



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

Canadian National Committee Comité National Canadien



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## **CNC/CIE Annual Report 2006**

Minutes of 51st Annual Meeting  
2006-October-13

and

Division Members' Reports



## MINUTES OF THE 51<sup>ST</sup> ANNUAL CNC/CIE MEETING

2006-October-13

The 51<sup>st</sup> annual meeting of the Canadian National Committee of the Commission Internationale de l'Éclairage (CNC/CIE) was held on Friday, October 13, 2006 in Room EV!3.309 of the Engineering, Computer Science & Visual Arts Building of Concordia University—Sir George Williams Campus, 1515 St. Catherine West, Montréal, Québec H3G!1M8.

A joint luncheon hosted by the CNC/CIE was held with the Montréal Section of IESNA. During this luncheon, Thanos!Tzempelikos, PhD, Post Doctoral Fellow at Concordia University, presented a seminar entitled *Integration of Daylighting in Lighting Design – current issues and research*.

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

CIE	Commission Internationale de l'Éclairage
CNC/CIE	Canadian National Committee of the CIE
CIE/USA	US National Committee of the CIE
CIE-BA	CIE Board of Administration
CIE-CB	CIE Central Bureau
NC	CIE National Committee
TC	CIE Technical Committee
CIE-DD	CIE Division Director
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
DRDC	Defence Research and Development Canada
IESNA	Illuminating Engineering Society of North America
M/AM	Members/Advisory Members

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

The 51st annual meeting of the Canadian National Committee of the Commission Internationale de l'Éclairage (CNC/CIE) was called to order at 9:06 on Friday, October 13, 2006 by J.A.!Love, President.

Ten Members and Advisory Members, and three guests, were in attendance. The list of all attendees, regrets and proxies is given in Appendix!A. The assignment of the three proxies was noted. At the request of the President, attendees introduced themselves.

The agenda as circulated by email (Appendix!B) was accepted, with the addition of Item 11b: Nomination of CNC/CIE delegates to the CIE 26<sup>th</sup> Session General Assembly to be held 2007-July-04 in Beijing, China.

## **2. Minutes of the 50<sup>th</sup> CNC/CIE Annual Meeting:**

The secretary indicated that a hard copy of the Minutes of the 50<sup>th</sup> Annual Meeting had been mailed to all Members and Advisory Members. It was moved by A.A.!Gaertner, seconded by J.C.!Zwinkels, that the Minutes be accepted as distributed. Passed.

The action items from the 50<sup>th</sup> Annual Meeting (Appendix!C) were considered:

Action Item 1 (AI-1): J.A.!Love explained the activities of Ciset and indicated that the clarification of the CNC/CIE action plan would need to be considered for the next CNC/CIE report to Ciset.

Action Item 2 (AI-2): A.A.!Gaertner indicated that this had been done.

Action Item 3 (AI-3): This item was still unresolved.

Action Item 4 (AI-4): A.A.!Gaertner indicated that the NRC library (CISTI) would be willing to purchase individual items when requested by NRC employees.

Action Items 5,6 (AI-5,6): A.A.!Gaertner indicated that these had been done.

Action Item 7 (AI-7): This subcommittee would be presenting a report in Agenda Item 9.

There were no additional matters arising.

## **3. President's Report:**

J.A.!Love presented a verbal report. He indicated that a written version would be available for the Minutes (Appendix!D).

## **4. Vice President's Report:**

J.C. Zwinkels presented a verbal report. She indicated she had served as the co-chair of the Joint ISCC/CIE Expert Symposium held in Ottawa 14-17 May 2006. This symposium, *75 Years of the CIE Standard Colorimetric Observer*, was held to celebrate the 75<sup>th</sup> anniversaries of the Inter-Society Color Council (ISCC) and the CIE Standard Colorimetric Observer. A report will be presented later in this meeting at Agenda Item 10. The President expressed the thanks of the CNC/CIE to J.C. Zwinkels for her extensive efforts in coordinating this symposium and associated meetings.

## **5. Secretary's Report:**

A.A. Gaertner presented his report, which is attached as Appendix!E. He briefly discussed each item in the report.

## **6. Financial and Publications Report:**

K.F.!Lin was unable to attend this meeting. He had submitted a written report (Appendix F). The Secretary briefly explained the report, noting that there are two parts to the report: the CIE/CNC Publication Stock List, and the CNC/CIE Publication – Canada Financial Report. J.A.!Love and S.M.!McFadden indicated that they would explore the options available for dealing with the stock of CIE Publications maintained by the CNC/CIE (Action Item (AI-1)). J.C. Zwinkels indicated that there would be some money coming to the CNC/CIE as proceeds from the Joint ISCC/CIE Expert Symposium held in Ottawa, 14-17 May 2006 (See item 4 above). It was moved by J.!Bastianpillai, seconded by B.!Jordan, that these reports be accepted. Passed.

J. Roberge noted that our stock of CIE publications should be considered as inventory and included in our financial statements. He asked how the CNC/CIE could do this.

## **7. Requests for Financial Support:**

Since the President would be requesting CNC/CIE funds, he passed the chair of the meeting to the Vice-President—J.C. Zwinkels.

The Secretary reported on the two requests that were considered during the year since the last annual meeting:

1. Division 3 and Division 6 meetings in Ottawa (2006-September-09). The Request for Funding from J.A. Veitch was approved at the last CNC/CIE annual meeting. The meetings have been held and the Request for Reimbursement of Approved Expenses is expected soon.
2. Division 1 meeting in Ottawa (2006-May-18, 19). A Request for Funding was received on 2006-March-16 from S.M. McFadden for a maximum of \$1000.00 to cover the cost of a dinner for the attendees to the CIE Division 1 meetings. The CNC/CIE Executive reviewed this request and approved it on 2006-March-23. The meetings were held and a Request for Reimbursement of Approved Expenses of \$929.21 was received by the CNC/CIE Secretary on 2006-May-31. This was approved by the CNC/CIE Secretary and the CNC/CIE Treasurer, and a check was issued on 2006-June-07. This request will need to be reviewed and recorded at this annual meeting, as required by the CNC/CIE Policy for Reimbursement of Expenses. The Request for Funding and the Request for Reimbursement of Approved Expenses forms are attached in Appendix G.

It was moved by J.A. Love, seconded by B. Jordan, that the CNC/CIE approve the request for funding from S.M. McFadden for a maximum of \$1000.00 to cover the cost of a dinner for the attendees to the CIE Division 1 meetings. Passed.

J.A. Love presented a verbal request that the CNC/CIE cover the costs of the luncheon today, up to a maximum of \$1000.00, to which we had invited the Montreal Section of the IESNA and members of the Solar Buildings Research Network. It was moved by J. Bastianpillai, seconded by J.D.Y. Deslauriers, that this request for funding be approved subject to the submission of the required CNC/CIE form. Passed. J.A. Love stated that he would submit the required CNC/CIE forms for covering the cost of the luncheon. (AI-2).

J.A. Love presented a verbal request that the CNC/CIE provide travel assistance, up to a maximum of \$1000.00, to Canadian student(s) to enable their attendance to present a paper at the joint meeting and symposium of the CNC/CIE with the CIE/USA in Ottawa in 2007. During the discussion that followed, it was considered that the assistance would be provided based on several criteria: 1) the student would be enrolled in a Canadian institution, or be a Canadian citizen or Landed Immigrant enrolled at a USA/foreign institution, 2) the assistance would be competitive with an associated Call for Papers, 3) it would be based upon merit and need, and 4) the students' supervisor would provide a letter of support. It was expected that there would be an application form and a CNC/CIE website announcement. It was moved by J.A. Love, seconded by J.D.Y. Deslauriers, that this request for funding be approved subject to the submission of the required CNC/CIE form. Passed. J.A. Love stated that he would submit the required CNC/CIE Request for Funding form. (AI-3).

J. Bastianpillai suggested that the CNC/CIE request various manufacturers to consider supporting the CNC/CIE meetings.

The President, J.A. Love, resumed as Chair of the meeting.

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

Note: The reports received from the Division Members are attached at the end of the Minutes, after all the Appendices.

### **DIVISION 1                      Vision and Colour                      S.M. McFadden**

S.M. McFadden was unable to attend the meeting. She had submitted a report, which was presented by J.A. Love. B. Jordan, a member of TC 1-66, added comments concerning the work of this TC. It was noted that the TC chair would like samples of window glass and coatings for consideration. J.A. Love suggested that someone from the building technology field, such as Thanos Tzempelikos, should be involved in the work of this TC. B. Jordan indicated that he would request that Thanos Tzempelikos be added to the membership of this committee (AI-4). A.R. Robertson commented on the activities of TC 1-56 and TC 1-57. The President called for volunteers to be active on the new TC 1-69, but none were forthcoming.

### **DIVISION 2                      Physical Measurement of Light and Radiation                      J.C. Zwinkels**

J.C. Zwinkels presented her report and discussed the main items, noting the items with Canadian participation. She reported that the Division Director, T. Goodman, would be moving to a new position as CIE Vice-President, so that Division 2 will need a new Division Director. She also reported on problems with discussions at TC meetings involving too many observers. A.R. Robertson suggested that discussions of reports could be done by email amongst the TC members before the meeting, and the meetings could be used primarily to give explanations.

### **DIVISION 3                      Interior Environment and Lighting Design                      J.A. Veitch**

J.A. Veitch was unable to attend the meeting. She had submitted a report, which was presented by J.A. Love. L.A. Whitehead, a member of TC 3-38, summarized some of the work of TC 3-38.

### **DIVISION 4                      Lighting and Signalling for Transport                      J. Bastianpillai**

J. Bastianpillai presented his report. He noted that he has some Canadians under consideration for membership on TC 4-44. He indicated that Eli Szamosi was a member of TC 4-45 and that he was also planning to become a member of TC 4-45. J.D. Yvon Deslauriers suggested that CSA/Toronto could measure these lamps and be involved in this work.

### **DIVISION 5                      Exterior and Other Lighting Applications                      M.K. Timmings**

M.K. Timmings was unable to attend and did not send a report.

### **DIVISION 6                      Photobiology and Photochemistry                      J.D.Y. Deslauriers**

J.D.Y. Deslauriers presented his report. He noted that the Division may need a new editor since Dr. Wolbarsht had retired. He indicated the new TCs and Reporterships, noting that P. Reinhardt is to be confirmed as a Canadian member of TC 6-60. He pointed out that some discussion on TC 6-55 was concerned with how LEDs are to be measured for determining their risk to vision. Since the Secretary did not have the addresses for some of the Canadian members of some of the TCs, he indicated that he would send the Secretary their addresses (AI-5). (Canadian members active on CIE TCs are automatically included as CNC/CIE Advisory Members.)

## **DIVISION 8            Image Technology**

**R. Baribeau**

R. Baribeau presented his report, highlighting the progress of the various TCs and Reporterships. L.A.!Whitehead volunteered to determine whether anyone at UBC would be interested in working on TC 8-08 (AI-6). B.!Jordan pointed out that he was a member of TC 8-10. It was also suggested that someone from the NRC-IRC Indoor Environment Research Program (the group in which J.A.!Veitch works) would be appropriate for membership on this TC 8-10 (AI-7).

It was moved by B.!Jordan, seconded by A.R.!Robertson, that the Division Members' reports be accepted. Passed.

----- The meeting stopped for lunch (11:45-13:15) -----

A joint luncheon hosted by the CNC/CIE was held with the Montréal Section of IESNA and members of the Solar Buildings Research Network (SBRN, who had provided the facilities for this meeting). Andreas Athienitis, Scientific Director of the SBRN, presented a brief overview of the work of the SBRN, which was followed by a seminar presented by Dr. Thanos Tzempelikos entitled *Integration of Daylighting in Lighting Design – current issues and research*.

### **9. CNC/CIE Subcommittee Reports:**

Renewal of Lighting Expertise in Canada: L.A.!Whitehead, chair, presented the report of this CNC/CIE sub-committee (see Appendix H). A discussion followed concerning where this course could be introduced. Algonquin (Ottawa) and University of Waterloo were suggested. It was also suggested that the course should be a 'low level' course so that young students would have the opportunity to learn about the field and determine whether they wished to pursue Lighting as a career. L.A.!Whitehead volunteered to contact various individuals at several universities to see whether the course could be implemented (AI-8).

CNC/CIE website: The CNC/CIE website coordinator, J.A.!Veitch, was unable to attend the meeting. She had sent a report, attached as Appendix I, which was presented by the Secretary.

### **10. Report on ISCC-CIE May 2006 Expert Symposium and Division 1 meetings in Canada:**

J.C.!Zwinkels presented the report, which is attached as Appendix J. She indicated that there would be some money coming from the ISCC to the CNC/CIE as proceeds from this joint meeting.

### **11. Report on CIE September 2006 Expert Symposium and Division 3,6 meetings in Canada:**

J.A.!Veitch, who served on the symposium organising committee, was unable to attend the meeting. She had submitted a report, which is attached in Appendix K. J.D.Y.!Deslauriers added that the meetings were well organized and very informative.

#### **11b. CIE 26th Session (2007-July-4 to 11, Beijing) delegates:**

The primary discussion concerned the nomination of the official CNC/CIE representation to the CIE General Assembly meeting to be held in Beijing, China on 2007-July-04. It was moved by L.A.!Whitehead, seconded by A.R.!Robertson, that the CNC/CIE nominate J.A.!Love as CNC/CIE GA-member, J.C.!Zwinkels as Appointed Alternate with voting right, and J.D.Y.!Deslauriers as Non-voting Advisor. Passed. These nominations are now to be forwarded by the Secretary to NRC-IRO for approval and authorization (AI-9).

## **12. Nominations and Appointments (CNC/CIE):**

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

### **12.1 Division Members:**

There were no changes in Canadian CIE Division Members this year.

### **12.2 Members and Advisory Members:**

#### **12.2.1 CNC/CIE Members:**

The President noted that the terms of two of the CNC/CIE Members would expire this year at the end of December: R.!Baribeau and I.C.!Pasini. Both have indicated that they are willing to continue as CNC/CIE Members. It was moved by J.C.!Zwinkels, seconded by L.A.!Whitehead, that the CNC/CIE recommend to the DG of the NRC-INMS that I.C.!Pasini be reappointed as a CNC/CIE Member, for a 4-year term. Passed. It was moved by A.R.!Robertson, seconded by J.!Roberge, that the CNC/CIE recommend to the DG of the NRC-INMS that R.!Baribeau be reappointed as a CNC/CIE Member for a 4-year term. Passed.

The Secretary is to forward these two nominations to the Director General of INMS for final approval and appointment (AI-10).

#### **12.2.2 CNC/CIE Advisory Members:**

The President recommended that Dr. Thanos Tzempelikos be accepted as a CNC/CIE Advisory Member. It was moved by A.R.!Robertson, seconded by J.C.!Zwinkels, that Thanos Tzempelikos be appointed to CNC/CIE Advisory Membership. Passed. The Secretary is to send him an appointment letter (AI-11).

Robert Lanteigne, who attended the afternoon session of this meeting as an observer, indicated that he was interested in pursuing Advisory Membership. It was recommended that he submit his resumé to the Secretary, which could then be discussed by the CNC/CIE Members (AI-12).

## **13. Other Business:**

### **13.1 Correspondence:**

The Secretary reported that he had received letters of appreciation and thanks to the CNC/CIE for their hosting and hospitality of both of the Symposia and associated CIE Division meetings held in Canada this past year as reported in items 10 and 11 above:

1. Letter from Mrs. Sharon McFadden, Director of CIE Division 1.
2. Email from Dr. Ann R. Webb, Director of CIE Division 6

The letters are attached in Appendix!M.

### **13.2 Date and Place of next Year's Meeting (Ottawa, joint with CIE/USA):**

The President noted that next year's meeting was planned to be a joint meeting with the CIE/USA, hosted by the CNC/CIE. He pointed out that these joint meetings usually include a one-day technical conference. The Secretary reported the results of his email poll of the thirteen CNC/CIE Members concerning the suggested dates for the joint meeting during the last two weeks of 2007-October. Four Members had replied that the suggested time during the last two weeks of October was satisfactory. It was moved by L.A.!Whitehead, seconded by J.!Bastianpillai, that next year's joint meeting be held

2007-October-19 and 20 (or the following week, depending upon the USA requirements), at the NRC Ottawa Montreal Road Campus. Passed. J.A.!Love indicated that he would coordinate with the CIE/USA in setting up the technical program (AI-13). It was suggested that a theme for the program might be related to use of LEDs.

### **13.3 Other Business:**

There was no other business.

The President thanked the members of Concordia University for arranging the location for this meeting and setting up the luncheon. He also thanked all the attendees for coming to the meeting.

### **14. Adjournment**

At approximately 15:15, it was moved by A.R.!Robertson, seconded by J.C.!Zwinkels, that the meeting be adjourned.

