CIE NEWS

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

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CIE DIVISION 2
PHYSICAL MEASUREMENT OF LIGHT AND RADIATION

Division 2 is concerned with all aspects of the measurement of light and optical radiation. The range of topics covered includes measurement of the emission properties of lamps, luminaires, LEDs etc., the responsivity of all types of optical radiation detector and the optical properties of all types of material. These measurements are important in an exceedingly wide range of applications in industry, science and medicine. Examples include obvious areas such as the quality control and development of lamps and luminaires and the colour matching of textiles, paints and plastics, as well as less obvious fields such as the development of instrumentation for the remote sensing of land utilisation and the non-destructive testing of welds in aircraft.

Technical Committees (TCs) within Division 2 are working to produce technical reports and CIE/ISO standards on many issues related to optical radiation metrology, including the characterisation of measuring equipment such as colorimeters and lux meters, goniophotometric measurements on various types of luminaire, measurement geometries for colorimetry and the use of detectors as absolute transfer standards. The Division maintains strong links with the other CIE Divisions, especially 1, 4, 6 and 8, in order to ensure that the measurement requirements of these Divisions are adequately addressed. There are also good links with other relevant bodies such as IEC, CEN and CCPR.

An extremely successful meeting of Division 2 was held in April, in conjunction with the NPL/CIE/Derby University 'Colour 2000' conferences and also linked with meetings of Divisions 1 and 8. The link with Division 1 worked particularly well and it is planned to hold another joint meeting in 2002, at a venue yet to be decided. Colour 2000 was divided into two conference sessions - Colour and Visual Scales 2000 in London on 3-5 April and Colour Image Science 2000 in Derby on 10-12 April. The Division 1 and 2 meetings were held between these conference sessions, on 6-8 April, in Bushy House at the National Physical Laboratory (NPL). Full advantage was taken of having Divisions 1 and 2 meet together; in particular, the first half day was a joint session to allow presentations and discussions on those TCs in both Divisions which are of wider interest. These included supplementary systems for photometry, equivalent luminance, and geometric tolerances for colorimetry. Nine Division 2 TC meetings were

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held and two workshop sessions were also organised, on the photometry of white LEDs and the photometry of emergency lighting luminaires. A total of approximately 70 delegates took part in the meetings.

The next Division 2 meeting will be held in May 2001, at NIST, Gaithersburg, immediately after a conference organised by the US Council for Optical Radiation Measurements (CORM) and linked to the NIST centennial celebrations. A CIE Symposium on LEDs is to be held at the same time. Division 2 is also arranging another CIE Symposium, which will be on the subject of photometric uncertainties. The date for this has now been set for 22-24 January 2001, at the Central Bureau in Vienna, and the detailed programme and speakers are being organised.

It will be clear from the above that Division 2 is very active, reflecting the developments currently underway in the area of optical radiation metrology. These generally fall into 2 categories:

a) development of new or improved measurement instrumentation and techniques;
b) development of new optical technologies, which pose new measurement challenges.

An example of the former is the increasing use of detector arrays for measurement of the spectral characteristics of sources or the spectral reflectance and transmittance of materials, which is being fuelled by recent reductions in cost and improvements in reliability of these systems. In an array-based system, the traditional scanning monochromator is replaced by a fixed monochromator with an array of detectors in the exit plane. The spectrum is distributed across the detector array and each of the individual elements ('pixels') effectively acts as a separate exit slit for the monochromator. Such a system can offer a number of advantages over scanning systems, particularly in terms of speed of operation and reduced size, but can also pose significant problems for those who want to make accurate and traceable measurements. For example, the problems of in-system stray light are considerably more acute with array-based spectrometers than with scanning systems, and procedures for calibration of the wavelength scale are also more difficult. In order to address these problems, users of array-based systems require guidance on recommended calibration and measurement procedures; CIE TC 2-51 has the task to prepare a technical report giving this guidance.

