COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien

CNC/CIE Annual Report 2010

55th Annual Meeting and Workshop

2010–October– 14-15

Minutes

Division Members' Reports

Joint CNC/CIE – IESBC Workshop - Abstracts

NRC·CNRC

Institute for National Measurement Standards • Institut des étalons nationaux de mesure • Ottawa, Canada, K1A 0R6, Fax (613) 952-1394

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MINUTES

CNC/CIE 55th Annual Meeting
2010–October–15

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MINUTES OF THE 55th ANNUAL CNC/CIE MEETING

2010-October-15

The 55th annual meeting of the Canadian National Committee of the Commission Internationale de l'Éclairage (CNC/CIE) was held on Friday, October 15, 2010 at the BC Hydro, 900-4555 Kingsway, Burnaby, BC V5H 4T8.

The agenda is given in Appendix A.

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

CIE	Commission Internationale de l'Éclairage
CIE-BA	CIE Board of Administration
CIE-CB	CIE Central Bureau
CIE-DD	CIE Division Director
NC	CIE National Committee
TC	CIE Technical Committee
CNC	Canadian National Committee
CNC/CIE	Canadian National Committee of the CIE
CIE/USA	US National Committee of the CIE
ISO	International Organization for Standardization
IESNA	Illuminating Engineering Society of North America
SCC	Standards Council of Canada
NRC-INMS	Institute for National Measurement Standards at the National Research Council of Canada
NRC-IRC	Institute for Research in Construction at the National Research Council of Canada
NRC-IRO	International Relations Office at the National Research Council of Canada
CISET	NRC Advisory Committee on International Science, Engineering and Technology
NRCan	Natural Resources Canada
DRDC	Defence Research and Development Canada
M/AM	Members/Advisory Members

The Canadian Division Members had submitted, prior to the meeting, written reports for the purpose of our CNC/CIE annual meeting and annual report. These reports are attached to these Minutes.

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

The 55th annual meeting of the Canadian National Committee of the Commission Internationale de l'Éclairage (CNC/CIE) was called to order at 8:30 on Friday, October 15, 2010 by L.A. Whitehead, President.

Ten Members and Advisory Members were in attendance. The list of all attendees, regrets and proxies is given in Appendix A. The teleconference call facility was arranged and hosted by J.A. Veitch.

The President expressed our appreciation to Cristian Suvagau and BC Hydro for providing the excellent facilities for these meetings.

The agenda, as circulated by email on 2010-October-12 (Appendix C), was accepted after inclusion, under "12.3 Any other business" of discussion topics on LED light levels in cities, and on the general field of color rendering with LED, as proposed by Lorne Whitehead.

2. Minutes of the 54th CNC/CIE Annual Meeting:

The secretary indicated that an electronic version of the Minutes of the 54th Annual Meeting had been emailed to all Members and Advisory Members on 2010-October-12. It was moved by J.C. Zwinkels, seconded by V. Venkataramanan, that the Minutes be accepted as distributed. Passed.

The action items from the 54th Annual Meeting (Appendix C) were considered and the actions taken are reported in Appendix C (Results column). There were 17 action items and most of them were quite simply mentioned "done", with further comments on the following:

AI-3: Yoshi Ohno has become the liaison between CIE Div. 2 and IEEE concerning LEDs.

AI-4: It was not known if J. Bastianpillai could join TC5-23. He has to contact the TC Chair.

AI-6: The action item is renewed (new AI-1). Jim Love will assist Venkat Venkataramanan into establishing the terms of reference of a Student Award. They will look for outside members to join.

AI-7: A list of Canadian Companies has been established and will be pass to the Secretary (new AI-2).

AI-13: A possible Canadian CIE Division 1 Member has not been identified yet for after 2011. It was decided to form a nomination committee (Arnold Gaertner, Sharon McFadden, Jim Love) to look into this new (AI-3).

There were no further Matters Arising.

3. President's Report:

L.A. Whitehead presented and discussed his report on the CIE 2009 General Assembly, which is attached as Appendix D.

4. Vice-President's Report:

J.A. Veitch presented and discussed her report, which is attached as Appendix E. She had attended the CODATA meeting and she pointed out that there was currently a concern about "data at risk", such as astronomical images in the form of photographic plates that some people want to throw away, and that this is something the lighting community should be wondering about.

5. Secretary's Report:

R. Baribeau presented his report, which is attached as Appendix F. He briefly summarized each item in the report.

6. Financial and Publications Report:

K.F. Lin was unable to attend this meeting, but he had sent a letter (Appendix G) that was presented by R. Baribeau. He indicated that there was no publication from the CNC/CIE stock of CIE Publications sold this year, and that no purchases from the CIE were made by the CNC/CIE. The Secretary also pointed out that there was a credit at the CIE-CB from publication sales by the CIE-CB to Canadians. This should be obtained from the CIE-CB (AI-4).

7. Requests for Financial Support:

The Secretary reported that there were no requests for funding during the year since the last annual meeting.

8. Reports from Division Members

Reports were presented for all the divisions except Division 4. These reports are attached in the appendix. Réjean Baribeau will contact J. Bastianpillai to obtain the Division 4 report for later inclusion. The following arose during the report discussion:

Div.1: Two new TC have been created, one on small colour differences, the other one on Colour Matching Functions.

Div. 2: Tim Moggridge attended the Division meeting and became TC2-59 member; he also wants to become a CNC member.

Div. 3: We have Canadians in six of the committees. Jennifer Veitch will send a correspondence with names.

Div. 8: It was pointed out that 3D display and its issues associated with color and quality, such as visual fatigue, comfort, binocular rivalry, gamut issues, and psychophysics, could be of interest to the community. We are encouraged to inquire with our contacts in industry and academia if such a Reportership/TC should be formed and what its Terms of Reference should be.

9. CNC/CIE Subcommittee Reports

9.1 CNC/CIE Website report:

J.A. Veitch presented her report, which is attached as Appendix H. She indicated that the Website will be migrating to new server for which there will be a higher fee.

9.2 CNC/CIE Finance Subcommittee report:

S.M. McFadden presented her report, which is attached in Appendix I. She thinks we need to solicit suggestions from our members who work in industry on more effective methods to interest the Canadian lighting industry in the work of the CNC/CIE. We need a way to make more personal contact.

S.M. McFadden sees no strong reason for this subcommittee to stay in existence.

10. CISET Annual Performance Review (APR) of the CNC/CIE:

Note: The structure of the NRC relationship with the CNCs can be summarized as follows:

The NRC maintains affiliations with international bodies, such as the CIE, on behalf of Canada. NRC is authorized by the Federal Government to provide funds for membership with international bodies to enable the Canadian scientific community to have access to international meetings, networking and knowledge exchange. NRC shares the responsibility for these international affiliations with Canadian partners through Canadian Partner Agreements. Each partner creates and maintains a CNC, composed of leading Canadian researchers, to support Canada's affiliation with the relevant international scientific bodies. In the case of the CIE,

the NRC maintains a Canadian Partner Agreement with NRC-INMS, which creates and maintains the CNC/CIE to support Canada's affiliation with the CIE. The NRC uses the APR to assess these international affiliations; the CISET reviews these APRs and makes recommendations to the NRC on whether the specific Canadian Partner Agreement should continue.

Réjean Baribeau indicated that that this year's questionnaire will be distributed to all NRC Partners/CNCs at the end of October 2010, and responses will be expected before December 31, 2010. He noted that the NRC Grant Transfer Program is currently being reviewed by Treasury Board. Once this review has been completed and the Terms and Conditions are in place, and contingent on the receipt and successful review of the 2010 Annual Performance Review questionnaire by CISET, the 2011 dues should be paid without delay.

Jim Love expressed that in answering this new questionnaire we should emphasize why lighting is important in Canada and bring in some elements of interconnectivity.

J. Veitch will prepare this year's response to the questionnaire (AI-5).

11. Nominations and Appointments (CNC/CIE):

The Secretary distributed a list of the current CNC/CIE Members and Advisory Members (Appendix K).

L. Whitehead suggested reserving some funds (say $5K) in our budget to help Division Members attend meetings, possibly up to $1K/Member.

11.1 CNC/CIE Officers:

A committee (Sharon McFadden, Jim Love, Arnold Gaertner) was formed that will look at the nomination for officers (AI-3).

11.2 CNC/CIE Members and Advisory Members:

R. Baribeau to check with Byron Jordan about the continuation of his membership.(AI-6)

J. Zwinkels proposed Tim Moggridge as an Advisory Member as he is already member of TC2-55 . R. Baribeau will ask Tim and it should be made official at the next Meeting?) (AI-7)

Jim Love suggested that a column be added to the member list indicating interest.

11.3 Canadian CIE Division Members:

A new Div. 1 Member is needed. A subcommittee (Arnold Gaertner, Sharon McFadden, Jim Love) will look into this. (AI-3)

12. Other Business:

12.1 Correspondence:

There was none to report.

12.2 Date and Place of next Year's Meeting:

Contact the US National Committee and ask if they are interested in a joint meeting. (AI-8)

J. Veitch suggested Université Laval (Department of Architecture, contact: Marie-Claude Dubois,) as a possibility.

L. Whitehead then suggested NRC. J. Zwinkels made the observation that her group at NRC will be holding some photometry and radiometry courses around the same time and that this could be conflicting. J. Veitch saw this as an opportunity to tie the meeting and workshop to a related event and attract more participation to both. A committee (J. Zwinkels, A. Gaertner, R. Baribeau, J. Veitch, V. Venkataramanan) will look at the coordination of this (AI-9).

--- lunch break---

12.3 Other Business:

Report on CIE 2009 General Assembly meeting:

A formal report on this meeting from L.A. Whitehead has been received and is attached as Appendix L.

It was proposed that Alan Robertson be proposed for some award at the CIE meeting in South Africa next year. Réjean Baribeau will inquire about the procedure (AI-10).

The was a discussion about NRCan proposed labeling of information on luminaries that does not use the rigorous terminology accepted by the CIE and others. A. Gaertner will prepare and circulate a letter to NRCan to indicate our dissensions and/or reserves related to that (AI-11).

L. Whitehead presented his view that colour rendering index and colour quality systems were doing a poor job at describing the quality of light sources, in particular LEDs. He suggests that the lighting community should work at defining an "ideal spectral distribution", that would be the optimum compromise between luminous efficacy of radiation and colour rendering. L. Whitehead will contact TC1-69 to suggest a presentation to them in South Africa on this subject.

The brightness of LED signs was discussed and a subcommittee (M. Timmings, L. Whitehead, D. Kline) will discuss appropriate standards (AI-12).

13. Adjournment

Jim Love expressed his thanks, and that of the participants, to Christian Suvagau for arranging the facilities at this meeting. The meeting was adjourned at approximately 14:00.

Réjean Baribeu
Secretary, CNC/CIE
Institute for National Measurement Standards
National Research Council of Canada
Ottawa, Ontario K1A 0R6

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2010-November-8

CNC/CIE 55th Annual Meeting

2010-October-15

Action Items

Action Item Number (AI#)	55th Minutes Item Number	Responsible	Action
AI-1	2	V. Venkataramanan, J. Love	Student Award
AI-2	2	M.K. Timmings, V. Venkataramanan	Send list of companies
AI-3	2, 11.1,13.3	Arnold Gaertner, Sharon McFadden, Jim Love	Nominate a Div. 1 member
AI-4	6	R. Baribeau, K.F. Lin	Transfer money from the CB
AI-5	10	J. Veitch	prepare response to APR questionnaire.
AI-6	11.2	R. Baribeau	Ask B. Jordan about he continuation of his membership
AI-7	11.2	R. Baribeau	Action regarding nomination of Tim Moggridge as an Advisory Member
AI-8	12.2	R. Baribeau	Contact the US NC for joint meeting
AI-9	12.2	J. Zwinkels, A. Gaertner, R. Baribeau, J. Veitch, V. Venkataramanan	Coordinate next meeting and workshop
AI-10	12.3	R. Baribeau	Inquire about the procedure to nominate A. Robertson for an award.
AI-11	12.3	A. Gaertner	Prepare and circulate the response to NRCan .
AI-12	12.3	(M. Timmings, L. Whitehead, D. Kline	Discuss standards for LEDs

LIST OF APPENDICES

APPENDIX A

CNC/CIE 55th Annual Meeting

2010-October-15

Attendees

Réjean Baribeau	National Research Council (INMS)
Cristian Suvagau	BC Hydro
[1]Arnold Gaertner	National Research Council (INMS)
James Love	University of Calgary
[1]Sharon McFadden	DRDC Toronto
Martyn Timmings	Canlyte Inc./Philips
Jennifer Veitch	National Research Council (IRC)
Venkat Venkataramanan	University of Toronto
Lorne Whitehead	University of British Columbia
Joanne Zwinkels	National Research Council (INMS)

Regrets

Yvon Deslauriers	Health Canada (RPB)
K. Frank Lin	Lighting Sciences Canada Ltd.
Joe Bastianpillai	Lumentech Engineers Inc

Proxies

K. Frank Lin	Réjean Baribeau

[1] Attended via teleconference.