A.A. Gaertner  
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2007-October-13



# CNC/CIE 51st Annual Meeting

2006-October-13

## Action Items

Action Item Number (AI#)	51st Minutes Item Number	Responsible	Action
1	6	S.M.!McFadden, J.A.!Love	deal with CNC/CIE stock of CIE publications
2	7	J.A.!Love	submit CNC/CIE forms for luncheon reimbursement
3	7	J.A.!Love	submit CNC/CIE form for student travel assistance
4	8	B.!Jordan	add T.!Tzempelikos to TC 1-66
5	8	J.D.Y.!Deslauriers	send Canadian TC member's addresses to Secretary
6	8	L.A.!Whitehead	anyone from UBC for TC 8-08?
7	8		anyone from NRC-IRC for TC 8-10?
8	9	L.A.!Whitehead	pursue implementation of Lighting course
9	11b	A.A.!Gaertner	forward GA nominations to NRC-IRO for authorisation
10	12.2.1	A.A.!Gaertner	forward recommendations re 2 CNC/CIE Members to NRC-INMS-DG
11	12.2.2	A.A.!Gaertner	welcome Thanos Tzempelikos as Advisory Member
12	12.2.2	A.A.!Gaertner	circulate R. Lantaigne's resumé, upon receipt
13	13.2	J.A.!Love	coordinate technical session with CIE/USA

## **LIST OF APPENDICES**

- APPENDIX A: Attendees to the 51st CNC/CIE Annual Meeting 2006-October-13
  - APPENDIX B: Agenda for the 51st CNC/CIE Annual Meeting 2006-October-13
  - APPENDIX C: Action Items from the 50<sup>th</sup> CNC/CIE Annual Meeting 2005-October-29
  - APPENDIX D: President's Report
  - APPENDIX E: Secretary's Report
  - APPENDIX F: Financial and Publications Report
  - APPENDIX G: Request for Financial Support
  - APPENDIX H: Report of sub-committee Renewal of Lighting Expertise in Canada
  - APPENDIX I: Report of CNC/CIE website coordinator.
  - APPENDIX J: Report on CIE May 2006 Expert Symposium and Division 1 meetings in Canada
  - APPENDIX K: Report on CIE September 2006 Expert Symposium and Division 3,6 meetings in Canada
  - APPENDIX L: CNC/CIE Members and Advisory Members
  - APPENDIX M: Letters of appreciation from CIE Division 1 and Division 6 Directors
- Attachments: Canadian CIE Division Members' reports

## **APPENDIX A**

### **CNC/CIE 51<sup>st</sup> Annual Meeting**

2006-October-13

#### **Attendees**

Andreas Athienitis†	Solar Buildings Research Network
Joe Bastianpillai	Lumentech Engineers Inc.
Réjean Baribeau	National Research Council (INMS)
Yvon Deslauriers	Health Canada (RPB)
Arnold Gaertner	National Research Council (INMS)
Byron Jordan	PAPRICAN
Robert Lanteigne†*	consultant
James Love	University of Calgary
Jacques Roberge	self
Alan Robertson	National Research Council (INMS)
M. Stylianou†	Solar Buildings Research Network
Thanos Tzempelikos†	Solar Buildings Research Network, Concordia University
Lorne Whitehead	University of British Columbia
Joanne Zwinkels	National Research Council (INMS)

† guest

\* attended afternoon session only

#### **Regrets**

Nolie Agellon	Ministry of Transportation of Ontario
Eduard Alf	Transport Canada
Kurt W. Ising	MEA Forensic
K. Frank Lin	Lighting Sciences Canada Ltd.
Sharon McFadden	DRDC Toronto
Thomy Nilsson	UPEI
Ivan Pasini	Pasini Lighting Services
Mankajee Shrestha	self
Andrew Silbiger	Andrew Silbiger Management Inc.
Nikolay Stoev	Valcom Laser Consulting
Cristian Suvagau	BC Hydro
Martyn Timmings	Canlyte Inc.
Jennifer Veitch	National Research Council (IRC)

#### **Proxies**

K. Frank Lin	Arnold Gaertner
Sharon McFadden	Joanne Zwinkels
Jennifer Veitch	Lorne Whitehead

## **APPENDIX B**

### **CNC/CIE 51st Annual Meeting**

#### **Proposed Agenda**

**DATE:** 2006-October-13, Friday

**TIME:** 9:00 to 17:00

**LOCATION:** Room EV 3.309 (3<sup>rd</sup> floor)  
Engineering, Computer Science & Visual Arts Building  
Concordia University—Sir George Williams Campus  
1515 St. Catherine West  
Montréal, Québec

**CONTACT:** Meli Stylianou  
(Host) Network Manager / Directeur du réseau  
Solar Buildings Research Network / Réseau de recherche sur les bâtiments solaires  
Tel: 514-848-2424 ext. 5619  
Email: [mstylian@solarbuildings.ca](mailto:mstylian@solarbuildings.ca)

**LUNCH:** There will be a joint lunch (12:00-13:00) with IESNA-Montreal Section.

**Speaker:** Thanos Tzempelikos, PhD, Post Doctoral Fellow, Concordia University.

**Topic:** *Integration of daylighting in lighting design – current issues and research.*

**RSVP:** A.A. Gaertner  
Secretary, CNC/CIE  
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**PROPOSED AGENDA:** (see next page)

## CNC/CIE 51st Annual Meeting

2006-October-13, Friday

### PROPOSED AGENDA:

1. Call to Order and Approval of Agenda J.A.!Love
2. Minutes of the 50<sup>th</sup> Annual CNC/CIE meeting
  - Action items
  - Matters arising
3. President's report J.A.!Love
4. Vice-President's report J.C.!Zwinkels
5. Secretary's report A.A.!Gaertner
6. Financial and Publications report K.F.!Lin
7. Requests for Financial Support J.C.!Zwinkels
  - CIE Division 3 and Division 6 meetings 2006-September-09, Ottawa (J.A. Veitch)
  - CIE Division 1 meetings 2006-May-18,19, Ottawa (S.M. McFadden)
  - Joint CNC/CIE – IESNA/Montreal lunch 2006-October-13 (J.A. Love)
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:
  - CNC/CIE website report J.A.!Veitch
  - Renewal of Lighting Expertise in Canada L.A.!Whitehead
10. CIE May 2006 Expert Symposium and Division 1 meetings in Canada S.M.!McFadden/ A.R.!Robertson/ J.C.!Zwinkels
11. CIE September 2006 Expert Symposium and Division 3,6 meetings in Canada J.A.!Veitch
12. Nominations and Appointments (CNC/CIE) J.A.!Love
  - 12.1 Division Members
  - 12.2 Members and Advisory Members
13. Other Business J.A.!Love
  - 13.1 Correspondence
  - 13.2 Date and Place for next year's meeting (Ottawa, joint with USNC)
  - 13.3 Any other business
14. Adjournment J.A.!Love

2006-October-04

## APPENDIX C

### CNC/CIE 51st Annual Meeting

#### Action items from CNC/CIE 50<sup>th</sup> Annual Meeting

##### Action Items

Action Item Number (AI#)	50th Minutes Item Number	Responsible	Action
1	2	J.A.!Love	for CISET, clarify the CNC/CIE action plan
2	6	A.A.!Gaertner	request publications credit from CIE CB
3	6	S.M.!McFadden, J.A.!Love	deal with CNC/CIE stock of CIE publications
4	6	A.A.!Gaertner	inquire whether NRC library wants CIE publications
5	13.2.1	A.A.!Gaertner	forward recommendations re 3 CNC/CIE Members to NRC-INMS-DG
6	13.2.2	A.A.!Gaertner	welcome 3 new Advisory Members
7	14.3.3	L.A.!Whitehead (chair), B.!Jordan, J.A.!Love, C.!Suvagau, (J.A.!Veitch)	subcommittee on "renewal of lighting expertise in Canada"



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## **APPENDIX D**

### **CNC/CIE 51st Annual Meeting**

2006-October-13

#### **President's Report**

*(no written report received)*



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## **APPENDIX E**

### **CNC/CIE 51st Annual Meeting**

2006-October-13

### **Secretary's Report**





COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE  
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## CNC/CIE SECRETARY'S REPORT TO THE 51<sup>ST</sup> ANNUAL MEETING

2006-October-13

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
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

This report covers the period from 2005-October-29 to 2006-October-12.

### CIE MATTERS:

#### 1. Annual Membership Fee:

The annual membership fee for the CNC/CIE as a member of the CIE for 2006 is 7,333 EUROS, which was approximately \$10,588 Cdn. The NRC-International Relations Office has continued to make these payments on our behalf.

#### 2. CIE Memberships:

The CIE-CB informed all CIE NCs that the Slovak Republic had applied for CIE Membership and issued a ballot for NCs to vote on this membership. A CNC/CIE letter ballot was sent to all 65 of our Members (13) and Advisory Members (52). 34 ballots (11 Members and 23 Advisory Members) were returned, with 32 in favor and 2 abstentions. The CNC/CIE vote in favor of the CIE Membership of the Slovak Republic was communicated to the CIE-CB on 2006-July-31.

#### 3. The 26<sup>TH</sup> Session of the CIE 2007-July-4—11:

This quadrennial session of the CIE will be held in Beijing, China. The CIE General Assembly will meet 2007-July-04. Information and a Call for Papers have been sent out to all CNC/CIE mailing lists. The deadline for the submission of abstracts to the CIE-CB was 2006-September-15. The CIE-CB has received a total of 336 abstracts from 34 countries. There were none submitted from Canada.

#### 4. CIE Draft Standards:

CIE DS 014-1.3/E:2005 *Colorimetry - Part 1: CIE Standard Colorimetric Observers*.

CIE DS 014-2.3/E:2005 *Colorimetry - Part 2: CIE Standard Illuminants*.

These Draft standards had been submitted by the CIE-CB to all NCs for comments in 2005. Comments were collected from all NCs and sent to the CIE Vice-President Technical, Vice-President Publications and Division Director, who evaluated the comments received and made necessary changes to the draft standards. These final versions, with a summary of all NC comments, were submitted on 2005-November-02 to all NCs for final vote. Copies were mailed on 2005-November-10, with a deadline of 2006-January-20, to each of the 13 CNC/CIE Members for their vote. Replies were received from 8 Members, all in favor. The CNC/CIE approval for the publication of these documents as CIE Standards was conveyed to the CIE-CB on 2006-February-06.



CIE DS 019.3/E:2006 *Photocarcinogenesis Action Spectrum (Non-Melanoma Skin Cancers)*.

This Draft Standard had been submitted by the CIE-CB to all NCs for comments in 2005. Comments were collected from all NCs and sent to the CIE Vice-President Technical, Vice-President Publications, TC Chair and Division Director, who evaluated the comments received and made necessary changes to the draft standard. The final version, with a summary of all NC comments, was submitted on 2006-January-23 to all NCs for final vote. Copies were mailed on 2006-February-07, with a deadline of 2006-April-13, to each of the 13 CNC/CIE Members for their vote. Replies were received from 7 Members, with 6 in favor and 1 abstention. The CNC/CIE approval for the publication of this document as a CIE Standard was conveyed to the CIE-CB on 2006-April-20. This was also approved by the CIE and issued as a CIE Standard on 2006-May-22.

CIE DS 020.2/E:2006 *Emergency Lighting*.

This CIE Draft Standard has been approved by the CIE Board of Administration and CIE Division 5, and then submitted to all the CIE National Committees for Comments. Copies were mailed to each of the 13 CNC/CIE Members for their evaluation. Four Members replied that they had reviewed the DS and had only editorial comments. These comments were forwarded to the CIE-CB on 2006-July-20.

CIE DS 020.3/E:2006 *Emergency Lighting*.

The comments from all NCs as submitted for the Draft Standard 020.2/E:2006 (above) were collected by the CIE-CB and sent to the CIE Vice-President Technical, Vice-President Publications, TC Chair and Division Director, who evaluated the comments received and made necessary changes to the draft standard. The final version, with a summary of all NC comments, was submitted on 2006-August-15 to all NCs for final vote. Copies were mailed on 2006-August-18, with a deadline of 2006-November-10, to each of the 13 CNC/CIE Members for their vote.

CIE DS 014.4.2/E:2006 *Colorimetry – Part 4: CIE 1976 L\*a\*b\* Colour Spaces*

This CIE Draft Standard has been approved by the CIE Board of Administration and CIE Division 1, and then submitted to all the CIE National Committees for Comments. Copies were mailed (2006-September-22) to each of the 13 CNC/CIE Members for their evaluation. Deadline for submission of comments is 2007-March-09. If any CNC/CIE Advisory Member would like a copy for the purpose of evaluation and comments, please contact me.

## 5. Mailings:

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

*CIE NEWS* Number 75, September 2005

*CIE NEWS* Number 76, December 2005

*CIE NEWS* Number 77, March 2006

*CIE NEWS* Number 78, June 2006

CIE Press Releases:

Publication CIE 97:2005 (2nd Edition) *Guide on the Maintenance of Indoor Lighting Systems*

Publication CIE 168:2005 *Criteria for the Evaluation of Extended-Gamut Colour Encodings*

Publication CIE 169:2005 *Practical Design Guidelines for the Lighting of Sport Events for Colour Television and Filming*

Publication CIE 170-1:2006 *Fundamental Chromaticity Diagram with Physiological Axes – Part 1*.

Publication CIE 171:2006 *Test Cases to Assess the Accuracy of Lighting Computer Programs*

Publication CIE 172:2006 *UV Protection and Clothing*

Publication CIE 173:2006 *Tubular Daylight Guidance Systems*

Publication CIE 174:2006 *Action Spectrum for the Production of Previtamin D<sub>3</sub> in Human Skin*

Publication CIE x028:2005 *Proceedings of the CIE Symposium '05 Vision and Lighting in Mesopic Conditions 21 May 2005, León, Spain*

CIE Standard 019/E:2006 *Photocarcinogenesis Action Spectrum (Non-Melanoma Skin Cancers)*.

ISO/CIE joint standards:

ISO 23539:2005(E)/CIE S010/E:2004 *Photometry–The CIE System of Physical Photometry*

ISO 23603:2005(E)/CIE S012/E:2004 *Standard Method of Assessing the Spectral Quality of Daylight Simulators for Visual Appraisal and Measurement of Colour*

CIE Draft Standard CIE DS 020.2/E:2006 *Emergency Lighting*

## CNC/CIE MATTERS:

### 1. CNC/CIE 2006 Annual Meeting:

This meeting will be held at Concordia University – Sir George Williams Campus in Montréal, Québec. We extend our thanks to our President, J.A. Love, for organising this meeting and to Meli Stylianou, Network Manager of the Solar Buildings Research Network at Concordia University, for hosting this meeting. We are happy to host the joint luncheon with the Montréal Section of the IESNA and we thank Dr. Thanos Tzempelikos of Concordia University for presenting the luncheon talk concerning *Integration of daylighting in lighting design – current issues and research*.

### 2. CIE Expert Symposia held in Canada:

There were two CIE Expert Symposia held in Canada during this past year. There will be reports on each of these symposia, and the accompanying CIE Division meetings, presented at this annual meeting. These symposia and meetings required a considerable amount of effort by our members who organized them. They are highly commended for their efforts.

- 2.1 ISCC/CIE Expert Symposium–75 Years of the CIE Standard Colorimetric Observer, Ottawa, 2006-May-16, 17. We have received a letter of thanks from the CIE Division 1 Director (S.M. McFadden) for the dedicated work of the CNC/CIE in supporting and arranging this symposium and the associated Division 1 meetings.
- 2.2 2<sup>ND</sup> CIE Expert Symposium on Lighting and Health, Ottawa, 2006-September-7, 8. We have received a letter of thanks from the CIE Division 6 Director (Dr. Ann R. Webb) for the hospitality and contributions of the CNC/CIE in making the symposium and associated CIE Division 6 meetings a great success.

### 3. Requests for Funding:

We have considered two requests for funding during this past year:

- 3.1 Division 3 and Division 6 meetings in Ottawa (2006-September-09). The Request for Funding from J.A. Veitch was approved at the last CNC/CIE annual meeting. The meetings have been held and the Request for Reimbursement of Approved Expenses is expected soon.
- 3.2 Division 1 meeting in Ottawa (2006-May-18, 19). A Request for Funding was received on 2006-March-16 from S.M. McFadden for a maximum of \$1000.00 to cover the cost of a dinner for the attendees to the CIE Division 1 meetings. The CNC/CIE Executive reviewed this request and approved it on 2006-March-23. The meetings were held and a Request for Reimbursement of Approved Expenses of \$929.21 was received by the CNC/CIE Secretary on 2006-May-31. These were approved by the CNC/CIE Secretary and the CNC/CIE Treasurer, and a check was issued on 2006-June-07. This request will need to be reviewed and recorded at this annual meeting, as required by the CNC/CIE Policy for Reimbursement of Expenses.

### 4. CNC/CIE website:

The website has been operating since 2005-October-26 at the web address of [www.cie-cnc.ca](http://www.cie-cnc.ca). I have begun to receive requests for information through the website. If anyone has suggestions for corrections, updates, or additions, please contact me or J.A. Veitch, our website coordinator. A report on the website will be given at this meeting.

### 5. Mailing Lists:

- 5.1 At present I maintain 3 mailing lists: Members (13), Advisory Members (52), General Interest (18). 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.
- 5.2 Electronic Mail: I have sent more documents to the CNC/CIE membership this year by email. I have been using a PDF format which should be more versatile in accommodating the various computer systems, and the reader can be downloaded free from the Adobe website. I now receive most information from the CIE-CB, such as Press Releases, in electronic format. I often receive announcements of meetings in electronic format, and I forward these electronically rather than sending a large paper mailing. At present my email mailing lists are: Members (13), Advisory Members (43), General Interest (9). Please keep me updated on your email address.

6. 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.

