISO/DIS 18314-5, Analytical colorimetry — Part 5 (commenting, ISO/TC 256)	2021-10-25	2021-12-21	<p>No. Questions Possible Answers</p> <p>1 Do you have any comments on ISO/DIS 18314-5? Yes *</p> <p>No</p> <p>(* ) A Comment is required for this answer value.</p>	No	2021-11-10
	SCC Mirror Committee Activity Report 2021	2021-11-02	2021-12-15	<p>1. Is the mirror committee significantly revising the previously submitted activity report?</p> <p>2. Is the mirror committee seeking financial assistance?</p> <p>3. Is the mirror committee providing external contributions?</p>	<p>No (A minor revision is attached)</p> <p>Yes</p> <p>Yes, our Form B(s) are attached. (One of our stakeholders had a technical problem with his e-signature on Dec. 14. I have posted his e-mail to me, and will</p>	2021-12-15



Item #	Title	Circulated	SCC due date	Questions	Vote	Date ballot cast
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replace it with the signed Form B when received.

N73 6	ISO/CIE DIS 11664-2 "Colorimetry — Part 2: CIE standard illuminants"	2021-10- 26	2021-11- 25	Questions still to come!	No	2021- 11-25
N71 4	SR on ISO/CIE 11664-5:2016	2021-07- 20	2021-11- 09	1 Do you have any comments on the SR on ISO/CIE 11664-5:2016? Yes * No Abstain (* ) A Comment is required for this answer value.	No	2021- 11-09



# APPENDIX K

## AIC 2022: SENSING COLOUR

International Colour Association (AIC)  
Hosted by: Colour Research Society of Canada  
June 13-16, 2022

### Organization

- We were very closely involved from early stages in conference planning. Venkat met the organizing committee at least once in two weeks.
- We proposed a few collaborative events. They were considered by the program committee but did not materialize. These included a pedagogical workshop on teaching colour, a workshop/opening keynote on northern lights, etc.
- In-person or hybrid (in-person and online) modes were discussed, eventually it was decided that the conference will be fully online.
- We organized (along with Tom Butters, Lighting Agora) an online panel discussion.

### CNC-CIE Sponsorship

- We approved a sponsorship of \$1,500 and a student award worth \$500. This placed us in the sponsorship Level 3: \$2,000 - \$6,999.
- We were provided 3 complimentary registrations for the conference.
- Our members were provided online access to daily uploads of talks. This link was accessible for 2 weeks.

### Contributions

- Participated in the Program Review Committee
- Reviewed eight abstracts submitted for Lighting related sessions. Resolved four more abstracts for acceptance/rejection (there was a tie between two other reviewers).
- Chaired Colour Science IV session, that included 5 oral presentations.
- Assisted in financial planning

### Student Award

Total eligible papers: 6

Adjudicated by: Jeff Hovis, Jennifer Veitch, and Venkat Venkataramanan

Award value: \$500 each

Winners:

- Hao Xie for the paper titled The Luther Condition for All: Evaluating Colorimetric Camera Design for Personalized Color Imaging



- Olivia Kuzio for the paper titled Simulating the Effect of Camera and Lens Choice for Color Accurate Spectral Imaging of Cultural Heritage Materials

### **Lighting Panel**

June 16th 9:00 am - 9:40 am.

Moderator - Tom Butters

- Intro for CIE and the panel – Venkat Venkataramanan
- Light, Colour and Design – Deborah Gottesman
- Light, Colour and the Importance of Modern Lighting Metrics – Tony Esposito
- Light, Colour and Health – Mariana Figuerio
- Light, Colour and Application Strategies from Classrooms to Patient Rooms – Patricia Rizzo
- Moderated Questions

### **Other**

- The conference was successful. 56 participants in all. CIE-related themes were the major part.
- It was financially profitable for CRSC.
- Talks are getting uploaded to YouTube. Will be available for general viewing for a period and then will be restricted to CRSC members.
- Conference proceedings getting ready for publication.
- AIC 2023 will be hosted by the Colour Society of Thailand, and will be held in Chian Rai, with the theme "Colour in Nature & Culture", Nov. 28 – Dec 2, 2023

Prepared by:  
*Venkat Venkataramanan*  
21 Nov 2022



## Division 1: VISION AND COLOUR

Report to CNC/CIE 67th Annual Meeting  
National Research Council of Canada  
1200 Montreal Road, Ottawa, Ontario K1A 0R6 Canada  
Zoom Web Conference  
Monday, Nov. 21, 2022  
1:00 PM to 4:00 PM EST

Jeff Hovis  
Email: [jhovis@uwaterloo.ca](mailto:jhovis@uwaterloo.ca)

### 1 Introduction

The annual Division 1 meeting was held Friday, 5<sup>th</sup> of August 2022 using the Webex virtual meeting platform. Thirty-five people from 17 countries attended. Canada was represented by Sharon McFadden. The minutes can be found at the Members Section of the CNC-CIE website.

Officers are

Division Director	Youngshin Kwak (KR)
Associate Director – Vision	Yoko Mizokami (JP)
Associate Director – Colour	Kaida Xiao (GB)
Division Editor	Peter Hanselaer (BE)
Division Secretary	Li-Chen Ou (TW)

### 2 Highlights

One of the major highlights were the results of the survey for updating the CIE research strategy. Two surveys were conducted in mid-to-late 2021 to collect ideas from the D1 members. Based on the results of the two surveys, four major themes emerged.

1. Cone-Fundamental based Colorimetry
2. Advanced Color Appearance Model
3. Visual Appearance: Perception, Measurement and Metrics
4. Colour Difference Equations

The summarized D1 research topics were submitted to Vice President, Technical on January 2022 for CIE-level topic selection.

#### New Work Items in preparation

Prof. Ronnier Luo (Zhejiang University, China) is preparing a proposal for a new TC to recommend CAM16-UCS as a new CIE uniform colour space.

Prof. Changjun Li (University of Science and Technology Liaoning, China) is preparing a proposal for a new TC to recommend a unified method for computing XYZ.

Dr. Tsujimura is planning to propose a new TC entitled Stimulus conditions under which ipRGC stimulation affects brightness perception

#### Opportunities

JTC 8 Terminology in Light and Lighting is looking for a new chair and someone from Division 1 to replace Sharon McFadden

#### 2.1 New Technical Committees and Reporterships

R1-71 Melanopsin contribution to visual perception. Sei-ichi Trujimura (literature review is nearly completed)



RF-03 Matters related to colour rendition. Kees Teunissen is the convener

## 2.2 Division publications

ISO/CIE TR 21783:2022(E) Light and lighting — Integrative lighting — Non-visual effects

CIE 249:2022 Visual Aspects of Time-Modulated Lighting Systems

CIE 248:2022 The CIE 2016 Colour Appearance Model for Colour Management Systems: CIECAM16

## 2.3 Future meetings

The 2023 Division 1 meeting will be held as part of the 30th CIE Quadrennial Session in Ljubljana, Slovenia, from 15th to 23rd September 2023

## 3 Current Canadian participation in Division 1 activities

List Canadians who Chair or participate in Technical Committees, handle a Reportership, act as a Division Officer or act as a liaison.

Activity	Title	Canadian Members
TC1-98	A road map forward basing CIE colorimetry on cone fundamentals	Lorne Whitehead, Chair
JTC 8	Terminology in Light and Lighting	Joanne Zwinkels Member
Liaison Associates		Joanne Zwinkels Sharon McFadden Jennifer Veitch



## 4 Highlights of Division Work Programme

### 4.1 Overview of the status of TCs and Reporterships

#### 4.1.1 Current Technical Committees

- TC1-83 Visual aspects of time-modulated lighting.** **Malgorzata Perz (NL); Chair**  
Closed  
No CA members
- TC1-84 Definition of visual field for conspicuity.** **Nana Itoh (JP); Chair**  
Committee Draft  
No CA members
- TC1-91 New method for evaluating the colour quality of white-light sources.** **Yandan Lin (CN); Chair**  
Committee Draft #2 is being prepared  
No CA members
- TC1-92 Skin Colour database.** **Kaida Xiao (GB); Chair**  
Working Draft #6 submitted to Central Bureau  
No CA members
- TC1-95 Validity of the CIE Whiteness and Tint Equations.** **Minchen Wei (HK); Chair**  
Working Draft – should be ready to submit by the end of September 2022.  
No CA members
- TC1-96 A comprehensive model of colour vision.** **Ronnier Luo (GB); Chair**  
Working Draft was rejected by Technical Manager. The title and terms of reference will be changed and voted on.  
No CA members
- TC1-97 Age- and Field-Size-Parameterised Calculation of Cone-Fundamental-Based Spectral Tristimulus Values.** **Jan Henrik Wold (NO); Chair**  
Completed, waiting to set-up of CIE website Version 1.0 released on GitHub. Suggested that there is a Technical Reference that accompanies the program
- TC1-98 A road map forward basing CIE colorimetry on cone fundamentals.** **Lorne Whitehead (CA); Chair**  
On working draft #7. Also suggesting that 5 new Technical Committees be established to act on recommendations and proposals that will be set out in the report&
- TC1-99 Modelling two-dimensional colour appearance scales.** **Ronnier Luo (GB); Chair**  
Pre-Working Draft & additional data was collected and published  
No CA member