In the area of new optical technologies, the development and increasing use of LEDs is of particular significance at present. Although LEDs have been available for many years, it is only recently that they have been introduced in applications such as variable message signs and signalling in transport. The development of blue and 'white' LEDs means that the range of uses is increasing rapidly and the introduction of LEDs into general lighting applications, for example, is now only a matter of time. CIE Publication 127 defined measurement geometries to be used for luminous intensity measurements on individual LEDs and TCs 2-46 and 2-45 are now working to prepare a CIE/ISO standard for these geometries and to define methods for partial flux measurements. However, in many applications LEDs are used in clusters or arrays, which pose new measurement problems, such as how to average results over several LEDs. These are being studied by TC 2-50.

As technology and instrumentation continue to develop, the need for best practice guidance on measurement-related issues will also continue to grow. The role of the CIE, and in particular CIE Division 2, in producing recommendations, defining best practice, and providing a lead to specification bodies such as CEN, is critical if these new developments are to be exploited to their full advantage.

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✉ News from the Divisions

Division 2 – Physical Measurement of Light and Radiation

http://nml.csir.co.za/~cie2

The following new TC has been established:

TC 2-52: *Addendum to CIE 121-1996 for the Photometry of Emergency Lighting Luminaires* (Chair: G. Vandermeersch, Belgium)

Terms of Reference: To define the proper correction factors for use with emergency lighting luminaires and to provide practical methods for the measure of such luminaires.

Division 2 will organize a Symposium on LED measurements on May 10-12, 2001, in USA, in conjunction with CORM2001 and CIE Division 2 meetings. See Call for papers on page 5 of this News issue.

The Division meeting and TC meetings will take place on 17-19 May 2001, in Gaithersburg, USA.

Division 3 – Interior Environment and Lighting Design

http://ciediv3.entpe.fr

Division 3 had its meeting on 8-9 July 2000. Minutes are available from the Divisional website.

Division 4 – Lighting and Signalling for Transport

http://www.tut.fi.cie4/

The Division has recently established its own webserver at: http://www.tut.fi/cie4/

Division 8 - Image Technology

http://www.colour.org

Division 8 will organize a CIE Expert Symposium on Extended Range Colour Spaces on 11 November 2000 in Scottsdale, USA. See page 7 of this News issue.

🕮 CIE Publications

Errata to Publication 133-1999:

Proceedings of the 24th Session of the CIE Warsaw, Poland, 24-30 June 1999

Vol. I. Part 1.

„A simple formula to calculate brightness equivalent luminance“ by Yasuhisa Nakano, Kinji Yamada, Kenichiro Suehara & Takuo Yano (pp 33-37)

Page 35 Equations 2 and 6

The correct equations are:

Equ. 2.

$$\log\left(\frac{L_{eq}}{L_t}\right) = 0{,}256 - 0{,}184y - 2{,}527xy + 4{,}656x^3y + 4{,}657xy^4$$

Equ. 6.

$$\log\left(\frac{L_{eq}}{L_t}\right) = \frac{1}{2}\log(-0{,}0054 - 0{,}21x + 0{,}77y + 1{,}44x^2 - 2{,}97xy + 1{,}59y^2 - 2{,}11zy^2) - \log y$$

🕮 New Publications in the Field of Light and Lighting

Handbook of Human-Computer Interaction

Helander MG, Landauer TK, Prabhu PV, ed.

Elsevier, 1997
ISBN 0 444 81876 6

This second edition of the Handbook of Human-Computer Interaction (HCI) discusses on over 1500 pages and nine major sections items related to human-computer interaction. As the editors point out in their introduction, it is difficult to properly define human-computer interaction. It includes the capabilities and limitations of human operators when using hard-ware and soft-ware components. The first edition of this book was published in 1988, and the rapid progress of this discipline is best reflected by the fact that three quarters of the book are new. The breadth and depth of the subject is well exemplified by the unusual length of the book, and that even with this length editors were forced to leave out a number of sections from the first edition: sections where the progress was not that overwhelming and the text of the first edition is still relevant. The nine major sections of the present edition deal with:

- Issues, theories, models and methods in HCI: After an introduction and background information, questions like visualization, graphic perception, virtual environment are discussed (it is impossible to merely enumerate all the items dealt with in this and the following chapters).
- Design and development of software systems: design issues, quality assurance problems, international ergonomic standards are discussed.
- User interface design: Graphical user interface, screen-, menu-design, the use of colours, questions of navigation are discussed here.
- Evaluation of HCI: Usability testing is a discipline in itself, the question is discussed in six papers.
- Individual differences and training: In this section questions of elderly people and of those with disabilities are discussed.
- Multimedia, video and voice: Both questions of the necessary interface devices and designing and using hypertext and multimedia are dealt with.
- Programming, intelligent interface design and knowledge-based systems: In this section the end-user stays in the foreground, e.g. how with the help of decision aiding the work of the end-user can be made easier.
- Input devices and design of work stations: Questions related to key-boards, pointing devices, the build-up of a workstation are discussed.
- The section on computer supported cooperative work discusses many issues of modern interactive work, not only between computer and the operator, but also among the humans working together.