APPENDIX B

CNC/CIE 55th Annual Meeting

2010-October-15, Friday

PROPOSED AGENDA:

1.	Call to Order and Approval of Agenda	L.A. Whitehead
2.	Minutes of the 54th Annual CNC/CIE meeting - Action items - Matters arising	L.A. Whitehead
3.	President's report	L.A. Whitehead
4.	Vice-President's report	J.A. Veitch
5.	Secretary's report	R. Baribeau
6.	Financial and Publications report	K.F. Lin
7.	Requests for Financial Support	L.A. Whitehead
8.	Reports from Division Members	
	Division 1: Vision and Colour	S.M. McFadden
	Division 2: Physical Measurement of Light and Radiation	J.C. Zwinkels
	Division 3: Interior Environment and Lighting Design	J.A. Veitch
	Division 4: Lighting and Signalling for Transport	J. Bastianpillai
	Division 5: Exterior and Other Lighting Applications	M.K. Timmings
	Division 6: Photobiology and Photochemistry	J.D.Y. Deslauriers
	Division 8: Image Technology	R. Baribeau
9.	CNC/CIE Subcommittee reports:	
	9.1 CNC/CIE website report	J.A. Veitch
	9.2 CNC/CIE Finance Subcommittee report	S. M. McFadden
10.	CISET Annual Performance Review of the CNC/CIE	L.A. Whitehead
11.	Nominations and Appointments (CNC/CIE) 11.1 Division Members 11.2 Members and Advisory Members	L.A. Whitehead
12.	Other Business 12.1 Correspondence 12.2 Date and Place for next year's meeting (joint with USNC) 12.3 Any other business	L.A. Whitehead
13.	Adjournment	L.A. Whitehead

APPENDIX C

Action items from CNC/CIE 54th Annual Meeting

Action Item Number (AI#)	54th Minutes Item Number	Responsible	Action	Result
1	2, 4	J.A. Veitch	contact SCC, CSA re Canadians on their lighting committees.	done
2	2	A.A. Gaertner	memorial for W.K. Adrian, contribution to Nuckolls Fund	done
3	2	J.A. Veitch, J.C. Zwinkels	potential liaison between CIE Div 2 and IEEE concerning LEDS	Yoshi Ohno has become the liaison
4	2	J. Bastianpillai, M.K. Timmings	J. Bastianpillai wishes to participate in TC5-23	We don't know.
5	2	B.D. Jordan, J.D.Y. Deslauriers	B.D. Jordan wishes to participate in TC6-61	
6	2, 8.3	V. Venkataramanan	Student Award Subcommittee: terms of reference and award	Renewed. Jim to assist Van.
7	2, 8.4	M.K. Timmings, V. Venkataramanan	Outreach Subcommittee, list of Canadian Companies	Done. To be passed to Secretaty
8	9	A.A. Gaertner	send new Code of Procedure to NRC-INMS DG for approval	done
9	10	J.A. Veitch	prepare response to 2009 APR	done
10	10	A.A. Gaertner	check Code of Procedure with NRC sample	Discussed with INMS DG.
11	11.1	A.A. Gaertner	submit nomination of R. Baribeau as CNC/CIE Secretary to DG of NRC-INMS	done
12	11.2	A.A. Gaertner	submit nomination of A.A. Gaertner as CNC/CIE Member to DG of NRC-INMS	done
13	11.3	all	possible Canadian CIE Division 1 Member after 2011	Not done
14	12.3	A.A. Gaertner	determine availability of GA 2009 Minutes	done
15	12.3	L.A. Whitehead	prepare report on CIE 2009 General Assembly	done
16	12.2	L.A. Whitehead, J.A. Love, C. Suvagau	resolve date and location of next annual meeting	done
17	12.2	Finance Subcom.: S.M. McFadden (chair), K.F. Lin, J.A. Love and V. Venkataramanan	contact 'lighting industry' re suggestions/participation in 2010 workshop	done

APPENDIX D

Report on CIE 2009 General Assembly

Report from Lorne Whitehead, President of the CIE Canadian National Committee, who was the NRC-INMS nominated Canadian delegate attending the CIE General Assembly Meeting, 26 May 2009, Budapest, Hungary

Report dated March 21, 2010

Lorne Whitehead attended the above referenced meeting, along with Joanne Zwinkels, another member of the CIE CNC.

We took notes at the meeting and also requested the official minutes from the CIE, and have just received them. In our opinion these minutes accurately reflect the activities at the meeting and we have therefore included them as part of this report.

In advance of the meeting, we had noted one area of possible concern and expressed it in an e-mail message to the CIE President. A copy of that message is appended. Our concern was noted, and in response the CIE withdrew, prior to the budget vote, the proposed change that had caused us concern. This is noted in section 6.5 of the minutes, where we have highlighted in yellow the key modification that reads “without any changes in the crediting of publication sales”. We were pleased with the CIE’s responsiveness to the concern we expressed.

There were no other areas of concern from a Canadian perspective.

Please let me know if you have any questions about this report.

Finally, regarding travel cost reimbursement, this trip constituted part of my normal travel activities as part of my scientific work for the University of British Columbia and therefore in this case there is no need for travel reimbursement from NRC-INMS.

Sincerely,

Lorne A. Whitehead
lorne.whitehead@ubc.ca

(604) 827-4299

APPENDIX E

Vice-President's Report

October, 2010

Jennifer A. Veitch, Ph.D.
jennifer.veitch@nrc-cnrc.gc.ca

In my capacity as Vice-President of the CNC, this year I undertook three principal tasks.

The largest of these was to lead the preparation of the annual report to the NRC International Relations Office. We received an excellent score in the rating of this report: 42 of a possible 45 points. Thanks to everyone involved in lighting in Canada, and particularly through CIE, for this excellent performance.

As promised in 2009, I have attempted to increase our links to people who serve on Canadian and international standards committees in CSA, ISO, and the like. In May 2010 I wrote to the relevant people at the Canadian Standards Association and the Standards Council of Canada, but have had no reply from either. I plan further follow up during the coming year.

Finally, on Sept. 24 I attended the annual meeting of the CNC for CODATA (www.codata.org/canada/), held in Ottawa. CODATA is the Committee on Data for Science and Technology, an Interdisciplinary Scientific Committee of the International Council for Science. Among the activities that might be of interest to CIE members is a new working group on "Data at risk", which will begin later this month to compile a database listing data that are at risk of being lost by virtue of being on non-digital media or held in non-secure archives. The group aims to raise awareness of the potential loss of information and its consequences for future science.

Appendix F

CNC/CIE SECRETARY'S REPORT TO THE 55th ANNUAL MEETING

2010-October-15

The following acronyms may be used in this report:

CEN:	Comité Européen de Normalisation
CIE-CB:	CIE Central Bureau in Vienna, Austria
CIE-BA:	CIE Board of Administration
CNC/CIE:	Canadian National Committee of CIE
CIE/USA:	US National Committee of the CIE
GA:	General Assembly
ISO:	International Organization for Standardization
NC:	National Committee
NRC:	National Research Council of Canada
CISET:	NRC advisory Committee on International Science, Engineering and Technology
NRC-IRO:	NRC International Relations Office
NRC-INMS:	NRC Institute for National Measurement Standards
NRC-IRC:	NRC Institute for Research in Construction
NRCan:	Natural Resources Canada

This report covers the period from 2008-October-24 to 2009-October-14.

CIE MATTERS:

1. Annual Membership Fee:
   The annual membership fee for the CNC/CIE as a member of the CIE for 2010 was 7,821 €. The NRC-International Relations Office has continued to make these payments on our behalf.

   The NRC, through a Grant Transfer Program, supports Canadian scientific organizations to affiliate with their corresponding international union and program bodies. As part of our CIE membership through the NRC, we are also affiliated with the International Council for Science (ICSU) and 29 other international scientific unions. The NRC membership to these international scientific organizations allows active participation by members of the Canadian scientific community in international scientific endeavors.

2. Revenues from Sales of Publications:

   A discussion has been ongoing with CIE-CB about the transfer of revenues from sales of publications to the CNC/CIE bank account. CIE-CB sees problems with the Austrian Association and Finance Laws and would like us to use our credit to purchase publications. I have explained that the CNC/CIE has never expressed explicit wishes that the CNC ignore its publication credit and instead buy publications for this amount. It would definitely not have the same effect for the CNC/CIE to balance the credits with the next year's dues. This point was explicitly made in a previous correspondence in 2008. The CNC/CIE has in the past had these funds transferred from the CIE-CB to the CNC/CIE. I have requested that this continue to happen. The CIE-CB has finally agreed to transfer the funds and is waiting for our instructions.

3. Nomination for CIE Div. 2 director:
   One of our members, Dr. Joanne Zwinkels of the NRC Institute for National Measurement Standards, has been proposed as a nominee for the position of Director of CIE Division 2, Measurement of Light and Radiation, for a term from 2011-2015. On behalf of the CNC/CIE, Jennifer A. Veitch has sent a letter of support for this nomination to Dr. James W. McLaren, Director General of INMS .

4. CIE Midterm Meeting
   The CIE Midterm General Assembly meeting was held in Budapest, Hungary, on 2009-May-26. Lorne A. Whitehead and Jennifer A. Veitch attended the meeting. The minutes of the meeting have been posted July 7, 2010 and are now available from me.

5. CIE Memberships

- USA: The CIE-CB, on 2010-May-20, informed all CIE NCs that the suspension of the CIE US National Committee was lifted as the dues payment for 2008 had been received in full.

6. CIE Conference "CIE 2010 Lighting Quality and Energy Efficiency", 2010-March-14 to 17
This conference was attended by CNC members

7. CIE Collaboration Tool

The CIE has implemented a web tool where CIE discussions, in particular TC discussions, should now take place. The login URL is: http://collaboration.iec.ch. To get a password for that one needs to tell the central bureau he is an active member. Some TC chairs have already done this for their TC members. After login one can access documents, minutes, agenda, discussion forum etc. of the sections in which one is active.

8. CIE Draft Standards:

CIE DS 014-3.2/E:2010 "Colorimetry - Part 3: CIE Tristimulus Values" . 2010, March 25. Sent to NC members for comments.

DS 017.2/E:2009 "ILV: International Lighting Vocabulary". 2009, Dec. 1. Sent to NC members for comments. No comments received.

9. Mailings:

Amongst others, the following CIE materials have been received and mailed and/or emailed to the membership as appropriate:

Note that the CIE NEWS is now only available on the CIE website (www.cie.co.at)

Announcements:

2nd CIE Expert Symposium on Appearance, and

CIE Tutorial and Expert Symposium on Spectral and Imaging Methods for Photometry and Radiometry

CIE Press Releases:

CIE 162:2010 Chromatic Adaptation under Mixed Illumination Condition when Comparing Softcopy and Hardcopy Images (incl. Erratum 1)

CIE x034:2010 SELECTED PAPERS of the Light and Lighting Conference with Special Emphasis on LEDs and Solid State Lighting

CIE 187:2010 UV-C Photocarcinogenesis Risks from Germicidal Lamps

CIE 188:2010 Performance Assessment Method for Vehicle Headlighting Systems

CIE 189:2010 CALCULATION OF TUNNEL LIGHTING QUALITY CRITERIA

CIE 115:2010, 2nd Edition LIGHTING OF ROADS FOR MOTOR AND PEDESTRIAN TRAFFIC

CIE 190:2010 CALCULATION AND PRESENTATION OF UNIFIED GLARE RATING TABLES FOR INDOOR LIGHTING LUMINAIRES

CIE 191:2010 RECOMMENDED SYSTEM FOR MESOPIC PHOTOMETRY BASED ON VISUAL PERFORMANCE

CNC/CIE MATTERS:

1. CNC/CIE 2010 Annual Meeting:
The 55th annual CNC/CIE meeting will be on Oct. 15, 2010 at BC Hydro, 900-4555 Kingsway, Burnaby, BC V5H 4T8. We extend our thanks to BC Hydro and Cristian Suvagau for hosting this meeting.

2. Annual Performance Review of the CNC/CIE:
The NRC International Relations Office has developed an Annual Performance Review (APR) questionnaire, requested by the NRC advisory Committee on International Science, Engineering and Technology (CISET), that focuses on assessing the impact of Canada's international affiliations supported through the NRC Grant Transfer Program. The questionnaire is distributed to all NRC Partners/CNCs. Annual dues and any other payments will be withheld until receipt and successful review of the questionnaire by CISET. We repeated this exercise this year

and obtained excellent notes. Dr. Jim McLaren, our NRC/INMS Director General, has sent his compliments on the excellent report that we submitted The NRC-IRO paid the CNC/CIE annual dues to the in 2009-June.

We have been advised that the questionnaire will be distributed to all NRC Partners/CNCs at the end of October 2010, and responses will be expected before December 31, 2010. Please note, the NRC Grant Transfer Program is currently being reviewed by Treasury Board. Once this review has been completed and the Terms and Conditions are in place, and contingent on the receipt and successful review of the 2010 Annual Performance Review questionnaire by CISET, the 2011 dues will be paid without delay.

3. Canadian Lighting Issues:

Natural Resources Canada (NRCan): The CNC/CIE is on the mailing list of the NRCan Office of Energy Efficiency to receive information concerning any lighting issues of interest to the Canadian lighting community. I forwarded this information to our email list until July 2010 when I invited everybody to use the registration form from The Office of Energy Efficiency and receive information directly from them. I have since then ceased to forward the emails that I keep receiveing from NRCan. I plan to send a reminder on this each year for our new members.

4. Requests for Funding:

There were no requests for funding during this past year.

5. CNC/CIE website:

The website has been operating since 2005-October-26 at the web address of www.cie-cnc.ca. If anyone has suggestions for corrections, updates, or additions, please contact the Secretary or J.A. Veitch, our website coordinator. A report on the website will be given at the annual meeting.

6. Mailing Lists:

6.1 At present I maintain 3 mailing lists: Members (16), Advisory Members (46), General Interest (19). In general, the difference between the first two and the third is that the third list tends to receive only CIE material (press releases of CIE publications, *CIE NEWS*) and notices of international conferences. Members and Advisory Members receive, in addition to the CIE material, more CNC information such as various ballots, and the Minutes of the annual meeting and related information.