#### 4.1.2 Current Joint Technical Committees

**JTC 1 (D1/D2/D4/D5): Implementation of CIE 191:2010 Mesopic Photometry in Outdoor Lighting. Stuart Mucklejohn (GB); Chair**

No CA member

**JTC 8 (D1/D2/D3/D4/D6/D8) Terminology in Light and Lighting , JTC Chair: Peter Zwick (DE), M Pointer (GB) and S McFadden(CA); Co-Chairs**

Looking for someone to replace Sharon McFadden

Joanne Zwinkels, Member

Continual updating and harmonizing with other dictionaries

**JTC 10 (D8/D1) A new colour appearance model for colour management systems: CIECAM16 Changun Li (CN); Chair**

Closed

No CA member

**JTC 12 (D2/D1/D8) The measurement of sparkle and graininess. Alejandro Ferrero (ES); Chair**

Collecting additional data and working on a draft Technical Report

No CA member

**JTC 16 (D1/D8) Validity of Chromatic Adaptation. Minchen Wei (HK); Chair**

Delayed progress due to COVID 19, more experiments will be carried out

No CA member

**JTC 17 (D1/D2/D8) Gloss measurement and gloss perception: A framework for the definition and standardization of visual cues to gloss. Frederick Leloup (BE); Chair**

Progress in the development of an image-based measurement, Pre-Working Draft

No CA member

#### 4.1.3 Current Reportships

**R1.60 Future colour difference-evaluation – Reporter: Manuel Melgosa (ES)**

Continuing literature review.

**R1.62 Typical LED Spectra – Reporter: Sophie Jost (FR)**

Results available from Kokka et al. Metrologia 2018 Vol. 55 Pages 526-534. Dr. Jost is currently on medical leave

**R1.63 Tristimulus Integration – Reporter: Changjun Li (CN)**

Finished and reporter recommended closing the reportship.

**R1.64 Real Colour Gamuts – Reporter: Changjun Li (CN)**

No further progress this year

**R1.66 The Effect of Dynamic and Stereo Visual Images on Human Health: Reporter: Hiroyasu Ujike (JP)**

Final Report has been submitted. Archived in Collaboration Platform

Closed

**R1.67 Revisiting Correlated Colour Temperature – Reporter: Youngshin Kwak (KR)**

Working on the journal paper proposing the warm-cool based CCT. Report will be submitted by the end of 2022





### **R1.69 Applicability of Metrics for Evaluating Reflected Glare on Displays: Shao-Tang Hung (TW)**

The reporter continues to report progress in developing a camera based system for measuring glare.

Anticipates to finish 2022/23

### **R1.70 Visual assessment methods of perceptual colour shifts in high-dynamic-range luminance conditions Jisoo Hwang (KR)**

Data collection is finished. A manuscript is in preparation

## **4.2 Dissolution of and changes to TCs and Reporterships**

TC 1-96 Revised Title: Advances in Colour Appearance Models

Revised Terms of Reference:

To present the state of the art in colour appearance modelling in terms of the effect of the stimulus size, and the colour appearance of unrelated colours. In both cases more than one model will be presented, and further experimental work encouraged.

TC 1-91 Revised Terms of Reference

from

“To evaluate available new methods for evaluating the colour quality of white-light sources with a goal of introducing methods for industrial use. (Methods based on colour fidelity shall not be included: see CIE 224:2017)”

to

“To summarize available new methods for evaluating the colour quality of white-light sources with a goal of introducing methods for industrial use. (Methods based on colour fidelity shall not be included: see CIE 224:2017)”

## **5 Other Division News**

As discussed at Annual Meeting on 5th August 2022, the average response rate in letter ballots of CIE Division 1 for the past three years was 36%. A survey was conducted to see if Division 1 members felt that this rate was low and to gather ideas on how to improve the rate. Results are being collated.

## **6 Thank you to the 2022 Reviewers**

I want to thank the following individuals for taking their time to review the numerous technical report drafts. Their thoughts, suggestions and comments were greatly appreciated.

Bill Cowan

Keith Niall

Thomy Nilsson

Sharon McFadden



## Division 2: Physical Measurement of Light and Radiation

Report to 2022 Annual Meeting of CNC/CIE

Monday, November 21, 2022 (via Zoom)

Dr. Joanne Zwinkels

Email: [joanne.zwinkels@nrc-cnrc.gc.ca](mailto:joanne.zwinkels@nrc-cnrc.gc.ca); [joanne.zwinkels1@gmail.com](mailto:joanne.zwinkels1@gmail.com)

### 1 Introduction

The 2022 annual meeting of CIE Division 2 (D2) took place in two parts. The first part was held by Web-Ex only on September 14, 2022 and the second part (including TC meetings) was held both in-person (Athens, Greece) and virtually on October 12, 2022. As in the case of the 2020 and 2021 virtual meetings, the first part was largely an informative (retrospective) reporting meeting and the second part was a forward-looking, decision-making meeting where balloting took place. I was unable to attend either parts of this meeting due to prior commitments. Dr. Luke Sandilands was my proxy as the voting Country D2 member for Canada for part 1 of the meeting and Dr. Jennifer Veitch was proxy for part 2 of the meeting (attending in-person).

### 2 Highlights

#### 2.1 New Technical Committees and Reporterships

Since the 2021 CIE Division 2 meeting, two new Reporterships were approved:

<b>Reportership:</b>	<b>Recommendation for standardization of the maximum luminous efficacy for a given photometric condition</b>
<b>Reporter:</b>	Tobias Schneider (DE)

*After the 2022 meeting, this reportership is: DR 2-92*

<b>Reportership:</b>	<b>Implementing CIE 1998-SP2 using Monte Carlo Simulation</b>
<b>Reporter:</b>	Udo Krüger

*After the 2022 meeting, this reportership is: DR 2-93*

Since the 2021 CIE Division 2 meeting, one new TC and two new JTCs were proposed:

Proposal for a **new TC** as follow-up of DR 2-90 on “**Reference spectra and metrics for software validation**”, was positively received by D2 members but lacks a TCC.

Proposal for a **new JTC** (with D6) on “**Action Spectra**” was positively received by D2 members. Proposed TCC was Peter Sperfeld but he declined. Follow-up action: D2D will prepare and Send out a Call for Experts to this TC.

Proposal for a **new JTC** (with D6) on “**Evaluation of Wearable Dosimeters**” was distributed to D2 members for comment.

#### 2.2 Division publications

There have been six D2 publications since the 2021 D2 meeting:

**CIE x049:2022** Proceedings of the CIE symposium on the advances in the measurement of temporal light modulation, Oct. 11, 2022, Athens, Greece



**ISO/CIE 11664-2:2022(E)** Colorimetry – Part 2: CIE Standard Illuminants

**ISO/CIE 11664-6:2022(E)** Colorimetry – Part 6: CIEDE2000 Colour Difference Formula

**CIE 250:2022** Spectroradiometric Measurement of Light Sources

**CIE TN 013:2022** Terms Related to Planckian Radiation Temperature for Light Sources

**ISO/CIE DIS 23539:2021** Photometry – The CIE System of Physical Photometry

It is notable that four out of the eight CIE 2022 publications come from D2.

### 2.3 Future meetings

- **CIE 2023, 30<sup>th</sup> Quadrennial Session**, Ljubljana, Slovenia, September 15-23, 2023  
Broad Theme of Conference (Sept. 15-23, 2023) is “Innovative Lighting Technologies”

### 2.4 Other D2 activities since D2 2021 virtual meetings:

- **D2 and NC(Greece) CIE Expert Tutorial and Symposium on the Measurement of Temporal Light Modulation**, Oct. 10-11, 2022 at the National Technical University of Athens, Greece
- **D2 Chair, Tony Bergen**, has announced that he will not be seeking a second term and that there will be a Call of Interest to NCs to Nominate a new D2 Chair for the next Quadrennial term
  - Follow-up action: Dr. Dong-Hoon Lee (Korea), currently D2S, has been elected by D2 members to be the D2 Director for the 2023-2027 quadrennium (subject to CIE BA approval).