The book contains an author index to the 4000 references and an extensive subject index. It can be recommended to computer scientists, especially if

working on items related to CIE Division 8, cognitive scientists, human factors professionals, interface and system designers, just to mention a few.

Program Monitoring and Visualization, An Exploratory Approach

Clinton L. Jeffery

Springer-Verlag, 1999
ISBN 0 387 98644 8

Computer programming becomes more and more the everyday task of most illuminating engineers as well. Often source code programs have to be edited by the user. One finds then too often problems due to the poor description and insufficient visualization of the software.

This book shows on the example of a high level language, Icon, how program monitoring can be made effectively. The book is organized into four parts. The first part serves as an introduction, Part 2 describes the Alamo monitor architecture that serves to monitor Icon programs. Alamo facilitates the construction and visualization of the Icon programs. In Part 3 the reader will find a number of examples, how the system is used in practice, while Part 4 discusses the use of program visualization tools in practical programming environment.

The book is probably a valuable reading not only for those who deal with language Icon, but who have to perform similar tasks using other computer languages as well.

Optical Systems and Processes

Joseph Shamir

SPIE Optical Engineering Press, 1999
ISBN 0 8194 3226 1

The instruments used by illuminating engineers are becoming more and more sophisticated. They use optical systems that were a few years ago only part of high-tech laboratory instruments. To understand the functioning of such instruments and to be able to select the system best suited for a given application, an in-depth understanding of optical systems is needed.

The book by Shamir is well suited as a text book for a one-year graduate-level course in optics. It keeps engineering applications in the foreground. Twelve major sections of the book provide an introduction to electromagnetic wave propagation, discuss Fourier transformation and build up a linear system theory approach of handling the optical system performance. This approach is then used to describe wave-front transformations in optical devices, as lenses, gratings, etc.

Further chapters deal with optical system aberrations, coherence problems, interference and interferometers, polarization, holography. The last sections of the book deal with optical information processing. At the end of each chapter the reader finds a number of problems and at the end of the book an appendix deals with the solution of these problems. Thus the book is well suited for individual learning as well.

Contrast Sensitivity of the Human Eye and its Effects on Image Quality

Peter G. J. Barten

SPIE Optical Engineering Press, 1999
ISBN 0 8194 3496 5

Contrast sensitivity is one of the fundamental quality criteria for lighting and imaging applications. Barten develops a new model for the human contrast sensitivity description and employs this model for practical engineering applications.

Major chapters of the book are: modulation threshold and noise, the spatial and temporal contrast sensitivity of the eye, applying also modulation transfer functions and noise considerations, both for foveal and extra-foveal vision, and discussing flicker phenomena. A contrast discrimination model is introduced and image quality measures are discussed.

The treatise of the subject reflects the author's exquisite knowledge of imaging devices, especially cathode ray tubes. The book is a worth-while reading for anybody who is interested in a theory of human contrast sensitivity and in image quality description.

A System Engineering Approach to Imaging

Norman S. Kopeika

SPIE Optical Engineering Press, 1998
ISBN 0 8194 2377 7

The book is intended as a text book for advanced undergraduate or graduate courses in imaging principles and systems concept. It consists of six major parts. The first one deals with geometrical optics and imaging. Part 2 contains chapters on radiometry, photometry, radiation sources, noise and

detectors (all these are dealt with as system components and not as devices). The next part deals with radiation transfer issues, such as diffraction, modulation transfer functions and imaging. Part 4 contains chapters on transfer through absorbing and turbulent matter, as e.g. the atmosphere. The last section deals with image processing and resolution.

At the end of each chapter examples are given, with solutions at the end of the book.