6.2 Electronic Mail: I have sent all documents to the CNC/CIE membership this year by email. I try to use the PDF format whenever possible. I now receive all the information from the CIE-CB, such as Press Releases, in electronic format. I also receive announcements of meetings in electronic format, and I forward these electronically rather than sending a large paper mailing. People on the mailing list need to keep me updated on their email address as I don't have the resources to recover that information.

7. Membership:

A list of our Members and Advisory Members is available and will be discussed during the annual meeting for the purposes of making any changes.

7.1. Officers:

I (Réjean Baribeau) have become CNC/CIE Secretary on 2010,January 1, in replacement of A. A. Gaertner, who has become the ex-officio INMS DG representative. On behalf of all the members, I thank Dr. Gaertner for his excellent work as Secretary throughout those years .

7.2. Members:

A.A. Gaertner continues as a CNC/CIE Member.

7.3. Advisory Members:

Nolie Agellon is retiring from MTO effective 2009-December-31 and has also resigned as Advisory Member to the CNC/CIE.

Martin Aitkenhead, Head of the Electrical Engineering Section of MTO, has become an Advisory Member.

Alan R. Robertson resigned as INMS Delegate to the CNC/CIE and has become an Advisary Member.

7.4. General Interest:

As a result of requests during the year, I have added the following to our General Interest mailings:

John S. Richards, Plus Associates Designers & Consultants

7.5 Removals:

The following people have been removed from our mailing lists:

Richard Dilon (died),
Michael Phillips, P.Eng., Stantec, Vancouver, British Columbia (moved to Australia)

Respectfully submitted,

Réjean Baribeau
Secretary, CNC/CIE
Institute for National Measurement Standards
Building M-36
National Research Council of Canada
1200 Montreal Road
Ottawa, Ontario K1A 0R6
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APPENDIX G

Financial and Publications Report

Letter 7 Oct. 2010:

Dear Rejean,

I am sorry I can not make to the CNC/CIE meeting this year. But I have a number that all of you can smile at:
The bank balance is $22043.81 (as of Sept. 30, 2010.)
There is no transaction in publication in this fiscal year.

Bank balance at end of fiscal year 2009: $22664.56
Nov 12, 09 Donation to Nuckolls fund: $549.35 (There is no check transaction since Nov 13, 2009)
There are two monthly stings from the bank: monthly fees $3.95, Record keeping fees $2.00.
Yearly cost: $71.4

Regards,
K. Frank Lin

Lighting Sciences Canada Ltd.
160 Frobisher Drive, Unit 5
Waterloo, Ontario, Canada N2V 2B1

Tel: (519)746-3140
Fax: (519)746-3156
Email: lsc@lightingsciences.ca
Web: http://www.lightingsciences.ca

APPENDIX H

CNC/CIE Web Site Report

October, 2010

Jennifer A. Veitch, Ph.D.
jennifer.veitch@nrc-cnrc.gc.ca

Usage

I regret that I have not compiled our usage statistics in time for this report.

Content

Our Webmaster, Bob Bridges, has had further health problems but has over the summer of 2010 completed most of the work to convert the site to a Joomla platform. Joomla is an open-source content management system (www.joomla.org) that will allow us to create password-protected spaces for document downloads (eliminating the need for large attachments to e-mails) and that will also permit your web secretary (me or whomever fills this role later) to update the content quickly. For instance, it will be easy to post the CIE press releases as PDF documents on the site. We are beta-testing it now and it will be activated in the coming months.

Translation services for the web site have and will continue to be provided by the National Research Council of Canada Institute for Research in Construction.

Records of Canadian TC Involvement

The most difficult task each year is obtaining the information from Division delegates concerning the membership of TCs in their divisions. When I ask for the information, please send it along. When the Joomla conversion is complete I will make long-overdue updates.

History of Lighting in Canada

I remain interested in adding content on the history of lighting in Canada, but other pressures have prevented making any progress on this task. When other things are complete, I will return to this.

Maintenance

The cost for the domain registration, site hosting, and maintenance in 2009 was $162.60. We will shortly receive the invoice for the conversion to Joomla as well as for the 2010 hosting. It will be higher on a one-time basis, but future costs should be lower because more of the maintenance will be done by volunteers.

It has not been an onerous task to be the liaison for the web site, and I would be pleased to continue in that role for the coming year.

Appendix I

Finance Subcommittee report

The primary task of the Finance Subcommittee this past year was to make contact with the Canadian lighting community in order to encourage participation in a technical session in 2010 to develop ideas for a lighting workshop in 2011. In support of this effort, M. Timmings prepared a Canadian Lighting Industry mailing list. In January an email was sent, by the Subcommittee Chair, to all of the people on the mailing list soliciting an expression of interest in the 2010 technical session. A small number of people responded expressing interest. After the initial mailing, the list was expanded using a more recent mailing list. In June, an email with information on the technical session was sent to this expanded list. The response was minimal. There may be greater interest in the 2011 workshop since it will be held in Toronto. However, I think we need to solicit suggestions from our members who work in industry on more effective methods to interest the Canadian lighting industry in the work of the CNC/CIE.

Respectfully Submitted

Sharon McFadden
Chair, Finance Subcommittee

APPENDIX J

CNC/CIE MEMBERS

CNC/CIE			TERM (expiry)	CIE
President	L.A. Whitehead	British Columbia	2011-12-31	
Vice President	J.A. Veitch	Ontario	2011-12-31	Division 3
Secretary	R. Baribeau	Ontario	2013-12-31	Division 8
Publications/Treasurer	K.F. Lin	Ontario	2012-12-31	
	J. Bastianpillai	Ontario	2011-12-31	Division 4
	J.D.Y. Deslauriers	Québec	2011-12-31	Division 6
	B.D. Jordan	Ontario	2011-12-31	
	J.A. Love	Alberta	2011-12-31	
	S.M. McFadden	Ontario	2011-12-31	Division 1
	I.C. Pasini	Ontario	2010-12-31	
	C. Suvagau	British Columbia	2011-12-31	
	M.K. Timmings	Ontario	2011-12-31	Division 5
	V. Venkataramanan	Ontario	2011-12-31	
	J.C. Zwinkels	Ontario	2011-12-31	Division 2
ex officio	A.A. Gaertner	Ontario		NRC/INMS Member

CNC/CIE ADVISORY MEMBERS

Martin Aitkenhead	Ontario	Denis Lavoie	Québec
Santo Aguanno	Ontario	Ken Loach	Ontario
Eduard Alf	Ontario	P. Manning	Nova Scotia
Chantal Arsenault	Ontario	J. Bruce McArthur	Ontario
Ian Ashdown	British Columbia	S.W. McKnight	Ontario
M.G. Bassett	Ontario	Arthur H. Mendel	Québec
Chrisnel Blot	Québec	Guy Newsham	Ontario
Mario Bucci	Ontario	Keith Niall	Ontario
J. Allyson Chrysler	Ontario	T. Nilsson	P.E.I.
Vince Cimino	Ontario	Karen Pero	Ontario
W.B. Cowan	Ontario	J.B. Roberge	Québec
Biman Das	Nova Scotia	A.R. Robertson	Ontario
R.V. Day	Ontario	Alexander Rosemann	British Columbia
Walter T. Delpero	Ontario	Mankajee Shrestha	British Columbia
Marie Dumont	Québec	Andrew D. Silbiger	Ontario
Marcin Gorzkowski	Ontario	Dyoni Smith	Ontario
John W. Harron	Ontario	Ralph A. Smith	New Brunswick
Kurt Ising	British Columbia	Nikolay Stoev	Ontario
S.M. Kaye	Manitoba	Eli Szamosi	Ontario
Donald Kline	Alberta	B.W. Tansley	Ontario
Barbara Kolesnik	Ontario	Thanos Tzempelikos	Ontario
R. Lakowski	British Columbia	R.W. White	Québec
André Laperrière	Québec	Ernest Wotton	Ontarrio

COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
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Canadian National Committee Comité National Canadien

CNC/CIE Division Members' Reports

CNC/CIE 55th Annual Meeting
2010–October–15

NRC·CNRC
Institute for National Measurement Standards • Institut des étalons nationaux de mesure • Ottawa, Canada, K1A 0R6, Fax (613) 952-1394

COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
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Division 1: Vision and Colour
Report to CNC/CIE Annual Meeting

Sharon M. McFadden
Email: sharon_mcfadden@rogers.com

The annual meeting of Division 1 was held 17-18 June 2010 in Princeton, NJ, USA. The meeting was attended by 4 officers, 8 country representatives, 9 TC Chairs, and several guests. Canada was not represented at the meeting. Four Technical Committees (TC) met in conjunction with the meeting: TC1-63: Validity of the Range of CIEDE2000, TC1-69: Color Rendition by White Light Sources. TC1-71: Tristimulus integration, and TC1-74: Methods for re-defining the CIE D-illuminants.

Highlights

Two new TCs and two Reporterships were proposed at the Division meeting and subsequently approved by the Board of Administration. They are:

TC 1-81 (C): Validity of Formulae for Predicting Small Colour Differences (Chair: Klaus Richter DE)

Terms of Reference: 1. To evaluate available formulae for small colour differences (<~2.0 CIELAB). 2. To define a visual threshold colour difference.

TC 1-82 (V) The Calculation of Colour Matching Functions as a Function of Age and Field Size (Chair: Jan Henrik Wold NO)

Terms of Reference: 1. Following on from CIE TR 170, to recommend a procedure for calculating XYZ-like colour matching functions from cone fundamentals, as a function of age and field size. 2. To deliver a computer programme for the calculations.

R1-51 (V) Reconciling Maxwell vs Maximum Saturation Colour Matches (Michael Brill, US)

Terms of Reference: 1. To examine the CIE TR 185 rod-cone model. 2. To examine the viability of the uniqueness of stimulus C for a Maxwell match. 3. To examine the hypothesis of pigment-bleaching distinction between the matching methods. 4. To examine in u'v' space the Wyszecki & Stiles reported discrepancy of the spectrum loci to assess the significance of the difference. 5. To consider the recommendation of a new TC to carry out further study.

R1-52 (C) Spectral Data Interpolation (Hugh Fairman, US)

Terms of Reference: To review the methods, and make a recommendation for the interpolation of existing, highly structured source spectra, including the FL illuminants, for colorimetric calculations.

Two TCs, (TC1-54: Age-related Change of Visual Response and TC1-56: Improved Colour Matching Functions) and two Reporterships (R1-19 and R1-43) were closed.

Future Meetings

The next meeting of CIE D1 will be in Sun City, South Africa, as part of the 2011 CIE Quadrennial Meeting, 11-14 July 2011.

Canadian Participation in Division 1

Based on the latest information available to me, Canada has representatives on 15 Technical Committees in Division 1. They are as follows:

TC1-27	A. Robertson	TC1-67	B. Tansley
TC1-37	W. Cowan	TC1-69	I. Ashdown
TC1-42	S. McFadden	TC1-70	A. Rosemann
TC1-44	J. Zwinkels	TC1-71	B. Jordan, A. Robertson
TC1-55	A. Robertson	TC1-72	L. Cormier, J. Zwinkels
TC1-57	A. Robertson (Chair), J. Zwinkels	TC1-77	B. Jordan
TC1-60	S. McFadden	TC1-79	S. McFadden
TC1-64	S. McFadden (Chair)		

J. Zwinkels is also a liaison between Division 1 and ISO TC6/WG3. If anyone is interested in participating in one of the TCs, especially the newer ones, please contact Sharon McFadden.

CIE Publications

TC1-56: CIE 185:2009 Reappraisal of Colour Matching Functions and Grassmann's Laws

TC1-58: CIE 191:2010 Recommended System for Mesopic Photometry Based on Visual Performance

Summary of Progress of Technical Committees and Reporterships

The following summaries of activities in the various Technical Committees of Division 1 are based on the minutes from the 2010 Division 1 meeting. Additional information on some of the TCs can be found in the minutes as well as the Activity Report for 2010. These are available in PDF format on the Division 1 website at http://div1.cie.co.at/. The activity report includes the terms of reference and membership for all Technical Committees and Reporterships.

Progress in Vision Section (M. Ayama, Associate Director)

TC1-36: Fundamental Chromaticity Diagram with Physiologically Significant Axes (F Viénot): Part 2 of CIE Publication 170-1:2006 is being prepared as CIE Publication 170-2 and will contain the following chapters:

Chapter 6. Photometric aspects

Chapter 7. Development of 2-dimensional chromaticity diagrams

Chapter 6 has been approved by the TC and Chapter 7 is in preparation.

TC1-37: Supplementary Systems of Photometry (K Sagawa): No report was provided for the meeting. The DD will inform the TCC that the end of September 2010 is a new and final deadline, and if no draft TR is received by that date, the TC should be closed or another chair found to complete the work.

TC1-41: Extension of $V_m(l)$ beyond 830 nm (P Walraven): The TCC of TC1-36, Françoise Viénot, will ask the TCC to start this work, because this subject was supposed to commence when Chapter 6 of Part 2 of the TC1-36 report had been approved.

TC1-42: Colour Appearance in Peripheral Vision (M Ayama): The first draft of a TR was circulated to the TC members and Division officers in May 2010. Comments are awaited by the end of July 2010.

TC1-54: Age-Related Change of Visual Responses (K. Sagawa): The CIE Guidelines for Accessibility, the document from the CIE BA ad-hoc group, TC3-44, and this TC, which contains vision data and design guidelines for better visibility and lighting for older persons and persons with disabilities, has been completed and approved by BA ballot. The TCC is now being requested to resolve the comments received in the ballot and to send the revised report to the CB. It was agreed to close this TC.

TC1-58: Visual Performance in the Mesopic Range (L Halonen): The final draft of a TR was approved by Division ballot, and is now in the hands of Peter Zwick, the CIE Technical Manager at the CB. The TC will be closed after the publication of the TR.