## 3 Current Canadian participation in Division 2 activities

Activity	Title	Canadian Member
<i>Six TCs/JTCs:</i>		
TC 2-77	Fundamental Concepts	J. Zwinkels (member)
TC 2-90	LED reference spectrum for photometer calibration	J. Zwinkels (member)
TC 2-93	Revision of ISO 23539:2005(E)/CIE S010/E:2004 Photometry – The CIE system of physical photometry	J.Zwinkels, T. Nilsson (members)
TC 2-94	Measurement of total transmittance, diffuse transmittance and transmittance haze	L. Sandilands (member)
TC 2-98	Revision of CIE 130-1998 Practical methods for the measurement of reflectance and transmittance	L. Sandilands (member)
JTC-08	Terminology in light and lighting	J. Zwinkels (member)



<i>One Liaison:</i>		
L2-3	ISO TC6: Paper, Pulp and Board	J. Zwinkels (member)
<i>One Officer:</i>		
Division 2	Associate Director	J. Zwinkels

## 4 Highlights of Division 2 Work Programme

### 4.1 Overview of the status of D2 TCs and Reporterships

The active D2 TCs, JTCs and Reporterships are listed below. The most recent Minutes will be attached, when they become available.

#### 4.1.1 TC2-xx or JTC-xx: Title (chair)

- **JTC19 (D6/D2)** Terms and definitions of horticultural lighting (D2TCC: Dekker)
- **JTC-17 (D1/D2/D8)** Gloss measurement and gloss perception: A framework for the definition and standardization of visual cues to gloss (D2TCC: Obein)
- **JTC-12 (D1/D2/D8)** The measurement of sparkle and graininess (D2TCC: Ferrero)
- **JTC-08 (D1/D2/D3/D4/D6/D8)** Terminology (D2TCC: Blattner)
- **JTC-01 (D4/D1/D2)** Implementation of mesopic photometry in outdoor lighting (D2TCC: Goodman)
- **TC 2-98** Revision of CIE 130-1998 Practical methods for the measurement of reflectance and transmittance (Cooksey)
- **TC 2-97** Revision of CIE S025/E:2015 Test methods for LED lamps, LED luminaires and LED modules and its Supplements (Thorseth)
- **TC 2-96** Revision of ISO/CIE 19476:2014 Characterisation of the performance of illuminance meters and luminance meters (Sperling)
- **TC 2-95** Measurement of obtrusive light and sky glow (Bouroussis)
- **TC 2-94** Measurement of total transmittance, diffuse transmittance and transmittance haze (H-L Yu)
- **TC 2-93** Revision of ISO 23539:2005/(E)CIE S010/E:2004 Photometry – The CIE system of physical photometry (Thorseth)
- **TC 2-92** International standard format for the electronic transfer of luminaire optical data (Ashdown)
- **TC 2-91** Optical measurement methods of LED packages and LED arrays (Schneider)
- **TC 2-90** LED reference spectrum for photometer calibration (Poikonen)
- **TC 2-89** Measurement of Temporal Light Modulation of Light Sources and Lighting Systems (Q.Li)
- **TC 2-86** Glare Measurement by Imaging Luminance Measurement Device (ILMD); (Wienold)
- **TC 2-85** Recommendation on the geometrical parameters for the measurement of the Bidirectional Reflectance Distribution Function (BRDF); (Obein)

- TC 2-84** Recommendations on LED package test data reporting (Poppe)
- TC 2-82** Revision of CIE S014-2 (Csuti)
- TC 2-81** Update of CIE 065:1985 (Absolute Radiometers); (Smid)
- TC 2-79:** Integrating sphere photometry and spectroradiometry (D.H.Lee)
- TC 2-78:** The Goniophotometry of Lamps and Luminaires (Bergen)
- TC 2-77:** Fundamental Concepts (Bergen)
- TC 2-68:** Optical Measurement Methods for OLEDs used for Lighting (Shitomi)
- TC 2-67:** Photometry of Lighting and Light-signalling Devices for Road Vehicles (Reiners)
- TC 2-62:** Imaging-Photometer-Based Near-Field Goniophotometry (Krüger)

#### 4.1.2 Reporterships DR2-xx: (Reporter ) Title

- DR2-64** (Edwin Mofokeng) TN on Errors of Measurement in Spectrophotometry
- DR2-69** (Johannes Ledig) TN on the validation of a near-field goniophotometer
- DR2-75** (Tony Bergen) TN on the use of “Accuracy” and related terms in the specifications of testing and measurement equipment
- DR2-76** (Udo Krüger) TN on measurement uncertainties for testing of LED Lamps, Luminaires and Modules
- DR2-77**(Tongsheng Mou) Measurement of Quantities Relating to Photobiological Safety of Lighting Products
- DR2-78** (Annette Koo) Investigation of the need for documentary guidance relating to 0°:d (d:0°) reflectance instrument
- DR 2-80** (Anders Thorseth) Metrology of laser-based lighting
- DR 2-81** (Dennis Couzin) Flash effective intensity calculation
- DR 2-82** (Tony Bergen) TN on clarification of the difference between adjustment, calibration and verification
- DR 2-83** (Quian (Cherry) Li) Characterization and measurement of horticultural lighting products
- DR 2-84** (Joanne Zwinkels) CIE D2 Strategy for Spectrophotometry
- DR 2-85** (F. Stuker) Quality indices for light dosimeters including visual and non-visual effects
- DR 2-86** (Alejandro Ferrero) Definitions for bidirectional scattering surface reflectance distribution (BSSCRDF)
- DR 2-87** (Dong-Hoon Lee) Terminology in single/few photon metrology
- DR 2-89** (Anders Thorseth) Complementary spectral mismatch index
- DR 2-90** (Peter Blattner) Reference spectra and metrics for software validation
- DR 2-91** (Tony Bergen) Appropriate calibration and use of UV radiometers
- DR 2-92** (Tobias Schneider) Recommendation for standardization of the maximum luminous efficacy for a given photometric condition



## 4.2 Dissolution of and changes to TCs and Reporterships

### 4.2.1 The following TCs have been dissolved or recommended for dissolution:

**TC 2-80** – due to publication of CIE 250:2022 Spectroradiometric Measurement of Light Sources

**TC 2-82** – due to publication of ISO/CIE 11664-2 (E) Colorimetry – Part 2: CIE standard illuminants

**TC 2-92** – due to mutual decision of TCC and D2 members

Note: a proposal for a new TC as a follow-up of the closed TC 2-92 is in preparation by NC Italy

### 4.2.2 The following Reporterships have been dissolved or recommended for dissolution:

**DR 2-76** – due to creation of a new Reportership, DR2-93

**DR 2-84** – due to creation of TC 2-98

**DR 2-88** – due to publication of TN 013:2022 Terms related to Planckian radiation temperature

Other Division News

## 5.1 Work in Progress/ Recently Completed

**CIE LB D02-2114** D2 Ballot on ED/TR of TC 2-80; Deadline:2022-02-10

**CIE LB D02-2113** D2 Ballot on CIE DIS 027:2021 of TC 2-67; Deadline: 2022-03-08

**CIE LB D02-2112** D2 Ballot on ED/TN of DR 2-88; Deadline: 2021-12-17

**CIE LB D02-2202** D2 Ballot on AD/TN of DR 2-88; Deadline: 2022-02-09

**CIE LB D02-2201** D2 Ballot on ED/TR of TC 2-90; Deadline: 2022-02-28

**CIE LB D02-2203** D2 Ballot on ISO/CIE DIS 23539:2021; Deadline: 2022-04-08

**CIE LB D02-2204** D2 Ballot on Creation of a new TC for Revision of CIE S025/E:2015 Test Method for LED lamps, LED luminaires and LED modules and its Supplements, TCC: A.Thorseth (DK); Deadline: 2022-03-21

**CIE LB D02-2205** D2 Ballot on AD/TR of TC 2-80; Deadline: 2022-04-26

**CIE LB D02-2206** D2 Ballot on ISO/CIE FDIS 11664-2:2022; Deadline: 2022-06-27

**CIE LB D02-2207** D2 Ballot on Creation of a new TC on Revision of CIE 130:1998; TCC: C,Cooksey (US); Deadline: 2022-06-02

**CIE LB D02-2208** D2 Ballot on Creation of a new Reportership on the use of Km, Reporter: T. Schnedier (DE); Deadline: 2022-06-24

**CIE LB D02-2209** D2 Ballot on Date of the 2022 D2 annual meeting – part 1; Deadline: 2022-07-11

**CIE LB D02-2210** D2 Ballot on approval draft Technical Report of TC 2-90; Deadline: 2022-11-30

**CIE LB D02-2211** D2 Ballot on ISO/CIE FDIS 23539:2022; Deadline: 2022-12-29

## 5.2 Call for Experts for CIE D2 TCs:

### **TC 2-97 Revision of CIE S025/E:2015 Test Methods for LED Lamps, LED Luminaires and LED Modules and its Supplements**

The terms of reference of this TC are to revise [CIE S 025/E:2015](#) Test Method for LED Lamps, LED Luminaires and LED Modules and its supplement, taking into consideration the feedback received and knowledge gained since the introduction of the standard.



