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

Canadian National Committee Comité National Canadien

2011 Joint CNC/CIE and CIE/USA Technical Conference & Annual Meetings
October 2 - 4, 2011
Ottawa, Canada

Programme

Sunday, October 2, 2011

Time	Event	Location
16:30 – 17:30	Registration	Lord Elgin Hotel, Private Dining room
17:00 – 19:00	Welcome Reception (cash bar)	Lord Elgin Hotel, Private Dining room

Dinner on your own

Monday, October 3, 2011

Time	Event	Location
08:30 – 9:00	Registration Continental Breakfast	NRC, Building M-36
9:00 – 10:30	Welcome Technical Papers 1-3	Kelvin Room
10:30 – 10:50	Coffee Break	Curie Room
10:50 – 12:30	Technical Papers 4-7	Kelvin Room
12:30 – 13:30	Lunch	Curie Room
13:30 – 14:00	Plenary Discussion	Kelvin Room
14:00 – 16:30	NRC Lab tours	NRC-INMS, M-36 NRC-IRC, M-24

Dinner on your own

Tuesday, October 4, 2011

Time	Event	Location
08:30 – 9:00	Continental Breakfast	NRC, Building M-36
9:00 – 10:30	Division Reports — Plenary	Kelvin Room
10:30 – 11:00	Coffee Break	Curie Room
11:00 – 12:30	Division Reports — Plenary	Kelvin Room
12:30 – 13:30	Lunch	Curie Room
13:30 – 16:30 *15:00*	CNC/CIE Business Meeting CIE/USA Business Meeting *coffee available*	Maxwell Room Kelvin Room *Curie Room*

For special requests, contact the Chair of the Organizing Committee, Dr. Jennifer Veitch, at jennifer.veitch@nrc-cnrc.gc.ca or 613-993-9671.

Abstracts

Paper #1
The CIE Colorimetry Standards

Alan R. Robertson
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The CIE series of six Standards covering the basics of colorimetry is now almost complete. This talk will describe the rationale for writing the Standards, summarize the contents and discuss some of the trials and tribulations involved in writing them.

Paper #2
Consideration of Meta-Standards for Color Rendering Metrics

Lorne A. Whitehead
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There is compelling, largely agreed-upon evidence that the CIE Color Rendering Index (CRI) is not a sufficiently accurate measure of the fidelity of color rendering. This has become particularly evident with the consideration of white light sources employing several narrow band light emitters. Although there are numerous suggestions for improving the CRI, the CIE has had difficulty reaching agreement on this matter. In this presentation an approach is suggested for reducing the difficulty, which is first to agree upon meta-standards for evaluation of proposed replacement metrics. Most experts already agree with the most basic requirement, which is the need to avoid ranking error. That is, if one light source is perceived, by most people, to render colors more accurately than another light source does (when both are compared to the color rendering of a defined ideal source), then the metric should not reverse that ranking. However this meta-standard, when taken alone, is not very discriminating because of the diversity and variability of human perception. As a result, secondary supplemental meta-standards are needed to make a selection decision. To be helpful, they should ensure that any new metric will be sensible, practical and will not cause undesirable unintended consequences in the future optimization of light source spectra. There already are proposed metrics for color rendering that satisfy all of these meta-standards to some degree. Therefore, it is hoped that if such meta-standards can be agreed upon, it will be possible to make quicker progress toward a significantly approved, widely accepted, replacement metric for the CRI.

Paper #3
Goniocolorimetry of diffusely reflecting and regularly reflecting surfaces.

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A new gonioreflectometer has been developed at the National Research Council of Canada to measure the angular variation of colours from reflecting surfaces. It incorporates a five-axis robot manipulator that holds the sample, a rotation stage that holds an extended uniform light source of precisely known emitting area, and an array spectroradiometer that measures the

reflected radiance from the sample, which is compared to the radiance of the source itself to allow the calculation of the Bidirectional Reflectance Distribution Function (BRDF) from first principles. The BRDF is then used to predict the colour appearance for Standard illuminants such as daylight D65 . The system can be used for either diffuse or shiny samples, and in the later case the regular reflectance of the material is obtained. The system has the advantage of being very fast compared to other techniques thanks to the inherent diode array parallel processing. Examples of use will be given for two cases of iridescent samples: diffuse surfaces that incorporate interference pigments and shiny Atomic Layer Deposited thin films.

Paper #4
Cross-referencing Calibration Standards in a Photometric Laboratory

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Photometric laboratories normally have illuminance meters, luminance meters, irradiance standard lamps, candlepower and lumen standard lamps. These devices all require scheduled calibration. Cross-referencing these standards in the photometric laboratory would help screen out poor calibration devices and increase the reliability of commercial photometric reports. Illuminance meters are reliable and easily maintained to 3% expanded uncertainty. This paper would describe how an illuminance meter could be used as the centre device for cross-referencing other standards.