TC1-60: Contrast Sensitivity Function (CSF) for Detection and Discrimination (E Martinez-Uriegas): No report: it is understood that the TCC is ill. The DD will clarify the situation and, if the TCC is unable to continue with the work, then the DD has the name of a potential new TCC.

TC1-67: The Effects of Dynamic and Stereo Visual Images on Human Health (H. Ujike): The work of this TC is proceeding in parallel with that of an ISO working group, ISO/TC 159/SC 4/WG 12 *Image Safety*. They intend to publish three separate reports on PSS (Photo-Sensitive Seizures), VIMS (Visually Induced Motion Sickness), and VSFI (Visual Fatigue caused by Stereoscopic Image), respectively. It is intended that the CIE TRs will provide the scientific background, while those of the ISO WG will contain relevant regulations. The 3rd TC meeting was held at the time of the 4th meeting of the ISO WG in Utrecht, Netherlands in June 2009. The 3rd draft of the TR on PSS was circulated to members to be completed as a final draft. Work will then start on drafting the TR on VIMS. The DD will ask the TCC to submit a list of the TC members, to clarify the relationship between the ISO and CIE work, and to explain the necessity of 3 independent reports from each CIE and ISO group.

TC1-78: Evaluation of Visual Performance in the Real Lit Environment (M. Billger): This TC was established at the 2009 Division Meeting in Budapest. No report was sent to the Division officers for the present meeting, but the TCC submitted a 4 year work-plan for the 2009 Activity Report, and will have a TC meeting in Gent, BE, in September 2010, in association with the CIE Expert Symposium on Appearance. The first task is to make an overview of relevant studies and work in progress to map out relevant research and to define different types of studies. Year 2 will be used to define areas of study. Experimental studies will be carried out in year 3 and the report written in year 4.

TC1-79: Limits of Normal Colour Vision (J. Barbur): No information was received for the D1 meeting, but the TCC sent a report to the 2009 Activity Report where he wrote that "the stated terms of reference for TC 1-79 are broad and in the view of the chairman difficult to achieve within four years using available data." The TCC suggested limiting the aim to understanding the observed variability in chromatic sensitivity in normal trichromacy and congenital deficiency, and to use this knowledge to enhance the usefulness of colour assessment techniques with immediate occupational and clinical applications. The DD will write to the TCC asking him to provide a list of the TC members together with some assurance that they approve the change to the Terms of Reference. The proposed change of the Terms of Reference will then be considered.

TC1-80: Research Methods for Psychophysical Studies of Brightness Judgements, (S. Fotios): The TC has 12 members in addition to the chairman. Feedback is being sought on the draft definition of spatial brightness from the IESNA *Visual Effects of Lamp Spectral Distribution* committee. Primary methods: As well definitions of the four methods primarily used in psychophysical judgements have been circulated and feedback sought on these definitions and the need to consider other methods.

R1-19: Specification on Individual Variation in Heterochromatic Matching (H Yaguchi): This Reportership was closed.

R1-36: Action Spectra for Glare (J. Fekete): A 1st draft report entitled *Retrospection for the Five Last Years – Action Spectra for Glare* was sent to the Division officers in early June. J. Schanda will discuss with the Reporter about the requirement for recommendations as to future work and the possibility of proposing a new TC for the next Division meeting in 2011. An outline of the contents of the report is provided in the D1 minutes.

R1-37: Definition of the Visual Field for Conspicuity (N. Itoh): The 1st draft Report entitled *Definition of Visual Field for Conspicuity* was sent to the Division officers in June 2010. An outline of the contents of the report is provided in the D1minutes.

R1-40: Scene Dynamic Range (Jack Holm): No report was received. The DD will contact the Reporter to encourage further activity. This Reportership will be closed at the next Division meeting if no recommendations for future work are forthcoming.

R1-43: Standard Deviate Observer (B. Oicherman): The Report has been edited and uploaded to the Division website. It was agreed to close this Reportership.

R1-49: Above-threshold Pulsed Lights (I. Tutt UK & D. Couzin): No information was received at the D1 meeting, but the Reporters wrote about the progress to date in the 2010 Activity Report.

Progress in Colour Section (E. Carter, Associate Director)

TC1-27: Specification of Colour Appearance for Reflective Media and Self-Luminous Display Comparison (P J Alessi): The final report was completed and handed to CIE Central Bureau in May 2009. The report is still not ready for CIE ballot. This TC can close after the report has been through the CIE ballot process.

TC1-44: Practical Daylight Sources for Colorimetry (R Hirschler): The technical report was accepted by the TC and submitted to CIE BA for D1 ballot.

TC1-55: Uniform Colour Space for Industrial Colour Difference Evaluation (M. Melgosa): The TCC presented a report of the recent activity of this TC. The STRESS metric allows researchers to determine whether two color-difference formulas are statistically significant with respect to a given set of visual data. This metric was used to evaluate CIELAB, CIE94, and CIEDE2000, showing CIEDE2000 to be the best. However, CIECDE2000 does not have a color space associated with it. Thus, additional formulae were evaluated. The new formulas are simpler (Euclidean) and increasingly based on physiology, but CIEDE2000 is significantly better than any of them. Therefore, the TCC issued a request for new data sets. Four new data sets were used in the evaluation of the potential colour spaces. Also four data sets with very small colour differences (about 1 CIELAB unit) were used to evaluate the spaces. The 5 formulas tested gave similar performance. The future work of the TC involves: analyzing LCAM dataset, testing the IPT models currently being developed by R. Berns (RIT), using available datasets, and TC discussion on which criteria will be considered in proposing (if possible) a new color space for industrial color-difference evaluation.

TC1-56: Improved Colour Matching Functions (M Brill): The final report was published last year: CIE 185:2009 *Reappraisal of Colour Matching and Grassmann's Laws*. A final meeting was held

to discuss future efforts that could be undertaken by a new reportership or TC. It was agreed to close this TC.

TC1-57: Standards in Colorimetry (A Robertson): Work is continuing on the Tristimulus Value Standard. The 5th draft was submitted in August 2009 and approved by BA and D1 in December 2009. CIE DS 014-3.2/E:2010 has been submitted to NCs in December 2009 for comments under the 6-month rule. No official comments have been received yet but some members of D2 have expressed concern at an informative note referring to the use of the ybar10(λ) function for photometry. If these comments become official, TC 1-57 and D1 will have to choose between these three options: 1) Insist on keeping the note as useful "informative" (i.e. non-standard) information, 2) Modify the note, 3) Remove the note entirely. Meanwhile, the work on the colour difference standard has begun. First draft to be written will be based on CIE Publication 142-2001, will refer to Sharma's algorithm for computing h'bar and will include an informative annex on the Nobbs method for lightness, chroma and hue splitting.

TC1-61: Categorical Colour Identification (T. Ishida): A draft of the TR has been prepared

TC1-63: Validity of the range of CIEDE2000 (K. Richter): The present stage of the results may be summarized as follows: 1. CIELAB has been developed for large colour differences: ÄE*ab of approximately 10 and the 2º observer. 2. CIEDE2000 has been developed for colour differences in the range 0 < ÄE*ab < 5 and the 10º observer. However, not many data in the range 0 to 1 have been used for the development. In addition these data are uncertain, because 25% percent of the observers report a colour difference if the two samples are equal. 3. P. Kittelmann has avoided this "hairline" effect (for example a small sample distance and different gloss at the border). Therefore his data of 40 observers may be more consistent compared to other data and more useful for developing a better formula. The TCC agreed that TC1-63 should now write a Technical Report and complete its work within one year.

TC 1-64: Terminology for vision, colour and appearance (S. McFadden): During the past year, members reviewed new D1 technical terms as well as LED terms proposed by TC2-66. The D1 terms will be revised based on the comments and resubmitted to the members for approval. The TCC will liaise with Central Bureau re: process for future updates to the ILV.

TC1-68: Effect of Stimulus Size on Colour Appearance (P. Bodrogi): The committee is currently writing the Technical Report with scheduled completion by the end of 2010. Since last year's meeting it was decided to add a new Section 4 *Colour Appearance In Real Life* which will discuss the fact that the colour appearance of real outdoor facades, as well as interior walls, is different from the colour chips used to select the paint, and both differ with the viewing situation. This is not a simple colour-size effect, but is the result of many aspects of the complex spatial viewing situations.

TC1-69: Colour Rendering of White Light Sources (W. Davis): Originally it was planned to have a draft report ready by the 2010 D1 meeting. The actual progress includes: 17 (+/-) research reports from 10 labs/groups from 7 different countries with topics ranging from color memory for real objects, chromatic discrimination, attractiveness and naturalness of fruits and vegetables, estimations of color differences, rendering of human skin, color harmony, and more. Proposals have been developed for seven metrics based on these research reports. Based on discussions held throughout the year it was decided to extend the timeline. It was felt that it was necessary to first define some terminology. This work is currently in progress.

TC1-70: Metameric Samples for Indoor Daylight Evaluation (B. Kranicz): At the CIE – Light and Lighting Conference with Special Emphasis on LEDs and Solid State Lighting in Budapest,

Hungary comparison specimens for both the visible and UV ranges for ID65 and ID50 were demonstrated. In summary metameric pairs have been derived to ID65 and ID50. The standard specimens are the same as in standard ISO 23603:2005(E) – CIE S 012/E:2004. Comparison specimens for ID65 and ID50 have been derived. The resulting comparison specimens look 'almost the same' as the original functions but fulfil the requirements of metamerism. The fluorescence in case of ID65 or ID50 is still present in such a volume that it cannot be neglected. Having studied the classification process given in standard ISO 23603:2005(E) – CIE S 012/E:2004 comparison specimens have been determined to the UV-classification for ID65 and ID50. The assessment method of the quality of Indoor Daylight distributions ID65 and ID50 is set up.

TC1-71: Tristimulus Integration (C. Li): Currently, Draft 1 of the TR is completed. Draft 1 will be circulated to the TC. At the TC meeting, discussion covered the sample data and the illuminant data to be used in the evaluations.

TC1-72: Measurement of Appearance Network : MapNet (M. Pointer): This TC sponsored the 2nd Expert Symposium on Appearance *When Appearance Meets Lighting* held 8-10 September 2010 at KaHo St. Lieven University, Gent, Belgium. The aim of the meeting was to present the state of the art in our understanding of the perception of colour and gloss and to explore the possible applications of visual appearance knowledge to several aspects of lighting design and comfort.

TC1-73: Real Colour Gamut (C. Li): A draft TR was prepared and distributed to the TC. It has been concluded that defining the gamut in terms of colorimetric coordinates under a particular illuminant is not enough and that the currently available gamuts do not well represent current available data. Hopefully this TC can derive a new gamut which does represent available data and is defined in terms of reflectance functions. The time scale can be anticipated to be within the next two years.

TC1-74: Methods for Re-defining CIE D illuminants (J. Schanda): A draft report was circulated to the TC on 18-May-2010. The membership of this TC was approved at the D1 meeting,

TC1-75: A Comprehensive Model of Colour Appearance (R. Luo): The work plan for this TC is available in the D1minutes. The membership of this TC was approved at the D1 meeting.

TC1-76: Unique Hue Data (S. Wuerger): The work plan for this TC is available in the D1minutes. The membership of this TC was approved at the D1 meeting.

TC1-77: Improvement of the CIE Whiteness and Tint Equations (R. Hirschler): The work plan for this TC is available in the D1minutes. The membership of this TC was approved at the D1 meeting.

R1-42: Extensions of CIECAM02 (C. Li): TC8-11 had an open meeting during the CIC conference 2009. Problems with CIECAM02 and its application to ICC-PCS were identified. Several approaches for repairing the problems have been suggested. A new version of CIECAM02 with the HPE primaries used in place of any version of CAT02 should be vetted. Then, the documentation of the model should be rewritten to reflect the simplification. The present goal is to develop an interim model until further improvements can be made.

R1-48: Colour Emotion and Harmony (L. C. Ou): An outline of a report on this topic is available in the D1 minutes.

R1-50: 3D Aspects of Visual Appearance Measurement (D. Simmons): As of May 2010, progress has been made on the 1st and 2nd terms of reference, but the 3rd and 4th terms have yet to be acted upon. All are still on-going. The report includes some references and links.

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Division 2: Physical Measurement of Light and Radiation

Report to CNC-CIE 2010 Annual Meeting
Vancouver, B.C., 15 October 2010

Joanne C. Zwinkels
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The most recent CIE Division 2 General and TC meetings were held 30 May and 1-3 June 2010 at METAS, Bern, Switzerland in conjunction with a CIE Tutorial and Expert Symposium on Spectral and Imaging Methods for Photometry and Radiometry. There were 59 participants from 23 countries, including 19 country representatives. I was unable to attend but I am very thankful that Dr. Tim Moggridge (Westboro Photonics, Ottawa) was able to represent Canada at the D2 meeting and to provide me with the following meeting highlights, supplemented by additional details provided by D2 Director (Ohno) and Secretary (Sperling). The detailed minutes of the meeting should be available shortly at the web-site: http://cie.co.,at/div2.

Fourteen Technical Committees (TCs) met in Bern: TC2-*29 Measurement of detector linearity* (Eppeldauer); TC2-40 *Characterizing the performance of luminance and illuminance standards* (Blattner); TC2-47 *Characterization and calibration methods of UV radiometers* (Sperling); TC2-48 *Spectral responsivity measurement of detectors, radiometers, and photometers (*Eppeldauer); TC2-50 *Measurement of optical properties of LED assemblies* (Distl); TC2-53 *Multi-geometry colour measurements of effect materials* (Rösler); TC2-58 *Measurement of LED radiance and luminance* (Kohmoto); TC2-59 *Characterization of imaging luminance measurement devices* (Krüger); TC2-60 *Effect of instrumental bandpass function and measurement interval on spectral quantities* (Woolliams); TC2-62 *Imaging photometer based near field goniophotomety* (Steudtner); TC2-63 *Optical measurement of high-power LEDs* (Zong); TC2-64 *High speed testing methods for LEDs* (Heidel); TC2-65 *Photometric measurements in the mesopic range* (Goodman); and TC2-66 *Terminoloyg of LEDs and LED assemblies* (Schanda).