The book is not always an easy reading. Thus e.g. Maxwell' equations are introduced, but it is assumed that everybody knows the meaning of the symbols E, B, H, J and D. Later too a symbol is presented and its meaning spelled out only a page later.

For the illuminating engineer the inconsistencies and inaccuracies in introducing photometric concepts are probably annoying: the author has probably never read the International Lighting Vocabulary, otherwise he would not use the symbol N for radiance, would know that Km for photopic vision is 683 lm/W and not 685 lm/W, etc. All typical examples of errors authors of other disciplines often make, when in their book radiometry and photometry is only a small section of the entire treatise. But one would like to see that in books providing an insight into adjacent areas of interest to our readers, subjects where CIE members are at home are also dealt with correctly.

CIE Conferences and Symposia

Call for Papers

2nd CIE Expert Symposium on LED Measurement

Standard Methods for Specifying and Measuring LED and LED Cluster Characteristics

10-12 May 2001
Holiday Inn, Gaithersburg, Maryland, USA

The first CIE Expert Symposium on LED measurement was held at the CIE Central Bureau in Vienna in 1997. During the past four years LEDs observed a considerable progress. Both as individual lamps and as clusters for signalling and recently even for lighting purposes LEDs have become competitive with more traditional light sources. Currently there are considerable efforts within the LED industry and the community who use LEDs to standardise on LED characterisation and measurement. Several CIE Technical Committees are active in the field.

The goals of the meeting are:

- Characterisation of LEDs and the measurement of individual LEDs
- Measurement of LED clusters and arrays
- Other aspects of LED measurements, including safety issues

This meeting is open to all participants. To insure adequate space and support, and to allow distribution and adequate review of relevant documents, prior registration is required. The following individuals are specifically encouraged to attend:

- Quality control laboratory personnel at LED manufacturers and users
- Those responsible in specifying and testing LED properties
- Those working in research laboratories dealing with new LEDs and LED-cluster development

The format of the meeting will include one day of tutorial presentations given by experts of CIE Division 2 "Physical Measurement of Light and Radiation", followed by a Symposium with Invited and Contributed Papers as well as Posters. Ample time will be secured for round-table discussions and demonstrations.

Tutorial Workshops will cover fundamentals and advanced methods of LED measurement:

- Fundamentals of radiometry, photometry and colorimetry
- Practical photometry and the use of LED Standards
- Calculation of uncertainty in measurement
- Introduction of CIE publication 127

Call for Contributed Papers and Posters:
Authors are invited to submit two page extended abstracts of their proposed contributions in English no later than 15 January 2001 to

CIE Central Bureau,
Kegelgasse 27, A-1030 Vienna, AUSTRIA
per mail or e-mail: ciecb@ping.at

(please do not fax, as the extended abstracts, if accepted, will be used to print the Abstract Booklet).

Authors will be notified of acceptance of their abstract by 1 March 2001. Instructions for preparing camera-ready copy of papers will be forwarded to accepted authors. Final camera-ready copy is due at the Symposium. The Proceedings of the Symposium will be made available after the meeting.

Accepted Symposium contributions will be pre-published for Symposium participants at the web site of the meeting.

Registrations are accepted for

- LED measurement tutorials, 10 May 2001. Several CIE publications and lecture notes will serve as background material for the tutorials.

Registration fee: US$ 400,-

- LED Symposium, 11-12 May 2001. Registration fee: US$ 250,-

For participants of both parts a reduced registration fee of US$ 500,- holds.

Deadline for registration is 15 March 2001,
to be sent to the

CIE Central Bureau
Bank Account No. 04610-665-450
at BAWAG Landstrasser Hauptstrasse 60
A-1030 Vienna, Austria.

VISA, Master Card, American Express credit card also honoured.