6.1. Members:

At last year's annual meeting two Member appointments were recommended by the CNC/CIE. Letters of appointment were sent to these people by Dr. James W. McLaren, Director-General of INMS. Both have accepted. They are:

Dr. A.A. Gaertner for a four-year term until 2009-December-31

Mr. Ivaldo Pasini for a one-year term until 2006-December-31

6.2. Advisory Members:

As a result of the actions taken at our last annual meeting, the following people have been added to our Advisory Membership, and letters were sent to them indicating their appointment:

Mr. Santo S. Aguanno. Photonics Research Ontario, Toronto, Ontario

Mr. Marcin Gorzkowski, Transport Canada, Ottawa, Ontario

Dr. Donald Kline, University of Calgary, Calgary, Alberta

The following has been suggested for Advisory Membership and has expressed interest in the CNC/CIE:

Dr. Thanos Tzempelikos, Concordia University, Montréal, Québec

The following people have been removed from our mailing lists:

Donald B. McIntyre, due to retirement

Tim M. Richardson, lost contact

Robert Bastin, lost contact

C.T. Bolton, lost contact

Respectfully submitted,

A.A. Gaertner  
Secretary, CNC/CIE  
Institute for National Measurement Standards  
Building M-36  
National Research Council of Canada  
1200 Montreal Road  
Ottawa, Ontario K1A 0R6  
Tel: (613) 993-9344  
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COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE  
INTERNATIONAL COMMISSION ON ILLUMINATION  
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee    Comité National Canadien



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## **APPENDIX F**

### **CNC/CIE 51st Annual Meeting**

2006-October-13

### **Financial and Publications Report**

**CNC/CIE PUBLICATION - CANADA  
FINANCIAL REPORT  
AS OF  
September 30, 2006**

<b>Income Statement</b>	<b>Page 1</b>
<b>Balance Sheeet</b>	<b>Page 2</b>
<b>Bank Account Balance as of September 30, 2006</b>	<b>Page 3</b>
<b>Publication Sale: October 1, 2005 - September 30, 2006</b>	<b>Page 4</b>
<b>Publication Purchase from Central Bureau of CIE: October 1, 2005 - September 30, 2006</b>	<b>Page 5</b>

# CNC/CIE PUBLICATION - CANADA FINANCIAL REPORT

## **INCOME STATEMENT**    01/October/2005 - 30/September/2006

### **Revenue**

Publication sale [year 2005-2006]	Nil
CIE Central Bureau credit note #CN 004/2005 income [re: Euro\$388.00 = Can\$598.58]	\$    598.58
	<hr/>

<b>Total Revenue</b>	<b>\$</b>	<b>598.58</b>
----------------------	-----------	---------------

### **Expense**

Bank charges [Oct/2005 - Sep/2006: 12 months @\$3.95]	\$    47.40
Central Bureau of CIE [re: publication purchase in year 2005-2006]	Nil
CNC/CIE Division 1 meeting expense [re: Dinner for 32 attendees in Ottawa on 18/May/2006]	\$    929.21
Cyberton [re: Web development service]	\$    219.42
	<hr/>

<b>Total Expense</b>	<b>\$</b>	<b>1,196.03</b>
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<b>Net Income (Loss)</b>	<b>\$</b>	<b>(597.45)</b>
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# CNC/CIE PUBLICATION - CANADA FINANCIAL REPORT

## **BALANCE SHEET**

**01/October/2005 - 30/September/2006**

### **Assets**

Bank/Cash

\$ 15,725.79

Accounts Receivable

Nil

### **Total Assets**

**\$ 15,725.79**

### **Liabilities**

Accounts Payable

Nil

### **Total Liabilities**

**\$ -**

### **Equity**

Balance, beginning @ 01/October/2005

\$ 16,323.24

Current Income(Loss)

\$ (597.45)

### **Total Equity**

**\$ 15,725.79**

### **Liability & Equity**

**\$ 15,725.79**



[illegible]

## CNC/CIE PUBLICATION SALE - CANADA

CNC/CIE Publication Sale: 01/October/2005 - 30/September/2006 (Canada)					
Date/Inv. #	Description/Title of Publication	Qty	Sale	Expense	Net Amount
	No Sale		\$ -	\$ -	\$ -
30-Sep-2006	<b>Total</b>		\$ -	\$ -	\$ -

**Please note:** CIE Central Bureau's credit note no. CN 004/2005 wire-transferred **Euro\$388.00 = Can\$598.58** to CNC/CIE's Bank Account on 16/July/2006 (see page 3 - Bank Account), due to "Credit notes for direct publication sales from CIE Central Bureau to customers in Canada".

## CNC/CIE PUBLICATION PURCHASE - CANADA

Publication purchase from Central Bureau of CIE: 01/October/2005 - 30/September/2006 (Canada)									
Date	CIE Inv.	CIE Code	Title of Publication	Qty	Unit Cost	Total Cost	Discount	Running Total	Payment
30-Sep-2005	Forward		No Purchase		(Euro) \$ -	(Euro) \$ -	(Euro) \$ -	(Euro) \$ -	(Euro) \$ -
			Total to date as of 30-September-2006			\$ -	\$ -	\$ -	
			Payment to CB @ 30-September-2006						\$ -
			Balance due as of 30-September-2006					\$ -	(Euro)

[illegible]

CIE/CNC PUBLICATION STOCK LIST																						
2006-SEPTEMBER-30																						
CIE	Title	Year	Price	Price	Sales								Purchase						Current	CB		
No.			Code	Cd\$	97-98	98-99	99-00	2001	2002	2003	04/05	05/06	99-00	2001	2002	2003	04/05	05/06	Stock	X		
56	Proceedings 1983/light&lighting	1983	L	166															5			
57	Lighting for football	1983	B	57															4			
58	Lighting for sports hall	1983	A	43							1								3			
59	Polarization	1984	D	74															4			
60	Vision/visual display work station	1984	D	74															1			
61	Tunnel entrance lighting	1984	I	109			1												2			
62	Lighting for swimming pools	1984	C	68				1											1			
63	Spectroradiometry	1984	G	91		1	1	1		1				1		2			1			
64	Spectral responsivity of detect.	1984	H	98		1													2			
65	Absolute radiometers	1985	D	74															3			
66	Road surfaces & lighting	1984	H	98							1								1			
67	Photometry of sports lighting	1986	A	43							1								1			
68	Lighting of exterior working area	1986	H	98															4	X		
69	Illuminance meters	1987	E	80	1		1			1						3			2			
70	Meas. of luminous intensity	1987	F	86															2			
71	Proceedings 1987-Volume I	1987																	1	X		
71	Proceedings 1987-Volume II	1987					1												1	X		
72	Retroreflectors at night	1987	G	91						1									1			
73	Visual aspect of road markings	1988	G	91															1			
74	Roadsigns	1988	K	137															3			
75	Spectral luminous efficiency	1988	C	68															2			
76	Meas. of luminescent specimens	1988	H	98															2			
77	Electric light sources	1988	K	137															0			
78	Brightness-luminance relations	1988	M	195															2			
79	Road traffic lights	1988	C	68				1											0			
80	Observer metamerism	1989	C	68															2			
81	Mesopic photometry	1989	D	74															3			
82	CIE history (1913-1988)	1990	M	195															1			
83	Lighting of sports for tv&film sys.	1989	C	68							1								0			
84	Meas. of luminous flux	1989	F	86		1	1				1		1				1		0			
85	Solar spectral irradiance	1989	F	86						1						2			1			
86	1988 2 deg.spec.lum.eff.function	1990	B	57															2			
87	Self-luminous displays	1990	E	80					1										0			
88	Lighting for road tunnels&underpa	1990	F	86	1				1										0	X		
88(2nd ed.)	Lighting for road tunnels&underpa	2004	Euro																0			
89	Technical collection 1990	1991	F	86															2			
90	Sunscreen testing (UV B)	1991	B	57															2			
91	Proceedings 1991-Volume I, P1	1991																	2	X		
91	Proceedings 1991-Volume I, P2	1991																	2	X		
91	Proceedings 1991-Volume II	1991																	2	X		
92	Guide for lighting of urban areas	1992	D	74				1											0	X		
93	Road lighting/accident counter me	1992	J	122	1														3			
94	Guide for floodlighting	1993	H	98															1			
95	Contrast & visibility	1992	F	86					1										0			
96	Electric light sources	1992	C	68															0			
97	Maintenance/indoor lgt systems	1992	C	68															2			
97(2nd ed.)	Maintenance/indoor lgt systems	2005	Euro	48															0			
98	Personal dosimetry of uv radiat.	1992	C	68															1			

CIE/CNC PUBLICATION STOCK LIST																								
2006-SEPTEMBER-30																								
CIE No.	Title	Year	Price Code	Price Cd\$	97-98	98-99	99-00	Sales					04/05	05/06	99-00	Purchase					04/05	05/06	Current Stock	CB X
99	Lighting education(1983-1989)	1992	B	57																		1		
100	Visual task of night driving	1992	G	91																		2		
101	Parametric effects/colour differ.	1993	B	57																		0		
102	File format-photometric data	1993	C	68																		1		
103	CIE technical collection 1993	1993	G	91																		0		
104	Daytime running lights (DRL)	1993	B	57																		1		
105	Spectroradiometry-optical radia.	1993	C	68	1	1																1		
106	Collection/photobio.& photochem.	1993	F	86																		1		
107	Colours of signal lights	1994	E	80																		1		
108	Daylight measurement	1994	F	86																		1		
109	Corresponding colours	1994	B	57						1												1		
110	Spatial distribution of daylight	1994	D	74	1																	0		
111	Variable message signs	1994	F	86						1												1		
112	Glare evaluation system-outdoor	1994	B	57		1						1										0		
113	Retroreflective road signs(night)	1995	G	91																		1		
114	Collection-photometry&radiometry	1994	E	80																		2		
115	Lighting of roads for motor ped.	1995	C	68		1						1										0		
116	Colour difference evaluation	1995	B	57			1															1		
117	Discomfort glare in interior lighting	1995	D	74	1																	1		
118	Collection-colour & vision	1995	G	91																		2		
119	Proceeding of New Delhi Vol.1	1995	X	189																		0		
120	Proceeding of New Delhi Vol.2	1996	K	137																		0	X	
121	Goniophotometry of luminaires	1996	F	86		1				1	2						3					1		
122	Digital&colorimetric data for CRT	1996	C	68							1											0		
123	Low vision	1997	L	166																		2		
123CD	Low vision: CD-ROM	1997	CD	83	1																	0		
124	Collection-colour & vision	1997	E	80																		2		
125	Standard erythema dose	1997	A	43						1												1		
126	Minimizing sky glow	1997	B	57																		2		
127	Measurement of LEDs	1997	C	68	1	2		1	3	3	1						4	4				1		
128	Lighting of open cast mines	1998	C	68																		2		
129	Lighting exterior work areas	1998	B	57				1														1		
130	Measurement of reflec.& trans.	1998	G	91			1															1		
131	CIECAM97s colour appearance	1998	B	57						1												1	X	
132	Design methods for lgtg of roads	1999	F	86																		2		
133	Proc.24th ses.CIE,Warsaw	1999	X	335																		0		
133CD	Proc.24th ses.CIE,Warsaw	1999	CD	114																		0		
134	Collection in photobi&photochem.	1999	F	86			1															1		
135	Vision and colour	1999	H	98											2							2		
136	Guide to lighting of urban areas	2000	D	74				1	1			1			2		1					0		
137	Conspicuity of traffic sign	2000	D	74											2							2		
138	Col.in photobiology & photochem.	2000	F	86			1								2							1		
139	Diurnal&seas. var.in humans	2001	G	91																		0		
140	Road lighting calculations	2000	D	74				1				1			2							0		
141	Test of suppl.systems of photo.	2001	I	109												2						2		
142	Impr.to ind.color-diff. evaluation	2001	B	57				1								2						1		
143	Colour vision req.for transport	2001	E	80				1	1							2						0		

CIE/CNC PUBLICATION STOCK LIST																					
2006-SEPTEMBER-30																					
CIE	Title	Year	Price	Price	Sales								Purchase						Current	CB	
No.			Code	Cd\$	97-98	98-99	99-00	2001	2002	2003	04/05	05/06	99-00	2001	2002	2003	04/05	05/06	Stock	X	
144	Road surf. & marking refl.charact.	2001	D	74										2					2		
145	Cor.for vision&visual perform.	2002	E	80					2						2				0		
146/147	CIE collection on glare 2002	2002	C	68					1						2				1		
	146-CIE equations for disab.glare																				
	147-glare from small....sources																				
148	Action spect.of skin /w...lasers	2002	B	57											2				2		
149	Use of tungsten filament lamp	2002	C	68											2				2		
150	Guide..obtrusive light from outdr. l	2003	E	80						2	1					2	1		0		
151	Spectral weighting of Solar UV	2003	D	74												2			2		
152(CD)	Proc.of 25th Session of CIE	2003	Euro	80	(CD plus print)														0		
152	Proc.of 25th Session of CIE	2003	Euro	230	(CD plus print)														0		
153	Interc.of luminous flux of HPS	2003	A	43												2			2		
154	Maint.of outdoor lighting system	2003	Euro	44						1	1					2			0		
154(Fren.)	Maint.of outdoor lighting system	2003	Euro	44															0		
155	Ultraviolet air disinfection	2003	G	91						1	1					2			0		
155(Fren.)	Ultraviolet air disinfection	2003	Euro	60															0		
156	....Gamut mapping algorithms	2004	Euro	44															0		
156(Fren.)	....Gamut mapping algorithms	2004	Euro	44															0		
157	..Museum object by optical rad.	2004	Euro	48															0		
157(Fren.)	..Museum object by optical rad.	2004	Euro	48															0		
158	Ocular light effects on human..	2004	Euro	56															0		
158(Fren.)	Ocular light effects on human..	2004	Euro	56															0		
159	Colour appearance..CIECAM02	2004	Euro	44															0		
159(Fren.)	Colour appearance..CIECAM02	2004	Euro	44															0		
160	Chromatic adaptation transfm.	2004	Euro																0		
161	Lighting ..for obstructed interior	2004	Euro	48															0		
161(Fren.)	Lighting ..for obstructed interior	2004	Euro	48															0		
162	Chromatic adaptation under mix.	2004	Euro	44															0		
163	Effects of fluo..of Imaging data	2004	Euro	38															0		
163(Fren.)	Effects of fluo..of Imaging data	2004	Euro	38															0		
164	Hollow light guide tech. & appli.	2005	Euro	48															0		
165	CIE 10 deg. photopic photometer	2005	Euro	44															0		
166	Cognitive colour	2005	Euro	44															0		
167	Recom..tabulating spectral data	2005	Euro	44															0		
168	Criteria..gamut colour encoding	2005	Euro	72															0		
168(Fren.)	Criteria..gamut colour encoding	2005	Euro	72															0		
169	..Sport events for col.tev.& film,	2005	Euro	64															0		
169(Fren.)	..Sport events for col.tev.& film,	2005	Euro	64															0		
170-1	..chromati. diag./w physio-part I	2006	Euro	56															0		
170-1(Fre.)	..chromati. diag./w physio-part I	2006	Euro	56															0		
171	Assess..lighting computer prog.	2006	Euro	72															0		
171(Fren.)	Assess..lighting computer prog.	2006	Euro	72															0		
172	UV protection and clothing	2006	Euro	56															0		
172(Fren.)	UV protection and clothing	2006	Euro	56															0		
173	Tubular daylight guidance syst.	2006	Euro	64															0		
173(Fren.)	Tubular daylight guidance syst.	2006	Euro	64															0		
174	Action spectr..previtamin D3..	2006	Euro	38															0		
174(Fren.)	Action spectr..previtamin D3..	2006	Euro	38															0		

[illegible]



CIE/CNC PUBLICATION STOCK LIST																					
2006-SEPTEMBER-30																					
CIE No.	Title	Year	Price Code	Price Cd\$	97-98	98-99	99-00	2001	2002	2003	04/05	05/06	99-00	2001	2002	2003	04/05	05/06	Current Stock	CB X	
	Proceedings of Conferences and Symposia:																				
X001	SLG-Div.5 symposium	1989	B	57															0	X	
X002	SLG-Div.4 symposium	1989	-																0	X	
X003	Daylight & solar radiation meas..	1989	J	122															1	X	
X004	Symp.light & radiation	1981	A	43		1													0	X	
X005	Proc.seminar computer program	1992	J	122															0		
X006	Japan CIE/PRAKASH91	1991	B	57															0		
X007	Proc. symposium colorimetry	1993	X	125	1	1													0		
X008	Urban sky glow	1994	E	80															1		
X009	Proc.symposium photometry	1995	L	166															2		
X010	Proc.symposium image tech.	1996	L	166															0		
X011	Proc. 95 late papres	1996	F	86															0		
X012	Proc.NPL-UK conf.-visual scale	1997	I	109															0		
X013	Proc. LED symp. '97	1997	I	109	1	1		1	1					1					0		
X014	Proc.symposium'97-colour std.	1998	K	137															0		
X015	Proc. symp. lighting quality	1998	H	98															0		
X016	Meas.of optical radiation haz.	1998	X	98															0		
X017	Special 24th CIE, Warsaw 1999	1999	G	91															0		
X018	Proc.of CIE sym.'99-75 yrs.	1999	L	166															0		
X018CD	Proc.of CIE sym.'99-75 yrs.	1999	CD	83															0		
X019	Proc.of 3 workshops-road lighting	2001	J	122															0		
X020	Proc.of CIE symp. 2001	2001	I	109				1						1					0		
X021	Proc.of CIE symp. 2000	2001	I	109															0		
X022	Proc. of 2nd symp. on LED	2001	J	122				2	1					2	1				0		
X023	Proc.of two CIE workshops	2002	J	122															0		
X024	Proc.of CIE/ARUP sym.on visual	2002	L	166						1						1			0		
X024CD	Proc.of CIE/ARUP sym.on visual	2002	CD	92															0		
X025	Temporal & spatial aspects of ligh	2003	L	166															0		
X025CD	Temporal & spatial aspects of ligh	2003	CD	92															0		
X026	LED light source:measr.& asses.	2004	Euro	146															0		
X027	Light & Health:non-visual effect	2004	Euro	170															0		
X028	Vision&lighting in mesopic cond.	2005	Euro	64															0		
AIC1AB	AIC Proc. 93 A+B	1993	Euro																0		
AIC1AC	AIC Proc. 93 A+C	1993	Euro																0		
AIC1ABC	AIC Proc. 93 A+B+C	1993	Euro																0		
Misc.	CIE symposium Toronto 2000	2000		10						1									0		



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## **APPENDIX G**

### **CNC/CIE 51st Annual Meeting**

2006-October-13

### **Request for Financial Support**

## CNC/CIE Request for Funding

**Applicant's Name:** Sharon McFadden  
**Address:** DRDC TORONTO  
1133 Sheppard Ave. W  
Toronto ON M3M 3B9

**Activity** for which funding is requested: Division One Annual  
Meeting 18-19 May 2006  
Ottawa ON

**Justification** for CNC/CIE Funding (refer to General Policy for criteria):

To reciprocate hospitality received by Division members during Division meetings in other countries. NCs usually host a meal.