There were no changes in the D2 officers but the GA has elected the DD (Ohno) to be VP-Technical for the next quadrennium (2011-2015). Three people have been nominated for the D2 Director position: Peter Blattner (Switzerland), Cameron Miller (USA) and Joanne Zwinkels (Canada).

Highlights

TC 2-23 (*Photometry of street lighting luminaires*) has completed its work and was closed. It was proposed to create a joint TC with D4

TC 2-44 (*Vocabulary Matters*) has been closed because the work in mainly restricted to the D2 Editor.

TC 2-46 (*CIE/ISO Standards on LED intensity measurements*) has been closed due to lack of recent progress and decrease in need.

TC 2-52 (*Addendum to CIE 121-1996 for the Photometry of Emergency Lighting Luminaires*) was closed after publication of CIE 121-SP1:2009.

Reportership R2-41(*Retroreflection intercomparison*) was closed because it was determined to be premature.

Reportership R2-43 (*Measurement of integrated LED light sources*) has been closed; this task has been included in the TR for TC2-50.

Two new TCs and one new Reportership were established by D2 but other proposals are pending (see details below).

Editorial and publication activities over the past year:

- Draft report from TC 2-43 (*Determination of Measurement Uncertainties in Photometry*). Canada voted acceptance of this document with a few minor editorial changes largely based on comments received from A. Rosemann and M. Timmons.
- Draft report from TC2-48 (*Spectral responsivity measurement of detectors, radiometers and photometers*) was edited before the TC ballot
- Draft report from TC2-32 (*Measuring retroreflectance of wet horizontal road markings*) was edited extensively to be ready for TC ballot.

Proposals for New Technical Committees

(1) Proposal by Danny Rich based on the work of R2-23 (ISO/CIE Standards for the Measurement of Reflectance and Transmittance), read by DD.

Title: Standards for Measurement of Reflectance and Transmittance Properties of Materials
Proposed chair: Danny Rich (US)
TR: To draft three new CIE standards that describe the minimum requirements for any instrument intended to measure the optical properties of planar, uniform, homogeneous (or nearly so) materials, The standards will define the geometric and spectral requirements, the processes for calibration or standardization of the scales and the required level of uncertainty for the measurement of spectral diffuse reflectance and reflectance factor, spectral regular transmittance and spectral diffuse transmittance, and spectral regular reflectance
ML: Dave Wyble (US); Andreas Kraushaar (DE)
Decision: approved with no objections and one abstention, pending collection of initial members from five different countries.

(2) Proposal by Armin Sperling based on the work of R2-44 (Photometric Characterization of Large Area Flat Sources Used for Lighting).

Title: Optical measurement methods for OLEDs used for lighting

Proposed chair: Thorsten Gerloff (DE)
TR: To produce a Technical Report on the measurement methods of the optical properties and the terminology of OLEDs used for lighting.
Decision: approved with no objections.

(3) Proposal by Jiangen Pan based on the work of R2-42 (Measurement of LED Luminaires)
Title: Measurement of LED Luminaires
Proposed chair: J. Pan (CN)
TR: To prepare a technical report that provide CIE recommendations on conditions, procedures and precautions for reproducible measurement of photometric and colorimetric quantities of LED luminaires.
Decision: General consensus was that there is a need for such a TC, but there were many comments, and the decision was postponed until D2 establishes the strategies on LED related TCs and publications.

(4) Proposal by Tongsheng Mou on the work of R2-46 (Photobiological Safety Measurement of Lighting Products)
Title: Photobiological Safety Measurement of Lighting Products
Proposed chair: T. Mou (CN)
TR: To prepare a technical report for the measurement of optical radiation related to photobiological safety of lighting products, more focusing LED products.
Decision: As this TC would cover LED products broadly and also relationship with TC2-58 to be clarified, the decision was postponed until D2 establishes the strategies on LED related TCs and publications.

(5) Proposal by Peter Blattner from the discussion in TC2-40 (Characterizing the Performance of Illuminance and Luminance Meters)
Title: CIE Classification Systems of Illuminance and Luminance Meters
TR: To prepare a technical report on existing material and regional classification systems of Photometers and to recommend a CIE classification system.
Proposed chair: Peter Blattner
Decision: Approved with no objections.

Those interested to become a member of the new TCs, should fill out the form on the D2 website (www.cie.co.at/div2, under DOCUMENTS and FORMS near the bottom) and send it to TC chair following instructions in the form.

Proposals for new Reporterships

(1) Proposal by Peiting Chou
Title: The measurement of AC-driven LEDs
Proposed Reporter: Pei Ting Chou (Taiwan)
TR: To investigate the needs for a technical report for optical measurements of AC-driven LEDs including thermal stability condition, usage of the power sources, and testing

methodology. The measurement of AC-driven LED flicker will also be taken into consideration in this investigation.
Decision: approved with no objections

Changes in TCs and Reporterships

- The Chair of TC2-51 (*Calibration of Multi-Channel Spectrometers*) has been changed from Austin (USA) to Richard Young (UK) due to little progress of the TC.
- The Chair of TC 2-57 (*Revision of CIE S014-2*) has been changed from Alan Robertson to Balázs Kránicz if he accepts the vote (this was due to resignation of Robertson).
- The Reporter for R2-39 (*Display measurement standard – liaison with ICDM*) has changed from Ken Vassie to Tongsheng Mou since Ken Vassie is no longer available.

Summary of Progress of Technical Committees and Reporterships

Additional information on the terms of reference and membership for all Technical Committees and Reporterships can be found at the website: http://cie.co.at/div2

Progress in TCs: 2-29, 37, 40, 43, 46, 47, 48, 58, 59, 60, 62, 65 and 65 (Sauter, AD)

TC2-29 Linearity (Eppeldauer). This TC met in Bern. The title of this TC has changed to "Non-linearity of optical detector systems". The current 5th draft of the report has 3.5 of the planned 6 chapters written. The final draft is expected for the Sun City meeting.

TC2-37 Detectors as transfer standards (Ohno). Ohno reported that Draft 11 has been written and is close to the final version.

TC2-40 Characterization of luminance/illuminance meters (Blattner). The TC met in Bern. The current 10th draft has two key sections: 1) What are the quantities and how to measure them; and 2) Classification system for photometer performance.

TC2-43 Uncertainty (Sauter). The TC Report has gone for D2 ballot (see above). This Report incorporates 5 documents: 1 main document and 4 supplements

TC2-46 Standard on LED intensity measurement. (Scarangello). This TC has basically been stalled since 2006. It is considered that the relevance of this work is diminishing as nearly no devices are specified by intensity at this time. It was voted to close this TC. CIE 127 will need to be standardized as it is being used now by industry as the de facto standard.
TC2-47 UV meters (Sperling). This TC met in Bern. The TCC reported that there are two parts to the existing document: 1) Characterization and structure of a UV meter; and 2) Calibration of the UV meter. It is planned to add chapters on: 3) UV degradation; and 4) UV weighting functions.

TC2-48 Spectral responsivity measurement (Eppeldauer). TC met in Bern. Draft 14 of the TC report has been reviewed. The deadline for final comments from TC members is 2 October 2010.

TC2-58 Measurement of LED radiance/luminance (Kohmoto). This TC met in Bern. Progress on this TC has been slow. The TCC reported on his concerns on how to measure the luminance of an LED chip and the photobiological effects of LED luminance.

TC2-59 Characterization of imaging luminance measurement devices (Krüger). TC met in Bern. The TC is working on finding a method to describe the uncertainty over the image.

TC2-60 Effect of instrumental bandpass function and measurement interval on spectral quantities (Wooliams). The TC met in Bern. The 4th draft of the TC report was discussed. The TCC has asked for volunteers to carry out some experimental tests on real data to validate the methods. The TCC hopes to have this work completed in 6 months.

TC2-62 Imaging-photometer-based near-field goniphotometry (Steudtner) . TC met in Budapest and TCC gave a status report.

TC 2-64 High speed testing methods for LEDs (Heidel). This TC met in Bern. The scope of work of this TC has been expanded to include wafer and chip testing.

TC 2-65 Photometric measurements in the mesopic range (Goodman). This TC met for the 1st time in Bern. The background document from D1 will be published in the next couple of weeks. D2 will not recommend how the measurements should be applied in specific applications, such as road lighting. An s/p (scotopic to photopic) ratio is proposed for all lighting sources. The TCC is looking for volunteers to help with the definition of measurement methods. It is considered that a lot of brain storming is needed for the content of the report.

Progress in TCs: 2-23,49, 50, 52 and 66 (Vandermeersch, AD)

TC2-23 Photometry of street lighting luminaires (Vandermeersch). This TC has completed its work with the publication of the TC report and has been closed.

TC2-49 Flashing lights (Ohno) TCC reported that the final draft of this TC report is to be finished by the end of 2010.

TC2-50 Measurement of the optical properties of LED assemblies (Distl). This TC met in Bern. The scope of this TC is being re-defined. It will be limited to objects with more than a single LED, but less than a luminaire and will exclude photobiological requirements.

TC2-52 Emergency lighting (Vandermeersch). The work of this TC has been completed with the publication of the report: CIE 121-spl:2009. This TCC has been closed.

TC 2-66 Terminology of LEDs and LED assemblies (Schanda). This TC met for the 1st time in Bern. The TC is currently working on 17 definitions.

Progress in TCs: 2-17, 19, 25, 28, 32, 42, 44, 51, 53, 56, 57 and 67 (Johnson, AD)

TC2-17 Simulated solar radiation (Zerlaut) No report was received.

TC2-19 Spectral coefficient of retroreflection (Johnson) The work of this TCC is stalled.

TC2-28 Characterization of spectrophotometers (Goodman) This TC has stalled and they are looking for a volunteer to be the new TCC.

TC2-32 Wet horizontal road markings (Johnson) The final draft of this TC report has been sent to the DD for TC ballot.

TC2-44 Vocabulary matters (Gardner). This work is on-going.

TC2-51 Multi-channel spectrometers (Austin) There was no TC report and little progress over the past few years. It was voted to change the TCC to Richard Young (UK).

TC2-53 Multi-geometry measurements (Roesler) This TC met in Bern. The 4th draft of the report will be distributed to TC members by Feb. 2011.

TC2-56 Standard on retroreflectance (Miller) No information.

TC2-57 Revision of CIE S014-2 (Robertson) Ohno read report sent by TCC. Robertson has indicated his wish to resign and has asked for a volunteer to be new TCC. A professor in Hungary, Dr. Balázs Kránicz, has been proposed as new TCC and he will be contacted within the next few weeks.

TC 2-67 Photometry of lighting and light-signalling devices for road vehicles (Werner). TC work is progressing.

Progress of Reporterships

I have little additional information on the progress of reporterships that have not only been reported (see above) that recommended the creation of new TCs or closing

Reports of Liaisons

I have only information at this time on the two liaisons for which I am directly responsible. I would be happy to provide copies of these liaison reports upon request. These liaisons are:

ISO/TC6 Paper, pulp and board: Optical properties *(*Zwinkels, CAN**)**

ISO/TC 145/SC2: N519 Safety colours and safety signs – Specification of colorimetric and photometric properties of materials (Zwinkels, CAN).

Future D2 Meetings and Symposia

2011 Sun City, South Africa (27th Quadrennial Session), 6-18 July, 2011
2012 Open. Invitation from INMETRO (Brazil) possibly with a D2 symposium (to be decided in 2011).
2013 Open. Possibility: CIE Midterm in France.

Canadian Participation in Division 2

Canada has representation on 9 Technical Committees:

TC2-28	J.C. Zwinkels, A.R. Robertson (retired NRC)
TC2-35	A.R. Robertson
TC2-43	A. Gaertner (NRC)
TC2-47	L.P. Boivin (NRC retired), B. McArthur (AES)
TC2-48	L.P. Boivin, R. McArthur
TC2-53	J.C. Zwinkels
TC2-57	J.C. Zwinkels
TC 2-59	T. Moggridge (Westboro Photonics)-NEW
TC2-60	A.R. Robertson, J.C. Zwinkels, R.Baribeau (NRC)

Two Liaisons:
ISO TC6: Paper, Pulp, Board: J.C. Zwinkels (NRC)
ISO TC 145/SC 2 Safety colours and safety signs J.C. Zwinkels (NRC)

One Reportership:
R2-33: K, Niall (DCIEM)

COMMISSION INTERNATIONALE DE L'ECLAIRAGE
DIVISION 3 – INTERIOR LIGHTING AND LIGHTING DESIGN

2010 Activity Report to the Canadian National Committee
2010-October-09

Jennifer A. Veitch, Ph.D. – Canadian Delegate
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2010 Division 3 Meeting
The meeting was held on March 19, 2010, in Vienna, Austria. I was in attendance. Minutes of the meeting are available from me or on the CIE web site (http://div3.cie.co.at).

At the meeting the Division resolved several outstanding issues related to non-productive committees, resulting in closing some TCs, finding new chairmen, and revising terms of reference for others.

Current Division 3 Activities
Completed reports and publications
CIE 190:2010 Calculation and Presentation of Unified Glare Rating Tables for Indoor Lighting is the Division's most recent publication. It is the output of TC 3-43, which will be closed at the 2011 meeting.

