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# NEWS

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## International Symposium on Light and Human Health

CIE Division 6 co-sponsored a very timely international research symposium entitled "*Light and Human Health*" held November 3-5, 2002 in Lake Buena Vista, Florida (USA). Several rather surprising, new scientific discoveries relating to the effects of light upon the human biological rhythms and other new findings were detailed showing the impact of ultraviolet radiation (UVR) and light upon human health. The Lighting Research Office (LRO) of the Electric Power Research Institute organized the symposium with the strong participation of a number of CIE Division 6 scientists. There were about 80 attendees. The President-Elect of CIE, Wout van Bommel (The Netherlands) gave an after-dinner speech noting the importance of new scientific findings and the need to pay more attention to the evolving aspects of the impact of lighting upon human health. Mark Rea, Director of the Lighting Research Center at Rensselaer Polytechnic Institute, underscored this theme in a Sunday-evening keynote lecture, "Light — Much More than Vision": He presented an overview of circadian rhythms and the evolving literature related to light and human health. He explained to the lighting community that there was a "light measurement problem", that neither photopic nor scotopic lumens adequately predict the effects of light upon the circadian rhythm. He suggested the need for a "circadian photometry" following the evolving action spectrum within the 420-480 nm spectral band (blue light). He speculated that illuminances in excess of 100 lx would be needed in some environments and that light sources may require a greater blue component.

The scientific presentations on Monday and Tuesday covered several areas, including the impact of light upon ocular growth, phototoxicity to the skin and eye, and the recently elucidated neuroendocrine effects of light. Some of the most notable presentations are reviewed below. Professor M. L. Wolbarsht (US), the D6 Editor and Chair of CIE TC 6-44, presented an argument that lighting could influence the development of myopia and that myopia could be prevented through better lighting. Richard Vincent (US), Chair of TC 6-52, spoke on the revival of UV germicidal irradiation for airborne disease control. He noted that this approach, which was common in the 1940s and 1950s, should be reintroduced because of the increasing incidence of multi-drug-resistant tuberculosis and AIDS. Dr. Michael Holick (US), Chair of TC 6-54, described the real need for some UV-B exposure to produce Vitamin D. Giovanni Agati (IT), who is active in TC 6-44, spoke on the use of new LED illuminators for phototherapy of neonatal jaundice and explained why the absorption spectrum of bilirubin, with a maximum in the mid-blue, did not match the action spectrum for phototherapy, which has a maximum near 490 nm.

The session that clearly aroused the greatest interest was on human circadian and neuroendocrine regulation by George (Bud) Brainard (US),

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former chair of TC 6-11. He began the session by describing the new action spectrum, which peaks at 464 nm. The most likely chromophore(s) are cryptochrome and/or melanopsin. David Berson (US) reported on his studies that support the hypothesis that melanopsin is the most likely chromophore. He showed that phototransduction takes place in the retinal ganglion cells, which in turn influenced the clock, melatonin levels, pupil size, and other responses. David Blask (US), a contributor/reviewer for TC 6-11, spoke on the role of melatonin in cancer development and argued that melatonin could suppress cancer growth. He speculated that excessive light might be a risk factor for cancer development through the suppression of melatonin. Several other speakers also addressed this topic. Jennifer Veitch, Chair of TC 6-11, spoke on the implications of the new results to lighting. In an applications session, Karl Schulmeister (A), Associate Director of Division 6, gave an overview of how to use an action spectrum for melatonin suppression, and by applying the basic principles of photobiology show how illumination could be evaluated for circadian efficacy.

Professor John Marshall (UK), a member of TC 6-21 and TC 6-37, presented a beautifully illustrated lecture about the effects of excessive light on the aging retina and implications for age-related macular degeneration (AMD); he explained the complex biochemical interactions involved in the pathophysiology of the retina. Joan Roberts (US), another member of TC 6-21 and TC 6-37, also spoke about light interactions with the human eye as a function of age, but focussed on the photochemistry of UV and light in ocular tissues. Jean-Pierre Césarini (F), the Associate Director of Division 6 for Photodermatology, spoke about the essential role of solar UVR in the development of melanoma and the important role of phaeomelanins in skin cancer risk. He explained that while skin phototypes 3-6 (referred to as "melanocompetent" skin) have naturally dark skin or tan quickly with a deep tan, phototypes 1 and 2 (melanocompromised skin) have a higher fraction of phaeomelanin (the pigment responsible for red hair).

There were a number of interesting posters on instrumentation and measurement methods. A poster from the Chair of TC 6-08, Erin Chaney (US) illustrated the distortion of action spectra from using monochromators with large bandwidths. Stephen Wengraitis (US), Chair of TC 6-25, showed the results of his Committee's spectral weighting of sunlight with different UV action spectra under different solar angles and atmospheric conditions.