Symposium Agenda

1. Radiometric, photometric and colorimetric characterisation of LEDs
2. Radiometric, photometric and colorimetric characterisation of LED clusters and arrays, with special emphasis on signalling and lighting applications
3. Other aspects of LED measurements, including safety issues and their use in health-care applications

The Symposium will be followed by meetings of CORM and CIE Div. 2:

- May 13 pm: CORM/CIE social event at Smithsonian National Gallery of Art (Symposium participants invited as guests of CORM)
- May 14: CORM subcommittee and CIE TC meetings at NIST (open to nonmembers as guests)
- May 15 to 16: CORM 2001 (registration required, on site or in advance) with NIST laboratory tour on May 16 pm
- May 17 to 19 CIE Div. 2 and TC meetings at NIST and Holiday Inn Gaithersburg

Copies of this 1st Circular can be obtained also from the Symposium home page:

http://physics.nist.gov/LED2001

The Turkish National Committee on Illumination is hosting the next

CIE Midterm Meeting

6-14 September 2001, Istanbul, Turkey

in conjunction with an International Lighting Congress and Exhibition.

The main theme is City Lighting and Beautification. City lighting is important in terms of emphasizing the historical, architectural, artistic, cultural values and making effective and meaningful appearances of these values within the city, including security, transportation and some open-air activities.

Other topics are:

- vision and colour
- physical measurement of light and radiation
- interior environment and lighting design
- lighting and signalling for transport
- exterior and other lighting applications
- photobiology and photochemistry
- image technology
- general aspects of lighting (terminology, education, economics of lighting, development of light sources, luminaires, etc.)

The official language is English.

An exhibition of lighting products will take place during the congress. Companies wishing to participate should contact the Congress Secretariat.

Registration fees (until 2 July 2001):

participants: USD 250,-

students: USD 125,-

covering the proceedings, refreshments, city tour and opening cocktail.

More detailed information will be given in the next issue of CIE NEWS. You may also contact the

Congress Secretariat
ITÜ Elektrik-Elektronik Fakültesi,
Elektrik Mühendisliği Bölümü
Ayazağa Kampüsü, Maslak,
80 626 İstanbul, Turkey
tel.: (+90) 0212 285 6050
fax: (+90) 0212 285 6051
e-mail: atmk@elk.itu.edu.tr

CIE Expert Symposium

Extended Range Colour Spaces

11 November, 2000, Scottsdale, Arizona, USA

On Saturday, November 11, the day following the Eighth IS&T/SID Color Imaging Conference (see next page) the CIE will host an Expert Symposium on the communication of colour using extended range colour spaces.

Most of the colour spaces users are familiar with today are tied to presentation devices, such as monitors and printers. This is reasonable, since in the end the application of most colour data is presentation. However, in an increasingly digital and networked world, colour encodings are needed that enable colour data from a wide range of sources to

be preserved and exchanged fluidly to allow multiple presentation options, each capable of a different range of colours. This is the topic to be explored at the CIE Expert Symposium.

The symposium will bring together both experts from standards groups and individual contributors who will discuss extended range colour spaces for digital photography, multimedia, graphic arts, colour and Internet facsimile, television and digital cinema. They will describe the problems to be solved, the criteria for solutions, and what spaces have been proposed and developed. The goal of the meeting will be to determine how we can cooperate to produce a set of colour spaces that meet the broadest possible range of needs.

Registration is required for this meeting. Registration fees are USD 150 for the one day program. If you register for the IS&T/SID Color Imaging Conference as well, you save USD 50 over the cost of the two meetings.

Papers will be presented on:

- Communication of colour information
- IEC led colour space standards
- Communicating colour when distributing complex images - standard solutions for printing and publishing
- Extended colour encoding requirements for photographic applications
- Colour space selection for colour facsimile
- Extended range colour spaces in television and digital cinema
- Standards activities for the colour management of colour printers
- Testing the uniformity of colour spaces
- Image states and standard colour encodings

Details of the CIE Expert Symposium program are available at:

http://www.colour.org/info Symposium2000.htm

Database of Daylight and Solar Radiation

A EU funded programme called SATELLIGHT has led to the establishment of an advanced Internet based service, geared toward solar energy related applications, with a specific orientation toward DAYLIGHTING.

At the core of this service is a high quality daylight and solar radiation database derived from two years (1996-1997) of half hour satellite images (three more years will be added in 2001). The data covers Western and Central Europe (from Lisbon to Moscow) at a spatial resolution of about 5 km by 7 km.