Active TCs and Reporterships
There are 12 active technical committees and 2 open reporterships in Division 3. Terms of Reference and current status of the committees are available on the Division 3 web site. *New activities are in italics.*

TC	Title	Chairman
3-25	Coordination and development of the IDMP and its data	N. Igawa
3-34	Protocols for describing lighting	J. Veitch
3-39	Discomfort glare from daylight in buildings	W. Osterhaus
3-42	Lighting design applications	K. Pero
3-44	Lighting for the elderly	Y. Akashi
3-45	Luminance-based design approach	Y. Nakamura
3-46	Research roadmap for healthful interior lighting applications	J. Veitch
3-47	Climate-based daylight modelling	J. Mardaljevic
3-48	CIE standard method of UF table calculation for indoor luminaires	P. Thorns
3-49	Decision scheme for lighting controls for tertiary lighting in buildings	P. Dehoff
3-50	Lighting quality measures for interior lighting with LED lighting systems	M. Knoop
3-51	*CIE standard general sky guide*	*S. Darula*

R #	Title	Reporter
3-13	Lighting vocabulary	Y. Koga
3-28	Lighting requirements for night-shift workers	M. Knoop

Current Canadian Participation in D3 Technical Committees (October 2010)

TC#	Title	Canadian Members
3-34	Protocols for describing lighting	J. Veitch (Chairman); D. Smith (Corresponding Member)
3-42	Lighting design applications	K. Pero (Chairman)
3-46	Research roadmap for healthful interior lighting applications	J. Veitch (Chairman)
3-49	Decision scheme for lighting controls for tertiary lighting in buildings	J. Veitch (Corresponding)
3-50	Lighting quality measures for interior lighting with LED lighting systems	E. Dikel (Corresponding)

TC 3-34, which I chair, is in the middle of final revisions prior to the TC ballot. We aim for completion prior to the 2011 Session. TC 3-46 is working on having a draft report completed before Spring 2011. TC 3-42 is in the beginning stages of its work.

Other D3 Activities
The call for nominations for the position of Division Director for the quadrennium 2011-2015 resulted in the nomination of the current Director, Prof. Jan Ejhed of Sweden, and no other nominees. We expect that the Board of Administration will confirm his appointment at the Sun City meeting.

Issues for Division 3
Division 3 has been grappling with issues related to maintaining lighting quality recommendations in the face of requirements for reduced energy use for lighting, and with revisiting discomfort glare prediction. It is likely that new activities on these topics will be developed at the 2011 meeting.

Next Meeting
Sun City, South Africa, July 2011.

CIE Division 5 Report

TC 5-18 Practical Design Guidelines for the Lighting of Exterior Work Areas – Current focus on new text and glare evaluation

TC 5-20 Guide for Sports Lighting – Final draft completed and ready for voting,

TC 5-21 Urban Masterplanning – Last draft under discussion, it is expected to be out before year end

TC 5-22 Beam Patterns for Exterior Floodlighting Luminaires - 5th draft of the report under discussion

TC 5-23 Guidelines for the use of Different Illuminance Patterns in Outdoor Applications – no report

TC 5-24 Guide for Architectural and Decorative Lighting – no progress, considering a working group that can prepare a working draft and the hiring of a professional writer to bring it to draft for voting

TC 5-25 Guide for the Photometric Specification and Measurement of Sports Lighting installations – Publication is up to date, new chair and committee being formed

TC 5-26 Guide for the Lighting of Sports Events for Colour TV and Film Systems – committee met in Vienna under new chair Alan Smith, good progress made

TC 5-27 Artificial Lighting and its impact on the Natural Environment – There are a number of studies going on with participation of several Universities

TC 5-28 Guide on Obtrusive Light – Review of Publication 150:2003 – Agreement to the addition of Zone 0 to cover protected areas as defined by IDA (USA) and UNESCO Proposals for further discussions and suggestions regarding surface reflections and task Illuminance to be supplied.

Next Meeting Sun City, South Africa (CIE 27th Quadrennial session) July 4-13 2011

There were no specific activities under Div 5 specifically in Canada this past year

Martyn Timmings (From Directors Report I was unable to attend the Sept 2010 Vienna Meeting)

DIVISION 6

PHOTOBIOLOGY AND PHOTOCHEMISTRY

Report to the Canadian National Committee
October 15, 2010

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Introduction.

The Division 6 Annual Meeting took place on June 14, 2010 in Providence, Rhode Island, USA at the Brown University, in conjunction with the American Society for Photobiology 35th Meeting on June 12 to June 16. The meeting gathered 14 participants from 8 countries. Canada was represented this year by Dr. Sami Qutob from Health Canada, Lasers and Electro-Optics Division.

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: http://www.cie.co.at/div6/tcs.htm

Division Officers.

Director: Dr. Ann R. Webb (UK)
Associate Director, Photobiological Standards:

Dr. Ko

Associate Director, Photobiological Measurements and Dosimetry:

Dr. Ka

Secretary: Dr. Andrew Smedley (UK)
Editor: Dr. John O'Hagan (UK)

Report from the Director.

Dr. Webb (DD) gave a brief summary of Division 6 activity over the past year, as well as passing on brief reports for Dr. Smedley (DS) and Dr. O'Hagan (DE) in their absence. She presented the following points to the assembly:
1. There are new Technical Committee (TC) Guidelines that are available from the Budapest (2009) Division report or are available on request from the DS or the DD. These include guidelines for TC membership and terminology; flowchart for TC approval; training in Collaboration tool are all available to assist TCs and guide the division in establishing and managing TCs. TC Guidelines will be implemented for new TCs as of now, but older TCs will not be forced to apply the guidelines retrospectively. TC Chairs (TTCs) are requested to provide the DS and the Central Bureau with an updated membership list. An annual report with activity, targets and dates should also be sent to the DS.

2. The future TC reports will be authored (active members) as in journal papers, rather than just a list of TC members.

3. CIE Scientific Services organised a very successful conference "Energy and Light" in Vienna in March – first under the newly reorganised CIE structure. The conference was a blueprint for future events. As part of the "experiment" the D6 workshop was filmed and will be made available.
4. There is current debate about the costs of publications, and also a proposal to cease providing hard copies of TC reports and only provide electronic copies. The meeting was split about 50:50 in their desire to retain the hard copies.
5. CIE Scientific Services (CIESS) would like to offer training / education modules. The Division members were reminded that a request for topics / experts to deliver the training had been circulated and ideas should be sent to DD or DS – the Division should have responded to CIESS by end of August. A comment sent from DE had queried the financial basis of the venture – i.e. how were experts to be recompensed for all the time involved in developing the material?

Report from the Secretary.

The DS reported that two TCs had been completed in the past year – TC6-24 (Sunscreens and UVA – thanks to TCC Uli Osterwalder) and TC 6-59 (UVC photocarcinogenesis risks from germicidal lamps – thanks to TCC Richard Vincent).

New National Committee (NC) D6 representatives were welcomed. They are:
Denmark – Jens Christofferson
Germany – Werner Jordan
Switzerland – Beat Gerber

NC representatives are still missing for Croatia, Greece, India, Malaysia, New Zealand and Slovak Republic. The Division would be happy to welcome NC members from those countries.

Reminder: the D6 website is now at div6.cie.co.at. It is now partially under the control of the Central Bureau (CB) where it is hosted, but we can still update it and have control over much of the content.

The CB is providing training with a Collaboration Tool currently to Bureau Administration (BA) and Division Officers, but soon to be offered to TC Chairs. The tool is designed for sharing documents amongst other things and it is hoped that it will assist in the preparation of TC reports.

Report from the Editor.

The DE reported that he had received one TC report to edit (6-58: Lower limits of UV) and had suggested a change of title and a few other edits. The DD mentioned that these changes are in hand and the report should soon be available for ballot. The DE had also had sight of the reportership R6-40 - A survey of action spectra in the scientific literature: 19XX – 200X, and understood that the total report was nearing completion.

Progress Reports from Technical Committee Chairs.

Reports on TCs were provided by the TCC where present. Some reports or updates had been sent to the DS and were conveyed by the DD. Further updates came from the floor. TCs that are ripe for closure in 2011 due to continuing inactivity are identified for information. Only currently open TCs are listed below. Action items are highlighted in yellow. TCs identified as ripe for closure in 2011 are highlighted in red. Significant action and output required by the TC to save these topics. Updates compiled by the Division officers when TCCs were absent. TCs that have not submitted a report will be considered inactive and will be closed in 2011 unless definite progress is made.

6-08 Guidelines for Obtaining Action Spectra.

TCC: David Sliney (USA).
Chair indicated that a final draft of the report was imminent. DS to chase TCC at monthly intervals.
Action: DS/TCC

6-15 A Computerized Approach to Reflection, Transmission and Absorption Characteristics of the Human Eye.

TCC: David Jack Lund (USA).

Dr. Sliney indicated that report needs to be inserted into template form. To be completed by Dr. Sliney and Mr. Wengraitis former DS. To be tracked by DS.

Action: DS/Sliney/Wengraitis

6-20 Phototoxicity in Domestic and Industrial Environments.

TCC: Neil Gibbs (UK).

No information available.

Action: Closure 2011

6-21 Cataractogenesis by Low-Level Exposure to Ambient UVA Radiation.

TCC: David Sliney (USA).

TCC claims to have sent a copy of this report to the Division after Beijing, but no-one can find a copy. TCC to resend. Also request to change UVA to just UV. DS to chase TCC and DD to sort title change

Action: DD/DS/TCC

6-24 Sunscreen and UVA

TCC: Jean-Pierre Césarini (France)/Uli Osterwalder (Switzerland).

Completed and published in the last year.

6-28 Standardization of Sunscreen Testing: Method of UV-A Sunscreen Testing.

TCC: Uli Osterwalder (Switzerland).

TC needs input from 6-24. Dr. Osterwalder will complete this in due course. Still appears to be pending change of title and TCC

Action: DS/DD

6-32 Action Spectrum for Photocarcinogenesis (Non-melanoma skin cancers)

TCC: Don Forbes (USA).

Standard to review. DS will ask TCC to review.

Action: DS

6-33 Photoimmunological Effects Mediated through the Skin.

TCC: Edward C. de Fabo (USA).

Final draft was sent to CB some years ago and deemed "too technical". Definitions were added with help of Dr. Sliney and Mr. Wengraitis. No activity despite efforts from DD, Dr. Sliney and Mr. Wengraitis over the years.

Action: Closure 2011

6-36 UVR Protective Materials Used in Shading.

TCC: Natasha van Tonder Nel-Sakharova (South Africa).

No activity

Action: Closure 2011

6-37 Light and Retinal Disease.

TCC: David Sliney (USA).

TCC indicated that an advanced draft existed. DS to chase TCC.

Action: DS/TCC

6-39 UV Radiation in Lighted Environments.

TCC: Kohtaro Kohmoto (Japan).

TC stalled. Dr. Qutob (Canada) has relevant data from his lab and offered to help finalize this TC report. DS is to put Qutob in touch with Kohmoto.

Action: DD/Qutob

6-41 International Standard Global Solar UV Index

TCC: E.C. Weatherhead (USA).

No information but working on a standard. Basic definition for ISO – only needs 1 page. Contact TCC and discuss.

Action: DD

6-42 Lighting Aspects for Plant Growth in Controlled Environments.
TCC: Mojtaba Navvab (USA).
Old TC member list recently sent to TCC by Wengraitis. No old versions of report held by Division so TCC to proceed. Literature review underway, data being collected. Second draft expected by fall 2010.
Action: TCC

6-43 UV Water Disinfection
TCC: Alexander Cabaj (Austria).
No information.
Action: Closure 2011

6-44 Illuminators for Treatment of Infant Hyperbilirubinemia.
TCC: Vacant ().
DD has received and edited draft. Draft sent to Dr. Agati in Prof. Riccardo Pratesi (Italy) for checking. In the meantime a request was also sent to Dr. A. McDonagh (via Dr. Sliney). Dr. McDonagh commented that it still needs some work as parts of the report are in error. DD to contact Dr. McDonagh for more detailed info.
Action: DD

6-45 Optical Radiation Hazard Measurements in the Work Space.
TCC: Robert Angelo (GER).
TC active but long running issues with CEN are delaying actions.

6-46 Standardized Action Spectrum for UV Disinfection
TCC: (Vacant).
Now taken over by Mr. R. Vincent. Vincent and Wengraitis to complete, now that 6-59 is completed.

6-47 Photobiological Safety of Lamps and Lamp Systems
TCC: Rolf Bergman (USA).
Working on revision of the standard.

6-48 Typical Minimal Erythema Doses.
TCC: Janusz Z. Beer (USA)/ Sharon Miller, co-chair (USA).
TC has been reactivated with a new draft and the plan is to finalise it soon.

6-49 Infrared Cataract.
New TCC: Tsutomu Okuno (Japan).
There was a TC meeting held in January 2010 and a second draft is underway.

6-50 Photodegradation of Pharmaceuticals.
TCC: Hanne Hjorth Tønnesen (NOR).
TCC has submitted a publication on the topic in Dec 2009 that will serve as the basis for a report.

6-51 Standardized Solar Simulator Spectral Irradiance for Sunscreen Testing.
TCC: Robert M. Sayre (USA).
No information.
Action: Closure 2011

6-52 Proper Measurement of Passive UV Air Disinfection Sources.
TCC: Richard Vincent (USA).
TCC to work on this now 6-59 is completed. Initial members recently recruited.