In the closing discussion, the four session chairs (Myron Wolbarsht, David Sliney, Bob Levin, and Richard Stark) served as a panel to lead a general discussion. Terry MacGowan, Director of LRO, provided some general remarks to set the stage and thanked all the speakers and participants. Dr. Sliney explained that there had been many important new research findings presented, but complete understanding was lacking in some areas. He pointed out that while today we could begin by applying basic principles of photobiology to show estimate circadian efficacy, one wanted to be cautious not to jump to conclusions as to how best to apply the research, since incomplete understanding might cause more problems than not. Myron Wolbarsht stated that UV-C to reduce airborne pathogens was proven; and he thought that while the very best phototherapy of newborns may still be in question, there was no question that it was needed. The role of vitamin-D appeared important for the elderly and there was a need for better public education and in particular to educate the children caring for their elderly relatives. From the audience, Noel Florence said that it was important that the proceedings be published. Another commented from the audience that it was suggested that lighting designers have a public health role. Jean Pierre Césarini noted that action spectra are nice, but all light is polychromatic and it is important not to over-simplify what is happening in photochemistry and photobiology; and Mark Rea suggested that on a practical level, there will be much more emphasis on daylighting and he thought that the timing of light was more important. Dr. Wolbarsht pointed out that one should not go too far toward increasing blue light if there is a retinal hazard from blue light. Dr. Levin argued for examining the balance of different effects since one could conclude that for many of the effects described in the Symposium one could argue for either more UVR (or light), or less UVR (or light).

Richard Stark was pleased that there were efforts to improve lighting in nursing homes. He thought that there would be quite an increased cost to properly illuminate nursing homes. Jennifer Veitch, Chair of TC 6-11, echoed the remarks of Dr. Alan Lewis, that all of this talk was excellent, but unless it was publicized it would come to naught and she asked how a public information program could occur. Dave Sliney suggested that this was a major role of the CIE and national organizations such as the IESNA and the LRO. The proceedings of the symposium will be published shortly by EPRI/LRO.

*Dr. David Sliney  
Director of CIE Division 6*

## **Division 1 - Vision and Colour**

<http://nml.csir.co.za/~cie1/>

The following new TC was established:

*TC 1-62: LED Colour Rendering* (Chairman: Péter Bodrogi, Hungary)

*Terms of Referece:* To investigate by visual experiments colour rendering properties of white LED light sources and to test the applicability of the CIE colour rendering index to white LEDs.

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

<http://cie2.nist.gov/>

Gene Zerlaut (USA) was approved as new Chairman of TC 2-17 "Recommendation for integrated irradiance and spectral distribution of simulated solar radiation".

The CIE Draft Standard CIE DS 010.3/E:2002 "Photometry - The CIE system of photometry" was circulated to CIE National Committees for vote (deadline: 2003-03-15).

The CIE Draft Standard CIE DS 014-2.1/E:2002 "Colorimetry - Part 2: CIE Standard Illuminants" was circulated for Board and Division ballot. Deadline for vote is 2003-03-15.

## **Division 5 – Exterior and Other Lighting Applications**

<http://www.cie.co.at/cie/div5/>

The draft report of TC 5-14 "Maintenance of Outdoor Lighting Systems" has been circulated for Board and Division ballot. Deadline for vote is 2003-06-10.

## **Division 6 – Photobiology and Photochemistry**

<http://physics.nist.gov/cie6/>

Dr. Steven W. Baertschi (USA) was approved as new Chairman of TC 6-50 "Photodegradation of pharmaceuticals".

The report of TC 6-25 "Spectral weighting of solar ultraviolet radiation" is under publication. Please check the "What's new" section on the CIE website (<http://www.cie.co.at>).

## **Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations**

**CIE 150:2003**

**ISBN 3 901 906 19 3**

The purpose of this Guide is to help formulate guidelines for assessing the environmental impacts of outdoor lighting and to give recommended limits for relevant lighting parameters to contain the obtrusive effects of outdoor lighting within tolerable levels. As the obtrusive effects of outdoor lighting are best controlled initially by appropriate design, the guidance given is primarily applicable to new installations; however, some advice is also provided on remedial measures which may be taken for existing installations.

This Guide refers to the potentially adverse effects of outdoor lighting on both natural and man-made environments for people in most aspects of daily life, from residents, sightseers, transport users to environmentalists and astronomers. (Astronomers also see CIE 126-1997.)

The daytime appearance of the lighting installation is important. The size and nature of the lighting support structures may be intrusive by day although this subject is not addressed in this Guide.

The Technical Report consists of 43 pages with 14 figures and 10 tables.

## **CIE Standard CIE S 011/E:2003 Spatial Distribution of Daylight - CIE Standard General Sky**

CIE published the Standard "CIE S 003 spatial distribution of daylight — CIE standard overcast sky and clear sky" in 1996. Since then further types of skies were examined and an international consensus was reached on their luminance distribution and standardization.

The luminance distribution of the sky depends on weather and climate, and it changes during the course of a day with the position of the sun. This Standard lists a set of luminance distributions, which model the sky under a wide range of conditions, from the heavily overcast sky to cloudless weather. It is intended for two purposes:

- i. to be a universal basis for the classification of measured sky luminance distributions,
- ii. to give a method for calculating sky luminance in daylighting design procedures.