The internet service allows to produce in a few minutes, maps or site specific information such as cumulative frequency curves, month-hour illuminance diagrams, sky luminance statistics... Its access is free, you can register by contacting the system administrator dominique.dumortier@entpe.fr or going to http://satel-light.entpe.fr

☞ Future Meetings

8th Color Imaging Conference

Color Science and Engineering: Systems, Technologies, Applications

7-10 November 2000, Scottsdale, Arizona, USA

This conference is the premier technical conference for scientists and engineers working in the areas of colour science, colour engineering, and their application to colour products and colour imaging technology.

Papers will be held on

- colour theory
- human colour vision
- colour science
- colour workflow
- colour image analysis
- image rendering
- image capture
- image display
- gamut mapping
- printing

For further information, please contact:

IS&T
7003 Kilworth Lane
Springfield, VA 22151, USA
fax: +1 703 642 9094
e-mail: info@imaging.org
http://www.imaging.org/conferences/cic8/

6th International Trade Fair for Lighting and Light Technology

InterLight 2000

13-16 December, 2000, Moscow, Russia

This trade fair gathers the experts from all over the world in Moscow. Herewith this fair offers excellent chances to establish personal contacts and to get to know the market in Russia better. The „InterLight 2000“ will present the latest developments on the sector of the international light technology as well as the diverse possibilities of energy saving at the beginning of the 21st century.

For further information please contact:

OWP Ost-West-Partner GmbH
PO Box 2127
D-92611 Weiden
tel: +49 (961) 38977-0
fax: +49 (961) 32035
e-mail: OWP-Weiden@t-online.de
www.owp-tradefairs.com

Lighting Efficiency: Higher Performance at Lower Costs

19 - 21 January 2001, Dhaka, Bangladesh

Good lighting conditions are imperative for proper performance and greater economic returns. In order to explore the potential of affordable, high-performance lighting systems, it is important to be aware of the different facets that constitute such systems and of available options in the market. One of the aims of this conference, organised by the Illumination Society of Bangladesh, is to increase understanding between the various professionals indispensable to the successful installation of lighting systems.

The present state of energy availability in much of Bangladesh and the developing world is far from adequate to supply the needs of all its population. Energy efficiency is therefore a prerequisite for all future development. Lighting forms a major energy need in households all over the world. Efficient lighting can provide solutions to the present energy crisis prevailing in much of the world, by decreasing the demands on electricity, while providing brighter interiors.

It is the aim of this two-day Conference to discuss the various issues that lead to the design, installation and running of energy efficient, cost effective, high performance lighting systems.

Papers are invited on the following topics:

- vision and lighting: general principles
- lighting design: case studies and lighting themes
- installations: discussions on advantages and disadvantages of available options

Deadline for abstracts: Sep.30, 2000

Registration fee: US$ 200,-

(covers cost of proceedings, lunch and refreshments, transport between hotel and conference venue).

For further information and registration, please contact:

Engr. Syed M.A. Quddus, General Secretary
Illumination Society of Bangladesh
M.N. Plaza, 2 New Eskaton Rd.
1st Floor, Baro Mogh Bazar,
Dhaka 1217, Bangladesh
e-mail: ieal@bdmail.net

CORM 2001

100 Years of Optical Radiation Standards for Commerce for the United States and in the Global Community: Shrinking Uncertainties for a Shrinking World

13-17 May 2001, Gaithersburg, Maryland, USA

2001 will be the 100th anniversary of the founding of the National Bureau of Standards, now the National Institute for Standards and Technology with the Department of Commerce, thus CORM 2001 will be held at NIST in celebration of their work on optical radiation standards for commerce in the USA and their cooperation with the standardizing bodies around the world.

Immediately following the CORM meeting, CIE Division 2 “Physical Measurement of Light and Radiation” will hold its annual technical meeting and several of the Division 2 Technical Committees will hold status meetings.

Before the meeting, the 2nd CIE Expert Symposium on LED Measurement will be held from 10 to 12 May (see page 5).

For further information, please contact:

Danny C. Rich
Sun Chemical Corporation
Color Research Laboratory
631 Central Avenue
Carlstadt, NJ 07072, USA
tel.: +1 201 933 4500, ext 1144
fax: +1 201 933 5658
e-mail: RichD@sunchem.com

Showlight 2001

21-23 May 2001, Edinburgh, Great Britain

Showlight 2001 is an international conference about lighting for the performing arts, principally television, theatre, architectural, concert, and film. It is organised by the National Illumination Committee of Great Britain.