6-53 Personal Dosimetry for UV Radiation.
New TCC: Vacant ().
No activity.
Action: Closure 2011

6-55 Photobiological Safety for LEDs.
TCC: Werner Horak (GER).
TCC is progressing well. Work has long been delayed by waiting for input on measurement material from TC2-58. Request sent to Yoshi Ohno (DD2) for comment. Plan to go ahead without TC2-58 input. DD to contact Ohno to confirm.
Action: DD

6-57 Standardization of Terms and Action Spectra for Blue Light and Retinal Thermal Hazard Functions.
TCC: K. Kohmoto (Japan)
No information
Action: Closure 2011

6-58 A Recommendation on Lower Limits for UV Exposure.
TCC: Wim Passchier (NL).
The final draft has been sent to DE. The received comments are being addressed before balloting. Title judged not suitable and should be changed.
Action: DD re: title issue

6-59 UVC Photocarcinogenesis Risks from Germicidal Lamps.
TCC: Richard Vincent (USA).
Work completed and published.
Action: To be closed

6-60 Spectral Weighting of UVR from Solar Surrogate Sources.
TCC: P. Donald Forbes (USA).
TCC Forbes recommends closure of this TC.
Action: CB to close

6-61 Measurement of Radiation Using the Phytometric System for Plant Applications.
TCC: Gilberto J.C. da Costa (Brazil)
First draft exists and work is progressing.

6-62 Action Spectra and Dosimetric Quantities for Circadian and Related Neurobiological Effects.
TCC: Howard Cooper (France)
Preliminary report expected by end 2010.

6-63 Photobiological Strategies for Adjusting Circadian Phase to Minimize the Impact of Shift Work and Jet Lag.
TCC: Stephen Lockley (USA)
Report is progressing.

6-64 Optical Safety of Infrared Eye Trackers Applied for Extended-Durations.
TCC: David Sliney (USA).
TCC is awaiting final draft still in the process of TC vote.

6-65 Photobiological Dosimetry for Low Level Laser/Light Phototherapy.
TCC: Terry L. Lyon (USA).
TCC is still awaiting paperwork from CB. DD has to chase CB.
Action: DD

Progress Reports from Reporters.

R6-37 Definition of UV wavebands.
Reporter: Masako Sasaki (China)
Reporter indicated to DD that her reportership was almost completed.

R6-40 A survey of action spectra in the scientific literature: 19XX – 200X.
Reporter: Alois Schmalweisser (Austria).
The reportership on action spectra is approaching completion (see Report from the Editor).

R6-41 The issues of vitamin D kinetics.
Reporter: Irina Terenetskaya (Ukraine).
This new reportership was proposed last year. No update received.

Liaisons with ICNIRP, CEN, WHO, IEC and ISO
There were no liaisons to report.

Proposals for dissolution of TCs and reporterships
The only TC or reportership closed at the meeting was TC 6-60, but several others were identified as ripe for closure in 2011 (Indicated in red in the TCs Progress Report).
The DD presented an outline of the proposed criteria for completion or closure in 2011:
1- TCs started in the last quadrennial cycle (2007 to 2011) continue for now.
2- TCs started in the 2003 to 2007 cycle are requested to have submitted the final draft for balloting by the mid-sessional in 2013, providing that they are demonstrably still active.
3- TCs started before 2003, or later TCs for which there have been no activity reports, should submit final reports for balloting by the Quadrennial in July 2011 or they will be closed.
4- It was agreed that such fundamental TCs should not be closed if there is obviously activity, but there were not any clear candidates in this category (except perhaps TC6-08 for which a report is ready anyway).
5- It was noted that a subject can always be reopened as a new TC in future if there is resurgent interest in the topic.
6- At present if there is long running inactivity then the subject is clearly not of sufficient interest to the TC (or Division) to warrant time and effort from members; it is best that the subject be closed.

Proposals for new TCs and reporterships
No new TCs were proposed.

Division Officers
DD Webb reminded the Division that a new DD was required to take over duties at the Quadrennial in July 2011, and that the Division had been encouraged to canvass candidates and hold a ballot. After several queries, we currently have two nominations for DD: John O'Hagan (UK) and Tongsheng Mou (China). Since only one candidate was present at the meeting, it was considered unfair to hear from the candidate, but a brief CV and statement from each candidate will be emailed to Division members for information prior to an email ballot.
There is no requirement to replace other division officers, but it was noted that a new DE may be required (depending on the results of the DD ballot).
The DS is willing to continue to serve if requested by the Division. The position of the ADDs has not been ascertained, but will be clarified.
Action: DS/DD

Future Division Meeting.

2011 - The next Division meeting will be held in conjunction with the CIE Quadrennial session in Sun City, South Africa in July. Dr. Webb explained that the new programme would be organised with science sessions in the morning and TC business in the afternoons.
DD encouraged TCs who plan to meet in Sun City to let the DS know ASAP.
The Division has received a request from Division 3 to run a joint D3-D6 workshop on Lighting and Health in Sun City, following on from previous successful workshops on this topic. The D3 convener will be Dr. Jennifer Veitch (Canada) and she is asking for a D6 convener to join her in organising the workshop. There is an offer from Dr. Brainard if he can make the meeting – needs to check diary and commitments).

Comments for future meetings

The Associate Division Director, Dr. Kohtaro Kohmoto (JP) believes in longer (2 day) CIE D6 only meetings, rather than as a satellite of other meetings, e.g. ASP as in this case. The Division tries to alternate continents and meetings but ESP and ASP are "Photobiology". Longer meetings would allow more discussion of science. The DD agrees this is valuable, and is available at the Quadrennial and mid-sessional. In the intervening years, considering the current economic climate, it is debatable whether members would travel for a D6 only meeting. Satellite meetings are efficient, but have low attendance. They do however provide a focus for nudging TCs into action, and also for disseminating CIE and D6 news to members, if only via the minutes. Would a D6 only meeting get more or less support? Comments are welcomed. I would like to know your views to provide the best service and get the best attendance. I can be reached at: yvon_deslauriers@hc-sc.gc.ca

AOB

There was no other business.

Canadian members and chairs of D6 Technical Committees.

TC 6-11 J.A. Veitch (Chair) (Closed; Publication CIE 158-2004)

TC 6-49 A.P. Cullen

TC 6-55 J.D.Y. Deslauriers

TC 6-62 M. Dumont

The CIE Division 8 "Image Technology" and its Activities in 2009/2010

Report to the CNC-CIE, 15 October, 2010

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1- Highlights

The CIE Division 8 Image Technology held its division Vienna, Austria, 15 March 2010. It was attended by 13 persons from 11 countries. Dr. Jennifer Veitch represented Canada in my place as Division 8 member. The Division Director (DD) noted that there had not been any technical reports published since 2005, and encouraged the TC to progress with their work. The DD also declined to continue her duty for another four year term, triggering an election process. The Division Secretary indicated that the new D8 website now exists: http://div8.cie.co.at/ . Reports were received by TC chairs, and some details are given in Paragraph 3 below. There were no proposals to open or close a TC or Reportership. It was noted that 3D display and its issues associated with color and quality, such as visual fatigue, comfort, binocular rivalry, gamut issues, and psychophysics, could be of interest to the community. The Division Members were encouraged to inquire with their contacts in industry and academia if such a RR/TC should be formed and what its Terms of Reference should be. It was unanimously agreed to have the next official D8 meeting during the CIE 2011 Session in South Africa. An "informal" meeting will be held during the IS&T/SID Color Imaging Conference in San Antonio, TX, USA in November 2010.

A vote on a new Division Director was conducted following the meeting, and favored Dr. Morovic (14 votes) over Dr. Hung (4 votes) with 2 abstentions. This result has been forwarded to CIE Board for final decision.

2- Organization

Terms of Reference:

To study procedures and prepare guides and standards for the optical, visual and metrological aspects of the communication, processing, and reproduction of images, using all types of analogue and digital imaging devices, storage media and imaging media.

Domaine d'activité:

Etudier les méthodes et préparer des recommandations et des normes, relative aux aspects optiques, visuels et métrologiques de la communication, du traitement et de la reproduction des images, applicables à tous les types de dispositifs d'acquisition, de conservation et de restitution, aussi bien analogiques que numériques.

Web site http://div8.cie.co.at/

2.1 Division Officers

Director of Division	Sabine Susstrunk
Secretary of Division	Nathan Moroney
Editor of Division	Ann McCarthy

2.2 Official Division Members

Canadian Member: Réjean Baribeau

2.3 Liaisons

CIE Division 8 has liaisons with the following organizations and liaison officers:

ISC/TC42: Photography (Mike Pointer)
ISO/TC130: Graphic Technology(Danny Rich)
ISO/IEC/JTAG2:Joint Technical Advisory Group (JTAG) 2 for Imagery(J. Schanda)
ICC -- International Colour Consortium (Cacant)
IEC/TC100 Multimedia Equipment and (Danny Rich)
ASTM/E12 Color and Appearance (Mike Pointer)

2.4 Publications and Technical Reports from Division 8

CIE 156-2004, Guidelines for the Evaluation of Gamut Mapping Algorithms (TC8-03)
CIE 159:2004, A Colour Appearance Model for Colour Management Systems:
CIECAM02. (TC8-01)
CIE 162:2004, Chromatic Adaptation Under Mixed Illumination Condition When Comparing Softcopy and Hardcopy Images (TC8-04)
CIE 163-2004, The Effects of Fluorescence in the Characterization of Imaging Media (R8-05)
CIE 168:2005, Criteria for the evaluation of extended-gamut colour encodings (TC8-05)
The work of TC8-06, Vocabulary, has become part of the revision of CIE Publication 17, International Lighting Vocabulary.

2.5 Technical Committees

TC8-02: Colour Difference Evaluation in Images
TC8-07: Multispectral Imaging
TC8-08: Spatial Appearance Models
TC8-09: Archival Color Imaging
TC8-10: Office Illumination for Imaging
TC8-11: CIECAM02 Mathematics
TC8-12: Video Compression Assessment

2.6 Reporterships

R8-08 Image Appearance Model Framework (M. Fairchild)

3- Technical Committees work in progress

TC8-02: Colour Difference Evaluation in Images

Terms of Reference:
To study, develop and standardize methods to derive colour differences for images.

Chair: Ronnier Luo
Web site: http://www.colour.org/tc8-02/

The technical report is in the last editing round and should be published by the end of 2010. The Summary/Résumé are:

SUMMARY
This technical report is concerned only with the evaluation of colour differences between two nominally similar images where the output media and the output viewing conditions are similar for both images. It is based on previously published work by CIE and other experts in this field. The report begins by reviewing the factors affecting the evaluation of these colour differences. Various methodologies are described to evaluate colour differences using both visual and instrumental methods. A series of reference colour digital images are presented. A method for statistically analyzing average colour-differences is described. All the activities of this TC are finally summarized and recommendations are made to apply either CIELAB(2:1) or CIEDE2000(2:1) for evaluating colour differences for a pair images displayed in the same medium side by side under the same illumination conditions. A worked example with optional optical filters is also given to supplement the described recommendations.

RÉSUMÉ
Ce rapport technique décrit les facteurs influant sur l'évaluation des différences de couleur entre deux images nommément semblables, entre une scène originale et une reproduction de cette scène, ou au sein d'une image. Il est fondé sur des travaux déjà publiés par la CIE et par d'autres experts dans cette discipline. On décrit différentes procédures pour évaluer les

différences de couleur en recourant aussi bien à des méthodes visuelles qu'à des techniques instrumentales. Une série d'images numériques en couleur sont présentées. On décrit une méthode d'analyse statistique des différences de couleur moyennes ainsi que le calcul d'une série d'indices de reproduction des couleurs. Des exemples avec solution sont donnés pour compléter les procédures décrites.

TC8-07: Multispectral Imaging

Proposed Terms of Reference:
To study, develop, and recommend encoding techniques and data formats for the exchange of multispectral images, and to provide test procedures for the evaluation of multispectral imaging systems..

Chair: Dr. Markku Hauta-Kasari
in replacement of Dr. Jussi Parkinen

This TC was formed in 2002 and was to cover the following subjects:
1. Spectral test sets
    1.1 data sets for simulation and testing,
    1.2 definition and fabrication of an experimental spectral test chart,
    1.3 test chart of pairs of metameric colors.
2. Definition of sets of color matching functions of typical human observers to be used in multispectral imaging systems for the definition of observer metamerism.
3. Encoding of multispectral image data
    3.1 linear encoding and quantization,
    3.2 nonlinear encoding and quantization,
    3.3 mixed spectral and spatial encoding.
4. Definition of data formats for the exchange of multispectral image data.
5. Recommendations for the definition of quality of a multispectral system and test procedures.

This year, a technical report on multispectral image formats is being compiled. Additionally, the TC now works on spectral test sets. The goal is to compile a multispectral image database that can be used in research and testing.

TC8-08: Spatial Appearance Models for High dynamic range

Terms of Reference:
To study high-dynamic range imaging and to provide methods and examples for evaluating spatial appearance models for such images. The priorities are to provide the community with techniques for

testing and improving existing algorithms, as well as providing a repository for hosting HDR images and tone-mapped versions (as well as experimental results) of said images.

Chair: Garrett Johnson

The TC had previously recognized the following priorities:

- Define the vocabulary, in particular, define “perceptible contrast ratio” and which tone curve to use for this definition.
- Methods for testing HDR scenes.
    - Preference scaling: Techniques for scaling preference without an original.
    - Accuracy scaling: Comparing tone-mapping algorithms against an "original" scene.
    - Accuracy scaling: Using and HDR display as the original...is it the same or equivalent to real scene.
    - Visibility/Perceptibility scaling: Techniques for measuring scientific usefulness of HDR rendering.
- Defining a "standard" scene for testing algorithm performance
    - Built out of common items.
    - Blueprint for construction of identical scene in a variety of locations.
    - Providing measurement (3D geometry, BRDF, spectral, luminance, colorimetric, and appearance scaling data).
    - Providing HDR images of standard scene.
- Providing a repository for unprocessed HDR scenes.
- Providing experimental tone mapped images and results for future comparisons.
- Providing guidelines for testing new algorithms against existing results.

