



CIE/USA Division Reports

Alan L. Lewis, O.D., Ph.D.

CIE/USA President



CIE Division 1 Report

Ellen Carter, CIE/USA Member & Associate Division
Director (Color)

Paula Alessi, CIE/USA Alternate

Annual Meeting

- The Division 1 Annual Meeting was held 5-6 July, 2013 in Leeds, UK
- Thirteen nations were represented
- Ellen Carter (US) acted as a proxy for Canada
- The United States was represented by E. Carter

Twelve Technical Committees met

- TC1-55 Uniform colour space for industrial colour difference evaluation
- TC1-61 Categorical colour identification
- TC1-77 Improvement of the CIE whiteness and tint equations
- TC1-81 Validity of formulae for predicting small colour differences
- TC1-82 The calculation of colour matching functions as a function of age and field size
- TC1-83 Visual aspects of time-modulated lighting systems

Technical Committees meeting in Leeds (cont.)

- TC1-84 Definition of visual field for conspicuity
- TC1-85 Update CIE Publication 15:2004 Colorimetry
- TC1-89 Enhancement of images for colour defective observers
- TC1-90 Colour fidelity index
- TC1-91 New methods for evaluating the colour quality of white-light sources
- TC1-92 Skin colour database

Technical Committees and Reporterships Closed

- TC1-57 Standards in Colorimetry
- TC1-74 Methods for Re-defining CIE D Illuminants
- R1-40 Scene Dynamic Range
- R1-50 3D Aspects of Visual Appearance Measurement
- R1-56 Skin Colour Database
- R1-57 Border between Luminous and Blackish Colours
- R1-59 Calculation of Self-luminous Neutral Scale

Reports for R1-56, R1-57, and R1-59 are available on the Division website.

New Technical Committees

- TC1-93 (V) Calculation of Self-luminous Neutral Scale
(Chair: Robert Carter US)

Terms of Reference: To recommend a formula or computational method for an achromatic, neutral or gray scale for self-luminous (i.e. non-reflective) surfaces. (This computation complements CIE Lightness, L^* , which serves a similar purpose for reflective surfaces.)

- TC1-94 (V) Visually Meaningful Spectral Luminous Efficiency Functions (Chair: Janos Schanda HU)

Terms of Reference: To propose new 2 degree and 10 degree photometric observers based on the work described in CIE Publications 086-1990 and 165:2005, as well as that of CIE TC1-36 Fundamental chromaticity diagram, and study their use in practical photometry.

New Reportership

- R1-60 (C) Future Colour-Difference Evaluation (Reporter: Guihua Cui CN)

Terms of Reference: To report on publications that relate to colour-difference evaluation and uniform colour spaces

Other highlights

- TC1-36 Fundamental Chromaticity Diagram with Physiologically Significant Axes
 - TC Ballot for Part 2 of the Technical Report closed April 29th.
- TC1-69 Colour Rendering of White Light Sources
 - The final report is in preparation
 - It will issue no recommendations
 - The work is continuing under TC1-90 Colour Fidelity Index and TC1-91 New Methods for Evaluating the Colour Quality of White-Light Sources, which were started last year.

Other updates since the 2013 Meeting

- The Activity Report was published February 10, 2014 and is available on the Division 1 website.
- Next meeting: the National Institute of Standards and Technology, Gaithersburg, Maryland, 16-17 June, 2014 as part of Color, Light, and Appearance Week at NIST (registration closes June 2nd)
- **Nominations for Division 1 Director are requested**

Color, Light, and Appearance Week at NIST

- The week features the CIE Division 1 Meeting on Monday and Tuesday June 16th and 17th
- Followed by a Bridge Symposium sponsored by the ISCC on Wednesday June 18th
- Concluded by the ASTM E12 on Color and Appearance Thursday and Friday June 19th-20th.
- More information is available at <http://www.iscc.org/meetings/ST2014/>

Division 1 Meeting 2014

The following TCs have planned meetings on Monday June 16th (followed by the Division 1 Main meeting on Tuesday June 17th) :

TC1-63	Validity of the Range of CIEDE2000
TC1-71	Tristimulus Integration
TC1-73	Real Color Gamut
TC1-75	A Comprehensive Model of Colour Appearance
TC1-81	Validity of Formulae for Predicting Small Colour Differences
TC1-82	Calculation of Colour Matching Functions as a Function of Age and Field Size
TC1-85	Update CIE Publication 15:2004 Colorimetry
TC1-89	Enhancement of Images for Colour Defective Observers
TC1-90	Colour Fidelity Index
TC1-91	New Meth for Eval the Colour Quality of White-Light Sources
TC1-92	Skin colour database
TC1-93	Calculation of self-luminous neutral scale

The Symposium on Wednesday bridges the interests of CIE Division 1 and ASTM E12 with topics of interest to both groups.