It will include an exhibition area where over 30 manufacturers will have products and service literature available.

Delegates are anticipated to be professional lighting designers and others associated with the performing arts who are interested in discussing the achievements of their colleagues and the equipment and techniques used. Although aimed at a technically knowledgeable audience, emphasis will be on the application of lighting equipment to achieve effect, rather than scientific merits.

The lecture programme will include invited contributions from eminent speakers, as well as papers submitted by those in the entertainment lighting field who have something of interest to offer. Six main topics have been chosen for broad interpretation:

- performances
- special rigs
- controlling and moving lights
- light sources
- special effects
- the future.

For further information please contact the

Showlight 2001 Administration
Ruth Rossington, PLASA Publishing
38 St. Leonards Road, Eastbourne
East-Sussex, BN21 3UT
tel.: +44 1323 64 2639
fax: +44 1323 64 6005
e-mail: ruth@plasa.org.uk

❑ Liaison Matters

IEC has sent us the following documents:

31/338/CDV:

Revision of the IEC 60079-7: Electrical apparatus for explosive gas atmospheres - Part 7: Increased safety 'e'

Deadline for comments and vote: 2000-11-30.

31/339/CD:

Revision of IEC 60079-18 Electrical apparatus for explosive atmospheres, Part 18: Encapsulation 'm'

Deadline for comments: 2000-11-15.

34A/932/CD:

IEC 60357, Ed. 3: Tungsten halogen lamps - Performance requirements

Deadline for comments: 2000-10-31.

34A/933/CD:

Proposed amendments to IEC 60357, Ed. 3: Tungsten halogen lamps - Performance specifications

Deadline for comments: 2000-10-31.

34A/934/CD:

IEC 60432-3, Ed. 1: Tungsten halogen lamps - Safety specifications

Deadline for comments: 2000-10-31.

34D/588/CDV:

Draft amendment 2 to IEC 60498-2-20: 1996: Luminaires. Part 2-20: Particular requirements - Lighting chains

(parallel IEC CDV/CENELEC enquiry)

Deadline for comments and vote: 2000-10-31.

34D/600/FDIS:

Draft amendment 2 to IEC 60598-2-3, Ed.2: Luminaires for road and street lighting

(parallel IEC-CENELEC voting)

Deadline for vote: 2000-10-16.

34D/602/CDV:

Draft of IEC 60598-2-3, Ed.3: Luminaires - Part 2-3: Particular requirements - Luminaires for road and street lighting

(parallel IEC CDV/CENELEC enquiry)

Deadline for comments and vote: 2001-01-31.

76/220/FDIS:

Amendment 2 to IEC 60825-1: Safety of laser products - Part 1: Equipment classification, requirements and user's guide

(parallel IEC-CENELEC voting)

Deadline for vote: 2000-10-16.

Readers interested in one of the above documents are asked to contact their National IEC Committee.

From the Lighting Journals

Flare - Architectural Lighting Magazine

Number 23, April 2000

The new Roma Termini Railway Station: The renovation and upgrading carried out on the occasion of the Jubilaeum

C. Baldacci

New interior landscapes: The Techint headquarters, Milan, the recover of a manufacturing facility
M. Vercelloni

Taiwanese shadows: Temporary urban stage designed by J. Min Lin for the Taipei Film Festival
M. Vercelloni

A sculpture of light: The church of Gelmeroda relives in a bright scenography
G. Antonelli

A tower-laboratory for light: The water-tower in Solingen-Gräfrath turned into a lighting technology research centre

Metal turns into light: At the dawn of electric lighting Auer reinvented the luminous filament
G. Antonelli

When the light is sunlight: Considerations on the "devices for the conditioning of sun rays"
B. Mazzone

Hotels as lighted set designs: The use of lighting as a means to emphasise the interiors
M. Turinetto

UV and light: Effects of UV on man and the environment, standards and design features
B. Piccoli, S. Orsin

When technology becomes poetry: The luminous decor "Life River" for the Royal Pine Hotel in Urawa in Japan
C. Pagni

Journal of Light & Visual Environment

Volume 24, Number 1, 2000

Analysis for speckle phenomenon of rapid-start fluorescent lamps with internal starting aids
S. Wada, M. Toho