### Detailed Budget

Item	Description	Amount
1	Meeting Rooms + setup	\$200.00
2	4 breaks for 20 @\$5 pp, per break	\$400.00
3	Buffet dinner for 20 @ \$50 pp.	\$1000.00

### Other Sources of Funding and Amounts:

Name	Amount
Symposium fees	\$600.00

### Return to:

A.A. Gaertner  
Secretary, CNC/CIE  
Institute for National Measurement Standards  
M-36, Room 115  
National Research Council of Canada  
1200 Montreal Road  
Ottawa, Ontario K1A 0R6

Tel: (613) 993-9344      Fax: (613) 952-1394  
Email: [arnold.gaertner@nrc-cnrc.gc.ca](mailto:arnold.gaertner@nrc-cnrc.gc.ca)

## CNC/CIE

## Request for Reimbursement of Approved Expenses

Applicant's Name: Sharon McFadden  
 Address: DRDC TORONTO  
1133 SHEPPARD AVE WEST  
P.O. BOX 2000  
TORONTO, ON M3M 3B9

COPY

Activity for which reimbursement is requested: DINNER FOR DIVISION 1  
MEMBERS DURING DIVISION  
MEETING IN OTTAWA 18-19 May 2006

## Description of items and expenses to be reimbursed:

Item	Date	Description	Amount
1	18 May 2006	Dinner for 32 attendees at Division 1 meeting	929.21

Total: \$ 929.21

Attach original receipts for expenditures in excess of \$20.00

Make cheque Payable to: Sharon McFadden  
 Mail cheque to address: DRDC TORONTO  
1133 Sheppard Ave W.  
P.O. Box 2000  
Toronto, ON M3M 3B9

I certify that all expenses are legitimate expenses made for and on behalf of the CNC/CIE and are in accordance with CNC/CIE policy for reimbursement of approved expenses.

Requester: Sharon McFadden Date: 24 May 2006

For approval: Arnold Gaertner Date: 2006-June-01  
 Secretary

For payment: [Signature] Date: June 7, 2006  
 Treasurer

## Mail request form to:

A.A. Gaertner  
 Secretary, CNC/CIE  
 Institute for National Measurement Standards  
 M-36, Room 115  
 National Research Council of Canada  
 1200 Montreal Road  
 Ottawa, Ontario K1A 0R6  
 Tel: (613) 993-9344 Fax: (613) 952-1394  
 Email: arnold.gaertner@nrc-cnrc.gc.ca



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## **APPENDIX H**

### **CNC/CIE 51st Annual Meeting**

2006-October-13

#### **Report of sub-committee Renewal of Lighting Expertise in Canada**

Report of  
Committee to Consider  
**Renewal of Lighting Expertise in Canada**

**Committee Membership**

- Jim Love
- Byron Jordan
- Christian Suvagau
- Jennifer Veitch
- Lorne Whitehead

## Result of Initial Discussion

- Design a course on:  
light, colour, vision, lighting
- Course should have wide appeal
- Intended result: Greater appreciation
- Challenge (1) design the course content
- Challenge (2) initiate a few test courses

## Development of Course Content

- Members produced content brainstorm list
- Some culling
- Some prioritization
- Substantial agreement

Lecture topic	hrs	cum. hrs		
What is light, physically, refraction, reflection, diffraction	3	3	Q1 light and optics	taught by a physicist ?
Sources of light, from a physics point of view	2	5		
Measuring light, concepts of radiometry, spectral distribution and photometry	3	8		
The retina - photoreceptors, dynamic range, image processing in retina	2	10	Q2 vision and colour	taught by a vision expert ?
The eye as a camera - variable focus lens, variable aperture iris, 3 axis motion stabilization also including optics of cameras and telescopes, eyeglasses and aging of eye	3	13		
Colour concepts, metamerism, colour reproduction, CRI, CCT	2	15		
Non-visual biological effects of light, SAD, circadian rhythms, UV risk, etc	1	16		
History of lighting, daylighting and introduction of new sources and methods	1	17	Q3 basic lighting design	taught by an illuminating engineer?
Basic principles of illumination system design with very rough quantification	3	20		
Sources of light, from a lighting design point of view - lamps and design of luminaires	3	23		
Zonal cavity method of lighting design with examples of computer modeling alternative	2	25		
Factors affecting the perceived quality of a lighting design, glare, contrast, aesthetics, also employing some examples of optics as in projectors etc.	3	28	Q4 lighting and society	taught by an architect?
Areas of lighting design and associated standards: office, factory, roadway, sports, home	2	30		
Lighting economics and energy management and maintenance issues	1	31		
Global implications of electrical lighting - energy, material, light pollution	1	32		
Total	32			

## Next Steps:

- Initiate course at a Canadian University
- Solicit feedback from all concerned
- Share the results and encourage growth
- Suggestions?





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## **APPENDIX I**

### **CNC/CIE 51st Annual Meeting**

2006-October-13

### **Report of CNC/CIE website coordinator**

## **CIE-CNC Web Site Report October, 2006**

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

### **Usage**

The web page <http://www.cie-cnc.ca> went "live" at the end of October, 2005. In 2005 (with two months of operation) there were a total of 48 unique visitors and 101 visits to the site. In 2006, to the end of September there were 275 unique visitors and 368 visits. Oddly, more of the visitors are from the USA than any other country, including Canada. I have more detailed reports should anyone wish to see them.

One likely reason for the low number of visitors is that the page is difficult to find. For instance, it does not appear high in the results list if one searches Google for "light Canada", "lighting Canada", "CIE Canada", or "CNC". We will work on this with the webmaster, Bob Bridges, in the coming months. It would also be helpful if those CNC members with web pages could add our page as a link.

### **Content**

At present the content is a thorough description of the CIE-CNC and of Canadian participation in CIE activities, with an additional page of links to lighting information for Canadians. This information will be updated later in October to reflect the division members' reports. Translation services for this information will be provided by the National Research Council of Canada.

We could add many other features, such as:

- the annual report (as a PDF file)
- meeting minutes
- the Code of Procedure
- the forms for requesting funding for specific events
- a members-only (password access) area, where documents for review and ballots could be downloaded
- an automated e-mail discussion list (for any combination of membership categories)

I would particularly like to add the documents listed in the first four bullet points, if there is agreement from the Committee. However, we need to consider what our translation policy will be if we are to do so. To fully translate all documents would be very expensive, and would not dramatically increase their readership (given the statistics above). I think we should translate the Code of Procedure and the forms; but meeting minutes and reports could be posted in the language in which they were provided (or in which the meeting took place). We might consider having a short summary in the other language for these documents. (This is how my NRC institute addresses the issue for scientific reports.) I would welcome comments on this issue.

### **Maintenance**

In 2005, the original vote for the creation of the site approved the creation of an annual expense of \$625 for creating, hosting, and maintaining the site and for supplementary programming. Mr. Bob Bridges has been our webmaster. I have been very pleased with his responsiveness to requests regarding the site, and believe we should continue our arrangement with him for these services. It is my understanding that no further vote is required on this matter, but wished to bring it to the Committee's attention. My understanding from Mr. Bridges is that the budget is adequate to cover expenses in the coming year.

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.



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## **APPENDIX J**

### **CNC/CIE 51st Annual Meeting**

2006-October-13

#### **Report on CIE May 2006**

#### **Expert Symposium and Division 1 meetings in Canada**

## **75 Years of the CIE Standard Colorimetric Observer**

ISCC/CIE Expert Symposium

16-17 May 2006

This meeting was organised by the Canadian National Committee of the CIE and the Inter-Society Color Council (USA), to celebrate the 75th anniversary of the CIE Standard Colorimetric Observer. It was held in the auditorium of the National Research Council Canada, Sussex Drive, Ottawa, Ontario, Canada and the Welcoming Address to the Symposium attendees was given by Dr. Richard Normandin, NRC Vice-President of Life Sciences.

The symposium included 27 presented papers divided amongst 9 sessions, 5 posters and 1 round-table discussion. Over 80 delegates attended with 20 countries represented. Session topics included the Standard Colorimetric Observer, colour matching functions, instruments and standards, temporal and spatial issues, application of the Standard Observer, colour appearance, colour differences, and colour management. Most sessions started with a review paper by an invited speaker that covered the historical perspective, the present state of knowledge, and in some cases future directions. The final session was a round-table discussion. Audience participation was encouraged, and the discussion was lively. Topics included colour management, the need for practical standard sources (ideally close to Illuminant D50), the need for a comprehensive colour appearance model that takes into consideration spatial factors, and the need to know more about the implications of the spread in 'real' observer colour matching functions.

Overall, the content of the presentations was excellent and most papers were accompanied by relevant questions from the audience and good discussion. Many positive comments were received from the attendees about the scientific content as well as the organization and the social events. A proceeding will be published by the CIE Central Bureau later this year.



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## **APPENDIX K**

### **CNC/CIE 51st Annual Meeting**

2006-October-13

### **Report on CIE September 2006 Expert Symposium and Division 3,6 meetings in Canada**

## **Report on the 2<sup>nd</sup> CIE Symposium on Lighting and Health held in Ottawa, Ontario, Sept. 7-8, 2006**

Jennifer A. Veitch, Ph.D.  
[jennifer.veitch@nrc-cnrc.gc.ca](mailto:jennifer.veitch@nrc-cnrc.gc.ca)

### **Event**

Unexpected discoveries in photobiology, most notably the identification of a novel photoreceptor in the human retina and its role in regulating circadian rhythms, have alerted the lighting community to new possibilities for lighting design. The first CIE symposium on Light and Health, held in Vienna in 2004, provided a forum for scientists and lighting practitioners to become acquainted with the scientific findings and issues. Its CIE sponsor was Division 6. This second symposium, on lighting and health, provided updates on scientific progress, with a stronger emphasis on how we might apply this new information in lighting recommendations and lighting design. Co-sponsored by CIE Divisions 3 and 6, the 2<sup>nd</sup> CIE Symposium on Lighting and Health featured invited papers and commentaries from more than 20 international experts in plenary sessions, and more than 20 research posters. The symposium took place over two days, Sept. 7-8, 2006. The goal of the symposium was the development of suggested actions for CIE Divisions to undertake, in order to progress to understand and to apply the knowledge about light and health into lighting recommendations and lighting design. For example:

- What is the necessary daily light exposure for good health?
- What are the acceptable limits of night-time light exposure?
- What possible conflicts exist between lighting for health and existing recommendations?

The full programme is available at [http://irc.nrc-cnrc.gc.ca/ie/lighting/health/cie\\_e.html](http://irc.nrc-cnrc.gc.ca/ie/lighting/health/cie_e.html). The proceedings are being produced by the CIE Central Bureau in Vienna and will be available shortly; expect a press release from CIE-CB in due course.

In addition, there were technical committee meetings for both divisions on Sept. 6, and division meetings on Sept. 9. IEA-ECBCS Annex 45, "Energy-Efficient Future Electric Lighting for Buildings" (many of whose members are also active in CIE Division 3), held its autumn meeting on Sept. 5-6 at the National Research Council of Canada.

### **Attendance**

161 people from 23 countries attended the symposium. There were 52 Canadian attendees (12 from NRC-IRC). The attendees represented a wide variety of backgrounds including: medicine, biology, psychology, psychiatry, lighting design, lighting manufacture, occupational health, and engineering.

### **Canadian Participation**

The symposium was co-hosted by the National Research Council of Canada, Institute for Research in Construction. Dr. Jennifer Veitch of NRC-IRC served on the symposium organizing committee. At NRC-IRC, Dr. Guy Newsham led the local arrangements, assisted by postdoctoral fellow Dr. Myriam Aries. The symposium secretariat was handled by Philippe Ladouceur and Monique Myre of NRC-IRC Client Services.

Of the 25 invited speakers, three were Canadian: Dr. Marie Dumont (Université de Montréal); Dr. Anthony Levitt (University of Toronto), and Dr. Jennifer Veitch. Two of the 26 posters were from Canadian authors: Ms Catherine Beaulieu, and Ms Susan Rowley (both from the Université de Montréal).

### **Symposium Supporters**

The following organizations generously provided financial support for the Symposium, enabling a fine roster of invited speakers: Canlyte; General Electric; Osram-Sylvania; Velux; Zumtobel.

## **Media Coverage**

The symposium garnered extensive media attention, with interviews from key speakers:

"Researcher studies link between light at night, breast cancer" Ottawa Citizen, Sept. 7, p. C1  
<http://www.canada.com/ottawacitizen/news/city/story.html?id=2cbab0ac-0cea-4ec3-aac6-4a26ce0bb97c&k=19614>

Local news, CBO-TV, 6:00 p.m., Thursday, Sept. 7, 2006

"World Report" CBC Radio, Friday Sept. 8, 2006  
<http://www.cbc.ca/health/story/2006/09/07/light-cancer.html>  
<http://www.cbc.ca/health/story/2006/09/08/light-office.html>

"Sci-Tech File", Radio Canada International, Sept. 15, 2006  
[http://www.rcinet.ca/rci/en/emissions/archives/archivesDetails\\_1441\\_15092006.shtml](http://www.rcinet.ca/rci/en/emissions/archives/archivesDetails_1441_15092006.shtml)  
(Note: this program also featured the Light Up the World Foundation, based in Calgary)

"Sunday House Call" with Dr. Barry Dworkin, broadcast on CFUN Vancouver, CFRW Winnipeg, CKLW Windsor, CHUM Toronto and CFRA Ottawa, Sept. 10, 2006.

"Ontario Today" with Rita Celli, CBC Radio One (in Ontario), interview and phone-in, Sept. 12, 2006  
[http://www.cbc.ca/ontariotoday/story\\_archive.html](http://www.cbc.ca/ontariotoday/story_archive.html),

"Breakaway" with Jacquie Czernin, CBA Radio One, Quebec, Sept. 21, 2006

## **Division Meetings**

Both Divisions 3 and 6 met following the symposium. The symposium discussions generated proposals for new TCs, and plans for further discussion at the CIE Session meetings in Beijing.

The CNC generously provided coffee service for the two Division meetings, for which the attendees were very grateful.



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## **APPENDIX L**

### **CNC/CIE 51st Annual Meeting**

2006-October-13

### **CNC/CIE Members and Advisory Members**





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### CNC/CIE MEMBERS

<u>CNC/CIE</u>			<u>TERM (expiry)</u>	<u>CIE</u>
President	J.A. Love	Alberta	2007-12-31	
Vice President	J.C. Zwinkels	Ontario	2007-12-31	Division 2
Secretary/Treasurer	A.A. Gaertner	Ontario	2009-12-31	
Publications	K.F. Lin	Ontario	2008-12-31	
	R. Baribeau	Ontario	2006-12-31	Division 8
	J.(Joe) Bastianpillai	Ontario	2007-12-31	Division 4
	J.D. Yvon Deslauriers	Ontario	2007-12-31	Division 6
	S.M. McFadden	Ontario	2007-12-31	Division 1, DD of Div 1
	I.C. Pasini	Ontario	2006-12-31	
	M.K. Timmings	Ontario	2007-12-31	Division 5
	J.A. Veitch	Ontario	2008-12-31	Division 3
	Lorne A. Whitehead	British Columbia	2008-12-31	
<i>ex officio</i>	A.R. Robertson	Ontario		NRC/INMS Member

### CNC/CIE ADVISORY MEMBERS

W.K. Adrian	Ontario	J. Bruce McArthur	Ontario
Nolie Agellon	Ontario	<del>Donald B. McIntyre</del>	<del>Ontario</del>
Santo Aguanno	Ontario	S.W. McKnight	Ontario
Eduard Alf	Ontario	Arthur H. Mendel	Québec
Chantal Arsenault	Ontario	Guy Newsham	Ontario
Ian Ashdown	British Columbia	Keith Niall	Ontario
M.G. Bassett	Ontario	T. Nilsson	P.E.I.
Chrisnel Blot	Québec	Karen Pero	Québec
Mario Bucci	Ontario	Igor Peshko	Ontario
J. Allyson Chrysler	Ontario	Pascale Reinhardt	Québec
Vince Cimino	Ontario	<del>Tim M. Richardson</del>	<del>Ontario</del>
W.B. Cowan	Ontario	J.B. Roberge	Québec
Biman Das	Nova Scotia	Mankajee Shrestha	British Columbia
R.V. Day	Ontario	Andrew D. Silbiger	Ontario
Walter T. Delpero	Ontario	William A. Simpson	Ontario
Marie Dumont	Québec	Dyoni Smith	Ontario
Marcin Gorzkowski	Ontario	Ralph A. Smith	New Brunswick
John W. Harron	Ontario	Nikolay Stoev	Ontario
Kurt Ising	British Columbia	Cristian Suvagau	British Columbia
Byron Jordan	Québec	Eli Szamosi	Ontario
S.M. Kaye	Manitoba	B.W. Tansley	Ontario
Donald Kline	Alberta	R. Topalova	Ontario
Barbara Kolesnik	Ontario	[Thanos Tzempelikos	Québec]
R. Lakowski	British Columbia	Venkat Venkataramanan	Ontario
André Laperrière	Québec	R.W. White	Québec
Denis Lavoie	Québec	Roy Williams	Manitoba
Ken Loach	Ontario	Ernest Wotton	Ontario
P. Manning	Nova Scotia		

[ ] = require CNC/CIE appointment at annual meeting of 2006-October-13.