This Standard defines relative luminance distributions: the luminance of the sky at any point is given as a function of the zenith luminance. For daylighting calculation purposes it may be used with values of zenith luminance or of horizontal illuminance to obtain absolute luminance distributions.

This Standard incorporates both the CIE Standard Clear Sky and the CIE Standard Overcast Sky, which are treated as particular cases of the General Sky. The Overcast Sky is retained as a separate formula because there are many calculation procedures that embody the mathematical formulation of this particular distribution.

This present Standard replaces CIE S 003 - 1996 "Spatial distribution of daylight - CIE standard overcast sky and clear sky".



## New Publications in the Field of Light and Lighting

### "Light and Lighting 2002"

#### Proceedings of the International Conference on "Comfort and Efficiency within Interior and Exterior Lighting Systems"

This conference was held from 28 to 30 November 2002 in Bucharest, Romania.

It was opened by speeches of Prof. Dr. Cornel Bianchi (President of the Romanian National Committee of CIE), Prof. Hans Allan Löffberg (CIE President), Wout v. Bommel (CIE President Elect) and others.

The following papers were presented in 3 sections:

#### a) Interior Lighting:

- Influence of the coupling between daylight and artificial lighting on thermal loads in office buildings (G. Achard, C. Franzetti, O. Dobre, G. Fraisse)
- Scale models under an artificial sky as tool for daylighting design: possible applications (C. Aghemo, A. Pellegrino, V. Lo Verso)
- Sunlight and dweller's emotions towards home. A phenomenological approach (A. Belakehal, K. Tabet Aoul, A. Bennadji)
- Light as entertainment (D. Beu)
- Luminous pollution in interior lighting systems (C. Bianchi, C. Ticleanu)
- Tubes de lumière connectés aux systèmes anidoliques (O. Dobre)
- New trends in supermarket lighting (O. Dragan)

- High performance, remote controlled dimmers for incandescent and fluorescent lamps (I. Dranga, R. Raducu, A. Mazare)
- Interdisciplinary approach problem in the lighting system designing (C. D. Galatanu, M. C. Driscu)
- Neuro-fuzzy daylight control (H.S. Grif, A. Gligor, F. Pop)
- Three dimensional luminance distribution and flow of light flux in lighting environment (K. Ikeda)
- Lighting for theater stages (B. Marinescu)
- Lighting in the built environment (F. Pop, D. Beu, M. Pop)
- A new proposal for stage lighting graphics (M. Rinaldi)
- Performance evaluation of intelligent personal controls for open office lighting (C. Suvagau, R. Hughes)
- Windows and lighting: design for visual comfort (K. Tabet Aoul)
- Modern daylighting techniques (C. Ticleanu)
- Industrial lighting - health, well-being and productivity (W. Van Bommel, G. Van den Beld, M. Van Ooyen)

#### b) Exterior Lighting:

- Computer-based simulation for road lighting prediction (V. Barb, D. Mihalescu)
- Lighting project for the palace of Superior Military University - Athens (M. Frangulea, D. Passariello, D. Xintadekas)
- Protecting the nighttime environment through quality outdoor lighting (R. Gent, D. Crawford)
- A new criterion for road lighting: "Average visibility level uniformity" (Ö. Güler, S. Onaygil)
- Architectural lighting for high buildings (M. Husch)
- Correlations functions of the characteristic variables for the road lighting luminaires emplacement (V. Maier, C. Rafiroiu, S. Pavel)
- Le calcul automatique de systèmes d'éclairage architectural en fonction de la luminance (H. E. Moroldo)
- Architectural lighting in Bucharest. Critical views and alternatives (V. Petrovici, A. Balasoiiu)
- Installed power reduction methods in street lighting systems based on mathematical models (I. Paut)
- Urban illumination candelabres (G. Popovic)

c) *Common Aspects of Lighting:*

- Candela realization at NIM Romania (J. Bastie, M. Simionescu, A. Seucan)
- On the numerical analyses of the radiosity equation (F. Baltaretu)
- Lighting education in Romania - a short story (C. Bianchi)
- Lights of the future 2002 - 2nd European luminaire design competition for energy-efficient dedicated fixtures in the residential market (C. Burlacu)
- Aspects théoriques et pratiques de la mesure du flux lumineux par la méthode de Rousseau (S. M. Diga, V. Ivanov)
- Simple numerical methods in lighting calculations with linear sources (P. Dinculescu)
- Trends in present lighting (M. Fetescu)
- Comparison between optic and energetic performances of close diffusers and drilled plates (M. Frascarolo, S. Grignaffini)
- Influence of traction return current of electro locos series FS E.491/492 on reliable work of track circuit applied of signalling devices on Yugoslav railways (B.S. Gavrilovic)
- Some experiences in creation of the integrating photometer systems (P.D. Rancic, D.D. Vuckovic)
- Photometric standards system maintained by NIM, meeting the MRA challenges (M. Simionescu, A. Seucan)

The Proceedings contain 350 pages in 2 volumes.

