

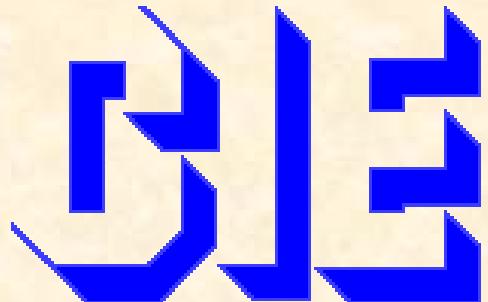
# CIE Division 1: Vision and Colour



TEKNILLINEN KORKEAKOULU  
Elekroniikan laitos  
Valaistusyksikkö

Marjukka Puolakka  
19.8.2009

# CIE Div1



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

DIVISION 1: VISION AND COLOUR

## Terms of Reference:

To study **visual responses** to light and to establish standards of response functions, models and procedures of specification relevant to **photometry, colorimetry, colour rendering, visual performance and visual assessment of light and lighting**.

# CIE Div1



COMMISSION INTERNATIONALE DE L'ECLAIRAGE  
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DIVISION 1: VISION AND COLOUR

## OFFICERS

Division Director

[Prof. Ronnier Luo](#)

Associate Director - Vision

Dr Miyoshi Ayama

Associate Director - Colour

Dr Ellen Carter

Division Secretary

[Dr Mike Pointer](#)

Division Editor

John Setchell

# CIE Div1: Tekniset komiteat

## TECHNICAL COMMITTEES

TC1-27	Colour appearance for reflection/VDU comparison	<a href="#">Paula Alessi</a>
TC1-36	Fundamental chromaticity diagram	<a href="#">Francoise Vienot</a>
TC1-37	Supplementary system of photometry	<a href="#">Ken Sagawa</a>
TC1-41	Extension of $V(\lambda)$ beyond 830nm	<a href="#">Pieter L. Walraven</a>
TC1-42	Colour appearance in peripheral vision	<a href="#">Miyoshi Ayama</a>
<a href="#">TC1-44</a>	Practical daylight sources for colorimetry	<a href="#">Robert Hirschler</a>
TC1-54	Age-related change of visual response	<a href="#">Ken Sagawa</a>
TC1-55	Uniform colour space for industrial colour difference evaluation	<a href="#">Manuel Melgosa</a>
TC1-56	Improved color matching functions	<a href="#">Michael Brill</a>
TC1-57	Standards in colorimetry	<a href="#">Alan Robertson</a>
<a href="#">TC1-58</a>	Visual performance in the mesopic range	<a href="#">Liisa Halonen</a>
<a href="#">TC1-60</a>	Contrast sensitivity function	<a href="#">Eugene Martinez-Uriegas</a>
TC1-61	Categorical colour identification	<a href="#">Taiichiro Ishida</a>
TC1-63	Validity of the range of CIEDE2000	<a href="#">Klaus Richter</a>
<a href="#">TC1-64</a>	Terminology for vision, colour, and appearance	<a href="#">Sharon McFadden</a>
TC1-66	Indoor daylight illuminant	<a href="#">Janos D. Schanda</a>
<a href="#">TC1-67</a>	The effect of dynamic and stereo visual images on human health	<a href="#">Hiroyasu Ujike</a>
TC1-68	Effect of stimulus size on colour appearance	<a href="#">Peter Bodrogi</a>
<a href="#">TC1-69</a>	Colour rendition by white light sources	<a href="#">Wendy Davis</a>
TC1-70	Metameric sample for indoor daylight evaluation	<a href="#">Balázs Kranicz</a>
TC1-71	Tristimulus integration	<a href="#">Changjun Li</a>
TC1-72	Measurement of appearance network: MApNet	<a href="#">Michael Pointer</a>
TC1-73	Real colour gamuts	<a href="#">Changjun Li</a>

# CIE Div1: Tekniset komiteat

Uudet, Budapestin kokouksessa 6-2009 perustetut:

*TC1- 75 A comprehensive model of colour appearance*

Chair: Ronnier Luo, GB

*TC1-76 Unique hue data*

Chair: Sophie Wuerger, GB

*TC1-77 Improvement of the CIE whiteness and tint equations*

Chair: Robert Hirschler, HU

*TC1-78 Evaluation of visual performance in the real lit environment*

Chair: Monica Billger, SE

*TC1-79 Limits of normal colour vision*

Chair: John Barbur, UK

# CIE Div1: Raportoinnit

## REPORTERS

R1-19	Specification on individual variation in heterochromatic matching	<a href="#">Hirohisa Yaguchi</a>
R1-32	Emotional aspects of colour and light	<a href="#">Gunilla Derefeldt</a>
R1-36	Action spectra for glare	<a href="#">J. Fekete</a>
R1-37	Definition of the visual field for conspicuity	<a href="#">N. Itoh</a>
R1-38	Concept and application of equivalent luminance	Yasuhisa Nakano
R1-39	Alternative Forms of the CIEDE2000 Colour Difference Equation	<a href="#">Michael R. Pointer</a>
R1-40	Scene dynamic range	Jack Holm
R1-42	Extensions of CIECAM02	Changjun Li
R1-43	Standard deviate observer	Boris Oicherman
R1-44	Limits of normal colour vision	<a href="#">Sharon McFadden</a>
R1-46	Evaluation of whiteness	Joanne Zwinkels
R1-47	Hue angles of elementary colours	Thorstein Seim

# CIE Div1: Julkaisut 2001-

## PUBLICATIONS

177	Colour rendering of white LED light sources	2007
175	A framework for the measurement of visual appearance	2006
170-1	Fundamental chromaticity diagram with physiological axes - Part 1	2006
167	Recommended practice for tabulating spectral data for use in colour computations	2005
166	Cognitive colour	2005
165	CIE 10 degree photopic photometric observer	2005
S 013	Standard method of assessing the spectral quality of daylight simulators for visual appraisal and measurement of colour	2004
15.3	Colorimetry, 3rd ed.	2004
160	A review of chromatic adaptation transforms	2004
145	The correlation of models for vision and visual performance	2002
146	CIE equations for disability glare	2002
141	Testing of supplementary systems of photometry	2001
142	Improvement to industrial colour difference evaluation	2001

# CIE Div1: Julkaisut

## Viimeisimmät julkaisut:

TC1-66: Janos Schanda

TC1-57: Alan Robertson

TC1-57: Alan Robertson

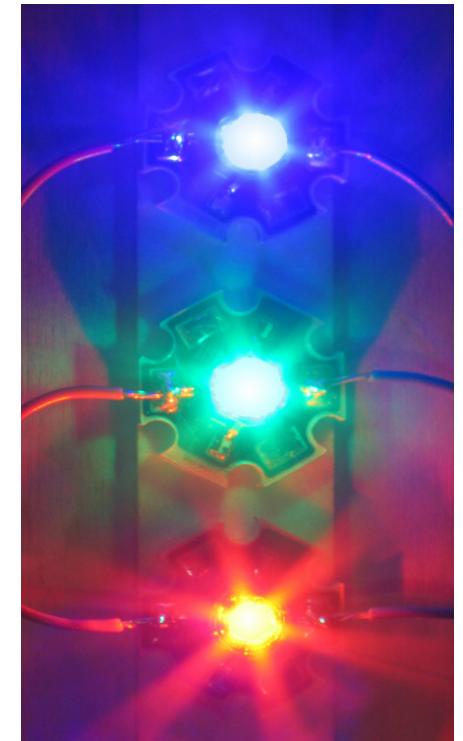
CIE 184:2009, Indoor Daylight Illuminants

Joint ISO/CIE Standard ISO 11664-4: 2008(E)/CIE S  
014-4/E:2007, Colorimetry – Part 4: CIE 1976  
 $L^*a^*b^*$  Colour Space

Standard CIE S 014-5/E:2009, Colorimetry - Part 5:  
CIE 1976  $L^*u^*v^*$  Colour Space and  $u'$ ,  $v'$  Uniform  
Chromaticity Scale Diagram

## Tulossa kirja:

Solid-state lighting & LEDs, 2010



# CIE Div1: LEDit ja värintoisto

**TC1-62: Peter Bodrogi, HU** (Työ päättynyt)

**Raportti: CIE 177:2007 Colour rendering of white LED light sources**

The Committee recommends the development of a new colour rendering index (or a set of indices) by a Div1 TC. The new supplementary colour rendering index/indices should be applicable to all types of light sources and not only to white LED light sources.

**TC1-69: Wendy Davis, US** (Käynnissä)

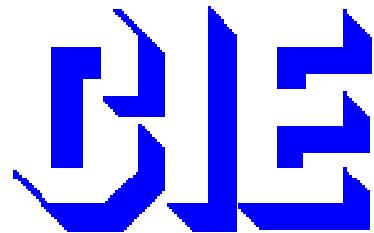
**Colour rendering of white light sources**

This TC met in Budapest as part of the Mid-Term meeting. The past year has been dedicated to conducting experiments related to the development, testing and validation of a new colour rendition metric.