2006-October-05





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## **APPENDIX M**

### **CNC/CIE 51st Annual Meeting**

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#### **Letters of appreciation from CIE Division 1 and Division 6 Directors**



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Central Bureau: Kegelgasse 27 - A-1030 Wien - AUSTRIA

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Director, Division 1: Vision and Colour

Defence R&D Canada - Toronto  
1133 Sheppard Avenue West  
Toronto, Ontario, M3M 3B9  
CANADA

Phone: (+1) 416 645 2189

Fax: (+1) 416 635 2013

E-mail: [sharon.mcfadden@drdc-rddc.gc.ca](mailto:sharon.mcfadden@drdc-rddc.gc.ca)

05 June 2006

President  
Canadian National Committee of the CIE  
Attn: Dr. A. Gaertner  
Institute for National Measurement Standards  
National Research Council of Canada  
1200 Montreal Road  
Ottawa, Ontario K1A 0R6

Dear Jim,

On behalf of the members of Division 1, I would like to express our appreciation to the Canadian National Committee of the CIE for jointly organizing the ISCC/CIE Expert Symposium – 75 Years of the CIE Standard Colorimetric Observer. Thanks to the dedicated effort of the members of the CNC/CIE and the ISCC, the Symposium attracted a wide range of excellent speakers that generated a great deal of worthwhile discussion. As a result, Division 1 has a much better understanding of some of the topics that need to be addressed to continue the progress that has been made over the past 75 years.

Division 1 would especially like to thank the CNC/CIE for hosting a dinner for us on the 18<sup>th</sup> of June. The dinner was attended by 32 members of Division 1 and its Technical Committees. An excellent time was had by all. Twelve countries were represented at the Division meeting including South Africa and Australia and seven Technical Committees met on the 18<sup>th</sup>. The meeting was also notable for the large number of younger participants.

The success of the week's events affirms that Canada, through the CNC/CIE and NRC, continues to be an important contributor to the development of knowledge and standards in colour, vision, and lighting. Thank-you again for all your support.

Sincerely,

Sharon McFadden  
Director, Division 1

From:!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! Ann Webb [ann.webb@manchester.ac.uk]  
Sent:!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! 2006-Sep-12 09:13  
To:!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! love@ucalgary.ca  
Cc:!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! arnold.gaertner@nrc-cnrc.gc.ca  
Subject:!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! D6 meeting, Ottawa

Dear Professor Love and Dr Gaertner,

Having just returned from a very pleasant trip to Ottawa I would like to thank you, on behalf of Division 6, for your part in enhancing our working environment there.  
The Light and Health Symposium was a great success and we followed this with a most productive meeting of Division 6 on Saturday. The hospitality that we enjoyed throughout our time at the Lord Elgin Hotel was most generous, and the contribution of CNC-CIE to these Division 6 activities is very much appreciated.

With many thanks for your generosity,  
Ann

Dr Ann R. Webb  
Director, CIE Division 6  
School of Earth Atmospheric and Environmental Sciences  
University of Manchester  
Sackville Street Building  
Sackville Street  
Manchester M60 1QD

Tel 0161 306 3917  
Fax 0161 306 3941



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## **Canadian Division Members' Reports**

### **CNC/CIE 51st Annual Meeting**

2006-October-13

### **CIE Division 1**

### **Vision and Colour**

**Division 1: Vision and Colour**  
**Report to CNC/CIE Annual Meeting**

Sharon M. McFadden  
Defence Research and Development Canada - Toronto  
P.O. Box 2000, Toronto, Ontario M3M 3B9  
Phone: (416) 635-2189  
Fax: (416) 635-2013  
Email: [sharon.mcfadden@drdc-rddc.gc.ca](mailto:sharon.mcfadden@drdc-rddc.gc.ca)

The annual meeting of Division 1 was held 19 May 2006 in Ottawa, Canada in conjunction with the CIE/ISCC Expert Symposium on 75 Years of the Standard Colorimetric Observer. The Symposium was preceded by the 75<sup>th</sup> Anniversary Meeting of the Inter Society Color Council (ISCC). The meeting was attended by all 5 officers, 12 country representatives of the 37 member nations and many guests. S. McFadden was the official Canadian representative. Seven Technical Committees (TC) met in conjunction with the meeting: TC1-42 Colour Appearance in Peripheral Vision, TC1-57 Standards in Colorimetry, TC1-58 Visual performance in the mesopic range, TC1-60 Contrast sensitivity function for detection and discrimination, TC1-63 Validity of the Range of CIEDE2000, TC1-66 Indoor Daylight Illuminant, and TC1-67 The Effects of Dynamic and Stereo Visual Images on Human Health.

**Highlights**

One TC, TC1-38, and two Reporterships, R1-11 and R-33 were closed. One TC, TC1-69, and two Reportership R1-39 and R1-40, were initiated (see summary below for a description on these).

Publication activities over the past year include:

1. 166:2005, Cognitive Colour. 24 pp. ISBN 3 901 906 40 1 (R1-11).
2. 167:2005, Recommended Practice for Tabulating Spectral Data for Use in Colour Computations, 21 pp. ISBN 3 901 906 41 X (TC1-38).
3. X028:2005, Proceedings of the CIE Symposium '05: Vision and Lighting in Mesopic Conditions, ISBN 3 901 906 43 6 (TC1-58).
4. 170-1:2006 Fundamental Chromaticity Diagram with Physiological Axes - Part 1, ISBN 3 901 906 46 0. (TC1-36)

Reports from three Division 1 Technical Committees are currently out for ballot:

1. TC1-57: "Colorimetry - Part 4: CIE 1976 L\*a\*b\* colour space" (CIE DS 014-4.1/E:2006) has been sent to the National Committees for review.
2. TC 1-65 A framework for the measurement of visual appearance.
3. TC1-62 Colour Rendering of White LED Light Sources.

**Summary of Progress of Technical Committees and Reporterships**

The following summaries of activities in the various Technical Committees of Division 1 are based on my notes from the 2006 Division 1 meeting and the 2006 Division 1 Activity Report. Additional information on some of the TCs can be found in the Activity Report for 2006. It is available in PDF format on the Division 1 website <http://www.bio.im.hiroshima-cu.ac.jp/~cie1>. It includes the terms of reference and membership for all Technical Committees and Reporterships.

## **Progress in Vision Section (F. Viénot, Associate Director)**

### TC1-30: Luminous Efficiency Functions (Y. Nakano, Chair)

Dr. Nakano gave a short report at the Division Meeting. The report from TC1-30 has the approval of the members. He is waiting for a copy of the Sprague interpolation approved by TC1-38. Dr. Schanda agreed to send a copy of the programme to the Chair.

### TC1-36: Fundamental Chromaticity Diagram with Physiologically Significant Axes (F Viénot, Chair)

Part 1 of a technical report comprising Chapters 1 to 6, has been published. In regards to part 2, Chapter 7 on the photometric aspects of the  $V_{10}(l)$  and the  $V_2(l)$  functions has been completed. The TC is working on the development of a fundamental chromaticity diagram and some progress has been made there. When they met in Lyon in 2005, it was agreed that for the two degree field, a synthesized luminous efficiency function  $V_F(l)$  in terms of quanta will be proposed, which is the weighted sum of the L- and M-cone fundamentals with a 1.55 L:M ratio. This ratio is published in a paper by the group of Stockman and Sharpe. A conversion of the ratio for the luminosity function in terms of energy will be given. For the ten degree field, it will not be possible to rely on the  $\bar{y}_{10}(l)$  function, but a close luminous efficiency function could probably be proposed. There is an active exchange on this aspect at the moment. When the L:M weights will be agreed on, the derivation of the CIE-like chromaticity diagram will start.

### TC1-37: Supplementary Systems of Photometry (K Sagawa, Chair)

The Chair said that the work completed in support of this TC has been published. The published paper will form the basis for a CIE Technical Report. There was question about the inclusion of the colour component in the model of mesopic photometry. The Chair said that the colour component was necessary to take account of brightness. The inclusion of this component would also be beneficial in the development of colour appearance models in the mesopic range.

### TC1-41: Extension of $V_m(l)$ beyond 830 nm (P Walraven, Chair)

As reported in earlier year reports, although the text is close to completion, the present text is not ready for voting, because it waits for conformity with the report of TC 1-36, chapter 6 "Photometric aspects; the choice of the spectral luminous efficiency functions  $V_{F2}(l)$  and  $V_{F10}(l)$ ".

### TC1-42: Colour Appearance in Peripheral Vision (M Ayama, Chair)

This TC met in Ottawa. The Chair requested assistance in preparing the final report. Several members agreed to prepare specific parts. Thus, a first draft should be prepared during the coming year.

### TC1-54: Age-Related Change of Visual Responses (K Sagawa, Chair)

The TC has collected data on the three visual functions, spectral sensitivity function, visual acuity, and contrast sensitivity function of the eye. The Chair is preparing a report containing all those data. Meanwhile a working group was established in CIE CB to develop guidelines on accessible lighting design that deals with lighting for older people. The TC has established a liaison with this work in CB. The data collected in TC1-54 will be shared with the working group. Some of the work has also been incorporated in ISO/IEC Guide 71 – Guidelines to address the needs of the elderly.

### TC1-58: Visual Performance in the Mesopic Range (L Halonen, Chair)

This TC met in Ottawa. There were two presentations on research that had been carried out over the past year on visual performance in the Mesopic range. The results of one of the studies were used to compare two alternative models of Mesopic sensitivity. Both are linear weighting functions that express the mesopic sensitivity as a weighted function of the photopic and scotopic curves. The weighting varies linearly as a function of photopic luminance. The function developed under the MOVE project provided a better fit to the recent results. The rest of the meeting was devoted to addressing questions that must be

resolved before a final report can be written such as what are relevant critical tasks, how do these vary as a function of luminance level, and what are the important parameters that must be varied.

TC1-60: Contrast Sensitivity Function (CSF) for Detection and Discrimination (E Martinez-Uriegas, Chair )

This TC met in Ottawa. The purpose of the meeting was to organize the work of writing of the report. Several key members were there and responsibilities for the different parts of the report were divided up. An initial spreadsheet with a wide range of available data was provided by one of the members. It specifies what parameters have been manipulated in the different studies. This will allow the members to define the limits of the standard curve. At the moment, the members favour representing the standard CSF curve by data rather than a model with assumptions. It would probably be a series of curves. A model based on these curves would also be available, but the data would form the standard.

TC1-67 The Effects of Dynamic and Stereo Visual Images on Human Health (H. Ujike, Chair)

The first meeting of this TC was held in Ottawa. The Chair is still looking for more participation. However, they have collected substantial data and are moving towards an initial draft on visually induced motion sickness that should be ready by the Division 1 Symposium in Paris in October 2006. They hope to have a draft of work on photosensitivity by April 2007. Current data show that the effect decreases with distance from the screen and also with age. Also some individuals seem to have a predilection for visually induced motion sickness. B. Tansley is a member of this TC and attended the meeting in Ottawa.

R1-19: Specification on Individual Variation in Heterochromatic Matching (H Yaguchi)

A report, featuring the development of a simple test of heterochromatic brightness matching, has been prepared, but it is in Japanese. A version in English should be completed soon. It is unlikely that a TC will be proposed.

R1-23: Guidelines on Planning a Mesopic Photometry Investigation (P Trezona)

Division 1 is still waiting for the revised report.

R1-35 Irregularities in  $\bar{y}_{10}(l)$  (P. Walraven)

Up to now the only progress is that the reporter has made a program for making the irregularities visible.

R1-36 Action Spectra for Glare (J. Fekete)

The background thinking for this reportship is the use of new light sources for automobile lighting that have the potential for increased glare. The work is nearing completion and the report should be finished by next year. It seems that the glare function is something other than  $V(l)$ .

R1-37 Definition of the Visual Field for Conspicuity (N. Itoh)

The previous studies of different functions of the visual field have been investigated. Those visual fields were analyzed and classified into several functional fields such as: (1) Detection and Perception, (2) Discrimination, (3) Recognition, (4) Performance/Behaviour. Currently, the relevant parameters that affect these functions are being identified. They include colour, luminance, age, background and individual differences. Finally, the report will look at what functions or tasks are impacted by a reduced visual field. For example, there is some evidence that even reading speed can be impacted by a reduced visual field. There is not a good understanding of the impact of the visual field on performance. A full report of the work is currently being prepared. At the same time, the useful field of view for the detectability of visual information is being studied at AIST in Japan. The results of this work will be included in the same report.



#### R1-38. Concept and Application of Equivalent Luminance (Y. Nakano)

The reporter is not sure that concept and application of equivalent luminance can be specified. It was suggested that perhaps the best course was to write a report on the current state of knowledge about equivalent luminance.

#### **Progress in Colour Section (M. Pointer, Associate Director)**

##### TC1-27: Specification of Colour Appearance for Reflective Media and Self-Luminous Display Comparison (P J Alessi, Chair)

The Chair provided a brief report to the Division meeting. Her plan is to write the report covering the work conducted under this TC in 2007.

##### TC1-44: Practical Daylight Sources for Colorimetry (R Hirschler, Chair)

The Chair is working on a Technical Report for this TC. It will contain the spectral power distributions and CIE Publication 51 ratings of actual daylight sources satisfying the recommendations of ASTM D1729, ISO 3664 and other relevant standards. The sources include filtered tungsten and dichroic lamps, fluorescent lamps, tuned lasers and filtered Xenon arc used in visual colour evaluation and pulsed Xenon lamps used in one-monochromator spectrophotometers.

##### TC1-55: Uniform Colour Space for Industrial Colour Difference Evaluation (M. Melgosa, Chair)

The new Chair has contacted the TC members and reviewed the work completed previously. The TC is revising the combined dataset used for the development of the CIEDE2000 color difference formula. They are looking at a new uniform space that is not based on CIELAB. They also are investigating the value of using only 3 terms instead of 4 in current colour appearance model.

##### TC1-56: Improved Colour Matching Functions (M Brill, Chair)

Three laboratories have produced new data on the colour matching function using luminance levels that are log units apart. One of the observers in the UK study is visiting the other laboratories to act as an observer. The goal is to get as many measurements as possible on a single observer under a wide range of conditions. TC1-56 down-scoped its goals relative to the stated terms of reference. Henceforth, the main goal is not to find better colour-matching functions, but to test the transformability of primaries for many trials on a single observer. Also, rather than try to insist on a single experimental design for the colour matching (as was attempted at the 2001 meeting), the TC agreed to receive and synthesize the results of all participating laboratories into a single recommendation. Diversity in the luminance levels of the first three laboratories was already a step forward.

Despite the title of TC1-56, the new main goal does not require the measurement of colour-matching functions. Only the following are strictly needed for a meaningful result: A least 7 lights, comprising an independent test light and 2 sets of 3 primaries each. The primary sets need not be even nearly monochromatic. For each of the primaries in a set, statistical robustness requires measuring the match at least 10 times with the opposite set of primaries. Then the seventh light must be repeatedly matched using both sets of primaries. Transformability will be verified if, by averaging the primary matching data (iterates for a single observer), the inferred coordinates of the test light under the two sets of primaries match the coordinates obtained from direct matching. This goal, which agrees with the subsidiary goal agreed upon at the 2001 meeting of TC1-56, is now the main mission of the TC.

##### TC1-57: Standards in Colorimetry (A Robertson, Chair)

The Division and Board ballot has been conducted on CIELAB (DS 014-4.1) and it is currently out for NC review. Concerns raised during the Division ballot were addressed. The TC met in Ottawa. There was some discussion on the need to provide an equivalent standard on the  $u'$ ,  $v'$  space. However, the

space is still used by many people and it is important to provide recommendations on the correct way to use it. The feeling was that the standard method now is CIELAB even for related colours on a display. There was also some discussion of the proposed standard on colour difference. It was felt that CIEDE2000 has now undergone sufficient testing by industry and could be turned into a standard. However, industry did find it difficult to use. Thus suggested should include an appendix with the Leeds variant that uses three terms instead of four (no cross products involved). This is really only applicable to differences less than 5DE.

#### TC1-61: Categorical Colour Identification (T. Ishida, Chair)

This TC has not been active in 2005. The Chair hopes to prepare the first draft document in 2006 and circulate it to the TC members.