Paper #5
EPA Energy Star Certification for Lighting Products

Rolf S. Bergman
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Over the last year or so the US Environmental Protection Agency (EPA) has revised the Energy Star requirements for lighting products. A major change from previous DOE Energy Star rules is the requirement that Certifying Bodies (CBs) be the major interfaced between the manufacturer and EPA. In addition the Accrediting Body (AB) which previously was limited to the National Voluntary Laboratory Accrediting Program (NVLAP) has now been opened up by EPA to allow other ABs to accredited laboratories for making measurements on lighting products.

I will present lighting Energy Star requirements for EPA, manufacturers, laboratories, ABs and CBs from the perspective of a NVLAP assessor of lighting laboratories. The current requirements cover most lighting products, fluorescent, HID, halogen and particularly SSL products, including luminaires. I believe this to be of interest to the CIE NCs as some CIE documents are listed as part of the requirements for test methods that the laboratories must know and the AB must assess.

Paper #6
Advanced Lighting Technologies: LED Street Lighting in Rouyn-Noranda

André Laperrière
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In the field of lighting technologies, LED technology is beginning to offer energy saving opportunities in some applications. But as with any new technology, we need to know how it works, its physical underpinnings and its limitations, among other things. The US Department of Energy and other bodies have started to promote use of the technology for street lighting. Some studies, however, have shown that caution should be used and that the energy savings are not as impressive as claimed in all cases.

Concurrent with a pilot project in the city of Rouyn-Noranda, a laboratory test campaign was conducted including measurements of photometric, colorimetric and electrical factors, including mesopic correction and nighttime vision, for both LED and conventional high pressure sodium (HPS) technologies. The City of Rouyn-Noranda conducted a survey regarding the pilot project. The analysis showed that it is possible to reduce electricity consumption from 130 watts (100 watt HPS lamp) to 55 watts with LED technology. However, illuminance levels diminish in comparison with previous levels. Nonetheless, luminosity levels in local streets were satisfactory. As for collector roads, i.e., roads that "collect" traffic flowing from local streets, illuminance levels were low. The laboratory tests, including numerical simulations, confirmed the performance observed in the field.

Thus LED technology provides adequate performance in some applications. With this rapidly evolving technology, new applications will become feasible. Caution is in order, requiring that findings be formulated with great care. This presentation will outline the issues that need to be taken into account in order to make informed decisions regarding the new technologies for street lighting.

Paper #7
The real lit environment: Measurements from NRC's POE of Green Buildings project

Benjamin J. Birt, Guy R. Newsham, Jennifer A. Veitch and Chantal D. Arsenault
NRC Institute for Research in Construction
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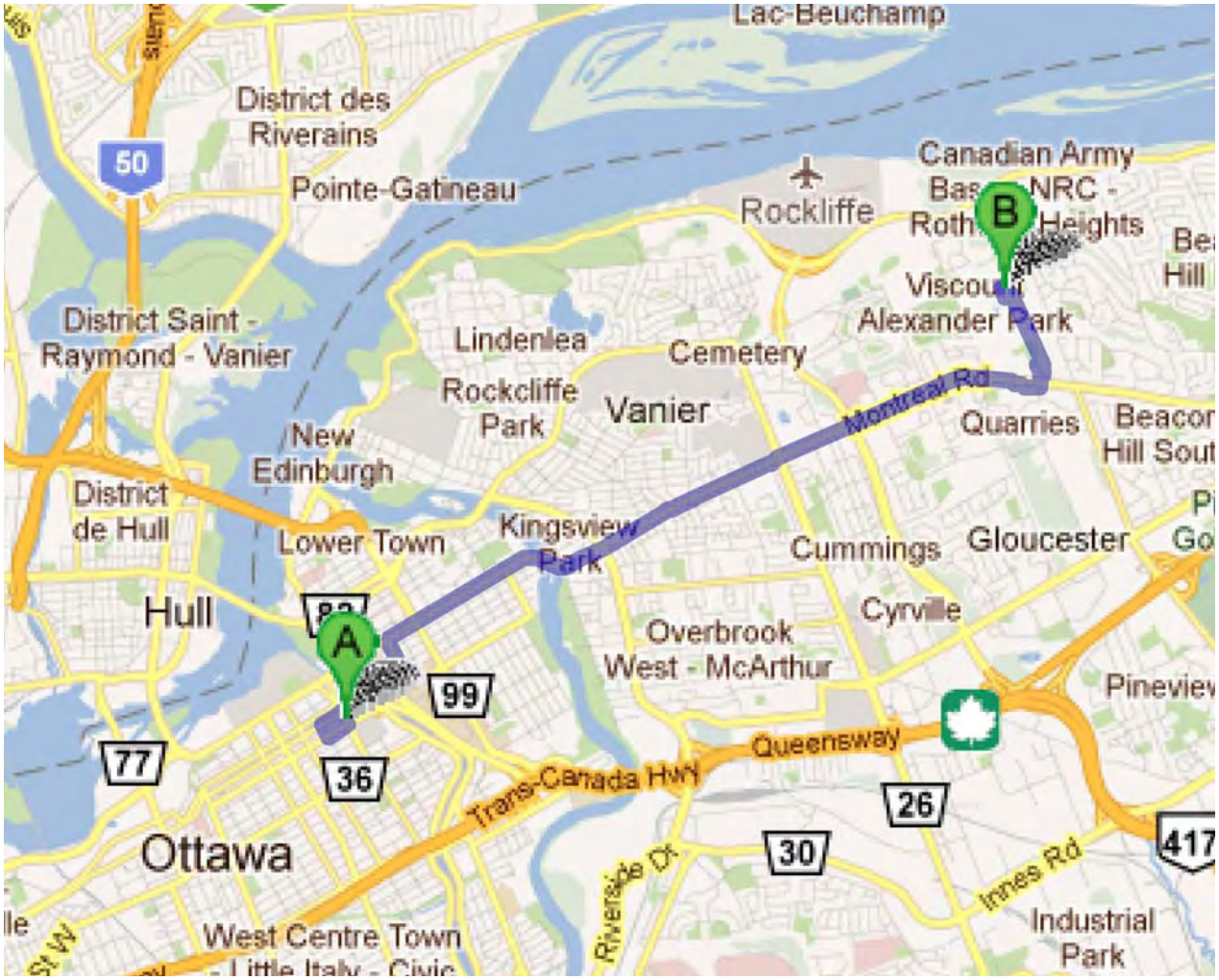
As part of a larger project on the post occupancy evaluation of buildings, we measured a range of parameters associated with the lit environment across 19 buildings. At 70 work stations, the reflectance of work station surfaces were measured, and lighting levels (and other parameters) logged over several days. General work station characteristics were also noted (e.g. luminaire and lamp type). At nearly 700 work stations, a "snapshot" measure was made of the desktop illuminance, illuminance on the sides of a cube at head position and HDR images taken of the occupant's field of view. The work station characteristics (window location, orientation, shading, etc.) were also noted. Accompanying the physical measures was an online survey about environmental satisfaction and other issues that was completed by nearly 1600 building occupants. We report the results of these measurements and discuss their implications to related lighting fields (modeling, design, systems control etc.).