The program is shown in the next two slides.

- **Evaluating Spectrophotometric Uncertainty.** Hugh S. Fairman, Resource III, Inc., Tatamy, PA USA; Jack A. Ladson, Color Science Consultancy, Yardley, PA, USA
- **Toward a Unified Method for Computing Tristimulus Values.** Changjun Li, Liaoning University of Science and Technology, Anshan, China
- **Age- and Field-Size-Parameterized Calculations of Physiologically Significant XYZ Colour-Matching Functions.** Jan Henrik Wold, Ivar Farup, Gjøvik U. College, Norway
- **Virtual Reality as a Surrogate Sensory Environment for Evaluation of Human Luminous Environment.** Mojtaba Navvab, U. Michigan Ann Arbor MI, USA
- **Review on One Aspect of Colour Quality: Visual Appreciation.** Sophie Jost, Université de Lyon, Ecole Nationale des Travaux Publics de l'Etat, Laboratoire Génie Civil et Bâtiment, Vaulx-en-Velin, Lyon, France
- **Slope of the Self-Luminous Gray Scale: Independent Converging Evidence.** Robert C. Carter, Pennsville, NJ, USA
- **How to Control Color Appearance Within the Interior Automotive Supply Chain.** Walter Franz, Datacolor AG, Switzerland

- **Specification of Gonioapparent Color and Appearance.** Larry Steenhoek, Jeff Alspach, Allan Rodrigues (retired), Axalta Coating Systems, Wilmington, DE, USA
- **xDReflect, a European Joint Research Project devoted to the metrology of the appearance of surfaces.** Gaël Obien, Laboratoire Commun de Métrologie LNE-CNAM, La Plaine St Denis, France
- **Chromaticity of White.** Kevin A.G Smet., Geert Deconinck , Peter Hanselaer, University of Leuven, Ghent, Belgium
- **Assessing Color Rendering Without Test Samples.** Lorne Whitehead University of British Columbia Vancouver, British Columbia, Canada
- **Color Rendering and Museum Lighting: Field Study Based on Refurbishing the Lighting of the Sistine Chapel.** Janos Schanda, Péter Csuti, Ferenc Szabó, University of Pannonia, Veszprém, Hungary
- **Toward a Unified Nomenclature in Fluorescence Spectrophotometry.** James E. Leland, Copia LLC Goshen, NH, USA
- **Evaluation of Targets for Color Calibrating Digital Color Images from Optical Bright-Field Transmission Microscope.** Hong Wei, Michael Brill, and Tae Park, Datacolor, Inc. Lawrenceville, NJ USA



CIE Division 2 Report

Yoshi Ohno, Ph.D.
CIE President-elect



CIE Division 3 Report Interior Environment & Lighting Design

Jennifer Veitch, Ph.D. (Canada)

Terry McGowan, PE (USA), Division Member

New Publication!

CIE 205.2013, *Review of lighting quality measures for interior lighting with LED lighting systems.*

• This report provides information on the suitability of existing lighting quality measures (developed mostly for diffuse sources) when applied to (commercial) interior LED lighting systems (in which the source often consists of small bright points):

- gaps and weaknesses in existing quality measures,
- recommends new quality measures
- suggestions for required research.

Authors include Naomi Miller (USA) and Erhan Dikel (Canada). TCC was Martine Knoop (Germany).

New Joint TC!

JTC4 (D3/D6): Visual, Health, and Environmental Benefits of Windows in Buildings during Daylight Hours

- TCCs: M. Knoop (D3, Germany) & F. Bisegna (D6, Italy)
- Literature review & consensus on benefits
- Recommendations for metrics to predict benefits

Technical Committees & Reporterships

TC	Title	Chairman
• 3-34	Protocols for describing lighting	J. Veitch
• 3-39	Discomfort glare from daylight in buildings	W. Osterhaus
• 3-44	Lighting for the elderly	Y. Akashi
• 3-45	Luminance-based design approach	Y. Nakamura
• 3-46	Research roadmap for healthful interior lighting applications	J. Veitch
• 3-47	Climate-based daylight modelling	J. Mardaljevic
• 3-48	CIE standard method of UF table calculation for indoor luminaires	P. Thorns
• 3-49	Decision scheme for lighting controls for tertiary lighting in buildings	P. Dehoff
• 3-50	Lighting quality measures for interior lighting with LED lighting systems	M. Knoop
• 3-51	CIE standard general sky guide	S. Darula
• 3-52	Energy performance of buildings – Energy requirements for lighting	D. Schornick
• 3-53	Revision of CIE S 008 Joint ISO*CIE Standard: Lighting of Work Places – • Part 1:Indoor	Y. Koga
• 3-54	Revision of CIE 16-1970: Daylight	A. Pellegrino
• 3-55	Metrics for sunlighting and daylight passing through sunshading devices	M. Fontoynt
R	Title	Chairman
• 3-29	Variable Transmission Glazing (VTG): Current Trends and Future Prospects for • Uptake by the Building Sector	J. Mardaljevic
• 3-30	Daylight Systems Metrics - Evaluation of Daylight Systems and Products	M. Fontoynt