The TC is asking for contributions of code and data by the end of 2009 to decide on a new metric by mid February 2010.



# CIE Div1: Mesooppinen mitoitus

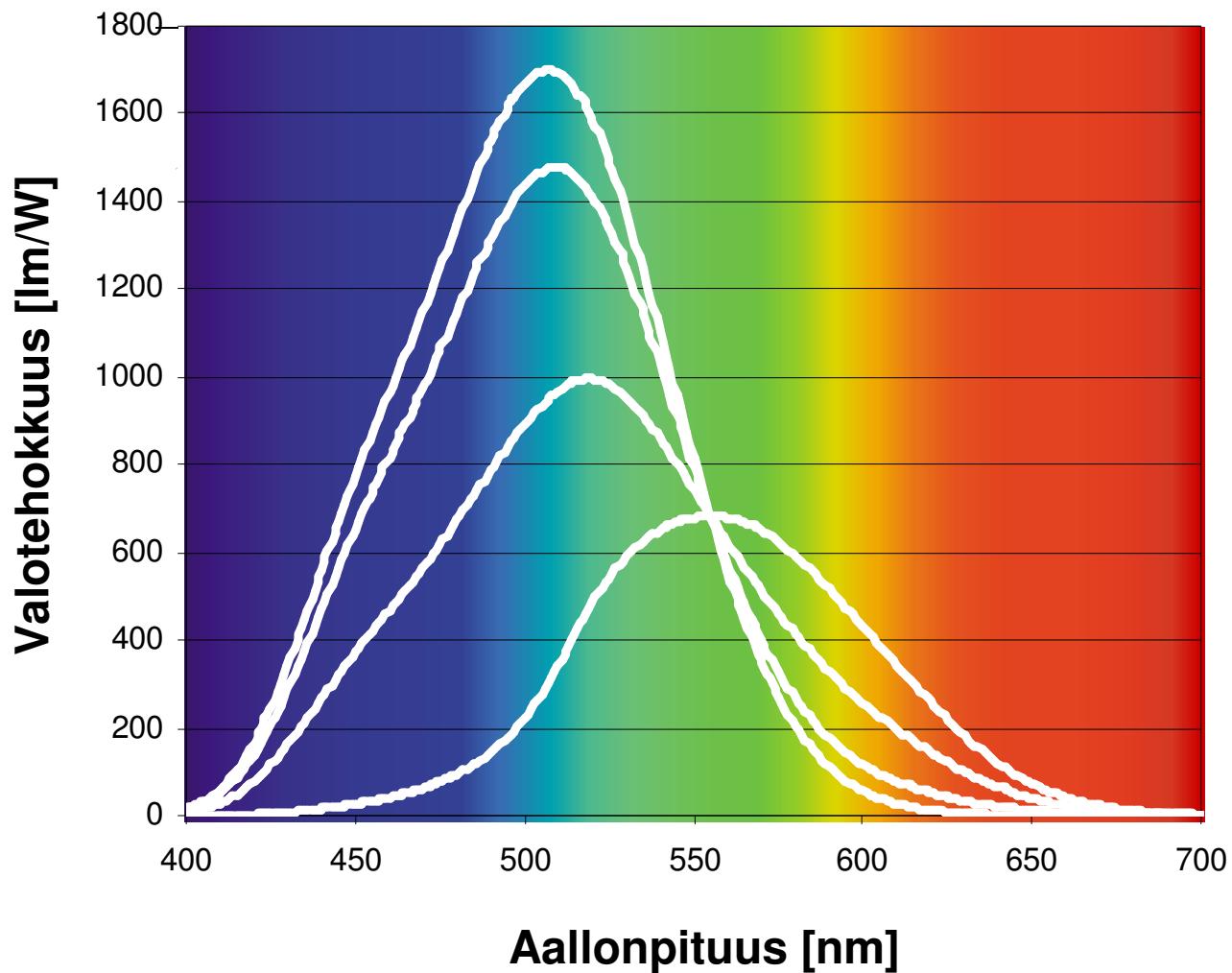


TC 1-58  
Visual Performance in the Mesopic Range  
2004 - 2009

Suositus mesooppisesta mallista, jota tullaan kansainvälisesti käyttämään mesooppisen fotometrian perustana