Preheating characteristics of a fluorescent lamp cathode (II)
M. Myojo, A. Waki, I. Okuno

The luminance decreasing phenomenon of the cold cathode discharge lamp operating with a capacitor ballast
H. Yano, T. Ueno, M. Aono

VUV radiation of afterglow generated by pulsed discharge of xenon
M. Jinno, H. Kurokawa, M. Aono

Annealing behavior of emission bands induced by neutron irradiation in silica glass
S. Nasu, T. Sutani, S. Ishida, A. Koshino, R. Yamamoto, H. Nanto, T. Tanifuji, Y. Morimoto

Illuminance calculation using Monte Carlo Method
Y. Ohtani, M. Ohkawa, A. Uchida, T. Yamaya

Fundamental study of shadow characteristics under task ambient lighting
A. Uchida, Y. Ohtani

Study on affluent lighting in a Japanese living room - Meanings of affluent lighting and elements concerned
K. Nakayama, M. Sato, M. Inui

Domestic comparison of relative spectral responsivity measurements for illuminance meters
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July 2000: Healthcare Facilities

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For your Diary

Date	Title of Meeting	Organizer	Place of Meeting
2000			
Oct. 24	SLG-Tagung 2000: Licht im Kultur und Kongreßzentrum Luzern	SLG fax: +31 312 12 50 slg.bern@bvm.ch	Luzern, Schwitzerland
Nov. 6-7	2000 AIC Meeting: Color & Environment	Korean Soc.of Color Studies fax:822-3650014 interad@unitel.co.kr	Seoul, Korea
Nov. 6-8	Light and Lighting 2000 - SANCI Annual General Meeting	SANCI, fax: 012 46 4264 drcronje@mweb.co.za	Port Elizabeth, South Africa
Nov. 7-10	8th Color Imaging Conf. Color Science and Engineering	IS&T fax: +1 703 642 9094 info@imaging.org	Scottsdale, Arizona, USA
Nov. 11	CIE Expert Symposium on Extended Range Colour Spaces	CIE (TC 8-05) Todd_Newman@cisnc.canon.com	Scottsdale, Arizona, USA
Nov. 23-24	3rd International Lighting Congress and Exhibition	Turkish NC of CIE fax: +90 212 285 3679	Istanbul, Turkey
Dec. 13-16	InterLight 2000	OWP, fax: 49 961 32035 OWP-Weiden@t-online.de	Moscow, Russia
2001			
Jan. 19-21	Lighting Efficiency: Higher Performance at Lower Costs	Illumination Society of Bangladesh ieal@bdmail.net	Dhaka, Bangla Desh
April 22-25	Image Processing, Image Quality, Image Capture, Systems Conference	IS&T fax: +1 703 642 9094 info@imaging.org	Montréal, Quebec, Canada

Date	Title of Meeting	Organizer	Place of Meeting
May 10-12	2nd CIE Expert Symposium on LED Measurement	CIE	Gaithersburg, USA
May 13-17	CORM 2001	Danny C. Rich RichD@sunchem.com	Gaithersburg, USA
May 16-19	CIE Division 2 Meeting	CIE Division 2	Gaithersburg, USA
May 21-23	Showlight 2001	Showlight 2001 Administration fax: +44 1323 64 6005 ruth@plasa.org.uk	Edinburgh, Great Britain
June 11-16	Summer Study: European Council for Energy Efficiency Economy	ECEEE www.eceee.org	Côte d'Azur, France
June 13-15	Light 2001	CBNCI http://acstre-ma.vmei.acad.bg/Light-2001/	Varna, Bulgaria
June 16-17	CIE Division 3 Meeting	CIE Division 3	Reykjavik, Iceland
June 18-20	Lux Europa 2001	Ill.Eng.Soc.Iceland fax: +354 515 9008 luxeuropa@lv.is	Reykjavik, Iceland
June 24–29	AIC Quadrennial Congress	AIC paula.alessi@kodak.com	New York, USA
Sept. 6-14	CIE Midterm Meeting	CIE	Istanbul, Turkey
Nov. 6-8	Nat. Measurement Conf. NMC 2001 and BEMC 2001	D. Hall fax: +44 020 8943 6821 nmp_sec@npl.co.uk	Harrogate, Great Britain

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