#### TC1-62 Colour rendering of LED light sources: (P. Bodrogi, Chair)

The Technical report of this TC has been submitted for Division and Board of Administration ballot.

#### TC1-63 Validity of the range of CIEDE2000 (K. Richter, Chair)

A research project for large color differences between both white and black and the three primary and three secondary colors of offset printing has been finished. Only relative color differences on a relative visual scale have been studied. Visual representations of the three test charts are available on the Chair's website. The URLs can be found in the Division 1 activity report along with a more detailed description of the results.

The interpretation may be as follows: The deviation between visual and calculated results is about 4% for CIELAB 1976 and 9% for CIEDE2000. Therefore CIELAB is more appropriate for the large color difference calculation compared to CIEDE2000. All test samples have color difference in the range  $\Delta E^*_{ab}$  between 10 and about 40.

The next steps of TC are to repeat the experiments at different places with the same sample series which will to be delivered for free on request from the Chairman of CIE TC1-63.

The results for large sample differences are only one part of the terms of reference of CIE TC1-63. For threshold sample differences a new research project has been started to make visual experiments at threshold with a 256-step gray scale ( $\Delta L^* = 0.3$ ) along the lightness axis and perpendicular in red-green and yellow-blue direction.

#### TC 1-64 Terminology for vision, colour and appearance (S. McFadden, Chair)

Further work under this TC is awaiting publication of the revised International Lighting Vocabulary.

#### TC1-65 Visual appearance measurement (M. Pointer, Chair)

The Technical Report of this TC has been submitted for ballot. The final part of the work is a symposium that will be held 19-20 October 2006 in Paris France.

#### TC1-66: Indoor daylight illuminant (J. Schanda, Chair)

TC1-66 met in Ottawa. The members agreed on the content of the Technical report and a partial draft has been prepared.

#### TC1-68 Effect of Stimulus Size on Colour Appearance (P. Bodrogi, Chair)

A website of the TC was established for TC members and advisors only. They can download the following documents from this site - the TC Worksheet, the Activity Report, answers to a survey, and articles related to the subject. The survey questions are available in the 2006 Activity Report. Over the next year the TC members plan to run experiments and develop a model based on the results. T. Nilsson is representing Canada on this TC. They are considering a meeting at or after the CIE Expert Symposium on Visual Appearance, Paris, France, October 19-20, 2006.

#### R1-11 Cognitive Aspects of Colour: (G. Derefeldt)

The report from this Reportership has been published by the CIE. The Reportership was closed at the 2006 meeting of Division 1.

#### R1-32 Emotional aspects of colour and light (G. Derefeldt)

The Reporter hopes to have the work finished by the 2007 meeting in Beijing.

#### R1-33 Colour-difference evaluation (R. Luo)

This reportership was closed at the 2006 meeting of Division 1.

### **Proposals for New Technical Committees and Reporterships**

One new TCs and two Reportership were proposed at the Division meeting in Ottawa. The TCs still require approval of the Board of Administration.

#### TC1-69 (C) Colour Rendition by White Light Sources

Chair: Wendy Davis, US

Terms of Reference: To investigate new methods for assessing the colour rendition properties of white-light sources used for illumination, including solid-state light sources, with the goal of recommending new assessment procedures.

Members include: Mike Pointer GB, Janos Schanda HU, Peter Hanselaer BE, Françoise Viénot FR, Hirohisa Yaguchi JP, Ronnie Luo GB, Peter Bodrogi HU, Klaus Richter DE

#### R 1-39 (C) Alternative Forms of the CIEDE2000 Colour-Difference Equation

Reporter: Mike Pointer, GB

Terms of Reference: To investigate alternative formulations of CIEDE2000 equation and make a recommendation to the Division on any necessary action.

#### R 1-40 (V) Scene Dynamic Range

Reporter: Jack Holm, US

Terms of Reference: To investigate the concept of scene dynamic range, the appearance of colours brighter than the adapted white, and adaptation to the dynamic range when viewing, and make recommendations regarding work to be done by the CIE.

### **Liaisons**

The Association International de la Couleur: The 2006 AIC Interim Meeting will be held in Johannesburg, South Africa, October 24<sup>th</sup> to 27<sup>th</sup>. The topic will be Color in Culture and Color in Fashion. The 2007 AIC Mid-term Meeting will be held in, Hangzhou, China, either before or after the CIE Quadrennial Meeting in Beijing, China. The topic will be related to Instrumentation and Textiles. The 2008 AIC Interim Meeting will be held in Stockholm, Sweden. The topic will be Color Education. Finally, the 2009 AIC Eleventh Congress will be held in Sydney, Australia from September 20-25th.

Comite Consultatif de Photometrie et Radiometrie, BIPM: The next CCPR meeting will take place on 18-22 June 2007. A detailed report on the work of BIPM can be found in the 2005 Activity Report.

ISO/TC6/3 Paper, Board and Pulp - Optical Properties: A detailed report is available in the 2006 Activity Report. The TC met in June in Sweden. Dr Byron Jordan from Canada is now the Convener of this Committee.

ISO/TC38/SC1 Textiles Colour Fastness & Measurement: M. R. Luo is now the liaison to Division 1. He has provided a detailed report in the 2006 Activity Report.

ISO/TC42 Photography: J. Holms from the U.S. is now the liaison to Division 1. His report is in the 2006 Activity Report.

ISO/TC130 Graphic Technology: A detailed summary is provided in the 2006 Activity report by D. Rich the liaison to Division 1.

ISO JTC28 SC28: K. Richter reported as liaison. His report is available in the 2006 Activity Report.

IALA: M. Nicholson reported this group's recent work in the 2006 Activity Report.

### **Next Meeting**

The 2007 meeting will be held Beijing, China in conjunction with the Quadrennial meeting of the CIE.

### **New Officers for Division 1**

There were no changes to the officers of Division 1. However, it is anticipated that all of the executive will change at the Quadrennial meeting. Balloting for a new Division Director is currently underway. Once this is completed a ballot for the two Associate Directors will be held.

### **Canadian Participation in Division 1**

Based on the latest information available to me, Canada has representatives on 13 Technical Committees in Division 1. The Canadian representatives are Ian Ashdown on TC1-62, Byron Jordan on TC1-66, W. Cowan on TC1-37, S. McFadden on TC1-42, TC1-60, TC1-64, and TC1-65, T. Nilsson on TC1-68, A. Robertson on TC1-27, TC1-56, and TC1-57, Brian Tansley on TC1-67, J. Veitch corresponding member on TC1-65, and J. Zwinkels on TC1-44, and TC1-57. 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.



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE  
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INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien



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## **Canadian Division Members' Reports**

### **CNC/CIE 51st Annual Meeting**

2006-October-13

### **CIE Division 2**

### **Physical Measurement of Light and Radiation**

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

Report to CNC/CIE 51st Annual Meeting  
Montreal, Quebec, October 13, 2006

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The most recent CIE Division 2 General and TC meetings were held 14-16 June, 2006 at PTB in Braunschweig, Germany, in conjunction with the CIE Symposium on Measurement Uncertainty, 12-13 June, 2006 and Interlumen 2006, 16-17 June, 2006. I attended the CIE D2 meeting and several D2 TC meetings. The following report is some of the meeting highlights. The detailed minutes of the meeting should be available shortly at the web-site: <http://cie2.nist.gov>.

Ten Technical Committees (TCs) met in conjunction with the Division 2 meeting: TC 2-29 Detector Linearity (Larason), TC 2-40 Characterizing the performance of luminance and illuminance standards (Rattunde), TC 2-45 Measurement of LEDs (Murray), TC 2-46 CIE/ISO Standard on LED intensity measurements (Scarangelo), TC 2-48 Spectral responsivity measurement of detectors, radiometers, and photometers (Eppeldauer), TC 2-50 Measurement of the optical properties of LED clusters and arrays (Schuette), TC 2-53 Multi-geometry colour measurements of effect materials (Roesler), TC 2-56 CIE/ISO standard on retroreflection measurements (Miller), TC 2-58 Measurement of LED radiance and luminance (Kohmoto), and TC 2-59 Characterization of imaging luminance measurement devices (Blattner).

The General D2 meeting had 54 attendees from 21 countries, including 15 country members.

### **Highlights**

#### **Director's Report (T. Goodman)**

- The DD is setting up a small working group within the management team to prepare guidelines for preparing uncertainty sections for TC reports.
- The DD is also preparing some general guidelines regarding the way in which members are accepted onto D2 TCs – this is in response to a concern that some TCs have too many members to work effectively.

#### **Editor's Report (J. Gardner)**

- Two draft standards have gone through NC ballot and been approved after editorial changes: CIE DS014-1.3 Colorimetry – Part 1: CIE Standard Colorimetric Observer and CIE DS014-2.3 Colorimetry – Part 2: CIE Standard Illuminants.
- The preparation of the ILV is being coordinated by VP Bastie. The CB has collated terms in alphabetic order, separated in two chapters: Basic Terms and Applied Terms. It was noted that most of the D2 terms are Basic.
- The editor has edited six draft documents into TC ballot format. These are: TC 2-16, 2-25 (Zwinkels), 2-39, 2-40, 2-45 and 2-48.

### **Secretary's Report (Ohno):**

- D2 now has 36 country members. Country representatives of Brazil, Turkey and South Africa have changed.

### **Proposals for New Technical Committees and Reporterships**

**R2-38** Spectral and colorimetric electronic data interchange

**TR:** To monitor the work in ISO TC38 regarding the development of an ISO Standard to define a specification for the electronic communication of spectral and colorimetric data.

Note: this replaces the TC on this subject that was established at the last D2 meeting.

**Reporter:** Mike Pointer

### **Changes in TCs and Reporterships**

- The Chair of TC 2-47 has changed to Armin Sperling (Germany)
- The Chair of TC 2-60 has changed to Emma Wooliams (UK)
- The Chair of TC 2-28 has changed to Teresa Goodman (UK)

### **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://cie2.nist.gov>.

### **Progress in TCs: 2-16, 29, 37, 40, 43, 45, 46, 47, 48, 58, 59 and 60 (Sauter, AD)**

**TC 2-16** Characterization of tristimulus colorimeters (Schanda). Draft 13 of this report has been voted in favour by the TC, with one negative vote. The editorial comments by CB have been incorporated and the D2 Editor is trying to resolve the negative vote. It is anticipated that a further TC vote will be necessary before the document can be circulated to D2 and BA.

**TC 2-29** Linearity (Larason). Draft 4 of document was sent out in May 2006 and comments were reviewed at TC meeting in Braunschweig. Some options were proposed and TCC will try to consolidate this in a new draft.

**TC 2-37** Detectors as transfer standards (Ohno). The work of this TC is close to completion. TC ballot was held in June 2004 and approved but with many comments. TCC is working on a revised draft to incorporate these comments and will distribute to TC members for info only and then to D2 vote.

**TC 2-40** Characterization of luminance/illuminance meters (Rattunde). Draft 4 of document was distributed in May 2006 and reviewed at TC meeting in Braunschweig. It was generally considered that recommendations can be given for classifying individual performance characteristics, but not giving an overall rating. TCC needs to revise document so that it conforms to CIE template for Standards document. It is planned to have final version prepared for Beijing meeting.

**TC 2-43** Uncertainty (Sauter). The document was used as a basis for the tutorial section of the CIE Uncertainty Symposium. There was considerable discussion at the D2 meeting about the format of this document. Hengstberger suggested publishing the document in parts to allow continuous updating of applications. The DD felt that the document needed to be at a much simpler level for uncertainty evaluation – emphasizing that correlation can be ignored in most cases. D2 Editor recommended that the uncertainty examples and descriptors be reviewed by key individuals in industry.

**TC 2-45** Measurement of LEDs, revision of CIE-127 (Murray). This document is now at CB. There was some discussion about possible future directions and a new TC was proposed to be Chaired by Gunter(?) of Osram (Germany).

**TC 2-46** Standard on LED intensity measurement. (Scarangelo). TC met in Braunschweig and reviewed changes in latest draft document. It was concluded that more work needed to be carried out on definitions, e.g. mechanical axis, averaged LED intensity, to better define the operating conditions, particularly the LED temperature, and to add a section on uncertainty. It is also planned to update the membership list.

**TC 2-47** UV meters. New TC Chair was proposed and approved: Sperling(Germany). The document from this committee under former TCC, Xu (Singapore) is well advanced.

**TC 2-48** Spectral responsivity measurement (Eppeldauer). TC met in Braunschweig and discussed Draft 9 of report. Eight Chapters have been written and it was agreed to add a chapter on uncertainty using examples prepared for the CIE Symposium. The deadline for next submissions by members is Nov. 15, 2006. This report is close to finalization.

**TC 2-58** Measurement of LED radiance/luminance (Kohmoto). TC had its 3<sup>rd</sup> meeting in Braunschweig and discussed Draft 2 of report. There was considerable discussion on what quantities to include in Sections on Related photometric quantities and Definition of fundamental terms. TCC proposed to hold a joint meeting with TC 6-55 Light Emitting Diodes (Horak) in Ottawa, Sept. 6, 2006. *Zwinkels* volunteered to attend this meeting as an Observer. *Follow-up note:* I attended this meeting in Ottawa that included detailed presentations by both Chairs and discussion of action plan. TC 6-55 members volunteered to provide inputs to sections of TC 2-58 report notably Sliney on background



requirements for Section on physical and subjective aspects of radiance and luminance and Horak on source size and FOV for Section on luminance measurement of small sized light sources.

**TC 2-59** Characterization of imaging luminance measurement devices (Blattner). TC met in Braunschweig and discussed Draft 3 of report. The TCC has received input from manufacturers on black-box versus physical approach and PTB will also provide some info on these cameras for the report.

**TC 2-60** Effect of instrumental bandpass function and measurement interval on spectral quantities (Wooliams). TCC Chair (Gibbs) has resigned. New TC Chair was proposed and approved: Wooliams (UK).

**Progress in TCs: 2-23, 49, 50, 52 and 61 (Vandermeersch, AD)**

**TC 2-23** Photometry of street lighting luminaires (Vandermeersch). TCC reported that no progress has been made since last meeting. It is planned to draft a 2 page addendum of definitions and how to handle measurement of luminaries with very expanded beams and high radiance dynamic ranges. Sauter (Ger) recommended that the report include a clear statement of the operating conditions.

**TC 2-49** Flashing lights (Ohno) TCC reported that progress has been slow. He is looking at visual evaluation data. There is a strong desire by TC members to standardize the effective intensity. TCC described a new Vision Science project that has been established at NIST to look at the issues of color rendering metrics and flashing lights. It is planned to build an experimental set-up for visual evaluation with a 2-yr time frame. Tutt (Australia) said that he would provide TCC with an IALA document that is close to finalization.

**TC 2-50** LED clusters & arrays (Schuette) TC met in Braunschweig with 64 attendees! There was considerable discussion on basic terms, e.g. luminance and luminous flux, uniformity and colour issues. The TCC plans to ask for help from D1.

**TC 2-52** Emergency lighting (Vandermeersch). TCC reported that the activity is largely within the IEC.

**TC 2-61** Spectral and Colorimetric Electronic Data Interchange (Pointer) TCC chair has resigned cited that ISO TC 38 has reversed its decision and is progressing to set up a Working Group to carry out this work. Pointer recommends the establishment of a Reportership to monitor progress of this work. He mentioned that Andrew Hanson (UK) would be a suitable Reporter since he is the facilitator of the NPL Group responsible for the NPL input to the original work, The CIE TC would only duplicate this work being carried out in ISO.

**Progress in TCs: 2-17, 19, 25, 28, 32, 35, 39, 42, 51, 53, 56, and 57 (Johnson, AD)**

**TC 2-17** Simulated solar radiation (Zerlaut) No report was received. TCC is planning to hold a TC meeting with ASTM in Toronto.

**TC 2-19** Spectral coefficient of retroreflection (Johnson) The TCC has informally communicated the final report to the TC and will try to finalize for meeting in Beijing.

**TC 2-25** Fluorescence measurements (Zwinkels, *Canada*). A final version of the TC Report (Draft 12) was prepared by the TC Chair that incorporated the input of voting and editorial comments by TC members to Draft 11 and a revision of terms in the section on Terminology (Section 1.2) to be consistent with the new fluorescence terms published in CIE Standard on the Assessment of the Spectral Quality of Daylight Simulators for Visual Appraisal and Measurement of Colour (CIE S 012/E:2004). The TC Chair has sent this final draft to the D2 Editor and he has completed the editorial review of this document. The revised draft (Draft No. 12.2 dated 2006-06-06) is now ready to be sent for Division ballot.

**TC 2-28** Characterization of spectrophotometers (Pointer) DD gave report. Pointer took over this TC in 2004 and circulated the latest draft of the report to TC members for review and update. Only one response was received and, as a consequence, TCC has resigned. DD volunteered to take over this TC and this was approved.

**TC 2-32** Wet horizontal road markings (Hodson) TCC will send latest draft of document to D2 Editor for editing and review before TC ballot.

**TC 2-39** Geometric tolerances (Rich). The final report from D2 ballot has been accepted with a long list of comments, most of which are editorial in nature. Technical comments are related primarily to the figures. TCC has addressed about 50% of these comments.

**TC 2-42** Colorimetry of visual displays (Vassiel). DD gave the report. TCC has been involved in a number of VESA display standards. The CIE TC report would be highly complementary to the VESA standard. TCC will review emerging areas and plans an extensive re-write of existing document.