For further information please contact Prof. Cornel Bianchi, Romanian National Committee of the CIE, fax: +4021 252 4367, e-mail: cnri@xnet.ro.

## **Designing with Light, A Lighting Handbook**

by **A. Valia**

International Lighting Academy, 2002

The colophon of the book gives as publisher the name of Dolly Valia, and as availability the e-mail address : atvalia@vsnl.com. Mr. Anil Valia is both author of the book and shows up under "compiled & edited by Anil Valia". The almost 600-page book covers a very wide field. It starts with a section on the "Language of light & lighting", where fundamentals of light and vision, the basic concepts of photometry are covered, but also some qualitative aspects of lighting are mentioned.

The second section deals with lamps, luminaires and control gear. It starts with the discussion of incandescent lamps, but ends up with a few pages on LEDs and organic LEDs (about 150 pages).

The section on "Designing with light" gives an introduction to lighting design (almost 100 pages), followed by sections on indoor and outdoor lighting, including also light pipes and fibre optic light guiding (over 200 pages). A further section includes items like computer calculation methods of lighting design and electrical design, and goes that far as lighting maintenance.

Two further shorter sections deal with energy management, lighting economics and education.

The book ends with an enumeration of international and other publications and standards.

The reader will find the description of many important questions and practical solutions of many different areas of lighting. One can find answers e.g. to the question how resistant a lighting material (metal or plastic) is to different fluids, but also work place lighting or decorative lighting has to be designed.

The book was written by an educator with many years of experience for the practical lighting engineer or technician. It is an interesting compilation of present knowledge of light and lighting.

JS

## **Photometry, or On the Measure and Gradations of Light, Colors and Shade**

**J. H. Lambert**

**Translation from the Latin of PHOTOMETRIA sive  
de Mesurea et Gradibus Luminis, Colorum et  
Umbræ**

**With Introductory monograph and notes by  
D. L. DiLaura**

Illum. Eng. Soc. Of NA, 2001  
ISBN 0-87995-179-6

With this book the reader takes an exceptional masterpiece in his hand. Lambert's fundamental law of radiometry is something every student learns already during his or her freshmen year of applied optics. But who has had the opportunity to read the original papers on this subject? Professor DiLaura can only be congratulated that he made this fundamental work of our subject available to us. Professor DiLaura states in his Preface correctly that Lambert "was the first to accurately identify most fundamental photometric concepts, to assemble them into a coherent system of photometric quantities, to define these quantities with a

precision sufficient for mathematical statements, and to build from them a system of photometric principles”.

The book gives an insight into the work of the translation, provides a brief biography of Lambert (1728-1777), puts the work of Lambert into perspectives by reviewing research prior to Lambert (from Medieval times till Euler), but also shows the after-life of the work of Lambert.

Professor DiLaura was able to blend the flavour of the original publications (both prior and past Lambert as well as Lambert's work) with modern readability requirements. It is a great work and should be read by every teacher of photometric fundamentals.

JS

## Introduction to Solid-State Lighting

A. Zukauskas, M. Shur , R. Gaska

Wiley Interscience, 2002  
ISBN 0-471-21574-0

A good introductory book on LEDs was very timely. In this respect this book is most welcome. It encompasses a very wide area of interest, from basic photometry and solid state physics to the application of modern high efficiency LEDs, thus it is probably almost impossible to find a reviewer who is equally knowledgeable in all these subjects. Your reviewer is certainly not, and can evaluate the value of the book only from those viewpoints where he is more familiar.

The book starts with a short historic overview and then continues with the fundamentals of photometry and colorimetry. It was a great pleasure to read exact definitions in the section of photometry. However it was somewhat surprising to find smaller inaccuracies in the colorimetric section; e.g. authors have neglected in the equations of the tristimulus values the coefficient “k”, without which the values for a light source will be only relative, and the tristimulus values of surface colours will be completely erroneous. It is also hard to understand from where the authors have obtained the descriptors “purple”, “green” and “blue” for the three colour-matching functions. Further, colour and chromaticity should be distinguished, and one should not state that the description of colours may be possible with two chromaticity coordinates. Only the chromaticity can be described with these two coordinates.

The authors have erroneously called a chromaticity with  $x=0,25$ ,  $y= 0,19$  (point P in Fig. 2.3.3) “pink”; this point is a very bluish purple as can be seen on the chromaticity diagram if the adaptation

is to source C (here it should be mentioned that source C is not called “standard source” anymore; and even so that this is a minor issue, a book published in 2002 should follow the latest adapted terminology).

In the description of colour rendering the concepts of hue and chromaticity are also somewhat mixed up: when moving from the white centre of the diagram towards the green angle, one resolves not much fewer hues, than when moving towards the red or blue angle, but chromaticities (see p. 16). In this section several further smaller errors can be found, but this is not serious since nobody would be able to calculate colour rendering according to this book; the reference to the proper CIE publications is available, but the URL for reference is outdated.

One can only hope that in the other parts of the book, dealing with semiconductor physics and LED technology, the authors who are real experts give an accurate account of the state of the art.