**Chair: Anders Thorseth (DK)**

## **TC 2-98 Revision of CIE 130-1998 Practical Methods for the Measurement of Reflectance and Transmittance**

The terms of reference of this TC are to revise [CIE 130-1998 Practical Methods for the Measurement of Reflectance and Transmittance](#), taking into consideration current CIE recommendations for terminology and definitions and knowledge gained since the introduction of the technical report.

**Chair: Catherine Cooksey (US)**

### **5.3 Technical Discussions at CIE D2 meeting (2022)**

#### **5.3.1 CIE Research Strategy**

The D2D provided information on the inputs from D2 members to the Update of the CIE Research Strategy. These priorities were:

1. New calibration standards (sources, detector and illuminants) for photometry, colorimetry and radiometry (existing research topic #4)
2. Metrology for advanced photometric and radiometric devices (existing research topic #9)
3. Emerging and alternative measurement devices and techniques
4. Application of germicidal UV for disinfection purposes
5. Implementation of the SI Digital Framework concept proposed by CIPM/CGPM
6. Horticultural lighting

#### **5.3.2 CIE D2 Standardization Strategy**

This agenda item was not discussed at the D2 meeting due to lack of time.

#### **5.3.3 Formation of a D2 Digitisation Strategy Taskgroup**

There was considerable discussion by D2 members on this topic (including possible scope and prioritization of this new D2 TG, possible data formats, examples and case studies). Follow-up action: Peter Blattner is to organize a brainstorming WebEx discussion meeting, inviting both D2 members and experts from stakeholder communities) to decide on data formats.



## Division 3: Interior Environment and Lighting Design

Report to CNC/CIE 67th Annual Meeting

Online, 2022-Nov-21

Jennifer A. Veitch, Ph.D.

Email: [j\\_a\\_veitch@jdarchitect.ca](mailto:j_a_veitch@jdarchitect.ca)

### 1 Introduction

The 2022 meeting of Division 3 was held via Webex on June 27, 2022. Division 3 has met online in even-numbered years for some time. The minutes are available to CNC/CIE Members on the Members area of the website.

### 2 Highlights

#### 2.1 New Technical Committees, Reporterships, and Other Activities

Since the last report, two new TCs and two Division Reporterships have been formed:

Number	Title	TCC
TC 3-61	<a href="#">Review of regional daylight requirement to assess the feasibility of global harmonization</a>	Claudia Amorim (BR)

In addition, a proposal for a new TC on Resilient Lighting (lighting that is designed to support needs during a disaster situation) is currently under ballot at the BA. A decision is expected in mid-December.

#### 2.2 Division publications

Since the last CNC/CIE report in December 2020, D3 has completed one publication, [ISO/CIE 21783:2022\(E\) Light and lighting – integrative lighting – non-visual effects](#)

#### 2.3 Future meetings

2023: September 15-23, CIE 30<sup>th</sup> Session, Ljubljana, Slovenia

2024: WebEx

### 3 Current Canadian participation in Division 3 activities

Canadians who Chair or participate in Technical Committees, handle a Reportership, act as a Division Officer or act as a liaison are listed below. This list includes activities that ended during the reporting period. Increased participation by Canadians in CIE TCs – including students and those early in their careers – would be most welcome.

Activity	Title	Canadian Members
JTC 13	Depreciation and Maintenance of Lighting Systems	D. McLean (co-chair)
JTC 14	Integrative Lighting Closed Oct. 2022, published ISO/CIE 21783:2022	J. Veitch (Member; D3 Chair)
JTC 15	Lighting of Indoor Workplaces	J. Veitch (Member), L. Whitehead (Member)
TC 3-57	Generic Discomfort Glare Sensation Model	D. McLean
TC 3-59	The integration of daylight and electric lighting – photometric, colorimetric and radiometric requirements for the spectral design of indoor lighting	D. Gottesman
TC 3-60	Spectral daylight characteristics	Lucas Wen Tang (Member)





Activity	Title	Canadian Members
RF-02	Matters Relating to Temporal Light Modulation	J. Veitch (Convenor), P. Gauthier, S. Morgan

In addition, Canadians are active in D3-related activities through the Canadian mirror committee to ISO TC 274. Although these are not, strictly speaking, CIE activities, they are indicative of Canadian participation in the broader work of recommendations and standards for light and lighting.

ISO/TC 274-JWG 1 [CIE JTC 6] (CIE-ISO)	Energy performance of lighting in buildings	T. Lau
ISO/CIE AWI TR 3092	Light and lighting – Energy performance of lighting in buildings – Explanation and justification of ISO/CIE 20086	T. Lau, project leader
ISO/TC 274 JWG 2	Commissioning process of lighting systems	T. Lau
ISO/TC 163	Liaison representative from ISO TC 163 to ISO TC 274	T. Lau
ISO/TC205	Alternate liaison representative from ISO/TC 274 to ISO/TC 205	T. Lau
ISO/TC 205/WG7	Liaison representative from ISO/TC 274 to IAO/TC 205/WG7 ** Co-Convenor of new ISO JWG on same topic	C. Sampson
ISO/TC205/WG10	Liaison representative from ISO TC 274 to ISO TC 205/WG10	T. Lau

#### 4 Highlights of Division Work Programme

Division 3 is making plans for an online tutorial on the Unified Glare Rating in 2023, dates to be announced.

Stay tuned for the Call for Papers for the CIE 2023 conference in Ljubljana, Slovenia. Abstract submissions will open in early December and close in March 2023.

##### 4.1 Overview of the status of TCs and Reporterships

Reports on each TC are available as part of the meeting minutes available to CNC/CIE Members at [www.cnc-cie.ca](http://www.cnc-cie.ca).

Activity	Title	Chairman	Status
JTC 6 (CIE-ISO)	Energy Performance of Lighting in Buildings	L. Bellia [IT]	ISO/CIE CD 10916 <i>Calculation of the impact of daylight utilization on the net and final energy demand for lighting</i> has been balloted once and comments are being resolved.  Toby Lau leads a project group developing ISO/CIE WD TR 3092 <i>Light and lighting – Energy performance of lighting in buildings – Explanation and justification of ISO/CIE 20086</i> . The document is in final editing, but a companion Excel calculator is still in the works.  ISO/NP TS 7127, <i>BIM Properties for Lighting – Luminaires and Sensing devices</i> is under development in the task group.