Directions

The Lord Elgin Hotel is at 100 Elgin St (A on map below). The Welcome Reception (including the registration desk) will be in the Private Dining room.

The Technical Day and meetings will be at the National Research Council of Canada Montreal Road Campus, building M-36 (B on map below). This is approximately 9 km (~ 6 mi) east of the hotel, about a $15 taxi ride. Parking is available adjacent to the building. The nearest major intersection is the corner of Montreal Road and Blair Road, and the street address for the entire campus is 1200 Montreal Road.

Local arrangements at building M-36 are in care of Dr. Joanne Zwinkels, 613-993-9363.



2011 Joint CNC/CIE and CIE/USA Technical Conference & Annual Meetings
October 2-4, 2011
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Registration Form				**No._____** (Office use only)
Name:				
Company:				
Address:				
	City	Province/State	Postal/Zip Code	Country
Tel:	Fax:	Email:		
Name of Accompanying Person:				

***Please complete this registration form and send it to:**

Dr. K. Frank Lin, Treasurer, CNC/CIE
Lighting Sciences Canada Ltd., 160 Frobisher Dr., Unit #5, Waterloo, Ontario, Canada N2V 2B1
Tel: (519) 746-3140 Fax: (519) 746-3156 Email: kflsc@lightingsciences.ca

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Full Conference Registration Fee: $100.00 (US/Cdn) ($50 students&retirees†) Amount $_____

Includes: Sunday, October 2 evening reception
Monday, October 3 continental breakfast, morning coffee, lunch & afternoon coffee
Tuesday, October 4 continental breakfast, morning coffee, & lunch

Technical Day Only Registration Fee: $70.00 (US/Cdn) ($30 students&retirees†) Amount $_____

Monday, October 3 continental breakfast, morning coffee, lunch & afternoon coffee

† registered full-time post-secondary students with student card; retiree eligibility as determined by CNC/CIE executive

Accompanying Person Registration Fee: $25.00 (US/Cdn) Amount $_____

Includes: Sunday, October 2 evening reception

TOTAL AMOUNT: [ ] **Cash** [ ] **Check** **$_____**

***Please pay at the conference: Check or Cash only (we have no credit card service)**

***Please make checks payable to: "Canadian National Committee of CIE"**

***** Make **hotel reservations** directly with the hotel (rate is $154.00 per night):
(room block held for the 'Canadian National Committee of CIE (CNC/CIE)' until ***September 2***)

Lord Elgin Hotel, 100 Elgin St, Ottawa, Ontario, Canada K1P 5K8
Tel: 1-800-267-4298, Email: reservations@lordelgin.ca

Payment Receipt from "Canadian National Committee of CIE" **No._____**

Received from: _____ **Dated**: October 2/3/4, 2011

Amount: **$**_____ paid by: [ ] cash [ ] check

Signature: _____ **Thank You!**

K. Frank Lin, Treasurer, CNC/CIE