The third section of the book deals with traditional light sources (as a last remark the term “bulb” in the title of the section is certainly misleading, as the bulb is only the glass envelop of a source, and not the “lamp”).

Chapter 4 deals with the semiconductor physics and the injection luminescence in LEDs; while Chapter 5 describes the different techniques to increase external quantum efficiency by coupling out the generated photons from the crystal.

Chapter 6 discusses the different possibilities to obtain white light emission: blue LED with one and two phosphors, two and three emitter structures; pointing out also the achievable efficacy and colour rendering.

The final chapter deals with LED applications, starting with the obvious signal lights, and discussing different possibilities for biological, medical, lighting and other applications. This chapter will certainly grow considerably in a next edition, as many new applications are on the horizon. A bibliography of approximately 500 entries is a valuable part of the book.

JS

## Intertech "Conference Proceedings Light Emitting Diodes 2002 CD-ROM" and "Conference Proceedings OLEDs2002"

Intertech organized two meetings on the hot subjects of LEDs and OLEDs in October 2002 in San Diego,

CA, and made the "Conference Proceedings" on CD-ROM available for CIE for review. The LED conference included 29 papers and most of the PPT files of the presentations are to be found on the CD-ROM. The OLED meeting CD-ROM contains the PPT files of 27 papers. Intertech tries to balance at its meetings the commercial and the technical character of papers, and this is seen also by looking at these CD-ROMs.

The LED Conference papers were grouped into seven sessions, starting with development and market progress, but dominated highly by market progress figures and forecasts.

Two sessions were devoted to technology updates. The question of producing white LEDs dominated the first session, while in the second one some fundamental chip production developments were also shown. It seems that there are still several routes to follow, before the chip manufacturing gets settled on a best solution. The heat exchange question gets nowadays much attention, as it seems to be one of the major bottlenecks in getting higher lumen packages from the single LED lamp.

The OLED conference papers were grouped around the following main topics:

OLED Market Analysis and Trends, in which the commercial side dominated, and canvassed a very bright future for OLED displays.

The "Materials & Technological Developments" session showed a number of modern solutions needed to get more flexible, really thin displays. Here also items, like encapsulation and driving the individual pixels were discussed.

The session on Production & Manufacturing Advancements went into more detail of the different technologies of manufacture, as e.g. ink jet printing. The data some of the authors presented are certainly impressive, for some colours and technologies the fundamental life-time problem seems to be largely solved. It is now more on the packaging side, where further progress is needed.

In the final session on applications and opportunities some authors could day-dream what one could eventually produce in lighting and photoelectric power generation using organic junction technologies.

Certainly the possibilities are great. Predictions show that OLEDs might become important both in the field of large area displays (for the smallest displays segment they are already now the technically best solution) and in area lighting.

JS

## CIE Session 2003

### **Announcement of a further workshop at the CIE Session 2003, San Diego**

#### **Joint CIE/IAU/IDA Workshop on Artificial Sky Glow - Measurement and Control**

**30 June 2003**

A workshop in two parts.

The first session will discuss the ways for measuring sky glow together with an analysis of the relative importance of the direct light from luminaires to that of the reflected light from surfaces.

The second session will discuss the light technical parameters relevant to luminaires in order to minimise their effects on sky glow.

There will be a limited number of presentations in order to introduce the topics, with the majority of time left for open discussion in order to finish with some practical guidelines to take forward for future works.

Nigel Pollard

nigelpollard@neplightingconsultancy.co.uk

## Future Meetings

### **V-th International Lighting Conference "Light and Progress"**

**2-5 September 2003  
St.-Petersburg, Russia**

This conference is organized by the Illuminating Engineering Society of Russia, "All-Russian Lighting Research Institute" S.I. Vavilov by name (VNISI).

Themes of the conference:

- Energy saving problems in illuminating engineering
- Lighting devices
- Light sources and ballasts
- Exterior and interior lighting installations
- Light and architecture, lighting design
- Irradiating installations in industry, agriculture and medicine
- Computer methods in lighting
- Lighting measurements
- Ecology aspects
- Problems of lighting education

Leading Russian and foreign specialists in science, manufacturing, design and trade of lighting product will take part in the conference. Seminars, "working tables" on actual lighting problems, technical excursions will take place at the conference.

Conference fee – 300\$.

Deadline for abstracts: April 25, 2003. Abstracts should be submitted as hard-copy together with the manuscript on disk (the preferred word processor is Microsoft Word 6.0 or .rtf-format). Length: not more than 1,5 paper size A4. Use the font Times New Roman, size 12 point, single space. Language - English.

For further information please contact:

Illuminating Engineering Society of Russia,  
Prospect Mira, 106,  
129626, Moscow, Russia  
Tel: 7 (095) 287 13 52  
Fax: 7 (095) 216 84 45

### **10th International Conference Vision in Vehicles**

**6-10 September 2003  
Granada, Spain**

This highly successful biannual conference was established in 1985. This multi-disciplinary conference will provide an international forum for the exchange of information on current research encompassing all aspects of vision and its relationship to vehicle design.