Dr. Johnson reported during the Division meeting that nothing had happened since January 2008, but that TC8-08 was looking at using the IEC web tool. The committee also remained committed to developing a color appearance vocabulary and corresponding test methods. The chair anticipated a draft technical report for August 2009.

TC8-09: Image Archiving

Proposed Terms of Reference:
To recommend a set of techniques for the accurate capture, encoding and long-term preservation of colour descriptions of digital images that are either born digital or the result of digitizing 2D static physical objects, including documents, maps, photographic materials and paintings.

Chair: Robert Buckley

The questionnaire about the most important archival color parameters was completed and analyzed. The main points further addressed are parameters of “Archival” color space, e.g., primaries, gamut, white point,

gamma correction, bit depth, and method to evaluate and validate the accuracy of images.

Color space conversion and rendering intent are also part of this discussion. The TC will proceed with the evaluation of different encoding approaches and the assessment of the benefits and risks of each considering different types of originals and use cases.

TC8-10: Office lighting for imaging

Terms of Reference:
To report on the spectral power distribution and illuminations levels used to view images in office lighting conditions. The report is to be based on empirical research.

Chair: Dr. Yasuki Yamauchi
in replacement of Dr. Todd Newman

The TC has so far

- developed guidelines for the experiment,
- developed a questionnaire to use with each measurement set,
- conducted a pilot study to test the methodology
- revised methodology based on pilot study
- held workshop at CIE Session to start the worldwide study.

The TC has been using a reference lighting box to investigate office lighting conditions. They have developed guidelines for use, written a questionnaire, conducted a pilot study, prepared a revised methodology, and given a workshop at the CIE Session in Being.

This year, the TC continued the worldwide data collection, circulating the reference source also to Oceania and Africa. Additionally, the instruments were to be recalibrated based on the measurements with reference LEDs. Considering the wide ranges of lighting situations, analyzing data is difficult, but some categorization will be provided. Considering the progress already achieved, the TC will start preparing the technical report.

TC8-11: CIECAM02 Mathematics

Terms of Reference:
To improve CIECAM02 model to avoid the mathematical inconsistencies; to enable CIECAM02 to work in colour management applications.

Chair: Changjun Li (GB).

It was believed that if CAT02 failure could be corrected, that may correct the CIECAM02 failure problem. So much work has been done with improving the CAT02 problem, but with no satisfactory result.

The following problems with CIECAM02 have then been identified:
1-Mathematical failure; (J becomes complex for certain input)

2- CIECAM02 domain is smaller than the domain of ICC-PCS;
3- CIECAM02 domain is illuminant dependent. There is a need to find out the domain under each of the illuminants;
4- Q function problem

At this point, a new version of CIECAM02 with the HPE primaries used in place of any version of CAT02 needs be tested, as well as Graeme Gill's CIECAM02 modifications. The corresponding-colour data sets that were used to validate CAT02 need to be compared with the predictions of HPE-based chromatic adaptation to discover how much difference in prediction quality is obtained relative to CAT02. The goal is to develop an interim solution until further improvements can be made. Specifically, the two remaining issues will be:
a) improving the robustness of the revised appearance model to the use of arbitrary range points, such as might occur in a color management systems;
b) improving the predictive accuracy of the chromatic adaptation model.

TC8-12: HVS-based quality assessment for video imaging Video Compression Assessment

Terms of Reference:
To establish and report on the display and viewing conditions and materials for video compression quality evaluation in different applications including, but not limited to, web, mobile phones, HDTV, home cinema and digital cinema.

Chair: Christine Fernadez-Maloigne (FR).

The addressed domains of this TC are small devices like mobile phones, www multimedia content, HD television, digital cinema.

It is proposed to study the role of human perception in the task of quality assessment, to define assessment protocols adapted to different media and different viewing conditions, and to provide quality assessment databases that allow studying the correlation of developed metrics.

Liaisons have been established with JPEG2000 and VQEG. However, the TC chair has had difficulties to attract TC members working on this project. The first results, concentrating on digital cinema, resulted from a European project EDCINE (Enhanced Digital CINEma). The TC chair thus proposed to submit a new European project, HAVPQoS, (End-to-end Hybrid Audio-Video Perceived Quality of Handheld Services) to cover the whole broadcast chain and to develop new and complete end-to-end prediction and monitoring services for audio-visual content, taking into account joint perceived quality in mobile environments. The TC chair is looking for partners in the project.

4- Reporterships

R8-08 Image Appearance Model Framework (new)

Prof.. M. Fairchild

The reporter was not able to make any progress since the last meeting due to personal reasons.

5- Canadian Participation

Byron Jordan	TC8-10
J. A. Veitch	TC8-10

COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien

55th Annual CNC/CIE Meeting
2010–October–14

Joint CNC/CIE – IESBC Workshop

Canadian Research and Development Activities in Light and Lighting

NRC·CNRC
Institute for National Measurement Standards • Institut des étalons nationaux de mesure • Ottawa, Canada, K1A 0R6, Fax (613) 952-1394

Canadian Research and Development Activities in Light and Lighting

CNC/CIE - IESBC Workshop

Hilton Hotel Metrotown

Vancouver, BC

14 October 2010

Abstracts

The Influence of Color Interreflections on Lighting Simulations

Ian Ashdown, P. Eng., FIES
President, byHeart Consultants Limited

Most lighting simulation programs represent color as RGB triplets in a device-dependent color space such as ITU-R BT.709. Implicit in this representation is the assumption that interreflections between colored surfaces can be accurately calculated using three separate color bands. We demonstrate that while this assumption generally holds for most architectural finishes, it can result in substantial prediction errors for saturated colors.

Lighting for Net-zero Ready Schools

Jim Love, D. Arch., P. Eng., MRAIC, LC, LEED AP
Professor, Faculty of Environmental Design
Adjunct Prof., Dept. of Mechanical Engineering
Chair in Sustainable Building Technologies
University of Calgary

The goal of green building is to improve the indoor environment for occupants while reducing negative effects of building construction and operation on the global environment. The University of Calgary has been engaged in action research on “low carbon” schools, working with design teams and conducting post-occupancy assessment of system performance.

Natural Resources Canada (NRCan's) considers buildings that have achieved a reduction of more than 70% relative to Canada’s Model National Energy Code for Buildings to be "netzero ready" (in netzero buildings, annual energy production equals annual energy use). Of about 250 buildings reviewed under NRCan's design validation program only 2 have achieved this. Only the Lawrence Grassi Middle School (Canmore, Alberta) has achieved this without a renewable energy system. The environmental control systems design and research leading to this will be discussed, considering the role of lighting.

Lighting Requirements in the NECB 2011

Dr.-Ing. habil. Alexander Rosemann, P.Eng., LC, CEM
Specialist Engineer - Codes & Standards
Innovation & Conservation Leadership
BC Hydro, PowerSmart

The National Energy Code for Buildings (NECB) will be published in 2011. The lighting requirements differ substantially from the last version, the Model National Energy Code of Canada for Buildings (MNECB) published in 1997. The talk outlines the requirements of the prescriptive and trade-off

compliance paths in Part 4 - Lighting. The methodology for the new trade-off path is based on the German standard DIN 18599-4. The model uses the installed lighting power density, the area of the daylit and non-daylit section and the effective operational times during daytime and night-time for each building zone. Models like these face the challenge that they base their assumptions on the data provided by early design stages of a particular building. The estimate needs to be reasonably precise to enable a reliable comparison between a set of options. At the same time, the amount of input data should be minimized to allow for a good and easy usability.

Adaptive Street Lighting

Dr. Cristian Suvagau, P.Eng., LC, CEM
BC Hydro, Power Smart ENGINEERING

Adaptive street lighting can be defined as outdoor lighting that varies light level automatically and precisely in response to changes such as the level of use or occupancy of an outdoor location. This talk will address the concept and the potential barriers to implementation as well as the principal existing technologies and case studies. Deploying an adaptive lighting system requires a systematic approach in order to maintain safe lighting levels and achieve maximum energy savings benefits. The talk is also introducing a recent incentive program developed by BC Hydro.

Solid State Lighting for Offices: Let's Get it Right

Jennifer A. Veitch, Ph.D.
NRC Institute for Research in Construction

Millions of square metres of office space are lit with linear fluorescent lamps. For solid-state lighting to make a major dent in the lighting energy budget will require light sources and luminaires that are more efficacious than the existing technology, and a reason for building owners and tenants to change to an initially expensive, new and unfamiliar technology. Uptake of this new technology will require that consumers trust that it is safe and effective as well as energy-efficient. Thus, we need to develop new luminaire designs and operation modes using the unique characteristics of SSL; to integrate SSL with intelligent controls; to identify usability issues and to solve them; and, to develop solid-state lighting systems that deliver a clear advantage over the fluorescent systems they are intended to replace. This presentation will summarize NRC-IRC activities in this area, including ideas for SSL systems that might offer "something more" that will encourage their adoption.

Quantum Dots and the Future of LEDs

Venkat Venkataramanan
Institute for Optical Sciences
University of Toronto

Solid state lighting (SSL) is now an energy efficient and cost-competitive alternative to conventional lighting. This talk will review the current status, progress and challenges in SSL for general-purpose illumination. One of the crucial issues that is holding back the widespread adaptation of LEDs is its poor color quality. Almost all commercially available white LEDs use GaN blue emitters combined with inorganic yellow phosphors. This results in cool white light and is poor in rendering colours. Quantum dots have high colour tunability, narrow emission and high luminescence efficiency and are emerging as viable alternatives to inorganic phosphors. This talk will also review the progress in quantum dot phosphors SSL applications.

Implications of Core Sunlighting for Energy-Efficient Buildings

Lorne Whitehead, Ph.D., University of British Columbia

When daylight enters a building there is an opportunity to turn off the electric lights that would otherwise provide illumination. This can be true with conventional daylighting, which typically works only in the peripheral regions of a building, and also for core daylighting systems that direct concentrated sunlight into the core regions. However, providing daylight does not automatically guarantee good lighting, reduced energy consumption, or an economically viable return on investment. In green construction, daylighting is often assumed to give these benefits, but the required increased fenestration introduces glare, energy losses and extra costs that often are not fully taken into account. This presentation will discuss these issues for both types of daylighting systems. An optimal solution may be a combination of the two approaches that provides better lighting, uses less energy, and reduces operating costs enough to justify the required investment.

Whiteness assessment of papers – impact of LED illumination

Joanne Zwinkels
Principal Research Officer
Institute for National Measurement Standards
National Research Council of Canada

Speakers' Biographies

Ian Ashdown is president of byHeart Consultants Ltd. With more than 30 years of experience in lighting research, he has been a senior research scientist for Ledalite, TIR Systems and Philips Lighting, and is currently senior software engineer for Lighting Analysts and senior research scientist for Cooledge Lighting.

Jim Love is a Professor in the Faculty of Environmental Design and Adjunct Professor in the Department of Mechanical Engineering at the University of Calgary. He holds the Chair in Sustainable Building Technologies.

Alexander Rosemann is a specialist engineer, Codes & Standards, with BC Hydro. His fields of expertise include electrical lighting, daylighting, control strategies, photometry and colourimetry. Alexander was/is currently involved in several committees including DIN, LiTG, CIE, IEA, CSA and the NECB. He has over 60 publications in journals and conference proceedings. Alexander is a Professional Engineer, a Certified Energy Manager and Lighting Certified through the NCQLP.

Christian Suvagau is a senior lighting and energy management engineer with BC Hydro specializing in lighting DSM programs and projects. He has been practicing and teaching architectural lighting design and energy efficiency in Europe and North America for over 20 years. Cristian is a Professional Engineer, member of the board of directors of the BC Chapter of the Illuminating Engineering Society of North America (IESNA) and member of the Canadian National Committee of the International Commission on Illumination (CNC/CIE).

Jennifer Veitch is a Senior Research Officer in the National Research Council of Canada Institute for Research in Construction, where she leads research into lighting effects on health, performance, and well-being. She is best known for her research on lighting quality, which has influenced lighting design recommendations in North America. She is currently Vice-President of the Canadian National Committee and Secretary of CIE Division 3 (Interior Environment and Lighting Design).

Venkat Venkataramanan is the Head, Scientific Operations at the Institute for Optical Sciences, University of Toronto. His current research is focused on developing new high efficiency nanophosphors for Solid State Lighting applications. He heads the LED applications and photometry laboratories. He is also the founder and Chief Technology Officer of Lumentra Inc. that commercializes nanophosphors and provides photometric, electrical and thermal characterization services to the industries.

Lorne Whitehead is a UBC professor specializing in illuminating engineering applications of optical microstructures. His group is currently carrying out several demonstration projects involving guiding sunlight deep into the core of buildings to enable electric lighting to be turned off when the sun shines. This saves energy and provides higher color quality illumination. Lorne is currently president of the CNC/CIE.

Joanne Zwinkels is a Principal Research Officer at the National Research Council of Canada Institute for National Measurement Standards, where she leads research into the development of reference facilities, standards, and procedures for high-accuracy measurement of optical properties of materials in the ultraviolet, visible, and near-infrared wavelength regions. This includes the measurement of colour and appearance properties, such as whiteness and brightness of paper samples in accordance with international standards. She has been actively involved in CIE technical committees that deal with practical daylight sources and whiteness evaluation. She is currently the International Convenor of ISO TC6/WG3 (Paper, board and pulps: Optical Properties) and Canadian member for CIE Division 2 (Physical Measurement of Light and Radiation).