Activity	Title	Chairman	Status
			ISO 17772-1 <i>Energy performance of buildings - Indoor environmental quality - Part 1: Indoor environmental input parameters for the design and assessment of energy performance of buildings</i> is expected to be split into parts with the lighting part to be under full responsibility of ISO/TC 274 (meaning that this JWG-JTC will undertake the work).
JTC 8 (all Ds)	Terminology		Following the publication of the ILV in December 2020, JTC-08 is inactive. There is a discussion in the BA concerning the best way to structure ongoing maintenance of the vocabulary and to incorporate new terms as they are proposed.
JTC 13 (D4/D3)	Depreciation and Maintenance of Lighting Systems	D. Gasparovsky (D4) Peng Zhuang (D3)	A working draft said to be in preparation, but no report was received at D3 prior to its meeting in June 2022.
JTC 15	Lighting of Indoor Workplaces	E. Mochizuki [JP]	A complete draft is with the ISO/TC 274 secretariat (DIN) for editing, to be followed by a WD ballot in the JTC.
JTC 18 (D3/D4)	Lighting Education	D3: Piotr Praki [PL]	No report was received. However, there is active discussion in the BA about how the CIE can support lighting education and how these activities might intersect with this JTC.
TC 3-54	Revision of CIE 16-1970: Daylight	Y. Sutter [FR]	This TC's term was extended to 2024 because of the new TCC. Work is resuming after COVID-related delays.
TC 3-56	Assessment of Discomfort Glare from Daylight in Buildings	T. Iwata [JP]	The document is with CB and editorial changes are under way.
TC 3-57	Generic Discomfort Glare Sensation Model	G. Vissenberg (NL)	Work is progressing, having been split between three subgroups. Each subgroup is working on validation of the model, with a target for this of end 2022.
TC 3-58	Visual ergonomics and digital display use	P. Thorns (UK)	There is a new TCC this year (the original TCC moved to a new field). The draft report is being edited prior to balloting.
TC 3-59	The integration of daylight and electric lighting – photometric, colorimetric and radiometric requirements for the spectral design of indoor lighting	Xue Peng (CN)	Work has begun, with the goal of completing the first WD by the end of December 2022.
TC 3-60	Spectral daylight characteristics	M. Knoop (DE)	Regular meetings are under way, and measurements are being collected from TC members with a target



Activity	Title	Chairman	Status
			completion of that phase in Dec. 2022.
TC 3-61	Review of regional daylight requirement to assess the feasibility of global harmonization	C. Amorim (BR)	This is a new TC, just getting started.
DR3-33	Guidelines for Post-Occupancy Evaluation of Lighting Installations	V. Garcia-Hansen [AU]	A report has been produced and received by the DMT, which will be shared with the Division Members. A TC proposal is expected.
DR 3-36	Luminance Measurement for UGR	Gilles Vissenberg [NL]	This DR produced a CIE Technical Note, which was balloted in D3 and the BA earlier this month. We await the results, but likely it will be approved and published shortly following editorial corrections.
RF-02	Matters Relating to Temporal Light Modulation	J. Veitch [CA]	Ongoing. There was a Webex meeting in Jan. 2022 and a hybrid meeting in Athens and online in Oct. 2022.

#### 4.2 Dissolution of and changes to TCs and Reporterships

Activity	Title	Chair	Reason
JTC 14	Integrative Lighting	J. O'Hagan [UK] [D3, J. Veitch]	Closed Oct. 2022 following the publication of ISO/CIE TR 21783:2022(E).
DR 3-35	Resilient Lighting	Yuki Akizuki [JP]	Closed, following receipt of the report. This has led to the TC proposal currently being balloted in the BA.

#### 4.3 Liaison representatives (LRs)

Official liaisons (denoted L below) exist between committees in organizations for which there is a formal relationship between the CIE and the other organization. Division Correspondents (DC in the table below) are information relationships with organizations who share common interests.

Activity	Partner committee	Representative
L 3-02	ISO/TC 159/SC 4 Ergonomics of Human-System Interactions	Bruce Nordman
L 3-03	ISO/TC159/SC 5 Ergonomics of the Physical Environment	
L 3-04	ISO/TC 163/SC 2 Thermal Performance and Energy Use in the Built Environment / Calculation Methods (Daylight)	
L 3-05	ISO/TC 205/WG 7 Indoor Visual Environment	Michail Papanikolaou
L 3-09	CEN/TC169/WG2 Lighting of Work Places	Tapio Kallasjoki
L 3-10	CEN/TC169/WG11 Daylight	Jan Wienold
L 3-11	CEN/TC169/WG3 Emergency Lighting in Buildings	Peter Thorns
L 3-12	CEN/TC169/WG9 Energy Performance of Buildings	Peter Thorns
L 3-13	ISO/TC163/WG4 Joint ISO/TC 163 - ISO/TC 205 WG: Energy performance of buildings using holistic approach	Laura Bellia
L 3-14	ISO/TC160/Glass in buildings	Peng Xue
DC 3-01	Illuminating Engineering Institute of Japan	Yoshiki Nakamura
DC 3-02	International Dark-Sky Association	Terry K McGowan



#### 4.4 Research strategy update

The CIE Research Strategy update is ongoing (a task I lead in my role as Vice-President Technical). There is nothing to report on this at present.

However, the CIE Central Bureau has noticed a good uptake of requests for research support letters from researchers undertaking projects that fit into the themes of the existing research strategy. Informal feedback suggests that these letters are seen as a good contribution to the requesters' applications for research funding. Canadian researchers might wish to take note of this opportunity.

#### 5 Other Division News

The Director of Division 3, Mr. Peter Thorns (UK), will step down from his role in September 2023 in order to devote time to his role as Convenor of ISO/TC 274. He also has been nominated for the role of CIE Vice-President Standards for the 2023-2027 term; elections for the new Board will take place at an online General Assembly meeting in January 2023.

The nominations for a new Director of Division 3 have closed. If there are multiple nominees, there will be a ballot within the Division. In any case, one name will go to the Board of Administration for final approval shortly.

As always, we would like to see more Canadian participation in Division 3 activities and TCs. Anyone interested in becoming more active in the CIE should contact me for more information about opportunities.



## Division 4: Transportation and Exterior Applications

Report to CNC/CIE 67th Annual Meeting

Webinar, November 21, 2022

Cristian Suvagau

Email: cristian.suvagau@bchydro.com

### 1 Introduction

Division 4 Scope: To study and prepare guides for the design of exterior lighting and light signaling.

The Div. 4 officers for 2020-2022 are:

- Division Director Dionyz Gasparovsky (SK)
- Division Secretary Steve Lau (CN) replaced Maurice Donners (NL)
- Division Editor Nigel Parry (GB)

Division 4 established 3 Subdivisions (each with an Associate Director):

- AD#1-Steve Fotios (GB) - Fundamentals in outdoor lighting
- AD#2- Maurice Donners (NL) - Lighting & signaling for transport  
replaced Raoul Lorphevre (BE)
- AD#3-Sermin Onaygil (TR) - Exterior applications

Last Division 4 meeting was held in hybrid participation mode on 23-24.09.2022 following Lux Europa in Prague (CZ)

The call for nominating candidates for the Division Director for the term 2023–2027 (according to the CIE statute) was on October 27 with a deadline for November 27, 2022. Further, a ballot to vote on the nominations will be on until December 20, 2022. The new Director's term will commence at the end of the next Quadrennial Session – September 2023.

### 2 Highlights

#### 2.1 New Technical Committees and Reporterships

N/A

#### 2.2 Division publications

Here is a summary of the 2021/2022 publications in the scope of Division 4:

- CIE 243:2021 Discomfort Glare in Road Lighting and Vehicle Lighting

#### 2.3 Future Div 4 meetings

- 2023 Ljubljana (SI) - CIE Quadrennial Session - 15.-23.09.2023
- 2024 Shanghai (CN) - mid-term meeting - 09.-13.05.2024
- 2025 CIE mid-term meeting - TBD

#### 2.4 Proposed Symposiums, workshops and other events for 2023 – 2025

- 2023 - Ljubljana (SI) - Workshop: Lighting Up the Cities (masterplan + urban/architectural elements) (within CIE Quadrennial) - 15.-23.09.2023
- 2024 - Shanghai (CN) – Symposium: New Directions in Research and Development of Road Lighting and Urban Lighting – within the mid-term meeting - 09.-13.05.2022



### 3 Current Canadian participation in Division 4 activities

List Canadians who Chair or participate in Technical Committees, handle a Reportership, act as a Division Officer or act as a liaison.

Activity	Title	Canadian Members
Div. 4	CNC Division representative	Cristian Suvagau
TC 4-58	TC member	Ian Ashdown
	CNC Member	Deborah Gottesman
	TC member	Lynn Asselin
	TC member	Andrew Silbiger
TC 4-57	TC member	Don McLean
TC 4-58	TC member	Martin Aube

### 4 Highlights of Division Work Program

#### 4.1 Overview of the status of TCs and Reporterships

Currently the Division 4 incorporates 12 Technical Committees, 7 Reporterships, participates in 3 Joint Technical Committees and has 6 Liaison Officers with other organizations:

##### 4.1.1 TC Reports

#### [TC 4-33 Discomfort Glare in Road Lighting](#)

Scope: To study the known mathematical description of the discomfort glare in road and vehicle lighting, its scaling and comparisons with field studies and to condense the outcome in a report that should result in methods for discomfort glare assessment. To review or replace Publication CIE 31-1976.