Topics covered will include:

- Functional requirements of the driving task
- Road transport informatics
- Vehicle design (internal & external environment)
- Intelligent driver-support systems
- Night myopia
- Simulation/virtual reality
- Driver's vision
- Attention, cognitive & perceptual performance
- Older drivers
- Novice drivers
- Driver training

For further information or to be added to the mailing list:

VIV10  
Institute of Behavioural Sciences  
University of Derby  
Kingsway House, Kingsway  
Derby DE22 3HL, UK  
Tel/Fax: 44+(0) 1332-593131  
website: <http://ibs.derby.ac.uk/viv/viv10.html>

### **Call for Papers Colour Society of Australia "Colour Communication '03"**

**10-11 October 2003  
Melbourne, Australia**

The conference will look at two facets: the contribution that is made by the artist and that of the process of imaging.

It shall generate debate on the use of colour with the scene set by the keynote addresses from leading artists or authors. The plan is to stimulate discussion on how colour complements art, how colours of old can be replicated, the joint issues of renovating and conservation, new colour and colouring methods and new materials.

Imaging is a well established but still rapidly expanding modern technology. Accurate reproduction of original colour in hard and soft copies is a major challenge in modern communication. Papers that define the problems and overview solutions would be welcomed.

Papers are also invited on any subject involving colour that is likely to add to the enjoyment and scope of the conference.

Authors are invited to submit an expression of interest to Conference Committee Chair Derek Grantham by e-mail: [derek@cathaypigments.au](mailto:derek@cathaypigments.au) or by fax to +61 3 8795 8099. The website <http://www.colour-society.org> is under construction.

### **50th Anniversary Conference of SANCI International Lighting and Colour Conference**

**2-5 November, 2003  
Cape Town, South Africa**

The conference will cover all aspects of lighting and colour in science, art, design and industry. Topics are:

Lighting:

- Road lighting and signalling for transport (obtrusive lighting, visibility requirements for road signs and markings, the relationship between road lighting and crime, etc.)
- Exterior and other lighting applications (exterior working and pedestrian areas, security, sports and recreation, city beautification, mines, etc.)
- Lighting of interiors and architectural lighting to include daylight and man made light
- General aspects of lighting (terminology, education, economics, design techniques, light sources and luminaires, LEDs, fibre optics, etc.)

Photobiology:

- UV disinfection of water, air or medical instruments
- Solar UV protection properties of sunscreen lotions or textiles
- Measurement of UV irradiance and fluence rate
- Application of UV in cosmetics and medicine
- UV treatment for food, beverages and packaging
- Regulatory standardization and directives worldwide

Colour and Appearance:

- Colour measurement, colour difference formulae, standardization in colour
- Colour perception, colour appearance, colour order systems
- Application of colorimetry and colour matching in different industries
- Colour design, art and architecture
- Colour and psychology
- Colour in education
- Colour in natural sciences
- Image technology

For further information contact:

Martie Cronjé, Administrative Secretary  
South African National Committee on Illumination  
37 Wenning Street  
Groenkloof, 0181, South Africa  
fax: +27 12 460 4264  
e-mail: drcronje@mweb.co.za

**The 11th Color Imaging Conference  
Color Science and Engineering:  
Systems, Technologies, Applications**

**4-7 November, 2003  
Scottsdale, Arizona, USA**

The range of topics include:

- Colour science
- Colour engineering
- Image processing
- Colour reproduction
- Colour printing
- Colour displays
- Digital photography
- Image capture
- Colour image quality analysis
- Visualization in colour
- Colour in computer graphics

- Psychophysics concerning human colour vision
- Optical physics
- Colour in systems engineering
- Software and hardware development for colour systems

This year's conference will feature basic introductory level as well as advanced level tutorials on colour science, imaging, measurement and processing. There will also be "How-to" workshops on the fundamentals and use of colour imaging tools.

For further information, please contact:

IS&T

The Society for Imaging Science and Technology  
7003 Kilworth Lane  
Springfield VA 22151  
tel.: +1 703 642 9090  
fax: +1 703 642 9094  
e-mail: info@imaging.org

**10th European Lighting Conference**

**Lux Europa 2005  
Lighting for Humans**

**19 - 21 September 2005  
Berlin, Germany**

Lux Europa is an association of national lighting societies of 17 European countries. Its target is to spread lighting knowledge by holding conferences every four years.