**TC 2-44** Vocabulary Matters (Gardner). TCC reported that he has received new terms for ILV.

**TC 2-51** Multi-channel spectrometers (Austin) No report received. DD will contact TCC and if no report is received within a few months, she will look for a new TCC. Hengstberger asked about the compendium of literature references prepared by this TC. DD said that there was a problem including this information in the TC report since it has an Eastman Kodak copyright protection.

**TC 2-53** Multi-geometry measurements (Roesler) TC met in Braunschweig. TCC thanked DD for sending a letter to ASTM E12.12 recommending the use of CIE angular recommendations from CIE 15 and TC 2-39 documents. This CIE approach has now

been adopted by ASTM. TC plans to publish the report in 2 parts separating the multi-angle measurements from the metrics.

**TC 2-56** Standard on retroreflectance (Miller) TC met in Braunschweig and discussed the inconsistencies in the different measurement methods. An important part of this document will be geometries and definitions. The TC members do not want to be prescriptive about the measurement method. TCC plans to have next meeting with D4.

**TC 2-57** Revision of CIE S014-2 (*Robertson*) D2 Editor read Alan's report. The current revision of this document, CIE DS 014-2.2/E:2005 has been balloted and received some comments. Once final approval is achieved, TC 2-57 will begin its work.

### **Progress of Reporterships**

**R 2-23** Standards for the measurement of reflectance and transmittance (Rich). It was reported that ISO 13655 on measurement of reflectance of colour of printing inks has been revised to include measurements over both matte black and white backings to correct for the effects of translucency. The method also calls for the use of a UV cut-off filter to eliminate the effects of FWAs.

**R 2-32** Visual appearance measurement (Pointer). CIE TC 1-65 on this topic is not being balloted within the D1. This defines the measurement of colour, gloss, translucency and texture as the building blocks for describing visual color. There will be a CIE Expert Symposium on this topic in Paris, Oct. 2006.

**R 2-33** Laser-based projection displays (*Niall, Canada*) No report received. *Zwinkels (Canada)* was asked to check on the status of this reportership.

**R 2-34** Photon-Counting regime (Rastello). There were more than 80 people attending a meeting on this subject at NPL. There are two new Workshops planned: SPW-07 (IEN, Italy) and SPW-09 (NIST in 2009). PHORA has prepared a roadmap on photon-based standards with applications such as photonics and photobiology. It is recommended to continue this reportership and to establish a TC at a future date.

**R 2-36** Solid state light sources (Heidel). Reporter gave a detailed report outlining many issues facing industry. DD asked what is the top priority. Reporter stated that these were: 1) thermal and pulse measurements, and 2) partial flux in production. The DD asked if the CIE has a role in solving these problems or will industry solve these issues. No resolution was achieved but the DD asked the Reporter to prepare a summary and to recommend what TCs would be useful to have and what they would try to achieve, noting that these should not be single industry requirements.

**R 2-37** Industrial requirements for D65 sources (Pierson) A two page report was given. The Reporter had contacted Chairs of TC 1-44 (Hirschler) and TC 1-66 Indoor Daylight Illuminants (Schanda), Hunterlab and Gretag Macbeth to find out the situation regarding commercially available D65 illuminants. It was noted that CIE source ratings are not

widely used by industry but that a solution to this issue could come from its more systematic use. The DD recommended that this Reportership stay open one more year and then decide on whether a TC should be formed.

### **Reports of Liaisons**

**CCPR** (Ohno) The 18<sup>th</sup> meeting of the CCPR was held Oct. 25-26, 2006. A brief status report was given of the various key and supplementary comparisons. *NRC* has applied for membership of the CCPR working group on key comparisons (WG-KC) and is a member of the newly formed strategic planning working group (WG-SP). These working groups will be meeting at CENAM (Mexico), October 22-24, 2006.

**CIE D8** (Kravetz) No report.

**ISO/TC6** (*Zwinkels*) Detailed report given and included as Attachment in D2 minutes. Of note: The next meeting of ISO TC6 is in Atlanta, GA (USA), Nov. 12-17, 2006. In August 2005, Dr. Anthony Bristow submitted his final report to ISO/TC6 on the activities of WG3 and *Dr. Byron Jordan (Canada)* commenced his term as the new Convenor of this working group.

**IALA** (Anderson) Ian Tutt reported. There was an IALA meeting in May 2006. The topics covered included visual experiments with flashing LEDs (France and Japan).

**IEC TC100** Colour measurement and management in multimedia systems (Rich) Liaison report was read by Ohno. There have only been simple maintenance activities.

### **Dissolution of TCs and Reporterships**

TC 2-61 Spectral and colorimetric electronic data interchange (Pointer) is to be closed and a reportership is to be established to keep the liaison with the ISO committee TC38.

### **Future D2 Meetings**

**2007:** Beijing, China, D2 meetings are scheduled for 9-11 July.

**2008** – IEN, Turin, Italy. Date TBD.

**2009** - Open. To be discussed next year.

### **Proposals for Future D2 Symposia**

- 1) 4<sup>th</sup> Symposium on LED measurements (2-3 days) is planned for 2007, separate from the Quadrennial meeting in Beijing. Dates and venue TBD.
- 2) 3<sup>rd</sup> Symposium on measurement uncertainty is considered for 2008.
- 3) 2<sup>nd</sup> Symposium on pulsed sources will be considered for 2009 or later.

## Canadian Participation in Division 2

Canada has representation on 11 Technical Committees:

TC 2-25,	J.C. Zwinkels ( <i>Chairman</i> , NRC)
TC 2-28	J.C. Zwinkels, A.R. Robertson (NRC)
TC 2-35	A.R. Robertson
TC 2-39	J.C. Zwinkels, B. Jordan (PAPRICAN)
TC 2-42	S. McFadden (DCIEM), R. Baribeau (NRC)
TC 2-43	A. Gaertner (NRC)
TC 2-47	L.P. Boivin (NRC), B. McArthur (AES)
TC 2-48	L.P. Boivin , R. McArthur
TC 2-53	J.C. Zwinkels
TC 2-57	A.R. Robertson ( <i>Chairman</i> ), J.C. Zwinkels
TC 2-60	A.R. Robertson, J.C. Zwinkels

One Liaison:

ISO TC6: Paper, Pulp, Board: J.C. Zwinkels(NRC)

One Reportership:

R2-33: K, Niall (DCIEM)



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## **Canadian Division Members' Reports**

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### **CIE Division 3**

### **Interior Environment and Lighting Design**

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

**2006 Activity Report to the Canadian National Committee**

Jennifer A. Veitch, Ph.D. – Canadian Delegate  
2006-October-03

*jennifer.veitch@nrc-cnrc.gc.ca*

**2006 Division 3 Meeting**

The meeting was held on September 9, 2006, in Ottawa. I was in attendance. The minutes are not yet available, so this report is based on my notes.

**Current Division 3 Activities**

*Completed reports and publications*

In 2006 I voted on one of two technical committee report ballots. The two technical committee ballots were:

- TC 3-38 Tubular daylight guidance systems (published as CIE 171:2006) [Canadian member: Lorne Whitehead]
- TC 3-40 Maintenance of indoor electric lighting systems (published as CIE 97/2:2005) (I missed this ballot because of my maternity leave.)

Division 3 has produced three CIE publications since the last report (August 2005):

CIE 97/2:2005 Maintenance of indoor electric lighting systems

CIE 171:2006 Test cases to assess the accuracy of lighting computer programs

CIE 173:2006 Tubular daylight guidance systems

*Active TCs and Reporterships*

There are 9 active technical committees and 5 open reporterships in Division 3. Terms of Reference and current status of the committees are available on the Division 3 web site (<http://ciediv3.entpe.fr/>). **As yet, none of the new TCs in 2006 have Canadian members. Anyone interested in joining one of these TCs should contact me.**

TC	Title	Chairman	Started	End?	Product
3-25	Coordination and development of the IDMP and its data	D. Dumortier	1991	2004	Web Server
3-34	Protocols for describing lighting	J. Veitch	1999	2005	Guide
3-36	Use of satellite images to derive daylight data	D. Dumortier	2000	2007	Standard
3-37	Guide for the application of the CIE general sky	Y. Uetani	2000	2007	Guide
3-39	Discomfort glare from daylight in buildings	W. Osterhaus	2002	2005	Guide
3-42	Lighting design applications	H. Kaplan	2006	2009	Guide
3-43	Determination of discomfort glare	L. Bedocs	2006	2010	Guide
3-44	Lighting for the elderly	G. Cook	2006	2010	Guide
3-45	Luminance-based design approach	Y. Nakamura	2006	2010	Guide

R #	Title	Reporter	Start	End?	Product
3-13	Lighting vocabulary	Y. Koga	2002	2004	Publication
3-23	Lighting control and energy efficiency	P. Dehoff	2004	2005	Review
3-24	Assessment of overhead glare	T. McGowan	2004	2005	Review
3-25	Lighting and health	Fontoynt	2006	2006	Statement
3-26	Climate based daylight analysis	J. Mardaljevic	2005	2007	Statement

*Current Canadian Participation in D3 Technical Committees (October 2006)*

TC#	Title	Canadian Members
3-34	Protocols for Describing Lighting	J. Veitch (Chairman); D. Smith (Corresponding Member)

There was an informal meeting in Ottawa of TC 3-34, which I chair. This committee is expected to complete its work and have a report ready for balloting by the time of the Beijing session.

*Other D3 Activities*

Divisions 3 and 6 worked together to organize the **Second CIE Expert Symposium on Lighting and Health, in Ottawa, Ontario, Canada, September 7-8, 2006**. The event was co-hosted by the National Research Council of Canada's Institute for Research in Construction (NRC-IRC). NRC-IRC's Dr. Jennifer Veitch was a member of the Organizing Committee and was a speaker, and Dr. Guy Newsham was co-ordinator of local arrangements. There is a separate report detailing the event. From Division 3's perspective, the symposium was a great success in that it achieved good participation from lighting practitioners and generated many ideas for the work of Division 3. One new TC has already been created with the aim of providing lighting design guidance based on light and health research (TC 3-44, Lighting for the elderly), and the Division is carrying a watching brief on other topics that are expected to result in other TCs being formed in the next few years.

**Issues Facing Division 3**

Division 3 must have a new Division Director in 2007. The current Director, Dr. Marc Fontoynt, has served for eight years and is not eligible to serve again; moreover, he has been elected as a Vice-President of CIE, starting at the Beijing Session.

Division 3 also seeks a new Webmaster and a new host for the web site. The present webmaster, Dr. Dominique Dumortier, is also the Associate Director for Daylighting, and finds the two positions to require more time than he can commit.

**Next Meeting**

Beijing, China, Tuesday, July 10, 2007

TC meetings will be on Monday, July 9, 2007.

———— End ————





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#### **CIE Division 4**

### **Lighting and Signalling for Transport**

**CIE Canadian National Committee  
Division 4 Lighting and Signalling for Transport  
Report**

Division meeting was held in Greece, 18-21 September, 2006 in conjunction with the “Urban Nightscape” conference  
No report available as yet

Next meeting in Beijing, July 3-7, 2007 in conjunction with CIE meeting

The following TCs were established:

TC 4-44      Management and Maintenance of Road Lighting.

Chair: P. Hautala, Finland

Terms of Reference:      To revise Publication CIE 115-1995

TC 4-45      Performance Assessment Method for Vehicle Headlamps.

Chair: G. Draper, U.K.

Terms of Reference:      To develop a technical report that defines the objective procedure for the evaluation of forward lighting system performance.

Proceedings of the CIE Symposium “Vision and Lighting in Mesopic Conditions”.

Symposium was held in Leon Spain on May 21, 2005

Submitted by

Joe Bastianpillai



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**CIE Division 5**

**Exterior Lighting and Other Applications**

*(no report received)*



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## **Canadian Division Members' Reports**

### **CNC/CIE 51st Annual Meeting**

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### **CIE Division 6**

### **Photobiology and Photochemistry**

**DIVISION 6**  
**PHOTOBIOLOGY AND PHOTOCHEMISTRY**  
**Report to the Canadian National Committee**  
**October 13, 2006**

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**Introduction.**

The Division 6 Annual Meeting took place on September 9, 2006 in Ottawa, in conjunction with the 2nd CIE Symposium on Lighting and Health.

The Division Terms of Reference are to study and evaluate the effects of optical radiation on biological and photochemical systems (exclusive of vision). A list of TCs and their current status is available on the Division web page: <http://physics.nist.gov/Divisions/Div844/CIE/CIE6/TCs/tcs.html>

**Division Officers.**

The Division Officers are:

Director:	Dr. Ann R. Webb (UK)
Associate Director, Photobiological Standards:	Dr. Kohtaro Kohmoto (JP)
Associate Director, Photobiological Measurements and Dosimetry:	Dr. Karl Schulmeister (AT)
Associate Director, Photodermatology:	Dr. Jean-Pierre Césarini (FR)
Secretary:	Mr. Stephen Wengraitis (USA)
Editor:	Dr. Myron L. Wolbarsht (USA)

**Technical Committees that met at the occasion of the Annual Meeting.**

**TC 6-08 Guidelines for Obtaining Action Spectra.**  
Chair, David Sliney (USA).

**TC 6-39 UV Radiation at Lighted Environments.**  
Chair: Kohtaro Kohmoto (Japan).

**TC6-47 Photobiological Safety of Lamps and Lamp Systems**

Chair: Rolf Bergman (USA). Reactivated TC.

**TC 6-55 Photobiological Safety of LED's**

Chair: Werner Horak (Ger).

**TC 6-59 UVC Photocarcinogenesis Risks from Germicidal Lamps.**

Chair: Richard Vincent (USA).

**TC 6-60 Spectral Weighting of UVR from Solar Surrogate Sources**

Chair: P. Donald Forbes (US). TC first meeting.

**Progress Reports from TCC's or updates from Secretary.**

**6-01 Actinic Effects of Optical Radiation on Man.**

Completed. Should be reviewed as much of it has been replaced, or overtaken by more recent advances.

**6-03 Photo-kerato-conjunctivitis.**

Outdated. Dr. Cullen (Can) has performed work that contradicts the report of this TC. He was asked if would consider a reportership to update this TC report. Dr. Cullen however declined the invitation due to his other professional commitments. Alternative reporters will be approached.

**6-08 Guidelines for Obtaining Action Spectra.**

TCC: David Sliney (USA). Draft report was discussed during the TC meeting. It was suggested that it be revised so that the main body of the document be designed as a practical guide and the more-theoretical aspects be moved to an appendix. Measurement techniques discussions included the use of light emitting diodes (LED's) or broad-band monochromators to determine action spectrum peaks, and then narrower bands to determine the fine structure.

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

TCC: David Jack Lund (USA). A spreadsheet with data to be used as a basis for the report was reviewed. A first draft was recently created. Efforts continue.

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

TCC: David Sliney (USA). Chair reported that TC met in Fort Lauderdale, FL. He stated that efforts continue, although there is still controversy on the various types and causes of cataract.

**6-23 Develop Generalized Action Spectra for Plant Responses to Wavebands from 280 to 1100 nm.**

TCC: Stephan Flint (USA). Chair has stated that he cannot continue as chair. However, he suggested a replacement (Patrick Neale) who is receptive to taking on this effort.

**6-24 Sunscreen and UVA.**

TCC: Jean-Pierre Cesarini (FR). Final draft is available. Dr. Bernd Herzog gave a detailed presentation on this subject. The TC performed a thorough investigation and intercomparison of testing techniques, and discussed advantages and shortcomings of the test methods. It was hoped that this important effort would soon be concluded with the publication of the TC document, which is a precursor to the 6-28 and 6-31 TC's.

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

TCC: Jean-Pierre Cesarini (FR). TC is awaiting the conclusion of 6-24.

**6-29 UV Protection and Clothing.**

TCC: Peter Gies (Australia). Activity completed, published as CIE Document 172:2006.

**6-31 Immediate Pigment Darkening.**

TCC: Jean-Pierre Cesarini (FR). TC is awaiting the conclusion of 6-24.

**6-32 Action Spectrum for Photocarcinogenesis (Non-melanoma Skin Cancers).**

TCC: P. Donald Forbes (USA). Activity completed, published as CIE Standard S019/E: 2006, "Photocarcinogenesis Action Spectrum (Non-melanoma Skin Cancers)".

**6-37 Light and Retinal Disease.**

TCC: David Sliney (USA). Chair reported that TC met in Fort Lauderdale, FL. Some controversy remains on this TC. Maria Ines de Wilde recently reviewed the document and provided comments on the draft.

**6-39 UV Radiation in Lighted Environments.**

TCC: Kohtaro Kohmoto (Japan). TC met in Ottawa. Chair showed the results of his research on a wide variety of lamps, with illustrative charts displaying the effectiveness of the lamps for hazard and material degradation. This effort continues to move forward.

**6-42 Lighting Aspects for Plant Growth in Controlled Environments.**

TCC: Harald Seidlitz (GER). Due to inactivity, TC was indicated as a candidate to be closed. After some discussion, Mojtaba Navvab (USA) volunteered to move this effort forward.

**6-43 UV Water Disinfection.**

TCC: Alexander Cabaj (Austria). ADD Schulmeister was tasked to follow up on activities of TC at last meeting in Aix-les-Bains. He reported that TCC Cabaj is still active in this TC.

**6-44 Illuminators for Treatment of Infant Hyperbilirubinemia.**

TCC: Myron L. Wolbarsht (USA). No recent updates. Riccardo Pratesi is currently being investigated as the possible new TCC for this effort.