Chair: Stephan Völker (DE)

Status: Published end of 2021

#### [TC 4-47 Application of LED's in Transport Lighting and Signaling](#)

Scope: To review the application and methods of measurement of LED Systems in transport lighting and signaling as far as they affect the visual performance of the users of the transport system. To prepare a Technical Report which includes the findings of the review and recommendations for the visual characteristics of LED signals and lighting.

Chair: Hugh Barton (GB)

Status: Draft finished- Re-balloted in April 2022 – Sent to publication as of July 2022

#### [TC 4-50 Road Surface Characterization for Lighting Applications](#)

Scope: To revise Publication CIE/PIARC TR 66-1984 containing the Standards. To propose Methodologies for the Determination of Parameters from Calculation and from Laboratory and on-site Measurements, considering also the Evaluation of Uncertainty.

Chair: Valerie Muzet (FR)

Status: CIE 144 -v.2 *Road surface and road marking reflection characteristics* and CIE 66 will be withdrawn and embedded into the new CIE 144 version 3.

#### [TC 4-53 Tunnel Lighting Evolution](#)

Scope: To prepare a revision of CIE 88:2004:” *Guide for the lighting of road tunnels and underpasses*”

Chair: Jerome Dehon (BE)



Status: work is progressing fine now and an extension has been requested until Jan 2024 to allow achieving the revision work,

#### **TC 4-57 Guide for Sports Lighting**

Scope: To prepare a Guide for Sports Lighting that excludes lighting for TV and films. This guide will replace the present publications CIE 42-1978, CIE 45-1979, CIE 57-1983, CIE 58-1983 and CIE 62-1984

Chair: Alan Smith (GB)

Status: Document is in final form and awaiting approval from all TC members.

#### **TC 4-58 Obtrusive Light (light pollution) from Colourful and Dynamic Lighting and its Limitation**

Scope: To provide guidelines for the implementation and usage of colourful and dynamic lighting in outdoor applications aiming at limitation of obtrusive light with respect to astronomical observations, humans and night-time environment. To develop metrics for obtrusive light from colourful and dynamic lighting systems and to propose suitable methods for limitation or prevention of obtrusive light from such systems.

Chair: Steve Lau (CN)

Status: TC4-58 is in finalizing stage and will go for approval in 2023

#### **TC 4-59 Guide for Lighting Urban Elements**

Scope: To revise and update the (obsolete, 20 years-old) publication CIE 94:1993 'Guide for floodlighting', introducing additional and updated information on the current light sources, luminaires and lighting techniques, as well as on the importance of lighting urban elements and the techniques and technology available for this lighting task. To extend the decorative/aesthetical focused guidelines by technical practice and research-based recommendations on other issues such as economic, functional, environmental and urbanistic aspects. To consider the particular case of cultural heritage in order to contribute to its preservation.

Chair: Diana del Negro (PT)

#### **TC 4-60 Road Traffic Lights – Photometric Properties of Roundel Signals**

Scope: The purpose of this TC is to revise the international standard ISO 16508:1999/CIE S 006 and to specify requirements to colour, luminous intensity and luminous intensity distribution of 200 mm and 300 mm road traffic signals incorporating the newest LED technology in light signals, dealing specifically with impacts on signal recognition due to the sun including sun phantom and ghosting. Furthermore, TC 4-60 is to provide a test method for determining phantom light luminance ratio.

Chair: Ron Gibbons (US)

Status: Delivery of the draft standard is delaying; extension has been requested in ISO.

#### **TC 4-61: Artificial Lighting and its Impact on the Natural Environment**

Scope: To provide guidance on ways to minimize the effects of artificial lighting on the natural environment, including impacts on flora and fauna. This would be accomplished by making recommendations on light levels, spectral distributions, and other specific considerations of a broad range of organisms as well as specific habitats.

Chair: Annika K. Jägerbrand (SE)

Status: First two drafts of TR were done in 2022; to be finalized in 2023.



### **TC 4-62: Adaptive Road Lighting**

Scope: To analyze needs, specify recommendations, develop methodology and promote application of adaptive road lighting based on various conditions and input data from field sensors and interconnected systems with respect and tailored to specific requirements of different user groups and user patterns.

Chair: Paolo Di Lecce (IT) replaced Thomas Baenziger (CH)

Status: Technical Note to be published in 2023

### **JTC 01 (D1/D2/D4) Implementation of the CIE191:2010 Mesopic Photometry In Outdoor Lighting**

Scope: To investigate adaptation and viewing conditions and define visual adaptation fields in outdoor lighting. To define lighting applications where mesopic photometry could be used. To provide guidelines for implementing mesopic photometry in outdoor lighting.

Chair: Stuart Mucklejohn (GB)

Status: Working draft is completed and soon it will move to the ballot.

### **JTC 13 (D4/D3) Depreciation and Maintenance of Lighting Systems**

Scope: To revise CIE 97:2005 and CIE 154:2003 in order to bring them up to date by incorporating recently used approaches for determination of lumen maintenance of LED lamps, dealing with lamp and ballast/driver survival factor and upgrading the luminaire maintenance factor according to current technologies and environmental factors. To deal additionally with distortion of luminous intensity distribution due to environmental influences. To extend the document by maintenance of LED luminaires regarding their cooling specific requirements.

Chair: Dionyz Gasparovsky (SK)

### **JTC 18 (D3/D4): Lighting Education**

Scope: To revise and update CIE 99:1989 and to provide recommendations on curricula for higher education and continuing education. To propose recommendations for education of lighting professionals and recommend options to improve and support continuing lighting education throughout the professional working life.

Chair: [Piotr Pracki](#) (PL)

#### **4.1.2 Reporterships:**

##### **DR 4-36 CEN/TC169 Lighting Applications**

Reporter: Axel Stockmar (GE)

##### **DR 4-50 Document Status and Review**

Reporter: Dionyz Gasparovsky (SK)

##### **DR-4-53 Environmental Aspects of Obtrusive Light from Outdoor Lighting Installations**

Reporter: Constantinos Bouroussis (GR)

Participation into the UN-organized conference "Dark and Quiet Skies". Work recommended for the update of limits and key tables of CIE 150:2017

##### **DR-4-54 Lighting for Cycling – establishing the State of Knowledge**

Reporter: Jim Uttley (GB)

A draft of annotated bibliography has been produced in 2022 and further work is required to develop it and identify new publications that are relevant to the aim of the Reportership.





## 4.2 Dissolution of and changes to TCs and Reporterships

Two TCs were closed:

### **TC 4-51 Optimization of Road Lighting**

Scope: To develop guidance on optimization of road lighting to balance the benefits and costs. Primary issues include accident risk and energy consumption. Tasks include: - Technical Report or update CIE Publication 93. - Provide analysis of lighting quality

Chair: Pal J.Larsen (NO)

### **TC 4-54 Road Lighting for Ageing Drivers**

Scope: To propose improvements to the existing road lighting recommendations to provide the required safety and comfort for drivers with a visual system which has deteriorated due to normal healthy ageing processes, based on a review of existing data and performance based empirical data. Drivers in this context is meant to include drivers of motor vehicles as well as cyclists, including powered bikes (e-bikes, pedals, etc.)

Chair: Maurice Donners (NL)

Three Reporterships were closed.

### **DR 4-49 Flicker from Lighting on High Speed Road**

Reporter: Chao-Hua Wen (CN)

### **DR 4-51 Visibility and Glare Study of LED Traffic Signs**

Reporter: Tsung-Xian Lee (CN)

### **DR-4-52 Visibility under Adverse Weather Conditions**

Reporter: Chan-Su Lee (CN)

## 4.3 Division Liaisons and interorganizational collaboration (Chair: Maurice Donners)

**L 4-06 LUCI** (Lighting Urban Community International)

**L 4-07 IALA** (International Association of Marine) (Alwyn Williams)

**L 4-08 CEN/TC 169/WG12 Road Lighting** (Sermin Onaygil)

WG12 was activated upon the necessity of updating the EN13201 standards, which emerged with the developing technology and especially the widespread use of LED light sources in road lighting.

**L 4-09 ISO TC22 SC35 Road Lighting** (Paola Iacomussi)

ISO TC22 SC 35 is devoted to Lighting and visibility: Visibility and Conspicuity; Lighting and light-signaling and safety glazing materials. Work contained in 3 WG

**DC 4-01 IAU (International Astronomical Union)** (Richard Wainscoat)

The CIE and the IAU have been exploring ways for closer cooperation on quality outdoor lighting for many years. The recommended technical and policy frameworks for the reduction of Artificial/Anthropogenic Light at Night on a worldwide scale motivated the drafting of a Memorandum of Understanding between the two organizations. The current status of the MOU is that the IAU Executive Committee has approved a draft, based on a CIE template, and has submitted it to CIE, where it is under consideration.