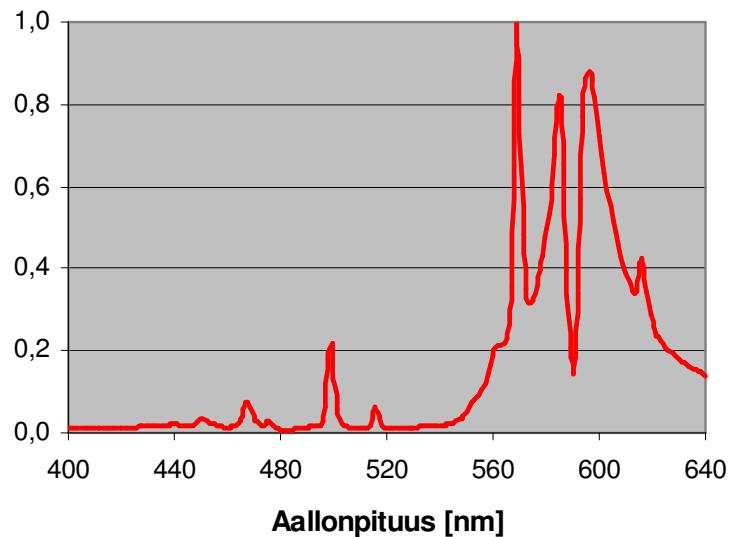


# CIE TC1-58

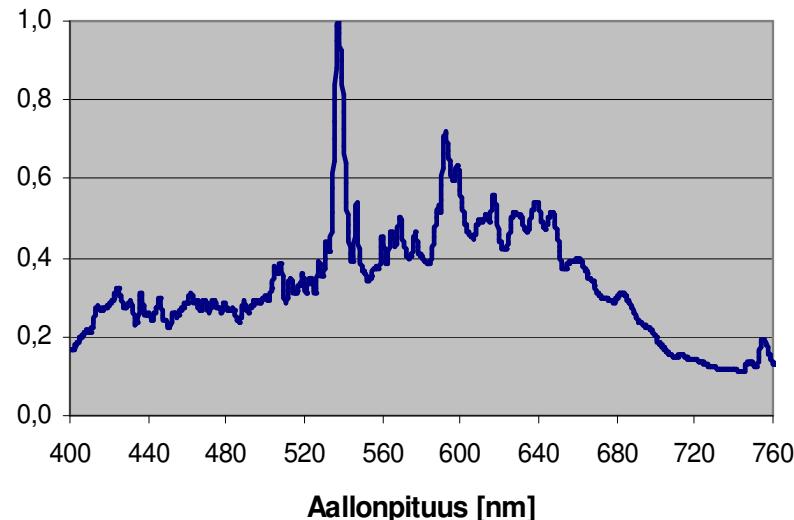


# CIE TC1-58

**70 W SpNa, S/P=0.52**



**70 W MM, S/P=1.76**



## Saman valovirran saamiseksi tarvittava lampputeho

	SpNa	MM	
Fotooppinen	70	78	W
Mesooppinen @ 1 cd/m <sup>2</sup>	70	69	W
Mesooppinen @ 0.5 cd/m <sup>2</sup>	70	64	W

# CIE TC1-58

- Valonlähteet, joissa suurempi sininen osuus tehokkaampia (lyhyet aallonpituuudet): monimetalli, valkoinen LED...
- Mesooppinen painotus erilainen eri valotasolla välillä  $0.005 - 5 \text{ cd/m}^2$
- Vaikutus suurempi matalilla valotasolla (esim. AL3...AL5)
- Esim. 70W suurpainenatrium-monimetalli valotehokkuus:  
*fotooppisella 95 – 85 lm/W  
mesooppisella 87 – 95 lm/W @ 0.5 cd/m<sup>2</sup>*
- CIE suositus: mahdollisuus kehittää uusia mesooppisesti optimoituja valonlähteitä
- Energiatehokkuus, turvallisuus



# CIE Div1: Asiantuntijaseminaarit

- ❖ 2008: CIE Expert Symposium on  
*Advances in Photometry and Colorimetry*
- ❖ 2006: CIE Expert Symposium on  
*Visual Appearance*
- ❖ 2006: CIE Expert Symposium on  
*75 Years of the CIE Standard Colorimetric Observer*
- ❖ 2005: CIE Expert Symposium on  
*Vision and Lighting in Mesopic Conditions*