Subjects to be covered:

- Generation of light
- Interior lighting
- Exterior lighting
- Daylighting
- Intelligent illumination systems
- Light and health
- Photobiology/photochemistry
- Dynamic lighting
- Light and environment

Deadline for Call for Papers: 30th September 2004

For further information please contact:

Conference Chairman:  
Prof.Dr.rer.nat. Heinrich Kaase  
Technische Universität Berlin  
Fakultät für Elektrotechnik und Informatik  
FG Lichttechnik, Sekr. E6  
Einsteinufer 19, D-10587 Berlin  
tel.: +49 30 - 314 224 01  
fax: +49 30 - 314 221 61  
e-mail: lichttechnik@ee.tu-berlin.de

## From the Lighting Journals

### **Color Research & Application**

(www.interscience.wiley.com)

Volume 28, Number 1, February 2003

- A fluorescent extension to the Kubelka-Munk Model  
T. Shakespeare, J. Shakespeare
- Interobserver variability and color representation systems  
J.M. Ezquerro, F. Carreño, J.M. Zoido
- Color coordinates of objects with daylight changes  
J. Romero, J. Hernández-Andrés, J.L. Nieves, J.A. García
- A comparison of constant stimuli and gray-scale methods of color difference scaling  
E.D. Montag, D.C. Wiber
- Color change due to surface state modification  
L. Simonot, M. Elias
- Modeling color change after spinning process using feedforward neural networks  
L. Thevenet, D. Dupont, A.M. Jolly-Desodt
- Determining colour gamuts of digital cameras and scanners  
J. Morovic, P. Morovic
- A non-PC look at principal components  
M.H. Brill

### **Ingineria Iluminatului (Lighting Engineering)**

(www.cs.ubbcluj.ro/~hfpop/lec/)

(Romanian/English)

Volume 4, Number 9, June 2002

- LED traffic signals save energy in British Columbia, Canada  
R. Hughes
- About the hypertext "Artificial illumination" for its use in higher education  
I. O. Mockey Coureaux, D. d.R. Barrero Formigo
- Energy efficient lighting systems - part of the programme "NAS EnerBuild-Energy Environment & Sustainable Development"  
F. Pop
- Research on compact discharge lamps and their control gear  
K. Otas
- Buildings smarter light. the IBECs network/ballast interface  
F. Rubinstein, P. Pettler

### **Journal of Light & Visual Environment**

(wwwsoc.nii.ac.jp/iej/)

Volume 26, Number 3, 2002

- A novel cold cathode fluorescent lamp with an adiabatic layer  
K. Nishimura, J. Yajima, K. Yuasa

Color appearance in peripheral vision: effects of test stimuli and surround luminance

M. Sakurai, T. Koseki, H. Hayashi, M. Ayama

Evaluation of the legibility for characters composed of multiple point sources in fog

Y. Tsukada, Y. Toyofuku, Y. Aoki

Visibility level at sea

M. Furusho, B.S. Ustaoglu

Evaluation of lighting environment using conjoint analysis (part 1) - for the case of office

R. Muramatsu, Y. Nakamura

Fabrication of optical Fourier transform hologram using blue white He-Cd laser and visual appearance of reconstructed color images

M. Kariya, M. Iizuka, Y. Ookuma, Y. Nakashima, M. Takamatsu

### **Light & Engineering**

(www.lta.ru)

Volume 10, Number 4, 2002

Global lighting energy savings potential

E. Mills

Architectural lighting of buildings at the Guards Square in Norilsk

E.I. Myasoedova

LED based lighting systems

L.M. Kogan

An integrated skylight luminaire: Combining daylight and electric luminaires for energy efficiency

R.P. Leslie, J.A. Brons

Heliostat light guide system for school recreation lighting

J.B. Aizenberg, W. Buob, T. Meisen

Thermal conditions of operation and cooling of the parts in special floodlights

Y.G. Basov, A.G. Rakviashvily, V.V. Sysun

Architectural lighting of the Reverend Sergey of Radonezh Temple in Volgograd

N.B. Burtseva, S.V. Sudakov, A.S. Chernyak

Lighting pollution the benefit/cost approach

E. Manzano, A. Cabello, R. San Martin, J.G. Vizmanos

Luminaires for public buildings at "Light + Building 2002" Frankfurt Exhibition

J.B. Aizenberg

### **Lighting Design & Application**

(www.iesna.org)

September 2002: *Attraction Lighting*

October 2002: *Hospitality Lighting*

November 2002: *Progress Report 2002*

December 2002: *Restaurant Lighting*

January 2003: *Lighting Controls*

**Luce** (in Italian)  
(www.tecnichenuove.com)  
Volume 41, Number 7, November 2002

Dublino, Merrion Square: Strade d'Irlanda  
A. Battistini  
L'applicazione meglio distribuita: Progetto & documentazione  
G. S. Mongiello  
Basilica dei S.S. Giovanni e Paolo: Riaprono le case romane e l'Antiquarium del Celio  
S. Rosati, A. Berghella  
Disegnare gli apparecchi: Il metodo associativo  
E. Alberti, F. Corbetta, A. Gilardi  
Valorizzazione e arredo urbano: L'illuminazione delle mura di Ferrara  
M. Targetti  
Milano, La Stazione Bar & Restaurant: Luci veloci da un treno di notte  
Francoforte, Palmen Garten: Nel colore dei Tropici

**Luces** (in Spanish)  
Revista Semestral del Comité Español de Iluminación  
(www.ceisp.com)  
Number 18, 2001

Iluminación artística del Castillo de Coca  
M. de Sousa Sancho  
Parc del Pla del Raval en Barcelona  
P. Cabrera, J. Artigues  
Nuevas vías de desarrollo para el alumbrado en el siglo XXI  
Iluminación simulada arquitectura digital  
A. Amann, A. Medarde  
La necesidad de iluminar adecuadamente las glorietas  
J. I. Urraca Peñeiro  
Iluminación de monumentos en Zaragoza  
J. L. Casado