**6-45 Optical Radiation Hazard Measurements in the Work Space.**

TCC: Robert Angelo (GER). Secretary Stephen Wengraitis and David Sliney met with TCC Angelo in August. A draft document is in development.

After a presentation by Harald Siekmann (GER) on CEN/TC169/WG8 Standards for Measurement and Assessment of Optical Radiation Exposures, EN 14 255 series, it was decided to ask TC Chair to consider the CEN report for adoption by CIE.

**6-46 Standard Action Spectrum for UV Disinfection.**

TCC: Petra Rettberg (GER). No recent updates. After this TC was identified as a candidate for closure, David Sliney suggested that providing a TC document template to the chair with some basic information would stimulate action in the TC. Richard Vincent suggested two action spectra that may be used for this TC, used in documents by the IES and the DIN.

**6-47 Photobiological Safety of Lamps and Lamp Systems.**

TCC: Rolf Bergman (USA). Chair reported that TC met recently in Cleveland and in Ottawa and that the current standard is under review. This effort continues to move forward.

**6-49 Infrared Cataract.**

TCC: Myron L. Wolbarsht (USA). No recent updates. Tsutomu Okuno (Japan) was recently identified as a possible new chair for this TC. He stated in correspondence that this may be possible, and potential new members have been investigated.

**6-50 Photodegradation of Pharmaceuticals.**

TCC: Steven Baertschi (USA). Chair has recently provided a rough draft for this TC.

**6-52 Proper Measurement of Passive UV Air Disinfection Sources.**

TCC: Richard Vincent (USA). Chair reported that a draft is available and he thanked to Robert E. Levin and

David Sliney for their help. It was stated that there was a need to expand the TC membership to other countries.

**6-53 Personal Dosimetry for UV Radiation.**

TCC: Gerda Horneck (GER). No recent updates. It was suggested that a CIE TC document template be sent to stimulate activity in this TC. Other potential TC chairs were discussed, although some of these experts are approaching retirement.

**6-54 Standardised Action Spectrum for Vitamin D Synthesis in Human Skin.**

TCC: Michael Holick (USA). Activity completed and published as CIE Document 174:2006. Efforts will likely continue to standardize this spectrum.

**6-55 Light Emitting Diodes.**

TCC: Werner Horak (GER). Chair held a combined meeting in Ottawa with TC 2-45 Chair Kohmoto. The most current draft has been circulated, with discussion including a need for additional measurements to be performed, to confirm some of the theoretical aspects of this TC.

**6-56 Infrared Warming Cabins.**

TCC: Jan Stolwijk (USA). Chair is concerned that there is little interest in this TC from the Health Authorities and Industry-only interests would bias the TC. H. Piazena (GER) was identified as a possible TC chair, if Stolwijk cannot continue.

**6-58 A Recommendation on Lower Limits for UV Exposure.**

TCC: Wim Passchier (NL). Chair held a meeting in the Netherlands. Chair is currently synthesizing information from various sources into a draft.

**6-59 UVC Photocarcinogenesis Risks from Germicidal Lamps.**

TCC: Richard Vincent (USA). TC met in Ottawa. Although some documents have identified UV-C radiation as a “probable” carcinogen, these documents do not consider that the likelihood of someone receiving high-level chronic UV-C exposures, enough to significantly increase cancer risk, is exceedingly low. Chair asked for change of TC Title to the Carcinogenic Risk Arising from Human Exposure to UV-C Energy Emitted from Germicidal lamp Systems.

**6-60 Spectral Weighting of UVR from Solar Surrogate Sources.**

TCC: P. Donald Forbes (USA). First TC meeting occurred in Ottawa. Effort of TC 6-25 on the Spectral Weighting of Solar Ultraviolet Radiation will be used as a template to weight the spectra from several “benchmark” light sources for biological effects.

**Proposals for Dissolution of TCs and Reporterships**

No TCs or Reporterships were proposed for dissolution, but there has been no known action or response from the following TCs:

- 6-20 Phototoxicity in Domestic and Industrial Environments;
- 6-33 Photoimmunological Effects Mediated Through the Skin;
- 6-36 UV Protective Materials Used in Shading;
- 6-48 Typical Minimal Erythema Doses;
- 6-51 Standardized Solar Simulator Spectral Irradiance Distribution for Sunscreen Testing.

The Division secretary will investigate.

**Proposals for New TCs and Reporterships**

The meeting approved the following TC proposal:

TCC: Gilberto da Costa (Brasil). “Measurement of Radiation Using the Phytometric System for Plant Application.” Terms of reference: To prepare a document intended to provide growers, lamp manufacturers,



greenhouse and growth-chamber designers, lighting engineers, architects, and plant scientists and engineers with a concise reference for the use of the phytometric system for measuring radiation for plant photosynthesis and related processes.

The meeting approved the following reportership proposal:

John O'Hagan (UK). "Occupational UV Protection by Disposable Gloves." Terms of reference: To describe a Glove Ultraviolet Protection Factor assessment methodology including consideration of the impact of stretching and moisture. Marina Khazova (UK) would be happy to produce a report, as she has done most of the work, and a paper was published in Radiation Protection Dosimetry in June 2006.

#### **Canadian members and chairs of D6 Technical Committees**

TC 6-11 J.A. Veitch (Chair)

TC 6-49 A.P. Cullen

TC 6-54 F.H. Glorieux

TC 6-55 J.D.Y. Deslauriers

TC6-59 P. Reinhardt

#### **Future D6 Meetings**

2007: The next meeting will be held in conjunction with the CIE 26<sup>th</sup> Quadrennium Meeting in Beijing.



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## **Canadian Division Members' Reports**

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### **CIE Division 8**

### **Image Technology**

# **The CIE Division 8 “Image Technology” and its Activities in 2005/2006**

**Report to the CNC-CIE, 13 October, 2006**

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## **1- Highlights**

The CIE Division 8 Image Technology held its division meeting on November 12 at the Color Imaging Conference (CIC-05) in Scottsdale. Comprehensive minutes of the meeting can be downloaded as [http://www.colour.org/meetings/D8N118\\_Minutes\\_Div\\_Meeting\\_2005-11-12.pdf](http://www.colour.org/meetings/D8N118_Minutes_Div_Meeting_2005-11-12.pdf) ; main elements are:

- New Director, Secretary and Editor need to be selected in 2007. Division members have been pooled for the replacement of Todd Newman as Division 8 director. Candidates were Sabine Susstrunk and Michael Stokes, who received respectively 9 and 6 votes.
- Technical committees TC8-01, TC8-04, TC8-05 and TC8-06 have completed their work and will be closed.
- Technical committees TC8-08 *Comparison of High Dynamic Range Algorithms*, TC8-09 Image Archiving, and TC8-10 Office Lighting for Imaging, will be created.
- Reportership R8-7 (Sabine Susstrunk) will be created to investigate and report on an alternative chromatic adaptation transform for CIECAM02 that does not result in the creation of complex numbers as appearance correlates.
- Reports were received from technical committees TC8-02, TC8-03, TC8-05, TC8-07, TC8-08, as well as from reporterships R8-05, R8-06

There will be no CIE Division 8 meeting this year. Ballots will be held on the creation of a new reportership on correction to CIE 162:2004 "Chromatic Adaptation Under Mixed Illumination Condition When Comparing Softcopy and Hardcopy Images," and on termination of TC8-03.

## **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://www.colour.org/>

A moderated Divisional email list exist and is intended to reach all those who actively participate in Division 8 of the CIE: Division officers, Division members, and TC members. It can be reached by mailing to [ciedivision8-L@vivid.colour.org](mailto:ciedivision8-L@vivid.colour.org).

## **2.1 Division Officers**

Director of Division	Todd Newman
Associate Directors	Dr. Noboru Ohta (reporters)
Secretary of Division	David McDowell
Editor of Division	Dr. Mike Pointer

## **2.2 Official Division Members**

CIE Division 8 has 36 member countries, of which 19 have designated representative. Canadian Member: Réjean Baribeau

## **2.3 Liaisons**

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

CIE Division 1 (Michael Pointer)  
CIE Division 2 (Y. Ohno)  
AIC - Association Internationale de la Couleur  
ISO/TC36: Cinematography  
ISO/TC38/SC1: Textiles: Colour Fastness & Measurement  
ISC/TC42: Photography (Mike Pointer)  
ISO/TC61/SC5/WG1:  
ISO/TC159/SC4/WG2: Ergonomics/Sign & Contr/VDU Requirements  
ISO/TC187: Colour Notations  
ISO/TC6/WG3: Paper Board and Pulp - Optical Properties  
ISO/TC130: Graphic Technology(Danny Rich)  
ISO/IEC/JTAG2:Joint Technical Advisory Group (JTAG) 2 for Imagery(Tim Kohler)  
ICC -- International Colour Consortium (Tim Kohler)  
CCPR - Comité Consultatif de Photométrie et Radiométrie,  
BIPM  
IEC/TC100 Multimedia Equipment and (Danny Rich)  
ASTM/E12 Color and Appearance (Mike Pointer)  
JTC1/SC28 (Klaus Richter)

## **2.4 Publications from Division 8**

None.

## **2.5 Technical Reports**

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 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.

## 2.6 Technical Committees

TC8-02: Colour Difference Evaluation in Images  
TC8-03: Gamut Mapping – to be closed  
TC8-06: Image Technology Vocabulary – closed  
TC8-07: Multispectral Imaging  
TC8-08: Spatial Appearance Models for High dynamic range Images  
TC8-09: Image Archiving  
TC8-10: Office Lighting for Imaging, will be created

## 2.7 Reporterships

R8-01 Reportership on Grading of Color Measurement Equipment (Y. Ohno) – **closed**  
R8-02 Reportership of Fluorescence (C. McCamy) – closed.  
R8-03 Reportership on Potential CIE and IEC/TC100/PT61966 Interactions (H. Ikeda) – **closed**  
R8-04 Reportership on the Effects of Fluorescence in the Characterization of Imaging Media. (D. Rich) – closed  
R8-05 Reportership on Image Appearance (M. Fairchild)  
R8-06 Reportership on Results of CIECAM02 (Nathan Moroney)  
R8-07 Reportership on an alternative chromatic adaptation transform for CIECAM02 (Sabine Susstrunk)

## 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 TC technical report V8 was distributed in July between TC members. It includes the following sections:

1. Introduction
2. Factors affecting the evaluation of colour differences for digital images
3. Reference colour digital images
4. Statistical processing of colour differences in images
5. Instrumental colour difference method
6. Existing experimental data
7. TC8-02 studies and recommendations

Section 7 is a new one which summarizes the TC work. Section 3 was also rewritten to update the recent developments.

### TC8-03: Gamut Mapping

Terms of Reference:

To study, develop and recommend an optimal solution for cross-device and cross-media image reproduction. This solution will provide a standard procedure to calculate the colour gamut of an image, an imaging system, or its components, and either one algorithm, or a set of algorithms and rules for use in specific applications.

Chair: Jan Morovic

Web site: <http://www.colour.org/tc8-03/>

CIE TC8-03 has completed its technical report on the Guidelines for the Evaluation of Gamut Mapping Algorithms in 2004 and has since been encouraging participation in the coordinated research on its basis. While there has been important work done in this way (most importantly the effort coordinated by the JBMIA in Japan) the TC has been encouraging further participation to arrive at a solid data set on gamut mapping algorithm performance. In parallel with this effort, there has been an internal discussion within the TC about its terms of reference and two alternatives are being considered. The first one is to facilitate the coordinated research and to combine the data from individual experiment and the second is to do that and also to make a recommendation of a number of baseline algorithms (i.e. algorithms that would be a reasonable default but that would likely be inferior to proprietary solutions) and instructions about when to use them.

The chair of Div. 8 has requested that the TC be terminated. There has been no substantive progress in the last year. A poll of TC members also favors termination.

#### **TC8-06: Image Technology Vocabulary**

Terms of Reference:

To liaise with TC7-06 (International Lighting Vocabulary) and collate definitions of terms associated with image technology.

Chair: Janos D. Schanda

Web site: <http://www.colour.org/tc8-06/>

Inputs from this committee (terms and definitions on imaging) have become part of the revision of CIE Publication 17, International Lighting Vocabulary

This committee is now closed.

#### **TC8-07: Multispectral Imaging (CIE approval pending)**

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. Patrick Herzog ( [P.Herzog@color-aixperts.de](mailto:P.Herzog@color-aixperts.de) )

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 metamerism 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.

The TC had its first meeting in November 2002. In particular, it has been found that the focus should be on the visible range of the spectrum, while extensions into the near IR and UV should not be excluded. It was also noted that multi-spectral imaging covers multi-spectral image acquisition, multi-spectral image

encoding, multi-spectral images and multi-spectral image reproduction systems such as multi-primaries displays and spectral printers.

The committee has been active discussing file formats for sharing multispectral colour information. JPEG 2000, BIIF (ISO/IEC 12087-5, NITFS), TIFF (various forms), open EXR, MUSP etc. were considered.

Also a new organization has established a web site:

<http://www.multispectral.org>.

#### **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 has undertaken 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 an 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.

#### **TC8-09: Image Archiving (CIE approval pending)**

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

#### **TC8-10 Office lighting for imaging (CIE approval pending)**

Proposed 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: Todd Newman

## **4- Reporterships**

### **R8-05 Reportership on Image Appearance.**

Prof.. M. Fairchild

The terms of reference would be:

To investigate and report on research extending colour appearance models to include properties of spatial vision for static images and scenes with particular focus on

- 1 Spatial filtering of image difference metrics
- 2 Spatial adaptation for image rendering
- 3 Potential interaction between 1 and 2

Dr. Fairchild has reported the following:

There continues to be incremental research in this area both in the open scientific literature and through activities of various CIE technical committees. It remains safe to say that there is no fully-defined image appearance model that has been published to date and that seems to be a logical prerequisite to forming a TC to explore possible CIE recommendations in the area. The iCAM framework that was one motivating factor for the formation of this reportership remains a topic of active research by its original authors and others. It shows promise, but still remains very immature relative to a formal CIE recommendation like CIECAM02. This process of gradual evolution and refinement will likely carry on for many years. Regarding items 1 and 2 in the terms of reference, CIE activities in TCs 1-60, Contrast Sensitivity Function for Detection and Discrimination, and 8-02, Colour Difference Evaluation in Images, 8-08, Testing of Spatial Colour Appearance Models, are providing some advancements in this area. These committees seem to be adequate for at this time. Formation of a new TC specifically on image appearance should wait for further research and the availability of comparable visual data and model structures from multiple research groups.

### **R8-06 Reportership on Results of CIECAM02.**

Nathan Moroney (USA)

Dr. Moroney has reported the following:

1. The technical committee 8-01 should be formally closed. This will be proposed and voted on during this division meeting.
2. Michael Brill has provided a pre-publication manuscript of his analysis of the two RGB spaces, CAT02 and HPE, that are used in CIECAM02. He notes that for a highly chromatic, say saturated blue, illuminant the model breaks due to mis-matches in the domain and range of the two RGB spaces. He proposes a revision to CAT02 to resolve this problem and provides visualizations schemes for assessing models with more than one RGB space.
3. Li et al, Tastl et al and Shaw et al have published results on the computational limits of the CIECAM02 model. Li et al published their analysis in a recent issue of Color Research and Application and through mathematical analysis of the model identify problematic regions in the chromaticity space. Tastl et al and Shaw et al consider the input range of the ICC CIELAB PCS and use a grid of input values to identify problematic regions of the CIELAB space. Both papers were presented at the 13th IS&T/SID Color Imaging Conferences and can be further reviewed in the conference proceedings. Both papers consider solutions to computational limits in CIECAM02 by exploring various forms of pre-clipping of the data. A subset of spaces and pre-clipping techniques has been considered but this has not been exhaustively explored and compared to other approaches, such as minor modifications to the model to allow extrapolation of negative perceptual attribute correlates.
4. The CIECAM02 model has been announced as one component in the newly announced Windows Vista Windows Color System. Michael Bourgoin of Microsoft presented an overview of the WCS at the



13th IS&T/SID Color Imaging Conference and discussed, among other things, how CIECAM02 will be used in this system. <http://www.microsoft.com/whdc/device/display/color/WCS.msp>

5. The open source CIECAM02 implementation of Billy Biggs has been revised by Moroney. Version 0.4 has been released on Bigg's web site for immediate download and testing by Moroney has brought the code into agreement with CIE publication 159. <http://scanline.ca/ciecam02/>

Given the above items of interest the following are specific recommendations of this reporter.

1. That TC8-01 be formally dissolved. With publication of CIE technical report 159 the committee has accomplished its goal of providing a single revision to the CIECAM97s model. The chair of TC8-01 would like to recognize the excellent efforts of all members and congratulate them on a timely completion of their work.

2. That a reportership be established to study item 2 above. While many applications of CIECAM02 will not require prediction of perceptual attribute correlates for highly saturated viewing illuminants, this issue may be a relatively low effort area in which a preliminary exploration of Brill's analysis and proposal will yield specific, short-term recommendations for these cases. At a minimum the range for which this problem occurs should be better explored and documented. This should be a separate reportership than R8-06.

3. That reportership R8-06 continue to provide timely status reports on CIECAM02 to CIE division 8.

#### **R 8-07**

Sabine Susstrunk

Terms of reference:

Investigate and report on alternate chromatic adaptation transforms for CIECAM02 that do not create computational problems in boundary conditions.

### **5- Canadian Participation**

Alastair Reed (Cymbolic Sciences)

TC8-05