**DC 4-02 PIARC** (Jean-Claude Martin)

**DC 4-03 GTB** (The International Automotive Lighting and Light Signalling Expert Group - Groupe de Travail "Bruxelles 1952")

## 4.4 Research Fora

Proposed priority research topics:



- Adaptive Lighting - update, develop and consult for merging inputs with Div.3
- Obtrusive Lighting – guidelines for limitation of the effects from outdoor lighting, for minimizing urban sky glow near observatories

## 5 Other Division News

The Divisions are asked to review the data tables that have been published on the CIE Website, comparing the data tables published on the website (in .csv format) with those published in the CIE documents.

Div. 4 will hold a tutorial (to provide an understanding and application of CIE documents) on urban lighting master planning (2023), based on CIE 234:2019 “A Guide to Urban Lighting Master planning”.

Div 4 to draft a CIE position addressed to municipalities regarding roadway, transportation, area and other exterior lighting within the context of switching off lights due to the energy crisis in Europe.



## Division 6: Photobiology and Photochemistry

Report to CNC/CIE 67th Annual Meeting

Sami Qutob (Canadian representative for Division 6)

Email: Sami.Qutob@hc-sc.gc.ca

### 1 Introduction

The 2022 Annual General Meeting of the CNC-CIE held by zoom on November 21th, starting at 1 PM EST. The link can be found here: <https://zoom.us/j/91734242627?pwd=dldnMkFMcFFOT2VjaEINS3QyTzZXdz09>

Meeting ID: 917 3424 2627

Passcode: 351666

One tap mobile

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Dial by your location

+1 438 809 7799 Canada

+1 587 328 1099 Canada

+1 647 374 4685 Canada

+1 647 558 0588 Canada

+1 778 907 2071 Canada

+1 780 666 0144 Canada

+1 204 272 7920 Canada

Meeting ID: 917 3424 2627

Find your local number: <https://zoom.us/j/aiM4M0Q79>

**Terms of Reference of Division 6:** To study and evaluate the effects of optical radiation on biological and photochemical systems (exclusive of vision). The list of TCs, their terms of reference and current status is available on the Division web page: <https://cie.co.at/technical-work/divisions/division6>

### DIVISION OFFICERS

Luc Schlangen (LS)	NL	Netherlands	DD6 (Division Director)
Eric Liggins (EL)	GB	United Kingdom	DE6 (Division Editor)
Luke Price (LP)	GB	United Kingdom	DS6 (Division Secretary)
Shu Takeshita (ST)	JP	Japan	ADD6 (Associate Director)
Karl Schulmeister (KS)	AT	Austria	ADD6
David H. Sliney (DHS)	US	United States	ADD6

### Official Division 6 Members

Urbain de Plessis	AU	Australia
Guy Vandermeersch	BE	Belgium
Kamelia Nikolova	BG	Bulgaria
Isac Roizenblatt	BR	Brazil
Sami Qutob	CA	Canada
Beat Gerber	CH	Switzerland



Tongsheng Mou	CN	China
Ralf Zuber	DE	Germany
Anne Bay	DK	Denmark
David Baeza Moyano	ES	Spain
Helge Lemmetyinen	FI	Finland
Coralie Barrau	FR	France
John O'Hagan	GB	United Kingdom
TM Chung	HK	Hong Kong S.A.R., CN
Gabriella Csik	HU	Hungary
Gabriela Dorfman-Furman	IL	Israel
Laura Bellia	IT	Italy
Mee-Ryoung Cho	KR	South Korea
Vineetha Kalavally	MY	Malaysia
Terje Christensen	NO	Norway
Urszula Blaszczyk	PL	Poland
Constantin Ion	RO	Romania
Zoran Ledinski	RS	Serbia
Roman Belyaev	RU	Russia
Thorbjörn Laike	SE	Sweden
Katja Malovrh Rebec	SI	Slovenia
Banu Manav	TR	Turkey
Chien-Yue Chen	TW	Chinese Taipei
George C Brainard	US	United States
Edwin Mofokeng	ZA	South Africa

## 2 Highlights

- New CIE “Lighting the Future Together” brochure (July 2022)  
[http://www.cie.org.au/CIE\\_Brochure\\_July\\_2022.pdf](http://www.cie.org.au/CIE_Brochure_July_2022.pdf)
- CIE now full member of the International Science Council (ISC): “The International Science Council (ISC) is a non-governmental organization with a unique global membership that brings together over 200 international scientific unions and associations as well as national and regional scientific organizations including academies and research councils.” <https://council.science/>
- Division 6 has two new committee members. Edwin Mofokeng is the new NC South Africa DMV and his alternate Pieter du Toit. Anne Bay is the new NC Denmark DMV replacing Jens Christoffersen. Ewan Eadie who approved as D6 LR to ISO/TC 142/WG 2 on UV-C technology in cleaning equipment for air and other gasses.

### 2.1 New Technical Committees and Reporterships

#### 2.1. TC Reports and Committees (4)

##### JTC 05 (CIE-IEC): Joint Technical Committee to Revise CIE S009/IEC 62471

**Scope:** To update CIE S009; to take account of revised exposure limit guidelines from the International Commission on Non-Ionizing Radiation Protection; to provide a clearer rationale for the definition of the risk groups; and to improve the guidance on measurements in conjunction with Division 2. To work with



IEC TC76 and IEC TC34 on the development of product-specific requirements of the revised standard. However, responsibility for the product-specific requirements will rest with IEC. To work with IEC to produce a dual-logo standard to replace CIE S009/IEC 62471.

**Status:** An ad-hoc meeting took place in conjunction with the IEC TC76 WG9 meeting in Sydney on 2022 09 22 to ensure that the CIE version of the text (S009) would be accepted through the fast-track procedure in IEC as a replacement for IEC 62471. An online meeting of the JTC is scheduled for late November 2022, with the aim of getting it to the stage of being balloted.

Chair: John O'Hagan (GB)

Canadian Member: None

### **JTC 08 (D1/D2/D3/D4/D6/D8): International Lighting Vocabulary**

**Scope:** To address any issues regarding terms and definitions related to the International Lighting Vocabulary (ILV). This includes coordination within CIE Divisions to maintain and update the ILV, coordination with IEC on questions related to the incorporation of ILV terms and definitions into IEC 60050-845 “International Electrotechnical Vocabulary. Lighting”, coordination with ISO/TC 12 on questions related to the incorporation of ILV terms and definitions into ISO 80000-7 “Quantities and units – Part 7: Light and radiation” and any further terminology issues within CIE.

**Status:** Translation of definitions to German (CIE CB) and Chinese (NC CN) in progress. There is continuous work on the improvement of the ILV and harmonization with the International Electrotechnical Vocabulary (IEV) (IEC 60050-845), ISO 80000-7 and other international terminology standards.

Chair: Peter Zwick (DE)

Canadian Members: J. Zwinkels

### **JTC 14 (CIE-ISO): Integrative Lighting**

**Scope:** To undertake an analysis of published scientific studies and review experience from published application studies on non-visual effects of light on humans, with the aim to provide guidance for safe and beneficial use in lighting applications beyond illumination for vision. The material to be analysed is existing material plus the outcome from studies that will become available during the period of this JTC. In particular, the work of the CIE on light as an input for all known photoreceptors in the human eye is included. The outcome of this JTC shall not cover subjects where no proper scientific validation is available and will concentrate on “low hanging fruit” or only provide the status of the different aspects of this topic.

**Status:** ISO/CIE TR 21783 “Light and lighting — Integrative lighting — Non-visual effects” was finally published on 2022 09 22. The work of the JTC (and the ISO JWG) is now complete and the JTC is automatically closed.

Chair: John O'Hagan (GB)  
Div.3)

Canadian Member: Jennifer Veitch (President-Elect CIE)

### **JTC 19 (D2/D6): Terms and Definitions for Horticultural Lighting**

**Scope:** To write an international standard for terms and definitions in the field of horticultural lighting, taking into account terms from existing national or regional publications.

**Status:** In March to May, 2022 (Meeting 10), the JTC was balloted and comment collection were finalized. Ballot result, ballot comments and observations, and the updated document were prepared accordingly and provided to CIE Technical Manager on 5th May.