Number 19, 2002

El Diseño, diez años después o el Diseño, la Moda y la Eficacia  
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Iluminación del Paseo Marítimo de Denia  
V. Ibarra, F. Cargallo, F. Álvarez  
Delicatessen Expositiva, Delicatessen Luminotécnica: "Las lágrimas de San Pedro" en el museo de BBAA de Bilbao  
J. Adell  
Efectos no ópticos de la luz sobre el ser humano  
L. Murguía, R. San Martín  
Conexión de última generación entre los componentes de las luminarias  
J. F. Mejía

El alumbrado en las rutas del mar  
M. Mateos

Number 20, 2002

XXVIII Simposium Nacional de alumbrado en La Coruña  
2002 Año Internacional Gaudí  
La iluminación artificial de iglesias, según Gaudí  
J. Bassegoda i Nonell  
El Jardín Botánico de Barakaldo (Bizkaia)  
D. Rica  
Museo Patio Herreriano de Valladolid, siglos de luz  
E. Portillo  
León, un espacio de la nueva ciudad  
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Viabilidad económica del cumplimiento de las prescripciones técnicas de la propuesta de modelo de ordenanza municipal de alumbrado exterior  
J. I. Urraca Piñeiro

**Lys** (in Danish)  
(www.lysteknisk.dk)  
Number 4, November 2002

Lux Europae 2002  
J. Kokkendoff  
The Spot: Qualified Fantasy  
U. Nordentoft  
Luminous flux from fluorescent tubes  
P.E. Pedersen  
The White Town  
D. Gram  
Better and cheaper lighting for classrooms  
A. Velk, G. Wilke  
Emergency and safety lighting systems  
O.B. Kristensen  
Serial story: Light and shadow  
R. B. Jensen  
Light planning at Frederiksberg  
A. Ruberg

**The Lighting Journal**  
[www.ile.co.uk](http://www.ile.co.uk)  
Volume 68, Number 1, January/February 2003

Research on the interrelation between illuminance at intersections and the reduction in traffic accidents  
H. Oya, K. Ando, H. Kanoshima  
New theory and practice in lighting for health  
M. Rushton-Beales  
White light and facial recognition  
P. Raynham, T. Saksvikrønning

 **For your Diary**

Date	Title of Meeting	Organizer	Place of Meeting
<b>2003</b>			
May 8-9	Illuminat 2003	Technical Univ Cluj-Napoca lec@colective.utcluj.ro	Cluj-Napoca, Romania
<b>June 25 – July 3</b>	<b>25th CIE Session</b>	<b>CIE (Organizing Committee: jrennilson@earthlink.net)</b>	<b>San Diego, CA, USA</b>
June 30	CIE Division 5 Meeting	CIE Division 5	San Diego, CA, USA
June 30	CIE Division 6 Meeting	CIE Division 6	San Diego, CA, USA
June 30	CIE Division 8 Meeting	CIE Division 8	San Diego, CA, USA
July 1	CIE Division 1 Meeting	CIE Division 1	San Diego, CA, USA
July 1-2	CIE Division 3 Meeting	CIE Division 3	San Diego, CA, USA
July 1-2	CIE Division 4 Meeting	CIE Division 4	San Diego, CA, USA
July 2	CIE Division 2 Meeting	CIE Division 2	San Diego, CA, USA
July 9-11	Ultraviolet Technologies IUVA	Icos. Congress Org. Serv. iuva2003@icos.co.at	Vienna, Austria
Sept. 2-5	Vth International Lighting Conf. Light and Progress1	Illum. Eng. Soc. of Russia fax: +7 095 216 84 45	St. Petersburg, Russia
Sept. 6-10	Vision in Vehicles	VIV10, University of Derby fax: +44 1332 593131 ibs@derby.ac.uk	Granada, Spain
Sept. 23-24	PAL 2003 Progress in automobile lighting	Darmstadt Univ. of Technology info@pal-symposium.de www.pal-symposium.de	Darmstadt, Germany
Oct. 8-10	Svetlo Light 2003	ZSVTS: fax: +4212 5542 4983 eliasova@stonline.sk	Low Tatras, Slovak Republic
Oct. 10-11	Colour Communication '03	Derek Grantham fax: +61 3 8795 8099 derek@cathaypigments.au	Melbourne, Australia
Nov. 2-5	International Lighting and Colour Conference	South African NC of CIE drcronje@mweb.co.za	Cape Town, South Africa
Nov. 4-7	11th Color Imaging Conference	IS&T, fax: +1 703 642 9094 info@imaging.org	Scottsdale, AZ, USA
<b>2004</b>			
Sept. 21-24	Licht 2004	LTGR: marita.steinhoff@dew.de	Dortmund, Germany
<b>2005</b>			
Sept. 19-21	Lux Europa 2005	lichttechnik@ee.tu-berlin.de	Berlin, Germany

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