Activity Highlights

- TC 3-34, “Protocols for Describing Lighting” is close to completion – major inputs came from N. Miller, T. McGowan
- TC 3-46, “Research Roadmap for Healthful Interior Lighting Applications” is moving again (albeit slowly)
- TC 3-53 will revise S008 / ISO 8995, Lighting for Indoor Work Places.
 - GLA sent a member, Mike Jouaneh (USA, Lutron)

Hot Topics

- Discomfort glare from small sources
 - TC proposal under discussion now
- Available daylighting metrics (likely a reportship)
- Possible expert workshop on research methods
- International Year of Light 2015!

New Ways of Working

- LinkedIn discussion group: invitation-only, moderated
 - but we welcome new expert “friends of D3”
- Even-year meetings will be Webex
 - Reduce cost of participation
 - Increase time for reflection and discussion
 - Reduce carbon footprint
- Goals and regular progress reviews



CIE Division 4 Report

Technical Committees

[TC 4-51: Optimization of Road Lighting](#)

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

[TC 4-49: Guide to the Properties and Uses of Retroreflectors at Night](#)

[TC 4-47: Application of LEDs in Transport Signalling and Lighting](#)

[TC 4-46: 300 mm Roundel Signals](#)

[TC 4-45: Performance Assessment Method for Vehicle Headlamps](#)

[TC 4-40: Requirements for Retroreflective Traffic Signs](#)

[TC 4-36: Visibility Design for Roadway Lighting](#)

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

[TC 4-32: Surface Colours for Traffic Signs](#)

[TC 4-21: Interference by Light with Astronomical Observations](#)

[TC 4-15: Road Lighting Calculations](#)



CIE Division 5 Report

Ronald Gibbons, Ph.D. is the new Division Director

Last meeting was in Blacksburg, VA in Sept. 2012

- [TC 5-28: Guide on the Limitation of the Effects of Obtrusive Light](#)
- [TC 5-27: Artificial Lighting and its Impact on the Natural Environment](#)
- [TC 5-26: Guide for the Lighting of Sport Events for Colour Television and Film Systems](#)
- [TC 5-24: Guide for Architectural and Decorative Lighting](#)
- [TC 5-23: Guidelines for the Use of Different Illuminance Parameters in Outdoor Applications](#)
- [TC 5-22: Beam Patterns for Exterior Floodlighting Luminaires](#)
- [TC 5-21: A Guide to Urban Lighting Masterplanning](#)
- [TC 5-20: Guide for Sports Lighting](#)
- [TC 5-18: Practical Design Guidelines for the Lighting of Exterior Work Areas](#)



CIE Division 6 Report

- TC 6-66: Maintaining summer levels of 25OH vitamin D during winter by minimal exposure to artificial UV sources; requirements and weighing the (dis)advantages
- TC 6-64: Optical Safety of Infrared Eye Trackers Applied for Extended-Duration
- TC 6-63: Photobiological Strategies for Adjusting Circadian Phases to Minimize the Impact of Shift Work and Jet Lag
- TC 6-62: Action Spectra and Dosimetric Quantities for Circadian and Related Neurobiological Effects
- TC 6-61: Measurement of Radiation Using the Phytometric System for Plant Application
- TC 6-52: Proper Measurement of Passive UV Air Disinfection Sources
- TC 6-49: Infrared Cataract
- TC 6-45: Optical Radiation Hazard Measurements in the Workspace
- TC 6-42: Lighting Aspects for Plant Growth in Controlled Environments
- TC 6-37: Light and Retinal Disease
- TC 6-28: Standardization of Sunscreen Testing: Method for UV-A Sunscreen Testing
- TC 6-21: Low Level UV Cataract
- TC 6-08: Guidelines for Obtaining Action Spectra Definitions



CIE Division 8 Report

Po-Chieh Hung, Ph.D.
Division Director

- [TC 8-13: Colour Gamuts for Output Media](#)
- [TC 8-12: Image and Video Compression Assessment](#)
- [TC 8-11: CIECAM02 Mathematics](#)
- [TC 8-10: Office Lighting for Imaging](#)
- [TC 8-09: Archival Colour Imaging](#)
- [TC 8-07: Multispectral Imaging](#)

Late Breaking News

- CIE has been admitted as a Scientific Associate of the International Council of Scientific Unions (ICSU).
- The US National Academy of Sciences sponsors several other National Committees of organizations which are members of ICSU.
- CIE/USA will approach NAS to discuss potential dues support.