Chair: Wei Zhang (CN)

Canadian Member: Ian Ashdown



## 2.1.2 Division Reporterships (4)

### R6-43 Illuminators for Treatment of Infant Hyperbilirubinemia

**Scope:** referencing of the progress of phototherapy for neonatal jaundice in the last sixty years, a section on photo-chemistry and a section on photo-physics with spectral analysis from different LED and tube-based units.

**Status:** a final working draft, which might serve as a Technical Note, was to be ready for review by this date.

Reporter: Michael Lynn

### R6-45 Publication and maintenance of the CIE S026 Toolbox

**Scope:** A Toolbox to support the use of the international standard CIE S 026:2018 CIE System for Metrology of Optical Radiation for ipRGC-Influenced Responses to Light has been developed. A beta version of the Toolbox was shared last year with attendees at the tutorial held on this new system of metrology. After further testing the Toolbox is now available to support the use of the standard. The S 026 Toolbox and S 026 User Guide are freely available on the CIE Website. <https://cie.co.at/news/launch-cie-s-026-toolbox-and-user-guide>

**Status:** No changes were required during the year, and the majority of queries related to where to find the Toolbox and User Guide.

Reporter: Luke Price

### R6-46 Second International Workshop on Circadian and Neurophysiological Photoreception

**Scope:** In preliminary guidance on applying “proper light at the proper time,” and in the absence of a formal consensus, a CIE position statement (CIE Position Statement on Non-Visual Effects of Light: Recommending Proper Light at the Proper Time, 2nd ed. (2019)) recently recommended using melanopic equivalent daylight illuminance (EDI) as an interim approach to manipulate non-visual responses. Further guidance on this approach is awaited from the participants of the 2nd International Workshop on Circadian and Neurophysiological Photometry (held in Manchester, August 2019), and this is expected to take the form of a scientific publication with melanopic-EDI centered recommendations for healthy indoor light exposures.

**Status:** Proceeding to an edition for ballot at D6 and BA (up to 4 weeks prep and 4 weeks ballot). Publication can take up to 4 weeks as long as there is no follow-up ballot which could add another 8 weeks.

Reporter: Luke Price

### R6-47 The Role of Light and Lighting Conditions in the Prevention, Development and Mitigation of Myopia: a Literature Review

**Scope:** Myopia was the main cause of irreversible blindness and myopia prevalence is increasing rapidly. It is known that spending time outdoors during the day is protective against the progression of myopia, but



more research is ongoing and needed to understand mechanisms and come up with preventative strategies. This report reviews the literature on the role light has on myopia

**Status:** The report is on track for progress and a continuous literature search and review has been conducted since the beginning, bringing to more than 200 the number of analysed papers. A shareable draft will be accessible by the end of the year for global review and comments.

Reporter: Coralie Barrau

### 2.1.3 Reports from Liaison Representatives and Division Correspondents (8)

#### **L6-01 IEC/TC76/WG1&9L Optical radiation safety and laser equipment - Optical Radiation Safety and Non-Coherent Sources**

Reporter: David Sliney (US)

#### **L6-08 CEN TC169 WG8 Lighting Applications - Photobiology**

Reporter: John O'Hagan (GB)

#### **L6-10 IEC/TC 34 Lighting**

Reporter: John O'Hagan (GB)

#### **L6-11 ISO/TC142/WG2 Cleaning equipment for air and other gases - UV-C technology**

Reporter: Ewan Eadie (GB)

#### **DC6-01 WHO**

Reporter: John O'Hagan (GB)

#### **DC6-02 ICNIRP**

Reporter: John O'Hagan (GB)

#### **DC6-03 ASP**

Reporter: David Sliney (US)

#### **DC6-04 World Meteorological Organisation (WMO)**

Reporter: Ann Webb (US)

## 2.2 Division publications

1. TC 6-64 (Sliney/Mulvey) has completed its report -> CIE 245:2021 Optical Safety of Infrared Eye Trackers Applied for Extended Durations
2. TC 6-52 (Vincent) has completed its report -> CIE 247:2021 Guide for the Gonioradiometric Measurement of Upper Air Ultraviolet Germicidal Irradiation Luminaires



## 2.3 Future meetings

- CIE expert tutorial and symposium on the measurement of temporal light modulation (Athens, Greece, October 10&11, 2022). <https://cie.co.at/news/cie-expert-tutorial-and-symposium-measurement-temporal-light-modulation>
- 30th Quadrennial Session of the CIE, which is hosted by the CIE National Committee of Slovenia, in Ljubljana, Slovenia (September 15-23, 2023). <https://slovenia2023.cie.co.at/>
- WHO CIE webinar: proper light @ proper time, a-opic metrology S 026, Manchester II recommendations for healthful light exposures (Q4, 2022).

## 3 Current Canadian participation in Division 6 activities

Activity	Title	Canadian Members
TCx-xx		Name (position)
JTC-8	International Lighting Vocabulary	Sharon McFadden Joanne Zwinkels (Associate Director)
JTC-14	Integrative Lighting (ISO JWG 4)	Jennifer Veitch (President-Elect CIE)
JTC-19	Horticultural Lighting	Ian Ashdown

## 4 Highlights of Division Work Programme

The summaries of activities in the various TCs of Division 6 are based on the minutes from the 2022 Division 6 meeting. Additional information on some of the TCs can be found in the minutes as well as the Activity Report for 2022. These are available in PDF format on the IEC Collaboration Platform (<https://collaboration.iec.ch/>).

### 4.1 Dissolution of and changes to TCs and Reporterships

No dissolutions were proposed. TCs that had been reported dissolved, including TC6-52, TC6-64 and JTC-14.

## 5 Other Division News

### 5.1 Proposals for TCs and Reporterships

Some consideration of a TC reviewing the link between blue light phototherapy and retinopathy in preterm infants, which can be a result of over-prescription of oxygen, which affects the retinal vessels.

No new reportership topics were proposed.

### 5.2 Division Research Strategy





A division strategy was introduced in 2021. Topics considered included:

- What light and dark daily patterns (intensity, spectrum, timing, duration) best supports well-being (younger/older).
- JTC5 the review of IEC 62471/CIE S009 “Photobiological Safety of Lamps and Lamp Systems, next to circadian regulation.
- What physiological and psychological processes are influenced by ocular light exposure (e.g. role of inadequate light exposure during childhood in development/progression of myopia (DR 6-47)).
- Horticulture lighting: terms & definitions (JTC 19), action spectra.
- Daylight definition, which is based on visual system that should be updated with regards to non-visual effects and spectral radiance.
- Medical uses of light (for example treatment of hyperbilirubinemia (DR 6-43) or skin disorders).
- UV disinfection (for example guide for gonioradiometric measurement of upper air UVGI luminaires TC 6-52).
- How light triggers pain, migraine, photophobia crises and discomfort.

**Note: the following acronyms may be used in this report:**

APR	Annual Progress Report
CIE	Commission Internationale de l'Éclairage
CIE-BA	CIE Board of Administration
CIE-CB	CIE Central Bureau
CIE-DD	CIE Division Director
CIE-USNC	US National Committee
CISSET	NRC Advisory Committee on International Science, Engineering and Technology
CNC/CIE	Canadian National Committee of the CIE
CNC-BA	Canadian National Committee Board of Administration
CORM	Council for Optical Radiation Measurement
CoP	CNC/CIE Code of Procedure
CIE/USA	US National Committee of the CIE
DC	Division Correspondent
DMV, DMA and DA	Division Members and Division Associates
ICSU	International Council for Science
IESNA	Illuminating Engineering Society of North America
IEV	International Electrotechnical Vocabulary
ISO	International Organization for Standardization
IRO	International Relations Office of the NRC
ITC and JTC	Interdivisional TCs (within CIE) and Joint TCs (with other organizations)
JTC	Joint CIE Technical Committee
LB	Letter Ballot
LR	Liaison Representative
M/AM	Members and Advisory Members of the CNC/CIE
MC	Mirror Committee
NC	CIE National Committee



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



Canadian National Committee Comité national canadien

NRC	National Research Council of Canada
NRC-IRO	NRC Government and International Relation office
NRC-MSS	NRC Measurement Science and Standards portfolio
NRC-CONST	NRC Construction portfolio
NRCan	Natural Resources Canada
SCC	Standards Council of Canada
TC	CIE Technical Committee
Types of technical publications	e.g. DRR and PS